NW 2157

Focused Subsurface Investigation

4425 South Third Avenue
Everett, Washington

September 30, 2011

Prepared For:

Acrowood Corporation
4425 South Third Avenue
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ECI Project No. 0377-03

Table of Contents

List Of Attachments

Attachment A
- Figure 1 – General Vicinity map
- Figure 2 – Site Representation Map
- Figure 3 – Area 1 Paint/Solvent Storage Area
- Figure 4 – Area 2 Former Heating Oil UST & ECI Investigation Area
- Figure 5 – Area 3 Former Location of Fuel Tank & Estimated Extent of Soil Impacts
- Figure 6 – Area 3 Former Location of Fuel Tank & Estimated Extent of Groundwater Impacts

Attachment B
- Table 1 – Summary of Area 1 Soil Analytical Results
- Table 2 – Summary of Area 2 Soil Analytical Results
- Table 3 – Summary of Area 3 Soil Analytical Results
- Table 4 – Summary of Area 1 Groundwater Analytical Results
- Table 5 – Summary of Areas 2 & 3 Groundwater Analytical Results

Attachment C
- Further Action Opinion Letter dated June 22, 2010 by Ecology

Attachment D
- Boring Logs – 6 Pages

Attachment E
- Laboratory Analytical Results

Attachment F
- Professional Qualifications

List of Abbreviations and Acronyms

ACM	Asbestos-Containing Material
AOC	Area of Concern
APS	Applied Professional Services
AST	Aboveground Storage Tank
ASTM	American Society for Testing and Materials
BGS	Below Ground Surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	Chemical / Contaminate of Concern
DRO	Diesel Range Organics (Carbons C12 to C24)
Ecology	Washington State Department of Ecology
EDR	Environmental Data Resources Inc.
EPA	U.S. Environmental Protection Agency
ESA	Environmental Site Assessment
ft	Feet
GRO	Gasoline Range Organics (Carbons C3 to C12)
LNAPL	Light Non-Aqueous Phase Liquid
LPB	Lead-Based Paint
µg/kg	Micrograms per Kilogram
mg/kg	Milligrams per Kilogram
MSL	Mean Sea Level
MTCA	Washington State Model Toxics Control Act
ORO	Oil Range Organics (Carbons C24 to C36)
PHCOC	Petroleum Hydrocarbon Chemical of Concern
RCW	Revised Code of Washington
SVOC	Semivolatile Organic Compound
TP	Target Property
TPCHD	Tacoma-Pierce County Health Department
USGS	U.S. Geological Survey
UST	Underground Storage Tank
VEC	Vapor Encroachment Condition
VES	Vapor Encroachment Screening
VOC	Volatile Organic Compound

1.0 INTRODUCTION

EconCon, Inc., (ECI) conducted a *Focused Subsurface Investigation* (FSI) for the property located at 4425 South 3rd Avenue in Everett, Washington (Site). The location of the Site is depicted on Figures 1 & 2.

The Site is currently owned by Acrowood Corporation and enrolled in the Washington Department of Ecology (Ecology) Voluntary Cleanup Program (VCP), and is identified as Acrowood Corp. and assigned the VCP Project No. NW2151.

The work described herein was performed in general accordance with the scope of work ECI proposed in our March 2011 Proposed Scope of Work.

1.1 Background

The Site is currently utilized as a metal fabrication facility and is occupied by Acrowood Corporation. According to the below-referenced reports, the facility was reportedly constructed in 1913 and occupied by an iron and metal foundry until the early-1970s. The Site has reportedly been used for metal fabrication since the –early-1970s. Acrowood Corporation has occupied the site since 1984.

ECI reviewed the following documents, which document previous non-intrusive and subsurface investigation activities at the Site:

- *Supplemental Phase II Site Assessment Report* dated February 6, 2009 by Adapt Engineering, Inc.;
- *Further Action Opinion Letter: Acrowood, 4425 South Third Avenue, Everett, WA* dated June 22, 2010 by Ecology.

According to these documents, several previous investigations have been performed at the Site by Adapt Engineering (Adapt) beginning in 1999. During the course of investigation, three areas were identified as containing concentrations of target analytes in soil and/or groundwater at concentrations above Model Toxics Control Act (MTCA) Method A or B Cleanup Levels. These areas are described as:

1) A paint and solvent storage shed where trichloroethene (TCE) was encountered in soil and groundwater at concentrations exceeding applicable MTCA Method A Soil and Groundwater Cleanup Levels. This area is referred to as Area 1 (see Figure 3).
2) A former heating oil UST location where oil-range organics (ORO) were encountered in soil at concentrations below the MTCA Method A Soil Cleanup Level. This area is referred to as Area 2 (see Figure 4), and

3) An area where a release from a former diesel fuel tank occurred and concentrations of diesel-range organics (DRO), ORO and polycyclic aromatic hydrocarbons (PAHs) in soil and groundwater exceeded MTCA Method A Soil and Groundwater Cleanup Levels. This area is now referred to as Area 3 (see Figures 5 & 6);

Subsequent investigations by Adapt between 1999 and 2002 involved the installation and monitoring of groundwater monitoring wells MW-1, MW-2 and MW-3 and additional soil and groundwater sampling to further evaluate the extent of impacts in these three areas.

The Site was submitted into the VCP by Adapt in January 2007 and Adapt requested a No Further Action (NFA) determination. Ecology responded to this request in a *Further Action Opinion Letter* dated April 18, 2007 by Ecology stating that it was necessary to determine the areal extent and depth of trichloroethene groundwater contamination at the paint and solvent storage area using groundwater monitoring wells. Ecology further indicated that is was necessary to determine the areal extent and depth of a possible contaminant plume from the former heating oil tank location using groundwater monitoring wells and the installation of an additional groundwater monitoring well southeast of the former fuel tank.

Based on Ecology's comments, Adapt conducted a Supplemental Phase II Environmental Site Assessment in 2007, which included the installation and quarterly sampling of groundwater monitoring wells MW-5, MW-6 and MW-7 in Area 1 and MW-4 situated southeast of the former fuel tank at a lower elevation in Area 3.

In October 2008 Acrowood was dropped from the VCP with a Termination of VCP Agreement Letter. Acrowood re-entered the VCP in May of 2009 and was issued a *Further Action Opinion Letter* dated June 22, 2010 by Ecology. Ecology concluded that further action is necessary to clean up contamination at the Site and included the following comments in the letter:

- *A Terrestrial Ecologic Evaluatioin (TEE) has not been completed. Therefore, it is unknown if soil cleanup standards protective of terrestrial species are required.*
- *Groundwater characterization has not been completed for the area around the former heating oil UST located by the shipping and receiving dock. Unless there is clear evidence that groundwater contamination is unlikely, Ecology interprets MTCA to require groundwater testing. Because there is a documented TPHo (ORO) release at 8.5 feet below ground surface (bgs) and the local water table elevation varies between 2 and 9 feet bgs a determination of groundwater impacts is required.*
- *Ecology does agree that groundwater monitoring in the area of the former paint solvent storage shed indicates that there is no longer a TCE impact.*

- *Groundwater and soil contamination around the former fuel UST has been characterized sufficiently to establish the extent of the contamination and to select a cleanup action.*
- *While the characterization of groundwater around the former fuel UST is sufficient to select a cleanup action, the location of the single remaining down-gradient monitoring well is insufficient to demonstrate that groundwater is meeting cleanup standards.*
- *A Feasibility Study (FS) would be needed to support the selected cleanup action of leaving contaminated soil in place and implementing institutional controls. There are specific requirements for the submission of a FS and for the disproportionate cost analysis (DCA) portion of the FS.*
- *If institutional controls (i.e., environmental covenant) will be part of the selected cleanup action then a copy of the covenant will need to be included with the FS.*

A copy of the Ecology *Further Action Opinion Letter* dated June 22, 2010 by Ecology is included in Attachment C.

1.2 Objectives

The general objectives of the FSI are to address a portion of Ecology's comments in the *Further Action Opinion Letter* dated June 22, 2010 and to further characterize the extent of soil and groundwater contamination previously identified by others at the Site and in Area 3 to determine if soil contamination was present below the groundwater table as previously reported.

On June 14, 2011, an ECI Environmental Professional met with Mr. Bradley Gilmore, VCP Project Manger for the Site and the following outline of cleanup action was discussed and verbally approved:

- Utilize a direct push probe rig to sample groundwater in the location of the former heating oil UST in Area 2. If the groundwater samples appear impacted, drill additional borings outward to determine the extent of impacts, if present.
- Excavate the impacted soils from the area of the former fueling UST (Area 3). Provide building support with shoring as needed. Collect confirmation soil samples to verify the extent of the impact.
- Utilize a direct push probe rig to install one additional downgradient groundwater monitoring well in Area 3. The location of the new well is to be to the south of the excavation.

Based on this information, ECI prepared a *Corrective Action Plan* (CAP) dated June 20, 2011. Modifications were made to the CAP scope of work based upon discussions between Acrowood

and ECI and were based on the identification of data gaps during the review of previous environmental activities at the Site.

The following scope of work was agreed upon and implemented for this FSI:

- A review of reports summarizing previous investigations conducted at the Site along with Ecology opinion letters pertaining to these investigations;
- Underground utility location;
- Utilize a direct push probe rig to obtain soil and/or groundwater samples in Areas 2 and 3;
- Utilize a direct push probe rig to install groundwater monitoring well ECIMW-5 in the location south of the former fuel tank excavation in Area 3 as requested by Ecology;
- Develop, monitor and sample groundwater monitoring well ECIMW-5 and monitor and sample wells MW-1 and MW-4 (installed previously by Adapt);
- Sample, log and coordinate transport and disposal of investigation derived waste (IDW), consisting of nine unlabeled 55-gallon drums generated by others situated south of Area 3 and one 55-gallon drum of purge/decon water generated by ECI during the FSI;
- Analyze soil and groundwater samples at a contracted and accredited laboratories (i.e., ESN Northwest, Inc. and ALS Environmental), and
- Prepare report documenting FSI activities, findings, analysis of data, conclusions and recommendations.

2.0 PHYSICAL SETTING

2.1 Topography

The United States Geological Survey (USGS), Everett, Washington 7.5-Minute Quadrangle topographic map 1991, was reviewed for this ESA. According to the contour lines on the topographic map, the Site is located at approximately 45 feet above mean sea level (MSL). The contour lines in the area of the Site indicate the area is generally flat.

2.2 Geology and Soils

The subject property and surrounding area are located within the Puget Sound Basin on glaciated outwash (toward the west of the Site), and nearly level alluvial plains closer to the Snohomish River. The lands in the vicinity of the Site are underlain by interbedded gravelly sandy loam (coarse-grained soils) with silty sands.

The USDA Natural Resources Conservation Service, Washington Soil Survey Reports for Snohomish County, indicates the native soils primary component at Site and surrounding properties is the Everett Gravelly Sandy Loam. This soil is in the Class A Hydrologic Group, indicating high infiltration rates, well drained to excessively well drained sands and gravels. This soil is reported to have high conductivity and low water holding capacity.

2.3 Surface Water and Groundwater

No naturally occurring water bodies or wetlands were observed at or within the Site boundary during this investigation. The nearest mapped surface water body is the Snohomish River that lies just to the east of the subject Site. The Snohomish River flows northwesterly through Everett toward the Puget Sound.

The groundwater elevations in monitoring wells in Area 3 of the Site ranged from 85.07 to 87.93 feet during the FSI. The hydraulic gradient was approximately 0.055 feet/foot (i.e., MW-1 to MW-4) and the inferred groundwater flow direction is generally southeast. However, variations in the site-specific geology can influence gradient direction, including perched conditions, aquatards, etc. these subsurface anomalies may exist and cannot be fully determined within the scope of this study.

3.0 SUBSURFACE INVESTIGATION

On July 21, 2011 ECI advanced a total of six borings (i.e., ECIA2B-1 and ECIA2B-2 in Area 2 and ECIA3B-1, ECIA3B-2, ECIA3B-3 and ECIMW-5 in Area 3) using standard Direct-Push Technology (DPT) sampling techniques in the locations depicted on Figures 4, 5 and 6. The maximum depth of exploration during the FSI was approximately 14 feet bgs in Area 2 and 20.5 feet bgs in Area 3.

Prior to drilling activities, all boring locations were cleared of underground utilities by Underground Detection Services, Inc. (UDS), a private utility locating service.

During drilling, soil conditions were logged and screened continuously using visual and olfactory observations. The soil conditions encountered during drilling were described using the Unified Soil Classification System (USCS) visual-manual procedures (ASTM 2488D). The results of field screening and the soil conditions encountered during drilling are presented on soil borings logs in Attachment D.

Soil samples were selected for laboratory analysis based upon the results of field screening. When field screening did not suggest the presence of impacts, samples were selected to provide representative data of subsurface conditions at the Site.

The groundwater table was consistently encountered during soil logging between 8 and 10 feet bgs in Area 2 and between 12 and 14 feet bgs in Area 3. Groundwater samples were collected from all boring locations except ECIMW-5, which required development at a later date prior to sampling. Groundwater samples were collected through a temporary stainless steel well screen using a peristaltic pump and dedicated tubing. Groundwater was purged from the well screen for several minutes then pumped directly into appropriate sample containers using standard low-flow groundwater sampling techniques.

Boring ECIMW-5 was completed as a monitoring well with a 1-inch diameter PVC casing and 0.010-inch factory slotted well screen. The well screen was placed from 5 feet bgs to 20 feet bgs which was sufficient to allow the well screen to intersect the saturated/unsaturated interface throughout normal seasonal changes in water levels. Saturated soil conditions were encountered at approximately 14 feet bgs during drilling. A sand filter-pack surrounds the PVC from 4 feet bgs to 20 feet bgs and a bentonite seal is present above that between 1.5 and 4 feet bgs. The well was completed with a surface seal consisting of a concrete and a flush-mounted well box.

A total of 11 soil samples and five groundwater samples were submitted to ESN Northwest Chemistry Laboratory in Olympia, Washington for analysis of DRO and ORO using Ecology

Method NWTPH-Dx. One soil sample and one groundwater sample were selected for follow-up analysis with PAHs using EPA Method 8270 based on initial analytical results.

Immediately upon collection, all soil and groundwater samples were labeled and placed in an iced cooler pending submittal to the analytical laboratory. All samples were handled and transported under standard chain-of-custody protocols.

3.1 Groundwater and IDW Sampling

On August 25, 2011 ECI returned to the Site to develop, monitor and sample monitoring well ECIMW-5, monitor and sample MW-1 and MW-4 and sample and take inventory of the 9 unlabeled soil and water drums situated in Area 3 for disposal purposes.

ECI developed well ECIMW-5 by purging approximately 20-gallons of water from the well prior to sampling. Water was observed to be very clear upon completion of well development and no visual or olfactory evidence of impacts were observed.

Prior to sampling or development of monitoring wells, the water level in each well was measured relative to the northernmost point on the well casing using an electronic probe. A minimum of three casing volumes were purged from each well using a peristaltic pump and dedicated tubing prior to sampling. Measurements of pH, temperature and conductivity were recorded during purging to verify that water parameters had stabilized prior to sampling. When purging was completed, groundwater samples were transferred directly into laboratory supplied sample containers using standard low-flow groundwater sampling techniques.

Groundwater samples obtained from MW-1, MW-4 and ECIMW-5 were submitted to ALS Environmental Laboratory (ALS) in Everett, WA for analysis of DRO and ORO using Ecology Method NWTHP-Dx and PAHs using EPA Method 8270SIM.

Immediately upon collection, all groundwater samples were labeled and placed in an iced cooler pending submittal to the analytical laboratory. All samples were handled and transported under standard chain-of-custody protocols.

3.2 Investigation Derived Waste

During the FSI, ECI took inventory of the nine unlabeled drums situated south of Area 3. This revealed that two drums contained soil and water, 5 drums contained soil only, one drum contained water only and one drum was empty. Since the drums were not labeled it was not possible to determine which drums came from which of the three investigation areas. Acrowood personnel verified that all of the drums were generated from previous Adapt subsurface investigation activities.

Two composite soil samples, one consisting of a composite of three soil drums and one consisting of a composite of two soil drums were collected by mixing a portion of the drum contents in a decontaminated stainless steel bowl then transferring soil into 4-oz jars. One soil sample was also collected from each of the two mixed soil and water drums.

One water sample was collected from the one water drum using a coliwasa tube to transfer liquid into laboratory supplied containers. One water sample was also collected from each of the mixed soil and water drums.

The four soil samples and three water samples obtained from the IDW drums were submitted to ALS for initial analysis of hydrocarbon identification using Ecology Method NWTPH-HCID. In order to comply with disposal facility requirements, one composite water sample was submitted for analysis of halogenated volatile organic compounds (HVOCs), PAHs and RCRA 8 Metals (i.e., Ag, As, Ba, Cd, Cr, Hg, Pb, Se) and one composite soil sample was submitted for analysis of RCRA 8 Metals.

Immediately upon collection, all soil and water samples were labeled and placed in an iced cooler pending submittal to the analytical laboratory. All samples were handled and transported under standard chain-of-custody protocols.

4.0 FINDINGS

4.1 Subsurface Conditions

Surface and subsurface conditions at the Site generally consisted of asphalt, gravel or grass at the surface underlain by fill material and intermittent intervals of silt, sand and gravel mixtures that were observed to the maximum depth of exploration of approximately 20.5 feet bgs

As noted above, saturated conditions were consistently encountered between 8 and 10 feet bgs in Area 2 and between 12 and 14 feet bgs in Area 3.

Descriptions of the soil types encountered at each boring location and the results of field screening are presented on the boring logs in Attachment D.

4.2 Analytical Results

This section summarizes the analytical results obtained during the FSI conducted by ECI. Soil and groundwater analytical results obtained from current and previous investigations are summarized in Tables 1 through 5. Sample locations from current and previous investigations are depicted on Figures 3 through 6. Final analytical laboratory reports for FSI investigation data are included in Attachment E.

4.3 cPAH Soil and Groundwater Cleanup Levels

Carcinogenic PAHs (cPAHs) were analyzed in soil and groundwater during the FSI and include benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene and ideno(1,2,3-cd)pyrene. When establishing compliance with cleanup levels under MTCA, the mixture of these compounds is considered a single hazardous substance. The toxicity equivalency factor (TEF) methodology was developed by the US Environmental Protection Agency (EPA) to evaluate the toxicity and assess the risks of a mixture of structurally related chemicals with a common mechanism of action. A TEF is an estimate of the relative toxicity of a chemical compared to a reference chemical. For mixtures of cPAHs, the reference chemical is benzo(a)pyrene. Therefore, for compliance purposes, the calculated total cPAHs (TEF modified) is compared to the MTCA Method A Soil or Groundwater Cleanup Level for benzo(a)pyrene of 0.1 micrograms/liter (µg/L) for groundwater and 0.1 milligrams/kilogram (mg/kg) for soil.

4.4 Soil

As noted above, a total of 11 soil samples were collected in Area 3 and submitted to ESN for analysis of DRO and ORO using Ecology Method NWTPH-Dx. Soil sample ECIA3B-2:12 was selected for follow-up analysis with PAHs using EPA Method 8270 based on the results of initial

analytical results and field screening. Soil sample analytical results obtained during the FSI are summarized in Table 3.

Soil sample location ECIA3B-2:12 was the only location where soil concentrations exceeded MTCA Method A Soil Cleanup Levels. DRO, ORO, total naphthalenes and total cPAHs (TEF modified) were detected in soil at concentrations of 31,000 mg/kg, 2,600 mg/kg, 168 mg/kg and 0.13 mg/kg, respectively. The MTCA Method A Soil Cleanup Level is 2,000 mg/kg for DRO and ORO, 5 mg/kg for total naphthalenes and 0.1 mg/kg for total cPAHs (TEF modified).

Soil samples were collected from below the groundwater table in boring locations ECIA3B-2 and ECIA3B-3 to verify if soil containing concentrations of target analytes exceeding MTCA Method A Soil Cleanup Levels was present below the groundwater table as previously reported. In all of the soil sample locations collected below the observed groundwater level, target analytes were either not detected above the laboratory detection limit or detected at a concentration below the applicable MTCA Method A Soil Cleanup Level.

No target analytes were detected above laboratory detection limits in any of the remaining soil sample locations.

4.5 Groundwater

As previously mentioned, a total of eight groundwater samples were collected during the FSI (i.e., Two from probe locations in Area 2, three from probe locations in Area 3 and three from groundwater monitoring wells). Groundwater samples collected during the first phase of the FSI were submitted to ESN for analysis of DRO and ORO using Ecology Method NWTPH-Dx. Groundwater sample ECIA3B-2GW was selected for follow-up analysis with PAHs using EPA Method 8270 based on initial analytical results. All groundwater monitoring well samples were submitted to ALS for analysis of DRO and ORO using Ecology Method NWTPH-Dx and PAHs using EPA Method 8270 SIM which has a lower laboratory detection limit of 0.02 µg/L. Groundwater analytical results obtained during the FSI are summarized in Table 5

During the first phase of the FSI, DRO was detected in sample location ECIA3B-2GW at a concentration of 920 µg/L, which exceeds the MTCA Method A Groundwater Cleanup Level for DRO is 500 µg/L. Naphthalenes and cPAHs were also detected in this location, but at concentrations below applicable MTCA Method A Groundwater Cleanup Levels. It should be noted that the laboratory detection limit for cPAHs was 0.1 µg/L and it is possible for concentrations of cPAHs below 0.1 µg/L to result in a total cPAH (TEF modified) concentration that exceeds the MTCA Method A Groundwater Cleanup Level of 0.1 µg/L.

During the second phase of the FSI, monitoring wells MW-1, MW-4 and ECIMW-5 were sampled and none of the monitoring wells contained dissolved-phase concentrations of target

analytes that exceeded MTCA Method A Groundwater Cleanup Levels. Dissolved-phase concentrations of cPAHs were detected in ECIMW-5, but at concentrations below the MTCA Method A Groundwater Cleanup Level.

No target analytes were detected above laboratory detection limits in the remaining two groundwater monitoring well sample locations.

5.0 EXTENT OF IMPACTS

5.1 Soil

Soil analytical data obtained from previous investigation activities combined with FSI data demonstrate that soil impacts are no longer a concern in Areas 1 and 2 and these areas require no further action.

The estimated lateral extent of soil impacts in Area 3 is depicted on Figure 5. Soil data obtained during the FSI indicates that all soil containing concentrations of target analytes exceeding MTCA Method A Soil Cleanup Levels is situated above the groundwater table. Therefore, the estimated vertical extent of the area where soil exceeds MTCA Cleanup Levels is between 9 and 13 feet bgs. This is a conservative estimate based on the fact that current FSI data was incorporated with previous investigation data, some of which is over 10 years old, to generate the estimated area of impacts. It is possible that soil concentrations in the previous sample locations have decreased due natural attenuation and this was not taken into consideration when estimating the area of soil impacts.

There is an estimated 60 cubic-yards of impacted soil present in this area and soil impacts do not appear to extend off-Site. Soil impacts likely extend beneath the eastern portion of the shop structure. This would appear to make it cost prohibitive to excavate these soils due to the fact that extensive costs would be associated with supporting the building and retaining wall during excavation. When compared to the benefit of removing such a such a small volume of soil, the costs are disproportionate.

5.2 Groundwater

Groundwater analytical data obtained from previous investigation activities demonstrate that groundwater impacts are no longer a concern in Area 1. Therefore, no further action is necessary in Area 1.

During the FSI, ECI complied with Ecology's request to sample groundwater in the area of the former heating oil tank (Area 2) by collecting groundwater sample ECIA2B-1 in the location where a previous soil sample (i.e., P-8) contained an ORO soil concentration of 1,920 mg/kg. In addition, groundwater was collected at ECIA2B-2 situated west of ECIA2B-1, also in the location of the former heating oil tank. Neither of the groundwater samples contained concentrations of target analytes above the laboratory detection limits. Therefore, no further action is necessary in Area 2.

The estimated extent of groundwater impacts in Area 3 is depicted on Figure 6. FSI data combined with previous groundwater data indicate that an approximate 500 square-foot area is

impacted with concentrations of one or more target analytes exceeding MTCA Method A Groundwater Cleanup Levels. It does not appear that impacted groundwater extends off-site and the estimated area of groundwater impacts is a conservative estimate based on the fact that current FSI data was incorporated with previous investigation data, some of which is over 10 years old, to generate the estimated area of impacts and potential natural attenuation of impacts was not taken into consideration.

During the FSI, sample ECIA3B-2 was collected approximately 2 feet southwest of boring P-26, which was sampled in July of 2007. The dissolved-phase concentration of DRO detected at that time was 7,800 µg/L and the detected DRO concentration in ECIA3B-2 during the FSI in July of 2011 was 920 µg/L. This decrease in concentration over a 4 year period appears to indicate that natural attenuation may be effective at remediating groundwater impacts at the Site and the estimated area of groundwater impacts depicted on Figure 6 is likely a smaller area than the area depicted.

6.0 CONCLUSIONS

The following conclusions are supported by the findings of this FSI along with previous investigation data for the Site:

- FSI soil and groundwater data combined with previous investigation data are sufficient to characterize the extent of soil and groundwater impacts at the Site.
- Soil and groundwater impacts previously observed in Area 1 have been remediated through natural attenuation and no further action is necessary in Area 1.
- Groundwater characterization has been completed in Area 2 as per Ecology's request. No target analytes were detected in groundwater above laboratory detection limits and all previous soil concentrations in this area were below MTCA Method A Soil Cleanup Levels. Therefore, no further action is necessary in Area 2.
- Soil in Area 3 is impacted with DRO, ORO, cPAHs and naphthalenes at concentrations exceeding applicable MTCA Method A Soil Cleanup Levels. Soil impacts in Area 3 are confined to a relatively small area and do not appear to extend off-property. It is estimated that approximately 60 yards of impacted soil remain in place in this location and that some of this soil is likely situated beneath the building. Soil impacts do not appear to be present below the groundwater table as previously reported.
- It would not be cost effective to excavate the small amount of impacted soil in Area 3 due to excessive costs associated with supporting the building and retaining wall during excavation activities. Given the fact that soil impacts consist of DRO, ORO and PAHs, which are not very volatile compounds and situated at least eight feet bgs, these impacts do not represent a threat to human health or the environment.
- Groundwater in Area 3 is impacted with DRO, ORO and cPAHs at concentrations exceeding MTCA Method A Groundwater Cleanup Levels. Groundwater impacts in Area 3 are confined to a relatively small area and do not appear to extend off-property.
- The observed decreases in dissolved-phase concentrations of DRO, ORO and cPAHs from July 2007 to July 2011 in the location of borings ECIA3B-2 and P-26 indicate that natural attenuation may be effective at remediating the observed groundwater impacts at the Site.
- The installation of groundwater monitoring well ECIMW-5 has satisfied Ecology's requirement to install a monitoring downgradient and south of the former excavation area in Area 3.

6.1 Recommendations

Based on the findings of this FSI, ECI recommends the following:

- ECI recommends leaving the estimated 60 yards of impacted soil in place and allowing groundwater impacts to naturally attenuate. This would involve requesting a No Further

Action (NFA) determination from Ecology with a deed restriction. Ecology will likely require the installation of additional groundwater monitoring wells in the impacted area and upgradient along with continued groundwater monitoring to monitor the attenuation.

- Ecology has indicated in previous opinion letters that a Feasibility Study (FS), including a disproportionate cost analysis (DCA) would be needed to support the selected cleanup action of leaving contaminated soil in place and implementing institutional controls. Ecology has also indicated that a Terrestrial Ecological Evaluation (TEE) needs to be completed for the Site. Given the labor intensive nature of these actions and the fact that Ecology has recently assigned a new Project Manager to the Site, ECI recommends scheduling a meeting with the new Project Manger once he has had the opportunity to review this report. The intent of the meeting would be to determine that the next actions taken at the Site are appropriate and cost effective.
- ECI recommends surveying the casing elevations of groundwater monitoring wells ECIMW-5, MW-1 and MW-4 in order to obtain recent groundwater elevation data and generate hydraulic gradient information for the Site.

ECI appreciates the opportunity to be of assistance on this project. Please do not hesitate to contact us if you have any questions or comments regarding this report.

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Attachment A
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Figure 3 – Area 1 Paint/Solvent Storage Area
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Groundwater Analytical Results

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Attachment D
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Attachment E
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Attachment F
Professional Qualifications

Lsit of Attachment

Attachment A

Project Figures

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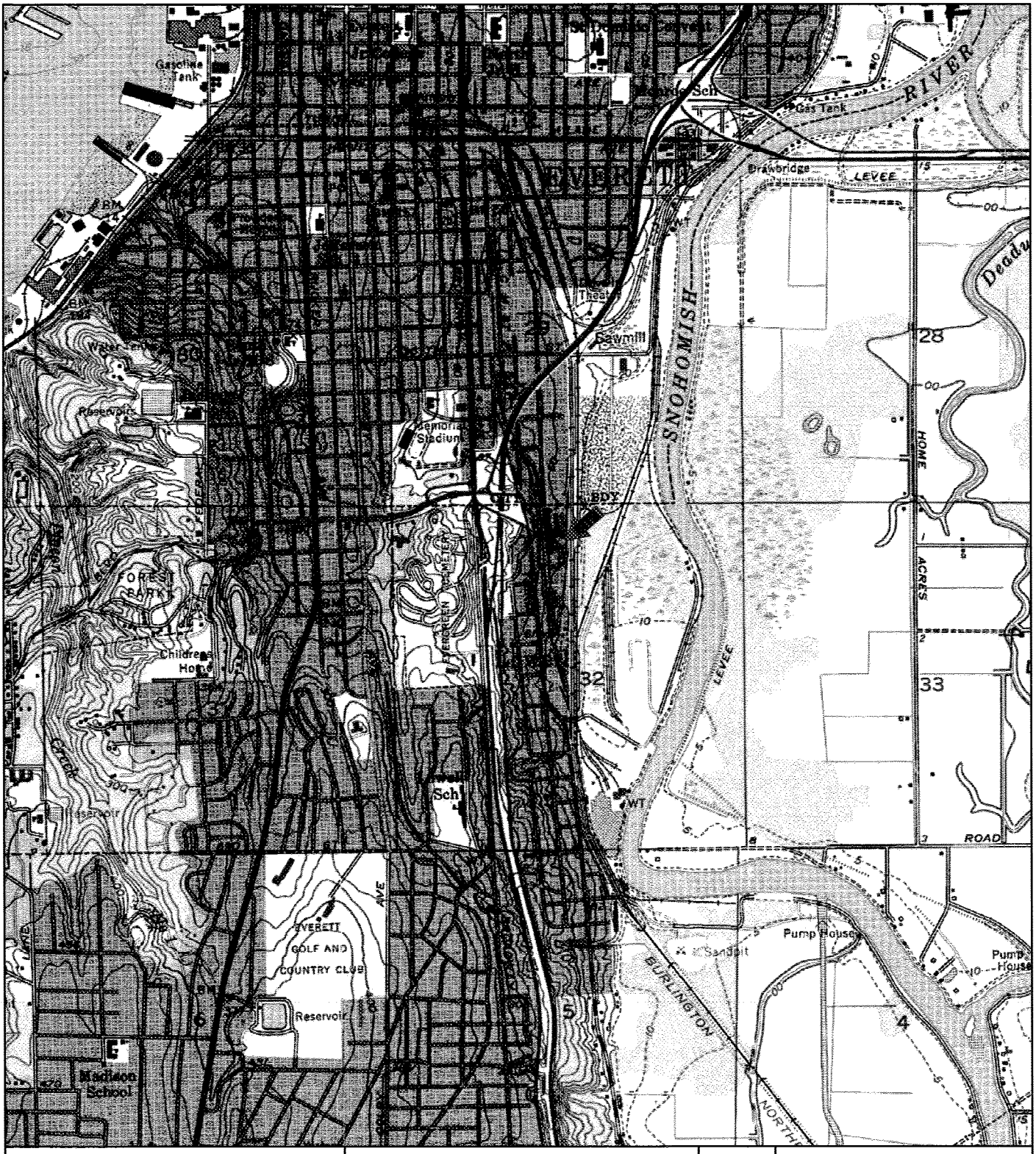


KEY:

SOURCE: USGS 7.5 MINUTE QUADRANGLES (TOPOGRAPHIC)

EVERETT, WASHINGTON
NW 1/4 OF EVERETT 15' QUADRANGLE
1953 (PHOTOREVISED 1968 & 1973)

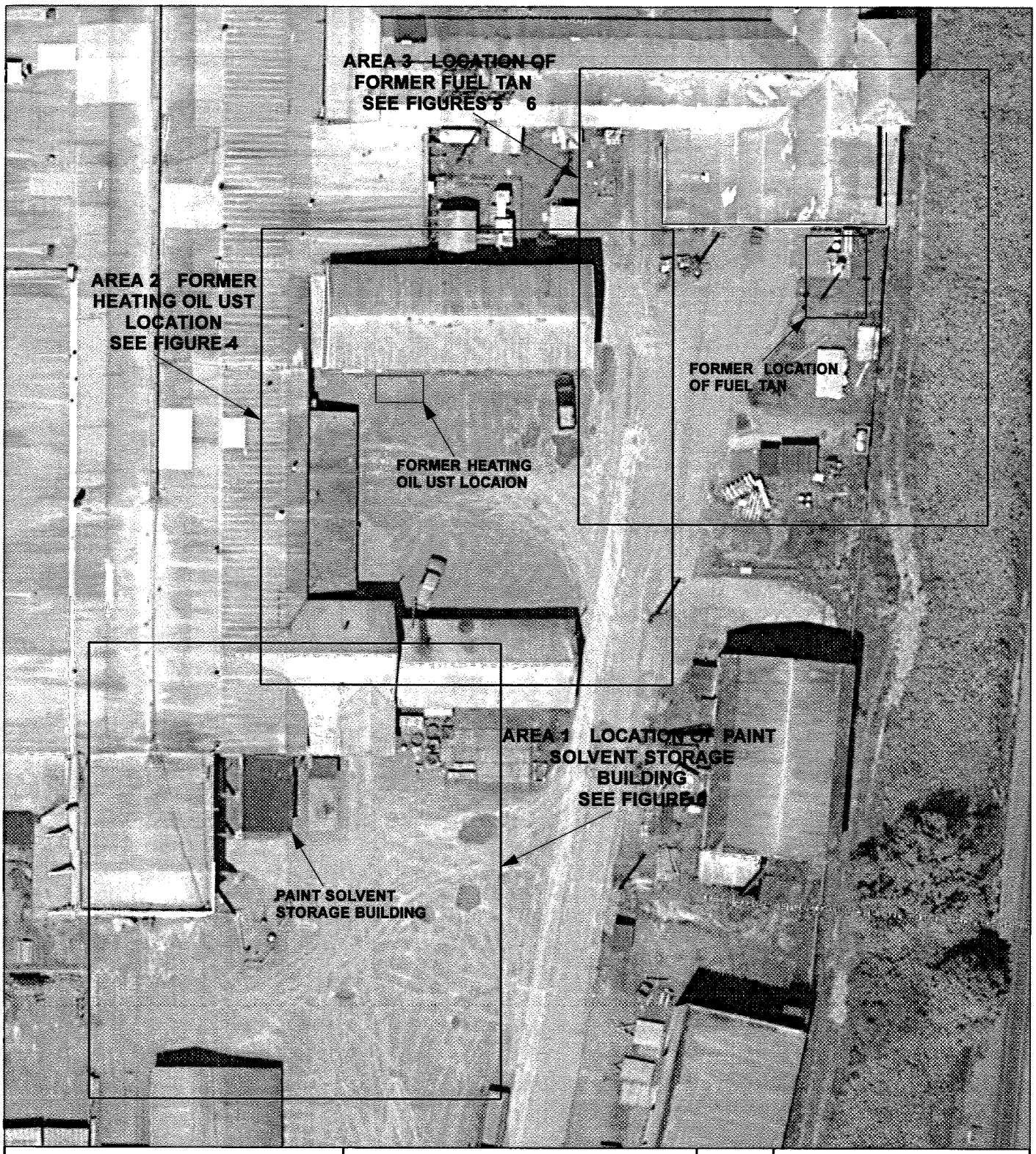
SCALE = 1:24,000

ECI environmental services
www.ecconlonline.com

FIGURE 1

GENERAL VICINITY MAP

PROJECT	ACROWOOD CORP		
PREPARED FOR	ACROWOOD CORPORATION		
LOCATION	4425 SOUTH THIRD AVENUE EVERETT, WASHINGTON		
SHEET	DRAWN BY	REVIEWED BY	DATE
1 of 1	JS	SS	9/30/11



0 25 50

APPROXIMATE SCALE: 1" = 50'

ECI environmental services
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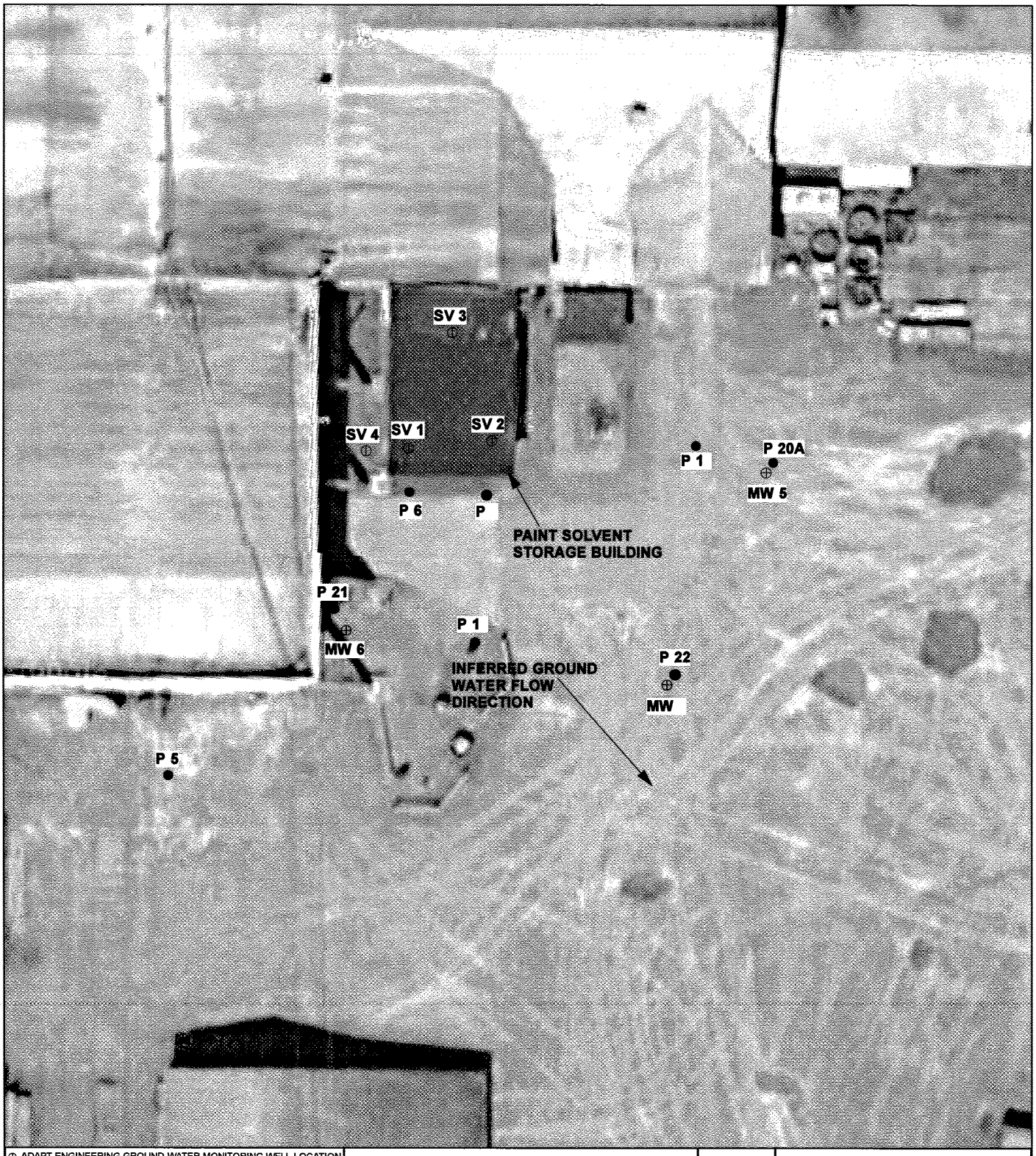
FIGURE 2

SITE REPRESENTATION

PROJECT	ACROWOOD CORP		
PREPARED FOR	ACROWOOD CORPORATION		
LOCATION	4425 SOUTH THIRD AVENUE EVERETT, WASHINGTON		
SHEET	DRAWN BY	REVIEWED BY	DATE
1 of 1	JS	SS	9/30/11



⊕ ADAPT ENGINEERING GROUND WATER MONITORING WELL LOCATION
⊕ ADAPT ENGINEERING SOIL VAPOR HOLE LOCATION
● ADAPT ENGINEERING GEOPROBE LOCATION
INFERRED GROUND WATER FLOW DIRECTION BASED ON GROUND WATER ELEVATION DATA OBTAINED FROM PREVIOUS INVESTIGATIONS

0 10 20
APPROXIMATE SCALE: 1" = 20'

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FIGURE 3

AREA 1
PAINT/SOLVENT STORAGE AREA

PROJECT	ACROWOOD CORP
PREPARED FOR	ACROWOOD CORPORATION
LOCATION	4425 SOUTH THIRD STREET EVERETT, WASHINGTON

SHEET	DRAWN BY	REVIEWED BY	DATE
1 of 1	JS	SS	9/30/11

O ECI GROUNDWATER SAMPLE LOCATION

● ADAPT ENGINEERING GEOPROBE LOCATION

INFERRED GROUND WATER FLOW DIRECTION BASED ON GROUND WATER ELEVATION DATA OBTAINED FROM PREVIOUS INVESTIGATIONS

HEATING OIL UST LOCATION BASED ON ADAPT ENGINEERING SITE PLAN WHICH WAS NOT TO SCALE

0 10 20

APPROXIMATE SCALE: 1" = 20'

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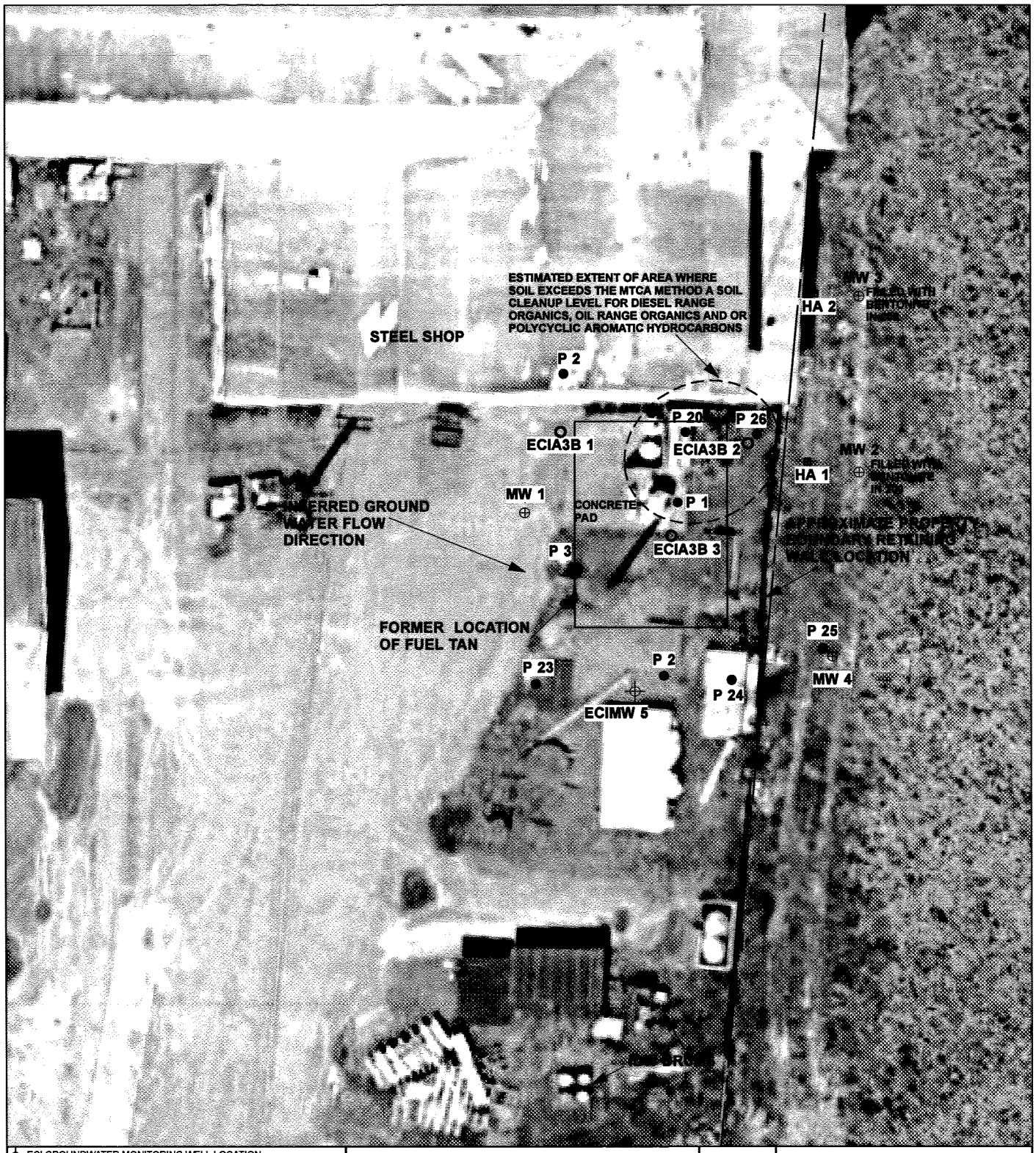
FIGURE 4

AREA 2
FORMER HEATING OIL UST LOCATION &
ECI INVESTIGATION AREA

PROJECT	ACROWOOD CORP		
PREPARED FOR	ACROWOOD CORPORATION		
LOCATION	4425 SOUTH THIRD AVENUE EVERETT, WASHINGTON		
SHEET	DRAWN BY	REVIEWED BY	DATE
1 of 1	JS	SS	9/30/11



- ECI GROUNDWATER MONITORING WELL LOCATION
- ECI SOIL AND/OR GROUNDWATER SAMPLE LOCATION
- ADAPT ENGINEERING GROUND WATER MONITORING WELL LOCATION
- ADAPT ENGINEERING GEOPROBE LOCATION
- ADAPT ENGINEERING HAND AUGER LOCATION

INFERRED GROUND WATER FLOW DIRECTION BASED ON GROUND WATER ELEVATION DATA OBTAINED FROM PREVIOUS INVESTIGATIONS

0 10 20

APPROXIMATE SCALE: 1" = 20'

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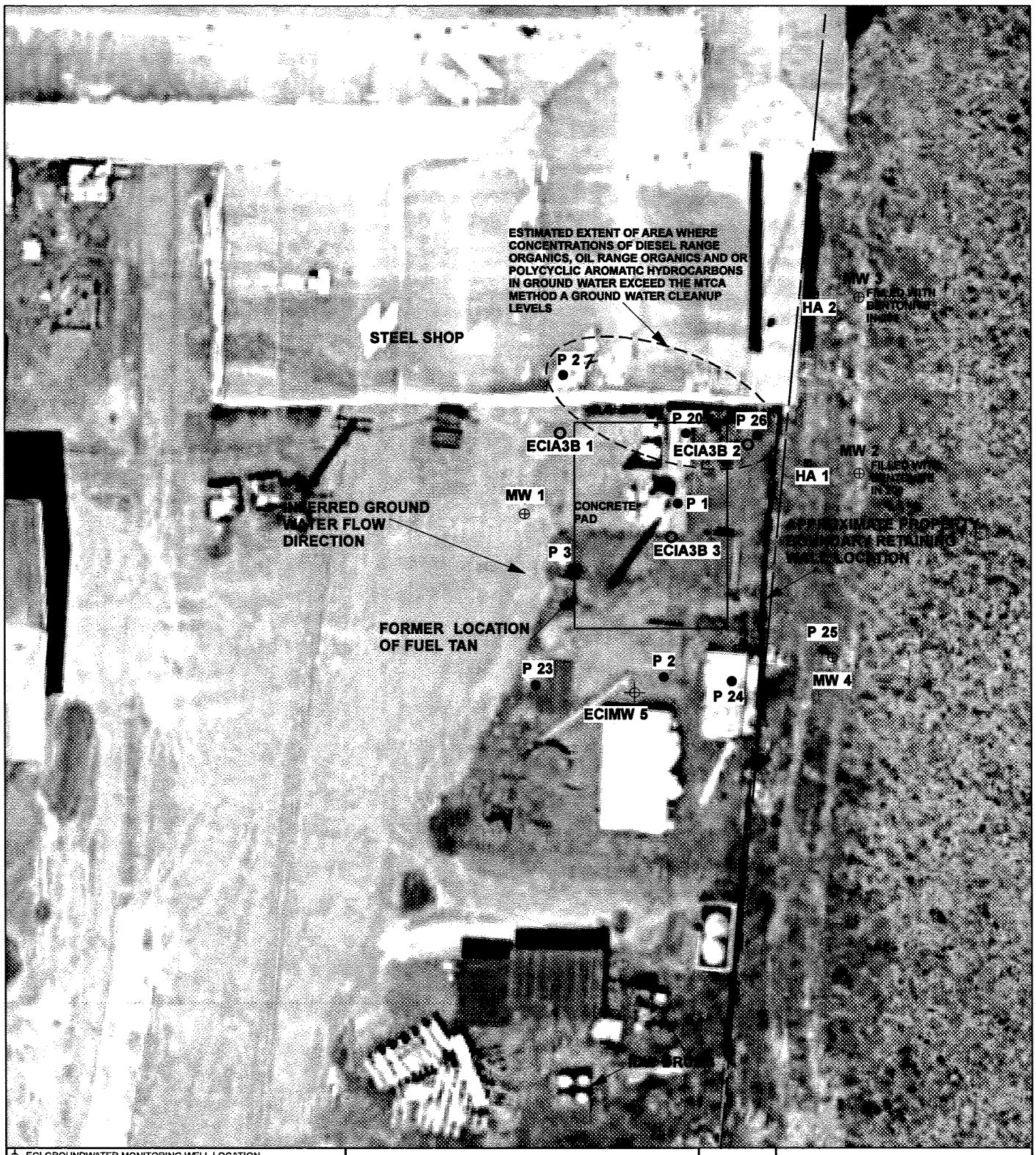
FIGURE 5

AREA 3
FORMER LOCATION OF FUEL TANK &
ESTIMATED EXTENT OF SOIL IMPACTS

PROJECT	ACROWOOD CORP		
PREPARED FOR	ACROWOOD CORPORATION		
LOCATION	4425 SOUTH THIRD AVENUE EVERETT, WASHINGTON		
SHEET	***DRAWN BY***	***REVIEWED BY***	***DATE***
1 of 1	*JS*	*SS*	*9/30/11*



- ECI GROUNDWATER MONITORING WELL LOCATION
- ECI SOIL AND/OR GROUNDWATER SAMPLE LOCATION
- ADAPT ENGINEERING GROUND WATER MONITORING WELL LOCATION
- ADAPT ENGINEERING GEOPROBE LOCATION
- ADAPT ENGINEERING HAND AUGER LOCATION
- INFERRED GROUND WATER FLOW DIRECTION BASED ON GROUND WATER ELEVATION DATA OBTAINED FROM PREVIOUS INVESTIGATIONS

0 10 20

APPROXIMATE SCALE: 1" = 20'

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FIGURE 6

AREA 3
FORMER LOCATION OF FUEL TANK &
ESTIMATED EXTENT OF GROUND WATER IMPACTS

PROJECT	ACROWOOD CORP		
PREPARED FOR	ACROWOOD CORPORATION		
LOCATION	4425 SOUTH THIRD AVENUE EVERETT, WASHINGTON		
SHEET	*DRAWN BY*	*REVIEWED BY*	*DATE*
1 of 1	JS	SS	9/30/11

Attachment B

Project Tables

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Table 1
Summary of Area 1 Analytical Results
VOCs in Soil (milligrams/kilogram)
Acrowood Corporation
4425 South Third Avenue, Everett, WA
September 09, 2011

Sample ID	Date Collected	Sample depth (bg)	Benzene	Toluene	Ethylbenzene	Total Xylenes	cis-1,2-Dichloroethylene	Trichloroethylene	Tetrachloroethylene	Acetone	1,1-Dichloroethylene
P5S2	11/3/1999	8	ND	ND	ND	ND	ND	ND	ND	ND	ND
P6S2	11/3/1999	8	ND	ND	ND	ND	ND	ND	ND	ND	ND
P7S2	11/3/1999	8	ND	ND	ND	ND	ND	**0.055**	ND	ND	ND
SV-1-4	3/27/2000	2.5-4	ND	ND	ND	ND	ND	ND	ND	ND	ND
SV-2-3.5	3/27/2000	2.5-3.5	ND	ND	ND	ND	ND	ND	ND	ND	ND
SV-3-3.5	3/27/2000	2.5-3.5	ND	ND	ND	ND	ND	ND	ND	ND	ND
SV-4-3.5	3/27/2000	2.5-3.5	ND	ND	ND	ND	ND	ND	ND	ND	ND
P20A	7/24/2007	10-12	<0.03	<0.05	<0.06	<0.1	<0.05	<0.03	<0.026	<0.5	<0.05
P-21	7/24/2007	8-10	<0.03	<0.05	<0.06	<0.1	<0.05	<0.03	<0.026	<0.5	<0.05
P-22	7/24/2007	8-10	<0.03	<0.05	<0.06	<0.1	<0.05	<0.03	<0.026	<0.5	<0.05
MTCA Method A Soil Cleanup Level For Unrestricted Land Uses			**0.03**		**6**	**9**	NA	**0.03**	**0.05**	NA	NA

Bolded and shaded concentration - indicates that the concentration exceeded the MTCA Method A Soil Cleanup Level

Volatile organic compounds analyzed using EPA Method 8260

All data obtained from previous consultants

ND - indicates analyte was not detected at a concentration above the laboratory detection limit

NA - indicates that data was not available

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Table 2
Summary of Area 2 Analytical Results
DRO & ORO in Soil (milligrams/kilogram)
Acrowood Corporation
4425 South Third Avenue, Everett, WA

September 9, 2011

Sample ID	Date Collected	Sample depth (bg)	HCID-Gasoline Range Organics	HCID-Diesel Range Organics	HCID-Oil Range Organics	Diesel Range Organics	Oil Range Organics
P8S3	11/3/1999	8.5	<20	**50**	**100**	**9 3**	**1,920**
P9S3	11/3/1999	12	<20	<50	<100	-	-
P10S3	11/3/1999	12	<20	<50	<100	-	-
P19-9	4/17/2000	6-9	-	-	-	<30	<60
MTCA Method A Soil Cleanup Level For Unrestricted Land Uses			NA	NA	NA	**2,000**	**2,000**

Bolded concentration - Indicates that the detected concentration was above the compound-specific laboratory detection limit

HCID - Hydrocarbon Identification analyzed using Ecology Method NWTPH-HCID

Diesel and oil range organics anayzed using Ecology Method NWTPH-Dx

All data obtained from previous consultants

NA - indicates that data was not available

"-" Indicates sample was not analyzed for the inicated analysis

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Table 3
Summary of Area 3 Analytical Results
DRO, ORO and PAHs in Soil (milligrams/kilogram)
Acrowood Corporation
4425 South Third Avenue, Everett, WA

September 9, 2011

Sample ID	Date Collected	Sample depth (bg)	Diesel-Range Organics[a]	Oil-Range Organics[a]	1-Methylnaphthalene(b)	2-Methylnaphthalene(b)	Naphthalene(b)	Total Naphthalenes(b,c)	Acenaphthene(b)	Acenaphthylene(b)	Anthracene(b)	Benzo(g,h,i)perylene(b)	Fluorene(b)	Fluoranthene(b)	Phenanthrene(b)	Pyrene(b)	Benzo(a)anthracene(d)	Benzo(a)pyrene(d)	Benzo(b)fluoranthene(d)	Benzo(k)fluoranthene(d)	Chrysene(d)	Dibenzo(a,h)anthracene(d)	Ideno(1,2,3-cd)pyrene(d)	Total cPAHs
Adapt Engineering Investigation Data																								
P1S4	11/3/1999	16	10,000	4,010	-	-	-	11.	6.2	1.21	6.94	0. 45	. 6	2. 6	2 .2	11.3	4.62	1.53	0. 05	ND	.01	ND	ND	2.133
P1S6	11/3/1999	22	ND	ND																				NA
P2S3	11/3/1999	12	ND	ND																				NA
P3S3	11/3/1999	12	134	210																				NA
P20-12	4/17/2000	9-12	-	-	-	-	-	16	.9	ND	.1	<2	12	2.1	33	11	5.1	1.4	<2	<2		ND	ND	1.99
P20-16	4/17/2000	12-16	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
HA1-4	4/17/2000	3-4	5	500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
HA2-5	4/17/2000	4-5	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
P-23	7/23/2007	12-14	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
P-24	7/23/2007	12-14	<50	<100	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	NA
P-25	7/24/2007	4-6	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
P-26	7/24/2007	12-14	440	5 0	-	-	-	1.9	1.9	<0.5	1.6	6.2	2	1.	5.	4.3	3.1	5.1		2.9	5	1.9	5.2	.16
P-27	7/24/2007	12-14	<50	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
EcoCon, Inc Investigation Data																								
ECIA3B-1:4	7/21/2011	4	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
ECIA3B-1:12	7/21/2011	12	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
ECIA3B-2:8	7/21/2011	8	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
ECIA3B-2:12	7/21/2011	12	31,000	2,600	5	96	14	16	11	1.5	.3	0.61	2.4	ND	29	ND	0.3	ND	ND	0.91	0.61	ND	ND	0.13
ECIA3B-2:16	7/21/2011	16	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
ECIA3B-2:17	7/21/2011	17	250	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA

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Table 3
Summary of Area 3 Analytical Results
DRO, ORO and PAHs in Soil (milligrams/kilogram)
Acrowood Corporation
4425 South Third Avenue, Everett, WA

September 9, 2011

Sample ID	Date Collected	Sample depth (bg)	Diesel-Range Organics[a]	Oil-Range Organics[a]	1-Methylnaphthalene[b]	2-Methylnaphthalene[b]	Naphthalene[b]	Total Naphthalenes[b,c]	Acenaphthene[b]	Acenaphthylene[b]	Anthracene[b]	Benzo(g,h,i)perylene[b]	Fluorene[b]	Fluoranthene[b]	Phenanthrene[b]	Pyrene[b]	Benzo(a)anthracene[d]	Benzo(a)pyrene[d]	Benzo(b)fluoranthene[d]	Benzo(k)fluoranthene[d]	Chrysene[d]	Dibenzo(a,h)anthracene[d]	Ideno(1,2,3-cd)pyrene[d]	Total cPAHs
ECIA3B-2:20	7/21/2011	20	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
ECIA3B-3:12	7/21/2011	12	<50	**200**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
ECIA3B-3:16	7/21/2011	16	<50	<100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
To icity E uivalency Factors TEF			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.1**	**1**	**0.1**	**0.1**	**0.01**	**0.1**	**0.1**	NA
MTCA Method A Soil Cleanup Level For Unrestricted Land Uses			**2,000**	**2,000**	NA	NA	**5**	**5**	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.1**	NA	NA	NA	NA	NA	**0.1**

Bolded and shaded concentration - indicates that the concentration exceeded the MTCA Method A Soil Cleanup Level

Bolded concentration - Indicates that the detected concentration was above the compound-specific laboratory detection limit, but did not exceed a cleanup level

(a) Diesel and oil-range orgainics analyzed using Ecology Method NWTPH-Dx with silica gel cleanup

(b) Polycyclic aromatic hydrocarbons (PAHs) analyzed using EPA Method 8270

(c) Total naphthalenes is the sum of the naphthalene, 1-Methylnaphthalene and 2-Methylnaphthalene concentrations

(d) Carcinogenic PAHs analyzed using EPA Method 8270

(e) Total carcenogenic polycyclic aromatic hydrobarbons is the sum of each individual cPAH concentration multiplied by the corresponding toxicity equivalency factors. The total represents the total toxicity equivalent concentration for the mixture and is compared to the MTCA Method A Cleanup Level for benzo(a)pyrene for compliance purposes

EcoCon, Inc. investigation soil sample analysis performed by Environmental Services Network

"-" Indicates sample was not analyzed for the inicated compound

NA - indicates that data was not available or applicable

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Table 4
Summary of Area 1 Analytical Results
VOCs in Groundwater (micrograms/liter)
Acrowood Corporation
4425 South Third Avenue, Everett, WA

September 9, 2011

Sample ID	Date Collected	Benzene	Toluene	Ethylbenzene	Total Xylenes	cis-1,2-Dichloroethylene	Trichloroethylene	Tetrachloroethylene	Acetone	1,1-Dichloroethylene
P6W1	11/3/1999	ND	ND	ND	ND	ND	.3	ND	ND	ND
P-17W	11/3/1999	ND	ND	ND	ND	ND	**4.9**	ND	ND	ND
P-18W	11/3/1999	ND	ND	ND	ND	ND	**0.2**	ND	ND	ND
MW-5	8/20/2007	<1	<1	<1	<2	<1	**1.6**	<1	<10	<1
	1/17/2008	<1	<1	<1	<2	<1	<1	<1	<10	<1
	3/21/2008	<1	<1	<1	<2	<1	<1	<1	<10	<1
	8/7/2008	<1	<1	<1	<2	<1	<1	<1	<10	<1
MW-6	8/20/2007	<1	<1	<1	<2	<1	<1	<1	<10	<1
	1/17/2008	<1	<1	<1	<2	<1	<1	<1	<10	<1
	3/21/2008	<1	<1	<1	<2	<1	<1	<1	<10	<1
	8/7/2008	<1	<1	<1	<2	<1	<1	<1	<10	<1
MW-7	8/20/2007	<1	<1	<1	<2	<1	<1	<1	<10	<1
	1/17/2008	<1	<1	<1	<2	<1	<1	<1	<10	<1
	3/21/2008	<1	<1	<1	<2	<1	<1	<1	<10	<1
	8/7/2008	<1	<1	<1	<2	<1	<1	<1	<10	<1
P20A	7/24/2007	<1	<1	<1	<2	<1	<1	<1	<10	<1
P-21	7/24/2007	<1	<1	<1	<2	<1	<1	<1	<10	<1
P-22	7/24/2007	<1	<1	<1	<2	<1	<1	<1	<10	<1
MTCA Method A Groundwater Cleanup Level For Unrestricted Land Uses		**5**	**1,000**	**00**	**1,000**	NA	**5**	**5**	NA	NA

ates that the concentration exceeded the MTCA Method A Ground Water Cleanup Leve
cted concentration was above the laboratory detection limit, but did not exceed a cleanup le
rganic compounds analyzed using EPA Method 826
All data obtained from previous consultants
as not detected at a concentration above the laboratory detection lir
NA - indicates that data was not available

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Table 5
Summary of Areas 2 & 3 Analytical Results
DRO, ORO and PAHs in Ground Water (micrograms/liter)
Acrowood Corporation
4425 South Third Avenue, Everett, WA

September 09, 2011

Sample ID	Date Collected	Diesel-Range Organics[a]	Oil-Range Organics[a]	1-Methylnaphthalene(b)	2-Methylnaphthalene(b)	Naphthalene(b)	Total Naphthalenes(b,c)	Acenaphthene(b)	Acenaphthylene(b)	Anthracene(b)	Benzo(g,h,i)perylene(b)	Fluorene(b)	Fluoranthene(b)	Phenanthrene(b)	Pyrene(b)	Benzo(a)anthracene(d)	Benzo(a)pyrene(d)	Benzo(b)fluoranthene(d)	Benzo(k)fluoranthene(d)	Chrysene(d)	Dibenzo(a,h)anthracene(d)	Ideno(1,2,3-cd)pyrene(d)	Total cPAHs(e)
Adapt Engineering Area 3 Investigation Data																							
P-20	4/17/2000	-	-	-	-	-	60	16	2.1	.	0.94	1	2.	36	12	5.6	1.6	0.	<0.5	.	<0.5	<0.5	2.33
HA1-W	4/17/2000	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
HA2-W	4/17/2000	ND	ND	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
P23-GW	7/23/2007	52	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
P26-GW	7/24/2007	. 00	3,100	-	-	-	5	1	<1	11	4.4	16	4.9	43	1	.4	6.2	5.4	2.3	13	1.1	3.4	.29
P27-GW	7/24/2007	160	510	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
MW-1	8/10/2000	<250	<500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	11/15/2000	<250	<500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	2/23/2001	<250	<500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	6/5/2001	<250	<500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		ND	ND	ND	ND	ND	ND	ND	ND	NA
	6/20/2007	<50	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
	1/17/2008	<50	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
	3/21/2008	<50	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
	8/7/2008	<50	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
MW-2	8/10/2000	<250	<500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	11/15/2000	<250	<500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	2/23/2001	<250	<500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	6/5/2001	<250	<500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
MW-3	8/10/2000	<250	<500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	11/15/2000	<250	<500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	2/23/2001	<250	<500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
	6/5/2001	<250	<500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA

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Table 5
Summary of Areas 2 & 3 Analytical Results
DRO, ORO and PAHs in Ground Water (micrograms/liter)
Acrowood Corporation
4425 South Third Avenue, Everett, WA

September 09, 2011

Sample ID	Date Collected	Diesel-Range Organics(a)	Oil-Range Organics(a)	1-Methylnaphthalene(b)	2-Methylnaphthalene(b)	Naphthalene(b)	Total Naphthalenes(b,c)	Acenaphthene(b)	Acenaphthylene(b)	Anthracene(b)	Benzo(g,h,i)perylene(b)	Fluorene(b)	Fluoranthene(b)	Phenanthrene(b)	Pyrene(b)	Benzo(a)anthracene(d)	Benzo(a)pyrene(d)	Benzo(b)fluoranthene(d)	Benzo(k)fluoranthene(d)	Chrysene(d)	Dibenzo(a,h)anthracene(d)	Ideno(1,2,3-cd)pyrene(d)	Total cPAHs(e)
MW-4	8/10/2000	<50	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
	11/15/2000	<50	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
	2/23/2001	<50	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
	6/5/2001	<50	<250	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
EcoCon, Inc. Area 2 Investigation Data																							
ECIA2B-1GW	7/21/2011	<250	<500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
ECIA2B-2GW	7/21/2011	<250	<500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
EcoCon, Inc. Area 3 Investigation Data																							
ECIA3B-1GW	7/21/2011	<250	<500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
ECIA3B-2GW	7/21/2011	**920**	<500	**12**	**15**	**6**	**33**	**0.3**	0.1	<0.1	-	**0.2**	<0.1	-	-	**0.1**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**0.01**
ECIA3B-3GW	7/21/2011	<250	<500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
MW-1	8/25/2011	<130	<250	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	NA
MW-2	8/25/2011	<130	<250	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	NA
ECIMW-5	8/25/2011	<130	<250	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	**0.036**	<0.02	**0.036**	<0.02	**0.034**	**0.030**	**0.032**	**0.04**	**0.030**	**0.041**	ND	**0.02**	**0.046**
To icity E uivalency Factors TEF		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.1**	**1**	**0.1**	**0.1**	**0.01**	**0.1**	**0.1**	NA
Laboratory Method Reporting Limit																							
MTCA Method A Ground Water Cleanup Level		**500**	**500**	NA	NA	NA	**160**	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.1**	NA	NA	NA	NA	NA	**0.1**

Bolded and shaded concentration - indicates that the concentration exceeded the MTCA Method A Ground Water Cleanup Level

Bolded concentration - Indicates that the detected concentration was above the compound-specific laboratory detection limit, but did not exceed a cleanup level

(a) Diesel and oil-range orgainics analyzed using Ecology Method NWTPH-Dx

(b) Polycyclic aromatic hydrocarbons (PAHs) analyzed using EPA Method 8270 on 7/21/11 and EPA Method 8270 SIM on 8/25/11

(c) Total naphthalenes is the sum of the naphthalene, 1-Methylnaphthalene and 2-Methylnaphthalene concentrations

(d) Carcinogenic PAHs analyzed using EPA Method 8270

(e) Total carcenogenic polycyclic aromatic hydrobarbons is the sum of each individual cPAH concentration multiplied by the corresponding toxicity equivalency factors. The total represents the total toxicity equivalent concentration for the mixture and is compared to the MTCA Method A Cleanup Level for benzo(a)pyrene for compliance

EcoCon, Inc. investigation ground water sample analysis performed by Environmental Services Network on 7/21/11 and ALS Environmental Laboratory on 8/25/11

"-" Indicates sample was not analyzed for the inicated compound or that data was not available

NA - indicates that data was not available or applicable

Attachment C

Further Action Opinion Letter
dated June 22, 2010 by Ecology

Attachment C
Further Action Letter

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Northwest Regional Office • 3190 160th Avenue SE • Bellevue, Washington 98008-5452 • (425) 649-7000

June 22, 2010

John T. Bhend
Adapt Engineering Inc
615 8th Avenue South
Seattle WA 98104

Re: Further Action at the following Site:

- **Site Name:** Acrowood Corp
- **Site Address:** 4425 South Third Ave. Everett, WA
- **Facility/Site No.:** 22755667
- **VCP Project No.:** NW2151

Dear Mr. Bhend:

The Washington State Department of Ecology (Ecology) received your request for an opinion on your independent cleanup of the Acrowood Corp facility (Site). This letter provides our opinion. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA), Chapter 70.105D RCW.

Issue Presented and Opinion

Is further remedial action necessary to clean up contamination at the Site?

YES. Ecology has determined that further remedial action is necessary to clean up contamination at the Site.

This opinion is based on an analysis of whether the remedial action meets the substantive requirements of MTCA, Chapter 70.105D RCW, and its implementing regulations, Chapter 173-340 WAC (collectively "substantive requirements of MTCA"). The analysis is provided below.

Description of the Site

This opinion applies only to the Site described below. The Site is defined by the nature and extent of contamination associated with the following releases:

- Diesel- and oil-range total petroleum hydrocarbons (TPHd, TPHo), polycyclic aromatic hydrocarbons (PAHs), and naphthalene into Soil and Ground water.

- Trichloroethylene (TCE) into Soil.

Enclosure A includes a detailed description and diagram of the Site, as currently known to Ecology.

Please note that a parcel of real property can be affected by multiple sites. At this time, we have no information that the parcel(s) associated with this Site are affected by other sites.

Basis for the Opinion

This opinion is based on the information contained in the following documents:

1. January 18, 2002, Closure Report, *Acrowood Corporation Facility, 4425 South 3rd Ave. Everett, WA.* Adapt Engineering Inc.

2. August 21, 2006, *Phase I Environmental Site Assessment Update, Acrowood Corporation Facility, 4425 South 3rd Ave. Everett, WA.* Adapt Engineering Inc.

3. February 6, 2009, *Supplemental Phase II Environmental Site Assessment, Acrowood Corporation Facility, 4425 South 3rd Ave. Everett, WA.* Adapt Engineering Inc.

4. April 18, 2007, *Further Action Opinion Letter*, Washington Department of Ecology.

These documents are kept in the Central Files of the Northwest Regional Office of Ecology (NWRO) for review by appointment only. You can make an appointment by calling the NWRO resource contact at 425-649-7190.

This opinion is void if any of the information contained in those documents is materially false or misleading.

Analysis of the Cleanup

Ecology has concluded that **further remedial action** is necessary to clean up contamination at the Site. That conclusion is based on the following analysis:

1. Characterization of the Site.

Ecology has determined your characterization of the Site is not sufficient to establish cleanup standards and select a cleanup action. The Site is described above and in **Enclosure A.**

The following items are missing in the Closure Report submitted for this Site.

- A terrestrial ecologic evaluation (TEE) has not been completed. Therefore it is unknown if soil cleanup standards protective of terrestrial species are required.

- Groundwater characterization has not been completed for the area around the former heating oil UST located by the shipping and receiving dock. Unless there is clear evidence that groundwater contamination is unlikely Ecology interprets MTCA to require groundwater testing. Because there is a documented TPHo release at 8.5 feet below ground surface (bgs) and the local water table elevation varies between 2 feet and 9 feet bgs a determination of groundwater impacts is required.

Ecology does agree that groundwater monitoring in the area of the former paint and solvent storage shed indicates that there is no longer a TCE impact. In addition, groundwater and soil contamination around the former fuel USTs has been characterized sufficiently to establish the extent of the contamination and to select a cleanup action.

While the characterization of ground water around the former fuel USTs is sufficient to select a cleanup action, the location of the single remaining down gradient monitoring well is insufficient to demonstrate that ground water is meeting cleanup standards.

2. **Establishment of cleanup standards.**

Ecology has determined the cleanup levels and points of compliance you established for Soil for the Site do not meet the substantive requirements of MTCA.

<u>Soil</u>
Cleanup Levels:
A terrestrial ecologic evaluation (TEE) has not been completed. Therefore it is unknown if soil cleanup standards protective of terrestrial species are required.

The Property is located in the City of Everett and zoned M1 Office-Industrial Park zone. Permitted uses in M1 include schools. Therefore, the Property does not meet the MTCA definition of an industrial property and soil cleanup levels suitable for unrestricted land use are appropriate. For unrestricted land use either Method A or Method B cleanup levels can be used. Analyses necessary to establish Method B cleanup levels for total petroleum hydrocarbons were not conducted. Method A cleanup levels for TPHd, TPHo, Naphthalene, PAHs and BTEX were used.

Ground water at this Site has been impacted by the identified releases, therefore soil cleanup levels based on leaching (protection of ground water) are appropriate. To establish soil concentrations protective of ground water, either MTCA Method A cleanup levels (Table 740-1) or one or more of the methods described in WAC 173-340-747 may be used. MTCA Method A cleanup levels for soil were used.

Point of Compliance:
The point of compliance based on the protection of ground water is Site wide throughout the soil profile and may extend below the water table. For soil cleanup levels based on unrestricted land use, the point of compliance is defined as throughout the site from the ground surface to fifteen feet below the ground surface.

Ground water
Cleanup Levels:
The ground water at this site is classified as potable to protect drinking water beneficial uses. For potable ground water either Method A or Method B cleanup levels could be used. However, site specific analyses supportive of Method B cleanup levels have not been conducted. Method A cleanup levels would therefore be the appropriate choice based upon the current available data.

Point of Compliance:
The standard point of compliance for groundwater is throughout the site from the uppermost level of the saturated zone extending vertically to the lowest depth which could potentially be affected.

3. Selection of cleanup action.

Ecology has determined the cleanup action you selected for the Site does not meet the substantive requirements of MTCA.

As noted on the previous opinion letter that Ecology issued for this site, a Feasibility Study (FS) would be needed to support the selected cleanup action of leaving the contaminated soil in place and implementing institutional controls. There are specific requirements for the submission of a FS and for the disproportionate cost analysis (DCA) portion of the FS. Please refer to WAC 173-340-350(8) for the FS requirements and WAC 173-340-360(3)(e) for the DCA criteria. In addition, a suggested annotated outline for an FS submittal is included with this opinion letter.

If institutional controls (i.e. environmental covenant) will be a part of the selected cleanup action then a copy of the covenant will need to be included with the FS. A

boilerplate environmental covenant can be found at:
http://aww.ecology.ecy.wa.gov/programs/tcp/siteManagement/boilerplates/bpVcp.shtm

Please be aware that any changes to the boilerplate wording will not be accepted and can significantly delay the issuance of an opinion.

Limitations of the Opinion

1. **Opinion does not settle liability with the state.**

   Liable persons are strictly liable, jointly and severally, for all remedial action costs and for all natural resource damages resulting from the release or releases of hazardous substances at the Site. This opinion **does not:**

   - Resolve or alter a person's liability to the state.
   - Protect liable persons from contribution claims by third parties.

   To settle liability with the state and obtain protection from contribution claims, a person must enter into a consent decree with Ecology under RCW 70.105D.040(4).

2. **Opinion does not constitute a determination of substantial equivalence.**

   To recover remedial action costs from other liable persons under MTCA, one must demonstrate that the action is the substantial equivalent of an Ecology-conducted or Ecology-supervised action. This opinion does not determine whether the action you performed is substantially equivalent. Courts make that determination. *See* RCW 70.105D.080 and WAC 173-340-545.

3. **State is immune from liability.**

   The state, Ecology, and its officers and employees are immune from all liability, and no cause of action of any nature may arise from any act or omission in providing this opinion. *See* RCW 70.105D.030(1)(i).

Contact Information

Thank you for choosing to clean up the Site under the Voluntary Cleanup Program (VCP). After you have addressed our concerns, you may request another review of your cleanup. Please do not hesitate to request additional services as your cleanup progresses. We look forward to working with you.

For more information about the VCP and the cleanup process, please visit our web site: www.ecy.wa.gov/programs/tcp/vcp/vcpmain.htm. If you have any questions about this opinion, please contact me at 425-649-7064.

Sincerely,

Bradly G. Gilmore, LG
NWRO Toxics Cleanup Program

bgg: [SECRETARY INITIALS]

Enclosures (2): A – Description of the Site
B – Feasibility Study Outline

cc: Mr. Phil Hutmacher, Owner

Enclosure A

Description and Diagram of the Site

Site Description
Site Name: Acrowood Corp
Site Address: 4425 South Third Ave. Everett, WA
Facility/Site No.: 22755667
VCP Project No.: NW2151

The Site is within the Property located at 4425 South 3rd Avenue in Everett, Washington. The Site is defined by contamination from what appears to be three separate releases at three distinct locations. Diesel- and oil-range petroleum hydrocarbons (TPHd, TPHo), polycyclic aromatic hydrocarbons (PAHs), naphthalene, and trichloroethene (TCE) were released to the soil and to groundwater.

The Property is located in a mixed industrial and residential area of southeast Everett. The Burlington Northern rail line runs along the east side of the property and the Snohomish River is located approximately one-quarter mile to the east on the other side of the rail line. Interstate-5 is 500 feet to the west, with a cluster of residential homes located between the Property and the Interstate. On the southern end of the property is a local park.

The Property was originally developed as an iron and metal foundry in 1913. The foundry operated at this location until the early 1970's when the site became a metal fabrication facility. The current use is still as a metal fabrication facility making forest industry equipment.

The majority of the Property is level with a steep bank on the east side that slopes down to the railroad tracks and the Snohomish River flood plain. The southern portion of the Property is undeveloped. Numerous buildings are located on the central and northern portions of the Property with gravel parking areas and a paved driveway and parking around the office and administration building. Stormwater drains to the east and presumably discharges into the Snohomish River.

The Property is located at the northern end of the Intercity Plateau, on the west side of the Snohomish trough as described by Newcomb (1952). The Intercity Plateau and Snohomish trough are part of the Puget Sound lowland physiographic province. The uppermost geologic unit beneath the Property is a sand with traces of silt. This sand deposit is interpreted to be Vashon advance outwash (Esperance Sand - Qvae) and extends to the maximum depth explored, 18 feet.

An unconfined aquifer exists in the sand deposit with a depth to water at the Property that varies between 2 feet to 9 feet below ground surface (bgs). The local groundwater flow is toward the southeast towards the Snohomish River.

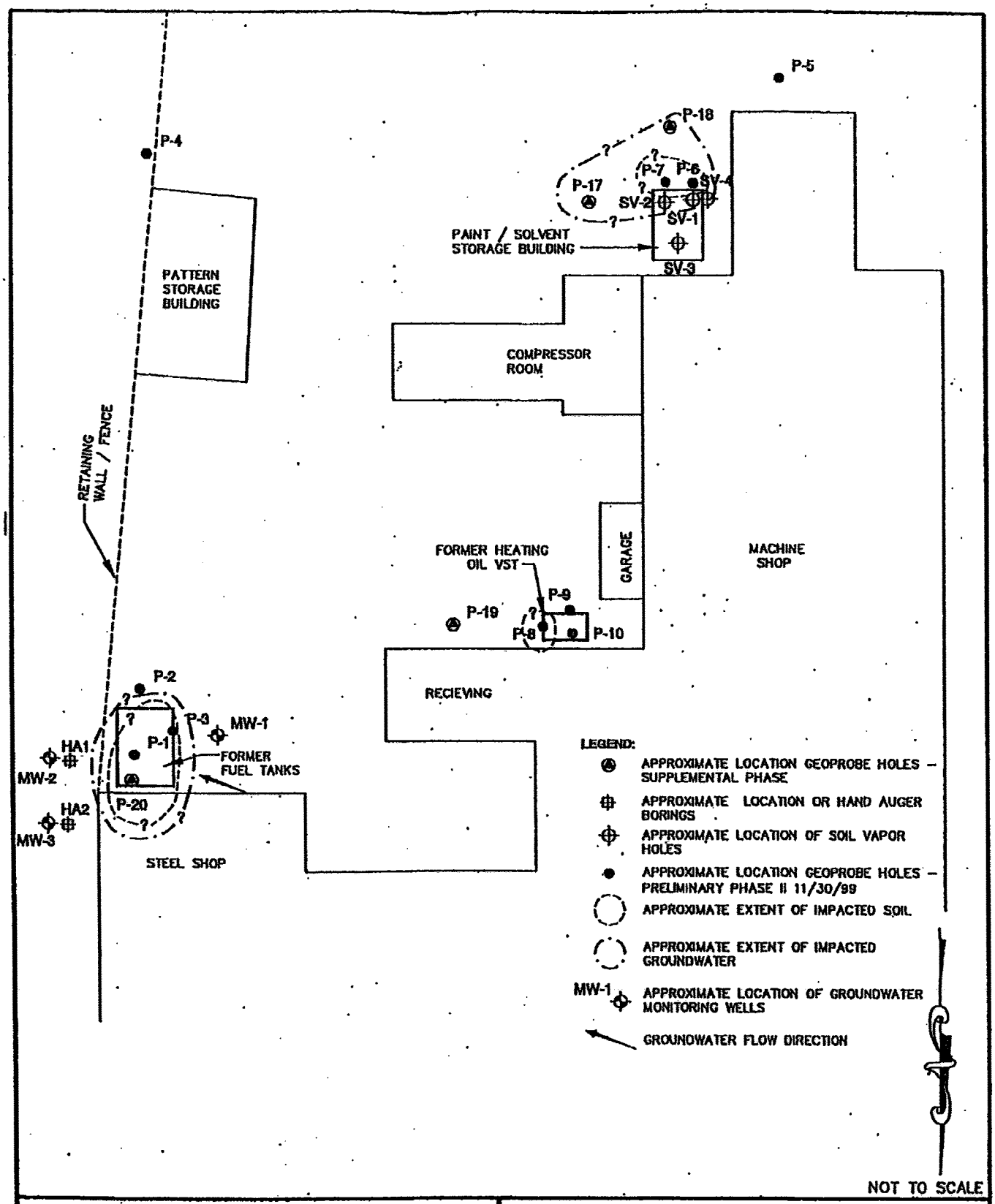
The Property is connected to the City of Everett municipal water system and municipal sewer system. No nearby residential water wells have been identified.

A Terrestrial Ecological Evaluation (TEE) has not been done for this Site. A preliminary evaluation indicates that an exclusion is not appropriate and a simplified TEE is needed.

Contamination at the Property is from what appears to be three separate releases at three distinct locations around the main shop building. The first release is from leaking fuel tanks. Soil samples from the suspected source area showed TPHd, TPHo, naphthalene and PAHs that exceeded MTCA Method A soil cleanup levels. Ground water sampling using grab samples from a direct push investigation in this area indicated that TPHd, TPHo, and PAHs exceeded MTCA Method A cleanup levels. Subsequent ground water sampling from properly constructed monitoring wells have not identified any contamination.

The second release is from a former heating oil UST located near the receiving area of the main building. Soil samples from the suspected source area identified TPHo concentrations that did not exceed MTCA Method A cleanup levels. No ground water investigation was done for this release.

The third release is located near the paint and solvent storage shed at the southeastern corner of the main building. Soil samples from the suspected source area showed TCE that exceeded MTCA Method A soil cleanup levels. Ground water sampling from properly constructed monitoring wells have not identified any contamination for this release.



LSI ADAPT, INC.
800 Maynard Avenue S., Suite 403
Seattle, Washington 98134
Ph : 206.654.7045 Fax : 206.654.7048

FIGURE - Site Plan Detail

Project : Acrowood Everett
Location : 4425 3rd Avenue
Everett, Washington 98206
Client : Acrowood Corporation
Date : 12/07/01

FS Outline - Not intended to replace MTCA's specific requirements as presented in WAC 173-340-350, and associated sections.
5/27/2010

Feasibility Study (FS) Outline

The following annotated outline is a schematic of elements to be included in a feasibility study (FS). It is not intended to replace MTCA's specific requirements as presented in WAC 173-340-350, and associated sections. Annotations are denoted by italicized parenthesis.

FS Outline - Not intended to replace MTCA's specific requirements as presented in WAC 173-340-350, and associated sections.
5/27/2010

I. **SELECTION AND DESCRIPTION OF CLEANUP ALTERNATIVES**
(This is where distinct alternatives are established and described only – no comparison. Some text is useful but the bulk of the description is best put into a table with accompanying figures.)

MTCA requires:
- A reasonable number and type of alternatives
- Alternatives that protect human health and the environment by eliminating, reducing, or controlling risks.
- Alternatives that have the standard point of compliance for all affected media, unless that are not technically possible or are disproportionately costly for the benefit obtained.
- At least one permanent cleanup alternative, unless it is not technically possible or is disproportionately costly for the benefit obtained.

- **Cleanup Action Objectives** *(These are not required by MTCA nor are they evaluation criteria under MTCA, but may be helpful in clarifying what the remedy needs to accomplish)*
- **Alternative 1** *(Describe: actions, cost and schedule, other considerations such as habitat, land use.)*
- **Alternative 2, 3, 4 etc.**

II. **DETAILED EVALUATION OF ALTERNATIVES**
(best put into tabular format with numerical values for weighting criteria, important to have figure showing cost versus environmental benefit for disproportionate cost analysis)

- **Applicable criteria** *(A cleanup action must meet the following minimum requirements [WAC 173-340-360(2)(a)], the project engineer may also establish project-specific requirements:*
  Threshold requirements
    - *Protect human health and the environment*
    - *Comply with cleanup standards*
    - *Comply with applicable state and federal laws*
    - *Provide for compliance monitoring*
  Other requirements
    - *Use permanent solutions to the maximum extent practicable*
    - *Provide for a reasonable restoration time frame*
    - *Consider public concerns*
  Project-Specific requirements
    - *Engineering criteria established for the specific project, as appropriate)*

- **Comparison with Threshold Criteria** *(Determine if alternatives meet threshold requirements)*

- **Comparison with Other MTCA Requirements** *(Only alternatives that meet the threshold requirements are advanced to the next stage of comparison)*

- **Use Permanent Solutions to the Maximum Extent Practicable (PMEP)** *(A "permanent cleanup action" is an action in which cleanup standards can be met without further action being required at the site being cleaned up or any other site involved with the cleanup action, other than the approved disposal of any residue from the treatment of hazardous substances.)*

  – *Determining PMEP - Disproportionate Cost Analysis (DCA)*

  Test: Costs are disproportionate to benefits if the incremental costs of the alternative over that of a lower cost alternative exceed the incremental degree of benefits achieved by the alternative over that of the other lower cost alternative.

DCA PROCEDURE

A. *The alternatives evaluated in the DCA shall be ranked from most to least permanent.*
B. *The most practicable permanent solution evaluated shall be the baseline against which other alternatives are compared.*
C. *The comparison of benefits and costs may be quantitative, but will often be qualitative and require the use of best professional judgment. In particular, the department has the discretion to favor or disfavor qualitative benefits and use that information in selecting a cleanup action.*

Evaluation Criteria for DCA (WAC173-340-360(3))

The following criteria shall be used to evaluate and compare each cleanup action alternative when conducting a disproportionate cost analysis to determine whether a cleanup action is permanent to the maximum extent practicable.

1. **Protectiveness**
   – Overall protectiveness of human health and the environment.

2. **Permanence**
   – The degree to which the alternative permanently reduces the toxicity, mobility or volume of hazardous substances.

3. **Cost**
   – The cost to implement the alternative.

4. **Effectiveness over the long term**
   - The following types of cleanup action components may be used as a guide, in descending order, when assessing the relative degree of long-term effectiveness:
     - Reuse or recycling;
     - destruction or detoxification;
     - immobilization or solidification;
     - on-site or offsite disposal in an engineered, lined and monitored facility;
     - on-site isolation or containment with attendant engineering controls; and
     - institutional controls and monitoring.

5. **Management of short-term risks**
   - The risk to human health and the environment associated with the alternative during construction and implementation.

6. **Technical and administrative implementability**
   - Ability to be implemented including consideration of whether the alternative is technically possible.

7. **Consideration of public concerns**
   - Whether the community has concerns regarding the alternative and, if so, the extent to which the alternative addresses those concerns.

A more complete definition of each of these criteria is in WAC 173-340-360(3)(f)

III. **CONCLUSIONS** *(The conclusion section analyzes results from the evaluation and makes recommendations based on those evaluations.)*

The following is an example of a evaluation work sheet for cleanup alternatives proposed in a Feasibility Study. This example does include the key elements of a FS w/DCA that are identified in WAC 173-340-360.

The key elements are:

- *An evaluation of alternatives to the threshold requirements in WAC 173-340-360(2)(a)*
- *An evaluation of alternatives to the 7 criteria in WAC 173-340-360(3)(f)*

Note that a FS is used to identify, and compare to, the alternative that is permanent to the maximum extent practicable (PMEP).

FS Outline - Not intended to replace MTCA's specific requirements as presented in WAC 173-340-350, and associated sections.
5/27/2010

	MTCA Threshold Criteria - Minimum Requirements	Alternative 1	Alternative 2	Alternative 3
WAC173-340-360(2)(a)				
WAC173-340-360(2)(a)(i)	Protection of Human Health and the Environment			
WAC173-340-360(2)(a)(ii)	Compliance with Cleanup Standards			
	Cleanup Levels - Method & Standard or Modified			
	Soil - TEE			
	Soil - Direct Contact			
	Soil - Leaching			
	Groundwater			
	Surface water			
	Vapor			
	Sediment			
	Point of Compliance - Standard or Conditional			
	Soil - TEE			
	Soil - Direct Contact			
	Soil - Leaching			
	Groundwater			
	Surface water			
	Vapor			
	Sediment			
WAC173-340-360(2)(a)(iii)	Compliance with Applicable State and Federal Laws			
WAC173-340-360(2)(a)(iv)	Provision for Compliance Monitoring			
WAC173-340-410(2)	Compliance monitoring shall be required for all cleanup actions. Unless otherwise directed by the department, a compliance monitoring plan shall be prepared.			

WAC173-340-410(3)	Where the cleanup action includes engineered controls or institutional controls, the monitoring may need to include not only measurements but also documentation of observations on the performance of these controls. Long-term monitoring shall be required if on-site disposal, isolation, or containment is the selected cleanup action for a site or a portion of a site. Such measures shall be required until residual hazardous substance concentrations no longer exceed site cleanup levels established under WAC 173-340-700 through 173-340-760.	
WAC173-340-360(2)(e)	**Use of Institutional Controls**	
WAC173-340-360(2)(e)(iii)	Cleanup actions shall not rely primarily on institutional controls and monitoring where it is technically possible to implement a more permanent cleanup action for all or a portion of the site.	
WAC173-340-360(2)(e)(ii)	Institutional controls should demonstrably reduce risks based on a quantitative analysis where appropriate.	
WAC173-340-360(2)(b)(i) & WAC173-340-360(3)	**PMEP Evaluation (DCA)**	
WAC173-340-360(3)(b)	When selecting a cleanup action, preference shall be given to permanent solutions to the maximum extent practicable. To determine whether a cleanup action uses permanent solutions to the maximum extent practicable, the following evaluation criteria will used:	
WAC173-340-360(3)(f)(i)	Protectiveness - Overall protectiveness, the degree of risk reduction, time required to reduce risk, and improvement of overall environmental quality.	

WAC173-340-360(3)(f)(ii)	**Permanence** - The degree of permanent reduction of the toxicity, mobility or volume of hazardous substances, including the reduction or elimination of sources, irreversibility, and type of residuals.	
WAC173-340-360(3)(f)(iv)	**Long-Term Effectiveness** - Includes the degree of certainty of successful cleanup, the reliability of the alternative and the effectiveness of controls to manage residues or remaining wastes. The following types of cleanup actions are used to determine the relative degree of long-term effectiveness:	
	Reuse or recycling;	
	destruction or detoxification;	
	immobilization or solidification;	
	disposal in an engineered, lined and monitored facility;	
	on-site isolation or containment with engineering controls;	
	institutional controls and monitoring.	
WAC173-340-360(3)(f)(v)	**Short-Term Risk Management** - The risk to human health and the environment during construction and implementation, and the effectiveness of mitigation measures.	
WAC173-340-360(3)(f)(vi)	**Implementability** - Technically possible, availability of necessary components, administrative and regulatory requirements, scheduling, monitoring requirements, and access issues.	
WAC173-340-360(3)(f)(vii)	**Public Concerns** - Whether the community has concerns regarding the alternative.	
WAC173-340-360(3)(f)(iii)	**Cost** - All costs for the design life of the cleanup action including construction, operation and maintenance, monitoring, equipment, *and* the cost of maintaining institutional controls.	
WAC173-340-360(2)(b)(ii) & WAC173-340-360(4)	**Restoration Time Frame**	

WAC173-340-360(4)(b)	To determine whether a cleanup action provides for a reasonable restoration time frame, the factors to be considered include the following:	
WAC173-340-360(4)(b)(i)	Potential risks to human health and the environment;	
WAC173-340-360(4)(b)(ii)	Practicability of achieving a shorter restoration time frame;	
WAC173-340-360(4)(b)(iii)	Current use of the site, surrounding areas, and associated resources that are, or may be, affected by releases from the site;	
WAC173-340-360(4)(b)(iv)	Potential future use of the site, surrounding areas, and associated resources that are, or may be, affected by releases from the site;	
WAC173-340-360(4)(b)(v)	Availability of alternative water supplies;	
WAC173-340-360(4)(b)(vi)	Likely effectiveness and reliability of institutional controls;	
WAC173-340-360(4)(b)(vii)	Ability to control and monitor migration of hazardous substances from the site;	
WAC173-340-360(4)(b)(viii)	Toxicity of the hazardous substances at the site; and	
WAC173-340-360(4)(b)(ix)	Natural processes that reduce concentrations of hazardous substances and have been documented to occur at the site or under similar site conditions.	
WAC173-340-360(4)(c)	A longer period of time may be used for a site to achieve cleanup levels at the point of compliance if the cleanup action selected has a greater degree of long-term effectiveness than on-site or offsite disposal, isolation, or containment options.	
WAC173-340-360(4)(f)	Extending the restoration time frame shall not be used as a substitute for active remedial measures, when such actions are practicable.	

Attachment D

Boring Logs

Attachment D
Boring Logs

ECI environmental services www.ecocononline.com	Boring No.:	ECIA2B 1	Sheet:	1	of	1
	Location:	4425 South Third Avenue, Everett, WA				
Date: uly 21, 2011	Client:	Acrowood Corporation				
Drilling Type: Direct Push Macro Sampler			Water Level:	12 bgs		
Well Screen Size:		Surface Conditions: Gravel	Surface Elevation:			
		Longitude:	Time:	Start	Finish	
		Latitude:				
		Comments:				

Interval	Recovery	Sample Number	Sample Depth	Field Reading	Depth to Water	Boring Depth	Soil Description
						0	Fill - Slightly moist, brown sand and gravel; no odor.
						1	Poorly Graded Sand (SP) - Light brown; slightly moist; mostly sand with trace silt and gravel; no odor.
						2	
						3	Same; no odor.
						4	
						5	
						6	
						7	Same; no odor.
						8	
						9	Driller indicates water at 9.6' bgs in borehole, but 8-12' core is not saturated.
						10	
						11	
					▼	12	Becomes wet at 12' bgs; increased silt content. Screened 11-14' bgs.
		ECIA2B-1GW				13	
						14	BOREHOLE TERMINATED AT 14' BGS
						15	
						16	
						17	
						18	
						19	
						20	

ECI environmental services www.ecocononline.com	Boring No.:	ECIA2B 2	Sheet:	1	of	1
	Location:	4425 South Third Avenue, Everett, WA				
Date: uly 21, 2011	Client:	Acrowood Corporation				
Drilling Type: Direct Push Macro Sampler				Water Level:	10 bgs	
Well Screen Size:		Surface Conditions: Gravel		Surface Elevation:		
		Longitude:	Time:	Start	Finish	
		Latitude:				
		Comments:				

Interval	Recovery	Sample Number	Sample Depth	Field Reading	Depth to Water	Boring Depth	Soil Description
						0	Fill slightly moist, brown sand and gravel; no odor.
						1	Poorly Graded Sand (SP) - light brown; slightly moist; mostly sand with trace silt and gravel; no odor
						2	
						3	Same; no odor.
						4	
						5	
						6	Wet between 6.5-7' bgs.
						7	Same; no odor; increased silt; becomes gray.
						8	
						9	
					▼	10	Screened 11-14' bgs.
						11	
						12	Same; saturated; no odor
		ECIA2B-2GW				13	
						14	BOREHOLE TERMINATED AT 14' BGS
						15	
						16	
						17	
						18	
						19	
						20	

ECI environmental services www.ecocononline.com	Boring No.:	ECIA3B 1	Sheet:	1	of	1
	Location:	4425 South Third Avenue, Everett, WA				
Date: uly 21, 2011	Client:	Acrowood Corporation				
Drilling Type: Direct Push Macro Sampler			Water Level:	12.5 bgs		
Well Screen Size:	Surface Conditions:	Asphalt	Surface Elevation:			
	Longitude:		Time:	Start	Finish	
	Latitude:					
	Comments:					

Interval	Recovery	Sample Number	Sample Depth	Field Reading	Depth to Water	Boring Depth	Soil Description
						0	Fill - Slightly moist, black/orange/brown sand with gravel; no odor.
						1	
						2	
						3	Poorly Graded Sand (SP) - light brown; slightly moist; mostly sand with some silt; no odor.
		ECIA3B-1:4					
						4	
						5	
						6	
						7	
						8	Silty Sand (SM) - Light brown; slightly moist; mostly sand with some silt and trace gravel; no odor.
						9	
						10	
						11	
		ECIA3B-1:12					Same; no odor.
					▼	12	
		ECIA3B-1GW					Saturated at 12.5 feet bgs. Screen 12-15 feet bgs
						13	
						14	
						15	
							Same; no odor.
						16	BOREHOLE TERMINATED AT 16' BGS
						17	
						18	
						19	
						20	

ECI environmental services www.ecocononline.com	Boring No.:	ECIA3B 2	Sheet:	1	of	1
	Location:	4425 South Third Avenue, Everett, WA				
Date: uly 21, 2011	Client:	Acrowood Corporation				
Drilling Type: Direct Push Macro Sampler			Water Level:	14.5 bgs		
Well Screen Size:		Surface Conditions: Grass	Surface Elevation:			
		Longitude:	Time:	Start	Finish	
		Latitude:				
		Comments:				

Interval	Recovery	Sample Number	Sample Depth	Field Reading	Depth to Water	Boring Depth	Soil Description
						0	Fill - slightly moist, black/orange sand with gravel; no odor.
						1	
						2	
						3	
						4	Poorly Graded Sand (SP) - black; slightly moist; moslty sand with trace gravel; no odor.
						5	
						6	
						7	
		ECIA3B-2:8				8	Silty Sand (SM) - dark brown; slightly moist; mostly sand with some silt and trace gravel; strong petroleum odor from 8-14' bgs.
						9	
						10	
						11	
		ECIA3B-2:12				12	
						13	Saturated from 13-15' bgs.
					▼	14	Water at 14.5' bgs in borehole.
		ECIA3B-2GW				15	Becomes gray and less moist at 15' bgs; slight petroleum odor.
		ECIA3B-2:16				16	Saturated from 16-18' bgs; black blotches, petroleum odor and heavy sheen observed at 17' bgs.
		ECIA3B-2:17				17	Screened 15-18 bgs
						18	Becomes light brown; less moist; no odor.
						19	
		ECIA3B-2:20				20	BOREHOLE TERMINATED AT 20' BGS

ECI environmental services www.ecocononline.com	Boring No.:	ECIA3B 3	Sheet:	1	of	1
	Location:	4425 South Third Avenue, Everett, WA				
Date: uly 21, 2011	Client:	Acrowood Corporation				
Drilling Type: Direct Push Macro Sampler			Water Level:	13 bgs		
Well Screen Size:		Surface Conditions: Grass	Surface Elevation:			
	Longitude:		Time:	Start	Finish	
	Latitude:					
	Comments:					

Interval	Recovery	Sample Number	Sample Depth	Field Reading	Depth to Water	Boring Depth	Soil Description
						0	Fill slightly moist, black sand with gravel and some silt; no odor.
						1	
						2	
						3	
						4	
						5	
						6	
						7	
						8	Silty Sand (SM) - Orange/brown; slightly moist; mostly sand with some silt and trace gravel; no odor.
						9	
						10	
						11	
		ECIA3B-3:12				12	Becomes light brown; increased gravel; no odor.
					▼		Saturated at 13 feet bgs.
		ECIA3B-3GW				13	Screen 13-16 feet bgs.
						14	
						15	
		ECIA3B-3:16					Same; no odor.
						16	
						17	
						18	
						19	
							Same; no odor.
						20	BOREHOLE TERMINATED AT 20' BGS

ECI environmental services www.ecocononline.com	Boring No.:	ECIMW 5	Sheet:	1	of	1
	Location:	4425 South Third Avenue, Everett, WA				
Date: uly 21, 2011	Client:	Acrowood Corporation				
Drilling Type: Direct Push			Water Level:	13. bgs		
	Surface Conditions:	Grass	Surface Elev.			
	Longitude:		Time:	Start	Finish	
	Latitude:					
	Comments:	Driller uses 4 sampler w liners				

Inches Driven	Inches Recovered	Sample Number	Sample Depth	PID Reading	Depth to Water	Boring Depth	Well Inst. Details	Material Description
						0	Concrete (0-1.5' bgs)	Fill - Slightly moist, black/brown sand and gravel; no odor.
						1		
						2	Bentonite (1.5-4' bgs)	
						3	Well casing (0-5' bgs)	Same; no odor.
						4		
						5	Sand (4-20' bgs)	
						6		Poorly Graded Sand (SP) - Light brown; slightly moist;
						7	Well screen (5-20' bgs)	mostly sand with trace silt and gravel; no odor.
						8		Same; no odor.
						9		
						10		
						11		Same; increased silt; no odor.
						12		
						13		
		ECIMW-5				14	Water at 13.7' bgs	Becomes wet at 14' bgs.
						15		Same; no odor.
						16		
						17		
						18		
						19		
						20		BOREHOLE TERMINATED AT 20' BGS

Well Screen = 1-inch (0.010" Slot Sch. 40 PVC Typical)
Well Casing = 1-inch (Sch. 40 PVC Typical)

Attachment E

Laboratory Analytical Results

Attachment E
Laboratory Analytical Results

ESN NORTHWEST, INC. Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: Ecocon, Inc.
ADDRESS: 1912 64th Ave Tacoma WA
PHONE: 253-238-9270 FAX: 253-369-6228
CLIENT PROJECT #: PROJECT MANAGER: Jerry Sawetz

DATE: 7/21/11 PAGE 1 OF 2
PROJECT NAME: Acro wood
LOCATION: Everett, WA
COLLECTOR: Jerry Sawetz DATE OF COLLECTION 7/21/11

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: TPH-HCID	TPH - DIESEL & OIL	TPH - GASOLINE	BTEX	VOC 8260CL	VOC 8260	Semivol 8270	PAH's 8270	PCB's 8082	CL Pesticides 8081	RCRA 8 Metals	MTCA 5 Metals	Pb	Asbestos-PLM	GRO Suite	DRO Suite	WO Suite	NOTES	Total Number of Containers	Laboratory Note Number
1. ECI A3 MW-5:4	4	1000	Soil	4oz																		Hold all samples		
2. ECI A3 MW-5:8	8	1005	Soil	↓																		will give instructions		
3. ECI A3 MW-5:12	12	1010	Soil	↓																		7/22 am		
4. ECI A3 B-1:4	4	1110	Soil	↓	•																			
5. ECI A3 B-1:8	8	1115	Soil	↓	•																			
6. ECI A3 B-1:12	12	1125	Soil	↓	•																			
7. ECI A3 B-1 GW		1155	GW	500 ml	•																			
8. ECI A3 B-2:4	4	1215	Soil	4oz																				
9. ECI A3 B-2:8	8	1220	Soil	↓	•																			
10. ECI A3 B-2:12	12	1225	Soil	↓	•																			
11. ECI A3 B-2:16	16	1230	Soil	↓	•																			
12. ECI A3 B-2:17	17	1245	Soil	↓	•																			
13. ECI A3 B-2:20	20	1255	Soil	↓	•																			
14. ECI A3 B-2 GW		1310	GW	500 ml	•																			
15. ECI A3 B-3:4	4	1320	Soil	4oz																				
16. ECI A3 B-3:12	12	1325	Soil	↓	•																			
17. ECI A3 B-3:16	16	1330	Soil	↓	•																			
18. ECI A3 B-3:20	20	1340	Soil	↓																				

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
	7/22/11		7/21/11 1630
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS
☐ ESN DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

Turn Around Time: 24 HR 48 HR 5 DAY

ESN NORTHWEST, INC. | Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: Ecocon, Inc.

ADDRESS: SAME AS PAGE 1

PHONE: _____ FAX: _____

CLIENT PROJECT #: _____ PROJECT MANAGER: _____

DATE: _____ PAGE 2 OF 2

PROJECT NAME: _____

LOCATION: _____

COLLECTOR: _____ DATE OF COLLECTION _____

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: TPH-HCID	TPH - DIESEL & OIL	TPH - GASOLINE	BTEX	VOC 8260CL	VOC 8260	SemiVol 8270	PAH's 8270	PCB's 8082	CL Pesticides 8081	RCRA 8 Metals	MTCA 5 Metals	Pb	Asbestos-PLM	GRO Suite	DRO Suite	WO Suite	NOTES	Total Number of Containers	Laboratory Note Number
1. ECI A3 B-3 GW		1400	GW	500 ml																				
2. ECI A2 B-1 GW		1515	GW	"																				
3. ECI A2 B-2 GW		1555	GW	"																				
4.																								
5.																								
6.																								
7.																								
8.																								
9.																								
10.																								
11.																								
12.																								
13.																								
14.																								
15.																								
16.																								
17.																								
18.																								

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RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ ESN DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

Turn Around Time: 24 HR 48 HR 5 DAY

ESN NORTHWEST CHEMISTRY LABORATORY

EcoCon
ACROWOOD PROJECT
Everett, Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Diesel Range Organics & Lube Oil Range Organics in Water
by Method NWTPH-Dx/Dx Extended with Silica Gel Cleanup

Sample Number	Date Prepared	Date Analyzed	Surrogate Recovery (%)	Diesel Range Organics (ug/L)	Lube Oil Range Organics (ug/L)
Method Blank	7/27/2011	7/28/2011	86%	nd	nd
ECIA3B-1GW	7/27/2011	7/28/2011	97%	nd	nd
ECIA3B-2GW	7/27/2011	7/28/2011	86%	920	nd
ECIA3B-3GW	7/27/2011	7/28/2011	104%	nd	nd
ECIA2B-1GW	7/27/2011	7/28/2011	85%	nd	nd
ECIA2B-2GW	7/27/2011	7/28/2011	86%	nd	nd
Reporting Limits				250	500

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 50% TO 150%

ESN NORTHWEST CHEMISTRY LABORATORY

EcoCon
ACROWOOD PROJECT
Everett, Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Diesel Range Organics & Lube Oil Range Organics in Soil
by Method NWTPH-Dx/Dx Extended with Silica Gel Cleanup

Sample Number	Date Prepared	Date Analyzed	Surrogate Recovery (%)	Diesel Range Organics (mg/kg)	Lube Oil Range Organics (mg/kg)
Method Blank	7/26/2011	7/26/2011	111	nd	nd
ECIA3B-1:4	7/26/2011	7/26/2011	101	nd	nd
ECIA3B-1:4 Duplicate	7/26/2011	7/26/2011	126	nd	nd
ECIA3B-1:12	7/26/2011	7/26/2011	118	nd	nd
ECIA3B-2:8	7/26/2011	7/26/2011	85	nd	nd
ECIA3B-2:12	7/26/2011	7/26/2011	Int	31000	2600
ECIA3B-2:16	7/26/2011	7/26/2011	114	nd	nd
ECIA3B-2:17	7/26/2011	7/26/2011	129	250	nd
ECIA3B-2:20	7/26/2011	7/26/2011	121	nd	nd
ECIA3B-3:12	7/26/2011	7/26/2011	114	nd	200
ECIA3B-3:16	7/26/2011	7/26/2011	96	nd	nd
Reporting Limits				50	100

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 50% TO 150%
Int-Surrogate recovery was not determined due to matrix interferences.

ESN NORTHWEST, INC. Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: Ecocon, Inc.
ADDRESS: 1912 64th Ave Tacoma WA
PHONE: 253-238-9270 FAX: 253-369-6228
CLIENT PROJECT #: PROJECT MANAGER: Jerry Sawetz

DATE: 7/21/11 PAGE 1 OF 2
PROJECT NAME: Acro wood
LOCATION: Everett, WA
COLLECTOR: Jerry Sawetz DATE OF COLLECTION 7/21/11

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: TPH-HCID	TPH - DIESEL & OIL	TPH - GASOLINE	BTEX	VOC 8260CL	VOC 8260	SemiVol 8270	PAH's 8270	PCB's 8082	CL Pesticides 8081	RCRA 8 Metals	MTCA 5 Metals	Pb	Asbestos-PLM	GRO Suite	DRO Suite	WO Suite	NOTES	Total Number of Containers	Laboratory Note Number
1. ECI A3 MW-5:4	4	1000	Soil	4oz																		Hold all samples		
2. ECI A3 MW-5:8	8	1005	Soil	"																		will give instructions		
3. ECI A3 MW-5:12	12	1010	Soil	"																		7/22 am		
4. ECI A3B-1:4	4	1110	Soil	"																				
5. ECI A3B-1:8	8	1115	Soil	"																				
6. ECI A3B-1:12	12	1125	Soil	"																				
7. ECI A3B-1GW		1155	GW	500 ml																				
8. ECI A3B-2:4	4	1215	Soil	4oz																				
9. ECI A3B-2:8	8	1220	Soil	"																				
10. ECI A3B-2:12	12	1225	Soil	"																				
11. ECI A3B-2:16	16	1230	Soil	"																				
12. ECI A3B-2:17	17	1245	Soil	"																				
13. ECI A3B-2:20	20	1255	Soil	"																				
14. ECI A3B-2GW		1310	GW	500 ml																				
15. ECI A3B-3:4	4	1320	Soil	4oz																				
16. ECI A3B-3:12	12	1325	Soil	"																				
17. ECI A3B-3:16	16	1330	Soil	"																				
18. ECI A3B-3:20	20	1340	Soil	"																				

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
	7/22/11		7/21/11 1630
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ ESN DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

Turn Around Time: 24 HR 48 HR 5 DAY

ESN Northwest, Inc. | Environmental Services Network

CHAIN-OF-CUSTODY RECORD

CLIENT: Ecocon, Inc. DATE: PAGE 2 OF 2

ADDRESS: SAME AS PAGE 1 PROJECT NAME:

PHONE: SAME FAX: LOCATION:

CLIENT PROJECT #: PROJECT MANAGER: COLLECTOR: DATE OF COLLECTION

Sample Number	Depth	Time	Sample Type	Container Type	ANALYSES: TPH-HCID	TPH - DIESEL & OIL	TPH - GASOLINE	BTEX	VOC 8260/CL	VOC 8260	SemiVol 8270	PAH's 8270	PCB's 8082	CL Pesticides 8081	RCRA 8 Metals	MTCA 5 Metals	Pb	Asbestos-PLM	GRO Suite	DRO Suite	WO Suite	NOTES	Total Number of Containers	Laboratory Note Number
1. ECI A3 B-3 GW		1400	GW	500ml																				
2. ECI A2 B-1 GW		1515	GW	↓																				
3. ECI A2 B-2 GW		1555	GW	↓																				
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RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ ESN DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

Turn Around Time: 24 HR 48 HR 5 DAY

ESN NORTHWEST CHEMISTRY LABORATORY

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lab@esnnw.com

Analysis of Diesel Range Organics & Lube Oil Range Organics in Water
by Method NWTPH-Dx/Dx Extended with Silica Gel Cleanup

Sample Number	Date Prepared	Date Analyzed	Surrogate Recovery (%)	Diesel Range Organics (ug/L)	Lube Oil Range Organics (ug/L)
Method Blank	7/27/2011	7/28/2011	86%	nd	nd
ECIA3B-1GW	7/27/2011	7/28/2011	97%	nd	nd
ECIA3B-2GW	7/27/2011	7/28/2011	86%	**920**	nd
ECIA3B-3GW	7/27/2011	7/28/2011	104%	nd	nd
ECIA2B-1GW	7/27/2011	7/28/2011	85%	nd	nd
ECIA2B-2GW	7/27/2011	7/28/2011	86%	nd	nd
Reporting Limits				250	500

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 50% TO 150%

ESN NORTHWEST CHEMISTRY LABORATORY

EcoCon
ACROWOOD PROJECT
Everett, Washington

ESN Northwest
1210 Eastside Street SE Suite 200
Olympia, WA 98501
(360) 459-4670 (360) 459-3432 Fax
lab@esnnw.com

Analysis of Diesel Range Organics & Lube Oil Range Organics in Soil
by Method NWTPH-Dx/Dx Extended with Silica Gel Cleanup

Sample Number	Date Prepared	Date Analyzed	Surrogate Recovery (%)	Diesel Range Organics (mg/kg)	Lube Oil Range Organics (mg/kg)
Method Blank	7/26/2011	7/26/2011	111	nd	nd
ECIA3B-1:4	7/26/2011	7/26/2011	101	nd	nd
ECIA3B-1:4 Duplicate	7/26/2011	7/26/2011	126	nd	nd
ECIA3B-1:12	7/26/2011	7/26/2011	118	nd	nd
ECIA3B-2:8	7/26/2011	7/26/2011	85	nd	nd
ECIA3B-2:12	7/26/2011	7/26/2011	Int	**31000**	**2600**
ECIA3B-2:16	7/26/2011	7/26/2011	114	nd	nd
ECIA3B-2:17	7/26/2011	7/26/2011	129	**250**	nd
ECIA3B-2:20	7/26/2011	7/26/2011	121	nd	nd
ECIA3B-3:12	7/26/2011	7/26/2011	114	nd	**200**
ECIA3B-3:16	7/26/2011	7/26/2011	96	nd	nd
Reporting Limits				50	100

"nd" Indicates not detected at the listed detection limits.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 50% TO 150%
Int-Surrogate recovery was not determined due to matrix interferences.

September 2, 2011

Mr. Jerry Sawetz
ECI
1912 - 64th Ave W.
Tacoma, WA 98466

Dear Mr. Sawetz,

On August 26th, 3 samples were received by our laboratory and assigned our laboratory project number 1108120. The project was identified as your Acrowood. The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

ALS Laboratory Group

Rick Bagan
Laboratory Director

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Laboratory Group A Campbell Brothers Limited Company

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	ECI 1912 - 64th Ave W. Tacoma, WA 98466	DATE: ALS JOB#: ALS SAMPLE#:	9/2/2011 1108120 -01
CLIENT CONTACT:	Jerry Sawetz	DATE RECEIVED:	8/26/2011
CLIENT PROJECT:	Acrowood	COLLECTION DATE:	8/25/2011 13:30
CLIENT SAMPLE ID	ECIMW-5	WDOE ACCREDITATION:	C601

DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX	U	130	1	UG/L	08/26/2011	EBS
TPH-Oil Range	NWTPH-DX	U	250	1	UG/L	08/26/2011	EBS
Naphthalene	EPA-8270 SIM	U	0.020	1	UG/L	08/30/2011	LAP
2-Methylnaphthalene	EPA-8270 SIM	U	0.020	1	UG/L	08/30/2011	LAP
1-Methylnaphthalene	EPA-8270 SIM	U	0.020	1	UG/L	08/30/2011	LAP
Acenaphthylene	EPA-8270 SIM	U	0.020	1	UG/L	08/30/2011	LAP
Acenaphthene	EPA-8270 SIM	U	0.020	1	UG/L	08/30/2011	LAP
Fluorene	EPA-8270 SIM	U	0.020	1	UG/L	08/30/2011	LAP
Phenanthrene	EPA-8270 SIM	U	0.020	1	UG/L	08/30/2011	LAP
Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	08/30/2011	LAP
Fluoranthene	EPA-8270 SIM	**0.036**	0.020	1	UG/L	08/30/2011	LAP
Pyrene	EPA-8270 SIM	**0.034**	0.020	1	UG/L	08/30/2011	LAP
Benzo[A]Anthracene	EPA-8270 SIM	**0.030**	0.020	1	UG/L	08/30/2011	LAP
Chrysene	EPA-8270 SIM	**0.041**	0.020	1	UG/L	08/30/2011	LAP
Benzo[B]Fluoranthene	EPA-8270 SIM	**0.048**	0.020	1	UG/L	08/30/2011	LAP
Benzo[K]Fluoranthene	EPA-8270 SIM	**0.030**	0.020	1	UG/L	08/30/2011	LAP
Benzo[A]Pyrene	EPA-8270 SIM	**0.032**	0.020	1	UG/L	08/30/2011	LAP
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	**0.028**	0.020	1	UG/L	08/30/2011	LAP
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	08/30/2011	LAP
Benzo[G,H,I]Perylene	EPA-8270 SIM	**0.036**	0.020	1	UG/L	08/30/2011	LAP

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
C25	NWTPH-DX	**94.2**	08/26/2011	EBS
Terphenyl-d14	EPA-8270 SIM	**109**	08/30/2011	LAP

U - Analyte analyzed for but not detected at level above reporting limit.

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Laboratory Group A Campbell Brothers Limited Company

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	ECI 1912 - 64th Ave W. Tacoma, WA 98466	DATE: ALS JOB#: ALS SAMPLE#:	9/2/2011 1108120 -02
CLIENT CONTACT:	Jerry Sawetz	DATE RECEIVED:	8/26/2011
CLIENT PROJECT:	Acrowood	COLLECTION DATE:	8/25/2011 14:45
CLIENT SAMPLE ID	MW-1	WDOE ACCREDITATION:	C601

DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX	U	130	1	UG/L	08/26/2011	EBS
TPH-Oil Range	NWTPH-DX	U	250	1	UG/L	08/26/2011	EBS
Naphthalene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
2-Methylnaphthalene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
1-Methylnaphthalene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Acenaphthylene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Acenaphthene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Fluorene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Phenanthrene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Pyrene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Benzo[A]Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Chrysene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Benzo[B]Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Benzo[K]Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Benzo[A]Pyrene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Benzo[G,H,I]Perylene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
C25	NWTPH-DX	**75.6**	08/26/2011	EBS
Terphenyl-d14	EPA-8270 SIM	**112**	08/31/2011	LAP

U - Analyte analyzed for but not detected at level above reporting limit.

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ALS Laboratory Group A Campbell Brothers Limited Company

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	ECI 1912 - 64th Ave W. Tacoma, WA 98466	DATE: ALS JOB#: ALS SAMPLE#:	9/2/2011 1108120 -03
CLIENT CONTACT:	Jerry Sawetz	DATE RECEIVED:	8/26/2011
CLIENT PROJECT:	Acrowood	COLLECTION DATE:	8/25/2011 16:30
CLIENT SAMPLE ID	MW-4	WDOE ACCREDITATION:	C601

DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX	U	130	1	UG/L	08/26/2011	EBS
TPH-Oil Range	NWTPH-DX	U	250	1	UG/L	08/26/2011	EBS
Naphthalene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
2-Methylnaphthalene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
1-Methylnaphthalene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Acenaphthylene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Acenaphthene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Fluorene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Phenanthrene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Pyrene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Benzo[A]Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Chrysene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Benzo[B]Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Benzo[K]Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Benzo[A]Pyrene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP
Benzo[G,H,I]Perylene	EPA-8270 SIM	U	0.020	1	UG/L	08/31/2011	LAP

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
C25	NWTPH-DX	**73.2**	08/26/2011	EBS
Terphenyl-d14	EPA-8270 SIM	**113**	08/31/2011	LAP

U - Analyte analyzed for but not detected at level above reporting limit.

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Laboratory Group A Campbell Brothers Limited Company

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT: ECI
1912 - 64th Ave W.
Tacoma, WA 98466
CLIENT CONTACT: Jerry Sawetz
CLIENT PROJECT: Acrowood

DATE: 9/2/2011
ALS SDG#: 1108120
WDOE ACCREDITATION: C601

LABORATORY BLANK RESULTS

MB-082411W - Batch 2048 - Water by NWTPH-DX

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX	U	130	1	UG/L	08/24/2011	EBS
TPH-Oil Range	NWTPH-DX	U	250	1	UG/L	08/24/2011	EBS

MB-082411W - Batch 2049 - Water by EPA-8270 SIM

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
Naphthalene	EPA-8270 SIM	U	0.020	1	UG/L	08/26/2011	LAP
2-Methylnaphthalene	EPA-8270 SIM	U	0.020	1	UG/L	08/26/2011	LAP
1-Methylnaphthalene	EPA-8270 SIM	U	0.020	1	UG/L	08/26/2011	LAP
Acenaphthylene	EPA-8270 SIM	U	0.020	1	UG/L	08/26/2011	LAP
Acenaphthene	EPA-8270 SIM	U	0.020	1	UG/L	08/26/2011	LAP
Fluorene	EPA-8270 SIM	U	0.020	1	UG/L	08/26/2011	LAP
Phenanthrene	EPA-8270 SIM	U	0.020	1	UG/L	08/26/2011	LAP
Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	08/26/2011	LAP
Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/L	08/26/2011	LAP
Pyrene	EPA-8270 SIM	U	0.020	1	UG/L	08/26/2011	LAP
Benzo[A]Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	08/26/2011	LAP
Chrysene	EPA-8270 SIM	U	0.020	1	UG/L	08/26/2011	LAP
Benzo[B]Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/L	08/26/2011	LAP
Benzo[K]Fluoranthene	EPA-8270 SIM	U	0.020	1	UG/L	08/26/2011	LAP
Benzo[A]Pyrene	EPA-8270 SIM	U	0.020	1	UG/L	08/26/2011	LAP
Indeno[1,2,3-Cd]Pyrene	EPA-8270 SIM	U	0.020	1	UG/L	08/26/2011	LAP
Dibenz[A,H]Anthracene	EPA-8270 SIM	U	0.020	1	UG/L	08/26/2011	LAP
Benzo[G,H,I]Perylene	EPA-8270 SIM	U	0.020	1	UG/L	08/26/2011	LAP

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ALS Laboratory Group A Campbell Brothers Limited Company

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT: ECI
1912 - 64th Ave W.
Tacoma, WA 98466
CLIENT CONTACT: Jerry Sawetz
CLIENT PROJECT: Acrowood

DATE: 9/2/2011
ALS SDG#: 1108120
WDOE ACCREDITATION: C601

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 2048 - Water by NWTPH-DX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range - BS	NWTPH-DX	**92.1**			08/24/2011	EBS
TPH-Diesel Range - BSD	NWTPH-DX	**87.7**	**5**		08/24/2011	EBS

ALS Test Batch ID: 2049 - Water by EPA-8270 SIM

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	ANALYSIS DATE	ANALYSIS BY
Naphthalene - BS	EPA-8270 SIM	**63.4**			08/25/2011	LAP
Naphthalene - BSD	EPA-8270 SIM	**57.8**	**9**		08/25/2011	LAP
Acenaphthene - BS	EPA-8270 SIM	**73.1**			08/25/2011	LAP
Acenaphthene - BSD	EPA-8270 SIM	**71.0**	**3**		08/25/2011	LAP
Pyrene - BS	EPA-8270 SIM	**71.0**			08/25/2011	LAP
Pyrene - BSD	EPA-8270 SIM	**73.4**	**3**		08/25/2011	LAP
Benzo[G,H,I]Perylene - BS	EPA-8270 SIM	**67.2**			08/25/2011	LAP
Benzo[G,H,I]Perylene - BSD	EPA-8270 SIM	**70.4**	**5**		08/25/2011	LAP

APPROVED BY

Laboratory Director

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Laboratory Group A Campbell Brothers Limited Company

ALS Environmental
8620 Holly Drive, Suite 100
Everett, WA 98208
Phone (425) 356-2600
(206) 292-9059 Seattle
(425) 356-2626 Fax
http://www.alsglobal.com

Chain Of Custody/ Laboratory Analysis Request

ALS Job# (Laboratory Use Only) 1108120

Date 8/25/11 Page 1 Of 1

PROJECT ID: Acrowood
REPORT TO COMPANY: ECI
PROJECT MANAGER: Jerry Sawetz
ADDRESS: 1912 64th Ave W Tacoma WA 98466
PHONE: 425-301-1227 FAX: 253-369-6228
P.O. NUMBER: E-MAIL: jerrys@ecaconnline.com
INVOICE TO COMPANY: SAME
ATTENTION: Steve Spencer
ADDRESS:

ANALYSIS REQUESTED | OTHER (Specify)

SAMPLE I.D.	DATE	TIME	TYPE	LAB#	NWTPH-HCID	NWTPH-DX	NWTPH-GX	BTEX by EPA-8021	MTBE by EPA-8021 EPA-8260	Halogenated Volatiles by EPA 8260	Volatile Organic Compounds by EPA 8260	EDB / EDC by EPA 8260 SIM (water)	EDB / EDC by EPA 8260 (soil)	Semivolatile Organic Compounds by EPA 8270	Polycyclic Aromatic Hydrocarbons (PAH) by EPA-8270 SIM	PCB Pesticides by EPA 8081/8082	Metals-MTCA-5 RCRA-8 Pri Pol TAL	Metals Other (Specify)	TCLP-Metals VOA Semi-Vol Pest Herbs	NUMBER OF CONTAINERS	RECEIVED IN GOOD CONDITION?
1. ECIMW-5	8/25/11	1330	GW	1		X									X					2	
2. MW-1		1445	GW	2		X									X					2	
3. MW-4		1630	GW	3		X									X					2	
4.																					
5.																					
6.																					
7.																					
8.																					
9.																					
10.																					

LABORATORY COPY

SPECIAL INSTRUCTIONS

SIGNATURES (Name, Company, Date, Time):

1. Relinquished By: ECI
   Received By: ALS 8/25/11 5:45
2. Relinquished By:
   Received By:

TURNAROUND REQUESTED in Business Days*

Organic, Metals & Inorganic Analysis: X Standard | 5 | 3 | 2 | 1 | SAME DAY

Fuels & Hydrocarbon Analysis: 5 Standard | 3 | 1 | SAME DAY

OTHER: Specify:

* Turnaround request less than standard may incur Rush Charges

Attachment E

Professional Qualifications

Attachment E
Professional Qualifications

ECI | environmental services
www.ecocononline.com

EcoCon, Inc. (ECI) is an environmental services company specializing in consulting and specialty contracting clients throughout the western United States since 2002. We recognize the importance of blending a variety of expertise and experience in order to provide our clients the most effective support in addressing their specific project needs. Our professionals combine a high level of technical ability with a broad understanding of the overall regulatory compliance requirements.

ECI is obligated to maintain a broad understanding of the most current regulatory compliance requirements, local and state permitting requirements and our regions environmental advocacy group's positions. ECI provides our clients the services they require by offering non-biased, practical, realistic solutions while maintaining positive relations with the regulatory community.

Our associates have completed projects including remedial investigation / feasibility studies (RI/FS), remediation design and management, facility regulatory compliance assessments, due diligence assessments, regulatory compliance training, underground storage tank compliance and hazardous materials management as well as many other environmental compliance related matters for clients throughout the west coast in all avenues of business. The varied background of our associates compliments the diverse nature of our clientele, providing better understanding of our client's needs and ultimate goals for their projects.

The information in the following pages outlines our professional experience and capabilities in providing environmental management and consulting services. We appreciate your interest in ECI. At your convenience, please feel free to contact our office should you have any questions regarding this document or for any other reason.

Sincerely,
ECI | environmental services

Stephen M. Spencer
President

Company Licenses & Insurance

EcoCon, Inc. (ECI) is a Washington State licensed corporation. ECI maintains $2,000,000 in general liability, professional liability (E&O) and pollution liability insurance (Insurance Certificate Attached).

Washington State Contractors License Number: ENVIRMS961DT
Washington State UBI Number: 603-088-538
Federal Tax ID Number: 90-0661144

Stephen M. Spencer
President

Mr. Spencer started his career in Portland Oregon the environmental services and construction industry in 1987. Mr. Spencer started his career working for the SRH Group in Portland as an environmental technician while attending college at Portland State. His career continued after leaving SRH to start a small Environmental Services Company with his father, John Spencer, the former Environmental Protection Agency region Administrator (Region 10 - 1980 to 1983). The new company, Creative Environmental Technologies, Inc. (CETI) operating as a small consulting and contracting company from 1994 to 2001 when it was sold to a Sound Environmental Strategies (SES) a Seattle Consulting company. Mr. Spencer continued his career with SES form 2001 to 2002 working as a senior environmental scientist and project manager. Mr. Spencer left SES to start ECI in the fall of 2002. During his career, he has worked on and successfully completed projects in many varied aspects of the environmental industry. During his career, Mr. Spencer has successfully completed projects for clients throughout the west coast. His forte is in facility assessment, due diligence investigation, health & safety program development and remediation management.

Mr. Spencer has established positive working relationships with regulatory agencies throughout the west coast, affording his clients a superior level of confidence in his approach to their specific project.

Mr. Spencer's skills as a project manager frequently result in significant savings in both time and budget to his clients. He is proficient in report writing providing a clear, concise detail of project activities including supporting documents and figures. His client's have ranged from property owners and facility operators to the regulatory agencies. His overall understanding of environmental compliance requirements provides a unique perspective on assessing potential and realized environmental risk and a creative understanding of remediation technique.

P: 253-238-9270 | F: 253-369-6228 | E: info@ecocononline.com

Robin P. Hamlet, L.G. / L.HG
Sr. Project Manager

- State of Washington Licensed Geologist/Hydrogeologist
- Ecology Licensed Washington State Site Assessor
- Ecology Licensed UST Decommissioning Supervisor
- AHERA Licensed Building Inspector
- OSHA Hazardous Materials & Emergency Response Certified

Robin P. Hamlet is a L icensed Geologist and Hydrogeologist in the State of Washington. Mr. Hamlet has 30 years experience in the geo logical sciences with over 25 years providing professional environmental con sulting services. Mr. Hamlet has been in volved with environmental investigations working on Environmental Protection Agency (EPA), United State s Navy and Air Force environmental projects, as a project geologist and project ma nager. As a Senior Project Manager in the private sector, Mr. Hamlet has performed multiple Phase I and Phase II Environmental Site Assessments; including geophysical surveys, soil and groundwater studies and has manag ed the design and impl ementation of soil and groundwater remediation projects.

As a Washington State Licensed U nderground Storage Tank (UST) Decommissioner and Site Assessor, Mr. Hamlet has managed multiple UST decommissioning and remediation project s, has prepared proposals, final report s, budgets, contracts with subcontr actors, negotiated with prospective clients, and coordinated activities with regulatory agencies. Mr. Ha mlet has been involved in training personnel in env ironmental field operations and Health & Safety programs, has working knowledge of state (N W states) a nd federal environmental regulations and the ASTM standards. As an AHERA Building Inspector, Mr. Hamlet has performed hazardou s materials surveys, air monitoring projects as well as providing asbestos abatement projects.

James E. Corcoran, P.E.
Sr. Project Manager / Sr. Project Engineer - Principal, Summit Design Group, LLC

- Bachelor of Science - Civil Engineering - Oregon State University - 1991
- Washington State Registered Professional Engineer – 1999
- OSHA Hazardous Materials & Emergency Response Certified

Mr. Corcoran has 17 years of experience in Civil Engineering and Project Management. For the past three years, Mr. Corcoran has been the principal of a consulting business that provides civil engineering consulting and site development services including:

- Critical Areas Review

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- FEMA floodplain study
- State Environmental Policy Act (SEPA) checklist
- Stormwater Pollution Prevention Plans (SWPPP)
- Spill Prevention, Control, and Countermeasure (SPCC) plans
- Temporary Erosion/Sediment Control (TESC) plans
- Permanent soil stabilization and precise grading plans
- Surface water collection, detention, retention, treatment, and infiltration design
- Construction coordination with utility purveyors
- Site inspection to verify conformance with design intent and contract documents

Mr. Corcoran has pro vided civil engineering consulting and stormwater man agement on residential, commercial, and industrial development projects in multiple Washington state jurisdictions including the City of Tacoma, the City of Lacey, the City of Kent, Pierce County, and King County. Specific projects that Mr. Corcoran provided engineering service include:

- Preparing a TESC plan, SPCC plan, and surfa ce water drainage collection and treatment system for a proposed petroleum products recycling process facility which discharg es to a municipal storm sewer located in the Port of Tacoma
- Preparing a SEPA checklist, TESC plan, SPCC plan and surface water drainage collection and treatment system for a proposed privately owned fuel ing facility, which drains to an environmentally sensitive wetland in the City of Kent.
- Preparing a TESC plan, and permanent surfa ce water drainage rete ntion and tr eatment system, which infiltrate s to sit e soils underlying a proposed commercial retail center in Pierce County.
- Preparing a TESC plan and permanent surface water drainage collection and tre atment system which discharges to a municipal storm sewer in the City of Tacoma.
- Preparing a TESC plan and perma nent surface water drainage colle ction, detention and treatment system for a proposed supermarket and commercial retail center located on the Key Peninsula.

Collette Foley, B.S. Geology
Environmental Scientist / Geologist

- Ecology Licensed Site Assessor
- Ecology Licensed UST Decommissioning Supervisor
- AHERA Licensed Building Inspector
- OSHA Compliance Supervisor
- OSHA Hazardous Materials & Emergency Response Certified

Ms. Foley has been conducting Phase I and II Environmental Site Assessments of commercial, industrial, multi- and single-family residential properties throughout western Washington since 2004. Ms. Foley performs a variety of activities associated with completing due diligence investigations including, but not limited to current and historical site research, regulatory agency file reviews, and subsurface investigations including drilling soil borings and installing monitoring wells to determine the presence and outcome of contamination in soil and groundwater.

Additionally, Ms. Foley completes asbestos "*Good Faith*" surveys prior to demolition or renovation of buildings; conducts project oversight for UST removals; and provides extensive environmental consulting as requested. Ms. Foley received her Bachelors degree in Geology and Environmental Science in 2003 from Pacific Lutheran University and has over two years experience as a field geologist / hydro geologist performing regional hydrogeologic characterization and production well drilling.

Gina Mulderig, B.S. Chemistry
Environmental Scientist / Chemist

- Ecology Licensed Site Assessor
- Ecology Licensed UST Decommissioning Supervisor
- AHERA Licensed Building Inspector
- Certified Erosion and Sediment Control Lead
- OSHA Hazardous Materials & Emergency Response Certified

Ms. Mulderig received her Bachelors degree in Chemistry from the University of Puget Sound in 1979. Ms. Mulderig has been working in the environmental regulatory compliance field since 1985, starting her career with a position as an environmental analyst for Weyerhaeuser Company. Her fifteen year position at Weyerhaeuser required a thorough knowledge of environmental regulatory compliance, focusing on groundwater monitoring, waste water management, storm water management and facility compliance audits.

Ms. Mulderig worked with two local environmental services / consulting firms from 2000 until 2007, greatly increasing her overall regulatory compliance, hydrogeology and environmental engineering knowledge and experience.

Her position with ECI as a Project Manager / Environmental Scientist provides a vast knowledge base to ECI clients in multiple areas of regulatory compliance and environmental science.

P: 253-238-9270 | F: 253-369-6228 | E: info@ecocononline.com

James D. Coppernoll, L.G. / L.HG (Sub-Consultant)
Licensed Geologist / Hydrogeologist

- Washington State Licensed Geologist and Hydrogeologist
- Ecology Licensed Site Assessor

James D. Coppernoll is a Washington State licensed Geologist and Hydrogeologist with thirteen years of experience practicing environmental geology in the Northwest. During his career, Mr. Coppernoll worked with clients ranging from major oil companies and national corporations to local businesses to identify, manage, and resolve their environmental situations and helped local agencies, businesses, and individuals with their environmental, geological, and regulatory issues.

Mr. Coppernoll has conducted various environmental and geological investigations ranging from numerous Phase I Environmental Assessments to contaminated site investigations and remedial planning and implementation as well as land use and development studies in Washington, Oregon, Idaho, Montana, and Alaska, and has frequently acted as a regulatory liaison and client representative in third-party negotiations.

Mr. Coppernoll managed all phases of assessment and remediation at dozens of retail and bulk fuel facilities for major oil companies in the Northwest including: excavation and disposal of contaminated soil; free product recovery; feasibility studies; and design, installation, and operation/maintenance of in-situ soil and ground water remediation systems. Mr. Coppernoll managed many of these sites from initial assessment through remediation and closure with the state.

Mr. Coppernoll has conducted geological investigations and assessments for diverse property development projects in the northwest including landfills, hot springs, and residential properties. The purpose of these assessments and investigations was to provide professional and reliable information for use in developing sensitive areas properties.

Jerry Sawetz, B.S. Environmental Science
Environmental Scientist / Project Manager

- Washington State Site Assessor No. 8057533-U7
- OSHA Hazardous Materials & Emergency Response Certified
- AHERA Licensed Building Inspector

Mr. Sawetz is an Environmental Scientist with over 10 years of professional experience working on and managing projects involving the assessment, characterization and remediation of properties with soil and ground water contamination issues.

Mr. Sawetz began his career in 1998 working under the Superfund Technical Assessment and Response Team (START) contract providing technical assistance on Superfund sites to the Environmental Protection Agency (EPA) Region II Branch in Edison, NJ.

In 2001, Mr. Sawetz began working for the private sector conducting Phase I and Phase II Environmental Site Assessments of commercial, industrial, multi- and single-family residential properties throughout western Washington. Since 2004, the focus of Mr. Sawetz's work has been managing projects involving the characterization and remediation of contaminated soil and ground water. This includes managing all aspects of projects including scope of work development, cost estimation, evaluating subcontractor bids, hiring subcontractors, permitting, soil profiling, budget tracking, overseeing and providing direction to subcontractors and field personnel during field work, selection of appropriate laboratory analysis, coordinating waste disposal, compiling and analyzing analytical data, selecting appropriate cleanup levels, preparing technical reports supporting client objectives, drafting and assisting clients with obtaining regulatory compliance and site closure.

Mr. Sawetz has managed environmental issues at numerous gas station/dry cleaner sites and implemented numerous soil and ground water remedial actions, assisted clients with underground storage tank (UST) removals & fuel system upgrades and closures, performed ground water monitoring, prepared technical reports and assisted clients with regulatory compliance and closure primarily pertaining to compliance with the Model Toxics Control Act (MTCA) and the Department of Ecology (Ecology). Mr. Sawetz has managed numerous sites to closure in the form of No Further Action (NFA) determinations from Ecology.