

May 20, 2011

ECI Project No. 0402-02

W&R Properties, LLC  
C/O JSH Properties  
14900 Interurban Ave South, Ste. 130  
Tukwilla, Washington 98168

Re: **Focused Subsurface Investigation / Site Delineation**  
**705 7<sup>th</sup> Street, Renton, Washington**

Mr. Stansfield:

EconCon, Inc., (ECI), per your request, completed a supplemental Focused Subsurface Investigation / Site Delineation project at 705 - 7<sup>th</sup> Street, Renton, Washington (the "Subject Property"; Figures 1 and 2) on May 9, 2011.

ECI understands that the Subject Property is currently occupied by AIM Aerospace, Inc. (AIM), an aircraft products manufacturer, and is listed as a Large Quantity Generator (LQG) of Hazardous Waste (Resource Conservation & Recovery Act [RCRA] Generator Identification Number WAD060030657).

## **Introduction**

The scope of this investigation was to further characterize soil and groundwater subsurface conditions within in the property boundaries and adjacent rail spur that were previously reported as impacted with chlorinated and non-chlorinated volatile organic compounds (cVOCs & VOCs). Contaminants of concern (COCs) for this project remain cVOCs and VOCs, as identified in AIM Aerospace Large Quantity Generator (LQG) Resource Conservation and Recovery Act (RCRA) waste disposal reports on file with the Washington State Department of Ecology (Ecology).

ECI identified impacted soil and groundwater at boring (B6), located along the western W&R Properties rail spur. This boring location was one of six boring locations completed during a subsurface investigation conducted in March 2011 (Focused Subsurface Investigation – 705 7<sup>th</sup> Street – 041911). Chemical analysis of soil and groundwater samples collected from boring B6

identified Chlorobenzene at concentrations indicative of a release.<sup>1</sup> Also identified in sample B6-H2O were concentrations of Benzene, Vinyl Chloride, trans-1-2-Dichloroethane, and cis-1-2-Dichloroethene. The concentration of Benzene was reported at 7.8 µg/L and Vinyl Chloride at 1.1 µg/L, both exceeding the Washington State Administrative Code (WAC) 173-340 Model Toxic Control Act (MTCA) Method A Cleanup Levels for Ground Water (MTCA-A) CUL of 5 µg/L and 0.2 µg/L respectively. Calculated CULs are determined using the CLARC<sup>2</sup> database tool for Chloroethane, trans-1-2-Dichloroethane, and cis-1-2-Dichloroethene detected in soil and groundwater samples. Boring B6 is located seventy-five feet north and twenty-feet west of the southwest corner of the Subject Property building (Figure 3).

A cursory regulatory review of the western adjacent property, 700 Powell Avenue SW, was completed using an Environmental Data Resources (EDR) ASTM Radius Map Report provided with a Phase I Environmental Site Assessment completed by Environmental Data Recourses – March 26, 2010. No listing identifying hazardous materials handling, storage or disposal were reported. Two businesses were identified at the 700 Powell Avenue SW address, EJ Bartells Co. and Rhem, LLC. EJ Bartells is a provider of insulation, low-to-high temperature refractory, and HVAC product. Rhem, LLC is a wholesale insulation contractor's equipment & supplier of acoustic insulation, basement wall Insulation and attic insulation. Exact operation use of the 700 Powell properties by either company is not known.

The project scope included the following:

- Underground utility location;
- Preparation of site specific health and safety plan;
- Installation of borings to the groundwater interface;
- Collection and analysis of soil and groundwater samples;
- Preparation of Letter Report documenting site activities, observations, analytical results, and their comparison to applicable Washington State regulatory guidelines.

### **Subsurface Investigation**

ECI mobilized to the Subject Property on May 9, 2011 with Washington State Licensed Drilling Contractor ESN with the intent to collect soil and groundwater samples from locations adjacent to the March 2011, boring B6 location (Figure 3). Specifically, samples were obtained adjacent

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<sup>1</sup> WAC 173-340-200 "**Release**" means any intentional or unintentional entry of any hazardous substance into the environment, including but not limited to the abandonment or disposal of containers of hazardous substances.

<sup>2</sup> The Cleanup Levels and Risk Calculation (CLARC) tool is a searchable database developed and maintained by the Washington State Department of Ecology (Ecology). CLARC includes technical information related to the establishment of cleanup levels under the Model Toxics Control Act (MTCA) Cleanup Regulation, chapter 173-340 WAC.

to the western property boundary north, east and south of boring B6 (Figure 3), along the W&R Properties Rail Road Spur. Six borings were completed (B7 through B12) that included the collection and chemical analysis of eight soil samples and six groundwater samples.

Boring B7 was placed approximately 40 feet north of boring B6. Boring B8 was placed approximately 15 feet east of boring B6, immediately adjacent to the AIM building. Boring B9 was placed approximately 35 feet south of boring B6. Boring B10 was placed approximately 75 feet south of boring B6, adjacent to the western property boundary. Boring B11 was placed approximately 125 feet south of boring B6 and the intersection of the southern and western property boundary. Boring B12 was placed 100 feet south and 25 feet east of boring B6, centered by a chain link fence gate on the south end of the property. Boring locations are presented on Figure 3, Attachment A.

### **Soil and Groundwater Sampling Activities**

Soil samples were collected at the soil-groundwater interface, typically between 4 and 6 feet below ground surface (bgs) at each location. Two borings (B7 and B9) were also sampled at 7 to 8' bgs, within the water column. Subsurface conditions at each boring location were generally consistent as gravel from zero to 12 inches bgs, dry to moist silty medium to fine sand with few gravels extending between 4 and 5 feet bgs. Soils were characterized as moist to wet silty fine sand and silt below 5 feet bgs at each location, with the exception of boring B11 where wet conditions were observed below 6 feet bgs and B12 where wet conditions were observed at 3.8 feet bgs. Soil conditions below 7 feet bgs were moist to dry silt. Groundwater observed appeared to be located in a very narrow "perched" lens between 4 and 7 feet bgs.

Soil and groundwater samples were collected by a properly trained environmental professional using industry standard sampling techniques. Using direct push drilling techniques, soil cores were extracted from each soil boring using a two inch diameter by four-foot long stainless steel Macro sampler lined with a disposable acetate liner. Prior to sample collection, each core was examined for field evidence of contaminants (e.g. odor, staining, production of sheen when placed in tap water, etc.).

Soil was extracted from each disposable sample core by the sampling technician donning appropriate person protective equipment including disposable nitrile gloves using EPA sampling method 5035. Each sample was and placed into two laboratory provided 40 milliliter sample containers and assigned a unique sample identifying number and placed in a climate controlled container maintained at 4° Celsius.

Following soil sampling activities, each boring was converted into a temporary groundwater monitoring well using a properly decontaminated one inch .010 inch slot stainless steel well screen. Groundwater samples were collected using a peristaltic pump and low-flow sampling techniques, with new disposable tubing and decontaminated sampling equipment at each location. Groundwater elevation was measured at approximately six feet bgs in borings B1, B2, and B6 and approximately seven feet bgs in borings B3, B4 and B5. Groundwater samples were collected into new, laboratory provided 40 milliliter sample collection bottles. Each sample was assigned a unique sample identifying number and placed in a climate controlled container maintained at 4<sup>o</sup> Celsius.

### **Sample Analysis**

Eight soil samples and six groundwater samples were analyzed for volatile organic compounds (VOCs) by EPA method 8260C<sup>3</sup> by an Ecology accredited mobile laboratory operated by Libby Environmental. Soil samples B8-4-5', B10-4-5', B11-4-5' and B12-4-5' were each reported with non-detectable concentrations, below the laboratory method reporting limit (MRL), for all contaminants of concern. Groundwater samples B11-H2O and B12-H2O were each reported non-detect, below the laboratory method reporting limit, for contaminants of concern.

Soil samples B7-4-5', B7-7-8', B9-4-5' and B9-7-8' were reported containing Chlorobenzene at concentrations of 2.33 milligrams per kilogram (mg/kg), 2.31 mg/kg, 0.15 mg/kg and 0.92 mg/kg respectively.

Groundwater samples B7-H2O, B8-H2O, B9-H2O and B10-H2O were each reported containing Chlorobenzene at concentrations of 1010 µg/L, 2.3 µg/L, 200 µg/L, and 575 µg/L respectively. Groundwater sample B7-H2O was reported containing Vinyl Chloride concentration of 0.29 µg/L. Groundwater samples B7-H2O, B9-H2O and B10-H2O were each reported containing Benzene concentrations of 2.1 µg/L, 2.1 µg/L, and 17 µg/L respectively. Refer to Tables 1 & 2 in the Attachments.

Benzene and Vinyl Chloride have pre-established MTCA-A CUL's. To establish appropriate soil and groundwater CULs for analytes without pre-established CULs, Ecology provides a Cleanup Level and Risk Calculations (CLARC) compendium of technical information related to the calculation of cleanup levels under MTCA. Ecology has compiled and calculated technical information to assist in the development of cleanup levels. User access to technical information

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<sup>3</sup> Method 8260C is a GC/MS method that is used to determine volatile organic compounds in a variety of solid waste matrices. This method is applicable to nearly all types of samples, regardless of water content, including but not limited to various air sampling trapping media, ground and surface water, soils, and sediments.

in the CLARC Information System is initiated by a chemical specific search engine using either the chemical name or Chemical Abstract Service Registry number (CAS#). Using this process, cleanup levels can be determined.

### **Contaminate Identification and Degradation Potential**

ECI reviewed multiple papers published by government entities, educational entities and individuals. The focuses of the review was to determine the insitu degradation potential of the three main contaminants of concern, Chlorobenzene, Benzene and Vinyl Chloride, identified during this investigation.

Most volatile organic compounds discharged into the environment quickly evaporate due to there high vapor pressure and is subsequently degraded atmospherically. As the compounds migrates vertically, biodegradation will lessen do to decreasing oxygen levels.

Chlorobenzene (also known as monochlorobenzene; benzene chloride; benzene monochloride; chlorbenzene; chlorbenzol, phenyl chloride) has been a major industrial chemical for at least the last 50 years. It was historically important in the manufacture of chlorinated pesticides, especially DDT, and in the production of phenol and aniline. Chlorobenzene's current use is primarily as a chemical intermediate in the production of chemicals such as nitrochlorobenzenes and diphenyl oxide. These chemicals are subsequently used in the production of herbicides, dyestuffs, and rubber chemicals. Additionally, monochlorobenzene is used as a solvent in degreasing processes (e.g., in metal cleaning operations), paints, adhesives, waxes and polishes. Chlorobenzene can persists in soil (several months), in air (3.5 days), and water in an aerobic environment (less than 1 day). In an anaerobic environment (groundwater), breakdown can take longer due to limited oxygen levels.

Benzene is a colorless and highly flammable liquid with a sweet smell. Because it is a known carcinogen, its use as an additive in gasoline is now limited, but it is an important industrial solvent and precursor to basic industrial chemicals including drugs, plastics, synthetic rubber, and dyes. Benzene is a natural constituent of crude oil, and is one of the most basic petrochemicals. Benzene can pass into air from water and soil surfaces. Once in the air, benzene reacts with other chemicals and breaks down within a few days. Benzene in the air can also be deposited on the ground by rain or snow. Benzene in water and soil breaks down more slowly. Benzene is slightly soluble in water and can pass through the soil into underground water. Benzene in the environment does not build up in plants or animals.

Vinyl chloride is a chemical intermediate, not a final product. Due to the hazardous nature of vinyl chloride to human health there are no end products that use vinyl chloride in its monomer form. Polyvinyl chloride is very stable, storable, and less acutely hazardous than the monomer. Most of the vinyl chloride that enters the environment comes from vinyl chloride manufacturing or processing plants, which release it into the air or into waste water. Vinyl chloride also is a breakdown product of other synthetic chemicals. Vinyl chloride has entered the environment at hazardous waste sites as a result of improper disposal or leakage from storage containers or spills, but some may result from the breakdown of other chemicals. In addition, vinyl chloride has been found in tobacco smoke at very low levels. Liquid vinyl chloride evaporates easily. Vinyl chloride in water or soil evaporates rapidly if it is near the surface (high oxygen levels). Vinyl chloride in the air breaks down in a few days, resulting in the formation of several other chemicals including hydrochloric acid, formaldehyde, and carbon dioxide. Some vinyl chloride can dissolve in water. Vinyl chloride can migrate to groundwater and can be in groundwater due to the breakdown of other chemicals. Vinyl chloride is unlikely to build up in plants or animals that you might eat.

## **Conclusions**

Chemical analysis of soil samples collected from borings B8, B10, B11 and B12 were each reported non-detect or below the laboratory method reporting limits for COCs. Samples collected from Boring B7 and B9 were each reported containing Chlorobenzene in soil at concentrations exceeding the laboratory MRL.

Groundwater samples collected from Boring B7, B9 and B10 were reported containing Benzene in groundwater at concentrations exceeding the laboratory MRL and in boring B10-H2O in concentrations (17 µg/L) exceeding the MTCA-A cleanup level of 5.0 µg/L. Sample B7-H2O was reported containing Vinyl Chloride at 0.29 µg/L exceeding the MTCA-A cleanup level of 0.2 µg/L. Chlorobenzene was reported in groundwater samples B7-H2O, B8-H2O B9-H2O and B10-H2O.

Based on the analytical data gathered during this subsurface investigation and the previous March 2011 investigation, the impacted soil and groundwater appears localized to the southwestern third of the property (Figure 3). The limit of impacted media on the western adjacent property has not been delineated.

Due to the nature of the impacted media identified, a surface down release is the most likely pathway. Although a specific release time frame can not be established, and operating under the assumption that the release is surface down, the contaminate concentration in water (<2

µg/L to >6000 µg/L), increasing concentrations in soil (S9-4'-0.16 mg/kg and S9-7'-0.92 mg/kg), and high water table (5' bgs +/- 1 foot) indicate a relatively recent release, estimated to be less than 10 years.

The source of the impacted media, extrapolating from the sample results gathered to date, appears to be near boring B6. This determination is made based on the diminishing contaminate concentrations in adjacent borings. The origin of the impacted media may be attributed to improper solvent handling and/or waste solvent management. However, until the western extent of impacted media is delineated, the source of the impacted media is merely a speculation.

While there is not enough data gathered to date to determine exact remediation costs, specifically the delineation of the western extent of impacted media, the information gathered to date provides a northern, southern and to a lesser degree eastern limit to the impacted media. Using the existing data, the Chlorobenzene impacted area appears to be approximately 100 feet (north-south) by 30 feet (east-west) and 6 to 10 feet in depth. The benzene and vinyl chloride impacted areas appear considerably smaller. Establishing a clean up level for Chlorobenzene using the CLARC calculation provided by Ecology and characterization of the western property will be necessary to establish the specific limits of impacted media.

We appreciate the opportunity to provide environmental consulting services to you on this project. If you have any questions or comments regarding this submittal please do not hesitate to contact us at (253) 238-9270.

Respectively Submitted,



Collette A. Foley  
Sr. Environmental Scientist



Stephen Spencer  
Principal

### Enclosures

#### Attachment A

- Figure 1 – Site Location Map
- Figure 2 – Site Topographic Map
- Figure 3 – Sample Location Map
- Figure 4 – Project Photographs

#### Attachment B

- Table 1 – Analytical Results – Soil
- Table 2 – Analytical Results – Groundwater
- MTCA Method A Cleanup Levels – WAC 173-340 Tables 720-1 & 740-1

#### Attachment C

- Boring Logs – 6 Pages

#### Attachment D

- Laboratory Analytical Results
- Contaminate Fact Sheets

#### Attachment E

- Professional Qualifications

### References

- Chlorobenzene Pathway Map – Degradation – Ryan McLeish, University of Minnesota, January 24, 2011
- Department of Microbiology, Swiss Federal Institute for Environmental Science and Technology (EAWAG), CH-8600 Duebendorf, Switzerland; Werlen et al., 1996
- U.S. Agency for Toxic Substances and Disease Registry (ATSDR) – General Publications



# Attachment A

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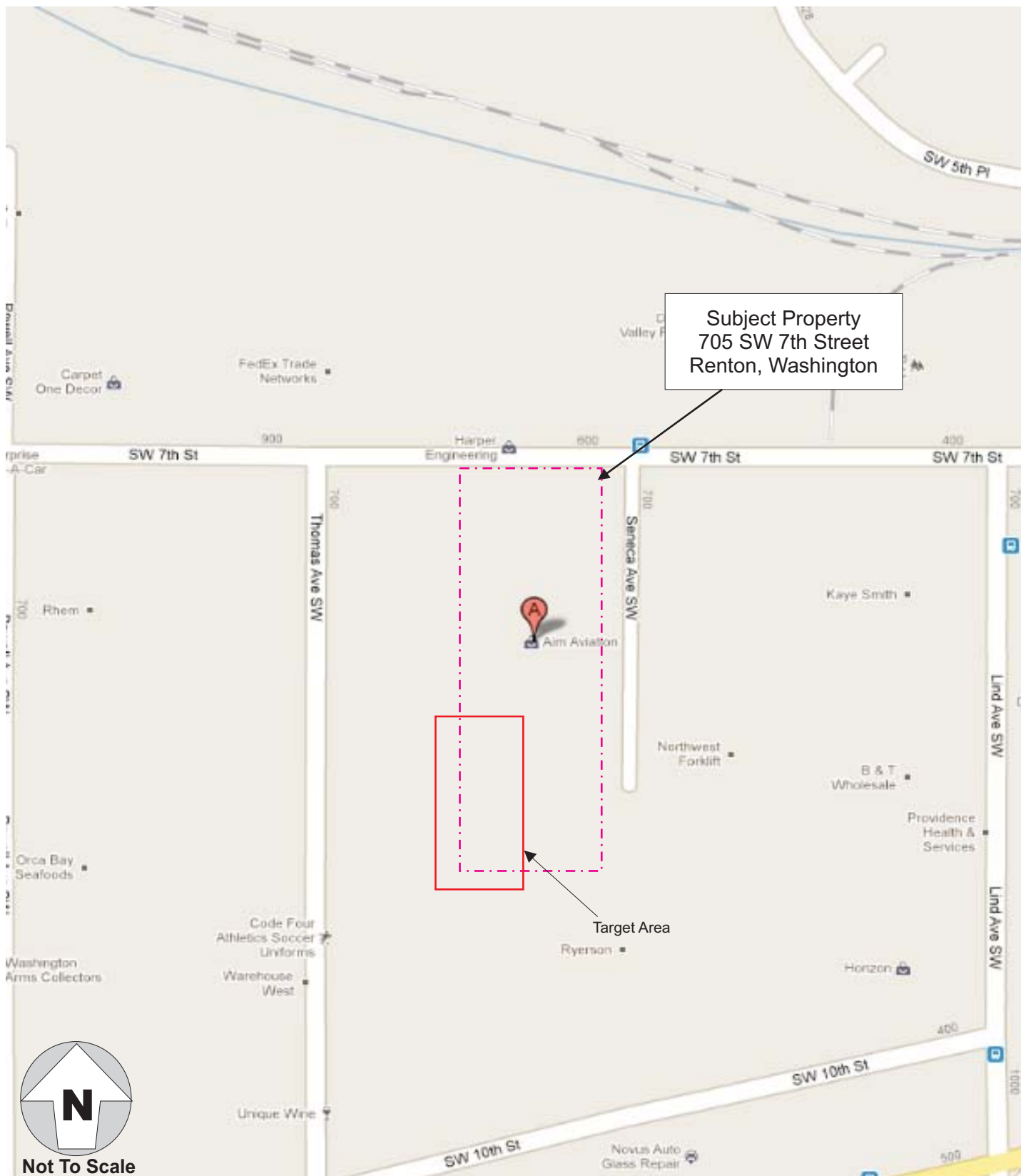
## List Of Figures

Figure 1- Site Location Map

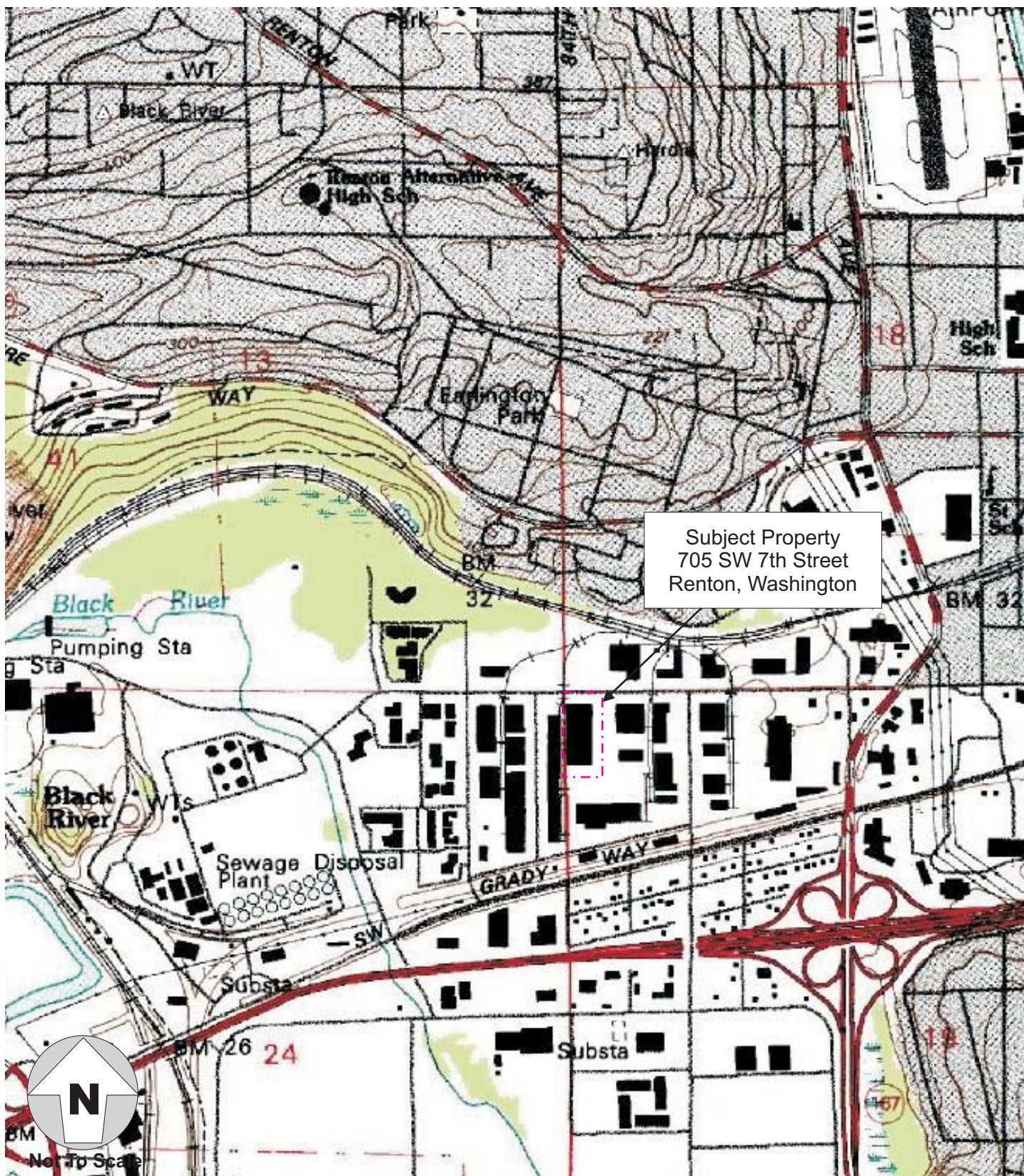
Figure 2 - Topographic Map

Figure 3 - Boring Location Map

Figure 4 - Project Photos









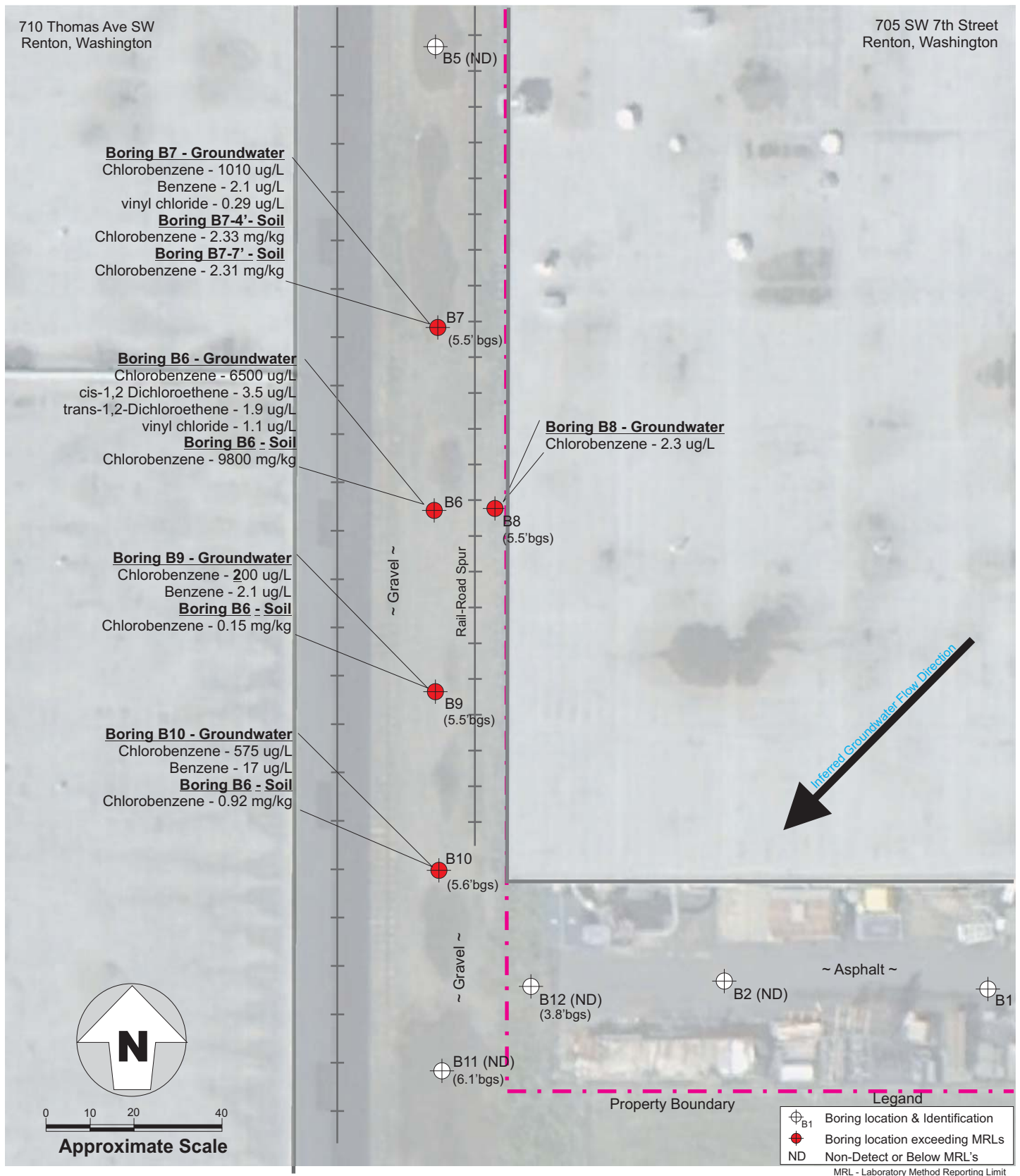




Photo 01 - Boring location B7 - View north



Photo 02 - Boring location B8 - View north



Photo 03 - Boring location B3 - View north



Photo 04 - Boring B10 - View north



Photo 05 - Boring location B11 - View northeast



Photo 06 - Boring location B12 - View west

# Attachment B

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## Project Tables

Table 1 - Soil Sample Analytical Results

Table 2 - Groundwater Sample Analytical Results

5/12/2011

Sample Number	Sample Location	Sample Depth	Sample Date	Select Volatile Organic Compounds by EPA Method 8260									
				Vinyl Chloride	Chlorobenzene	Benzene	Methylene Chloride	trans-1,2-Dichloroethene	cis 1,2- Dichloroethene	1,2- Dichloroethane	1,1,1-Trichloroethane	Trichloroethene	Tetrachloroethene
		(feet bgs)		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
B7-4'	Boring B7	4'-5' bgs	5/9/2011	<0.02	<u>2.33</u>	<0.028	<0.02	<0.02	<0.02	<0.005	<0.02	<0.03	<0.02
B7-7'	Boring B7	7-8' bgs	5/9/2011	<0.02	<u>2.31</u>	<0.028	<0.02	<0.02	<0.02	<0.005	<0.02	<0.03	<0.02
B8-4'	Boring B8	4-5' bgs	5/9/2011	<0.02	<0.02	<0.028	<0.02	<0.02	<0.02	<0.005	<0.02	<0.03	<0.02
B9-4'	Boring B9	4-5' bgs	5/9/2011	<0.02	<u>0.15</u>	<0.028	<0.02	<0.02	<0.02	<0.005	<0.02	<0.03	<0.02
B9-7'	Boring B9	7-8' bgs	5/9/2011	<0.02	<u>0.92</u>	<0.028	<0.02	<0.02	<0.02	<0.005	<0.02	<0.03	<0.02
B10-4'	Boring B10	4-5' bgs	5/9/2011	<0.02	<0.02	<0.028	<0.02	<0.02	<0.02	<0.005	<0.02	<0.03	<0.02
B11-4.5'	Boring B11	4.5-5' bgs	5/9/2011	<0.02	<0.02	<0.028	<0.02	<0.02	<0.02	<0.005	<0.02	<0.03	<0.02
B12-5'	Boring B12	5-6' bgs	5/9/2011	<0.02	<0.02	<0.028	<0.02	<0.02	<0.02	<0.005	<0.02	<0.03	<0.02
B12-5' (Duplicate)	Boring B12	5-6' bgs	5/9/2011	<0.02	<0.02	<0.028	<0.02	<0.02	<0.02	<0.005	<0.02	<0.03	<0.02
Laboratory Method Reporting Limits				0.02	0.02	0.028	0.02	0.02	0.02	0.01	0.02	0.03	0.02

Values are reported in milligrams per kilograms (mg/kg).

< # (ND) = analyte not detected above the analytical method detection limit cited.

bgs=below ground surface

NA=Not Applicable

5/12/2011

Sample Number	Sample Location	Sample Depth (bgs)	Sample Date	Select Volatile Organic Compounds by EPA Method 8260									
				Vinyl Chloride	Chlorobenzene	Benzene	Methylene Chloride	trans-1,2-Dichloroethene	cis 1,2- Dichloroethene	1,2- Dichloroethane	1,1,1-Trichloroethane	Trichloroethene	Tetrachloroethene
				ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
B7-H2O	Boring 7	5.5' bgs	5/9/2011	<b><u>0.29</u></b>	<b><u>1010</u></b>	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
B8-H2O	Boring 8	5.6' bgs	5/9/2011	<0.2	<b><u>2.3</u></b>	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
B9-H2O	Boring 9	5.5' bgs	5/9/2011	<0.2	<b><u>200</u></b>	<b><u>2.1</u></b>	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
B10-H2O	Boring 10	5.6' bgs	5/9/2011	<0.2	<b><u>575</u></b>	<b><u>17.0</u></b>	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
B11-H2O	Boring 11	6.1' bgs	5/9/2011	<0.2	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
B12-H2O	Boring 12	3.8' bgs	5/9/2011	<0.2	<2.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Laboratory Method Reporting Limits				<0.2	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

Values are reported in micrograms per liter (ug/L).

< # (ND) = analyte not detected above the analytical method detection limit cited.

bgs=below ground surface

NA=Not Applicable

Shaded/**BOLD**/Underlined Area = Analyte exceeding MRL



**Table 740-1**  
**Method A Soil Cleanup Levels**  
**for Unrestricted Land Uses.<sup>a</sup>**

Hazardous Substance	CAS Number	Cleanup Level
Arsenic	7440-38-2	20 mg/kg <sup>b</sup>
Benzene	71-43-2	0.03 mg/kg <sup>c</sup>
Benzo(a)pyrene	50-32-8	0.1 mg/kg <sup>d</sup>
Cadmium	7440-43-9	2 mg/kg <sup>e</sup>
Chromium		
Chromium VI	18540-29-9	19 mg/kg <sup>f1</sup>
Chromium III	16065-83-1	2,000 mg/kg <sup>f2</sup>
DDT	50-29-3	3 mg/kg <sup>g</sup>
Ethylbenzene	100-41-4	6 mg/kg <sup>h</sup>
Ethylene dibromide (EDB)	106-93-4	0.005 mg/kg <sup>i</sup>
Lead	7439-92-1	250 mg/kg <sup>j</sup>
Lindane	58-89-9	0.01 mg/kg <sup>k</sup>
Methylene chloride	75-09-2	0.02 mg/kg <sup>l</sup>
Mercury (inorganic)	7439-97-6	2 mg/kg <sup>m</sup>
MTBE	1634-04-4	0.1 mg/kg <sup>n</sup>
Naphthalenes	91-20-3	5 mg/kg <sup>o</sup>
PAHs (carcinogenic)		See benzo(a)pyrene <sup>d</sup>
PCB Mixtures		1 mg/kg <sup>p</sup>
Tetrachloroethylene	127-18-4	0.05 mg/kg <sup>q</sup>
Toluene	108-88-3	7 mg/kg <sup>r</sup>
Total Petroleum Hydrocarbons <sup>s</sup>		
[Note: Must also test for and meet cleanup levels for other petroleum components--see footnotes!]		
Gasoline Range Organics		
Gasoline mixtures without benzene and the total of ethyl benzene, toluene and xylene are less than 1% of the gasoline mixture		100 mg/kg
All other gasoline mixtures		30 mg/kg
Diesel Range Organics		2,000 mg/kg
Heavy Oils		2,000 mg/kg
Mineral Oil		4,000 mg/kg
1,1,1 Trichloroethane	71-55-6	2 mg/kg <sup>t</sup>
Trichloroethylene	79-01-6	0.03 mg/kg <sup>u</sup>
Xylenes	1330-20-7	9 mg/kg <sup>v</sup>

**Footnotes:**

- a Caution on misusing this table.** This table has been developed for specific purposes. It is intended to provide conservative cleanup levels for sites undergoing routine cleanup actions or for sites with relatively few hazardous substances, and the site qualifies under WAC 173-340-7491 for an exclusion from conducting a simplified or site-specific terrestrial ecological evaluation, or it can be demonstrated using a terrestrial ecological evaluation under WAC 173-340-7492 or 173-340-7493 that the values in this table are ecologically protective for the site. This table may not be appropriate for defining cleanup levels at other sites. For these reasons, the values in this table should not automatically be used to define cleanup levels that must be met for financial, real estate, insurance coverage or placement, or similar transactions or purposes. Exceedances of the values in this table do not necessarily mean the soil must be restored to these levels at a site. The level of restoration depends on the remedy selected under WAC 173-340-350 through 173-340-390.
- b Arsenic.** Cleanup level based on direct contact using Equation 740-2 and protection of ground water for drinking water use using the procedures in WAC 173-340-747(4), adjusted for natural background for soil.
- c Benzene.** Cleanup level based on protection of ground water for drinking water use, using the procedures in WAC 173-340-747(4) and (6).
- d Benzo(a)pyrene.** Cleanup level based on direct contact using Equation 740-2. If other carcinogenic PAHs are suspected of being present at the site, test for them and use this value as the total concentration that all carcinogenic PAHs must meet using the toxicity equivalency methodology in WAC 173-340-708(8).
- e Cadmium.** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4), adjusted for the practical quantitation limit for soil.
- f1 Chromium VI.** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4).
- f2 Chromium III.** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4). Chromium VI must also be tested for and the cleanup level met when present at a site.
- g DDT (dichlorodiphenyltrichloroethane).** Cleanup level based on direct contact using Equation 740-2.
- h Ethylbenzene.** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4).
- i Ethylene dibromide (1,2 dibromoethane or EDB).** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4) and adjusted for the practical quantitation limit for soil.
- j Lead.** Cleanup level based on preventing unacceptable blood lead levels.
- k Lindane.** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4), adjusted for the practical quantitation limit.
- l Methylene chloride (dichloromethane).** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4).
- m Mercury.** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4).
- n Methyl tertiary-butyl ether (MTBE).** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4).
- o Naphthalenes.** Cleanup level based on protection of ground water for drinking water use, using the procedures described in WAC 173-340-747(4). This is a total value for naphthalene, 1-methyl naphthalene and 2-methyl naphthalene.
- p PCB Mixtures.** Cleanup level based on applicable federal law (40 C.F.R. 761.61). This is a total value for all PCBs.

**Table 720-1**  
**Method A Cleanup Levels for Ground Water.<sup>a</sup>**

Hazardous Substance	CAS Number	Cleanup Level
Arsenic	7440-38-2	5 ug/liter <sup>b</sup>
Benzene	71-43-2	5 ug/liter <sup>c</sup>
Benzo(a)pyrene	50-32-8	0.1 ug/liter <sup>d</sup>
Cadmium	7440-43-9	5 ug/liter <sup>e</sup>
Chromium (Total)	7440-47-3	50 ug/liter <sup>f</sup>
DDT	50-29-3	0.3 ug/liter <sup>g</sup>
1,2 Dichloroethane (EDC)	107-06-2	5 ug/liter <sup>h</sup>
Ethylbenzene	100-41-4	700 ug/liter <sup>i</sup>
Ethylene dibromide (EDB)	106-93-4	0.01 ug/liter <sup>j</sup>
Gross Alpha Particle Activity		15 pCi/liter <sup>k</sup>
Gross Beta Particle Activity		4 mrem/yr <sup>l</sup>
Lead	7439-92-1	15 ug/liter <sup>m</sup>
Lindane	58-89-9	0.2 ug/liter <sup>n</sup>
Methylene chloride	75-09-2	5 ug/liter <sup>o</sup>
Mercury	7439-97-6	2 ug/liter <sup>p</sup>
MTBE	1634-04-4	20 ug/liter <sup>q</sup>
Naphthalenes	91-20-3	160 ug/liter <sup>r</sup>
PAHs (carcinogenic)		See benzo(a)pyrene <sup>d</sup>
PCB mixtures		0.1 ug/liter <sup>s</sup>
Radium 226 and 228		5 pCi/liter <sup>t</sup>
Radium 226		3 pCi/liter <sup>u</sup>
Tetrachloroethylene	127-18-4	5 ug/liter <sup>v</sup>
Toluene	108-88-3	1,000 ug/liter <sup>w</sup>
Total Petroleum Hydrocarbons <sup>x</sup>		
[Note: Must also test for and meet cleanup levels for other petroleum components--see footnotes!]		
Gasoline Range Organics		
Benzene present in ground water		800 ug/liter
No detectable benzene in ground water		1,000 ug/liter
Diesel Range Organics		
Heavy Oils		500 ug/liter
Mineral Oil		500 ug/liter
1,1,1 Trichloroethane	71-55-6	200 ug/liter <sup>y</sup>
Trichloroethylene	79-01-6	5 ug/liter <sup>z</sup>
Vinyl chloride	75-01-4	0.2 ug/liter <sup>aa</sup>
Xylenes	1330-20-7	1,000 ug/liter <sup>bb</sup>

**Footnotes:**

- a Caution on misusing this table.** This table has been developed for specific purposes. It is intended to provide conservative cleanup levels for drinking water beneficial uses at sites undergoing routine cleanup actions or those sites with relatively few hazardous substances. This table may not be appropriate for defining cleanup levels at other sites. For these reasons, the values in this table should not automatically be used to define cleanup levels that must be met for financial, real estate, insurance coverage or placement, or similar transactions or purposes. Exceedances of the values in this table do not necessarily mean the ground water must be restored to those levels at all sites. The level of restoration depends on the remedy selected under WAC 173-340-350 through 173-340-390.
- b Arsenic.** Cleanup level based on background concentrations for state of Washington.
- c Benzene.** Cleanup level based on applicable state and federal law (WAC 246-290-310 and 40 C.F.R. 141.61).
- d Benzo(a)pyrene.** Cleanup level based on applicable state and federal law (WAC 246-290-310 and 40 C.F.R. 141.61), adjusted to a  $1 \times 10^{-5}$  risk. If other carcinogenic PAHs are suspected of being present at the site, test for them and use this value as the total concentration that all carcinogenic PAHs must meet using the toxicity equivalency methodology in WAC 173-340-708(8).
- e Cadmium.** Cleanup level based on applicable state and federal law (WAC 246-290-310 and 40 C.F.R. 141.62).
- f Chromium (Total).** Cleanup level based on concentration derived using Equation 720-1 for hexavalent chromium. This is a total value for chromium III and chromium VI. If just chromium III is present at the site, a cleanup level of 100 ug/l may be used (based on WAC 246-290-310 and 40 C.F.R. 141.62).
- g DDT (dichlorodiphenyltrichloroethane).** Cleanup levels based on concentration derived using Equation 720-2.
- h 1,2 Dichloroethane (ethylene dichloride or EDC).** Cleanup level based on applicable state and federal law (WAC 246-290-310 and 40 C.F.R. 141.61).
- i Ethylbenzene.** Cleanup level based on applicable state and federal law (WAC 246-290-310 and 40 C.F.R. 141.61).
- j Ethylene dibromide (1,2 dibromoethane or EDB).** Cleanup level based on concentration derived using Equation 720-2, adjusted for the practical quantitation limit.
- k Gross Alpha Particle Activity, excluding uranium.** Cleanup level based on applicable state and federal law (WAC 246-290-310 and 40 C.F.R. 141.15).
- l Gross Beta Particle Activity, including gamma activity.** Cleanup level based on applicable state and federal law (WAC 246-290-310 and 40 C.F.R. 141.15).
- m Lead.** Cleanup level based on applicable state and federal law (40 C.F.R. 141.80).
- n Lindane.** Cleanup level based on applicable state and federal law (WAC 246-290-310 and 40 C.F.R. 141.61).
- o Methylene chloride (dichloromethane).** Cleanup level based on applicable state and federal law (WAC 246-290-310 and 40 C.F.R. 141.61).
- p Mercury.** Cleanup level based on applicable state and federal law (WAC 246-290-310 and 40 C.F.R. 141.62).
- q Methyl tertiary-butyl ether (MTBE).** Cleanup level based on federal drinking water advisory level (EPA-822-F-97-009, December 1997).
- r Naphthalenes.** Cleanup level based on concentration derived using Equation 720-1. This is a total value for naphthalene, 1-methyl naphthalene and 2-methyl naphthalene.
- s PCB mixtures.** Cleanup level based on concentration derived using Equation 720-2, adjusted for the practical quantitation limit. This cleanup level is a total value for all PCBs.
- t Radium 226 and 228.** Cleanup level based on applicable state and federal law (WAC 246-290-310 and 40 C.F.R. 141.15).
- u Radium 226.** Cleanup level based on applicable state law (WAC 246-290-310).

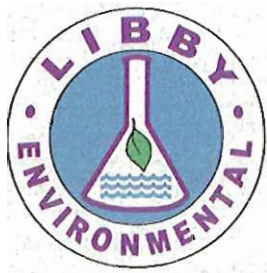
# Attachment C

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Analytical Results

Sample Analytical Results

Sample Chain Of Custody



# Libby Environmental, Inc.

4139 Libby Road NE • Olympia, WA 98506-2518

May 11, 2011

Steve Spencer  
Ecocon  
P.O. Box 153  
Fox Island, WA 98333

Dear Mr. Spencer:

Please find enclosed the analytical data report for the W&R #3 Project located in Renton, Washington. Soil and water samples were analyzed for Volatile Organic Compounds by EPA Method 8260C on May 9, 2011.

The results of the analyses are summarized in the attached tables. Applicable detection limits and QA/QC data are included. All soil samples are reported on a dry weight basis. An invoice for this analytical work is enclosed.

Libby Environmental, Inc. appreciates the opportunity to have provided analytical services for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

A handwritten signature in black ink, appearing to read "Sherry L. Chilcutt".

Sherry L. Chilcutt  
*President*  
*Libby Environmental, Inc.*

# LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

W&R #3 PROJECT  
 Renton, Washington  
 EMS  
 Libby Project No. L110509-10

## VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260C IN SOIL

Sample Description		Method Blank	B7-7-8'	B7-4'	B8-4'	B9-4'	B9-7'
Date Sampled	Reporting	N/A	5/9/11	5/9/11	5/9/11	5/9/11	5/9/11
Date Analyzed	Limits	5/9/11	5/9/11	5/9/11	5/9/11	5/9/11	5/9/11
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Dichlorodifluoromethane	0.06	nd	nd	nd	nd	nd	nd
Chloromethane	0.06	nd	nd	nd	nd	nd	nd
Vinyl chloride	0.02	nd	nd	nd	nd	nd	nd
Bromomethane	0.09	nd	nd	nd	nd	nd	nd
Chloroethane	0.06	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	0.05	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	nd	nd	nd	nd	nd
Methylene chloride	0.02	nd	nd	nd	nd	nd	nd
Methyl <i>tert</i> - Butyl Ether (MTBE)	0.02	nd	nd	nd	nd	nd	nd
<i>trans</i> -1,2-Dichloroethene	0.02	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.02	nd	nd	nd	nd	nd	nd
2,2-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd
<i>cis</i> -1,2-Dichloroethene	0.02	nd	nd	nd	nd	nd	nd
Chloroform	0.02	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	0.02	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	0.02	nd	nd	nd	nd	nd	nd
1,1-Dichloropropene	0.02	nd	nd	nd	nd	nd	nd
Benzene	0.028	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	0.03	nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	0.03	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	0.02	nd	nd	nd	nd	nd	nd
Dibromomethane	0.04	nd	nd	nd	nd	nd	nd
Bromodichloromethane	0.02	nd	nd	nd	nd	nd	nd
<i>cis</i> -1,3-Dichloropropene	0.02	nd	nd	nd	nd	nd	nd
Toluene	0.10	nd	nd	nd	nd	nd	nd
Trans-1,3-Dichloropropene	0.03	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	0.03	nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd	nd	nd	nd	nd	nd
1,3-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd
Dibromochloromethane	0.03	nd	nd	nd	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.005	nd	nd	nd	nd	nd	nd
Chlorobenzene	0.02	nd	2.31	2.33	nd	0.15	0.92
1,1,1,2-Tetrachloroethane	0.03	nd	nd	nd	nd	nd	nd
Ethylbenzene	0.04	nd	nd	nd	nd	nd	nd
Total Xylenes	0.08	nd	nd	nd	nd	nd	nd
Styrenes	0.02	nd	nd	nd	nd	nd	nd

# LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

W&R #3 PROJECT  
Renton, Washington  
EMS  
Libby Project No. L110509-10

## VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260C IN SOIL

Sample Description		Method Blank	B7-7-8'	B7-4'	B8-4'	B9-4'	B9-7'
Date Sampled	Reporting	N/A	5/9/11	5/9/11	5/9/11	5/9/11	5/9/11
Date Analyzed	Limits	5/9/11	5/9/11	5/9/11	5/9/11	5/9/11	5/9/11
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Bromoform	0.02	nd	nd	nd	nd	nd	nd
Isopropylbenzene	0.08	nd	nd	nd	nd	nd	nd
1,2,3-Trichloropropane	0.02	nd	nd	nd	nd	nd	nd
Bromobenzene	0.03	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.02	nd	nd	nd	nd	nd	nd
n-Propylbenzene	0.02	nd	nd	nd	nd	nd	nd
2-Chlorotoluene	0.02	nd	nd	nd	nd	nd	nd
4-Chlorotoluene	0.02	nd	nd	nd	nd	nd	nd
1,3,5-Trimethylbenzene	0.02	nd	nd	nd	nd	nd	nd
tert-Butylbenzene	0.02	nd	nd	nd	nd	nd	nd
1,2,4-Trimethylbenzene	0.02	nd	nd	nd	nd	nd	nd
sec-Butylbenzene	0.02	nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	0.02	nd	nd	nd	nd	nd	nd
Isopropyltoluene	0.02	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	0.02	nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	0.02	nd	nd	nd	nd	nd	nd
n-Butylbenzene	0.02	nd	nd	nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	0.03	nd	nd	nd	nd	nd	nd
1,2,4-Trichlorobenzene	0.05	nd	nd	nd	nd	nd	nd
Hexachloro-1,3-butadiene	0.10	nd	nd	nd	nd	nd	nd
Naphthalene	0.05	nd	nd	nd	nd	nd	nd
1,2,3-Trichlorobenzene	1.0	nd	nd	nd	nd	nd	nd
<b>Surrogate Recovery</b>							
Dibromofluoromethane		113	95.7	105	111	98.8	106
1,2-Dichloroethane-d4		92.6	89.4	105	115	99.8	115
Toluene-d8		93.8	91.2	96.1	104	99.4	97.0
4-Bromofluorobenzene		108	110	108	117	115	113

"nd" Indicates not detected at listed detection limit.

"int" Indicates that interference prevents determination.

\* INSTRUMENT DETECTION LIMIT

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Sherry Chilcutt

## LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

W&R #3 PROJECT  
Renton, Washington  
EMS  
Libby Project No. L110509-10

### QA/QC Data - EPA 8260C Analyses

Sample Identification: B8-4'							
Matrix Spike			Matrix Spike Duplicate			RPD	
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	
1,1-Dichloroethene	0.50	0.66	132	0.50	0.64	128	3.1
Benzene	0.50	0.64	128	0.50	0.62	124	3.2
Toluene	0.50	0.67	134	0.50	0.64	128	4.6
Chlorobenzene	0.50	0.64	128	0.50	0.65	130	1.6
Trichloroethene (TCE)	0.50	0.61	122	0.50	0.63	126	3.2
Surrogate Recovery							
Dibromofluoromethane			108			97	
1,2-Dichloroethane-d4			102			67	
Toluene-d8			93			95	
4-Bromofluorobenzene			110			99	
Laboratory Control Sample							
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)				
1,1-Dichloroethene	0.50	0.67	134				
Benzene	0.50	0.65	130				
Toluene	0.50	0.66	132				
Chlorobenzene	0.50	0.64	127				
Trichloroethene (TCE)	0.50	0.63	126				
Surrogate Recovery							
Dibromofluoromethane			114				
1,2-Dichloroethane-d4			106				
Toluene-d8			98.4				
4-Bromofluorobenzene			109				

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%  
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Sherry Chilcutt

# LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

W&R #3 PROJECT  
 Renton, Washington  
 EMS  
 Libby Project No. L110509-10

## VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260C IN SOIL

Sample Description		B10-4'	B11-4.5'	B12-5	B12-5 Dup
Date Sampled	Reporting	5/9/11	5/9/11	5/9/11	5/9/11
Date Analyzed	Limits	5/9/11	5/9/11	5/9/11	5/9/11
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Dichlorodifluoromethane	0.06	nd	nd	nd	nd
Chloromethane	0.06	nd	nd	nd	nd
Vinyl chloride	0.02	nd	nd	nd	nd
Bromomethane	0.09	nd	nd	nd	nd
Chloroethane	0.06	nd	nd	nd	nd
Trichlorofluoromethane	0.05	nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	nd	nd	nd
Methylene chloride	0.02	nd	nd	nd	nd
Methyl <i>tert</i> - Butyl Ether (MTBE)	0.02	nd	nd	nd	nd
<i>trans</i> -1,2-Dichloroethene	0.02	nd	nd	nd	nd
1,1-Dichloroethane	0.02	nd	nd	nd	nd
2,2-Dichloropropane	0.05	nd	nd	nd	nd
<i>cis</i> -1,2-Dichloroethene	0.02	nd	nd	nd	nd
Chloroform	0.02	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	0.02	nd	nd	nd	nd
Carbon tetrachloride	0.02	nd	nd	nd	nd
1,1-Dichloropropene	0.02	nd	nd	nd	nd
Benzene	0.028	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	0.03	nd	nd	nd	nd
Trichloroethene (TCE)	0.03	nd	nd	nd	nd
1,2-Dichloropropane	0.02	nd	nd	nd	nd
Dibromomethane	0.04	nd	nd	nd	nd
Bromodichloromethane	0.02	nd	nd	nd	nd
<i>cis</i> -1,3-Dichloropropene	0.02	nd	nd	nd	nd
Toluene	0.10	nd	nd	nd	nd
Trans-1,3-Dichloropropene	0.03	nd	nd	nd	nd
1,1,2-Trichloroethane	0.03	nd	nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd	nd	nd	nd
1,3-Dichloropropane	0.05	nd	nd	nd	nd
Dibromochloromethane	0.03	nd	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.005	nd	nd	nd	nd
Chlorobenzene	0.02	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.03	nd	nd	nd	nd
Ethylbenzene	0.04	nd	nd	nd	nd
Total Xylenes	0.08	nd	nd	nd	nd
Styrenes	0.02	nd	nd	nd	nd



# LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

W&R #3 PROJECT  
 Renton, Washington  
 EMS  
 Libby Project No. L110509-10

## VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260C IN SOIL

Sample Description		B10-4'	B11-4.5'	B12-5	B12-5 Dup
Date Sampled	Reporting	5/9/11	5/9/11	5/9/11	5/9/11
Date Analyzed	Limits	5/9/11	5/9/11	5/9/11	5/9/11
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Bromoform	0.02	nd	nd	nd	nd
Isopropylbenzene	0.08	nd	nd	nd	nd
1,2,3-Trichloropropane	0.02	nd	nd	nd	nd
Bromobenzene	0.03	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.02	nd	nd	nd	nd
n-Propylbenzene	0.02	nd	nd	nd	nd
2-Chlorotoluene	0.02	nd	nd	nd	nd
4-Chlorotoluene	0.02	nd	nd	nd	nd
1,3,5-Trimethylbenzene	0.02	nd	nd	nd	nd
tert-Butylbenzene	0.02	nd	nd	nd	nd
1,2,4-Trimethylbenzene	0.02	nd	nd	nd	nd
sec-Butylbenzene	0.02	nd	nd	nd	nd
1,3-Dichlorobenzene	0.02	nd	nd	nd	nd
Isopropyltoluene	0.02	nd	nd	nd	nd
1,4-Dichlorobenzene	0.02	nd	nd	nd	nd
1,2-Dichlorobenzene	0.02	nd	nd	nd	nd
n-Butylbenzene	0.02	nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	0.03	nd	nd	nd	nd
1,2,4-Trichlorobenzene	0.05	nd	nd	nd	nd
Hexachloro-1,3-butadiene	0.10	nd	nd	nd	nd
Naphthalene	0.05	nd	nd	nd	nd
1,2,3-Trichlorobenzene	1.0	nd	nd	nd	nd
Surrogate Recovery					
Dibromofluoromethane		110	108	102	105
1,2-Dichloroethane-d4		122	111	99.2	101
Toluene-d8		96.2	97.6	93.4	94.1
4-Bromofluorobenzene		120	116	111	109

"nd" Indicates not detected at listed detection limit.

"int" Indicates that interference prevents determination.

\* INSTRUMENT DETECTION LIMIT

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Sherry Chilcutt

# LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

W&R #3 PROJECT  
 Renton, Washington  
 EMS  
 Libby Project No. L110509-10

## VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260C IN WATER

Sample Description		Method Blank	B7-H2O	B8-H2O	B9-H2O	B10-H2O	B11-H2O
Date Sampled	Reporting	N/A	5/9/11	5/9/11	5/9/11	5/9/11	5/9/11
Date Analyzed	Limits	5/9/11	5/9/11	5/9/11	5/9/11	5/9/11	5/9/11
	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Dichlorodifluoromethane	2.0	nd	nd	nd	nd	nd	nd
Chloromethane	2.0	nd	nd	nd	nd	nd	nd
Vinyl chloride	0.2	nd	0.29	nd	nd	nd	nd
Bromomethane	2.0	nd	nd	nd	nd	nd	nd
Chloroethane	2.0	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	2.0	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	2.0	nd	nd	nd	nd	nd	nd
Methylene chloride	2.0	nd	nd	nd	nd	nd	nd
Methyl <i>tert</i> - Butyl Ether (MTBE)	5.0	nd	nd	nd	nd	nd	nd
<i>trans</i> -1,2-Dichloroethene	1.0	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	1.0	nd	nd	nd	nd	nd	nd
2,2-Dichloropropane	2.0	nd	nd	nd	nd	nd	nd
<i>cis</i> -1,2-Dichloroethene	1.0	nd	nd	nd	nd	nd	nd
Chloroform	1.0	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	1.0	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	1.0	nd	nd	nd	nd	nd	nd
1,1-Dichloropropene	1.0	nd	nd	nd	nd	nd	nd
Benzene	1.0	nd	2.1	nd	2.1	17	nd
1,2-Dichloroethane (EDC)	1.0	nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	1.0	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	1.0	nd	nd	nd	nd	nd	nd
Dibromomethane	1.0	nd	nd	nd	nd	nd	nd
Bromodichloromethane	1.0	nd	nd	nd	nd	nd	nd
<i>cis</i> -1,3-Dichloropropene	1.0	nd	nd	nd	nd	nd	nd
Toluene	1.0	nd	nd	nd	nd	nd	nd
<i>Trans</i> -1,3-Dichloropropene	1.0	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	1.0	nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	1.0	nd	nd	nd	nd	nd	nd
1,3-Dichloropropane	1.0	nd	nd	nd	nd	nd	nd
Dibromochloromethane	1.0	nd	nd	nd	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.01	nd	nd	nd	nd	nd	nd
Chlorobenzene	1.0	nd	1010	2.3	200	575	nd
1,1,1,2-Tetrachloroethane	1.0	nd	nd	nd	nd	nd	nd
Ethylbenzene	1.0	nd	nd	nd	nd	nd	nd
Total Xylenes	2.0	nd	nd	nd	nd	nd	nd
Styrenes	1.0	nd	nd	nd	nd	nd	nd

# LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

W&R #3 PROJECT  
Renton, Washington  
EMS  
Libby Project No. L110509-10

## VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260C IN WATER

Sample Description		Method Blank	B7-H2O	B8-H2O	B9-H2O	B10-H2O	B11-H2O
Date Sampled	Reporting	N/A	5/9/11	5/9/11	5/9/11	5/9/11	5/9/11
Date Analyzed	Limits	5/9/11	5/9/11	5/9/11	5/9/11	5/9/11	5/9/11
	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Bromoform	1.0	nd	nd	nd	nd	nd	nd
Isopropylbenzene	4.0	nd	nd	nd	nd	nd	nd
1,2,3-Trichloropropane	1.0	nd	nd	nd	nd	nd	nd
Bromobenzene	1.0	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	1.0	nd	nd	nd	nd	nd	nd
n-Propylbenzene	1.0	nd	nd	nd	nd	nd	nd
2-Chlorotoluene	1.0	nd	nd	nd	nd	nd	nd
4-Chlorotoluene	1.0	nd	nd	nd	nd	nd	nd
1,3,5-Trimethylbenzene	1.0	nd	nd	nd	nd	nd	nd
tert-Butylbenzene	1.0	nd	nd	nd	nd	nd	nd
1,2,4-Trimethylbenzene	1.0	nd	nd	nd	nd	nd	nd
sec-Butylbenzene	1.0	nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	1.0	nd	nd	nd	nd	nd	nd
Isopropyltoluene	1.0	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	1.0	nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	1.0	nd	nd	nd	nd	nd	nd
n-Butylbenzene	1.0	nd	nd	nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	1.0	nd	nd	nd	nd	nd	nd
1,2,4-Trichlorobenzene	2.0	nd	nd	nd	nd	nd	nd
Hexachloro-1,3-butadiene	5.0	nd	nd	nd	nd	nd	nd
Naphthalene	5.0	nd	nd	nd	nd	nd	nd
1,2,3-Trichlorobenzene	5.0	nd	nd	nd	nd	nd	nd
Surrogate Recovery							
Dibromofluoromethane		113	108	108	105	86.9	91.0
1,2-Dichloroethane-d4		92.6	91	103	96.4	83.9	89.6
Toluene-d8		93.8	98.4	102	99.6	102	99.9
4-Bromofluorobenzene		108	106	110	104	108	111

"nd" Indicates not detected at listed detection limit.

"int" Indicates that interference prevents determination.

\* INSTRUMENT DETECTION LIMIT

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Sherry Chilcutt

# LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

W&R #3 PROJECT  
 Renton, Washington  
 EMS  
 Libby Project No. L110509-10

## QA/QC Data - EPA 8260C Analyses

Sample Identification: B8-H2O							RPD
Matrix Spike			Matrix Spike Duplicate				
	Spiked Conc. (ug/l)	Measured Conc. (ug/l)	Spike Recovery (%)	Spiked Conc. (ug/l)	Measured Conc. (ug/l)	Spike Recovery (%)	
1,1-Dichloroethene	10	11.2	112	10	13.5	135	18.6
Benzene	10	10.6	106	10	11.6	116	9.0
Toluene	10	11.6	116	10	12.8	128	9.8
Chlorobenzene	10	7.9	79	10	9.7	97	20.5
Trichloroethene (TCE)	10	10.5	105	10	11.8	118	11.7

### Surrogate Recovery

Dibromofluoromethane	116	109
1,2-Dichloroethane-d4	99.6	83.1
Toluene-d8	98.4	93.2
4-Bromofluorobenzene	111	107

### Laboratory Control Sample

	Spiked Conc. (ug/l)	Measured Conc. (ug/l)	Spike Recovery (%)
1,1-Dichloroethene	10	13.4	134
Benzene	10	13.0	130
Toluene	10	13.2	132
Chlorobenzene	10	12.7	127
Trichloroethene (TCE)	10	12.6	126

### Surrogate Recovery

Dibromofluoromethane	114
1,2-Dichloroethane-d4	106
Toluene-d8	98.4
4-Bromofluorobenzene	109

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%  
 ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Sherry Chilcutt

# LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

W&R #3 PROJECT  
 Renton, Washington  
 EMS  
 Libby Project No. L110509-10

## VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260C IN WATER

Sample Description		B12-H2O	B12-H2O
		Dup	
Date Sampled	Reporting	5/9/11	5/9/11
Date Analyzed	Limits	5/9/11	5/9/11
	(ug/l)	(ug/l)	(ug/l)
Dichlorodifluoromethane	2.0	nd	nd
Chloromethane	2.0	nd	nd
Vinyl chloride	0.2	nd	nd
Bromomethane	2.0	nd	nd
Chloroethane	2.0	nd	nd
Trichlorofluoromethane	2.0	nd	nd
1,1-Dichloroethene	2.0	nd	nd
Methylene chloride	2.0	nd	nd
Methyl <i>tert</i> - Butyl Ether (MTBE)	5.0	nd	nd
<i>trans</i> -1,2-Dichloroethene	1.0	nd	nd
1,1-Dichloroethane	1.0	nd	nd
2,2-Dichloropropane	2.0	nd	nd
<i>cis</i> -1,2-Dichloroethene	1.0	nd	nd
Chloroform	1.0	nd	nd
1,1,1-Trichloroethane (TCA)	1.0	nd	nd
Carbon tetrachloride	1.0	nd	nd
1,1-Dichloropropene	1.0	nd	nd
Benzene	1.0	nd	nd
1,2-Dichloroethane (EDC)	1.0	nd	nd
Trichloroethene (TCE)	1.0	nd	nd
1,2-Dichloropropane	1.0	nd	nd
Dibromomethane	1.0	nd	nd
Bromodichloromethane	1.0	nd	nd
<i>cis</i> -1,3-Dichloropropene	1.0	nd	nd
Toluene	1.0	nd	nd
<i>Trans</i> -1,3-Dichloropropene	1.0	nd	nd
1,1,2-Trichloroethane	1.0	nd	nd
Tetrachloroethene (PCE)	1.0	nd	nd
1,3-Dichloropropane	1.0	nd	nd
Dibromochloromethane	1.0	nd	nd
1,2-Dibromoethane (EDB) *	0.01	nd	nd
Chlorobenzene	1.0	nd	nd
1,1,1,2-Tetrachloroethane	1.0	nd	nd
Ethylbenzene	1.0	nd	nd
Total Xylenes	2.0	nd	nd
Styrenes	1.0	nd	nd

# LIBBY ENVIRONMENTAL CHEMISTRY LABORATORY

W&R #3 PROJECT  
 Renton, Washington  
 EMS  
 Libby Project No. L110509-10

## VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 8260C IN WATER

Sample Description		B12-H2O	B12-H2O Dup
Date Sampled	Reporting	5/9/11	5/9/11
Date Analyzed	Limits	5/9/11	5/9/11
	(ug/l)	(ug/l)	(ug/l)
Bromoform	1.0	nd	nd
Isopropylbenzene	4.0	nd	nd
1,2,3-Trichloropropane	1.0	nd	nd
Bromobenzene	1.0	nd	nd
1,1,2,2-Tetrachloroethane	1.0	nd	nd
n-Propylbenzene	1.0	nd	nd
2-Chlorotoluene	1.0	nd	nd
4-Chlorotoluene	1.0	nd	nd
1,3,5-Trimethylbenzene	1.0	nd	nd
tert-Butylbenzene	1.0	nd	nd
1,2,4-Trimethylbenzene	1.0	nd	nd
sec-Butylbenzene	1.0	nd	nd
1,3-Dichlorobenzene	1.0	nd	nd
Isopropyltoluene	1.0	nd	nd
1,4-Dichlorobenzene	1.0	nd	nd
1,2-Dichlorobenzene	1.0	nd	nd
n-Butylbenzene	1.0	nd	nd
1,2-Dibromo-3-Chloropropane	1.0	nd	nd
1,2,4-Trichlorobenzene	2.0	nd	nd
Hexachloro-1,3-butadiene	5.0	nd	nd
Naphthalene	5.0	nd	nd
1,2,3-Trichlorobenzene	5.0	nd	nd
Surrogate Recovery			
Dibromofluoromethane		89.9	94.1
1,2-Dichloroethane-d4		87.8	87.7
Toluene-d8		96.8	95.3
4-Bromofluorobenzene		112	111

"nd" Indicates not detected at listed detection limit.

"int" Indicates that interference prevents determination.

\* INSTRUMENT DETECTION LIMIT

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Sherry Chilcutt



# Libby Environmental, Inc.

## Chain of Custody Record

4139 Libby Road NE  
Olympia, WA 98506

Ph: 360-352-2110  
Fax: 360-352-4154

Client:

BMS

Address:

Box 153, Fox Island, WA

Phone:

253 921 7059

Fax:

753 549 7528

Client Project #

5/9/11

Date of Collection: 5/9/11

Date:

5/9/11

Page:

1 of 1

Project Manager:

S. SPENCER

Project Name:

WATER #3

Location:

705 SW 2nd St.

Collector:

SMS

Sample Number	Depth	Time	Sample Type	Container Type	VOA 8021B	VOA 8021B BTEX Only	VOA 8260	SEMI VOL 8270	NWTPH-HCID	NWTPH-Gx	NWTPH-Dx	NWTPH-Dx Ext.	PAH 8270	PCBs 8082	MTCA 5 Metals	Field Note# Containers
1 B3-7-8'	2-8'		So.1	VOA												
2 B3-4-7'	5-1'		H26	VOA												
3 B3-4'	4'		So.1	VOA												
4 B3-4'	4-5'		So.1	VOA												
5 B3-4-7'	5-6'		H20	VOA												
6 B3-4'	4-0'		So.1	VOA												
7 B3-7'	7-0'		So.1	VOA												
8 B3-4-7'	4-0'		H20	VOA												
9 B3-4'	4-0'		So.1	VOA												
10 B3-7'	7-0'		So.1	VOA												
11 B3-4-7'	5-10'		H20	VOA												
12 B3-4-5'	4-5'		So.1	VOA												
13 B3-4-7'	6-7'		So.1	VOA												
14 B3-4-7'	15-6'		H20	VOA												
15 B3-5'	5'		So.1	VOA												
16 B3-7'	7'		So.1	VOA												
17 B3-4-7'			H20	VOA												
18																
Relinquished by:	Date / Time	Received by	Date / Time	Sample Receipt:	Good Condition?	Cold?	Seals Intact?	Total Number of Containers	Remarks:							
Relinquished by:	Date / Time	Received by	Date / Time	Sample Receipt:	Good Condition?	Cold?	Seals Intact?	Total Number of Containers	Remarks:							
Relinquished by:	Date / Time	Received by	Date / Time	Sample Receipt:	Good Condition?	Cold?	Seals Intact?	Total Number of Containers	Remarks:							



# OPPT Chemical Fact Sheets

## Chlorobenzene Fact Sheet: Support Document (CAS No. 108-90-7)

This summary is based on information retrieved from a systematic search limited to secondary sources (see Appendix A). These sources include online databases, unpublished EPA information, government publications, review documents, and standard reference materials. The literature search was done in January of 1995. No attempt has been made to verify information in these databases and secondary sources.

### I. CHEMICAL IDENTITY AND PHYSICAL/CHEMICAL PROPERTIES

The chemical identity and physical/chemical properties of chlorobenzene are summarized in Table 1.

TABLE 1. CHEMICAL IDENTITY AND CHEMICAL/PHYSICAL PROPERTIES OF CHLOROBENZENE

Characteristic/Property	Data	Reference
CAS No.	108-90-7	
Common Synonyms	monochlorobenzene; benzene chloride MCB; chlorobenzol; Caswell No. 183A	ATSDR 1990
Molecular Formula	C <sub>6</sub> H <sub>5</sub> Cl	
Chemical Structure		
Physical State	colorless liquid	ATSDR 1990
Molecular Weight	112.56	ATSDR 1990
Melting Point	-45.6°C	ATSDR 1990
Boiling Point	132°C	ATSDR 1990
Water Solubility	466.3 mg/L	U.S. EPA 1988
Density	1.1058 @ 20°C	ATSDR 1990
Vapor Density (air = 1)	3.9	Keith and Walters 1985
K <sub>oc</sub>	126	U.S. EPA 1988
K <sub>ow</sub>	692	U.S. EPA 1988
Vapor Pressure	11.7 mm Hg @ 20°C	U.S. EPA 1988
Reactivity	flammable	Keith and Walters 1985
Flash Point	29.4°C	ATSDR 1990
Henry's Law Constant	3.58 x 10 <sup>-3</sup> atm·m <sup>3</sup> /mol	ATSDR 1990
Fish Bioconcentration Factor	45.7 (rainbow trout); 446.7 (fathead minnow)	U.S. EPA 1988
Odor Threshold	0.05 mg/L (water); 1-8 mg/m <sup>3</sup> (air)	ATSDR 1990
Conversion Factors	1 ppm = 4.7 mg/m <sup>3</sup> ; 1 mg/m <sup>3</sup> = 0.22 ppm	ATSDR 1990



## BENZENE

Also known as: Benzol, Mineral Naphtha, Phenyl Hydride, Annulene  
Chemical reference number (CAS): 71-43-2

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### WHAT IS BENZENE?

Benzene is a widely used industrial chemical. Benzene is found in crude oil and is a major part of gasoline. It's used to make plastics, resins, synthetic fibers, rubber lubricants, dyes, detergents, drugs and pesticides. Benzene is produced naturally by volcanoes and forest fires.

In homes, benzene may be found in glues, adhesives, cleaning products, paint strippers, tobacco smoke and gasoline. Most benzene in the environment comes from our use of petroleum products.

Benzene quickly evaporates from water or soil. If benzene leaks from buried storage tanks or landfills, it can contaminate nearby drinking water wells. Benzene can move long distances in groundwater.

### HOW ARE PEOPLE EXPOSED TO BENZENE?

**Breathing:** The most common way people are exposed to benzene is when they fill their car with gasoline. People are also exposed to benzene when they use household products that contain benzene.

Benzene evaporates quickly from contaminated water. People can be exposed to benzene if they use contaminated water to bathe, shower, wash dishes or do laundry.

Benzene vapors are present in exhaust from many industries and automobiles. People who live near highways or industries can be exposed to benzene.

**Drinking/Eating:** People whose drinking water wells are located within half a mile of leaking underground storage tank, may be exposed by drinking contaminated water.

**Touching:** Benzene can pass through the skin. Benzene exposure through skin contact with gasoline or other solvents is possible. People can also absorb benzene as they bathe or shower in contaminated water.

### DO STANDARDS EXIST FOR REGULATING BENZENE?

**Water:** The state and federal drinking water standards for benzene are both set at 5 parts per billion (ppb). We suggest you stop drinking water that contains more than 5 ppb of benzene. If the level of benzene in your water is higher than 100 ppb, you may also need to avoid washing, bathing or using the water for other purposes. Contact your local public health agency for more information specific to your situation.

**Air:** No standards exist for the amount of benzene allowed in the air of homes, but we recommend that benzene levels in air do not exceed 1.0 part per billion (ppb), the average background concentration found in a home. People with detectable levels of benzene in the air of their homes should eliminate the source of the contamination (gasoline in cans, contaminated drinking water, etc.) Most people can smell benzene at levels above 5 parts per million (ppm) in air.

## WILL EXPOSURE TO BENZENE RESULT IN HARMFUL HEALTH EFFECTS?

Drowsiness, headaches, and dizziness have been reported when people breathed air with benzene levels of more than 10 ppm for a short time.

The following health effects can occur after several years of exposure to benzene:

**Cancer:** Long-term exposure to benzene can increase the risk of developing leukemia.

**Reproductive Effects:** Animal studies show that inhaling benzene vapors can damage reproductive organs and cause infertility. Exposure to benzene in workplaces has caused menstrual variations.

**Organ Systems:** Exposure to benzene can cause anemia and weaken the immune system.

In general, chemicals affect the same organ systems in all people who are exposed. However, the seriousness of the effects may vary from person to person.

A person's reaction depends on several things, including individual health, heredity, previous exposure to chemicals including medicines, and personal habits such as smoking or drinking.

It is also important to consider the length of exposure to the chemical; the amount of chemical exposure; and whether the chemical was inhaled, touched, or eaten.

## WHAT CAN I DO TO DECREASE MY EXPOSURE TO BENZENE?

A primary source of benzene exposure is from automotive gasoline.

- When dispensing gasoline, avoid breathing the vapors.
- Store gasoline in air-tight containers.
- Do not dispense or handle gasoline in your home or garage. Take containers and gasoline operated machinery outside, away from the house, when filling to allow for ventilation.

Cigarette smoke and exhaust fumes are other common sources of benzene. Do not smoke cigarettes and avoid exposure to exhaust fumes when possible.

## CAN A MEDICAL TEST DETERMINE EXPOSURE TO BENZENE?

Benzene breaks down in the body to several other compounds. Those compounds can be found in the blood or urine of people who have been exposed to high levels of benzene within the past two days. Tests will prove an exposure to benzene occurred but will not predict the kind of illness that could result. We do not know what level of benzene break-down products are common in most people, since most people are regularly exposed to some amount of benzene.

People who think they have been exposed to benzene over a long period of time should contact their doctor. Physicians can use blood chemistry, liver function and kidney function tests.

*Seek medical advice if you have any symptoms that you think may be related to chemical exposure.*

This fact sheet summarizes information about this chemical and is not a complete listing of all possible effects. It does not refer to work exposure or emergency situations.

## FOR MORE INFORMATION

- Poison Control Center, 800-815-8855
- Your local public health agency
- Division of Public Health, BEOH, 1 West Wilson Street, Rm. 150 Madison, WI 53701-2659, (608) 266-1120
- Internet: [www.dhs.state.wi.us/eh/index.htm](http://www.dhs.state.wi.us/eh/index.htm)



Prepared by the  
Wisconsin Department of Health Services  
Division of Public Health, with funds from the  
Agency for Toxic Substances and Disease Registry,  
Public Health Service,  
U.S. Department of Health and Human Services.

(POH 4341 Revised 03/2009)

## VINYL CHLORIDE

Also known as: Chlorethylene, Chlorethene, Ethylene monochloride, Monochloroethene, VC  
Chemical reference number (CAS): 75-01-4

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### WHAT IS VINYL CHLORIDE?

Vinyl chloride is a colorless flammable gas that evaporates very quickly. It's used to make polyvinyl chloride (PVC) pipes, wire coatings, vehicle upholstery, and plastic kitchen ware. Higher than normal levels of vinyl chloride may be present inside new cars as the chemical evaporates from new vinyl products.

Vinyl chloride can be formed in the environment when soil organisms break down "chlorinated" solvents. In the environment, the highest levels of vinyl chloride are found in air around factories producing vinyl products. Vinyl chloride that is released by industries or formed by the breakdown of other chlorinated chemicals can enter the air and drinking water supplies. Vinyl chloride is a common contaminant found near landfills.

### HOW ARE PEOPLE EXPOSED TO VINYL CHLORIDE?

**Breathing:** Most exposure to vinyl chloride occurs when people breathe contaminated air. If a water supply is contaminated, vinyl chloride can enter household air when the water is used for showering, cooking or laundry.

**Drinking/Eating:** People can be exposed to vinyl chloride if they drink or cook with contaminated water.

**Touching:** Vinyl chloride can be absorbed through the skin. This can occur when people handle vinyl products, contaminated soil, or bathe in contaminated water. However, skin absorption is probably a minor route of exposure.

### DO STANDARDS EXIST FOR REGULATING VINYL CHLORIDE?

**Water:** The state drinking water standard for vinyl chloride is 0.2 parts per billion (ppb). We suggest you stop drinking water containing more than 0.2 ppb. If levels of vinyl chloride are above 2 ppb, avoid washing or bathing with it. You may still use the water to flush toilets. Contact your local public health agency for more information specific to your situation.

**Air:** No standards exist for the amount of vinyl chloride allowed in the air of homes. Most people can't smell vinyl chloride until the level is greater than 10 ppm. If you can smell the chemical, the level is too high to be safe.

The Wisconsin Department of Natural Resources regulates the amount of vinyl chloride that can be released by industries.

## WILL EXPOSURE TO VINYL CHLORIDE RESULT IN HARMFUL HEALTH EFFECTS?

Vinyl chloride is very toxic. People should avoid contact with this chemical. The following health effects can occur after several years of exposure to vinyl chloride:

- Damage to the nervous system
- Changes in the immune system

**Cancer:** Exposure to vinyl chloride may increase a person's risk of developing cancer. Human and animal studies show higher rates of liver, lung and several other types of cancer.

**Reproductive Effects:** People exposed to levels of 1,000 ppm or more in air may have an increased risk of miscarriage and birth defects. Damage to male sperm-producing organs has occurred in laboratory animals.

**Organ Systems :** Being exposed to vinyl chloride can affect a person's liver, kidney, lung, spleen, nervous system and blood.

**Bone :** Long-term exposure to high levels of vinyl chloride can result in a decrease in bone strength in fingers, arms, and joints.

In general, chemicals affect the same organ systems in all people who are exposed. However, the seriousness of the effects may vary from person to person.

A person's reaction depends on several things, including individual health, heredity, previous exposure to chemicals including medicines, and personal habits such as smoking or drinking. It is also important to consider the length of exposure to the chemical; the amount of chemical exposure; and whether the chemical was inhaled, touched, or eaten.

## CAN A MEDICAL TEST DETERMINE EXPOSURE TO VINYL CHLORIDE?

Vinyl chloride can be found in urine and body tissues after recent exposures. However, test results may not accurately reflect the level or duration of the exposure, or predict future health effects. Function tests of bone marrow, liver, kidney, and nerves may be useful in determining the effects of vinyl chloride exposure.

*Seek medical advice if you have any symptoms that you think may be related to chemical exposure.*

This fact sheet summarizes information about this chemical and is not a complete listing of all possible effects. It does not refer to work exposure or emergency situations.

## FOR MORE INFORMATION

- Poison Control Center, 800-222-1222
- Your local public health agency
- Division of Public Health, BEOH, 1 West Wilson Street, Rm. 150, Madison, WI 53701-2659, (608) 266-1120 or Internet: <http://dhfs.wisconsin.gov/eh>




Prepared by the  
Wisconsin Department of Health and Family Services  
Division of Public Health, with funds from the  
Agency for Toxic Substances and Disease Registry,  
Public Health Service,  
U.S. Department of Health and Human Services.


(POH 4723 Revised 12/2000)


# Attachment D

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Boring Logs


		Boring No.: <b>B07</b>		Sheet: <b>1</b> of <b>1</b>								
Date: <b>May 9, 2011</b>		Location: <b>AIM Aerospace / 705 SW 7th Street, Renton, WA</b>										
Drilling Type: <b>Direct Push / Macro Sampler</b>		Client: <b>W&amp;R Properties / JHR Properties</b>										
Well Screen Size: <b>NA</b>		Surface Conditions: <b>Gravel</b>		Water Level: <b>5.5' bgs</b>								
Inches Driven	Inches Recovered	Sample Number	Sample Depth	Field Reading	Depth to Water	Boring Depth	Longitude:		Time:	Start	Finish	
							Latitude:					
							Comments:		<b>Driller uses 4' sampler w/ liners</b>			
							Soil Description					
↑	↑					<b>0</b>	-	↑	Gravel			
							-	↓				
						<b>1</b>	-	↑	Brown to Brown Gray Silty Medium to fine Sand with few gravels - Dry to moist below 4' bgs			
							-					
						<b>2</b>	-					
							-					
						<b>3</b>	-					
↓	↓						-	↓				
↑	↑	B7-4-5'				<b>4</b>	-	↑	Brown Gray Silt - Moist to wet below 5' bgs			
							-					
		B7-H2O				<b>5</b>	-					
							-					
						<b>6</b>	-		Brown Gray Silty fine sand - moist to dry below 8' bgs			
							-					
		B7-7-8'				<b>7</b>	-	↓				
↓	↓						-	↑				
						<b>8</b>	-					
							-					
						<b>9</b>	-					
							-					
						<b>10</b>	-		Note: Water first observed at 5' +/- 1' bgs. Soil below 7 feet bgs observed moist to dry. Perched water appears to be between 5 and 7 feet bgs +/- 1' bgs.			
							-					
						<b>11</b>	-					
							-					
						<b>12</b>	-					
							-					
						<b>13</b>	-					
							-					
						<b>14</b>	-					
							-					
						<b>15</b>	-					
							-					
						<b>16</b>	-					
							-					
						<b>17</b>	-					
							-					
						<b>18</b>	-					
							-					
						<b>19</b>	-					
							-					
						<b>20</b>	-					

 <b>environmental services</b> <small>www.ecoonline.com</small>		Boring No.: <b>B08</b>		Sheet: <b>1</b> of <b>1</b>							
Date: <b>May 9, 2011</b>		Location: <b>AIM Aerospace / 705 SW 7th Street, Renton, WA</b>									
Drilling Type: <b>Direct Push / Macro Sampler</b>		Client: <b>W&amp;R Properties / JHR Properties</b>		Water Level: <b>5.5' bgs</b>							
Well Screen Size: <b>NA</b>		Surface Conditions: <b>Gravel</b>		Surface Elevation:							
Inches Driven	Inches Recovered	Sample Number	Sample Depth	Field Reading	Depth to Water	Boring Depth	Longitude:	Time:		Start	Finish
							Latitude:				
							Comments:	<b>Driller uses 4' sampler w/ liners</b>			
							Soil Description				
↑	↑					0	-	↑	Gravel		
						1	-	↑	Brown to Brown Gray Silty Medium to fine Sand with few gravels - Dry to moist below 4' bgs		
						2	-				
						3	-				
↓	↓					4	-	↓	Brown Gray Silt - Moist to wet below 5' bgs		
↑	↑	B8-4-5'				5	-	↓			
						6	-	↓	Brown Gray Silty fine sand - moist to dry below 8' bgs		
		B8-H2O				7	-	↓			
↓	↓					8	-	↓			
						9	-				
						10	-		Note: Water first observed at 5' +/- 1' bgs. Soil below 7 feet bgs observed moist to dry. Perched water appears to be between 5 and 7 feet bgs +/- 1' bgs.		
						11	-				
						12	-				
						13	-				
						14	-				
						15	-				
						16	-				
						17	-				
						18	-				
						19	-				
						20	-				

 <b>environmental services</b> <small>www.ecocononline.com</small>		Boring No.: <b>B09</b>		Sheet: <b>1</b> of <b>1</b>							
Date: <b>May 9, 2011</b>		Location: <b>AIM Aerospace / 705 SW 7th Street, Renton, Washington</b>									
Drilling Type: <b>Direct Push / Macro Sampler</b>		Client: <b>W&amp;R Properties / JHR Properties</b>									
Well Screen Size: <b>NA</b>		Surface Conditions: <b>Gravel</b>		Water Level: <b>5.5' bgs</b>							
Inches Driven	Inches Recovered	Sample Number	Sample Depth	Field Reading	Depth to Water	Boring Depth	Longitude:	Time:		Start	Finish
							Latitude:				
							Comments:		<b>Driller uses 4' sampler w/ liners</b>		
							Soil Description				
↑	↑					<b>0</b>	-	↑	Gravel		
	↑						-	↓			
	↑					<b>1</b>	-	↑	Brown to Brown Gray Silty Medium to fine Sand with few gravels - Dry to moist below 4' bgs		
							-				
						<b>2</b>	-				
							-				
	↓					<b>3</b>	-	↓			
↓	↑	B9-4-5'	■			<b>4</b>	-	↑	Brown Gray Silt - Moist to wet below 5' bgs		
		B7-H2O			▽	<b>5</b>	-	↓			
							-	↑	Brown Gray Silty fine sand - moist to dry below 8' bgs		
						<b>6</b>	-	↓			
							-				
		B9-7-8'	■			<b>7</b>	-	↓			
↓	↓						-	↑			
						<b>8</b>	-	↓			
							-				
						<b>9</b>	-				
							-				
						<b>10</b>	-		Note: Water first observed at 5' +/- 1' bgs. Soil below 7 feet bgs observed moist to dry. Perched water appears to be between 5 and 7 feet bgs +/- 1' bgs.		
							-				
						<b>11</b>	-				
							-				
						<b>12</b>	-				
							-				
						<b>13</b>	-				
							-				
						<b>14</b>	-				
							-				
						<b>15</b>	-				
							-				
						<b>16</b>	-				
							-				
						<b>17</b>	-				
							-				
						<b>18</b>	-				
							-				
						<b>19</b>	-				
							-				
						<b>20</b>	-				



 <b>environmental services</b> <small>www.ecocononline.com</small>		Boring No.: <b>B10</b>		Sheet: <b>1</b> of <b>1</b>						
Date: <b>May 9, 2011</b>		Location: <b>AIM Aerospace / 705 SW 7th Street, Renton, Washington</b>								
Drilling Type: <b>Direct Push / Macro Sampler</b>		Client: <b>W&amp;R Properties / JHR Properties</b>		Water Level: <b>5.6' bgs</b>						
Well Screen Size: <b>NA</b>		Surface Conditions: <b>Gravel</b>		Surface Elevation: <b></b>						
Inches Driven	Inches Recovered	Sample Number	Sample Depth	Field Reading	Depth to Water	Boring Depth	Longitude: <b></b>	Time: <b></b>	Start <b></b>	Finish <b></b>
							Latitude: <b></b>			
							Comments: <b>Driller uses 4' sampler w/ liners</b>			
Soil Description										
↑	↑					<b>0</b>	-	↑	Gravel	
	↑						-	↓		
	↑					<b>1</b>	-	↑	Brown to Brown Gray Silty Medium to fine Sand with few gravels - Dry to moist below 4' bgs	
							-			
						<b>2</b>	-			
							-			
	↓					<b>3</b>	-	↓		
↓	↑	B10-4-5'				<b>4</b>	-	↑	Brown Gray Silt - Moist to wet below 5' bgs	
							-	↓		
		B10-H2O				<b>5</b>	-	↑		
							-	↓		
						<b>6</b>	-	↑	Brown Gray Silty fine sand - moist to dry below 8' bgs	
							-	↓		
						<b>7</b>	-	↑		
↓	↓						-	↓		
						<b>8</b>	-			
							-			
						<b>9</b>	-			
							-			
						<b>10</b>	-		Note: Water first observed at 5' +/- 1' bgs. Soil below 7 feet bgs observed moist to dry. Perched water appears to be between 5 and 7 feet bgs +/- 1' bgs.	
							-			
						<b>11</b>	-			
							-			
						<b>12</b>	-			
							-			
						<b>13</b>	-			
							-			
						<b>14</b>	-			
							-			
						<b>15</b>	-			
							-			
						<b>16</b>	-			
							-			
						<b>17</b>	-			
							-			
						<b>18</b>	-			
							-			
						<b>19</b>	-			
							-			
						<b>20</b>	-			

 <b>environmental services</b> <small>www.ecocononline.com</small>		Boring No.: <b>B11</b>		Sheet: <b>1</b> of <b>1</b>					
Date: <b>May 9, 2011</b>		Location: <b>AIM Aerospace / 705 SW 7th Street, Renton, WA</b>							
Drilling Type: <b>Direct Push / Macro Sampler</b>		Client: <b>W&amp;R Properties / JHR Properties</b>							
Well Screen Size: <b>NA</b>		Surface Conditions: <b>Gravel</b>		Water Level: <b>6.1' bgs</b>					
Inches Driven	Inches Recovered	Sample Number	Sample Depth	Field Reading	Depth to Water	Boring Depth	Longitude:	Time: Start Finish	
							Latitude:		
							Comments: <b>Driller uses 4' sampler w/ liners</b>		
							Soil Description		
↑	↑					<b>0</b>	-	↑	Gravel
							-	↓	
						<b>1</b>	-	↑	Brown to Brown Gray Silty Medium to fine Sand with few gravels - Dry to moist below 4' bgs
							-		
						<b>2</b>	-		
							-		
						<b>3</b>	-	↓	
↓	↓						-		
↑	↑					<b>4</b>	-	↑	Brown Gray Silt - Moist to wet below 5' bgs
		B11-4.5-5.5'					-	↓	
						<b>5</b>	-	↑	
							-	↓	
		B11-H2O				<b>6</b>	-	↑	Brown Gray Silty fine sand - moist to dry below 8' bgs
							-	↓	
						<b>7</b>	-		
↓	↓						-		
						<b>8</b>	-		
							-		
						<b>9</b>	-		
							-		
						<b>10</b>	-		
							-		
						<b>11</b>	-		
							-		
						<b>12</b>	-		
							-		
						<b>13</b>	-		
							-		
						<b>14</b>	-		
							-		
						<b>15</b>	-		
							-		
						<b>16</b>	-		
							-		
						<b>17</b>	-		
							-		
						<b>18</b>	-		
							-		
						<b>19</b>	-		
							-		
						<b>20</b>	-		

Note: Water first observed at 6' +/- 1' bgs. Soil below 7 feet bgs observed moist to dry. Perched water appears to be between 6 and 7.5 feet bgs +/- 1' bgs.

<b>ECI</b> environmental services <small>www.ecocononline.com</small>		Boring No.: <b>B12</b>		Sheet: <b>1</b> of <b>1</b>							
Date: <b>May 9, 2011</b>		Location: <b>AIM Aerospace / 705 SW 7th Street, Renton, WA</b>									
Drilling Type: <b>Direct Push / Macro Sampler</b>		Client: <b>W&amp;R Properties / JHR Properties</b>									
Well Screen Size: <b>NA</b>		Surface Conditions: <b>Gravel</b>		Water Level: <b>3.8' bgs</b>							
Inches Driven	Inches Recovered	Sample Number	Sample Depth	Field Reading	Depth to Water	Boring Depth	Longitude:	Time:		Start	Finish
							Latitude:				
							Comments: <b>Driller uses 4' sampler w/ liners</b>				
Soil Description											
↑	↑					0	-	Gravel			
						1	-	Brown to Brown Gray Silty Medium to fine Sand with few gravels - Dry to moist below 4' bgs			
						2	-				
						3	-	Brown Gray Silty fine sand - moist to dry below 8' bgs			
↓	↓	B12-H2O				4	-				
↑	↑					5	-				
		B12-5'				6	-				
						7	-				
↓	↓					8	-				
						9	-				
						10	-				
						11	-				
						12	-				
						13	-				
						14	-				
						15	-				
						16	-				
						17	-				
						18	-				
						19	-				
						20	-				

Note: Water first observed at 5' +/- 1' bgs. Water elevation changed to 3.8 after equilibrium. Perched water appears to be between 3 and 7 feet bgs +/- 1' bgs.

# Attachment E

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Professional Qualifications

**Attachment E**  
Professional Qualifications

environmental services  
[www.ecocononline.com](http://www.ecocononline.com)

**ECI**

EcoCon, Inc. (ECI) is an environmental consulting and contracting company providing services to 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  
Principal

## **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 the environmental services and construction industry in 1987. During his career, he has worked on and successfully completed projects in many varied aspects of the environmental industry. During the past five years, as principal and senior project manager, 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.

## **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 Licensed Geologist and Hydrogeologist in the State of Washington. Mr. Hamlet has 30 years experience in the geological sciences with over 25 years providing professional environmental consulting services. Mr. Hamlet has been involved with environmental investigations working on Environmental Protection Agency (EPA), United States Navy and Air Force environmental projects, as a project geologist and project manager. 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 managed the design and implementation of soil and groundwater remediation projects.

As a Washington State Licensed Underground Storage Tank (UST) Decommissioner and Site Assessor, Mr. Hamlet has managed multiple UST decommissioning and remediation projects, has prepared proposals, final reports, budgets, contracts with subcontractors, negotiated with prospective clients, and coordinated activities with regulatory agencies. Mr. Hamlet has been involved in training personnel in environmental field operations and Health & Safety programs, has working knowledge of state (NW states) and federal environmental regulations and the ASTM standards. As an AHERA Building Inspector, Mr. Hamlet has performed hazardous 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
- 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 provided civil engineering consulting and stormwater management 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 surface water drainage collection and treatment system for a proposed petroleum products recycling process facility which discharges 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 fueling facility, which drains to an environmentally sensitive wetland in the City of Kent.
- Preparing a TESC plan, and permanent surface water drainage retention and treatment system, which infiltrates to site soils underlying a proposed commercial retail center in Pierce County.
- Preparing a TESC plan and permanent surface water drainage collection and treatment system which discharges to a municipal storm sewer in the City of Tacoma.
- Preparing a TESC plan and permanent surface water drainage collection, 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 / hydrogeologist 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.

**Kaitlyn Allegretti, B.S. Geology**  
**Environmental Scientist / Technician**

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

Ms. Allegretti serves as a site manager and field technical for ECI. Ms. Allegretti graduated from the University of Dayton (2005) with a Bachelor's degree in Geology. Ms. Allegretti's primary responsibilities are field work including monitoring well sampling, underground storage tank closure and decommissioning and asbestos inspections. Ms. Allegretti was licensed as an AHERA building inspector and UST Decommissioner within the first 60 days of her employment.

During her two years with ECI, Ms. Allegetti has completed in excess of fifty Phase I Environmental Site Assessments and in excess of 20 commercial underground storage tank closure projects.

**Mile Felicita  
Superintendent**

- Certified Asbestos/Demolition Supervisor
- Certified Lead Supervisor
- Certified & HazMat Endorsed Drivers License
- 30 hr. OSHA Safety Class
- CPR & First Aid Certified
- Machinery Operator License

Mr. Felicita has 10 years experience in the construction business including all phases of construction from startup to completion. He is knowledgeable in all the local and federal construction codes and regulations. Mr. Jackson has experience in the management of several asbestos abatement projects from design to completion and dealing with local and federal regulators. Mr. Jackson is a certified lead inspector as well as a certified asbestos/demolition supervisor. He is also a certified competent person, OSHA and health and safety trained.

**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 problems 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.

## Professional Qualifications

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.



# CERTIFICATE OF LIABILITY INSURANCE

OP ID: DS

DATE (MM/DD/YYYY)

05/09/11

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

**IMPORTANT:** If the certificate holder is an **ADDITIONAL INSURED**, the policy(ies) must be endorsed. If **SUBROGATION IS WAIVED**, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

<b>PRODUCER</b> Century Insurance Services LLC 3208 50th St Ct NW, Suite C104 Gig Harbor, WA 98335 Deborah S Sajovitz		253-851-9600  253-851-9601	<b>CONTACT NAME:</b> <b>PHONE</b> (A/C, No, Ext): <b>E-MAIL ADDRESS:</b> <b>PRODUCER CUSTOMER ID #:</b> ENVIR-3		<b>FAX</b> (A/C, No):
<b>INSURED</b> Ecocon Inc PO Box 153 Fox Island, WA 98335			<b>INSURER(S) AFFORDING COVERAGE</b> INSURER A : Westchester Surpl Lines Ins Co INSURER B : INSURER C : INSURER D : INSURER E : INSURER F :		<b>NAIC #</b>

**COVERAGES****CERTIFICATE NUMBER:****REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	<input checked="" type="checkbox"/> GENERAL LIABILITY			G23987934004	09/26/10	09/26/11	EACH OCCURRENCE	\$ 2,000,000
	<input type="checkbox"/> COMMERCIAL GENERAL LIABILITY						DAMAGE TO RENTED PREMISES (Ea occurrence)	\$ 50,000
	<input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR						MED EXP (Any one person)	\$ 5,000
	<input checked="" type="checkbox"/> Employers Liab						PERSONAL & ADV INJURY	\$ 2,000,000
	GEN'L AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	\$ 2,000,000
	<input type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC						PRODUCTS - COMP/OP AGG	\$ 2,000,000
							Emp Ben.	\$ 1,000,000
	<b>AUTOMOBILE LIABILITY</b>						COMBINED SINGLE LIMIT (Ea accident)	\$
	<input type="checkbox"/> ANY AUTO						BODILY INJURY (Per person)	\$
	<input type="checkbox"/> ALL OWNED AUTOS						BODILY INJURY (Per accident)	\$
	<input type="checkbox"/> SCHEDULED AUTOS						PROPERTY DAMAGE (Per accident)	\$
	<input type="checkbox"/> HIRED AUTOS							\$
	<input type="checkbox"/> NON-OWNED AUTOS							\$
	<b>UMBRELLA LIAB</b>	<input type="checkbox"/> OCCUR					EACH OCCURRENCE	\$
	<b>EXCESS LIAB</b>	<input type="checkbox"/> CLAIMS-MADE					AGGREGATE	\$
	DEDUCTIBLE							\$
	RETENTION \$							\$
	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b>						WC STATU-TORY LIMITS	OTH-ER
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH)	Y / N	N / A				E.L. EACH ACCIDENT	\$
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. DISEASE - EA EMPLOYEE	\$
							E.L. DISEASE - POLICY LIMIT	\$

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

**CERTIFICATE HOLDER****CANCELLATION**

State of Washington Dept of Labor & Industries P.O. Box 44450 Olympia, WA 98504	STATE01	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
		AUTHORIZED REPRESENTATIVE <i>Deborah S Sajovitz</i>

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