

August 31, 2004

Anchorage

Mr. Jim Seaver Ivar's Restaurants/Kidd Valley Restaurants 1001 Alaskan Way Seattle, Washington 98104

Denver

Re: Limited Phase II Assessment

Queen Anne Property

531 Queen Anne Avenue North

Seattle, Washington

17063-01

**Edmonds** 

Dear Mr. Seaver:

This letter report presents the results of our limited Phase II environmental assessment at the referenced property located in Seattle (Figure 1). The project work scrope was completed in general accordance with our scope of services dated July 7, 2004. We understand that you are interested in purchasing the property. Our limited Phase II assessment provides information on the current conditions and past practices at the property to evaluate whether it is likely that potentially adverse environmental conditions may be present.

Long Beach

Our report begins with a Summary of Findings and Recommendations, which is followed by our:

Philadelphia

- Scope of Work;
- Subject Property Description;
- Geology and Hydrogeology;
- Limited Phase II Subsurface Assessment;
- Potential for Contamination; and
- Limitations.

Portland

Sample analytical results for soil samples are summarized in Table 1. Figure 1 is a Vicinity Map showing the location of the subject property. A Site Plan showing subject property features and sampling locations is presented on Figure 2. Appendix A presents the field exploration procedures and copies of the field boring logs. The Advanced Analytical laboratory report is presented in Appendix B.

Seattle

1910 Fairview Avenue East Seattle, Washington 98102-3699 Fax 206.328,5581 Tel 206.324,9530

# SUMMARY OF FINDINGS AND RECOMMENDATIONS

Based on the results of our June 2004 Phase I Environmental assessment and our recent limited subsurface investigation, localized areas of subsurface soil and groundwater contamination exist at the subject property. The following summarizes our findings relating to environmental conditions at the subject property.

# Petroleum Hydrocarbon Impacts and Underground Storage Tanks (USTs)

From the late 1930s until the early 1980s, two gasoline service stations were present on the property. The first service station was associated with two pump islands and a small lube building with one hoist, but no information regarding the number or location of the USTs associated with the first service station was located. In the late 1950s, the first service station and the retail building were removed and a second service station was constructed for Tidewater Oil Company. The second service station was associated with one hydraulic hoist, four pump islands, one 250-gallon UST, one 5,000-gallon UST, and one 7,500-gallon UST. In 1981, the service station was converted to a retail space and a 1983 city directory lists the address as "Queen Anne Cleaners." The service station building and USTs were removed in 1986, but Ecology still lists two USTs at the property as "closed in-place." We did not locate any documentation of soil sampling and analysis conducted in 1986. Because soil and groundwater samples submitted for analysis during this study contained concentrations of petroleum hydrocarbons above applicable cleanup levels, there is some potential for migratory contamination from former subject property USTs and other former service station features. However, groundwater was encountered in only two borings, in the northeast portion of the property and may not be continuous across the site.

## Recommendation

Additional subsurface investigation could be conducted at the property prior to any future site activities to better define the extent of soil and groundwater contamination at the property and assess the potential for on-site migration from another source and for off-site migration from the subject property. Additional investigation work could include the installation of monitoring wells and collection of additional soil and groundwater samples for chemical analysis.

# SCOPE OF WORK

Our limited Phase II environmental assessment included:

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- Advancing eight Strataprobe soil borings in strategic locations on the subject property;
- Collecting and chemically analyzing soil and groundwater samples from the subject property; and
- Preparing this letter report presenting the findings of our work.

# SUBJECT PROPERTY DESCRIPTION

The subject property is approximately 12,480-square-foot lot described as Lots 1 and 2, Block 23, D. T. Denny's North Replat of Seattle. The subject property contains one building, located at 531 Queen Anne Avenue North in Seattle, Washington. The building is approximately 4,200 square feet and is a one-story wood frame retail strip building. Current tenants are a Kidd Valley Restaurant, a Checks Cashed franchise, and a dry cleaning company. The building was constructed in 1987. The property is bound by West Mercer Street to the north, Queen Anne Avenue North to the west, an alley to the east, and a commercial property to the south. John Morris currently owns the subject property.

# GEOLOGY AND HYDROGEOLOGY

According to borings completed during this study, the property is predominantly underlain by silty or gravelly sand fill underlain by native materials. The fill beneath the property is generally less than 5 feet thick. The native materials consist of non-silty to silty sand and gravel with interbedded silt zones (glacial till).

The surrounding area topography slopes downward to the south and west toward Elliott Bay, located approximately 1/2 mile to the southwest. The subject propert—at approximate elevation of 140 feet above mean sea level and slopes down—ie north and west. The subject property grade at the southwest property boundary is approximately 6 feet higher than the grade of the adjacent alley. Because groundwater was encountered in only two of the borings in the northeast portion of the property between 7.5 and 10 feet below ground surface, shallow perched groundwater zones likely exists in the till and alluvium beneath the property within 20 feet of the ground surface. Based on surrounding area topography, the inferred groundwater flow direction is to the south or west.

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# LIMITED PHASE II SUBSURFACE ASSESSMENT

# Soil Sampling and Analysis

On August 10, 2004, Hart Crowser advanced shallow soil borings at eight locations north of the subject property building (Figure 2).

One boring (B-1) was advanced in the vicinity of former USTs. Four borings (B-2, B-3, B-4, and B-5) were advanced in the northeast portion of the property, near the location of former pump islands. Two borings (B-6 and B-8) were located on the western side of the property near former automotive service areas. The remaining boring (B-7) was located near the middle of the existing parking lot. ESN NW completed the borings by Strataprobe equipment to depths of 8 to 14 feet. Groundwater was encountered in only two borings, B-3 and B-4. Groundwater was encountered in these two borings between 7.5 and 10.0 feet below ground surface. Grab groundwater samples were obtained from B-3 and B-4.

Composite soil samples were collected at 1- to 4-foot-depth intervals in the borings. A PID detector was used to screen the soil samples for volatile organic vapors indicative of petroleum hydrocarbons. PID measurements greater than 100 were encountered in soil samples from between 4.0 and 9.0 feet below grade in boring B-4. Petroleum-like odors were observed on the above samples from boring B-4, soil samples from between 4.0 and 12.0 feet below grade in boring B-3, and from the soil samples from between the surface and 8.0 feet below grade in boring B-8.

Soil and groundwater samples were temporarily stored in Hart Crowser's locked refrigerators and were submitted to the Advanced Analytical chemical laboratory in Redmond, WA for analysis. Eleven soil samples were submitted for analysis of one or more of the following: hydrocarbon identification by Ecology Method NWTPH-HCID, gasoline-range total petroleum hydrocarbons (TPH) and diesel-range TPH (Ecology Method NWTPH-Gx and NWTPH-Dx), benzene, toluene, ethylbenzene, and xylenes (BTEX compounds by EPA Method 8021), volatile organic compounds (VOCs by EPA Method 8260), semivolatile organic compounds (SVOCs by EPA Method 8270), and metals (lead, cadmium, chromium, copper, nickel, arsenic, zinc, and mercury by EPA Method 7000-series). The two grab groundwater samples were submitted for NWTPH-Gx, NWTPH-Dx, BTEX, and metals analyses.

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# Analytical Results

# BTEX Compounds, VOCs, and SVOCs

Two or more BTEX compounds were detected in the five soil samples submitted for analysis. Benzene, toluene, ethylbenzene, and xylenes were detected above MTCA Method A cleanup levels (30, 7000, 6000, and 9000 ug/kg, respectively) in the two soil samples from boring B-4. The xylene concentration detected in the soil sample from B-8 was also above the applicable cleanup levels. Remaining TEX detections were below applicable cleanup levels. Benzene was not detected in the two soil samples from boring B-3 or the soil sample from B-8. One soil sample from boring B-4 was subsequently analyzed for additional VOCs and SVOCs. The detected VOCs and SVOCs were below applicable MTCA Method A or B cleanup levels except for naphthalene, which was detected at 52 mg/kg, above the MTCA Method A cleanup level of 5 mg/kg.

The four BTEX compounds were detected in both grab groundwater samples. Benzene, toluene, ethylbenzene, and xylenes were detected above MTCA Method A cleanup levels (5, 1000, 700, and 1000 ug/L, respectively) in the grab groundwater sample from boring B-4. The benzene concentration detected in the grab groundwater sample from boring B-3 was also above the applicable cleanup level. TEX detections in B-3 were below MTCA Method A cleanup levels.

# Gasoline-Range TPH

Gasoline-range TPH was detected in five of the eleven soil samples submitted for analysis. Detections occurred in soil samples from boring B-3, B-4, and B-8. The detected concentration in both samples from boring B-3 was lower than the MTCA Method A cleanup level of 30 mg/kg for samples without benzene. The remaining gasoline-range TPH concentrations detected were higher than applicable MTCA Method A cleanup levels. The detected concentrations in the two soil samples from boring B-4 were 7,100 and 690 mg/kg. The detected concentration in the soil sample from boring B-8 was 110 mg/kg.

Gasoline-range TPH was detected in both grab groundwater samples submitted for analysis. The detected concentrations in the grab groundwater samples from B-3 and B-4 were 6.3 and 110 mg/L, respectively. The MTCA Method A cleanup level for gasoline-range TPH in groundwater is 0.8 mg/L, when benzene is also present in the groundwater.

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# **Diesel-Range TPH**

Diesel-range TPH was detected in only one of the eleven soil samples submitted for analysis. The diesel concentration detected was in one sample from boring B-4, below the MTCA Method A cleanup level of 2,000 mg/kg. Heavy oil-range TPH was detected in six of the eleven soil samples submitted for analysis. All heavy oil-range TPH detections were below the MTCA Method A cleanup level of 2,000 mg/kg.

Diesel- and heavy oil-range TPH was not detected in either of the grab groundwater samples submitted for analysis.

# Metals

One soil sample was submitted for analysis of metals. Lead, chromium, copper, nickel, and zinc were detected in this soil sample at concentrations less than applicable MTCA cleanup levels. Cadmium, arsenic, and mercury were not detected in the soil sample analyzed.

The two grab groundwater samples were submitted for analysis of metals. Lead, nickel, and zinc were detected in both grab groundwater samples at concentrations less than applicable MTCA cleanup levels. Chromium, cadmium, arsenic, copper, and mercury were not detected in the grab groundwater samples analyzed.

The analytical results for soil and groundwater samples are summarized in Tables 1 and 2, respectively. A chemical data quality review and the laboratory analytical report are presented in Appendix B.

### POTENTIAL FOR CONTAMINATION

The subject property previously contained two gasoline service stations. No records were located regarding the removal of the USTs associated with the service station. Our subsurface investigation identified localized areas of petroleum-contaminated soil and groundwater were north of the existing building, in the vicinity of former pump islands.

# LIMITATIONS

Work for this project was performed, and this letter report prepared, in accordance with generally accepted professional practices for the nature and conditions of the work

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Page 7

completed in the same or similar localities, at the time the work was performed. It is intended for the exclusive use of Ivar's Restaurants/Kidd Valley Restaurants, for specific application to the subject property. This report is not meant to represent a legal opinion. No other warranty, express or implied, is made.

Our work did not include sampling or testing of drinking water for lead content, sampling for indoor air quality and mold, assessment of sewer systems, sampling for radon vapor, a "good-faith" survey of asbestos and lead, and other items not the standard of practice for our time, unless otherwise noted herein.

Any questions regarding our work and this letter report, the presentation of the information, and the interpretation of the data are welcome and should be referred to the undersigned.

Sincerely,

HART CROWSER, INC.

JESSICA ROBERTSON

Senior Staff Geochemist

jessica.robertson@hartcrowser.com

JULIE K.W. WUKELIC

Zala kan kalakak

Principal

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Attachments:

Table 1 - Analytical Results for Soil Samples

Table 2 - Analytical Results for Grab Groundwater Samples

Figure 1 - Vicinity Map

Figure 2 - Site and Exploration Plan

Appendix A - Field Exploration Procedures

Appendix B - Chemical Data Quality Review and Certificates of Analysis

Advanced Analytical Laboratory

F:\docs\jobs\1706301\Queen Anne Phase II.doc

Table 1 - Analytical R	esults for Soil	Samples						Sheet 1 of 5
Sample ID	MTCA	B1-S2	B2-S1	B3-S2	B3-S3A	B4-S2A	B4-S3C	B5-S1
Depth in Feet	Method A	4 to 8	0 to 4	4 to 8	8 to 10	8 to 9	10 to 11.5	0 to 4
	Cleanup Level							
NWTPH-Gx in mg/kg		•						
Mineral spirits/Stoddard				5.0 U	5.0 U	5.0 U	5.0 U	
Gasoline	100/30(b)			17	58	7100	690	
BTEX in ug/kg						<del></del>	<del></del>	
Benzene	30		•	20 U	20 U	5000	290	
Toluene	7000			50 U	76	140000	16000	
Ethylbenzene	6000			51	50 U	92000	6400	
Xylenes	9000			380	390	580000	60000	
NWTPH-Dx in mg/kg			•					
Kerosene/Jet fuel				20 U	20 U	20 U	20 U	
Diesel/Fuel oil	2000			20 U	20 U	830	20 U	
Heavy oil	2000			740	250	170	50 U	
NWTPH-HCID in mg/kg					•			
Gasoline		20 U	20 U		D		,	20 U
Stoddard/Mineral spirits		20 U	20 U		20 U			20 U
Kensol		20 U	20 U		20 U			20 U
Kerosene/Jet fuel		20 U	20 U	·	20 U			20 U
Diesel/Fuel oil		50 U	50 U		50 U			50 U
Bunker C		50 U	50 U		50 U			50 U
Heavy oil		100 U	100 U		D		•	100 U
Metals in mg/kg	*				_			
Lead	<b>` 250</b>					6.9		
Chromium		·				6.4		
Cadmium	<b>2</b> ·					1.0 U		
Copper	2960(a)					4.8		•
Nickel						6.5		
Arsenic	20					2.0 U		
Zinc	24000(a)					1.3		•
Mercury	2	•	,	. •		0.05 U		

# Table 1 - Analytical Results for Soil Samples

Sample ID	B6-S2	B7-S1	B8-S1A	B8-S2
Depth in Feet	0 to 4	0 to 4	0 to 2	4 to 8
NWTPH-Gx in mg/kg Mineral spirits/Stoddard			5.0 U	

110

# Gasoline BTEX in ug/kg

· · Ex iii uging	
Benzene	20 U
Toluene	2500
Ethylbenzene	650
Xylenes	11000

# NWTPH-Dx in mg/kg

Kerosene/Jet fuel	20 U	20 U	20 U
Diesel/Fuel oil	20 U	20 U	20 U
Heavy oil	470	150	310

# NWTPH-HCID in mg/kg

			•
Gasoline	20 U	20 U	20 U
Stoddard/Mineral spirits	20 U	20 U	20 U
Kensol	20 U	20 U	20 U
Kerosene/Jet fuel	20 U .	20 U	20 U
Diesel/Fuel oil	50 U	50 U	50 U
Bunker C	50 U	50 U	50 U
Heavy oil	100 U	D	. <b>D</b> ·

# Metals in mg/kg

Lead Chromlum Cadmium

Copper Nickel

Arsenic

Zinc

Mercury

•		
Sample ID	MTCA	B4-S2A
Depth in Feet	Method A	8 to 9
•	Cleanup Level	0.00
	Groundp 2010	
Volatiles(8260) in μg/kg		
Dichlorodifluoromethane		50 U
Chloromethane		50 U
Vinyl Chloride		50 U
Bromomethane		50 U
Chloroethane		
		50 U
Trichlorofluoromethane		50 U
1,1-Dichloroethene		50 U
Methylene Chloride		20 U
Trans-1,2-Dichloroethene		50 U.
1,1-Dichloroethane	•	50 U
2,2-Dichloropropene		50 U
Cis-1,2-Dichloroethene		50 U
Chloroform		50 U
1,1,1-Trichloroethane	2,000	50 U
Carbon Tetrachloride	2,000	50 U
1,1-Dichloropropene		50 U
1,2-Dichloroethane(EDC)	~	20 U
Trichloroethene	20.1	
	30	20 U
1,2-Dichloropropane		50 U
Dibromomethane		50 U
Bromodichloromethane	16,100(a)	3,800
Cis-1,3-Dichloropropene		50 U
Trans-1,3-Dichloropropene		50 U
1,1,2-Trichloroethane	17,500(a)	3,100
Tetrachloroethene		50 U
1,3-Dichloropropane	•	50 U
Dibromochloromethane	*	20 U
1,2-Dibromoethane(EDB)	5	5 U
Chlorobenzene		50 U
1,1,1,2-Tetrachloroethane		50 U
Styrene	33,300	5,000
Bromoform	4	50 U
Isopropylbenzene	8,000,000(a)	
1,2,3-Trichloropropane	0,000,000(a)	29,000
Bromobenzene		50 U
		50 U
1,1,2,2-Tetrachloroethane	0.000.000/ \	50 U
n-Propylbenzene	3,200,000(a)	69,000
2-Chlorotoluene		47,000
4-Chlorotoluene	1,600,000(a)	16,000
1,3,5-Trimethylbenzene	4,000,000(a)	110,000
tert-Butylbenzene	3,200,000(a)	170
1,2,4-Trimethylbenzene	4,000,000(a)	100,000
sec-Butylbenzene	3,200,000(a)	17,000
1,3-Dichlorobenzene		50 U
Isopropyltoluene	4,000,000(a)	17,000
1,4-Dichlorobenzene	· · · · · · · · · · · · · · · · · · ·	50 U
1,2-Dichlorobenzene		50 U
n-Butylbenzene	3,200,000(a)	44,000
1,2-Dibromo-3-Chloropropar		50 U
		30 0

Comple ID	MATOM	- D4 004
Sample ID Depth in Feet	MTCA	B4-S2A
pebu w Leek	Method A	8 to 9
1,2,4-Trichlorobenzene	Cleanup Level 800,000(a)	520
Hexachloro-1,3-butadiene	000,000(a)	50 U
Naphthalene	5,000	39,000
1,2,3-Trichlorobenzene	4,000,000(a)	170
1,2,0 111011010001120110	4,000,000(a)	170
Semivolatiles in mg/kg		
Penatchloroethane		0.50 U
Phenol	•	0.50 U
2-Chlorophenol		0,50 ป
1,3-Dichlorobenzene		0.10 U
1,4-Dichlorobenzene		0.10 U
1,2-Dichlorobenzene	•	0.10 U
2-Methylphenol (o-cresol)		2.6
3,4-Methylphenol (m,p-cres	ol)	0.10 U
Hexachloroethane		0.10 U
2-Nitrophenol		0.50 U
2,4-Dimethylphenol	1,600(a)	2.0
Bis(2-chloroethoxy)methan		2.7
2,4-Dichlorophenol	240(a)	1.0
1,2,4-Trichlorobenzene	4, <b>0</b> 00(a)	0.10 U
Naphthalene	5	52
2,6-Dichlorophenol		0.84
Hexachlorobutadiene		0.50 U
4-Chloro-3-methylphenol		0.31
Hexachlorocyclopentadiene	•	0.10 U
2,4,6-Trichlorophenol		0.50 U
2,4,5-Trichlorophenol	0.400(-)	0.50 U
2-Chloronaphthalene	6,400(a)	0.21
Dimethylphthalate Acenaphthylene	4 900/=)	0.10 U
Acenaphthene	4,800(a)	0.28
2,4-Dinitrophenol	4,800(a)	0.12
4-Nitrophenol		0.50 U
2,3,4,6-Tetrachlorophenol		0.50 U 0.10 U
Diethylphthalate	•	0.10 U
4-Chlorophenylphenylether		0.10 U
Fluorene	3,200(a)	0.14
N-Nitrosodiphenylamine	0,200(0)	0.10 U
2,4,6-Tribromophenol		0.50 U
4-Bromophenylphenylether		0.10 U
Hexachlorobenzene		0.10 U
Pentachlorophenol	8.33(a)	0.50 U
Phenanthrene	,	0.10 U
Anthracene		0.10 U
Di-n-butylphthalate		0.10 U
Fluoranthene	3,200(a)	0.10 U
Pyrene	2,400(a)	0.13
Butylbenzylphthalate	. ,	0.50 U
Benzo(a)anthracene	0. <b>1</b> 37(a)	0.10 U
Chrysene	0.137(a)	0.10 U
Bis(2-ethylhexyl)ether		0.10 U

Hart Crowser 1706301\ChemRsIts17063.xls - Soil 82608270

Sample ID	MTCA	B4-S2A
Depth in Feet	Method A	8 to 9
	Cleanup Level	
Di-n-octylphthalate		0.50 U
Benzo(b)fluoranthene	0.137(a)	0.10 U
Benzo(k)fluoranthene	0.137(a)	0.10 U
Benzo(a)pyrene	0.1	0.10 U
Indeno(1,2,3-cd)pyrene	0.137(a)	0.10 U
Dibenz(a,h)anthracene	0:137(a)	0.10 U
Benzo(ghi)perylene	·	0.10 U

U = Not detected at detection limit indicated.

Blank indicates sample not analyzed for specific analyte or no MTCA criteria available. Detected concentrations are bolded.

Concentrations that exceed the screening criteria are boxed.

- (a) MTCA Method B cleanup level.
- (b) MTCA Method A cleanup level for gasoline mixtures without benzene is 30 mg/kg.

  MTCA Method A cleanup level for gasoline mixtures with benzene is 100 mg/kg.
- D indicates constituent identified but not qualified.

Table 2 - Analytical Results for Grab Groundwater Samples

Sample ID	MTCA Method A Cleanup Level	B-3	- B-4
Metals in mg/L			<i>;</i>
Lead	0.015	0.006	0.007
Chromium	0.05	0.01 U	0.01 U
Cadmium	0.005	0.005 U	0.005 U
Arsenic	0.005	0.005 U	0.005 U
Mercury	0.002	0.0005 U	0.0005 U
Copper		0.01 U	0.01 U
Nickel		0.04	0.05
Zinc .	•	0.004	0.003
NWTPH-Gx in mg/L	,		
Mineral spirits/Stoddard		5.0 U	5.0 U
Gasoline	0.8	6.3	110
BTEX in ug/L			<u> </u>
Benzene	5	530	650
Toluene	1000	55	4900
Ethylbenzene	700	100	1500
Xylenes	1000	· <b>530</b>	8700
NWTPH-Dx in mg/L			<del></del>
Kerosene/Jet fuel		0.2 U	0.2 U
Diesel/Fuel oil	0.5	0.2 U	0.2 U
Heavy oil	0.5	0.5 U	0.5 U

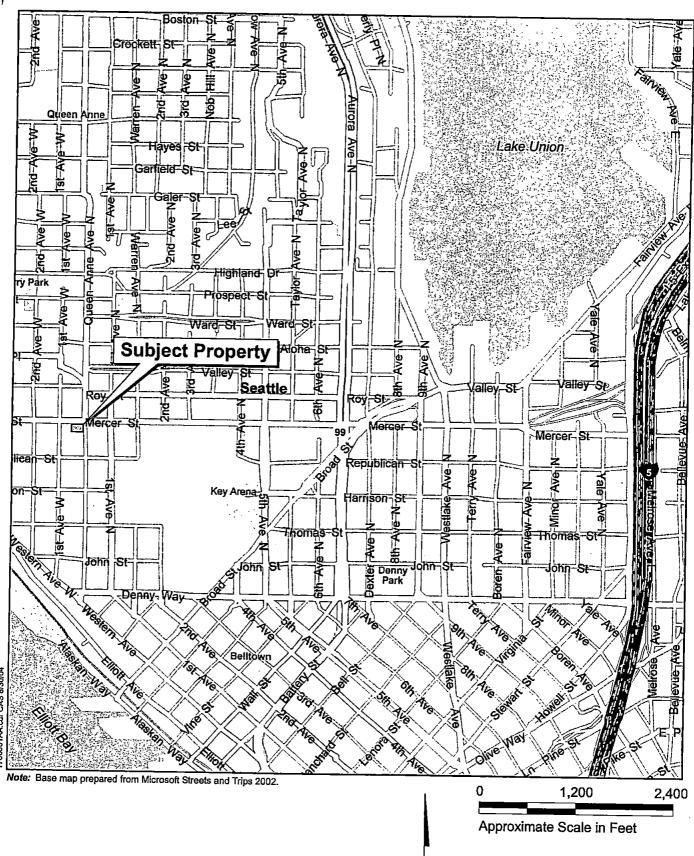
U = Not detected at detection limit indicated.

Blank indicates no MTCA criteria available.

Detected concentrations are bolded.

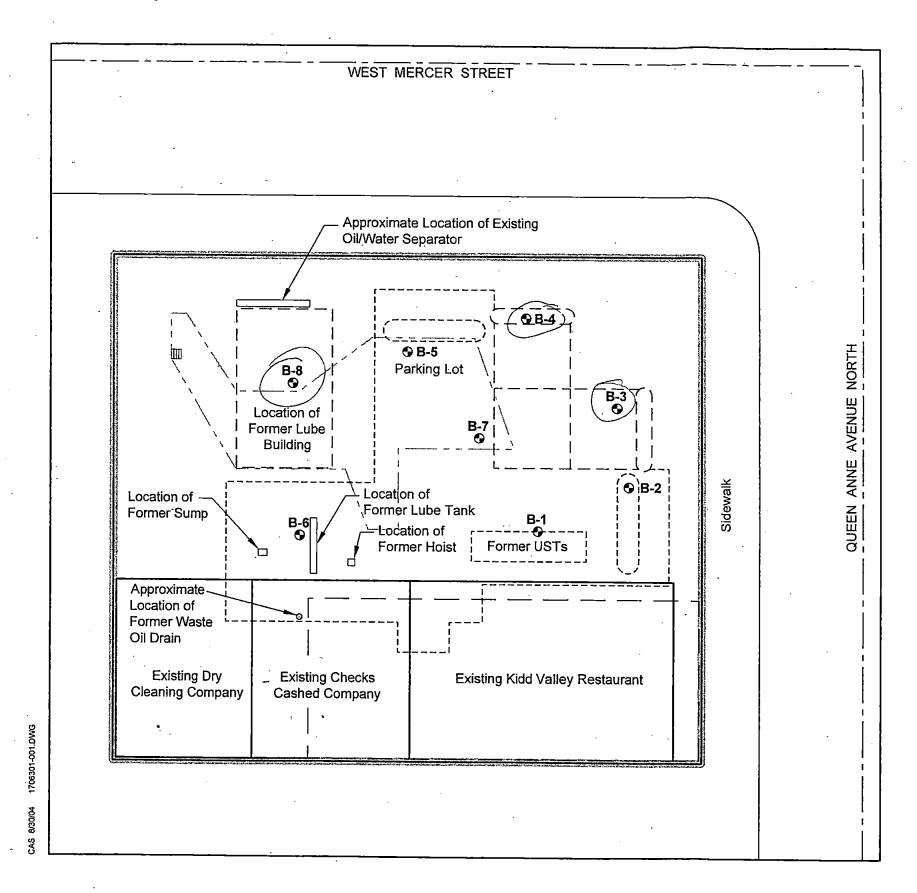
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Concentrations that exceed the screening criteria are boxed.



HARTCROWSER 17063-01 9/04 Figure 1

# Site and Exploration Plan



Subject Property Boundary

Existing Building Footprint

Existing Catch Basin

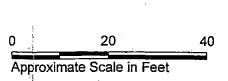
B-1 Strataprobe Boring Location and Number

Retail Store Location (1950 to pre-1960)

Retail Store Station Location (1935 to pre-1960)

Service Station Location (1960 to pre-1986)

Approximate Location of Asphalt Patch





# APPENDIX A FIELD EXPLORATION PROCEDURES

Hart Crowser advanced eight Strataprobe soil borings on the subject property and collected soil samples. Two grab groundwater samples were also collected. The field procedures and methods used for this work are described below. Exploration locations for this work are illustrated on Figure 2.

# **Borings**

• 1

Eight Strataprobe borings were advanced on August 10, 2004. In the Strataprobe borings a continuous 4-foot-long, 2-inch-diameter sampler was pushed and samples were collected. Hart Crowser Field Representatives (Evan Griffiths) logged soil descriptions and placed soil in pre-cleaned 4-ounce glass sample jars. Filled sample jars were stored in a cooler with blue ice. Soils were screened in the field for the presence of volatile organic compounds (VOCs) using a PID. The Hart Crowser project manager selected samples for chemical analysis at representative locations to assess soil quality based on observed signs of potential contamination.

Borings were completed to depths ranging from approximately 12 to 15 feet below ground surface. These borings were backfilled with bentonite chips and hydrated. The surfaces of borings drilled in paved areas were finished with asphalt. Copies of the field logs are included at the end of this appendix.

# Soil Classification

The Hart Crowser field representative visually classified the soil samples in general accordance with ASTM Method D 2488, prepared a log of soils encountered in the exploration, and recorded pertinent observations regarding conditions, types of soils encountered, and the depth to water. Soil descriptions include the following properties: relative density of sands and gravels/consistency of silts and clays, moisture, color, minor constituents, and major constituents. The presence of non-soil substances (e.g., debris etc.) and odors or visual observations such as sheen that may indicate contamination were also noted.

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ŞI,	ZE (	(%) F	<b>১</b> ৯	DE	PTH	l	(PLE	SAMPLE RECOVERY	ation	DESCRIPTION; Den., moist., collor, minor, MAJOR CONSTITUENT. NON-SOIL SUBSTANCES: Odor, staining, sheen, scrap, slag, etc.	REMARKS, Drill action, drill and sample proced—	SUMMARY			
Hav	Ronge	Att.	SE	From	Το.	Туре	Number	CON	netr	NON-SOIL SUBSTANCES: Odor,	ures, water conditions,	(Water & Date)			
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			5.1					1	<del> </del>	(medium dense), damp, brown SAND with	_				
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# APPENDIX B CHEMICAL DATA QUALITY REVIEW AND CERTIFICATES OF ANALYSIS

Eleven soil samples collected on August 10, 2004, were submitted to Advanced Analytical Laboratory of Redmond, WA for analysis of one or more of the following:

- Total Metals Arsenic, Chromium, Copper, Lead, Mercury, Copper, Nickel, and Zinc by EPA Method 7000 series;
- VOCs (EPA Method 8260);
- SVOCs (EPA Method 8270);
- NWTPH-Gx;
- BTEX compounds (EPA Method 8021B);
- NWTPH-Dx; and
- NWTPH-HCID.

Two groundwater samples collected on August 10, 2004, were submitted to Advanced Analytical Laboratory of Redmond, WA for analysis of one or more of the following:

- Dissolved Metals Arsenic, Chromium, Copper, Lead, Mercury, Copper, Nickel, and Zinc by EPA Method 7000 series;
- NWTPH-Gx;
- BTEX compounds (EPA Method 8021B); and
- NWTPH-Dx.

The following criteria were evaluated in the standard data quality review process for the results:

- Holding Times;
- Method Blanks;
- Surrogate Recoveries;
- Laboratory Control Sample Recoveries;
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries; and
- Laboratory Duplicate Relative Percent Differences (RPDs).

# Soil Samples

**Total Metals.** All required holding times were met. No method blank contamination was detected. Laboratory LCS recoveries were acceptable.

**NWTPH-Gx.** All required holding times were met. No method blank contamination was detected. Laboratory duplicate RPDs were acceptable. Surrogate recoveries were within laboratory control limits with one exception. The surrogate recovery for surrogate trifluorotoluene was not applicable for sample B4-S3C due to coelution with sample peaks. The sample data were not qualified because all other QC requirements were met.

**NWTPH-Dx.** All required holding times were met. No method blank contamination was detected. Laboratory duplicate RPDs were acceptable. Surrogate recoveries were within laboratory control limits.

BTEX Compounds. All required holding times were met. No method blank contamination was detected. Surrogate recoveries, duplicate recoveries, and LCS recoveries were within laboratory control limits with one exception. The surrogate recovery for surrogate trifluorotoluene was not applicable for sample B4-S3C due to coelution with sample peaks. The sample data were not qualified because all other QC requirements were met.

**VOCs.** All required holding times were met. No method blank contamination was detected. Surrogate recoveries and LCS recoveries were within laboratory control limits with one exception. The surrogate recovery for surrogate 4-Bromofluorobenzene was not applicable for sample B4-S2Á due to coelution with sample peaks. The sample data were not qualified because all other QC requirements were met.

**SVOCs.** All required holding times were met. No method blank contamination was detected. Surrogate recoveries and LCS recoveries were within laboratory control limits.

**HCID.** All required holding times were met. No method blank contamination was detected. Surrogate recoveries and duplicated recoveries were within laboratory control limits.

# **Groundwater Samples**

**Dissolved Metals.** All required holding times were met. No method blank contamination was detected. Laboratory LCS recoveries were acceptable.

**NWTPH-Gx.** All required holding times were met. No method blank contamination was detected. Laboratory duplicate RPDs were acceptable. Surrogate recoveries were within laboratory control limits.

**NWTPH-Dx.** All required holding times were met. No method blank contamination was detected. Laboratory duplicate RPDs were acceptable. Surrogate recoveries were within laboratory control limits.

**BTEX Compounds.** All required holding times were met. No method blank contamination was detected. Surrogate recoveries and laboratory duplicate RPDs were within laboratory control limits.

The soil data are acceptable for use as reported.

F:\docs\jobs\1706301\Queen Anne Phase II.doc

# CERTIFICATES OF ANALYSIS ADVANCED ANALYTICAL LABORATORY

A40812-4

Client:

Hart Crowser, Inc.

Project Manager:

Jessica Robertson

Client Project Name:

Ivars - Queen Anne

Client Project Number: 17063-02

Date received:

08/12/04

· ·											
Analytical Results						Dupl	RPD				
NWTPH-Gx /瞪TEX		MTH	I BLK	LCS	B3-S2	B3-S2	B3-S2	B4-S2A	B4-S3C	B8-S1A	
Matrix	Soil		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	
Date extracted	Reportin	ng 08/	/12/04	08/12/04	08/12/04	08/12/04	08/12/04	08/12/04	08/12/04	08/12/04	
Date analyzed	Limits	08/	/12/04	08/12/04	08/12/04	08/12/04	08/12/04	08/12/04	08/12/04	08/12/04	
		Clean	cer lee	id							
NWTPH-Gx, mg/kg		acc	agle	T	مل مست	1.00					
Mineral spirits/Stoddard	5.0	10 H	nd	MOUSEV	Crink Ik	nd		nd	nd	nd	_
Gasoline	5.0	ľ	nd		17	13	27%	7 100	690	110	7
· · · · · · · · · · · · · · · · · · ·										- 110	•
BTEX, µg/kg	1 1										
Benzene	20	30	nd	98%	nd	nd		5 000	290	nd	
Toluene	50	7,000	nd	105%	nd	nd		140 000	16 000	2 500	
Ethylbenzene	50	6000	nd		51	52	2%	92 000		650	
Xylenes	50	9000	nd		380	350			60 000	11 000	<b>4</b> (
							ı				<i>)</i> ។
Surrogate recoveries:											
Trifluorotoluene			99%	106%	103%	85%	<del>-                                    </del>	116%	С	100%	
Bromofluorobenzene		•	108%	107%	103%	106%		106%	126%	106%	
									, .	.0070	

# **Data Qualifiers and Analytical Comments**

nd - not detected at listed reporting limits

na - not analyzed .

C - coelution with sample peaks

M - matrix interference

J - estimated value

Results reported on dry-weight basis

Acceptable Recovery limits: 70% TO 130%

A40812-4

Client:

Hart Crowser, Inc.

Project Manager:

Jessica Robertson

Client Project Name: Client Project Number: 17063-02

Ivars - Queen Anne

Date received:

08/12/04

# **Analytical Results**

	MTH BLK	MTH BLK	LCS	B3-S3A
Soil	Soil	Soil	Soil	Soil
Reporting	08/12/04	08/17/04	08/17/04	08/17/04
Limits	08/12/04	08/17/04	08/17/04	08/17/04
<u> </u>	-			_
5.0	nd	nd		nd
5.0	nd	nd		58
20	nd	nd	104%	nd
50	nd	nd	104%	76
50	nd	nd		nd
50	nd	nd		390
	_			· · · · · ·
	99%	80%	90%	89%
	108%	105%	112%	105%
	Reporting Limits 5.0 5.0 5.0	Soil         Soil           Reporting         08/12/04           Limits         08/12/04           5.0         nd           5.0         nd           50         nd           50         nd           50         nd           50         nd           50         nd           99%	Soil         Soil         Soil           Reporting         08/12/04         08/17/04           Limits         08/12/04         08/17/04           5.0         nd         nd           5.0         nd         nd           5.0         nd         nd           50         nd         nd           99%         80%	Soil         Soil         Soil         Soil           Reporting         08/12/04         08/17/04         08/17/04           Limits         08/12/04         08/17/04         08/17/04           5.0         nd         nd         nd           5.0         nd         nd         104%           50         nd         nd         104%           50         nd         nd         nd           50         nd         nd         nd           50         nd         nd         nd           50         nd         nd         nd           99%         80%         90%

# **Data Qualifiers and Analytical Comments**

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A40812-4

Client:

Hart Crowser, Inc.

Project Manager:

Jessica Robertson

Client Project Name:

Ivars - Queen Anne

Client Project Number:

17063-02

Date received:

08/12/04

Analytical Results				Dupl	RPD	
NWTPH-Gx	<u> </u>	MTH BLK	B3	В3	B3	В4
Matrix	Water	Water	Water	Water	Water	Water
Date analyzed	Reporting Limits	08/12/04	08/12/04	08/12/04	08/12/04	08/12/04
NWTPH-Gx, mg/L	-	•	·			
Mineral spirits/Stoddard	0.10	nd	nd	nd		nd
Gasoline	0.10 ,	nď	6.3	5.5	14%	110
BTEX, ug/L		-	•	-	_	
Benzene	50	nd	530	520	2%	650
Toluene	50	nd	55	53	4%	4 900
Ethylbenzene	50	nd	100	92	8%	1 500
Xylenes	50	nd	530	520	2%	8 700
Surrogate recoveries:		·			,	
Trifluorotoluene	•	99%	112%	112%		102%
Bromofluorobenzene	<del></del>	108%	117%	117%		111%

# **Data Qualifiers and Analytical Comments**

nd - not detected at listed reporting limits

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J - estimated value

Acceptable Recovery limits: 70% TO 130%

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Ivars - Queen Anne

Client Project Number:

17063-02

Date received:

08/12/04

Analytical Results						Đupl	
NWTPH-Dx, mg/kg		MTH BLK	B3-S2	B4-S2A	B4-S3C	B4-S3C	B8-S1A
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	08/13/04	08/13/04	08/13/04	08/13/04	08/13/04	08/13/04
Date analyzed	Limits	08/13/04	08/13/04	08/13/04	08/13/04	08/13/04	08/13/04
Kerosene/Jet fuel	20	. nd	nd	nd	nd	nd	nd
Diesel/Fuel oil	20	nd	nd	830	nd	nd	nd
Heavy oil	50	nd	740	170	nd	nd	150
Surrogate recoveries:							
Fluorobiphenyl		110%	115%	117%	115%	114%	115%
o-Terphenyl		110%	112%	109%	112%	111%	110%

# Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits

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M - matrix interference

J - estimated value

Results reported on dry-weight basis

Acceptable Recovery limits: 70% TO 130%

A40812-4

Client:

Hart Crowser, Inc

Project Manager:

Jessica Robertsor

Client Project Name:

Ivars - Queen Anr

Client Project Number: Date received:

17063-02 08/12/04

Analytical Results	<u> </u>					Dupl
NWTPH-Dx, mg/kg		MTH BLK	B3-S3A	B7-S1	B8-S2	B8-S2
Matrix	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	08/17/04	08/17/04	08/17/04	08/17/04	08/17/04
Date analyzed	Limits	08/17/04	08/17/04	08/17/04	08/17/04	08/17/04
Kerosene/Jet fuel	20	nd	nd	nd-	nd	nd
Diesel/Fuel oil	20	nd	nd	nd	nd	nd
Heavy oil	50	nd	250	470	310	310
Surrogate recoveries:						
Fluorobiphenyl		105%	106%	105%	104%	105%
o-Terphenyl		104%	102%	104%	102%	103%

# **Data Qualifiers and Analytical Comments**

nd - not detected at listed reporting limits

na - not analyzed

C - coelution with sample peaks

M - matrix interference

J - estimated value

Results reported on dry-weight basis

Acceptable Recovery limits: 70% TO 130%

A40812-4

Client:

Hart Crowser, Inc.

Project Manager:

Jessica Robertson

Client Project Name:

Ivars - Queen Anne

Client Project Number:

17063-02

Date received:

08/12/04

**Analytical Results** 

8260, μg/kg		MTH BLK	LCS	B4-S2A
Matrix	Soil	Soil	Soil	Soil
Date extracted	Reporting	08/17/04	08/17/04	08/17/04
Date analyzed	Limits	08/17/04	08/17/04	08/17/04
				00, 17.0 1
Dichlorodifluoromethane	<b>5</b> 0	nd		nd
Chloromethane	50	nd		nd
Vinyl chloride	50	nd		nd
Bromomethane	50	nd	•	nd
Chloroethane	50	nd		nd
Trichlorofluoromethane	50	nd		nd
1,1-Dichloroethene	50	nd		nd
Methylene chloride	20	nd		nd
trans-1,2-Dichloroethene	50	nd		nd
1,1-Dichloroethane	50	nd		nd
2,2-Dichloropropane	50	nd		nd
cis-1,2-Dichloroethene	50	nd		nd
Chloroform	50	nd		nd
1,1,1-Trichloroethane	50	nd		nd
Carbontetrachloride	50	nd		nd
1,1-Dichloropropene	50	nd		nd
1,2-Dichloroethane(EDC)	20	nd		nd
Trichloroethene	20	nd	90%	nd
1,2-Dichloropropane	50	· nd		nd
Dibromomethane	50	nd		nd
Bromodichloromethane	50	nd		3 800
cis-1,3-Dichloropropene	50	nd		nd
trans-1,3-Dichloropropene	50	nd		nd
1,1,2-Trichloroethane	50	nd		3 100
Tetrachloroethene	50	nd		nd
1,3-Dichloropropane	50	nd		nd
Dibromochloromethane	20	nd		nd
1,2-Dibromoethane (EDB)*	5	nd		nd
Chlorobenzene	50	nd	92%	nd
1,1,1,2-Tetrachloroethane	50	nd		nd
Styrene	50	nd		5 000
Bromoform	50	nd		nd
Isopropylbenzene	50	nd		29 000
1,2,3-Trichloropropane	50	nd		nd
Bromobenzene	. 50	nd		nd
1,1,2,2-Tetrachloroethane	50	nd		nd
n-Propylbenzene	50	· nd		69 000
2-Chlorotoluene	50	nd	•	47 000
		<u> </u>		

:				
4-Chlorotoluene	50	nd		16 000
1,3,5-Trimethylbenzene	50	nd		110 000
tert-Butylbenzene	50	nd		170
1,2,4-Trimethylbenzene	50	nd		100 000
sec-Butylbenzene	50	nd		17 000
1,3-Dichlorobenzene	50	· nd		nd
Isopropyltoluene	50	nd		17 000
1,4-Dichlorobenzene	50	лd		nd
1,2-Dichlorobenzene	· 50	nd		nd
n-Butylbenzene	50	nd		44 000
1,2-Dibromo-3-Chloropropane	50°	nd		nd
1,2,4-Trichlorobenzene	50	· nd		520
Hexachloro-1,3-butadiene	50	nd		nd
Naphthalene	50	nd		39 000
1,2,3-Trichlorobenzene	50	nd		170
*-instrument detection limits				<del></del>
Surrogate recoveries				
Dibromofluoromethane		102%	99%	83%
Toluene-d8		103%	. 110%	115%
1,2-Dichloroethane-d4		93%	88%	92%
4-Bromofluorobenzene		107%	110%	С

**Data Qualifiers and Analytical Comments** 

nd - not detected at listed reporting limits
Acceptable Recovery limits: 70% TO 130%

A40812-4

Client:

Hart Crowser, Inc.

Project Manager:

Jessica Robertson

Client Project Name:

Ivars - Queen Anne

Client Project Number:

17063-02

Date received:

08/12/04

**Analytical Results** 

8270C, mg/kg		MTH BLK	LCS	B4-S2A
Matrix	Soil	Soil	Soil	Soil
Date extracted	Reporting	08/18/04	08/18/04	08/18/04
Date analyzed	Limits	08/18/04	08/18/04	08/18/04
Phenol	0.50	nd		nd
2-Chlorophenol	0.50	nd		nd
Bis (2-chloroethyl) ether	0.50	nd		nd
1,3-Dichlorobenzene	0.10	nd		nd
1,4-Dichlorobenzene	0.10	nd	94%	nd
1,2-Dichlorobenzene	0.10	nd		nd
2-Methylphenol (o-cresol)	0.10	nd		2.6
Bis (2-chloroisopropyl) ether	0.10	nd		nd
3,4-Methylphenol (m,p-cresol)	0.10	nd		nd
Hexachloroethane	0.10	nd		. nd
2-Nitrophenol	0.50	nd		nd
2,4-Dimethylphenol	0.50	nd		2.0
Bis (2-chloroethoxy) methane	0.10	nd		2.7
2,4-Dichlorophenol	0.50	nd	90%	1.0
1,2,4-Trichlorobenzene	0.10	nd		nd
Naphthalene	0.10	nd		52
2,6-Dichlorophenol	0.50	nd		0.84
Hexachloropropylene	0.50	nd		nd
Hexachlorobutadiene	0.50	nd	87%	nd
4-Chloro-3-methylphenol	0.50	nd		0.31
1,2,4,5-Tetrachlorobenzene	0.50	, nd		nd
Hexachlorocyclopentadiene	0.10	nd		nd
2,4,6-Trichlorophenol	0.50	nd		nd
2,4,5-Trichlorophenol	0.50	nd		nd
2-Chloronaphthalene	0.10	nd		0.21
Dimethylphthalate	0.10	nd		nd
Acenaphthylene	0.10	nd		0.28
Acenaphthene	0.10	nd	93%	0.12
2,4-Dinitrophenol	0.50	nd		nd
4-Nitrophenol	0.50	nd		nd
Pentachlorobenzene	0.50	nd		nd
2,3,4,6-Tetrachlorophenol	0.50	nd		nd
Fluorene	0.10	nd		0.14
2,4,6-Tribromophenol	0.50	nd		nd
Diethylphthalate	0.10	nd		nd
4-Chlorophenylphenylether	0.50	nd		nd
N-Nitrosodiphenylamine	0.10	nd	79%	nd
4-Bromophenylphenylether	0.10	nd		nd

Hexachlorobenzene	0.10	nd		nd
Pentachlorophenol	0.50	nd	,	nd
Phenanthrene	0.10	nd		nd
Anthracene	0.10	nd		nd
2-sec-Butyl-4,6-dinitrophenol	0.50	nd		nd
Di-n-butylphthalate	0.10	nd		nd
Fluoranthene	0.10	nd	118%	nd
Pyrene	0.10	nd		0.13
Butylbenzylphthalate	0.50	nđ		nd
Benzo(a)anthracene	0.10	nd		nd
Chrysene	0.10	nd		nd
Bis (2-ethylhexyl) ether	0.10	nd		nd
Di-n-octylphthalate	0.50	nd		nd
Benzo(b)fluoranthene	0.10	nd		nd
Benzo(k)fluoranthene	0.10	nd	, .	nd
Benzo(a)pyrene	0.10	nd		nd
Indeno(1,2,3-cd)pyrene	0.10	nd		nd
Dibenzo(a,h)anthracene	0.10	nd		nd
Benzo(ghi)perylene	0.10	nd		nd
			•	-
Surrogate recoveries	<del></del>	· · · · · · · · · · · · · · · · · · ·		
Nitrobenzene-d5		116%	107%	112%
2-Fluorobiphenyl		· 103%	95%	113%
4-Terphenyl-d14	·	99%	98%	96%

**Data Qualifiers and Analytical Comments** 

nd - not detected at listed reporting limits

Acceptable Recovery limits: 70% TO 130%

A40812-4

Client:

Hart Crowser, Inc.

Project Manager:

Jessica Robertson

Client Project Name:

Ivars - Queen Anne

Client Project Number:

17063-02

Date	received:	
•		

08/12/04

Analytical Results					Dupl	RPD
Metals Dissolved (7010), r	ng/l	MTH BLK	LCS	В4	B4	B4
Matrix	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	08/18/04	08/18/04	08/18/04	08/18/04	08/18/04
Date analyzed	Limits	08/18/04	08/18/04	08/18/04	08/18/04	08/18/04
Lead (Pb)	0.002	nd	92%	0.006	0.007	15%
Chromium (Cr)	. 0.01	nd	88%	nd	nd	
Cadmium (Cd)	0.005	· nd	108%	nd	nd	
Arsenic (As)	0.005	nd	95%	nd	nd	
Mercury (Hg) (7470A)	0.0005	" nd	66%	nd	nd <sup>.</sup>	
Copper (Cu)	0.01	nd	98%	· nd	nd	
Nickel (Ni)	0.01	nd	70%	0.04	0.05	22%
Zinc (Zn)	0.001	nd	88%	0.004	0.003	29%

# **Data Qualifiers and Analytical Comments**

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na - not analyzed

J - estimated value

Acceptable Recovery limits: 70% TO 130%

A40812-4

Client:

Hart Crowser, Inc.

Project Manager:

Jessica Robertson

Client Project Name:

Ivars - Queen Anne

Client Project Number: 17063-02 Date received:

08/12/04

Analytical Results

Analytical Nesults				
Metals (7010), mg/kg		MTH BLK	LCS	B4-S2A
Matrix	Soil	Soil	Soil	Soil
Date extracted	Reporting	08/18/04	08/18/04	08/18/04
Date analyzed	Limits	08/18/04	08/18/04	08/18/04
		- <del>-</del>		
Lead (Pb)	1.0	nd	92%	6.9
Chromium (Cr)	2.0	nd	92%	6.4
Cadmium (Cd)	1.0	nd	108%	nd
Copper (Cu)	1.0	nd	98%	4.8
Nickel (Ni)	0.5	nd	86%	6.5
Arsenic (As)	2.0	nd	95%	nd
Zinc (Zn)	0.05	nd	88%	1.3
Mercury (Hg) (7471)	0.5	ndnd	96%	nd

# **Data Qualifiers and Analytical Comments**

nd - not detected at listed reporting limits

na - not analyzed

J - estimated value

Results reported on dry-weight basis

Acceptable Recovery limits: 70% TO 130%

AÁĽ Job Number:

A40812-4

Client:

Hart Crowser, Inc.

Project Manager:

Jessica Robertson

Client Project Name:

Ivars - Queen Anne

Client Project Number:

17063-02

Date received:

08/12/04

Analytical Results					Dupl
NWTPH-Dx, mg/I		MTH BLK	B3	B4	B4
Matrix	Water	Water	Water	Water	Water
Date extracted	Reporting	08/13/04	08/13/04	08/13/04	08/13/04
Date analyzed	Limits	08/13/04	08/13/04	08/13/04	08/13/04
Kerosene/Jet fuel	0.20	nd	nd	nd	nd
Diesel/Fuel oil	0.20	nd	nd	nd	nd
Heavy oil	0.50	nd	nd	nd	nd
Surrogate recoveries:					
Fluorobiphenyl		116%	118%	117%	115%
o-Terphenyl		111%	115%	112%	110%

# **Data Qualifiers and Analytical Comments**

nd - not detected at listed reporting limits

na - not analyzed

C - coelution with sample peaks

M - matrix interference

J - estimated value

Acceptable Recovery limits: 70% TO 130%

A40812-4

Client:

'n

Hart Crowser, Inc.

Project Manager:

Jessica Robertson

Client Project Name:

Ivars - Queen Anne

Client Project Number: Date received:

17063-02 08/12/04

**Analytical Results** 

Analytical Results								
NWTPH-HCID, mg/kg	· · · · · · · · · · · · · · · · · · ·	MTH BLK	B1-S2	B2-S1	B3-S3A	B5-S1	B6-S2	B7-S1
Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Date extracted	Reporting	08/13/04	08/13/04	08/13/04	08/13/04	08/13/04	08/13/04	08/13/04
Date analyzed	Limits	08/13/04	08/13/04	08/13/04	08/13/04	08/13/04	08/13/04	08/13/04
Gasoline	20	nd	nd	nd	D	_ nd	n <b>d</b>	nd
Stoddard/Mineral spirits	20	nd	nd	nd	nd	nd	nd	nd
Kensol	20	nd	nd	nd	nd	nd	nd	nd
Kerosene/Jet fuel	20	nd	nd	nd	nd	nd	nd	nd
Diesel/Fuel oil	50	nd	nd	nd	nd	nd	nd	' nd
Bunker C	50	nd	nd	nd	nd	nd	nd	nd
Heavy oil	100	nd	nd	nd	D	nd	nd	, D
Surrogate recoveries:								
Fluorobiphenyl		110%	115%	116%	117%	120%	115%	116%
o-Terphenyl		110%	110%	112%	112%	115%	110%	111%

# **Data Qualifiers and Analytical Comments**

nd - not detected at listed reporting limits

D - detected at or above listed reporting limits

C - coelution with sample peaks

M - matrix interference

J - estimated value

Results reported on dry-weight basis

Acceptable Recovery limits: 70% TO 130%

A40812-4

Client:

Hart Crowser, Inc.

Project Manager:

Jessica Robertson

Client Project Name:

Ivars - Queen Anne

Client Project Number:

17063-02

Date received:

08/12/04

Analytical Results				Dupl
NWTPH-HCID, mg/kg		MTH BLK	B8-S2	B8-S2
Matrix	Soil	Soil	Soil	Soil
Date extracted	Reporting	08/13/04	08/13/04	08/13/04
Date analyzed	Limits	08/13/04	08/13/04	08/13/04
Gasoline	20	nd	nd	nd
Stoddard/Mineral spirits	20	nd	nd	nd
Kensol	20	nd	nd	nd
Kerosene/Jet fuel	20	nd	nd	nd
Diesel/Fuel oil	50	nd	nd	nd
Bunker C	50	nd	nd	nd
Heavy oil	100	nd	· D	D
Surrogate recoveries:	-			
Fluorobiphenyl		110%	117%	118%
o-Terphenyl		110%	112%	113%

# **Data Qualifiers and Analytical Comments**

nd - not detected at listed reporting limits

D- detected at or above listed reporting limits

C - coelution with sample peaks

M - matrix interference

J - estimated value

Results reported on dry-weight basis

Acceptable Recovery limits: 70% TO 130%

Samples Shipped to:

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·	. =	•	

**HARTCROWSER** 

1910 Fairview Avenue East Seattle, Washington 98102-3699 Phone: 206-324-9530 FAX: 206-328-5581

JOB LAB NUMBER							Ñ			REQU	STE	D AN	IALYSI	S				S	
				Anna	<del></del> .		8			ľ			. :					CONTAINERS	
PROJECT NAME <u>LUDRS</u> QUEEN ANNE HART CROWSER CONTACT <u>JESSICE</u> <u>Robeltson</u>					3	4		•   .								ATNC	OBSERVATIONS/COMMENTS/ COMPOSITING INSTRUCTIONS		
THAT CHOTES	JEN CONTA	CI <u> </u>	<u> </u>	WC 1' 30	<u>~</u>	10	Hd	to	d							-		OF C	
SAMPLED BY:	;		<u> </u>			HCL	NWTTPH-	NW TOH-D	700									Š	
	رسيل					T	· N	2								ļ.	<u> </u>		
LAB NO. SA	AMPLE ID	DESCRIPTI		TIME	MATRIX										<u> </u>	-			)
5,	<u>/ 13/</u>	<u> </u>	8/10/04	· · · · · · · · · · · · · · · · · · ·	5	<u> </u>			×		_				_		<u> </u>		Note: for all samples,
5	2 B/		11/10/04			X						_		<u> </u>					A NYES SENIO DELLE
5	3 <u>/</u> 3/		2/10/04	1	1	_			X		1		_						ANNE PISTANCE
												$\perp$		ļ	$\perp$				EXAMPLE VILLEND FREE
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Samples :	Shipped to:	 	•	



1910 Fairview≠Avenue East Seattle, Washington 98102-3699

Samples S	hipped to:		· · · · · · · · · · · · · · · · · · ·	<u>.</u>						·	П	/.UK	/(	JK	U	V5	ĽK		Phone: 206-324-9530 FAX: 206-328-558
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Samples Shipped to	0:



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**REQUESTED ANALYSIS** JOB \_\_\_\_\_\_\_ LAB NUMBER \_\_\_\_\_\_ CONTAINERS PROJECT NAME LUBRS QUEEN ANNE OBSERVATIONS/COMMENTS/ HART CROWSER CONTACT JESSIED Robertson COMPOSITING INSTRUCTIONS \* ᆼ SAMPLED BY: ECG LAB NO. SAMPLE ID DESCRIPTION DATE TIME **MATRIX** 8/10/04 730 8/10/04 8/10/04 8/10/04 1200 8/10/04 945 5/A/38 **RELINQUISHED BY** DATE **RECEIVED BY** DATE TOTAL NUMBER OF CONTAINERS SPECIAL SHIPMENT HANDLING OR STORAGE REQUIREMENTS: SAMPLE RECEIPT INFORMATION SIGNATURE CUSTODY SEALS □YES: □NO □NA \$ 14 M SIGNATURE PRINT NAME
COMPANY TIME PRINT NAME TIME GOOD CONDITION □YES - □NO TEMPERATURE 400 COMPANY SHIPMENT METHOD: □HAND. **RELINQUISHED BY RECEIVED BY** DATE DATE □COURIER. □OVERNIGHT. COOLER NO .: TURNAROUND TIME: STORAGE LOCATION: SIGNATURE SIGNATURE ☐ 24 HOURS ☐ 1 WEEK TIME TIME PRINT NAME PRINT NAME ₽ŞTANDARD ☐ 48 HOURS See Lab Work Order No. 7 , 1 COMPANY COMPANY for Other Contract Requirements ☐ 72 HOURS OTHER \_\_\_\_\_

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Samples Shipped to:



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Phone: 206-324-9530 FAX: 206-328-5581

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