



TIKI CAR WASH
LUST# 2910 / UST# 100678
Bellevue, King Co.

www.hartcrowser.com

March 7, 2003

RECEIVED
APR 04 2003
DEPT OF ECOLOGY

Bruce Nurse
Bellevue Properties
575 Bellevue Square
Bellevue, WA 98004

Re: Groundwater Sampling and Analysis
Barrier Motors Lot
NE 6th Street
Bellevue, Washington
7867

ENTERED
E/2 / 03-RM

Dear Bruce:

This letter summarizes results of groundwater sampling and analysis for samples collected from the Barrier Motors lot (Figure 1). Barrier Motors has leased the lot from Bellevue Properties for vehicle parking and storage since prior to the early 1990s. The property is located immediately downgradient from the Tiki Car Wash site, where gasoline was released from a leaking underground storage tank (UST) system prior to about 1990. Gasoline releases from the Tiki site have migrated to the Barrier Motors property, as documented by Hart Crowser (2001).

The purpose of the current work was to evaluate concentrations of gasoline-range hydrocarbons and related chemical constituents in groundwater beneath the Barrier Motors lot. We understand that Bellevue Properties is considering leasing the property to another party for potential retail/commercial construction. In addition to sampling and analysis conducted by Hart Crowser, this letter also summarizes chemical analysis results of samples collected by Environmental Associates, Inc. (EAI) on behalf of the prospective lessee. EAI collected a number of these samples from the same locations, but analysis of the Hart Crowser samples was recommended because the bailer sampling method used by EAI is sometimes subject to high-biased results. In general however, the Hart Crowser and EAI sampling results were comparable, as discussed below.

Summary Conclusions

Results of sampling and analysis by Hart Crowser and EAI indicate that a plume of gasoline in groundwater continues to be present on the Barrier Motors lot. Concentrations of

Anchorage

Boston

Denver

Edmonds

Eureka

Jersey City

Juneau

Long Beach

Portland

Seattle



gasoline-range hydrocarbons and other constituents have increased near the edge of the plume since sampling was last conducted by the Washington State Department of Ecology (Ecology) in 1996. This suggests that the plume could be migrating slowly to the southwest over time. The presence of relatively high concentrations of benzene and methyl tertiary-butyl ether (MTBE) suggest that the Tiki UST system may have continued releasing gasoline following replacement of the USTs in the late 1980s. MTBE is an additive that was commonly present in gasoline distributed between the late 1970s and 1990s. The current status and integrity of the Tiki UST system is unknown. There are no known past uses of the Barrier Motors lot that would have resulted in the observed groundwater impacts.

Although the Tiki gasoline plume has not dissipated and may potentially be expanding over time, there is no indication that this condition represents a threat to human health and the environment. In addition, provisions of the Washington State Model Toxics Control Act statute (Chapter 70.105.020 RCW) exclude Bellevue properties as an "owner or operator" associated with the Tiki gasoline release. The exclusion is known as the "plume clause" and applies to sites where contamination is solely the result of groundwater migration from a source off the property, as is the case for the Barrier Motors lot (70.105D.20(iv) RCW). MTCA requires that activities at the affected downgradient property do not interfere with the operation remedial actions, or result in human or environmental exposures to contaminated groundwater that has migrated onto the property.

Recommendations. Results of the Barrier Motors groundwater sampling and analysis should be reported to Ecology with the recommendation that the state renew site assessment efforts at the Tiki Car Wash. During future site development at the Barrier Motors lot, a Construction Contingency Plan should be prepared to establish procedures for appropriate on-site handling, management, and disposal of affected soils and groundwater. The need for a potential vapor migration barrier beneath the building floor slab should also be evaluated.

TIKI CAR WASH GASOLINE RELEASES AND REMEDIATION

Gasoline releases to soil and groundwater at the Tiki Car Waste are well-documented (Hart Crowser 2001) and were first reported to Ecology during UST replacements in the late 1980s. Beginning in the early 1990s, Hart Crowser and others installed groundwater monitoring wells to delineate a plume of gasoline in groundwater extending onto the Barrier Motors lot. The approximate previous and current plume locations are shown on Figure 1, based on information from the current investigation and from sampling and analysis last conducted in 1996. Gasoline releases in soil and groundwater prompted additional site



assessment by Ecology contractors. Ecology initiated cleanup efforts in 1995, but discontinued remediation and site assessment in 1996 because of lack of funding. According to available Ecology records obtained through EAI, no additional soil or groundwater sampling and analysis is known to have occurred since 1996. In 1995, the Washington Department of Health determined that the condition did not "represent a significant hazard to public health." The Department of Health also determined that the Tiki Car Wash site was "not of immediate concern because of the lack of a current completed human health pathway."

HART CROWSER GROUNDWATER SAMPLING AND ANALYSIS

On February 6, 2003, Hart Crowser collected groundwater samples from existing monitoring wells MW-2, MW-6, and MW-7 located on the Barrier Motors lot, and from well MW-5 located on NE 6th Street (Figure 1). The wells were purged and sampled by low-flow technique to minimize sample turbidity. To evaluate purging efficiency, the groundwater was monitored for pH, temperature, conductivity, and dissolved oxygen. Groundwater samples were collected into pre-cleaned preserved containers provided by ESN NW laboratory (Bellevue). Samples were stored in a locked refrigerator at Hart Crowser, and were delivered to ESN NW on February 18, 2003. The samples were submitted for chemical analysis by the following methods:

- Gasoline-range total petroleum hydrocarbons (TPH) by Ecology Method NWTPH-G;
- Benzene, toluene, ethylbenzene, xylenes (BTEX), and MTBE by EPA Method 8020;
- Diesel- and oil-range TPH by Ecology Method NWTPH-D-extended; and
- Dissolved lead by EPA Method 6020.

Analytical results for the Hart Crowser and EAI samples are summarized in Table 1. Based on apparent elevated concentrations of MTBE in samples from wells MW-5 and MW-6, additional confirmation analysis for MTBE was run on the two samples using mass spectrometry by EPA Method 8260B.

Comparison of groundwater sampling results to MTCA groundwater cleanup levels is for screening purposes only, and does not imply that additional remedial actions are necessary at the Barrier Motors property.



Analytical Results

Gasoline. Concentrations of gasoline-range TPH exceeding Ecology's MTCA Method A cleanup level of 1.0 mg/L (0.8 mg/L for samples containing benzene) were detected in samples MW-2 (10 mg/L), MW-5 (240 mg/L), and MW-6 (200 mg/L). Sample MW-7 contained no detectable gasoline.

BTEX. Concentrations of BTEX were well above Method A levels for samples MW-5 and MW-6. Specific BTEX concentrations are summarized in Table 1.

MTBE. Three of the four samples contained MTBE above the Method A limit of 20 ug/L. Sample MW-2 contained 90 ug/L, sample MW-5 contained 1,700 ug/L, and sample MW-6 contained 4,000 ug/L. Due to the potential for false positives using EPA Method 8020, the two highest concentration samples were reanalyzed by mass spectrometry (Method 8260B). The MTBE concentrations by Method 8260B were 500 ug/L for MW-5 and 1,200 ug/L for MW-6. The Method 8260B sample results have been qualified as estimates due to sample holding time exceedance of 5 days. The detected MTBE concentrations demonstrate the presence of this compound at elevated concentrations, however.

Dissolved Lead. Lead samples were forwarded for analysis by ESN NW to Severn Trent Laboratory in Tacoma, Washington. Samples MW-5 (161 ug/L lead) and MW-6 (52.5 ug/L lead) contained concentrations of dissolved lead above the Method A level of 15 ug/L.

Diesel and Oil. No detectable concentrations of diesel or oil were reported for the four samples.

The differences in analytical results between the Hart Crowser and EAI samples presented below are likely due to purging and sampling techniques (i.e., low-flow versus bailer). However, the Hart Crowser results verify that gasoline, BTEX, lead, and MTBE concentrations in samples collected from MW-2, MW-5, and MW-6 are consistently well above Method A levels.

EAI GROUNDWATER SAMPLING AND ANALYSIS

EAI collected samples from the same wells on February 3, 2003, by bailer method. The samples were submitted on February 4 to Friedman & Bruya laboratory for analysis by the following methods:



- Gasoline-range TPH by Ecology Method NWTPH-G;
- BTEX by EPA Method 8020; and
- Diesel- and oil-range TPH by Ecology Method NWTPH-D-extended.

Analytical Results

The following analytical results were reported in a draft FAX correspondence by EAI. We understand that EAI is presenting final analytical results and laboratory documentation in a report to the prospective lessee.

Gasoline. Concentrations of gasoline-range TPH exceeding Method A cleanup levels were detected in samples MW-2 (3.6 mg/L), MW-5 (45 mg/L), and MW-6 (86 mg/L). Sample MW-7 contained no detectable gasoline.

BTEX. Concentrations of BTEX were well above Method A levels for samples MW-5 and MW-6. A concentration of benzene in MW-2 (22 ug/L) also exceeded the Method A level for benzene (5.0 ug/L). BTEX concentrations are summarized in Table 1.

Diesel and Oil. Concentrations of diesel-range TPH exceeding the Method A cleanup level of 0.5 mg/L were detected in samples MW-2 (3.2 mg/L), MW-5 (6.5 mg/L), and MW-6 (7.4 mg/L). Sample MW-7 contained no detectable diesel. No oil-range TPH was detected. The presence of diesel-range petroleum hydrocarbons is likely due to weathered gasoline rather than an actual diesel product.

COMPARISON OF SAMPLING RESULTS TO 1996 PLUME CONDITION

Table 2 summarizes analytical results of previous sampling on May 23, 1996, with results from Hart Crowser samples collected on February 6, 2003. The 1996 sampling was completed by Enviro Incorporated for Ecology, and represents the last sampling event prior to the 2003 sampling. Since 1996, gasoline and BTEX concentrations have increased substantially in monitoring well MW-5. This well was non-detect for gasoline and BTEX in 1996 and defined the boundary of the groundwater plume along NE 6th Street (Figure 1). February 2003 results now indicate the plume boundary may have expanded beyond this point to the southwest. In contrast gasoline and BTEX concentrations in wells MW-2, MW-6, and MW-7 are relatively comparable between 1996 and 2003. In particular, gasoline and



Bellevue Properties
March 7, 2003

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volatile concentrations in MW-2 near the Tiki site boundary remain at similar concentrations, with the exception of benzene, which is now non-detect.

CLOSING

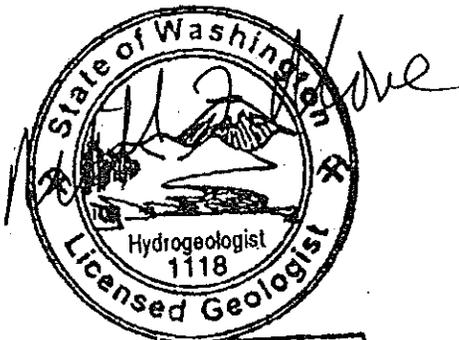
Work for this project was performed, and this letter report prepared, in accordance with generally accepted professional practices for the nature and conditions of the work completed in the same or similar localities, at the time the work was performed. It is intended for the exclusive use of Bellevue Properties for specific application to the referenced property. This report is not meant to represent a legal opinion. No other warranty, express or implied, is made.

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.

We trust that this report meets your needs.

Sincerely,

HART CROWSER, INC.



Richard F. Moore

RICHARD F. MOORE, L.H.G.

Senior Associate Environmental Specialist

Attachments:

- Table 1 - Analytical Results for Hart Crowser and EAI Groundwater Samples
- Table 2 - Comparison of Analytical Results: May 23, 1996 and February 6, 2003 Groundwater Samples
- Figure 1 - Site and Sampling Plan
- Attachment A - Laboratory Analytical Documentation

Table 1 - Analytical Results for Hart Crowser and EAI Groundwater Samples

Sample ID: Sampling Date: Sampling Technique:	MTCA Methods A Cleanup Level	MW-2		MW-5		MW-6		MW-7	
		2/6/03 HC Low-flow	2/3/03 EAI Bailer	2/6/03 HC Low-flow	2/3/03 EAI Bailer	2/6/03 HC Low-flow	2/3/03 EAI Bailer	2/6/03 HC Low-flow	2/3/03 EAI Bailer
NWTPH-Dx in mg/L Kerosene/Jet fuel Diesel/Fuel oil Heavy oil		0.20 U	NA						
	0.5	0.20 U	3.2	0.20 U	6.5	0.20 U	7.4	0.20 U	0.05 U
	0.5	0.50 U	0.25 U						
NWTPH-Gx in mg/L Mineral spirits/ Stoddard solvent Gasoline		0.10 U	NA						
	1.0 (a)	10	3.6	240	45	200	86	0.10 U	0.05 U
Volatiles in µg/L MTBE (GS/MS) MTBE (GC-only) Benzene Toluene Ethylbenzene Xylenes		NA	NA	500 J	NA	1,200 J	NA	NA	NA
	20	90	1,700	NA	NA	4,000	NA	5.0 U	NA
	5	1.0 U	12,000	13,000	17,000	17,000	13,000	1.0 U	1.0 U
	1000	8.3	8,400	5,600	30,000	30,000	21,000	1.0 U	1.0 U
	700	180	3,800	2,400	3,000	3,000	3,500	1.0 U	1.0 U
1000	660	28,000	12,000	18,000	18,000	18,000	1.0 U	1.0 U	
Dissolved Metals in µg/L	15	1.5	NA	161	NA	53	NA	2.8	NA

HC - Hart Crowser samples collected February 6, 2003
EAI - Environmental Associates, Inc. samples collected February 3, 2003.

Hart Crowser samples analyzed by ESN Northwest Lab in Bellevue, Washington.
Environmental Associates samples analyzed by Friedman & Bruya, Inc. (results in italics).

- (a) The cleanup level for gasoline with benzene present is 0.8 mg/L
- U - Analyte not detected above the given detection limit.
- J - Concentrations are estimated because of holding time exceedence.
- NA - Not Analyzed

Table 2 - Comparison of Analytical Results: February 6, 2003, and May 23, 1996, Groundwater Samples

Sample ID: Sampling Date:	MW-2 2/6/03 HC	MW-2 5/23/96 ENV	MW-5 2/6/03 HC	MW-5 5/23/96 ENV	MW-6 2/6/03 HC	MW-6 5/23/96 ENV	MW-7 2/6/03 HC	MW-7 5/23/96 ENV
NWTPH-Gx in mg/L								
Gasoline	10	6.8	240	0.3 U	200	110	0.10 U	0.30 U
Volatiles in µg/L								
Benzene	1.0 U	9	12,000	1 U	17,000	12,000	1.0 U	1 U
Toluene	8.3	24	8,400	1 U	30,000	24,000	1.0 U	1 U
Ethylbenzene	180	240	3,800	1 U	3,000	2,500	1.0 U	1 U
Xylenes	660	690	28,000	2 U	18,000	14,400	1.0 U	2 U

HC - Hart Crowser samples collected February 6, 2003

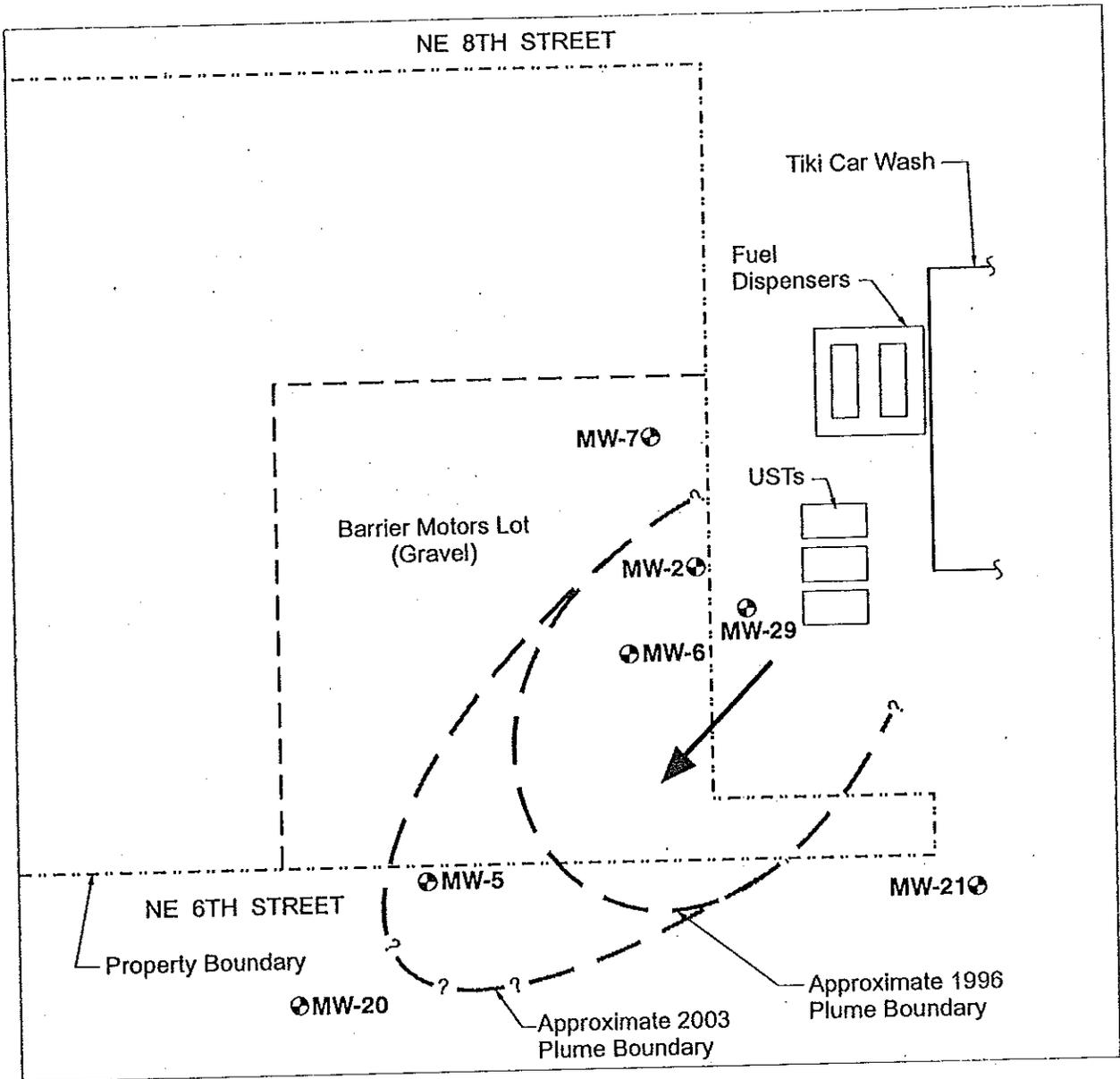
ENV - Environmental Incorporated samples collected February 3, 2003.

Hart Crowser samples analyzed by ESN Northwest Lab in Bellevue, Washington.
Environmental Associates samples analyzed by Friedman & Bruya, Inc. (results in italics).

U - Analyte not detected above the given detection limit.

NR - Not Reported

Site and Exploration Plan



- ⊗ MW-1 Monitoring Well Location and Number
- ← Groundwater Flow Direction



Not to Scale

DNK 3/6/03 7867A.cdr

ATTACHMENT A
LABORATORY ANALYTICAL DOCUMENTATION



Environmental
Services Network

February 28, 2003

Rob Roberts
Hart Crowser
1910 Fairview Avenue East
Seattle, WA 98102-3699

Dear Mr. Roberts:

Please find enclosed the analytical data report for the Barrier Motors Project in Washington. Water samples were analyzed for Diesel by NWTPH-Dx, MTBE by EPA Method 8260, Gasoline by NWTPH-Gx, BTEX by EPA Method 8021B, MTBE by EPA Method 8021b and Dissolved Metals by EPA Method 6000 Series on February 19 – 25, 2003.

The results of these analyses are summarized in the attached tables. Applicable detection limits and QA/QC data are included. An invoice for this work has been sent to your accounting department.

ESN Northwest appreciates the opportunity to have provided analytical services to Hart Crowser for this project. It was a pleasure working with you, and we are looking forward to the next opportunity to work together.

Sincerely,

A handwritten signature in cursive script that reads "Michael A. Korosec".

Michael A. Korosec
President

ESN SEATTLE CHEMISTRY LABORATORY
 (425) 957-9872, fax (425) 957-9904

ESN Job Number: S30219-2
 Client: HART CROWSER
 Client Job Name: BARRIER MOTORS
 Client Job Number: NA

Analytical Results

NWTPH-Gx / BTEX		MTH BLK	LCS	MW-2	MW-3	MW-5	MW-7
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	02/19/03	02/19/03	02/19/03	02/19/03	02/19/03	02/19/03
Date analyzed	Limits	02/19/03	02/19/03	02/19/03	02/19/03	02/19/03	02/19/03

NWTPH-Gx, mg/L

Mineral spirits/Stoddard solvent	0.10	nd		nd	nd	nd	nd
Gasoline	0.10	nd		10	200	240	nd

BTEX, µg/L

MTBE	5.0	nd		90	4,000	1,700	nd
Benzene	1.0	nd	71%	nd	17,000	12,000	nd
Toluene	1.0	nd	74%	8.3	30,000	8,400	nd
Ethylbenzene	1.0	nd		180	3,000	3,800	nd
Xylenes	1.0	nd		660	18,000	28,000	nd

Surrogate recoveries:

Trifluorotoluene		89%	82%	104%	95%	87%	99%
Bromofluorobenzene		83%	75%	C	72%	C	85%

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: 65% TO 135%

Acceptable RPD limit: 35%

ESN SEATTLE CHEMISTRY LABORATORY
 (425) 957-9872, fax (425) 957-9904

ESN Job Number: S30219-2
 Client: HART CROWSER
 Client Job Name: BARRIER MOTORS
 Client Job Number: NA

Analytical Results		DUPL	MS	MSD	RPD
		MW-7	MW-7	MW-7	MW-7
NWTPH-Gx / BTEX					
Matrix	Water	Water	Water	Water	Water
Date extracted	Reporting	02/19/03	02/19/03	02/19/03	02/19/03
Date analyzed	Limits	02/19/03	02/19/03	02/19/03	02/19/03

NWTPH-Gx, mg/L

Mineral spirits/Stoddard solvent	0.10	nd			
Gasoline	0.10	nd			

BTEX, µg/L

MTBE	5.0	nd			
Benzene	1.0	nd	71%	74%	4%
Toluene	1.0	nd	74%	74%	0%
Ethylbenzene	1.0	nd			
Xylenes	1.0	nd			

Surrogate recoveries:

Trifluorotoluene	95%	82%	81%
Bromofluorobenzene	87%	75%	83%

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: 65% TO 135%

Acceptable RPD limit: 35%

ESN SEATTLE CHEMISTRY LABORATORY
 (425) 957-9872, fax (425) 957-9904

ESN Job Number: S30219-2
 Client: HART CROWSER
 Client Job Name: BARRIER MOTORS
 Client Job Number: NA

Analytical Results							DUPL
NWTPH-Dx, mg/l		MTH BLK	MW-2	MW-3	MW-5	MW-7	MW-7
Matrix	Water	Water	Water	Water	Water	Water	Water
Date extracted	Reporting	02/19/03	02/19/03	02/19/03	02/19/03	02/19/03	02/19/03
Date analyzed	Limits	02/19/03	02/19/03	02/19/03	02/19/03	02/19/03	02/19/03
Kerosene/Jet fuel	0.20	nd	nd	nd	nd	nd	nd
Diesel/Fuel oil	0.20	nd	nd	nd	nd	nd	nd
Heavy oil	0.50	nd	nd	nd	nd	nd	nd
Surrogate recoveries:							
Fluorobiphenyl		95%	120%	C	125%	92%	93%
o-Terphenyl		83%	96%	103%	97%	78%	77%

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: 65% TO 135%
 Acceptable RPD limit: 35%

ESN SEATTLE CHEMISTRY LABORATORY
 (425) 957-9872, fax (425) 957-9904

ESN Job Number: S30219-2
 Client: HART CROWSER
 Client Job Name: BARRIER MOTORS
 Client Job Number: NA

Analytical Results

MTBE (8260), µg/L	MTH BLK	LCS	MW-3	MW-5	
Matrix	Water	Water	Water	Water	
Date extracted	Reporting	02/25/03	02/25/03	02/25/03	
Date analyzed	Limits	02/25/03	02/25/03	02/25/03	
MTBE	5.0	nd	104%	1,200	500
Surrogate recoveries					
Dibromofluoromethane	101%	105%	88%	94%	
Toluene-d8	96%	94%	94%	97%	
4-Bromofluorobenzene	100%	98%	97%	100%	

Data Qualifiers and Analytical Comments

nd - not detected at listed reporting limits
 Acceptable Recovery limits: 65% TO 135%
 Acceptable RPD limit: 35%

STL Seattle

Sample Identification:

<u>Lab. No.</u>	<u>Client ID</u>	<u>Date/Time Sampled</u>	<u>Matrix</u>
112016-1	MW-2	02-06-03 *	Liquid
112016-2	MW-3	02-06-03 *	Liquid
112016-3	MW-5	02-06-03 *	Liquid
112016-4	MW-7	02-06-03 *	Liquid

* - Sampling time not specified for this sample

STL Seattle is a part of Severn Trent Laboratories, Inc.

This report is issued solely for the use of the person or company to whom it is addressed. Any use, copying or disclosure other than by the intended recipient is unauthorized. If you have received this report in error, please notify the sender immediately at 253-922-2310 and destroy this report immediately.

STL Seattle

Client Name
Client ID:
Lab ID:
Date Received:
Date Prepared:
Date Analyzed:
Dilution Factor

ESN Northwest, Inc.
MW-2
112016-01
2/20/03
2/21/03
2/21/03
5

Dissolved Metals by ICP-MS - USEPA Method 6020

Analyte	Result (mg/L)	PQL	Flags
Lead	0.00145	0.0005	

STL Seattle

Client Name	ESN Northwest, Inc.
Client ID:	MW-3
Lab ID:	112016-02
Date Received:	2/20/03
Date Prepared:	2/21/03
Date Analyzed:	2/21/03
Dilution Factor	5

Dissolved Metals by ICP-MS - USEPA Method 6020

Analyte	Result (mg/L)	PQL	Flags
Lead	0.0525	0.0005	

STL Seattle

Client Name	ESN Northwest, Inc.
Client ID:	MW-5
Lab ID:	112016-03
Date Received:	2/20/03
Date Prepared:	2/21/03
Date Analyzed:	2/21/03
Dilution Factor	5

Dissolved Metals by ICP-MS - USEPA Method 6020

Analyte	Result (mg/L)	PQL	Flags
Lead	0.161	0.0005	

STL Seattle

Client Name	ESN Northwest, Inc.
Client ID:	MW-7
Lab ID:	112016-04
Date Received:	2/20/03
Date Prepared:	2/21/03
Date Analyzed:	2/21/03
Dilution Factor	5

Dissolved Metals by ICP-MS - USEPA Method 6020

Analyte	Result (mg/L)	PQL	Flags
Lead	0.00284	0.0005	

STL Seattle

Client Name	ESN Northwest, Inc.
Client ID:	MW-7
Lab ID:	112016-04
Date Received:	2/20/03
Date Prepared:	2/21/03
Date Analyzed:	2/21/03
Dilution Factor	5

Dissolved Metals by ICP-MS - USEPA Method 6020

Analyte	Result (mg/L)	PQL	Flags
Lead	0.00284	0.0005	

STL Seattle

Lab ID:	Method Blank - DP377
Date Received:	-
Date Prepared:	2/21/03
Date Analyzed:	2/21/03
Dilution Factor:	1

Dissolved Metals by ICP-MS - USEPA Method 6020

Analyte	Result (mg/L)	PQL	Flags
Lead	ND	0.0001	

STL Seattle

Matrix Spike Report

Client Sample ID:	MW-2
Lab ID:	112016-01
Date Prepared:	2/21/03
Date Analyzed:	2/21/03
QC Batch ID:	DP377

Dissolved Metals by ICP-MS - USEPA Method 6020

Parameter Name	Sample Result (mg/L)	Spike Amount (mg/L)	MS Result (mg/L)	MS % Rec.	Flag
Lead	0.0015	1	1.01	101	

STL Seattle

Duplicate Report

Client Sample ID: MW-2
Lab ID: 112016-01
Date Prepared: 2/21/03
Date Analyzed: 2/21/03
QC Batch ID: DP377

Dissolved Metals by ICP-MS - USEPA Method 6020

Parameter Name	Sample Result (mg/L)	Duplicate Result (mg/L)	RPD %	Flag
Lead	0.0015	0.0015	0.0	

DATA QUALIFIERS AND ABBREVIATIONS

- B1: This analyte was detected in the associated method blank. The analyte concentration was determined not to be significantly higher than the associated method blank (less than ten times the concentration reported in the blank).
- B2: This analyte was detected in the associated method blank. The analyte concentration in the sample was determined to be significantly higher than the method blank (greater than ten times the concentration reported in the blank).
- B1: Second column confirmation was performed. The relative percent difference value (RPD) between the results on the two columns was evaluated and determined to be $\leq 40\%$.
- B2: Second column confirmation was performed. The RPD between the results on the two columns was evaluated and determined to be $> 40\%$. The higher result was reported unless anomalies were noted.
- M: GC/MS confirmation was performed. The result derived from the original analysis was reported.
-): The reported result for this analyte was calculated based on a secondary dilution factor.
- E: The concentration of this analyte exceeded the instrument calibration range and should be considered an estimated quantity.
- : The analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity.
- MCL: Maximum Contaminant Level
- IDL: Method Detection Limit
- N: See analytical narrative.
- D: Not Detected
- PQL: Practical Quantitation Limit
- 1: Contaminant does not appear to be "typical" product. Elution pattern suggests it may be _____.
- 2: Contaminant does not appear to be "typical" product.
- 3: Identification and quantitation of the analyte or surrogate was complicated by matrix interference.
- 4: RPD for duplicates was outside advisory QC limits. The sample was re-analyzed with similar results. The sample matrix may be nonhomogeneous.
- 4a: RPD for duplicates outside advisory QC limits due to analyte concentration near the method practical quantitation limit/detection limit.
- 5: Matrix spike recovery was not determined due to the required dilution.
- 6: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Sample was re-analyzed with similar results.
- 7: Recovery and/or RPD values for matrix spike(/matrix spike duplicate) outside advisory QC limits. Matrix interference may be indicated based on acceptable blank spike recovery and/or RPD.
- 7a: Recovery and/or RPD values for this spiked analyte outside advisory QC limits due to high concentration of the analyte in the original sample.
- 8: Surrogate recovery was not determined due to the required dilution.
- 9: Surrogate recovery outside advisory QC limits due to matrix interference.

Sample Custody Record

Samples Shipped to: ESN (for pickup)

580214-2



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

JOB _____ LAB NUMBER Barrier Motors
PROJECT NAME Barrier Motors
HART CROWSER CONTACT R. Roberts/R. Moore

SAMPLED BY: ESN

LAB NO.	SAMPLE ID	DESCRIPTION	DATE	TIME	MATRIX	REQUESTED ANALYSIS						NO. OF CONTAINERS	OBSERVATIONS/COMMENTS/ COMPOSITING INSTRUCTIONS
MU-2	40mL VOA	2/6/03	1455	H ₂ O	X	X	X	X	X	X	X	3	
MU-2	500mL DPE		1455									1	
MU-2	1L Amber		1455									1	
MU-3	40mL VOA		1525		X	X	X	X	X	X	X	3	
MU-3	500mL DPE		1525									1	
MU-3	1L Amber		1525									1	
MU-5	40mL VOA		1700		X	X	X	X	X	X	X	3	
MU-5	500mL DPE		1645									1	
MU-5	1L Amber		1715									1	
MU-7	40mL VOA		1335		X	X	X	X	X	X	X	3	
MU-7	500mL DPE		1335									1	
MU-7	1L Amber		1335									1	

RELINQUISHED BY: ESN DATE: 7/18 RECEIVED BY: J. V. M. B. V. DATE: 2/19/03

SIGNATURE: [Signature] TIME: _____ SIGNATURE: [Signature] TIME: _____

PRINT NAME: ESN PRINT NAME: ESN

COMPANY: ESN COMPANY: ESN

RELINQUISHED BY: _____ DATE: _____ RECEIVED BY: _____ DATE: _____

SIGNATURE: _____ TIME: _____ SIGNATURE: _____ TIME: _____

PRINT NAME: _____ PRINT NAME: _____

COMPANY: _____ COMPANY: _____

COOLER NO.: _____ STORAGE LOCATION: _____

SPECIAL SHIPMENT HANDLING OR STORAGE REQUIREMENTS: STORAGE IN HC P-4 2/6 - 2/18

See Lab Work Order No. _____ for Other Contract Requirements

TURNAROUND TIME: 24 HOURS 48 HOURS 72 HOURS 1 WEEK STANDARD OTHER _____

SAMPLE RECEIPT INFORMATION: CUSTODY SEALS: YES NO N/A

GOOD CONDITION: YES NO

TEMPERATURE: _____

SHIPMENT METHOD: HAND OVERNIGHT

COURIER

White and Yellow Cap Lab Pink to Project Manager Lab to Return White Copy to Hart Crowser G Sample Custodian