## 'ENVIRONMENTAL ASSOCIATES, INC.

1380 - 112th Avenue Northeast, Suite 300 Bellevue, Washington 98004 (425) 455-9025 Office (888) 453-5394 Toll Free (425) 455-2316 Fax RECEIVED

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DEPT OF ECOLOGY TCP - NWRO

December 31, 2012

JN-28260-4

North Woodinville 195, LLC c/o Ms. Jana Lottinville Sierra Construction 19900 - 144<sup>th</sup> Avenue NE Woodinville, Washington 98072

Subject:

FOURTH OUARTER 2012 - GROUNDWATER MONITORING

Former Woodinville Auto Auction Site

13820 NE 195<sup>th</sup> Street Woodinville, Washington

#### Gentlemen:

In accordance with your directives, Environmental Associates, Inc (EAI) has completed a fourth round of groundwater sampling and laboratory testing at the subject property. This work has been performed in accordance with our November 30, 2011 proposal (PR-28260-4). The following report provides a brief summary of the current sampling event along with a more detailed discussion of the of the entirety of the monitoring performed to date.

#### Background

On February 12, 2009, Environmental Associates, Inc. (EAI) presented North Woodinville 195, LLC (NWLLC) with a report summarizing the findings of a UST Removal and Independent Cleanup Action performed at the subject property. In that effort, EAI observed the removal of four (4) underground storage tanks (USTs), approximately 475-tons of "Class 3" petroleum impacted soils, and 12,000-gallons of petroleum impacted groundwater. Analysis of confirmation samples collected in conjunction with that effort indicated regulated petroleum hydrocarbon concentrations remained in soil and groundwater at, and beyond the limits of the remedial excavation.

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At the conclusion of excavation and remedial activities, six (6) separate sections of slotted and/or perforated 2"-diameter PVC piping were installed in the subsurface at locations identified as TP1 through TP4 as well as "west infiltration" and "east infiltration" on Plate 4 in conjunction with site restoration. These various sections of piping were installed to provide a means to sample groundwater, and to facilitate application of Oxygen Releasing Compound (ORC) or other products to enhance degradation of remaining subsurface contaminants if desired.

Two (2) applications of ORC have occurred at the subject property. The first ORC treatment was performed on August 26, 2009, and included all of the onsite test pits. After EAI completed sample collection on February 10, 2010, a second ORC treatment was performed. During the second treatment, the largest amount of ORC was added to locations with the lowest measured dissolved oxygen (DO) levels. No ORC was added to the infiltration galleries during this second application. In both cases, the ORC was mixed with tap water obtained from the Woodinville Water District, poured into the onsite test-pits and/or infiltration galleries, and further back-flushed with tap water to aid in the propagation of the ORC in the subsurface environment. To date, a total of 200-pounds of ORC have added to the subsurface at the subject property.

For the benefit of the reader, ORC (oxygen releasing compound) is used to supply oxygen so that microbes present in the subsurface environment can metabolize petroleum hydrocarbons. Prior to application of the ORC compound in August of 2009, dissolved oxygen (DO) had not been detected in groundwater at the site. Measurements of groundwater quality taken during the two previous sampling events suggest the ORC applications had measurably influenced DO levels at the site.

In accordance with WDOE guidelines pertaining to UST closure "Site Assessments," a copy of our February 2009 dated report was forwarded to the WDOE. The property, under the name North Woodinville 195, LLC, is listed as a UST site and assigned a Facility ID number (#1947253). Based on information available from online WDOE resources, the property has apparently not yet been designated as a leaking underground storage tank (LUST) site by WDOE.

At the request of the client, the network of groundwater monitoring points has been periodically sampled since its installation in 2009. The monitoring points were last sampled in May of 2012.

#### **August 2012 Sampling Event**

The monitoring wells had last been sampled in May 2012, therefore EAI visited the site in August 2012 to perform the next consecutively quarterly monitoring event. The summer of 2012 was unusually dry, experiencing over 80 consecutive days without measurable precipitation. As an apparent result of this protracted dry period, only two (2) of the six (6) monitoring points contained sufficient groundwater (Table 1). Based upon the unusual hydrologic conditions, it was decided to postpone the sampling event until groundwater levels recovered to a point that all six (6) monitoring locations could again be sampled.

#### **November 2012 Groundwater Sampling Event**

On November 30, 2012, the six (6) on-site groundwater monitoring points were accessed and groundwater samples were recovered. Groundwater was present and recoverable at all six (6) monitoring locations during this current event.

Prior to sampling, an electronic meter was utilized to measure the depth to the shallow groundwater surface below the top of each pipe casing. Groundwater levels were measurable at all six monitoring locations. These measurements along with prior casing elevation survey data were used to deduce the relative elevation of the water table at each location, as presented in Table 1, attached. As presented on Plate 4, Detailed Site Plan, the shallow groundwater within the study area appears to be flowing westward. As the depths to water measured in the two horizontal pipe segments do not represent the water elevations at discrete locations, these data points were simply used to deduce an average elevation of groundwater within the former tank hold.

Average groundwater levels were noted to have risen 1.5 to 2 feet or more since the August 2012 site visit, once again returning to within the "normal" range of water levels.

A low-flow micro-purging technique relying on a peristaltic pump was used to collect groundwater samples. Water discharged from the pump was directed to a "flow-through" cell to allow various water quality parameters to be monitored in "real time." Once select parameters (pH, temperature, and dissolved oxygen) stabilized, the parameters were documented (see Table 3 - General Water Quality Parameters) and representative samples were then pumped directly from the pump into laboratory prepared glassware.

The recovered groundwater samples were submitted to the WDOE-accredited project laboratory to be analyzed for gasoline, BTEX (benzene, toluene, ethylbenzene, xylene), diesel, and heavy oil range total petroleum hydrocarbons (TPH) by Washington State Department of Ecology test methods NWTPH-G/BTEX and NWTPH-Dx. Due to potential "interferences" noted by the project laboratory during prior sampling events, a silica gel cleanup was used in conjunction with the NWTPH-Dx analysis.

#### Laboratory Results & Discussion

Referring to Table 2, all six (6) recovered groundwater samples were <u>in compliance</u> with WDOE Method-A target levels for the compounds evaluated. The groundwater sample from TP-1 contained a trace detection of diesel at a concentration of 130 parts per billion (ppb), well below the WDOE's 500 ppb target compliance level. Similar trace concentrations of diesel range petroleum have been detected at TP-1 in past sampling events, ranging between 93 ppb to 240 ppb.

The current November 2012, sampling event marks the <u>fourth consecutive quarter</u> in which all six (6) monitoring points produced groundwater samples that were in compliance with WDOE levels for all the compounds tested for. Putting this statement in context, to qualify for a determination of "no further action" (NFA) from the WDOE, such an achievement must continue over a minimum of four (4) consecutive quarterly monitoring events.

Oxygen releasing compound (ORC) was last applied to the site in February 2010. Based upon the general water quality parameters noted in Table 3, evidence of lingering ORC "effects" (primarily elevated pH, were noted in groundwater extracted from both the west and east-infiltration gallery piping and to a lesser extent down-gradient monitoring point TP-3. At the remaining locations, the ORC appears to have been mostly consumed and groundwater parameters such as pH and dissolved oxygen are returning to "natural" pretreatment ranges.

#### Fourth Quarter Annual Review - Summary and Discussion

Upon the completion of four (4) consecutive quarters of groundwater sampling and laboratory testing, groundwater has remained in continual compliance with Washington State Department of Ecology levels for unrestricted land use, at all six (6) on-site monitoring points. These locations include two within the former UST removal excavation and four (4) points cross and/or downgradient from the former UST area.

#### **Conclusions**

Acknowledging the findings to date, it would appear that the limited independent cleanup action initiated following the removal of the underground tanks in 2008 was successful in achieving compliance with Washington State Department of Ecology's performance standards for both soil and groundwater. On that basis, no further remedial action or monitoring would appear to be warranted at this time.

#### Recommendations

Presently the WDOE has assigned this site Facility #1947253 and lists it on its UST database. Copies of this fourth quarter summary report should be forwarded to the WDOE for inclusion in their UST file for the subject facility. Presently the subject site does not appear to be listed on either the "Leaking Underground Storage Tank (LUST)" database or the "Confirmed or Suspected Contaminated Sites List (CSCSL). It is EAI's understanding that the Client desires to solicit a determination of "no further action (NFA)" from the WDOE. Based upon the findings to date, it would appear that an application to the WDOE through that agency's Voluntary Cleanup Program (VCP) could be made at this time. The WDOE typically requires 90 days to complete their review of an NFA / VCP application. Upon completion of their review the WDOE will either provide the requested NFA opinion letter or provide a further action required letter in which they would identify any additional tasks or requests for additional information.

#### Limitations

This report has been prepared for the exclusive use of the North Woodinville 195, LLC,, along with its several representatives for specific application to this site for specific application to this site. Our work for this project was conducted in a manner consistent with that level of care and skill normally exercised by members of the environmental science profession currently practicing under similar conditions in the area, and in accordance with the terms and conditions set forth in our proposal dated November 30, 2011. The opinions expressed in this report are based upon interpretations, observations and testing made at separated sampling locations and conditions may vary between those locations or other locations or depths. No guarantee or warranty is made in regard to future actions and/or expressed opinions by the WDOE or other regulatory agencies. No other warranty, expressed or implied, is made. If new information is developed in future site work that may include excavations, borings, studies, etc., Environmental Associates, Inc., must be retained to reevaluate the conclusions of this report and to provide amendments as required.

We appreciate the opportunity to be of service on this assignment. If you have any questions or if we may be of additional service, please do not hesitate to contact us.

Robert B. Roe, M.Sc., LHG.

Senior Hydrogeologist / Project Manager

License: 1125

(Washington)

Don W. Spencer, M.Sc., P.G., R.E.A.

Principal

License: 604

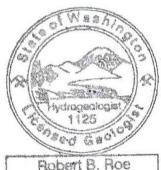
License: 11464 License: 876

License: 5195 License: 0327 (Washington)

(Oregon) (California)

(Illinois)

(Mississippi)



DON W. SPENCER

### North Woodinville 195, LLC December 31, 2012

#### Attachments

Table 1 - Water Table Survey

Table 2 - Petroleum Hydrocarbons - Groundwater Sampling Results

Table 3 - General Water Quality Parameters

Plate 1 - Vicinity Map

Plate 2 - Topographic Map

Plate 3 - Site Plan

Plate 4 - Detailed Site Plan

Appendix-A Laboratory Reports

**TP-2** 

4/9/09

7/9/09

2/10/10

11/14/11

2/23/12

5/11/12

8/31/12

11/30/12

87.88

TABLE 1 Water Table Survey (feet)								
Monitoring Point	TOC Elevation	Depth to Water Below TOC	Net Change	Elevation of Water Table				
East								
Infiltration		]						
4/9/09	90.00	No Water (>4.12)		<b></b>				
7/9/09		No Water (>4.12)						
2/10/10		3.50		86.50				
11/14/11		3.75	-0.25	86.25				
2/23/12		2.63	1.12	87.37				
5/11/12		3.38	-0.75	86.62				
8/31/12		No Water (>4.12)	>-0.74					
11/30/12		2.86	>1.26	87.14				
West								
Infiltration								
4/9/09	89.32	No Water (>3.76)						
7/9/09		No Water (>3.76)						
2/10/10		2.80		86.52				
11/14/11		3.04	-0.24	86.28				
2/23/12		1.92	1.12	87.40				
5/11/12		2.68	-0.76	86.64				
8/31/12		No Water (>3.76)	> -1.08					
11/30/12		2.15	> 1.61	87.17				
TP-1		<del>                                     </del>						
4/9/09	87.26	1.98		85.28				
7/9/09		3.50	-1.52	83.76				
2/10/10		2.40	1.10	84.86				
11/14/11		2.93	-0.53	84.33				
2/23/12		1.70	1.23	85.56				
5/11/12		2.19	-0.49	85.07				
8/31/12		No Water (>3.25)	> -1.06					
11/30/12		1.81	> 1.44	85.45				

2.23

3.44

2.17

2.55

1.44

2.043.47

1.44

-1.21

1.27

-0.38

1.11

-0.60

-1.43

2.03

85.65

84.44

85.71

85.33

86.44

85.84

84.41

86.44

Monitoring Point	TOC Elevation	Depth to Water Below TOC	Net Change	Elevation of Water Table
TP-3		·		
4/9/09	86.54	1.85		84.69
7/9/09		3.80	-1.95	82.74
2/10/10		2.73	1.07	83.81
11/14/11		2.99	-0.26	83.55
2/23/12		2.11	0.88	84.43
5/11/12		2.50	-0.39	84.04
8/31/12		3.80	-1.30	82.74
11/30/12		2.06	1.74	84.48
TP-4	<del></del>			
4/9/09	87.16	2.32		84.84
7/9/09		No Water		
2/10/10		2.60		84.56
11/14/11		2.68	-0.08	84.48
2/23/12		1.86	0.82	85.30
5/11/12		2.31	-0.45	84.85
8/31/12		No Water(>3.27)	> -0.96	
11/30/12		1.95	> 1.32	85.21

#### Notes:

(1) TOC. Top of casing elevation.

<sup>(2)</sup> Elevations based upon assigning the ground surface in the vicinity of the East Infiltration point an approximate elevation of 90.00 feet above sea-level.

TABLE 2 - Petroleum Hydrocarbons - Groundwater Sampling Results
All results and limits in parts per billion (ppb)

Monitoring Point	Gasoline	Diesel	Heavy Oil	Benzene	Toluene	Ethylbenzene	Total
Monitoring Foint	(TPH)	(TPH)	(TPH)				Xylenes
East Infiltration	1						
Apr-09 (Not Sampled, Dry)	NA	NA	NA	NA	NA	NA	NA
7/9/2009 (Not Sampled, Dry)	NA	NA	NA	NA	NA	NA	NA
February 3, 2010	<100	<50*	<250	<1	<1	<1	<3
November 14, 2011	<100	<50*	<250	<1	<1	<1	<3
February 23, 2012	<100	<50	<250	<1	<1	<1	<3
May 11, 2012	<100	<50	<250	<1	<1	<1	<3
August 31, 2012							
November 30, 2012	<100	<50	<250	<1	<1	<1	<3
West Infiltration							
Apr-09 (Not Sampled, Dry)	NA	NA	NA	NA	NA	NA I	NA
7/9/2009 (Not Sampled, Dry)	NA	NA	NA	NA	NA	NA .	NA
February 10, 2010	<100	<50*	<250	<1	<1	<1	<3
November 14, 2011	<100	<50*	<250	<1	<1	<1	<3
February 23, 2012	<100	<50	<250	<1	<1	<1	<3
May 11, 2012	<100	<50	<250	< <u>1</u>	<1	<1	<3
August 31, 2012							
November 30, 2012	<100	<50	<250	<1	<1	<1	<3
TP-1	100	- 30					-
	<100	93*	<250	1	<1	<1	<3
April 9, 2009	<100	230*	<250	<1	<1	<1	<3
July 9, 2009	120		<250	<1	<1	<1	<3
February 3, 2010	100	240*		<1	<1	<1	<3
November 11, 2011	<100	<50*	<250	<1 <1	<1	<1	<3
February 23, 2012	<100	130	<250	<1	<1	\ \ <1	<3
May 11, 2012	<100	180*	<250				
August 31, 2012					 <1	<1	<3
November 30, 2012	<100	130*	<250	<1	<1	<del>                                     </del>	
TP-2	1			_		] , ]	-/1
April 9, 2009	<100	<50*	<250	<1	<1	<1	<3
July 9, 2009	160	190*	<250.	<1	<1	<1	<3
February 3, 2010	· <100	<50*	<250	<1	<1	<1	<3
November 14, 2011	<100	<50*	<250	<1	<1	<1	<3
February 23, 2012	<100	<50	<250	<1	<1	<1	<3
May 11, 2012	<100	<50	<250	<1	<1	<1	<3
August 31, 2012							
November 30, 2012	<100	<50	<250	<1	<1	<1	<3
TP-3				]			_
April 9, 2009	<100	83*	<250	·<1	<1	<1	<3
July 9, 2009	120	760*	470	<1	<1	<1	<3
February 3, 2010	<100	52*	<250	<1	<1	<1	<3
November 14, 2011	<100	<50*	<250	<1	<1	<1	<3
February 23, 2012	<100	<50	<250	<1	<1	<1	<3
May 11, 2012	<100	<50	<250	<1	<1	<1	<3
August 31, 2012							
November 30, 2012	<100	<50	<250	<1	<1	<1	<3

Monitoring Point	Gasoline (TPH)	Diesel (TPH)	Heavy Oil (TPH)	Benzene	Toluene	Ethylbenzene	Total Xylenes
TP-4	•				-		
April 9, 2009	<100	<50*	<250	<1	<1	2	<3
7/9/2009 (Not Sampled, Dry)	NA	NA	NA	NA	NA	NA	NA
February 3, 2010	220	290*	<250	6	<1	6	<3
November 14, 2011	450	220*	<250	3.1	<1	1.7	<3
February 23, 2012	<100	<50	<250	<1	<1	<1	<3
May 11, 2012	360	270*	<250	2.7	1.8	<1	<3
August 31, 2012							
November 30, 2012	<100	70*	<250	<1 `	<1	<1	<3
Reporting Limit <sup>3</sup>	100	50	250	1	1	1	3
MTCA-Method-A Cleanup Levels4	800 or 1000 <sup>5</sup>	500	500	5	1000	700	1000

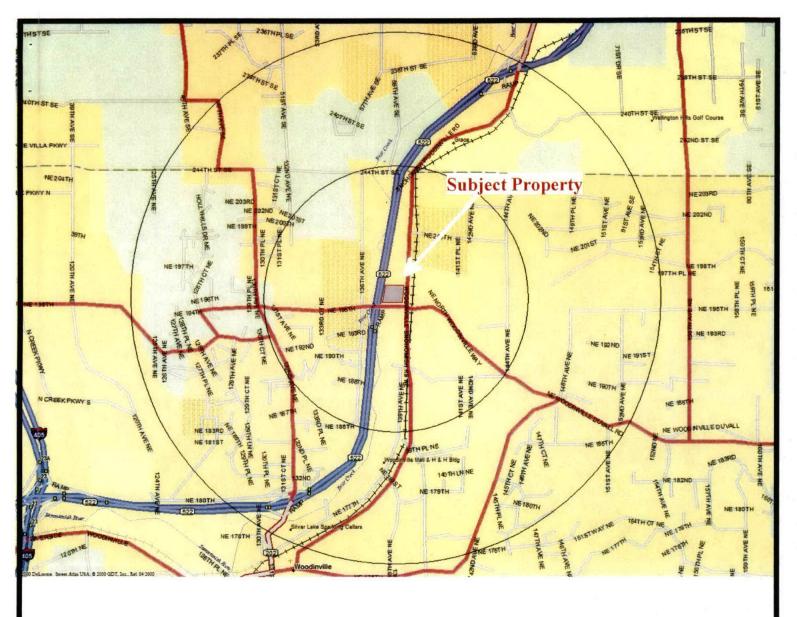
- 1 "ND" denotes analyte not delected at or above listed Reporting Limit.
- "NA" denotes sample not analyzed for specific analyte.
- 3- "Reporting Limit" represents the laboratory lower quantitation limit.
- 4- Method A groundwater cleanup levels as published in the Model Toxics Control Act (MTCA) 173-340-WAC.
- 5- The MTCA gasoline TPH cleanup level is 800 ppb for groundwater with benzene. Otherwise, the cleanup level is 1000 ppb.
  6- The project laboratory reports that "the pattern of peaks present is not indicative of diesel." The detected concentration is likely "carry over" from the gasoline range.
- Sample analyzed for diesel and heavy oil range petroluem compounds using "silica gel cleanup" methodology.

Bold and Italics denotes concentrations above existing or proposed MTCA Method A groundwater cleanup levels.

TABLE 3 - General Water Quality Parameters
Readings Taken at Time of Sampling

Monitoring Point	рН	Conductivity mS/m	Temperature (Celsius)	Oxidation- Reduction Potential mV	Turbidity NTU	Dissolved Oxygen mg/L	Total Dissolved Solids g/L
East Infiltration		1110/111	(Celsius)	,			Ū.
	NA	NA	NA	NA	NA	NA	NA
April 7, 2009 (Not Sampled, Dry)	NA NA	NA NA	NA NA	NA	NA NA	NA	NA
July 9, 09 (Not Sampled, Dry)	6.19	22.8	9.7	+199	Not Measured	2.98	0.15
February 3, 2010	7.45		10.80	+152		7.03	
November 14, 2011	8.91	9.5	8.1	+295		9.26	
February 23, 2012	6.48	23.2	13.4	+126		0.78	0.15
May 11, 2012		23.2	13.4				
August 31, 2012	12.00	108	10.3	+65		12.4	.7
November 30, 2012	12.06	108	10.5	105		12.7	
West Infiltration					314	NTA	NA
April 7, 2009 (Not Sampled, Dry)	NA	NA	NA	NA	NA NA	NA	
July 9, 2009 (Not Sampled, Dry)	NA	NA	NA	NA	NA I	NA 16.50	NA 0.22
February 3, 2010	10.35	35.9	9.2	+124	Not Measured	16.59	0.23
November 14, 2011	9.13		11.95	+110		12.79	
February 23, 2012	8.99	26.4	8.5	+306		10.42	0.45
May 11, 2012	11.23	69.8	13.3	+11		12.6	0.45
August 31, 2012							
November 30, 2012	12.02	113	11.0	+93		16.5	0.7
TP-1					1		
April 7, 2009	• 6.57	35.4	10.8	+28	34.8	0.00	0.24
July 9, 2009	5.71	35.11	23.4	+47	Not Measured	0.00	0.23
February 3, 2010	6.75	38.0	9.0	+21	Not Measured	0.91	0.25
November 11, 2011	6.55		11.85	+35		3.7	
February 23, 2012	6.60	27.6	8.4	+25		0.85	
May 11, 2012	6.86	37.6	14.9	-111		0.00	0.24
August 31, 2012							
November 30, 2012	7.01	27.3	9.7	+183		3.3	0.18
TP-2							
April 7, 2009	6.74	22.1	10.5	+96	30.7	0.00	0.15
July 9, 2009	5.94	40.7	23.4	+5	Not Measured	0.00	0.26
February 3, 2010	6.72	27.8	8.6	+241	Not Measured	4.21	0.18
November 14, 2011	7.00	27.0	10.91	+175		8.6	
February 23, 2012	7.64	12.2	8.3	+150		3.50	
May 11, 2012	6.62	17.3	15.6	+24		0.00	0.16
August 31, 2012	6.68	19.4	9.9	+350		3.0	0.13
November 30, 2012	0.00	17.7	''		i		

Monitoring Point	рН	Conductivity mS/m	Temperature (Celsius)	Oxidation- Reduction Potential mV	Turbidity NTU	Dissolved Oxygen mg/L	Total Dissolved Solids g/L
TP-3							
April 7, 2009	6.71	32.2	9.6	+99	16.3	0.00	0.21
July 9, 2009	5.76	48.4	22.6	+14	Not Measured	0.00	0.31
February 3, 2010	6.69	48.5	9.0	+42	Not Measured	1.71	0.32
November 14, 2011	9.42		11.29	+98		11.16	
February 23, 2012	9.27	21.2	7.6	+174		5.09	
May 11, 2012	8.64	35.2	11.8	+108		0.50	0.23
August 31, 2012							
November 30, 2012	5.56	24.4	9.3	+376		7.9	0.16
TP-4					•	'	
April 7, 2009	7.34	40.8	10.5	+87	35.2	0.00	0.27
July 9, 2009 (Not Sampled, Dry)	NA	NA	NA	· NA	NA	NA	NA
February 3, 2010	6.58	38.7	9.3	+4	Not Measured	0.79	0.25
November 14, 2011	7.45		10.80	-62		7.03	
February 23, 2012	6.60	22.1	7.7	+68		5.23	
May 11, 2012	6.66	39.1	11.5	-71		0.00	0.25
August 31, 2012							
November 30, 2012	6.94	48.1	9.9	+117		1.4	.31



Scale 0 1/2 1 mile



**Subject Property** 





## ENVIRONMENTAL ASSOCIATES, INC.

1380 112th Avenue N.E., Ste. 300 Bellevue, Washington 98004

#### **VICINITY MAP**

Former Auto Auction Site 13820 NE 195th Street Woodinville, Washington

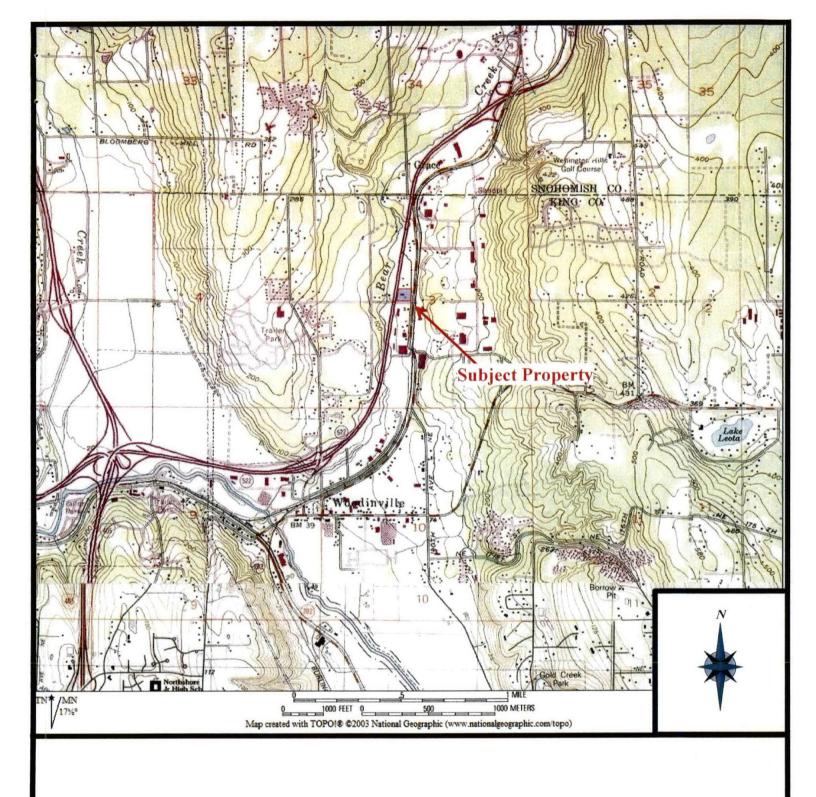
Job Number: JN 28260-4

Date:

November 2012

Plate:

1





## ENVIRONMENTAL ASSOCIATES, INC.

1380 - 112th Avenue N.E., Ste. 300 Bellevue, Washington 98004

#### **TOPOGRAPHIC MAP**

Former Auto Auction Site 13820 NE 195th Street Woodinville, Washington

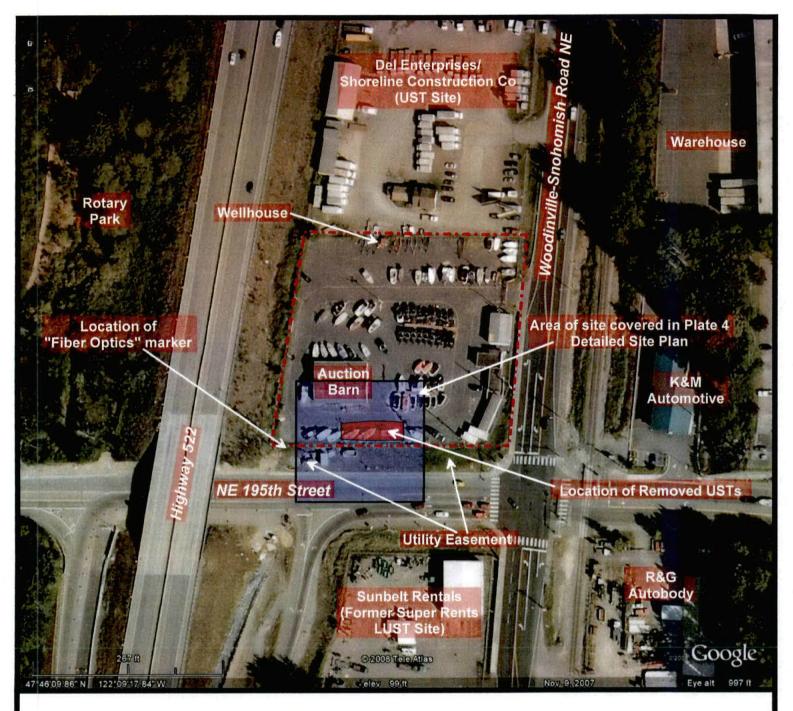
Job Number: JN 28260-4

Date:

November 2012

Plate:

2





Approximate area of subject property.





## ENVIRONMENTAL ASSOCIATES, INC.

1380 112th Avenue N.E., Ste. 300 Bellevue, Washington 98004

#### SITE PLAN

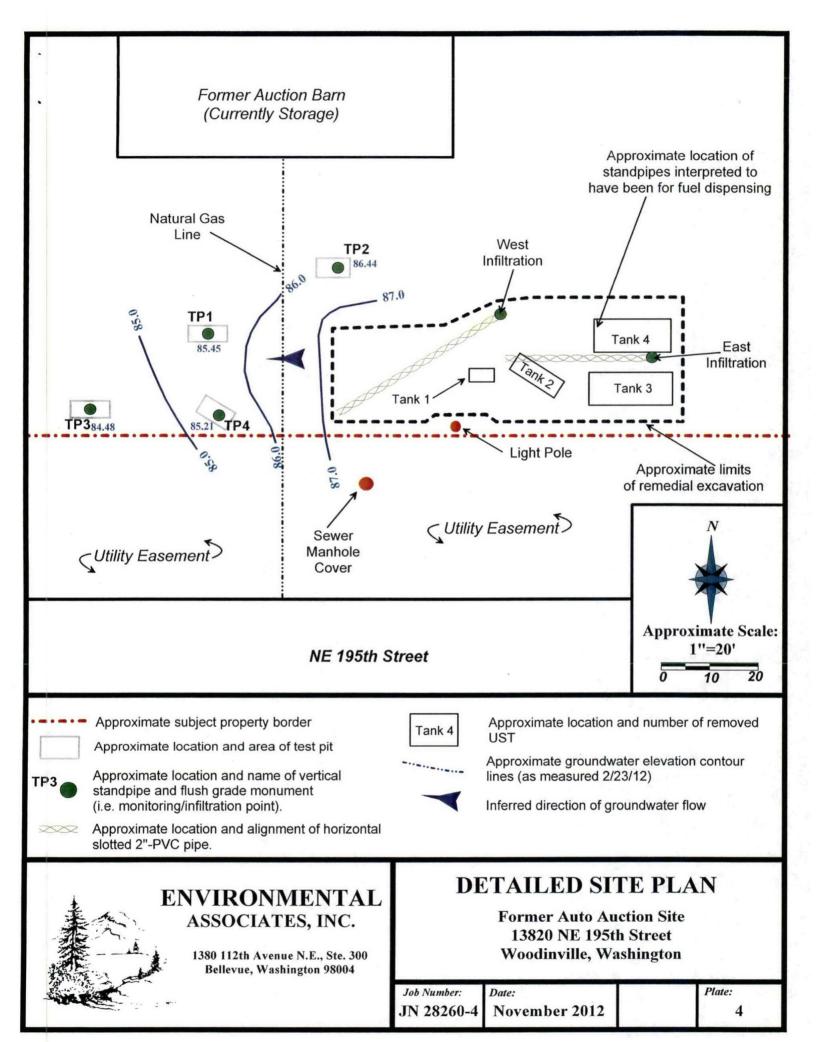
Former Auto Auction Site 13820 NE 195th Street Woodinville, Washington

Job Number: JN 28260-4 Date:

November 2012

Plate:

3



#### APPENDIX-A

**Laboratory Reports** 

#### **ENVIRONMENTAL CHEMISTS**

James E. Bruya, Ph.D. Yelena Aravkina, M.S. Bradley T. Benson, B.S. Kurt Johnson, B.S. 3012 16th Avenue West Seattle, WA 98119-2029 TEL: (206) 285-8282 e-mail: fbi@isomedia.com

December 10, 2012

Rob Roe, Project Manager Environmental Associates, Inc. 1380 112th Ave. NE, 300 Bellevue, WA 98004

Dear Mr. Roe:

Included are the results from the testing of material submitted on December 3, 2012 from the Former Woodinville Auto, PO JN-28260-4, F&BI 212022 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl Project Manager

Enclosures EAI1210R.DOC

#### **ENVIRONMENTAL CHEMISTS**

#### CASE NARRATIVE

This case narrative encompasses samples received on December 3, 2012 by Friedman & Bruya, Inc. from the Environmental Associates Former Woodinville Auto, PO JN-28260-4, F&BI 212022 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	Environmental Associates
212022-01	TP1
212022-02	TP2
212022-03	TP3
212022-04	TP4
212022-05	I-W
212022-06	I-E

All quality control requirements were acceptable.

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 12/10/12 Date Received: 12/03/12

Project: Former Woodinville Auto, PO JN-28260-4, F&BI 212022

Date Extracted: 12/04/12 Date Analyzed: 12/04/12

#### RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	Ethyl <u>Benzene</u>	Total <u>Xylenes</u>	Gasoline <u>Range</u>	Surrogate (% Recovery) (Limit 52-124)
TP1 212022-01	<1	<1	<1	<3	<100	93
TP2 212022-02	<1	<1	<1	<3	<100	94
TP3 212022-03	<1	<1	<1	<3	<100	96
TP4 212022-04	<1	<1	<1	<3	<100	95
I-W 212022-05	<1	<1	<1	<3	<100	96
I-E 212022-06	<1	<1	<1	<3	<100	98
Method Blank 02-2206 MB	<1	<1	<1	<3	<100	96

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 12/10/12 Date Received: 12/03/12

Project: Former Woodinville Auto, PO JN-28260-4, F&BI 212022

Date Extracted: 12/05/12 Date Analyzed: 12/06/12

# RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx Sample Extracts Passed Through a Silica Gel Column Prior to Analysis

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Diesel Range (C <sub>10</sub> -C <sub>25</sub> )	Motor Oil Range (C <sub>25</sub> -C <sub>36</sub> )	Surrogate (% Recovery) (Limit 51-134)
TP1 212022-01	130 x	<250	97
TP2 212022-02	<50	<250	90
TP3 212022-03	<50	<250	88
TP4 212022-04	70 x	<250	97
I-W 212022-05	<50	<250	89
I-E 212022-06	<50	<250	91
Method Blank 02-2229 MB	<50	<250	95

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 12/10/12 Date Received: 12/03/12

Project: Former Woodinville Auto, PO JN-28260-4, F&BI 212022

# QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 211499-01 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	Relative Percent Difference (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	· <1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	${f nm}$
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

	Percent							
	Reporting	Spike	Recovery	Acceptance				
Analyte	Units	Level	LCS	Criteria				
Benzene	ug/L (ppb)	50	86	65-118				
Toluene	ug/L (ppb)	50	93	72-122				
Ethylbenzene	ug/L (ppb)	50	94	73-126				
Xylenes	ug/L (ppb)	150	93	74-118				
Gasoline	ug/L (ppb)	1,000	102	69-134				

#### **ENVIRONMENTAL CHEMISTS**

Date of Report: 12/10/12 Date Received: 12/03/12

Project: Former Woodinville Auto, PO JN-28260-4, F&BI 212022

## QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: Laboratory Control Sample Silica Gel

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	110	113	58-134	. 3

#### **ENVIRONMENTAL CHEMISTS**

#### **Data Qualifiers & Definitions**

- a The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.
- A1 More than one compound of similar molecule structure was identified with equal probability.
- b The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.
- ca The calibration results for this range fell outside of acceptance criteria. The value reported is an estimate.
- c The presence of the analyte indicated may be due to carryover from previous sample injections.
- d The sample was diluted. Detection limits may be raised due to dilution.
- ds The sample was diluted. Detection limits are raised due to dilution and surrogate recoveries may not be meaningful.
- dv Insufficient sample was available to achieve normal reporting limits and limits are raised accordingly.
- fb Analyte present in the blank and the sample.
- fc The compound is a common laboratory and field contaminant.
- hr The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. The variability is attributed to sample inhomogeneity.
- ht Analysis performed outside the method or client-specified holding time requirement.
- ip Recovery fell outside of normal control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.
- j The result is below normal reporting limits. The value reported is an estimate.
- J The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.
- $\rm jl$  The analyte result in the laboratory control sample is out of control limits. The reported concentration should be considered an estimate.
- jr The rpd result in laboratory control sample associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- is The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.
- lc The presence of the compound indicated is likely due to laboratory contamination.
- L The reported concentration was generated from a library search.
- nm The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.
- pc The sample was received in a container not approved by the method. The value reported should be considered an estimate.
- pr The sample was received with incorrect preservation. The value reported should be considered an estimate.
- ve Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- vo The value reported fell outside the control limits established for this analyte.
- x The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

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	City, State, ZIP Waxden		REMARKS  ** Silica - Gel Clean-Up										☐ Dispose after 30 days ☐ Return samples ☐ Will call with instructions						
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