



Solving environment-related business problems worldwide

4006 148th Avenue NE  
Redmond, Washington 98052 USA  
425.882.3528 800.477.7411  
Fax 425.869.1892

GROUND WATER MONITORING REPORT  
Atlantic Richfield Company  
Annual Report for 2005  
September 9, 2005

RELEASE 400435  
ARCO 6175  
AUBURN  
LIST # 8812  
www.deltaenv.com

ARCO Facility No.:	6175
Address:	3910 South 320 <sup>th</sup> Street, Auburn, WA
Atlantic Richfield Company Environmental Business Manager:	Scott Hooton
Consulting Co./Contact Person:	Delta Environmental Consultants, Inc./Matt Miller MM
Consultant Project Number:	G0BKM
Primary Agency/Regulatory ID No.:	Washington State Department of Ecology/8812

WORK PERFORMED DURING 2005:

- Delta conducted annual ground water monitoring and sampling on March 28, 2005.
- Delta prepared this annual ground water monitoring report.

Current Phase of Project:	Monitoring ✓	(Phase I, Addtl Assmnt RAP/CAP, Remed., etc)
Frequency of Ground Water Sampling and Monitoring:	Annual	(Quarterly, etc)
Are LPH Present On-Site:	No	(Yes/No)
LPH Recovered this Reporting Period:	None	(Gallons)
Cumulative LPH Recovered to Date:	None	(Gallons)
Amount of Soil Removed to Date:	Unknown	(Cubic yards/tons)
Current Remediation Techniques:	Natural Attenuation	(SVES/Sparge/Pump and Treat)
Approximate Depth to Ground Water:	7.10 to 8.73	(Feet)
Ground Water Gradient:	East	(Direction)
	0.03 ft/linear ft	(Magnitude)

RECEIVED

OCT 14 2005

DEPT OF ECOLOGY

A member of:

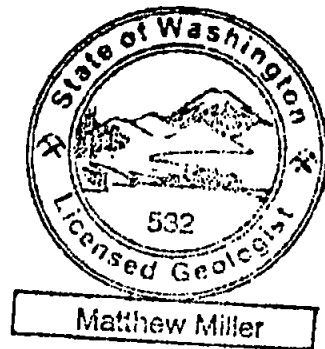


The recommendations contained in this report represent Delta's professional opinions based upon the currently available information and are arrived at in accordance with currently acceptable professional standards. This report is based upon a specific scope of work requested by the client. The contract between Delta and its client outlines the scope of work, and only those tasks specifically authorized by that contract or outlined in this report were performed. This report is intended only for the use of Delta's client and the Department of Ecology. Delta will not and cannot be liable for unauthorized reliance by any other party. Other than as contained in this paragraph, Delta makes no express or implied warranty as to the contents of this report.



Matt Miller  
Project Manager

- Attachments:**
- Table 1 - Summary of Ground Water Data
  - Figure 1 - Site Location Map
  - Figure 2 - Site Aerial Map
  - Figure 3 - Inferred Water Table Contour Map 3/28/05
  - North Creek Analytical Lab Report
  - Field Data Sheets



**TABLE-1**  
**SUMMARY OF GROUND WATER DATA**  
**ARCO FACILITY NO. 6175**  
**3910 SOUTH 320TH STREET**  
**AUBURN, WASHINGTON**

Well	TOC (feet)	Date Sampled	Depth to Water (feet)	GW Elevation (feet)	Dissolved Oxygen (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl- Benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	1,2 Dibromo ethane (µg/L)	1,2 Dichloro ethane (µg/L)	TPH-G (µg/L)	TPH-D (µg/L)	TPH-O (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)	Comments
VE-1	98.61	04/08/04	7.51	91.10	4.6	<0.500	<0.500	<0.500	<1.00	<1.00	<0.010	<0.200	<50.0	NA	NA	8.36	<1.00	P
VE-1	98.61	03/28/05	7.95	90.66	3.2	0.490 ✓	<0.500	<0.500	<1.00	<2.00	<0.500	<0.500	<80.0	NA	NA	<1.00	<1.00	P
VE-2	98.97	04/08/04	6.85	92.12	5.4	<0.500	<0.500	<0.500	<1.00	<1.00	<0.010	<0.200	<50.0	NA	NA	6.17	<1.00	P
VE-2	98.97	03/28/05	8.13	90.84	1.3	0.320 ✓	<0.500	<0.500	<1.00	<2.00	<0.500	<0.500	<80.0	NA	NA	<1.00	<1.00	P
VE-3	99.22	04/08/04	7.41	91.81	5.9	<0.500	<0.500	<0.500	<1.00	<1.00	<0.010	<0.200	<50.0	NA	NA	3.76	<1.00	P
VE-3	99.22	03/28/05	7.10	92.12	5.2	<0.200 ✓	<0.500	<0.500	<1.00	<2.00	<0.500	<0.500	<80.0	NA	NA	<1.00	<1.00	P
VE-4	99.51	04/08/04	6.67	92.84	5.4	<0.500	<0.500	<0.500	<1.00	<1.00	<0.010	<0.200	<50.0 ✓	NA	NA	9.84	<1.00	P
VE-4	99.51	03/28/05	7.53	91.98	4.9	0.200 ✓	<0.500	<0.500	<1.00	<2.00	<0.500	<0.500	<80.0 ✓	NA	NA	<1.00	<1.00	P
VE-5	99.88	04/08/04	8.38	91.50	1.0	<0.500	<0.500	<0.500	<1.00	<1.00	<0.010	<0.200	<50.0 ✓	NA	NA	4.22	<1.00	P
VE-5	99.88	03/28/05	8.73	91.15	1.4	<0.200 ✓	<0.500	<0.500	<1.00	<2.00	<0.500	<0.500	<80.0	NA	NA	<1.00	<1.00	P

**Notes:** Benzene, toluene, ethylbenzene, total xylenes, and methyl tert-butyl ether (MTBE) analyzed by EPA Method 8260B. Analyses prior to 4/8/04 utilized EPA Method 8021B. Samples with MTBE detections above the laboratory method reporting limit using 8021B were re-analyzed using 8260B to confirm the MTBE concentration.

TPH-G = Gasoline-range hydrocarbons analyzed by the Northwest method NWTPH-Gx.

TPH-D = Diesel-range hydrocarbons analyzed by the Northwest method NWTPH-Dx.

TPH-O = Oil-range hydrocarbons analyzed by the Northwest method NWTPH-Dx.

1,2-Dibromoethane (EDB) analyzed by EPA Method 8260B. Analyses on 4/8/04 utilized EPA Method 8011.

1,2-Dichloroethane (EDC) analyzed by EPA Method 8260B.

Total and dissolved lead analyzed by EPA Method 6020.

NA = Not analyzed.

<1.00 = Concentrations were not detected above the stated reporting limit.

TOC = Top of casing elevations and ground water elevations referenced to a site specific benchmark, assigned an elevation of 100.00 feet.

ug/L = Micrograms per liter.

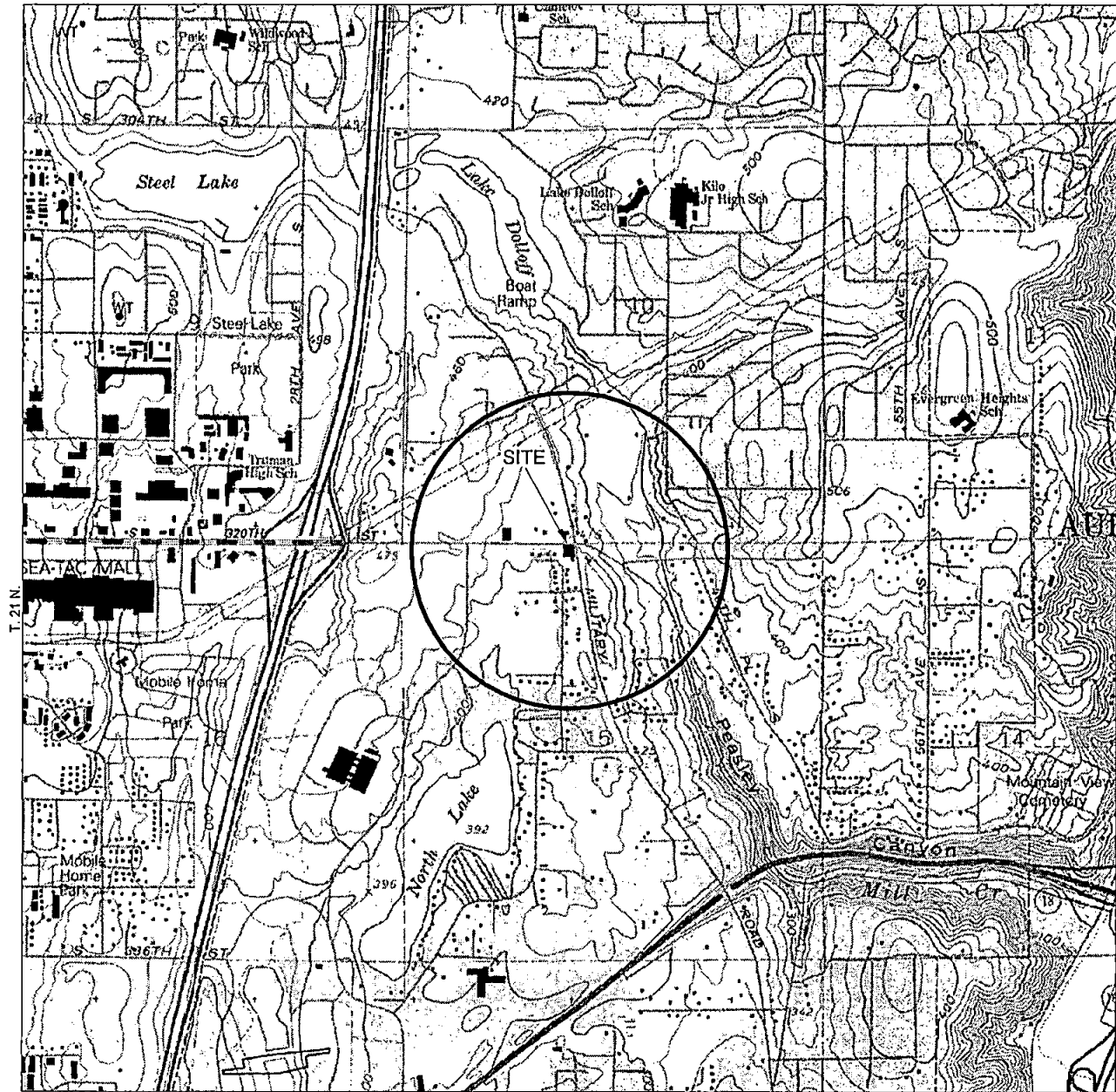
mg/L = Milligrams per liter.

P = Purge sampling methods were utilized.

GW elevation = Ground water elevation as calculated by TOC elevation – depth to water.

Sampling Frequency:

1Q 2005: VE-1, VE-2, VE-3, VE-4, VE-5

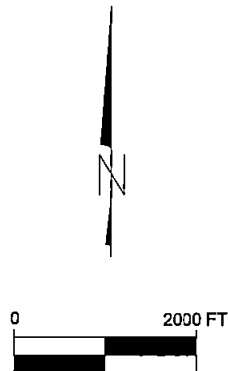


R 4 E.

GENERAL NOTES:  
BASE MAP FROM U.S.G.S.  
POVERTY BAY, WA.  
7.5 MINUTE TOPOGRAPHIC  
REVISED 1994



QUADRANGLE LOCATION



SCALE 1:24,000

FIGURE 1  
SITE LOCATION MAP

ARCO FACILITY 6175  
3910 S 320th STREET  
AUBURN, WASHINGTON

PROJECT NO. AM04-313	DRAWN BY M.L. 6/28/04
FILE NO. AM04313A	PREPARED BY BAB
REVISION NO. 1	REVIEWED BY





GENERAL NOTES:  
AERIAL PHOTOGRAPH  
DATED 6/13/02

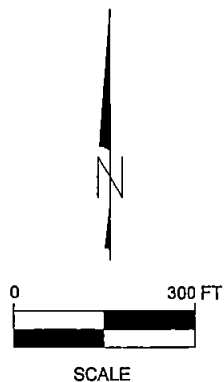


FIGURE 2

SITE AERIAL MAP

ARCO FACILITY 6175  
3910 S 320th STREET  
AUBURN, WASHINGTON

PROJECT NO.

DRAWN BY  
7/18/05

FILE NO.  
AM00431B

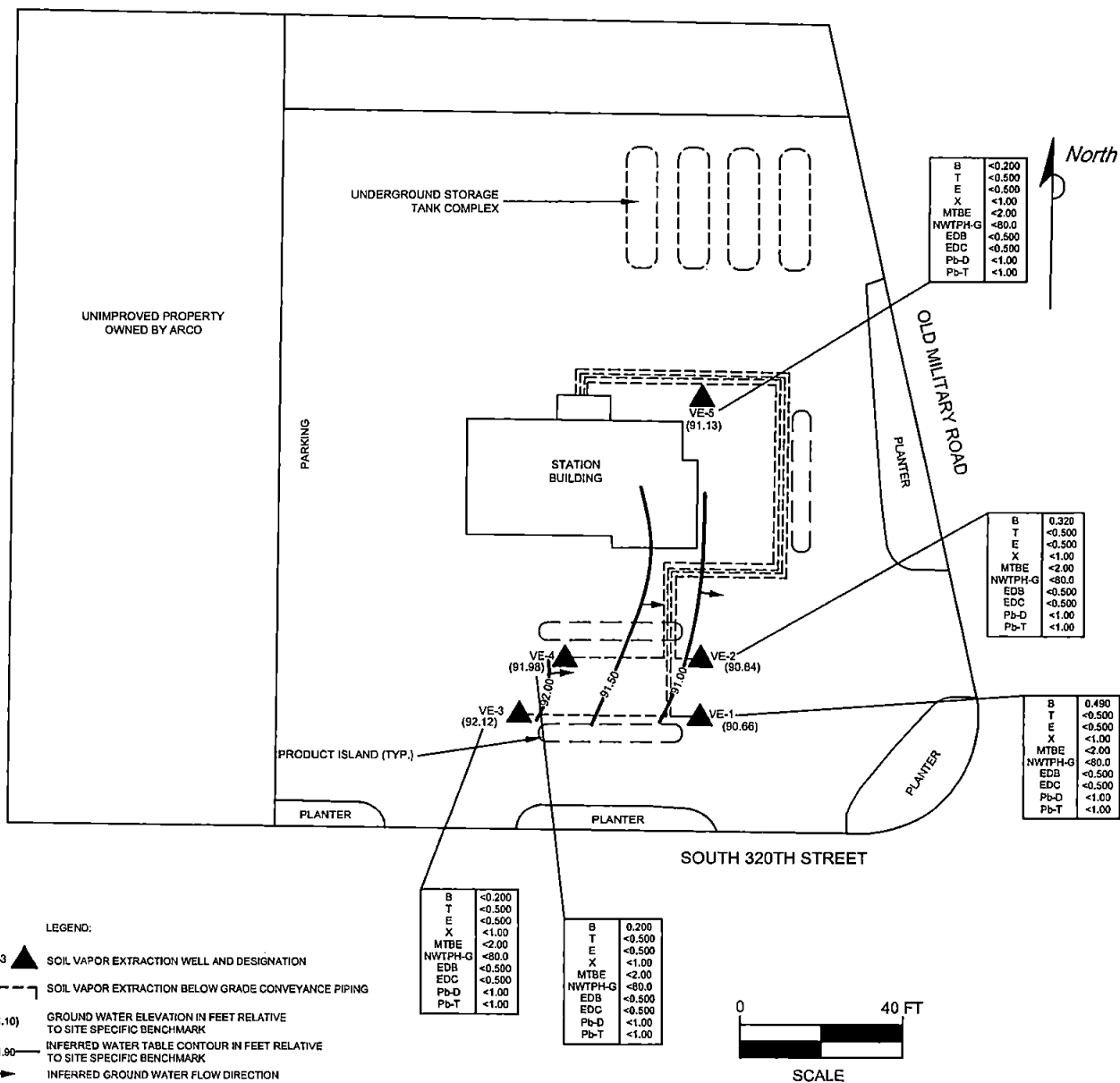
PREPARED BY  
SBM

REVISION NO.  
1

REVIEWED BY



**Delta**  
Environmental  
Consultants, Inc.



**FIGURE 3**  
**INFERRED WATER TABLE CONTOUR MAP**  
 3/28/05  
 ARCO FACILITY NO. 6175  
 3910 SOUTH 320TH STREET  
 AUBURN, WA.

PROJECT NO. GOBKM	DRAWN BY MC 9/1/05
FILE NO. AR-6175	PREPARED BY SBM
REVISION NO. 1	REVIEWED BY





Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244  
425.420.9200 fax 425.420.9210  
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776  
509.924.9200 fax 509.924.9290  
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132  
503.906.9200 fax 503.906.9210  
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711  
541.383.9310 fax 541.382.7588  
Anchorage 2000 W International Airport Road, Suite A-10, Anchorage, AK 99502-1119  
907.563.9200 fax 907.563.9210

May 02, 2005

Matt Miller  
Delta Environmental Consultants - Bellevue  
1200 112th Ave. NE Ste. C-210  
Bellevue, WA 98004

RE: ARCO #6175, Auburn, WA

Enclosed are the results of analyses for samples received by the laboratory on 04/01/05 09:50.  
The following list is a summary of the NCA Work Orders contained in this report.  
If you have any questions concerning this report, please feel free to contact me.

---

<u>Work</u>	<u>Project</u>	<u>ProjectNumber</u>
P5D0126	ARCO #6175, Auburn, WA	G0BKMRP51

---

Thank You,

---

Sarah Passarge, Project Manager

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

**North Creek Analytical, Inc.**  
**Environmental Laboratory Network**



Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244  
phone: (425) 420.9200 fax: (425) 420.9210  
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776  
phone: (509) 924.9200 fax: (509) 924.9290  
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132  
phone: (503) 906.9200 fax: (503) 906.9210  
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711  
phone: (541) 383.9310 fax: 541.382.7588  
Anchorage 2000 W International Airport Road, Suite A-10, Anchorage, AK 99502-1119  
phone: (907) 563.9200 fax: (907) 563.9210

**Delta Environmental Consultants - Bellevue**

1200 112th Ave. NE Ste. C-210  
Bellevue, WA 98004

Project Name: **ARCO #6175, Aburn, WA**

Project Number: G0BKMRP51

Project Manager: Matt Miller

Report Created:

05/02/05 17:42

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
VE-1-7.95	P5D0126-01	Water	03/28/05 13:00	04/01/05 09:50
VE-2-8.13	P5D0126-02	Water	03/28/05 12:25	04/01/05 09:50
VE-3-7.10	P5D0126-03	Water	03/28/05 14:10	04/01/05 09:50
VE-5-8.73	P5D0126-04	Water	03/28/05 11:43	04/01/05 09:50
VE-4-7.53	P5D0126-05	Water	03/28/05 13:37	04/01/05 09:50

North Creek Analytical - Portland

Sarah Passarge, Project Manager

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

North Creek Analytical, Inc.  
Environmental Laboratory Network





Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244  
 phone: (425) 420.9200 fax: (425) 420.9210  
 Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776  
 phone: (509) 924.9200 fax: (509) 924.9290  
 Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132  
 phone: (503) 906.9200 fax: (503) 906.9210  
 Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711  
 phone: (541) 383.9310 fax: 541.382.7588  
 Anchorage 2000 W International Airport Road, Suite A-10, Anchorage, AK 99502-1119  
 phone: (907) 563.9200 fax: (907) 563.9210

# **Delta Environmental Consultants - Bellevue**

1200 112th Ave. NE Ste. C-210  
 Bellevue, WA 98004

Project Name: **ARCO #6175, Auburn, WA**

Project Number: **G0BKMRP51**

Project Manager: **Matt Miller**

Report Created:

05/02/05 17:42

## **Gasoline Hydrocarbons per NW TPH-Gx Method**

North Creek Analytical - Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
<b>P5D0126-01</b>	<b>Water</b>	<b>VE-1-7.95</b>	<b>Sampled: 03/28/05 13:00</b>							
Gasoline Range Hydrocarbons	NW TPH-Gx	ND	----	80.0	ug/l	1x	5040288	04/07/05	04/08/05 00:07	
Surrogate(s): 4-BFB		Recovery: 92.4%		Limits: 50 - 150 %		"				"
<b>P5D0126-02</b>	<b>Water</b>	<b>VE-2-8.13</b>	<b>Sampled: 03/28/05 12:25</b>							
Gasoline Range Hydrocarbons	NW TPH-Gx	ND	----	80.0	ug/l	1x	5040288	04/07/05	04/08/05 01:08	
Surrogate(s): 4-BFB		Recovery: 91.2%		Limits: 50 - 150 %		"				"
<b>P5D0126-03</b>	<b>Water</b>	<b>VE-3-7.10</b>	<b>Sampled: 03/28/05 14:10</b>							
Gasoline Range Hydrocarbons	NW TPH-Gx	ND	----	80.0	ug/l	1x	5040288	04/07/05	04/08/05 01:39	
Surrogate(s): 4-BFB		Recovery: 92.0%		Limits: 50 - 150 %		"				"
<b>P5D0126-04</b>	<b>Water</b>	<b>VE-5-8.73</b>	<b>Sampled: 03/28/05 11:43</b>							
Gasoline Range Hydrocarbons	NW TPH-Gx	ND	----	80.0	ug/l	1x	5040288	04/07/05	04/08/05 02:09	
Surrogate(s): 4-BFB		Recovery: 97.4%		Limits: 50 - 150 %		"				"
<b>P5D0126-05</b>	<b>Water</b>	<b>VE-4-7.53</b>	<b>Sampled: 03/28/05 13:37</b>							
Gasoline Range Hydrocarbons	NW TPH-Gx	ND	----	80.0	ug/l	1x	5040288	04/07/05	04/08/05 02:39	
Surrogate(s): 4-BFB		Recovery: 92.4%		Limits: 50 - 150 %		"				"

North Creek Analytical - Portland

*Sarah Passarge*

Sarah Passarge, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

North Creek Analytical, Inc.  
 Environmental Laboratory Network



**Seattle** 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244  
 phone: (425) 420.9200 fax: (425) 420.9210  
**Spokane** East 11115 Montgomery, Suite B, Spokane, WA 99206-4776  
 phone: (509) 924.9200 fax: (509) 924.9290  
**Portland** 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132  
 phone: (503) 906.9200 fax: (503) 906.9210  
**Bend** 20332 Emplre Avenue, Suite F-1, Bend, OR 97701-5711  
 phone: (541) 383.9310 fax: 541.382.7588  
**Anchorage** 2000 W International Airport Road, Suite A-10, Anchorage, AK 99502-1119  
 phone: (907) 563.9200 fax: (907) 563.9210

**Delta Environmental Consultants - Bellevue**

1200 112th Ave. NE Ste. C-210  
Bellevue, WA 98004

Project Name: **ARCO #6175, Auburn, WA**

Project Number: **G0BKMRP51**

Project Manager: **Matt Miller**

Report Created:  
05/02/05 17:42

**Total Metals per EPA 6000/7000 Series Methods**

**North Creek Analytical - Portland**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
<b>P5D0126-01</b>	<b>Water</b>	<b>VE-1-7.95</b>	<b>Sampled: 03/28/05 13:00</b>							
Lead	EPA 6020	ND	-----	0.00100	mg/l	1x	5040160	04/05/05	04/30/05 22:52	
<b>P5D0126-02</b>	<b>Water</b>	<b>VE-2-8.13</b>	<b>Sampled: 03/28/05 12:25</b>							
Lead	EPA 6020	ND	-----	0.00100	mg/l	1x	5040160	04/05/05	04/30/05 22:58	
<b>P5D0126-03</b>	<b>Water</b>	<b>VE-3-7.10</b>	<b>Sampled: 03/28/05 14:10</b>							
Lead	EPA 6020	ND	-----	0.00100	mg/l	1x	5040160	04/05/05	04/30/05 23:05	
<b>P5D0126-04</b>	<b>Water</b>	<b>VE-5-8.73</b>	<b>Sampled: 03/28/05 11:43</b>							
Lead	EPA 6020	ND	-----	0.00100	mg/l	1x	5040160	04/05/05	04/30/05 23:11	
<b>P5D0126-05</b>	<b>Water</b>	<b>VE-4-7.53</b>	<b>Sampled: 03/28/05 13:37</b>							
Lead	EPA 6020	ND	-----	0.00100	mg/l	1x	5040160	04/05/05	04/30/05 23:18	

North Creek Analytical - Portland

*Sarah Passarge*

Sarah Passarge, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

North Creek Analytical, Inc.  
Environmental Laboratory Network



Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244  
phone: (425) 420.9200 fax: (425) 420.9210  
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776  
phone: (509) 924.9200 fax: (509) 924.9290  
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132  
phone: (503) 906.9200 fax: (503) 906.9210  
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711  
phone: (541) 383.9310 fax: 541.382.7588  
Anchorage 2000 W International Airport Road, Suite A-10, Anchorage, AK 99502-1119  
phone: (907) 563.9200 fax: (907) 563.9210

**Delta Environmental Consultants - Bellevue**

1200 112th Ave. NE Ste. C-210  
Bellevue, WA 98004

Project Name: **ARCO #6175, Auburn, WA**

Project Number: G0BKMRP51

Project Manager: Matt Miller

Report Created:

05/02/05 17:42

**Dissolved Metals per EPA 6000/7000 Series Methods**

North Creek Analytical - Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
<b>P5D0126-01</b>	<b>Water</b>	<b>VE-1-7.95</b>	<b>Sampled: 03/28/05 13:00</b>							
Lead	EPA 6020	ND	----	0.00100	mg/l	1x	5040309	04/07/05	05/01/05 00:49	M-04
<b>P5D0126-02</b>	<b>Water</b>	<b>VE-2-8.13</b>	<b>Sampled: 03/28/05 12:25</b>							
Lead	EPA 6020	ND	----	0.00100	mg/l	1x	5040309	04/07/05	05/01/05 01:03	M-04
<b>P5D0126-03</b>	<b>Water</b>	<b>VE-3-7.10</b>	<b>Sampled: 03/28/05 14:10</b>							
Lead	EPA 6020	ND	----	0.00100	mg/l	1x	5040309	04/07/05	05/01/05 01:22	M-04
<b>P5D0126-04</b>	<b>Water</b>	<b>VE-5-8.73</b>	<b>Sampled: 03/28/05 11:43</b>							
Lead	EPA 6020	ND	----	0.00100	mg/l	1x	5040309	04/07/05	05/01/05 01:29	M-04
<b>P5D0126-05</b>	<b>Water</b>	<b>VE-4-7.53</b>	<b>Sampled: 03/28/05 13:37</b>							
Lead	EPA 6020	ND	----	0.00100	mg/l	1x	5040309	04/07/05	05/01/05 01:35	M-04

North Creek Analytical - Portland

Sarah Passarge, Project Manager

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

North Creek Analytical, Inc.  
Environmental Laboratory Network



Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244  
phone: (425) 420.9200 fax: (425) 420.9210  
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776  
phone: (509) 924.9200 fax: (509) 924.9290  
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132  
phone: (503) 906.9200 fax: (503) 906.9210  
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711  
phone: (541) 383.9310 fax: 541.382.7588  
Anchorage 2000 W International Airport Road, Suite A-10, Anchorage, AK 99502-1119  
phone: (907) 563.9200 fax: (907) 563.9210

# Delta Environmental Consultants - Bellevue

1200 112th Ave. NE Ste. C-210  
Bellevue, WA 98004

Project Name: **ARCO #6175, Auburn, WA**

Project Number: G0BKMRP51

Project Manager: Matt Miller

Report Created:

05/02/05 17:42

## Selected Volatile Organic Compounds (Including BTEX) per EPA Method 8260B

### North Creek Analytical - Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
<b>PSD0126-01</b>	<b>Water</b>	<b>VE-1-7.95</b>	<b>Sampled: 03/28/05 13:00</b>							
1,2-Dibromoethane	EPA 8260B	ND	----	0.500	ug/l	1x	5040346	04/08/05	04/09/05 00:09	
1,2-Dichloroethane	"	ND	----	0.500	"	"	"	"	"	
<b>Benzene</b>	"	<b>0.490</b>	----	0.200	"	"	"	"	"	
Toluene	"	ND	----	0.500	"	"	"	"	"	
Ethylbenzene	"	ND	----	0.500	"	"	"	"	"	
Xylenes (total)	"	ND	----	1.00	"	"	"	"	"	
Methyl tert-butyl ether	"	ND	----	2.00	"	"	"	"	"	
Surrogate(s): 4-BFB		Recovery: 89.5%		Limits: 75 - 120 %	"					"
1,2-DCA-d4		114%		77 - 129 %	"					"
Dibromofluoromethane		109%		80 - 121 %	"					"
Toluene-d8		104%		80 - 120 %	"					"
<b>PSD0126-02</b>	<b>Water</b>	<b>VE-2-8.13</b>	<b>Sampled: 03/28/05 12:25</b>							
1,2-Dibromoethane	EPA 8260B	ND	----	0.500	ug/l	1x	5040346	04/08/05	04/09/05 00:36	
1,2-Dichloroethane	"	ND	----	0.500	"	"	"	"	"	
<b>Benzene</b>	"	<b>0.320</b>	----	0.200	"	"	"	"	"	
Toluene	"	ND	----	0.500	"	"	"	"	"	
Ethylbenzene	"	ND	----	0.500	"	"	"	"	"	
Xylenes (total)	"	ND	----	1.00	"	"	"	"	"	
Methyl tert-butyl ether	"	ND	----	2.00	"	"	"	"	"	
Surrogate(s): 4-BFB		Recovery: 91.0%		Limits: 75 - 120 %	"					"
1,2-DCA-d4		115%		77 - 129 %	"					"
Dibromofluoromethane		110%		80 - 121 %	"					"
Toluene-d8		104%		80 - 120 %	"					"
<b>PSD0126-03</b>	<b>Water</b>	<b>VE-3-7.10</b>	<b>Sampled: 03/28/05 14:10</b>							
1,2-Dibromoethane	EPA 8260B	ND	----	0.500	ug/l	1x	5040346	04/08/05	04/09/05 01:03	
1,2-Dichloroethane	"	ND	----	0.500	"	"	"	"	"	
Benzene	"	ND	----	0.200	"	"	"	"	"	
Toluene	"	ND	----	0.500	"	"	"	"	"	
Ethylbenzene	"	ND	----	0.500	"	"	"	"	"	
Xylenes (total)	"	ND	----	1.00	"	"	"	"	"	
Methyl tert-butyl ether	"	ND	----	2.00	"	"	"	"	"	
Surrogate(s): 4-BFB		Recovery: 89.5%		Limits: 75 - 120 %	"					"
1,2-DCA-d4		115%		77 - 129 %	"					"
Dibromofluoromethane		110%		80 - 121 %	"					"
Toluene-d8		103%		80 - 120 %	"					"

North Creek Analytical - Portland

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

*Sarah Passarge*

Sarah Passarge, Project Manager

North Creek Analytical, Inc.  
Environmental Laboratory Network



Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244  
phone: (425) 420.9200 fax: (425) 420.9210  
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776  
phone: (509) 924.9200 fax: (509) 924.9250  
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132  
phone: (503) 906.9200 fax: (503) 906.9210  
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711  
phone: (541) 383.9310 fax: 541.382.7588  
Anchorage 2000 W International Airport Road, Suite A-10, Anchorage, AK 99502-1119  
phone: (907) 563.9200 fax: (907) 563.9210

**Delta Environmental Consultants - Bellevue**

1200 112th Ave. NE Ste. C-210  
Bellevue, WA 98004

Project Name: ARCO #6175, Auburn, WA  
Project Number: G0BKMRP51  
Project Manager: Matt Miller

Report Created:  
05/02/05 17:42

**Selected Volatile Organic Compounds (Including BTEX) per EPA Method 8260B**

North Creek Analytical - Portland

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
<b>P5D0126-04</b>	<b>Water</b>	<b>VE-5-8.73</b>	<b>Sampled: 03/28/05 11:43</b>							
1,2-Dibromoethane	EPA 8260B	ND	----	0.500	ug/l	1x	5040346	04/08/05	04/09/05 01:29	
1,2-Dichloroethane	"	ND	----	0.500	"	"	"	"	"	
Benzene	"	ND	----	0.200	"	"	"	"	"	
Toluene	"	ND	----	0.500	"	"	"	"	"	
Ethylbenzene	"	ND	----	0.500	"	"	"	"	"	
Xylenes (total)	"	ND	----	1.00	"	"	"	"	"	
Methyl tert-butyl ether	"	ND	----	2.00	"	"	"	"	"	
<i>Surrogate(s): 4-BFB Recovery: 90.5% Limits: 75 - 120 %</i>										
<i>1,2-DCA-d4 113% 77 - 129 %</i>										
<i>Dibromofluoromethane 107% 80 - 121 %</i>										
<i>Toluene-d8 99.0% 80 - 120 %</i>										
<b>P5D0126-05</b>	<b>Water</b>	<b>VE-4-7.53</b>	<b>Sampled: 03/28/05 13:37</b>							
1,2-Dibromoethane	EPA 8260B	ND	----	0.500	ug/l	1x	5040346	04/08/05	04/09/05 01:56	
1,2-Dichloroethane	"	ND	----	0.500	"	"	"	"	"	
Benzene	"	0.200	----	0.200	"	"	"	"	"	
Toluene	"	ND	----	0.500	"	"	"	"	"	
Ethylbenzene	"	ND	----	0.500	"	"	"	"	"	
Xylenes (total)	"	ND	----	1.00	"	"	"	"	"	
Methyl tert-butyl ether	"	ND	----	2.00	"	"	"	"	"	
<i>Surrogate(s): 4-BFB Recovery: 92.5% Limits: 75 - 120 %</i>										
<i>1,2-DCA-d4 116% 77 - 129 %</i>										
<i>Dibromofluoromethane 114% 80 - 121 %</i>										
<i>Toluene-d8 105% 80 - 120 %</i>										

North Creek Analytical - Portland

*Sarah Passage*

Sarah Passage, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

North Creek Analytical, Inc.  
Environmental Laboratory Network



Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244  
 phone: (425) 420.9200 fax: (425) 420.9210  
 Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776  
 phone: (509) 924.9200 fax: (509) 924.9290  
 Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132  
 phone: (503) 906.9200 fax: (503) 906.9210  
 Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711  
 phone: (541) 383.9310 fax: 541.382.7588  
 Anchorage 2000 W International Airport Road, Suite A-10, Anchorage, AK 99502-1119  
 phone: (907) 563.9200 fax: (907) 563.9210

**Delta Environmental Consultants - Bellevue**

1200 112th Ave. NE Ste. C-210  
 Bellevue, WA 98004

Project Name: **ARCO #6175, Auburn, WA**

Project Number: **G0BKMRP51**

Project Manager: **Matt Miller**

Report Created:

05/02/05 17:42

**Gasoline Hydrocarbons per NW TPH-Gx Method - Laboratory Quality Control Results**

North Creek Analytical - Portland

QC Batch: 5040288

Water Preparation Method: EPA 5030B

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5040288-BLK1)							Extracted: 04/07/05 13:24							
Gasoline Range Hydrocarbons	NW TPH-Gx	ND	---	80.0	ug/l	1x	--	--	--	--	--	--	04/07/05 14:05	
Surrogate(s): 4-BFB		Recovery: 97.2%		Limits: 50-150%		"		04/07/05 14:05						
LCS (5040288-BS1)							Extracted: 04/07/05 13:24							
Gasoline Range Hydrocarbons	NW TPH-Gx	430	---	80.0	ug/l	1x	--	500	86.0%	(70-130)	--	--	04/07/05 14:39	
Surrogate(s): 4-BFB		Recovery: 102%		Limits: 50-150%		"		04/07/05 14:39						
LCS Dup (5040288-BSD1)							Extracted: 04/07/05 13:27							
Gasoline Range Hydrocarbons	NW TPH-Gx	417	---	80.0	ug/l	1x	--	500	83.4%	(70-130)	3.07%	(40)	04/07/05 15:10	
Surrogate(s): 4-BFB		Recovery: 106%		Limits: 50-150%		"		04/07/05 15:10						
Duplicate (5040288-DUP1)				QC Source: PSD0062-01				Extracted: 04/07/05 13:24						
Gasoline Range Hydrocarbons	NW TPH-Gx	ND	---	80.0	ug/l	1x	ND	--	--	--	84.7%	(40)	04/07/05 19:34	Q-06
Surrogate(s): 4-BFB		Recovery: 81.8%		Limits: 50-150%		"		04/07/05 19:34						
Duplicate (5040288-DUP2)				QC Source: PSD0117-03				Extracted: 04/07/05 13:24						
Gasoline Range Hydrocarbons	NW TPH-Gx	63500	---	8000	ug/l	100x	61000	--	--	--	4.02%	(40)	04/07/05 17:21	
Surrogate(s): 4-BFB		Recovery: 103%		Limits: 50-150%		1x		04/07/05 17:21						

North Creek Analytical - Portland

*Sarah Passarge*

Sarah Passarge, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

North Creek Analytical, Inc.  
 Environmental Laboratory Network



Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244  
phone: (425) 420.9200 fax: (425) 420.9210  
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776  
phone: (509) 924.9200 fax: (509) 924.9290  
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132  
phone: (503) 906.9200 fax: (503) 906.9210  
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711  
phone: (541) 383.9310 fax: 541.382.7588  
Anchorage 2000 W International Airport Road, Suite A-10, Anchorage, AK 99502-1119  
phone: (907) 563.9200 fax: (907) 563.9210

**Delta Environmental Consultants - Bellevue**

1200 112th Ave. NE Ste. C-210  
Bellevue, WA 98004

Project Name: **ARCO #6175, Auburn, WA**

Project Number: **G0BKMRP51**

Project Manager: **Matt Miller**

Report Created:

05/02/05 17:42

**Total Metals per EPA 6000/7000 Series Methods - Laboratory Quality Control Results**

**North Creek Analytical - Portland**

QC Batch: 5040160

Water Preparation Method: EPA 200/3005

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
<b>Blank (5040160-BLK1)</b>										Extracted: 04/05/05 11:15				
Lead	EPA 6020	ND	---	0.00100	mg/l	1x	--	--	--	--	--	--	04/30/05 20:54	
<b>LCS (5040160-BS1)</b>										Extracted: 04/05/05 11:15				
Lead	EPA 6020	0.0973	---	0.00100	mg/l	1x	--	0.100	97.3%	(80-120)	--	--	04/30/05 21:00	
<b>LCS Dup (5040160-BSD1)</b>										Extracted: 04/05/05 11:15				
Lead	EPA 6020	0.0983	---	0.00100	mg/l	1x	--	0.100	98.3%	(80-120)	1.02%	(20)	04/30/05 21:07	
<b>Duplicate (5040160-DUP1)</b>										QC Source: PSD0052-11 Extracted: 04/05/05 11:15				
Lead	EPA 6020	ND	---	0.00100	mg/l	1x	ND	--	--	--	NR	(20)	04/30/05 21:33	
<b>Matrix Spike (5040160-MS1)</b>										QC Source: PSD0052-12 Extracted: 04/05/05 11:15				
Lead	EPA 6020	0.0961	--	0.00100	mg/l	1x	ND	0.100	96.1%	(75-125)	--	--	04/30/05 21:53	
<b>Matrix Spike (5040160-MS2)</b>										QC Source: PSD0052-13 Extracted: 04/05/05 11:15				
Lead	EPA 6020	0.0939	---	0.00100	mg/l	1x	0.000581	0.100	93.3%	(75-125)	--	--	04/30/05 22:06	

North Creek Analytical - Portland

Sarah Passarge, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

North Creek Analytical, Inc.  
Environmental Laboratory Network



**Seattle** 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244  
 phone: (425) 420.9200 fax: (425) 420.9210  
**Spokane** East 11115 Montgomery, Suite B, Spokane, WA 99206-4776  
 phone: (509) 924.9200 fax: (509) 924.9290  
**Portland** 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132  
 phone: (503) 906.9200 fax: (503) 906.9210  
**Bend** 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711  
 phone: (541) 383.9310 fax: 541.382.7588  
**Anchorage** 2000 W International Airport Road, Suite A-10, Anchorage, AK 99502-1119  
 phone: (907) 563.9200 fax: (907) 563.9210

<b>Delta Environmental Consultants - Bellevue</b>	Project Name: <b>ARCO #6175, Auburn, WA</b>	
1200 112th Ave. NE Ste. C-210	Project Number: <b>G0BKMRP51</b>	Report Created: <b>05/02/05 17:42</b>
Bellevue, WA 98004	Project Manager: <b>Matt Miller</b>	

### Dissolved Metals per EPA 6000/7000 Series Methods - Laboratory Quality Control Results

#### **North Creek Analytical - Portland**

QC Batch: 5040309		Water Preparation Method: EPA 200/3005 Diss												
Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (5040309-BLK1)							Extracted: 04/07/05 18:37							
Lead	EPA 6020	ND	---	0.00100	mg/l	1x	--	--	--	--	--	--	04/30/05 23:24	M-04
LCS (5040309-BS1)							Extracted: 04/07/05 18:37							
Lead	EPA 6020	0.100	---	0.00100	mg/l	1x	--	0.100	100%	(80-120)	--	--	04/30/05 23:31	M-04
LCS Dup (5040309-BSD1)							Extracted: 04/07/05 18:37							
Lead	EPA 6020	0.100	---	0.00100	mg/l	1x	--	0.100	100%	(80-120)	0.00%	(20)	04/30/05 23:37	M-04
Duplicate (5040309-DUP1)				QC Source: PSD0057-02				Extracted: 04/07/05 18:37						
Lead	EPA 6020	0.00127	---	0.00100	mg/l	1x	0.00127	--	--	--	0.00%	(20)	05/01/05 00:04	M-04
Matrix Spike (5040309-MS1)				QC Source: PSD0057-02				Extracted: 04/07/05 18:37						
Lead	EPA 6020	0.0948	---	0.00100	mg/l	1x	0.00127	0.100	93.5%	(75-125)	--	--	05/01/05 00:17	M-04
Matrix Spike (5040309-MS2)				QC Source: PSD0126-01				Extracted: 04/07/05 18:37						
Lead	EPA 6020	0.0950	---	0.00100	mg/l	1x	ND	0.100	95.0%	(75-125)	--	--	05/01/05 00:56	M-04

North Creek Analytical - Portland

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

*Sarah Passarge*

Sarah Passarge, Project Manager

North Creek Analytical, Inc.  
Environmental Laboratory Network





Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244  
phone: (425) 420.9200 fax: (425) 420.9210  
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776  
phone: (509) 924.9200 fax: (509) 924.9280  
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132  
phone: (503) 906.9200 fax: (503) 906.9210  
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711  
phone: (541) 383.9310 fax: 541.382.7588  
Anchorage 2000 W International Airport Road, Suite A-10, Anchorage, AK 99502-1119  
phone: (907) 563.9200 fax: (907) 563.9210

**Delta Environmental Consultants - Bellevue**

1200 112th Ave. NE Ste. C-210  
Bellevue, WA 98004

Project Name: **ARCO #6175, Auburn, WA**

Project Number: **G0BKMRP51**

Project Manager: **Matt Miller**

Report Created:  
05/02/05 17:42

**Selected Volatile Organic Compounds (Including BTEX) per EPA Method 8260B - Laboratory Quality Control Results****North Creek Analytical - Portland**

QC Batch: 5040346

Water Preparation Method: EPA 5030B

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
---------	--------	--------	------	-----	-------	-----	---------------	-----------	-------	----------	-------	----------	----------	-------

**Blank (5040346-BLK1)**

Extracted: 04/08/05 15:02

1,2-Dibromoethane	EPA 8260B	ND	---	0.500	ug/l	1x	--	--	--	--	--	--	04/08/05 20:36	
1,2-Dichloroethane	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Benzene	"	ND	---	0.200	"	"	--	--	--	--	--	--	"	
Toluene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Ethylbenzene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Xylenes (total)	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
Methyl tert-butyl ether	"	ND	---	2.00	"	"	--	--	--	--	--	--	"	
Naphthalene	"	ND	---	2.00	"	"	--	--	--	--	--	--	"	
1,2,4-Trimethylbenzene	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	
1,3,5-Trimethylbenzene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Isopropylbenzene	"	ND	---	2.00	"	"	--	--	--	--	--	--	"	
n-Propylbenzene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	

Surrogate(s): 4-BFB	Recovery: 94.0%	Limits: 75-120%	"	04/08/05 20:36
1,2-DCA-d4	114%	77-129%	"	"
Dibromofluoromethane	110%	80-121%	"	"
Toluene-d8	104%	80-120%	"	"

**LCS (5040346-BS1)**

Extracted: 04/08/05 15:02

Benzene	EPA 8260B	20.6	---	0.200	ug/l	1x	--	20.0	103%	(80-120)	--	--	04/08/05 18:49	
Toluene	"	20.4	---	0.500	"	"	--	"	102%	(80-124)	--	--	"	
Ethylbenzene	"	18.3	---	0.500	"	"	--	"	91.5%	(80-120)	--	--	"	
Xylenes (total)	"	55.3	---	1.00	"	"	--	60.0	92.2%	(73-124)	--	--	"	
Methyl tert-butyl ether	"	21.1	---	2.00	"	"	--	20.0	106%	(80-129)	--	--	"	
Naphthalene	"	18.1	---	2.00	"	"	--	"	90.5%	(72-149)	--	--	"	

Surrogate(s): 4-BFB	Recovery: 94.5%	Limits: 75-120%	"	04/08/05 18:49
1,2-DCA-d4	116%	77-129%	"	"
Dibromofluoromethane	113%	80-121%	"	"
Toluene-d8	107%	80-120%	"	"

**Matrix Spike (5040346-MS1)**

QC Source: PSD0283-01

Extracted: 04/08/05 15:02

Benzene	EPA 8260B	19.9	---	0.200	ug/l	1x	ND	20.0	99.5%	(80-124)	--	--	04/08/05 19:15	
Toluene	"	18.9	---	0.500	"	"	ND	"	94.5%	(79.7-131)	--	--	"	
Ethylbenzene	"	16.3	---	0.500	"	"	ND	"	81.5%	(80-124)	--	--	"	
Xylenes (total)	"	43.4	---	1.00	"	"	ND	60.0	72.3%	(44.6-154)	--	--	"	
Methyl tert-butyl ether	"	20.7	---	2.00	"	"	ND	20.0	104%	(80-130)	--	--	"	
Naphthalene	"	16.7	---	2.00	"	"	ND	"	83.5%	(69-163)	--	--	"	

Surrogate(s): 4-BFB	Recovery: 90.0%	Limits: 75-120%	"	04/08/05 19:15
1,2-DCA-d4	116%	77-129%	"	"
Dibromofluoromethane	112%	80-121%	"	"
Toluene-d8	102%	80-120%	"	"

North Creek Analytical - Portland

*Sarah Passarge*

Sarah Passarge, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

North Creek Analytical, Inc.  
Environmental Laboratory Network



Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244  
phone: (425) 420.9200 fax: (425) 420.9210  
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776  
phone: (509) 924.9200 fax: (509) 924.9290  
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132  
phone: (503) 906.9200 fax: (503) 906.9210  
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711  
phone: (541) 383.9310 fax: 541.382.7588  
Anchorage 2000 W International Airport Road, Suite A-10, Anchorage, AK 99502-1119  
phone: (907) 563.9200 fax: (907) 563.9210

**Delta Environmental Consultants - Bellevue**

1200 112th Ave. NE Ste. C-210  
Bellevue, WA 98004

Project Name: **ARCO #6175, Auburn, WA**Project Number: **G0BKMRP51**Project Manager: **Matt Miller****Report Created:**  
05/02/05 17:42**Selected Volatile Organic Compounds (Including BTEX) per EPA Method 8260B - Laboratory Quality Control Results****North Creek Analytical - Portland****QC Batch: 5040346****Water Preparation Method: EPA 5030B**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
<b>Matrix Spike Dup (5040346-MSD1)</b>		<b>QC Source: PSD0283-01</b>			<b>Extracted: 04/08/05 15:02</b>									
Benzene	EPA 8260B	20.1	---	0.200	ug/l	1x	ND	20.0	100%	(80-124)	1.00%	(25)	04/08/05 19:42	
Toluene	"	19.8	---	0.500	"	"	ND	"	99.0%	(79.7-131)	4.65%	"	"	
Ethylbenzene	"	17.4	---	0.500	"	"	ND	"	87.0%	(80-124)	6.53%	"	"	
Xylenes (total)	"	49.5	---	1.00	"	"	ND	60.0	82.5%	(44.6-154)	13.1%	"	"	
Methyl tert-butyl ether	"	20.9	---	2.00	"	"	ND	20.0	104%	(80-130)	0.962%	"	"	
Naphthalene	"	17.3	---	2.00	"	"	ND	"	86.5%	(69-163)	3.53%	"	"	
<i>Surrogate(s): 4-BFB</i>		<i>Recovery:</i>	<i>93.0%</i>	<i>Limits: 75-120%</i>	<i>"</i>									<i>04/08/05 19:42</i>
<i>1,2-DCA-d4</i>			<i>115%</i>	<i>77-129%</i>	<i>"</i>									<i>"</i>
<i>Dibromofluoromethane</i>			<i>111%</i>	<i>80-121%</i>	<i>"</i>									<i>"</i>
<i>Toluene-d8</i>			<i>104%</i>	<i>80-120%</i>	<i>"</i>									<i>"</i>

North Creek Analytical - Portland

Sarah Passarge, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

North Creek Analytical, Inc.  
Environmental Laboratory Network

Page 11 of 12



Seattle 11720 North Creek Pkwy N, Suite 400, Bothell, WA 98011-8244  
phone: (425) 420.9200 fax: (425) 420.9210  
Spokane East 11115 Montgomery, Suite B, Spokane, WA 99206-4776  
phone: (509) 924.9200 fax: (509) 924.9290  
Portland 9405 SW Nimbus Avenue, Beaverton, OR 97008-7132  
phone: (503) 906.9200 fax: (503) 906.9210  
Bend 20332 Empire Avenue, Suite F-1, Bend, OR 97701-5711  
phone: (541) 383.9310 fax: 541.382.7588  
Anchorage 2000 W International Airport Road, Suite A-10, Anchorage, AK 99502-1119  
phone: (907) 563.9200 fax: (907) 563.9210

**Delta Environmental Consultants - Bellevue**

1200 112th Ave. NE Ste. C-210  
Bellevue, WA 98004

Project Name: **ARCO #6175, Auburn, WA**  
Project Number: G0BKMRP51  
Project Manager: Matt Miller

Report Created:  
05/02/05 17:42

**Notes and Definitions**

**Report Specific Notes:**

- M-04 - Sample Filtered through 0.45 micron filter in Laboratory prior to analysis.
- Q-06 - RPD is not applicable for analyte concentrations less than 5 times the MRL.

**Laboratory Reporting Conventions:**

- DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
- ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
- NR / NA - Not Reported / Not Available
- dry - Sample results reported on a dry weight basis. Reporting Limits are corrected for %Solids when %Solids are <50%.
- wet - Sample results and reporting limits reported on a wet weight basis (as received).
- RPD - Relative Percent Difference. (RPDs calculated using Results, not Percent Recoveries).
- MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
- MDL\* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B.  
\*MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated results.
- Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.

North Creek Analytical - Portland

Sarah Passarge, Project Manager

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

North Creek Analytical, Inc.  
Environmental Laboratory Network

Page 12 of 12



# Chain of Custody Record

Project Name: Routine Ground Water Sampling  
BP BU/AR Region/Enfos Segment: West Coast/Retail  
State or Lead Regulatory Agency: Washington Dept. of Ecology  
Requested Due Date (mm/dd/yy): Standard TAT

On-site Time: 1030	Temp: 40
Off-site Time: 1400	Temp: 40
Sky Conditions: Rain	
Meteorological Events:	
Wind Speed:	Direction:

Lab Name: North Creek Analytical, Inc.	BP/AR Facility No.: 6175	Consultant/Contractor: Delta Environmental Consultants
Address: 9405 SW Nimbus Avenue	BP/AR Facility Address: 3910 South 320 St. Aburn, WA	Address: 1200 112th Avenue Northeast, Suite C-210
Beaverton, Oregon 97008	Site Lat/Long:	Bellevue, Washington 98004
Lab PM: Sarah Passarge	California Global ID No.: NA	Consultant/Contractor Project No.: G0BKM RP51
Tele/Fax: (503) 906-9200/(503) 906-9210	Enfos Project No.: G0BKM-0001	Consultant/Contractor PM: Matt Miller
BP/AR PM Contact: Scott Hooton	Provision or RCOP (circle one)	Tele/Fax: (425) 450-7707/(425) 450-8837
Address: 295 SW 41st Street, Bldg. 13, Ste N	Phase/WBS: 04-Monitoring Only	Report Type & QC Level: BP Level 1
Renton, WA 98055	Sub Phase/Task: 27-Sampling	E-mail EDD To: mrmiller@deltaenv.com
Tele/Fax: (425) 251-0689/(425) 251-0736	Cost Element: 05-Subcontracted Costs	Invoice to: Consultant or BP or Atlantic Richfield Co. (circle one)

Lab Bottle Order No:				Matrix			Laboratory No.	No. of Containers	Preservative					Requested Analysis							Sample Point Lat/Long and Comments
Item No.	Sample Description	Time	Date	Soil/Solid	Water/Liquid	Air			Unpreserved	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCl	Methanol	NWTPH-Gx	BTEX(8011B)	BTEX+MTBE(8021B)*	EDC(826(B)	EDB(8011B)	NWTPH-Dx	Total Lead	
1	VE-1-795	1300	3/26/05	X			9	1	1	7		X	X	X	X	X	X	X	X		* 1 litre umbors broke in transit, please run EOB by 8:30C
2	VF-2-5.13	1225	3/26/05	X			9	1	1	7		X	X	X	X	X	X	X	X		
3	VE-3 7.10	1410	3/26/05	X			9	1	1	7		X	X	X	X	X	X	X	X		
4	VE-4 1410		3/26/05	X			9	1	1	7		X	X	X	X	X	X	X	X		
5	VE-5-8:13	1143	3/26/05	X			9	1	1	7		X	X	X	X	X	X	X	X		
6	VE-4-7.53	1337	3/26/05	X			9	1	1	7		X	X	X	X	X	X	X	X		
7																					
8																					
9																					
10																					

Sampler's Name: Kevin Hill	Relinquished By / Affiliation		Date	Time	Accepted By / Affiliation		Date	Time
Sampler's Company: Delta Environmental	[Signature] Delta		3/26/05	800	[Signature] NEA		3/26/05	9:50
Shipment Date: 3/25/05								
Shipment Method: UPS								
Shipment Tracking No:								

## Special Instructions:

\*If positive for MTBE or if MTBE is not detected above an MRL exceeding 20ug/l, then analyze by 8260B for confirmation MTBE.

Custody Seals In Place Yes	No	Temp Blank Yes	No	Cooler Temperature on Receipt 14.7 °F/C	Trip Blank Yes	No
----------------------------	----	----------------	----	---	----------------	----

Distribution: White Copy - Laboratory / Yellow Copy - BP/Atlantic Richfield Co. / Pink Copy - Consultant/Contractor



A member of:

WELL MONITORING &  
SAMPLING FIELD FORM

Project Name: ARCO Facility # 6175 Auburn

Project #: G0BKMRP51

Monitoring/Sampling Date: 3/28/05

Monitoring Well ID: VE-1 Field Personnel: Kevin Hill

Start Time: 1233 Weather Conditions: Rain Approx Air Temp (F): 40

## INITIAL WELL DATA &amp; WELL PURGING INFORMATION

Top of Casing Elevation (ft):	Depth to Water Measuring Technique: LLI
Total Well Depth (ft): 13	Detection Method of Free Product:
Depth to Water (ft): 7.95	Conversion Factors (casing dia. = gallons/linear ft.) Circle One
Free Product Detected:	0.75"=0.02 1"=0.04 2"=0.17 3"=0.37
Depth to Free Product:	4"=0.66 6"=1.47 8"=2.61 12"=5.88
Casing Diameter (in.): 2	Three Well Purge Volumes (gallons) = 3 X = 2.5
Quantity of Free Product Bailed (gal):	Method of Collecting Free Product:

Casing Volumes (#)	Gallons Purged (gallons)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (µS)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
3						3.2	42	12:59

Total Purged = 2.5 Purge Pumping Rate (approx. gpm or ml/min): Well Yield: High / Moderate / Low

Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristaltic Pump / Grunfos Pump / Other

Water Level After Purging (TOC - ft.): Decontamination Methods:

Instrument Type &amp; Number: Instrument Notes:

Instrument Calibration Date &amp; Time:

## WELL CONDITION

Casing (circle one):	Stainless Steel (SS)	Carbon Steel	PVC	Other:
Casing Condition:	OK / NA / Needs Repairs / Repaired	Lock Condition:	OK / NA / Needs Repairs / Repaired	
Cap Condition:	OK / NA / Needs Repairs / Repaired	Inner Casing Condition:	OK / NA / Needs Repairs / Repaired	
Paint Condition:	OK / NA / Needs Repairs / Repaired	Monument Condition:	OK / NA / Needs Repairs / Repaired	
Recommended Well Repairs:				

## SAMPLING INFORMATION / DATA

Date Sampled: 3/28/05	QA/QC Sample (circle one): YES / NO	Water Chemistry Sample: YES / NO
Time Sampled: 1300	Sampling Method (circle One): SS Bailer	Poly Bailer
Chain-of-Custody #:	Teflon Bailer	Peristaltic Pump

Sample ID	Bottles (total)	(size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
VE-1-7.95	7	VOA	HCL		NWTPH-Gx, BTEX, MTBE, EDC	
	1	500ml	NONE		DISSOLVED LEAD	
	1	500ml	HCL		EDB	
		500ml	HNO3		TOTAL LEAD	

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observation / Notes of Sampling Event:

Clear Sample

TOC - Top of Casing

Sampler (Print): Kevin Hill

Sampler Signature: [Signature]

Date Signed: 3/28/05



**Delta**  
Environmental  
Consultants, Inc.

A member of:



**WELL MONITORING &  
SAMPLING FIELD FORM**

Project Name: ARCO Facility # 6175 Auburn

Project #: G0BKMRP51

Monitoring/Sampling Date: 3/28/05

Monitoring Well ID: VE-2

Field Personnel: Kevin Hill

Start Time: 1150

Weather Conditions: Rain

Approx Air Temp (F): 40

**INITIAL WELL DATA & WELL PURGING INFORMATION**

Top of Casing Elevation (ft):

Total Well Depth (ft): 13.50

Depth to Water Measuring Technique: LLP

Depth to Water (ft): 8.15

Detection Method of Free Product:

Free Product Detected:

Conversion Factors (casing dia. = gallons/linear ft.) Circle One  
0.75"=0.02 1"=0.04 2"=0.17 3"=0.37  
4"=0.66 6"=1.47 8"=2.61 12"=5.88

Depth to Free Product:

Casing Diameter (in.): 2

Three Well Purge Volumes (gallons) = 3 X = 2.7

Quantity of Free Product Bailed (gal):

Method of Collecting Free Product:

Casing Volumes (#)	Gallons Purged (gallons)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (µS)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
						<u>1.3</u>		<u>1271</u>

Total Purged = 2.7

Purge Pumping Rate (approx. gpm or ml/min):

Well Yield: High / Moderate / Low

Purge Method (circle one):

PVC Bailer / Poly Bailer / SS Bailer / Peristaltic Pump / Grunfos Pump / Other

Water Level After Purging (TOC - ft.):

Decontamination Methods:

Instrument Type & Number:

Instrument Notes:

Instrument Calibration Date & Time:

**WELL CONDITION**

Casing (circle one): Stainless Steel (SS) Carbon Steel PVC Other:

Casing Condition: OK / NA / Needs Repairs / Repaired

Lock Condition: OK / NA / Needs Repairs / Repaired

Cap Condition: OK / NA / Needs Repairs / Repaired

Inner Casing Condition: OK / NA / Needs Repairs / Repaired

Paint Condition: OK / NA / Needs Repairs / Repaired

Monument Condition: OK / NA / Needs Repairs / Repaired

Recommended Well Repairs:

**SAMPLING INFORMATION / DATA**

Date Sampled: 3/28/05

QA/QC Sample (circle one): YES / NO

Water Chemistry Sample: YES / NO

Time Sampled: VE-2-8.15 12:25

Sampling Method (circle one): SS Bailer

Poly Bailer

Grunfos Pump

Chain-of-Custody #:

Teflon Bailer

Peristaltic Pump

Other:

Sample ID	Bottles		Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
	(total)	(size)				
<u>VE-2-8.15</u>	<u>7</u>	<u>VOA</u>	<u>HCL</u>		<u>NWTPH-Gx, BTEX, MTBE, EDC</u>	
	<u>1</u>	<u>500ml</u>	<u>NONE</u>		<u>DISSOLVED LEAD</u>	
		<u>liter</u>	<u>HCL</u>		<u>EDB</u>	
	<u>1</u>	<u>500ml</u>	<u>HNO3</u>		<u>TOTAL LEAD</u>	

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted:

YES / NO

Field Observation / Notes of Sampling Event:

Sample Clear

TOC - Top of Casing

Sampler (Print):

Kevin Hill

Sampler Signature:

[Signature]

Date Signed:

3/28/05



**Delta**  
Environmental  
Consultants, Inc.

A member of:



WELL MONITORING &

SAMPLING FIELD FORM

Project Name: ARCO Facility # 6175 Auburn

Project #: GOBKMRP51

Monitoring/Sampling Date:

3/28/05

Monitoring Well ID:

VE-3

Field Personnel: Kevin Hill

Start Time:

1346

Weather Conditions:

Rain

Approx Air Temp (F): 40

### INITIAL WELL DATA & WELL PURGING INFORMATION

Top of Casing Elevation (ft):

Total Well Depth (ft):

14.10

Depth to Water (ft):

7.10

Free Product Detected:

Depth to Free Product:

Casing Diameter (in.):

2

Quantity of Free Product Bailed (gal):

Depth to Water Measuring Technique:

WLD

Detection Method of Free Product:

Conversion Factors (casing dia. = gallons/linear ft.)

Circle One

0.75"=0.02

1"=0.04

2" = 0.17

3" = 0.37

4" = 0.66

6" = 1.47

8" = 2.61

12" = 5.88

Three Well Purge Volumes (gallons) = 3 X

=

Method of Collecting Free Product:

Casing  
Volumes  
(#)

Gallons  
Purged  
(gallons)

Water  
Temperature  
(degree C)

Water  
pH  
(S.U.)

Specific  
Conductivity  
(µS)

Turbidity  
(NTUs)

Dissolved  
Oxygen  
(mg/L)

ORP  
(mV)

Time  
(0:00 -  
23:59)

5.2

14:10

Total Purged =

3.7

Purge Pumping Rate (approx. gpm or ml/min):

Well Yield: High / Moderate / Low

Purge Method (circle one):

PVC Bailer (Poly Bailer) / SS Bailer / Peristaltic Pump / Grunfos Pump / Other

Water Level After Purging (TOC - ft.):

Decontamination Methods:

Instrument Type & Number:

Instrument Notes:

Instrument Calibration Date & Time:

### WELL CONDITION

Casing (circle one): Stainless Steel (SS) Carbon Steel (PVC) Other:

Casing Condition: OK / NA / Needs Repairs / Repaired

Lock Condition: OK / NA / Needs Repairs / Repaired

Cap Condition: OK / NA / Needs Repairs / Repaired

Inner Casing Condition: OK / NA / Needs Repairs / Repaired

Paint Condition: OK / NA / Needs Repairs / Repaired

Monument Condition: OK / NA / Needs Repairs / Repaired

Recommended Well Repairs:

full of water

### SAMPLING INFORMATION / DATA

Date Sampled: 3/28/05

QA/QC Sample (circle one): YES / NO

Water Chemistry Sample: YES / NO

Time Sampled: 1410

Sampling Method (circle One): SS Bailer

(Poly Bailer)

Grunfos Pump

Chain-of-Custody #:

Teflon Bailer

Peristaltic Pump

Other:

Sample ID	Bottles		Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
	(total)	(size)				
VE-3-7.10	7	VOA	HCL		NWTPH-Gx, BTEX, MTBE, EDC	
	1	500ml	NONE		DISSOLVED LEAD	
	1	500ml	HCL		EDB	
	1	500ml	HNO3		TOTAL LEAD	

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted:

YES / NO

Field Observation / Notes of Sampling Event:

Clear Sample

TOC - Top of Casing

Sampler (Print):

Kevin Hill

Sampler Signature:

[Signature]

Date Signed:

3/28/05

Delta Environmental Consultants, Inc.

1200 - 112th Avenue NE, Suite C-210, Bellevue, WA 98004

425/450-7726, Toll Free: 800/477-7411, Fax: 425/450-8837



**Delta**  
Environmental  
Consultants, Inc.

A member of:

**Inogen**  
Environmental Services

WELL MONITORING &

SAMPLING FIELD FORM

Project Name: ARCO Facility # 6175 Auburn

Project #: G0BKMRP51

Monitoring/Sampling Date: 3/28/05

Monitoring Well ID: VE-4

Field Personnel: Kevin Hill

Start Time: 1307

Weather Conditions: Rain

Approx Air Temp (F): 40

**INITIAL WELL DATA & WELL PURGING INFORMATION**

Top of Casing Elevation (ft):		Depth to Water Measuring Technique: <u>WLL</u>						
Total Well Depth (ft): <u>12</u>		Detection Method of Free Product:						
Depth to Water (ft): <u>7.53</u>		Conversion Factors (casing dia. = gallons/linear ft.) Circle One						
Free Product Detected:		0.75"=0.02    1"=0.04    2"=0.17    3"=0.37						
Depth to Free Product:		4"=0.66    6"=1.47    8"=2.61    12"=5.88						
Casing Diameter (in.):		Three Well Purge Volumes (gallons) = 3 X = <u>2.2</u>						
Quantity of Free Product Bailed (gal):		Method of Collecting Free Product:						
Casing Volumes (#)	Gallons Purged (gallons)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (µS)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
						<u>4.9</u>		

Total Purged = 2.2    Purge Pumping Rate (approx. gpm or ml/min):    Well Yield: High / Moderate / Low  
Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristaltic Pump / Grunfos Pump / Other  
Water Level After Purging (TOC - ft.):    Decontamination Methods:  
Instrument Type & Number:    Instrument Notes:  
Instrument Calibration Date & Time:

**WELL CONDITION**

Casing (circle one): Stainless Steel (SS)    Carbon Steel    PVC    Other:  
Casing Condition: OK / NA / Needs Repairs / Repaired    Lock Condition: OK / NA / Needs Repairs / Repaired  
Cap Condition: OK / NA / Needs Repairs / Repaired    Inner Casing Condition: OK / NA / Needs Repairs / Repaired  
Paint Condition: OK / NA / Needs Repairs / Repaired    Monument Condition: OK / NA / Needs Repairs / Repaired  
Recommended Well Repairs:

**SAMPLING INFORMATION / DATA**

Date Sampled: 3/28/05    QA/QC Sample (circle one): YES / NO    Water Chemistry Sample: YES / NO  
Time Sampled: 1337    Sampling Method (circle one): SS Bailer    Poly Bailer    Grunfos Pump  
Chain-of-Custody #:    Teflon Bailer    Peristaltic Pump    Other:

Sample ID	Bottles		Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
	(total)	(size)				
<u>VE-4-7.53</u>	<u>7</u>	<u>VOA</u>	<u>HCL</u>		<u>NWTPH-Gx, BTEX, MTBE, EDC</u>	
	<u>1</u>	<u>500ml</u>	<u>NONE</u>		<u>DISSOLVED LEAD</u>	
		<u>filter</u>	<u>HCL</u>		<u>EDB</u>	
	<u>1</u>	<u>500ml</u>	<u>HNO3</u>		<u>TOTAL LEAD</u>	

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO  
Field Observation / Notes of Sampling Event:

Sampler (Print):

Kevin Hill

Sampler Signature:

[Signature]

Date Signed:

3/28/05

TOC - Top of Casing

Delta Environmental Consultants, Inc.

1200 - 112th Avenue NE, Suite C-210, Bellevue, WA 98004  
425/450-7726, Toll Free: 800/477-7411, Fax: 425/450-8837





**Delta**  
Environmental  
Consultants, Inc.

A member of:



**WELL MONITORING &  
SAMPLING FIELD FORM**

Project Name: ARCO Facility # 6175 Auburn

Project #: G0BKMRP51

Monitoring/Sampling Date: 3/28/05

Monitoring Well ID: VE-5 Field Personnel: Kevin Hill

Start Time: 1125 Weather Conditions: Rain Approx Air Temp (F): 40

**INITIAL WELL DATA & WELL PURGING INFORMATION**

Top of Casing Elevation (ft): \_\_\_\_\_ Depth to Water Measuring Technique: WLF

Total Well Depth (ft): 12 Detection Method of Free Product: \_\_\_\_\_

Depth to Water (ft): 8.73 Conversion Factors (casing dia. = gallons/linear ft.) Circle One

Free Product Detected: \_\_\_\_\_ 0.75"=0.02 1"=0.04 2"=0.17 3"=0.37

Depth to Free Product: \_\_\_\_\_ 4"=0.66 6"=1.47 8"=2.61 12"=5.88

Casing Diameter (in.): 2 Three Well Purge Volumes (gallons) = 3 X 0.5 = 1.6

Quantity of Free Product Bailed (gal): \_\_\_\_\_ Method of Collecting Free Product: \_\_\_\_\_

Casing Volumes (#)	Gallons Purged (gallons)	Water Temperature (degree C)	Water pH (S.U.)	Specific Conductivity (µS)	Turbidity (NTUs)	Dissolved Oxygen (mg/L)	ORP (mV)	Time (0:00 - 23:59)
--------------------	--------------------------	------------------------------	-----------------	----------------------------	------------------	-------------------------	----------	---------------------

Total Purged = 1.6 Purge Pumping Rate (approx. gpm or ml/min): \_\_\_\_\_ Well Yield: High / Moderate / Low

Purge Method (circle one): PVC Bailer / Poly Bailer / SS Bailer / Peristaltic Pump / Grunfos Pump / Other

Water Level After Purging (TOC - ft.): \_\_\_\_\_ Decontamination Methods: \_\_\_\_\_

Instrument Type & Number: \_\_\_\_\_ Instrument Notes: \_\_\_\_\_

Instrument Calibration Date & Time: \_\_\_\_\_

**WELL CONDITION**

Casing (circle one): Stainless Steel (SS) Carbon Steel PVC Other: \_\_\_\_\_

Casing Condition: OK / NA / Needs Repairs / Repaired Lock Condition: OK / NA / Needs Repairs / Repaired

Cap Condition: OK / NA / Needs Repairs / Repaired Inner Casing Condition: OK / NA / Needs Repairs / Repaired

Paint Condition: OK / NA / Needs Repairs / Repaired Monument Condition: OK / NA / Needs Repairs / Repaired

Recommended Well Repairs: \_\_\_\_\_

**SAMPLING INFORMATION / DATA**

Date Sampled: 3/28/05 QA/QC Sample (circle one): YES / NO Water Chemistry Sample: YES / NO

Time Sampled: 1143 Sampling Method (circle One): SS Bailer Poly Bailer Grunfos Pump

Chain-of-Custody #: \_\_\_\_\_ Teflon Bailer Peristaltic Pump Other: \_\_\_\_\_

Sample ID	Bottles (total)	Bottles (size)	Preservative	Destination Laboratory	Sample Transporter	Analytical Parameters
-----------	-----------------	----------------	--------------	------------------------	--------------------	-----------------------

All samples were immediately placed into a cooler and packed with ice or "Blue Ice", unless otherwise noted: YES / NO

Field Observation / Notes of Sampling Event: Clear Sample

TOC - Top of Casing

Sampler (Print): Kevin Hill Sampler Signature: [Signature] Date Signed: 3/28/05

**Delta Environmental Consultants, Inc.**

1200 - 112th Avenue NE, Suite C-210, Bellevue, WA 98004  
425/450-7726, Toll Free: 800/477-7411, Fax: 425/450-8837