

DATE: October 15, 1998**TOSCO MARKETING COMPANY
GROUNDWATER MONITORING REPORT**

Site No.: 4165 Address: 202 Avenue D, Snohomish, WA
Tosco Project Manager: Timothy D. Johnson
Consultant /Contact Person: Environmental Resolutions, Inc./John Meyer
Primary Agency/Regulatory ID No.: Washington State Department of Ecology

WORK PERFORMED THIS QUARTER(S) [Third - 1998]:

- Monitored 10, and purged and sampled 7 groundwater monitoring wells

WORK PROPOSED FOR NEXT QUARTER [Fourth - 1998]:

- Monitor, purge, and sample 10 groundwater monitoring wells

SUMMARY:

Frequency of Sampling Events:	<u>Quarterly</u>	(Quarterly, etc.)
Approximate Depth to Groundwater:	<u>8 to 11 ft</u>	(Measured Feet)
Groundwater Gradient:	<u>Southerly and Westerly</u>	(Direction)
	<u>0.04 ft/ft</u>	(Magnitude)
Maximum TPH-G/Benzene Concentrations:	<u>1,940/42.3</u>	(ppb)
Measurable Free Product Detected:	<u>Yes - 0.07 ft in MW-12</u>	(Yes - ID wells(s)/No)
Free Product Recovered This Quarter:	<u>Unknown</u>	(gallons)
Cumulative Free Product Recovered to Date:	<u>Unknown</u>	(gallons)
Bulk Soil Removed This Quarter:	<u>None</u>	(cubic yards)
Water Wells or Surface Waters w/in a 2000'	<u>Snohomish River</u>	
Radius and Respective Direction:	<u>~ 0.25 Miles South</u>	(Direction)
Current Remedial Action:	<u>None</u>	(SVE/AS/P&T etc.)
Permits for Discharge:	<u>None</u>	(NPDES, POTW, etc.)

DISCUSSION:

- 5 of 7 wells sampled contained hydrocarbon concentrations exceeding MTCA Method A Cleanup Levels
- 0.07 ft LPH detected in MW-12

ATTACHMENTS:

Plate P-1 - Groundwater Sample Analyses Map, 8/16/98
Table 1 - Groundwater Analytical Results
Laboratory Reports and Chain of Custody Records
Field Data Records

Prepared By:



John K. Meyer, R.G.
Environmental Resolutions, Inc.

cc: Brian Sato, Ecology NW Region
Mick Monken, City of Snohomish
Lisa Bona, GeoEngineers

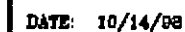


TABLE 1
GROUNDWATER ANALYTICAL RESULTS
Tosco Facility 4165
202 Avenue D
Snohomish, Washington
Page 1 of 2

Well Name	Sample Date	DTW	GW Elev.	TPH-G	TPH-D	TPH-O	B	T	E	X
MW-1 88.11	01/23/95	7.16	90.95	25,000	2,400	<750	92	110	379	2,400
	01/23/95	-	-	27,000	-	-	38	120	390	2,700
	04/20/95	7.56	90.55	20,000	1,800	<750	100	390	760	4,000
	04/20/95	-	-	20,000	-	-	100	420	780	5,200
	07/21/95	10.15	87.96	7,300	1,600	<1,000	6.6	17	50	370
	07/21/95	-	-	9,100	-	-	6.9	19	61	320
	10/18/95	9.17	88.94	20,000	2,500	<750	19	24	290	1,800
	10/18/95	-	-	28,000	-	-	17	17	280	1,800
	01/24/96	5.51	95.47	35,000	2,600	1,700	66	80	640	3,800
	01/24/96	-	-	36,000	-	-	62	81	620	3,700
	04/24/96	7.78	90.73	19,000	1,990	<750	<2.0	<2.0	25	140
	04/24/96	-	-	16,000	-	-	19	4.1	22	180
	07/23/96	9.77	58.69	7,950	648	<750	9.35	81.5	32.1	94.8
	07/23/96	-	-	7,430	-	-	<2.50	<2.50	24.7	72.3
	10/15/96	10.52	58.14	1,750	321	<750	<0.500	1.89	4.91	10.1
	10/15/96	-	-	1,730	-	-	<0.500	1.86	5.01	10.2
	03/17/97 ^{NP}	6.81	62.05	8,800	684	<785	<0.500	3.80	3.25	8.37
	03/17/97	-	-	13,800	2,070	1,030	13.2	8.11	10.3	25.3
	06/04/97	8.40	60.28	16,600	896	<750	18.1	14.7	25.5	106
68.26	09/12/97	10.70	57.98	818	368	<750	12.7	2.76	2.64	9.20
	12/16/97*	-	-	4,640	3,210	3,790	<1.25	<6.25	3.86	10.8
	3/11/98	6.83	61.43	2,090	1,360	<750	0.542	<0.500	5.20	18.3
	6/22/98	8.91	59.35	3,470	726	<750	<2.50	24.8	4.34	6.93
	9/16/98	10.80	57.46	1,530	627	<750	15.2	<6.00	<4.00	<15.0
MW-2	01/23/95	4.87	94.72	9,800	810	<750	4.8	5.0	8.8	16
	04/20/95	5.20	94.19	6,700	1,100	<750	4.5	4.1	4.5	7.0
	07/21/95	8.30	91.09	7,020	1,750	<1,000	2.8	2.4	3.9	7.2
	10/18/95	6.00	93.39	6,400	1,000	760	<2.0	2.7	7.0	11
	01/24/96	3.92	95.75	6,600	580	<750	1.8	<0.5	3.5	6.2
	04/24/96	5.30	94.70	6,800	630	<750	1.6	2.9	4.4	7.1
	07/23/96	6.24	81.97	3,710	469	<750	<2.50	2.81	2.92	<5.00
	10/15/96	8.65	81.58	4,180	427	<750	<1.00	2.57	2.58	4.47
	03/17/97 ^{NP}	4.19	88.02	2,730	388	<750	<2.50	<2.50	<2.50	<5.00
	03/17/97	-	-	3,280	677	<750	<2.50	3.13	2.61	<5.00
	06/04/97	6.20	84.01	2,970	<250	<750	31.7	2.77	2.71	5.07
	09/12/97	8.92	81.29	1,880	390	<750	60.3	4.24	3.37	4.83
	12/16/97	5.52	84.28	1,840	343	<750	29.4	2.59	1.80	3.52
	3/11/98	4.53	85.27	3,030	413	<750	<0.500	<0.500	0.939	<1.00
	6/22/98	7.05	82.75	1,880	312	<750	<2.50	31.6	<2.50	<5.00
	9/16/98	8.98	80.82	1,940	292	<750	42.3	<10.0	<2.50	10.7
MW-3	01/23/95	4.61	95.26	<50	<250	<750	<0.5	<0.5	<0.5	<0.5
	04/20/95	5.15	94.72	<50	<250	<750	<0.5	<0.5	<0.5	<1.0
	07/21/95	8.72	91.15	<50	<250	<1,000	<0.5	<0.5	<0.5	<1.0
	10/18/95	6.36	93.51	<50	<250	<750	<0.5	<0.5	<0.5	<1.0
	01/24/96	4.12	95.75	<50	<250	<750	<0.5	<0.5	<0.5	<1.0
	04/24/96	5.34	95.04	-	-	-	-	-	-	-
	07/23/96	8.81	61.85	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	10/15/96	9.14	61.62	-	-	-	-	-	-	-
	03/17/97	4.48	88.30	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	06/04/97	-	-	-	-	-	-	-	-	-
	09/12/97	9.41	81.35	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	12/16/97	5.95	84.30	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	3/11/98	4.85	85.40	-	-	-	-	-	-	-
	6/22/98	7.80	82.65	<50.0	<250	<750	<0.500	0.856	<0.500	1.45
	9/16/98	9.29	80.96	-	-	-	-	-	-	-
MW-6 87.74	03/17/97 ^{NP}	-	-	4,710	698	<750	941	102	218	142
	03/17/97	6.86	61.30	2,790	881	<750	1,100	37.5	170	108
	06/04/97	6.94	81.22	3,920	<250	<750	201	37.8	141	100
	09/12/97	9.05	59.11	674	<250	<750	7.66	3.98	6.57	12.7
	12/16/97	6.51	61.23	2,260	348	<750	111	32.3	118	137
	3/11/98	6.25	61.49	3,880	623	<750	480	34.0	210	205
	6/22/98 ¹	7.50	60.24	834	<250	<750	2.39	15.6	21.4	22.3
	9/16/98	9.99	57.75	814	<250	<750	7.42	<2.00	10.9	19.3
MTCA Method A Cleanup Level				1,000*		5	40	30	20	

Continued on Page 2.

TABLE 1
GROUNDWATER ANALYTICAL RESULTS
Tosco Facility 4165
202 Avenue D
Snohomish, Washington
Page 2 of 2

Well Name	Sample Date	DTW	GW Elev.	TPH-G	TPH-D	TPH-O	B	T	E	X
MW-7 67.86	03/17/97	2.30	65.95	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	06/04/97	5.68	62.57	<50.0	1,420	<750	<0.500	<0.500	<0.500	<1.00
	09/12/97	9.22	59.03	-	-	-	-	-	-	-
	12/16/97	4.78	63.07	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	3/11/98	3.45	64.41	-	-	-	-	-	-	-
	6/22/98	7.32	60.54	<50.0	<250	<750	<0.500	1.24	<0.500	2.07
	9/16/98	10.27	57.59	-	-	-	-	-	-	-
MW-8 67.52	03/17/97	8.48	61.45	<50	<250	<750	<0.500	<0.500	<0.500	<1.00
	06/04/97	8.48	59.47	1,080	<250	<750	1,087	4.77	1.79	31.6
	09/12/97	10.74	57.19	1,020	1,380	814	12.2	5.74	2.68	7.89
	12/16/97	7.92	59.60	874	478	<750	8.90	<4.00	<4.00	<8.00
	3/11/98	6.85	60.67	771	309	<750	<0.500	0.774	<0.500	<1.00
	6/22/98	8.99	58.53	829	<250	<750	<0.500	14.1	<1.00	6.88
	9/16/98	10.81	58.71	343	458	<750	2.62	<1.50	<0.500	<4.00
MW-9 68.66	03/17/97	8.89	62.21	5,770	4,060	1,140	<2.50	15.7	9.38	12.3
	06/04/97	7.94	61.16	<50	887	<750	<0.500	<0.500	<0.500	<1.00
	09/12/97	9.84	59.28	<50	<250	<750	<0.500	<0.500	<0.500	<1.00
	12/16/97	7.38	61.28	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	3/11/98	6.57	62.09	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	6/22/98	8.27	60.39	<50.0	<250	<750	<0.500	<0.500	<0.500	<1.00
	9/16/98	9.89	58.77	<50.0	-	-	<0.500	<0.500	<0.500	<1.00
MW-10 67.33	03/17/97	6.47	61.31	4,180	14,300	1,040	10.6	<10.0	12.4	<20.0
	03/17/97 ^{NP}	-	-	4,850	5,040	<750	9.94	8.38	55.3	9.77
	06/04/97	5.46	62.32	3,620	<250	<750	13.1	7.70	66.4	13.6
	09/12/97	7.49	60.29	4,280	660	<750	21.6	13.4	10.7	41.8
	12/16/97*	4.85	62.48	825	887	<750	<2.00	<2.00	<2.00	<4.00
	3/11/98	4.53	62.80	1,150	343	<750	<0.500	1.07	1.36	<1.00
	6/22/98	5.86	61.47	908	<250	<750	<0.500	<6.00	<3.50	<4.50
MW-11 68.37	03/17/97	6.47	61.31	1,010	389	<750	<2.10	<2.00	<3.50	<8.00
	03/17/97 ^{NP}	-	-	924	<250	<750	2.48	17.5	37.1	38.1
	06/04/97	9.58	57.33	788	<250	<750	2.41	16.0	34.4	28.7
	09/12/97	10.05	56.86	1,020	<250	<750	2.41	11.2	29.6	20.3
	09/12/97	11.01	55.90	1,200	<250	<750	38.4	1.27	2.34	7.12
	12/16/97*	9.59	56.78	512	272	<750	84.2	2.37	4.14	6.31
	3/11/98	9.38	56.99	388	346	<750	168	7.88	17.7	12.0
MW-12 66.40	6/22/98	9.92	56.45	589	<250	<750	70.8	3.47	4.07	<10.0
	9/16/98	10.93	55.44	306	<250	<750	11.1	<0.500	<0.500	<3.50
	03/17/97	9.01	58.05	2,080	1,700	<750	8.27	3.53	12.0	13.4
	06/04/97	9.88	57.38	2,640	726	<750	11.4	4.16	32.2	23.6
	09/12/97	10.91	56.15	2,740	762	<750	15.7	2.75	18.7	19.5
	12/16/97	8.09	58.31	-	0.01 Feet LPH - No sample collected	-	-	-	-	-
	3/11/98 ^{NP}	8.72	57.68	11,200	17,800	5,000	<2.50	4.28	42.9	197
	6/22/98	8.76	56.69	-	0.06 Feet LPH - No sample collected	-	-	-	-	-
	9/16/98	10.97	55.48	-	0.07 Feet LPH - No sample collected	-	-	-	-	-
MTCA Method A Cleanup Level				1,000 ¹	5	40	30	20		

EXPLANATION:

All concentrations in ug/L (ppb).

Wellhead elevations taken from prior consultant's reports. Elevations recalculated 4/29/96.

DTW = Depth to water in feet below top of casing. Measurements taken from ground surface between 4/24/96 and 9/12/97.

GW Elev. = Groundwater elevation relative to top of casing elevations, corrected for free product where applicable using a specific gravity of 0.75.

TPH-G = Total Petroleum Hydrocarbons as Gasoline by Ecology Method WTPH-G.

TPH-D and TPH-O = Total Petroleum Hydrocarbons as Diesel and Oil, respectively, by Ecology Method WTPH-D (extended).

B = Benzene; T = Toluene; E = Ethylbenzene; X = Total Xylenes.

BTEX = Aromatic compounds by EPA Method 8020.

LPH = Liquid-phase petroleum hydrocarbons present; no sample collected.

- = No Data.

< = Less than the stated laboratory reporting limit.

NP = Sample collected without purging.

* Well resampled on 12/23/97 due to laboratory breakage.

¹ Approximate elevation

* Total Petroleum Hydrocarbons.

Shaded values equal or exceed MTCA Method A Cleanup Levels.

Data collected before 12/16/97 are taken from prior consultants.



NORTH CREEK ANALYTICAL

Environmental Laboratory Services

BOTHELL ■ (425) 420-9200 ■ FAX 420-9210
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 906-9200 ■ FAX 906-9210

ERI
1921 Edmonds Drive SE
Renton, WA 98055

Project: TOSCO #4165, Snohomish
Project Number: 31018
Project Manager: John Meyer

Sampled: 9/16/98
Received: 9/17/98
Reported: 9/30/98 09:44

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
MW-1	B809448-01	Water	9/16/98
MW-2	B809448-02	Water	9/16/98
MW-6	B809448-03	Water	9/16/98
MW-8	B809448-04	Water	9/16/98
MW-9	B809448-05	Water	9/16/98
MW-10	B809448-06	Water	9/16/98
MW-11	B809448-07	Water	9/16/98

North Creek Analytical - Bothell

*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.*

Matthew Essig, Project Manager

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776

Page 1 of 7



NORTH CREEK ANALYTICAL

Environmental Laboratory Services

BOTHELL ■ (425) 420-9200 ■ FAX 420-9210
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 906-9200 ■ FAX 906-9210

ERI	Project: TOSCO #4165, Snohomish	Sampled: 9/16/98
1921 Edmonds Drive SE	Project Number: 31018	Received: 9/17/98
Renton, WA 98055	Project Manager: John Meyer	Reported: 9/30/98 09:44

Gasoline Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8021B North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-1								
				<u>B809448-01</u>		Water		
Gasoline Range Hydrocarbons	0980883	9/26/98	9/26/98		250	1530	ug/l	
Benzene	"	"	"		2.50	15.2	"	
Toluene	"	"	"		6.00	ND	"	1
Ethylbenzene	"	"	"		4.00	ND	"	1
Xylenes (total)	"	"	"		15.0	ND	"	1
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		112	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		107	"	
MW-2								
				<u>B809448-02</u>		Water		
Gasoline Range Hydrocarbons	0980883	9/26/98	9/26/98		250	1940	ug/l	
Benzene	"	"	"		2.50	42.3	"	
Toluene	"	"	"		10.0	ND	"	1
Ethylbenzene	"	"	"		2.50	ND	"	
Xylenes (total)	"	"	"		5.00	10.7	"	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		118	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		111	"	
MW-6								
				<u>B809448-03</u>		Water		
Gasoline Range Hydrocarbons	0980883	9/26/98	9/26/98		50.0	814	ug/l	
Benzene	"	"	"		0.500	7.42	"	
Toluene	"	"	"		2.00	ND	"	1
Ethylbenzene	"	"	"		0.500	10.9	"	
Xylenes (total)	"	"	"		1.00	19.3	"	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		115	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		120	"	
MW-8								
				<u>B809448-04</u>		Water		
Gasoline Range Hydrocarbons	0980883	9/26/98	9/26/98		50.0	343	ug/l	
Benzene	"	"	"		0.500	2.62	"	
Toluene	"	"	"		1.50	ND	"	1
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		4.00	ND	"	1
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		119	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		107	"	
MW-9								
				<u>B809448-05</u>		Water		
Gasoline Range Hydrocarbons	0980883	9/26/98	9/26/98		50.0	ND	ug/l	
Benzene	"	"	"		0.500	ND	"	

North Creek Analytical - Bothell

*Refer to end of report for text of notes and definitions.

Matthew Essig, Project Manager

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776

Page 2 of 7



NORTH CREEK ANALYTICAL

Environmental Laboratory Services

BOTHELL ■ (425) 420-9200 ■ FAX 420-9210
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 906-9200 ■ FAX 906-9210

ERI	Project: TOSCO #4165, Snohomish	Sampled: 9/16/98
1921 Edmonds Drive SE	Project Number: 31018	Received: 9/17/98
Renton, WA 98055	Project Manager: John Meyer	Reported: 9/30/98 09:44

Gasoline Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8021B North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-9 (continued)				B809448-05			Water	
Toluene	0980883	9/26/98	9/26/98		0.500	ND	ug/l	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		1.00	ND	"	
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		102	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		104	"	
MW-10				B809448-06			Water	
Gasoline Range Hydrocarbons	0980883	9/26/98	9/26/98		50.0	1010	ug/l	2
Benzene	"	"	"		2.10	ND	"	1
Toluene	"	"	"		2.00	ND	"	1
Ethylbenzene	"	"	"		3.50	ND	"	1
Xylenes (total)	"	"	"		8.00	ND	"	1
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		152	%	3
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		106	"	
MW-11				B809448-07			Water	
Gasoline Range Hydrocarbons	0980883	9/26/98	9/27/98		50.0	306	ug/l	2
Benzene	"	"	"		0.500	11.1	"	
Toluene	"	"	"		0.500	ND	"	
Ethylbenzene	"	"	"		0.500	ND	"	
Xylenes (total)	"	"	"		3.50	ND	"	1
Surrogate: 4-BFB (FID)	"	"	"	50.0-150		114	%	
Surrogate: 4-BFB (PID)	"	"	"	50.0-150		110	"	

North Creek Analytical - Bothell

*Refer to end of report for text of notes and definitions.

Matthew Essig, Project Manager

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776

Page 3 of 7



NORTH CREEK ANALYTICAL

Environmental Laboratory Services

BOTHELL ■ (425) 420-9200 ■ FAX 420-9210
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 906-9200 ■ FAX 906-9210

ERI	Project: TOSCO #4165, Snohomish	Sampled: 9/16/98
1921 Edmonds Drive SE	Project Number: 31018	Received: 9/17/98
Renton, WA 98055	Project Manager: John Mcycr	Reported: 9/30/98 09:44

Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C40) by WTPH-D (extended) North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
MW-1								
				B809448-01			Water	
Diesel Range Hydrocarbons	0980727	9/23/98	9/24/98		0.250	0.627	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		86.8	%	
MW-2								
				B809448-02			Water	
Diesel Range Hydrocarbons	0980727	9/23/98	9/24/98		0.250	0.299	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		83.1	%	
MW-6								
				B809448-03			Water	
Diesel Range Hydrocarbons	0980727	9/23/98	9/24/98		0.250	ND	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		78.8	%	
MW-8								
				B809448-04			Water	
Diesel Range Hydrocarbons	0980727	9/23/98	9/24/98		0.250	0.456	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		89.7	%	
MW-10								
				B809448-06			Water	
Diesel Range Hydrocarbons	0980727	9/23/98	9/24/98		0.250	0.369	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		80.1	%	
MW-11								
				B809448-07			Water	
Diesel Range Hydrocarbons	0980727	9/23/98	9/24/98		0.250	ND	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	50.0-150		88.4	%	



NORTH CREEK ANALYTICAL

Environmental Laboratory Services

BOTHELL ■ (425) 420-9200 ■ FAX 420-9210
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 906-9200 ■ FAX 906-9210

ERI	Project: TOSCO #4165, Snohomish	Sampled: 9/16/98
1921 Edmonds Drive SE	Project Number: 31018	Received: 9/17/98
Renton, WA 98055	Project Manager: John Meyer	Reported: 9/30/98 09:44

Gasoline Hydrocarbons (Toluene to Dodecane) and BTEX by WTPH-G and EPA 8021B/Quality Control North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0980883										
Blank										
Date Prepared: 9/26/98										
Extraction Method: EPA 5030B (MeOH)										
0980883-BLK1										
Gasoline Range Hydrocarbons	9/26/98			ND	ug/l	50.0				
Benzene	"			ND	"	0.500				
Toluene	"			ND	"	0.500				
Ethylbenzene	"			ND	"	0.500				
Xylenes (total)	"			ND	"	1.00				
Surrogate: 4-BFB (FID)	"	48.0		51.1	"	50.0-150	106			
Surrogate: 4-BFB (PID)	"	48.0		49.9	"	50.0-150	104			
LCS										
0980883-BS1										
Gasoline Range Hydrocarbons	9/26/98	500		450	ug/l	70.0-130	90.0			
Surrogate: 4-BFB (FID)	"	48.0		54.9	"	50.0-150	114			
Duplicate										
0980883-DUP1 B809448-07										
Gasoline Range Hydrocarbons	9/29/98		306	250	ug/l			25.0	20.1	
Surrogate: 4-BFB (FID)	"	48.0		55.8	"	50.0-150	116			
Matrix Spike										
0980883-MS1 B809448-05										
Benzene	9/27/98	10.0	ND	10.6	ug/l	70.0-130	106			
Toluene	"	10.0	ND	10.7	"	70.0-130	107			
Ethylbenzene	"	10.0	ND	9.74	"	70.0-130	97.4			
Xylenes (total)	"	30.0	ND	29.4	"	70.0-130	98.0			
Surrogate: 4-BFB (PID)	"	48.0		50.8	"	50.0-150	106			
Matrix Spike Dup										
0980883-MSD1 B809448-05										
Benzene	9/27/98	10.0	ND	10.3	ug/l	70.0-130	103	15.0	2.87	
Toluene	"	10.0	ND	10.0	"	70.0-130	100	15.0	6.76	
Ethylbenzene	"	10.0	ND	9.58	"	70.0-130	95.8	15.0	1.66	
Xylenes (total)	"	30.0	ND	28.1	"	70.0-130	93.7	15.0	4.49	
Surrogate: 4-BFB (PID)	"	48.0		51.4	"	50.0-150	107			

North Creek Analytical - Bothell

*Refer to end of report for text of notes and definitions.

Matthew Essig, Project Manager

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776

Page 5 of 7



NORTH CREEK ANALYTICAL

Environmental Laboratory Services

BOTHELL ■ (425) 420-9200 ■ FAX 420-9210
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 906-9200 ■ FAX 906-9210

ERI	Project: TOSCO #4165, Snohomish	Sampled: 9/16/98
1921 Edmonds Drive SE	Project Number: 31018	Received: 9/17/98
Renton, WA 98055	Project Manager: John Meyer	Reported: 9/30/98 09:44

Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C40) by WTPH-D (extended)/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Reporting Limit Units	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0980727									
Date Prepared: 9/23/98									
Extraction Method: EPA 3510C/600 Series									
Blank	0980727-BLK1								
Diesel Range Hydrocarbons	9/24/98			ND	mg/l	0.250			
Heavy Oil Range Hydrocarbons	"			ND	"	0.750			
Surrogate: 2-FBP	"	0.320		0.283	"	50.0-150	88.4		
LCS									
0980727-BS1									
Diesel Range Hydrocarbons	9/24/98	2.00		1.79	mg/l	60.0-140	89.5		
Surrogate: 2-FBP	"	0.320		0.247	"	50.0-150	77.2		
Duplicate									
0980727-DUP1 B809435-07									
Diesel Range Hydrocarbons	9/24/98		ND	ND	mg/l			44.0	
Heavy Oil Range Hydrocarbons	"		ND	ND	"			44.0	4
Surrogate: 2-FBP	"	0.641		0.542	"	50.0-150	84.6		
Duplicate									
0980727-DUP2 B809448-02									
Diesel Range Hydrocarbons	9/24/98		0.299	0.423	mg/l			44.0	34.3
Heavy Oil Range Hydrocarbons	"		ND	5.97	"			44.0	4
Surrogate: 2-FBP	"	0.605		0.514	"	50.0-150	85.0		



NORTH CREEK ANALYTICAL

Environmental Laboratory Services

BOTHELL ■ (425) 420-9200 ■ FAX 420-9210
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 906-9200 ■ FAX 906-9210

ERI	Project: TOSCO #4165, Snohomish	Sampled: 9/16/98
1921 Edmonds Drive SE	Project Number: 31018	Received: 9/17/98
Renton, WA 98055	Project Manager: John Meyer	Reported: 9/30/98 09:44

Notes and Definitions

#	Note
---	------

- 1 The reporting limit for this analyte has been raised to account for interference from coeluting organic compounds present in the sample.
- 2 The chromatogram for this sample does not resemble a typical gasoline pattern. Please refer to the sample chromatogram.
- 3 The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample.

- 4 Analyses are not controlled on RPD values from sample concentrations less than 10 times the reporting limit.

DET Analyte DETECTED

ND Analyte NOT DETECTED at or above the reporting limit

NR Not Reported

dry Sample results reported on a dry weight basis

Recov. Recovery

RPD Relative Percent Difference

North Creek Analytical - Bothell

Matthew Essig, Project Manager

18939 129th Avenue N.E., Suite 101, Bothell, WA 98011-9508
East 11115 Montgomery, Suite B, Spokane, WA 99206-4776
206 442 7491

TOSCO CHAIN OF CUSTODY REPORT

B809448

TOSCO INFORMATION

Facility Number: Tosco 4165 Snohomish
Site Address: 202 Avenue D
City, State, ZIP: Snohomish, WA
Site Release Number:
Tosco Manager: Tim Johnson
CERT INFO: (check one) ☒ Evaluation ☐ Remediation
☐ Detection ☐ Demolition ☐ Closure ☐ Miscellaneous

CONSULTANT INFORMATION

Firm: ERI Project#: 3168
Address: 1921 Edmunds Dr SE
Renton, WA 98055
Phone: (425) 227-0280 Fax: x 0225
Project Manager: John Meyer
Sample Collection by: John Meyer

Chain of Custody Record #:

Quality Assurance Data Level:
☒ A ☐ B
A: Standard Summary
B: Standard + Chromatograms
Laboratory Turnaround Days:
☒ 10 ☐ 5 ☐ 3 ☐ 2 ☐ 1

SAMPLE IDENTIFICATION	SAMPLING DATE / TIME	MATRIX (W.S.O)	# OF CONTAINERS
1. <u>MW-1</u>	<u>9/16/98</u>	<u>W</u>	<u>3</u>
2. <u>MW-2</u>			<u>3</u>
3. <u>MW-6</u>			<u>3</u>
4. <u>MW-8</u>			<u>3</u>
5. <u>MW-9</u>			<u>2</u>
6. <u>MW-10</u>			<u>2</u>
7. <u>MW-11</u>			<u>2</u>
8.			
9.			
10.			

OR	WA	AK	NW Series
TPH-HCID			
TPH-Gas			
BTEX			
EPA 8021 Mod.			
TPH-Gas + BTEX			
TPH-Diesel			
TPH-Diesel Extended			
TPH-Diesel-Ext. w/SG Cleanup			
Halogen Volatiles			
EPA 8021			
Pesticides/PCBs or PCBs Only			
GC/MS Volatiles			
EPA 8260			
GC/MS Semi Vols.			
EPA 8270			
PAH's			
8270 SIM or 8310			
Lead			
Total or Dissolved TCLP or RCRA Metals (8)			

NCA SAMPLE NUMBER

B809448-01
-02
-03
-04
-05
-06
-07

Relinquished by: ERI Date & Time: 9/16/98
Received by: NCA Date & Time: 9/17/98 1200
1. John Meyer NCA 9/16/98 1335
2.
3.

Final Report Approval

Were all requested results provided? ☒ yes ☐ no Define
Were results within requested turnaround? ☒ yes ☐ no "No" on back
Final Approval Signature: _____
Firm: _____ Date: _____

GROUNDWATER SAMPLING - FIELD LOG

Client Name: TORCO 4165
 Location: Shedden 124
 Field Crew: SW

ERI Job No. 31018
 Date: 9/16/98
 Field Cleaning Performed: _____
 Analysis: _____

Page 1 of 1

* Case Volume = $(d_{\text{well}} - d_{\text{casing}}) \times L \times F$ where F =
 0.163 for a 2" inside diameter well casing
 0.652 for a 4" inside diameter well casing
 1.467 for a 6" inside diameter well casing

Well No.	Time	Depth Water (ft.)	Depth Well (ft.)	Case Dia. (in)	Case Vol. gal	Purge Vol. (gal)	Conduct. $\mu\text{S}/\text{CM}$ (X1000)	Temp. Deg F	pH	TURB. NTU	PID PPM	Comments
1		10.80	23	2"	2	6	3.79	59.2	6.95			
2		8.98	20		2	8	4.47	61.0	7.10			
3		9.29	19									
4		9.99	17	2"	2	3	4.55	61.6	7.04			Day 2 3
7		10.27	15		2							
8		10.81	17		2	2	1.15	62	7.51			Day 2 2 gal
9		9.89	14		2	3	2.27	61.0	7.25			Day 2 3
10		7.97	17		2	2	7.08	60.7	7.25			Day 2 2 gal
11		10.93	17		2	5	5.45	61.4	7.14			
12		10.97	17		2		0.07	FP	- Black			
						29						
						120						
						49						
						1000						
						2"						
						3						

ENVIRONMENTAL RESOLUTIONS, INC.