

EXXON GROUND WATER MONITORING REPORT

Third and Fourth Quarters of 1995

February 8, 1996



1756-114th Avenue S.E.
Suite 110
Bellevue, WA 98004
206/450-7726
FAX: 206/450-8837

RAS Location #:	<u>7-6375</u>	Contact Person:	<u>Jim Coppernoll</u>
Site Address:	<u>8325 Mukilteo Speedway</u>	Delta Project #:	<u>M091-801</u>
	<u>Mukilteo, Washington</u>	Contract	
Contract # for Invoicing:	<u>91137804</u>	Expiration Date:	<u>05/31/96</u>

WORK PERFORMED DURING THE THIRD AND FOURTH QUARTERS OF 1995

- Installed two wells, SV-1 and SV-2, in August of 1995.
- Conducted quarterly ground water monitoring for both quarters.
- Prepared a semi-annual ground water monitoring report.

WORK PROPOSED FOR THE FIRST AND SECOND QUARTERS OF 1996

- Conduct quarterly ground water monitoring.
- Prepare a semi-annual ground water monitoring report.

Current Phase of Project:	Monitoring	(Phase I, Add'l Assmnt RAP/CAP, Remed., etc)
Frequency of Ground Water Monitoring:	Quarterly	(Quarterly, etc)
Frequency of Remediation System Monitoring:	N/A	(Monthly, etc)
Are Liquid Phase Hydrocarbons Present On-Site:	No	(Yes/No)
Cumulative LPH Recovered to Date:	N/A	(gallons)
Amount of Soil Removed to Date:	Seven cubic yards (drill cuttings)	(cubic yards/tons)
Sensitive Receptors w/in a 1000' Radius & their Direction:	No registered water wells within 2500 feet. One residence with a basement approximately 1,500 feet west. No surface water within 1,000 feet. Puget Sound approx 3,000 ft west.	(Sewers, basements, water wells, etc.)
Current Remediation Techniques:	N/A	(SVES, Pump & Treat, FP Removal, etc.)
Permits for Discharge:	N/A	(NPDES, POTW, etc.)

- Attachments:**
- Figure 1 - Site Location Map
 - Figure 2 - Site Data Map - 8/17/95
 - Figure 3 - Inferred Water Table Contour Map - 11/06/95
 - Table 1 - Water Level Measurements
 - Table 2 - Summary of Ground Water Chemical Analyses
 - Attachment A - Laboratory Analytical Reports

T.28 N.



R.4 E.

GENERAL NOTES:
 BASE MAP FROM U.S.G.S.
 MUKILTEO, WA.
 7.5 MINUTE TOPOGRAPHIC
 PHOTOREVISED 1973

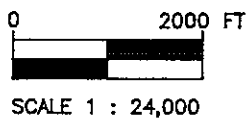
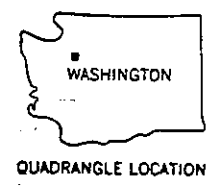
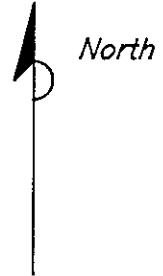


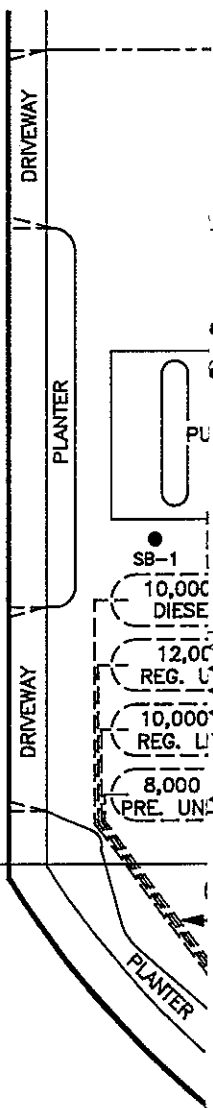
FIGURE 1
 SITE LOCATION MAP
 FORMER EXXON R/S NO. 7-6375
 8325 MUKILTEO SPEEDWAY
 MUKILTEO, WA.

PROJECT NO. M091-801	DRAWN BY L.H. 11/1/95
FILE NO. ---	PREPARED BY R.B.
REVISION NO. 1	REVIEWED BY

Delta
Environmental
Consultants, Inc.



MUKILTEO SPEEDWAY



LEGEND:

- x BM GEO BENCH MARK
- SB-1 SOIL BORING LOCATION
- ⊙ MW-1 MONITORING WELL LOCATION
- ⊙ PU (89.74) GROUND WATER ELEVATION IN FEET RELATIVE TO TEMPORARY BENCH MARK

GROUND WATER DATA

- BENZENE IN MICROGRAMS PER LITER (ug/L)
- TOLUENE IN ug/L
- ETHYLBENZENE IN ug/L
- XYLENES IN ug/L
- TOTAL PETROLEUM HYDROCARBONS AS GASOLINE IN ug/L
- TOTAL PETROLEUM HYDROCARBON AS DIESEL IN ug/L
- TOTAL RECOVERABLE HYDROCARBONS IN ug/L
- LEAD IN ug/L

B	<0.5
T	<0.5
E	<0.5
X	<1.0
WTPH-G	<50
WTPH-D	NA
TRPH	NA
Pb	<2.0

12,000	<0.5
REG. L	<0.5
10,000	<1.0
REG. L	<50
8,000	NA
PRE. UN	<2.0

NOTE: LOCATIONS OF TANKS, VENT LINES, AND PRODUCT DISTRIBUTION LINES ARE APPROXIMATE.

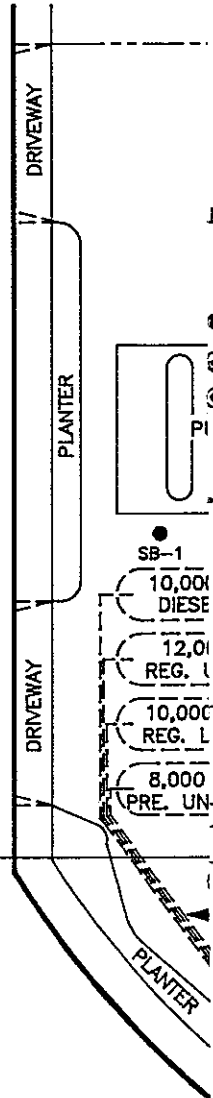
FIGURE 2
 SITE DATA MAP - 8/17/95
 FORMER EXXON R/S NO. 7-6375
 8325 MUKILTEO SPEEDWAY
 MUKILTEO, WA.

PROJECT NO. MO91-801	DRAWN BY I.H. 12/20/95
FILE NO. MO918011	PREPARED BY K.K.
REVISION NO. 1	REVIEWED BY





MUKILTEO SPEEDWAY



EGEND:

- x BM GEO BENCH MARK
- SB-1 SOIL BORING LOCATION
- ⊙ MW-1 MONITORING WELL LOCATION
- ⊙ SV-1 SOIL VAPOR EXTRACTION WELL LOCATION
- PI (89.23) GROUND WATER ELEVATION IN FEET RELATIVE TO TEMPORARY BENCH MARK
- 94 — WATER TABLE CONTOUR IN FEET RELATIVE TO TEMPORARY BENCH MARK
- ← GROUND WATER FLOW DIRECTION

GROUND WATER DATA

B	<0.5
T	<0.5
E	<0.5
X	<1.0
WTPH-G	<50
WTPH-D	<250
Pb	11

10,000 DIESE	<0.5
12,000 REG. I	<0.5
10,000 REG. I	<0.5
8,000 PRE. UN-G	<1.0
D	<50
D	NA
D	<2.0

- BENZENE IN MICROGRAMS PER LITER (ug/L)
- TOLUENE IN ug/L
- ETHYLBENZENE IN ug/L
- XYLENES IN ug/L
- TOTAL PETROLEUM HYDROCARBONS AS GASOLINE IN ug/L
- TOTAL PETROLEUM HYDROCARBONS AS DIESEL IN ug/L
- LEAD IN ug/L

NA NOT ANALYZED

NOTE: LOCATIONS OF TANKS, VENT LINES, AND PRODUCT DISTRIBUTION LINES ARE APPROXIMATE.

FIGURE 3
 INFERRED WATER TABLE CONTOUR MAP
 11/6/95
 FORMER EXXON R/S NO. 7-6375
 8325 MUKILTEO SPEEDWAY
 MUKILTEO, WA.

PROJECT NO. M091-801	DRAWN BY I.H. 12/18/95
FILE NO. M0918011	PREPARED BY K.K.
REVISION NO. 1	REVIEWED BY



TABLE 1

**Water Level Measurements
Former Exxon R/S No. 7-6375
8325 Mukilteo Speedway
Mukilteo, Washington
Delta Project No. M091-801**

<u>Monitoring Well</u>	<u>Date Measured</u>	<u>Referenced Elevation (feet) (Top of Casing)</u>	<u>Depth to Ground Water (feet)</u>	<u>Ground Water Elevation (feet)</u>
MW-1	08/13/92	100.00	10.45	89.55
	12/08/92		11.28	88.72
	04/22/93		10.20	89.80
	06/01/93		10.14	89.86
	09/07/93		10.21	89.79
	12/01/93		10.83	89.17
	02/22/94		9.26	90.74
	06/01/94		10.05	89.95
	08/18/94		10.20	89.80
	11/15/94		11.14	88.86
	02/23/95		9.88	90.12
	05/09/95		9.98	90.02
	08/17/95		10.26	89.74
	11/06/95		10.77	89.23
SV-1	11/06/95	101.04	13.97	87.07
SV-2	11/06/95	101.45	4.29	97.16

Elevations are relative to the top of the well casing assigned an elevation of 100.00 feet.

TABLE 2
SUMMARY OF GROUND WATER CHEMICAL ANALYSES
FORMER EXXON R/S NO. 7-6375
8325 MUKILTEO SPEEDWAY
MUKILTEO, WASHINGTON
DELTA PROJECT NO. M091-801

MONITORING WELL	DATE SAMPLED	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	WTPH-G	WTPH-D	OIL RANGE	PNAs	PURGEABLE HALOCARBONS	LEAD	
MW-1	08/14/92	<0.5	<0.5	<0.5	<0.5	<50	NA	NA	NA	ND	NA	
	12/08/92	<0.5	<0.5	<0.5	<0.5	<50	NA	NA	NA	1.3a	NA	
	04/22/93	<0.5	<0.5	<0.5	<0.5	<50	<50	NA	NA	1.7a	NA	
	06/01/93	<0.5	<0.5	<0.5	<0.5	<50	NA	NA	NA	1.5a	NA	
	09/07/93	<0.5	<0.5	<0.5	<0.5	<50	NA	NA	NA	ND	<3.0	
	12/01/93	<0.5	<0.5	<0.5	<0.5	<50	NA	NA	NA	NA	<3.0	
	02/22/94	<0.5	<0.5	<0.5	<0.5	<50	NA	NA	NA	NA	<3.0	
	06/01/94	<0.5	<0.5	<0.5	<0.5	<50	NA	NA	NA	NA	<3.0	
	08/18/94	<0.5	<0.5	<0.5	<0.5	<50	NA	NA	NA	NA	<3.0	
	11/15/94	<0.5	<0.5	<0.5	<0.5	<50	NA	NA	NA	NA	<3.0	
	02/23/95	<0.5	<0.5	<0.5	<0.5	<50	NA	NA	NA	NA	27	
	05/09/95	<0.5	<0.5	<0.5	<1.0	<50	NA	NA	NA	NA	NA	
	08/17/95	<0.5	<0.5	<0.5	<1.0	<50	NA	NA	NA	NA	<2.0	
	11/06/95	<0.5	<0.5	<0.5	<1.0	<50	<250	<750	<750	NA	NA	11
	SV-1	11/06/95	<0.5	<0.5	<0.5	<1.0	<50	400	<750	NA	NA	21
SV-2	11/06/95	3200	160	2000	4700	31,000	1600	920	NA	NA	7.2	
Duplicate of MW-1*	08/17/95	<0.5	<0.5	<0.5	<1.0	<50	NA	NA	NA	NA	NA	
Duplicate of SV-2*	11/06/95	3100	150	1900	4400	29,000	NA	NA	NA	NA	NA	
Laboratory Method		8020	8020	8020	8020	WTPH-G	WTPH-D	WTPH-D-Ext.	8270	601	7421	
MTCA Cleanup Levels		5.0	40.0	30.0	20.0	1000	1000	1000	NE	5.0	5.0	

All concentrations are reported in ug/L (ppb).

WTPH-G = Total petroleum hydrocarbons as gasoline.

WTPH-D = Total petroleum hydrocarbons as diesel.

WTPH-D-Ext. = Analyzed using WTPH-D extended for heavy oil range hydrocarbons (C24 to C40).

Purgeable Halocarbons = Analysis for 30 individual halogenated volatile organic compounds.

PNAs = Polynuclear aromatic hydrocarbons reported as naphthalene. Samples did not

contain concentrations above the method detection limit for the other PNAs tested.

a = 1,1,1-Trichloroethane

NA = Not analyzed.

ND = None detected.

NE = Not established. Action levels have only been established for BTEX, WTPH-G, WTPH-D, TRPH and I releases from UST sites. Compounds not listed on Method A clean-up tables may require Method B calculation to determine clean-up levels.

* Labeled MW-2.

REV.02/07/96.NF

PROJECTS\EXXON\91801\TABLES\1995\3-4QGWCA.WQ2

ATTACHMENT A

Laboratory Analytical Reports

SEP - 1 1995

Delta Environmental
3150 Richards Road, #100
Bellevue, WA 98005
Attention: Jim Coppernoll

Project Name: EXXON Mukilteo, #7-6375
Client Project: #M091-801
NCA Project #: B508345

Received: Aug 18, 1995
Reported: Aug 25, 1995

PROJECT SUMMARY PAGE

Laboratory Sample Number	Sample Description	Sample Matrix	Date Sampled
B508345-01	MW-1	Water	8/17/95
B508345-02	MW-2	Water	8/17/95

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.

Laura Dutton

Laura Dutton
Project Manager

508345.DEL <1>

Delta Environmental	Client Project ID: EXXON Mukilteo, #7-6375	Sampled: Aug 17, 1995
3150 Richards Road, #100	Sample Matrix: Water	Received: Aug 18, 1995
Bellevue, WA 98005	Analysis Method: WTPH-G	Analyzed: Aug 24, 1995
Attention: Jim Coppernoll	First Sample #: B508345-01	Reported: Aug 25, 1995

TOTAL PETROLEUM HYDROCARBONS-GASOLINE RANGE

Sample Number	Sample Description	Sample Result µg/L (ppb)	Surrogate Recovery %
B508345-01	MW-1	N.D.	90
B508345-02	MW-2	N.D.	93
BLK082495	Method Blank	N.D.	92

Reporting Limit:	50
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4-Bromofluorobenzene surrogate recovery control limits are 50 - 150 %.
Volatile Total Petroleum Hydrocarbons are quantitated as Gasoline Range Organics (toluene - dodecane).
Analytes reported as N.D. were not detected above the stated Reporting Limit.

NORTH CREEK ANALYTICAL Inc.


Laura Dutton
Project Manager

Delta Environmental
 3150 Richards Road, #100
 Bellevue, WA 98005
 Attention: Jim Coppernoll

Client Project ID: EXXON Mukilteo, #7-6375
 Sample Matrix: Water
 Analysis Method: WTPH-G
 Units: µg/L (ppb)

Analyst: B. Christlieb
 F. Shino

Analyzed: Aug 24, 1995
 Reported: Aug 25, 1995

HYDROCARBON QUALITY CONTROL DATA REPORT

ACCURACY ASSESSMENT

Laboratory Control Sample

Gasoline

Spike Conc.
 Added: 100

Spike
 Result: 103

%
 Recovery: 103

Upper Control
 Limit %: 132

Lower Control
 Limit %: 56

PRECISION ASSESSMENT

Sample Duplicate

Gasoline Range
 Organics

Sample
 Number: B508384-02

Original
 Result: 61,000

Duplicate
 Result: 71,000

Relative
 % Difference: 15

Maximum
 RPD: 50

NORTH CREEK ANALYTICAL Inc.

Laura Dutton

Laura Dutton
 Project Manager

% Recovery:	$\frac{\text{Spike Result}}{\text{Spike Concentration Added}} \times 100$
Relative % Difference:	$\frac{\text{Original Result} - \text{Duplicate Result}}{(\text{Original Result} + \text{Duplicate Result}) / 2} \times 100$

Delta Environmental	Client Project ID: EXXON Mukilteo, #7-6375	Sampled: Aug 17, 1995
3150 Richards Road, #100	Sample Matrix: Water	Received: Aug 18, 1995
Bellevue, WA 98005	Analysis Method: EPA 8020	Analyzed: Aug 24, 1995
Attention: Jim Coppernoll	First Sample #: B508345-01	Reported: Aug 25, 1995

BTEX DISTINCTION

Sample Number	Sample Description	Benzene µg/L (ppb)	Toluene µg/L (ppb)	Ethyl Benzene µg/L (ppb)	Xylenes µg/L (ppb)	Surrogate Recovery %
B508345-01	MW-1	N.D.	N.D.	N.D.	N.D.	91
B508345-02	MW-2	N.D.	N.D.	N.D.	N.D.	97
BLK082495	Method Blank	N.D.	N.D.	N.D.	N.D.	90

Reporting Limits:	0.50	0.50	0.50	1.0
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4-Bromofluorobenzene surrogate recovery control limits are 59 - 144 %.
Analytes reported as N.D. were not detected above the stated Reporting Limit.

NORTH CREEK ANALYTICAL Inc.



Laura Dutton
Project Manager

Delta Environmental
 3150 Richards Road, #100
 Bellevue, WA 98005
 Attention: Jim Coppernoll

 Client Project ID: EXXON Mukilteo, #7-6375
 Sample Matrix: Water
 Analysis Method: EPA 8020
 Units: µg/L (ppb)
 QC Sample #: B508345-01

 Analyst: B. Christlieb
 F. Shino
 Analyzed: Aug 24, 1995
 Reported: Aug 25, 1995

MATRIX SPIKE QUALITY CONTROL DATA REPORT

ANALYTE	Ethyl			
	Benzene	Toluene	Benzene	Xylenes
Sample Result:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	10.0	10.0	10.0	30.0
Spike Result:	10.6	10.3	10.5	32.3
Spike % Recovery:	106%	103%	105%	108%
Spike Dup. Result:	10.4	9.9	9.8	27.5
Spike Duplicate % Recovery:	104%	99%	98%	92%
Upper Control Limit %:	115	116	122	122
Lower Control Limit %:	82	81	85	85
Relative % Difference:	1.9%	4.0%	6.9%	16%
Maximum RPD:	16	16	16	17

NORTH CREEK ANALYTICAL Inc.



 Laura Dutton
 Project Manager

% Recovery:	$\frac{\text{Spike Result} - \text{Sample Result}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Spike Result} - \text{Spike Dup. Result}}{(\text{Spike Result} + \text{Spike Dup. Result}) / 2} \times 100$

Delta Environmental 3150 Richards Road, #100 Bellevue, WA 98005 Attention: Jim Coppernoll	Client Project ID: EXXON Mukilteo, #7-6375 Sample Matrix: Water Analysis Method: EPA 239.2 First Sample #: B508345-01	Sampled: Aug 17, 1995 Received: Aug 18, 1995 Analyzed: Aug 21, 1995 Reported: Aug 25, 1995
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METALS ANALYSIS FOR: DISSOLVED LEAD

Sample Number	Sample Description	Reporting Limit µg/L (ppb)	Sample Result µg/L (ppb)
B508345-01	MW-1	2.0	N.D.
BLK082195	Method Blank	2.0	N.D.

Analytes reported as N.D. were not detected above the stated Reporting Limit.

NORTH CREEK ANALYTICAL Inc.



Laura Dutton
Project Manager

Delta Environmental
 3150 Richards Road, #100
 Bellevue, WA 98005
 Attention: Jim Coppernoll

Client Project ID: EXXON Mukilteo, #7-6375
 Sample Matrix : Water
 Units: µg/L (ppb)

Analyst: K. Gendron
 S. Davis

Reported: Aug 25, 1995

METALS QUALITY CONTROL DATA REPORT

ANALYTE

Lead

EPA Method: 239.2
 Date Analyzed: Aug 21, 1995

ACCURACY ASSESSMENT

LCS Spike Conc. Added: 25
LCS Spike Result: 25
LCS Spike % Recovery: 100
Upper Control Limit: 106
Lower Control Limit: 77
Matrix Spike Sample #: B508345-01
Matrix Spike % Recovery: 83

PRECISION ASSESSMENT

Sample #: B508345-01
Original: N.D.
Duplicate: N.D.
Relative % Difference: RPD values are not reported at sample concentration levels <10 X the Reporting Limit.

NORTH CREEK ANALYTICAL Inc.



Laura Dutton
 Project Manager

Lab Control Sample	Conc. of L.C.S.	x 100
% Recovery:	L.C.S. Spike Conc. Added	
Relative % Difference:	$\frac{\text{Original Result} - \text{Duplicate Result}}{(\text{Original Result} + \text{Duplicate Result}) / 2}$	x 100



18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (206) 481-9200 FAX 485-2992
 East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
 9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

EXXON COMPANY U.S.A. CHAIN OF CUSTODY REPORT

EXXON INFORMATION

EXXON RAS #: 7-6375
 Site Address: 8305 Mukiteo Speedway
 City, State, ZIP: Mukiteo, Wa.
 EXXON Engineer: DENNIS BOCK
 Laboratory WR#:

CONSULTANT INFORMATION

Name: Delta Enviro. Consultant WR #:
 Address: 3150 Richards Rd # 100
 Bellevue, Wa. 98005
 Phone: 649-9663 Fax:
 Project Manager: Jim Capperroll Consultant Project #: NC91-801
 Sample Collection by: Geoff McLaughlin-Airbill #:

Turnaround Times
 All TPH, Volatiles & BTEX:
 Calendar Days
 10
 Pest, TCLP, Metals, PP, Etc.
 Calendar Days
 14
 RUSH Analyses (HOURS)
 24 48 72 96
 Air Analysis
 72 Hours

Oregon	O Washington	O Montana	Hydrocarbon Methods
TPH-HCID	TPH-Gas	TPH-Gas + BTEX (EPA 8020 Mod.)	TPH-Diesel
			TPH-Diesel Extended
			TPH-418.1
			Halogen Volatiles (EPA 8010)
			Aromatic Volatiles (EPA 8020)
			PAHs by HPLC (EPA 8270)
			GC/MS Semivolatiles (EPA 8240/8260)
			GC/MS Volatiles or PCBs Only
			GC/MS Volatiles (EPA 8240/8260)
			GC/MS Semivolatiles (EPA 8270)
			PAHs by HPLC (EPA 8310)
			Total of Dissolved (EPA 8310)
			TCLP Metals (EPA 8310)

NCA SAMPLE NUMBER
 B508395-01
 -02

SAMPLE IDENTIFICATION	SAMPLING DATE / TIME	MATRIX (W.S.O)	# OF CONTAINERS
1. MW-1	8/17/95 1530	W	3
2. MW-2	8/17/95 1545	W	2
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

Requested by: [Signature]
 Date & Time: 8/18/95 900
 Firm: NCA-B
 Received by: [Signature]
 Date & Time: 8/19/95 1200
 Firm: NCA-B
 Comments:

Delta Environmental
3150 Richards Road, #100
Bellevue, WA 98005
Attention: Jim Coppernoll

Project Name: EXXON #7-6375, #91137804
Client Project : #M091-801
NCA Project #: B511103

Received: Nov 6, 1995
Reported: Nov 10, 1995

PROJECT SUMMARY PAGE

Laboratory Sample Number	Sample Description	Sample Matrix	Date Sampled
B511103-01	MW-1	Water	11/6/95
B511103-02	SV-1	Water	11/6/95
B511103-03	SV-2	Water	11/6/95
B511103-04	MW-2	Water	11/6/95
B511103-05	TRIP BLANK	Water	11/6/95

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.

Laura Dutton

Laura Dutton
Project Manager

Delta Environmental 3150 Richards Road, #100 Bellevue, WA 98005 Attention: Jim Coppemoll	Client Project ID: EXXON #7-6375, #91137804 Sample Matrix: Water Analysis Method: WTPH-G First Sample #: B511103-01	Sampled: Nov 6, 1995 Received: Nov 6, 1995 Analyzed: Nov 7-8, 1995 Reported: Nov 10, 1995
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TOTAL PETROLEUM HYDROCARBONS-GASOLINE RANGE

Sample Number	Sample Description	Sample Result µg/L (ppb)	Surrogate Recovery %
B511103-01	MW-1	N.D.	83
B511103-02	SV-1	N.D.	78
B511103-03	SV-2	31,000	133
B511103-04	MW-2	29,000	131
B511103-05	TRIP BLANK	N.D.	73
BLK110795	Method Blank	N.D.	68

Reporting Limit:	50
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4-Bromofluorobenzene surrogate recovery control limits are 50 - 150 %.
Volatile Total Petroleum Hydrocarbons are quantitated as Gasoline Range Organics (toluene - dodecane).
Analytes reported as N.D. were not detected above the stated Reporting Limit.

NORTH CREEK ANALYTICAL Inc.


Laura Dutton
Project Manager

Delta Environmental
 3150 Richards Road, #100
 Bellevue, WA 98005
 Attention: Jim Coppernoll

 Client Project ID: EXXON #7-6375, #91137804
 Sample Matrix: Water
 Analysis Method: WTPH-G
 Units: µg/L (ppb)

 Analyst: B. Christlieb
 F. Shino

 Analyzed: Nov 7, 1995
 Reported: Nov 10, 1995

HYDROCARBON QUALITY CONTROL DATA REPORT
**ACCURACY ASSESSMENT
Laboratory Control Sample**
**PRECISION ASSESSMENT
Sample Duplicate**

Gasoline

 Gasoline Range
 Organics

 Spike Conc.
 Added: 100

 Sample
 Number: B511103-01

 Spike
 Result: 92

 Original
 Result: N.D.

 %
 Recovery: 92

 Duplicate
 Result: N.D.

 Upper Control
 Limit %: 132

Relative % Difference: Relative Percent Difference values are not reported at sample concentration levels less than 10 times the Detection Limit.

 Lower Control
 Limit %: 56

 Maximum
 RPD: 50

NORTH CREEK ANALYTICAL Inc.

$$\% \text{ Recovery} = \frac{\text{Spike Result}}{\text{Spike Concentration Added}} \times 100$$

$$\text{Relative \% Difference} = \frac{\text{Original Result} - \text{Duplicate Result}}{(\text{Original Result} + \text{Duplicate Result}) / 2} \times 100$$


 Laura Dutton
 Project Manager

Delta Environmental 3150 Richards Road, #100 Bellevue, WA 98005 Attention: Jim Coppernoll	Client Project ID: EXXON #7-6375, #91137804 Sample Matrix: Water Analysis Method: EPA 8020 First Sample #: B511103-01	Sampled: Nov 6, 1995 Received: Nov 6, 1995 Analyzed: Nov 7-8, 1995 Reported: Nov 10, 1995
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BTEX DISTINCTION

Sample Number	Sample Description	Benzene µg/L (ppb)	Toluene µg/L (ppb)	Ethyl Benzene µg/L (ppb)	Xylenes µg/L (ppb)	Surrogate Recovery %
B511103-01	MW-1	N.D.	N.D.	N.D.	N.D.	86
B511103-02	SV-1	N.D.	N.D.	N.D.	N.D.	82
B511103-03	SV-2	3,200	160	2,000	4,700	113
B511103-04	MW-2	3,100	150	1,900	4,400	111
B511103-05	TRIP BLANK	N.D.	N.D.	N.D.	N.D.	80
BLK110795	Method Blank	N.D.	N.D.	N.D.	N.D.	74

Reporting Limits:	0.50	0.50	0.50	1.0
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4-Bromofluorobenzene surrogate recovery control limits are 59 - 144 %.
Analytes reported as N.D. were not detected above the stated Reporting Limit.

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Project Manager

Delta Environmental
3150 Richards Road, #100
Bellevue, WA 98005
Attention: Jim Coppernoll

Client Project ID: EXXON #7-6375, #91137804
Sample Matrix: Water
Analysis Method: EPA 8020
Units: µg/L (ppb)
QC Sample #: B511084-01

Analyst: B. Christlieb
F. Shino

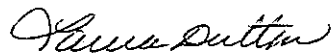
Analyzed: Nov 7, 1995
Reported: Nov 10, 1995

MATRIX SPIKE QUALITY CONTROL DATA REPORT

ANALYTE	Benzene		Ethyl Xylenes	
	Benzene	Toluene	Benzene	Xylenes
Sample Result:	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	10.0	10.0	10.0	30.0
Spike Result:	9.4	9.8	10.1	31.5
Spike % Recovery:	94%	98%	101%	105%
Spike Dup. Result:	9.5	9.7	10.1	31.5
Spike Duplicate % Recovery:	95%	97%	101%	105%
Upper Control Limit %:	115	116	122	122
Lower Control Limit %:	82	81	85	85
Relative % Difference:	1.1%	1.0%	0.0%	0.0%
Maximum RPD:	16	16	16	17

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% Recovery: $\frac{\text{Spike Result} - \text{Sample Result}}{\text{Spike Conc. Added}} \times 100$

Relative % Difference: $\frac{\text{Spike Result} - \text{Spike Dup. Result}}{(\text{Spike Result} + \text{Spike Dup. Result}) / 2} \times 100$


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Project Manager



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 East 11115 Montgomery, Suite B • Spokane, WA 99206-4776 (509) 924-9200 • FAX 924-9290
 9405 S.W. Nimbus Avenue • Beaverton, OR 97008-7132 (503) 643-9200 • FAX 644-2202

Delta Environmental 3150 Richards Road, #100 Bellevue, WA 98005 Attention: Jim Coppernoll	Client Project ID: EXXON #7-6375, #91137804 Sample Matrix: Water Analysis Method: WTPH-D Extended First Sample #: B511103-01	Sampled: Nov 6, 1995 Received: Nov 6, 1995 Extracted: Nov 7, 1995 Analyzed: Nov 9, 1995 Reported: Nov 10, 1995
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TOTAL PETROLEUM HYDROCARBONS - DIESEL RANGE EXTENDED

Sample Number	Sample Description	Diesel Result mg/L (ppm)	Heavy Oil Result mg/L (ppm)	Surrogate Recovery %
B511103-01	MW-1	N.D.	N.D.	87
B511103-02	SV-1	0.40	N.D.	88
B511103-03	SV-2	1.6 D-1	0.92	83
BLK110795	Method Blank	N.D.	N.D.	97

Reporting Limit:	0.25	0.75
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2-Fluorobiphenyl surrogate recovery control limits are 50 - 150%.
 Extractable Hydrocarbons are quantitated as Diesel Range Organics (C12 - C24) and Heavy Oil Range Organics (>C24).
 Analytes reported as N.D. were not detected above the stated Reporting Limit.

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 Project Manager

HYDROCARBON ANALYSIS FOOTNOTES

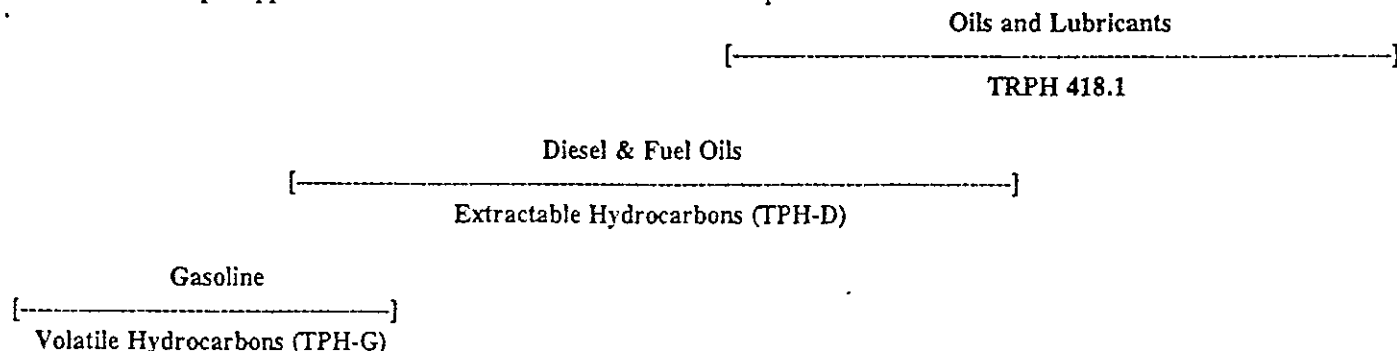
2/94, Rev. 3

VOLATILE HYDROCARBONS - GASOLINE RANGE ORGANICS

- G 1 This sample appears to contain extractable diesel range organics.
- G 2 The chromatogram for this sample does not resemble a typical gasoline pattern. Please refer to the sample chromatogram.
- G 3 The total hydrocarbon result in this sample is primarily due to an individual compound(s) eluting in the volatile hydrocarbon range. Identification and quantitation by EPA 8010, 8021 or 8240 is recommended.
- G 4 This sample contains compound(s) not identified as Benzene, Toluene, Ethyl benzene or Xylene.
- G 5 This sample appears to contain or be saturated with gasoline product.

EXTRACTABLE HYDROCARBONS - DIESEL RANGE ORGANICS

- D 1 This sample appears to contain volatile gasoline range organics.
- D 2 The hydrocarbons present in this sample resemble heavy, non-resolvable oil range organics. Quantitation by TPH-Diesel Extended or TPH 418.1 is recommended.
- D 3 The hydrocarbon concentration result in this sample is partially due to an individual peak(s) eluting in the diesel / motor oil carbon range.
- D 4 The hydrocarbons present in this sample are a complex mixture of diesel range and heavy oil range organics.
- D 5 The hydrocarbon result shown is an estimated (greater than) value due to the high concentration. Reanalysis is being performed to yield a quantitative result. An amended report will follow.
- D 6 The sample chromatographic pattern does not resemble the fuel standard used for quantitation. A fuel fingerprint is advised.
- D 7 This sample appears to contain or be saturated with diesel product.



HYDROCARBON BOILING POINT RANGE

LOW LOW TO MEDIUM MEDIUM MEDIUM TO HIGH VERY HIGH

CARBON RANGE:

5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31+

Delta Environmental
 3150 Richards Road, #100
 Bellevue, WA 98005
 Attention: Jim Coppernoll

Client Project ID: EXXON #7-6375, #91137804
 Sample Matrix: Water
 Analysis Method: WTPH-D
 Units: mg/L (ppm)

Analyst: T. Fitzgibbon

Extracted: Nov 7, 1995
 Analyzed: Nov 9, 1995
 Reported: Nov 10, 1995

HYDROCARBON QUALITY CONTROL DATA REPORT

ACCURACY ASSESSMENT Laboratory Control Sample

Diesel

PRECISION ASSESSMENT Sample Duplicate

Diesel Range Organics

Spike Conc.
 Added: 2.00

Spike
 Result: 1.93

%
 Recovery: 96

Upper Control
 Limit %: 107

Lower Control
 Limit %: 69

Sample
 Number: B511074-01

Original
 Result: 1.4

Duplicate
 Result: 1.7

Relative % Difference: Relative Percent Difference values are not reported at sample concentration levels less than 10 times the Reporting Limit.

Maximum
 RPD: 44

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 Project Manager

% Recovery:	$\frac{\text{Spike Result}}{\text{Spike Concentration Added}} \times 100$
Relative % Difference:	$\frac{\text{Original Result} - \text{Duplicate Result}}{(\text{Original Result} + \text{Duplicate Result}) / 2} \times 100$

Delta Environmental
3150 Richards Road, #100
Bellevue, WA 98005
Attention: Jim Coppernoll

Client Project ID: EXXON #7-6375, #91137804
Sample Matrix: Water
Analysis Method: EPA 7421
First Sample #: B511103-01

Sampled: Nov 6, 1995
Received: Nov 6, 1995
Digested: Nov 7, 1995
Analyzed: Nov 8, 1995
Reported: Nov 10, 1995

METALS ANALYSIS FOR: TOTAL LEAD

Sample Number	Sample Description	Reporting Limit µg/L (ppb)	Sample Result µg/L (ppb)
B511103-01	MW-1	2.0	11
B511103-02	SV-1	2.0	21
B511103-03	SV-2	2.0	7.2
BLK110795	Method Blank	2.0	N.D.

Analytes reported as N.D. were not detected above the stated Reporting Limit.

NORTH CREEK ANALYTICAL Inc.



Laura Dutton
Project Manager

Delta Environmental
 3150 Richards Road, #100
 Bellevue, WA 98005
 Attention: Jim Coppernoll

Client Project ID: EXXON #7-6375, #91137804
 Sample Matrix : Water
 Units: µg/L (ppb)

Analyst: K. Gendron
 S. Davis

Digested: Nov 7, 1995
 Reported: Nov 10, 1995

METALS QUALITY CONTROL DATA REPORT

ANALYTE

Lead

EPA Method: 7421
 Date Analyzed: Nov 8, 1995

ACCURACY ASSESSMENT

LCS Spike
 Conc. Added: 25.0

LCS Spike
 Result: 25.6

LCS Spike
 % Recovery: 102

Upper Control
 Limit: 122

Lower Control
 Limit: 88

Matrix Spike
 Sample #: B511079-01

Matrix Spike
 % Recovery: 98

PRECISION ASSESSMENT

Sample #: B511079-01

Original: 2.1

Duplicate: N.D.

Relative %
 Difference: RPD values are not reported at sample concentration levels <10 X the Reporting Limit.

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Lab Control Sample	Conc. of L.C.S.	x 100
% Recovery:	L.C.S. Spike Conc. Added	
Relative % Difference:	$\frac{\text{Original Result} - \text{Duplicate Result}}{(\text{Original Result} + \text{Duplicate Result}) / 2}$	x 100

