509011

Date: January 23, 2001

ARCO QUARTERLY GROUNDWATER MONITORING REPORT – 4TH QUARTER 2000

Facility No:	0855
Address:	4603 Ocean Beach Highway, Longview, Washington
ARCO Environmental Engineer:	Mr. Chuck Hutchens
Consulting Co./Contact Person:	SECOR International Incorporated/Scott Miller
Consultant Project No.:	015.08698.704
Primary Agency:	Washington Department of Ecology (Ecology)
Ecology LUST File No:	5421

WORK PERFORMED 4TH QUARTER 2000:

1. Groundwater monitoring and sampling of wells MW-1 through MW-3 on October 18, 2000.
2. Installation of monitoring wells MW-4 through MW-7 on October 24, 2000
3. Groundwater monitoring and sampling of wells MW-4 through MW-7 on November 15, 2000.

WORK PROPOSED FOR 1ST QUARTER 2001:

1. Quarterly groundwater monitoring and sampling.

Current Phase of Project:	Groundwater monitoring
Is Free Product (FP) Present On-Site:	No
FP Recovered this Quarter (gallons):	Not applicable (NA)
Cumulative FP Recovered to Date (gallons):	NA
Current Remediation Techniques:	NA
Approximate Depth to Groundwater (feet below top of casing):	5.19 (MW-2) to 6.88 (MW-4) Note: Depth to groundwater measurements taken on 10/18/00 and 11/15/00
Groundwater Gradient (direction):	East
Groundwater Gradient (magnitude):	0.02 ft/ft

DISCUSSION:

Groundwater monitoring field activities conducted on October 18, 2000 included measuring the water levels and collecting groundwater samples from MW-1 through MW-3. Four new monitoring wells (MW-4 through MW-7) were installed on October 24, 2000. Water levels measurements and groundwater samples were taken from MW-4 through MW-7 on November 15, 2000. The water samples collected from MW-1 through MW-7 were analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX) by Environmental Protection Agency (EPA) Method 8021B and total petroleum hydrocarbons in the gasoline range (TPH-G) by NWTPH-Gx.

Benzene was detected at concentrations above the laboratory method reporting limit (MRL) in monitoring wells MW-2, MW-3, and MW-4 at 3.67 micrograms per liter (µg/L), 12,900 µg/L, and 1,310 µg/L, respectively. TPH-G was detected above the laboratory MRL in six wells at concentrations ranging from 113 µg/L to 179,000 µg/L. There were no detections above the laboratory MRLs in monitoring well MW-5.

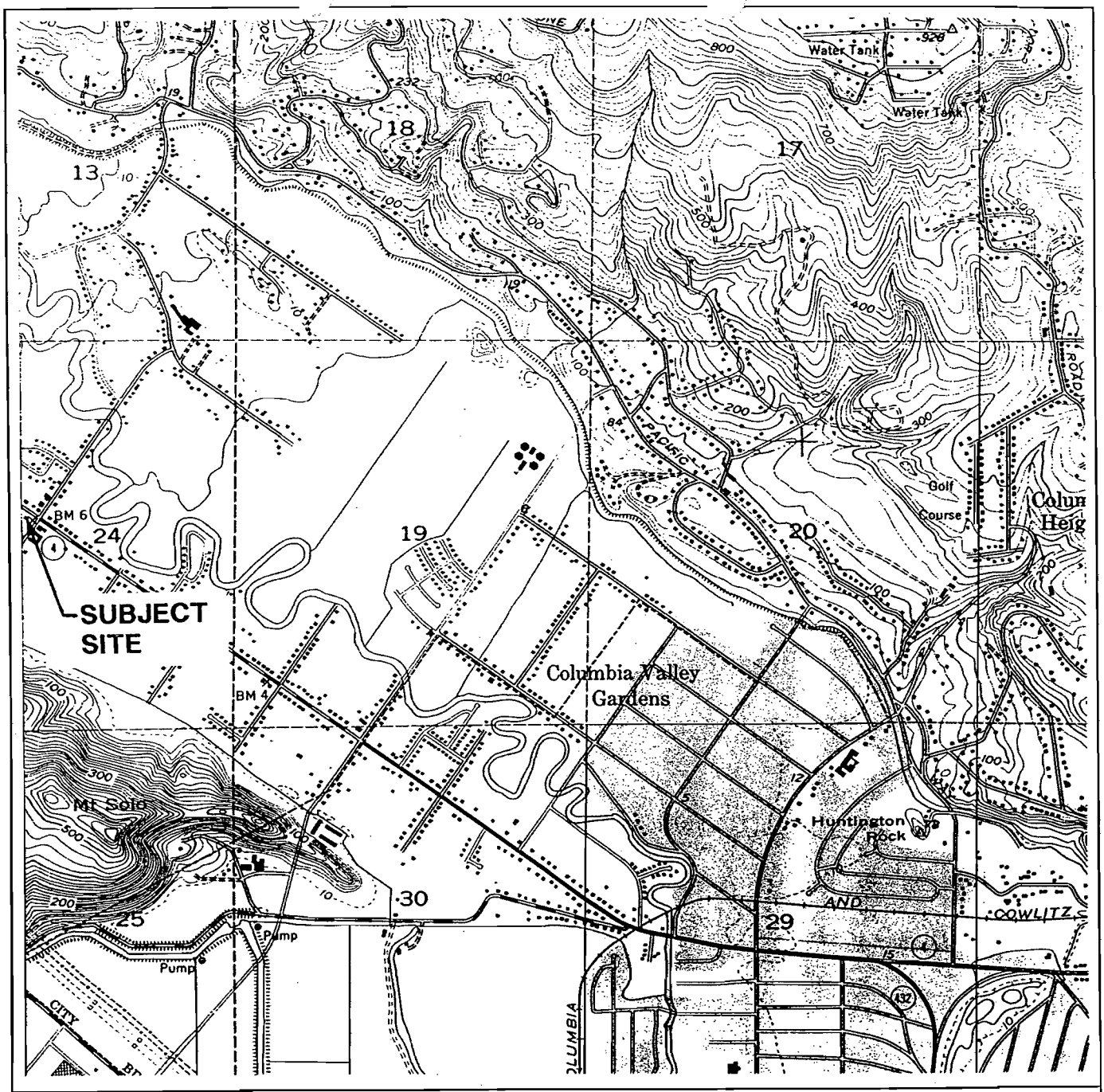
On October 24, 2000, four additional groundwater monitoring wells were installed on site. The wells were installed to assess the lateral extent of groundwater contamination.

ATTACHMENTS:

- Figure 1: Site Location Map
- Figure 2: Groundwater Contour and Groundwater Analytical Results Map
- Table 1: Historical Water Sample Analyses
- Table 2: Historical Water Level Elevations
- Laboratory Report and Chain of Custody
- Groundwater Sampling Field Data Sheets

cc: Ms. Patty Martin, Washington Department of Ecology, Olympia, Washington
Mr. David McDowell, Attorney for Wakefield Trust, Vancouver, Washington

FIGURES



REFERENCE: USGS 7.5 MINUTE QUADRANGLE; KELSO, WASHINGTON; 1970

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SITE LOCATION MAP

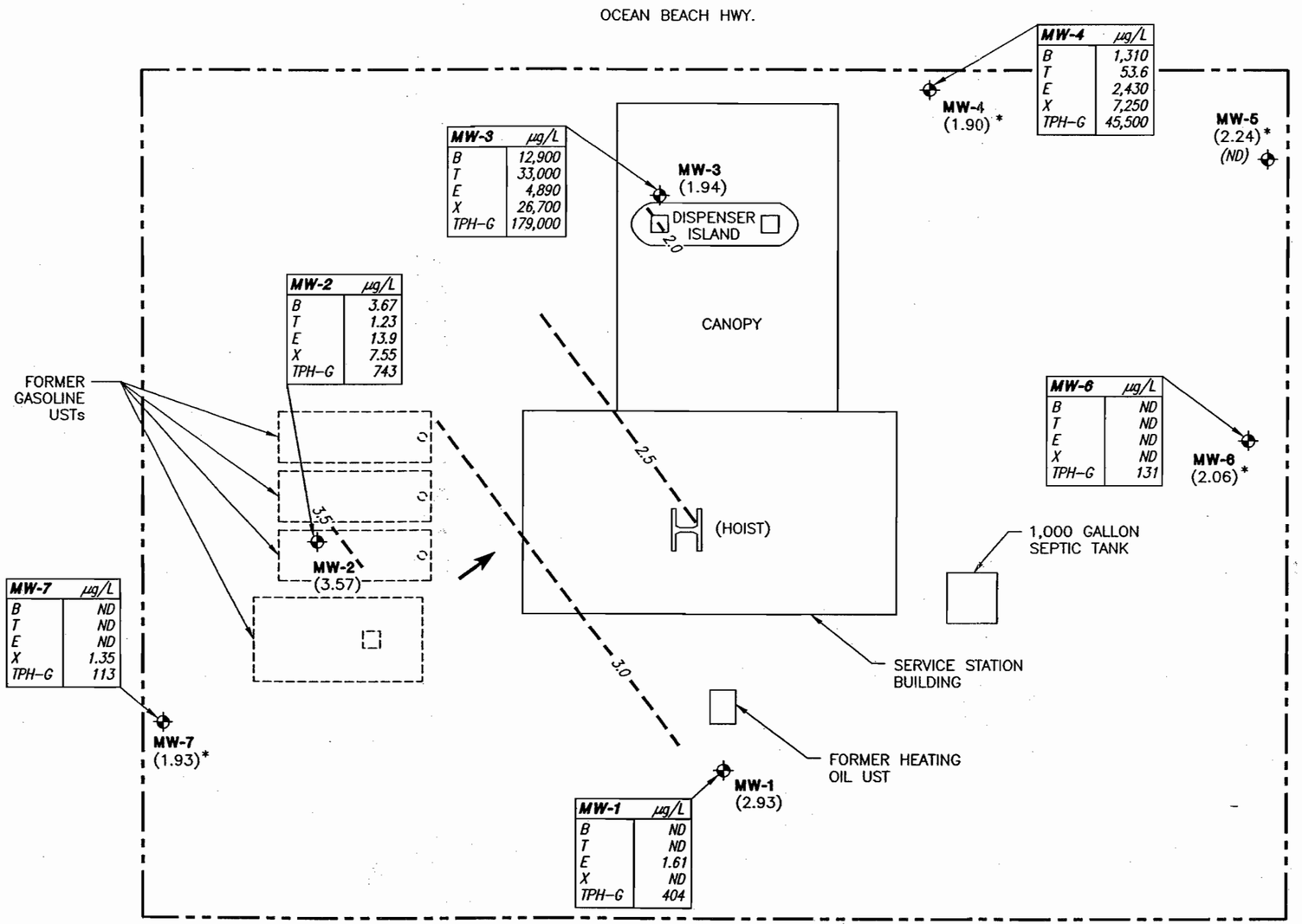
FORMER ARCO SERVICE STATION 0855
4603 OCEAN BEACH HIGHWAY
LONGVIEW, WASHINGTON

FIGURE: 1

JOB#: 015.08698.702 APPR: CWG DWN: KPM DATE: 07/28/00

F:/FILES/PORTLAND/ARCO/855/08698

DWG: 15-8698-7(1)



LEGEND

- SUBJECT PROPERTY LINE BOUNDARY
- MW-5 GROUNDWATER MONITORING WELL LOCATION
- INFERRED GROUNDWATER FLOW DIRECTION
- INFERRED GROUNDWATER ELEVATION CONTOUR (FEET)
- (3.70) RELATIVE GROUNDWATER ELEVATION (FEET)
- (NM) NOT MEASURED

ANALYTE	
B	BENZENE
T	TOLUENE
E	ETHYLBENZENE
X	XYLENES
G	GASOLINE

(ND) NOT DETECTED AT OR ABOVE THE LABORATORY METHOD REPORTING LIMIT

NOTES

CONTOUR INTERVAL = 0.5 FT

* GROUNDWATER ELEVATION NOT USED TO GENERATE CONTOURS.

GROUNDWATER ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL

N

0 15 30

APPROXIMATE SCALE (FEET)

NOTE: MONITORING WELL LOCATIONS AND CORNERS OF BUILDING SURVEYED APRIL 2000 BY GIBBS & OLSEN, INC. OF LONGVIEW, WASHINGTON.

SOURCE: MAP BASED ON ATLANTIC RICHFIELD "GENERAL ARRANGEMENT" DRAWING, NOVEMBER 30, 1966, 1/8"–1'.

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GROUNDWATER CONTOUR AND GROUNDWATER ANALYTICAL RESULTS MAP (10/18/00 AND 11/15/00)
FORMER ARCO SERVICE STATION 0855
4603 OCEAN BEACH HIGHWAY
LONGVIEW, WASHINGTON

FIGURE: 2

JOB#: 015.08698.704 APPR: DV DWN: KPM DATE: 01/18/01

F:/FILES/PORTLAND/ARCO/WASHINGTON/08698

DWG: 15–8698–7042–1100

TABLES

Table 1. Historical Water Sample Analyses
Former ARCO Station No. 0855
4603 Ocean Beach Highway, Longview, Washington

Well Number	Sample Date	BTEX (µg/L)				TPH-G (µg/L)	TPH-D (µg/L)	TPH-O (µg/L)
		Benzene	Toluene	Ethyl-benzene	Total Xylenes			
MW-1	03/27/00	ND	ND	ND	ND	ND	ND	ND
	05/23/00	ND	ND	ND	ND	ND	—	—
	07/20/00	ND	ND	ND	ND	ND	—	—
	10/18/00	ND	ND	1.61	ND	404	—	—
MW-2	03/27/00	6.89	49.5	599	2,490	17,100	ND	ND
	05/23/00	26.2	16.2	614	1,770	13,200	—	—
	07/20/00	11.9	11.8	304	330	7,220	—	—
	10/18/00	3.67	1.23	13.9	7.55	743	—	—
MW-3	03/27/00	7,520	12,900	2,780	14,500	93,700	ND	ND
	05/23/00	4,710	8,330	2,280	11,200	65,200	—	—
	07/20/00	10,700	22,600	3,160	17,400	145,000	—	—
	10/18/00	12,900	33,000	4,890	26,700	179,000	—	—
MW-4	11/15/00[a]	1,310	53.6	2,430	7,250	45,500	—	—
MW-5	11/15/00[a]	ND	ND	ND	ND	ND	—	—
MW-6	11/15/00[a]	ND	ND	ND	ND	131	—	—
MW-7	11/15/00[a]	ND	ND	ND	1.35	113	—	—
Current Laboratory MRLs		0.50	0.50	0.50	1.0	80	250	500

ND or < = Less than laboratory method reporting limit (MRL).
— = Not sampled or not available.
Benzene, toluene, ethylbenzene, and total xylenes (BTEX) analysis by EPA Method 8021B.
Total petroleum hydrocarbons-gasoline range (TPH-G) analysis by Method NWTPH-Gx.
TPH-diesel range (TPH-D) and TPH-oil range (TPH-O) analysis by Method NWTPH-Dx.
a Monitoring wells MW-4 through MW-7 were installed on October 24 and sampled on November 15, 2000.

Note: Results in micrograms per liter (µg/L), or approximately parts per billion (ppb).

Table 2. Historical Water Level Elevations
Former ARCO Service Station No. 0855
4603 Ocean Beach Highway, Longview, Washington

Well Number/ TOC Elevation[a] (feet)	Date Measured	Static Water Level (feet BTOC)[b]	Floating Product Thickness (feet)	Groundwater Elevation (feet)[c]	Change in Water Level Elevation (feet)
MW-1					
8.34	03/27/00	4.36	0.00	3.98	—[d]
	05/23/00	5.20	0.00	3.14	-0.84
	07/20/00	5.55	0.00	2.79	-0.35
	10/18/00	5.41	0.00	2.93	0.14
MW-2					
8.76	03/27/00	3.61	0.00	5.15	—
	05/23/00	4.64	0.00	4.12	-1.03
	07/20/00	5.06	0.00	3.70	-0.42
	10/18/00	5.19	0.00	3.57	-0.13
MW-3					
8.78	03/27/00	5.61	0.00	3.17	—
	05/23/00	6.46	0.00	2.32	-0.85
	07/20/00	7.05	0.00	1.73	-0.59
	10/18/00	6.84	0.00	1.94	0.21
MW-4					
8.78	11/15/00[e]	6.88	0.00	1.90	—
MW-5					
8.78	11/15/00[e]	6.54	0.00	2.24	—
MW-6					
8.21	11/15/00[e]	6.15	0.00	2.06	—
MW-7					
8.45	11/15/00[e]	6.52	0.00	1.93	—

a Top of casing (TOC) elevations, NAVD, 1988

b Measurements in feet below top of well casing.

c Elevation relative to mean sea level. Static water level corrected if floating product thickness (FPT) is present; corrected water level elevation = TOC - Static Water Level + (FPT x 0.80).

d — = Data not applicable or not measured.

e Monitoring wells MW-4 through MW-7 were installed on October 24 and measured on November 15, 2000.

LABORATORY REPORT AND CHAIN OF CUSTODY

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Secor	Project: ARCO #0855, Longview, WA	
P.O. Box 1508	Project Number: 015.08698	**Reported:**
Tualatin, OR 97062	Project Manager: Scott Miller	11/21/00 17:23

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-4	P0K0445-01	Water	11/15/00 09:55	11/16/00 16:40
MW-5	P0K0445-02	Water	11/15/00 10:05	11/16/00 16:40
MW-6	P0K0445-03	Water	11/15/00 10:15	11/16/00 16:40
MW-7	P0K0445-04	Water	11/15/00 09:45	11/16/00 16:40

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Secor	Project: ARCO #0855, Longview, WA	
P.O. Box 1508	Project Number: 015.08698	**Reported:**
Tualatin, OR 97062	Project Manager: Scott Miller	11/21/00 17:23

Gasoline Hydrocarbons per NW TPH-Gx Method and BTEX per EPA Method 8021B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
MW-4 (P0K0445-01) Water					Sampled: 11/15/00 Received: 11/16/00				
Benzene	**1310**	25.0	ug/l	50	NW-G, 8021B	11/17/00	11/17/00	0110619	
Toluene	**53.6**	25.0	"	"	"	"	"	"	
Ethylbenzene	**2430**	25.0	"	"	"	"	"	"	
Xylenes (total)	**7250**	50.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	**45500**	4000	"	"	"	"	"	"	
Surr: 4-BFB (FID)	*135 %*	*50-150*							
Surr: 4-BFB (PID)	*103 %*	*75-120*							
MW-5 (P0K0445-02) Water					Sampled: 11/15/00 Received: 11/16/00				
Benzene	ND	0.500	ug/l	1	NW-G, 8021B	11/17/00	11/17/00	0110619	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	80.0	"	"	"	"	"	"	
rr: 4-BFB (FID)	*103 %*	*50-150*							
urr: 4-BFB (PID)	*87.8 %*	*75-120*							
MW-6 (P0K0445-03) Water					Sampled: 11/15/00 Received: 11/16/00				
Benzene	ND	0.500	ug/l	1	NW-G, 8021B	11/17/00	11/17/00	0110619	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	**131**	80.0	"	"	"	"	"	"	
Surr: 4-BFB (FID)	*106 %*	*50-150*							
Surr: 4-BFB (PID)	*91.8 %*	*75-120*							

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P.O. Box 1508	Project Number: 015.08698	**Reported:**
Tualatin, OR 97062	Project Manager: Scott Miller	11/21/00 17:23

Gasoline Hydrocarbons per NW TPH-Gx Method and BTEX per EPA Method 8021B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
MW-7 (P0K0445-04) Water					Sampled: 11/15/00 Received: 11/16/00				
Benzene	ND	0.500	ug/l	1	NW-G, 8021B	11/17/00	11/17/00	0110619	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	ND	0.500	"	"	"	"	"	"	
Xylenes (total)	**1.35**	1.00	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	**113**	80.0	"	"	"	"	"	"	
Surr: 4-BFB (FID)	*118 %*	*50-150*							
Surr: 4-BFB (PID)	*106 %*	*75-120*							

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P.O. Box 1508	Project Number: 015.08698	**Reported:**
Tualatin, OR 97062	Project Manager: Scott Miller	11/21/00 17:23

Gasoline Hydrocarbons per NW TPH-Gx Method and BTEX per EPA Method 8021B - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0110617 - EPA 5030B										
Blank (0110617-BLK1)				Prepared & Analyzed: 11/17/00						
Benzene	ND	0.500	ug/l							
Toluene	ND	0.500	"							
Ethylbenzene	ND	0.500	"							
Xylenes (total)	ND	1.00	"							
Gasoline Range Hydrocarbons	ND	80.0	"							
Surr: 4-BFB (FID)	*53.7*		"	*50.0*		*107*	*50-150*			
Surr: 4-BFB (PID)	*48.8*		"	*50.0*		*97.6*	*75-120*			
LCS (0110617-BS1)				Prepared & Analyzed: 11/17/00						
Gasoline Range Hydrocarbons	1160	80.0	ug/l	1250		92.8	70-130			
Surr: 4-BFB (FID)	*58.5*		"	*50.0*		*117*	*50-150*			
LCS (0110617-BS2)				Prepared & Analyzed: 11/17/00						
nzene	15.8	0.500	ug/l	20.0		79.0	70-130			
luene	15.2	0.500	"	20.0		76.0	70-130			
Ethylbenzene	16.1	0.500	"	20.0		80.5	70-130			
Xylenes (total)	47.8	1.00	"	60.0		79.7	70-130			
Surr: 4-BFB (PID)	*42.3*		"	*50.0*		*84.6*	*75-120*			
Duplicate (0110617-DUP1)		Source: P0K0467-01		Prepared & Analyzed: 11/17/00						
Gasoline Range Hydrocarbons	ND	80.0	ug/l		84.8				50	
Surr: 4-BFB (FID)	*50.0*		"	*50.0*		*100*	*50-150*			
Matrix Spike (0110617-MS1)		Source: P0K0467-01		Prepared & Analyzed: 11/17/00						
Benzene	19.4	0.500	ug/l	20.0	ND	97.0	70-130			
Toluene	19.0	0.500	"	20.0	ND	95.0	70-130			
Ethylbenzene	19.8	0.500	"	20.0	ND	99.0	70-130			
Xylenes (total)	59.2	1.00	"	60.0	ND	98.7	70-130			
Surr: 4-BFB (FID)	*56.0*		"	*50.0*		*112*	*50-150*			
Surr: 4-BFB (PID)	*54.2*		"	*50.0*		*108*	*75-120*			

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P.O. Box 1508	Project Number: 015.08698	**Reported:**
Tualatin, OR 97062	Project Manager: Scott Miller	11/21/00 17:23

Gasoline Hydrocarbons per NW TPH-Gx Method and BTEX per EPA Method 8021B - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0110617 - EPA 5030B										
Matrix Spike Dup (0110617-MSD1)	**Source: P0K0467-01**			Prepared & Analyzed: 11/17/00						
Benzene	16.7	0.500	ug/l	20.0	ND	83.5	70-130	15.0	15	
Toluene	15.4	0.500	"	20.0	ND	77.0	70-130	20.9	15	Q-01
Ethylbenzene	15.8	0.500	"	20.0	ND	79.0	70-130	22.5	15	Q-01
Xylenes (total)	47.5	1.00	"	60.0	ND	79.2	70-130	21.9	15	Q-01
Surr: 4-BFB (FID)	*45.7*		"	*50.0*		*91.4*	*50-150*			
Surr: 4-BFB (PID)	*43.7*		"	*50.0*		*87.4*	*75-120*			
Batch 0110619 - EPA 5030B										
Blank (0110619-BLK1)				Prepared & Analyzed: 11/17/00						
Benzene	ND	0.500	ug/l							
Toluene	ND	0.500	"							
Ethylbenzene	ND	0.500	"							
Xylenes (total)	ND	1.00	"							
asoline Range Hydrocarbons	ND	80.0	"							
Surr: 4-BFB (FID)	*52.7*		"	*50.0*		*105*	*50-150*			
Surr: 4-BFB (PID)	*45.1*		"	*50.0*		*90.2*	*75-120*			
LCS (0110619-BS1)				Prepared & Analyzed: 11/17/00						
Gasoline Range Hydrocarbons	1160	80.0	ug/l	1250		92.8	70-130			
Surr: 4-BFB (FID)	*65.5*		"	*50.0*		*131*	*50-150*			
LCS (0110619-BS2)				Prepared & Analyzed: 11/17/00						
Benzene	16.8	0.500	ug/l	20.0		84.0	70-130			
Toluene	16.5	0.500	"	20.0		82.5	70-130			
Ethylbenzene	17.4	0.500	"	20.0		87.0	70-130			
Xylenes (total)	52.8	1.00	"	60.0		88.0	70-130			
Surr: 4-BFB (PID)	*46.3*		"	*50.0*		*92.6*	*75-120*			

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Tualatin, OR 97062	Project Manager: Scott Miller	11/21/00 17:23

Gasoline Hydrocarbons per NW TPH-Gx Method and BTEX per EPA Method 8021B - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0110619 - EPA 5030B										
Duplicate (0110619-DUP1)		**Source: P0K0445-01**		Prepared & Analyzed: 11/17/00						
Gasoline Range Hydrocarbons	46600	4000	ug/l		45500			2.39	50	
Surr: 4-BFB (FID)	*68.8*		"	*50.0*		*138*	*50-150*			
Duplicate (0110619-DUP2)		**Source: P0K0452-01**		Prepared & Analyzed: 11/17/00						
Gasoline Range Hydrocarbons	ND	80.0	ug/l		ND				50	
Surr: 4-BFB (FID)	*50.1*		"	*50.0*		*100*	*50-150*			
Matrix Spike (0110619-MS1)		**Source: P0K0445-02**		Prepared & Analyzed: 11/17/00						
Benzene	18.2	0.500	ug/l	20.0	ND	91.0	70-130			
Toluene	17.6	0.500	"	20.0	ND	88.0	70-130			
Ethylbenzene	18.3	0.500	"	20.0	ND	91.5	70-130			
Xylenes (total)	55.7	1.00	"	60.0	ND	92.8	70-130			
Surr: 4-BFB (PID)	*48.9*		"	*50.0*		*97.8*	*75-120*			
[illegible]atrix Spike Dup (0110619-MSD1)		**Source: P0K0445-02**		Prepared & Analyzed: 11/17/00						
[illegible]enzene	18.0	0.500	ug/l	20.0	ND	90.0	70-130	1.10	15	
Toluene	17.5	0.500	"	20.0	ND	87.5	70-130	0.570	15	
Ethylbenzene	18.3	0.500	"	20.0	ND	91.5	70-130	0	15	
Xylenes (total)	55.6	1.00	"	60.0	ND	92.7	70-130	0.180	15	
Surr: 4-BFB (PID)	*48.2*		"	*50.0*		*96.4*	*75-120*			

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.

Crystal Burkholder, Project Manager

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541.383.9310 fax 541.382.7588

Secor	Project: ARCO #0855, Longview, WA	
P.O. Box 1508	Project Number: 015.08698	**Reported:**
Tualatin, OR 97062	Project Manager: Scott Miller	11/21/00 17:23

Notes and Definitions

Q-01	The spike recovery, and/or RPD, for this QC sample is outside of established control limits. Review of associated batch QC indicates the recovery for this analyte does not represent an out-of-control condition for the batch.
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
wet	Sample results reported on a wet weight basis
RPD	Relative Percent Difference

North Creek Analytical - Portland

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Crystal Burkholder, Project Manager

ARCO Prod Company | Work Authorization No. 049 00 | Chain of Custody | Page 1 of 1

ARCO Facility No. 00855	City, State (Facility) Longview, Washington	Project Manager (Consultant) Ruth ~~Cary Goodman~~ Scott	Project No. (Consultant) 015.08698
ARCO Engineer Mike Whelan	ARCO Telephone No. (425) 868 -1133	Telephone No. (Consultant) (503) 691-2030	Fax No. (Consultant) (503) 692-7074
Consultant Company SECOR	Consultant Address 7730 SW Mohawk St, Portland, Oregon 97062		

Laboratory Name: Northcreek Analytical

POV-0445

Method of Shipment: Laboratory Courier

Special Detection Limit/Reporting

Sample I.D.	Lab Sample No.	No. of Containers	Matrix: Soil	Water	Air	Other	Prsv.: Yes	No	Sampling Date	Sampling Time	Gas & BTEX per NWTPH-Gx & EPA 8021B	HOLD (see remarks)	Turn Around Time (business days)
~~MW-1~~ MW-4		3		X					11/15	0955	X		10
~~MW-2~~ MW-5		3		X						1005	X		10
~~MW-3~~ MW-6		3		X						1015	X		10
MW-7		3		X					↓	0945	X		10

Special QA/QC

Sub'd COC Attch'd:

REMARKS: Any questions please contact Ruth @ 503 691 2030

Sample Received Intact: Yes No

Temperature received: Ice No Ice

Relinq. by Sampler (Sign & Print Name)	Date	Time	Received by (Sign & Print Name)
Amy C. Zach	11/16/00	~~1500~~ 1135	Corey Mangler
Relinquished by	Date 11-16-00	Time	Received by Dena Saruela

Lab Work No.

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541.383.9310 fax 541.382.7588

Secor	Project: ARCO #0855, Longview, WA	
P.O. Box 1508	Project Number: 015.08698	**Reported:**
Tualatin, OR 97062	Project Manager: Scott Miller	10/30/00 12:21

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1-855	P010687-01	Water	10/18/00 10:28	10/19/00 11:15
MW-2-855	P010687-02	Water	10/18/00 10:38	10/19/00 11:15
MW-3-855	P010687-03	Water	10/18/00 10:45	10/19/00 11:15

North Creek Analytical - Portland

Crystal Burkholder, Project Manager

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Secor	Project: ARCO #0855, Longview, WA	
P.O. Box 1508	Project Number: 015.08698	**Reported:**
Tualatin, OR 97062	Project Manager: Scott Miller	10/30/00 12:21

Gasoline Hydrocarbons per NW TPH-Gx Method and BTEX per EPA Method 8021B

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Dilution	Method	Prepared	Analyzed	Batch	Notes
MW-1-855 (P010687-01) Water					Sampled: 10/18/00 Received: 10/19/00				
Benzene	ND	0.500	ug/l	1	NW-G, 8021B	10/25/00	10/26/00	0101759	
Toluene	ND	0.500	"	"	"	"	"	"	
Ethylbenzene	**1.61**	0.500	"	"	"	"	"	"	
Xylenes (total)	ND	1.00	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	**404**	80.0	"	"	"	"	"	"	
Surr: 4-BFB (FID)	*94.4 %*	*50-150*							
Surr: 4-BFB (PID)	*105 %*	*75-120*							
MW-2-855 (P010687-02) Water					Sampled: 10/18/00 Received: 10/19/00				
Benzene	**3.67**	0.500	ug/l	1	NW-G, 8021B	10/25/00	10/26/00	0101759	
Toluene	**1.23**	0.500	"	"	"	"	"	"	
Ethylbenzene	**13.9**	0.500	"	"	"	"	"	"	
Xylenes (total)	**7.55**	1.00	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	**743**	80.0	"	"	"	"	"	"	
Surr: 4-BFB (FID)	*95.6 %*	*50-150*							
Surr: 4-BFB (PID)	*103 %*	*75-120*							
MW-3-855 (P010687-03RE1) Water					Sampled: 10/18/00 Received: 10/19/00				
Benzene	**12900**	250	ug/l	500	NW-G, 8021B	10/26/00	10/26/00	0101806	
Toluene	**33000**	250	"	"	"	"	"	"	
Ethylbenzene	**4890**	250	"	"	"	"	"	"	
Xylenes (total)	**26700**	500	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	**179000**	40000	"	"	"	"	"	"	
Surr: 4-BFB (FID)	*115 %*	*50-150*							
Surr: 4-BFB (PID)	*111 %*	*75-120*							

North Creek Analytical - Portland

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Crystal Burkholder, Project Manager

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ecor	Project: ARCO #0855, Longview, WA	
P.O. Box 1508	Project Number: 015.08698	**Reported:**
Tualatin, OR 97062	Project Manager: Scott Miller	10/30/00 12:21

Gasoline Hydrocarbons per NWTPH-GX Method and BTEX per EPA Method 8021B - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0101759 - EPA 5030B										
Blank (0101759-BLK1)				Prepared & Analyzed: 10/25/00						
Benzene	ND	0.500	ug/l							
Toluene	ND	0.500	"							
Ethylbenzene	ND	0.500	"							
Xylenes (total)	ND	1.00	"							
Gasoline Range Hydrocarbons	ND	80.0	"							
Surr: 4-BFB (FID)	*43.6*		"	*50.0*		*87.2*	*50-150*			
Surr: 4-BFB (PID)	*48.6*		"	*50.0*		*97.2*	*75-120*			
LCS (0101759-BS1)				Prepared & Analyzed: 10/25/00						
Gasoline Range Hydrocarbons	1190	80.0	ug/l	1250		95.2	70-130			
Surr: 4-BFB (FID)	*52.0*		"	*50.0*		*104*	*50-150*			
LCS (0101759-BS2)				Prepared & Analyzed: 10/25/00						
nzene	18.3	0.500	ug/l	20.0		91.5	70-130			
uene	17.7	0.500	"	20.0		88.5	70-130			
Ethylbenzene	18.4	0.500	"	20.0		92.0	70-130			
Xylenes (total)	54.6	1.00	"	60.0		91.0	70-130			
Surr: 4-BFB (PID)	*47.3*		"	*50.0*		*94.6*	*75-120*			
Duplicate (0101759-DUP1)		**Source: P010234-01**		Prepared & Analyzed: 10/25/00						
Gasoline Range Hydrocarbons	ND	80.0	ug/l		ND				50	
Surr: 4-BFB (FID)	*41.7*		"	*50.0*		*83.4*	*50-150*			
Duplicate (0101759-DUP2)		**Source: P010553-01**		Prepared & Analyzed: 10/25/00						
Gasoline Range Hydrocarbons	5290	4000	ug/l		5790			9.03	50	
Surr: 4-BFB (FID)	*45.4*		"	*50.0*		*90.8*	*50-150*			
Matrix Spike (0101759-MS1)		**Source: P010553-02**		Prepared & Analyzed: 10/25/00						
Benzene	263	5.00	ug/l	200	43.8	110	70-130			
Toluene	211	5.00	"	200	8.51	101	70-130			
Ethylbenzene	342	5.00	"	200	129	107	70-130			
Xylenes (total)	683	10.0	"	600	58.9	104	70-130			
Surr: 4-BFB (PID)	*53.2*		"	*50.0*		*106*	*75-120*			

North Creek Analytical - Portland

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Crystal Burkholder, Project Manager

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;ecor	Project: ARCO #0855, Longview, WA	
P.O. Box 1508	Project Number: 015.08698	**Reported:**
Tualatin, OR 97062	Project Manager: Scott Miller	10/30/00 12:21

Gasoline Hydrocarbons per NW TPH-Gx Method and BTEX per EPA Method 8021B - Quality Control

North Creek Analytical - Portland

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0101759 - EPA 5030B										
Matrix Spike Dup (0101759-MSD1)	**Source: P010553-02**			Prepared & Analyzed: 10/25/00						
Benzene	239	5.00	ug/l	200	43.8	97.6	70-130	9.56	15	
Toluene	195	5.00	"	200	8.51	93.2	70-130	7.88	15	
Ethylbenzene	310	5.00	"	200	129	90.5	70-130	9.82	15	
Xylenes (total)	629	10.0	"	600	58.9	95.0	70-130	8.23	15	
Surr: 4-BFB (PID)	*52.5*		"	*50.0*		*105*	*75-120*			
Batch 0101806 - EPA 5030B										
Blank (0101806-BLK1)				Prepared & Analyzed: 10/26/00						
Benzene	ND	0.500	ug/l							
Toluene	ND	0.500	"							
Ethylbenzene	ND	0.500	"							
Xylenes (total)	ND	1.00	"							
Gasoline Range Hydrocarbons	ND	80.0	"							
Surr: 4-BFB (FID)	*52.4*		"	*50.0*		*105*	*50-150*			
Surr: 4-BFB (PID)	*50.8*		"	*50.0*		*102*	*75-120*			
LCS (0101806-BS1)				Prepared & Analyzed: 10/26/00						
Gasoline Range Hydrocarbons	1190	80.0	ug/l	1250		95.2	70-130			
Surr: 4-BFB (FID)	*63.7*		"	*50.0*		*127*	*50-150*			
LCS (0101806-BS2)				Prepared & Analyzed: 10/26/00						
Benzene	21.3	0.500	ug/l	20.0		106	70-130			
Toluene	20.1	0.500	"	20.0		101	70-130			
Ethylbenzene	20.8	0.500	"	20.0		104	70-130			
Xylenes (total)	62.6	1.00	"	60.0		104	70-130			
Surr: 4-BFB (PID)	*53.4*		"	*50.0*		*107*	*75-120*			

North Creek Analytical - Portland

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Crystal Burkholder, Project Manager

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Secor	Project: ARCO #0855, Longview, WA	
P.O. Box 1508	Project Number: 015.08698	**Reported:**
Tualatin, OR 97062	Project Manager: Scott Miller	10/30/00 12:21

Notes and Definitions

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
wet	Sample results reported on a wet weight basis
RPD	Relative Percent Difference

North Creek Analytical - Portland

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Crystal Burkholder, Project Manager

ARCO Products Company | Work Authorization No. 26049 00 | **Chain of Custody** | Page ___

ARCO Facility No.	City, State (Facility)	Project Manager (Consultant)	Project No. (Consultant)	Laboratory Name
00855	Longview, Washington	Cary Goodman	015.08698	Northcreek Analytical
ARCO Engineer	**ARCO Telephone No.**	**Telephone No. (Consultant)**	**Fax No. (Consultant)**	
Mike Whelan	(425) 868 -1133	(503) 691-2030	(503) 692-7074	
Consultant Company	**Consultant Address**			**Method of Shipment**
SECOR	7730 SW Mohawk St, Portland, Oregon 97062			Laboratory Courier

Sample I.D.	Lab Sample No.	No. of Containers	Matrix: Soil	Matrix: Water	Matrix: Air	Matrix: Other	Prsv.: Yes	Prsv.: No	Sampling Date	Sampling Time	Gas & BTEX per NWTPH-Gx & EPA 8021B	HOLD (see remarks)	Turn Around Time (business days)
MW-1-855		3		X					10/18/01	1028	X		10
MW-2-855		3		X						1038	X		10
MW-3-855		3		X						10:45	X		10
trip blank		1		X							X		

Special Detection Limit/Reporting

Special QA/QC

Sub'd COC Attch'd:

REMARKS

Sample Received Intact: Yes No

Temperature received: Ice No ice

Relinq. by sampler (Sign & Print Name)	Date	Time	Received by (Sign & Print Name)
Josh A. Cushman	10/19	@ 11:15	Rob F NCA 7.2°C
Relinquished by	Date	Time	Received by

Lab Work No. P010687

GROUNDWATER SAMPLING
FIELD DATA SHEETS

COR
7730 SW MOHAWK ST
TUALATIN, OREGON 97062

GROUNDWATER LEVEL DATA

PROJECT: QGWM SITE: ARCO Facility 0855 PROJECT #: 015.08698.050

CLIENT: ARCO RECORDED BY: ACZ MEASURING DEVICE:

SITE LOCATION: 4603 Ocean Beach Hwy, Longview, Washington

WELL ID	DATE	TIME	TOP OF CASING ELEVATION	DEPTH TO WATER*	DEPTH TO PRODUCT	GROUNDWATER ELEVATION	APPARENT PRODUCT THICKNESS	DEPTH TO BOTTOM	ODOR/ SHEEN	COMMENTS
MW-1	10/18	-	8.34	5.41 (10/18)				20.4		2" - No purge sampling
MW-2	↓	-	8.76	5.19				19.4		2" - No purge sampling
MW-3	↓	-	8.78	6.84 ↓				20.0		2" - No purge sampling
MW-4	11/15		8.78	6.88						2" - No purge sampling
MW-5	↓		8.78	6.54						2" - No purge sampling
MW-6	↓		8.21	6.15						2" - No purge sampling
MW-7	↓		8.45	6.52						2" - No purge sampling

* All measurements from top of PVC casing unless noted.

:OR
7730 SW MOHAWK ST
TUALATIN, OREGON 97062

GROUNDWATER LEVEL DATA

PROJECT:___ SITE: ARCO Facility 0855 PROJECT #: 015.08698.050

CLIENT: ARCO RECORDED BY:___ MEASURING DEVICE: Heron WL indicator

SITE LOCATION: 4603 Ocean Beach Highway, Longview, Washington

WELL ID	DATE	TIME	TOP OF CASING ELEVATION	DEPTH TO WATER*	DEPTH TO PRODUCT	GROUNDWATER ELEVATION	DISS. OXYGEN (mg/L)	DEPTH TO BOTTOM	ODOR/ SHEEN	COMMENTS
MW-1	10/18/00		8.34	5.91 J.L				20.4		2"well, no-purge sampling
MW-2	/		8.76	5.19				19.4		2"well, no-purge sampling
MW-3	/		8.78	6.84				20.0		2"well, no-purge sampling

* All measurements from top of PVC casing unless noted.

SECOR
GROUNDWATER SAMPLING FIELD DATA SHEET

SECOR PN: 015.08698.050 DATE: 6/18/00 WELL NO. MW4

FACILITY NAME: Arco 0855, Longview, Washington TEMPERATURE: 64 ~~60~~ or °C

FIELD PERSONNEL: J. L WEATHER: Clear

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: — FT.
B. Thickness of Free Product, if present: _____ Inches — FT.
C. Total Depth of well (TD) from top of casing/piezometer: ~~5.41~~ FT.
D. Height of Water Column in casing (h = TD - SWL): 5.41 FT.
E. Casing Size (in.): 2"
F. Calculated Purge Volume (3 Well Volumes): NP gal

PURGING METHOD: — DURATION: —

OBSERVATIONS:

	Time	Turbidity	Color	Sheen	pH	Temp.	Conduct.	SWL
1st Volume:								
2nd Volume:								
3rd Volume:			No purge sampling					
4th Volume:								
Addl. Volumes:								

TOTAL VOLUME OF WATER PURGED FROM WELL: —
PURGE WATER STORED/DISPOSED OF WHERE/HOW: —

SAMPLES COLLECTED: Depth to Water at time of sample collection: 5.41 7805

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
MW4-855	10:28	3x 40ml VOA	HCl

COMMENTS:

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft.
8-inch hole.....2.60 gal/lin ft.
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:

Total Depth of Well: _____
Original Water Column: _____ x 0.80 = -- ( )
Collect sample when Depth to Water measures
Less than or equal to: _____

Signature: Jr A. Lula

Gwsample.wpd

SECOR
GROUNDWATER SAMPLING FIELD DATA SHEET

SECOR PN: 015.08698.050 DATE: 10/18/00 WELL NO. MW2

FACILITY NAME: Arco 0855, Longview, Washington TEMPERATURE: 64 °F or °C

FIELD PERSONNEL: J.L WEATHER: Clear

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: — FT.
B. Thickness of Free Product, if present: — Inches — FT.
C. Total Depth of well (TD) from top of casing/piezometer: — FT.
D. Height of Water Column in casing (h = TD - SWL): 5.19 FT.
E. Casing Size (in.): _____
F. Calculated Purge Volume (3 Well Volumes): — WP gal

PURGING METHOD: _____ DURATION: _____

OBSERVATIONS:

	Time	Turbidity	Color	Sheen	pH	Temp.	Conduct.	SWL
1st Volume:								
2nd Volume:								
3rd Volume:		—	No purge sampling					
4th Volume:								
Addl. Volumes:								

TOTAL VOLUME OF WATER PURGED FROM WELL: —
PURGE WATER STORED/DISPOSED OF WHERE/HOW: —

SAMPLES COLLECTED: Depth to Water at time of sample collection: 5.19

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
MW2-855	10:38	3x40 ml VOA	HCl

COMMENTS:

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft.
8-inch hole.....2.60 gal/lin ft.
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:

Total Depth of Well: _____
Original Water Column: _____ x 0.80 = --( )
Collect sample when Depth to Water measures
Less than or equal to: _____

Signature: _____

SECOR
GROUNDWATER SAMPLING FIELD DATA SHEET

SECOR PN: 015.08698.050 DATE: 10/18/00 WELL NO. MW3

FACILITY NAME: Arco 0855, Longview, Washington TEMPERATURE: 64 °F or °C

FIELD PERSONNEL: J.L WEATHER: Clear

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: — FT.

B. Thickness of Free Product, if present: ________ Inches — FT.

C. Total Depth of well (TD) from top of casing/piezometer: — FT.

D. Height of Water Column in casing (h = TD - SWL): 6.84 FT.

E. Casing Size (in.): ________

F. Calculated Purge Volume (3 Well Volumes): — NP gal

PURGING METHOD: — DURATION: ________

OBSERVATIONS:

	Time	Turbidity	Color	Sheen	pH	Temp.	Conduct.	SWL
1st Volume:								
2nd Volume:		—				—		
3rd Volume:			No purge Sampling					
4th Volume:								
Addl. Volumes:								

TOTAL VOLUME OF WATER PURGED FROM WELL: —

PURGE WATER STORED/DISPOSED OF WHERE/HOW: —

SAMPLES COLLECTED: Depth to Water at time of sample collection: 6.84

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
MW3-855	10:45	3x 40ml VOA	HCl

COMMENTS:

Sheen on samples

Casing Capacities:
2-inch hole.........0.16 gal/lin ft.
4-inch hole.........0.65 gal/lin ft.
6.5-inch hole.......1.70 gal/lin ft.
8-inch hole.........2.60 gal/lin ft.
10-inch hole........4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:

Total Depth of Well: ________

Original Water Column: ________ x 0.80 = --( )

Collect sample when Depth to Water measures

Less than or equal to: ________

Signature: [signature]

Gwsample.wpd

SECOR
GROUNDWATER SAMPLING FIELD DATA SHEET

SECOR PN: 015.08698.050 DATE: 11/15/00 WELL NO. MW-4

FACILITY NAME: Arco 0855, Longview, Washington TEMPERATURE: 41 (F) or °C

FIELD PERSONNEL: ACZ WEATHER: Sunny

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: _____ FT.
B. Thickness of Free Product, if present: _____ Inches _____ FT.
C. Total Depth of well (TD) from top of casing/piezometer: _____ FT.
D. Height of Water Column in casing (h = TD - SWL): 6.88 FT.
E. Casing Size (in.): _____
F. Calculated Purge Volume (3 Well Volumes): _____ gal

PURGING METHOD: — DURATION: _____

OBSERVATIONS:

	Time	Turbidity	Color	Sheen	pH	Temp.	Conduct.	SWL
1st Volume:								
2nd Volume:								
3rd Volume:			NO PURGE SAMPLING					
4th Volume:								
Addl. Volumes:								

TOTAL VOLUME OF WATER PURGED FROM WELL: _____
PURGE WATER STORED/DISPOSED OF WHERE/HOW: _____

SAMPLES COLLECTED: Depth to Water at time of sample collection: 6.88

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
MW-4	0955	3 x 40mL VOAs	HCl

COMMENTS:

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft.
8-inch hole.....2.60 gal/lin ft.
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:

Total Depth of Well: _____
Original Water Column: _____ x 0.80 = -- ( )
Collect sample when Depth to Water measures
Less than or equal to: _____

Signature: _____

SECOR
GROUNDWATER SAMPLING FIELD DATA SHEET

SECOR PN: 015.08698.050 DATE: 11/15/00 WELL NO. MW-5

FACILITY NAME: Arco 0855, Longview, Washington TEMPERATURE: 41 ℉ or °C

FIELD PERSONNEL: ACZ WEATHER: sunny

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: _____ FT.
B. Thickness of Free Product, if present: _____ Inches _____ FT.
C. Total Depth of well (TD) from top of casing/piezometer: _____ FT.
D. Height of Water Column in casing (h = TD - SWL): 6.54 FT.
E. Casing Size (in.): _____
F. Calculated Purge Volume (3 Well Volumes): _____ gal

PURGING METHOD: — DURATION: _____

OBSERVATIONS:

	Time	Turbidity	Color	Sheen	pH	Temp.	Conduct.	SWL
1st Volume:								
2nd Volume:								
3rd Volume:			NO PURGE SAMPLING					
4th Volume:								
Addl. Volumes:								

TOTAL VOLUME OF WATER PURGED FROM WELL: _____
PURGE WATER STORED/DISPOSED OF WHERE/HOW: _____

SAMPLES COLLECTED: Depth to Water at time of sample collection: 6.54

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
MW-5	AM 1005	3 x 40ml Voas	HCl

COMMENTS:

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft.
8-inch hole.....2.60 gal/lin ft.
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:

Total Depth of Well: _____
Original Water Column: _____ x 0.80 = -- ( )
Collect sample when Depth to Water measures
Less than or equal to: _____

Signature: _____

SECOR

GROUNDWATER SAMPLING FIELD DATA SHEET

SECOR PN: 015.08698.050 DATE: 11/15/00 WELL NO. MW-6

FACILITY NAME: Arco 0855, Longview, Washington TEMPERATURE: 41 (F) or °C

FIELD PERSONNEL: ACZ WEATHER: sunny

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: _____ FT.
B. Thickness of Free Product, if present: _____ Inches _____ FT.
C. Total Depth of well (TD) from top of casing/piezometer: _____ FT.
D. Height of Water Column in casing (h = TD - SWL): 6.15 FT.
E. Casing Size (in.): _____
F. Calculated Purge Volume (3 Well Volumes): _____ gal

PURGING METHOD: — DURATION: _____

OBSERVATIONS:

	Time	Turbidity	Color	Sheen	pH	Temp.	Conduct.	SWL
1st Volume:								
2nd Volume:								
3rd Volume:			NO PURGE SAMPLING					
4th Volume:								
Addl. Volumes:								

TOTAL VOLUME OF WATER PURGED FROM WELL: _____

PURGE WATER STORED/DISPOSED OF WHERE/HOW: _____

SAMPLES COLLECTED: Depth to Water at time of sample collection: 6.15

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
MW-6	1015	3×40mL VOAs	HCl

COMMENTS:

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft.
8-inch hole.....2.60 gal/lin ft.
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:

Total Depth of Well: _____
Original Water Column: _____ x 0.80 = -- ( )
Collect sample when Depth to Water measures
Less than or equal to: _____

Signature: _____

SECOR

GROUNDWATER SAMPLING FIELD DATA SHEET

SECOR PN: 015.08698.050 DATE: 11/15/00 WELL NO. MW-7

FACILITY NAME: Arco 0855, Longview, Washington TEMPERATURE: 41 (F) or °C

FIELD PERSONNEL: ACZ WEATHER: Sunny

FIELD MEASUREMENTS:

A. Static Water Level (SWL) below top of casing/piezometer: _____ FT.
B. Thickness of Free Product, if present: _____ Inches _____ FT.
C. Total Depth of well (TD) from top of casing/piezometer: _____ FT.
D. Height of Water Column in casing (h = TD - SWL): 6.52 FT.
E. Casing Size (in.): _____
F. Calculated Purge Volume (3 Well Volumes): _____ gal

PURGING METHOD: — DURATION: _____

OBSERVATIONS:

	Time	Turbidity	Color	Sheen	pH	Temp.	Conduct.	SWL
1st Volume:								
2nd Volume:								
3rd Volume:			NO PURGE SAMPLING					
4th Volume:								
Addl. Volumes:								

TOTAL VOLUME OF WATER PURGED FROM WELL: _____

PURGE WATER STORED/DISPOSED OF WHERE/HOW: _____

SAMPLES COLLECTED: Depth to Water at time of sample collection: 6.52

Sample Number(s)	Time	Size/Number of Container(s)	Preservative
MW-7	0945	3 x 40mL Voas	HCl

COMMENTS:

Casing Capacities:
2-inch hole.....0.16 gal/lin ft.
4-inch hole.....0.65 gal/lin ft.
6.5-inch hole.....1.70 gal/lin ft.
8-inch hole.....2.60 gal/lin ft.
10-inch hole.....4.10 gal/lin ft.

Recharge Calculation at Time of Sample Collection:

Total Depth of Well: _____
Original Water Column: _____ x 0.80 = --( )
Collect sample when Depth to Water measures
Less than or equal to: _____

Signature: _____

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