



PACIFIC
ENVIRONMENTAL
GROUP, INC.

July 31, 1997
Project No. 530-009.5C

Mr. Chuck Hutchens
ARCO Products Company
12520 NE 160th Place
Woodinville, Washington 98072-7960

Re: Remedial System Performance Evaluation - First/Second Quarter 1997
ARCO Station 6175
3910 South 320th Street
Auburn, Washington

Dear Mr. Hutchens:

Attached is the first and second quarter 1997 remedial system performance evaluation for the site referenced above. If there are any questions regarding the contents of this report, please do not hesitate to call us at (425) 869-5099.

Sincerely,

Pacific Environmental Group, Inc.

Dawna Leong
Project Engineer

Brett Amero
Project Manager

cc: Mr. Wally Moon, Department of Ecology

400435		DEPARTMENT OF ECOLOGY	
		NWRO/TCP TANK UNIT	
INTERIM CLEANUP REPORT		<input checked="" type="checkbox"/>	
SITE CHARACTERIZATION		<input type="checkbox"/>	
FINAL CLEANUP REPORT		<input type="checkbox"/>	
OTHER _____		<input type="checkbox"/>	
AFFECTED MEDIA: SOIL		<input checked="" type="checkbox"/>	
OTHER _____		<input type="checkbox"/>	
INSPECTOR (INIT.) <u>WM</u>	DATE <u>11-26-97</u>	<input checked="" type="checkbox"/>	

Date: July 31, 1997
Quarter: First/Second 1997

ARCO SEMI-ANNUAL REMEDIATION MONITORING REPORT

Facility No.: 6175 Address: 3910 South 320th Street, Auburn, Washington
ARCO Environmental Engineer: Mr. Chuck Hutchens
Consulting Co./ Contact Person: Pacific Environmental Group, Inc./Brett Amero
Consultant Project No.: 530-009.5C
Primary Agency/Regulatory ID No.: Washington State Department of Ecology
Regulatory Contact Person: Wally Moon

WORK PERFORMED THESE QUARTERS (First/Second - 1997):

1. *Remedial system operation and maintenance.*

WORK PROPOSED FOR NEXT QUARTER (Third/Fourth - 1997):

1. *Continue remedial system operation and maintenance.*

Current Phase of Project: Remediation (Assmnt, Remed., etc.)
Frequency of Groundwater Sampling: NA (Quarterly, etc.)
Frequency of Groundwater Monitoring: NA (Monthly, etc.)
Is Free Product (SPH) Present On-Site: No (Yes/No)
SPH Recovered this Quarter: 0 (gallons)
Cumulative SPH Recovered to Date: 0 (gallons)
Current Remediation Techniques: SVE (SVE/Sparge/SPH Removal, etc.)
Approximate Depth to Groundwater: NA (Feet bgs, pumping or static)
Groundwater Gradient: NA (Direction & Magnitude)

SITE REMEDIATION

SVE System Data:

Equipment Inventory: Rotron EN 505 2 hp regenerative blower.

Operating Mode: Direct Discharge

Air Permit: PSAPCA Notice of Construction 4505 - 15 lbs per day maximum discharge.

Summary of SVE Operational Data:

Operating hours this quarter.:	986	Natural Gas Usage:	n/a	cf
Cumulative operating hours:	8076	Electrical Usage:	102	kWh
Percent operational:	24%			

SVE Source Data (field):

	<u>TPH as Gasoline</u>
Max. conc. this period:	1.3 ppmv
Max. conc. last period:	488 ppmv
Initial conc. (03/22/95):	37.1 ppmv
Current removal rate	0.0 lbs/day
Cumulative mass removed:	1,734 lbs.
Max. source flowrate this period:	49 cfm

DISCUSSION:

At ARCO's request, PACIFIC shut down the remedial system on October 18, 1996 and winterized the equipment. PACIFIC re-started the system on May 13, 1997 and will continue system operation and maintenance.

ATTACHMENTS:

- Table 1 -Soil Vapor Extraction Data Evaluation
- Table 2 - SVE Monitoring Data
- Figure 1 - Site Map

TABLE 1
SOIL VAPOR EXTRACTION DATA EVALUATION

ARCO Service Station 6175
39100 South 320th Street
Federal Way, Washington

Sample Date	t (days)	td (days)	TVH (ppm)	Flow Rate (cfm)	TVH (lbs/day)	Net TVH (lb)	Total TVH (lb)
3/22/95	0	0	37.1	34	0.4	0	0
4/21/95*	30	0	520	39	3.5	107	107
6/29/95	69	58	193	133	7.5	82	189
7/18/95	19	0	523	79	10.9	207	396
8/20/95	33	26	48.7	54	7.1	49	445
9/12/95	23	0	467	81	6.6	151	596
9/25/95	13	0	325	39	8.3	109	704
4/18/96	206	184	4	74	2.1	47	752
5/6/96	18	0	0	83	0.0	1	752
6/14/96	39	0	3400	10	5.5	212	965
7/10/96	26	24	488	88	12.5	21	986
8/2/96	23	0	228	88	10.3	236	1222
9/4/96	33	0	250	98	7.3	242	1464
10/18/96	44	0	182	49	5.5	240	1704
10/25/96**	7	0	268	64	4.3	30	1734
5/13/97***	200	200	-	-	0.0	0.0	1734
5/23/97	10	0	1.3	49	0.02	0.2	1734
6/23/97	31	0	0.0	49	0.01	0.3	1734
Average Daily Removal Rate (lbs):					5.1		
Total Mass Removed (lbs):							1,734
<p>- = not measured</p> <p>t = time of period since last sampling</p> <p>td = down time during period since last sampling</p> <p>TVH = total volatile hydrocarbons</p> <p>ppm = parts per million</p> <p>cfm = cubic feet per minute</p> <p>lb/day = pounds per day</p> <p>Net = since last period only</p> <p>Total = since beginning of operation</p> <p>* = TVH value obtained from FID reading including and after this event</p> <p>** = At ARCO's request, the remedial system was shut down and winterized on October 25, 1996.</p> <p>*** = At ARCO's request, the remedial systems was restarted May 13, 1997.</p> <p>The measurement of system parameters was postponed to allow the system to equilibrate.</p>							

TABLE 2
SOIL VAPOR EXTRACTION MONITORING DATA

ARCO Service Station 6175
3910 South 320th Street
Federal Way, Washington

Sample Point	Sample Date	On/Off	Vapor Concentration (ppm*)	Vacuum (in H ₂ O)	Flow Rate (CFM)	Mass Removal Rate (lb/day)
VE-1	03/22/95	On	>10,000	47	>131	>428
	04/21/95	On	>1,000	**	NC	NC
	06/29/95	On	18,911	12	4.4	27
	07/18/95	On	6,117	11	6.5	13
	08/20/95	On	3,750	15	1.1	1.3
	09/12/95	On	1,850	26	2.2	1.3
	09/25/95	On	1,130	28	2.2	0.8
	04/18/96	On	46	>30	3.3	0.0
	05/06/96	On	0.0	42	0.5	0.0
	06/14/96	On	250	71	6.5	0.5
	07/10/96	On	812	20	16.4	4.3
	08/02/96	On	559	30	9.8	1.8
	09/04/96	On	363	25	4.9	0.6
	10/18/96	On	136	29	>131	>5.8
	10/25/96***	Off	121	29	39.3	1.6
	5/13/97****	On	-	-	-	-
	5/23/97	On	494	35	2.2	0.4
	6/23/97	On	0.0	21	3.3	0.0
VE-2	03/22/95	On	>10,000	46	>131	>428
	04/21/95	On	**	**	NC	NC
	06/29/95	On	21,687	12	6.5	46
	07/18/95	On	8,637	10	10.9	31
	08/20/95	On	6,700	15	4.4	9.6
	09/12/95	On	3,500	25	12.0	14
	09/25/95	On	2,900	28	8.7	8.3
	04/18/96	On	36	>30	1.1	0.0
	05/06/96	On	0.0	34	0.8	0.0
	06/14/96	On	230	65	13.1	1.0
	07/10/96	On	1,210	15	21.8	8.6
	08/02/96	On	657	25	19.6	4.2
	09/04/96	On	1,130	22	8.7	3.2
	10/18/96	On	962	22	13.1	4.1
	10/25/96***	Off	1,175	25	21.8	8.4
	5/13/97****	On	-	-	-	-
	5/23/97	On	**	**	NC	NC
	6/23/97	On	0.0	20	4.4	0.0

TABLE 2
SOIL VAPOR EXTRACTION MONITORING DATA

ARCO Service Station 6175
3910 South 320th Street
Federal Way, Washington

Sample Point	Sample Date	On/Off	Vapor Concentration (ppm*)	Vacuum (in H ₂ O)	Flow Rate (CFM)	Mass Removal Rate (lb/day)
VE-3	03/22/95	On	100	48	131	4.3
	04/21/95	On	**	**	NC	NC
	06/29/95	On	18,710	12	2.2	13
	07/18/95	On	8,474	12	2.2	6.0
	08/20/95	On	5,770	15	0.0	0.00
	09/12/95	On	2,700	27	0.0	0.00
	09/25/95	On	2,200	28	0.0	0.00
	04/18/96	On	36	>30	0.0	0.00
	05/06/96	On	0.0	39	0.2	0.00
	06/14/96	On	-	61	-	-
	07/10/96	On	1,010	20	4.4	1.4
	08/02/96	On	680	30	3.3	0.73
	09/04/96	On	775	29	0.0	0.00
	10/18/96	On	725	31	<2.2	<0.5
	10/25/96***	Off	814	31	10.9	2.9
	5/13/97****	On	-	-	-	-
	5/23/97	On	13	40	0.9	0.00
	6/23/97	On	0.0	20	10.9	0.00
VE-4	03/22/95	On	90	47	131	3.9
	04/21/95	On	>1,000	**	NC	NC
	06/29/95	On	16,308	12	2.2	12
	07/18/95	On	7,532	12	0.0	0.00
	08/20/95	On	4,500	15	0.0	0.00
	09/12/95	On	2,500	27	0.0	0.00
	09/25/95	On	2,300	28	0.0	0.00
	04/18/96	On	0	>30	0.0	0.00
	05/06/96	On	0	20	0.2	0.00
	06/14/96	On	43,000	48	8.7	123
	07/10/96	On	>1,600	3	8.7	>4.6
	08/02/96	On	2,803	10	17.5	>16
	09/04/96	On	1,224	10	7.1	2.8
	10/18/96	On	253	12	174.5	14
	10/25/96***	Off	283	13	10.9	1.0
	5/13/97****	On	-	-	-	-
	5/23/97	On	7.0	20	4.4	0.01
	6/23/97	On	0.0	20	4.4	0.00

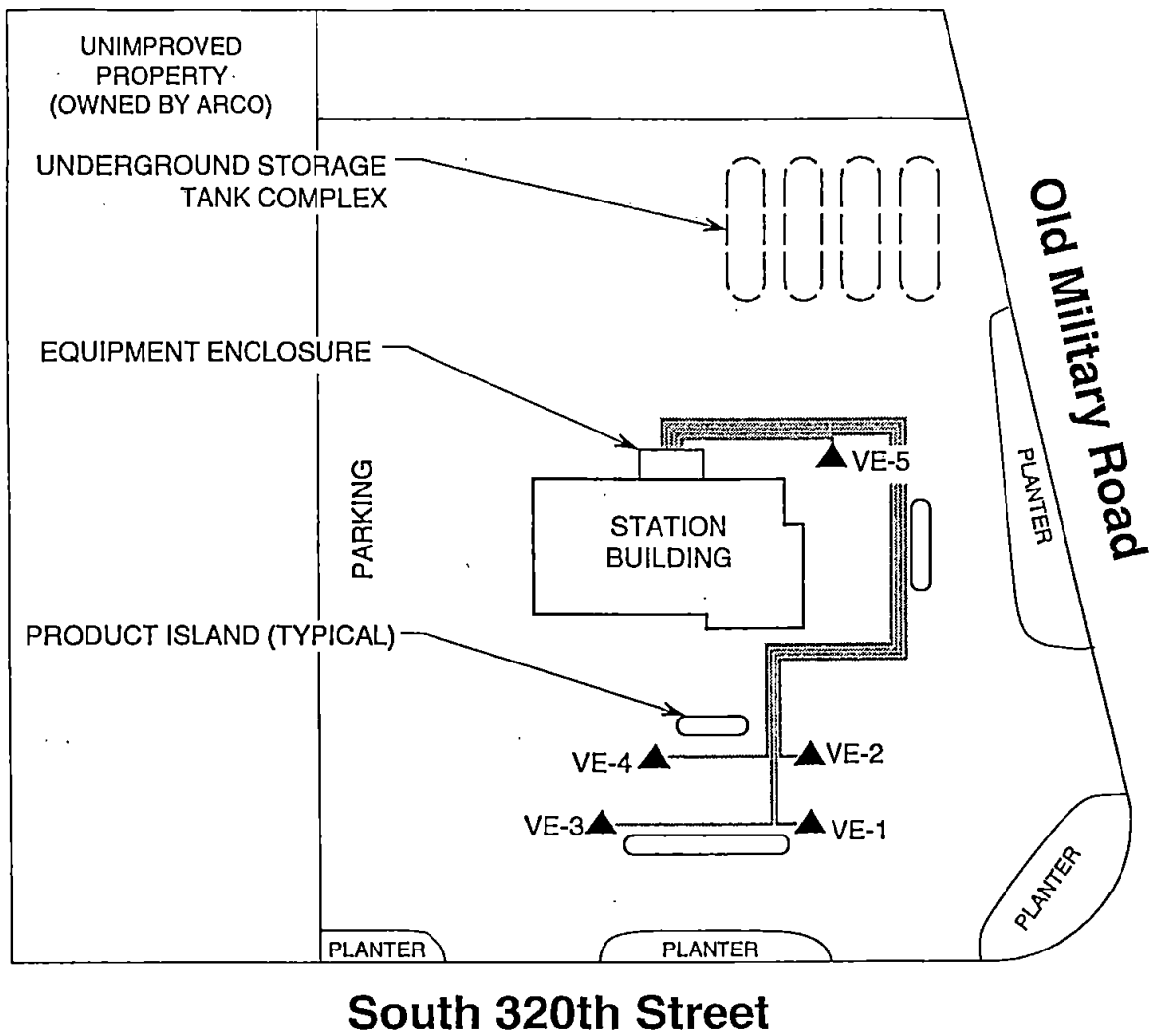
TABLE 2
SOIL VAPOR EXTRACTION MONITORING DATA

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ARCO Service Station 6175
3910 South 320th Street
Federal Way, Washington

Sample Point	Sample Date	On/Off	Vapor Concentration (ppm*)	Vacuum (in H ₂ O)	Flow Rate (CFM)	Mass Removal Rate (lb/day)
VE-5	08/02/96	On	85	26	NC	NC
	09/04/96	On	208	-	9.3	0.63
	10/18/96	On	1,122	-	54.5	20
	10/25/96***	Off	177	28	43.6	2.5
	5/13/97****	On	-	-	-	-
	5/23/97	On	3.2	-	21.8	0.02
	6/23/97	On	0.0	20	10.9	0.00
<p>* = measurement obtained in the field using a flame-ionization detector</p> <p>** = measurement not possible due to the presence of water in the below grade piping.</p> <p>*** = At ARCO's request, the remedial system was shut down and winterized on October 25, 1996.</p> <p>**** = At ARCO's request, the remedial systems was restarted May 13, 1997. The measurement of system parameters was postponed to allow the system to equilibrate.</p> <p>- = not measured</p> <p>NC = not calculable</p> <p>ppm = parts per million</p> <p>cfm = cubic feet per minute</p> <p>lb/day = pounds per day</p>						

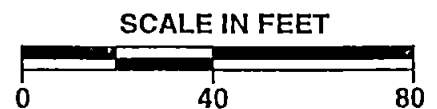
7/31/97



LEGEND

VE-3 ▲ SOIL VAPOR EXTRACTION WELL LOCATION AND DESIGNATION

└─┘ SOIL VAPOR EXTRACTION BELOW GRADE CONVEYANCE PIPING



PACIFIC
ENVIRONMENTAL
GROUP, INC.

ARCO SERVICE STATION #6175
3910 South 320th Street
Auburn, Washington

SITE MAP

FIGURE:
1
PROJECT:
530-009.5C