

**APPENDIX D**

**RISK SCREENING FOR URBAN RESIDENTS**

## **APPENDIX D TABLES**

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- D-1 Total Petroleum Hydrocarbons in Soil and Urban Resident Risk-Based Concentrations
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- D-7 Volatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations

# Appendix D Table Notes Astoria Area-Wide Petroleum Site Astoria, Oregon

All non-detect values are 1/2 the method reporting limit.

bgs = below ground surface.

DEQ = Oregon Department of Environmental Quality.

>Csat = This soil RBC exceeds the limit of three-phase equilibrium partitioning. Soil concentrations in excess of Csat indicate that free product might be present.

>MAX = The constituent RBC for this pathway is greater than 100,000 mg/kg. The total petroleum hydrocarbon RBC is greater than the maximum amount that would be present if all of the initial air space were filled with petroleum product. The DEQ believes it is highly unlikely that such concentrations will ever be encountered.

>S = This groundwater RBC exceeds the solubility limit. Groundwater concentrations in excess of S indicate that free product may be present.

mg/kg = milligrams per kilogram.

mg/L = milligrams per liter.

µg/L = micrograms per liter.

µg/m<sup>3</sup> = micrograms per cubic meter.

NA = not applicable; RBCs are included for chemicals of potential concern only.

NV = no value.

ppbv = parts per billion by volume.

ppmv = parts per million by volume.

R = datum rejected.

RBC = risk-based concentration.

U = not detected at the method reporting limit.

<sup>a</sup>DEQ RBC for Chromium VI.

**Table D-1**  
**Total Petroleum Hydrocarbons in Soil and Urban Resident Risk-Based Concentrations**  
**(mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Gasoline-Range Organics	Diesel-Range Organics	Heavy-Oil-Range Organics
DEQ RBC—Urban Residential Direct Contact			1,500	8,300	NV
DEQ RBC—Urban Residential Volatilization to Outdoor Air			4,500	>MAX	NV
DEQ RBC—Urban Residential Vapor Intrusion			140	>MAX	NV
SB-800 (Q)-0	8/27/2002	0	1.25 U	12.5 U	25 U
SB801(Q)-0	8/26/2002	0	2 U	11.2	23.4
SB802(Q)-0	8/26/2002	0	2 U	24.6	57.9
SB803(Q)-0	8/26/2002	0	2 U	20.2	25.3
SB-804(Q)-0	8/26/2002	0	2 U	3.9 U	7.8 U
SB-805(Q)-0	8/26/2002	0	2 U	11.7	22.2
SB-806 (Q)-0	8/28/2002	0	1.25 U	12.5 U	25 U
SB-807 (Q)-0	8/28/2002	0	2.96	82.9	349
SB-809 (Q)-0	8/28/2002	0	3.08	12.5 U	25 U
SB-810 (Q)-0	8/28/2002	0	1.25 U	12.5 U	25 U
SB-811 (Q)-0	8/27/2002	0	1.25 U	12.5 U	25 U
SB812(Q)-0	8/27/2002	0	2 U	3.9 U	7.8 U
SB813(Q)-0	8/27/2002	0	R	25	50
SB814(Q)-0	8/27/2002	0	2 U	3.9 U	7.8 U
SB815(Q)-0	8/27/2002	0	2 U	13.5	7.8 U
SB816(Q)-0	8/27/2002	0	2 U	3.9 U	7.8 U
SB-817 (Q)-0	8/28/2002	0	1.25 U	12.5 U	25 U
SB-818 (Q)-0	8/28/2002	0	1.25 U	12.5 U	25 U
SB-819 (Q)-0	8/28/2002	0	1.25 U	12.5 U	25 U
SB-820 (Q)-0	8/29/2002	0	2.6	47.5	131
SB-821 (Q)-0	8/29/2002	0	1.25 U	12.5 U	131
SB-822 (Q)-0	8/29/2002	0	1.25 U	12.5 U	25 U
SB-823 (Q)-0	8/27/2002	0	1.25 U	48.6	146
SB-824 (Q)-0	8/27/2002	0	1.25 U	12.5 U	25 U
SB-825 (Q)-0	8/27/2002	0	1.25 U	12.5 U	25 U
SB-826 (Q)-0	8/27/2002	0	1.25 U	12.5 U	25 U
SB-827 (Q)-0	8/29/2002	0	1.25 U	12.5 U	25 U
SB-828 (Q)-0	8/28/2002	0	2.5	12.5 U	25 U
SB-829 (Q)-0	8/28/2002	0	3.44	39.8	201
SB-830 (Q)-0	8/28/2002	0	1.25 U	12.5 U	25 U
SB-831 (Q)-0	8/28/2002	0	1.25 U	12.5 U	25 U
SB-832 (Q)-0	8/28/2002	0	1.25 U	12.5 U	25 U
SB-833 (Q)-0	8/28/2002	0	1.25 U	125 U	563
Ex-1/S-1	3/30/2004	1	1.26	26.5	34
Ex-2/S-1	3/30/2004	1	3.18	16.1	110
Ex-3/S-1	3/31/2004	1	1.08	770	760
SB-618 (N)-1.5	9/12/2002	1.5	7.89	239	133

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DEQ RBC—Urban Residential Volatilization to Outdoor Air			4,500	>MAX	NV
DEQ RBC—Urban Residential Vapor Intrusion			140	>MAX	NV
Ex-2/S-2	4/1/2004	2	2.09	12.5 U	35.6
SB-008(A)-2	8/26/2003	2	4.93	16.6	59
SB-009(A)-2	8/27/2003	2	7.84	12.5 U	25 U
SB-010(A)-2	8/27/2003	2	6.39	12.5 U	25 U
SB-253(C)-2	9/4/2003	2	2 U	12.5 U	25 U
SB-254(C)-2	9/4/2003	2	2 U	125 U	1010
SB-320(D)-2	9/10/2003	2	2 U	12.5 U	25 U
SB-321(D)-2	9/9/2003	2	392	1780	3560
SB-322(D)-2	9/10/2003	2	4.31	12.5 U	27.8
SB-324(D)-2	9/10/2003	2	2.75	12.5 U	25 U
SB-325(D)-2	9/10/2003	2	5.53	12.5 U	25 U
SB-326(D)-2	9/9/2003	2	31.6	12.5 U	25 U
SB-327(D)-2	9/10/2003	2	2.78	12.5 U	25 U
SB-328(D)-2	9/10/2003	2	2 U	12.5 U	48.1
SB-410(F)-2'	3/31/2004	2	4.45	48.2	179
SB-622 (N)-2	9/12/2002	2	1.25 U	NV	NV
SB-624 (N)-2	9/12/2002	2	1.25 U	12.5 U	25 U
SB-625 (N)-2	9/12/2002	2	1.25 U	12.5 U	25 U
SB-627(N)-2	8/28/2003	2	31.4	132	239
SB-701(P)-2	8/20/2002	2	1.25 U	12.5 U	25 U
SB-702(P)-2	8/21/2002	2	1.25 U	12.5 U	25 U
SB-703(P)-2	8/21/2002	2	15.8	102	453
SB-704(P)-2	8/21/2002	2	1.25 U	12.5 U	128
SB-707(P)-2	8/21/2002	2	1.25 U	12.5 U	25 U
SB-712(P)-2	8/21/2002	2	1.25 U	125 U	2110
SB-713(P)-2	8/21/2002	2	1.25 U	12.5 U	25 U
SB-714(P)-2	8/21/2002	2	1.25 U	66.4	162
SB-718(P)-2	8/21/2002	2	1.25 U	12.5 U	25 U
SB-720(P)-2	8/23/2002	2	7.63	12.5 U	142
SB-800 (Q)-2	8/27/2002	2	1.25 U	12.5 U	25 U
SB801(Q)-2	8/26/2002	2	2 U	3.9 U	7.8 U
SB802(Q)-2	8/26/2002	2	2 U	3.9 U	7.8 U
SB803(Q)-2	8/26/2002	2	2 U	3.9 U	31.1
SB-804(Q)-2	8/26/2002	2	2 U	152.5 U	953
SB-805(Q)-2	8/26/2002	2	13.1	16	31.6
SB-806 (Q)-2	8/28/2002	2	1.25 U	12.5 U	25 U
SB-809 (Q)-2	8/28/2002	2	1.25 U	12.5 U	25 U

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DEQ RBC—Urban Residential Volatilization to Outdoor Air			4,500	>MAX	NV
DEQ RBC—Urban Residential Vapor Intrusion			140	>MAX	NV
SB-810 (Q)-2	8/28/2002	2	1.25 U	12.5 U	25 U
SB816(Q)-2	8/27/2002	2	2 U	3.9 U	7.8 U
SB-817 (Q)-2	8/28/2002	2	2.88	116	162
SB-820 (Q)-2	8/29/2002	2	3.41	30.4	67.2
SB-822 (Q)-2	8/29/2002	2	1.25 U	12.5 U	25 U
SB-822 (Q)-2C	8/29/2002	2	1.25 U	12.5 U	25 U
SB-823 (Q)-2	8/27/2002	2	1.25 U	12.5 U	25 U
SB-825 (Q)-2	8/27/2002	2	1.25 U	12.5 U	25 U
SB-827 (Q)-2	8/29/2002	2	3.19	12.5 U	25 U
SB-828 (Q)-2	8/28/2002	2	6.87	12.5 U	25 U
SB-829 (Q)-2	8/28/2002	2	1.25 U	12.5 U	25 U
SB-829 (Q)-2C	8/28/2002	2	1.25 U	12.5 U	25 U
SB-830 (Q)-2	8/28/2002	2	1.25 U	12.5 U	25 U
SB-832 (Q)-2	8/28/2002	2	1.25 U	12.5 U	25 U
SB-833 (Q)-2	8/28/2002	2	1.25 U	12.5 U	25 U
SB-834(Q)-2	9/5/2003	2	2 U	12.5 U	25 U
SB-835(Q)-2	9/5/2003	2	2 U	12.5 U	107
SB-912(S)-2	9/3/2003	2	2 U	27.8	130
SB-913(S)-2	9/3/2003	2	2.58	2440	6390
SB-914(S)-2	9/3/2003	2	2 U	12.5 U	25 U
SB-002(A)-2.5	8/27/2003	2.5	8.4	12.5 U	25 U
SB-005(A)-2.5	9/5/2003	2.5	2 U	12.5 U	25 U
SB-019(A)-2.5	8/27/2003	2.5	7.46	12.5 U	25 U
SB-255(C)-2.5	9/4/2003	2.5	2 U	77.5	325
SB-400(F)-2.5	8/22/2002	2.5	1.25 U	12.5 U	25 U
SB-401(F)-2.5	8/23/2002	2.5	1.25 U	12.5 U	25 U
SB-402(F)-2.5	8/23/2002	2.5	1.25 U	12.5 U	25 U
SB-404(F)-2.5	8/22/2002	2.5	1.25 U	12.5 U	25 U
SB-405(F)-2.5	8/22/2002	2.5	1.25 U	12.5 U	25 U
SB-406(F)-2.5	8/22/2002	2.5	1.25 U	12.5 U	77.1
SB-407(F)-2.5	8/22/2002	2.5	1.25 U	12.5 U	56.3
SB-408(F)-2.5	8/22/2002	2.5	6.44	1470	229
SB-409(F)-2.5	8/22/2002	2.5	1.25 U	12.5 U	25 U
SB-706(P)-2.5	8/21/2002	2.5	1.25 U	12.5 U	25 U
SB100(C)3	8/22/2002	3	2 U	12.5 U	25 U
SB101(C)3	8/22/2002	3	2 U	12.5 U	25 U
SB103(C)3	8/22/2002	3	2 U	76.4	283

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DEQ RBC—Urban Residential Volatilization to Outdoor Air			4,500	>MAX	NV
DEQ RBC—Urban Residential Vapor Intrusion			140	>MAX	NV
SB200(C)-3	8/22/2002	3	2 U	12.5 U	25 U
SB201(C)-3	8/22/2002	3	2 U	12.5 U	25 U
SB202(C)-3	8/22/2002	3	2 U	38.8	57.8
SB203(C)-3	8/22/2002	3	2 U	12.5 U	25 U
SB204(C)-3	8/22/2002	3	2 U	12.5 U	25 U
SB-602(N)-3	9/13/2002	3	2.56	NV	NV
SB-604(N)-3	9/13/2002	3	1.25 U	NV	NV
SB-606(N)-3	9/13/2002	3	1.25 U	NV	NV
SB-617 (N)-3	9/12/2002	3	NV	54.1	25 U
SB-620 (N)-3	9/12/2002	3	1.25 U	NV	NV
SB-700(P)-3	8/21/2002	3	1.25 U	12.5 U	117
SB-705(P)-3	8/20/2002	3	1.25 U	12.5 U	25 U
SB-708(P)-3	8/20/2002	3	1.25 U	12.5 U	25 U
SB-709(P)-3	8/21/2002	3	1.25 U	35.3	74.4
SB-710(P)-3	8/21/2002	3	1.25 U	250 U	2450
SB-711(P)-3	8/21/2002	3	1.25 U	12.5 U	150
SB-715(P)-3	8/21/2002	3	1.25 U	12.5 U	25 U
SB-716(P)-3	8/20/2002	3	1.25 U	12.5 U	25 U
SB-717(P)-3	8/20/2002	3	1.25 U	12.5 U	25 U
SB-824 (Q)-3	8/27/2002	3	1.25 U	12.5 U	25 U
SB-826 (Q)-3	8/27/2002	3	1.25 U	12.5 U	25 U
SB-020(A)-4'	3/31/2004	4	2 U	12.5 U	25 U
SB104(C)-4	8/22/2002	4	2 U	12.5 U	25 U
SB-410(F)-4'	3/31/2004	4	2 U	12.5 U	25 U
SB-818 (Q)-4	8/28/2002	4	2.6	29.6	25 U
SB-831 (Q)-4	8/28/2002	4	1.25 U	12.5 U	25 U
SB-900(S)-4	8/26/2002	4	NV	96	184
SB-904 (S)-4	8/26/2002	4	1.25 U	1200	3070
SB-905 (S)-4	8/26/2002	4	3.23	3630	7500
SB-906 (S)-4	8/27/2002	4	NV	1570	1100
SB-908 (S)-4	8/27/2002	4	NV	7550	12300
SB-909 (S)-4	8/27/2002	4	3.19	1300	5500
SB-910 (S)-4	8/27/2002	4	NV	32.5	241
SB812(Q)-4.5	8/27/2002	4.5	2 U	13.2	7.8 U
SB814(Q)-4.5	8/27/2002	4.5	2 U	16.1	7.8 U
SB815(Q)-4.5	8/27/2002	4.5	2 U	163	571
SB-320(D)-5	9/10/2003	5	2 U	12.5 U	25 U

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DEQ RBC—Urban Residential Volatilization to Outdoor Air			4,500	>MAX	NV
DEQ RBC—Urban Residential Vapor Intrusion			140	>MAX	NV
SB-321(D)-5	9/9/2003	5	1530	6370	19200
SB-322(D)-5	9/10/2003	5	4.61	12.5 U	25 U
SB-324(D)-5	9/10/2003	5	2.63	12.5 U	25 U
SB-325(D)-5	9/10/2003	5	2 U	12.5 U	25 U
SB-326(D)-5	9/9/2003	5	870	12.5 U	47.2
SB-327(D)-5	9/10/2003	5	6.22	12.5 U	25 U
SB-328(D)-5	9/10/2003	5	67.9	21.3	104
SB-400(F)-5	8/22/2002	5	1.25 U	12.5 U	25 U
SB-409(F)-5	8/22/2002	5	1.25 U	12.5 U	25 U
SB-719(P)-5	8/23/2002	5	5.07	12.5 U	110
SB-811 (Q)-5	8/27/2002	5	1.25 U	12.5 U	25 U
SB813(Q)-5	8/27/2002	5	2 U	3.9 U	7.8 U
SB-819 (Q)-5	8/28/2002	5	2.5	69.8	25 U
SB-821 (Q)-5	8/29/2002	5	1950	1070	87.2
SB-821 (Q)-5C	8/29/2002	5	459	324	25 U
SB-915(s)-5.0	3/31/2004	5	NV	12.5 U	294
SB-613 (N)-5.5	9/12/2002	5.5	2110	2270	500 U
SB-617 (N)-5.5	9/12/2002	5.5	4.32	NV	NV
SB-705(P)-5.5	8/20/2002	5.5	1.25 U	12.5 U	25 U
SB-706(P)-5.5	8/21/2002	5.5	1.25 U	12.5 U	25 U
SB200(C)6	8/22/2002	6	2 U	12.5 U	25 U
SB201(C)6	8/22/2002	6	2 U	37.5	159
SB256 (c) 6	3/31/2004	6	6.23	12.5 U	25 U
SB-501 (M) 4-8	8/29/2002	6	20.6	282	25 U
SB-608(N)-6	9/13/2002	6	82.8	NV	NV
SB408/S-2(6-7)	8/22/2002	6.5	34.8	NV	NV
SB-827 (Q)-6.5	8/29/2002	6.5	3.16	12.5 U	25 U
SB-005(A)-7	9/5/2003	7	2 U	12.5 U	25 U
SB-006(A)-7'	3/31/2004	7	2190	14000	1000 U
SB-015(A)-7	9/10/2003	7	695	12.5 U	25 U
SB202(C)7	8/22/2002	7	2 U	28.7	25 U
SB203(C)7	8/22/2002	7	2 U	12.5 U	25 U
SB-254(C)-7	9/4/2003	7	2 U	12.5 U	25 U
SB-255(C)-7	9/4/2003	7	10	196	301
SB-323(D)-7	9/10/2003	7	2.61	12.5 U	25 U
SB407/S-2(6-8)	8/22/2002	7	1470	NV	NV
SB-600(N)-7	9/13/2002	7	2510	NV	NV



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DEQ RBC—Urban Residential Vapor Intrusion			140	>MAX	NV
SB-601(N)-7	9/13/2002	7	3750	1380	25 U
SB-602(N)-7	9/13/2002	7	337	528	25 U
SB-603(N)-7	9/13/2002	7	3750	1520	500 U
SB-604(N)-7	9/13/2002	7	601	2780	500 U
SB-605(N)-7	9/13/2002	7	3000	2260	500 U
SB-606(N)-7	9/13/2002	7	1.25 U	NV	NV
SB-612 (N)-7	9/12/2002	7	4100	4580	500 U
SB-614 (N)-7	9/12/2002	7	1370	809	250 U
SB-615 (N)-7	9/12/2002	7	1340	2070	500 U
SB-616 (N)-7	9/12/2002	7	4000	7880	500 U
SB-618 (N)-7	9/12/2002	7	1780	7490	500 U
SB-619 (N)-7	9/12/2002	7	1.25 U	NV	NV
SB-620 (N)-7	9/12/2002	7	2130	3480	125 U
SB-621 (N)-7	9/12/2002	7	1.25 U	NV	NV
SB-622 (N)-7	9/12/2002	7	1.25 U	NV	NV
SB-623 (N)-7	9/12/2002	7	1460	2420	125 U
SB-624 (N)-7	9/12/2002	7	753	5930	125 U
SB-625 (N)-7	9/12/2002	7	6.4	2170	250 U
SB-626 (N)-7	9/12/2002	7	4560	9600	255
SB-715(P)-7	8/21/2002	7	8.52	71	157
SB-721(P)-7'	3/31/2004	7	2 U	12.5 U	25 U
SB-807 (Q)-7	8/28/2002	7	2300	485	25 U
SB-835(Q)-7	9/5/2003	7	2 U	12.5 U	25 U
SB-912(S)-7	9/3/2003	7	2 U	12.5 U	25 U
SB-913(S)-7	9/3/2003	7	4.64	2050	1250
SB-001(A)-7.5	8/27/2003	7.5	4.64	12.5 U	25 U
SB-002(A)-7.5	8/27/2003	7.5	3.18	12.5 U	25 U
SB-007(A)-7.5	8/26/2003	7.5	2520	6840	500 U
SB-008(A)-7.5	8/26/2003	7.5	2 U	12.5 U	25 U
SB-009(A)-7.5	8/27/2003	7.5	1670	12200	1000 U
SB-010(A)-7.5	8/27/2003	7.5	2.76	12.5 U	25 U
SB-011(A)-7.5	9/3/2003	7.5	2 U	12.5 U	25 U
SB-013(A)-7.5	9/3/2003	7.5	2 U	12.5 U	25 U
SB-017(A)-7.5	9/8/2003	7.5	2 U	12.5 U	25 U
SB-019(A)-7.5	8/27/2003	7.5	5960	2370	67.8
SB-253(C)-7.5	9/4/2003	7.5	2 U	12.5 U	25 U
SB-405(F)-7.5	8/22/2002	7.5	93.9	12.5 U	25 U

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DEQ RBC—Urban Residential Vapor Intrusion			140	>MAX	NV
SB-407(F)-7.5	8/22/2002	7.5	1570	413	25 U
SB-408(F)-7.5	8/22/2002	7.5	3.66	150	53.4
SB-629(N)-7.5	8/28/2003	7.5	1650	10800	500 U
SB-632(N)-7.5	9/8/2003	7.5	1690	282	36.5
SB-714(P)-7.5	8/21/2002	7.5	1150	6240	250 U
SB-834(Q)-7.5	9/5/2003	7.5	2 U	12.5 U	25 U
SB-914(S)-7.5	9/3/2003	7.5	2 U	12.5 U	25 U
SB204(C)-8	8/22/2002	8	5.51	12.5 U	25 U
SB-406(F)-8	8/22/2002	8	5.03	12.5 U	25 U
SB-806 (Q)-8	8/28/2002	8	4.68	12.5 U	25 U
SB-810 (Q)-8	8/28/2002	8	1.25 U	12.5 U	25 U
SB-822 (Q)-8	8/29/2002	8	7620	429	25 U
SB-901 (S)-8	8/26/2002	8	1.25 U	12.5 U	25 U
SB-902 (S)-8	8/26/2002	8	29.6	81.3	25 U
SB-903 (S)-8	8/26/2002	8	1.25 U	437	162
SB-908 (S)-8	8/27/2002	8	NV	12.5 U	25 U
SB-911 (S)-8	8/27/2002	8	1.25 U	12.5 U	25 U
SB-720(P)-8.5	8/23/2002	8.5	3420	6110	250 U
SB-804(Q)-8.5	8/26/2002	8.5	2 U	22.5	169
SB-809 (Q)-8.5	8/28/2002	8.5	2.5	12.5 U	25 U
SB-828 (Q)-8.5	8/28/2002	8.5	2.5	12.5 U	25 U
SB-830 (Q)-8.5	8/28/2002	8.5	1.25 U	31.9	130
SB-020(A)-9'	3/31/2004	9	2 U	12.5 U	25 U
SB-410(F)-9'	3/31/2004	9	2 U	12.5 U	25 U
SB802(Q)-9	8/26/2002	9	2 U	24.5	57.7
SB803(Q)-9	8/26/2002	9	2 U	57.7	244
SB-807 (Q)-9	8/28/2002	9	28.5	12.5 U	25 U
SB-811 (Q)-9	8/27/2002	9	2.5	12.5 U	60.8
SB-811 (Q)-9C	8/27/2002	9	2.5	12.5 U	63
SB812(Q)-9	8/27/2002	9	2 U	3.9 U	7.8 U
SB814(Q)-9	8/27/2002	9	2 U	14.1	7.8 U
SB-817 (Q)-9	8/28/2002	9	1.25 U	38.6	90.6
SB-818 (Q)-9	8/28/2002	9	1.25 U	12.5 U	25 U
SB-820 (Q)-9	8/29/2002	9	3.44	12.5 U	25 U
SB-820 (Q)-9C	8/29/2002	9	537	186	181
SB-821 (Q)-9	8/29/2002	9	12.3	12.5 U	25 U
SB-823 (Q)-9	8/27/2002	9	1.25 U	25 U	288

**Table D-1**  
**Total Petroleum Hydrocarbons in Soil and Urban Resident Risk-Based Concentrations**  
**(mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Gasoline-Range Organics	Diesel-Range Organics	Heavy-Oil-Range Organics
DEQ RBC—Urban Residential Direct Contact			1,500	8,300	NV
DEQ RBC—Urban Residential Volatilization to Outdoor Air			4,500	>MAX	NV
DEQ RBC—Urban Residential Vapor Intrusion			140	>MAX	NV
SB-824 (Q)-9	8/27/2002	9	2.93	12.5 U	25 U
SB-825 (Q)-9	8/27/2002	9	2.5	12.5 U	25 U
SB-826 (Q)-9	8/27/2002	9	1.25 U	12.5 U	25 U
SB-829 (Q)-9	8/28/2002	9	1.25 U	125 U	926
SB-831 (Q)-9	8/28/2002	9	1.25 U	27.2	25 U
SB-832 (Q)-9	8/28/2002	9	7.11	12.5 U	25 U
SB-705(P)-9.5	8/20/2002	9.5	1.25 U	12.5 U	60.1
SB-706(P)-9.5	8/21/2002	9.5	1.25 U	12.5 U	56.9
SB801(Q)-9.5	8/26/2002	9.5	2 U	3.9 U	7.8 U
SB813(Q)-9.5	8/27/2002	9.5	2 U	3.9 U	7.8 U
SB815(Q)-9.5	8/27/2002	9.5	2 U	16.7	24.9
SB816(Q)-9.5	8/27/2002	9.5	2 U	3.9 U	7.8 U
SB-028 (A)-10	9/14/2005	10	2.205 U	25.3	64.5
SB-324(D)-10	9/10/2003	10	586	4630	25 U
SB-325(D)-10	9/10/2003	10	2 U	12.5 U	25 U
SB-326(D)-10	9/9/2003	10	1920	202	25 U
SB-327(D)-10	9/10/2003	10	758	9640	500 U
SB-328(D)-10	9/10/2003	10	1360	3580	25 U
SB-500 (M) 8-12	8/29/2002	10	1.25 U	12.5 U	25 U
SB-501 (M) 8-12	8/29/2002	10	1300	1680	25 U
SB-502 (M) 8-12	8/29/2002	10	217	10800	500 U
SB-503 (M) 8-12	8/29/2002	10	490	16800	250 U
SB-505 (M) 8-12	8/29/2002	10	186	4750	250 U
SB-506 (M) 8-12	8/29/2002	10	890	2520	25 U
SB-507 (M) 8-12	8/29/2002	10	532	16100	250 U
SB-508 (M) 8-12	8/29/2002	10	1380	3270	25 U
SB-509 (M) 8-12	8/29/2002	10	6.51	41.4	75.6
SB-510 (M) 8-12	8/29/2002	10	2040	35500	250 U
SB-625 (N)-10	9/12/2002	10	55.5	1630	25 U
SB-703(P)-10	8/21/2002	10	1.25 U	12.5 U	25 U
SB-707(P)-10	8/21/2002	10	1.25 U	12.5 U	25 U
SB-708(P)-10	8/20/2002	10	1.25 U	12.5 U	25 U
SB-709(P)-10	8/21/2002	10	1.25 U	12.5 U	25 U
SB-711(P)-10	8/21/2002	10	1.25 U	12.5 U	127
SB-712(P)-10	8/21/2002	10	1.25 U	125 U	1630
SB-713(P)-10	8/21/2002	10	1.25 U	12.5 U	25 U
SB-714(P)-10	8/21/2002	10	3460	5780	250 U

**Table D-1**  
**Total Petroleum Hydrocarbons in Soil and Urban Resident Risk-Based Concentrations**  
**(mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Gasoline-Range Organics	Diesel-Range Organics	Heavy-Oil-Range Organics
DEQ RBC—Urban Residential Direct Contact			1,500	8,300	NV
DEQ RBC—Urban Residential Volatilization to Outdoor Air			4,500	>MAX	NV
DEQ RBC—Urban Residential Vapor Intrusion			140	>MAX	NV
SB-716(P)-10	8/20/2002	10	1.25 U	12.5 U	25 U
SB-717(P)-10	8/20/2002	10	1.25 U	12.5 U	25 U
SB-718(P)-10	8/21/2002	10	1.25 U	12.5 U	25 U
SB-805(Q)-10	8/26/2002	10	2 U	3.9 U	7.8 U
SB-822 (Q)-10	8/29/2002	10	10.5	25	25 U
SB-901 (S)-10	8/26/2002	10	1.25 U	12.5 U	25 U
SB-903 (S)-10	8/26/2002	10	396	16400	250 U
SB-908 (S)-10	8/27/2002	10	1.25 U	12.5 U	25 U
SB-909 (S)-10	8/27/2002	10	1.25 U	125 U	894
SB-910 (S)-10	8/27/2002	10	1.25 U	12.5 U	25 U
SB-911 (S)-10	8/27/2002	10	2.62	12.5 U	25 U
SB-022 (A)-10.5	9/14/2005	10.5	108	2730	720
SB-700(P)-10.5	8/21/2002	10.5	2920	703	25 U
SB-800 (Q)-10.5	8/27/2002	10.5	2.5	12.5 U	25 U
SB-833 (Q)-10.5	8/28/2002	10.5	6.48	12.5 U	25 U
SB-027 (A)-11	9/14/2005	11	2450	31900	2845 U
SB-607(N)-11	9/13/2002	11	1.25 U	12.5 U	25 U
SB-619 (N)-11	9/12/2002	11	18.1	NV	NV
SB-701(P)-11	8/20/2002	11	1.25 U	12.5 U	25 U
SB-702(P)-11	8/21/2002	11	1.25 U	12.5 U	25 U
SB-704(P)-11	8/21/2002	11	1.25 U	12.5 U	25 U
SB-715(P)-11	8/21/2002	11	1.25 U	77.6	180
SB-806 (Q)-11	8/28/2002	11	3.93	12.5 U	25 U
SB-819 (Q)-11	8/28/2002	11	3.36	12.5 U	25 U
SB-021 (A)-11.5	9/14/2005	11.5	1550	51400	3185 U
SB-023 (A)-11.5	9/15/2005	11.5	2.47 U	15.6 U	31.15 U
SB-024 (A)-11.5	9/14/2005	11.5	2.345 U	15.05 U	30.1 U
SB-025 (A)-11.5	9/15/2005	11.5	2.475 U	15.5 U	31 U
SB-720(P)-11.5	8/23/2002	11.5	2590	4350	25 U
SB-504 (M) 10-12	8/29/2002	12	3.17	12.5 U	25 U
SB-701(P)-12	8/20/2002	12	1.25 U	12.5 U	25 U
SB-705(P)-12	8/20/2002	12	1.25 U	12.5 U	25 U
SB-706(P)-12	8/21/2002	12	1.25 U	12.5 U	25 U
SB-719(P)-12	8/23/2002	12	14.5	12.5 U	25 U
SB-900(S)-12	8/26/2002	12	2160	261	25 U
SB-902 (S)-12	8/26/2002	12	NV	1770	76.7
SB-904 (S)-12	8/26/2002	12	647	23100	250 U

**Table D-1**  
**Total Petroleum Hydrocarbons in Soil and Urban Resident Risk-Based Concentrations**  
**(mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Gasoline-Range Organics	Diesel-Range Organics	Heavy-Oil-Range Organics
DEQ RBC—Urban Residential Direct Contact			1,500	8,300	NV
DEQ RBC—Urban Residential Volatilization to Outdoor Air			4,500	>MAX	NV
DEQ RBC—Urban Residential Vapor Intrusion			140	>MAX	NV
SB-905 (S)-12	8/26/2002	12	1.25 U	12.5 U	25 U
SB-906 (S)-12	8/27/2002	12	NV	11200	250 U
SB-029 (A)-12.5	9/14/2005	12.5	2.515 U	15.75 U	31.5 U
SB-030 (A)-12.5	9/14/2005	12.5	2.555 U	16.25 U	32.55 U
SB102(C)1-3	8/22/2002	13	8.31	12.5 U	25 U
SB-026 (A)-13.5	9/14/2005	13.5	2.4 U	511	31.15 U
SB-324(D)-15	9/10/2003	15	162	433	125 U
SB-325(D)-15	9/10/2003	15	6.05	12.5 U	25 U
SB-327(D)-15	9/10/2003	15	390	22	25 U
SB-328(D)-15	9/10/2003	15	11.4	22.8	25 U
SB101(C)18	8/22/2002	18	2 U	12.5 U	25 U
SB102(C)18	8/22/2002	18	2 U	73.9	473
SB103(C)18	8/22/2002	18	2 U	44.5	126
SB100(C)20	8/22/2002	20	6.31	12.5 U	25 U
SB104(C)20	8/22/2002	20	5.14	12.5 U	74.1
SB-401(F)-20	8/23/2002	20	1.25 U	12.5 U	71.7
SB-402(F)-20	8/23/2002	20	1.25 U	12.5 U	71.7
SB-404(F)-20	8/22/2002	20	7.81	12.5 U	25 U
Number of Samples			341 146	336 126	336 95
Average Concentration			313	1244	312
Median Concentration			2	12.5	25
Frequency of Detection			43	38	28
Minimum Value			1.08	3.9	7.8
Maximum Detection			7620	51400	19200

**Table D-2**  
**Semivolatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	2-Methyl-naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) Anthracene	Benzo(a) Pyrene
DEQ RBC—Urban Residential Direct Contact			NV	5,900 >Csat	NV	41,000 >Csat	0.31	0.031
Ex-1/S-1	3/30/2004	1	NV	0.0067	U	0.0067	U	0.0067
Ex-2/S-1	3/30/2004	1	NV	0.0067	U	0.0067	U	0.00973
Ex-3/S-1	3/31/2004	1	NV	0.0335	U	0.0202	0.0967	0.102
Ex-4/S-1	3/29/2004	1	NV	0.0067	U	0.0067	U	0.0067
SB 232 (C)-8	8/30/2002	8	NV	0.0134	U	0.0134	U	0.0134
SB 233 (C)-3	8/30/2002	3	NV	0.0067	U	0.0067	U	0.0067
SB 234 (C)-8	8/30/2002	8	NV	0.0067	U	0.0067	U	0.0067
SB 235 (C)-6	8/30/2002	6	NV	0.0067	U	0.0067	U	0.0067
SB 236 (C)-6	8/30/2002	6	NV	0.0134	U	0.0134	U	0.0134
SB 237 (C)-6	8/30/2002	6	NV	0.0152	U	0.0118	U	0.0067
SB 238 (C)-3	8/30/2002	3	NV	0.0134	U	0.0134	U	0.0134
SB-001(A)-7.5	8/27/2003	7.5	NV	0.0067	U	0.00516	0.0067	U
SB-002(A)-2.5	8/27/2003	2.5	NV	0.0067	U	0.0067	U	0.0067
SB-002(A)-7.5	8/27/2003	7.5	NV	0.0067	U	0.0067	U	0.0067
SB-003(A)-5	9/4/2003	5	NV	0.0134	U	0.0134	U	0.0145
SB-005(A)-2.5	9/5/2003	2.5	NV	0.0067	U	0.0067	U	0.0067
SB-005(A)-7	9/5/2003	7	NV	0.0067	U	0.0067	U	0.00469
SB-006(A)-7	3/31/2004	7	NV	2.47	0.5	3.35	U	0.335
SB-007(A)-7.5	8/26/2003	7.5	NV	1.46	1.34	0.526	0.134	U
SB-008(A)-2	8/26/2003	2	NV	0.0987	0.134	0.207	2.53	2.59
SB-008(A)-7.5	8/26/2003	7.5	NV	0.0067	U	0.0067	U	0.0067
SB-009(A)-2	8/27/2003	2	NV	0.0067	U	0.0067	U	0.0067
SB-009(A)-7.5	8/27/2003	7.5	NV	1.34	1.34	2.17	0.134	U
SB-010(A)-2	8/27/2003	2	NV	0.0067	U	0.0067	U	0.0067
SB-010(A)-7.5	8/27/2003	7.5	NV	0.0067	U	0.0067	U	0.0067
SB-011(A)-7.5	9/3/2003	7.5	NV	0.0067	U	0.0067	U	0.0067
SB-013(A)-7.5	9/3/2003	7.5	NV	0.0067	U	0.0067	U	0.0067
SB-015(A)-7	9/10/2003	7	NV	0.067	U	0.067	U	0.067
SB-016(A)-7	9/4/2003	7	NV	0.0649	0.0335	0.0466	0.0335	U
SB-017(A)-7.5	9/8/2003	7.5	NV	0.0067	U	0.0067	U	0.0067

**Table D-2**  
**Semivolatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	2-Methyl-naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) Anthracene	Benzo(a) Pyrene
DEQ RBC—Urban Residential Direct Contact								
SB-019(A)-2.5	8/27/2003	2.5	NV	5.900 >Csat	NV	41,000 >Csat	0.31	0.031
SB-019(A)-7.5	8/27/2003	7.5	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB-020(A)-4'	3/31/2004	4	NV	0.449	0.335	0.22	0.335	0.335
SB-020(A)-9'	3/31/2004	9	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB-021 (A)-11.5	9/14/2005	11.5	NV	0.00651	0.0067	0.0067	0.0067	0.0067
SB-027 (A)-11	9/14/2005	11	NV	7.01	0.635	3.375	0.4225	0.4225
SB-029 (A)-12.5	9/14/2005	12.5	NV	8.7	0.7775	3.7	0.3875	0.3875
SB100(C)20	8/22/2002	20	NV	0.004225	0.004225	0.004225	0.004225	0.004225
SB100(C)3	8/22/2002	3	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB200(C)3	8/22/2002	3	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB200(C)6	8/22/2002	6	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB201(C)3	8/22/2002	3	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB201(C)6	8/22/2002	6	NV	0.0134	0.0134	0.0134	0.0342	0.031
SB202(C)3	8/22/2002	3	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB202(C)7	8/22/2002	7	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB203(C)3	8/22/2002	3	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB203(C)7	8/22/2002	7	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB204(C)3	8/22/2002	3	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB204(C)8	8/22/2002	8	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB205(C)-4.5	8/27/2002	4.5	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB206(C)-6	8/27/2002	6	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB207(C)-4.5	8/27/2002	4.5	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB208(C)-3.5	8/27/2002	3.5	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB209(C)-3	8/27/2002	3	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB210(C)-3.5	8/27/2002	3.5	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB211(C)-3	8/27/2002	3	NV	0.0067	0.0067	0.0067	0.0067	0.011
SB212(C)-2.5	8/27/2002	2.5	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB213(C)-4	8/27/2002	4	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB214(C)-5	8/27/2002	5	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB215(C)-5	8/27/2002	5	NV	0.0067	0.0067	0.0067	0.0067	0.0067

**Table D-2**  
**Semivolatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	2-Methyl-naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) Anthracene	Benzo(a) Pyrene
DEQ RBC—Urban Residential Direct Contact								
SB216(C)-3	8/27/2002	3	NV	5,900 >Csat	NV	41,000 >Csat	0.31	0.031
SB217(C)-3	8/28/2002	3	NV	0.0117	0.0067	0.0117	0.00632	0.00491
SB218(C)-2.5	8/28/2002	2.5	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB219(C)-4	8/28/2002	4	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB220 (C)-5	8/28/2002	5	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB221 (C)-4.5	8/28/2002	4.5	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB222 (C)-4.5	8/28/2002	4.5	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB223 (C)-6	8/29/2002	6	NV	0.0134	0.0134	0.0134	0.0134	0.0134
SB224 (C)-2	8/29/2002	2	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB225 (C)-3	8/29/2002	3	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB226 (C)-3	8/29/2002	3	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB227 (C)-8	8/29/2002	8	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB228 (C)-4	8/29/2002	4	NV	0.0134	0.0134	0.0134	0.0134	0.0241
SB229 (C)-8	8/29/2002	8	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB230 (C)-8	8/29/2002	8	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB231 (C)-2	8/29/2002	2	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB-239(C)-4	9/3/2002	4	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB-240(C)-6	9/3/2002	6	NV	0.0134	0.0134	0.0134	0.0134	0.0134
SB-241(C)-5	9/3/2002	5	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB-242(C)-4	9/3/2002	4	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB-243(C)-4	9/3/2002	4	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB-244(C)-3	9/3/2002	3	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB-245(C)-5	9/3/2002	5	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB-246(C)-5	9/3/2002	5	NV	0.0134	0.0134	0.0134	0.0134	0.0134
SB-247(C)-6	9/3/2002	6	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB-250(C)-4	9/9/2002	4	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB-251(C)-4	9/9/2002	4	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB-252(C)-5	9/9/2002	5	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB-253(C)-2	9/4/2003	2	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB-253(C)-7.5	9/4/2003	7.5	NV	0.0067	0.0067	0.0067	0.0067	0.0067



**Table D-2**  
**Semivolatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	2-Methyl-naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) Anthracene	Benzo(a) Pyrene
DEQ RBC—Urban Residential Direct Contact								
SB-254(C)-2	9/4/2003	2	NV	5.900 >Csat	NV	41,000 >Csat	0.31	0.031
SB-254(C)-7	9/4/2003	7	NV	0.02	0.0335	0.0598	0.117	0.167
SB-255(C)-2.5	9/4/2003	2.5	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB-255(C)-7	9/4/2003	7	NV	0.357	0.084	1.79	0.27	0.118
SB256 (c) 6	3/31/2004	6	NV	7.4	0.953	3.72	4.43	5.84
SB-301-D-3.5	8/20/2002	3.5	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB-304-D-2.0	8/19/2002	2	NV	0.257	0.0335	0.286	0.0335	0.0335
SB-304-D-5.0	8/19/2002	5	NV	0.345	0.067	0.0478	0.067	0.067
SB-305-D-2.0	8/19/2002	2	NV	0.086	0.0335	0.0335	0.0335	0.0335
SB-305-D-4.5	8/19/2002	4.5	NV	0.0702	0.0335	0.032	0.0067	0.0067
SB-306-D-2.0	8/19/2002	2	NV	0.00887	0.0067	0.0067	0.0067	0.0067
SB-306-D-4.5	8/19/2002	4.5	NV	0.494	0.067	0.0877	0.067	0.067
SB-307-D-2.0	8/19/2002	2	NV	0.841	0.067	0.175	0.067	0.067
SB-309-D-2.0	8/19/2002	2	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB-309-D-5.0	8/19/2002	5	NV	0.272	0.0335	0.0826	0.0335	0.0335
SB-310-D-2.0	8/19/2002	2	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB-310-D-5.0	8/19/2002	5	NV	0.0115	0.0067	0.00393	0.0067	0.0067
SB-311-D-5.0	8/19/2002	5	NV	0.325	0.067	0.0572	0.067	0.067
SB-312-D-5.0	8/19/2002	5	NV	0.0134	0.139	0.0166	0.265	0.405
SB-314-D-10.0	8/20/2002	10	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB-314-D-15.0	8/20/2002	15	NV	0.414	0.067	0.67	0.005	0.0067
SB-314-D-2.0	8/20/2002	2	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB-315-D-2.0	8/20/2002	2	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB-315-D-5.0	8/20/2002	5	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB-316-D-10.0	8/20/2002	10	NV	0.0335	0.0335	0.0335	0.0335	0.0335
SB-316-D-14.5	8/20/2002	14.5	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB-316-D-2.0	8/20/2002	2	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB-323(D)-7	9/10/2003	7	NV	0.0067	0.0067	0.0067	0.0067	0.0067
SB-406(F)-2.5	8/22/2002	2.5	NV	0.0067	0.0067	0.0067	0.00903	0.0171
SB-407(F)-7.5	8/22/2002	7.5	NV	0.0335	0.0335	0.0216	0.0335	0.0335

**Table D-2**  
**Semivolatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	2-Methyl-naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) Anthracene	Benzo(a) Pyrene
DEQ RBC—Urban Residential Direct Contact								
SB-408(F)-2.5	8/22/2002	2.5	NV	5,900 >Csat	NV	41,000 >Csat	0.31	0.031
SB-408(F)-7.5	8/22/2002	7.5	NV	0.067 U	0.067 U	0.067 U	0.0134	0.0582
SB-410(F)-4'	3/31/2004	4	NV	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-601(N)-3	9/13/2002	3	NV	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-601(N)-7	9/13/2002	7	NV	0.0335 U	0.0335 U	0.0335 U	0.0335 U	0.0335 U
SB-602(N)-7	9/13/2002	7	NV	0.5 U	0.5 U	0.05 U	0.05 U	0.05 U
SB-603(N)-7	9/13/2002	7	NV	0.134	0.0335 U	0.0335 U	0.0335 U	0.0335 U
SB-604(N)-7	9/13/2002	7	NV	0.335 U	0.067 U	0.067 U	0.067 U	0.067 U
SB-605(N)-3	9/13/2002	3	NV	0.0195	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-605(N)-7	9/13/2002	7	NV	0.529	0.067 U	0.067 U	0.067 U	0.067 U
SB-608(N)-3	9/13/2002	3	NV	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-612 (N)-7	9/12/2002	7	NV	0.484	0.149	0.149	0.05 U	0.05 U
SB-617 (N)-3	9/12/2002	3	NV	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SB-618 (N)-7	9/12/2002	7	80.5	0.825 U	0.825 U	0.825 U	0.825 U	0.825 U
SB-619 (N)-11	9/12/2002	11	NV	0.351	0.0543	0.294	0.005 U	0.005 U
SB-619 (N)-7	9/12/2002	7	NV	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SB-620 (N)-7	9/12/2002	7	NV	0.758	0.159	0.558	0.0123	0.005 U
SB-624 (N)-7	9/12/2002	7	38.1	1.65 U	1.65 U	1.65 U	1.65 U	1.65 U
SB-625 (N)-7	9/12/2002	7	NV	0.0203	0.0275	0.275	0.005 U	0.005 U
SB-626 (N)-7	9/12/2002	7	NV	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SB-627(N)-2	8/28/2003	2	NV	0.0335 U	0.0335 U	0.0335 U	0.0387	0.0577
SB-629(N)-7.5	8/28/2003	7.5	NV	1.51 U	0.67 U	1.35	0.335 U	0.335 U
SB-632(N)-7.5	9/8/2003	7.5	NV	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U
SB-700(P)-10.5	8/21/2002	10.5	NV	0.0346	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-701(P)-11	8/20/2002	11	NV	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-702(P)-11	8/21/2002	11	NV	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-704(P)-11	8/21/2002	11	NV	NV	NV	NV	NV	NV
SB-704(P)-2	8/21/2002	2	NV	NV	NV	NV	NV	NV
SB-705(P)-12	8/20/2002	12	NV	NV	NV	NV	NV	NV
SB-705(P)-3	8/20/2002	3	NV	NV	NV	NV	NV	NV

**Table D-2**  
**Semivolatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	2-Methyl-naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) Anthracene	Benzo(a) Pyrene
DEQ RBC—Urban Residential Direct Contact								
SB-705(P)-5.5	8/20/2002	5.5	NV	5.900 >Csat	NV	41,000 >Csat	0.31	0.031
SB-705(P)-9.5	8/20/2002	9.5	NV	NV	NV	NV	NV	NV
SB-706(P)-9.5	8/21/2002	9.5	NV	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-707(P)-10	8/21/2002	10	NV	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-708(P)-10	8/20/2002	10	NV	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-710(P)-3	8/21/2002	3	NV	0.0134 U	0.0134 U	0.0134 U	0.0134 U	0.0117
SB-712(P)-10	8/21/2002	10	NV	0.215	0.0359	0.62	0.326	0.151
SB-714(P)-7.5	8/21/2002	7.5	NV	0.833	0.134 U	0.67 U	0.0427	0.0284
SB-716(P)-10	8/20/2002	10	NV	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-719(P)-12	8/23/2002	12	NV	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-720(P)-11.5	8/23/2002	11.5	NV	0.604	0.0335 U	0.382	0.0335 U	0.0335 U
SB-720(P)-2	8/23/2002	2	NV	0.0076	0.0067 U	0.0139	0.225	0.238
SB-721(P)-7	3/31/2004	7	NV	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-820 (Q)-0C	8/29/2002	0	NV	0.0335 U	0.0335 U	0.0335 U	0.0335 U	0.0335 U
SB-834(Q)-2	9/5/2003	2	NV	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-834(Q)-7.5	9/5/2003	7.5	NV	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-835(Q)-2	9/5/2003	2	NV	0.0067 U	0.0067 U	0.0067 U	0.0108	0.0169
SB-835(Q)-7	9/5/2003	7	NV	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-900(S)-12	8/26/2002	12	NV	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-900(S)-4	8/26/2002	4	NV	0.0067 U	0.0067 U	0.00544	0.00997	0.00982
SB-902 (S)-12	8/26/2002	12	NV	0.067 U	0.0335 U	0.027	0.0335 U	0.0067 U
SB-903 (S)-10	8/26/2002	10	NV	0.84 U	0.1675 U	0.359	0.1675 U	0.0067 U
SB-904 (S)-12	8/26/2002	12	NV	1.49	0.1675 U	0.43	0.1675 U	0.0067 U
SB-905 (S)-12	8/26/2002	12	NV	0.0335 U	0.0335 U	0.0335 U	0.0335 U	0.0067 U
SB-906 (S)-12	8/27/2002	12	NV	0.633	0.1675 U	0.379	0.0208	0.00686
SB-906 (S)-4	8/27/2002	4	NV	0.0335 U	0.0335 U	0.0335 U	0.0067 U	0.0067 U
SB-908 (S)-10	8/27/2002	10	NV	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-908 (S)-4	8/27/2002	4	NV	0.67 U	0.335 U	0.67 U	0.254	0.148
SB-908 (S)-8	8/27/2002	8	NV	0.335 U	0.335 U	0.335 U	0.335 U	0.0809
SB-909 (S)-4	8/27/2002	4	NV	0.067 U	0.067 U	0.067 U	0.067 U	0.067 U

**Table D-2**  
**Semivolatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	2-Methyl-naphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a) Anthracene	Benzo(a) Pyrene
DEQ RBC—Urban Residential Direct Contact			NV	5,900 >Csat	NV	41,000 >Csat	0.31	0.031
SB-910 (S)-4	8/27/2002	4	NV	0.0067	U	0.0067	U	0.0067
SB-912(S)-2	9/3/2003	2	NV	0.0067	U	0.0067	U	0.0067
SB-912(S)-7	9/3/2003	7	NV	0.0067	U	0.0067	U	0.0067
SB-913(S)-2	9/3/2003	2	NV	0.335	U	0.335	U	0.335
SB-913(S)-7	9/3/2003	7	NV	0.1675	U	0.1675	U	0.1675
SB-914(S)-2	9/3/2003	2	NV	0.0067	U	0.0067	U	0.0067
SB-914(S)-7.5	9/3/2003	7.5	NV	0.0067	U	0.0067	U	0.0067
SB-915(s)-5.0	3/31/2004	5	NV	0.0335	U	0.0335	U	0.0335
SB-D-DUP-0819	8/19/2002	2	NV	0.067	U	0.0335	U	0.0335
SB-D-DUP-3	8/20/2002	3	NV	0.00889	U	0.0134	U	0.0134
TP201(C)6E	8/27/2002	6	NV	0.0067	U	0.0067	U	0.0067
TP202(C)6W	8/27/2002	6	NV	0.0067	U	0.0067	U	0.0067
Number of Samples			2	187	187	187	187	187
Average Concentration			59.3	0.25	0.08	0.17	0.09	0.09
Median Concentration			59.3	0.0067	0.0067	0.0067	0.0067	0.0067
Frequency of Detection			100	20.85561497	3.743315508	18.7165775	11.764706	13.368984
Minimum Value			38.1	0.004225	0.004225	0.00393	0.004225	0.004225
Maximum Detection			80.5	8.7	1.65	3.72	4.43	5.84

**Table D-2**  
**Semivolatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Benzo(b) Fluoranthene	Benzo(g,h,i) Perylene	Benzo(k) Fluoranthene	Chrysene	Dibenzo(a,h) Anthracene	Fluoranthene
DEQ RBC—Urban Residential Direct Contact			0.31	NV	3.1	31 >Csat	0.031	4,600 >Csat
Ex-1/S-1	3/30/2004	1	0.0067	0.0111	0.0067	0.00424	0.0067	0.0067
Ex-2/S-1	3/30/2004	1	0.00986	0.0184	0.00631	0.0114	0.0067	0.00865
Ex-3/S-1	3/31/2004	1	0.0941	0.089	0.0592	0.106	0.0233	0.152
Ex-4/S-1	3/29/2004	1	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB 232 (C)-8	8/30/2002	8	0.0134	0.0134	0.0134	0.0134	0.0134	0.0134
SB 233 (C)-3	8/30/2002	3	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB 234 (C)-8	8/30/2002	8	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB 235 (C)-6	8/30/2002	6	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB 236 (C)-6	8/30/2002	6	0.0134	0.0134	0.0134	0.0134	0.0134	0.0134
SB 237 (C)-6	8/30/2002	6	0.0067	0.0067	0.0067	0.00634	0.0067	0.0067
SB 238 (C)-3	8/30/2002	3	0.0134	0.0134	0.0134	0.0134	0.0134	0.0134
SB-001(A)-7.5	8/27/2003	7.5	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-002(A)-2.5	8/27/2003	2.5	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-002(A)-7.5	8/27/2003	7.5	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-003(A)-5	9/4/2003	5	0.0124	0.0299	0.0135	0.016	0.0134	0.0244
SB-005(A)-2.5	9/5/2003	2.5	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-005(A)-7	9/5/2003	7	0.0067	0.00558	0.0067	0.0049	0.0067	0.00753
SB-006(A)-7	3/31/2004	7	0.335	0.335	0.335	0.335	0.335	0.273
SB-007(A)-7.5	8/26/2003	7.5	0.134	0.134	0.134	0.0797	0.134	0.128
SB-008(A)-2	8/26/2003	2	3.14	1.78	1.67	3.05	0.661	3.92
SB-008(A)-7.5	8/26/2003	7.5	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-009(A)-2	8/27/2003	2	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-009(A)-7.5	8/27/2003	7.5	0.134	0.134	0.134	0.0798	0.134	1.34
SB-010(A)-2	8/27/2003	2	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-010(A)-7.5	8/27/2003	7.5	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-011(A)-7.5	9/3/2003	7.5	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-013(A)-7.5	9/3/2003	7.5	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-015(A)-7	9/10/2003	7	0.067	0.067	0.067	0.067	0.067	0.067
SB-016(A)-7	9/4/2003	7	0.0335	0.0335	0.0335	0.0335	0.0335	0.0335
SB-017(A)-7.5	9/8/2003	7.5	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067

**Table D-2**  
**Semivolatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Benzo(b) Fluoranthene	Benzo(g,h,i) Perylene	Benzo(k) Fluoranthene	Chrysene	Dibenzo(a,h) Anthracene	Fluoranthene
DEQ RBC—Urban Residential Direct Contact			0.31	NV	3.1	31 >Csat	0.031	4,600 >Csat
SB-019(A)-2.5	8/27/2003	2.5	0.0067	U	0.0067	U	0.0067	U
SB-019(A)-7.5	8/27/2003	7.5	0.335	U	0.335	U	0.335	U
SB-020(A)-4'	3/31/2004	4	0.0067	U	0.0067	U	0.0067	U
SB-020(A)-9'	3/31/2004	9	0.0067	U	0.0067	U	0.0067	U
SB-021 (A)-11.5	9/14/2005	11.5	0.4225	U	0.4225	U	0.4225	U
SB-027 (A)-11	9/14/2005	11	0.3875	U	0.3875	U	0.3875	U
SB-029 (A)-12.5	9/14/2005	12.5	0.004225	U	0.004225	U	0.004225	U
SB100(C)20	8/22/2002	20	0.0067	U	0.0067	U	0.0067	U
SB100(C)3	8/22/2002	3	0.0067	U	0.0067	U	0.0067	U
SB200(C)3	8/22/2002	3	0.0067	U	0.0067	U	0.0067	U
SB200(C)6	8/22/2002	6	0.0067	U	0.0067	U	0.0067	U
SB201(C)3	8/22/2002	3	0.0067	U	0.0067	U	0.0067	U
SB201(C)6	8/22/2002	6	0.0188		0.0134	U	0.0134	U
SB202(C)3	8/22/2002	3	0.0067	U	0.0067	U	0.0067	U
SB202(C)7	8/22/2002	7	0.0067	U	0.0067	U	0.0067	U
SB203(C)3	8/22/2002	3	0.0067	U	0.0067	U	0.0067	U
SB203(C)7	8/22/2002	7	0.0067	U	0.0067	U	0.0067	U
SB204(C)3	8/22/2002	3	0.0067	U	0.0067	U	0.0067	U
SB204(C)8	8/22/2002	8	0.0067	U	0.0067	U	0.0067	U
SB205(C)-4.5	8/27/2002	4.5	0.0134	U	0.0134	U	0.0067	U
SB206(C)-6	8/27/2002	6	0.0067	U	0.0067	U	0.0067	U
SB207(C)-4.5	8/27/2002	4.5	0.0067	U	0.0067	U	0.0067	U
SB208(C)-3.5	8/27/2002	3.5	0.0067	U	0.0067	U	0.0067	U
SB209(C)-3	8/27/2002	3	0.0067	U	0.0067	U	0.0067	U
SB210(C)-3.5	8/27/2002	3.5	0.0067	U	0.0067	U	0.0067	U
SB211(C)-3	8/27/2002	3	0.00371	0.0213	0.0067	U	0.00545	U
SB212(C)-2.5	8/27/2002	2.5	0.0067	U	0.0067	U	0.0067	U
SB213(C)-4	8/27/2002	4	0.0067	U	0.0067	U	0.0067	U
SB214(C)-5	8/27/2002	5	0.0067	U	0.0067	U	0.0067	U
SB215(C)-5	8/27/2002	5	0.0067	U	0.0067	U	0.0067	U

**Table D-2**  
**Semivolatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Benzo(b) Fluoranthene	Benzo(g,h,i) Perylene	Benzo(k) Fluoranthene	Chrysene	Dibenzo(a,h) Anthracene	Fluoranthene
DEQ RBC—Urban Residential Direct Contact			0.31	NV	3.1	31 >Csat	0.031	4,600 >Csat
SB216(C)-3	8/27/2002	3	0.0067	0.00412	0.0067	0.0106	0.0067	0.00404
SB217(C)-3	8/28/2002	3	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB218(C)-2.5	8/28/2002	2.5	0.0067	0.0067	0.0067	0.00477	0.0067	0.0067
SB219(C)-4	8/28/2002	4	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB220 (C)-5	8/28/2002	5	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB221 (C)-4.5	8/28/2002	4.5	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB222 (C)-4.5	8/28/2002	4.5	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB223 (C)-6	8/29/2002	6	0.0134	0.0134	0.0134	0.0134	0.0134	0.0134
SB224 (C)-2	8/29/2002	2	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB225 (C)-3	8/29/2002	3	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB226 (C)-3	8/29/2002	3	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB227 (C)-8	8/29/2002	8	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB228 (C)-4	8/29/2002	4	0.0255	0.0226	0.0134	0.0189	0.0134	0.014
SB229 (C)-8	8/29/2002	8	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB230 (C)-8	8/29/2002	8	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB231 (C)-2	8/29/2002	2	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-239(C)-4	9/3/2002	4	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-240(C)-6	9/3/2002	6	0.0134	0.0134	0.0134	0.0134	0.0134	0.0134
SB-241(C)-5	9/3/2002	5	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-242(C)-4	9/3/2002	4	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-243(C)-4	9/3/2002	4	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-244(C)-3	9/3/2002	3	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-245(C)-5	9/3/2002	5	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-246(C)-5	9/3/2002	5	0.0134	0.0134	0.0134	0.0134	0.0134	0.0134
SB-247(C)-6	9/3/2002	6	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-250(C)-4	9/9/2002	4	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-251(C)-4	9/9/2002	4	0.0067	0.00629	0.0067	0.00363	0.0067	0.0067
SB-252(C)-5	9/9/2002	5	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-253(C)-2	9/4/2003	2	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-253(C)-7.5	9/4/2003	7.5	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067

**Table D-2**  
**Semivolatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Benzo(b) Fluoranthene	Benzo(g,h,i) Perylene	Benzo(k) Fluoranthene	Chrysene	Dibenzo(a,h) Anthracene	Fluoranthene
DEQ RBC—Urban Residential Direct Contact								
SB-254(C)-2	9/4/2003	2	0.31	NV	3.1	31 >Csat	0.031	4,600 >Csat
SB-254(C)-7	9/4/2003	7	0.249	0.158	0.0335	0.199	0.0439	0.215
SB-255(C)-2.5	9/4/2003	2.5	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-255(C)-7	9/4/2003	7	0.151	0.0893	0.151	0.434	0.084	0.843
SB256 (c) 6	3/31/2004	6	3.48	6.39	3.54	5.39	0.694	24.5
SB-301-D-3.5	8/20/2002	3.5	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-304-D-2.0	8/19/2002	2	0.0335	0.0335	0.0335	0.0335	0.0335	0.0335
SB-304-D-5.0	8/19/2002	5	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-305-D-2.0	8/19/2002	2	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-305-D-4.5	8/19/2002	4.5	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-306-D-2.0	8/19/2002	2	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-306-D-4.5	8/19/2002	4.5	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-307-D-2.0	8/19/2002	2	0.0335	0.0335	0.0335	0.0335	0.0335	0.0335
SB-309-D-2.0	8/19/2002	2	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-309-D-5.0	8/19/2002	5	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-310-D-2.0	8/19/2002	2	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-310-D-5.0	8/19/2002	5	0.067	0.067	0.067	0.067	0.067	0.067
SB-311-D-5.0	8/19/2002	5	0.447	0.599	0.384	0.374	0.112	0.507
SB-312-D-5.0	8/19/2002	5	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-314-D-10.0	8/20/2002	10	0.0067	0.0067	0.0067	0.0249	0.0067	0.067
SB-314-D-15.0	8/20/2002	15	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-314-D-2.0	8/20/2002	2	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-315-D-2.0	8/20/2002	2	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-315-D-5.0	8/20/2002	5	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-316-D-10.0	8/20/2002	10	0.0335	0.0335	0.0335	0.0335	0.0335	0.0335
SB-316-D-14.5	8/20/2002	14.5	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-316-D-2.0	8/20/2002	2	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-323(D)-7	9/10/2003	7	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-406(F)-2.5	8/22/2002	2.5	0.0122	0.0286	0.00808	0.0186	0.00415	0.0205
SB-407(F)-7.5	8/22/2002	7.5	0.0335	0.0335	0.0335	0.0335	0.0335	0.0186



**Table D-2**  
**Semivolatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Benzo(b) Fluoranthene	Benzo(g,h,i) Perylene	Benzo(k) Fluoranthene	Chrysene	Dibenzo(a,h) Anthracene	Fluoranthene
DEQ RBC—Urban Residential Direct Contact			0.31	NV	3.1	31 >Csat	0.031	4,600 >Csat
SB-408(F)-2.5	8/22/2002	2.5	0.0267	0.098	0.036	0.065	0.015	0.0678
SB-408(F)-7.5	8/22/2002	7.5	0.0067	U	0.0067	U	0.0067	U
SB-410(F)-4'	3/31/2004	4	0.0067	U	0.0067	U	0.0067	U
SB-601(N)-3	9/13/2002	3	0.0067	U	0.0067	U	0.0067	U
SB-601(N)-7	9/13/2002	7	0.0335	U	0.0335	U	0.0335	U
SB-602(N)-7	9/13/2002	7	0.05	U	0.5	U	0.00005	U
SB-603(N)-7	9/13/2002	7	0.0335	U	0.0335	U	0.0335	U
SB-604(N)-7	9/13/2002	7	0.067	U	0.067	U	0.067	U
SB-605(N)-3	9/13/2002	3	0.0067	U	0.0067	U	0.0067	U
SB-605(N)-7	9/13/2002	7	0.067	U	0.067	U	0.067	U
SB-608(N)-3	9/13/2002	3	0.0067	U	0.0067	U	0.0067	U
SB-612 (N)-7	9/12/2002	7	0.05	U	0.05	U	0.00005	U
SB-617 (N)-3	9/12/2002	3	0.005	U	0.005	U	0.000005	U
SB-618 (N)-7	9/12/2002	7	0.825	U	0.825	U	0.000825	U
SB-619 (N)-11	9/12/2002	11	0.005	U	0.005	U	0.000005	U
SB-619 (N)-7	9/12/2002	7	0.005	U	0.005	U	0.000005	U
SB-620 (N)-7	9/12/2002	7	0.013	U	0.0109	0.0362	0.000005	U
SB-624 (N)-7	9/12/2002	7	1.65	U	1.65	U	0.00165	U
SB-625 (N)-7	9/12/2002	7	0.005	U	0.005	U	0.000005	U
SB-626 (N)-7	9/12/2002	7	0.005	U	0.005	U	0.000005	U
SB-627(N)-2	8/28/2003	2	0.0759	0.119	0.0433	0.0629	0.0227	0.0526
SB-629(N)-7.5	8/28/2003	7.5	0.335	U	0.335	U	0.335	U
SB-632(N)-7.5	9/8/2003	7.5	0.067	U	0.067	U	0.067	U
SB-700(P)-10.5	8/21/2002	10.5	0.0067	U	0.0067	U	0.0067	U
SB-701(P)-11	8/20/2002	11	0.0067	U	0.0067	U	0.0067	U
SB-702(P)-11	8/21/2002	11	0.0067	U	0.0067	U	0.0067	U
SB-704(P)-11	8/21/2002	11	NV	NV	NV	NV	NV	NV
SB-704(P)-2	8/21/2002	2	NV	NV	NV	NV	NV	NV
SB-705(P)-12	8/20/2002	12	NV	NV	NV	NV	NV	NV
SB-705(P)-3	8/20/2002	3	NV	NV	NV	NV	NV	NV

**Table D-2**  
**Semivolatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Benzo(b) Fluoranthene	Benzo(g,h,i) Perylene	Benzo(k) Fluoranthene	Chrysene	Dibenzo(a,h) Anthracene	Fluoranthene
DEQ RBC—Urban Residential Direct Contact			0.31	NV	3.1	31 >Csat	0.031	4,600 >Csat
SB-705(P)-5.5	8/20/2002	5.5	NV	NV	NV	NV	NV	NV
SB-705(P)-9.5	8/20/2002	9.5	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-706(P)-9.5	8/21/2002	9.5	0.0067	0.0067	0.0067	0.00531	0.0067	0.0067
SB-707(P)-10	8/21/2002	10	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-708(P)-10	8/20/2002	10	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-710(P)-3	8/21/2002	3	0.0268	0.021	0.0134	0.0368	0.0134	0.0106
SB-712(P)-10	8/21/2002	10	0.324	0.124	0.268	0.698	0.0475	1.02
SB-714(P)-7.5	8/21/2002	7.5	0.0289	0.0203	0.0169	0.0639	0.00513	0.0869
SB-716(P)-10	8/20/2002	10	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-719(P)-12	8/23/2002	12	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-720(P)-11.5	8/23/2002	11.5	0.0335	0.0335	0.0335	0.0335	0.0335	0.0401
SB-720(P)-2	8/23/2002	2	0.233	0.16	0.187	0.285	0.052	0.331
SB-721(P)-7	3/31/2004	7	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-820 (Q)-0C	8/29/2002	0	0.0272	0.0371	0.0335	0.0238	0.0335	0.0286
SB-834(Q)-2	9/5/2003	2	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-834(Q)-7.5	9/5/2003	7.5	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-835(Q)-2	9/5/2003	2	0.0205	0.0232	0.0162	0.0244	0.00498	0.0229
SB-835(Q)-7	9/5/2003	7	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-900(S)-12	8/26/2002	12	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-900(S)-4	8/26/2002	4	0.0067	0.0105	0.00397	0.0155	0.0067	0.0204
SB-902 (S)-12	8/26/2002	12	0.0067	0.0067	0.0067	0.0335	0.0067	0.0067
SB-903 (S)-10	8/26/2002	10	0.00753	0.0067	0.00481	0.1675	0.0067	0.103
SB-904 (S)-12	8/26/2002	12	0.0335	0.0067	0.0335	0.1675	0.0067	0.1675
SB-905 (S)-12	8/26/2002	12	0.0067	0.00857	0.0067	0.0335	0.0067	0.0335
SB-906 (S)-12	8/27/2002	12	0.0335	0.00582	0.0335	0.066	0.0067	0.1675
SB-906 (S)-4	8/27/2002	4	0.0067	0.0108	0.0067	0.00707	0.0067	0.0067
SB-908 (S)-10	8/27/2002	10	0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
SB-908 (S)-4	8/27/2002	4	0.0868	0.122	0.148	0.585	0.134	0.335
SB-908 (S)-8	8/27/2002	8	0.134	0.134	0.134	0.302	0.134	0.335
SB-909 (S)-4	8/27/2002	4	0.067	0.08	0.067	0.0389	0.067	0.0494

**Table D-2**  
**Semivolatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Benzo(b) Fluoranthene	Benzo(g,h,i) Perylene	Benzo(k) Fluoranthene	Chrysene	Dibenzo(a,h) Anthracene	Fluoranthene
DEQ RBC—Urban Residential Direct Contact			0.31	NV	3.1	31 >Csat	0.031	4,600 >Csat
SB-910 (S)-4	8/27/2002	4	0.0067 U	0.00519	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-912(S)-2	9/3/2003	2	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-912(S)-7	9/3/2003	7	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-913(S)-2	9/3/2003	2	0.335 U	0.335 U	0.335 U	0.335 U	0.335 U	0.335 U
SB-913(S)-7	9/3/2003	7	0.1675 U	0.1675 U	0.1675 U	0.1675 U	0.1675 U	0.1675 U
SB-914(S)-2	9/3/2003	2	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-914(S)-7.5	9/3/2003	7.5	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-915(s)-5.0	3/31/2004	5	0.0335 U	0.0335 U	0.0335 U	0.0335 U	0.0335 U	0.0335 U
SB-D-DUP-0819	8/19/2002	2	0.0335 U	0.0335 U	0.0335 U	0.0335 U	0.0335 U	0.0335 U
SB-D-DUP-3	8/20/2002	3	0.0134 U	0.0134 U	0.0134 U	0.0134 U	0.0134 U	0.0104
TP201(C)6E	8/27/2002	6	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
TP202(C)6W	8/27/2002	6	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
Number of Samples			187	187	187	187	187	187
Average Concentration			0.08	0.09	0.08	0.11	0.04	0.22
Median Concentration			0.0067	0.0067	0.0067	0.0067	0.0067	0.0067
Frequency of Detection			11.7647059	16.57754011	9.6256684	22.459893	6.95187166	21.3903743
Minimum Value			0.00371	0.00412	0.00397	0.00363	0.000005	0.00404
Maximum Detection			3.48	6.39	3.54	5.39	0.694	24.5

**Table D-2**  
**Semivolatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Fluorene	Indeno(1,2,3-cd) Pyrene	Naphthalene	Phenanthrene	Pyrene
DEQ RBC—Urban Residential	Direct Contact						
Ex-1/S-1	3/30/2004	1	5,200 >Csat	0.31	67	NV	3,400 >Csat
Ex-2/S-1	3/30/2004	1	0.0067	U	0.0067	U	0.00563
Ex-3/S-1	3/31/2004	1	0.0067	U	0.0352	U	0.0162
Ex-4/S-1	3/29/2004	1	0.0335	U	0.0335	U	0.194
SB 232 (C)-8	8/30/2002	8	0.0067	U	0.0067	U	0.0067
SB 233 (C)-3	8/30/2002	3	0.0134	U	0.0067	U	0.0067
SB 234 (C)-8	8/30/2002	8	0.0067	U	0.0067	U	0.0067
SB 235 (C)-6	8/30/2002	6	0.0067	U	0.0067	U	0.0067
SB 236 (C)-6	8/30/2002	6	0.0134	U	0.0067	U	0.0107
SB 237 (C)-6	8/30/2002	6	0.0394	U	0.0134	U	0.0134
SB 238 (C)-3	8/30/2002	3	0.0067	U	0.0067	U	0.0067
SB-001(A)-7.5	8/27/2003	7.5	0.0134	U	0.0067	U	0.0134
SB-002(A)-2.5	8/27/2003	2.5	0.0067	U	0.0067	U	0.0067
SB-002(A)-7.5	8/27/2003	7.5	0.0067	U	0.0067	U	0.0067
SB-003(A)-5	9/4/2003	5	0.0134	U	0.0067	U	0.031
SB-005(A)-2.5	9/5/2003	2.5	0.0067	U	0.0067	U	0.0067
SB-005(A)-7	9/5/2003	7	0.0067	U	0.0067	U	0.00871
SB-006(A)-7	3/31/2004	7	6.7	0.335	61.2	12.5	1.09
SB-007(A)-7.5	8/26/2003	7.5	3.22	0.134	44.9	5.25	0.388
SB-008(A)-2	8/26/2003	2	0.134	U	0.134	1.05	3.58
SB-008(A)-7.5	8/26/2003	7.5	0.0067	U	0.0067	U	0.0067
SB-009(A)-2	8/27/2003	2	0.0067	U	0.0067	U	0.0067
SB-009(A)-7.5	8/27/2003	7.5	7.8	0.134	10.5	16.4	0.969
SB-010(A)-2	8/27/2003	2	0.0067	U	0.0067	U	0.0067
SB-010(A)-7.5	8/27/2003	7.5	0.0067	U	0.0067	U	0.0067
SB-011(A)-7.5	9/3/2003	7.5	0.0067	U	0.0067	U	0.0067
SB-013(A)-7.5	9/3/2003	7.5	0.0067	U	0.0067	U	0.0067
SB-015(A)-7	9/10/2003	7	0.067	U	7.06	0.067	0.067
SB-016(A)-7	9/4/2003	7	0.151	0.0335	0.552	0.346	0.0335
SB-017(A)-7.5	9/8/2003	7.5	0.0067	U	0.00659	0.0067	0.0067

**Table D-2**  
**Semivolatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Fluorene	Indeno(1,2,3-cd) Pyrene	Naphthalene	Phenanthrene	Pyrene
DEQ RBC—Urban Residential	Direct Contact						
SB-019(A)-2.5	8/27/2003	2.5	5,200 >Csat	0.31	67	NV	3,400 >Csat
SB-019(A)-7.5	8/27/2003	7.5	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-020(A)-4'	3/31/2004	4	0.823	0.335 U	35.6	2.33	0.336
SB-020(A)-9'	3/31/2004	9	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-021 (A)-11.5	9/14/2005	11.5	0.0067 U	0.0067 U	0.00541	0.0343	0.00823
SB-027 (A)-11	9/14/2005	11	23.4	0.4225 U	45.4	54.7	6.03
SB-029 (A)-12.5	9/14/2005	12.5	25.4	0.3875 U	41.9	60.1	5.93
SB100(C)20	8/22/2002	20	0.004225 U	0.004225 U	0.0305 U	0.004225 U	0.004225 U
SB100(C)3	8/22/2002	3	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB200(C)3	8/22/2002	3	0.0067 U	0.0067 U	0.00837	0.00879	0.00391
SB200(C)6	8/22/2002	6	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB201(C)3	8/22/2002	3	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB201(C)6	8/22/2002	6	0.0134 U	0.0134 U	0.0134 U	0.0128	0.0934
SB202(C)3	8/22/2002	3	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB202(C)7	8/22/2002	7	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB203(C)3	8/22/2002	3	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB203(C)7	8/22/2002	7	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB204(C)3	8/22/2002	3	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB204(C)8	8/22/2002	8	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB205(C)-4.5	8/27/2002	4.5	0.0067 U	0.0067 U	0.0067 U	0.0116	0.00787
SB206(C)-6	8/27/2002	6	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB207(C)-4.5	8/27/2002	4.5	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB208(C)-3.5	8/27/2002	3.5	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB209(C)-3	8/27/2002	3	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB210(C)-3.5	8/27/2002	3.5	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB211(C)-3	8/27/2002	3	0.0067 U	0.00711	0.0067 U	0.0067 U	0.00446
SB212(C)-2.5	8/27/2002	2.5	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB213(C)-4	8/27/2002	4	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB214(C)-5	8/27/2002	5	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB215(C)-5	8/27/2002	5	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.00562

**Table D-2**  
**Semivolatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Fluorene	Indeno(1,2,3-cd) Pyrene	Naphthalene	Phenanthrene	Pyrene
DEQ RBC—Urban Residential	Direct Contact						
SB216(C)-3	8/27/2002	3	5,200 >Csat	0.31	67	NV	3,400 >Csat
SB217(C)-3	8/28/2002	3	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0351
SB218(C)-2.5	8/28/2002	2.5	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB219(C)-4	8/28/2002	4	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0108
SB220 (C)-5	8/28/2002	5	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB221 (C)-4.5	8/28/2002	4.5	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB222 (C)-4.5	8/28/2002	4.5	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB223 (C)-6	8/29/2002	6	0.0134 U	0.0134 U	0.0134 U	0.0134 U	0.0134 U
SB224 (C)-2	8/29/2002	2	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB225 (C)-3	8/29/2002	3	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB226 (C)-3	8/29/2002	3	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB227 (C)-8	8/29/2002	8	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB228 (C)-4	8/29/2002	4	0.0134 U	0.00816	0.0134 U	0.0134 U	0.0233
SB229 (C)-8	8/29/2002	8	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB230 (C)-8	8/29/2002	8	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB231 (C)-2	8/29/2002	2	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-239(C)-4	9/3/2002	4	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-240(C)-6	9/3/2002	6	0.0134 U	0.0134 U	0.0134 U	0.0134 U	0.0134 U
SB-241(C)-5	9/3/2002	5	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-242(C)-4	9/3/2002	4	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-243(C)-4	9/3/2002	4	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-244(C)-3	9/3/2002	3	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-245(C)-5	9/3/2002	5	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-246(C)-5	9/3/2002	5	0.0134 U	0.0134 U	0.0134 U	0.0134 U	0.0134 U
SB-247(C)-6	9/3/2002	6	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-250(C)-4	9/9/2002	4	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-251(C)-4	9/9/2002	4	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-252(C)-5	9/9/2002	5	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-253(C)-2	9/4/2003	2	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-253(C)-7.5	9/4/2003	7.5	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U

**Table D-2**  
**Semivolatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Fluorene	Indeno(1,2,3-cd) Pyrene	Naphthalene	Phenanthrene	Pyrene
DEQ RBC—Urban Residential	Direct Contact						
SB-254(C)-2	9/4/2003	2	5,200 >Csat	0.31	67	NV	3,400 >Csat
SB-254(C)-7	9/4/2003	7	0.0267	0.1	0.0335 U	0.172	0.263
SB-255(C)-2.5	9/4/2003	2.5	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-255(C)-7	9/4/2003	7	0.52	0.0623	0.0621	0.996	0.776
SB256 (c) 6	3/31/2004	6	8.15	4.23	10.2	35.8	24.4
SB-301-D-3.5	8/20/2002	3.5	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-304-D-2.0	8/19/2002	2	0.734	0.0335 U	0.578	2.38	0.0918
SB-304-D-5.0	8/19/2002	5	0.395	0.067 U	1.06	0.633	0.1
SB-305-D-2.0	8/19/2002	2	0.124	0.0335 U	0.448	0.197	0.0329
SB-305-D-4.5	8/19/2002	4.5	0.136	0.0067 U	0.25	0.312	0.0245
SB-306-D-2.0	8/19/2002	2	0.0191	0.0067 U	0.154	0.0146	0.0067 U
SB-306-D-4.5	8/19/2002	4.5	1.03	0.067 U	1.35	1.26	0.124
SB-307-D-2.0	8/19/2002	2	1.52	0.067 U	0.335 U	2.49	0.192
SB-309-D-2.0	8/19/2002	2	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-309-D-5.0	8/19/2002	5	0.552	0.0335 U	0.067 U	1.16	0.0801
SB-310-D-2.0	8/19/2002	2	0.00644	0.0067 U	0.0067 U	0.0202	0.00413
SB-310-D-5.0	8/19/2002	5	0.0254	0.0067 U	0.14	0.0582	0.00763
SB-311-D-5.0	8/19/2002	5	0.666	0.067 U	1.57	0.965	0.0712
SB-312-D-5.0	8/19/2002	5	0.0134 U	0.45	0.0246	0.0657	0.671
SB-314-D-10.0	8/20/2002	10	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-314-D-15.0	8/20/2002	15	1.66	0.0067 U	2.09	4.13	0.428
SB-314-D-2.0	8/20/2002	2	0.0067 U	0.0067 U	0.0509	0.0067 U	0.0067 U
SB-315-D-2.0	8/20/2002	2	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-315-D-5.0	8/20/2002	5	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-316-D-10.0	8/20/2002	10	0.0335 U	0.0335 U	0.981	0.0335 U	0.0335 U
SB-316-D-14.5	8/20/2002	14.5	0.0067 U	0.0067 U	0.272	0.0067 U	0.0067 U
SB-316-D-2.0	8/20/2002	2	0.0067 U	0.0067 U	0.0067 U	0.00986	0.0136
SB-323(D)-7	9/10/2003	7	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-406(F)-2.5	8/22/2002	2.5	0.0067 U	0.0186	0.00892	0.0105	0.0241
SB-407(F)-7.5	8/22/2002	7.5	0.0263	0.0335 U	0.588	0.0492	0.0215

**Table D-2**  
**Semivolatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Fluorene	Indeno(1,2,3-cd) Pyrene	Naphthalene	Phenanthrene	Pyrene
DEQ RBC—Urban Residential	Direct Contact						
SB-408(F)-2.5	8/22/2002	2.5	5,200 >Csat	0.31	67	NV	3,400 >Csat
SB-408(F)-7.5	8/22/2002	7.5	0.067 U	0.0672	0.067 U	0.067 U	0.084
SB-410(F)-4'	3/31/2004	4	0.0067 U	0.0067 U	0.0276	0.0067 U	0.00613
SB-601(N)-3	9/13/2002	3	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-601(N)-7	9/13/2002	7	0.0335 U	0.0335 U	36.3	0.0335 U	0.0335 U
SB-602(N)-7	9/13/2002	7	0.5 U	0.5 U	71.1	1.64	0.145
SB-603(N)-7	9/13/2002	7	0.335 U	0.0335 U	33.3	0.321	0.0335 U
SB-604(N)-7	9/13/2002	7	0.319	0.067 U	20.8	0.383	0.067 U
SB-605(N)-3	9/13/2002	3	0.0403	0.0067 U	0.348	0.0718	0.0067 U
SB-605(N)-7	9/13/2002	7	0.67 U	0.067 U	38.7	1.49	0.145
SB-608(N)-3	9/13/2002	3	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-612 (N)-7	9/12/2002	7	0.722	0.05 U	38.3	2.43	0.164
SB-617 (N)-3	9/12/2002	3	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SB-618 (N)-7	9/12/2002	7	2.55	0.825 U	42.8	6.04	0.825 U
SB-619 (N)-11	9/12/2002	11	1.81	0.005 U	21.3	3.95	0.133
SB-619 (N)-7	9/12/2002	7	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
SB-620 (N)-7	9/12/2002	7	1.3	0.005 U	9.28	5.92	0.453
SB-624 (N)-7	9/12/2002	7	5.58	1.65 U	6.07	8.52	1.65 U
SB-625 (N)-7	9/12/2002	7	0.0268	0.005 U	0.0377	0.0333	0.005 U
SB-626 (N)-7	9/12/2002	7	0.005 U	0.005 U	0.005 U	0.0391	0.005 U
SB-627(N)-2	8/28/2003	2	0.0335 U	0.0743	0.0291	0.0385	0.074
SB-629(N)-7.5	8/28/2003	7.5	7.06	0.335 U	25.5	13	0.671
SB-632(N)-7.5	9/8/2003	7.5	0.0589	0.067 U	36.6	0.0714	0.067 U
SB-700(P)-10.5	8/21/2002	10.5	0.0168	0.0067 U	1.94	0.0133	0.0067 U
SB-701(P)-11	8/20/2002	11	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-702(P)-11	8/21/2002	11	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-704(P)-11	8/21/2002	11	NV	NV	NV	NV	NV
SB-704(P)-2	8/21/2002	2	NV	NV	NV	NV	NV
SB-705(P)-12	8/20/2002	12	NV	NV	NV	NV	NV
SB-705(P)-3	8/20/2002	3	NV	NV	NV	NV	NV



**Table D-2**  
**Semivolatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Fluorene	Indeno(1,2,3-cd) Pyrene	Naphthalene	Phenanthrene	Pyrene
DEQ RBC—Urban Residential	Direct Contact						
SB-705(P)-5.5	8/20/2002	5.5	5,200 >Csat	0.31	67	NV	3,400 >Csat
SB-705(P)-9.5	8/20/2002	9.5	NV	NV	NV	NV	NV
SB-706(P)-9.5	8/21/2002	9.5	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-707(P)-10	8/21/2002	10	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-708(P)-10	8/20/2002	10	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-710(P)-3	8/21/2002	3	0.0134 U	0.00864	0.0134 U	0.0134 U	0.0163
SB-712(P)-10	8/21/2002	10	0.318	0.116	0.067 U	0.9	0.753
SB-714(P)-7.5	8/21/2002	7.5	1.78	0.0133	39.7	4.77	0.567
SB-716(P)-10	8/20/2002	10	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-719(P)-12	8/23/2002	12	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-720(P)-11.5	8/23/2002	11.5	1.24	0.0335 U	24.1	4.35	0.181
SB-720(P)-2	8/23/2002	2	0.0067 U	0.143	0.0067 U	0.0928	0.335
SB-721(P)-7	3/31/2004	7	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-820 (Q)-0C	8/29/2002	0	0.0335 U	0.0252	0.0335 U	0.0335 U	0.0225
SB-834(Q)-2	9/5/2003	2	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-834(Q)-7.5	9/5/2003	7.5	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-835(Q)-2	9/5/2003	2	0.0067 U	0.0149	0.0067 U	0.0117	0.0244
SB-835(Q)-7	9/5/2003	7	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-900(S)-12	8/26/2002	12	0.0067 U	0.0067 U	0.67 U	0.0067 U	0.0067 U
SB-900(S)-4	8/26/2002	4	0.0067 U	0.00763	0.00822	0.0239	0.0301
SB-902 (S)-12	8/26/2002	12	0.198	0.0067 U	0.1675 U	0.169	0.0335 U
SB-903 (S)-10	8/26/2002	10	2.03	0.0067 U	1.675 U	2.66	0.202
SB-904 (S)-12	8/26/2002	12	2.49	0.0067 U	15.1	3.32	0.193
SB-905 (S)-12	8/26/2002	12	0.0335 U	0.00438	0.0335 U	0.0304	0.0335 U
SB-906 (S)-12	8/27/2002	12	2.05	0.00544	1.675 U	3	0.216
SB-906 (S)-4	8/27/2002	4	0.0335 U	0.00516	0.0335 U	0.035	0.0121
SB-908 (S)-10	8/27/2002	10	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-908 (S)-4	8/27/2002	4	0.67 U	0.134 U	1.675 U	0.799	0.462
SB-908 (S)-8	8/27/2002	8	0.335 U	0.134 U	0.335 U	0.306	0.264
SB-909 (S)-4	8/27/2002	4	0.067 U	0.067 U	0.067 U	0.0495	0.0412

**Table D-2**  
**Semivolatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Fluorene	Indeno(1,2,3-cd) Pyrene	Naphthalene	Phenanthrene	Pyrene
DEQ RBC—Urban Residential Direct Contact			5,200 >Csat	0.31	67	NV	3,400 >Csat
SB-910 (S)-4	8/27/2002	4	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-912(S)-2	9/3/2003	2	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-912(S)-7	9/3/2003	7	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-913(S)-2	9/3/2003	2	0.335 U	0.335 U	0.335 U	0.335 U	0.335 U
SB-913(S)-7	9/3/2003	7	0.1675 U	0.1675 U	0.1675 U	0.1675 U	0.1675 U
SB-914(S)-2	9/3/2003	2	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-914(S)-7.5	9/3/2003	7.5	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
SB-915(s)-5.0	3/31/2004	5	0.0335 U	0.0335 U	0.0335 U	0.0335 U	0.0335 U
SB-D-DUP-0819	8/19/2002	2	0.0335 U	0.0335 U	0.211	0.0507	0.0695
SB-D-DUP-3	8/20/2002	3	0.0134 U	0.0134 U	0.515	0.0115	0.0254
TP201(C)6E	8/27/2002	6	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
TP202(C)6W	8/27/2002	6	0.0067 U	0.0067 U	0.0067 U	0.0067 U	0.0067 U
Number of Samples			187 43	187 24	187 53	187 68	187 67
Average Concentration			0.63	0.08	3.94	1.44	0.30
Median Concentration			0.0067	0.0067	0.0067	0.0067	0.0067
Frequency of Detection			22.9946524	12.8342246	28.34224599	36.36363636	35.82887701
Minimum Value			0.004225	0.00376	0.005	0.004225	0.00391
Maximum Detection			25.4	4.23	71.1	60.1	24.4

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	1,2,4-Trimethyl- benzene	1,2-Dichloro- ethane	1,3,5-Trimethyl- benzene	1,4-Dichloro- benzene	2-Butanone	4-Isopropyl- toluene
DEQ RBC—Urban Residential Direct Contact								
DEQ RBC—Urban Residential Volatilization to Outdoor			97	9.9	97	38	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			200	5.4	200	20	NV	NV
			70	0.071	12	3.2	NV	NV
SB-800 (Q)-0	8/27/2002	0	NV	NV	NV	NV	NV	NV
SB-801 (Q)-0	8/26/2002	0	NV	NV	NV	NV	NV	NV
SB-802 (Q)-0	8/26/2002	0	NV	NV	NV	NV	NV	NV
SB-803 (Q)-0	8/26/2002	0	NV	NV	NV	NV	NV	NV
SB-804 (Q)-0	8/26/2002	0	NV	NV	NV	NV	NV	NV
SB-805 (Q)-0	8/26/2002	0	NV	NV	NV	NV	NV	NV
SB-806 (Q)-0	8/28/2002	0	NV	NV	NV	NV	NV	NV
SB-807 (Q)-0	8/28/2002	0	NV	NV	NV	NV	NV	NV
SB-809 (Q)-0	8/28/2002	0	NV	NV	NV	NV	NV	NV
SB-810 (Q)-0	8/28/2002	0	NV	NV	NV	NV	NV	NV
SB-811 (Q)-0	8/27/2002	0	NV	NV	NV	NV	NV	NV
SB-812 (Q)-0	8/27/2002	0	NV	NV	NV	NV	NV	NV
SB-813 (Q)-0	8/27/2002	0	NV	NV	NV	NV	NV	NV
SB-814 (Q)-0	8/27/2002	0	NV	NV	NV	NV	NV	NV
SB-815 (Q)-0	8/27/2002	0	NV	NV	NV	NV	NV	NV
SB-816 (Q)-0	8/27/2002	0	NV	NV	NV	NV	NV	NV
SB-817 (Q)-0	8/28/2002	0	NV	NV	NV	NV	NV	NV
SB-818 (Q)-0	8/28/2002	0	NV	NV	NV	NV	NV	NV
SB-819 (Q)-0	8/28/2002	0	NV	NV	NV	NV	NV	NV
SB-820 (Q)-0	8/29/2002	0	NV	NV	NV	NV	NV	NV
SB-820 (Q)-0C	8/29/2002	0	0.0144	0.05 U	0.05 U	0.05 U	0.5 U	0.1 U
SB-821 (Q)-0	8/29/2002	0	NV	NV	NV	NV	NV	NV
SB-822 (Q)-0	8/29/2002	0	NV	NV	NV	NV	NV	NV
SB-823 (Q)-0	8/27/2002	0	NV	NV	NV	NV	NV	NV
SB-824 (Q)-0	8/27/2002	0	NV	NV	NV	NV	NV	NV
SB-825 (Q)-0	8/27/2002	0	NV	NV	NV	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	1,2,4-Trimethyl- benzene	1,2-Dichloro- ethane	1,3,5-Trimethyl- benzene	1,4-Dichloro- benzene	2-Butanone	4-Isopropyl- toluene
DEQ RBC—Urban Residential Direct Contact								
DEQ RBC—Urban Residential Volatilization to Outdoor			97	9.9	97	38	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			200	5.4	200	20	NV	NV
			70	0.071	12	3.2	NV	NV
SB-826 (Q)-0	8/27/2002	0	NV	NV	NV	NV	NV	NV
SB-827 (Q)-0	8/29/2002	0	NV	NV	NV	NV	NV	NV
SB-828 (Q)-0	8/28/2002	0	NV	NV	NV	NV	NV	NV
SB-829 (Q)-0	8/28/2002	0	NV	NV	NV	NV	NV	NV
SB-830 (Q)-0	8/28/2002	0	NV	NV	NV	NV	NV	NV
SB-831 (Q)-0	8/28/2002	0	NV	NV	NV	NV	NV	NV
SB-832 (Q)-0	8/28/2002	0	NV	NV	NV	NV	NV	NV
SB-833 (Q)-0	8/28/2002	0	NV	NV	NV	NV	NV	NV
Ex-1/S-1	3/30/2004	1	NV	NV	NV	NV	NV	NV
Ex-2/S-1	3/30/2004	1	NV	NV	NV	NV	NV	NV
Ex-3/S-1	3/31/2004	1	NV	NV	NV	NV	NV	NV
Ex-4/S-1	3/29/2004	1	NV	NV	NV	NV	NV	NV
SB-618 (N)-1.5	9/12/2002	1.5	NV	NV	NV	NV	NV	NV
SB-008(A)-2	8/26/2003	2	0.05	0.025	0.025	NV	NV	NV
SB-009(A)-2	8/27/2003	2	0.0438	0.025	0.0109	NV	NV	NV
SB-010(A)-2	8/27/2003	2	0.0105	0.025	0.025	NV	NV	NV
SB102(C)-3	8/22/2002	2	0.0005	0.0005	0.0005	0.0005	0.025	0.0005
SB224 (C)-2	8/29/2002	2	0.0005	0.0005	0.0005	0.0005	0.025	0.0005
SB231 (C)-2	8/29/2002	2	0.0005	0.0005	0.0005	0.0005	0.025	0.0005
SB-253(C)-2	9/4/2003	2	0.05	0.025	0.025	NV	NV	NV
SB-254(C)-2	9/4/2003	2	0.05	0.025	0.025	NV	NV	NV
SB-304-D-2.0	8/19/2002	2	23.7	0.05	8.97	NV	NV	NV
SB-305-D-2.0	8/19/2002	2	23.1	0.05	5.69	NV	NV	NV
SB-306-D-2.0	8/19/2002	2	34.9	0.05	17	NV	NV	NV
SB-307-D-2.0	8/19/2002	2	0.000155	0.025	0.0005	NV	NV	NV
SB-309-D-2.0	8/19/2002	2	6.8	0.025	2.25	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	1,2,4-Trimethyl- benzene	1,2-Dichloro- ethane	1,3,5-Trimethyl- benzene	1,4-Dichloro- benzene	2-Butanone	4-Isopropyl- toluene
DEQ RBC—Urban Residential Direct Contact								
DEQ RBC—Urban Residential Volatilization to Outdoor			97	9.9	97	38	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			200	5.4	200	20	NV	NV
			70	0.071	12	3.2	NV	NV
SB-310-D-2.0	8/19/2002	2	13.7	0.025 U	3.83	NV	NV	NV
SB-315-D-2.0	8/20/2002	2	0.00447	0.000304	0.0182	NV	NV	NV
SB-316-D-2.0	8/20/2002	2	0.05	0.025 U	0.0001375	NV	NV	NV
SB-320(D)-2	9/10/2003	2	0.0334	0.025 U	0.025 U	NV	NV	NV
SB-321(D)-2	9/9/2003	2	10.3	0.025 U	0.187	NV	NV	NV
SB-322(D)-2	9/10/2003	2	0.05	0.025 U	0.025 U	NV	NV	NV
SB-324(D)-2	9/10/2003	2	0.0526	0.025 U	0.025 U	NV	NV	NV
SB-325(D)-2	9/10/2003	2	0.05	0.025 U	0.025 U	NV	NV	NV
SB-325(D)-DUP	9/10/2003	2	0.05	0.025 U	0.025 U	NV	NV	NV
SB-326(D)-2	9/9/2003	2	0.123	0.025 U	0.0537	NV	NV	NV
SB-327(D)-2	9/10/2003	2	0.05	0.025 U	0.025 U	NV	NV	NV
SB-328(D)-2	9/10/2003	2	0.05	0.025 U	0.025 U	NV	NV	NV
SB-410(F)-2'	3/31/2004	2	0.0186	0.025 U	0.025 U	NV	NV	NV
SB-622 (N)-2	9/12/2002	2	NV	NV	NV	NV	NV	NV
SB-624 (N)-2	9/12/2002	2	NV	NV	NV	NV	NV	NV
SB-625 (N)-2	9/12/2002	2	NV	NV	NV	NV	NV	NV
SB-627(N)-2	8/28/2003	2	0.0194	0.025 U	0.025 U	NV	NV	NV
SB-701(P)-2	8/20/2002	2	0.000115	0.0005 U	0.0005 U	0.0005 U	0.025 U	0.0005 U
SB-701(P)-2	8/20/2002	2	NV	NV	NV	NV	NV	NV
SB-702(P)-2	8/21/2002	2	0.000218	0.0005 U	0.0005 U	0.0005 U	0.025 U	0.0005 U
SB-702(P)-2	8/21/2002	2	NV	NV	NV	NV	NV	NV
SB-703(P)-2	8/21/2002	2	0.00328	0.0005 U	0.00158	0.0005 U	0.025 U	0.00247
SB-703(P)-2	8/21/2002	2	NV	NV	NV	NV	NV	NV
SB-704(P)-2	8/21/2002	2	0.000203	0.0005 U	0.0005 U	0.0005 U	0.025 U	0.0005 U
SB-704(P)-2	8/21/2002	2	NV	NV	NV	NV	NV	NV
SB-707(P)-2	8/21/2002	2	NV	NV	NV	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	1,2,4-Trimethyl- benzene	1,2-Dichloro- ethane	1,3,5-Trimethyl- benzene	1,4-Dichloro- benzene	2-Butanone	4-Isopropyl- toluene
DEQ RBC—Urban Residential Direct Contact			97	9.9	97	38	NV	NV
DEQ RBC—Urban Residential Volatilization to Outdoor			200	5.4	200	20	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			70	0.071	12	3.2	NV	NV
SB-712(P)-2	8/21/2002	2	NV	0.0005 U	0.000392	0.0005 U	0.025 U	0.0005 U
SB-712(P)-2	8/21/2002	2	NV	NV	NV	NV	NV	NV
SB-713(P)-2	8/21/2002	2	NV	NV	NV	NV	NV	NV
SB-714(P)-2	8/21/2002	2	NV	NV	NV	NV	NV	NV
SB-718(P)-2	8/21/2002	2	NV	NV	NV	NV	NV	NV
SB-720(P)-2	8/23/2002	2	NV	NV	NV	NV	NV	NV
SB-800 (Q)-2	8/27/2002	2	NV	NV	NV	NV	NV	NV
SB801(Q)-2	8/26/2002	2	NV	NV	NV	NV	NV	NV
SB802(Q)-2	8/26/2002	2	NV	NV	NV	NV	NV	NV
SB803(Q)-2	8/26/2002	2	NV	NV	NV	NV	NV	NV
SB-804(Q)-2	8/26/2002	2	NV	NV	NV	NV	NV	NV
SB-805(Q)-2	8/26/2002	2	NV	NV	NV	NV	NV	NV
SB-806 (Q)-2	8/28/2002	2	NV	NV	NV	NV	NV	NV
SB-809 (Q)-2	8/28/2002	2	NV	NV	NV	NV	NV	NV
SB-810 (Q)-2	8/28/2002	2	NV	NV	NV	NV	NV	NV
SB816(Q)-2	8/27/2002	2	NV	NV	NV	NV	NV	NV
SB-817 (Q)-2	8/28/2002	2	NV	NV	NV	NV	NV	NV
SB-820 (Q)-2	8/29/2002	2	NV	NV	NV	NV	NV	NV
SB-822 (Q)-2	8/29/2002	2	NV	NV	NV	NV	NV	NV
SB-822 (Q)-2C	8/29/2002	2	NV	NV	NV	NV	NV	NV
SB-823 (Q)-2	8/27/2002	2	NV	NV	NV	NV	NV	NV
SB-825 (Q)-2	8/27/2002	2	NV	NV	NV	NV	NV	NV
SB-827 (Q)-2	8/29/2002	2	NV	NV	NV	NV	NV	NV
SB-828 (Q)-2	8/28/2002	2	NV	NV	NV	NV	NV	NV
SB-829 (Q)-2	8/28/2002	2	NV	NV	NV	NV	NV	NV
SB-829 (Q)-2C	8/28/2002	2	NV	NV	NV	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	1,2,4-Trimethyl- benzene	1,2-Dichloro- ethane	1,3,5-Trimethyl- benzene	1,4-Dichloro- benzene	2-Butanone	4-Isopropyl- toluene
DEQ RBC—Urban Residential Direct Contact								
DEQ RBC—Urban Residential Volatilization to Outdoor			97	9.9	97	38	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			200	5.4	200	20	NV	NV
			70	0.071	12	3.2	NV	NV
SB-830 (Q)-2	8/28/2002	2	NV	NV	NV	NV	NV	NV
SB-832 (Q)-2	8/28/2002	2	NV	NV	NV	NV	NV	NV
SB-833 (Q)-2	8/28/2002	2	NV	NV	NV	NV	NV	NV
SB-834(Q)-2	9/5/2003	2	0.0334	0.025 U	0.0108	NV	NV	NV
SB-835(Q)-2	9/5/2003	2	0.05 U	0.025 U	0.025 U	NV	NV	NV
SB-912(S)-2	9/3/2003	2	0.05 U	0.025 U	0.025 U	NV	NV	NV
SB-913(S)-2	9/3/2003	2	0.05 U	0.025 U	0.025 U	NV	NV	NV
SB-914(S)-2	9/3/2003	2	0.05 U	0.025 U	0.025 U	NV	NV	NV
SB-D-DUP-0819	8/19/2002	2	8.6	0.025 U	3.99	NV	NV	NV
SB-002(A)-2.5	8/27/2003	2.5	0.05 U	0.025 U	0.025 U	NV	NV	NV
SB-005(A)-2.5	9/5/2003	2.5	0.05 U	0.025 U	0.025 U	NV	NV	NV
SB-019(A)-2.5	8/27/2003	2.5	0.05 U	0.025 U	0.025 U	NV	NV	NV
SB212(C)-2.5	8/27/2002	2.5	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.025 U	0.0005 U
SB218(C)-2.5	8/28/2002	2.5	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.025 U	0.0005 U
SB-255(C)-2.5	9/4/2003	2.5	0.0136	0.025 U	0.025 U	NV	NV	NV
SB-400(F)-2.5	8/22/2002	2.5	NV	NV	NV	NV	NV	NV
SB-401(F)-2.5	8/23/2002	2.5	NV	NV	NV	NV	NV	NV
SB-402(F)-2.5	8/23/2002	2.5	0.00354	0.0005 U	0.00112	NV	NV	NV
SB-402(F)-2.5	8/23/2002	2.5	NV	NV	NV	NV	NV	NV
SB-404(F)-2.5	8/22/2002	2.5	NV	NV	NV	NV	NV	NV
SB-405(F)-2.5	8/22/2002	2.5	NV	NV	NV	NV	NV	NV
SB-406(F)-2.5	8/22/2002	2.5	NV	NV	NV	NV	NV	NV
SB-407(F)-2.5	8/22/2002	2.5	NV	NV	NV	NV	NV	NV
SB-408(F)-2.5	8/22/2002	2.5	0.000415	0.0005 U	0.000208	NV	NV	NV
SB-408(F)-2.5	8/22/2002	2.5	NV	NV	NV	NV	NV	NV
SB-409(F)-2.5	8/22/2002	2.5	NV	NV	NV	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	1,2,4-Trimethyl- benzene	1,2-Dichloro- ethane	1,3,5-Trimethyl- benzene	1,4-Dichloro- benzene	2-Butanone	4-Isopropyl- toluene
DEQ RBC—Urban Residential Direct Contact			97	9.9	97	38	NV	NV
DEQ RBC—Urban Residential Volatilization to Outdoor			200	5.4	200	20	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			70	0.071	12	3.2	NV	NV
SB-706(P)-2.5	8/21/2002	2.5	NV	NV	NV	NV	NV	NV
SB 233 (C)-3	8/30/2002	3	0.0005	0.0005	0.000159	0.0005	0.025	0.0005
SB 238 (C)-3	8/30/2002	3	0.0005	0.0005	0.000336	0.0005	0.025	0.0005
SB100(C)3	8/22/2002	3	0.0005	0.0005	0.0005	0.0005	0.025	0.0005
SB101(C)3	8/22/2002	3	0.0005	0.0005	0.000333	0.0005	0.025	0.0005
SB103(C)3	8/22/2002	3	0.0005	0.0005	0.0005	0.0005	0.025	0.0005
SB200(C)3	8/22/2002	3	0.0005	0.0005	0.0005	0.0005	0.025	0.0005
SB201(C)3	8/22/2002	3	0.0005	0.0005	0.0005	0.0005	0.025	0.0005
SB202(C)3	8/22/2002	3	0.0005	0.0005	0.0005	0.0005	0.025	0.0005
SB203(C)3	8/22/2002	3	0.0005	0.0005	0.0005	0.0005	0.025	0.0005
SB204(C)3	8/22/2002	3	0.0005	0.0005	0.0005	0.0005	0.025	0.0005
SB209(C)-3	8/27/2002	3	0.0005	0.0005	0.0005	0.0005	0.025	0.0005
SB211(C)-3	8/27/2002	3	0.0005	0.0005	0.000173	0.0005	0.025	0.0005
SB216(C)-3	8/27/2002	3	0.0005	0.0005	0.000158	0.0005	0.025	0.0005
SB217(C)-3	8/28/2002	3	0.0005	0.0005	0.0005	0.0005	0.025	0.0005
SB225 (C)-3	8/29/2002	3	0.0005	0.0005	0.0005	0.0005	0.025	0.0005
SB226 (C)-3	8/29/2002	3	0.0005	0.0005	0.0005	0.0005	0.025	0.0005
SB-244(C)-3	9/3/2002	3	0.0005	0.0005	0.0005	0.0005	0.025	0.0005
SB-601(N)-3	9/13/2002	3	0.05	0.025	0.025	NV	NV	NV
SB-602(N)-3	9/13/2002	3	NV	NV	NV	NV	NV	NV
SB-604(N)-3	9/13/2002	3	NV	NV	NV	NV	NV	NV
SB-605(N)-3	9/13/2002	3	20.3	0.025	4.02	NV	NV	NV
SB-606(N)-3	9/13/2002	3	NV	NV	NV	NV	NV	NV
SB-608(N)-3	9/13/2002	3	0.05	0.025	0.025	NV	NV	NV
SB-609(N)-3	9/13/2002	3	0.05	0.025	0.025	NV	NV	NV
SB-617 (N)-3	9/12/2002	3	0.05	0.025	0.025	NV	NV	NV



**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	1,2,4-Trimethyl- benzene	1,2-Dichloro- ethane	1,3,5-Trimethyl- benzene	1,4-Dichloro- benzene	2-Butanone	4-Isopropyl- toluene
DEQ RBC—Urban Residential Direct Contact								
DEQ RBC—Urban Residential Volatilization to Outdoor			97	9.9	97	38	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			200	5.4	200	20	NV	NV
			70	0.071	12	3.2	NV	NV
SB-620 (N)-3	9/12/2002	3	NV	NV	NV	NV	NV	NV
SB-700(P)-3	8/21/2002	3	0.0005	U	0.0005	U	0.025	U
SB-700(P)-3	8/21/2002	3	NV	NV	NV	NV	NV	NV
SB-705(P)-3	8/20/2002	3	NV	NV	NV	NV	NV	NV
SB-708(P)-3	8/20/2002	3	NV	NV	NV	NV	NV	NV
SB-709(P)-3	8/21/2002	3	0.000222	0.0005	U	0.0005	U	0.00937
SB-709(P)-3	8/21/2002	3	NV	NV	NV	NV	NV	NV
SB-710(P)-3	8/21/2002	3	0.000215	0.0005	U	0.0005	U	0.0005
SB-710(P)-3	8/21/2002	3	NV	NV	NV	NV	NV	NV
SB-711(P)-3	8/21/2002	3	0.000442	0.0005	U	0.000168	U	0.0005
SB-711(P)-3	8/21/2002	3	NV	NV	NV	NV	NV	NV
SB-715(P)-3	8/21/2002	3	NV	NV	NV	NV	NV	NV
SB-716(P)-3	8/20/2002	3	0.00018	0.0005	U	0.0005	U	0.0005
SB-716(P)-3	8/20/2002	3	NV	NV	NV	NV	NV	NV
SB-717(P)-3	8/20/2002	3	0.0005	U	0.0005	U	0.025	U
SB-717(P)-3	8/20/2002	3	NV	NV	NV	NV	NV	NV
SB-824 (Q)-3	8/27/2002	3	NV	NV	NV	NV	NV	NV
SB-826 (Q)-3	8/27/2002	3	NV	NV	NV	NV	NV	NV
SB-D-DUP-3	8/20/2002	3	44.5	0.05	U	NV	NV	NV
SB208(C)-3.5	8/27/2002	3.5	0.0005	U	0.0005	U	0.025	U
SB210(C)-3.5	8/27/2002	3.5	0.0005	U	0.000159	U	0.025	U
SB-301-D-3.5	8/20/2002	3.5	26.7	0.05	U	NV	NV	NV
SB-020(A)-4'	3/31/2004	4	0.05	U	0.025	U	NV	NV
SB104(C)4	8/22/2002	4	0.0005	U	0.0005	U	0.025	U
SB213(C)-4	8/27/2002	4	0.0005	U	0.000157	U	0.025	U
SB219(C)-4	8/28/2002	4	0.0005	U	0.0005	U	0.025	U

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	1,2,4-Trimethyl- benzene	1,2-Dichloro- ethane	1,3,5-Trimethyl- benzene	1,4-Dichloro- benzene	2-Butanone	4-Isopropyl- toluene
DEQ RBC—Urban Residential Direct Contact			97	9.9	97	38	NV	NV
DEQ RBC—Urban Residential Volatilization to Outdoor			200	5.4	200	20	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			70	0.071	12	3.2	NV	NV
SB228 (C)-4	8/29/2002	4	0.0005	U	0.0005	U	0.025	U
SB-239(C)-4	9/3/2002	4	0.000189	U	0.0005	U	0.025	U
SB-242(C)-4	9/3/2002	4	0.000156	U	0.0005	U	0.025	U
SB-243(C)-4	9/3/2002	4	0.000947	U	0.000377	U	0.025	U
SB-250(C)-4	9/9/2002	4	0.0005	U	0.000448	U	0.025	U
SB-251(C)-4	9/9/2002	4	0.0021	U	0.000611	U	0.025	U
SB-410(F)-4	3/31/2004	4	0.05	U	0.025	U	NV	NV
SB-818 (Q)-4	8/28/2002	4	NV	NV	NV	NV	NV	NV
SB-831 (Q)-4	8/28/2002	4	NV	NV	NV	NV	NV	NV
SB-900(S)-4	8/26/2002	4	0.0005	U	0.0005	U	NV	NV
SB-904 (S)-4	8/26/2002	4	NV	NV	NV	NV	NV	NV
SB-905 (S)-4	8/26/2002	4	NV	NV	NV	NV	NV	NV
SB-906 (S)-4	8/27/2002	4	0.0005	U	0.0005	U	NV	NV
SB-908 (S)-4	8/27/2002	4	1.1	0.025	0.456	NV	NV	NV
SB-909 (S)-4	8/27/2002	4	NV	NV	NV	NV	NV	NV
SB-910 (S)-4	8/27/2002	4	0.0005	U	0.000375	NV	NV	NV
SB205(C)-4.5	8/27/2002	4.5	0.0005	U	0.0005	U	0.025	U
SB207(C)-4.5	8/27/2002	4.5	0.0005	U	0.0005	U	0.025	U
SB221 (C)-4.5	8/28/2002	4.5	0.0005	U	0.0005	U	0.025	U
SB222 (C)-4.5	8/28/2002	4.5	0.0005	U	0.0005	U	0.025	U
SB-305-D-4.5	8/19/2002	4.5	2.36	0.025	0.569	NV	NV	NV
SB-306-D-4.5	8/19/2002	4.5	0.547	0.05	4.51	NV	NV	NV
SB812(Q)-4.5	8/27/2002	4.5	NV	NV	NV	NV	NV	NV
SB814(Q)-4.5	8/27/2002	4.5	NV	NV	NV	NV	NV	NV
SB815(Q)-4.5	8/27/2002	4.5	NV	NV	NV	NV	NV	NV
SB214(C)-5	8/27/2002	5	0.0005	U	0.0005	U	0.025	U

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	1,2,4-Trimethyl- benzene	1,2-Dichloro- ethane	1,3,5-Trimethyl- benzene	1,4-Dichloro- benzene	2-Butanone	4-Isopropyl- toluene
DEQ RBC—Urban Residential Direct Contact			97	9.9	97	38	NV	NV
DEQ RBC—Urban Residential Volatilization to Outdoor			200	5.4	200	20	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			70	0.071	12	3.2	NV	NV
SB215(C)-5	8/27/2002	5	0.0005	U	0.0005	U	0.025	U
SB220 (C)-5	8/28/2002	5	0.0005	U	0.0005	U	0.025	U
SB-241(C)-5	9/3/2002	5	0.0005	U	0.0005	U	0.025	U
SB-245(C)-5	9/3/2002	5	0.0005	U	0.0005	U	0.025	U
SB-246(C)-5	9/3/2002	5	0.0005	U	0.0005	U	0.025	U
SB-252(C)-5	9/9/2002	5	0.0005	U	0.00042	U	0.025	U
SB-304-D-5.0	8/19/2002	5	30.1	0.05	7.28	NV	NV	NV
SB-309-D-5.0	8/19/2002	5	0.0003515	U	0.00051	NV	NV	NV
SB-310-D-5.0	8/19/2002	5	41.3	0.125	49.6	NV	NV	NV
SB-311-D-5.0	8/19/2002	5	0.000221	U	0.0005	NV	NV	NV
SB-312-D-5.0	8/19/2002	5	0.044	0.0005	0.0451	NV	NV	NV
SB-313-D-5.0	8/20/2002	5	14.4	0.025	5.18	NV	NV	NV
SB-316-D-5.0	8/20/2002	5	95.2	0.125	31.6	NV	NV	NV
SB-320(D)-5	9/10/2003	5	0.05	U	0.025	NV	NV	NV
SB-321(D)-5	9/9/2003	5	39.5	0.125	22.2	NV	NV	NV
SB-322(D)-5	9/10/2003	5	0.05	U	0.025	NV	NV	NV
SB-324(D)-5	9/10/2003	5	0.0187	0.025	0.025	NV	NV	NV
SB-325(D)-5	9/10/2003	5	0.05	U	0.025	NV	NV	NV
SB-326(D)-5	9/9/2003	5	22.5	0.125	8.02	NV	NV	NV
SB-327(D)-5	9/10/2003	5	0.05	U	0.025	NV	NV	NV
SB-328(D)-5	9/10/2003	5	0.0888	0.025	0.0407	NV	NV	NV
SB-400(F)-5	8/22/2002	5	NV	NV	NV	NV	NV	NV
SB-409(F)-5	8/22/2002	5	NV	NV	NV	NV	NV	NV
SB-719(P)-5	8/23/2002	5	NV	NV	NV	NV	NV	NV
SB-811 (Q)-5	8/27/2002	5	NV	NV	NV	NV	NV	NV
SB813(Q)-5	8/27/2002	5	NV	NV	NV	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	1,2,4-Trimethyl- benzene	1,2-Dichloro- ethane	1,3,5-Trimethyl- benzene	1,4-Dichloro- benzene	2-Butanone	4-Isopropyl- toluene
DEQ RBC—Urban Residential Direct Contact								
DEQ RBC—Urban Residential Volatilization to Outdoor			97	9.9	97	38	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			200	5.4	200	20	NV	NV
			70	0.071	12	3.2	NV	NV
SB-819 (Q)-5	8/28/2002	5	NV	NV	NV	NV	NV	NV
SB-821 (Q)-5	8/29/2002	5	NV	NV	NV	NV	NV	NV
SB-821 (Q)-5C	8/29/2002	5	NV	NV	NV	NV	NV	NV
SB-613 (N)-5.5	9/12/2002	5.5	NV	NV	NV	NV	NV	NV
SB-617 (N)-5.5	9/12/2002	5.5	NV	NV	NV	NV	NV	NV
SB-705(P)-5.5	8/20/2002	5.5	NV	NV	NV	NV	NV	NV
SB-706(P)-5.5	8/21/2002	5.5	0.00047	0.0005	0.000157	0.0005	0.0325	0.0005
SB-710(P)-5.5	8/21/2002	5.5	0.000531	0.0005	0.000387	0.0005	0.0444	0.0005
SB 235 (C)-6	8/30/2002	6	0.0005	0.0005	0.000184	0.0005	0.025	0.0005
SB 236 (C)-6	8/30/2002	6	0.0005	0.0005	0.0005	0.0005	0.025	0.0005
SB 237 (C)-6	8/30/2002	6	0.0304	0.0005	0.0005	0.0005	0.025	0.0164
SB200(C)6	8/22/2002	6	0.0005	0.0005	0.0005	0.0005	0.025	0.0005
SB201(C)6	8/22/2002	6	0.0005	0.0005	0.0005	0.0005	0.025	0.0005
SB206(C)-6	8/27/2002	6	0.0005	0.0005	0.0005	0.0005	0.025	0.0005
SB223 (C)-6	8/29/2002	6	0.0005	0.0005	0.0005	0.0005	0.025	0.0005
SB-240(C)-6	9/3/2002	6	0.0005	0.0005	0.0005	0.0005	0.025	0.0005
SB-247(C)-6	9/3/2002	6	0.0005	0.0005	0.0005	0.0005	0.025	0.0005
SB256 (c) 6	3/31/2004	6	0.05	0.05	0.05	0.05	0.5	0.1
SB-501 (M) 4-8	8/29/2002	6	NV	NV	NV	NV	NV	NV
SB-608(N)-6	9/13/2002	6	0.05	0.025	0.025	NV	NV	NV
TP201(C)6E	8/27/2002	6	0.000304	0.0005	0.0005	0.0005	0.025	0.0005
TP202(C)6W	8/27/2002	6	0.000247	0.0005	0.0005	0.0005	0.025	0.0005
SB408/S-2(6-7)	8/22/2002	6.5	NV	NV	NV	NV	NV	NV
SB-827 (Q)-6.5	8/29/2002	6.5	NV	NV	NV	NV	NV	NV
SB-005(A)-7	9/5/2003	7	0.05	0.025	0.025	NV	NV	NV
SB-006(A)-7'	3/31/2004	7	186	0.25	31.1	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	1,2,4-Trimethyl- benzene	1,2-Dichloro- ethane	1,3,5-Trimethyl- benzene	1,4-Dichloro- benzene	2-Butanone	4-Isopropyl- toluene
DEQ RBC—Urban Residential Direct Contact			97	9.9	97	38	NV	NV
DEQ RBC—Urban Residential Volatilization to Outdoor			200	5.4	200	20	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			70	0.071	12	3.2	NV	NV
SB-015(A)-7	9/10/2003	7	44.1	0.125 U	11.6	NV	NV	NV
SB202(C)7	8/22/2002	7	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.025 U	0.0005 U
SB203(C)7	8/22/2002	7	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.025 U	0.0005 U
SB-254(C)-7	9/4/2003	7	0.05 U	0.025 U	0.025 U	NV	NV	NV
SB-255(C)-7	9/4/2003	7	0.0355 U	0.025 U	0.02 U	NV	NV	NV
SB-323(D)-7	9/10/2003	7	0.05 U	0.025 U	0.025 U	NV	NV	NV
SB407/S-2(6-8)	8/22/2002	7	NV	NV	NV	NV	NV	NV
SB-600(N)-7	9/13/2002	7	NV	NV	NV	NV	NV	NV
SB-601(N)-7	9/13/2002	7	252	2.5 U	65.9	NV	NV	NV
SB-601(N)-7	9/13/2002	7	NV	NV	NV	NV	NV	NV
SB-602(N)-7	9/13/2002	7	689	1.25 U	189	NV	NV	NV
SB-602(N)-7	9/13/2002	7	NV	NV	NV	NV	NV	NV
SB-603(N)-7	9/13/2002	7	151	1.25 U	40.3	NV	NV	NV
SB-603(N)-7	9/13/2002	7	NV	NV	NV	NV	NV	NV
SB-604(N)-7	9/13/2002	7	392	0.5 U	118	NV	NV	NV
SB-605(N)-7	9/13/2002	7	567	1.25 U	137	NV	NV	NV
SB-606(N)-7	9/13/2002	7	NV	NV	NV	NV	NV	NV
SB-609(N)-7	9/13/2002	7	0.05 U	0.025 U	0.025 U	NV	NV	NV
SB-612 (N)-7	9/12/2002	7	480	1.25 U	148	NV	NV	NV
SB-612 (N)-7	9/12/2002	7	NV	NV	NV	NV	NV	NV
SB-614 (N)-7	9/12/2002	7	NV	NV	NV	NV	NV	NV
SB-615 (N)-7	9/12/2002	7	NV	NV	NV	NV	NV	NV
SB-616 (N)-7	9/12/2002	7	NV	NV	NV	NV	NV	NV
SB-618 (N)-7	9/12/2002	7	150	0.5 U	47.3	0.5 U	5 U	1 U
SB-619 (N)-7	9/12/2002	7	0.05 U	0.025 U	0.025 U	NV	NV	NV
SB-619 (N)-7	9/12/2002	7	NV	NV	NV	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	1,2,4-Trimethyl- benzene	1,2-Dichloro- ethane	1,3,5-Trimethyl- benzene	1,4-Dichloro- benzene	2-Butanone	4-Isopropyl- toluene
DEQ RBC—Urban Residential Direct Contact			97	9.9	97	38	NV	NV
DEQ RBC—Urban Residential Volatilization to Outdoor			200	5.4	200	20	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			70	0.071	12	3.2	NV	NV
SB-620 (N)-7	9/12/2002	7	121	1.25	39.3	NV	NV	NV
SB-620 (N)-7	9/12/2002	7	NV	NV	NV	NV	NV	NV
SB-621 (N)-7	9/12/2002	7	NV	NV	NV	NV	NV	NV
SB-622 (N)-7	9/12/2002	7	0.00294	0.0005	0.0005	0.0005	0.025	0.0005
SB-622 (N)-7	9/12/2002	7	NV	NV	NV	NV	NV	NV
SB-623 (N)-7	9/12/2002	7	102	0.25	4.24	NV	NV	NV
SB-623 (N)-7	9/12/2002	7	NV	NV	NV	NV	NV	NV
SB-624 (N)-7	9/12/2002	7	31.9	0.25	10.5	0.25	2.5	4.34
SB-625 (N)-7	9/12/2002	7	0.05	0.025	0.025	NV	NV	NV
SB-625 (N)-7	9/12/2002	7	NV	NV	NV	NV	NV	NV
SB-626 (N)-7	9/12/2002	7	221	1.25	66.4	NV	NV	NV
SB-626 (N)-7	9/12/2002	7	NV	NV	NV	NV	NV	NV
SB-715(P)-7	8/21/2002	7	NV	NV	NV	NV	NV	NV
SB-721(P)-7	3/31/2004	7	0.05	0.025	0.025	NV	NV	NV
SB-807 (Q)-7	8/28/2002	7	NV	NV	NV	NV	NV	NV
SB-835(Q)-7	9/5/2003	7	0.05	0.025	0.025	NV	NV	NV
SB-912(S)-7	9/3/2003	7	0.05	0.025	0.025	NV	NV	NV
SB-913(S)-7	9/3/2003	7	0.05	0.025	0.025	NV	NV	NV
SB-001(A)-7.5	8/27/2003	7.5	0.05	0.025	0.025	NV	NV	NV
SB-002(A)-7.5	8/27/2003	7.5	0.05	0.025	0.025	NV	NV	NV
SB-007(A)-7.5	8/26/2003	7.5	247	1.25	58	NV	NV	NV
SB-008(A)-7.5	8/26/2003	7.5	0.05	0.025	0.025	NV	NV	NV
SB-009(A)-7.5	8/27/2003	7.5	2.47	0.25	2.62	NV	NV	NV
SB-010(A)-7.5	8/27/2003	7.5	0.05	0.025	0.025	NV	NV	NV
SB-011(A)-7.5	9/3/2003	7.5	0.05	0.025	0.025	NV	NV	NV
SB-013(A)-7.5	9/3/2003	7.5	0.0151	0.025	0.025	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	1,2,4-Trimethyl- benzene	1,2-Dichloro- ethane	1,3,5-Trimethyl- benzene	1,4-Dichloro- benzene	2-Butanone	4-Isopropyl- toluene
DEQ RBC—Urban Residential Direct Contact								
DEQ RBC—Urban Residential Volatilization to Outdoor			97	9.9	97	38	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			200	5.4	200	20	NV	NV
			70	0.071	12	3.2	NV	NV
SB-017(A)-7.5	9/8/2003	7.5	0.0503	0.025	U	NV	NV	NV
SB-019(A)-7.5	8/27/2003	7.5	288	1.25	U	NV	NV	NV
SB-253(C)-7.5	9/4/2003	7.5	0.05	0.025	U	NV	NV	NV
SB-405(F)-7.5	8/22/2002	7.5	21.7	0.025	U	NV	NV	NV
SB-405(F)-7.5	8/22/2002	7.5	NV	NV	NV	NV	NV	NV
SB-407(F)-7.5	8/22/2002	7.5	24	0.05	U	NV	NV	NV
SB-407(F)-7.5	8/22/2002	7.5	NV	NV	NV	NV	NV	NV
SB-408(F)-7.5	8/22/2002	7.5	NV	NV	NV	NV	NV	NV
SB-629(N)-7.5	8/28/2003	7.5	36.2	0.25	U	NV	NV	NV
SB-632(N)-7.5	9/8/2003	7.5	152	0.25	U	NV	NV	NV
SB-714(P)-7.5	8/21/2002	7.5	NV	NV	NV	NV	NV	NV
SB-834(Q)-7.5	9/5/2003	7.5	0.0166	0.025	U	NV	NV	NV
SB-914(S)-7.5	9/3/2003	7.5	0.05	0.025	U	NV	NV	NV
SB 232 (C)-8	8/30/2002	8	0.0005	0.0005	U	0.0005	U	0.0005
SB 234 (C)-8	8/30/2002	8	0.0005	0.0005	U	0.0005	U	0.0005
SB204(C)8	8/22/2002	8	0.0005	0.0005	U	0.0005	U	0.0005
SB227 (C)-8	8/29/2002	8	0.0005	0.0005	U	0.0005	U	0.0005
SB229 (C)-8	8/29/2002	8	0.0005	0.0005	U	0.0005	U	0.0005
SB230 (C)-8	8/29/2002	8	0.0005	0.0005	U	0.0005	U	0.0005
SB-406(F)-8	8/22/2002	8	NV	NV	NV	NV	NV	NV
SB-806 (Q)-8	8/28/2002	8	NV	NV	NV	NV	NV	NV
SB-810 (Q)-8	8/28/2002	8	NV	NV	NV	NV	NV	NV
SB-822 (Q)-8	8/29/2002	8	NV	NV	NV	NV	NV	NV
SB-901 (S)-8	8/26/2002	8	NV	NV	NV	NV	NV	NV
SB-902 (S)-8	8/26/2002	8	NV	NV	NV	NV	NV	NV
SB-903 (S)-8	8/26/2002	8	NV	NV	NV	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	1,2,4-Trimethyl- benzene	1,2-Dichloro- ethane	1,3,5-Trimethyl- benzene	1,4-Dichloro- benzene	2-Butanone	4-Isopropyl- toluene
DEQ RBC—Urban Residential Direct Contact								
DEQ RBC—Urban Residential Volatilization to Outdoor			97	9.9	97	38	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			200	5.4	200	20	NV	NV
			70	0.071	12	3.2	NV	NV
SB-908 (S)-8	8/27/2002	8	0.0005	U	0.000215	NV	NV	NV
SB-911 (S)-8	8/27/2002	8	NV	NV	NV	NV	NV	NV
SB-720(P)-8.5	8/23/2002	8.5	NV	NV	NV	NV	NV	NV
SB-804(Q)-8.5	8/26/2002	8.5	NV	NV	NV	NV	NV	NV
SB-809 (Q)-8.5	8/28/2002	8.5	NV	NV	NV	NV	NV	NV
SB-828 (Q)-8.5	8/28/2002	8.5	NV	NV	NV	NV	NV	NV
SB-830 (Q)-8.5	8/28/2002	8.5	NV	NV	NV	NV	NV	NV
SB-020(A)-9'	3/31/2004	9	0.05	U	0.025	U	NV	NV
SB-410(F)-9'	3/31/2004	9	0.05	U	0.025	U	NV	NV
SB802(Q)-9	8/26/2002	9	NV	NV	NV	NV	NV	NV
SB803(Q)-9	8/26/2002	9	NV	NV	NV	NV	NV	NV
SB-807 (Q)-9	8/28/2002	9	NV	NV	NV	NV	NV	NV
SB-811 (Q)-9	8/27/2002	9	NV	NV	NV	NV	NV	NV
SB-811 (Q)-9C	8/27/2002	9	NV	NV	NV	NV	NV	NV
SB812(Q)-9	8/27/2002	9	NV	NV	NV	NV	NV	NV
SB814(Q)-9	8/27/2002	9	NV	NV	NV	NV	NV	NV
SB-817 (Q)-9	8/28/2002	9	NV	NV	NV	NV	NV	NV
SB-818 (Q)-9	8/28/2002	9	NV	NV	NV	NV	NV	NV
SB-820 (Q)-9	8/29/2002	9	NV	NV	NV	NV	NV	NV
SB-820 (Q)-9C	8/29/2002	9	NV	NV	NV	NV	NV	NV
SB-821 (Q)-9	8/29/2002	9	NV	NV	NV	NV	NV	NV
SB-823 (Q)-9	8/27/2002	9	NV	NV	NV	NV	NV	NV
SB-824 (Q)-9	8/27/2002	9	NV	NV	NV	NV	NV	NV
SB-825 (Q)-9	8/27/2002	9	NV	NV	NV	NV	NV	NV
SB-826 (Q)-9	8/27/2002	9	NV	NV	NV	NV	NV	NV
SB-829 (Q)-9	8/28/2002	9	NV	NV	NV	NV	NV	NV



**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	1,2,4-Trimethyl- benzene	1,2-Dichloro- ethane	1,3,5-Trimethyl- benzene	1,4-Dichloro- benzene	2-Butanone	4-Isopropyl- toluene
DEQ RBC—Urban Residential Direct Contact			97	9.9	97	38	NV	NV
DEQ RBC—Urban Residential Volatilization to Outdoor			200	5.4	200	20	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			70	0.071	12	3.2	NV	NV
SB-831 (Q)-9	8/28/2002	9	NV	NV	NV	NV	NV	NV
SB-832 (Q)-9	8/28/2002	9	NV	NV	NV	NV	NV	NV
SB-705(P)-9.5	8/20/2002	9.5	NV	NV	NV	NV	NV	NV
SB-706(P)-9.5	8/21/2002	9.5	NV	NV	NV	NV	NV	NV
SB801(Q)-9.5	8/26/2002	9.5	NV	NV	NV	NV	NV	NV
SB813(Q)-9.5	8/27/2002	9.5	NV	NV	NV	NV	NV	NV
SB815(Q)-9.5	8/27/2002	9.5	NV	NV	NV	NV	NV	NV
SB816(Q)-9.5	8/27/2002	9.5	NV	NV	NV	NV	NV	NV
SB-316-D-10.0	8/20/2002	10	174	0.25 U	55.1	NV	NV	NV
SB-318-D-10.0	8/20/2002	10	80.2	0.125 U	25	NV	NV	NV
SB-324(D)-10	9/10/2003	10	18.2	0.05 U	0.41	NV	NV	NV
SB-325(D)-10	9/10/2003	10	0.05 U	0.025 U	0.025 U	NV	NV	NV
SB-326(D)-10	9/9/2003	10	26.6	0.125 U	9.67	NV	NV	NV
SB-327(D)-10	9/10/2003	10	8.15	0.05 U	1.19	NV	NV	NV
SB-328(D)-10	9/10/2003	10	77	0.25 U	13.1	NV	NV	NV
SB-500 (M) 8-12	8/29/2002	10	NV	NV	NV	NV	NV	NV
SB-501 (M) 8-12	8/29/2002	10	NV	NV	NV	NV	NV	NV
SB-502 (M) 8-12	8/29/2002	10	NV	NV	NV	NV	NV	NV
SB-503 (M) 8-12	8/29/2002	10	NV	NV	NV	NV	NV	NV
SB-505 (M) 8-12	8/29/2002	10	NV	NV	NV	NV	NV	NV
SB-506 (M) 8-12	8/29/2002	10	NV	NV	NV	NV	NV	NV
SB-507 (M) 8-12	8/29/2002	10	NV	NV	NV	NV	NV	NV
SB-508 (M) 8-12	8/29/2002	10	NV	NV	NV	NV	NV	NV
SB-509 (M) 8-12	8/29/2002	10	NV	NV	NV	NV	NV	NV
SB-510 (M) 8-12	8/29/2002	10	NV	NV	NV	NV	NV	NV
SB-625 (N)-10	9/12/2002	10	NV	NV	NV	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	1,2,4-Trimethyl- benzene	1,2-Dichloro- ethane	1,3,5-Trimethyl- benzene	1,4-Dichloro- benzene	2-Butanone	4-Isopropyl- toluene
DEQ RBC—Urban Residential Direct Contact								
DEQ RBC—Urban Residential Volatilization to Outdoor			97	9.9	97	38	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			200	5.4	200	20	NV	NV
			70	0.071	12	3.2	NV	NV
SB-703(P)-10	8/21/2002	10	0.000256	0.0005	U	0.000163	U	0.0005
SB-703(P)-10	8/21/2002	10	NV	NV	NV	NV	NV	NV
SB-707(P)-10	8/21/2002	10	0.000109	0.0005	U	0.0005	U	0.0005
SB-707(P)-10	8/21/2002	10	NV	NV	NV	NV	NV	NV
SB-708(P)-10	8/20/2002	10	NV	NV	NV	NV	NV	NV
SB-709(P)-10	8/21/2002	10	NV	U	0.0005	U	0.025	U
SB-709(P)-10	8/21/2002	10	NV	NV	NV	NV	NV	NV
SB-711(P)-10	8/21/2002	10	0.000745	0.0005	U	0.000257	U	0.0005
SB-711(P)-10	8/21/2002	10	NV	NV	NV	NV	NV	NV
SB-712(P)-10	8/21/2002	10	0.000382	0.0005	U	0.000244	U	0.0005
SB-712(P)-10	8/21/2002	10	NV	NV	NV	NV	NV	NV
SB-713(P)-10	8/21/2002	10	NV	NV	NV	NV	NV	NV
SB-714(P)-10	8/21/2002	10	262	0.5	U	83.5	NV	NV
SB-714(P)-10	8/21/2002	10	NV	NV	NV	NV	NV	NV
SB-716(P)-10	8/20/2002	10	0.0005	U	0.0005	U	0.0005	U
SB-716(P)-10	8/20/2002	10	NV	NV	NV	NV	NV	NV
SB-717(P)-10	8/20/2002	10	0.0005	U	0.0005	U	0.025	U
SB-717(P)-10	8/20/2002	10	NV	NV	NV	NV	NV	NV
SB-718(P)-10	8/21/2002	10	NV	NV	NV	NV	NV	NV
SB-805(Q)-10	8/26/2002	10	NV	NV	NV	NV	NV	NV
SB-822 (Q)-10	8/29/2002	10	NV	NV	NV	NV	NV	NV
SB-901 (S)-10	8/26/2002	10	NV	NV	NV	NV	NV	NV
SB-903 (S)-10	8/26/2002	10	6.02	0.125	U	1.5	NV	NV
SB-903 (S)-10	8/26/2002	10	NV	NV	NV	NV	NV	NV
SB-908 (S)-10	8/27/2002	10	0.0005	U	0.000164	NV	NV	NV
SB-908 (S)-10	8/27/2002	10	NV	NV	NV	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	1,2,4-Trimethyl- benzene	1,2-Dichloro- ethane	1,3,5-Trimethyl- benzene	1,4-Dichloro- benzene	2-Butanone	4-Isopropyl- toluene
DEQ RBC—Urban Residential Direct Contact			97	9.9	97	38	NV	NV
DEQ RBC—Urban Residential Volatilization to Outdoor			200	5.4	200	20	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			70	0.071	12	3.2	NV	NV
SB-909 (S)-10	8/27/2002	10	NV	NV	NV	NV	NV	NV
SB-910 (S)-10	8/27/2002	10	NV	NV	NV	NV	NV	NV
SB-911 (S)-10	8/27/2002	10	NV	NV	NV	NV	NV	NV
SB-700(P)-10.5	8/21/2002	10.5	11.7	0.05	3.97	0.05	0.5	1.42
SB-700(P)-10.5	8/21/2002	10.5	NV	NV	NV	NV	NV	NV
SB-800 (Q)-10.5	8/27/2002	10.5	NV	NV	NV	NV	NV	NV
SB-833 (Q)-10.5	8/28/2002	10.5	NV	NV	NV	NV	NV	NV
SB-027 (A)-11	9/14/2005	11	59.2	0.1385	16.9	NV	NV	NV
SB-504 (M) 10-12	8/29/2002	11	NV	NV	NV	NV	NV	NV
SB-607(N)-11	9/13/2002	11	NV	NV	NV	NV	NV	NV
SB-619 (N)-11	9/12/2002	11	284	0.25	58.3	NV	NV	NV
SB-619 (N)-11	9/12/2002	11	NV	NV	NV	NV	NV	NV
SB-701(P)-11	8/20/2002	11	0.000167	0.0005	0.0005	0.0005	0.025	0.0005
SB-701(P)-11	8/20/2002	11	NV	NV	NV	NV	NV	NV
SB-702(P)-11	8/21/2002	11	0.000208	0.0005	0.0005	0.0005	0.025	0.0005
SB-702(P)-11	8/21/2002	11	NV	NV	NV	NV	NV	NV
SB-704(P)-11	8/21/2002	11	0.0005	0.0005	0.0005	0.0005	0.025	0.0005
SB-704(P)-11	8/21/2002	11	NV	NV	NV	NV	NV	NV
SB-715(P)-11	8/21/2002	11	NV	NV	NV	NV	NV	NV
SB-806 (Q)-11	8/28/2002	11	NV	NV	NV	NV	NV	NV
SB-819 (Q)-11	8/28/2002	11	NV	NV	NV	NV	NV	NV
SB-021 (A)-11.5	9/14/2005	11.5	50.4	0.1525	6.76	NV	NV	NV
SB-720(P)-11.5	8/23/2002	11.5	NV	NV	NV	NV	NV	NV
SB-701(P)-12	8/20/2002	12	0.0134	0.0005	0.000329	0.0005	0.025	0.0005
SB-701(P)-12	8/20/2002	12	NV	NV	NV	NV	NV	NV
SB-705(P)-12	8/20/2002	12	NV	NV	NV	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	1,2,4-Trimethyl- benzene	1,2-Dichloro- ethane	1,3,5-Trimethyl- benzene	1,4-Dichloro- benzene	2-Butanone	4-Isopropyl- toluene
DEQ RBC—Urban Residential Direct Contact								
DEQ RBC—Urban Residential Volatilization to Outdoor			97	9.9	97	38	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			200	5.4	200	20	NV	NV
			70	0.071	12	3.2	NV	NV
SB-706(P)-12	8/21/2002	12	NV	NV	NV	NV	NV	NV
SB-719(P)-12	8/23/2002	12	NV	NV	NV	NV	NV	NV
SB-900(S)-12	8/26/2002	12	0.05	0.025	0.025	NV	NV	NV
SB-900(S)-12	8/26/2002	12	NV	NV	NV	NV	NV	NV
SB-902 (S)-12	8/26/2002	12	0.0122	0.0005	0.0005	NV	NV	NV
SB-904 (S)-12	8/26/2002	12	5.37	0.125	1.3	NV	NV	NV
SB-904 (S)-12	8/26/2002	12	NV	NV	NV	NV	NV	NV
SB-905 (S)-12	8/26/2002	12	0.000895	0.0005	0.000184	NV	NV	NV
SB-905 (S)-12	8/26/2002	12	NV	NV	NV	NV	NV	NV
SB-906 (S)-12	8/27/2002	12	14	0.025	3.91	NV	NV	NV
SB-029 (A)-12.5	9/14/2005	12.5	0.03055	0.01525	0.01525	NV	NV	NV
SB-316-D-14.5	8/20/2002	14.5	115	0.125	36.4	NV	NV	NV
SB-314-D-15.0	8/20/2002	15	0.313	0.000315	0.108	NV	NV	NV
SB-315-D-15.0	8/20/2002	15	0.133	0.0005	0.00119	NV	NV	NV
SB-318-D-15.0	8/20/2002	15	63.1	0.5	18.6	NV	NV	NV
SB-324(D)-15	9/10/2003	15	0.824	0.025	0.146	NV	NV	NV
SB-324(D)-DUP	9/10/2003	15	7.29	0.025	0.86	NV	NV	NV
SB-325(D)-15	9/10/2003	15	0.05	0.025	0.025	NV	NV	NV
SB-327(D)-15	9/10/2003	15	40.8	0.125	5.59	NV	NV	NV
SB-328(D)-15	9/10/2003	15	0.313	0.025	0.109	NV	NV	NV
SB101(C)18	8/22/2002	18	0.0005	0.0005	0.0005	0.0005	0.025	0.0005
SB102(C)18	8/22/2002	18	0.0005	0.0005	0.0005	0.0005	0.025	0.0005
SB103(C)18	8/22/2002	18	0.0005	0.0005	0.00018	0.0005	0.0579	0.0005
SB-313-D-18.0	8/20/2002	18	3.74	0.025	0.517	NV	NV	NV
SB100(C)20	8/22/2002	20	0.179	0.0005	0.0705	0.000222	0.145	0.00258
SB104(C)20	8/22/2002	20	0.0005	0.0005	0.0005	0.0005	0.025	0.0005

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	1,2,4-Trimethyl- benzene	1,2-Dichloro- ethane	1,3,5-Trimethyl- benzene	1,4-Dichloro- benzene	2-Butanone	4-Isopropyl- toluene
DEQ RBC—Urban Residential Direct Contact			97	9.9	97	38	NV	NV
DEQ RBC—Urban Residential Volatilization to Outdoor			200	5.4	200	20	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			70	0.071	12	3.2	NV	NV
SB-401(F)-20	8/23/2002	20	NV	NV	NV	NV	NV	NV
SB-402(F)-20	8/23/2002	20	NV	NV	NV	NV	NV	NV
SB-404(F)-20	8/22/2002	20	NV	NV	NV	NV	NV	NV
Number of Samples			234	236	236	98	98	98
Average Concentration			25.3	0.1	6.9	0.01	0.1	0.1
Median Concentration			0.047	0.025	0.025	0.0005	0.025	0.0005
Frequency of Detection			46.2	0.8	41.9	1.0	4.1	6.1
Minimum Value			0.000109	0.000304	0.0001375	0.000222	0.025	0.0005
Maximum Detection			689	0.000315	189	0.000222	0.145	4.34
								6

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Acetone	Benzene	Bromo- methane	Carbon Disulfide	Chloro- methane
DEQ RBC—Urban Residential Direct Contact			NV	21	59	NV	310
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	18	160	NV	78
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.15	1.3	NV	0.63
SB-800 (Q)-0	8/27/2002	0	NV	0.025	U	NV	NV
SB801 (Q)-0	8/26/2002	0	NV	0.025	U	NV	NV
SB802 (Q)-0	8/26/2002	0	NV	0.025	U	NV	NV
SB803 (Q)-0	8/26/2002	0	NV	0.025	U	NV	NV
SB-804 (Q)-0	8/26/2002	0	NV	0.025	U	NV	NV
SB-805 (Q)-0	8/26/2002	0	NV	0.025	U	NV	NV
SB-806 (Q)-0	8/28/2002	0	NV	0.025	U	NV	NV
SB-807 (Q)-0	8/28/2002	0	NV	0.025	U	NV	NV
SB-809 (Q)-0	8/28/2002	0	NV	0.025	U	NV	NV
SB-810 (Q)-0	8/28/2002	0	NV	0.025	U	NV	NV
SB-811 (Q)-0	8/27/2002	0	NV	0.025	U	NV	NV
SB812 (Q)-0	8/27/2002	0	NV	0.025	U	NV	NV
SB813 (Q)-0	8/27/2002	0	NV	R	NV	NV	NV
SB814 (Q)-0	8/27/2002	0	NV	0.025	U	NV	NV
SB815 (Q)-0	8/27/2002	0	NV	0.025	U	NV	NV
SB816 (Q)-0	8/27/2002	0	NV	0.025	U	NV	NV
SB-817 (Q)-0	8/28/2002	0	NV	0.025	U	NV	NV
SB-818 (Q)-0	8/28/2002	0	NV	0.025	U	NV	NV
SB-819 (Q)-0	8/28/2002	0	NV	0.025	U	NV	NV
SB-820 (Q)-0	8/29/2002	0	NV	0.025	U	NV	NV
SB-820 (Q)-0C	8/29/2002	0	1.25	U	NV	0.5	0.0167
SB-821 (Q)-0	8/29/2002	0	NV	0.025	U	NV	NV
SB-822 (Q)-0	8/29/2002	0	NV	0.025	U	NV	NV
SB-823 (Q)-0	8/27/2002	0	NV	0.025	U	NV	NV
SB-824 (Q)-0	8/27/2002	0	NV	0.025	U	NV	NV
SB-825 (Q)-0	8/27/2002	0	NV	0.025	U	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Acetone	Benzene	Bromo- methane	Carbon Disulfide	Chloro- methane
DEQ RBC—Urban Residential Direct Contact			NV	21	59	NV	310
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	18	160	NV	78
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.15	1.3	NV	0.63
SB-826 (Q)-0	8/27/2002	0	NV	0.025	U	NV	NV
SB-827 (Q)-0	8/29/2002	0	NV	0.025	U	NV	NV
SB-828 (Q)-0	8/28/2002	0	NV	0.05	NV	NV	NV
SB-829 (Q)-0	8/28/2002	0	NV	0.025	U	NV	NV
SB-830 (Q)-0	8/28/2002	0	NV	0.025	U	NV	NV
SB-831 (Q)-0	8/28/2002	0	NV	0.025	U	NV	NV
SB-832 (Q)-0	8/28/2002	0	NV	0.025	U	NV	NV
SB-833 (Q)-0	8/28/2002	0	NV	0.025	U	NV	NV
Ex-1/S-1	3/30/2004	1	NV	0.025	U	NV	NV
Ex-2/S-1	3/30/2004	1	NV	0.0493	NV	NV	NV
Ex-3/S-1	3/31/2004	1	NV	0.025	U	NV	NV
Ex-4/S-1	3/29/2004	1	NV	0.025	U	NV	NV
SB-618 (N)-1.5	9/12/2002	1.5	NV	0.025	U	NV	NV
SB-008(A)-2	8/26/2003	2	NV	0.025	U	NV	NV
SB-009(A)-2	8/27/2003	2	NV	0.025	U	NV	NV
SB-010(A)-2	8/27/2003	2	NV	0.025	U	NV	NV
SB102(C)1-3	8/22/2002	2	0.00613	0.0005	U	0.01	U
SB224 (C)-2	8/29/2002	2	0.01	U	0.0005	U	0.0025
SB231 (C)-2	8/29/2002	2	0.01	U	0.0005	U	0.0025
SB-253(C)-2	9/4/2003	2	NV	0.025	U	NV	NV
SB-254(C)-2	9/4/2003	2	NV	0.025	U	NV	NV
SB-304-D-2.0	8/19/2002	2	NV	0.05	U	NV	NV
SB-305-D-2.0	8/19/2002	2	NV	0.05	U	NV	NV
SB-306-D-2.0	8/19/2002	2	NV	0.0263	NV	NV	NV
SB-307-D-2.0	8/19/2002	2	NV	0.0005	U	NV	NV
SB-309-D-2.0	8/19/2002	2	NV	0.0526	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Acetone	Benzene	Bromo- methane	Carbon Disulfide	Chloro- methane
DEQ RBC—Urban Residential Direct Contact			NV	21	59	NV	310
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	18	160	NV	78
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.15	1.3	NV	0.63
SB-310-D-2.0	8/19/2002	2	NV	0.025 U	NV	NV	NV
SB-315-D-2.0	8/20/2002	2	NV	0.00371	NV	NV	NV
SB-316-D-2.0	8/20/2002	2	NV	0.025 U	NV	NV	NV
SB-320(D)-2	9/10/2003	2	NV	0.025 U	NV	NV	NV
SB-321(D)-2	9/9/2003	2	NV	0.0456	NV	NV	NV
SB-322(D)-2	9/10/2003	2	NV	0.025 U	NV	NV	NV
SB-324(D)-2	9/10/2003	2	NV	0.025 U	NV	NV	NV
SB-325(D)-2	9/10/2003	2	NV	0.025 U	NV	NV	NV
SB-325(D)-DUP	9/10/2003	2	NV	0.025 U	NV	NV	NV
SB-326(D)-2	9/9/2003	2	NV	0.0689	NV	NV	NV
SB-327(D)-2	9/10/2003	2	NV	0.025 U	NV	NV	NV
SB-328(D)-2	9/10/2003	2	NV	0.025 U	NV	NV	NV
SB-410(F)-2'	3/31/2004	2	NV	0.02 U	NV	NV	NV
SB-622 (N)-2	9/12/2002	2	NV	0.025 U	NV	NV	NV
SB-624 (N)-2	9/12/2002	2	NV	0.025 U	NV	NV	NV
SB-625 (N)-2	9/12/2002	2	NV	0.025 U	NV	NV	NV
SB-627(N)-2	8/28/2003	2	NV	0.025 U	NV	NV	NV
SB-701(P)-2	8/20/2002	2	0.01 U	0.025 U	0.0025 U	0.01 U	0.0025 U
SB-701(P)-2	8/20/2002	2	NV	0.0005 U	NV	NV	NV
SB-702(P)-2	8/21/2002	2	0.0266	0.025 U	0.0025 U	0.01 U	0.0025 U
SB-702(P)-2	8/21/2002	2	NV	0.000167	NV	NV	NV
SB-703(P)-2	8/21/2002	2	0.119	0.025 U	0.0025 U	0.000519	0.0025 U
SB-703(P)-2	8/21/2002	2	NV	0.000395	NV	NV	NV
SB-704(P)-2	8/21/2002	2	0.01 U	0.025 U	0.0025 U	0.01 U	0.0025 U
SB-704(P)-2	8/21/2002	2	NV	0.0005 U	NV	NV	NV
SB-707(P)-2	8/21/2002	2	NV	0.025 U	NV	NV	NV



**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Acetone	Benzene	Bromo- methane	Carbon Disulfide	Chloro- methane
DEQ RBC—Urban Residential Direct Contact			NV	21	59	NV	310
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	18	160	NV	78
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.15	1.3	NV	0.63
SB-712(P)-2	8/21/2002	2	NV	0.025	0.0025	0.01	0.0025
SB-712(P)-2	8/21/2002	2	NV	0.0005	NV	NV	NV
SB-713(P)-2	8/21/2002	2	NV	0.025	NV	NV	NV
SB-714(P)-2	8/21/2002	2	NV	0.025	NV	NV	NV
SB-718(P)-2	8/21/2002	2	NV	0.025	NV	NV	NV
SB-720(P)-2	8/23/2002	2	NV	0.025	NV	NV	NV
SB-800 (Q)-2	8/27/2002	2	NV	0.025	NV	NV	NV
SB801(Q)-2	8/26/2002	2	NV	0.025	NV	NV	NV
SB802(Q)-2	8/26/2002	2	NV	0.025	NV	NV	NV
SB803(Q)-2	8/26/2002	2	NV	0.025	NV	NV	NV
SB-804(Q)-2	8/26/2002	2	NV	0.025	NV	NV	NV
SB-805(Q)-2	8/26/2002	2	NV	0.025	NV	NV	NV
SB-806 (Q)-2	8/28/2002	2	NV	0.025	NV	NV	NV
SB-809 (Q)-2	8/28/2002	2	NV	0.025	NV	NV	NV
SB-810 (Q)-2	8/28/2002	2	NV	0.025	NV	NV	NV
SB816(Q)-2	8/27/2002	2	NV	0.025	NV	NV	NV
SB-817 (Q)-2	8/28/2002	2	NV	0.025	NV	NV	NV
SB-820 (Q)-2	8/29/2002	2	NV	0.025	NV	NV	NV
SB-822 (Q)-2	8/29/2002	2	NV	0.025	NV	NV	NV
SB-822 (Q)-2C	8/29/2002	2	NV	0.025	NV	NV	NV
SB-823 (Q)-2	8/27/2002	2	NV	0.025	NV	NV	NV
SB-825 (Q)-2	8/27/2002	2	NV	0.025	NV	NV	NV
SB-827 (Q)-2	8/29/2002	2	NV	0.025	NV	NV	NV
SB-828 (Q)-2	8/28/2002	2	NV	0.025	NV	NV	NV
SB-829 (Q)-2	8/28/2002	2	NV	0.025	NV	NV	NV
SB-829 (Q)-2C	8/28/2002	2	NV	0.025	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Acetone	Benzene	Bromo- methane	Carbon Disulfide	Chloro- methane
DEQ RBC—Urban Residential Direct Contact			NV	21	59	NV	310
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	18	160	NV	78
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.15	1.3	NV	0.63
SB-830 (Q)-2	8/28/2002	2	NV	0.025	U	NV	NV
SB-832 (Q)-2	8/28/2002	2	NV	0.025	U	NV	NV
SB-833 (Q)-2	8/28/2002	2	NV	0.025	U	NV	NV
SB-834(Q)-2	9/5/2003	2	NV	0.025	U	NV	NV
SB-835(Q)-2	9/5/2003	2	NV	0.025	U	NV	NV
SB-912(S)-2	9/3/2003	2	NV	0.025	U	NV	NV
SB-913(S)-2	9/3/2003	2	NV	0.025	U	NV	NV
SB-914(S)-2	9/3/2003	2	NV	0.025	U	NV	NV
SB-D-DUP-0819	8/19/2002	2	NV	0.025	U	NV	NV
SB-002(A)-2.5	8/27/2003	2.5	NV	0.025	U	NV	NV
SB-005(A)-2.5	9/5/2003	2.5	NV	0.025	U	NV	NV
SB-019(A)-2.5	8/27/2003	2.5	NV	0.025	U	NV	NV
SB212(C)-2.5	8/27/2002	2.5	0.01	U	0.0005	U	0.0025
SB218(C)-2.5	8/28/2002	2.5	0.01	U	0.0005	U	0.0025
SB-255(C)-2.5	9/4/2003	2.5	NV	0.025	U	NV	NV
SB-400(F)-2.5	8/22/2002	2.5	NV	0.025	U	NV	NV
SB-401(F)-2.5	8/23/2002	2.5	NV	0.025	U	NV	NV
SB-402(F)-2.5	8/23/2002	2.5	NV	0.025	U	NV	NV
SB-402(F)-2.5	8/23/2002	2.5	NV	0.00116		NV	NV
SB-404(F)-2.5	8/22/2002	2.5	NV	0.025	U	NV	NV
SB-405(F)-2.5	8/22/2002	2.5	NV	0.025	U	NV	NV
SB-406(F)-2.5	8/22/2002	2.5	NV	0.025	U	NV	NV
SB-407(F)-2.5	8/22/2002	2.5	NV	0.025	U	NV	NV
SB-408(F)-2.5	8/22/2002	2.5	NV	0.025	U	NV	NV
SB-408(F)-2.5	8/22/2002	2.5	NV	0.0005	U	NV	NV
SB-409(F)-2.5	8/22/2002	2.5	NV	0.025	U	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Acetone	Benzene	Bromo- methane	Carbon Disulfide	Chloro- methane
DEQ RBC—Urban Residential Direct Contact			NV	21	59	NV	310
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	18	160	NV	78
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.15	1.3	NV	0.63
SB-706(P)-2.5	8/21/2002	2.5	NV	0.025	NV	NV	NV
SB 233 (C)-3	8/30/2002	3	0.01	0.0005	0.0025	0.01	0.0025
SB 238 (C)-3	8/30/2002	3	0.01	0.0005	0.0025	0.01	0.0025
SB100(C)3	8/22/2002	3	0.01	0.0005	0.0025	0.01	0.0025
SB101(C)3	8/22/2002	3	0.01	0.0005	0.0025	0.01	0.0025
SB103(C)3	8/22/2002	3	0.0102	0.0005	0.0025	0.01	0.0025
SB200(C)3	8/22/2002	3	0.01	0.0005	0.0025	0.01	0.0025
SB201(C)3	8/22/2002	3	0.01	0.0005	0.0025	0.01	0.0025
SB202(C)3	8/22/2002	3	0.00483	0.0005	0.0025	0.01	0.0025
SB203(C)3	8/22/2002	3	0.01	0.0005	0.0025	0.01	0.0025
SB204(C)3	8/22/2002	3	0.0059	0.0005	0.0025	0.01	0.0025
SB209(C)-3	8/27/2002	3	0.01	0.0005	0.0025	0.01	0.0025
SB211(C)-3	8/27/2002	3	0.01	0.0005	0.0025	0.01	0.0025
SB216(C)-3	8/27/2002	3	0.01	0.0005	0.0025	0.01	0.0025
SB217(C)-3	8/28/2002	3	0.01	0.0005	0.0025	0.01	0.0025
SB225 (C)-3	8/29/2002	3	0.01	0.0005	0.0025	0.01	0.0025
SB226 (C)-3	8/29/2002	3	0.01	0.0005	0.0025	0.01	0.0025
SB-244(C)-3	9/3/2002	3	0.01	0.0005	0.0025	0.01	0.0025
SB-601(N)-3	9/13/2002	3	NV	0.025	NV	NV	NV
SB-602(N)-3	9/13/2002	3	NV	0.025	NV	NV	NV
SB-604(N)-3	9/13/2002	3	NV	0.025	NV	NV	NV
SB-605(N)-3	9/13/2002	3	NV	0.157	NV	NV	NV
SB-606(N)-3	9/13/2002	3	NV	0.025	NV	NV	NV
SB-608(N)-3	9/13/2002	3	NV	0.025	NV	NV	NV
SB-609(N)-3	9/13/2002	3	NV	0.025	NV	NV	NV
SB-617 (N)-3	9/12/2002	3	NV	0.025	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Acetone	Benzene	Bromo- methane	Carbon Disulfide	Chloro- methane
DEQ RBC—Urban Residential Direct Contact			NV	21	59	NV	310
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	18	160	NV	78
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.15	1.3	NV	0.63
SB-620 (N)-3	9/12/2002	3	NV	0.025	NV	NV	NV
SB-700(P)-3	8/21/2002	3	0.01	0.025	0.0025	0.01	0.0025
SB-700(P)-3	8/21/2002	3	NV	0.0005	NV	NV	NV
SB-705(P)-3	8/20/2002	3	NV	0.025	NV	NV	NV
SB-708(P)-3	8/20/2002	3	NV	0.025	NV	NV	NV
SB-709(P)-3	8/21/2002	3	0.0266	0.025	0.000359	0.01	0.0025
SB-709(P)-3	8/21/2002	3	NV	0.0005	NV	NV	NV
SB-710(P)-3	8/21/2002	3	0.01	0.025	0.0025	0.01	0.0025
SB-710(P)-3	8/21/2002	3	NV	0.000226	NV	NV	NV
SB-711(P)-3	8/21/2002	3	0.01	0.025	0.000358	0.01	0.0025
SB-711(P)-3	8/21/2002	3	NV	0.0005	NV	NV	NV
SB-715(P)-3	8/21/2002	3	NV	0.025	NV	NV	NV
SB-716(P)-3	8/20/2002	3	0.01	0.025	0.0025	0.01	0.0025
SB-716(P)-3	8/20/2002	3	NV	0.0005	NV	NV	NV
SB-717(P)-3	8/20/2002	3	0.01	0.025	0.0025	0.01	0.0025
SB-717(P)-3	8/20/2002	3	NV	0.0005	NV	NV	NV
SB-824 (Q)-3	8/27/2002	3	NV	0.025	NV	NV	NV
SB-826 (Q)-3	8/27/2002	3	NV	0.025	NV	NV	NV
SB-D-DUP-3	8/20/2002	3	NV	0.168	NV	NV	NV
SB208(C)-3.5	8/27/2002	3.5	0.01	0.0005	0.0025	0.01	0.0025
SB210(C)-3.5	8/27/2002	3.5	0.01	0.0005	0.0025	0.01	0.0025
SB-301-D-3.5	8/20/2002	3.5	NV	0.05	NV	NV	NV
SB-020(A)-4'	3/31/2004	4	NV	0.02	NV	NV	NV
SB104(C)4	8/22/2002	4	0.01	0.0005	0.0025	0.01	0.0025
SB213(C)-4	8/27/2002	4	0.01	0.0005	0.0025	0.01	0.0025
SB219(C)-4	8/28/2002	4	0.01	0.0005	0.0025	0.01	0.0025

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Acetone	Benzene	Bromo- methane	Carbon Disulfide	Chloro- methane
DEQ RBC—Urban Residential Direct Contact			NV	21	59	NV	310
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	18	160	NV	78
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.15	1.3	NV	0.63
SB228 (C)-4	8/29/2002	4	0.01	U	0.0025	U	0.0025
SB-239(C)-4	9/3/2002	4	0.01	U	0.0025	U	0.0025
SB-242(C)-4	9/3/2002	4	0.01	U	0.0025	U	0.0025
SB-243(C)-4	9/3/2002	4	0.01	U	0.0025	U	0.0025
SB-250(C)-4	9/9/2002	4	0.01	U	0.000698	U	0.0025
SB-251(C)-4	9/9/2002	4	0.01	U	0.000601	U	0.0025
SB-410(F)-4'	3/31/2004	4	NV	0.02	NV	NV	NV
SB-818 (Q)-4	8/28/2002	4	NV	0.025	NV	NV	NV
SB-831 (Q)-4	8/28/2002	4	NV	0.025	NV	NV	NV
SB-900(S)-4	8/26/2002	4	NV	0.0005	NV	NV	NV
SB-904 (S)-4	8/26/2002	4	NV	0.025	NV	NV	NV
SB-905 (S)-4	8/26/2002	4	NV	0.025	NV	NV	NV
SB-906 (S)-4	8/27/2002	4	NV	0.0005	NV	NV	NV
SB-908 (S)-4	8/27/2002	4	NV	0.025	NV	NV	NV
SB-909 (S)-4	8/27/2002	4	NV	0.025	NV	NV	NV
SB-910 (S)-4	8/27/2002	4	NV	0.0005	NV	NV	NV
SB205(C)-4.5	8/27/2002	4.5	0.01	U	0.0025	U	0.0025
SB207(C)-4.5	8/27/2002	4.5	0.01	U	0.0025	U	0.0025
SB221 (C)-4.5	8/28/2002	4.5	0.01	U	0.0025	U	0.0025
SB222 (C)-4.5	8/28/2002	4.5	0.01	U	0.0025	U	0.0025
SB-305-D-4.5	8/19/2002	4.5	NV	0.025	NV	NV	NV
SB-306-D-4.5	8/19/2002	4.5	NV	0.265	NV	NV	NV
SB812(Q)-4.5	8/27/2002	4.5	NV	0.025	NV	NV	NV
SB814(Q)-4.5	8/27/2002	4.5	NV	0.025	NV	NV	NV
SB815(Q)-4.5	8/27/2002	4.5	NV	0.025	NV	NV	NV
SB214(C)-5	8/27/2002	5	0.01	U	0.0025	U	0.0025

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Acetone	Benzene	Bromo- methane	Carbon Disulfide	Chloro- methane
DEQ RBC—Urban Residential Direct Contact			NV	21	59	NV	310
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	18	160	NV	78
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.15	1.3	NV	0.63
SB215(C)-5	8/27/2002	5	0.01	U	0.0025	U	0.0025
SB220 (C)-5	8/28/2002	5	0.01	U	0.0025	U	0.0025
SB-241(C)-5	9/3/2002	5	0.01	U	0.0025	U	0.0025
SB-245(C)-5	9/3/2002	5	0.01	U	0.0025	U	0.0025
SB-246(C)-5	9/3/2002	5	0.01	U	0.0025	U	0.0025
SB-252(C)-5	9/9/2002	5	0.01	U	0.0062	U	0.0025
SB-304-D-5.0	8/19/2002	5	NV	0.05	NV	NV	NV
SB-309-D-5.0	8/19/2002	5	NV	0.000283	NV	NV	NV
SB-310-D-5.0	8/19/2002	5	NV	0.226	NV	NV	NV
SB-311-D-5.0	8/19/2002	5	NV	0.025	NV	NV	NV
SB-312-D-5.0	8/19/2002	5	NV	0.025	NV	NV	NV
SB-313-D-5.0	8/20/2002	5	NV	0.0376	NV	NV	NV
SB-316-D-5.0	8/20/2002	5	NV	0.114	NV	NV	NV
SB-320(D)-5	9/10/2003	5	NV	0.025	NV	NV	NV
SB-321(D)-5	9/9/2003	5	NV	0.563	NV	NV	NV
SB-322(D)-5	9/10/2003	5	NV	0.025	NV	NV	NV
SB-324(D)-5	9/10/2003	5	NV	0.025	NV	NV	NV
SB-325(D)-5	9/10/2003	5	NV	0.025	NV	NV	NV
SB-326(D)-5	9/9/2003	5	NV	0.599	NV	NV	NV
SB-327(D)-5	9/10/2003	5	NV	0.025	NV	NV	NV
SB-328(D)-5	9/10/2003	5	NV	0.025	NV	NV	NV
SB-400(F)-5	8/22/2002	5	NV	0.025	NV	NV	NV
SB-409(F)-5	8/22/2002	5	NV	0.025	NV	NV	NV
SB-719(P)-5	8/23/2002	5	NV	0.025	NV	NV	NV
SB-811 (Q)-5	8/27/2002	5	NV	0.025	NV	NV	NV
SB813(Q)-5	8/27/2002	5	NV	0.025	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Acetone	Benzene	Bromo- methane	Carbon Disulfide	Chloro- methane
DEQ RBC—Urban Residential Direct Contact			NV	21	59	NV	310
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	18	160	NV	78
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.15	1.3	NV	0.63
SB-819 (Q)-5	8/28/2002	5	NV	0.025	U	NV	NV
SB-821 (Q)-5	8/29/2002	5	NV	1.29	NV	NV	NV
SB-821 (Q)-5C	8/29/2002	5	NV	0.1	NV	NV	NV
SB-613 (N)-5.5	9/12/2002	5.5	NV	2.5	NV	NV	NV
SB-617 (N)-5.5	9/12/2002	5.5	NV	0.025	NV	NV	NV
SB-705(P)-5.5	8/20/2002	5.5	NV	0.025	NV	NV	NV
SB-706(P)-5.5	8/21/2002	5.5	0.159	0.025	U	0.00208	0.0025
SB-710(P)-5.5	8/21/2002	5.5	0.13	0.00244	U	0.00242	0.0025
SB 235 (C)-6	8/30/2002	6	0.01	U	0.0025	U	0.0025
SB 236 (C)-6	8/30/2002	6	0.01	U	0.0025	U	0.0025
SB 237 (C)-6	8/30/2002	6	0.0114	0.0005	U	0.01	U
SB200(C)6	8/22/2002	6	0.00889	0.0005	U	0.01	U
SB201(C)6	8/22/2002	6	0.01	U	0.0025	U	0.0025
SB206(C)-6	8/27/2002	6	0.01	U	0.0025	U	0.0025
SB223 (C)-6	8/29/2002	6	0.01	U	0.0025	U	0.0025
SB-240(C)-6	9/3/2002	6	0.01	U	0.0025	U	0.0025
SB-247(C)-6	9/3/2002	6	0.01	U	0.0025	U	0.0025
SB256 (c) 6	3/31/2004	6	1.25	U	0.25	U	0.25
SB-501 (M) 4-8	8/29/2002	6	NV	0.03	NV	NV	NV
SB-608(N)-6	9/13/2002	6	NV	0.025	NV	NV	NV
TP201(C)6E	8/27/2002	6	0.01	U	0.0025	U	0.0025
TP202(C)6W	8/27/2002	6	0.01	U	0.0025	U	0.0025
SB408(S-2(6-7)	8/22/2002	6.5	NV	0.025	U	NV	NV
SB-827 (Q)-6.5	8/29/2002	6.5	NV	0.025	U	NV	NV
SB-005(A)-7	9/5/2003	7	NV	0.025	U	NV	NV
SB-006(A)-7	3/31/2004	7	NV	4.39	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Acetone	Benzene	Bromo- methane	Carbon Disulfide	Chloro- methane
DEQ RBC—Urban Residential Direct Contact			NV	21	59	NV	310
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	18	160	NV	78
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.15	1.3	NV	0.63
SB-015(A)-7	9/10/2003	7	NV	0.116	NV	NV	NV
SB202(C)7	8/22/2002	7	0.00504	0.0005	U	0.01	0.0025
SB203(C)7	8/22/2002	7	0.01	0.0005	U	0.01	0.0025
SB-254(C)-7	9/4/2003	7	NV	0.025	U	NV	NV
SB-255(C)-7	9/4/2003	7	NV	0.0122	NV	NV	NV
SB-323(D)-7	9/10/2003	7	NV	0.025	U	NV	NV
SB407(S-2(6-8)	8/22/2002	7	NV	0.5	U	NV	NV
SB-600(N)-7	9/13/2002	7	NV	2.5	U	NV	NV
SB-601(N)-7	9/13/2002	7	NV	5	U	NV	NV
SB-601(N)-7	9/13/2002	7	NV	2.5	U	NV	NV
SB-602(N)-7	9/13/2002	7	NV	0.5	U	NV	NV
SB-602(N)-7	9/13/2002	7	NV	7.84	NV	NV	NV
SB-603(N)-7	9/13/2002	7	NV	2.5	U	NV	NV
SB-603(N)-7	9/13/2002	7	NV	1.25	U	NV	NV
SB-604(N)-7	9/13/2002	7	NV	0.5	U	NV	NV
SB-605(N)-7	9/13/2002	7	NV	3.22	NV	NV	NV
SB-606(N)-7	9/13/2002	7	NV	0.025	U	NV	NV
SB-609(N)-7	9/13/2002	7	NV	0.025	U	NV	NV
SB-612 (N)-7	9/12/2002	7	NV	17.2	NV	NV	NV
SB-612 (N)-7	9/12/2002	7	NV	5.35	NV	NV	NV
SB-614 (N)-7	9/12/2002	7	NV	0.5	U	NV	NV
SB-615 (N)-7	9/12/2002	7	NV	0.5	U	NV	NV
SB-616 (N)-7	9/12/2002	7	NV	2.5	U	NV	NV
SB-618 (N)-7	9/12/2002	7	12.5	U	2.5	5	2.5
SB-619 (N)-7	9/12/2002	7	NV	0.025	NV	NV	NV
SB-619 (N)-7	9/12/2002	7	NV	0.025	NV	NV	NV



**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Acetone	Benzene	Bromo- methane	Carbon Disulfide	Chloro- methane
DEQ RBC—Urban Residential Direct Contact			NV	21	59	NV	310
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	18	160	NV	78
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.15	1.3	NV	0.63
SB-620 (N)-7	9/12/2002	7	NV	2.5	NV	NV	NV
SB-620 (N)-7	9/12/2002	7	NV	1.25	NV	NV	NV
SB-621 (N)-7	9/12/2002	7	NV	0.025	NV	NV	NV
SB-622 (N)-7	9/12/2002	7	0.01	0.025	0.0025	0.01	0.0025
SB-622 (N)-7	9/12/2002	7	NV	0.0005	NV	NV	NV
SB-623 (N)-7	9/12/2002	7	NV	0.5	NV	NV	NV
SB-623 (N)-7	9/12/2002	7	NV	0.25	NV	NV	NV
SB-624 (N)-7	9/12/2002	7	6.25	0.25	1.25	2.5	1.25
SB-625 (N)-7	9/12/2002	7	NV	0.025	NV	NV	NV
SB-625 (N)-7	9/12/2002	7	NV	0.025	NV	NV	NV
SB-626 (N)-7	9/12/2002	7	NV	2.5	NV	NV	NV
SB-626 (N)-7	9/12/2002	7	NV	1.25	NV	NV	NV
SB-715(P)-7	8/21/2002	7	NV	0.025	NV	NV	NV
SB-721(P)-7	3/31/2004	7	NV	0.02	NV	NV	NV
SB-807 (Q)-7	8/28/2002	7	NV	0.25	NV	NV	NV
SB-835(Q)-7	9/5/2003	7	NV	0.025	NV	NV	NV
SB-912(S)-7	9/3/2003	7	NV	0.025	NV	NV	NV
SB-913(S)-7	9/3/2003	7	NV	0.025	NV	NV	NV
SB-001(A)-7.5	8/27/2003	7.5	NV	0.025	NV	NV	NV
SB-002(A)-7.5	8/27/2003	7.5	NV	0.025	NV	NV	NV
SB-007(A)-7.5	8/26/2003	7.5	NV	1.19	NV	NV	NV
SB-008(A)-7.5	8/26/2003	7.5	NV	0.025	NV	NV	NV
SB-009(A)-7.5	8/27/2003	7.5	NV	0.309	NV	NV	NV
SB-010(A)-7.5	8/27/2003	7.5	NV	0.025	NV	NV	NV
SB-011(A)-7.5	9/3/2003	7.5	NV	0.025	NV	NV	NV
SB-013(A)-7.5	9/3/2003	7.5	NV	0.025	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Acetone	Benzene	Bromo- methane	Carbon Disulfide	Chloro- methane
DEQ RBC—Urban Residential Direct Contact			NV	21	59	NV	310
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	18	160	NV	78
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.15	1.3	NV	0.63
SB-017(A)-7.5	9/8/2003	7.5	NV	0.025	U	NV	NV
SB-019(A)-7.5	8/27/2003	7.5	NV	1.25	U	NV	NV
SB-253(C)-7.5	9/4/2003	7.5	NV	0.025	U	NV	NV
SB-405(F)-7.5	8/22/2002	7.5	NV	0.05	U	NV	NV
SB-405(F)-7.5	8/22/2002	7.5	NV	0.025	U	NV	NV
SB-407(F)-7.5	8/22/2002	7.5	NV	0.5	U	NV	NV
SB-407(F)-7.5	8/22/2002	7.5	NV	0.05	U	NV	NV
SB-408(F)-7.5	8/22/2002	7.5	NV	0.025	U	NV	NV
SB-629(N)-7.5	8/28/2003	7.5	NV	0.131	NV	NV	NV
SB-632(N)-7.5	9/8/2003	7.5	NV	0.25	U	NV	NV
SB-714(P)-7.5	8/21/2002	7.5	NV	1	U	NV	NV
SB-834(Q)-7.5	9/5/2003	7.5	NV	0.025	U	NV	NV
SB-914(S)-7.5	9/3/2003	7.5	NV	0.025	U	NV	NV
SB 232 (C)-8	8/30/2002	8	0.01	U	0.0025	U	0.0025
SB 234 (C)-8	8/30/2002	8	0.01	U	0.0025	U	0.0025
SB204(C)8	8/22/2002	8	0.00462	U	0.0025	U	0.0025
SB227 (C)-8	8/29/2002	8	0.01	U	0.0025	U	0.0025
SB229 (C)-8	8/29/2002	8	0.01	U	0.0025	U	0.0025
SB230 (C)-8	8/29/2002	8	0.01	U	0.0025	U	0.0025
SB-406(F)-8	8/22/2002	8	NV	0.025	U	NV	NV
SB-806 (Q)-8	8/28/2002	8	NV	0.025	U	NV	NV
SB-810 (Q)-8	8/28/2002	8	NV	0.025	U	NV	NV
SB-822 (Q)-8	8/29/2002	8	NV	0.307	NV	NV	NV
SB-901 (S)-8	8/26/2002	8	NV	0.025	U	NV	NV
SB-902 (S)-8	8/26/2002	8	NV	0.025	U	NV	NV
SB-903 (S)-8	8/26/2002	8	NV	0.025	U	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Acetone	Benzene	Bromo- methane	Carbon Disulfide	Chloro- methane
DEQ RBC—Urban Residential Direct Contact			NV	21	59	NV	310
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	18	160	NV	78
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.15	1.3	NV	0.63
SB-908 (S)-8	8/27/2002	8	NV	0.0005	U	NV	NV
SB-911 (S)-8	8/27/2002	8	NV	0.025	U	NV	NV
SB-720(P)-8.5	8/23/2002	8.5	NV	5.86	NV	NV	NV
SB-804(Q)-8.5	8/26/2002	8.5	NV	0.025	U	NV	NV
SB-809 (Q)-8.5	8/28/2002	8.5	NV	0.05	NV	NV	NV
SB-828 (Q)-8.5	8/28/2002	8.5	NV	0.05	NV	NV	NV
SB-830 (Q)-8.5	8/28/2002	8.5	NV	0.025	U	NV	NV
SB-020(A)-9'	3/31/2004	9	NV	0.02	U	NV	NV
SB-410(F)-9'	3/31/2004	9	NV	0.02	U	NV	NV
SB802(Q)-9	8/26/2002	9	NV	0.025	U	NV	NV
SB803(Q)-9	8/26/2002	9	NV	0.025	U	NV	NV
SB-807 (Q)-9	8/28/2002	9	NV	0.0632	NV	NV	NV
SB-811 (Q)-9	8/27/2002	9	NV	0.05	NV	NV	NV
SB-811 (Q)-9C	8/27/2002	9	NV	0.05	NV	NV	NV
SB812(Q)-9	8/27/2002	9	NV	0.025	U	NV	NV
SB814(Q)-9	8/27/2002	9	NV	0.025	U	NV	NV
SB-817 (Q)-9	8/28/2002	9	NV	0.025	U	NV	NV
SB-818 (Q)-9	8/28/2002	9	NV	0.025	U	NV	NV
SB-820 (Q)-9	8/29/2002	9	NV	0.025	U	NV	NV
SB-820 (Q)-9C	8/29/2002	9	NV	3.54	NV	NV	NV
SB-821 (Q)-9	8/29/2002	9	NV	0.025	U	NV	NV
SB-823 (Q)-9	8/27/2002	9	NV	0.025	U	NV	NV
SB-824 (Q)-9	8/27/2002	9	NV	0.025	U	NV	NV
SB-825 (Q)-9	8/27/2002	9	NV	0.05	NV	NV	NV
SB-826 (Q)-9	8/27/2002	9	NV	0.025	U	NV	NV
SB-829 (Q)-9	8/28/2002	9	NV	0.025	U	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Acetone	Benzene	Bromo- methane	Carbon Disulfide	Chloro- methane
DEQ RBC—Urban Residential Direct Contact			NV	21	59	NV	310
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	18	160	NV	78
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.15	1.3	NV	0.63
SB-831 (Q)-9	8/28/2002	9	NV	0.025	U	NV	NV
SB-832 (Q)-9	8/28/2002	9	NV	0.025	U	NV	NV
SB-705(P)-9.5	8/20/2002	9.5	NV	0.025	U	NV	NV
SB-706(P)-9.5	8/21/2002	9.5	NV	0.025	U	NV	NV
SB801(Q)-9.5	8/26/2002	9.5	NV	0.025	U	NV	NV
SB813(Q)-9.5	8/27/2002	9.5	NV	0.025	U	NV	NV
SB815(Q)-9.5	8/27/2002	9.5	NV	0.025	U	NV	NV
SB816(Q)-9.5	8/27/2002	9.5	NV	0.025	U	NV	NV
SB-316-D-10.0	8/20/2002	10	NV	1.52	NV	NV	NV
SB-318-D-10.0	8/20/2002	10	NV	0.125	U	NV	NV
SB-324(D)-10	9/10/2003	10	NV	0.141	NV	NV	NV
SB-325(D)-10	9/10/2003	10	NV	0.025	U	NV	NV
SB-326(D)-10	9/9/2003	10	NV	0.639	NV	NV	NV
SB-327(D)-10	9/10/2003	10	NV	0.05	U	NV	NV
SB-328(D)-10	9/10/2003	10	NV	0.472	NV	NV	NV
SB-500 (M) 8-12	8/29/2002	10	NV	0.025	U	NV	NV
SB-501 (M) 8-12	8/29/2002	10	NV	6.11	NV	NV	NV
SB-502 (M) 8-12	8/29/2002	10	NV	0.0763	NV	NV	NV
SB-503 (M) 8-12	8/29/2002	10	NV	0.25	U	NV	NV
SB-505 (M) 8-12	8/29/2002	10	NV	0.101	NV	NV	NV
SB-506 (M) 8-12	8/29/2002	10	NV	2.14	NV	NV	NV
SB-507 (M) 8-12	8/29/2002	10	NV	2.61	NV	NV	NV
SB-508 (M) 8-12	8/29/2002	10	NV	3.12	NV	NV	NV
SB-509 (M) 8-12	8/29/2002	10	NV	0.025	U	NV	NV
SB-510 (M) 8-12	8/29/2002	10	NV	1.43	NV	NV	NV
SB-625 (N)-10	9/12/2002	10	NV	0.025	U	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Acetone	Benzene	Bromo- methane	Carbon Disulfide	Chloro- methane
DEQ RBC—Urban Residential Direct Contact			NV	21	59	NV	310
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	18	160	NV	78
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.15	1.3	NV	0.63
SB-703(P)-10	8/21/2002	10	0.0337	0.025	U	0.01	U
SB-703(P)-10	8/21/2002	10	NV	0.0005	NV	NV	NV
SB-707(P)-10	8/21/2002	10	0.00583	0.025	U	0.01	U
SB-707(P)-10	8/21/2002	10	NV	0.0005	NV	NV	NV
SB-708(P)-10	8/20/2002	10	NV	0.025	NV	NV	NV
SB-709(P)-10	8/21/2002	10	NV	U	0.000385	0.01	U
SB-709(P)-10	8/21/2002	10	NV	0.0005	NV	NV	NV
SB-711(P)-10	8/21/2002	10	0.01	U	0.000428	0.01	U
SB-711(P)-10	8/21/2002	10	NV	0.0005	NV	NV	NV
SB-712(P)-10	8/21/2002	10	0.01	U	0.0025	U	U
SB-712(P)-10	8/21/2002	10	NV	0.0005	NV	NV	NV
SB-713(P)-10	8/21/2002	10	NV	0.025	NV	NV	NV
SB-714(P)-10	8/21/2002	10	NV	2.5	NV	NV	NV
SB-714(P)-10	8/21/2002	10	NV	0.5	NV	NV	NV
SB-716(P)-10	8/20/2002	10	0.0077	0.025	U	0.01	U
SB-716(P)-10	8/20/2002	10	NV	0.0005	NV	NV	NV
SB-717(P)-10	8/20/2002	10	0.0058	0.025	U	0.01	U
SB-717(P)-10	8/20/2002	10	NV	0.0005	NV	NV	NV
SB-718(P)-10	8/21/2002	10	NV	0.025	NV	NV	NV
SB-805(Q)-10	8/26/2002	10	NV	0.025	NV	NV	NV
SB-822 (Q)-10	8/29/2002	10	NV	0.025	NV	NV	NV
SB-901 (S)-10	8/26/2002	10	NV	0.025	NV	NV	NV
SB-903 (S)-10	8/26/2002	10	NV	0.25	NV	NV	NV
SB-903 (S)-10	8/26/2002	10	NV	0.125	NV	NV	NV
SB-908 (S)-10	8/27/2002	10	NV	0.025	NV	NV	NV
SB-908 (S)-10	8/27/2002	10	NV	0.0005	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Acetone	Benzene	Bromo- methane	Carbon Disulfide	Chloro- methane
DEQ RBC—Urban Residential Direct Contact			NV	21	59	NV	310
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	18	160	NV	78
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.15	1.3	NV	0.63
SB-909 (S)-10	8/27/2002	10	NV	0.025	NV	NV	NV
SB-910 (S)-10	8/27/2002	10	NV	0.025	NV	NV	NV
SB-911 (S)-10	8/27/2002	10	NV	0.025	NV	NV	NV
SB-700(P)-10.5	8/21/2002	10.5	1.25	1	NV	0.5	0.25
SB-700(P)-10.5	8/21/2002	10.5	NV	0.05	NV	NV	NV
SB-800 (Q)-10.5	8/27/2002	10.5	NV	0.05	NV	NV	NV
SB-833 (Q)-10.5	8/28/2002	10.5	NV	0.025	NV	NV	NV
SB-027 (A)-11	9/14/2005	11	NV	0.477	NV	NV	NV
SB-504 (M) 10-12	8/29/2002	11	NV	0.025	NV	NV	NV
SB-607(N)-11	9/13/2002	11	NV	0.025	NV	NV	NV
SB-619 (N)-11	9/12/2002	11	NV	0.025	NV	NV	NV
SB-619 (N)-11	9/12/2002	11	NV	0.25	NV	NV	NV
SB-701(P)-11	8/20/2002	11	0.0515	0.025	0.0025	0.00389	0.0025
SB-701(P)-11	8/20/2002	11	NV	0.0005	NV	NV	NV
SB-702(P)-11	8/21/2002	11	0.0214	0.025	0.0025	0.01	0.0025
SB-702(P)-11	8/21/2002	11	NV	0.0005	NV	NV	NV
SB-704(P)-11	8/21/2002	11	0.00597	0.025	0.0025	0.01	0.0025
SB-704(P)-11	8/21/2002	11	NV	0.0005	NV	NV	NV
SB-715(P)-11	8/21/2002	11	NV	0.025	NV	NV	NV
SB-806 (Q)-11	8/28/2002	11	NV	0.025	NV	NV	NV
SB-819 (Q)-11	8/28/2002	11	NV	0.025	NV	NV	NV
SB-021 (A)-11.5	9/14/2005	11.5	NV	0.926	NV	NV	NV
SB-720(P)-11.5	8/23/2002	11.5	NV	2.5	NV	NV	NV
SB-701(P)-12	8/20/2002	12	0.0246	0.025	0.0025	0.000431	0.00153
SB-701(P)-12	8/20/2002	12	NV	0.0005	NV	NV	NV
SB-705(P)-12	8/20/2002	12	NV	0.025	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Acetone	Benzene	Bromo- methane	Carbon Disulfide	Chloro- methane
DEQ RBC—Urban Residential Direct Contact			NV	21	59	NV	310
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	18	160	NV	78
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.15	1.3	NV	0.63
SB-706(P)-12	8/21/2002	12	NV	0.025	NV	NV	NV
SB-719(P)-12	8/23/2002	12	NV	0.025	NV	NV	NV
SB-900(S)-12	8/26/2002	12	NV	2.5	NV	NV	NV
SB-900(S)-12	8/26/2002	12	NV	0.025	NV	NV	NV
SB-902 (S)-12	8/26/2002	12	NV	0.0005	NV	NV	NV
SB-904 (S)-12	8/26/2002	12	NV	0.5	NV	NV	NV
SB-904 (S)-12	8/26/2002	12	NV	0.125	NV	NV	NV
SB-905 (S)-12	8/26/2002	12	NV	0.025	NV	NV	NV
SB-905 (S)-12	8/26/2002	12	NV	0.0005	NV	NV	NV
SB-906 (S)-12	8/27/2002	12	NV	0.025	NV	NV	NV
SB-029 (A)-12.5	9/14/2005	12.5	NV	0.0122	NV	NV	NV
SB-316-D-14.5	8/20/2002	14.5	NV	0.37	NV	NV	NV
SB-314-D-15.0	8/20/2002	15	NV	0.00516	NV	NV	NV
SB-315-D-15.0	8/20/2002	15	NV	0.000165	NV	NV	NV
SB-318-D-15.0	8/20/2002	15	NV	0.5	NV	NV	NV
SB-324(D)-15	9/10/2003	15	NV	0.0328	NV	NV	NV
SB-324(D)-DUP	9/10/2003	15	NV	0.156	NV	NV	NV
SB-325(D)-15	9/10/2003	15	NV	0.025	NV	NV	NV
SB-327(D)-15	9/10/2003	15	NV	0.125	NV	NV	NV
SB-328(D)-15	9/10/2003	15	NV	0.0414	NV	NV	NV
SB101(C)18	8/22/2002	18	0.00791	0.0005	0.0025	0.01	0.0025
SB102(C)18	8/22/2002	18	0.01	0.0005	0.0025	0.01	0.0025
SB103(C)18	8/22/2002	18	0.285	0.000291	0.0025	0.00262	0.0025
SB-313-D-18.0	8/20/2002	18	NV	0.025	NV	NV	NV
SB100(C)20	8/22/2002	20	0.543	0.00306	0.0025	0.00188	0.0025
SB104(C)20	8/22/2002	20	0.01	0.0005	0.0025	0.01	0.0025

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Acetone	Benzene	Bromo- methane	Carbon Disulfide	Chloro- methane
DEQ RBC—Urban Residential Direct Contact			NV	21	59	NV	310
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	18	160	NV	78
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.15	1.3	NV	0.63
SB-401(F)-20	8/23/2002	20	NV	0.025	NV	NV	NV
SB-402(F)-20	8/23/2002	20	NV	0.025	NV	NV	NV
SB-404(F)-20	8/22/2002	20	NV	0.025	NV	NV	NV
Number of Samples			96	22	64	98	98
Average Concentration			0.3	0.3	0.0	0.1	0.0
Median Concentration			0.01	0.025	0.0025	0.01	0.0025
Frequency of Detection			22.9	13.6	4.2	7.1	2.0
Minimum Value			0.00462	0.000165	0.000358	0.000431	0.00153
Maximum Detection			0.01	17.2	0.000428	0.00389	0.0167



**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Ethyl- benzene	Formaldehyde	Isopropyl- benzene	Methyl Iodide	Methylene Chloride
DEQ RBC—Urban Residential Direct Contact			8,100 >Csat	36	NV	NV	NV
DEQ RBC—Urban Residential Volatilization to Outdoor			>Csat	NV	NV	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			>Csat	NV	NV	NV	NV
SB-800 (Q)-0	8/27/2002	0	0.025 U	NV	NV	NV	NV
SB801(Q)-0	8/26/2002	0	0.025 U	NV	NV	NV	NV
SB802(Q)-0	8/26/2002	0	0.025 U	NV	NV	NV	NV
SB803(Q)-0	8/26/2002	0	0.025 U	NV	NV	NV	NV
SB-804(Q)-0	8/26/2002	0	0.025 U	NV	NV	NV	NV
SB-805(Q)-0	8/26/2002	0	0.025 U	NV	NV	NV	NV
SB-806 (Q)-0	8/28/2002	0	0.025 U	NV	NV	NV	NV
SB-807 (Q)-0	8/28/2002	0	0.025 U	NV	NV	NV	NV
SB-809 (Q)-0	8/28/2002	0	0.025 U	NV	NV	NV	NV
SB-810 (Q)-0	8/28/2002	0	0.025 U	NV	NV	NV	NV
SB-811 (Q)-0	8/27/2002	0	0.025 U	NV	NV	NV	NV
SB812(Q)-0	8/27/2002	0	0.025 U	NV	NV	NV	NV
SB813(Q)-0	8/27/2002	0	R	NV	NV	NV	NV
SB814(Q)-0	8/27/2002	0	0.025 U	NV	NV	NV	NV
SB815(Q)-0	8/27/2002	0	0.025 U	NV	NV	NV	NV
SB816(Q)-0	8/27/2002	0	0.025 U	NV	NV	NV	NV
SB-817 (Q)-0	8/28/2002	0	0.025 U	NV	NV	NV	NV
SB-818 (Q)-0	8/28/2002	0	0.025 U	NV	NV	NV	NV
SB-819 (Q)-0	8/28/2002	0	0.025 U	NV	NV	NV	NV
SB-820 (Q)-0	8/29/2002	0	0.025 U	NV	NV	NV	NV
SB-820 (Q)-0C	8/29/2002	0	NV U	NV	0.0189	0.5 U	NV U
SB-821 (Q)-0	8/29/2002	0	0.025 U	NV	NV	NV	NV
SB-822 (Q)-0	8/29/2002	0	0.025 U	NV	NV	NV	NV
SB-823 (Q)-0	8/27/2002	0	0.025 U	NV	NV	NV	NV
SB-824 (Q)-0	8/27/2002	0	0.025 U	NV	NV	NV	NV
SB-825 (Q)-0	8/27/2002	0	0.025 U	NV	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Ethyl- benzene	Formaldehyde	Isopropyl- benzene	Methyl Iodide	Methylene Chloride
DEQ RBC—Urban Residential Direct Contact			8,100 >Csat	36	NV	NV	NV
DEQ RBC—Urban Residential Volatilization to Outdoor			>Csat	NV	NV	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			>Csat	NV	NV	NV	NV
SB-826 (Q)-0	8/27/2002	0	0.025 U	NV	NV	NV	NV
SB-827 (Q)-0	8/29/2002	0	0.025 U	NV	NV	NV	NV
SB-828 (Q)-0	8/28/2002	0	0.05	NV	NV	NV	NV
SB-829 (Q)-0	8/28/2002	0	0.025 U	NV	NV	NV	NV
SB-830 (Q)-0	8/28/2002	0	0.025 U	NV	NV	NV	NV
SB-831 (Q)-0	8/28/2002	0	0.025 U	NV	NV	NV	NV
SB-832 (Q)-0	8/28/2002	0	0.025 U	NV	NV	NV	NV
SB-833 (Q)-0	8/28/2002	0	0.025 U	NV	NV	NV	NV
Ex-1/S-1	3/30/2004	1	0.025 U	NV	NV	NV	NV
Ex-2/S-1	3/30/2004	1	0.0778	NV	NV	NV	NV
Ex-3/S-1	3/31/2004	1	0.025 U	NV	NV	NV	NV
Ex-4/S-1	3/29/2004	1	0.025 U	NV	NV	NV	NV
SB-618 (N)-1.5	9/12/2002	1.5	0.025 U	NV	NV	NV	NV
SB-008(A)-2	8/26/2003	2	0.025 U	NV	0.1 U	NV	NV
SB-009(A)-2	8/27/2003	2	0.025 U	NV	0.1 U	NV	NV
SB-010(A)-2	8/27/2003	2	0.025 U	NV	0.1 U	NV	NV
SB102(C)1-3	8/22/2002	2	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB224 (C)-2	8/29/2002	2	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB231 (C)-2	8/29/2002	2	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB-253(C)-2	9/4/2003	2	0.025 U	NV	0.1 U	NV	NV
SB-254(C)-2	9/4/2003	2	0.025 U	NV	0.1 U	NV	NV
SB-304-D-2.0	8/19/2002	2	0.593	NV	0.283	NV	NV
SB-305-D-2.0	8/19/2002	2	0.728	NV	0.308	NV	NV
SB-306-D-2.0	8/19/2002	2	3.47	NV	2.72	NV	NV
SB-307-D-2.0	8/19/2002	2	0.0075 U	NV	0.0005 U	NV	NV
SB-309-D-2.0	8/19/2002	2	1.95	NV	0.83	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Ethyl- benzene	Formaldehyde	Isopropyl- benzene	Methyl Iodide	Methylene Chloride
DEQ RBC—Urban Residential Direct Contact			8,100 >Csat	36	NV	NV	NV
DEQ RBC—Urban Residential Volatilization to Outdoor			>Csat	NV	NV	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			>Csat	NV	NV	NV	NV
SB-310-D-2.0	8/19/2002	2	0.314	NV	0.313	NV	NV
SB-315-D-2.0	8/20/2002	2	0.02845 U	NV	0.0132	NV	NV
SB-316-D-2.0	8/20/2002	2	0.02	NV	0.0005 U	NV	NV
SB-320(D)-2	9/10/2003	2	0.025 U	NV	0.1 U	NV	NV
SB-321(D)-2	9/9/2003	2	1.9	NV	0.313	NV	NV
SB-322(D)-2	9/10/2003	2	0.025 U	NV	0.1 U	NV	NV
SB-324(D)-2	9/10/2003	2	0.025 U	NV	0.1 U	NV	NV
SB-325(D)-2	9/10/2003	2	0.025 U	NV	0.1 U	NV	NV
SB-325(D)-DUP	9/10/2003	2	0.025 U	NV	0.1 U	NV	NV
SB-326(D)-2	9/9/2003	2	0.0234	NV	0.1 U	NV	NV
SB-327(D)-2	9/10/2003	2	0.025 U	NV	0.1 U	NV	NV
SB-328(D)-2	9/10/2003	2	0.025 U	NV	0.1 U	NV	NV
SB-410(F)-2'	3/31/2004	2	0.025 U	NV	0.1 U	NV	NV
SB-622 (N)-2	9/12/2002	2	0.025 U	NV	NV	NV	NV
SB-624 (N)-2	9/12/2002	2	0.025 U	NV	NV	NV	NV
SB-625 (N)-2	9/12/2002	2	0.025 U	NV	NV	NV	NV
SB-627 (N)-2	8/28/2003	2	0.025 U	NV	0.1 U	NV	NV
SB-701(P)-2	8/20/2002	2	0.025 U	NV	0.0005 U	0.01 U	0.0125 U
SB-701(P)-2	8/20/2002	2	0.0005 U	NV	NV	NV	NV
SB-702(P)-2	8/21/2002	2	0.025 U	NV	0.0005 U	0.01 U	0.0125 U
SB-702(P)-2	8/21/2002	2	0.000719	NV	NV	NV	NV
SB-703(P)-2	8/21/2002	2	0.025 U	NV	0.0005 U	0.01 U	0.0125 U
SB-703(P)-2	8/21/2002	2	0.00343	NV	NV	NV	NV
SB-704(P)-2	8/21/2002	2	0.025 U	NV	0.0005 U	0.01 U	0.0125 U
SB-704(P)-2	8/21/2002	2	0.000792	NV	NV	NV	NV
SB-707(P)-2	8/21/2002	2	0.025 U	NV	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Ethyl- benzene	Formaldehyde	Isopropyl- benzene	Methyl Iodide	Methylene Chloride
DEQ RBC—Urban Residential Direct Contact			8,100 >Csat	36	NV	NV	NV
DEQ RBC—Urban Residential Volatilization to Outdoor			>Csat	NV	NV	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			>Csat	NV	NV	NV	NV
SB-712(P)-2	8/21/2002	2	0.025 U	NV	0.0005 U	0.01 U	0.0125 U
SB-712(P)-2	8/21/2002	2	0.00174	NV	NV	NV	NV
SB-713(P)-2	8/21/2002	2	0.025 U	NV	NV	NV	NV
SB-714(P)-2	8/21/2002	2	0.025 U	NV	NV	NV	NV
SB-718(P)-2	8/21/2002	2	0.025 U	NV	NV	NV	NV
SB-720(P)-2	8/23/2002	2	0.025 U	NV	NV	NV	NV
SB-800 (Q)-2	8/27/2002	2	0.025 U	NV	NV	NV	NV
SB801(Q)-2	8/26/2002	2	0.025 U	NV	NV	NV	NV
SB802(Q)-2	8/26/2002	2	0.025 U	NV	NV	NV	NV
SB803(Q)-2	8/26/2002	2	0.025 U	NV	NV	NV	NV
SB-804(Q)-2	8/26/2002	2	0.025 U	NV	NV	NV	NV
SB-805(Q)-2	8/26/2002	2	0.025 U	NV	NV	NV	NV
SB-806 (Q)-2	8/28/2002	2	0.025 U	NV	NV	NV	NV
SB-809 (Q)-2	8/28/2002	2	0.025 U	NV	NV	NV	NV
SB-810 (Q)-2	8/28/2002	2	0.025 U	NV	NV	NV	NV
SB816(Q)-2	8/27/2002	2	0.025 U	NV	NV	NV	NV
SB-817 (Q)-2	8/28/2002	2	0.025 U	NV	NV	NV	NV
SB-820 (Q)-2	8/29/2002	2	0.025 U	NV	NV	NV	NV
SB-822 (Q)-2	8/29/2002	2	0.025 U	NV	NV	NV	NV
SB-822 (Q)-2C	8/29/2002	2	0.025 U	NV	NV	NV	NV
SB-823 (Q)-2	8/27/2002	2	0.025 U	NV	NV	NV	NV
SB-825 (Q)-2	8/27/2002	2	0.025 U	NV	NV	NV	NV
SB-827 (Q)-2	8/29/2002	2	0.025 U	NV	NV	NV	NV
SB-828 (Q)-2	8/28/2002	2	0.025 U	NV	NV	NV	NV
SB-829 (Q)-2	8/28/2002	2	0.025 U	NV	NV	NV	NV
SB-829 (Q)-2C	8/28/2002	2	0.025 U	NV	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Ethyl- benzene	Formaldehyde	Isopropyl- benzene	Methyl Iodide	Methylene Chloride
DEQ RBC—Urban Residential Direct Contact			8,100 >Csat	36	NV	NV	NV
DEQ RBC—Urban Residential Volatilization to Outdoor			>Csat	NV	NV	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			>Csat	NV	NV	NV	NV
SB-830 (Q)-2	8/28/2002	2	0.025 U	NV	NV	NV	NV
SB-832 (Q)-2	8/28/2002	2	0.025 U	NV	NV	NV	NV
SB-833 (Q)-2	8/28/2002	2	0.025 U	NV	NV	NV	NV
SB-834(Q)-2	9/5/2003	2	0.0119	NV	0.1 U	NV	NV
SB-835(Q)-2	9/5/2003	2	0.025 U	NV	0.1 U	NV	NV
SB-912(S)-2	9/3/2003	2	0.025 U	NV	0.1 U	NV	NV
SB-913(S)-2	9/3/2003	2	0.025 U	NV	0.1 U	NV	NV
SB-914(S)-2	9/3/2003	2	0.025 U	NV	0.1 U	NV	NV
SB-D-DUP-0819	8/19/2002	2	0.0974	NV	0.0552	NV	NV
SB-002(A)-2.5	8/27/2003	2.5	0.025 U	NV	0.1 U	NV	NV
SB-005(A)-2.5	9/5/2003	2.5	0.025 U	NV	0.1 U	NV	NV
SB-019(A)-2.5	8/27/2003	2.5	0.025 U	NV	0.1 U	NV	NV
SB212(C)-2.5	8/27/2002	2.5	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB218(C)-2.5	8/28/2002	2.5	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB-255(C)-2.5	9/4/2003	2.5	0.025 U	NV	0.1 U	NV	NV
SB-400(F)-2.5	8/22/2002	2.5	0.025 U	NV	NV	NV	NV
SB-401(F)-2.5	8/23/2002	2.5	0.025 U	NV	NV	NV	NV
SB-402(F)-2.5	8/23/2002	2.5	0.025 U	NV	0.000321	NV	NV
SB-402(F)-2.5	8/23/2002	2.5	0.00357	NV	NV	NV	NV
SB-404(F)-2.5	8/22/2002	2.5	0.025 U	NV	NV	NV	NV
SB-405(F)-2.5	8/22/2002	2.5	0.025 U	NV	NV	NV	NV
SB-406(F)-2.5	8/22/2002	2.5	0.025 U	NV	NV	NV	NV
SB-407(F)-2.5	8/22/2002	2.5	0.025 U	NV	NV	NV	NV
SB-408(F)-2.5	8/22/2002	2.5	0.025 U	NV	0.0005 U	NV	NV
SB-408(F)-2.5	8/22/2002	2.5	0.0005 U	NV	NV	NV	NV
SB-409(F)-2.5	8/22/2002	2.5	0.025 U	NV	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Ethyl- benzene	Formaldehyde	Isopropyl- benzene	Methyl Iodide	Methylene Chloride
DEQ RBC—Urban Residential Direct Contact			8,100 >Csat	36	NV	NV	NV
DEQ RBC—Urban Residential Volatilization to Outdoor			>Csat	NV	NV	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			>Csat	NV	NV	NV	NV
SB-706(P)-2.5	8/21/2002	2.5	0.025 U	NV	NV	NV	NV
SB 233 (C)-3	8/30/2002	3	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB 238 (C)-3	8/30/2002	3	0.000509	NV	0.0005 U	0.01 U	0.0125 U
SB100(C)3	8/22/2002	3	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB101(C)3	8/22/2002	3	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB103(C)3	8/22/2002	3	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB200(C)3	8/22/2002	3	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB201(C)3	8/22/2002	3	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB202(C)3	8/22/2002	3	0.00015	NV	0.0005 U	0.01 U	0.0125 U
SB203(C)3	8/22/2002	3	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB204(C)3	8/22/2002	3	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB209(C)-3	8/27/2002	3	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB211(C)-3	8/27/2002	3	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB216(C)-3	8/27/2002	3	0.000147	NV	0.0005 U	0.01 U	0.0125 U
SB217(C)-3	8/28/2002	3	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB225 (C)-3	8/29/2002	3	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB226 (C)-3	8/29/2002	3	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB-244(C)-3	9/3/2002	3	0.0005 U	NV	0.0005 U	0.01 U	0.0177
SB-601(N)-3	9/13/2002	3	0.025 U	NV	0.1 U	NV	NV
SB-602(N)-3	9/13/2002	3	0.025 U	NV	NV	NV	NV
SB-604(N)-3	9/13/2002	3	0.025 U	NV	NV	NV	NV
SB-605(N)-3	9/13/2002	3	4.3	NV	0.543	NV	NV
SB-606(N)-3	9/13/2002	3	0.025 U	NV	NV	NV	NV
SB-608(N)-3	9/13/2002	3	0.025 U	NV	0.1 U	NV	NV
SB-609(N)-3	9/13/2002	3	0.025 U	NV	0.1 U	NV	NV
SB-617 (N)-3	9/12/2002	3	0.025 U	NV	0.1 U	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Ethyl- benzene	Formaldehyde	Isopropyl- benzene	Methyl Iodide	Methylene Chloride
DEQ RBC—Urban Residential Direct Contact			8,100 >Csat	36	NV	NV	NV
DEQ RBC—Urban Residential Volatilization to Outdoor			>Csat	NV	NV	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			>Csat	NV	NV	NV	NV
SB-620 (N)-3	9/12/2002	3	0.025 U	NV	NV	NV	NV
SB-700(P)-3	8/21/2002	3	0.025 U	NV	0.0005 U	0.01 U	0.0125 U
SB-700(P)-3	8/21/2002	3	0.0005 U	NV	NV	NV	NV
SB-705(P)-3	8/20/2002	3	0.025 U	1 U	NV	NV	NV
SB-708(P)-3	8/20/2002	3	0.025 U	NV	NV	NV	NV
SB-709(P)-3	8/21/2002	3	0.025 U	NV	0.0005 U	0.01 U	0.0125 U
SB-709(P)-3	8/21/2002	3	0.00056	NV	NV	NV	NV
SB-710(P)-3	8/21/2002	3	0.025 U	NV	0.0005 U	0.01 U	0.0125 U
SB-710(P)-3	8/21/2002	3	0.00102	NV	NV	NV	NV
SB-711(P)-3	8/21/2002	3	0.025 U	NV	0.0005 U	0.01 U	0.0125 U
SB-711(P)-3	8/21/2002	3	0.000768	NV	NV	NV	NV
SB-715(P)-3	8/21/2002	3	0.025 U	NV	NV	NV	NV
SB-716(P)-3	8/20/2002	3	0.025 U	NV	0.0005 U	0.01 U	0.0125 U
SB-716(P)-3	8/20/2002	3	0.000149	NV	NV	NV	NV
SB-717(P)-3	8/20/2002	3	0.025 U	NV	0.0005 U	0.01 U	0.0125 U
SB-717(P)-3	8/20/2002	3	0.0005 U	NV	NV	NV	NV
SB-824 (Q)-3	8/27/2002	3	0.025 U	NV	NV	NV	NV
SB-826 (Q)-3	8/27/2002	3	0.025 U	NV	NV	NV	NV
SB-D-DUP-3	8/20/2002	3	17.6	NV	1.94	NV	NV
SB208(C)-3.5	8/27/2002	3.5	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB210(C)-3.5	8/27/2002	3.5	0.000169	NV	0.0005 U	0.01 U	0.0125 U
SB-301-D-3.5	8/20/2002	3.5	0.751	NV	0.371	NV	NV
SB-020(A)-4'	3/31/2004	4	0.025 U	NV	0.1 U	NV	NV
SB104(C)4	8/22/2002	4	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB213(C)-4	8/27/2002	4	0.00022	NV	0.0005 U	0.01 U	0.0125 U
SB219(C)-4	8/28/2002	4	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Ethyl- benzene	Formaldehyde	Isopropyl- benzene	Methyl Iodide	Methylene Chloride
DEQ RBC—Urban Residential Direct Contact			8,100 >Csat	36	NV	NV	NV
DEQ RBC—Urban Residential Volatilization to Outdoor			>Csat	NV	NV	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			>Csat	NV	NV	NV	NV
SB228 (C)-4	8/29/2002	4	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB-239(C)-4	9/3/2002	4	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB-242(C)-4	9/3/2002	4	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB-243(C)-4	9/3/2002	4	0.000441	NV	0.0005 U	0.01 U	0.0116 U
SB-250(C)-4	9/9/2002	4	0.000615	NV	0.0005 U	0.01 U	0.0125 U
SB-251(C)-4	9/9/2002	4	0.00102	NV	0.0005 U	0.01 U	0.0103 U
SB-410(F)-4	3/31/2004	4	0.025 U	NV	0.1 U	NV	NV
SB-818 (Q)-4	8/28/2002	4	0.025 U	NV	NV	NV	NV
SB-831 (Q)-4	8/28/2002	4	0.025 U	NV	NV	NV	NV
SB-900(S)-4	8/26/2002	4	0.0005 U	NV	0.0005 U	NV	NV
SB-904 (S)-4	8/26/2002	4	0.025 U	NV	NV	NV	NV
SB-905 (S)-4	8/26/2002	4	0.025 U	NV	NV	NV	NV
SB-906 (S)-4	8/27/2002	4	0.0005 U	NV	0.0005 U	NV	NV
SB-908 (S)-4	8/27/2002	4	0.147	NV	0.0353	NV	NV
SB-909 (S)-4	8/27/2002	4	0.025 U	NV	NV	NV	NV
SB-910 (S)-4	8/27/2002	4	0.000279	NV	0.0005 U	NV	NV
SB205(C)-4.5	8/27/2002	4.5	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB207(C)-4.5	8/27/2002	4.5	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB221 (C)-4.5	8/28/2002	4.5	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB222 (C)-4.5	8/28/2002	4.5	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB-305-D-4.5	8/19/2002	4.5	0.125	NV	0.0445	NV	NV
SB-306-D-4.5	8/19/2002	4.5	3.16	NV	9.51	NV	NV
SB812(Q)-4.5	8/27/2002	4.5	0.025 U	NV	NV	NV	NV
SB814(Q)-4.5	8/27/2002	4.5	0.025 U	NV	NV	NV	NV
SB815(Q)-4.5	8/27/2002	4.5	0.025 U	NV	NV	NV	NV
SB214(C)-5	8/27/2002	5	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U



**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Ethyl- benzene	Formaldehyde	Isopropyl- benzene	Methyl Iodide	Methylene Chloride
DEQ RBC—Urban Residential Direct Contact			8,100 >Csat	36	NV	NV	NV
DEQ RBC—Urban Residential Volatilization to Outdoor			>Csat	NV	NV	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			>Csat	NV	NV	NV	NV
SB215(C)-5	8/27/2002	5	0.000147	NV	0.0005 U	0.01 U	0.0125 U
SB220 (C)-5	8/28/2002	5	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB-241(C)-5	9/3/2002	5	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB-245(C)-5	9/3/2002	5	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB-246(C)-5	9/3/2002	5	0.000151	NV	0.0005 U	0.01 U	0.0125 U
SB-252(C)-5	9/9/2002	5	0.000536	NV	0.0005 U	0.01 U	0.0125 U
SB-304-D-5.0	8/19/2002	5	1.34	NV	0.626	NV	NV
SB-309-D-5.0	8/19/2002	5	0.000453	NV	0.0215	NV	NV
SB-310-D-5.0	8/19/2002	5	6.96	NV	11.2	NV	NV
SB-311-D-5.0	8/19/2002	5	0.00915 U	NV	0.1 U	NV	NV
SB-312-D-5.0	8/19/2002	5	0.00915 U	NV	0.0183	NV	NV
SB-313-D-5.0	8/20/2002	5	2.59	NV	0.504	NV	NV
SB-316-D-5.0	8/20/2002	5	32	NV	4.06	NV	NV
SB-320(D)-5	9/10/2003	5	0.025 U	NV	0.1 U	NV	NV
SB-321(D)-5	9/9/2003	5	3.52	NV	3.76	NV	NV
SB-322(D)-5	9/10/2003	5	0.025 U	NV	0.1 U	NV	NV
SB-324(D)-5	9/10/2003	5	0.025 U	NV	0.1 U	NV	NV
SB-325(D)-5	9/10/2003	5	0.025 U	NV	0.1 U	NV	NV
SB-326(D)-5	9/9/2003	5	7.91	NV	1.06	NV	NV
SB-327(D)-5	9/10/2003	5	0.025 U	NV	0.1 U	NV	NV
SB-328(D)-5	9/10/2003	5	0.0493	NV	0.1 U	NV	NV
SB-400(F)-5	8/22/2002	5	0.025 U	NV	NV	NV	NV
SB-409(F)-5	8/22/2002	5	0.025 U	NV	NV	NV	NV
SB-719(P)-5	8/23/2002	5	0.025 U	NV	NV	NV	NV
SB-811 (Q)-5	8/27/2002	5	0.025 U	NV	NV	NV	NV
SB813(Q)-5	8/27/2002	5	0.025 U	NV	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Ethyl- benzene	Formaldehyde	Isopropyl- benzene	Methyl Iodide	Methylene Chloride
DEQ RBC—Urban Residential Direct Contact			8,100 >Csat	36	NV	NV	NV
DEQ RBC—Urban Residential Volatilization to Outdoor			>Csat	NV	NV	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			>Csat	NV	NV	NV	NV
SB-819 (Q)-5	8/28/2002	5	0.025 U	NV	NV	NV	NV
SB-821 (Q)-5	8/29/2002	5	19.9	NV	NV	NV	NV
SB-821 (Q)-5C	8/29/2002	5	6.57	NV	NV	NV	NV
SB-613 (N)-5.5	9/12/2002	5.5	26.2	NV	NV	NV	NV
SB-617 (N)-5.5	9/12/2002	5.5	0.025 U	NV	NV	NV	NV
SB-705(P)-5.5	8/20/2002	5.5	0.025 U	2.8	NV	NV	NV
SB-706(P)-5.5	8/21/2002	5.5	0.025 U	NV	0.0005 U	0.01 U	0.0125 U
SB-710(P)-5.5	8/21/2002	5.5	0.00146	NV	0.0005 U	0.01 U	0.0121
SB 235 (C)-6	8/30/2002	6	0.00016	NV	0.0005 U	0.01 U	0.0125 U
SB 236 (C)-6	8/30/2002	6	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB 237 (C)-6	8/30/2002	6	0.000882	NV	0.00746	0.01 U	0.0125 U
SB200(C)6	8/22/2002	6	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB201(C)6	8/22/2002	6	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB206(C)-6	8/27/2002	6	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB223 (C)-6	8/29/2002	6	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB-240(C)-6	9/3/2002	6	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB-247(C)-6	9/3/2002	6	0.0005 U	NV	0.0005 U	0.01 U	0.0165
SB256 (c) 6	3/31/2004	6	0.05 U	NV	0.1 U	NV	0.25 U
SB-501 (M) 4-8	8/29/2002	6	0.418	NV	NV	NV	NV
SB-608(N)-6	9/13/2002	6	0.025 U	NV	0.213	NV	NV
TP201(C)6E	8/27/2002	6	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
TP202(C)6W	8/27/2002	6	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB408/S-2(6-7)	8/22/2002	6.5	0.296	NV	NV	NV	NV
SB-827 (Q)-6.5	8/29/2002	6.5	0.025 U	NV	NV	NV	NV
SB-005(A)-7	9/5/2003	7	0.025 U	NV	0.1 U	NV	NV
SB-006(A)-7	3/31/2004	7	73.8	NV	7.68	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Ethyl- benzene	Formaldehyde	Isopropyl- benzene	Methyl Iodide	Methylene Chloride
DEQ RBC—Urban Residential Direct Contact			8,100 >Csat	36	NV	NV	NV
DEQ RBC—Urban Residential Volatilization to Outdoor			>Csat	NV	NV	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			>Csat	NV	NV	NV	NV
SB-015(A)-7	9/10/2003	7	11.7	NV	1.41	NV	NV
SB202(C)-7	8/22/2002	7	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB203(C)-7	8/22/2002	7	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB-254(C)-7	9/4/2003	7	0.025 U	NV	0.1 U	NV	NV
SB-255(C)-7	9/4/2003	7	0.025 U	NV	0.1 U	NV	NV
SB-323(D)-7	9/10/2003	7	0.025 U	NV	0.1 U	NV	NV
SB407(S-2(6-8)	8/22/2002	7	3.19	NV	NV	NV	NV
SB-600(N)-7	9/13/2002	7	31.6	NV	NV	NV	NV
SB-601(N)-7	9/13/2002	7	82.2	NV	10 U	NV	NV
SB-601(N)-7	9/13/2002	7	83	NV	NV	NV	NV
SB-602(N)-7	9/13/2002	7	3.39	NV	22.6	NV	NV
SB-602(N)-7	9/13/2002	7	204	NV	NV	NV	NV
SB-603(N)-7	9/13/2002	7	71.5	NV	5 U	NV	NV
SB-603(N)-7	9/13/2002	7	42	NV	NV	NV	NV
SB-604(N)-7	9/13/2002	7	35.4	NV	12.1	NV	NV
SB-605(N)-7	9/13/2002	7	151	NV	17.7	NV	NV
SB-606(N)-7	9/13/2002	7	0.025 U	NV	NV	NV	NV
SB-609(N)-7	9/13/2002	7	0.025 U	NV	0.1 U	NV	NV
SB-612 (N)-7	9/12/2002	7	90.1	NV	15.2	NV	NV
SB-612 (N)-7	9/12/2002	7	148	NV	NV	NV	NV
SB-614 (N)-7	9/12/2002	7	11.9	NV	NV	NV	NV
SB-615 (N)-7	9/12/2002	7	29.4	NV	NV	NV	NV
SB-616 (N)-7	9/12/2002	7	68.5	NV	NV	NV	NV
SB-618 (N)-7	9/12/2002	7	31.9	NV	2.95	5 U	2.5 U
SB-619 (N)-7	9/12/2002	7	0.025 U	NV	0.1 U	NV	NV
SB-619 (N)-7	9/12/2002	7	0.025 U	NV	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Ethyl- benzene	Formaldehyde	Isopropyl- benzene	Methyl Iodide	Methylene Chloride
DEQ RBC—Urban Residential Direct Contact			8,100	36	NV	NV	NV
DEQ RBC—Urban Residential Volatilization to Outdoor			>Csat	NV	NV	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			>Csat	NV	NV	NV	NV
SB-620 (N)-7	9/12/2002	7	21.2	NV	5	NV	NV
SB-620 (N)-7	9/12/2002	7	20.9	NV	NV	NV	NV
SB-621 (N)-7	9/12/2002	7	0.025	NV	NV	NV	NV
SB-622 (N)-7	9/12/2002	7	0.025	NV	0.0005	0.01	0.0125
SB-622 (N)-7	9/12/2002	7	0.00168	NV	NV	NV	NV
SB-623 (N)-7	9/12/2002	7	8.19	NV	5.34	NV	NV
SB-623 (N)-7	9/12/2002	7	18.1	NV	NV	NV	NV
SB-624 (N)-7	9/12/2002	7	3.47	NV	2.65	2.5	1.25
SB-625 (N)-7	9/12/2002	7	0.025	NV	0.1	NV	NV
SB-625 (N)-7	9/12/2002	7	0.025	NV	NV	NV	NV
SB-626 (N)-7	9/12/2002	7	106	NV	5	NV	NV
SB-626 (N)-7	9/12/2002	7	63.7	NV	NV	NV	NV
SB-715(P)-7	8/21/2002	7	0.025	NV	NV	NV	NV
SB-721(P)-7	3/31/2004	7	0.025	NV	0.1	NV	NV
SB-807 (Q)-7	8/28/2002	7	13	NV	NV	NV	NV
SB-835(Q)-7	9/5/2003	7	0.025	NV	0.1	NV	NV
SB-912(S)-7	9/3/2003	7	0.025	NV	0.1	NV	NV
SB-913(S)-7	9/3/2003	7	0.025	NV	0.1	NV	NV
SB-001(A)-7.5	8/27/2003	7.5	0.025	NV	0.1	NV	NV
SB-002(A)-7.5	8/27/2003	7.5	0.025	NV	0.1	NV	NV
SB-007(A)-7.5	8/26/2003	7.5	68.8	NV	7.3	NV	NV
SB-008(A)-7.5	8/26/2003	7.5	0.025	NV	0.1	NV	NV
SB-009(A)-7.5	8/27/2003	7.5	4.72	NV	1.6	NV	NV
SB-010(A)-7.5	8/27/2003	7.5	0.025	NV	0.1	NV	NV
SB-011(A)-7.5	9/3/2003	7.5	0.025	NV	0.1	NV	NV
SB-013(A)-7.5	9/3/2003	7.5	0.025	NV	0.1	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Ethyl- benzene	Formaldehyde	Isopropyl- benzene	Methyl Iodide	Methylene Chloride
DEQ RBC—Urban Residential Direct Contact			8,100 >Csat	36	NV	NV	NV
DEQ RBC—Urban Residential Volatilization to Outdoor			>Csat	NV	NV	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			>Csat	NV	NV	NV	NV
SB-017(A)-7.5	9/8/2003	7.5	0.025 U	NV	0.1 U	NV	NV
SB-019(A)-7.5	8/27/2003	7.5	53.3	NV	8.76	NV	NV
SB-253(C)-7.5	9/4/2003	7.5	0.025 U	NV	0.1 U	NV	NV
SB-405(F)-7.5	8/22/2002	7.5	0.138	NV	0.36	NV	NV
SB-405(F)-7.5	8/22/2002	7.5	0.593	NV	NV	NV	NV
SB-407(F)-7.5	8/22/2002	7.5	1.02	NV	0.535	NV	NV
SB-407(F)-7.5	8/22/2002	7.5	0.22	NV	NV	NV	NV
SB-408(F)-7.5	8/22/2002	7.5	0.025 U	NV	NV	NV	NV
SB-629(N)-7.5	8/28/2003	7.5	6.1	NV	3.19	NV	NV
SB-632(N)-7.5	9/8/2003	7.5	12.4	NV	4.18	NV	NV
SB-714(P)-7.5	8/21/2002	7.5	27.2	NV	NV	NV	NV
SB-834(Q)-7.5	9/5/2003	7.5	0.025 U	NV	0.1 U	NV	NV
SB-914(S)-7.5	9/3/2003	7.5	0.025 U	NV	0.1 U	NV	NV
SB 232 (C)-8	8/30/2002	8	0.0005 U	NV	0.0005 U	0.01 U	0.0116
SB 234 (C)-8	8/30/2002	8	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB204(C)8	8/22/2002	8	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB227 (C)-8	8/29/2002	8	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB229 (C)-8	8/29/2002	8	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB230 (C)-8	8/29/2002	8	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB-406(F)-8	8/22/2002	8	0.025 U	NV	NV	NV	NV
SB-806 (Q)-8	8/28/2002	8	0.025 U	NV	NV	NV	NV
SB-810 (Q)-8	8/28/2002	8	0.025 U	NV	NV	NV	NV
SB-822 (Q)-8	8/29/2002	8	17.7	NV	NV	NV	NV
SB-901 (S)-8	8/26/2002	8	0.025 U	NV	NV	NV	NV
SB-902 (S)-8	8/26/2002	8	0.025 U	NV	NV	NV	NV
SB-903 (S)-8	8/26/2002	8	0.025 U	NV	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Ethyl- benzene	Formaldehyde	Isopropyl- benzene	Methyl Iodide	Methylene Chloride
DEQ RBC—Urban Residential Direct Contact			8,100 >Csat	36	NV	NV	NV
DEQ RBC—Urban Residential Volatilization to Outdoor			>Csat	NV	NV	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			>Csat	NV	NV	NV	NV
SB-908 (S)-8	8/27/2002	8	0.000194	NV	0.0005 U	NV	NV
SB-911 (S)-8	8/27/2002	8	0.025 U	NV	NV	NV	NV
SB-720(P)-8.5	8/23/2002	8.5	44.9	NV	NV	NV	NV
SB-804(Q)-8.5	8/26/2002	8.5	0.025 U	NV	NV	NV	NV
SB-809 (Q)-8.5	8/28/2002	8.5	0.05	NV	NV	NV	NV
SB-828 (Q)-8.5	8/28/2002	8.5	0.05	NV	NV	NV	NV
SB-830 (Q)-8.5	8/28/2002	8.5	0.025 U	NV	NV	NV	NV
SB-020(A)-9'	3/31/2004	9	0.025 U	NV	0.1 U	NV	NV
SB-410(F)-9'	3/31/2004	9	0.025 U	NV	0.1 U	NV	NV
SB802(Q)-9	8/26/2002	9	0.025 U	NV	NV	NV	NV
SB803(Q)-9	8/26/2002	9	0.025 U	NV	NV	NV	NV
SB-807 (Q)-9	8/28/2002	9	0.172	NV	NV	NV	NV
SB-811 (Q)-9	8/27/2002	9	0.05	NV	NV	NV	NV
SB-811 (Q)-9C	8/27/2002	9	0.05	NV	NV	NV	NV
SB812(Q)-9	8/27/2002	9	0.025 U	NV	NV	NV	NV
SB814(Q)-9	8/27/2002	9	0.025 U	NV	NV	NV	NV
SB-817 (Q)-9	8/28/2002	9	0.025 U	NV	NV	NV	NV
SB-818 (Q)-9	8/28/2002	9	0.025 U	NV	NV	NV	NV
SB-820 (Q)-9	8/29/2002	9	0.025 U	NV	NV	NV	NV
SB-820 (Q)-9C	8/29/2002	9	8.72	NV	NV	NV	NV
SB-821 (Q)-9	8/29/2002	9	0.174	NV	NV	NV	NV
SB-823 (Q)-9	8/27/2002	9	0.025 U	NV	NV	NV	NV
SB-824 (Q)-9	8/27/2002	9	0.025 U	NV	NV	NV	NV
SB-825 (Q)-9	8/27/2002	9	0.05	NV	NV	NV	NV
SB-826 (Q)-9	8/27/2002	9	0.025 U	NV	NV	NV	NV
SB-829 (Q)-9	8/28/2002	9	0.025 U	NV	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Ethyl- benzene	Formaldehyde	Isopropyl- benzene	Methyl Iodide	Methylene Chloride
DEQ RBC—Urban Residential Direct Contact			8,100 >Csat	36	NV	NV	NV
DEQ RBC—Urban Residential Volatilization to Outdoor			>Csat	NV	NV	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			>Csat	NV	NV	NV	NV
SB-831 (Q)-9	8/28/2002	9	0.025 U	NV	NV	NV	NV
SB-832 (Q)-9	8/28/2002	9	0.025 U	NV	NV	NV	NV
SB-705(P)-9.5	8/20/2002	9.5	0.025 U	1 U	NV	NV	NV
SB-706(P)-9.5	8/21/2002	9.5	0.025 U	NV	NV	NV	NV
SB801(Q)-9.5	8/26/2002	9.5	0.025 U	NV	NV	NV	NV
SB813(Q)-9.5	8/27/2002	9.5	0.025 U	NV	NV	NV	NV
SB815(Q)-9.5	8/27/2002	9.5	0.025 U	NV	NV	NV	NV
SB816(Q)-9.5	8/27/2002	9.5	0.025 U	NV	NV	NV	NV
SB-316-D-10.0	8/20/2002	10	53.7	NV	6.97	NV	NV
SB-318-D-10.0	8/20/2002	10	15.6	NV	2.22	NV	NV
SB-324(D)-10	9/10/2003	10	0.381	NV	1.38	NV	NV
SB-325(D)-10	9/10/2003	10	0.025 U	NV	0.1 U	NV	NV
SB-326(D)-10	9/9/2003	10	9.62	NV	1.28	NV	NV
SB-327(D)-10	9/10/2003	10	0.158	NV	0.655	NV	NV
SB-328(D)-10	9/10/2003	10	0.695	NV	3.18	NV	NV
SB-500 (M) 8-12	8/29/2002	10	0.025 U	NV	NV	NV	NV
SB-501 (M) 8-12	8/29/2002	10	32.3	NV	NV	NV	NV
SB-502 (M) 8-12	8/29/2002	10	0.518	NV	NV	NV	NV
SB-503 (M) 8-12	8/29/2002	10	0.25 U	NV	NV	NV	NV
SB-505 (M) 8-12	8/29/2002	10	0.616	NV	NV	NV	NV
SB-506 (M) 8-12	8/29/2002	10	13.5	NV	NV	NV	NV
SB-507 (M) 8-12	8/29/2002	10	7.79	NV	NV	NV	NV
SB-508 (M) 8-12	8/29/2002	10	32.7	NV	NV	NV	NV
SB-509 (M) 8-12	8/29/2002	10	0.025 U	NV	NV	NV	NV
SB-510 (M) 8-12	8/29/2002	10	6.53	NV	NV	NV	NV
SB-625 (N)-10	9/12/2002	10	0.025 U	NV	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Ethyl- benzene	Formaldehyde	Isopropyl- benzene	Methyl Iodide	Methylene Chloride
DEQ RBC—Urban Residential Direct Contact			8,100 >Csat	36	NV	NV	NV
DEQ RBC—Urban Residential Volatilization to Outdoor			>Csat	NV	NV	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			>Csat	NV	NV	NV	NV
SB-703(P)-10	8/21/2002	10	0.025 U	NV	0.0005 U	0.01 U	0.0125 U
SB-703(P)-10	8/21/2002	10	0.000256	NV	NV	NV	NV
SB-707(P)-10	8/21/2002	10	0.025 U	NV	0.0005 U	0.01 U	0.0125 U
SB-707(P)-10	8/21/2002	10	0.0005 U	NV	NV	NV	NV
SB-708(P)-10	8/20/2002	10	0.025 U	NV	NV	NV	NV
SB-709(P)-10	8/21/2002	10	0.025 U	NV	0.0005 U	0.01 U	0.0125 U
SB-709(P)-10	8/21/2002	10	0.000229	NV	NV	NV	NV
SB-711(P)-10	8/21/2002	10	0.025 U	NV	0.0005 U	0.01 U	0.0125 U
SB-711(P)-10	8/21/2002	10	0.000892	NV	NV	NV	NV
SB-712(P)-10	8/21/2002	10	0.025 U	NV	0.0005 U	0.01 U	0.0125 U
SB-712(P)-10	8/21/2002	10	0.00292	NV	NV	NV	NV
SB-713(P)-10	8/21/2002	10	0.025 U	NV	NV	NV	NV
SB-714(P)-10	8/21/2002	10	87.1	NV	6.72	NV	NV
SB-714(P)-10	8/21/2002	10	0.5 U	NV	NV	NV	NV
SB-716(P)-10	8/20/2002	10	0.025 U	NV	0.0005 U	0.01 U	0.0125 U
SB-716(P)-10	8/20/2002	10	0.0005 U	NV	NV	NV	NV
SB-717(P)-10	8/20/2002	10	0.025 U	NV	0.0005 U	0.01 U	0.0125 U
SB-717(P)-10	8/20/2002	10	0.0005 U	NV	NV	NV	NV
SB-718(P)-10	8/21/2002	10	0.025 U	NV	NV	NV	NV
SB-805(Q)-10	8/26/2002	10	0.025 U	NV	NV	NV	NV
SB-822 (Q)-10	8/29/2002	10	0.025 U	NV	NV	NV	NV
SB-901 (S)-10	8/26/2002	10	0.025 U	NV	NV	NV	NV
SB-903 (S)-10	8/26/2002	10	0.25 U	NV	0.185	NV	NV
SB-903 (S)-10	8/26/2002	10	0.0816	NV	NV	NV	NV
SB-908 (S)-10	8/27/2002	10	0.025 U	NV	0.0005 U	NV	NV
SB-908 (S)-10	8/27/2002	10	0.0005 U	NV	NV	NV	NV



**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Ethyl- benzene	Formaldehyde	Isopropyl- benzene	Methyl Iodide	Methylene Chloride
DEQ RBC—Urban Residential Direct Contact			8,100 >Csat	36	NV	NV	NV
DEQ RBC—Urban Residential Volatilization to Outdoor			>Csat	NV	NV	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			>Csat	NV	NV	NV	NV
SB-909 (S)-10	8/27/2002	10	0.025 U	NV	NV	NV	NV
SB-910 (S)-10	8/27/2002	10	0.025 U	NV	NV	NV	NV
SB-911 (S)-10	8/27/2002	10	0.025 U	NV	NV	NV	NV
SB-700(P)-10.5	8/21/2002	10.5	6.12	NV	0.638	NV	0.25 U
SB-700(P)-10.5	8/21/2002	10.5	1.5	NV	NV	NV	NV
SB-800 (Q)-10.5	8/27/2002	10.5	0.05	NV	NV	NV	NV
SB-833 (Q)-10.5	8/28/2002	10.5	0.025 U	NV	NV	NV	NV
SB-027 (A)-11	9/14/2005	11	8.24	NV	5.63	NV	NV
SB-504 (M) 10-12	8/29/2002	11	0.025 U	NV	NV	NV	NV
SB-607(N)-11	9/13/2002	11	0.025 U	NV	NV	NV	NV
SB-619 (N)-11	9/12/2002	11	0.356	NV	10.2	NV	NV
SB-619 (N)-11	9/12/2002	11	141	NV	NV	NV	NV
SB-701(P)-11	8/20/2002	11	0.025 U	NV	0.0005 U	0.01 U	0.0125 U
SB-701(P)-11	8/20/2002	11	0.0005 U	NV	NV	NV	NV
SB-702(P)-11	8/21/2002	11	0.025 U	NV	0.0005 U	0.01 U	0.0125 U
SB-702(P)-11	8/21/2002	11	0.000169	NV	NV	NV	NV
SB-704(P)-11	8/21/2002	11	0.025 U	1 U	0.0005 U	0.01 U	0.0125 U
SB-704(P)-11	8/21/2002	11	0.0005 U	NV	NV	NV	NV
SB-715(P)-11	8/21/2002	11	0.025 U	NV	NV	NV	NV
SB-806 (Q)-11	8/28/2002	11	0.025 U	NV	NV	NV	NV
SB-819 (Q)-11	8/28/2002	11	0.025 U	NV	NV	NV	NV
SB-021 (A)-11.5	9/14/2005	11.5	8.15	NV	5.64	NV	NV
SB-720(P)-11.5	8/23/2002	11.5	41.4	NV	NV	NV	NV
SB-701(P)-12	8/20/2002	12	0.025 U	NV	0.000848	0.00499	0.0125 U
SB-701(P)-12	8/20/2002	12	0.0102	NV	NV	NV	NV
SB-705(P)-12	8/20/2002	12	0.025 U	1 U	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Ethyl- benzene	Formaldehyde	Isopropyl- benzene	Methyl Iodide	Methylene Chloride
DEQ RBC—Urban Residential Direct Contact			8,100 >Csat	36	NV	NV	NV
DEQ RBC—Urban Residential Volatilization to Outdoor			>Csat	NV	NV	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			>Csat	NV	NV	NV	NV
SB-706(P)-12	8/21/2002	12	0.025 U	NV	NV	NV	NV
SB-719(P)-12	8/23/2002	12	0.025 U	NV	NV	NV	NV
SB-900(S)-12	8/26/2002	12	8.56	NV	0.1 U	NV	NV
SB-900(S)-12	8/26/2002	12	0.025 U	NV	NV	NV	NV
SB-902 (S)-12	8/26/2002	12	0.0005 U	NV	0.0093	NV	NV
SB-904 (S)-12	8/26/2002	12	0.5 U	NV	0.298	NV	NV
SB-904 (S)-12	8/26/2002	12	0.298	NV	NV	NV	NV
SB-905 (S)-12	8/26/2002	12	0.025 U	NV	0.0005 U	NV	NV
SB-905 (S)-12	8/26/2002	12	0.0005 U	NV	NV	NV	NV
SB-906 (S)-12	8/27/2002	12	0.304	NV	0.5	NV	NV
SB-029 (A)-12.5	9/14/2005	12.5	0.01525 U	NV	0.061 U	NV	NV
SB-316-D-14.5	8/20/2002	14.5	25.5	NV	4.99	NV	NV
SB-314-D-15.0	8/20/2002	15	0.219	NV	0.0137	NV	NV
SB-315-D-15.0	8/20/2002	15	0.0176	NV	0.1 U	NV	NV
SB-318-D-15.0	8/20/2002	15	13	NV	1.68	NV	NV
SB-324(D)-15	9/10/2003	15	0.298	NV	0.0644	NV	NV
SB-324(D)-DUP	9/10/2003	15	0.972	NV	0.485	NV	NV
SB-325(D)-15	9/10/2003	15	0.025 U	NV	0.1 U	NV	NV
SB-327(D)-15	9/10/2003	15	10.1	NV	1.81	NV	NV
SB-328(D)-15	9/10/2003	15	0.0515	NV	0.0364	NV	NV
SB101(C)18	8/22/2002	18	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB102(C)18	8/22/2002	18	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U
SB103(C)18	8/22/2002	18	0.000263	NV	0.0005 U	0.01 U	0.013
SB-313-D-18.0	8/20/2002	18	3.95	NV	3.67	NV	NV
SB100(C)20	8/22/2002	20	0.0427	NV	0.00675	0.01 U	0.0146
SB104(C)20	8/22/2002	20	0.0005 U	NV	0.0005 U	0.01 U	0.0125 U

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Ethyl- benzene	Formaldehyde	Isopropyl- benzene	Methyl Iodide	Methylene Chloride
DEQ RBC—Urban Residential Direct Contact			8,100 >Csat	36	NV	NV	NV
DEQ RBC—Urban Residential Volatilization to Outdoor			>Csat	NV	NV	NV	NV
DEQ RBC—Urban Residential Vapor Intrusion			>Csat	NV	NV	NV	NV
SB-401(F)-20	8/23/2002	20	0.025 U	NV	NV	NV	NV
SB-402(F)-20	8/23/2002	20	0.025 U	NV	NV	NV	NV
SB-404(F)-20	8/22/2002	20	0.025 U	NV	NV	NV	NV
Number of Samples			469 145	5 1	236 67	96 1	97 7
Average Concentration			5.0	1.4	1.0	0.1	0.1
Median Concentration			0.025	1	0.1	0.01	0.0125
Frequency of Detection			30.9	20.0	28.4	1.0	7.2
Minimum Value			0.000147	1	0.000321	0.00499	0.0103
Maximum Detection			204	2.8	22.6	0.00499	0.0177

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Naphthalene	N-Butyl- benzene	N-Propyl- benzene	o-Xylene	Sec- Butylbenzene
DEQ RBC—Urban Residential Direct Contact			67	420 >Csat	420 >Csat	NV	420 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			240	>Csat	>Csat	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			290	>Csat	140	NV	78
SB-800 (Q)-0	8/27/2002	0	NV	NV	NV	NV	NV
SB801 (Q)-0	8/26/2002	0	NV	NV	NV	NV	NV
SB802 (Q)-0	8/26/2002	0	NV	NV	NV	NV	NV
SB803 (Q)-0	8/26/2002	0	NV	NV	NV	NV	NV
SB-804 (Q)-0	8/26/2002	0	NV	NV	NV	NV	NV
SB-805 (Q)-0	8/26/2002	0	NV	NV	NV	NV	NV
SB-806 (Q)-0	8/28/2002	0	NV	NV	NV	NV	NV
SB-807 (Q)-0	8/28/2002	0	NV	NV	NV	NV	NV
SB-809 (Q)-0	8/28/2002	0	NV	NV	NV	NV	NV
SB-810 (Q)-0	8/28/2002	0	NV	NV	NV	NV	NV
SB-811 (Q)-0	8/27/2002	0	NV	NV	NV	NV	NV
SB812 (Q)-0	8/27/2002	0	NV	NV	NV	NV	NV
SB813 (Q)-0	8/27/2002	0	NV	NV	NV	NV	NV
SB814 (Q)-0	8/27/2002	0	NV	NV	NV	NV	NV
SB815 (Q)-0	8/27/2002	0	NV	NV	NV	NV	NV
SB816 (Q)-0	8/27/2002	0	NV	NV	NV	NV	NV
SB-817 (Q)-0	8/28/2002	0	NV	NV	NV	NV	NV
SB-818 (Q)-0	8/28/2002	0	NV	NV	NV	NV	NV
SB-819 (Q)-0	8/28/2002	0	NV	NV	NV	NV	NV
SB-820 (Q)-0	8/29/2002	0	NV	NV	NV	NV	NV
SB-820 (Q)-0C	8/29/2002	0	0.07	0.0555	0.0267	0.05 U	0.0411
SB-821 (Q)-0	8/29/2002	0	NV	NV	NV	NV	NV
SB-822 (Q)-0	8/29/2002	0	NV	NV	NV	NV	NV
SB-823 (Q)-0	8/27/2002	0	NV	NV	NV	NV	NV
SB-824 (Q)-0	8/27/2002	0	NV	NV	NV	NV	NV
SB-825 (Q)-0	8/27/2002	0	NV	NV	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Naphthalene	N-Butyl- benzene	N-Propyl- benzene	o-Xylene	Sec- Butylbenzene
DEQ RBC—Urban Residential Direct Contact			67	420 >Csat	420 >Csat	NV	420 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			240	>Csat	>Csat	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			290	>Csat	140	NV	78
SB-826 (Q)-0	8/27/2002	0	NV	NV	NV	NV	NV
SB-827 (Q)-0	8/29/2002	0	NV	NV	NV	NV	NV
SB-828 (Q)-0	8/28/2002	0	NV	NV	NV	NV	NV
SB-829 (Q)-0	8/28/2002	0	NV	NV	NV	NV	NV
SB-830 (Q)-0	8/28/2002	0	NV	NV	NV	NV	NV
SB-831 (Q)-0	8/28/2002	0	NV	NV	NV	NV	NV
SB-832 (Q)-0	8/28/2002	0	NV	NV	NV	NV	NV
SB-833 (Q)-0	8/28/2002	0	NV	NV	NV	NV	NV
Ex-1/S-1	3/30/2004	1	NV	NV	NV	NV	NV
Ex-2/S-1	3/30/2004	1	NV	NV	NV	NV	NV
Ex-3/S-1	3/31/2004	1	NV	NV	NV	NV	NV
Ex-4/S-1	3/29/2004	1	NV	NV	NV	NV	NV
SB-618 (N)-1.5	9/12/2002	1.5	0.226	NV	NV	NV	NV
SB-008(A)-2	8/26/2003	2	0.1 U	NV	0.025 U	NV	NV
SB-009(A)-2	8/27/2003	2	0.208	NV	0.025 U	NV	NV
SB-010(A)-2	8/27/2003	2	0.262	NV	0.025 U	NV	NV
SB102(C)1-3	8/22/2002	2	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB224 (C)-2	8/29/2002	2	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB231 (C)-2	8/29/2002	2	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-253(C)-2	9/4/2003	2	0.1 U	NV	0.025 U	NV	NV
SB-254(C)-2	9/4/2003	2	0.0255	NV	0.025 U	NV	NV
SB-304-D-2.0	8/19/2002	2	1.08	NV	1.03	NV	NV
SB-305-D-2.0	8/19/2002	2	0.56	NV	1.44	NV	NV
SB-306-D-2.0	8/19/2002	2	1.34	NV	11.6	NV	NV
SB-307-D-2.0	8/19/2002	2	0.0005 U	NV	0.025 U	NV	NV
SB-309-D-2.0	8/19/2002	2	0.0655	NV	2.87	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Naphthalene	N-Butyl- benzene	N-Propyl- benzene	o-Xylene	Sec- Butylbenzene
DEQ RBC—Urban Residential Direct Contact			67	420 >Csat	420 >Csat	NV	420 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			240	>Csat	>Csat	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			290	>Csat	140	NV	78
SB-310-D-2.0	8/19/2002	2	0.535	NV	1.53	NV	NV
SB-315-D-2.0	8/20/2002	2	0.00062 U	NV	0.0238	NV	NV
SB-316-D-2.0	8/20/2002	2	0.001125 U	NV	0.00025	NV	NV
SB-320(D)-2	9/10/2003	2	0.0204	NV	0.025 U	NV	NV
SB-321(D)-2	9/9/2003	2	0.1 U	NV	1.14	NV	NV
SB-322(D)-2	9/10/2003	2	0.1 U	NV	0.025 U	NV	NV
SB-324(D)-2	9/10/2003	2	0.218	NV	0.025 U	NV	NV
SB-325(D)-2	9/10/2003	2	0.1 U	NV	0.025 U	NV	NV
SB-325(D)-DUP	9/10/2003	2	0.1 U	NV	0.025 U	NV	NV
SB-326(D)-2	9/9/2003	2	0.0344	NV	0.0289	NV	NV
SB-327(D)-2	9/10/2003	2	0.0329	NV	0.025 U	NV	NV
SB-328(D)-2	9/10/2003	2	0.031	NV	0.025 U	NV	NV
SB-410(F)-2'	3/31/2004	2	0.023	NV	0.025 U	NV	NV
SB-622 (N)-2	9/12/2002	2	0.025 U	NV	NV	NV	NV
SB-624 (N)-2	9/12/2002	2	0.025 U	NV	NV	NV	NV
SB-625 (N)-2	9/12/2002	2	0.025 U	NV	NV	NV	NV
SB-627(N)-2	8/28/2003	2	0.0335	NV	0.025 U	NV	NV
SB-701(P)-2	8/20/2002	2	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-701(P)-2	8/20/2002	2	NV	NV	NV	NV	NV
SB-702(P)-2	8/21/2002	2	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-702(P)-2	8/21/2002	2	NV	NV	NV	NV	NV
SB-703(P)-2	8/21/2002	2	0.00104	0.000835	0.00106	0.000632	0.000248
SB-703(P)-2	8/21/2002	2	NV	NV	NV	NV	NV
SB-704(P)-2	8/21/2002	2	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-704(P)-2	8/21/2002	2	NV	NV	NV	NV	NV
SB-707(P)-2	8/21/2002	2	NV	NV	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Naphthalene	N-Butyl- benzene	N-Propyl- benzene	o-Xylene	Sec- Butylbenzene
DEQ RBC—Urban Residential Direct Contact			67	420 >Csat	420 >Csat	NV	420 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			240	>Csat	>Csat	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			290	>Csat	140	NV	78
SB-712(P)-2	8/21/2002	2	0.00345	0.000261	0.00049	0.00199	0.0005 U
SB-712(P)-2	8/21/2002	2	NV	NV	NV	NV	NV
SB-713(P)-2	8/21/2002	2	NV	NV	NV	NV	NV
SB-714(P)-2	8/21/2002	2	NV	NV	NV	NV	NV
SB-718(P)-2	8/21/2002	2	NV	NV	NV	NV	NV
SB-720(P)-2	8/23/2002	2	NV	NV	NV	NV	NV
SB-800 (Q)-2	8/27/2002	2	NV	NV	NV	NV	NV
SB801(Q)-2	8/26/2002	2	NV	NV	NV	NV	NV
SB802(Q)-2	8/26/2002	2	NV	NV	NV	NV	NV
SB803(Q)-2	8/26/2002	2	NV	NV	NV	NV	NV
SB-804(Q)-2	8/26/2002	2	NV	NV	NV	NV	NV
SB-805(Q)-2	8/26/2002	2	NV	NV	NV	NV	NV
SB-806 (Q)-2	8/28/2002	2	NV	NV	NV	NV	NV
SB-809 (Q)-2	8/28/2002	2	NV	NV	NV	NV	NV
SB-810 (Q)-2	8/28/2002	2	NV	NV	NV	NV	NV
SB816(Q)-2	8/27/2002	2	NV	NV	NV	NV	NV
SB-817 (Q)-2	8/28/2002	2	NV	NV	NV	NV	NV
SB-820 (Q)-2	8/29/2002	2	NV	NV	NV	NV	NV
SB-822 (Q)-2	8/29/2002	2	NV	NV	NV	NV	NV
SB-822 (Q)-2C	8/29/2002	2	NV	NV	NV	NV	NV
SB-823 (Q)-2	8/27/2002	2	NV	NV	NV	NV	NV
SB-825 (Q)-2	8/27/2002	2	NV	NV	NV	NV	NV
SB-827 (Q)-2	8/29/2002	2	NV	NV	NV	NV	NV
SB-828 (Q)-2	8/28/2002	2	NV	NV	NV	NV	NV
SB-829 (Q)-2	8/28/2002	2	NV	NV	NV	NV	NV
SB-829 (Q)-2C	8/28/2002	2	NV	NV	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Naphthalene	N-Butyl- benzene	N-Propyl- benzene	o-Xylene	Sec- Butylbenzene
DEQ RBC—Urban Residential Direct Contact			67	420 >Csat	420 >Csat	NV	420 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			240	>Csat	>Csat	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			290	>Csat	140	NV	78
SB-830 (Q)-2	8/28/2002	2	NV	NV	NV	NV	NV
SB-832 (Q)-2	8/28/2002	2	NV	NV	NV	NV	NV
SB-833 (Q)-2	8/28/2002	2	NV	NV	NV	NV	NV
SB-834 (Q)-2	9/5/2003	2	0.0808	NV	0.0129	NV	NV
SB-835 (Q)-2	9/5/2003	2	0.1 U	NV	0.025 U	NV	NV
SB-912 (S)-2	9/3/2003	2	0.1 U	NV	0.025 U	NV	NV
SB-913 (S)-2	9/3/2003	2	0.1 U	NV	0.025 U	NV	NV
SB-914 (S)-2	9/3/2003	2	0.1 U	NV	0.025 U	NV	NV
SB-D-DUP-0819	8/19/2002	2	0.211	NV	0.0822	NV	NV
SB-002 (A)-2.5	8/27/2003	2.5	0.1 U	NV	0.025 U	NV	NV
SB-005 (A)-2.5	9/5/2003	2.5	0.1 U	NV	0.025 U	NV	NV
SB-019 (A)-2.5	8/27/2003	2.5	0.1 U	NV	0.025 U	NV	NV
SB212 (C)-2.5	8/27/2002	2.5	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB218 (C)-2.5	8/28/2002	2.5	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-255 (C)-2.5	9/4/2003	2.5	0.0147	NV	0.025 U	NV	NV
SB-400 (F)-2.5	8/22/2002	2.5	NV	NV	NV	NV	NV
SB-401 (F)-2.5	8/23/2002	2.5	NV	NV	NV	NV	NV
SB-402 (F)-2.5	8/23/2002	2.5	0.00732	NV	0.000871	NV	NV
SB-402 (F)-2.5	8/23/2002	2.5	NV	NV	NV	NV	NV
SB-404 (F)-2.5	8/22/2002	2.5	NV	NV	NV	NV	NV
SB-405 (F)-2.5	8/22/2002	2.5	NV	NV	NV	NV	NV
SB-406 (F)-2.5	8/22/2002	2.5	NV	NV	NV	NV	NV
SB-407 (F)-2.5	8/22/2002	2.5	NV	NV	NV	NV	NV
SB-408 (F)-2.5	8/22/2002	2.5	0.0005 U	NV	0.0005 U	NV	NV
SB-408 (F)-2.5	8/22/2002	2.5	NV	NV	NV	NV	NV
SB-409 (F)-2.5	8/22/2002	2.5	NV	NV	NV	NV	NV



**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Naphthalene	N-Butyl- benzene	N-Propyl- benzene	o-Xylene	Sec- Butylbenzene
DEQ RBC—Urban Residential Direct Contact			67	420 >Csat	420 >Csat	NV	420 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			240	>Csat	>Csat	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			290	>Csat	140	NV	78
SB-706(P)-2.5	8/21/2002	2.5	NV	NV	NV	NV	NV
SB 233 (C)-3	8/30/2002	3	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB 238 (C)-3	8/30/2002	3	0.0005 U	0.000282	0.0005 U	0.0005 U	0.0005 U
SB100(C)3	8/22/2002	3	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB101(C)3	8/22/2002	3	0.0005 U	0.000195	0.0005 U	0.000206	0.0005 U
SB103(C)3	8/22/2002	3	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB200(C)3	8/22/2002	3	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB201(C)3	8/22/2002	3	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB202(C)3	8/22/2002	3	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB203(C)3	8/22/2002	3	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB204(C)3	8/22/2002	3	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB209(C)-3	8/27/2002	3	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB211(C)-3	8/27/2002	3	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB216(C)-3	8/27/2002	3	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB217(C)-3	8/28/2002	3	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB225 (C)-3	8/29/2002	3	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB226 (C)-3	8/29/2002	3	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-244(C)-3	9/3/2002	3	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-601(N)-3	9/13/2002	3	0.1 U	NV	0.025 U	NV	NV
SB-602(N)-3	9/13/2002	3	0.502	NV	NV	NV	NV
SB-604(N)-3	9/13/2002	3	0.025 U	NV	NV	NV	NV
SB-605(N)-3	9/13/2002	3	5.22	NV	2.34	NV	NV
SB-606(N)-3	9/13/2002	3	0.025 U	NV	NV	NV	NV
SB-608(N)-3	9/13/2002	3	0.1 U	NV	0.025 U	NV	NV
SB-609(N)-3	9/13/2002	3	0.1 U	NV	0.025 U	NV	NV
SB-617 (N)-3	9/12/2002	3	0.025 U	NV	0.025 U	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Naphthalene	N-Butyl- benzene	N-Propyl- benzene	o-Xylene	Sec- Butylbenzene
DEQ RBC—Urban Residential Direct Contact			67	420 >Csat	420 >Csat	NV	420 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			240	>Csat	>Csat	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			290	>Csat	140	NV	78
SB-620 (N)-3	9/12/2002	3	0.0517	NV	NV	NV	NV
SB-700(P)-3	8/21/2002	3	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-700(P)-3	8/21/2002	3	NV	NV	NV	NV	NV
SB-705(P)-3	8/20/2002	3	NV	NV	NV	NV	NV
SB-708(P)-3	8/20/2002	3	NV	NV	NV	NV	NV
SB-709(P)-3	8/21/2002	3	NV U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-709(P)-3	8/21/2002	3	NV	NV	NV	NV	NV
SB-710(P)-3	8/21/2002	3	0.000591	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-710(P)-3	8/21/2002	3	NV	NV	NV	NV	NV
SB-711(P)-3	8/21/2002	3	NV U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-711(P)-3	8/21/2002	3	NV	NV	NV	NV	NV
SB-715(P)-3	8/21/2002	3	NV	NV	NV	NV	NV
SB-716(P)-3	8/20/2002	3	0.00052	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-716(P)-3	8/20/2002	3	NV	NV	NV	NV	NV
SB-717(P)-3	8/20/2002	3	0.000488	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-717(P)-3	8/20/2002	3	NV	NV	NV	NV	NV
SB-824 (Q)-3	8/27/2002	3	NV	NV	NV	NV	NV
SB-826 (Q)-3	8/27/2002	3	NV	NV	NV	NV	NV
SB-D-DUP-3	8/20/2002	3	1.64	NV	7.94	NV	NV
SB208(C)-3.5	8/27/2002	3.5	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB210(C)-3.5	8/27/2002	3.5	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-301-D-3.5	8/20/2002	3.5	1.63	NV	1.82	NV	NV
SB-020(A)-4'	3/31/2004	4	0.1 U	NV	0.025 U	NV	NV
SB104(C)4	8/22/2002	4	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB213(C)-4	8/27/2002	4	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB219(C)-4	8/28/2002	4	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Naphthalene	N-Butyl- benzene	N-Propyl- benzene	o-Xylene	Sec- Butylbenzene
DEQ RBC—Urban Residential Direct Contact			67	420 >Csat	420 >Csat	NV	420 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			240	>Csat	>Csat	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			290	>Csat	140	NV	78
SB228 (C)-4	8/29/2002	4	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-239(C)-4	9/3/2002	4	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-242(C)-4	9/3/2002	4	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-243(C)-4	9/3/2002	4	0.0005 U	0.0005 U	0.000248	0.0005 U	0.0005 U
SB-250(C)-4	9/9/2002	4	0.00126	0.000188	0.0005 U	0.0005 U	0.0005 U
SB-251(C)-4	9/9/2002	4	0.00129	0.000242	0.0005 U	0.000443	0.0005 U
SB-410(F)-4'	3/31/2004	4	0.1 U	NV	0.025 U	NV	NV
SB-818 (Q)-4	8/28/2002	4	NV	NV	NV	NV	NV
SB-831 (Q)-4	8/28/2002	4	NV	NV	NV	NV	NV
SB-900(S)-4	8/26/2002	4	0.00071	NV	0.0005 U	NV	NV
SB-904 (S)-4	8/26/2002	4	NV	NV	NV	NV	NV
SB-905 (S)-4	8/26/2002	4	NV	NV	NV	NV	NV
SB-906 (S)-4	8/27/2002	4	0.0005 U	NV	0.0005 U	NV	NV
SB-908 (S)-4	8/27/2002	4	0.1 U	NV	0.0662	NV	NV
SB-909 (S)-4	8/27/2002	4	NV	NV	NV	NV	NV
SB-910 (S)-4	8/27/2002	4	0.0005 U	NV	0.000257	NV	NV
SB205(C)-4.5	8/27/2002	4.5	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB207(C)-4.5	8/27/2002	4.5	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB221 (C)-4.5	8/28/2002	4.5	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB222 (C)-4.5	8/28/2002	4.5	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-305-D-4.5	8/19/2002	4.5	0.529	NV	0.168	NV	NV
SB-306-D-4.5	8/19/2002	4.5	0.319	NV	37	NV	NV
SB812(Q)-4.5	8/27/2002	4.5	NV	NV	NV	NV	NV
SB814(Q)-4.5	8/27/2002	4.5	NV	NV	NV	NV	NV
SB815(Q)-4.5	8/27/2002	4.5	NV	NV	NV	NV	NV
SB214(C)-5	8/27/2002	5	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Naphthalene	N-Butyl- benzene	N-Propyl- benzene	o-Xylene	Sec- Butylbenzene
DEQ RBC—Urban Residential Direct Contact			67	420 >Csat	420 >Csat	NV	420 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			240	>Csat	>Csat	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			290	>Csat	140	NV	78
SB215(C)-5	8/27/2002	5	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB220 (C)-5	8/28/2002	5	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-241(C)-5	9/3/2002	5	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-245(C)-5	9/3/2002	5	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-246(C)-5	9/3/2002	5	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-252(C)-5	9/9/2002	5	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-304-D-5.0	8/19/2002	5	1.38	NV	2.99	NV	NV
SB-309-D-5.0	8/19/2002	5	0.000261 U	NV	0.000997	NV	NV
SB-310-D-5.0	8/19/2002	5	2.68	NV	44.3	NV	NV
SB-311-D-5.0	8/19/2002	5	0.0172	NV	0.0005 U	NV	NV
SB-312-D-5.0	8/19/2002	5	0.0924	NV	0.000677	NV	NV
SB-313-D-5.0	8/20/2002	5	0.705	NV	2.28	NV	NV
SB-316-D-5.0	8/20/2002	5	3.21	NV	16	NV	NV
SB-320(D)-5	9/10/2003	5	0.1 U	NV	0.025 U	NV	NV
SB-321(D)-5	9/9/2003	5	0.285	NV	14.1	NV	NV
SB-322(D)-5	9/10/2003	5	0.0273	NV	0.025 U	NV	NV
SB-324(D)-5	9/10/2003	5	0.0299	NV	0.025 U	NV	NV
SB-325(D)-5	9/10/2003	5	0.1 U	NV	0.025 U	NV	NV
SB-326(D)-5	9/9/2003	5	1.24	NV	4.21	NV	NV
SB-327(D)-5	9/10/2003	5	0.1 U	NV	0.025 U	NV	NV
SB-328(D)-5	9/10/2003	5	0.0234	NV	0.037	NV	NV
SB-400(F)-5	8/22/2002	5	NV	NV	NV	NV	NV
SB-409(F)-5	8/22/2002	5	NV	NV	NV	NV	NV
SB-719(P)-5	8/23/2002	5	NV	NV	NV	NV	NV
SB-811 (Q)-5	8/27/2002	5	NV	NV	NV	NV	NV
SB813(Q)-5	8/27/2002	5	NV	NV	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Naphthalene	N-Butyl- benzene	N-Propyl- benzene	o-Xylene	Sec- Butylbenzene
DEQ RBC—Urban Residential Direct Contact			67	420 >Csat	420 >Csat	NV	420 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			240	>Csat	>Csat	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			290	>Csat	140	NV	78
SB-819 (Q)-5	8/28/2002	5	NV	NV	NV	NV	NV
SB-821 (Q)-5	8/29/2002	5	NV	NV	NV	NV	NV
SB-821 (Q)-5C	8/29/2002	5	NV	NV	NV	NV	NV
SB-613 (N)-5.5	9/12/2002	5.5	34.1	NV	NV	NV	NV
SB-617 (N)-5.5	9/12/2002	5.5	0.113	NV	NV	NV	NV
SB-705(P)-5.5	8/20/2002	5.5	NV	NV	NV	NV	NV
SB-706(P)-5.5	8/21/2002	5.5	0.000541	0.0005 U	0.0005 U	0.000228	0.0005 U
SB-710(P)-5.5	8/21/2002	5.5	0.00099	0.0005 U	0.000273	0.000344	0.0005 U
SB 235 (C)-6	8/30/2002	6	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB 236 (C)-6	8/30/2002	6	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB 237 (C)-6	8/30/2002	6	0.0005 U	0.0334	0.00597	0.0005 U	0.00809
SB200(C)6	8/22/2002	6	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB201(C)6	8/22/2002	6	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB206(C)-6	8/27/2002	6	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB223 (C)-6	8/29/2002	6	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-240(C)-6	9/3/2002	6	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-247(C)-6	9/3/2002	6	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB256 (c) 6	3/31/2004	6	0.1	0.25 U	0.05 U	0.05 U	0.05 U
SB-501 (M) 4-8	8/29/2002	6	NV	NV	NV	NV	NV
SB-608(N)-6	9/13/2002	6	0.1	NV	0.343	NV	NV
TP201(C)6E	8/27/2002	6	0.000672	0.0005 U	0.0005 U	0.0005 U	0.0005 U
TP202(C)6W	8/27/2002	6	0.000461	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB408(S-2(6-7)	8/22/2002	6.5	1.37	NV	NV	NV	NV
SB-827 (Q)-6.5	8/29/2002	6.5	NV	NV	NV	NV	NV
SB-005(A)-7	9/5/2003	7	0.0167	NV	0.025 U	NV	NV
SB-006(A)-7	3/31/2004	7	38	NV	34.7	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Naphthalene	N-Butyl- benzene	N-Propyl- benzene	o-Xylene	Sec- Butylbenzene
DEQ RBC—Urban Residential Direct Contact			67	420 >Csat	420 >Csat	NV	420 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			240	>Csat	>Csat	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			290	>Csat	140	NV	78
SB-015(A)-7	9/10/2003	7	15.7	NV	5.61	NV	NV
SB202(C)7	8/22/2002	7	0.000354	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB203(C)7	8/22/2002	7	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-254(C)-7	9/4/2003	7	0.1 U	NV	0.025 U	NV	NV
SB-255(C)-7	9/4/2003	7	4.23	NV	0.025 U	NV	NV
SB-323(D)-7	9/10/2003	7	0.1 U	NV	0.025 U	NV	NV
SB407(S-2(6-8))	8/22/2002	7	1.46	NV	NV	NV	NV
SB-600(N)-7	9/13/2002	7	69	NV	NV	NV	NV
SB-601(N)-7	9/13/2002	7	94.4	NV	34.2	NV	NV
SB-601(N)-7	9/13/2002	7	NV	NV	NV	NV	NV
SB-602(N)-7	9/13/2002	7	11.3	NV	91.3	NV	NV
SB-602(N)-7	9/13/2002	7	NV	NV	NV	NV	NV
SB-603(N)-7	9/13/2002	7	79.7	NV	19.2	NV	NV
SB-603(N)-7	9/13/2002	7	NV	NV	NV	NV	NV
SB-604(N)-7	9/13/2002	7	58.3	NV	57.9	NV	NV
SB-605(N)-7	9/13/2002	7	132	NV	72.2	NV	NV
SB-606(N)-7	9/13/2002	7	0.025 U	NV	NV	NV	NV
SB-609(N)-7	9/13/2002	7	0.1 U	NV	0.025 U	NV	NV
SB-612 (N)-7	9/12/2002	7	94.1	NV	71.5	NV	NV
SB-612 (N)-7	9/12/2002	7	NV	NV	NV	NV	NV
SB-614 (N)-7	9/12/2002	7	30.6	NV	NV	NV	NV
SB-615 (N)-7	9/12/2002	7	25.3	NV	NV	NV	NV
SB-616 (N)-7	9/12/2002	7	81.3	NV	NV	NV	NV
SB-618 (N)-7	9/12/2002	7	36.1	15	17.9	29	0.5 U
SB-619 (N)-7	9/12/2002	7	0.025 U	NV	0.025 U	NV	NV
SB-619 (N)-7	9/12/2002	7	NV	NV	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Naphthalene	N-Butyl- benzene	N-Propyl- benzene	o-Xylene	Sec- Butylbenzene
DEQ RBC—Urban Residential Direct Contact			67	420 >Csat	420 >Csat	NV	420 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			240	>Csat	>Csat	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			290	>Csat	140	NV	78
SB-620 (N)-7	9/12/2002	7	30.6	NV	14.3	NV	NV
SB-620 (N)-7	9/12/2002	7	NV	NV	NV	NV	NV
SB-621 (N)-7	9/12/2002	7	0.025 U	NV	NV	NV	NV
SB-622 (N)-7	9/12/2002	7	0.025 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-622 (N)-7	9/12/2002	7	NV	NV	NV	NV	NV
SB-623 (N)-7	9/12/2002	7	18.3	NV	12.9	NV	NV
SB-623 (N)-7	9/12/2002	7	NV	NV	NV	NV	NV
SB-624 (N)-7	9/12/2002	7	9.65	8.89	6.5	7.89	4.88
SB-625 (N)-7	9/12/2002	7	0.025 U	NV	0.025 U	NV	NV
SB-625 (N)-7	9/12/2002	7	NV	NV	NV	NV	NV
SB-626 (N)-7	9/12/2002	7	96.2	NV	33.8	NV	NV
SB-626 (N)-7	9/12/2002	7	NV	NV	NV	NV	NV
SB-715(P)-7	8/21/2002	7	NV	NV	NV	NV	NV
SB-721(P)-7	3/31/2004	7	0.1 U	NV	0.025 U	NV	NV
SB-807 (Q)-7	8/28/2002	7	NV	NV	NV	NV	NV
SB-835(Q)-7	9/5/2003	7	0.1 U	NV	0.025 U	NV	NV
SB-912(S)-7	9/3/2003	7	0.1 U	NV	0.025 U	NV	NV
SB-913(S)-7	9/3/2003	7	0.1 U	NV	0.025 U	NV	NV
SB-001(A)-7.5	8/27/2003	7.5	0.1 U	NV	0.025 U	NV	NV
SB-002(A)-7.5	8/27/2003	7.5	0.0287	NV	0.025 U	NV	NV
SB-007(A)-7.5	8/26/2003	7.5	53.4	NV	38.2	NV	NV
SB-008(A)-7.5	8/26/2003	7.5	0.1 U	NV	0.025 U	NV	NV
SB-009(A)-7.5	8/27/2003	7.5	11.3	NV	3.9	NV	NV
SB-010(A)-7.5	8/27/2003	7.5	0.0438	NV	0.025 U	NV	NV
SB-011(A)-7.5	9/3/2003	7.5	0.1 U	NV	0.025 U	NV	NV
SB-013(A)-7.5	9/3/2003	7.5	0.1 U	NV	0.025 U	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Naphthalene	N-Butyl- benzene	N-Propyl- benzene	o-Xylene	Sec- Butylbenzene
DEQ RBC—Urban Residential Direct Contact			67	420 >Csat	420 >Csat	NV	420 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			240	>Csat	>Csat	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			290	>Csat	140	NV	78
SB-017(A)-7.5	9/8/2003	7.5	0.1 U	NV	0.025 U	NV	NV
SB-019(A)-7.5	8/27/2003	7.5	85.3	NV	38.3	NV	NV
SB-253(C)-7.5	9/4/2003	7.5	0.1 U	NV	0.025 U	NV	NV
SB-405(F)-7.5	8/22/2002	7.5	6.49	NV	2.13	NV	NV
SB-405(F)-7.5	8/22/2002	7.5	NV	NV	NV	NV	NV
SB-407(F)-7.5	8/22/2002	7.5	1.01	NV	3.68	NV	NV
SB-407(F)-7.5	8/22/2002	7.5	NV	NV	NV	NV	NV
SB-408(F)-7.5	8/22/2002	7.5	NV	NV	NV	NV	NV
SB-629(N)-7.5	8/28/2003	7.5	25.5	NV	7.18	NV	NV
SB-632(N)-7.5	9/8/2003	7.5	38.9	NV	16.6	NV	NV
SB-714(P)-7.5	8/21/2002	7.5	NV	NV	NV	NV	NV
SB-834(Q)-7.5	9/5/2003	7.5	0.127	NV	0.025 U	NV	NV
SB-914(S)-7.5	9/3/2003	7.5	0.1 U	NV	0.025 U	NV	NV
SB 232 (C)-8	8/30/2002	8	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB 234 (C)-8	8/30/2002	8	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB204(C)8	8/22/2002	8	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB227 (C)-8	8/29/2002	8	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB229 (C)-8	8/29/2002	8	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB230 (C)-8	8/29/2002	8	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-406(F)-8	8/22/2002	8	NV	NV	NV	NV	NV
SB-806 (Q)-8	8/28/2002	8	NV	NV	NV	NV	NV
SB-810 (Q)-8	8/28/2002	8	NV	NV	NV	NV	NV
SB-822 (Q)-8	8/29/2002	8	NV	NV	NV	NV	NV
SB-901 (S)-8	8/26/2002	8	NV	NV	NV	NV	NV
SB-902 (S)-8	8/26/2002	8	NV	NV	NV	NV	NV
SB-903 (S)-8	8/26/2002	8	NV	NV	NV	NV	NV



**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Naphthalene	N-Butyl- benzene	N-Propyl- benzene	o-Xylene	Sec- Butylbenzene
DEQ RBC—Urban Residential Direct Contact			67	420 >Csat	420 >Csat	NV	420 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			240	>Csat	>Csat	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			290	>Csat	140	NV	78
SB-908 (S)-8	8/27/2002	8	0.0005 U	NV	0.0005 U	NV	NV
SB-911 (S)-8	8/27/2002	8	NV	NV	NV	NV	NV
SB-720(P)-8.5	8/23/2002	8.5	NV	NV	NV	NV	NV
SB-804(Q)-8.5	8/26/2002	8.5	NV	NV	NV	NV	NV
SB-809 (Q)-8.5	8/28/2002	8.5	NV	NV	NV	NV	NV
SB-828 (Q)-8.5	8/28/2002	8.5	NV	NV	NV	NV	NV
SB-830 (Q)-8.5	8/28/2002	8.5	NV	NV	NV	NV	NV
SB-020(A)-9'	3/31/2004	9	0.1 U	NV	0.025 U	NV	NV
SB-410(F)-9'	3/31/2004	9	0.1 U	NV	0.025 U	NV	NV
SB802(Q)-9	8/26/2002	9	NV	NV	NV	NV	NV
SB803(Q)-9	8/26/2002	9	NV	NV	NV	NV	NV
SB-807 (Q)-9	8/28/2002	9	NV	NV	NV	NV	NV
SB-811 (Q)-9	8/27/2002	9	NV	NV	NV	NV	NV
SB-811 (Q)-9C	8/27/2002	9	NV	NV	NV	NV	NV
SB812(Q)-9	8/27/2002	9	NV	NV	NV	NV	NV
SB814(Q)-9	8/27/2002	9	NV	NV	NV	NV	NV
SB-817 (Q)-9	8/28/2002	9	NV	NV	NV	NV	NV
SB-818 (Q)-9	8/28/2002	9	NV	NV	NV	NV	NV
SB-820 (Q)-9	8/29/2002	9	NV	NV	NV	NV	NV
SB-820 (Q)-9C	8/29/2002	9	NV	NV	NV	NV	NV
SB-821 (Q)-9	8/29/2002	9	NV	NV	NV	NV	NV
SB-823 (Q)-9	8/27/2002	9	NV	NV	NV	NV	NV
SB-824 (Q)-9	8/27/2002	9	NV	NV	NV	NV	NV
SB-825 (Q)-9	8/27/2002	9	NV	NV	NV	NV	NV
SB-826 (Q)-9	8/27/2002	9	NV	NV	NV	NV	NV
SB-829 (Q)-9	8/28/2002	9	NV	NV	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Naphthalene	N-Butyl- benzene	N-Propyl- benzene	o-Xylene	Sec- Butylbenzene
DEQ RBC—Urban Residential Direct Contact			67	420 >Csat	420 >Csat	NV	420 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			240	>Csat	>Csat	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			290	>Csat	140	NV	78
SB-831 (Q)-9	8/28/2002	9	NV	NV	NV	NV	NV
SB-832 (Q)-9	8/28/2002	9	NV	NV	NV	NV	NV
SB-705(P)-9.5	8/20/2002	9.5	NV	NV	NV	NV	NV
SB-706(P)-9.5	8/21/2002	9.5	NV	NV	NV	NV	NV
SB801(Q)-9.5	8/26/2002	9.5	NV	NV	NV	NV	NV
SB813(Q)-9.5	8/27/2002	9.5	NV	NV	NV	NV	NV
SB815(Q)-9.5	8/27/2002	9.5	NV	NV	NV	NV	NV
SB816(Q)-9.5	8/27/2002	9.5	NV	NV	NV	NV	NV
SB-316-D-10.0	8/20/2002	10	5.96	NV	27.3	NV	NV
SB-318-D-10.0	8/20/2002	10	8.34	NV	10.1	NV	NV
SB-324(D)-10	9/10/2003	10	0.791	NV	3.43	NV	NV
SB-325(D)-10	9/10/2003	10	0.0141	NV	0.025 U	NV	NV
SB-326(D)-10	9/9/2003	10	1.32	NV	5.19	NV	NV
SB-327(D)-10	9/10/2003	10	2.85	NV	1.22	NV	NV
SB-328(D)-10	9/10/2003	10	9.58	NV	12.4	NV	NV
SB-500 (M) 8-12	8/29/2002	10	NV	NV	NV	NV	NV
SB-501 (M) 8-12	8/29/2002	10	NV	NV	NV	NV	NV
SB-502 (M) 8-12	8/29/2002	10	NV	NV	NV	NV	NV
SB-503 (M) 8-12	8/29/2002	10	NV	NV	NV	NV	NV
SB-505 (M) 8-12	8/29/2002	10	NV	NV	NV	NV	NV
SB-506 (M) 8-12	8/29/2002	10	NV	NV	NV	NV	NV
SB-507 (M) 8-12	8/29/2002	10	NV	NV	NV	NV	NV
SB-508 (M) 8-12	8/29/2002	10	NV	NV	NV	NV	NV
SB-509 (M) 8-12	8/29/2002	10	NV	NV	NV	NV	NV
SB-510 (M) 8-12	8/29/2002	10	NV	NV	NV	NV	NV
SB-625 (N)-10	9/12/2002	10	0.898	NV	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Naphthalene	N-Butyl- benzene	N-Propyl- benzene	o-Xylene	Sec- Butylbenzene
DEQ RBC—Urban Residential Direct Contact			67	420 >Csat	420 >Csat	NV	420 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			240	>Csat	>Csat	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			290	>Csat	140	NV	78
SB-703(P)-10	8/21/2002	10	0.000874	0.000233	0.0005 U	0.0005 U	0.0005 U
SB-703(P)-10	8/21/2002	10	NV	NV	NV	NV	NV
SB-707(P)-10	8/21/2002	10	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-707(P)-10	8/21/2002	10	NV	NV	NV	NV	NV
SB-708(P)-10	8/20/2002	10	NV	NV	NV	NV	NV
SB-709(P)-10	8/21/2002	10	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-709(P)-10	8/21/2002	10	NV	NV	NV	NV	NV
SB-711(P)-10	8/21/2002	10	NV U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-711(P)-10	8/21/2002	10	NV	NV	NV	NV	NV
SB-712(P)-10	8/21/2002	10	NV U	0.0005 U	0.000191	0.00305	0.0005 U
SB-712(P)-10	8/21/2002	10	NV	NV	NV	NV	NV
SB-713(P)-10	8/21/2002	10	NV	NV	NV	NV	NV
SB-714(P)-10	8/21/2002	10	37	NV	34.4	NV	NV
SB-714(P)-10	8/21/2002	10	NV	NV	NV	NV	NV
SB-716(P)-10	8/20/2002	10	0.000576	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-716(P)-10	8/20/2002	10	NV	NV	NV	NV	NV
SB-717(P)-10	8/20/2002	10	0.000501	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB-717(P)-10	8/20/2002	10	NV	NV	NV	NV	NV
SB-718(P)-10	8/21/2002	10	NV	NV	NV	NV	NV
SB-805(Q)-10	8/26/2002	10	NV	NV	NV	NV	NV
SB-822 (Q)-10	8/29/2002	10	NV	NV	NV	NV	NV
SB-901 (S)-10	8/26/2002	10	NV	NV	NV	NV	NV
SB-903 (S)-10	8/26/2002	10	0.5 U	NV	0.446	NV	NV
SB-903 (S)-10	8/26/2002	10	NV	NV	NV	NV	NV
SB-908 (S)-10	8/27/2002	10	0.0005 U	NV	0.0005 U	NV	NV
SB-908 (S)-10	8/27/2002	10	NV	NV	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Naphthalene	N-Butyl- benzene	N-Propyl- benzene	o-Xylene	Sec- Butylbenzene
DEQ RBC—Urban Residential Direct Contact			67	420 >Csat	420 >Csat	NV	420 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			240	>Csat	>Csat	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			290	>Csat	140	NV	78
SB-909 (S)-10	8/27/2002	10	NV	NV	NV	NV	NV
SB-910 (S)-10	8/27/2002	10	NV	NV	NV	NV	NV
SB-911 (S)-10	8/27/2002	10	NV	NV	NV	NV	NV
SB-700(P)-10.5	8/21/2002	10.5	1.81	2.93	1.4	0.947	0.795
SB-700(P)-10.5	8/21/2002	10.5	NV	NV	NV	NV	NV
SB-800 (Q)-10.5	8/27/2002	10.5	NV	NV	NV	NV	NV
SB-833 (Q)-10.5	8/28/2002	10.5	NV	NV	NV	NV	NV
SB-027 (A)-11	9/14/2005	11	NV	NV	13.2	NV	NV
SB-504 (M) 10-12	8/29/2002	11	NV	NV	NV	NV	NV
SB-607(N)-11	9/13/2002	11	0.0947	NV	NV	NV	NV
SB-619 (N)-11	9/12/2002	11	1.43	NV	36.7	NV	NV
SB-619 (N)-11	9/12/2002	11	NV	NV	NV	NV	NV
SB-701(P)-11	8/20/2002	11	0.0005	0.0005	0.0005	0.0005	0.0005
SB-701(P)-11	8/20/2002	11	NV	NV	NV	NV	NV
SB-702(P)-11	8/21/2002	11	0.00183	0.0005	0.0005	0.0005	0.0005
SB-702(P)-11	8/21/2002	11	NV	NV	NV	NV	NV
SB-704(P)-11	8/21/2002	11	0.0005	0.0005	0.0005	0.0005	0.0005
SB-704(P)-11	8/21/2002	11	NV	NV	NV	NV	NV
SB-715(P)-11	8/21/2002	11	NV	NV	NV	NV	NV
SB-806 (Q)-11	8/28/2002	11	NV	NV	NV	NV	NV
SB-819 (Q)-11	8/28/2002	11	NV	NV	NV	NV	NV
SB-021 (A)-11.5	9/14/2005	11.5	NV	NV	12.8	NV	NV
SB-720(P)-11.5	8/23/2002	11.5	NV	NV	NV	NV	NV
SB-701(P)-12	8/20/2002	12	0.0465	0.000418	0.00315	0.000583	0.0005
SB-701(P)-12	8/20/2002	12	NV	NV	NV	NV	NV
SB-705(P)-12	8/20/2002	12	NV	NV	NV	NV	NV

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Naphthalene	N-Butyl- benzene	N-Propyl- benzene	o-Xylene	Sec- Butylbenzene
DEQ RBC—Urban Residential Direct Contact			67	420 >Csat	420 >Csat	NV	420 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			240	>Csat	>Csat	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			290	>Csat	140	NV	78
SB-706(P)-12	8/21/2002	12	NV	NV	NV	NV	NV
SB-719(P)-12	8/23/2002	12	NV	NV	NV	NV	NV
SB-900(S)-12	8/26/2002	12	0.0886	NV	0.025 U	NV	NV
SB-900(S)-12	8/26/2002	12	NV	NV	NV	NV	NV
SB-902 (S)-12	8/26/2002	12	0.0005 U	NV	0.0228	NV	NV
SB-904 (S)-12	8/26/2002	12	4.06	NV	0.637	NV	NV
SB-904 (S)-12	8/26/2002	12	NV	NV	NV	NV	NV
SB-905 (S)-12	8/26/2002	12	0.00884	NV	0.0005 U	NV	NV
SB-905 (S)-12	8/26/2002	12	NV	NV	NV	NV	NV
SB-906 (S)-12	8/27/2002	12	0.146	NV	1.15	NV	NV
SB-029 (A)-12.5	9/14/2005	12.5	NV	NV	0.01525 U	NV	NV
SB-316-D-14.5	8/20/2002	14.5	4.58	NV	18.9	NV	NV
SB-314-D-15.0	8/20/2002	15	0.0198	NV	0.0531	NV	NV
SB-315-D-15.0	8/20/2002	15	0.0417	NV	0.0143	NV	NV
SB-318-D-15.0	8/20/2002	15	6.57	NV	7.2	NV	NV
SB-324(D)-15	9/10/2003	15	0.413	NV	0.191	NV	NV
SB-324(D)-DUP	9/10/2003	15	2.59	NV	1.43	NV	NV
SB-325(D)-15	9/10/2003	15	0.1 U	NV	0.025 U	NV	NV
SB-327(D)-15	9/10/2003	15	4.19	NV	7.49	NV	NV
SB-328(D)-15	9/10/2003	15	0.11	NV	0.153	NV	NV
SB101(C)18	8/22/2002	18	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB102(C)18	8/22/2002	18	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
SB103(C)18	8/22/2002	18	0.0005 U	0.0005 U	0.0005 U	0.000415	0.0005 U
SB-313-D-18.0	8/20/2002	18	0.486	NV	16.1	NV	NV
SB100(C)20	8/22/2002	20	0.0179	0.0204	0.0005 U	0.0613	0.0005 U
SB104(C)20	8/22/2002	20	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Naphthalene	N-Butyl- benzene	N-Propyl- benzene	o-Xylene	Sec- Butylbenzene
DEQ RBC—Urban Residential Direct Contact			67	420 >Csat	420 >Csat	NV	420 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			240	>Csat	>Csat	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			290	>Csat	140	NV	78
SB-401(F)-20	8/23/2002	20	NV	NV	NV	NV	NV
SB-402(F)-20	8/23/2002	20	NV	NV	NV	NV	NV
SB-404(F)-20	8/22/2002	20	NV	NV	NV	NV	NV
Number of Samples			249 112	98 14	236 81	98 13	98 5
Average Concentration			5.2	0.3	4.0	0.4	0.1
Median Concentration			0.0329	0.0005	0.025	0.0005	0.0005
Frequency of Detection			45.0	14.3	34.3	13.3	5.1
Minimum Value			0.000261	0.000188	0.000191	0.000206	0.000248
Maximum Detection			132	15	91.3	29	4.88

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Tert- Butylbenzene	Tetrachloro- ethylene	Toluene	Xylene, Isomers m & p	Xylenes
DEQ RBC—Urban Residential Direct Contact			NV	3.0	11,000 >Csat	NV	1,600 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	23	>Max	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.19	>Csat	NV	110
SB-800 (Q)-0	8/27/2002	0	NV	NV	0.025 U	NV	0.025 U
SB801(Q)-0	8/26/2002	0	NV	NV	0.025 U	NV	0.025 U
SB802(Q)-0	8/26/2002	0	NV	NV	0.025 U	NV	0.025 U
SB803(Q)-0	8/26/2002	0	NV	NV	0.025 U	NV	0.025 U
SB-804(Q)-0	8/26/2002	0	NV	NV	0.025 U	NV	0.025 U
SB-805(Q)-0	8/26/2002	0	NV	NV	0.025 U	NV	0.025 U
SB-806 (Q)-0	8/28/2002	0	NV	NV	0.025 U	NV	0.025 U
SB-807 (Q)-0	8/28/2002	0	NV	NV	0.025 U	NV	0.025 U
SB-809 (Q)-0	8/28/2002	0	NV	NV	0.025 U	NV	0.025 U
SB-810 (Q)-0	8/28/2002	0	NV	NV	0.025 U	NV	0.025 U
SB-811 (Q)-0	8/27/2002	0	NV	NV	0.025 U	NV	0.025 U
SB812(Q)-0	8/27/2002	0	NV	NV	0.025 U	NV	0.025 U
SB813(Q)-0	8/27/2002	0	NV	NV	0.025 U	NV	R
SB814(Q)-0	8/27/2002	0	NV	NV	0.025 U	NV	0.025 U
SB815(Q)-0	8/27/2002	0	NV	NV	0.025 U	NV	0.025 U
SB816(Q)-0	8/27/2002	0	NV	NV	0.025 U	NV	0.025 U
SB-817 (Q)-0	8/28/2002	0	NV	NV	0.025 U	NV	0.025 U
SB-818 (Q)-0	8/28/2002	0	NV	NV	0.025 U	NV	0.025 U
SB-819 (Q)-0	8/28/2002	0	NV	NV	0.025 U	NV	0.025 U
SB-820 (Q)-0	8/29/2002	0	NV	NV	0.025 U	NV	0.025 U
SB-820 (Q)-0C	8/29/2002	0	0.05 U	0.05 U	0.05 U	0.0144	0.0644
SB-821 (Q)-0	8/29/2002	0	NV	NV	0.025 U	NV	0.025 U
SB-822 (Q)-0	8/29/2002	0	NV	NV	0.025 U	NV	0.025 U
SB-823 (Q)-0	8/27/2002	0	NV	NV	0.025 U	NV	0.025 U
SB-824 (Q)-0	8/27/2002	0	NV	NV	0.025 U	NV	0.025 U
SB-825 (Q)-0	8/27/2002	0	NV	NV	0.025 U	NV	0.025 U

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Tert- Butylbenzene	Tetrachloro- ethylene	Toluene	Xylene, Isomers m & p	Xylenes
DEQ RBC—Urban Residential Direct Contact			NV	3.0	11,000 >Csat	NV	1,600 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	23	>Max	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.19	>Csat	NV	110
SB-826 (Q)-0	8/27/2002	0	NV	NV	0.025 U	NV	0.025 U
SB-827 (Q)-0	8/29/2002	0	NV	NV	0.025 U	NV	0.025 U
SB-828 (Q)-0	8/28/2002	0	NV	NV	0.05	NV	0.05
SB-829 (Q)-0	8/28/2002	0	NV	NV	0.025 U	NV	0.025 U
SB-830 (Q)-0	8/28/2002	0	NV	NV	0.025 U	NV	0.025 U
SB-831 (Q)-0	8/28/2002	0	NV	NV	0.025 U	NV	0.025 U
SB-832 (Q)-0	8/28/2002	0	NV	NV	0.025 U	NV	0.025 U
SB-833 (Q)-0	8/28/2002	0	NV	NV	0.025 U	NV	0.025 U
Ex-1/S-1	3/30/2004	1	NV	NV	0.025 U	NV	0.025 U
Ex-2/S-1	3/30/2004	1	NV	NV	0.053	NV	0.129
Ex-3/S-1	3/31/2004	1	NV	NV	0.025 U	NV	0.025 U
Ex-4/S-1	3/29/2004	1	NV	NV	0.025 U	NV	0.025 U
SB-618 (N)-1.5	9/12/2002	1.5	NV	NV	0.025 U	NV	0.106
SB-008(A)-2	8/26/2003	2	NV	NV	0.025 U	NV	0.05 U
SB-009(A)-2	8/27/2003	2	NV	NV	0.025 U	NV	0.05 U
SB-010(A)-2	8/27/2003	2	NV	NV	0.025 U	NV	0.05 U
SB102(C)1-3	8/22/2002	2	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB224 (C)-2	8/29/2002	2	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB231 (C)-2	8/29/2002	2	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB-253(C)-2	9/4/2003	2	NV	NV	0.025 U	NV	0.05 U
SB-254(C)-2	9/4/2003	2	NV	NV	0.025 U	NV	0.05 U
SB-304-D-2.0	8/19/2002	2	NV	NV	0.05 U	NV	3.52
SB-305-D-2.0	8/19/2002	2	NV	NV	0.05 U	NV	2.56
SB-306-D-2.0	8/19/2002	2	NV	NV	0.114	NV	7.72
SB-307-D-2.0	8/19/2002	2	NV	NV	0.0005 U	NV	0.001 U
SB-309-D-2.0	8/19/2002	2	NV	NV	0.234	NV	7.66



**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Tert- Butylbenzene	Tetrachloro- ethylene	Toluene	Xylene, Isomers m & p	Xylenes
DEQ RBC—Urban Residential Direct Contact			NV	3.0	11,000 >Csat	NV	1,600 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	23	>Max	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.19	>Csat	NV	110
SB-310-D-2.0	8/19/2002	2	NV	NV	0.025 U	NV	1.34
SB-315-D-2.0	8/20/2002	2	NV	NV	0.025 U	NV	0.05 U
SB-316-D-2.0	8/20/2002	2	NV	NV	0.025 U	NV	0.05 U
SB-320(D)-2	9/10/2003	2	NV	NV	0.025 U	NV	0.05 U
SB-321(D)-2	9/9/2003	2	NV	NV	0.0933	NV	4.15
SB-322(D)-2	9/10/2003	2	NV	NV	0.025 U	NV	0.05 U
SB-324(D)-2	9/10/2003	2	NV	NV	0.025 U	NV	0.05 U
SB-325(D)-2	9/10/2003	2	NV	NV	0.025 U	NV	0.05 U
SB-325(D)-DUP	9/10/2003	2	NV	NV	0.025 U	NV	0.05 U
SB-326(D)-2	9/9/2003	2	NV	NV	0.0744	NV	0.05 U
SB-327(D)-2	9/10/2003	2	NV	NV	0.025 U	NV	0.05 U
SB-328(D)-2	9/10/2003	2	NV	NV	0.025 U	NV	0.05 U
SB-410(F)-2'	3/31/2004	2	NV	NV	0.025 U	NV	0.05 U
SB-622 (N)-2	9/12/2002	2	NV	NV	0.025 U	NV	0.025 U
SB-624 (N)-2	9/12/2002	2	NV	NV	0.025 U	NV	0.025 U
SB-625 (N)-2	9/12/2002	2	NV	NV	0.025 U	NV	0.025 U
SB-627(N)-2	8/28/2003	2	NV	NV	0.0302	NV	0.05 U
SB-701(P)-2	8/20/2002	2	0.0005 U	0.00165	0.025 U	0.001 U	0.0015 U
SB-701(P)-2	8/20/2002	2	NV	NV	0.0005 U	NV	0.025 U
SB-702(P)-2	8/21/2002	2	0.0005 U	0.0005 U	0.025 U	0.00151	0.0020
SB-702(P)-2	8/21/2002	2	NV	NV	0.0005 U	NV	0.025 U
SB-703(P)-2	8/21/2002	2	0.0005 U	0.0005 U	0.025 U	0.00593	0.0066
SB-703(P)-2	8/21/2002	2	NV	NV	0.000891	NV	0.025 U
SB-704(P)-2	8/21/2002	2	0.0005 U	0.0005 U	0.025 U	0.00118	0.0017
SB-704(P)-2	8/21/2002	2	NV	NV	0.0005 U	NV	0.025 U
SB-707(P)-2	8/21/2002	2	NV	NV	0.025 U	NV	0.025 U

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Tert- Butylbenzene	Tetrachloro- ethylene	Toluene	Xylene, Isomers m & p	Xylenes
DEQ RBC—Urban Residential Direct Contact			NV	3.0	11,000 >Csat	NV	1,600 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	23	>Max	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.19	>Csat	NV	110
SB-712(P)-2	8/21/2002	2	0.0005 U	0.0005 U	0.025 U	0.0101	0.01209
SB-712(P)-2	8/21/2002	2	NV	NV	0.000751	NV	0.025 U
SB-713(P)-2	8/21/2002	2	NV	NV	0.025 U	NV	0.025 U
SB-714(P)-2	8/21/2002	2	NV	NV	0.025 U	NV	0.025 U
SB-718(P)-2	8/21/2002	2	NV	NV	0.025 U	NV	0.025 U
SB-720(P)-2	8/23/2002	2	NV	NV	0.025 U	NV	0.0628
SB-800 (Q)-2	8/27/2002	2	NV	NV	0.025 U	NV	0.025 U
SB801(Q)-2	8/26/2002	2	NV	NV	0.025 U	NV	0.025 U
SB802(Q)-2	8/26/2002	2	NV	NV	0.025 U	NV	0.025 U
SB803(Q)-2	8/26/2002	2	NV	NV	0.025 U	NV	0.025 U
SB-804(Q)-2	8/26/2002	2	NV	NV	0.025 U	NV	0.025 U
SB-805(Q)-2	8/26/2002	2	NV	NV	0.025 U	NV	1.1
SB-806 (Q)-2	8/28/2002	2	NV	NV	0.025 U	NV	0.025 U
SB-809 (Q)-2	8/28/2002	2	NV	NV	0.025 U	NV	0.025 U
SB-810 (Q)-2	8/28/2002	2	NV	NV	0.025 U	NV	0.025 U
SB816(Q)-2	8/27/2002	2	NV	NV	0.025 U	NV	0.025 U
SB-817 (Q)-2	8/28/2002	2	NV	NV	0.025 U	NV	0.025 U
SB-820 (Q)-2	8/29/2002	2	NV	NV	0.025 U	NV	0.025 U
SB-822 (Q)-2	8/29/2002	2	NV	NV	0.025 U	NV	0.025 U
SB-822 (Q)-2C	8/29/2002	2	NV	NV	0.025 U	NV	0.025 U
SB-823 (Q)-2	8/27/2002	2	NV	NV	0.025 U	NV	0.025 U
SB-825 (Q)-2	8/27/2002	2	NV	NV	0.025 U	NV	0.025 U
SB-827 (Q)-2	8/29/2002	2	NV	NV	0.0514	NV	0.025 U
SB-828 (Q)-2	8/28/2002	2	NV	NV	0.025 U	NV	0.025 U
SB-829 (Q)-2	8/28/2002	2	NV	NV	0.025 U	NV	0.025 U
SB-829 (Q)-2C	8/28/2002	2	NV	NV	0.025 U	NV	0.025 U

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Tert- Butylbenzene	Tetrachloro- ethylene	Toluene	Xylene, Isomers m & p	Xylenes
DEQ RBC—Urban Residential Direct Contact			NV	3.0	11,000 >Csat	NV	1,600 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	23	>Max	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.19	>Csat	NV	110
SB-830 (Q)-2	8/28/2002	2	NV	NV	0.025 U	NV	0.025 U
SB-832 (Q)-2	8/28/2002	2	NV	NV	0.025 U	NV	0.025 U
SB-833 (Q)-2	8/28/2002	2	NV	NV	0.025 U	NV	0.025 U
SB-834(Q)-2	9/5/2003	2	NV	NV	0.025 U	NV	0.05 U
SB-835(Q)-2	9/5/2003	2	NV	NV	0.025 U	NV	0.05 U
SB-912(S)-2	9/3/2003	2	NV	NV	0.025 U	NV	0.05 U
SB-913(S)-2	9/3/2003	2	NV	NV	0.025 U	NV	0.05 U
SB-914(S)-2	9/3/2003	2	NV	NV	0.025 U	NV	0.05 U
SB-D-DUP-0819	8/19/2002	2	NV	NV	0.025 U	NV	0.78
SB-002(A)-2.5	8/27/2003	2.5	NV	NV	0.025 U	NV	0.05 U
SB-005(A)-2.5	9/5/2003	2.5	NV	NV	0.025 U	NV	0.05 U
SB-019(A)-2.5	8/27/2003	2.5	NV	NV	0.025 U	NV	0.05 U
SB212(C)-2.5	8/27/2002	2.5	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB218(C)-2.5	8/28/2002	2.5	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB-255(C)-2.5	9/4/2003	2.5	NV	NV	0.0237	NV	0.05 U
SB-400(F)-2.5	8/22/2002	2.5	NV	NV	0.025 U	NV	0.025 U
SB-401(F)-2.5	8/23/2002	2.5	NV	NV	0.025 U	NV	0.025 U
SB-402(F)-2.5	8/23/2002	2.5	NV	NV	0.025 U	NV	0.025 U
SB-402(F)-2.5	8/23/2002	2.5	NV	NV	0.00357	NV	0.0108
SB-404(F)-2.5	8/22/2002	2.5	NV	NV	0.025 U	NV	0.025 U
SB-405(F)-2.5	8/22/2002	2.5	NV	NV	0.025 U	NV	0.025 U
SB-406(F)-2.5	8/22/2002	2.5	NV	NV	0.025 U	NV	0.025 U
SB-407(F)-2.5	8/22/2002	2.5	NV	NV	0.025 U	NV	0.025 U
SB-408(F)-2.5	8/22/2002	2.5	NV	NV	0.025 U	NV	0.025 U
SB-408(F)-2.5	8/22/2002	2.5	NV	NV	0.0005 U	NV	0.001 U
SB-409(F)-2.5	8/22/2002	2.5	NV	NV	0.025 U	NV	0.025 U

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Tert- Butylbenzene	Tetrachloro- ethylene	Toluene	Xylene, Isomers m & p	Xylenes
DEQ RBC—Urban Residential Direct Contact			NV	3.0	11,000 >Csat	NV	1,600 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	23	>Max	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.19	>Csat	NV	110
SB-706(P)-2.5	8/21/2002	2.5	NV	NV	0.025 U	NV	0.025 U
SB 233 (C)-3	8/30/2002	3	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB 238 (C)-3	8/30/2002	3	0.0005 U	0.0005 U	0.0005 U	0.00039	0.00089
SB100(C)3	8/22/2002	3	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB101(C)3	8/22/2002	3	0.0005 U	0.0005 U	0.0005 U	0.000401	0.000607
SB103(C)3	8/22/2002	3	0.0005 U	0.00291	0.0005 U	0.000272	0.000772
SB200(C)3	8/22/2002	3	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB201(C)3	8/22/2002	3	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB202(C)3	8/22/2002	3	0.0005 U	0.00277	0.0005 U	0.000396	0.000896
SB203(C)3	8/22/2002	3	0.0005 U	0.0005 U	0.0005 U	0.000248	0.000748
SB204(C)3	8/22/2002	3	0.0005 U	0.0005 U	0.0005 U	0.000244	0.000744
SB209(C)-3	8/27/2002	3	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB211(C)-3	8/27/2002	3	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB216(C)-3	8/27/2002	3	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB217(C)-3	8/28/2002	3	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB225 (C)-3	8/29/2002	3	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB226 (C)-3	8/29/2002	3	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB-244(C)-3	9/3/2002	3	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB-601(N)-3	9/13/2002	3	NV	NV	0.025 U	NV	0.05 U
SB-602(N)-3	9/13/2002	3	NV	NV	0.025 U	NV	0.025 U
SB-604(N)-3	9/13/2002	3	NV	NV	0.025 U	NV	0.025 U
SB-605(N)-3	9/13/2002	3	NV	NV	0.0785	NV	14.3
SB-606(N)-3	9/13/2002	3	NV	NV	0.025 U	NV	0.025 U
SB-608(N)-3	9/13/2002	3	NV	NV	0.025 U	NV	0.05 U
SB-609(N)-3	9/13/2002	3	NV	NV	0.025 U	NV	0.05 U
SB-617 (N)-3	9/12/2002	3	NV	NV	0.025 U	NV	0.025 U

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Tert- Butylbenzene	Tetrachloro- ethylene	Toluene	Xylene, Isomers m & p	Xylenes
DEQ RBC—Urban Residential Direct Contact			NV	3.0	11,000 >Csat	NV	1,600 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	23	>Max	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.19	>Csat	NV	110
SB-620 (N)-3	9/12/2002	3	NV	NV	0.025 U	NV	0.025 U
SB-700(P)-3	8/21/2002	3	0.0005 U	0.0005 U	0.025 U	0.001 U	0.0015 U
SB-700(P)-3	8/21/2002	3	NV	NV	0.0005 U	NV	0.025 U
SB-705(P)-3	8/20/2002	3	NV	NV	0.025 U	NV	0.025 U
SB-708(P)-3	8/20/2002	3	NV	NV	0.025 U	NV	0.025 U
SB-709(P)-3	8/21/2002	3	0.0005 U	0.0005 U	0.025 U	0.000761	0.001261 U
SB-709(P)-3	8/21/2002	3	NV	NV	0.0005 U	NV	0.025 U
SB-710(P)-3	8/21/2002	3	0.0005 U	0.0005 U	0.025 U	0.00174	0.00224 U
SB-710(P)-3	8/21/2002	3	NV	NV	0.0005 U	NV	0.025 U
SB-711(P)-3	8/21/2002	3	0.0005 U	0.0005 U	0.025 U	0.00165	0.00215 U
SB-711(P)-3	8/21/2002	3	NV	NV	0.0005 U	NV	0.025 U
SB-715(P)-3	8/21/2002	3	NV	NV	0.025 U	NV	0.025 U
SB-716(P)-3	8/20/2002	3	0.0005 U	0.00186	0.025 U	0.000244	0.000744 U
SB-716(P)-3	8/20/2002	3	NV	NV	0.0005 U	NV	0.025 U
SB-717(P)-3	8/20/2002	3	0.0005 U	0.00153	0.025 U	0.001 U	0.0015 U
SB-717(P)-3	8/20/2002	3	NV	NV	0.0005 U	NV	0.025 U
SB-824 (Q)-3	8/27/2002	3	NV	NV	0.025 U	NV	0.025 U
SB-826 (Q)-3	8/27/2002	3	NV	NV	0.025 U	NV	0.025 U
SB-D-DUP-3	8/20/2002	3	NV	NV	0.0605	NV	38
SB208(C)-3.5	8/27/2002	3.5	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB210(C)-3.5	8/27/2002	3.5	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB-301-D-3.5	8/20/2002	3.5	NV	NV	0.05 U	NV	1.39
SB-020(A)-4'	3/31/2004	4	NV	NV	0.025 U	NV	0.05 U
SB104(C)4	8/22/2002	4	0.0005 U	0.00287	0.0005 U	0.000311	0.000811
SB213(C)-4	8/27/2002	4	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB219(C)-4	8/28/2002	4	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Tert- Butylbenzene	Tetrachloro- ethylene	Toluene	Xylene, Isomers m & p	Xylenes
DEQ RBC—Urban Residential Direct Contact			NV	3.0	11,000 >Csat	NV	1,600 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	23	>Max	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.19	>Csat	NV	110
SB228 (C)-4	8/29/2002	4	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB-239(C)-4	9/3/2002	4	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB-242(C)-4	9/3/2002	4	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB-243(C)-4	9/3/2002	4	0.0005 U	0.000592	0.0005 U	0.001 U	0.0015 U
SB-250(C)-4	9/9/2002	4	0.0005 U	0.0005 U	0.0005 U	0.00076	0.00126
SB-251(C)-4	9/9/2002	4	0.0005 U	0.0005 U	0.0005 U	0.00219	0.002633
SB-410(F)-4	3/31/2004	4	NV	NV	0.025 U	NV	0.05 U
SB-818 (Q)-4	8/28/2002	4	NV	NV	0.025 U	NV	0.025 U
SB-831 (Q)-4	8/28/2002	4	NV	NV	0.025 U	NV	0.025 U
SB-900(S)-4	8/26/2002	4	NV	NV	0.0005 U	NV	0.001 U
SB-904 (S)-4	8/26/2002	4	NV	NV	0.025 U	NV	0.025 U
SB-905 (S)-4	8/26/2002	4	NV	NV	0.025 U	NV	0.025 U
SB-906 (S)-4	8/27/2002	4	NV	NV	0.0005 U	NV	0.001 U
SB-908 (S)-4	8/27/2002	4	NV	NV	0.025 U	NV	0.385
SB-909 (S)-4	8/27/2002	4	NV	NV	0.025 U	NV	0.025 U
SB-910 (S)-4	8/27/2002	4	NV	NV	0.0005 U	NV	0.000911
SB205(C)-4.5	8/27/2002	4.5	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB207(C)-4.5	8/27/2002	4.5	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB221 (C)-4.5	8/28/2002	4.5	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB222 (C)-4.5	8/28/2002	4.5	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB-305-D-4.5	8/19/2002	4.5	NV	NV	0.025 U	NV	0.249
SB-306-D-4.5	8/19/2002	4.5	NV	NV	0.271	NV	2.57
SB812(Q)-4.5	8/27/2002	4.5	NV	NV	0.025 U	NV	0.025 U
SB814(Q)-4.5	8/27/2002	4.5	NV	NV	0.025 U	NV	0.025 U
SB815(Q)-4.5	8/27/2002	4.5	NV	NV	0.025 U	NV	0.025 U
SB214(C)-5	8/27/2002	5	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Tert- Butylbenzene	Tetrachloro- ethylene	Toluene	Xylene, Isomers m & p	Xylenes
DEQ RBC—Urban Residential Direct Contact			NV	3.0	11,000 >Csat	NV	1,600 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	23	>Max	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.19	>Csat	NV	110
SB215(C)-5	8/27/2002	5	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB220 (C)-5	8/28/2002	5	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB-241(C)-5	9/3/2002	5	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB-245(C)-5	9/3/2002	5	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB-246(C)-5	9/3/2002	5	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB-252(C)-5	9/9/2002	5	0.0005 U	0.0005 U	0.0005 U	0.00062	0.00112
SB-304-D-5.0	8/19/2002	5	NV	NV	0.05 U	NV	3.92
SB-309-D-5.0	8/19/2002	5	NV	NV	0.0005 U	NV	0.05 U
SB-310-D-5.0	8/19/2002	5	NV	NV	0.442	NV	32
SB-311-D-5.0	8/19/2002	5	NV	NV	0.0119	NV	0.05 U
SB-312-D-5.0	8/19/2002	5	NV	NV	0.0005 U	NV	0.000784
SB-313-D-5.0	8/20/2002	5	NV	NV	0.0201	NV	8.46
SB-316-D-5.0	8/20/2002	5	NV	NV	0.125 U	NV	69.8
SB-320(D)-5	9/10/2003	5	NV	NV	0.025 U	NV	0.05 U
SB-321(D)-5	9/9/2003	5	NV	NV	1.45	NV	31.6
SB-322(D)-5	9/10/2003	5	NV	NV	0.025 U	NV	0.05 U
SB-324(D)-5	9/10/2003	5	NV	NV	0.025 U	NV	0.05 U
SB-325(D)-5	9/10/2003	5	NV	NV	0.025 U	NV	0.05 U
SB-326(D)-5	9/9/2003	5	NV	NV	0.125 U	NV	19.4
SB-327(D)-5	9/10/2003	5	NV	NV	0.025 U	NV	0.05 U
SB-328(D)-5	9/10/2003	5	NV	NV	0.025 U	NV	0.037
SB-400(F)-5	8/22/2002	5	NV	NV	0.025 U	NV	0.025 U
SB-409(F)-5	8/22/2002	5	NV	NV	0.025 U	NV	0.025 U
SB-719(P)-5	8/23/2002	5	NV	NV	0.025 U	NV	0.025 U
SB-811 (Q)-5	8/27/2002	5	NV	NV	0.025 U	NV	0.025 U
SB813(Q)-5	8/27/2002	5	NV	NV	0.025 U	NV	0.025 U

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**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Tert- Butylbenzene	Tetrachloro- ethylene	Toluene	Xylene, Isomers m & p	Xylenes
DEQ RBC—Urban Residential Direct Contact			NV	3.0	11,000 >Csat	NV	1,600 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	23	>Max	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.19	>Csat	NV	110
SB-819 (Q)-5	8/28/2002	5	NV	NV	0.025 U	NV	0.05
SB-821 (Q)-5	8/29/2002	5	NV	NV	6.51	NV	70.7
SB-821 (Q)-5C	8/29/2002	5	NV	NV	1.57	NV	22.3
SB-613 (N)-5.5	9/12/2002	5.5	NV	NV	7.49	NV	181
SB-617 (N)-5.5	9/12/2002	5.5	NV	NV	0.025 U	NV	0.025 U
SB-705(P)-5.5	8/20/2002	5.5	NV	NV	0.025 U	NV	0.025 U
SB-706(P)-5.5	8/21/2002	5.5	0.0005 U	0.0005 U	0.025 U	0.00158	0.001808
SB-710(P)-5.5	8/21/2002	5.5	0.0005 U	0.0005 U	0.000574	0.00317	0.003514
SB 235 (C)-6	8/30/2002	6	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB 236 (C)-6	8/30/2002	6	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB 237 (C)-6	8/30/2002	6	0.00961	0.0005 U	0.0005 U	0.000868	0.001368
SB200(C)6	8/22/2002	6	0.0005 U	0.0005 U	0.0005 U	0.000231	0.000731
SB201(C)6	8/22/2002	6	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB206(C)-6	8/27/2002	6	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB223 (C)-6	8/29/2002	6	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB-240(C)-6	9/3/2002	6	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB-247(C)-6	9/3/2002	6	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB256 (c) 6	3/31/2004	6	0.05 U	0.05 U	0.05 U	0.1 U	0.15 U
SB-501 (M) 4-8	8/29/2002	6	NV	NV	0.025 U	NV	0.604
SB-608(N)-6	9/13/2002	6	NV	NV	0.025 U	NV	0.05 U
TP201(C)6E	8/27/2002	6	0.0005 U	0.000184	0.0005 U	0.001 U	0.0015 U
TP202(C)6W	8/27/2002	6	0.0005 U	0.000182	0.0005 U	0.001 U	0.0015 U
SB408/S-2(6-7)	8/22/2002	6.5	NV	NV	0.025 U	NV	0.112
SB-827 (Q)-6.5	8/29/2002	6.5	NV	NV	0.025 U	NV	0.025 U
SB-005(A)-7	9/5/2003	7	NV	NV	0.025 U	NV	0.05 U
SB-006(A)-7	3/31/2004	7	NV	NV	0.832	NV	86.9



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**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
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**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Tert- Butylbenzene	Tetrachloro- ethylene	Toluene	Xylene, Isomers m & p	Xylenes
DEQ RBC—Urban Residential Direct Contact			NV	3.0	11,000 >Csat	NV	1,600 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	23	>Max	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.19	>Csat	NV	110
SB-015(A)-7	9/10/2003	7	NV	NV	7.4	NV	64.6
SB202(C)-7	8/22/2002	7	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB203(C)-7	8/22/2002	7	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB-254(C)-7	9/4/2003	7	NV	NV	0.025 U	NV	0.05 U
SB-255(C)-7	9/4/2003	7	NV	NV	0.0189	NV	0.05 U
SB-323(D)-7	9/10/2003	7	NV	NV	0.025 U	NV	0.05 U
SB407/S-2(6-8)	8/22/2002	7	NV	NV	1.47	NV	4.68
SB-600(N)-7	9/13/2002	7	NV	NV	2.5 U	NV	171
SB-601(N)-7	9/13/2002	7	NV	NV	33.9	NV	426
SB-601(N)-7	9/13/2002	7	NV	NV	23.2	NV	482
SB-602(N)-7	9/13/2002	7	NV	NV	0.5 U	NV	22.5
SB-602(N)-7	9/13/2002	7	NV	NV	169	NV	1160
SB-603(N)-7	9/13/2002	7	NV	NV	34.5	NV	393
SB-603(N)-7	9/13/2002	7	NV	NV	15.6	NV	253
SB-604(N)-7	9/13/2002	7	NV	NV	9.61	NV	172
SB-605(N)-7	9/13/2002	7	NV	NV	1.25 U	NV	333
SB-606(N)-7	9/13/2002	7	NV	NV	0.025 U	NV	0.025 U
SB-609(N)-7	9/13/2002	7	NV	NV	0.025 U	NV	0.05 U
SB-612 (N)-7	9/12/2002	7	NV	NV	19.2	NV	478
SB-612 (N)-7	9/12/2002	7	NV	NV	42.6	NV	931
SB-614 (N)-7	9/12/2002	7	NV	NV	4.57	NV	79.9
SB-615 (N)-7	9/12/2002	7	NV	NV	4.43	NV	156
SB-616 (N)-7	9/12/2002	7	NV	NV	2.5 U	NV	207
SB-618 (N)-7	9/12/2002	7	0.5 U	0.5 U	4.61	132	137
SB-619 (N)-7	9/12/2002	7	NV	NV	0.025 U	NV	0.025 U
SB-619 (N)-7	9/12/2002	7	NV	NV	0.025 U	NV	0.05 U

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Tert- Butylbenzene	Tetrachloro- ethylene	Toluene	Xylene, Isomers m & p	Xylenes
DEQ RBC—Urban Residential Direct Contact			NV	3.0	11,000 >Csat	NV	1,600 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	23	>Max	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.19	>Csat	NV	110
SB-620 (N)-7	9/12/2002	7	NV	NV	2.5 U	NV	96.7
SB-620 (N)-7	9/12/2002	7	NV	NV	1.25 U	NV	121
SB-621 (N)-7	9/12/2002	7	NV	NV	0.025 U	NV	0.025 U
SB-622 (N)-7	9/12/2002	7	0.0005 U	0.0005 U	0.025 U	0.00515	0.00565
SB-622 (N)-7	9/12/2002	7	NV	NV	0.0005 U	NV	0.025 U
SB-623 (N)-7	9/12/2002	7	NV	NV	0.5 U	NV	17.4
SB-623 (N)-7	9/12/2002	7	NV	NV	0.25 U	NV	41.5
SB-624 (N)-7	9/12/2002	7	0.25 U	0.25 U	0.768	16.7	24.59
SB-625 (N)-7	9/12/2002	7	NV	NV	0.025 U	NV	0.025 U
SB-625 (N)-7	9/12/2002	7	NV	NV	0.025 U	NV	0.05 U
SB-626 (N)-7	9/12/2002	7	NV	NV	2.5 U	NV	195
SB-626 (N)-7	9/12/2002	7	NV	NV	1.25 U	NV	295
SB-715(P)-7	8/21/2002	7	NV	NV	0.025 U	NV	0.21
SB-721(P)-7	3/31/2004	7	NV	NV	0.025 U	NV	0.05 U
SB-807 (Q)-7	8/28/2002	7	NV	NV	1.82	NV	57.9
SB-835(Q)-7	9/5/2003	7	NV	NV	0.025 U	NV	0.05 U
SB-912(S)-7	9/3/2003	7	NV	NV	0.025 U	NV	0.05 U
SB-913(S)-7	9/3/2003	7	NV	NV	0.025 U	NV	0.05 U
SB-001(A)-7.5	8/27/2003	7.5	NV	NV	0.025 U	NV	0.05 U
SB-002(A)-7.5	8/27/2003	7.5	NV	NV	0.025 U	NV	0.05 U
SB-007(A)-7.5	8/26/2003	7.5	NV	NV	0.025 U	NV	0.05 U
SB-008(A)-7.5	8/26/2003	7.5	NV	NV	1.24	NV	120
SB-009(A)-7.5	8/27/2003	7.5	NV	NV	0.025 U	NV	0.05 U
SB-010(A)-7.5	8/27/2003	7.5	NV	NV	0.245	NV	1.32
SB-011(A)-7.5	8/27/2003	7.5	NV	NV	0.025 U	NV	0.05 U
SB-011(A)-7.5	9/3/2003	7.5	NV	NV	0.025 U	NV	0.05 U
SB-013(A)-7.5	9/3/2003	7.5	NV	NV	0.025 U	NV	0.05 U

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Tert- Butylbenzene	Tetrachloro- ethylene	Toluene	Xylene, Isomers m & p	Xylenes
DEQ RBC—Urban Residential Direct Contact			NV	3.0	11,000 >Csat	NV	1,600 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	23	>Max	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.19	>Csat	NV	110
SB-017(A)-7.5	9/8/2003	7.5	NV	NV	0.025 U	NV	0.05 U
SB-019(A)-7.5	8/27/2003	7.5	NV	NV	2.38	NV	134
SB-253(C)-7.5	9/4/2003	7.5	NV	NV	0.025 U	NV	0.05 U
SB-405(F)-7.5	8/22/2002	7.5	NV	NV	0.05 U	NV	0.708
SB-405(F)-7.5	8/22/2002	7.5	NV	NV	0.025 U	NV	3.78
SB-407(F)-7.5	8/22/2002	7.5	NV	NV	0.5 U	NV	6.01
SB-407(F)-7.5	8/22/2002	7.5	NV	NV	0.05 U	NV	1.21
SB-408(F)-7.5	8/22/2002	7.5	NV	NV	0.025 U	NV	0.025 U
SB-629(N)-7.5	8/28/2003	7.5	NV	NV	0.25 U	NV	37.9
SB-632(N)-7.5	9/8/2003	7.5	NV	NV	0.25 U	NV	63.8
SB-714(P)-7.5	8/21/2002	7.5	NV	NV	1 U	NV	72.7
SB-834(Q)-7.5	9/5/2003	7.5	NV	NV	0.025 U	NV	0.05 U
SB-914(S)-7.5	9/3/2003	7.5	NV	NV	0.025 U	NV	0.05 U
SB 232 (C)-8	8/30/2002	8	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB 234 (C)-8	8/30/2002	8	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB204(C)8	8/22/2002	8	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB227 (C)-8	8/29/2002	8	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB229 (C)-8	8/29/2002	8	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB230 (C)-8	8/29/2002	8	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U
SB-406(F)-8	8/22/2002	8	NV	NV	0.025 U	NV	0.025 U
SB-806 (Q)-8	8/28/2002	8	NV	NV	0.025 U	NV	0.025 U
SB-810 (Q)-8	8/28/2002	8	NV	NV	0.025 U	NV	0.025 U
SB-822 (Q)-8	8/29/2002	8	NV	NV	4.58	NV	62.9
SB-901 (S)-8	8/26/2002	8	NV	NV	0.025 U	NV	0.025 U
SB-902 (S)-8	8/26/2002	8	NV	NV	0.025 U	NV	0.025 U
SB-903 (S)-8	8/26/2002	8	NV	NV	0.025 U	NV	0.025 U

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Tert- Butylbenzene	Tetrachloro- ethylene	Toluene	Xylene, Isomers m & p	Xylenes
DEQ RBC—Urban Residential Direct Contact			NV	3.0	11,000 >Csat	NV	1,600 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	23	>Max	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.19	>Csat	NV	110
SB-908 (S)-8	8/27/2002	8	NV	NV	0.0005 U	NV	0.000538
SB-911 (S)-8	8/27/2002	8	NV	NV	0.025 U	NV	0.025 U
SB-720(P)-8.5	8/23/2002	8.5	NV	NV	2.5 U	NV	104
SB-804(Q)-8.5	8/26/2002	8.5	NV	NV	0.025 U	NV	0.025 U
SB-809 (Q)-8.5	8/28/2002	8.5	NV	NV	0.05	NV	0.05
SB-828 (Q)-8.5	8/28/2002	8.5	NV	NV	0.05	NV	0.05
SB-830 (Q)-8.5	8/28/2002	8.5	NV	NV	0.025 U	NV	0.025 U
SB-020(A)-9'	3/31/2004	9	NV	NV	0.025 U	NV	0.05 U
SB-410(F)-9'	3/31/2004	9	NV	NV	0.025 U	NV	0.05 U
SB802(Q)-9	8/26/2002	9	NV	NV	0.025 U	NV	0.025 U
SB803(Q)-9	8/26/2002	9	NV	NV	0.025 U	NV	0.025 U
SB-807 (Q)-9	8/28/2002	9	NV	NV	0.0856	NV	0.778
SB-811 (Q)-9	8/27/2002	9	NV	NV	0.05	NV	0.05
SB-811 (Q)-9C	8/27/2002	9	NV	NV	0.05	NV	0.05
SB812(Q)-9	8/27/2002	9	NV	NV	0.025 U	NV	0.025 U
SB814(Q)-9	8/27/2002	9	NV	NV	0.025 U	NV	0.025 U
SB-817 (Q)-9	8/28/2002	9	NV	NV	0.025 U	NV	0.025 U
SB-818 (Q)-9	8/28/2002	9	NV	NV	0.025 U	NV	0.025 U
SB-820 (Q)-9	8/29/2002	9	NV	NV	0.025 U	NV	0.025 U
SB-820 (Q)-9C	8/29/2002	9	NV	NV	2.66	NV	31.7
SB-821 (Q)-9	8/29/2002	9	NV	NV	0.025 U	NV	0.025 U
SB-823 (Q)-9	8/27/2002	9	NV	NV	0.025 U	NV	0.025 U
SB-824 (Q)-9	8/27/2002	9	NV	NV	0.025 U	NV	0.025 U
SB-825 (Q)-9	8/27/2002	9	NV	NV	0.05	NV	0.05
SB-826 (Q)-9	8/27/2002	9	NV	NV	0.025 U	NV	0.025 U
SB-829 (Q)-9	8/28/2002	9	NV	NV	0.025 U	NV	0.025 U

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Tert- Butylbenzene	Tetrachloro- ethylene	Toluene	Xylene, Isomers m & p	Xylenes
DEQ RBC—Urban Residential Direct Contact			NV	3.0	11,000 >Csat	NV	1,600 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	23	>Max	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.19	>Csat	NV	110
SB-831 (Q)-9	8/28/2002	9	NV	NV	0.025 U	NV	0.025 U
SB-832 (Q)-9	8/28/2002	9	NV	NV	0.025 U	NV	0.025 U
SB-705(P)-9.5	8/20/2002	9.5	NV	NV	0.025 U	NV	0.025 U
SB-706(P)-9.5	8/21/2002	9.5	NV	NV	0.025 U	NV	0.025 U
SB801(Q)-9.5	8/26/2002	9.5	NV	NV	0.025 U	NV	0.025 U
SB813(Q)-9.5	8/27/2002	9.5	NV	NV	0.025 U	NV	0.025 U
SB815(Q)-9.5	8/27/2002	9.5	NV	NV	0.025 U	NV	0.025 U
SB816(Q)-9.5	8/27/2002	9.5	NV	NV	0.025 U	NV	0.025 U
SB-316-D-10.0	8/20/2002	10	NV	NV	12.7	NV	304
SB-318-D-10.0	8/20/2002	10	NV	NV	0.0961	NV	80
SB-324(D)-10	9/10/2003	10	NV	NV	0.05 U	NV	1.32
SB-325(D)-10	9/10/2003	10	NV	NV	0.025 U	NV	0.05 U
SB-326(D)-10	9/9/2003	10	NV	NV	0.0752	NV	23.3
SB-327(D)-10	9/10/2003	10	NV	NV	0.05 U	NV	0.652
SB-328(D)-10	9/10/2003	10	NV	NV	0.211	NV	0.385
SB-500 (M) 8-12	8/29/2002	10	NV	NV	0.025 U	NV	0.025 U
SB-501 (M) 8-12	8/29/2002	10	NV	NV	1 U	NV	47.1
SB-502 (M) 8-12	8/29/2002	10	NV	NV	0.1 U	NV	0.494
SB-503 (M) 8-12	8/29/2002	10	NV	NV	0.25 U	NV	0.25 U
SB-505 (M) 8-12	8/29/2002	10	NV	NV	0.25 U	NV	0.25 U
SB-506 (M) 8-12	8/29/2002	10	NV	NV	2.05	NV	43
SB-507 (M) 8-12	8/29/2002	10	NV	NV	0.5 U	NV	4.38
SB-508 (M) 8-12	8/29/2002	10	NV	NV	1 U	NV	98.7
SB-509 (M) 8-12	8/29/2002	10	NV	NV	0.025 U	NV	0.025 U
SB-510 (M) 8-12	8/29/2002	10	NV	NV	1 U	NV	17.6
SB-625 (N)-10	9/12/2002	10	NV	NV	0.025 U	NV	0.0989

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Tert- Butylbenzene	Tetrachloro- ethylene	Toluene	Xylene, Isomers m & p	Xylenes
DEQ RBC—Urban Residential Direct Contact			NV	3.0	11,000 >Csat	NV	1,600 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	23	>Max	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.19	>Csat	NV	110
SB-703(P)-10	8/21/2002	10	0.0005 U	0.0005 U	0.025 U	0.000525	0.001025
SB-703(P)-10	8/21/2002	10	NV	NV	0.0005 U	NV	0.025 U
SB-707(P)-10	8/21/2002	10	0.0005 U	0.000208	0.025 U	0.001 U	0.0015 U
SB-707(P)-10	8/21/2002	10	NV	NV	0.0005 U	NV	0.025 U
SB-708(P)-10	8/20/2002	10	NV	NV	0.025 U	NV	0.025 U
SB-709(P)-10	8/21/2002	10	0.0005 U	0.0005 U	0.025 U	0.000505	0.001005
SB-709(P)-10	8/21/2002	10	NV	NV	0.000313	NV	0.025 U
SB-711(P)-10	8/21/2002	10	0.0005 U	0.0005 U	0.025 U	0.00172	0.00222
SB-711(P)-10	8/21/2002	10	NV	NV	0.0005 U	NV	0.025 U
SB-712(P)-10	8/21/2002	10	0.0005 U	0.0005 U	0.025 U	0.00808	0.01113
SB-712(P)-10	8/21/2002	10	NV	NV	0.000976	NV	0.0763
SB-713(P)-10	8/21/2002	10	NV	NV	0.025 U	NV	0.025 U
SB-714(P)-10	8/21/2002	10	NV	NV	2.5 U	NV	344
SB-714(P)-10	8/21/2002	10	NV	NV	0.5 U	NV	259
SB-716(P)-10	8/20/2002	10	0.0005 U	0.0005 U	0.025 U	0.000249	0.000749
SB-716(P)-10	8/20/2002	10	NV	NV	0.0005 U	NV	0.025 U
SB-717(P)-10	8/20/2002	10	0.0005 U	0.0005 U	0.025 U	0.001 U	0.0015 U
SB-717(P)-10	8/20/2002	10	NV	NV	0.0005 U	NV	0.025 U
SB-718(P)-10	8/21/2002	10	NV	NV	0.025 U	NV	0.025 U
SB-805(Q)-10	8/26/2002	10	NV	NV	0.025 U	NV	0.025 U
SB-822 (Q)-10	8/29/2002	10	NV	NV	0.025 U	NV	0.05
SB-901 (S)-10	8/26/2002	10	NV	NV	0.025 U	NV	0.025 U
SB-903 (S)-10	8/26/2002	10	NV	NV	0.25 U	NV	0.25 U
SB-903 (S)-10	8/26/2002	10	NV	NV	0.125 U	NV	0.62
SB-908 (S)-10	8/27/2002	10	NV	NV	0.025 U	NV	0.025 U
SB-908 (S)-10	8/27/2002	10	NV	NV	0.0005 U	NV	0.001 U

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Tert- Butylbenzene	Tetrachloro- ethylene	Toluene	Xylene, Isomers m & p	Xylenes
DEQ RBC—Urban Residential Direct Contact			NV	3.0	11,000 >Csat	NV	1,600 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	23	>Max	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.19	>Csat	NV	110
SB-909 (S)-10	8/27/2002	10	NV	NV	0.025 U	NV	0.025 U
SB-910 (S)-10	8/27/2002	10	NV	NV	0.025 U	NV	0.025 U
SB-911 (S)-10	8/27/2002	10	NV	NV	0.025 U	NV	0.025 U
SB-700(P)-10.5	8/21/2002	10.5	0.05 U	0.05 U	1 U	5.71	6.657
SB-700(P)-10.5	8/21/2002	10.5	NV	NV	0.05 U	NV	16
SB-800 (Q)-10.5	8/27/2002	10.5	NV	NV	0.05	NV	0.05
SB-833 (Q)-10.5	8/28/2002	10.5	NV	NV	0.025 U	NV	0.025 U
SB-027 (A)-11	9/14/2005	11	NV	NV		NV	6.5
SB-504 (M) 10-12	8/29/2002	11	NV	NV	0.025 U	NV	0.025 U
SB-607(N)-11	9/13/2002	11	NV	NV	0.025 U	NV	0.025 U
SB-619 (N)-11	9/12/2002	11	NV	NV	0.025 U	NV	0.628
SB-619 (N)-11	9/12/2002	11	NV	NV	2.65	NV	287
SB-701(P)-11	8/20/2002	11	0.0005 U	0.00347	0.025 U	0.000335	0.000835
SB-701(P)-11	8/20/2002	11	NV	NV	0.0005 U	NV	0.025 U
SB-702(P)-11	8/21/2002	11	0.0005 U	0.0005 U	0.025 U	0.000415	0.000915
SB-702(P)-11	8/21/2002	11	NV	NV	0.0005 U	NV	0.025 U
SB-704(P)-11	8/21/2002	11	0.0005 U	0.0005 U	0.025 U	0.001 U	0.0015 U
SB-704(P)-11	8/21/2002	11	NV	NV	0.0005 U	NV	0.025 U
SB-715(P)-11	8/21/2002	11	NV	NV	0.025 U	NV	0.025 U
SB-806 (Q)-11	8/28/2002	11	NV	NV	0.025 U	NV	0.025 U
SB-819 (Q)-11	8/28/2002	11	NV	NV	0.025 U	NV	0.025 U
SB-021 (A)-11.5	9/14/2005	11.5	NV	NV	NV	NV	6.92
SB-720(P)-11.5	8/23/2002	11.5	NV	NV	2.5 U	NV	125
SB-701(P)-12	8/20/2002	12	0.0005 U	0.0005 U	0.025 U	0.0193	0.019883
SB-701(P)-12	8/20/2002	12	NV	NV	0.000418	NV	0.025 U
SB-705(P)-12	8/20/2002	12	NV	NV	0.025 U	NV	0.025 U

**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Tert- Butylbenzene	Tetrachloro- ethylene	Toluene	Xylene, Isomers m & p	Xylenes
DEQ RBC—Urban Residential Direct Contact			NV	3.0	11,000 >Csat	NV	1,600 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	23	>Max	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.19	>Csat	NV	110
SB-706(P)-12	8/21/2002	12	NV	NV	0.025 U	NV	0.025 U
SB-719(P)-12	8/23/2002	12	NV	NV	0.025 U	NV	0.025 U
SB-900(S)-12	8/26/2002	12	NV	NV	2.5 U	NV	16.4
SB-900(S)-12	8/26/2002	12	NV	NV	0.025 U	NV	0.05 U
SB-902 (S)-12	8/26/2002	12	NV	NV	0.000512	NV	0.029
SB-904 (S)-12	8/26/2002	12	NV	NV	0.5 U	NV	3.63
SB-904 (S)-12	8/26/2002	12	NV	NV	0.125 U	NV	2.03
SB-905 (S)-12	8/26/2002	12	NV	NV	0.025 U	NV	0.025 U
SB-905 (S)-12	8/26/2002	12	NV	NV	0.00049 U	NV	0.001 U
SB-906 (S)-12	8/27/2002	12	NV	NV	0.025 U	NV	2.13
SB-029 (A)-12.5	9/14/2005	12.5	NV	NV	NV	NV	0.03055 U
SB-316-D-14.5	8/20/2002	14.5	NV	NV	0.427	NV	63.3
SB-314-D-15.0	8/20/2002	15	NV	NV	0.025 U	NV	0.429
SB-315-D-15.0	8/20/2002	15	NV	NV	0.0005 U	NV	0.05 U
SB-318-D-15.0	8/20/2002	15	NV	NV	0.305	NV	73.8
SB-324(D)-15	9/10/2003	15	NV	NV	0.025 U	NV	0.179
SB-324(D)-DUP	9/10/2003	15	NV	NV	0.0457	NV	1.39
SB-325(D)-15	9/10/2003	15	NV	NV	0.025 U	NV	0.05 U
SB-327(D)-15	9/10/2003	15	NV	NV	0.0932	NV	7.42
SB-328(D)-15	9/10/2003	15	NV	NV	0.025 U	NV	0.05 U
SB101(C)18	8/22/2002	18	0.0005 U	0.0005 U	0.0005 U	0.000211	0.000711
SB102(C)18	8/22/2002	18	0.0005 U	0.0005 U	0.0005 U	0.000229	0.000729
SB103(C)18	8/22/2002	18	0.0005 U	0.00598	0.000816	0.000941	0.001356
SB-313-D-18.0	8/20/2002	18	NV	NV	0.025 U	NV	1.33
SB100(C)20	8/22/2002	20	0.0005 U	0.00454	0.0046	0.14	0.2013
SB104(C)20	8/22/2002	20	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.0015 U



**Table D-3**  
**Volatile Organic Compounds in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Tert- Butylbenzene	Tetrachloro- ethylene	Toluene	Xylene, Isomers m & p	Xylenes
DEQ RBC—Urban Residential Direct Contact			NV	3.0	11,000 >Csat	NV	1,600 >Csat
DEQ RBC—Urban Residential Volatilization to Outdoor			NV	23	>Max	NV	>Csat
DEQ RBC—Urban Residential Vapor Intrusion			NV	0.19	>Csat	NV	110
SB-401(F)-20	8/23/2002	20	NV	NV	0.025 U	NV	0.025 U
SB-402(F)-20	8/23/2002	20	NV	NV	0.025 U	NV	0.025 U
SB-404(F)-20	8/22/2002	20	NV	NV	0.025 U	NV	0.0557
Number of Samples			98	13	468	98	470
Average Concentration			0.0	0.0	1.0	1.6	20.1
Median Concentration			0.0005	0.0005	0.025	0.001	0.025
Frequency of Detection			1.0	13.3	14.5	39.8	32.3
Minimum Value			0.0005	0.000182	0.000313	0.000211	0.000538
Maximum Detection			0.00961	0.00598	169	132	1160

**Table D-4**  
**Metals in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium
DEQ RBC—Urban Residential Direct Contact			1.0	31,000	78 (nc)	140	400	47	NV
Background			7	NA	NA	42	17	NA	NA
SB-008(A)-2	8/26/2003	2	NV	NV	NV	NV	7.09	NV	NV
SB-009(A)-2	8/27/2003	2	NV	NV	NV	NV	4.66	NV	NV
SB-010(A)-2	8/27/2003	2	NV	NV	NV	NV	2.76	NV	NV
SB224 (C)-2	8/29/2002	2	1.32	24.6	0.225 U	5.25	2.14	0.05 U	0.225 U
SB231 (C)-2	8/29/2002	2	3.93	49.4	0.2275 U	7.23	4.49	0.05 U	0.2275 U
SB-253(C)-2	9/4/2003	2	NV	NV	NV	NV	2.55	NV	NV
SB-254(C)-2	9/4/2003	2	NV	NV	NV	NV	34.1	NV	NV
SB-304-D-2.0	8/19/2002	2	NV	NV	NV	NV	20.9	NV	NV
SB-305-D-2.0	8/19/2002	2	NV	NV	NV	NV	6.53	NV	NV
SB-306-D-2.0	8/19/2002	2	NV	NV	NV	NV	3.51	NV	NV
SB-307-D-2.0	8/19/2002	2	NV	NV	NV	NV	0.392 U	NV	NV
SB-309-D-2.0	8/19/2002	2	NV	NV	NV	NV	5.22	NV	NV
SB-310-D-2.0	8/19/2002	2	NV	NV	NV	NV	0.4145 U	NV	NV
SB-315-D-2.0	8/20/2002	2	NV	NV	NV	NV	7.17	NV	NV
SB-316-D-2.0	8/20/2002	2	NV	NV	NV	NV	7.5	NV	NV
SB-627(N)-2	8/28/2003	2	NV	NV	NV	NV	31.4	NV	NV
SB-701(P)-2	8/20/2002	2	1.23	29.9	0.25 U	3.97	2.15	0.04465 U	0.25 U
SB-702(P)-2	8/21/2002	2	8.46	161	0.25 U	21.9	36.7	0.142	1.9
SB-703(P)-2	8/21/2002	2	3.35	77.3	0.25 U	14.6	33.9	0.04465 U	0.62
SB-704(P)-2	8/21/2002	2	2.69	80.9	0.25 U	12.1	19.6	0.05 U	0.519
SB-707(P)-2	8/21/2002	2	2.93	46.2	0.25 U	10.4	9.9	0.05 U	0.25 U
SB-834(Q)-2	9/5/2003	2	NV	NV	NV	NV	3.21	NV	NV
SB-835(Q)-2	9/5/2003	2	NV	NV	NV	NV	17.9	NV	NV
SB-D-DUP-0819	8/19/2002	2	NV	NV	NV	NV	25.1	NV	NV
SB-002(A)-2.5	8/27/2003	2.5	NV	NV	NV	NV	2.51	NV	NV
SB-005(A)-2.5	9/5/2003	2.5	NV	NV	NV	NV	6.56	NV	NV
SB-019(A)-2.5	8/27/2003	2.5	NV	NV	NV	NV	2.62	NV	NV
SB212(C)-2.5	8/27/2002	2.5	1.24	53.7	0.25 U	8.48	1.84	0.05 U	0.25 U

**Table D-4**  
**Metals in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium
DEQ RBC—Urban Residential Direct Contact			1.0	31,000	78 (nc)	140	400	47	NV
Background			7	NA	NA	42	17	NA	NA
SB218(C)-2.5	8/28/2002	2.5	2.43	45.7	0.25	9.06	2.62	0.0431	0.25
SB-255(C)-2.5	9/4/2003	2.5	NV	NV	NV	NV	38.8	NV	NV
SB-706(P)-2.5	8/21/2002	2.5	1.49	32.5	0.25	8	2.49	0.05	0.25
SB100(C)3	8/22/2002	3	1.42	55.1	0.156	12.3	4.69	0.551	0.549
SB200(C)3	8/22/2002	3	2.03	37.7	0.2035	7.26	3.69	0.05	0.2035
SB201(C)3	8/22/2002	3	1.66	40.7	0.1925	8.79	5.54	0.05	0.1925
SB202(C)3	8/22/2002	3	1.84	31.8	0.1985	8.94	3.39	0.05	0.1985
SB203(C)3	8/22/2002	3	6.99	69.9	0.194	8.06	5.18	0.04465	0.194
SB204(C)3	8/22/2002	3	5.33	44.4	0.194	6.63	3.76	0.04465	0.194
SB209(C)-3	8/27/2002	3	1.59	41.4	0.25	8.7	6.68	0.04465	0.25
SB211(C)-3	8/27/2002	3	1.78	52.4	0.2175	9.56	3.35	0.0431	0.2175
SB216(C)-3	8/27/2002	3	1.58	40	0.25	9.36	2.26	0.0431	0.25
SB217(C)-3	8/28/2002	3	2.52	46.5	0.25	7.67	1.49	0.05	0.25
SB225 (C)-3	8/29/2002	3	6.67	36.2	0.2135	5.66	2.54	0.05	0.2135
SB226 (C)-3	8/29/2002	3	0.991	24.8	0.181	4.08	1.54	0.05	0.181
SB-244(C)-3	9/3/2002	3	2.86	42.9	0.2	10.1	3.33	0.05	0.453
SB-601(N)-3	9/13/2002	3	NV	NV	NV	NV	4.32	NV	NV
SB-605(N)-3	9/13/2002	3	NV	NV	NV	NV	3.84	NV	NV
SB-608(N)-3	9/13/2002	3	NV	NV	NV	NV	3.25	NV	NV
SB-700(P)-3	8/21/2002	3	2.33	46	0.25	7.75	53.2	0.04465	0.25
SB-705(P)-3	8/20/2002	3	1.36	38.6	0.25	7.96	2.24	0.0431	0.25
SB-708(P)-3	8/20/2002	3	1.59	46.6	0.25	11	4.19	0.05	0.25
SB-721(P)-3'	3/31/2004	3	NV	NV	NV	NV	13	NV	NV
SB-D-DUP-3	8/20/2002	3	NV	NV	NV	NV	9.2	NV	NV
SB208(C)-3.5	8/27/2002	3.5	1.92	45.5	0.25	10.2	2.49	0.05	0.592
SB210(C)-3.5	8/27/2002	3.5	1.79	36.5	0.25	8.91	1.85	0.05	0.539
SB-301-D-3.5	8/20/2002	3.5	NV	NV	NV	NV	18.9	NV	NV
SB-020(A)-4'	3/31/2004	4	NV	NV	NV	NV	4.59	NV	NV

**Table D-4**  
**Metals in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium
DEQ RBC—Urban Residential Direct Contact			1.0	31,000	78 (nc)	140	400	47	NV
Background			7	NA	NA	42	17	NA	NA
SB213(C)-4	8/27/2002	4	1.65	56.7	0.2275 U	11.5	2.67	0.0431 U	0.2275 U
SB219(C)-4	8/28/2002	4	1.09	36.4	0.25 U	8.94	0.981	0.04465 U	0.25 U
SB228 (C)-4	8/29/2002	4	1.51	51.9	0.212 U	92.2	178	0.05 U	0.212 U
SB-239(C)-4	9/3/2002	4	1.77	40.9	0.1645 U	10.3	3.42	0.04465 U	0.1645 U
SB-242(C)-4	9/3/2002	4	1.33	43.5	0.2065 U	9.87	3.9	0.05 U	0.2065 U
SB-243(C)-4	9/3/2002	4	1.81	40.5	0.668	8.61	5.26	0.05 U	0.42
SB-250(C)-4	9/9/2002	4	1.72	49.6	0.181 U	10	7.47	0.05 U	0.181 U
SB-251(C)-4	9/9/2002	4	2.12	44.9	0.1645 U	6.78	4.16	0.04465 U	0.1645 U
SB-410(F)-4'	3/31/2004	4	NV	NV	NV	NV	1.66	NV	NV
SB-900(S)-4	8/26/2002	4	NV	NV	0.25 U	11.7	45.1	NV	NV
SB-904 (S)-4	8/26/2002	4	NV	NV	0.25 U	9.64	15.6	NV	NV
SB-905 (S)-4	8/26/2002	4	NV	NV	0.25 U	8.11	13.9	NV	NV
SB-906 (S)-4	8/27/2002	4	NV	NV	0.212 U	12.4	200	NV	NV
SB-908 (S)-4	8/27/2002	4	NV	NV	0.1985 U	8.94	2.82	NV	NV
SB-909 (S)-4	8/27/2002	4	NV	NV	0.176 U	9.65	53.1	NV	NV
SB-910 (S)-4	8/27/2002	4	NV	NV	0.25 U	7.92	12	NV	NV
SB205(C)-4.5	8/27/2002	4.5	2.04	34.3	0.25 U	12.2	1.33	0.05 U	0.564
SB207(C)-4.5	8/27/2002	4.5	2.49	76.1	0.221 U	10.8	3.22	0.05 U	0.641
SB221 (C)-4.5	8/28/2002	4.5	1.43	43	0.2155 U	7.81	2.66	0.05 U	0.2155 U
SB222 (C)-4.5	8/28/2002	4.5	1.38	35	0.2 U	9.73	3.25	0.05 U	0.2 U
SB-305-D-4.5	8/19/2002	4.5	NV	NV	NV	NV	3.38	NV	NV
SB-306-D-4.5	8/19/2002	4.5	NV	NV	NV	NV	0.77 U	NV	NV
SB214(C)-5	8/27/2002	5	1.59	38.6	0.2015 U	7.74	2.78	0.0431 U	0.2015 U
SB215(C)-5	8/27/2002	5	1.87	37.3	0.1955 U	10.2	2.47	0.05 U	0.1955 U
SB220 (C)-5	8/28/2002	5	1.18	31.8	0.25 U	6.06	8.5	0.05 U	0.25 U
SB-241(C)-5	9/3/2002	5	1.69	40.9	0.2015 U	12.4	4.24	0.05 U	0.2015 U
SB-245(C)-5	9/3/2002	5	1.52	33.7	0.168 U	7.56	2.33	0.05 U	0.168 U
SB-246(C)-5	9/3/2002	5	1.75	34.7	0.2135 U	15.6	3.51	0.04465 U	0.2135 U

**Table D-4**  
**Metals in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium
DEQ RBC—Urban Resident Direct Contact			1.0	31,000	78 (nc)	140	400	47	NV
Background			7	NA	NA	42	17	NA	NA
SB-252(C)-5	9/9/2002	5	1.31	30.6	0.146 U	5.61	2.5	0.05 U	0.146 U
SB-304-D-5.0	8/19/2002	5	NV	NV	NV	NV	8.16	NV	NV
SB-309-D-5.0	8/19/2002	5	NV	NV	NV	NV	0.3865 U	NV	NV
SB-310-D-5.0	8/19/2002	5	NV	NV	NV	NV	144	NV	NV
SB-311-D-5.0	8/19/2002	5	NV	NV	NV	NV	32.5	NV	NV
SB-312-D-5.0	8/19/2002	5	NV	NV	NV	NV	2.42	NV	NV
SB-313-D-5.0	8/20/2002	5	NV	NV	NV	NV	23.7	NV	NV
SB-316-D-5.0	8/20/2002	5	NV	NV	NV	NV	7.96	NV	NV
SB-705(P)-5.5	8/20/2002	5.5	5.77	98.3	0.25 U	28.3	9.35	0.05 U	0.569
SB-706(P)-5.5	8/21/2002	5.5	4.18	84	0.25 U	16.1	5.61	0.0431 U	0.512
SB200(C)6	8/22/2002	6	1.88	32.4	0.2015 U	10.8	4.03	0.0431 U	0.2015 U
SB201(C)6	8/22/2002	6	6.88	37	0.2135 U	14.8	18.5	0.05 U	0.2135 U
SB206(C)-6	8/27/2002	6	1.95	52.6	0.25 U	8.61	1.94	0.05 U	0.798
SB223 (C)-6	8/29/2002	6	1.18	31.8	0.25 U	5.5	2.21	0.0431 U	0.25 U
SB-240(C)-6	9/3/2002	6	3.75	52.4	0.1865 U	11.9	5.42	0.05 U	0.1865 U
SB-247(C)-6	9/3/2002	6	1.41	34.4	0.168 U	7.4	2.69	0.05 U	0.168 U
SB256 (c) 6	3/31/2004	6	2.19	37.5	0.2015 U	6.81	2.68	0.0357 U	0.2015 U
SB-608(N)-6	9/13/2002	6	NV	NV	NV	NV	11.2	NV	NV
TP201(C)6E	8/27/2002	6	1.48	48	0.25 U	6.48	1.81	0.05 U	0.611
TP202(C)6W	8/27/2002	6	1.53	46.4	0.25 U	10.9	3.41	0.0431 U	0.25 U
SB-005(A)-7	9/5/2003	7	NV	NV	NV	NV	3.24	NV	NV
SB-006(A)-7'	3/31/2004	7	NV	NV	NV	NV	2.34	NV	NV
SB202(C)7	8/22/2002	7	2.07	36.2	0.188 U	6.98	3.2	0.05 U	0.188 U
SB203(C)7	8/22/2002	7	5.52	43.1	0.1785 U	9.53	4.97	0.05 U	0.1785 U
SB-254(C)-7	9/4/2003	7	NV	NV	NV	NV	31.5	NV	NV
SB-255(C)-7	9/4/2003	7	NV	NV	NV	NV	107	NV	NV
SB-601(N)-7	9/13/2002	7	NV	NV	NV	NV	10.7	NV	NV
SB-602(N)-7	9/13/2002	7	NV	NV	NV	NV	3.13	NV	NV

**Table D-4**  
**Metals in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium
DEQ RBC—Urban Resident Direct Contact			1.0	31,000	78 (nc)	140	400	47	NV
Background			7	NA	NA	42	17	NA	NA
SB-603(N)-7	9/13/2002	7	NV	NV	NV	NV	3.58	NV	NV
SB-604(N)-7	9/13/2002	7	NV	NV	NV	NV	27.4	NV	NV
SB-605(N)-7	9/13/2002	7	NV	NV	NV	NV	3.47	NV	NV
SB-615 (N)-7	9/12/2002	7	NV	NV	NV	NV	4.76	NV	NV
SB-618 (N)-7	9/12/2002	7	NV	NV	NV	NV	7.6	NV	NV
SB-620 (N)-7	9/12/2002	7	NV	NV	NV	NV	3.76	NV	NV
SB-623 (N)-7	9/12/2002	7	NV	NV	NV	NV	4.91	NV	NV
SB-624 (N)-7	9/12/2002	7	NV	NV	NV	NV	3.75	NV	NV
SB-626 (N)-7	9/12/2002	7	NV	NV	NV	NV	6.45	NV	NV
SB-721(P)-7	3/31/2004	7	NV	NV	NV	NV	5.36	NV	NV
SB-835(Q)-7	9/5/2003	7	NV	NV	NV	NV	2.49	NV	NV
SB-001(A)-7.5	8/27/2003	7.5	NV	NV	NV	NV	8.43	NV	NV
SB-002(A)-7.5	8/27/2003	7.5	NV	NV	NV	NV	2.72	NV	NV
SB-007(A)-7.5	8/26/2003	7.5	NV	NV	NV	NV	4.51	NV	NV
SB-008(A)-7.5	8/26/2003	7.5	NV	NV	NV	NV	4.24	NV	NV
SB-009(A)-7.5	8/27/2003	7.5	NV	NV	NV	NV	3.27	NV	NV
SB-010(A)-7.5	8/27/2003	7.5	NV	NV	NV	NV	2.86	NV	NV
SB-011(A)-7.5	9/3/2003	7.5	NV	NV	NV	NV	3.31	NV	NV
SB-019(A)-7.5	8/27/2003	7.5	NV	NV	NV	NV	7.44	NV	NV
SB-253(C)-7.5	9/4/2003	7.5	NV	NV	NV	NV	3.73	NV	NV
SB-629(N)-7.5	8/28/2003	7.5	NV	NV	NV	NV	2.49	NV	NV
SB-632(N)-7.5	9/8/2003	7.5	NV	NV	NV	NV	27.7	NV	NV
SB-834(Q)-7.5	9/5/2003	7.5	NV	NV	NV	NV	3.63	NV	NV
SB204(C)8	8/22/2002	8	1.53	32.9	0.188 U	6.25	3.27	0.05 U	0.188 U
SB227 (C)-8	8/29/2002	8	1.84	34.9	0.2015 U	6.42	2.76	0.05 U	0.2015 U
SB229 (C)-8	8/29/2002	8	1.55	27.8	0.2085 U	10.1	1.305 U	0.05 U	0.2085 U
SB230 (C)-8	8/29/2002	8	1.71	33	0.13 U	6.43	2.54	0.05 U	0.13 U
SB257 (c) 8	3/31/2004	8	NV	NV	NV	3.48	NV	NV	NV

**Table D-4**  
**Metals in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium
DEQ RBC—Urban Residential Direct Contact			1.0	31,000	78 (nc)	140	400	47	NV
Background			7	NA	NA	42	17	NA	NA
SB-901 (S)-8	8/26/2002	8	NV	NV	0.25 U	7.01	2.82	NV	NV
SB-902 (S)-8	8/26/2002	8	NV	NV	0.25 U	7.52	3.98	NV	NV
SB-903 (S)-8	8/26/2002	8	NV	NV	0.2275 U	6.09	5.94	NV	NV
SB-908 (S)-8	8/27/2002	8	NV	NV	0.2135 U	7.37	2.57	NV	NV
SB-911 (S)-8	8/27/2002	8	NV	NV	0.2035 U	7.36	3.55	NV	NV
SB258 (c) 8.5	3/31/2004	8.5	NV	NV	NV	16.3	NV	NV	NV
SB259 (c) 8.5	3/31/2004	8.5	NV	NV	NV	12.9	NV	NV	NV
SB-020(A)-9'	3/31/2004	9	NV	NV	NV	NV	2.48	NV	NV
SB-410(F)-9'	3/31/2004	9	NV	NV	NV	NV	5.42	NV	NV
SB-705(P)-9.5	8/20/2002	9.5	1.47	38.4	0.25 U	10.3	2.55	0.05 U	0.25 U
SB-706(P)-9.5	8/21/2002	9.5	1.88	50.1	0.25 U	8.61	3.85	0.05 U	0.637
SB-316-D-10.0	8/20/2002	10	NV	NV	NV	NV	13.9	NV	NV
SB-318-D-10.0	8/20/2002	10	NV	NV	NV	NV	4.89	NV	NV
SB-703(P)-10	8/21/2002	10	1.87	40.1	0.25 U	7.96	2.24	0.05 U	0.519
SB-707(P)-10	8/21/2002	10	12.8	40.8	0.25 U	7.01	2.03	0.0431 U	24.5
SB-708(P)-10	8/20/2002	10	1.33	31.3	0.25 U	6.71	2.6	0.04465 U	0.25 U
SB-714(P)-10	8/21/2002	10	NV	NV	NV	NV	4.57	NV	NV
SB-901 (S)-10	8/26/2002	10	NV	NV	0.25 U	13.9	4.84	NV	NV
SB-903 (S)-10	8/26/2002	10	NV	NV	0.212 U	9.24	2.74	NV	NV
SB-908 (S)-10	8/27/2002	10	NV	NV	0.185 U	9.77	2.23	NV	NV
SB-909 (S)-10	8/27/2002	10	NV	NV	0.2 U	13.1	37.7	NV	NV
SB-910 (S)-10	8/27/2002	10	NV	NV	0.221 U	7.31	2.79	NV	NV
SB-911 (S)-10	8/27/2002	10	NV	NV	0.25 U	11.3	3.99	NV	NV
SB-700(P)-10.5	8/21/2002	10.5	1.25	48.5	0.25 U	10.6	9.04	0.0431 U	0.524
SB-701(P)-11	8/20/2002	11	2.07	50.7	0.25 U	13.1	3.46	0.05 U	0.25 U
SB-702(P)-11	8/21/2002	11	0.811	29.6	0.25 U	5.11	2.08	0.134	0.25 U
SB-704(P)-11	8/21/2002	11	1.16	31.9	0.25 U	10.2	2.12	0.0431 U	0.501
SB-701(P)-12	8/20/2002	12	1.34	36	0.25 U	10.2	2.41	0.04465 U	0.25 U

**Table D-4**  
**Metals in Soil and Urban Resident Risk-Based Concentrations (mg/kg)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Feet bgs	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium
DEQ RBC—Urban Residental Direct Contact			1.0	31,000	78 (nc)	140	400	47	NV
Background			7	NA	NA	42	17	NA	NA
SB-705(P)-12	8/20/2002	12	1.89	33.4	0.25 U	7.73	2.29	0.05 U	0.25 U
SB-706(P)-12	8/21/2002	12	2.28	38.2	0.25 U	8.72	2.13	0.04465 U	0.25 U
SB-900(S)-12	8/26/2002	12	NV	NV	0.1895 U	9.62	7.91	NV	NV
SB-902 (S)-12	8/26/2002	12	NV	NV	0.25 U	9.89	4.46	NV	NV
SB-904 (S)-12	8/26/2002	12	NV	NV	0.25 U	11.6	2.93	NV	NV
SB-905 (S)-12	8/26/2002	12	NV	NV	0.2135 U	7.47	2.75	NV	NV
SB-906 (S)-12	8/27/2002	12	NV	NV	0.223 U	11.5	3.22	NV	NV
SB-316-D-14.5	8/20/2002	14.5	NV	NV	NV	NV	5.96	NV	NV
SB-314-D-15.0	8/20/2002	15	NV	NV	NV	NV	4.36	NV	NV
SB-315-D-15.0	8/20/2002	15	NV	NV	NV	NV	3.72	NV	NV
SB-318-D-15.0	8/20/2002	15	NV	NV	NV	NV	7.76	NV	NV
SB-313-D-18.0	8/20/2002	18	NV	NV	NV	NV	13.2	NV	NV
SB100(C)20	8/22/2002	20	3.84	149	0.185 U	18.9	15.3	0.0431 U	1
Number of Samples			77	77	100	103	178	77	77
Average Concentration			2.43	46.22	0.23	10.36	10.85	0.06	0.64
Median Concentration			1.78	40.7	0.2275	8.94	3.755	0.05	0.25
Frequency of Detection			100	100	1	100	97	4	26
Minimum Value			0.811	24.6	0.13	3.48	0.3865	0.0357	0.13
Maximum Detection			12.8	161	0.668	92.2	200	0.551	24.5
90th Percentile			4.64						
95th Percentile			6.71						



**Table D-5**  
**Total Petroleum Hydrocarbons in Groundwater and Urban Resident Risk-Based**  
**Concentrations (mg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Gasoline-Range Organics	Diesel-Range Organics	Heavy-Oil-Range Organics
DEQ RBC—Vapor Intrusion—Urban Resident		>S	>S	NV
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		>S	>S	NV
MW-1 (F)	1/15/2004	0.408	0.171	0.25 U
MW-1 (F)	7/20/2004	0.197	0.125 U	0.25 U
MW-1(F)	10/22/2003	0.094	0.125 U	0.25 U
MW-1(F)	4/15/2004	0.141	0.163	0.25 U
MW-10 (M)	10/15/2003	3.36	1.79	0.302
MW-10 (M)	1/13/2004	2.57	1.59	0.25 U
MW-10 (M)	4/13/2004	2.44	2.67	0.379
MW-10 (M)	7/19/2004	2.24	2.26	0.41
MW-10(M)	6/19/2003	2.4	1.43	0.25 U
MW-1-082302	8/23/2002	0.143	0.125 U	0.25 U
MW-11 (M)	10/15/2003	0.652	0.125 U	0.25 U
MW-11 (M)	1/13/2004	0.219	0.5	0.25 U
MW-11 (M)	4/13/2004	0.106	0.222	0.25 U
MW-11 (M)	7/21/2004	0.04 U	0.125 U	0.25 U
MW-11(M)	6/19/2003	0.179	0.125 U	0.25 U
MW-12 (A)	1/15/2004	0.04 U	0.125 U	0.25 U
MW-12 (A)	7/22/2004	0.04 U	0.125 U	0.25 U
MW-12(A)	10/22/2003	0.0601	0.125 U	0.25 U
MW-12(A)	4/16/2004	0.04 U	0.125 U	0.25 U
MW-13 (A)	1/15/2004	15.3	1.31	0.658
MW-13 (A)	7/22/2004	9.14	1.04	0.25 U
MW-13(A)	10/22/2003	10.1	0.125 U	0.25 U
MW-13(A)	4/16/2004	13.4	1.93	0.25 U
MW-14 (A)	1/15/2004	0.04 U	0.125 U	0.25 U
MW-14 (A)	7/23/2004	0.04 U	0.125 U	0.25 U
MW-14(A)	10/21/2003	0.0718	0.125 U	0.25 U
MW-14(A)	4/16/2004	0.04 U	0.125 U	0.25 U
MW-15(A)	10/20/2003	2.55	0.125 U	0.25 U
MW-16 (A)	7/22/2004	0.458	0.551	0.25 U
MW-16(A)	10/20/2003	0.457	0.125 U	0.425
MW-16(A)	1/19/2004	0.141	0.125 U	0.25 U
MW-16(A)	4/15/2004	0.315	0.859	0.25 U
MW-17 (A)	10/17/2003	0.74	0.125 U	0.25 U
MW-17 (A)	7/22/2004	0.124	0.137	0.25 U
MW-17(A)	1/19/2004	0.778	0.125 U	0.25 U
MW-17(A)	4/15/2004	0.516	0.49	0.25 U

**Table D-5**  
**Total Petroleum Hydrocarbons in Groundwater and Urban Resident Risk-Based**  
**Concentrations (mg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Gasoline-Range Organics	Diesel-Range Organics	Heavy-Oil-Range Organics
DEQ RBC—Vapor Intrusion—Urban Resident		>S	>S	NV
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		>S	>S	NV
MW-18 (A)	7/21/2004	0.266	0.229	0.25 U
MW-18(A)	10/21/2003	1.28	0.936	2.18
MW-18(A)	1/19/2004	0.83	0.807	0.25 U
MW-18(A)	4/15/2004	0.148	0.241	0.25 U
MW-19 (A)	1/13/2004	0.04 U	0.125 U	0.25 U
MW-19 (A)	7/20/2004	0.04 U	0.125 U	0.25 U
MW-19(A)	10/20/2003	0.04 U	0.18	0.25 U
MW-19(A)	4/15/2004	0.04 U	0.125 U	0.25 U
MW-2 (M)	10/15/2003	4.51	3.26	1.67
MW-2 (M)	1/12/2004	0.628	1.34	0.25 U
MW-2 (M)	7/22/2004	5.01	3.58	0.294
MW-2(M)	6/19/2003	9.44	2.9	0.25 U
MW-2(M)	4/14/2004	6.47	4.17	0.295
MW-20 (A)	1/13/2004	0.979	0.927	0.918
MW-20 (A)	7/20/2004	0.821	1.9	0.951
MW-20(A)	10/20/2003	1.4	1.37	0.71
MW-20(A)	4/15/2004	0.263	0.918	0.64
MW-21 (A)	1/13/2004	0.309	0.799	0.25 U
MW-21 (A)	7/20/2004	0.847	1.67	0.25 U
MW-21(A)	10/20/2003	0.753	1.46	0.25 U
MW-21(A)	4/16/2004	0.243	4.86	0.734
MW-22 (A)	10/16/2003	0.14	0.125 U	0.25 U
MW-22 (A)	7/20/2004	0.04 U	0.125 U	0.25 U
MW-22(A)	1/19/2004	0.04 U	0.125 U	0.25 U
MW-22(A)	4/15/2004	0.04 U	0.125 U	0.25 U
MW-23 (A)	1/15/2004	0.0617	0.125 U	0.25 U
MW-23 (A)	7/20/2004	0.04 U	0.125 U	0.25 U
MW-23(A)	10/20/2003	0.04 U	0.125 U	0.25 U
MW-23(A)	4/15/2004	0.207	0.194	0.25 U
MW-24 (A)	1/15/2004	4.05	0.125 U	0.25 U
MW-24 (A)	7/22/2004	0.915	0.359	0.25 U
MW-24(A)	10/21/2003	0.376	0.125 U	0.25 U
MW-24(A)	4/14/2004	0.813	0.735	0.25 U
MW-26 (A)	10/17/2003	8.05	0.125 U	0.25 U
MW-26 (A)	1/15/2004	24.8	0.125 U	0.25 U
MW-26 (A)	7/22/2004	26	3.96	0.25 U

**Table D-5**  
**Total Petroleum Hydrocarbons in Groundwater and Urban Resident Risk-Based**  
**Concentrations (mg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Gasoline-Range Organics	Diesel-Range Organics	Heavy-Oil-Range Organics
DEQ RBC—Vapor Intrusion—Urban Resident		>S	>S	NV
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		>S	>S	NV
MW-26(A)	4/14/2004	18.5	3.46	0.25 U
MW-27 (A)	1/14/2004	0.173	0.125 U	0.25 U
MW-27 (A)	4/14/2004	0.04 U	0.125 U	0.25 U
MW-27 (A)	7/22/2004	0.04 U	0.125 U	0.25 U
MW-27(A)	10/21/2003	0.099	0.125 U	0.25 U
MW-28 (A)	10/17/2003	2.06	2.13	0.25 U
MW-28 (A)	7/23/2004	2.24	1.39	0.678
MW-28(A)	1/19/2004	13.8	0.125 U	0.25 U
MW-28(A)	4/14/2004	8.91	0.851	0.25 U
MW-29 (A)	7/22/2004	39.8	3.17	0.25 U
MW-29(A)	10/21/2003	60.2	4.12	0.25 U
MW-29(A)	1/19/2004	62	0.125 U	0.31
MW-29(A)	4/16/2004	34.2	3.66	0.25 U
MW-30 (A)	10/16/2003	14.7	0.125 U	0.25 U
MW-30 (A)	1/16/2004	9.57	0.125 U	0.25 U
MW-30 (A)	4/13/2004	8.09	0.125 U	0.25 U
MW-30 (A)	7/20/2004	12.6	3.73	0.25 U
MW-31 (A)	10/16/2003	7.2	0.125 U	0.25 U
MW-31 (A)	1/12/2004	5.22	1.1	0.25 U
MW-31 (A)	4/13/2004	3.23	1.42	0.25 U
MW-31 (A)	7/20/2004	6.14	2.21	0.25 U
MW-32 (A)	1/12/2004	0.04 U	0.125 U	0.25 U
MW-32 (A)	4/13/2004	0.04 U	0.125 U	0.25 U
MW-32 (A)	7/19/2004	0.04 U	0.125 U	0.25 U
MW-32(A)	10/14/2003	0.04 U	0.125 U	0.25 U
MW-33 (A)	1/12/2004	0.276	0.125 U	0.25 U
MW-33 (A)	4/13/2004	0.434	0.125 U	0.25 U
MW-33 (A)	7/19/2004	0.116	0.511	0.198
MW-33(A)	10/14/2003	0.07	0.125 U	0.25 U
MW-34 (A)	1/13/2004	0.04 U	0.125 U	0.25 U
MW-34 (A)	4/14/2004	0.04 U	0.125 U	0.25 U
MW-34 (A)	7/20/2004	0.04 U	0.125 U	0.25 U
MW-34(A)	10/14/2003	0.04 U	0.125 U	0.25 U
MW-35 (A)	10/16/2003	0.04 U	0.125 U	0.25 U
MW-35 (A)	1/16/2004	0.04 U	0.125 U	0.25 U
MW-35 (A)	4/13/2004	0.04 U	0.125 U	0.25 U

**Table D-5**  
**Total Petroleum Hydrocarbons in Groundwater and Urban Resident Risk-Based**  
**Concentrations (mg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Gasoline-Range Organics	Diesel-Range Organics	Heavy-Oil-Range Organics
DEQ RBC—Vapor Intrusion—Urban Resident		>S	>S	NV
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		>S	>S	NV
MW-35 (A)	7/20/2004	0.04 U	0.125 U	0.25 U
MW-36 (A)	1/14/2004	0.04 U	0.125 U	0.25 U
MW-36 (A)	4/14/2004	0.04 U	0.125 U	0.25 U
MW-36 (A)	7/22/2004	0.04 U	0.125 U	0.25 U
MW-36(A)	10/21/2003	0.04 U	0.125 U	0.25 U
MW-37 (A)	10/17/2003	1.35	0.174	0.25 U
MW-38 (A)	1/14/2004	0.04 U	0.125 U	0.25 U
MW-38 (A)	4/14/2004	0.04 U	0.125 U	0.25 U
MW-38 (A)	7/22/2004	0.04 U	0.125 U	0.25 U
MW-38(A)	10/21/2003	0.04 U	0.125 U	0.25 U
MW-39 (A)	10/16/2003	0.518	1.25	0.25 U
MW-39 (A)	1/16/2004	0.291	0.806	0.25 U
MW-39 (A)	4/14/2004	0.381	1.17	0.25 U
MW-39 (A)	7/21/2004	0.421	0.883	0.25 U
MW-40 (A)	10/17/2003	8.27	3.66	0.25 U
MW-40(A)	1/20/2004	31.4	9.38	0.598
MW-40(A)	4/16/2004	41.6	8.36	0.689
MW-41(A)	10/14/2003	7.7	4.7	0.319
MW-42 (A)	10/15/2003	18.9	5.74	1.25 U
MW-43 (A)	1/12/2004	0.04 U	0.633	0.25 U
MW-43 (A)	4/13/2004	0.04 U	1.05	0.25 U
MW-43 (A)	7/21/2004	0.04 U	1.98	0.191
MW-43(A)	10/13/2003	0.04 U	1	0.25 U
MW-44 (A)	10/17/2003	67.7	5.78	0.25 U
MW-45 (A)	10/16/2003	0.04 U	0.125 U	0.25 U
MW-45 (A)	1/16/2004	0.04 U	0.125 U	0.25 U
MW-45 (A)	4/14/2004	0.04 U	0.125 U	0.25 U
MW-45 (A)	7/21/2004	0.04 U	0.125 U	0.25 U
MW-46 (A)	4/12/2004	0.0283	0.179	0.25 U
MW-46 (A)	7/21/2004	0.04 U	0.125 U	0.25 U
MW-46(A)	10/14/2003	0.04 U	0.125 U	0.25 U
MW-46(A)	1/14/2004	0.04 U	0.125 U	0.25 U
MW-47 (A)	1/14/2004	0.0543	0.125 U	0.25 U
MW-47 (A)	4/12/2004	0.00685	0.207	0.25 U
MW-47 (A)	7/21/2004	0.04 U	0.125 U	0.25 U
MW-47(A)	10/13/2003	0.04 U	0.125 U	0.25 U

**Table D-5**  
**Total Petroleum Hydrocarbons in Groundwater and Urban Resident Risk-Based**  
**Concentrations (mg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Gasoline-Range Organics		Diesel-Range Organics		Heavy-Oil-Range Organics	
DEQ RBC—Vapor Intrusion—Urban Resident		>S		>S		NV	
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		>S		>S		NV	
MW-48 (A)	1/14/2004	0.04	U	0.125	U	0.25	U
MW-48 (A)	4/12/2004	0.0227		0.125	U	0.25	U
MW-48 (A)	7/21/2004	0.04	U	0.125	U	0.25	U
MW-48(A)	10/14/2003	0.04	U	0.125	U	0.25	U
MW-6 (M)	1/12/2004	0.04	U	0.125	U	0.25	U
MW-6 (M)	4/13/2004	0.04	U	0.125	U	0.25	U
MW-6 (M)	7/19/2004	0.04	U	0.125	U	0.25	U
MW-6(M)	6/19/2003	0.457		0.125	U	0.25	U
MW-6(M)	10/22/2003	0.04	U	0.179		0.25	U
MW-7 (M)	1/12/2004	0.04	U	0.756		0.25	U
MW-7 (M)	4/12/2004	0.0149		0.401		0.25	U
MW-7 (M)	7/19/2004	0.04	U	0.61		0.196	
MW-7(M)	6/19/2003	0.04	U	0.125	U	0.25	U
MW-7(M)	10/13/2003	0.04	U	0.307		0.25	U
R-1(M)	10/22/2003	0.04	U	0.125	U	0.25	U
Number of Samples		159	97	159	72	159	22
Average Concentration		4.15		0.89		0.31	
Median Concentration		0.141		0.125		0.25	
Frequency of Detection		61		45		14	
Minimum Value		0.00685		0.125		0.191	
Maximum Detection		67.7		9.38		2.18	

**Table D-6**  
**Semivolatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Acenaphthene	Acenaph- thylene	Anthracene	Benzo(a) Anthracene	Benzo(a) Pyrene
DEQ RBC—Vapor Intrusion—Urban Residential		>S	NV	>Max	NV	NV
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		>S	NV	>Max	NV	NV
MW-1 (F)	1/15/2004	0.186	0.0998	0.025	0.005	0.005
MW-1 (F)	7/20/2004	0.102	0.025	0.025	0.005	0.005
MW-1(F)	10/22/2003	0.025	0.025	0.025	0.005	0.005
MW-1(F)	4/15/2004	0.112	0.0544	0.025	0.005	0.005
MW-10 (M)	10/15/2003	0.28	0.025	0.025	0.0475	0.069
MW-10 (M)	1/13/2004	0.5	0.5	0.025	0.0114	0.0105
MW-10 (M)	4/13/2004	0.375	0.05	0.05	0.01	0.01
MW-10 (M)	7/19/2004	0.365	0.025	0.025	0.0147	0.0111
MW-10(M)	6/19/2003	1	1	0.25	0.25	0.25
MW-1-082302	8/23/2002	0.0811	0.025	0.025	0.005	0.005
MW-11 (M)	10/15/2003	0.025	0.025	0.025	0.005	0.005
MW-11 (M)	1/13/2004	0.025	0.025	0.025	0.005	0.005
MW-11 (M)	4/13/2004	0.025	0.025	0.025	0.005	0.005
MW-11 (M)	7/21/2004	0.025	0.025	0.025	0.005	0.005
MW-11(M)	6/19/2003	0.05	0.05	0.05	0.05	0.05
MW-12 (A)	1/15/2004	0.025	0.025	0.025	0.005	0.005
MW-12 (A)	7/22/2004	0.025	0.025	0.025	0.0139	0.005
MW-12(A)	10/22/2003	0.025	0.025	0.025	0.005	0.005
MW-12(A)	4/16/2004	0.025	0.025	0.025	0.005	0.005
MW-13 (A)	1/15/2004	0.05	0.05	0.05	0.01	0.01
MW-13 (A)	7/22/2004	0.25	0.25	0.25	0.05	0.05
MW-13(A)	10/22/2003	0.025	0.025	0.025	0.005	0.005
MW-13(A)	4/16/2004	0.05	0.05	0.05	0.01	0.01
MW-14 (A)	1/15/2004	0.025	0.025	0.025	0.005	0.005
MW-14 (A)	7/23/2004	0.025	0.025	0.025	0.005	0.005
MW-14(A)	10/21/2003	0.025	0.025	0.025	0.005	0.005
MW-14(A)	4/16/2004	0.025	0.025	0.025	0.005	0.005
MW-15(A)	10/20/2003	0.0916	0.025	0.025	0.005	0.005
MW-16 (A)	7/22/2004	0.025	0.025	0.025	0.005	0.005
MW-16(A)	10/20/2003	0.025	0.025	0.025	0.005	0.005

**Table D-6**  
**Semivolatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Acenaphthene	Acenaph- thylene	Anthracene	Benzo(a) Anthracene	Benzo(a) Pyrene
DEQ RBC—Vapor Intrusion—Urban Residential		>S	NV	>Max	NV	NV
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		>S	NV	>Max	NV	NV
MW-16(A)	1/19/2004	0.025	U	0.025	U	0.005
MW-16(A)	4/15/2004	0.025	U	0.025	U	0.005
MW-17 (A)	10/17/2003	0.0612	U	0.025	U	0.005
MW-17 (A)	7/22/2004	0.0864	U	0.025	U	0.005
MW-17(A)	1/19/2004	0.025	U	0.025	U	0.005
MW-17(A)	4/15/2004	0.0532	U	0.025	U	0.005
MW-18 (A)	7/21/2004	0.428	U	0.025	U	0.005
MW-18(A)	10/21/2003	0.517	U	0.025	U	0.005
MW-18(A)	1/19/2004	0.632	U	0.025	U	0.005
MW-18(A)	4/15/2004	0.312	U	0.025	U	0.005
MW-19 (A)	1/13/2004	0.025	U	0.025	U	0.005
MW-19 (A)	7/20/2004	0.025	U	0.025	U	0.005
MW-19(A)	10/20/2003	0.025	U	0.025	U	0.005
MW-19(A)	4/15/2004	0.025	U	0.025	U	0.005
MW-2 (M)	10/15/2003	0.638	U	0.0568	U	0.005
MW-2 (M)	1/12/2004	0.54	U	0.05	U	0.01
MW-2 (M)	7/22/2004	1.41	U	0.25	U	0.05
MW-2(M)	6/19/2003	1.44	U	0.25	U	0.25
MW-2(M)	4/14/2004	0.644	U	0.25	U	0.05
MW-20 (A)	1/13/2004	0.345	U	0.025	U	0.005
MW-20 (A)	7/20/2004	0.306	U	0.05	U	0.01
MW-20(A)	10/20/2003	0.318	U	0.025	U	0.005
MW-20(A)	4/15/2004	0.184	U	0.05	U	0.01
MW-21 (A)	1/13/2004	0.185	U	0.025	U	0.005
MW-21 (A)	7/20/2004	0.318	U	0.025	U	0.005
MW-21(A)	10/20/2003	0.224	U	0.025	U	0.005
MW-21(A)	4/16/2004	0.25	U	0.25	U	0.01
MW-22 (A)	10/16/2003	0.025	U	0.025	U	0.005
MW-22 (A)	7/20/2004	0.025	U	0.025	U	0.005
MW-22(A)	1/19/2004	0.025	U	0.025	U	0.005

**Table D-6**  
**Semivolatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Acenaphthene	Acenaph- thylene	Anthracene	Benzo(a) Anthracene	Benzo(a) Pyrene
DEQ RBC—Vapor Intrusion—Urban Residential		>S	NV	>Max	NV	NV
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		>S	NV	>Max	NV	NV
MW-22(A)	4/15/2004	0.025	U	0.025	U	0.005
MW-23 (A)	1/15/2004	0.025	U	0.025	U	0.005
MW-23 (A)	7/20/2004	0.025	U	0.025	U	0.005
MW-23(A)	10/20/2003	0.025	U	0.025	U	0.005
MW-23(A)	4/15/2004	0.025	U	0.025	U	0.005
MW-24 (A)	1/15/2004	0.025	U	0.025	U	0.005
MW-24 (A)	7/22/2004	0.025	U	0.025	U	0.005
MW-24(A)	10/21/2003	0.025	U	0.025	U	0.005
MW-24(A)	4/14/2004	0.025	U	0.025	U	0.005
MW-26 (A)	10/17/2003	2.5	U	2.5	U	0.005
MW-26 (A)	1/15/2004	0.0687	U	0.025	U	0.005
MW-26 (A)	7/22/2004	1.25	U	1.25	U	0.25
MW-26(A)	4/14/2004	0.0548	U	0.025	U	0.005
MW-27 (A)	1/14/2004	0.025	U	0.025	U	0.005
MW-27 (A)	4/14/2004	0.025	U	0.025	U	0.005
MW-27 (A)	7/22/2004	0.025	U	0.025	U	0.005
MW-27(A)	10/21/2003	0.025	U	0.025	U	0.005
MW-28 (A)	10/17/2003	2.5	U	2.5	U	0.005
MW-28 (A)	7/23/2004	0.25	U	0.25	U	0.05
MW-28(A)	1/19/2004	0.0548	U	0.025	U	0.005
MW-28(A)	4/14/2004	0.0555	U	0.025	U	0.005
MW-29 (A)	7/22/2004	1.25	U	1.25	U	0.25
MW-29(A)	10/21/2003	0.0959	U	0.025	U	0.005
MW-29(A)	1/19/2004	0.126	U	0.025	U	0.005
MW-29(A)	4/16/2004	0.05	U	0.05	U	0.01
MW-30 (A)	10/16/2003	0.0531	U	0.025	U	0.005
MW-30 (A)	1/16/2004	0.0751	U	0.025	U	0.005
MW-30 (A)	4/13/2004	0.025	U	0.025	U	0.005
MW-30 (A)	7/20/2004	0.0744	U	0.025	U	0.005
MW-31 (A)	10/16/2003	0.0661	U	0.025	U	0.005



**Table D-6**  
**Semivolatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Acenaphthene	Acenaph- thylene	Anthracene	Benzo(a) Anthracene	Benzo(a) Pyrene
DEQ RBC—Vapor Intrusion—Urban Residential		>S	NV	>Max	NV	NV
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		>S	NV	>Max	NV	NV
MW-31 (A)	1/12/2004	0.096	0.025	0.025	0.005	0.005
MW-31 (A)	4/13/2004	0.05	0.05	0.05	0.01	0.01
MW-31 (A)	7/20/2004	0.0652	0.025	0.025	0.005	0.005
MW-32 (A)	1/12/2004	0.025	0.025	0.025	0.005	0.005
MW-32 (A)	4/13/2004	0.025	0.025	0.025	0.005	0.005
MW-32 (A)	7/19/2004	0.025	0.025	0.025	0.005	0.005
MW-32 (A)	10/14/2003	0.025	0.025	0.025	0.005	0.005
MW-33 (A)	1/12/2004	0.025	0.025	0.025	0.005	0.005
MW-33 (A)	4/13/2004	0.025	0.025	0.025	0.005	0.005
MW-33 (A)	7/19/2004	0.0528	0.025	0.025	0.005	0.005
MW-33 (A)	10/14/2003	0.025	0.025	0.025	0.005	0.005
MW-34 (A)	1/13/2004	0.025	0.025	0.025	0.005	0.005
MW-34 (A)	4/14/2004	0.025	0.025	0.025	0.005	0.005
MW-34 (A)	7/20/2004	0.025	0.025	0.025	0.0262	0.005
MW-34 (A)	10/14/2003	0.025	0.025	0.025	0.005	0.005
MW-35 (A)	10/16/2003	0.025	0.025	0.025	0.005	0.005
MW-35 (A)	1/16/2004	0.025	0.025	0.025	0.005	0.005
MW-35 (A)	4/13/2004	0.025	0.025	0.025	0.005	0.005
MW-35 (A)	7/20/2004	0.025	0.025	0.025	0.005	0.005
MW-36 (A)	1/14/2004	0.025	0.025	0.025	0.005	0.005
MW-36 (A)	4/14/2004	0.025	0.025	0.025	0.005	0.005
MW-36 (A)	7/22/2004	0.025	0.025	0.025	0.005	0.005
MW-36 (A)	10/21/2003	0.025	0.025	0.025	0.005	0.005
MW-37 (A)	10/17/2003	0.025	0.025	0.025	0.005	0.005
MW-38 (A)	1/14/2004	0.025	0.025	0.025	0.005	0.005
MW-38 (A)	4/14/2004	0.025	0.025	0.025	0.005	0.005
MW-38 (A)	7/22/2004	0.025	0.025	0.025	0.005	0.005
MW-38 (A)	10/21/2003	0.025	0.025	0.025	0.005	0.005
MW-39 (A)	10/16/2003	1.04	0.025	0.137	0.005	0.005
MW-39 (A)	1/16/2004	0.598	0.0625	0.0715	0.005	0.005

**Table D-6**  
**Semivolatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Acenaphthene	Acenaph- thylene	Anthracene	Benzo(a) Anthracene	Benzo(a) Pyrene
DEQ RBC—Vapor Intrusion—Urban Residential		>S	NV	>Max	NV	NV
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		>S	NV	>Max	NV	NV
MW-39 (A)	4/14/2004	0.462	0.05	0.0707	0.005	0.005
MW-39 (A)	7/21/2004	1.4	0.25	0.156	0.005	0.005
MW-40 (A)	10/17/2003	0.727	0.025	0.025	0.005	0.005
MW-40 (A)	1/20/2004	0.553	0.075	0.05	0.01	0.01
MW-40 (A)	4/16/2004	0.822	0.15	0.1	0.02	0.02
MW-41 (A)	10/14/2003	2.45	0.625	0.625	0.005	0.005
MW-42 (A)	10/15/2003	1.1	0.025	0.0893	0.005	0.005
MW-43 (A)	1/12/2004	0.025	0.025	0.025	0.005	0.005
MW-43 (A)	4/13/2004	0.025	0.025	0.025	0.005	0.005
MW-43 (A)	7/21/2004	0.025	0.025	0.025	0.005	0.005
MW-43 (A)	10/13/2003	0.025	0.025	0.025	0.005	0.005
MW-44 (A)	10/17/2003	0.194	0.025	0.04	0.005	0.005
MW-45 (A)	10/16/2003	0.025	0.025	0.025	0.005	0.005
MW-45 (A)	1/16/2004	0.025	0.025	0.025	0.005	0.005
MW-45 (A)	4/14/2004	0.025	0.025	0.025	0.005	0.005
MW-45 (A)	7/21/2004	0.025	0.025	0.025	0.005	0.005
MW-46 (A)	4/12/2004	0.025	0.025	0.025	0.005	0.005
MW-46 (A)	7/21/2004	0.025	0.025	0.025	0.005	0.005
MW-46 (A)	10/14/2003	0.025	0.025	0.025	0.005	0.005
MW-46 (A)	1/14/2004	0.025	0.025	0.025	0.005	0.005
MW-47 (A)	1/14/2004	0.025	0.025	0.025	0.005	0.005
MW-47 (A)	4/12/2004	0.025	0.025	0.025	0.005	0.005
MW-47 (A)	7/21/2004	0.025	0.025	0.025	0.005	0.005
MW-47 (A)	10/13/2003	0.025	0.025	0.025	0.005	0.005
MW-48 (A)	1/14/2004	0.176	0.025	0.025	0.005	0.005
MW-48 (A)	4/12/2004	0.117	0.025	0.025	0.0109	0.0104
MW-48 (A)	7/21/2004	0.201	0.025	0.025	0.0243	0.0177
MW-48 (A)	10/14/2003	0.362	0.025	0.025	0.0127	0.005
MW-6 (M)	1/12/2004	0.167	0.025	0.025	0.011	0.005
MW-6 (M)	4/13/2004	0.153	0.025	0.025	0.005	0.005

**Table D-6**  
**Semivolatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Acenaphthene	Acenaph- thylene	Anthracene	Benzo(a) Anthracene	Benzo(a) Pyrene
DEQ RBC—Vapor Intrusion—Urban Residential		>S	NV	>Max	NV	NV
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		>S	NV	>Max	NV	NV
MW-6 (M)	7/19/2004	0.228	0.025	U	0.005	U
MW-6(M)	6/19/2003	0.214	0.05	U	0.05	U
MW-6(M)	10/22/2003	0.146	0.025	U	0.005	U
MW-7 (M)	1/12/2004	0.025	U	0.025	U	U
MW-7 (M)	4/12/2004	0.025	U	0.025	U	U
MW-7 (M)	7/19/2004	0.025	U	0.025	U	U
MW-7(M)	6/19/2003	0.05	U	0.05	U	U
MW-7(M)	10/13/2003	0.025	U	0.025	U	U
R-1(M)	10/22/2003	0.0873	U	0.025	U	U
Number of Samples		159	159	159	159	159
Average Concentration		0.22	0.10	0.09	0.01	0.01
Median Concentration		0.025	0.025	0.025	0.005	0.005
Frequency of Detection		37.7	1.3	3.8	5.7	3.1
Minimum Value		0.025	0.025	0.025	0.005	0.005
Maximum Detection		2.45	0.0998	0.156	0.0475	0.069

**Table D-6**  
**Semivolatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Benzo(b) Fluoranthene	Benzo(k) Fluoranthene	Chrysene	Dibenzo(a,h) Anthracene	Fluoranthene
DEQ RBC—Vapor Intrusion—Urban Residential		NV	NV	NV	NV	NV
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		NV	NV	NV	NV	NV
MW-1 (F)	1/15/2004	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-1 (F)	7/20/2004	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-1(F)	10/22/2003	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-1(F)	4/15/2004	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-10 (M)	10/15/2003	0.0625	0.0548	0.0554	0.0172	0.0655
MW-10 (M)	1/13/2004	0.0124	0.005 U	0.0144	0.005 U	0.025 U
MW-10 (M)	4/13/2004	0.01	0.01 U	0.01	0.01 U	0.05 U
MW-10 (M)	7/19/2004	0.0118	0.0106	0.0133	0.005 U	0.025 U
MW-10(M)	6/19/2003	0.25 U	0.25 U	0.25 U	0.5 U	0.25 U
MW-1-082302	8/23/2002	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-11 (M)	10/15/2003	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-11 (M)	1/13/2004	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-11 (M)	4/13/2004	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-11 (M)	7/21/2004	0.005 U	0.0075 U	0.005 U	0.005 U	0.025 U
MW-11(M)	6/19/2003	0.05 U	0.05 U	0.05 U	0.1 U	0.05 U
MW-12 (A)	1/15/2004	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-12 (A)	7/22/2004	0.0102	0.015	0.0144	0.005 U	0.025 U
MW-12(A)	10/22/2003	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-12(A)	4/16/2004	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-13 (A)	1/15/2004	0.01 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-13 (A)	7/22/2004	0.05 U	0.05 U	0.05 U	0.05 U	0.25 U
MW-13(A)	10/22/2003	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-13(A)	4/16/2004	0.01 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-14 (A)	1/15/2004	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-14 (A)	7/23/2004	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-14(A)	10/21/2003	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-14(A)	4/16/2004	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-15(A)	10/20/2003	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-16 (A)	7/22/2004	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-16(A)	10/20/2003	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U

**Table D-6**  
**Semivolatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Benzo(b) Fluoranthene	Benzo(k) Fluoranthene	Chrysene	Dibenzo(a,h) Anthracene	Fluoranthene
DEQ RBC—Vapor Intrusion—Urban Residential		NV	NV	NV	NV	NV
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		NV	NV	NV	NV	NV
MW-16(A)	1/19/2004	0.005	U	0.005	U	0.025
MW-16(A)	4/15/2004	0.005	U	0.005	U	0.025
MW-17 (A)	10/17/2003	0.005	U	0.005	U	0.025
MW-17 (A)	7/22/2004	0.005	U	0.005	U	0.025
MW-17(A)	1/19/2004	0.005	U	0.005	U	0.025
MW-17(A)	4/15/2004	0.005	U	0.005	U	0.025
MW-18 (A)	7/21/2004	0.005	U	0.005	U	0.025
MW-18(A)	10/21/2003	0.005	U	0.005	U	0.025
MW-18(A)	1/19/2004	0.005	U	0.005	U	0.025
MW-18(A)	4/15/2004	0.005	U	0.005	U	0.025
MW-19 (A)	1/13/2004	0.005	U	0.005	U	0.025
MW-19 (A)	7/20/2004	0.005	U	0.005	U	0.025
MW-19(A)	10/20/2003	0.005	U	0.005	U	0.025
MW-19(A)	4/15/2004	0.005	U	0.005	U	0.025
MW-2 (M)	10/15/2003	0.005	U	0.005	U	0.0693
MW-2 (M)	1/12/2004	0.01	U	0.01	U	0.05
MW-2 (M)	7/22/2004	0.05	U	0.05	U	0.25
MW-2(M)	6/19/2003	0.25	U	0.25	U	0.25
MW-2(M)	4/14/2004	0.05	U	0.05	U	0.25
MW-20 (A)	1/13/2004	0.005	U	0.005	U	0.025
MW-20 (A)	7/20/2004	0.01	U	0.01	U	0.05
MW-20(A)	10/20/2003	0.005	U	0.005	U	0.025
MW-20(A)	4/15/2004	0.01	U	0.01	U	0.05
MW-21 (A)	1/13/2004	0.005	U	0.005	U	0.025
MW-21 (A)	7/20/2004	0.005	U	0.005	U	0.025
MW-21(A)	10/20/2003	0.005	U	0.005	U	0.025
MW-21(A)	4/16/2004	0.01	U	0.01	U	0.25
MW-22 (A)	10/16/2003	0.005	U	0.005	U	0.025
MW-22 (A)	7/20/2004	0.005	U	0.005	U	0.025
MW-22(A)	1/19/2004	0.005	U	0.005	U	0.025

**Table D-6**  
**Semivolatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Benzo(b) Fluoranthene	Benzo(k) Fluoranthene	Chrysene	Dibenzo(a,h) Anthracene	Fluoranthene
DEQ RBC—Vapor Intrusion—Urban Residential		NV	NV	NV	NV	NV
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		NV	NV	NV	NV	NV
MW-22(A)	4/15/2004	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-23 (A)	1/15/2004	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-23 (A)	7/20/2004	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-23(A)	10/20/2003	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-23(A)	4/15/2004	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-24 (A)	1/15/2004	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-24 (A)	7/22/2004	0.005 U	0.0075 U	0.005 U	0.005 U	0.025 U
MW-24(A)	10/21/2003	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-24(A)	4/14/2004	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-26 (A)	10/17/2003	0.005 U	0.005 U	0.005 U	0.005 U	2.5 U
MW-26 (A)	1/15/2004	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-26 (A)	7/22/2004	0.25 U	0.25 U	0.25 U	0.25 U	1.25 U
MW-26(A)	4/14/2004	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-27 (A)	1/14/2004	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-27 (A)	4/14/2004	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-27 (A)	7/22/2004	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-27(A)	10/21/2003	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-28 (A)	10/17/2003	0.005 U	0.005 U	0.005 U	0.005 U	2.5 U
MW-28 (A)	7/23/2004	0.05 U	0.05 U	0.05 U	0.05 U	0.25 U
MW-28(A)	1/19/2004	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-28(A)	4/14/2004	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-29 (A)	7/22/2004	0.25 U	0.25 U	0.25 U	0.25 U	1.25 U
MW-29(A)	10/21/2003	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-29(A)	1/19/2004	0.005 U	0.005 U	0.0125 U	0.005 U	0.025 U
MW-29(A)	4/16/2004	0.01 U	0.01 U	0.01 U	0.01 U	0.05 U
MW-30 (A)	10/16/2003	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-30 (A)	1/16/2004	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-30 (A)	4/13/2004	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-30 (A)	7/20/2004	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U
MW-31 (A)	10/16/2003	0.005 U	0.005 U	0.005 U	0.005 U	0.025 U

**Table D-6**  
**Semivolatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Benzo(b) Fluoranthene	Benzo(k) Fluoranthene	Chrysene	Dibenzo(a,h) Anthracene	Fluoranthene
DEQ RBC—Vapor Intrusion—Urban Residential		NV	NV	NV	NV	NV
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		NV	NV	NV	NV	NV
MW-31 (A)	1/12/2004	0.005	U	0.005	U	0.025
MW-31 (A)	4/13/2004	0.01	U	0.01	U	0.05
MW-31 (A)	7/20/2004	0.005	U	0.005	U	0.025
MW-32 (A)	1/12/2004	0.005	U	0.005	U	0.025
MW-32 (A)	4/13/2004	0.005	U	0.005	U	0.025
MW-32 (A)	7/19/2004	0.005	U	0.005	U	0.025
MW-32(A)	10/14/2003	0.005	U	0.005	U	0.025
MW-33 (A)	1/12/2004	0.005	U	0.005	U	0.025
MW-33 (A)	4/13/2004	0.005	U	0.005	U	0.025
MW-33 (A)	7/19/2004	0.005	U	0.005	U	0.025
MW-33(A)	10/14/2003	0.005	U	0.005	U	0.025
MW-34 (A)	1/13/2004	0.005	U	0.005	U	0.025
MW-34 (A)	4/14/2004	0.005	U	0.005	U	0.025
MW-34 (A)	7/20/2004	0.0267	0.0261	0.0306	0.0111	0.025
MW-34(A)	10/14/2003	0.005	U	0.005	U	0.025
MW-35 (A)	10/16/2003	0.005	U	0.005	U	0.025
MW-35 (A)	1/16/2004	0.005	U	0.005	U	0.025
MW-35 (A)	4/13/2004	0.005	U	0.005	U	0.025
MW-35 (A)	7/20/2004	0.005	U	0.005	U	0.025
MW-36 (A)	1/14/2004	0.005	U	0.005	U	0.025
MW-36 (A)	4/14/2004	0.005	U	0.005	U	0.025
MW-36 (A)	7/22/2004	0.005	U	0.005	U	0.025
MW-36(A)	10/21/2003	0.005	U	0.005	U	0.025
MW-37 (A)	10/17/2003	0.005	U	0.005	U	0.025
MW-38 (A)	1/14/2004	0.005	U	0.005	U	0.025
MW-38 (A)	4/14/2004	0.005	U	0.005	U	0.025
MW-38 (A)	7/22/2004	0.01	U	0.0412	0.005	0.025
MW-38(A)	10/21/2003	0.005	U	0.005	U	0.025
MW-39 (A)	10/16/2003	0.005	U	0.005	U	0.025
MW-39 (A)	1/16/2004	0.005	U	0.005	U	0.025

**Table D-6**  
**Semivolatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Benzo(b) Fluoranthene	Benzo(k) Fluoranthene	Chrysene	Dibenzo(a,h) Anthracene	Fluoranthene
DEQ RBC—Vapor Intrusion—Urban Residential		NV	NV	NV	NV	NV
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		NV	NV	NV	NV	NV
MW-39 (A)	4/14/2004	0.005	U	0.005	U	0.025
MW-39 (A)	7/21/2004	0.005	U	0.005	U	0.025
MW-40 (A)	10/17/2003	0.005	U	0.005	U	0.025
MW-40(A)	1/20/2004	0.01	U	0.01	U	0.05
MW-40(A)	4/16/2004	0.02	U	0.02	U	0.1
MW-41(A)	10/14/2003	0.005	U	0.01	U	0.625
MW-42 (A)	10/15/2003	0.005	U	0.005	U	0.025
MW-43 (A)	1/12/2004	0.005	U	0.005	U	0.025
MW-43 (A)	4/13/2004	0.005	U	0.005	U	0.025
MW-43 (A)	7/21/2004	0.005	U	0.005	U	0.025
MW-43(A)	10/13/2003	0.005	U	0.005	U	0.025
MW-44 (A)	10/17/2003	0.005	U	0.005	U	0.025
MW-45 (A)	10/16/2003	0.005	U	0.005	U	0.025
MW-45 (A)	1/16/2004	0.005	U	0.005	U	0.025
MW-45 (A)	4/14/2004	0.005	U	0.005	U	0.025
MW-45 (A)	7/21/2004	0.005	U	0.005	U	0.025
MW-46 (A)	4/12/2004	0.005	U	0.005	U	0.025
MW-46 (A)	7/21/2004	0.005	U	0.005	U	0.025
MW-46(A)	10/14/2003	0.005	U	0.005	U	0.025
MW-46(A)	1/14/2004	0.005	U	0.005	U	0.025
MW-47 (A)	1/14/2004	0.005	U	0.005	U	0.025
MW-47 (A)	4/12/2004	0.005	U	0.005	U	0.025
MW-47 (A)	7/21/2004	0.005	U	0.005	U	0.025
MW-47(A)	10/13/2003	0.005	U	0.005	U	0.025
MW-48 (A)	1/14/2004	0.005	U	0.005	U	0.025
MW-48 (A)	4/12/2004	0.0105	U	0.0122	U	0.0507
MW-48 (A)	7/21/2004	0.0202	0.0176	0.0282	U	0.106
MW-48(A)	10/14/2003	0.005	U	0.0157	U	0.123
MW-6 (M)	1/12/2004	0.005	U	0.013	U	0.025
MW-6 (M)	4/13/2004	0.005	U	0.005	U	0.025



**Table D-6**  
**Semivolatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Benzo(b) Fluoranthene	Benzo(k) Fluoranthene	Chrysene	Dibenzo(a,h) Anthracene	Fluoranthene
DEQ RBC—Vapor Intrusion—Urban Residential		NV	NV	NV	NV	NV
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		NV	NV	NV	NV	NV
MW-6 (M)	7/19/2004	0.005	U	0.005	U	0.025
MW-6(M)	6/19/2003	0.05	U	0.05	U	0.05
MW-6(M)	10/22/2003	0.005	U	0.005	U	0.025
MW-7 (M)	1/12/2004	0.005	U	0.0104	U	0.025
MW-7 (M)	4/12/2004	0.005	U	0.005	U	0.025
MW-7 (M)	7/19/2004	0.005	U	0.005	U	0.025
MW-7(M)	6/19/2003	0.05	U	0.05	U	0.05
MW-7(M)	10/13/2003	0.005	U	0.005	U	0.025
R-1 (M)	10/22/2003	0.005	U	0.015	U	0.025
Number of Samples		159	159	159	159	159
Average Concentration		0.01	0.01	0.01	0.02	0.09
Median Concentration		0.005	0.005	0.005	0.005	0.025
Frequency of Detection		4.4	3.1	8.2	1.3	3.1
Minimum Value		0.005	0.005	0.005	0.005	0.025
Maximum Detection		0.0625	0.0548	0.0554	0.0111	0.123

**Table D-6**  
**Semivolatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Fluorene	Indeno(1,2,3-cd) Pyrene	Naphthalene	Phenanthrene	Pyrene
DEQ RBC—Vapor Intrusion—Urban Residential		>S	NV	29,000	NV	NV
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		>S	NV	>S	NV	NV
MW-1 (F)	1/15/2004	0.209	0.005	U	0.0523	0.025
MW-1 (F)	7/20/2004	0.0967	0.005	U	0.025	0.025
MW-1(F)	10/22/2003	0.025	0.005	U	0.025	0.025
MW-1(F)	4/15/2004	0.134	0.005	U	0.025	0.025
MW-10 (M)	10/15/2003	0.238	0.0408	12	0.104	0.0589
MW-10 (M)	1/13/2004	0.5	0.005	U	0.025	0.025
MW-10 (M)	4/13/2004	0.187	0.01	U	0.05	0.05
MW-10 (M)	7/19/2004	0.154	0.005	U	0.025	0.025
MW-10(M)	6/19/2003	1	0.25	U	0.25	0.25
MW-1-082302	8/23/2002	0.12	0.005	U	0.025	0.025
MW-11 (M)	10/15/2003	0.025	0.005	U	0.025	0.025
MW-11 (M)	1/13/2004	0.025	0.005	U	0.025	0.025
MW-11 (M)	4/13/2004	0.025	0.005	U	0.025	0.025
MW-11 (M)	7/21/2004	0.025	0.005	U	0.025	0.025
MW-11(M)	6/19/2003	0.05	0.05	U	0.05	0.05
MW-12 (A)	1/15/2004	0.025	0.005	U	0.025	0.025
MW-12 (A)	7/22/2004	0.025	0.005	U	0.025	0.025
MW-12(A)	10/22/2003	0.025	0.005	U	0.025	0.025
MW-12(A)	4/16/2004	0.025	0.005	U	0.025	0.025
MW-13 (A)	1/15/2004	0.05	0.01	U	0.05	0.05
MW-13 (A)	7/22/2004	0.25	0.05	U	0.25	0.25
MW-13(A)	10/22/2003	0.025	0.005	U	0.025	0.025
MW-13(A)	4/16/2004	0.05	0.01	U	0.05	0.05
MW-14 (A)	1/15/2004	0.025	0.005	U	0.025	0.025
MW-14 (A)	7/23/2004	0.025	0.005	U	0.025	0.025
MW-14(A)	10/21/2003	0.025	0.005	U	0.025	0.025
MW-14(A)	4/16/2004	0.025	0.005	U	0.025	0.025
MW-15(A)	10/20/2003	0.0941	0.005	U	0.106	0.025
MW-16 (A)	7/22/2004	0.025	0.005	U	0.025	0.025
MW-16(A)	10/20/2003	0.025	0.005	U	0.025	0.025

**Table D-6**  
**Semivolatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Fluorene	Indeno(1,2,3-cd) Pyrene	Naphthalene	Phenanthrene	Pyrene
DEQ RBC—Vapor Intrusion—Urban Residential		>S	NV	29,000	NV	NV
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		>S	NV	>S	NV	NV
MW-16(A)	1/19/2004	0.025	U	0.075	U	0.025
MW-16(A)	4/15/2004	0.025	U	0.225	U	0.025
MW-17 (A)	10/17/2003	0.025	U	2.37	0.025	0.025
MW-17 (A)	7/22/2004	0.025	U	0.649	0.025	0.025
MW-17(A)	1/19/2004	0.025	U	0.125	U	0.025
MW-17(A)	4/15/2004	0.025	U	5.04	0.025	0.025
MW-18 (A)	7/21/2004	0.113	U	0.483	0.025	0.025
MW-18(A)	10/21/2003	0.22	U	0.44	0.025	0.025
MW-18(A)	1/19/2004	0.39	U	0.688	0.025	0.025
MW-18(A)	4/15/2004	0.197	U	0.119	0.025	0.025
MW-19 (A)	1/13/2004	0.025	U	0.025	U	0.025
MW-19 (A)	7/20/2004	0.025	U	0.15	0.025	0.025
MW-19(A)	10/20/2003	0.025	U	0.025	U	0.025
MW-19(A)	4/15/2004	0.025	U	0.128	0.025	0.025
MW-2 (M)	10/15/2003	1.33	U	89.4	1.07	0.051
MW-2 (M)	1/12/2004	0.78	U	4.08	0.669	0.05
MW-2 (M)	7/22/2004	1.83	U	132	1.55	0.25
MW-2(M)	6/19/2003	2.16	U	524	1.45	0.25
MW-2(M)	4/14/2004	0.88	U	143	0.748	0.25
MW-20 (A)	1/13/2004	0.527	U	9.6	0.0981	0.025
MW-20 (A)	7/20/2004	0.504	U	2.77	0.128	0.05
MW-20(A)	10/20/2003	0.434	U	3.93	0.0697	0.025
MW-20(A)	4/15/2004	0.312	U	0.4	U	0.05
MW-21 (A)	1/13/2004	0.256	U	0.765	0.025	0.025
MW-21 (A)	7/20/2004	0.516	U	2.09	0.108	0.025
MW-21(A)	10/20/2003	0.327	U	1.83	0.045	0.025
MW-21(A)	4/16/2004	0.25	U	1.27	0.25	0.05
MW-22 (A)	10/16/2003	0.025	U	2.61	0.025	0.025
MW-22 (A)	7/20/2004	0.025	U	0.93	0.025	0.025
MW-22(A)	1/19/2004	0.025	U	0.0931	0.025	0.025

**Table D-6**  
**Semivolatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Fluorene	Indeno(1,2,3-cd) Pyrene	Naphthalene	Phenanthrene	Pyrene
DEQ RBC—Vapor Intrusion—Urban Residential		>S	NV	29,000	NV	NV
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		>S	NV	>S	NV	NV
MW-22(A)	4/15/2004	0.025 U	0.005 U	0.0757	0.025 U	0.025 U
MW-23 (A)	1/15/2004	0.025 U	0.005 U	0.1125 U	0.025 U	0.025 U
MW-23 (A)	7/20/2004	0.025 U	0.005 U	0.0525	0.025 U	0.025 U
MW-23(A)	10/20/2003	0.025 U	0.005 U	0.0617	0.025 U	0.025 U
MW-23(A)	4/15/2004	0.025 U	0.005 U	1.14	0.025 U	0.025 U
MW-24 (A)	1/15/2004	0.025 U	0.005 U	44.6	0.025 U	0.025 U
MW-24 (A)	7/22/2004	0.025 U	0.005 U	13.4	0.025 U	0.025 U
MW-24(A)	10/21/2003	0.025 U	0.005 U	0.025 U	0.025 U	0.025 U
MW-24(A)	4/14/2004	0.025 U	0.005 U	20.8	0.025 U	0.025 U
MW-26 (A)	10/17/2003	2.5 U	0.005 U	107	2.5 U	0.025 U
MW-26 (A)	1/15/2004	0.0718	0.005 U	564	0.025 U	0.025 U
MW-26 (A)	7/22/2004	1.25 U	0.25 U	534	1.25 U	1.25 U
MW-26(A)	4/14/2004	0.0595	0.005 U	464	0.025 U	0.025 U
MW-27 (A)	1/14/2004	0.025 U	0.005 U	0.0512	0.025 U	0.025 U
MW-27 (A)	4/14/2004	0.025 U	0.005 U	0.0763	0.025 U	0.025 U
MW-27 (A)	7/22/2004	0.025 U	0.005 U	0.0625 U	0.025 U	0.025 U
MW-27(A)	10/21/2003	0.025 U	0.005 U	0.158	0.025 U	0.025 U
MW-28 (A)	10/17/2003	2.5 U	0.005 U	112	2.5 U	0.025 U
MW-28 (A)	7/23/2004	0.25 U	0.05 U	113	0.25 U	0.25 U
MW-28(A)	1/19/2004	0.076	0.005 U	78.4	0.07	0.025 U
MW-28(A)	4/14/2004	0.0763	0.005 U	66.9	0.0564	0.025 U
MW-29 (A)	7/22/2004	1.25 U	0.25 U	1040	1.25 U	1.25 U
MW-29(A)	10/21/2003	0.0811	0.005 U	1640	0.0638	0.025 U
MW-29(A)	1/19/2004	0.101	0.005 U	867	0.0802	0.025 U
MW-29(A)	4/16/2004	0.05 U	0.01 U	806	0.05 U	0.05 U
MW-30 (A)	10/16/2003	0.0569	0.005 U	531	0.025 U	0.025 U
MW-30 (A)	1/16/2004	0.0613	0.005 U	696	0.025 U	0.025 U
MW-30 (A)	4/13/2004	0.025 U	0.005 U	381	0.025 U	0.025 U
MW-30 (A)	7/20/2004	0.0577	0.005 U	1130	0.0513	0.025 U
MW-31 (A)	10/16/2003	0.0582	0.005 U	10	0.025 U	0.025 U

**Table D-6**  
**Semivolatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Fluorene	Indeno(1,2,3-cd) Pyrene	Naphthalene	Phenanthrene	Pyrene
DEQ RBC—Vapor Intrusion—Urban Residential		>S	NV	29,000	NV	NV
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		>S	NV	>S	NV	NV
MW-31 (A)	1/12/2004	0.0661	0.005	U	0.025	U
MW-31 (A)	4/13/2004	0.05	0.01	U	0.05	U
MW-31 (A)	7/20/2004	0.025	0.005	U	0.025	U
MW-32 (A)	1/12/2004	0.025	0.005	U	0.025	U
MW-32 (A)	4/13/2004	0.025	0.005	U	0.025	U
MW-32 (A)	7/19/2004	0.025	0.005	U	0.025	U
MW-32(A)	10/14/2003	0.025	0.005	U	0.025	U
MW-33 (A)	1/12/2004	0.025	0.005	U	0.025	U
MW-33 (A)	4/13/2004	0.025	0.005	U	0.025	U
MW-33 (A)	7/19/2004	0.025	0.005	U	0.025	U
MW-33(A)	10/14/2003	0.025	0.005	U	0.025	U
MW-34 (A)	1/13/2004	0.025	0.005	U	0.025	U
MW-34 (A)	4/14/2004	0.025	0.005	U	0.025	U
MW-34 (A)	7/20/2004	0.025	0.012	U	0.025	U
MW-34(A)	10/14/2003	0.025	0.005	U	0.025	U
MW-35 (A)	10/16/2003	0.025	0.005	U	0.025	U
MW-35 (A)	1/16/2004	0.025	0.005	U	0.025	U
MW-35 (A)	4/13/2004	0.025	0.005	U	0.025	U
MW-35 (A)	7/20/2004	0.025	0.005	U	0.025	U
MW-36 (A)	1/14/2004	0.025	0.005	U	0.025	U
MW-36 (A)	4/14/2004	0.025	0.005	U	0.025	U
MW-36 (A)	7/22/2004	0.025	0.005	U	0.025	U
MW-36(A)	10/21/2003	0.025	0.005	U	0.025	U
MW-37 (A)	10/17/2003	0.025	0.005	U	0.025	U
MW-38 (A)	1/14/2004	0.025	0.005	U	0.025	U
MW-38 (A)	4/14/2004	0.025	0.005	U	0.025	U
MW-38 (A)	7/22/2004	0.025	0.005	U	0.025	U
MW-38(A)	10/21/2003	0.025	0.005	U	0.025	U
MW-39 (A)	10/16/2003	2.24	0.005	U	0.806	U
MW-39 (A)	1/16/2004	1.04	0.005	U	0.629	U

**Table D-6**  
**Semivolatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Fluorene	Indeno(1,2,3-cd) Pyrene	Naphthalene	Phenanthrene	Pyrene
DEQ RBC—Vapor Intrusion—Urban Residential		>S	NV	29,000	NV	NV
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		>S	NV	>S	NV	NV
MW-39 (A)	4/14/2004	0.633	0.005	4.14	0.357	0.025
MW-39 (A)	7/21/2004	1.67	0.005	10.7	0.631	0.025
MW-40 (A)	10/17/2003	0.618	0.005	43.8	0.317	0.025
MW-40(A)	1/20/2004	0.72	0.01	682	1.11	0.05
MW-40(A)	4/16/2004	1.16	0.02	850	2.13	0.1
MW-41(A)	10/14/2003	4.97	0.005	82.3	6.93	0.2
MW-42 (A)	10/15/2003	2.56	0.005	141	2.16	0.025
MW-43 (A)	1/12/2004	0.025	0.005	0.025	0.025	0.025
MW-43 (A)	4/13/2004	0.025	0.005	0.025	0.025	0.025
MW-43 (A)	7/21/2004	0.025	0.005	0.0605	0.025	0.025
MW-43(A)	10/13/2003	0.025	0.005	0.025	0.025	0.025
MW-44 (A)	10/17/2003	0.362	0.005	696	0.44	0.025
MW-45 (A)	10/16/2003	0.025	0.005	0.0896	0.025	0.025
MW-45 (A)	1/16/2004	0.025	0.005	0.025	0.025	0.025
MW-45 (A)	4/14/2004	0.025	0.005	0.0798	0.025	0.025
MW-45 (A)	7/21/2004	0.025	0.005	0.1125	0.025	0.025
MW-46 (A)	4/12/2004	0.025	0.005	0.0526	0.025	0.025
MW-46 (A)	7/21/2004	0.025	0.005	0.025	0.025	0.025
MW-46(A)	10/14/2003	0.025	0.005	0.025	0.025	0.025
MW-46(A)	1/14/2004	0.025	0.005	0.025	0.025	0.025
MW-47 (A)	1/14/2004	0.025	0.005	0.0783	0.025	0.025
MW-47 (A)	4/12/2004	0.025	0.005	0.025	0.025	0.025
MW-47 (A)	7/21/2004	0.025	0.005	0.025	0.025	0.025
MW-47(A)	10/13/2003	0.025	0.005	0.025	0.025	0.025
MW-48 (A)	1/14/2004	0.0763	0.005	0.397	0.131	0.025
MW-48 (A)	4/12/2004	0.0569	0.005	0.244	0.101	0.0729
MW-48 (A)	7/21/2004	0.0602	0.014	0.457	0.108	0.0883
MW-48(A)	10/14/2003	0.204	0.005	0.538	0.345	0.0812
MW-6 (M)	1/12/2004	0.025	0.005	0.025	0.025	0.025
MW-6 (M)	4/13/2004	0.025	0.005	0.025	0.025	0.025

**Table D-6**  
**Semivolatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Fluorene	Indeno(1,2,3-cd) Pyrene	Naphthalene	Phenanthrene	Pyrene
DEQ RBC—Vapor Intrusion—Urban Residential		>S	NV	29,000	NV	NV
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		>S	NV	>S	NV	NV
MW-6 (M)	7/19/2004	0.025	U	0.025	U	0.025
MW-6(M)	6/19/2003	0.05	U	0.05	U	0.05
MW-6(M)	10/22/2003	0.025	U	0.025	U	0.025
MW-7 (M)	1/12/2004	0.025	U	0.025	U	0.025
MW-7 (M)	4/12/2004	0.025	U	0.025	U	0.025
MW-7 (M)	7/19/2004	0.025	U	0.0868	U	0.025
MW-7(M)	6/19/2003	0.05	U	0.05	U	0.05
MW-7(M)	10/13/2003	0.025	U	0.025	U	0.025
R-1 (M)	10/22/2003	0.025	U	0.0972	U	0.025
Number of Samples		159	49	159	159	159
Average Concentration		0.26		83.97	0.22	0.05
Median Concentration		0.025		0.225	0.025	0.025
Frequency of Detection		30.8		60.4	19.5	3.8
Minimum Value		0.025		0.025	0.025	0.025
Maximum Detection		4.97		1640	6.93	0.2

**Table D-7**  
**Volatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	1,2,4- Trimethylbenzene	1,2-Dichloroethane	1,3,5- Trimethylbenzene	Benzene	Ethylbenzene
DEQ RBC—Vapor Intrusion—Urban Residential		4,300	460	3,200	340	>S
DEQ RBC—Volatilization to Outdoor Air— Urban Residential		>S	3,400	>S	5,100	>S
MW-1 (F)	1/15/2004	0.09	0.25	0.25	2.79	1.99
MW-1 (F)	7/20/2004	0.37	0.25	0.25	0.23	2.48
MW-1 (F)	10/22/2003	1.64	0.25	0.42	0.41	3.65
MW-1 (F)	4/15/2004	0.36	0.25	0.25	0.1	0.66
MW-10 (M)	10/15/2003	6.3	0.5	1.34	319	182
MW-10 (M)	1/13/2004	4.05	0.25	4.55	50.3	24.9
MW-10 (M)	4/13/2004	3.71	0.25	3.15	52.4	32.1
MW-10 (M)	7/19/2004	4.16	0.25	4.76	34.4	7.38
MW-10 (M)	6/19/2003	26.1	0.25	7.58	21	25
MW-1-082302	8/23/2002	0.5	0.25	0.25	0.25	0.25
MW-11 (M)	10/15/2003	0.5	0.25	0.31	11.6	0.38
MW-11 (M)	1/13/2004	0.5	0.25	0.25	8.86	0.11
MW-11 (M)	4/13/2004	0.19	0.25	0.25	0.35	0.53
MW-11 (M)	7/21/2004	0.5	0.25	0.25	0.44	0.25
MW-11 (M)	6/19/2003	0.5	0.25	0.25	0.25	0.25
MW-12 (A)	1/15/2004	0.5	0.25	0.25	0.25	0.25
MW-12 (A)	7/22/2004	0.5	0.25	0.25	0.1	0.25
MW-12 (A)	10/22/2003	0.15	0.25	0.25	0.19	1.35
MW-12 (A)	4/16/2004	0.5	0.25	0.25	0.1	0.25
MW-13 (A)	1/15/2004	393	6.8	5	750	2270
MW-13 (A)	7/22/2004	8.6	5	45.4	256	1290
MW-13 (A)	10/22/2003	17.4	1.25	42.8	259	915
MW-13 (A)	4/16/2004	31	5	41.8	564	2190
MW-14 (A)	1/15/2004	0.09	0.25	0.25	0.65	3.28
MW-14 (A)	7/23/2004	0.5	0.25	0.25	0.1	0.25
MW-14 (A)	10/21/2003	0.53	0.25	0.17	0.77	2.36
MW-14 (A)	4/16/2004	0.5	0.25	0.25	0.1	0.25
MW-15 (A)	10/20/2003	7.37	0.26	6.87	127	27



**Table D-7**  
**Volatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	1,2,4- Trimethylbenzene	1,2-Dichloroethane	1,3,5- Trimethylbenzene	Benzene	Ethylbenzene
DEQ RBC—Vapor Intrusion—Urban Residential		4,300	460	3,200	340	>S
DEQ RBC—Volatilization to Outdoor Air— Urban Residential		>S	3,400	>S	5,100	>S
MW-16 (A)	7/22/2004	0.48	0.25	0.25	7.26	1.39
MW-16(A)	10/20/2003	2.09	0.25	0.93	11.4	1.86
MW-16(A)	1/19/2004	0.5	0.25	0.25	2.32	0.36
MW-16(A)	4/15/2004	0.5	0.25	0.25	11.7	1.1
MW-17 (A)	10/17/2003	3.19	0.25	0.54	9.19	14.7
MW-17 (A)	7/22/2004	0.44	0.25	0.25	1.22	0.86
MW-17(A)	1/19/2004	0.72	0.25	2.64	2.52	51.7
MW-17(A)	4/15/2004	0.44	0.25	1.73	2.69	29.3
MW-18 (A)	7/21/2004	0.09	0.25	0.34	44.1	1.92
MW-18(A)	10/21/2003	0.72	0.5	1.56	273	2.18
MW-18(A)	1/19/2004	0.29	0.25	1.15	138	5.45
MW-18(A)	4/15/2004	0.17	0.25	0.25	3.2	0.26
MW-19 (A)	1/13/2004	0.5	0.25	0.25	0.25	0.25
MW-19 (A)	7/20/2004	0.13	0.25	0.25	0.31	1.58
MW-19(A)	10/20/2003	0.5	0.25	0.25	0.25	0.25
MW-19(A)	4/15/2004	0.5	0.25	0.25	0.1	0.25
MW-2 (M)	10/15/2003	2.23	0.25	0.25	125	92.6
MW-2 (M)	1/12/2004	0.5	0.25	0.25	10.6	2.52
MW-2 (M)	7/22/2004	16.3	1.25	2.7	15.5	196
MW-2(M)	6/19/2003	100	1.25	14.6	48.4	756
MW-2(M)	4/14/2004	87.6	1.25	3.55	28.8	625
MW-20 (A)	1/13/2004	56.2	0.25	7.32	3.64	12.5
MW-20 (A)	7/20/2004	19.6	0.25	1.89	2.98	14.8
MW-20(A)	10/20/2003	15.9	0.25	2.06	16.9	20.2
MW-20(A)	4/15/2004	5.97	0.25	0.59	1.77	0.11
MW-21 (A)	1/13/2004	0.5	0.25	0.25	0.31	1.45
MW-21 (A)	7/20/2004	0.22	0.25	0.25	0.26	3.01
MW-21(A)	10/20/2003	0.2	0.25	0.24	0.25	3.1
MW-21(A)	4/16/2004	1.37	0.25	0.25	0.7	2.51

**Table D-7**  
**Volatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	1,2,4- Trimethylbenzene	1,2-Dichloroethane	1,3,5- Trimethylbenzene	Benzene	Ethylbenzene
DEQ RBC—Vapor Intrusion—Urban Residential		4,300	460	3,200	340	>S
DEQ RBC—Volatilization to Outdoor Air— Urban Residential		>S	3,400	>S	5,100	>S
MW-22 (A)	10/16/2003	0.5	U	0.25	U	52.9
MW-22 (A)	7/20/2004	0.5	U	0.25	U	1.25
MW-22 (A)	1/19/2004	0.5	U	0.25	U	0.3
MW-22 (A)	4/15/2004	0.5	U	0.25	U	0.19
MW-23 (A)	1/15/2004	0.1	U	0.25	U	0.52
MW-23 (A)	7/20/2004	0.5	U	0.25	U	0.25
MW-23 (A)	10/20/2003	0.5	U	0.25	U	0.25
MW-23 (A)	4/15/2004	2.7	U	0.84	3.04	14.8
MW-24 (A)	1/15/2004	232	2.5	33.9	2.7	60.1
MW-24 (A)	7/22/2004	48.3	0.25	1.4	0.55	29.5
MW-24 (A)	10/21/2003	2.05	0.25	1.35	0.62	7.69
MW-24 (A)	4/14/2004	55	0.25	3.87	0.16	28.4
MW-26 (A)	10/17/2003	600	1.25	135	3.05	373
MW-26 (A)	1/15/2004	3120	5	682	3	1280
MW-26 (A)	7/22/2004	3300	5	665	2	886
MW-26 (A)	4/14/2004	2580	5	565	2	852
MW-27 (A)	1/14/2004	0.5	U	0.25	U	0.25
MW-27 (A)	4/14/2004	0.5	U	0.25	U	0.25
MW-27 (A)	7/22/2004	0.5	U	0.25	U	0.37
MW-27 (A)	10/21/2003	0.5	U	0.25	U	0.12
MW-28 (A)	10/17/2003	566	2.5	138	208	334
MW-28 (A)	7/23/2004	130	1.25	28.4	72.2	141
MW-28 (A)	1/19/2004	942	2.5	204	702	902
MW-28 (A)	4/14/2004	250	2.5	51.2	179	247
MW-29 (A)	7/22/2004	2260	12.5	521	380	1750
MW-29 (A)	10/21/2003	1980	12.5	446	482	2480
MW-29 (A)	1/19/2004	2630	12.5	568	330	2640
MW-29 (A)	4/16/2004	1770	12.5	396	148	1840

**Table D-7**  
**Volatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	1,2,4- Trimethylbenzene	1,2-Dichloroethane	1,3,5- Trimethylbenzene	Benzene	Ethylbenzene
DEQ RBC—Vapor Intrusion—Urban Residential		4,300	460	3,200	340	>S
DEQ RBC—Volatilization to Outdoor Air— Urban Residential		>S	3,400	>S	5,100	>S
MW-30 (A)	10/16/2003	10	5	34.8	262	2080
MW-30 (A)	1/16/2004	33.6	5	14.2	341	1910
MW-30 (A)	4/13/2004	75.7	2.5	85.5	533	1850
MW-30 (A)	7/20/2004	3.4	5	60.6	407	2070
MW-31 (A)	10/16/2003	5	2.5	3.9	1170	706
MW-31 (A)	1/12/2004	5	2.5	2.2	1390	798
MW-31 (A)	4/13/2004	0.85	1.25	2.65	574	533
MW-31 (A)	7/20/2004	1.1	2.5	4.8	1020	911
MW-32 (A)	1/12/2004	0.5	0.25	0.25	0.25	0.25
MW-32 (A)	4/13/2004	0.5	0.25	0.25	0.1	0.25
MW-32 (A)	7/19/2004	0.5	0.25	0.25	0.1	0.25
MW-32(A)	10/14/2003	0.5	0.25	0.25	0.25	0.25
MW-33 (A)	1/12/2004	0.5	0.25	0.25	15	0.55
MW-33 (A)	4/13/2004	0.5	0.25	0.25	12.1	1.82
MW-33 (A)	7/19/2004	0.5	0.25	0.25	3.47	0.25
MW-33(A)	10/14/2003	0.5	0.25	0.25	3.49	0.25
MW-34 (A)	1/13/2004	0.5	0.25	0.25	0.25	0.25
MW-34 (A)	4/14/2004	0.5	0.25	0.25	0.1	0.21
MW-34 (A)	7/20/2004	0.5	0.25	0.25	0.1	0.25
MW-34(A)	10/14/2003	0.5	0.25	0.25	0.25	0.29
MW-35 (A)	10/16/2003	0.5	0.25	0.25	0.25	1.12
MW-35 (A)	1/16/2004	0.13	0.25	0.25	0.25	0.42
MW-35 (A)	4/13/2004	0.5	0.25	0.25	0.1	0.25
MW-35 (A)	7/20/2004	0.5	0.25	0.25	0.1	0.25
MW-36 (A)	1/14/2004	0.5	0.25	0.25	0.25	0.25
MW-36 (A)	4/14/2004	0.5	0.25	0.25	0.1	0.92
MW-36 (A)	7/22/2004	0.5	0.25	0.25	0.1	0.54
MW-36(A)	10/21/2003	0.15	0.25	0.25	0.25	0.25
MW-37 (A)	10/17/2003	12.2	0.25	2.96	0.16	17

**Table D-7**  
**Volatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	1,2,4- Trimethylbenzene	1,2-Dichloroethane	1,3,5- Trimethylbenzene	Benzene	Ethylbenzene
DEQ RBC—Vapor Intrusion—Urban Residential		4,300	460	3,200	340	>S
DEQ RBC—Volatilization to Outdoor Air— Urban Residential		>S	3,400	>S	5,100	>S
MW-38 (A)	1/14/2004	0.5 U	0.25 U	0.25 U	0.25 U	0.25 U
MW-38 (A)	4/14/2004	0.5 U	0.25 U	0.25 U	0.1 U	0.25 U
MW-38 (A)	7/22/2004	0.5 U	0.25 U	0.25 U	0.1 U	0.73 U
MW-38(A)	10/21/2003	0.5 U	0.25 U	0.25 U	0.25 U	0.25 U
MW-39 (A)	10/16/2003	19.7	0.25 U	3.02	3.98	10.9
MW-39 (A)	1/16/2004	14.4	0.25 U	2.7	3.37	10.8
MW-39 (A)	4/14/2004	6.04	0.25 U	1.12	3.4	9.92
MW-39 (A)	7/21/2004	7.49	0.25 U	1.9	1.7	6.32
MW-40 (A)	10/17/2003	40.6	1.25 U	8.7	81.2	650
MW-40(A)	1/20/2004	3170	5 U	527	7.8	2230
MW-40(A)	4/16/2004	3170	12.5 U	620	83.5	2510
MW-41(A)	10/14/2003	15.4	2.5 U	2.5 U	355	1260
MW-42 (A)	10/15/2003	44.8	5 U	11.2	3020	1850
MW-43 (A)	1/12/2004	0.5 U	0.25 U	0.25 U	10.9	3.56
MW-43 (A)	4/13/2004	0.5 U	0.25 U	0.25 U	0.1 U	0.48
MW-43 (A)	7/21/2004	0.5 U	0.25 U	0.25 U	0.1 U	0.25 U
MW-43(A)	10/13/2003	0.5 U	0.25 U	0.25 U	0.25 U	0.25 U
MW-44 (A)	10/17/2003	3470	12.5 U	898	898	2890
MW-45 (A)	10/16/2003	0.5 U	0.25 U	0.25 U	0.16	0.32
MW-45 (A)	1/16/2004	0.11	0.25 U	0.25 U	0.25 U	0.23
MW-45 (A)	4/14/2004	0.5 U	0.25 U	0.25 U	0.1 U	0.11
MW-45 (A)	7/21/2004	0.5 U	0.25 U	0.25 U	0.1 U	0.11
MW-46 (A)	4/12/2004	0.32	0.25 U	0.25 U	0.1 U	0.25 U
MW-46 (A)	7/21/2004	0.5 U	0.25 U	0.25 U	0.1 U	0.25 U
MW-46(A)	10/14/2003	0.5 U	0.25 U	0.25 U	0.25 U	0.25 U
MW-46(A)	1/14/2004	0.5 U	0.25 U	0.25 U	0.25 U	0.25 U
MW-47 (A)	1/14/2004	0.5 U	0.25 U	0.25 U	0.21	0.13
MW-47 (A)	4/12/2004	0.5 U	0.25 U	0.25 U	0.1 U	0.25 U
MW-47 (A)	7/21/2004	0.5 U	0.25 U	0.25 U	0.1 U	0.25 U
MW-47(A)	10/13/2003	0.5 U	0.25 U	0.25 U	0.25 U	0.25 U
MW-48 (A)	1/14/2004	0.5 U	0.25 U	0.25 U	0.25 U	0.25 U
MW-48 (A)	4/12/2004	0.5 U	0.25 U	0.25 U	0.1 U	0.25 U
MW-48 (A)	7/21/2004	0.5 U	0.25 U	0.25 U	0.1 U	0.25 U

**Table D-7**  
**Volatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	1,2,4- Trimethylbenzene	1,2-Dichloroethane	1,3,5- Trimethylbenzene	Benzene	Ethylbenzene
DEQ RBC—Vapor Intrusion—Urban Residential		4,300	460	3,200	340	>S
DEQ RBC—Volatilization to Outdoor Air— Urban Residential		>S	3,400	>S	5,100	>S
MW-48(A)	10/14/2003	0.5	U	0.25	U	0.25
MW-6 (M)	1/12/2004	0.92	U	0.2	U	0.25
MW-6 (M)	4/13/2004	0.5	U	0.25	U	0.25
MW-6 (M)	7/19/2004	0.5	U	0.25	U	0.25
MW-6(M)	6/19/2003	0.5	U	0.25	U	0.25
MW-6(M)	10/22/2003	0.5	U	0.25	U	0.41
MW-7 (M)	1/12/2004	0.5	U	0.25	U	0.25
MW-7 (M)	4/12/2004	0.5	U	0.25	U	0.25
MW-7 (M)	7/19/2004	0.5	U	0.25	U	0.25
MW-7(M)	6/19/2003	0.5	U	0.25	U	0.25
MW-7(M)	10/13/2003	0.5	U	0.25	U	0.25
R-1 (M)	10/22/2003	0.5	U	0.25	U	0.63
Number of Samples		159	79	159	159	159
Average Concentration		198	1.2	44	100	283
Median Concentration		0.5	0.25	0.25	0.41	0.92
Frequency of Detection		49.7	1.3	39.6	56.6	67.9
Minimum Value		0.09	0.25	0.17	0.1	0.11
Maximum Detection		3470	6.8	898	3020	2890

**Table D-7**  
**Volatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Isopropylbenzene	Methyl-t-butyl Ether	Naphthalene	N-Propylbenzene	Toluene	Xylenes, total
DEQ RBC—Vapor Intrusion—Urban Residential		>S	70,000	29,000	>S	>S	59,000
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		>S	410,000	>S	>S	>S	>S
MW-1 (F)	1/15/2004	2.1	1	U	1.13	0.25	U
MW-1 (F)	7/20/2004	0.18	1	U	0.4	0.32	2
MW-1 (F)	10/22/2003	0.17	1	U	0.26	7.08	16.3
MW-1 (F)	4/15/2004	0.19	1	U	0.26	0.25	U
MW-10 (M)	10/15/2003	18.5	2	U	48.6	19.3	49.6
MW-10 (M)	1/13/2004	27.5	1	U	28.9	15.3	46.9
MW-10 (M)	4/13/2004	23.1	1	U	21.7	10.5	55
MW-10 (M)	7/19/2004	28.9	1	U	37.1	6.09	31.2
MW-10 (M)	6/19/2003	27.8	1	U	26.8	5.55	49
MW-1-082302	8/23/2002	1	1	U	0.25	0.25	U
MW-11 (M)	10/15/2003	4.37	1	U	7.48	0.96	8.39
MW-11 (M)	1/13/2004	3.15	1	U	1.3	0.25	U
MW-11 (M)	4/13/2004	0.43	1	U	3.19	0.25	U
MW-11 (M)	7/21/2004	1	1	U	0.25	0.25	U
MW-11 (M)	6/19/2003	1	1	U	0.25	0.25	U
MW-12 (A)	1/15/2004	1	1	U	0.25	0.25	U
MW-12 (A)	7/22/2004	1	1	U	0.25	0.25	U
MW-12 (A)	10/22/2003	1	1	U	0.25	2.77	3.77
MW-12 (A)	4/16/2004	1	1	U	0.25	0.25	U
MW-13 (A)	1/15/2004	225	20	U	676	82.4	578
MW-13 (A)	7/22/2004	137	20	U	355	30	50.4
MW-13 (A)	10/22/2003	94.7	5	U	228	26.6	94.6
MW-13 (A)	4/16/2004	233	20	U	657	58	110
MW-14 (A)	1/15/2004	0.28	1	U	0.66	0.25	U
MW-14 (A)	7/23/2004	1	1	U	0.25	0.25	U
MW-14 (A)	10/21/2003	0.11	1	U	0.2	5.91	6.82
MW-14 (A)	4/16/2004	1	1	U	0.25	0.25	U
MW-15 (A)	10/20/2003	42.4	0.93	2.11	90.3	13.5	40.7

**Table D-7**  
**Volatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Isopropylbenzene	Methyl-t-butyl Ether	Naphthalene	N-Propylbenzene	Toluene	Xylenes, total
DEQ RBC—Vapor Intrusion—Urban Residential		>S	70,000	29,000	>S	>S	59,000
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		>S	410,000	>S	>S	>S	>S
MW-16 (A)	7/22/2004	13.3	1 U	0.49	25.1	2.15	2.83
MW-16(A)	10/20/2003	7.81	1 U	1 U	12.3	1.43	9.74
MW-16(A)	1/19/2004	3.79	1 U	0.28	5.44	0.25 U	0.5 U
MW-16(A)	4/15/2004	28.8	0.38	0.86	29.9	0.71	0.34
MW-17 (A)	10/17/2003	2.9	1 U	4.88	7.97	25.5	35.3
MW-17 (A)	7/22/2004	1.85	1 U	0.66	4.37	1.46	1.83
MW-17(A)	1/19/2004	6.55	1 U	19	17.4	1.05	20.1
MW-17(A)	4/15/2004	7.78	1 U	15.6	23	0.67	8.65
MW-18 (A)	7/21/2004	9.41	1 U	0.52	19	3.18	1.68
MW-18(A)	10/21/2003	25.8	0.98	2 U	45	21.1	22.4
MW-18(A)	1/19/2004	13.8	1 U	1.53	26.9	13.9	18.9
MW-18(A)	4/15/2004	2.09	0.2	0.99	1.6	0.68	0.82
MW-19 (A)	1/13/2004	1 U	1 U	1 U	0.25 U	0.25 U	0.5 U
MW-19 (A)	7/20/2004	1 U	1 U	1.09	0.2	0.19	0.61
MW-19(A)	10/20/2003	1 U	0.23	1 U	0.25 U	0.25 U	0.5 U
MW-19(A)	4/15/2004	1 U	1 U	1 U	0.25 U	0.25 U	0.5 U
MW-2 (M)	10/15/2003	42.9	1 U	125	159	8.5	21.3
MW-2 (M)	1/12/2004	10.2	1 U	3.42	47.8	0.51	0.86
MW-2 (M)	7/22/2004	50.6	5 U	179	206	7.35	29.4
MW-2(M)	6/19/2003	70.2	5 U	656	270	15.5	369
MW-2(M)	4/14/2004	54.7	5 U	334	212	13.4	342
MW-20 (A)	1/13/2004	6.54	1 U	36.5	8.92	0.88	46.2
MW-20 (A)	7/20/2004	4.03	1 U	5.12	3	1.18	63.3
MW-20(A)	10/20/2003	1.88	1 U	11.1	3.62	1.29	121
MW-20(A)	4/15/2004	1.16	1 U	1.94	2.02	0.25 U	1.08
MW-21 (A)	1/13/2004	2.53	1 U	4.01	7.59	0.25 U	0.46
MW-21 (A)	7/20/2004	3.9	1 U	2.96	13.3	0.17	0.88
MW-21(A)	10/20/2003	2.5	1 U	3.04	7.31	0.25 U	1.73
MW-21(A)	4/16/2004	2.59	1 U	1.11	3.97	0.52	5.41

**Table D-7**  
**Volatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Isopropylbenzene	Methyl-t-butyl Ether	Naphthalene	N-Propylbenzene	Toluene	Xylenes, total
DEQ RBC—Vapor Intrusion—Urban Residential		>S	70,000	29,000	11,000	>S	59,000
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		>S	410,000	>S	>S	>S	>S
MW-22 (A)	10/16/2003	2.78	1	U	7	2.96	7.82
MW-22 (A)	7/20/2004	1	1	U	0.18	0.25	0.46
MW-22(A)	1/19/2004	1	1	U	0.25	0.25	0.5
MW-22(A)	4/15/2004	1	1	U	0.25	0.25	0.5
MW-23 (A)	1/15/2004	1	1	U	0.17	0.25	0.38
MW-23 (A)	7/20/2004	1	1	U	0.25	0.25	0.5
MW-23(A)	10/20/2003	1	1	U	0.15	0.25	0.5
MW-23(A)	4/15/2004	3.27	1	U	6.02	1.13	14.5
MW-24 (A)	1/15/2004	4.8	10	U	9.7	2.5	116
MW-24 (A)	7/22/2004	3.2	1	U	6.53	0.98	15.6
MW-24(A)	10/21/2003	0.94	1	U	2.01	1.17	10.5
MW-24(A)	4/14/2004	4.54	1	U	11.1	0.25	30.7
MW-26 (A)	10/17/2003	32	5	U	83.3	18.4	1040
MW-26 (A)	1/15/2004	104	20	U	280	24.2	5500
MW-26 (A)	7/22/2004	102	20	U	278	17.2	3430
MW-26(A)	4/14/2004	96	20	U	251	14.8	3060
MW-27 (A)	1/14/2004	1	1	U	0.25	0.25	0.5
MW-27 (A)	4/14/2004	1	1	U	0.25	0.25	0.5
MW-27 (A)	7/22/2004	1	1	U	0.25	0.25	0.5
MW-27(A)	10/21/2003	1	1	U	0.25	0.25	0.5
MW-28 (A)	10/17/2003	24.4	10	U	85.6	201	1070
MW-28 (A)	7/23/2004	6.55	5	U	18.2	15.8	412
MW-28(A)	1/19/2004	30.1	10	U	92.4	696	4000
MW-28(A)	4/14/2004	16.2	10	U	37.4	88.9	874
MW-29 (A)	7/22/2004	98.5	50	U	270	5520	8130
MW-29(A)	10/21/2003	86	50	U	234	5160	13300
MW-29(A)	1/19/2004	82	50	U	241	8170	13500
MW-29(A)	4/16/2004	69.5	50	U	188	3780	8920



**Table D-7**  
**Volatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Isopropylbenzene	Methyl-t-butyl Ether	Naphthalene	N-Propylbenzene	Toluene	Xylenes, total
DEQ RBC—Vapor Intrusion—Urban Residential		>S	70,000	29,000	>S	>S	59,000
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		>S	410,000	>S	>S	>S	>S
MW-30 (A)	10/16/2003	88.8	20 U	1130	238	110	663
MW-30 (A)	1/16/2004	79	20 U	1200	232	127	378
MW-30 (A)	4/13/2004	70.2	10 U	1030	170	243	2140
MW-30 (A)	7/20/2004	83.2	20 U	1240	218	128	1330
MW-31 (A)	10/16/2003	54.4	10 U	16.2	152	38.4	138
MW-31 (A)	1/12/2004	44.2	10 U	13.5	121	109	189
MW-31 (A)	4/13/2004	35.2	5 U	145	80.2	35.9	127
MW-31 (A)	7/20/2004	44.8	10 U	191	119	67.9	356
MW-32 (A)	1/12/2004	1 U	1 U	1 U	0.25 U	0.25 U	0.5 U
MW-32 (A)	4/13/2004	1 U	1 U	1 U	0.25 U	0.25 U	0.5 U
MW-32 (A)	7/19/2004	1 U	1 U	1 U	0.25 U	0.25 U	0.5 U
MW-32 (A)	10/14/2003	1 U	1 U	1 U	0.25 U	0.25 U	0.5 U
MW-33 (A)	1/12/2004	3.71	1 U	0.19	8.13	2.16	4.16
MW-33 (A)	4/13/2004	4.07	1 U	1 U	8.46	0.83	2.13
MW-33 (A)	7/19/2004	0.89	1 U	1 U	1.61	0.62	0.65
MW-33 (A)	10/14/2003	0.35	1 U	1 U	0.63	0.25 U	0.28
MW-34 (A)	1/13/2004	1 U	1 U	1 U	0.25 U	0.25 U	0.5 U
MW-34 (A)	4/14/2004	1 U	1 U	1 U	0.25 U	0.25 U	0.5 U
MW-34 (A)	7/20/2004	1 U	1 U	1 U	0.25 U	0.25 U	0.5 U
MW-34 (A)	10/14/2003	1 U	1 U	1 U	0.25 U	0.25 U	0.5 U
MW-35 (A)	10/16/2003	1 U	1 U	1.04	0.17	0.25 U	0.5 U
MW-35 (A)	1/16/2004	1 U	1 U	0.31	0.18	0.25 U	0.5 U
MW-35 (A)	4/13/2004	1 U	1 U	1 U	0.25 U	0.25 U	0.5 U
MW-35 (A)	7/20/2004	1 U	1 U	1 U	0.25 U	0.25 U	0.5 U
MW-36 (A)	1/14/2004	1 U	1 U	0.68	0.25 U	0.25 U	0.5 U
MW-36 (A)	4/14/2004	1 U	1 U	0.84	0.25 U	0.25 U	0.5 U
MW-36 (A)	7/22/2004	1 U	1 U	1 U	0.14	0.25 U	0.5 U
MW-36 (A)	10/21/2003	1 U	1 U	1 U	0.25 U	0.25 U	0.28
MW-37 (A)	10/17/2003	6.72	1 U	21.5	10.4	0.72	30.6

**Table D-7**  
**Volatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Isopropylbenzene	Methyl-t-butyl Ether	Naphthalene	N-Propylbenzene	Toluene	Xylenes, total
DEQ RBC—Vapor Intrusion—Urban Residential		>S	70,000	29,000	>S	>S	59,000
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		>S	410,000	>S	>S	>S	>S
MW-38 (A)	1/14/2004	1	1	1	0.15	0.25	0.5
MW-38 (A)	4/14/2004	1	1	0.5	0.25	0.25	0.5
MW-38 (A)	7/22/2004	0.2	1	0.48	0.51	0.25	0.5
MW-38(A)	10/21/2003	1	1	1	0.25	0.25	0.5
MW-39 (A)	10/16/2003	3.42	1	22.8	5.33	0.25	21.6
MW-39 (A)	1/16/2004	3.34	1	23.4	4.57	0.25	28.8
MW-39 (A)	4/14/2004	3.36	1	18.7	6.58	0.6	11.7
MW-39 (A)	7/21/2004	2.77	1	13.8	4.4	0.26	13.2
MW-40 (A)	10/17/2003	44.8	5	82.5	86.4	57.6	367
MW-40(A)	1/20/2004	98	20	1220	334	833	6460
MW-40(A)	4/16/2004	98.5	50	1500	325	1530	8150
MW-41(A)	10/14/2003	38.1	10	105	88.9	103	192
MW-42 (A)	10/15/2003	63.4	20	190	226	163	370
MW-43 (A)	1/12/2004	1	1	1	0.25	0.25	0.5
MW-43 (A)	4/13/2004	1	1	1	3.76	0.25	0.5
MW-43 (A)	7/21/2004	1	1	1	0.25	0.25	0.5
MW-43(A)	10/13/2003	1	1	1	0.25	0.25	0.5
MW-44 (A)	10/17/2003	94	50	1050	388	5320	14900
MW-45 (A)	10/16/2003	1	1	1.11	0.21	0.25	0.5
MW-45 (A)	1/16/2004	1	1	1	0.25	0.25	0.5
MW-45 (A)	4/14/2004	1	1	1	0.25	0.25	0.5
MW-45 (A)	7/21/2004	1	1	1	0.25	0.25	0.5
MW-46 (A)	4/12/2004	1	1	1	0.25	0.25	0.5
MW-46 (A)	7/21/2004	1	1	1	0.25	0.25	0.5
MW-46(A)	10/14/2003	1	1	1	0.25	0.25	0.5
MW-46(A)	1/14/2004	1	1	1	0.25	0.25	0.5
MW-47 (A)	1/14/2004	1	1	1	0.25	0.25	0.5
MW-47 (A)	4/12/2004	1	1	1	0.25	0.25	0.5
MW-47 (A)	7/21/2004	1	1	1	0.25	0.25	0.5
MW-47(A)	10/13/2003	1	1	1	0.25	0.25	0.5
MW-48 (A)	1/14/2004	1	1	1	0.25	0.25	0.5
MW-48 (A)	4/12/2004	1	1	1	0.25	0.25	0.5
MW-48 (A)	7/21/2004	1	1	1	0.25	0.25	0.5

**Table D-7**  
**Volatile Organic Compounds in Groundwater and Urban Resident Risk-Based Concentrations (µg/L)**  
**Astoria Area-Wide Petroleum Site**  
**Astoria, Oregon**

Sample ID	Sample Date	Isopropylbenzene	Methyl-t-butyl Ether	Naphthalene	N-Propylbenzene	Toluene	Xylenes, total
DEQ RBC—Vapor Intrusion—Urban Residential		>S	70,000	29,000	>S	>S	59,000
DEQ RBC—Volatilization to Outdoor Air—Urban Residential		>S	410,000	>S	>S	>S	>S
MW-48(A)	10/14/2003	1	1	0.76	0.25	0.25	0.5
MW-6 (M)	1/12/2004	0.27	1	0.4	0.49	0.25	0.5
MW-6 (M)	4/13/2004	1	1	1	0.25	0.25	0.5
MW-6 (M)	7/19/2004	1	1	1	0.25	0.25	0.5
MW-6(M)	6/19/2003	1	1	1	0.25	0.25	0.5
MW-6(M)	10/22/2003	1	1	1	0.25	0.25	0.5
MW-7 (M)	1/12/2004	1	1	1	0.25	0.25	0.5
MW-7 (M)	4/12/2004	1	1	1	0.25	0.25	0.5
MW-7 (M)	7/19/2004	0.12	1	0.26	0.17	0.25	0.5
MW-7(M)	6/19/2003	1	1	1	0.25	0.25	0.5
MW-7(M)	10/13/2003	1	1	1	0.25	0.25	0.5
R-1(M)	10/22/2003	1	1	1	0.25	0.25	0.5
Number of Samples		159	159	159	159	159	159
Average Concentration		19	4.9	129	52	208	639
Median Concentration		1	1	1	1.13	0.25	0.5
Frequency of Detection		55.3	3.1	56.0	61.6	45.9	54.1
Minimum Value		0.11	0.2	0.19	0.14	0.17	0.28
Maximum Detection		233	0.98	1500	676	8170	14900