

TABLE D-16

DISSOLVED METALS IN GROUND WATER

Remedial Investigation/Feasibility Study
Astoria Area-Wide Petroleum Site
Astoria, Oregon

Locator ID	Sample ID	Sample Date	Arsenic, Total	Barium	Cadmium	Chromium	Chromium, Hexavalent	Lead
			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-1(F)	MW-1 (F)	1/15/2004	1.4	60.9	1 U	1 U		1 U B
MW-2(M)	MW-2 (M)	10/15/2003	19.3	11.8	1 U	1.37		2.03
MW-6(M)	MW-6(M)	6/19/2003						10 U
MW-6(M)	MW-6(M)	10/22/2003	13.3	12.4	1 U	1.32		0.27 J
MW-7(M)	BM-7(M)	6/19/2003						10 U
MW-7(M)	MW-7(M)	6/19/2003						10 U
MW-7(M)	MW-7(M)	10/13/2003	9.85	17.8	1 U	1 U		1 U
MW-10(M)	MW-10 (M)	1/13/2004	26.4	38.2	1 U	1 U		0.37 J
MW-11(M)	MW-11(M)	6/19/2003						10 U
MW-11(M)	MW-11 (M)	10/15/2003	14.8	10	0.14 J	1.02		0.24 J
MW-12(A)	MW-12(A)	10/22/2003	1 U	39.5	1 U	1 U		0.24 J
MW-13(A)	MW-13(A)	10/22/2003	1 U	14.3	1 U	1.18		0.74 J
MW-14(A)	MW-14(A)	10/21/2003	1 U	27.7	1 U	1 U		0.21 J
MW-15(A)	MW-15(A)	10/20/2003	1 U	32.8	1 U	1 U		0.32 J
MW-16(A)	MW-16(A)	10/20/2003	1 U	25.4	1 U	1 U		0.34 J
MW-17(A)	MW-17 (A)	10/17/2003	1 U	36.2	1 U	1 U		0.1 J
MW-18(A)	MW-18(A)	10/21/2003	1 U	44.3	1 U	1 U		0.19 J

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Locator ID	Sample ID	Sample Date	Arsenic, Total	Barium	Cadmium	Chromium	Chromium, Hexavalent	Lead
			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-19(A)	BM-19(A)	10/20/2003	1.88	26.4	1 U	1 U		0.14 J
MW-19(A)	MW-19(A)	10/20/2003	1.73	28.8	1 U	1 U		0.39 J
MW-20(A)	MW-20(A)	10/20/2003	1.18	15	1 U	1 U		0.22 J
MW-21(A)	MW-21(A)	10/20/2003	1 U	15.2	1 U	1 U		0.43 J
MW-22(A)	MW-22 (A)	10/16/2003	1 U	17	1 U	1.04		0.19 J
MW-23(A)	MW-23(A)	10/20/2003	1 U	24.7	1 U	1 U		0.33 J
MW-24(A)	MW-24(A)	10/21/2003	2.43	57.2	1 U	1 U		0.33 J
MW-26(A)	MW-26 (A)	10/17/2003	1 U	52	1 U	1 U		1.16
MW-27(A)	MW-27(A)	10/21/2003	0.99 J	11.9	0.1 J	1 U		0.3 J
MW-28(A)	MW-28 (A)	10/17/2003	1 U	38.1	1 U	1 U		1.02
MW-29(A)	MW-29(A)	10/21/2003	5.97	19.7	1 U	1 U		3
MW-30(A)	MW-30 (A)	10/16/2003	6.93	27.6	1 U	1.25		0.44 J
MW-31(A)	BM-31 (A)	10/16/2003	13.3	23.3	1 U	0.99 J		1 U
MW-31(A)	MW-31 (A)	10/16/2003	15.3	25.2	1 U	1.11		0.18 J
MW-32(A)	MW-32(A)	10/14/2003	2.28	25	1 U	1 U		0.13 J

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Astoria, Oregon

Locator ID	Sample ID	Sample Date	Arsenic, Total	Barium	Cadmium	Chromium	Chromium, Hexavalent	Lead
			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-33(A)	MW-33(A)	10/14/2003	18.2	15.5	1 U	1 U		0.14 J
MW-34(A)	MW-34(A)	10/14/2003	1 U	23.5	1 U	1 U		0.14 J
MW-35(A)	MW-35 (A)	10/16/2003	1 U	13.2	1 U	0.92 J		1 U
MW-36(A)	MW-36(A)	10/21/2003	1 U	82.7	1 U	1 U		0.98 J
MW-37(A)	MW-37 (A)	10/17/2003	1 U	24.8	1 U	2.03		0.41 J
MW-38(A)	MW-38(A)	10/21/2003	1 U	20	1 U	1 U		0.24 J
MW-39(A)	MW-39 (A)	10/16/2003	1.79	6.83	1 U	0.86 J		0.19 J
MW-40(A)	MW-40 (A)	10/17/2003	1.86	22.2	1 U	1.3		0.27 J
MW-41(A)	MW-41(A)	10/14/2003	12.4	23	1 U	1 U		1 U
MW-42(A)	MW-42 (A)	10/15/2003	35.6	20.2	1 U	1 U		0.48 J
MW-43(A)	MW-43(A)	10/13/2003	7.34	23.4	1 U	1 U		0.14 J
MW-44(A)	MW-44 (A)	10/17/2003	11.9	13	1 U	1.09		0.29 J
MW-45(A)	MW-45 (A)	10/16/2003	2.25	3.79	1 U	0.97 J		0.16 J
MW-46(A)	MW-46(A)	10/14/2003	1 U	9.1	1 U	54.3		0.29 J
MW-46(A)	MW-46(A)	11/10/2004				22.1	18.6	
MW-46(A)	MW-46(A)	2/8/2005				24.9	10 U	

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Locator ID	Sample ID	Sample Date	Arsenic, Total	Barium	Cadmium	Chromium	Chromium, Hexavalent	Lead
			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MW-46(A)	MW-102	6/29/2005				10.3	10 U	
MW-46(A)	MW-46(A)	6/29/2005				11.6	10 U	
MW-47(A)	MW-47(A)	10/13/2003	1 U	17.4	1 U	0.79 U		0.18 J
MW-47(A)	MW-47(A)	2/8/2005				5.51	10 U	
MW-47(A)	MW-47(A)	6/29/2005				1.82	10 U	
MW-48(A)	MW-48(A)	10/14/2003	1 U	31.4	1 U	0.79 U		0.51 J
MW-48(A)	MW-48(A)	2/8/2005				1 U	10 U	
MW-48(A)	MW-48(A)	6/29/2005				1 U	10 U	
MW-48(A)	MW-101	6/29/2005				1 U	10 U	
TW-100(C)	SB100(C)W	8/22/2002	5.57	229	1 U	24.1		22.3
TW-200(C)	SB200(C)W	8/22/2002	1.94	39.3	1 U	5.99		3.35
TW-201(C)	SB201(C)W	8/22/2002	2.76	54.5	1 U	8.37		4.81
TW-202(C)	SB202(C)W	8/22/2002	2.99	66.9	1 U	9.05		6.56
TW-203(C)	SB203(C)W	8/22/2002	1.53	45	1 U	4.22		2.84
TW-204(C)	SB204(C)W	8/22/2002	2.22	17.8	1 U	2.48		2.29
TW-204(C)	SB204(C)W2	8/22/2002	2.25	17	1 U	2.26		2.29
TW-305(D)	SB-305-D-9.0	8/19/2002						1.52
TW-311(D)	SB-311-D-10.0	8/19/2002						0.19 J
TW-312(D)	SB-312-D-10.0	8/19/2002						0.27 J
TW-313(D)	TW-313-D-22.0	8/20/2002						0.23 J
TW-318(D)	TW-318-D-22.0	8/20/2002						1 U
TW-600(N)	TW-600(N)	9/13/2002						1 U
TW-601(N)	TW-601(N)	9/13/2002						1 U

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Astoria, Oregon

Locator ID	Sample ID	Sample Date	Arsenic, Total	Barium	Cadmium	Chromium	Chromium, Hexavalent	Lead
			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
TW-602(N)	BT-602(N)	9/13/2002						1 U
TW-602(N)	TW-602(N)	9/13/2002						1 U
TW-603(N)	TW-603(N)	9/13/2002						1 U
TW-608(N)	TW-608 (N)	9/13/2002						1 U
TW-612(N)	TW-612(N)	9/12/2002						1 U
TW-616(N)	TW-616(N)	9/12/2002						1.01
TW-619(N)	TW-619(N)	9/12/2002						1 U
TW-623(N)	TW-623(N)	9/12/2002						1 U
TW-624(N)	TW-624(N)	9/12/2002			1 U	1 U		1 U
TW-700(P)	TW-700(P)	8/21/2002	6.64	10.2	1 U	1 U		1 U
TW-701(P)	TW-701(P)	8/20/2002	12.2	12.4	1 U	1 U		1 U
TW-702(P)	TW-702(P)	8/21/2002	1 U	5.68	1 U	1 U		1 U
TW-703(P)	TW-703(P)	8/21/2002	64.6	20.2	1 U	U B		1 U
TW-704(P)	TW-704(P)	8/21/2002	1 U	11.6	1 U	U B		1 U
TW-705(P)	TW-705(P)	8/20/2002	5.29	11.9	1 U	1 U		1 U
TW-706(P)	TW-706(P)	8/21/2002	6.72	10.2	1 U	1 U		1 U
TW-708(P)	BT-708(P)	8/20/2002	6.7	25.2	1 U	1 U		1 U
TW-708(P)	TW-708(P)	8/20/2002	6.08	26	1 U	1.06		1 U
TW-710(P)	TW-710(P)	8/21/2002	1.56	8.93	1 U	U B		1 U
TW-712(P)	TW-712(P)	8/21/2002	2.37	18.3	1 U	U B		1 U
TW-716(P)	TW-716(P)	8/20/2002						1 U
TW-717(P)	TW-717(P)	8/20/2002						1 U
TW-719(P)	BT-719(P)	8/23/2002						1 U
TW-719(P)	TW-719(P)	8/23/2002						1 U
TW-720(P)	TW-720(P)	8/23/2002						1.59 JB
TW-900(S)	SB-900(TW)	8/26/2002			1 U	1 U		1 U
TW-901(S)	SB-901(TW)	8/26/2002			1 U	1		1.18

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			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
TW-902(S)	SB-902(TW)	8/26/2002			1 U	1 U		1 U
TW-903(S)	SB-903(TW)	8/26/2002			1 U	1.19		1 U
TW-904(S)	SB-904(TW)	8/26/2002			1 U	1.15		1 U
TW-905(S)	SB-905(TW)	8/26/2002			1 U	5.48		4.62
TW-906(S)	SB-906(TW)	8/27/2002			1 U	1 U		1 U
TW-908(S)	SB-908(TW)	8/27/2002			1 U	1 U		1 U
TW-909(S)	SB-909(TW)	8/27/2002			1 U	1 U		1 U
TW-910(S)	SB-910(TW)	8/26/2002			1 U	1.06		1 U
TW-911(S)	SB-911(TW)	8/27/2002			1 U	1 U		1 U

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Astoria, Oregon

Locator ID	Sample ID	Sample Date	Mercury	Selenium	Silver
			ug/L	ug/L	ug/L
MW-1(F)	MW-1 (F)	1/15/2004	0.2 U	1.41	1 U
MW-2(M)	MW-2 (M)	10/15/2003	0.2 U B	2 U B	1 U
MW-6(M)	MW-6(M)	6/19/2003			
MW-6(M)	MW-6(M)	10/22/2003	0.038 J	0.76 J	1 U
MW-7(M)	BM-7(M)	6/19/2003			
MW-7(M)	MW-7(M)	6/19/2003			
MW-7(M)	MW-7(M)	10/13/2003	0.2 U B	0.93 J	1 U
MW-10(M)	MW-10 (M)	1/13/2004	0.2 U	1.19 J+,B	0.07 J
MW-11(M)	MW-11(M)	6/19/2003			
MW-11(M)	MW-11 (M)	10/15/2003	0.2 U B	2 U B	1 U
MW-12(A)	MW-12(A)	10/22/2003	0.2 U	5 U B	1 U
MW-13(A)	MW-13(A)	10/22/2003	0.2 U	5 U B	1 U
MW-14(A)	MW-14(A)	10/21/2003	0.2 U	5 U B	1 U
MW-15(A)	MW-15(A)	10/20/2003	0.2 U	1 U	1 U
MW-16(A)	MW-16(A)	10/20/2003	0.2 U	1 U B	1 U
MW-17(A)	MW-17 (A)	10/17/2003	0.2 U	1 U B	1 U
MW-18(A)	MW-18(A)	10/21/2003	0.072 J	1 U B	1 U

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Locator ID	Sample ID	Sample Date	Mercury	Selenium	Silver
			ug/L	ug/L	ug/L
MW-19(A)	BM-19(A)	10/20/2003	0.2 U	1 U B	1 U
MW-19(A)	MW-19(A)	10/20/2003	0.2 U	1 U B	1 U
MW-20(A)	MW-20(A)	10/20/2003	0.2 U	1 U	1 U
MW-21(A)	MW-21(A)	10/20/2003	0.2 U	1 U B	1 U
MW-22(A)	MW-22 (A)	10/16/2003	0.2 U B	2 U B	1 U
MW-23(A)	MW-23(A)	10/20/2003	0.2 U	1 U	1 U
MW-24(A)	MW-24(A)	10/21/2003	0.2 U	1.27 J+,B	1 U
MW-26(A)	MW-26 (A)	10/17/2003	0.2 U B	1 U B	1 U
MW-27(A)	MW-27(A)	10/21/2003	0.2 U	1.6 J+,B	1 U
MW-28(A)	MW-28 (A)	10/17/2003	0.2 U B	1 U B	1 U
MW-29(A)	MW-29(A)	10/21/2003	0.088 J	5 U	1 U
MW-30(A)	MW-30 (A)	10/16/2003	0.2 U B	2 U B	1 U
MW-31(A)	BM-31 (A)	10/16/2003	0.2 U	1 U	1 U
MW-31(A)	MW-31 (A)	10/16/2003	0.2 U B	1 U B	1 U
MW-32(A)	MW-32(A)	10/14/2003	0.2 U	1 U	1 U

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Locator ID	Sample ID	Sample Date	Mercury	Selenium	Silver
			ug/L	ug/L	ug/L
MW-33(A)	MW-33(A)	10/14/2003	0.2 U B	1 U	1 U
MW-34(A)	MW-34(A)	10/14/2003	0.2 U	1 U	1 U
MW-35(A)	MW-35 (A)	10/16/2003	0.2 U J	1 U	1 U
MW-36(A)	MW-36(A)	10/21/2003	0.2 U	2.61 J+,B	1 U
MW-37(A)	MW-37 (A)	10/17/2003	0.2 U B	1 U B	1 U
MW-38(A)	MW-38(A)	10/21/2003	0.2 U	1.34 J+,B	1 U
MW-39(A)	MW-39 (A)	10/16/2003	0.2 U B	1.11 J+,B	1 U
MW-40(A)	MW-40 (A)	10/17/2003	0.2 U B	1 U	1 U
MW-41(A)	MW-41(A)	10/14/2003	0.2 U B	1 U	1 U
MW-42(A)	MW-42 (A)	10/15/2003	0.2 U B	2 U B	1 U
MW-43(A)	MW-43(A)	10/13/2003	0.2 U	0.96 J	1 U
MW-44(A)	MW-44 (A)	10/17/2003	0.2 U B	1 U B	1 U
MW-45(A)	MW-45 (A)	10/16/2003	0.2 U	1 U	1 U
MW-46(A)	MW-46(A)	10/14/2003	0.2 U B	1 U	1 U
MW-46(A)	MW-46(A)	11/10/2004			
MW-46(A)	MW-46(A)	2/8/2005			

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Locator ID	Sample ID	Sample Date	Mercury	Selenium	Silver
			ug/L	ug/L	ug/L
MW-46(A)	MW-102	6/29/2005			
MW-46(A)	MW-46(A)	6/29/2005			
MW-47(A)	MW-47(A)	10/13/2003	0.2 U	1 U	1 U
MW-47(A)	MW-47(A)	2/8/2005			
MW-47(A)	MW-47(A)	6/29/2005			
MW-48(A)	MW-48(A)	10/14/2003	0.2 U J	1 U	1 U
MW-48(A)	MW-48(A)	2/8/2005			
MW-48(A)	MW-48(A)	6/29/2005			
MW-48(A)	MW-101	6/29/2005			
TW-100(C)	SB100(C)W	8/22/2002	0.2 U	2.17	1 U
TW-200(C)	SB200(C)W	8/22/2002	0.2 U	1 U	1 U
TW-201(C)	SB201(C)W	8/22/2002	0.2 U	1 U	1 U
TW-202(C)	SB202(C)W	8/22/2002	0.2 U	1 U	1 U
TW-203(C)	SB203(C)W	8/22/2002	0.2 U	1 U	1 U
TW-204(C)	SB204(C)W	8/22/2002	0.2 U	1 U	1 U
TW-204(C)	SB204(C)W2	8/22/2002	0.2 U	1 U	1 U
TW-305(D)	SB-305-D-9.0	8/19/2002			
TW-311(D)	SB-311-D-10.0	8/19/2002			
TW-312(D)	SB-312-D-10.0	8/19/2002			
TW-313(D)	TW-313-D-22.0	8/20/2002			
TW-318(D)	TW-318-D-22.0	8/20/2002			
TW-600(N)	TW-600(N)	9/13/2002			
TW-601(N)	TW-601(N)	9/13/2002			

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			ug/L	ug/L	ug/L
TW-602(N)	BT-602(N)	9/13/2002			
TW-602(N)	TW-602(N)	9/13/2002			
TW-603(N)	TW-603(N)	9/13/2002			
TW-608(N)	TW-608 (N)	9/13/2002			
TW-612(N)	TW-612(N)	9/12/2002			
TW-616(N)	TW-616(N)	9/12/2002			
TW-619(N)	TW-619(N)	9/12/2002			
TW-623(N)	TW-623(N)	9/12/2002			
TW-624(N)	TW-624(N)	9/12/2002			
TW-700(P)	TW-700(P)	8/21/2002	0.2 U	1 U	1 U
TW-701(P)	TW-701(P)	8/20/2002	0.2 U	1 U	1 U
TW-702(P)	TW-702(P)	8/21/2002	0.2 U	1 U	1 U
TW-703(P)	TW-703(P)	8/21/2002	0.2 U	1 U	1 U
TW-704(P)	TW-704(P)	8/21/2002	0.2 U	1 U	1 U
TW-705(P)	TW-705(P)	8/20/2002	0.2 U	U B	1 U
TW-706(P)	TW-706(P)	8/21/2002	0.2 U	1 U	1 U
TW-708(P)	BT-708(P)	8/20/2002	0.2 U	U B	U B
TW-708(P)	TW-708(P)	8/20/2002	0.2 U	U B	1 U
TW-710(P)	TW-710(P)	8/21/2002	0.2 U	1.41	1 U
TW-712(P)	TW-712(P)	8/21/2002	0.2 U	1 U	1 U
TW-716(P)	TW-716(P)	8/20/2002			
TW-717(P)	TW-717(P)	8/20/2002			
TW-719(P)	BT-719(P)	8/23/2002			
TW-719(P)	TW-719(P)	8/23/2002			
TW-720(P)	TW-720(P)	8/23/2002			
TW-900(S)	SB-900(TW)	8/26/2002			
TW-901(S)	SB-901(TW)	8/26/2002			

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Locator ID	Sample ID	Sample Date	Mercury	Selenium	Silver
			ug/L	ug/L	ug/L
TW-902(S)	SB-902(TW)	8/26/2002			
TW-903(S)	SB-903(TW)	8/26/2002			
TW-904(S)	SB-904(TW)	8/26/2002			
TW-905(S)	SB-905(TW)	8/26/2002			
TW-906(S)	SB-906(TW)	8/27/2002			
TW-908(S)	SB-908(TW)	8/27/2002			
TW-909(S)	SB-909(TW)	8/27/2002			
TW-910(S)	SB-910(TW)	8/26/2002			
TW-911(S)	SB-911(TW)	8/27/2002			