

Table 8-1
Roadmap to Requested Contents
Northwest Pipe Company

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Table 8-2
Analytical Summary of Stormwater Samples
Northwest Pipe Company Portland Oregon

Sample Location						Outfall 3				Outfall 4			
Collect Date						12/11/2012		5/22/2013 11/18/2013 ¹		12/11/2012		5/22/2013 11/18/2013 ¹	
Parameter	Units	CAS ² #	Water ³ JSC Table 3-1	Comparison ⁴ Values	Permit Benchmark ⁵ Values	Value	Qual	Value	Qual	Value	Qual	Value	Qual
General Chemistry													
Total Organic Carbon	mg/L					1.67		3.04	J	0.97		2.25	J
Total Suspended Solids	mg/L					5.6		1.6	J	5.0	U	2.2	J
Field pH	SU					6.85		7.42		7.12		7.03	
Inorganics													
Aluminum	ug/L	7429-90-5	50-200		750	175		152		55.2	J	86.5	
Antimony	ug/L	7440-36-0	6			10.0	U	0.36	J	3.5	U	0.12	J
Arsenic	ug/L	7440-38-2	0.045	2		0.50	U	0.17	J	0.092	J	0.15	J
Cadmium	ug/L	7440-43-9	0.094	0.5		0.50	U	0.05	U	0.03	U	0.05	U
Chromium	ug/L	7440-47-3	100	10		1.91		1.04		0.50		1.12	
Copper	ug/L	7440-50-8	2.7	60	20	10.0	U	4.9		2.7	J	2	
Lead	ug/L	7439-92-1	0.54	50	40	5.00	U	1.48		1.46	U	0.92	
Manganese	ug/L	7439-96-5	50										
Nickel	ug/L	7440-02-0	16	10		1.17		0.93		0.83		0.7	
Selenium	ug/L	7782-49-2	5			0.50	U	0.2	J	0.069	U	0.15	J
Silver	ug/L	7440-22-4	0.12	0.1		1.00	U	0.05	U	0.07	J	0.05	U
Zinc	ug/L	7440-66-6	36	300	120	180		41.5		27.9		33.9	
Mercury	ug/L	7439-97-6	0.77	0.2		0.10	U	0.015	U	0.028	U	0.015	U
PCB Aroclors													
Aroclor 1016	ug/L	12674-11-2	0.96			0.50	U	0.51	UH	0.50	U	0.51	UH
Aroclor 1221	ug/L	11104-28-2	0.034			0.50	U	0.51	UH	0.50	U	0.51	UH
Aroclor 1232	ug/L	11141-16-5	0.034			0.50	U	0.51	UH	0.50	U	0.51	UH
Aroclor 1242	ug/L	23469-21-9	0.034			0.50	U	0.51	UH	0.50	U	0.51	UH
Aroclor 1248	ug/L	12672-29-6	0.034			0.50	U	0.51	UH	0.50	U	0.51	UH
Aroclor 1254	ug/L	11097-69-1	0.033			0.50	U	0.51	UH	0.50	U	0.51	UH
Aroclor 1260	ug/L	11096-82-5	0.034			0.50	U	0.51	UH	0.50	U	0.51	UH
Total PCBs	ug/L	--	0.000064	0.3	2	0	U	0	U	0	U	0	U
VOCs													
All VOCs were below reporting limits in both rounds of samples.	ug/L					0.01	U	0.20	U	0.01	U	0.20	U
Typical reporting limits posted.													
Chlorinated Pesticides													
Aldrin	ug/L	309-00-2	0.00005		3	0.01	U	0.010	UH	0.010	U	0.00083	JH
Gamma BHC	ug/L	58-89-9	0.052			0.01	U	0.0017	JH	0.010	U	0.010	UH
4,4-DDT	ug/L	50-29-3	0.00022		1.1	0.014	J	0.020	UH	0.015	J	0.020	UH
Phthalates													
bis(2-Ethylhexyl)phthalate	ug/L	117-81-7	2.2	4		1.90		2.04	U	1.85		2.04	U
Butylbenzylphthalate	ug/L	85-68-7	3			0.15	U	2.04	U	0.15	U	2.04	U
Diethylphthalate	ug/L	84-66-2	3			0.15	U	2.04	U	0.15	U	2.04	U
Dimethylphthalate	ug/L	131-11-3	3			0.15	U	2.04	U	0.15	U	2.04	U
Di-n-butylphthalate	ug/L	84-74-2	3			0.15	U	2.04	U	0.15	U	2.04	U
Di-n-octylphthalate	ug/L	117-84-0	3			0.15	U	2.04	U	5.67		4.59	J
PAHs													
1-Methylaphthalene	ug/L	90-12-0	--			0.010	U	0.0031	U	0.010	U	0.0030	U
2-Methylnaphthalene	ug/L	91-57-6	0.2			0.010	U	0.0035	J	0.010	U	0.0031	J
Acenaphthene	ug/L	83-32-9	0.2		95	0.010	U	0.0018	U	0.010	U	0.0023	J
Acenaphthylene	ug/L	208-96-8	0.2			0.010	U	0.0021	J	0.010	U	0.0019	J
Anthracene	ug/L	120-12-7	0.2		2900	0.010	U	0.011		0.010	U	0.0041	J
Benzo(a)anthracene	ug/L	56-55-3	0.018		1	0.011		0.094		0.010	U	0.016	
Benzo(a)pyrene	ug/L	50-32-8	0.018		1	0.038		0.12		0.010	U	0.057	
Benzo(b)fluoranthene	ug/L	205-99-2	0.018		1	0.019		0.16		0.010	U	0.034	
Benzo(g,h,i)perylene	ug/L	191-24-2	0.2			0.011		0.063		0.010	U	0.020	
Benzo(k)fluoranthene	ug/L	207-08-9	0.018		1	0.010	U	0.16		0.010	U	0.058	
Chrysene	ug/L	218-01-9	0.018		1	0.015		0.15		0.010	U	0.024	
Dibenz(a,h)anthracene	ug/L	53-70-3	0.018		1	0.010	U	0.059		0.010	U	0.048	
Fluoranthene	ug/L	206-44-0	0.2		14	0.023		0.17		0.010	U	0.033	
Fluorene	ug/L	86-73-7	0.2		390	0.010	U	0.0019	J	0.010	U	0.0014	U
Indeno(1,2,3-cd)pyrene	ug/L	193-39-5	0.018		1	0.036		0.088		0.010	U	0.053	
Naphthalene	ug/L	91-20-3	0.2			0.010	U	0.0051	J	0.010	U	0.0044	J
Phenanthrene	ug/L	85-01-8	0.2			0.010	U	0.029	J	0.010	U	0.010	J
Pyrene	ug/L	129-00-0	0.2		290	0.023		0.19		0.011		0.036	
Total PAHs	ug/L			1		0.153		1.3066		0.011		0.405	

Notes

¹ - Sample collection date for the second round of samples was May 22, 2013 and (for inorganic constituents) November 18, 2013. The November sample event was conducted because the analytical laboratory failed to achieve the desired reporting limits on inorganic constituent analysis for the May samples.

² - CAS # - Chemical Abstracts Service number - a unique numerical identifier for chemicals and compounds

³ - Screening levels taken from Portland Harbor Joint Source Control Strategy Table 3-1 (DEQ 2005) (Revised 7/16/07)

⁴ - Method Detection Level- the limits of the identified method to positively detect a given constituent

⁵ - Comparison Values are the inflection point between "typical" industrial storm water concentrations and "elevated" concentrations, as indicated in the Guidance for Evaluating the

⁵ - NPDES 1200-Z permit Benchmark values Aug 30, 2012

Green shaded cells indicate a value above or estimated (J) values below the reporting limit that exceeds the screening level

Gray shaded cells indicate a given constituent was detected

Blue shaded cells indicate a value above or estimated values (J) below the reporting limit that exceeds the Comparison values

mg/L - milligrams per liter

ug/L - micrograms per liter

-0.84 values identified as negative represent one of a congener that co eluted from the column with a different congener. The total concentration of the two congeners is presented as a negative number in the second congener to indicate co elution.

Qualifiers:

J - Estimated value, the associated concentration was outside the established quality control range for precision.

H - Sample analyzed beyond the method specified holding time due to stability of PCBs. See Memo in Appendix B.

U - Constituent not detected at the specified laboratory reporting limit, which is the level above which a detection can be reliably confirmed and quantified with a 99 percent

EMPC- estimated maximum potential concentration - material eluted from the column at the time the marked congener should have eluted, however the

congener fingerprint did not meet QA/QC standards to positively identify the congener.

Table 8-3
Recent NPDES Stormwater Monitoring Results
Northwest Pipe Company, Portland Plant

Sample location			Sample Point 003								Sample Point 004							
Date			Oct-12	Dec-12	Mar-13	May-13	Nov-13	Dec-13	Mar-14	May-14	Oct-12	Dec-12	Mar-13	May-13	Nov-13	Dec-13	Mar-14	May-14
Chem Group/Chemical	Benchmark	Units																
Benchmark Parameters																		
pH	6.0 - 9.0	SU	7.55	6.85	6.87	7.42	7.6	7.3	7.8	7.5	7.03	7.12	7.12	7.03	7.8	7.4	7.7	7.4
Total Suspended Solids	50	mg/L	5 U	5 U	5.8	5 U	5	2.5 U	2.5 U	2.5 U	5 U	5 U	2.2 J	5 U	3	2 U	3.5	6
Oil & Grease	10	mg/L	5.1 U	4.8 U	6.0 U	5.4 U	5.88 U	5 U	5.1 U	5.26 U	4.8 U	4.7 U	5.7 U	5.4 U	5.38 U	5.18 U	5.18 U	5.35 U
Copper	0.020	mg/L	0.01 U	0.01 U	0.00714 J	0.01 U	0.005 U	0.005 U	0.005 U	0.005 U	0.01 U	0.01 U	0.00416 J	0.01 U	0.005 U	0.005 U	0.005 U	0.005U
Lead	0.040	mg/L	0.005 U	0.005 U	0.00212 J	0.005 U	0.00267	0.0011	0.00268	0.00125	0.005	0.005 U	0.00146 U	0.005 U	0.00111	0.001 U	0.00155	0.00147
Zinc	0.12	mg/L	0.02 U	0.02 U	0.0359	0.058	0.0563	0.0353	0.0538	0.069	0.0204	0.0291	0.0505	0.0475	0.0325	0.0349	0.0329	0.0595
Sector Specific																		
Iron	1.0	mg/L	0.183	0.111	0.488	0.5	0.469	0.261	0.283	0.25	0.171	0.129	0.206	0.371	0.214	0.114	0.287	0.45
Aluminum	0.75	mg/L	0.117	0.1 U	0.264	0.286	0.24	0.122	0.112	0.108	0.113	0.1 U	0.0647 J	0.178	0.0948	0.0403	0.16	0.206
Additional Pollutants																		
Cadmium	NA	mg/L	0.0005	0.0005 U	0.00026 J	0.0005 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0005 U	0.0005 U	0.00005 J	0.0005 U	0.001 U	0.001 U	0.001 U	0.001 U
Chromium	NA	mg/L	0.00072	0.0009	0.00147	0.00119	0.005 U	0.005 U	0.005 U	0.005 U	0.00083	0.00062	0.00067	0.00164	0.005 U	0.005 U	0.005 U	0.005 U
Nickel	NA	mg/L	0.00108	0.0007	0.00101	0.00131	0.01 U	0.01 U	0.025 U	0.025 U	0.00097	0.00106	0.00077	0.00121	0.01 U	0.01 U	0.025 U	0.025 U
Impairment Pollutants																		
Aldrin	0.003	mg/L	0.000005 U		0.0000006 U		0.00474 U		0.00535 U		0.000005 U		6.1E-07 U		0.00494 U		0.00515 U	
DDT	0.0011	mg/L	0.000005 U		0.000001 U		0.00474 U		0.00535 U		0.000005 U		0.000001 U		0.00494 U		0.00515 U	
DDE	0.00001	mg/L	0.000005 U		0.0000011 U		0.00474 U		0.00535 U		0.000005 U		0.0000011 U		0.00494 U		0.00515 U	
Dieldrin	0.0025	mg/L	0.000005 U		0.00093 JP		0.00474 U		0.00535 U		0.000005 U		0.0000016 JP		0.00494 U		0.00515 U	
Pentachlorophenol	0.02	mg/L		0.0002 U	0.00203 U		0.000905 U		0.000995 U			0.00015 U	0.00203 U		0.000928 U		0.000997 U	
Total PCBs	0.002	mg/L	0.000019 U		0.000072 U		0.00949 U		0.0107 U		0.000019 U		0.000064 U		0.00988 U		0.0103 U	
PAH																		
Acenaphthene	0.095	mg/L	0.00001 U		0.0000021 J		0.000905 U		0.000995 U		0.00001 U		0.0000018 U		0.000928 U		0.000997 U	
Anthracene	2.9	mg/L	0.00001 U		0.0000065 J		0.000905 U		0.000995 U		0.00001 U		0.0000023 J		0.000928 U		0.000997 U	
Benzo(a)anthracene	0.001	mg/L	0.000013		0.000088		0.000905 U		0.000995 U		0.00001 U		0.000036		0.000928 U		0.000997 U	
Benzo(a)pyrene	0.001	mg/L	0.000013		0.000036		0.000905 U		0.000995 U		0.00001 U		0.0000034 J		0.000928 U		0.000997 U	
Benzo(b)fluoranthene	0.001	mg/L	0.000029		0.000096		0.000905 U		0.000995 U		0.00001 U		0.000029		0.000928 U		0.000997 U	
Benzo(k)fluoranthene	0.001	mg/L	0.00001 U		0.00003		0.000905 U		0.000995 U		0.00001 U		0.0000099 J		0.000928 U		0.000997 U	
Chrysene	0.001	mg/L	0.000024		0.000094		0.000905 U		0.000995 U		0.00001 U		0.000025		0.000928 U		0.000997 U	
Dibenzo(a,h)anthracene	0.001	mg/L	0.00001 U		0.000015		0.000905 U		0.000995 U		0.00001 U		0.0000089 J		0.000928 U		0.000997 U	
Fluoranthene	0.014	mg/L	0.000021		0.00015		0.000905 U		0.000995 U		0.00001 U		0.000038		0.000928 U		0.000997 U	
Fluorene	0.39	mg/L	0.00001 U		0.0000015 J		0.000905 U		0.000995 U		0.00001 U		0.0000014 U		0.000928 U		0.000997 U	
Indeno(1,2,3-c,d)pyrene	0.001	mg/L	0.00001 U		0.000037		0.000905 U		0.000995 U		0.00001 U		0.000019		0.000928 U		0.000997 U	
Pyrene	0.29	mg/L	0.000025		0.00015		0.000905 U		0.000995 U		0.000014		0.00004		0.000928 U		0.000997 U	

Notes
All results are in milligrams per liter, except pH, which is [H+]
U = not detected at the indicated reporting limit
Figures exceeding permit benchmarks are bolded and boxed

Table 8-4

Historical NPDES Stormwater Monitoring Results

Northwest Pipe Company, Portland Plant

		Total Suspended Solids		Oil & Grease	Copper	Lead	Zinc
pH		130	10	0.1	0.4	0.6	
Benchmark	5.5 - 9.0						
Date							
Sample point 003	Mar-12	7.21	122	5.6 U	0.0222	0.0201	0.277
	Feb-12	7.88	14.8	6.1 U	0.0100 U	0.00817	0.0678
	Dec-11	8.70	44	6.0 U	0.0228	0.0211	0.261
	Dec-11	6.5	92	5.7 U	0.0244	0.0267	0.271
	Apr-11	7.63	21.6	5.8 U	0.0100 U	0.00500 U	0.252
	Feb-11	8.41	67	5.8 U	0.0126	0.00740	0.188
	Dec-10	6.34	28.4	5.8 U	0.0105	0.00500 U	0.380
	Nov-10	6.94	7.2	5.8 U	0.0100 U	0.00500 U	0.440
	Apr-10	7.01	24.0	5.5 U	0.0104	0.00645	0.229
	Feb-10	8.65	39.0	5.9	0.0152	0.00743	0.304
	Nov-09	7.26	13.2	4.30 J	0.0100 U	0.00648	0.0955
	Oct-09	8.56	22.0	5.61 U	0.0183	0.0122	0.216
	Apr-09	8.04	78.0	5.14 U	0.0258	0.0205	0.981
	Jan-09	7.70	110	4.72 U	0.0347	0.0235	1.070
	Dec-08	7.26	99	2.4 J	0.0311	0.0241	0.885
	Nov-08	7.82	39.0	5.09 U	0.021	0.0147	0.774
	Mar-08	6.52	43.0	5.1 U	0.0186	0.0121	0.658
	Feb-08	6.73	68.0	5.3 U	0.0155	0.0088	1.03
	Dec-07	8.23	50.4	5.1 U	0.0135	0.01 U	0.745
	Oct-07	8.52	69.3	7.1	0.0247	0.0141	0.753
	May-07	9.27	96.4	5 U	0.0291	0.0137	0.787
	Nov-06	7.28	32	4.8 U	0.01	0.0052	0.93
	May-06	9.73	45	5.3 U	0.0345	0.01	0.563
	Dec-05	9.64	153	5.3 U	0.0356	0.0129	0.713
	Apr-05	8.20	25	5 U	0.0114	0.005 U	0.721
	Dec-04	7.21	16	5.5	0.01 U	0.0077	4.53
	Jun-04	7.76	12	5 U	0.01 U	0.052	1.23
	Nov-03	7.72	218	5 U	0.0302	0.0229	0.761
	Sep-03	8.01	10	5 U	0.0104	0.0069	0.24
	Dec-02	8.40	183	6	0.0445	0.0298	0.882
Sample point 004	Mar-12	7.52	4.4	5.8 U	0.0100 U	0.00500 U	0.0698
	Feb-12	7.6	3.6	6.2	0.0100 U	0.00500 U	0.0203
	Dec-11	7.86	12.4	6.3 U	0.0100 U	0.00500 U	0.117
	Dec-11	6.5	46	5.6 U	0.0127	0.0174	0.181
	Apr-11	7.13	14	5.8 U	0.0100 U	0.00500 U	0.138
	Feb-11	7.71	22	5.7 U	0.0100 U	0.00785	0.112
	Dec-10	6.58	8.4	5.9 U	0.0100 U	0.00500 U	0.180
	Nov-10	7.21	2.0 U	5.1 U	0.0100 U	0.00500 U	0.210
	Apr-10	6.94	9.3	6.5	0.0100 U	0.00500 U	0.109
	Feb-10	7.06	11.0	6.1 U	0.0100 U	0.00500 U	0.171
	Nov-09	7.31	14.4	6.00	0.0100 U	0.00815	0.0897
	Oct-09	7.60	26.0	5.69 U	0.0126	0.0115	0.184
	Apr-09	8.54	30.0	5.06 U	0.0138	0.0128	0.950
	Jan-09	7.86	55.0	8.10	0.0114	0.0109	0.870
	Dec-08	8.80	66	6.1	0.0276	0.0284	1.03
	Nov-08	7.41	11.5	5.14 U	0.01 U	0.00615	1.41
	Mar-08	7.82	25.0	5.1 U	0.0115	0.0098	0.526
	Feb-08	8.31	13.3	7.9	0.01 U	0.0079	1.18
	Dec-07	7.94	23.6	5.1 U	0.01 U	0.106	0.605
	Oct-07	8.25	110	13.6	0.0918	0.135	0.578
	May-07	8.01	26	5 U	0.0121	0.0098	1.26
	Nov-06	7.24	5.2	4.8 U	0.01 U	0.0057	1.4
	May-06	7.64	10	5.4 U	0.021	0.0056	0.689
	Dec-05	8.27	40	5.2 U	0.01 U	0.05 U	1.46
	Apr-05	8.80	8.8	5 U	0.01 U	0.005 U	1.13
	Dec-04	7.78	105	6.6	0.0279	0.0191	2.26
	Jun-04	6.35	2	5 U	0.01 U	0.003 U	1.67
	Nov-03	6.45	2 U	5 U	0.01 U	0.003 U	0.02 U
	Sep-03	7.54	2	5 U	0.01 U	0.003 U	0.0689
	Dec-02	6.80	58	5 U	0.0133	0.0083	1.11

Notes

All results are in milligrams per liter, except pH, which is [H+]

U = not detected at the indicated reporting limit

Figures exceeding permit benchmarks are bolded and boxed

TABLE 8- 5

Storm Water Source Control Actions Identified in 2013 DEQ Milestone Report*Northwest Pipe Company, Portland, Oregon*

DEQ Milestone Report Source Control Action Statement	Northwest Pipe Actions
<i>“Cleaning-up contaminated upland areas – Cleanup work addresses contaminated soil, groundwater, stormwater and other sources; and focuses on reducing or eliminating contaminant migration to the river. Common source control measures include removing highly contaminated soil areas, stabilizing or capping contaminated bank areas, treating or containing contaminated groundwater, and extracting contaminated sediment from storm sewer systems. Source control measures vary from site to site.”</i>	Soil addressed: The 1989 soil removal, 2011 hot spot soil removal, and the 2012 site cap construction eliminated the potential for site storm water to be exposed to contaminated soil. Groundwater addressed: The 2005 draft Remedial Investigation/Source Control Evaluations report for the site investigated the potential for groundwater to infiltrate into storm water lines and confirmed that seasonal high groundwater remained below the invert (bottom) of site storm water liens, meaning no such infiltration is possible. Storm water settled solids addressed: Periodic catch basin cleaning and storm water line jet cleaning has removed settled solids from the storm water conveyance system. Use of catch basin filters and weekly roadway sweeping minimizes the potential for new solids to enter the storm water system.
<i>“Source control of active discharges – Tools to control active discharges include best management practices (BMPs), industrial process changes, pollution prevention practices, technology-based effluent controls, and end-of-pipe stormwater treatment. Compliance is achieved voluntarily or through administrative actions, including permits or enforcement.”</i>	Best management practices addressed: Several best management practices that have been implemented at the site to reduce the potential exposure of storm water to contaminants, including moving material storage under roof and retrofitting the storm water system at the secondary-containment fueling area to include a shutoff valve to isolate the fueling area from the rest of the storm water system if necessary.
<i>“Source control of active discharges” (continued)</i>	Industrial process changes addressed: Several process changes at the site, including improved air particulate filters and removal of the coal tar coating process and associated materials from the site. End-of-pipe storm water treatment addressed: two state-of-the-art storm water treatment systems have been installed at the site to treat the two lines that convey storm water offsite the communal outfall in the IT Slip.

Table 8-6

Storm Water Quality Change 2007-2013*Northwest Pipe Company Portland Oregon*

Constituent	Average Site Storm Water, 2007 (ug/L)	Source control samples, 2012/2013 (ug/L)	Percent change (negative value indicates a reduction)
Acenaphthene	0.057	0.013	-77%
Acenaphthylene	0.029	0.014	-52%
Anthracene	0.223	0.025	-89%
Benzo(a)anthracene	0.415	0.032	-92%
Benzo(a)pyrene	0.404	0.055	-86%
Benzo(b)fluoranthene	0.636	0.055	-91%
Benzo(g,h,i) perylene	0.316	0.099	-69%
Benzo(k) fluoranthene	0.21	0.228	8%
Chrysene	0.626	0.194	-69%
Dibenz(a,h)anthracene	0.075	0.117	56%
Fluoranthene	1.054	0.231	-78%
Fluorene	0.073	0.012	-84%
Indeno(1,2,3-cd)pyrene	0.244	0.046	-81%
Naphthalene	0.039	0.02	-50%
Phenanthrene	0.528	0.049	-91%
Pyrene	0.968	0.015	-98%
Average change, all PAHs			-65%
Aroclor 1254	0.343	None detected	None detected
Zinc	0.382	0.079	-79%

Note:

Non-quantified values calculated at one-half the reporting limit for PAHs where the sample set contained both quantified and non-quantified values