Table 6

Monthly Pretreatment System Analytical Summary[1]
Former Rhone-Poulenc Site
Tukwila, Washington

				Effluent Sample					Between GAC Units Sample					Influent Sample					
Month-Year	Sample Day	Sample Type[2]	24 Hour flow (gallons)	pH (pH units)	Benzene (µg/l)[3]	Toluene (µg/l)	Ethylbenzene (µg/l)	HEM O&G[4] (mg/l)	pH (pH units)	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	HEM O&G (mg/l)	pH (pH units)	Benzene (µg/l)	Toluene (µg/l)	Ethylbenzene (µg/l)	HEM O&G (mg/l)	Which Extraction Well Pumping?
May-03	-	-	No discharge	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jun-03	-	-	No discharge	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Jul-03	-	-	No discharge	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Aug-03	8	G	No record[5]	**6.60**	10	10	10	4,700	**6.61**	10	10	10	4,700	**6.52**	10	10	10	4,700	No record
Aug-03	15	G	No record	**6.58**	10	10	10	4,700	**6.57**	10	10	10	4,700	**6.59**	10	10	10	4,700	No record
Aug-03	22	G	No record	**6.65**	10	10	10	5,000	**6.67**	10	10	10	5,000	**6.70**	10	10	10	5,000	No record
Aug-03	29	G	3,442	**6.70**	1.0	1.0	1.0	4,700	**6.70**	1.0	1.0	1.0	4,700	**6.66**	1.0	1.0	1.0	4,800	No record
Sep-03	12	G	No record	**6.74**	1.0	1.0	1.0	5,000	**6.72**	1.0	1.0	1.0	5,000	**6.69**	1.0	1.0	1.0	5,000	No record
Sep-03	26	G	17,280	**6.67**	1.0	1.0	1.0	4,700	**6.67**	1.0	1.0	1.0	4,700	**6.69**	1.0	1.0	1.0	4,700	No record
Oct-03[6]	NA[7]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nov-03	18	G	16,272	**8.45**	1.0	1.0	1.0	5,300	**7.81**	1.0	1.0	1.0	5,300	**6.62**	1.0	1.0	1.0	5,300	No record
Dec-03	3	G	19,152	**6.66**	1.0	1.0	1.0	5,300	**6.67**	1.0	1.0	1.0	5,300	**6.63**	1.0	1.0	1.0	5,300	No record
Jan-04	5	G	20,448	**6.79**	1.0	1.0	1.0	4,700	**6.75**	1.0	1.0	1.0	9,900	**6.72**	1.0	1.0	1.0	4,700	No record
Feb-04	4	G	20,160	**6.65**	1.0	1.0	1.0	5,200	**6.65**	1.0	1.0	1.0	5,200	**6.45**	1.0	1.0	1.0	5,200	No record
Feb-04	27	G	9,504[8]	**6.54**	1.0	1.0	1.0	5,300	**6.55**	1.0	1.0	1.0	5,300	**6.57**	1.0	1.0	1.0	5,300	No record
Mar-04	31	G	13,430	**6.46**	1.0	1.0	1.0	5,200	Not indicated[9]	1.0	1.0	1.0	Not indicated	**6.40**	1.0	1.0	1.0	5,200	No record
Apr-04	28	G	9,280	**6.67**	1.0	1.0	1.0	5,300	**6.69**	1.0	1.0	1.0	5,300	**6.64**	1.0	1.0	1.0	5,300	EX-1
May-04	26	G	27,224	**6.59**	1.0	1.0	1.0	5,300	**6.58**	1.0	1.0	1.0	5,300	**6.51**	1.0	1.0	1.0	5,300	EX-1 &EX-2
Jun-04	30	G	40,965	**6.53**	1.0	1.0	1.0	4,800	**6.47**	1.0	1.0	1.0	5,800	**6.48**	1.0	1.0	1.0	4,600	Not indicated
Jul-04	29	G	48,393	**6.57**	1.0	1.0	1.0	5,900	**6.59**	1.0	1.0	1.0	5,300	**6.80**	1.0	1.0	1.0	5,200	Not indicated
Aug-04	30	G	16,283	**6.34**	1.0	1.0	1.0	5,600	**6.41**	1.0	1.0	1.0	5,400	**6.48**	1.0	1.0	1.0	5,800	Not indicated
Sep-04	29	G	11,871	**6.55**	1.0	1.0	1.0	5,600	**6.52**	1.0	1.0	1.0	5,600	**6.48**	1.0	1.0	1.0	5,600	EX-2
Oct-04	27	G	1,046	**6.66**	1.0	1.0	1.0	5,800	**6.68**	1.0	1.0	1.0	5,700	**6.59**	**1.1**	1.0	1.0	5,700	No record
Nov-04	29	G	23,082	**6.65**	1.0	1.0	1.0	6,000	**6.70**	1.0	1.0	1.0	6,100	**6.74**	1.0	1.0	1.0	6,100	No record
Jan-05	3	G	0[8]	**6.73**	1.0	1.0	1.0	6,300	**6.68**	1.0	1.0	1.0	6,400	**6.45**	1.0	1.0	1.0	6,400	Not indicated
Jan-05	25	G	367	**6.64**	1.0	1.0	1.0	5,200	**6.66**	1.0	1.0	1.0	5,700	**6.33**	1.0	1.0	1.0	5,800	EX-1
Feb-05	23	G	42,800[8]	**6.60**	1.0	1.0	1.0	6,200	**6.63**	1.0	1.0	1.0	6,000	**6.62**	1.0	1.0	1.0	6,200	all three
Mar-05	15	G	20,700[8]	**6.61**	1.0	1.0	1.0	5,000	**6.63**	1.0	1.0	1.0	5,000	**6.62**	1.0	1.0	1.0	5,000	Not indicated
Mar-05[11]	17	C	900[8]	**8.40**	1.0	1.0	1.0	5,800	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Apr-05	21	G	No record	**6.77**	1.0	1.0	1.0	6,000	**6.68**	1.0	1.0	1.0	6,200	**6.70**	1.0	1.0	1.0	6,000	EX-2
May-05	27	G	9,145	**6.58**	1.0	1.0	1.0	4,900	**6.57**	1.0	1.0	1.0	4,900	**6.46**	1.0	1.0	1.0	5,100	EX-2
Jun-05	30	G	9,717	**6.77**	1.0	1.0	1.0	6,500	**6.74**	1.0	1.0	1.0	6,000	**6.76**	1.0	1.0	1.0	6,200	EX-2
Jul-05	14	G	9,893	**6.73**	1.0	1.0	1.0	5,800	**6.70**	1.0	1.0	1.0	5,600	**6.68**	1.0	1.0	1.0	5,300	EX-2
Aug-05	22	G	10,238	**6.61**	1.0	1.0	1.0	6000.0	**6.58**	1.0	1.0	1.0	5,700	**6.59**	1.0	1.0	1.0	5,900	EX-2
Sep-05	21	G	9,370	**6.68**	1.0	1.0	1.0	6,200	**6.69**	1.0	1.0	1.0	5,700	**6.71**	1.0	1.0	1.0	5,700	EX-2
Oct-05	19	G	21,180[8]	**6.71**	1.0	1.0	1.0	5,700	**6.65**	1.0	1.0	1.0	5,700	**6.63**	1.0	1.0	1.0	5,900	all three
Nov-05	16	G	22,038	**6.76**	1.0	1.0	1.0	5,800	**6.68**	1.0	1.0	1.0	5,700	**6.75**	1.0	1.0	1.0	6,000	all three
Dec-05	22	G	12,641	**6.78**	1.0	1.0	1.0	5,700	**6.71**	1.0	1.0	1.0	5,700	**6.71**	1.0	1.0	1.0	5,700	all three
Jan-06	30	G	19,724	**6.67**	1.0	1.0	1.0	5,000	**6.65**	1.0	1.0	1.0	5,000	**6.59**	1.0	1.0	1.0	5,000	EX-1
Feb-06	16	G	52,104	**6.63**	1.0	1.0	1.0	5,600	**6.65**	1.0	1.0	1.0	5,600	**6.62**	1.0	1.0	1.0	5,600	all three
Mar-06	21	G	16,000	**6.62**	1.0	1.0	1.0	5,600	**6.61**	1.0	1.0	1.0	5,000	**6.56**	1.0	**4.4**	1.0	5,600	EX-3
Apr-06	12	G	19,100	**6.63**	1.0	1.0	1.0	5,200	**6.63**	1.0	1.0	1.0	5,200	**6.63**	1.0	**15**	1.0	5,200	EX-3
May-06	16	G	11,500	**6.72**	1.0	1.0	1.0	4,700	**6.70**	1.0	1.0	1.0	4,700	**6.68**	1.0	1.0	1.0	4,700	EX-1
May-06[11]	16	C	14,000	NA	1.0	1.0	1.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Jun-06	22	G	17,800	**6.64**	1.0	1.0	1.0	4,700	**6.66**	1.0	1.0	1.0	4,700	**6.70**	1.0	**9.0**	1.0	4,700	all three
Jul-06	14	G	1,400	**6.65**	1.0	1.0	1.0	4,700	**6.64**	1.0	1.0	1.0	4,700	**6.69**	1.0	**1.6**	1.0	4,700	all three
Aug-06	11	G	1,800	**6.46**	1.0	1.0	1.0	4,900	**6.44**	1.0	1.0	1.0	5,000	**6.53**	1.0	**8.5**	1.0	5,000	all three
Sep-06[11]	1	C	9,200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**8.47**	1.0	**2.1**	1.0	5,900	NA
Sep-06	18	G	1,000	**6.64**	1.0	1.0	1.0	4,700	**6.65**	1.0	1.0	1.0	5,000	**6.71**	1.0	1.0	1.0	5,200	EX-2
Oct-06[11]	9	C	5,900	**6.83**	1.0	1.0	1.0	5,700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Oct-06	17	G	1,400	**6.82**	1.0	1.0	1.0	4,900	**6.73**	1.0	1.0	1.0	4,600	**6.61**	1.0	1.0	1.0	4,900	all three
Nov-06	21	G	1,100	**6.59**	1.0	1.0	1.0	4,700	**6.66**	1.0	1.0	1.0	4,900	**6.53**	1.0	1.0	1.0	4,800	all three
Dec-06	12	G	900	**6.58**	1.0	1.0	1.0	4,700	**6.58**	1.0	1.0	1.0	4,700	**6.59**	1.0	1.0	1.0	4,700	all three
KCDNRP Discharge Limits[10]			**65,000**	**5.0-12.0**	**130**	**1500**	**1400**	**100,000**											

Notes:
1. Bold numbers are results above the reporting limits, gray results are non-detects.
2. Sample types : G = grab; C = composite.
3. µg/L = micrograms per liter.
4. HEM O&G = n-Hexane-extractable material, oil and grease.
5. No records = No records available.
6. System Failure resulted in no sample being taken in October 2003.
7. NA = Not applicable.
8. Estimated value from data recorder records
9. Not indicated = Not indicated on the records available.
10. Current KCDNRP discharge limits, historic limits have varied as discussed in the text Section 2.0.
11. Batch discharge sampling event.

Table 7

Field pH Readings During
Groundwater Performance Monitoring, 2002–2006[1]
Former Rhone-Poulenc Site
Tukwila, Washington

Sample Location	Inside/Outside Barrier Wall	Aquifer or Zone	Field pH															
			Round 17 Sep-2002	Round 18 Dec-2002	Round 21 Sep-2003	Round 22 Dec-2003	Round 23 Mar-2004	Round 24 Jun-2004	Round 25 Sep-2004	Round 26 Dec-2004	Round 27 Mar-2005	Round 28 Jun-2005	Round 29 Sep-2005	Round 30 Dec-2005	Round 31 Mar-2006	Round 32 Jun-2006	Round 33 Oct-2006	Round 34 Dec-2006
B1A	Outside	Upper Zone	6.57	6.49	6.46	6.27	6.22	n/s	6.55	6.36	6.43	5.61	6.48	6.54	6.45	5.86	4.82[3]	5.78
DM-5	Inside	Upper Zone	7.39	7.06	7.02	9.86	6.7	8.52	6.27	7.32	7.28	6.13	7.52	7.28	7.51	n/s	6.55	n/s
DM-8	Outside	Upper Zone	6.81	6.74	6.89	6.8	6.33	8.98	7.06	6.9[4]	6.88[4]	6.47	7.14	7.07	7.07	6.73	6.63	6.75
EX-3	Inside	Upper Zone	n/a[5]	n/a	7.02[6]	6.54	n/s	n/s	n/s	6.67	6.68	6.01	6.85	6.8	6.95	n/s	6.44	n/s
MW-17	Inside	Upper Zone	6.79	6.57	6.46	9.89	6.47	9.02	5.83	7.36	7.09	6.34	7	7.06	6.79	n/s	6.53	n/s
MW-27	Inside	Upper Zone	10.07	9.69	8.77	8.36	9.04	11.34	10.71	10.66	10.56	8.8	10.04	9.58	7.9	n/s	8.69	n/s
MW-28	Inside	Upper Zone	10.11	9.73	10.03	10.05	9.56	10.99	10.17	10.46	10.44	9.57	10.57	10.82	11.32	n/s	10.79	n/s
MW-29	Inside	Upper Zone	6.48	n/s	6.54	n/s	6.21	8.44	6.66	6.49	6.67	6.05	6.62	6.78	6.85	n/s	5.66	n/s
MW-38	Outside	Upper Zone	6.41	6.68	6.78	6.8	6.33	7.77	7.01	6.95[4]	6.84[4]	6.03	6.68	6.73	7.03	n/s	n/s	6.33
MW-39	Outside	Lower Zone	7.48	7.34	7.43	7.47	6.91	8.96	7.96	7.48[4]	7.45[4]	6.77	7.63	7.48	7.66	7.31	6.65	7.43
MW-40	Outside	Lower Zone	7.8	7.49	7.55	7.55	6.97	9.72	6.37	7.65[4]	7.71[4]	7.11	7.65	7.67	8.01	7.83	8.08	8.32
MW-41	Outside	Upper Zone	10.44	9.65	10.2	9.95	9.03	10.52	8.8	9.6[4]	9.68[4]	9.53	10.41	9.82	10.61	10.47	10.19	9.83
MW-42	Outside	Lower Zone	7.91	7.56	7.61	7.58	7.01	9.73	8.17	7.66[4]	7.77[4]	7.16	7.88	7.76	7.92	7.68	7.59	7.75
MW-43	Outside	Lower Zone	10.8	9.75	9.09	10.02	9.18	10.35	9.97	10.46[4]	10.41[4]	9.96	10.49	10.59	10.92	10.94	10.3	10.84
MW-44	Outside	Upper Zone	9.89	9.57	10.2	10.35	9.8	11.27	11.02	10.93[4]	10.91[4]	10.78	11.07	11	11.88	11.82	10.88	11.43
MW-45	Outside	Lower Zone	7.6	7.31	7.42	7.65	7.12	8.66	7.99	7.44[4]	7.54[4]	6.66	7.48	7.54	7.99	7.42	7.39	7.33
MW-46	Outside	Upper Zone	6.65	6.3	6.38	6.37	5.99	7.56	6.84	6.46[4]	6.43[4]	5.54	6.25	6.5	6.73	6.49	6.31	6.5

Notes:

1. This table lists field pH readings; despite the use of calibrated field instruments, these readings are more variable than laboratory pH readings.
2. n/s = Not sampled during these events. EX-3 was not sampled during Rounds 23-25 because the pump system was not in operation. B1-A was not sampled during Round 24 due to a pump malfunction. MW-29 was not sampled during Rounds 18 and 22 due to ponding atop the well.
3. pH meter was recalibrated after sample collection due to lower-than-expected pH reading.
4. Laboratory reading used due to field instrument malfunction.
5. n/a = EX-3 not installed until April 2003
6. pH Value for nearby well DM5 used because pH was not measured at EX-3.

Table 8

Groundwater Analytical Results for Toluene
Groundwater Performance Monitoring, 2002–2006[1]
Former Rhone-Poulenc Site
Tukwila, Washington

units in micrograms per liter (µg/L) or parts per billion (ppb)

Sample Location	Inside/ Outside Barrier Wall	Aquifer or Zone	Toluene (µg/L)															
			Round 17 Sep-2002	Round 18 Dec-2002	Round 21 Sep-2003	Round 22 Dec-2003	Round 23 Mar-2004	Round 24 Jun-2004	Round 25 Sep-2004	Round 26 Dec-2004	Round 27 Mar-2005	Round 28 Jun-2005	Round 29 Sep-2005	Round 30 Dec-2005	Round 31 Mar-2006	Round 32 Jun-2006	Round 33 Oct-2006	Round 34 Dec-2006
B1A	Outside	Upper Zone	0.5 U[2]	0.5 U	0.5 U	0.5 U	0.5 U	n/s [3]	0.6 U	0.5 U	2.0	0.50 U	0.50 U	43	0.25 U	0.25 U	0.25 U	1.0 U
DM-5	Inside	Upper Zone	2.5 U	2.2	0.5 U	2.5 U	3.7	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.25 U	0.25 U	-- [4]	0.25 U	--
DM-8	Outside	Upper Zone	99	0.5 U	0.5 U	0.5 U	0.5 UJ[5]	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.38 J[6]	0.25 U	0.25 U	0.25 U	1.0 U
DM-8 dup[7]	Outside	Upper Zone	91	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
EX-3	Inside	Upper Zone	n/a [8]	n/a	0.5 U	0.5 U	n/s	n/s	n/s	0.5 U	0.7	0.50 U	0.50 U	0.27 J	5	--	1.5	--
MW-17	Inside	Upper Zone	**340,000**	**300,000**	**45,000**	**120,000**	**110,000 J**	**200,000**	**100,000**	**150,000**	**170,000**	**350,000**	**260,000**	**240,000**	**320,000**	--	**280,000**	--
MW-27	Inside	Upper Zone	0.5 U	71	0.5 U	2.5 U	1.7	7.7	0.5 U	43	39	2.4	2.4	1.30 J	2.10	--	0.25 U	--
MW-28	Inside	Upper Zone	**62,000**	**43,000**	14,000	13,000	6,100 J	7,700	6,200	5,300	4,800	4,200	2,800	2,400 J	2,600	--	750	--
MW-28 dup	Inside	Upper Zone	--	--	14,000	13,000	5,900 J	7,600	6,900	5,400	4,800	4,400	3,100	2,300	2,600	--	760	--
MW-29	Inside	Upper Zone	**36,000**	n/s	0.5 U	n/s	0.6	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.40 J	0.25 U	--	0.25 U	--
MW-38	Outside	Upper Zone	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.25 U	0.25 U	n/a	n/a	1.0 U
MW-38 dup	Outside	Upper Zone	--	0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	1.0 U
MW-39	Outside	Lower Zone	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.59	0.50 U	0.25 U	0.25 U	0.25 U	0.25 U	1.0 U
MW-40	Outside	Lower Zone	0.5 U	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.25 U	0.25 U	0.25 U	0.25 U	1.0 UJ
MW-41	Outside	Upper Zone	82	2.3	260	190	7.4	4.8	88 U	16	5.5	190	160	23	150 J	190	57	42 J
MW-41 dup	Outside	Upper Zone	--	1.8	250	190	7.7	4.5	88 U	16	4.3	190	170	25	110 J	190	56	--
MW-42	Outside	Lower Zone	0.9	0.5 U	0.5 U	0.5 U	0.5 UJ	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	1.80	0.25 U	0.25 U	0.25 U	1.0 UJ
MW-43	Outside	Lower Zone	62	11	1.8	14	8.2	24	21 U	28	28	26	29	31	22	22	12	28 J
MW-44	Outside	Upper Zone	160	29	120	94	140	180	220	200	240	240	220	170	250	250	170	170 J
MW-45	Outside	Lower Zone	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.25 U	0.25 U	0.25 U	0.25 U	1.0 UJ
MW-46	Outside	Upper Zone	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.50 U	0.50 U	0.25 U	0.25 U	0.25 U	0.25 U	1.0 U
MW-46 dup	Outside	Upper Zone	0.5 U	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.0 U

Notes:

1. The National Recommended Water Quality Criteria for toluene in water is 15,000 µg/L based on human health consumption of organism only. Concentrations that exceed this value are in **bold.**
2. U = Not detected; value to left is the detection limit.
3. n/s = Not sampled during these events. EX-3 was not sampled during Rounds 23-25 because the pump system was not in operation. B1-A was not sampled during Round 24 due to a pump malfunction. MW-29 was not sampled during Rounds 18 and 22 due to ponding atop the well.
4. -- = Well not included in performance monitoring plan for that sampling round.
5. UJ = The analyte was not detected; the associated detection limit is an estimated value.
6. J = Indicated value is estimated concentration.
7. dup = field duplicate sample.
8. n/a = Well not yet installed during indicated sampling period.