

Table 7. Logan Wash Monitoring Well Analytical Data

SampleID		LWCW-1A	LWCW-1A	LWCW-1A	LWCW-1A	LWCW-1A	LWCW-1A	LWCW-1A	LWCW-1A
SampleDate		2/2/2000	3/9/2000	10/26/2000	9/26/2001	5/10/2011	10/27/2011	6/13/2012	10/25/2012
Parameters	Units								
General Chemistry									
Alkalinity, Bicarbonate (as CaCO ₃)	mg/L	360	390	471	376	425	360	370	380
Alkalinity, Carbonate (as CaCO ₃)	mg/L	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Alkalinity, Total (As CaCO ₃)	mg/L	360	390	471	376	432	360	370	380
Ammonia	mg/L	1.2	0.8 U	0.8 U	0.15	0.1 U	0.12 U	0.14 U	0.32
Bromide	mg/L	---	---	180	---	0.5 U	1 U	0.5 U	1.3 U
Chemical Oxygen Demand (COD)	mg/L	---	---	26.3	---	38.8	28	38	18
Chloride	mg/L	31 D	35 J	46.7	41.6	35.4	16	24	32
Conductivity	umhos/cm	---	---	---	---	5550	4300	4000	4000
Cyanide (free)	mg/L	---	---	---	---	---	---	---	---
Fluoride	mg/L	4.2	3.1	3.9	3.1	---	---	---	---
Fluoride (dissolved)	mg/L	---	---	3.1	---	1.2	1.1 U	1.1	1.1
Hardness	mg/L	---	---	244	---	1130	770	820	760
Nitrate (as N)	mg/L	---	---	19.4	---	23.1	14	14	14 J
Nitrite (as N)	mg/L	---	---	0.01 U	---	1.2 U	0.25 U	0.13 U	0.13 U J
Oil and Grease, Total	mg/L	---	---	---	5 U	---	---	---	---
Oil and grease (HEM), polar	mg/L	---	---	---	---	---	4.7 U	2.4 J	5.2 U
Oil and grease (HEM), total	mg/L	5	2 U	---	---	2 J	---	---	---
pH	s.u.	---	---	---	---	7.5 J	7.66 J	7.39 J	7.74 J
Phenolics (Total)	mg/L	0.092	0.05 U	0.05 U	0.01 U	0.025	0.01 U	0.01 U	0.01 U
Phosphorus as P, total	mg/L	---	---	---	---	0.1 U	0.1 U	0.1 U	0.058 J
Silica	mg/L	---	---	---	---	---	---	---	---
Sulfate	mg/L	1200 D	220 J	1510	1340	1950	1400	1700	1600
Sulfide	mg/L	---	---	---	---	1.8 J	3 U	3 U	3 U
Sulfite	mg/L	2 U	2 U J	2 U	2 U	---	---	---	---
Thiocyanate	mg/L	0.4 U	0.4 U	1 U	0.7 U	---	---	---	---
Thiosulfate	mg/L	0.4 U	0.4 U	1 U	0.7 U	---	---	---	---
Total Dissolved Solids (TDS)	mg/L	2170	2770	2710	2400	3620	2700	2500	2500
Nitrogen, Total Kjeldahl	mg/L	1.2	1.7	1.8	1.7	5 U	5 U	5 U	1.1 J
Total Organic Carbon - Duplicates	mg/L	---	---	---	---	---	---	---	---
Total Organic Carbon (TOC)	mg/L	---	---	---	---	14.1	11	11	11
Total Pet_ Hydrocarbons	mg/L	---	---	---	---	0.67	0.48 U	0.5 U	---
Total Suspended Solids (TSS)	mg/L	---	---	34	---	9.2	17	40	150
Dissolved Organic Carbon (DOC)	mg/L	8.3	11 J	14.2	10.9	14.4	12	10	11

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SampleDate		2/2/2000	3/9/2000	10/26/2000	9/26/2001	5/10/2011	10/27/2011	6/13/2012	10/25/2012
Parameters	Units								
Metals									
Arsenic	ug/L	20	20	23.2	19.6	14.7	13	15	15
Arsenic (Dissolved)	ug/L	---	---	24.9	---	14.7	14	13	11
Boron	ug/L	4900	8300	6300 E	5780	---	---	---	---
Boron (Dissolved)	ug/L	---	---	6550 E	---	9590	8200	9700	7900
Cadmium	ug/L	2 U	2 U	0.84	0.51	---	---	---	---
Cadmium (Dissolved)	ug/L	---	---	0.49	---	0.098 J	1 U	1 U	0.099 J
Calcium	ug/L	---	---	---	---	---	---	---	---
Calcium (Dissolved)	ug/L	---	---	98000	---	126000	98000	110000	78000
Chromium	ug/L	---	---	1.4	---	4.9	3.7	3.2	2.5
Chromium (Dissolved)	ug/L	---	---	1.5	---	4.6	3.6	2.5	1.1 J
Chromium III	ug/L	---	---	10 U	---	---	---	---	---
Chromium VI	ug/L	---	---	0.05 U	---	---	---	---	---
Copper	ug/L	---	---	18.9	---	---	---	---	---
Copper (Dissolved)	ug/L	---	---	14.9	---	6.2	6.5	8.1	6
Iron	ug/L	---	---	628 E	---	198	420	780	1900
Iron (Dissolved)	ug/L	---	---	369 E	---	50 U	8.1 J	24 J	22 J
Lead	ug/L	---	---	6.9	---	---	---	---	---
Lead (Dissolved)	ug/L	---	---	7.7	---	1 U	1 U	1 U	0.14 J
Lithium	ug/L	200 J	620	337 J	---	---	---	---	---
Lithium (Dissolved)	ug/L	---	---	339 J	308	264	200	240	250
Magnesium	ug/L	---	---	93100 E	---	---	---	---	---
Magnesium (Dissolved)	ug/L	---	---	28.6 U	---	167000	130000	140000	97000
Manganese	ug/L	---	---	16.1	---	---	---	---	---
Manganese (Dissolved)	ug/L	---	---	15.1	---	0.22 J	1.5 J	1 J	13
Mercury	ug/L	---	---	0.12 U	---	---	---	---	---
Mercury (Dissolved)	ug/L	---	---	0.12 U	---	0.2 U	0.2 U	0.2 U	0.2 U
Molybdenum (Dissolved)	ug/L	---	---	---	---	---	---	---	---
Nickel	ug/L	---	---	5.2	---	---	---	---	---
Nickel (Dissolved)	ug/L	---	---	7.1	---	---	---	---	---
Potassium	ug/L	---	---	1100000 E	---	---	---	---	---
Potassium (Dissolved)	ug/L	---	---	151000 E	---	18400	18000	17000	13000

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SampleDate		2/2/2000	3/9/2000	10/26/2000	9/26/2001	5/10/2011	10/27/2011	6/13/2012	10/25/2012
Parameters	Units								
Metals									
Selenium	ug/L	---	---	3.8	---	---	---	---	---
Selenium (Dissolved)	ug/L	---	---	7.1	---	46.1	37	37	17
Silicon	ug/L								
Silicon (Dissolved)	ug/L	---	---	---	---	6730	6800	7400	6000
Silver	ug/L	5 U	5 U	0.05 U	10 U	---	---	---	---
Silver (Dissolved)	ug/L	---	---	0.03 U	---	---	---	---	---
Sodium	ug/L	---	---	---	---	---	---	---	---
Sodium (Dissolved)	ug/L	---	---	489000	---	596000	480000	660000	630000
Strontium	ug/L	---	---	5000 J	---	---	---	---	---
Strontium (Dissolved)	ug/L	---	---	4280 J	---	4100	3100	4000	2800
Uranium (Dissolved)	ug/L	---	---	---	---	---	---	---	---
Zinc	ug/L	---	---	66	---	---	---	---	---
Zinc (Dissolved)	ug/L	---	---	58.4	---	3.5 J	9.9 U	10	9.9
Volatile Organic Compounds - BTEX									
Benzene	ug/L	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	ug/L	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U
Toluene	ug/L	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U
Xylenes, Total	ug/L	1 U	1 U	2 U	1 U	3 U	3 U	3 U	3 U
Petroleum Products									
Diesel fuel	mg/L	---	---	0.1 U	---	---	---	---	0.51 U
TPH - Extractable (DRO)	mg/L	---	---	---	---	---	---	---	---
TPH (non-polar)	mg/L	---	---	---	---	0.67	0.48 U	0.5 U	---
TPH (C21 - C28)	mg/L	---	---	---	---	---	---	---	---
Radiology									
Gross Alpha Analytes	pci/l	53	5	10 + or - 16	5 + or - 2	---	---	---	---
Gross Beta Analytes	pci/l	150	100	150 + or - 30	15 + or - 2	---	---	---	---
Field Parameters									
Specific conductivity, field	umhos/cm	---	---	---	---	---	---	---	---
Dissolved oxygen (DO), field	mg/L	---	---	---	---	---	---	---	---
Oxidation reduction potential (ORP), fie	millivolts	---	---	---	---	---	---	---	---
pH, field	s.u.	---	---	---	---	---	---	---	---
Temperature, ambient	Deg C	---	---	---	---	---	---	---	---
Temperature, field	Deg C	---	---	---	---	---	---	---	---
Turbidity, field	NTU	---	---	---	---	---	---	---	---

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SampleDate		6/12/2013	10/23/2013	5/21/2014	10/27/2014	5/13/2015	10/19/2015	5/25/2016	10/11/2016	5/2/2017	10/11/2017
Parameters	Units										
General Chemistry											
Alkalinity, Bicarbonate (as CaCO ₃)	mg/L	390	400	420	440 B	470	430	367	351	374	391
Alkalinity, Carbonate (as CaCO ₃)	mg/L	5 U	5 U	5 U	5 U	5 U	5 U	2.71 U	2.71 U	2.71 U	2.71 U
Alkalinity, Total (As CaCO ₃)	mg/L	390	400	420	440 B	470	430	367	351	374	391
Ammonia	mg/L	0.15	0.13 U	0.05 J	0.1 U	0.24	0.1 U	0.038 U	0.038 U	0.0317 U	0.0317 U
Bromide	mg/L	2.5 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	0.079 U	0.079 U	0.079 U	0.079 U
Chemical Oxygen Demand (COD)	mg/L	34	30	33	51	32	28 B	53.1	64.4	34	31.6
Chloride	mg/L	27	28	17	22	23	26	20.2	20.7	23.5	23
Conductivity	umhos/cm	4100	4200	---	4100	4000	4400	4160	38300	3850	4030
Cyanide (free)	mg/L	---	---	---	---	---	---	---	---	---	---
Fluoride	mg/L	---	---	---	---	---	---	1.31	1.37	1.17	1.19
Fluoride (dissolved)	mg/L	0.41	0.76	0.38	0.87	1.1	1.2	---	---	---	---
Hardness	mg/L	1000	1200	990	1100	1100	1100	896	814	907	995
Nitrate (as N)	mg/L	16	18	18	22 H	21	21 B	16.4	16.4	18	22.7 U
Nitrite (as N)	mg/L	0.13 U	0.13 U	0.13 U	0.13 UH	0.13 U	U*	0.0277 U	0.0277 U	0.0277 U	0.0277 U
Oil and Grease, Total	mg/L	---	---	---	3.4 J	---	---	---	---	---	---
Oil and grease (HEM), polar	mg/L	1.4 J	1.8 J	4.7 U	---	4.5 U	4.5 U	---	---	---	---
Oil and grease (HEM), total	mg/L	---	---	---	---	---	---	1.16 U	1.16 U	1.16 U	1.16 U
pH	s.u.	7.79 J	7.52 J	7.93 J	7.5 HF	7.74 J	7.69 HF	7.56 J	7.70 J	7.69 J	7.6 J
Phenolics (Total)	mg/L	0.0077 J	0.01 U	0.01 U	0.01 U	0.015	0.01 U	0.0205 U	0.0179 J	0.0083 U	0.0083 U
Phosphorus as P, total	mg/L	0.1 U	0.1 U	0.017 J	0.1 U	0.1 U	0.1 U	0.035 U	0.035 U	0.0843 U	0.0958 J
Silica	mg/L	---	17	---	---	---	---	16.7	15.8	16.7	16.9
Sulfate	mg/L	1900	2100	1800	2100	2000	2200	1800	1700	1820	1790
Sulfide	mg/L	3 U	3 U	3 U	0.53 J	0.49 J	30 U	0.0065 U	0.0065 U	0.0065 U	0.0065 U
Sulfite	mg/L	---	---	---	---	---	---	---	---	---	---
Thiocyanate	mg/L	---	---	---	---	---	---	---	---	---	---
Thiosulfate	mg/L	---	---	---	---	---	---	---	---	---	---
Total Dissolved Solids (TDS)	mg/L	2600	2700	2800	3000	3500	3600	3360	2240	3020	2900
Nitrogen, Total Kjeldahl	mg/L	3.4 J	3.9 J	7.9	5 U	5 U	3.4 J	1.32	0.847	0.951	0.120 U
Total Organic Carbon - Duplicates	mg/L	---	---	---	12	---	---	---	---	---	---
Total Organic Carbon (TOC)	mg/L	8.5	10	10	---	13	13	89.3	10.3	11.3	11.6
Total Pet_ Hydrocarbons	mg/L	---	---	---	---	---	---	---	---	---	---
Total Suspended Solids (TSS)	mg/L	24	7.2	6.4	13	---	---	---	---	---	---
Dissolved Organic Carbon (DOC)	mg/L	10	11	10	11	13	13	88.4	9.73	11.4	11.9

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SampleDate		6/12/2013	10/23/2013	5/21/2014	10/27/2014	5/13/2015	10/19/2015	5/25/2016	10/11/2016	5/2/2017	10/11/2017
Parameters	Units										
Metals											
Arsenic	ug/L	12	14	14	14	13	16	21.5	14.5	384	13
Arsenic (Dissolved)	ug/L	12	19	15	13	13	15	15.2	13.8	15.3	14.3
Boron	ug/L	---	---	---	---	11000	12000	---	---	---	---
Boron (Dissolved)	ug/L	11000	11000	12000	10000	---	---	8450	9720	12800	10600
Cadmium	ug/L	---	---	---	---	---	---	---	---	---	---
Cadmium (Dissolved)	ug/L	0.14 J	0.85 J	1 U	0.081 J	1 U	1.5	0.220 U	0.220 U	0.220 U	0.22 U
Calcium	ug/L	---	---	---	---	---	---	---	---	---	---
Calcium (Dissolved)	ug/L	130000	170000	130000	130000	120000	150000 B	115000	121000	141000	139000
Chromium	ug/L	2.5	2.6	4.9	3.6	3.2	4.7	6.26	2.94	118	3.47
Chromium (Dissolved)	ug/L	2.6	4 J	4.9	3.2	2.9	4.3	4.44	2.98	4.52	3.39
Chromium III	ug/L	---	---	---	---	---	---	---	---	---	---
Chromium VI	ug/L	---	---	---	---	---	---	---	---	---	---
Copper	ug/L	---	---	---	---	---	---	---	---	---	---
Copper (Dissolved)	ug/L	7	12	5.5	6	5.6	9.8	5.83	6.92	18.3	11.2
Iron	ug/L	340	160	64	240	350	120	98.8 J	133	2630	22.7 J
Iron (Dissolved)	ug/L	5.3 J	250 U	50 U	11 J	30 J	50 U	65.9 J	15.0 U	15.0 U	15 U
Lead	ug/L	---	---	---	---	---	---	---	---	---	---
Lead (Dissolved)	ug/L	0.57 J	5 U	1 U	0.074 J	1 U	0.9 J	0.260 U	0.260 U	0.260 U	0.26 U
Lithium	ug/L	---	---	---	---	---	---	---	---	---	---
Lithium (Dissolved)	ug/L	240	240	230	250	250	270	286	255	323	243
Magnesium	ug/L	---	---	---	---	---	---	---	---	---	---
Magnesium (Dissolved)	ug/L	150000	210000	160000	160000	150000	170000	125000	128000	152000	155000
Manganese	ug/L	---	---	---	---	---	---	---	---	---	---
Manganese (Dissolved)	ug/L	5 U	0.46 J	0.32 J	0.87 JB	0.2 J	0.42 J	2.07 J	0.510 U	0.510 U	0.51 U
Mercury	ug/L	---	---	---	---	---	---	---	---	---	---
Mercury (Dissolved)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.0490 U	0.0490 U	0.0490 U	0.049 U
Molybdenum (Dissolved)	ug/L	---	570	---	---	---	---	---	---	---	---
Nickel	ug/L	---	---	---	---	---	---	---	---	---	---
Nickel (Dissolved)	ug/L	---	4.5 J	---	---	---	---	---	---	---	---
Potassium	ug/L	---	---	---	---	---	---	---	---	---	---
Potassium (Dissolved)	ug/L	19000	28000	22000	21000	20000	21000	18300	17200	21500	20600

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SampleDate		6/12/2013	10/23/2013	5/21/2014	10/27/2014	5/13/2015	10/19/2015	5/25/2016	10/11/2016	5/2/2017	10/11/2017
Parameters	Units										
Metals											
Selenium	ug/L	---	---	---	---	---	---	---	---	---	---
Selenium (Dissolved)	ug/L	40	52	49	46	49	60	42.7	41.1	52.1	45.6
Silicon	ug/L	---	---	---	---	---	---	7810	7410	7810	7880
Silicon (Dissolved)	ug/L	6500	8100	8000	6600	6700	7600	---	---	---	---
Silver	ug/L	---	---	---	---	---	---	---	---	---	---
Silver (Dissolved)	ug/L	---	5 U	---	---	---	---	---	---	---	---
Sodium	ug/L	---	---	---	---	---	---	---	---	---	---
Sodium (Dissolved)	ug/L	540000	720000	610000	600000	550000	720000	556000	576000	649000	631000
Strontium	ug/L	---	---	---	---	---	---	---	---	---	---
Strontium (Dissolved)	ug/L	4400	6200	4100	4500	3700	4600	3380	3590	4650	4710
Uranium (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---
Zinc	ug/L	---	---	---	---	---	---	---	---	---	---
Zinc (Dissolved)	ug/L	15	25 U	5 U	7.7 B	1.9 J	17 B	3.21 U	1.91 U	9.69 J	7.22 U
Volatile Organic Compounds - BTEX											
Benzene	ug/L	1 U	1 U	1 U	1 U	5 U	5 U	0.331 U	0.331 U	0.331 U	0.331 U
Ethylbenzene	ug/L	1 U	1 U	1 U	1 U	5 U	5 U	0.384 U	0.384 U	0.384 U	0.384 U
Toluene	ug/L	1 U	1 U	1 U	1 U	5 U	5 U	0.780 U	0.780 U	0.412 U	0.412 U
Xylenes, Total	ug/L	3 U	3 U	3 U	3 U	10 U	10 U	1.06 U	1.06 U	1.06 U	1.06 U
Petroleum Products											
Diesel fuel	mg/L	0.48 U	0.49 U	0.52 U	0.54:U	0.5 U	0.33 J	0.148	0.0247 U	0.067 U	0.113
TPH - Extractable (DRO)	mg/L	---	---	---	---	---	---	---	---	---	---
TPH (non-polar)	mg/L	---	---	---	---	---	---	---	---	---	---
TPH (C21 - C28)	mg/L	---	---	---	---	---	---	---	---	---	---
Radiology											
Gross Alpha Analytes	pci/l	---	---	---	---	---	---	---	---	---	---
Gross Beta Analytes	pci/l	---	---	---	---	---	---	---	---	---	---
Field Parameters											
Specific conductivity, field	umhos/cm	---	4265	4007	4177	4227	4515	4164	3669	3884	4052
Dissolved oxygen (DO), field	mg/L	---	6.80	9.52	6.34	7.39	9.14	8.02	8.84	9.53	73.4
Oxidation reduction potential (ORP), fie	millivolts	---	203.7	213.6	162.3	252	198.8	173.5	313.6	209.2	75.7
pH, field	s.u.	---	7.45	7.41	6.34	7.37	6.91	7.73	6.49	7.67	6.07
Temperature, ambient	Deg C	---	12.7	18.3	10.0	18	---	---	---	15.6	15.6
Temperature, field	Deg C	---	8.72	8.48	9.69	8.7	9.07	8.09	9.26	9	9.3
Turbidity, field	NTU	---	9.67	5.43	10.30	23.51	3.46	16.78	4.56	9.46	1.65

Notes: U = result not detected at the reporting limit;

J = result value greater than the MDL and less than the RL; result considered estimated;

B = analyte found in sample and associated blank;

HF = analysis holding time exceeded; result considered estimated;

E = result estimated due to the presence of interference;

R = rejected data; --- = Analysis not performed