

Table 11. Logan Wash Monitoring Well Analytical Data

| SampleID | | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A |
|------------------------------------|----------|----------|----------|----------|----------|------------|----------|-----------|-----------|-----------|------------|-----------|
| SampleDate | | 2/2/2000 | 3/9/2000 | 4/7/2000 | 8/3/2000 | 10/26/2000 | 2/7/2001 | 5/23/2001 | 9/26/2001 | 5/10/2011 | 10/27/2011 | 6/13/2012 |
| Parameters | Units | | | | | | | | | | | |
| General Chemistry | | | | | | | | | | | | |
| Alkalinity, Bicarbonate (as CaCO3) | mg/L | 360 | 390 | --- | --- | 471 | --- | --- | 376 | 425 | 360 | 370 |
| Alkalinity, Carbonate (as CaCO3) | mg/L | 5 U | 5 U | --- | --- | 5 U | --- | --- | 5 U | 5 U | 5 U | 5 U |
| Alkalinity, Total (As CaCO3) | mg/L | 360 | 390 | --- | --- | 471 | --- | --- | 376 | 432 | 360 | 370 |
| Ammonia | mg/L | 1.2 | 0.8 U | --- | --- | 0.8 U | --- | --- | 0.15 | 0.1 U | 0.12 U | 0.14 U |
| Bromide | mg/L | --- | --- | --- | --- | 180 | --- | --- | --- | 0.5 U | 1 U | 0.5 U |
| Chemical Oxygen Demand (COD) | mg/L | --- | --- | --- | --- | 26.3 | --- | --- | --- | 38.8 | 28 | 38 |
| Chloride | mg/L | 31 D | 35 J | --- | --- | 46.7 | --- | --- | 41.6 | 35.4 | 16 | 24 |
| Specific Conductivity | umhos/cm | --- | --- | --- | --- | --- | --- | --- | --- | 5550 | 4300 | 4000 |
| Cyanide (free) | mg/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Fluoride | mg/L | 4.2 | 3.1 | 0.4 U | 1.8 | 3.9 | 2.5 | 2.3 | 3.1 | --- | --- | --- |
| Fluoride (dissolved) | mg/L | --- | --- | --- | --- | 3.1 | --- | --- | --- | 1.2 | 1.1 U | 1.1 |
| Hardness | mg/L | --- | --- | --- | --- | 244 | --- | --- | --- | 1130 | 770 | 820 |
| Nitrate (as N) | mg/L | --- | --- | --- | --- | 19.4 | --- | --- | --- | 23.1 | 14 | 14 |
| Nitrite (as N) | mg/L | --- | --- | --- | --- | 0.01 U | --- | --- | --- | 1.2 U | 0.25 U | 0.13 U |
| Oil and Grease, Total | mg/L | --- | --- | --- | --- | --- | --- | --- | 5 U | --- | --- | --- |
| Oil and grease (HEM), polar | mg/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | 4.7 U | 2.4 J |
| Oil and grease (HEM), total | mg/L | 5 | 2 U | --- | --- | --- | --- | --- | --- | 2 J | --- | --- |
| pH | s.u. | --- | --- | --- | --- | --- | --- | --- | --- | 7.5 J | 7.66 J | 7.39 J |
| Phenolics (Total) | mg/L | 0.092 | 0.05 U | --- | --- | 0.05 U | --- | --- | 0.01 U | 0.025 | 0.01 U | 0.01 U |
| Phosphorus as P, total | mg/L | --- | --- | --- | --- | --- | --- | --- | --- | 0.1 U | 0.1 U | 0.1 U |
| Silica | mg/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sulfate | mg/L | 1200 D | 220 J | --- | --- | 1510 | --- | --- | 1340 | 1950 | 1400 | 1700 |
| Sulfide | mg/L | --- | --- | --- | --- | --- | --- | --- | --- | 1.8 J | 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 |
| Nitrogen, Total Kjeldahl | mg/L | 1.2 | 1.7 | --- | --- | 1.8 | --- | --- | 1.7 | 5 U | 5 U | 5 U |
| Total Organic Carbon (TOC) | mg/L | --- | --- | --- | --- | --- | --- | --- | --- | 14.1 | 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 |
| Dissolved Organic Carbon (DOC) | mg/L | 8.3 | 11 J | --- | --- | 14.2 | --- | --- | 10.9 | 14.4 | 12 | 10 |

Table 11. Logan Wash Monitoring Well Analytical Data

| SampleID | | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A |
|------------------------|-------|----------|----------|----------|----------|------------|----------|-----------|-----------|-----------|------------|-----------|
| SampleDate | | 2/2/2000 | 3/9/2000 | 4/7/2000 | 8/3/2000 | 10/26/2000 | 2/7/2001 | 5/23/2001 | 9/26/2001 | 5/10/2011 | 10/27/2011 | 6/13/2012 |
| Parameters | Units | | | | | | | | | | | |
| Metals | | | | | | | | | | | | |
| Arsenic | ug/L | 20 | 20 | 20 | 13 | 23.2 | 41 | 47 U | 19.6 | 14.7 | 13 | 15 |
| Arsenic (Dissolved) | ug/L | --- | --- | --- | --- | 24.9 | --- | --- | --- | 14.7 | 14 | 13 |
| Boron | ug/L | 4900 | 8300 | 8800 | 7700 | 6300 E | 2330 | 6400 | 5780 | --- | --- | --- |
| Boron (Dissolved) | ug/L | --- | --- | --- | --- | 6550 E | --- | --- | --- | 9590 | 8200 | 9700 |
| Cadmium | ug/L | 2 U | 2 U | 0.9 J | 2.1 U | 0.84 | 0.73 | --- | 0.51 | --- | --- | --- |
| Cadmium (Dissolved) | ug/L | --- | --- | --- | --- | 0.49 | --- | --- | --- | 0.098 J | 1 U | 1 U |
| Calcium | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Calcium (Dissolved) | ug/L | --- | --- | --- | --- | 98000 | --- | --- | --- | 126000 | 98000 | 110000 |
| Chromium | ug/L | --- | --- | --- | --- | 1.4 | --- | --- | --- | 4.9 | 3.7 | 3.2 |
| Chromium (Dissolved) | ug/L | --- | --- | --- | --- | 1.5 | --- | --- | --- | 4.6 | 3.6 | 2.5 |
| Chromium III | ug/L | --- | --- | --- | --- | 10 U | --- | --- | --- | --- | --- | --- |
| Chromium VI | ug/L | --- | --- | --- | --- | 0.05 U | --- | --- | --- | --- | --- | --- |
| Copper | ug/L | --- | --- | --- | --- | 18.9 | --- | 26 | --- | --- | --- | --- |
| Copper (Dissolved) | ug/L | --- | --- | --- | --- | 14.9 | --- | --- | --- | 6.2 | 6.5 | 8.1 |
| Iron | ug/L | --- | --- | --- | --- | 628 E | --- | --- | --- | 198 | 420 | 780 |
| Iron (Dissolved) | ug/L | --- | --- | --- | --- | 369 E | --- | --- | --- | 50 U | 8.1 J | 24 J |
| Lead | ug/L | --- | --- | --- | 59 U | 6.9 | 39.6 | 59 U | --- | --- | --- | --- |
| Lead (Dissolved) | ug/L | --- | --- | --- | --- | 7.7 | --- | --- | --- | 1 U | 1 U | 1 U |
| Lithium | ug/L | 200 J | 620 | --- | --- | 337 J | --- | --- | --- | --- | --- | --- |
| Lithium (Dissolved) | ug/L | --- | --- | --- | --- | 339 J | --- | --- | 308 | 264 | 200 | 240 |
| Magnesium | ug/L | --- | --- | --- | --- | 93100 E | --- | --- | --- | --- | --- | --- |
| Magnesium (Dissolved) | ug/L | --- | --- | --- | --- | 28.6 U | --- | --- | --- | 167000 | 130000 | 140000 |
| Manganese | ug/L | --- | --- | --- | --- | 16.1 | --- | --- | --- | --- | --- | --- |
| Manganese (Dissolved) | ug/L | --- | --- | --- | --- | 15.1 | --- | --- | --- | 0.22 J | 1.5 J | 1 J |
| Mercury | ug/L | --- | --- | --- | --- | 0.12 U | --- | --- | --- | --- | --- | --- |
| Mercury (Dissolved) | ug/L | --- | --- | --- | --- | 0.12 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 |

Table 11. Logan Wash Monitoring Well Analytical Data

| SampleID | | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A |
|--------------------------------------------|------------|----------|----------|----------|----------|---------------|----------|-----------|-------------|-----------|------------|-----------|
| SampleDate | | 2/2/2000 | 3/9/2000 | 4/7/2000 | 8/3/2000 | 10/26/2000 | 2/7/2001 | 5/23/2001 | 9/26/2001 | 5/10/2011 | 10/27/2011 | 6/13/2012 |
| Parameters | Units | | | | | | | | | | | |
| Metals | | | | | | | | | | | | |
| Selenium | ug/L | --- | --- | --- | --- | 3.8 | --- | --- | --- | --- | --- | --- |
| Selenium (Dissolved) | ug/L | --- | --- | --- | --- | 7.1 | --- | --- | --- | 46.1 | 37 | 37 |
| Silicon | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Silicon (Dissolved) | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | 6730 | 6800 | 7400 |
| Silver | ug/L | 5 U | 5 U | 10 U | --- | 0.05 U | --- | --- | 10 U | --- | --- | --- |
| Silver (Dissolved) | ug/L | --- | --- | --- | --- | 0.03 U | --- | --- | --- | --- | --- | --- |
| Sodium | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sodium (Dissolved) | ug/L | --- | --- | --- | --- | 489000 | --- | --- | --- | 596000 | 480000 | 660000 |
| Strontium | ug/L | --- | --- | --- | --- | 5000 J | --- | --- | --- | --- | --- | --- |
| Strontium (Dissolved) | ug/L | --- | --- | --- | --- | 4280 J | --- | --- | --- | 4100 | 3100 | 4000 |
| Uranium (Dissolved) | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Zinc | ug/L | --- | --- | --- | --- | 66 | --- | --- | --- | --- | --- | --- |
| Zinc (Dissolved) | ug/L | --- | --- | --- | --- | 58.4 | --- | --- | --- | 3.5 J | 9.9 U | 10 |
| Volatile Organic Compounds - BTEX | | | | | | | | | | | | |
| Benzene | ug/L | 1 U | 1 U | 1 U | 0.2 U | 2 U | 2 U | 2 U | 1 U | 1 U | 1 U | 1 U |
| Ethylbenzene | ug/L | 1 U | 1 U | 1 U | 0.2 U | 2 U | 2 U | 2 U | 1 U | 1 U | 1 U | 1 U |
| Toluene | ug/L | 1 U | 1 U | 1 U | 0.2 U | 2 U | 2 U | 2 U | 1 U | 1 U | 1 U | 1 U |
| Xylenes, Total | ug/L | 1 U | 1 U | 1 U | 0.2 U | 2 U | 2 U | 2 U | 1 U | 3 U | 3 U | 3 U |
| Petroleum Products | | | | | | | | | | | | |
| Diesel fuel | mg/L | --- | --- | --- | --- | 0.1 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), field | millivolts | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| pH, field | s.u. | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Temperature, ambient | Deg C | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Temperature, field | Deg C | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Turbidity, field | NTU | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |

Table 11. Logan Wash Monitoring Well Analytical Data

| SampleID | | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A |
|------------------------------------|----------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|----------|------------|
| SampleDate | | 10/25/2012 | 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 CaCO3) | mg/L | 380 | 390 | 400 | 420 | 440 B | 470 | 430 | 367 | 351 | 374 | 391 |
| Alkalinity, Carbonate (as CaCO3) | mg/L | 5 U | 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 CaCO3) | mg/L | 380 | 390 | 400 | 420 | 440 B | 470 | 430 | 367 | 351 | 374 | 391 |
| Ammonia | mg/L | 0.32 | 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 | 1.3 U | 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 | 18 | 34 | 30 | 33 | 51 | 32 | 28 B | 53.1 | 64.4 | 34 | 31.6 |
| Chloride | mg/L | 32 | 27 | 28 | 17 | 22 | 23 | 26 | 20.2 | 20.7 | 23.5 | 23 |
| Specific Conductivity | umhos/cm | 4000 | 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 | 1.1 | 0.41 | 0.76 | 0.38 | 0.87 | 1.1 | 1.2 | --- | --- | --- | --- |
| Hardness | mg/L | 760 | 1000 | 1200 | 990 | 1100 | 1100 | 1100 | 896 | 814 | 907 | 995 |
| Nitrate (as N) | mg/L | 14 J | 16 | 18 | 18 | 22 H | 21 | 21 B | 16.4 | 16.4 | 18 | 22.7 U |
| Nitrite (as N) | mg/L | 0.13 U J | 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 | 5.2 U | 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. | 7.74 J | 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 | 0.01 U | 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 | 0.058 J | 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 | 1600 | 1900 | 2100 | 1800 | 2100 | 2000 | 2200 | 1800 | 1700 | 1820 | 1790 |
| Sulfide | mg/L | 3 U | 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 | 2500 | 2600 | 2700 | 2800 | 3000 | 3500 | 3600 | 3360 | 2240 | 3020 | 2900 |
| Nitrogen, Total Kjeldahl | mg/L | 1.1 J | 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 (TOC) | mg/L | 11 | 8.5 | 10 | 10 | 12 | 13 | 13 | 89.3 | 10.3 | 11.3 | 11.6 |
| Total Pet_ Hydrocarbons | mg/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Total Suspended Solids (TSS) | mg/L | 150 | 24 | 7.2 | 6.4 | 13 | --- | --- | --- | --- | --- | --- |
| Dissolved Organic Carbon (DOC) | mg/L | 11 | 10 | 11 | 10 | 11 | 13 | 13 | 88.4 | 9.73 | 11.4 | 11.9 |

Table 11. Logan Wash Monitoring Well Analytical Data

| SampleID | | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A |
|------------------------|-------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|----------|------------|
| SampleDate | | 10/25/2012 | 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 | 15 | 12 | 14 | 14 | 14 | 13 | 16 | 21.5 | 14.5 | 384 | 13 |
| Arsenic (Dissolved) | ug/L | 11 | 12 | 19 | 15 | 13 | 13 | 15 | 15.2 | 13.8 | 15.3 | 14.3 |
| Boron | ug/L | --- | --- | --- | --- | --- | 11000 | 12000 | --- | --- | --- | --- |
| Boron (Dissolved) | ug/L | 7900 | 11000 | 11000 | 12000 | 10000 | --- | --- | 8450 | 9720 | 12800 | 10600 |
| Cadmium | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cadmium (Dissolved) | ug/L | 0.099 J | 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 | 78000 | 130000 | 170000 | 130000 | 130000 | 120000 | 150000 B | 115000 | 121000 | 141000 | 139000 |
| Chromium | ug/L | 2.5 | 2.5 | 2.6 | 4.9 | 3.6 | 3.2 | 4.7 | 6.26 | 2.94 | 118 | 3.47 |
| Chromium (Dissolved) | ug/L | 1.1 J | 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 | 6 | 7 | 12 | 5.5 | 6 | 5.6 | 9.8 | 5.83 | 6.92 | 18.3 | 11.2 |
| Iron | ug/L | 1900 | 340 | 160 | 64 | 240 | 350 | 120 | 98.8 J | 133 | 2630 | 22.7 J |
| Iron (Dissolved) | ug/L | 22 J | 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 | 0.14 J | 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 | 250 | 240 | 240 | 230 | 250 | 250 | 270 | 286 | 255 | 323 | 243 |
| Magnesium | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Magnesium (Dissolved) | ug/L | 97000 | 150000 | 210000 | 160000 | 160000 | 150000 | 170000 | 125000 | 128000 | 152000 | 155000 |
| Manganese | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Manganese (Dissolved) | ug/L | 13 | 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 | 0.2 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 | 13000 | 19000 | 28000 | 22000 | 21000 | 20000 | 21000 | 18300 | 17200 | 21500 | 20600 |

Table 11. Logan Wash Monitoring Well Analytical Data

| SampleID | | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A |
|--------------------------------------------|------------|------------|-----------|------------|-----------|------------|-----------|------------|-----------|------------|----------|------------|
| SampleDate | | 10/25/2012 | 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 | 17 | 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 | 6000 | 6500 | 8100 | 8000 | 6600 | 6700 | 7600 | --- | --- | --- | --- |
| Silver | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Silver (Dissolved) | ug/L | --- | --- | 5 U | --- | --- | --- | --- | --- | --- | --- | --- |
| Sodium | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sodium (Dissolved) | ug/L | 630000 | 540000 | 720000 | 610000 | 600000 | 550000 | 720000 | 556000 | 576000 | 649000 | 631000 |
| Strontium | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Strontium (Dissolved) | ug/L | 2800 | 4400 | 6200 | 4100 | 4500 | 3700 | 4600 | 3380 | 3590 | 4650 | 4710 |
| Uranium (Dissolved) | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Zinc | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Zinc (Dissolved) | ug/L | 9.9 | 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 | 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 | 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 | 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 | 3 U | 10 U | 10 U | 1.06 U | 1.06 U | 1.06 U | 1.06 U |
| Petroleum Products | | | | | | | | | | | | |
| Diesel fuel | mg/L | 0.51 U | 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), field | 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 |

Table 11. Logan Wash Monitoring Well Analytical Data

| SampleID | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LW-22A | LW-22A | LW-22A | LW-22A | LW-22A | LW-22A | |
|------------------------------------|----------|------------|------------|------------|-----------|------------|-----------|------------|-----------|-----------|----------|------------|----------|
| SampleDate | 6/4/2018 | 11/13/2018 | 05/29/2019 | 10/14/2019 | 5/26/2020 | 10/7/2020 | 5/13/2015 | 10/15/2015 | 5/24/2016 | 10/5/2016 | 5/3/2017 | 10/10/2017 | |
| Parameters | Units | | | | | | | | | | | | |
| General Chemistry | | | | | | | | | | | | | |
| Alkalinity, Bicarbonate (as CaCO3) | mg/L | 432 | 411 | 395 | 369 | 418 | 379 | 520 | 480 B | 412 | 435 | 448 | 451 |
| Alkalinity, Carbonate (as CaCO3) | mg/L | 20 U | 2.71 U | 2.71 U | 2.71 U | 8.45 U | 8.45 U | 5 U | 5 U | 2.71 U | 2.71 U | 2.71 U | 2.71 U |
| Alkalinity, Total (As CaCO3) | mg/L | 432 | 411 | 395 | 369 | 418 | 379 | 520 | 480 B | 412 | 435 | 448 | 451 |
| Ammonia | mg/L | 0.1 U | 0.0317 U | 0.0317 U | 0.0317 U | 0.117 U | 0.117 U | 0.1 U | 0.1 U | 0.038 U | 0.038 U | 0.0317 U | 0.0317 U |
| Bromide | mg/L | 1 U | 1.58 U | 0.079 U | 0.079 U | 17.6 U | 35.3 U | 0.5 U | 1.3 U | 0.079 U | 0.079 U | 0.079 U | 0.079 U |
| Chemical Oxygen Demand (COD) | mg/L | 56.8 | 33 | 32.8 | --- | --- | --- | 9.4 J | 11 | 10.9 | 26.8 | 20.7 | 14.4 |
| Chloride | mg/L | 25.2 | 28.1 | 17.9 | 18.7 | 23.1 | 24.5 | 15 | 14 | 16.7 | 16.9 | 15.9 | 15.5 |
| Specific Conductivity | umhos/cm | 3510 | 4240 | 3970 | 3280 | 4090 | 3970 | 2400 | 2500 | 37600 | 2750 | 1430 | 2500 |
| Cyanide (free) | mg/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Fluoride | mg/L | 1.11 | 1.28 | --- | --- | --- | --- | --- | --- | 0.679 | 0.683 | 0.603 | 0.611 |
| Fluoride (dissolved) | mg/L | --- | --- | 1.48 | 1.47 | 1.1 | 1.19 | 0.66 | 0.56 | --- | --- | --- | --- |
| Hardness | mg/L | 1070 | 935 | 629 | 756 B | 1060 | 985 | 870 | 900 | 924 | 930 | 970 | 861 |
| Nitrate (as N) | mg/L | 16.6 | 19 | 15.3 | 16.1 | 17.8 T8 | 15.3 | 8.3 | 9.3 | 6.76 | 7.81 | 8.91 | 6.65 |
| Nitrite (as N) | mg/L | 0.1 U | 0.0277 U | 0.0277 U | 0.0277 U | 0.042 U,T8 | 0.042 U | 0.05 U | 0.13 U | 0.0277 U | 0.0277 U | 0.0277 U | 0.0277 U |
| Oil and Grease, Total | mg/L | --- | --- | 1.35 U | 1.29 U | 1.32 U | --- | --- | --- | --- | --- | --- | --- |
| Oil and grease (HEM), polar | mg/L | --- | --- | --- | --- | --- | --- | 4.3 U | 4.5 U | --- | --- | --- | --- |
| Oil and grease (HEM), total | mg/L | 5.56 U | 1.29 U | --- | --- | --- | --- | --- | --- | 1.16 U | 1.16 U | 1.16 U | 1.16 U |
| pH | s.u. | 7.70 T8 | 7.65 J | 7.92 J | 7.88 T8 | 7.84 T8 | 7.69 T8 | 7.62 J | 7.39 HF | 7.44 J | 7.70 J | 8.42 J | 7.53 J |
| Phenolics (Total) | mg/L | 0.0126 J | 0.0083 U | 0.0083 U | 0.026 J | 0.0083 U | 0.0083 U | 0.01 U | 0.014 | 0.015 J | 0.0207 U | 0.0083 U | 0.0083 U |
| Phosphorus as P, total | mg/L | 0.1 U | 0.0621 U | 0.036 J | 0.052 B | 0.035 U | 0.035 U | 0.1 U | 0.1 U | 0.0414 U | 0.035 U | 0.0693 J | 0.0748 U |
| Silica | mg/L | 23.6 | 14.7 | 17.1 | 15.5 | 15.1 | 15 | --- | --- | 17.9 | 20.8 | 25 | 18.6 |
| Sulfate | mg/L | 2030 | 2000 | 1780 | 1560 | 1900 | 1850 | 950 | 910 | 986 | 1100 | 1030 | 880 |
| Sulfide | mg/L | 0.05 U | 0.0065 U | 0.0065 U | 0.0065 U | 0.025 U | 0.025 U | 3 U | 7.5 | 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 | 2790 | 3320 | 2760 | 2490 | 2610 J3 | 3100 | 1900 | 2000 | 1730 | 1840 J | 1970 | 1900 |
| Nitrogen, Total Kjeldahl | mg/L | 1.1 J6 | 1.2 | 0.522 | --- | --- | --- | 5 U | 5 U | 0.633 | 0.608 | 0.208 J | 0.035 U |
| Total Organic Carbon (TOC) | mg/L | 11.7 | 13.6 | 13 | 10.8 | 13 | 9.81 | 5.3 | 5.6 | 92.8 | 5.5 | 5.91 | 5.73 |
| Total Pet_ Hydrocarbons | mg/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Total Suspended Solids (TSS) | mg/L | --- | --- | --- | 4.4 | 1.6 J | 1.1 J | --- | --- | --- | --- | --- | --- |
| Dissolved Organic Carbon (DOC) | mg/L | 10.9 | 12.5 | 12.7 | --- | --- | --- | 12 | 5.5 | 96.1 | 5.13 | 5.65 | 6.45 |

Table 11. Logan Wash Monitoring Well Analytical Data

| SampleID | | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LW-22A | LW-22A | LW-22A | LW-22A | LW-22A | LW-22A |
|------------------------|-------|----------|------------|------------|------------|-----------|-----------|-----------|------------|-----------|-----------|----------|------------|
| SampleDate | | 6/4/2018 | 11/13/2018 | 05/29/2019 | 10/14/2019 | 5/26/2020 | 10/7/2020 | 5/13/2015 | 10/15/2015 | 5/24/2016 | 10/5/2016 | 5/3/2017 | 10/10/2017 |
| Parameters | Units | | | | | | | | | | | | |
| Metals | | | | | | | | | | | | | |
| Arsenic | ug/L | 13.4 | 12.6 | 12.6 | --- | --- | --- | 2.4 | 2.5 | 2.14 | 1.92 | 2.5 | 2.47 |
| Arsenic (Dissolved) | ug/L | 13.6 | 13 | 14.4 | 12.3 | 12.6 | 13.1 | 0.92 J | 1.9 | 1.97 | 1.78 | 1.15 | 1.24 |
| Boron | ug/L | --- | --- | --- | --- | --- | --- | 2200 | 2600 | --- | --- | --- | --- |
| Boron (Dissolved) | ug/L | 10700 | 9890 | 9700 | 10200 V | 11900 | 11800 | --- | --- | 1720 | 2380 | 2590 | 2850 |
| Cadmium | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cadmium (Dissolved) | ug/L | 1.00 U | 0.220 U | 0.352 J | 116000 | --- | --- | 1 U | 0.28 J | 0.220 U | 0.220 U | 0.220 U | 0.22 U |
| Calcium | ug/L | --- | --- | --- | --- | 142000 | 134000 | --- | --- | --- | --- | --- | --- |
| Calcium (Dissolved) | ug/L | 159000 | 148000 | 162000 | --- | 148000 | 130000 | 110000 | 140000 B | 145000 | 162000 | 149000 | 140000 |
| Chromium | ug/L | 3.61 | 2.52 | 3.21 | --- | --- | --- | 0.78 J | 1.5 J | 1.34 | 0.460 U | 1.7 U | 0.958 J |
| Chromium (Dissolved) | ug/L | 3.15 | 3.22 | 4.04 | --- | --- | --- | 2 U | 0.97 J | 1.18 | 1.29 U | 0.320 U | 0.342 J |
| Chromium III | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Chromium VI | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Copper | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Copper (Dissolved) | ug/L | 13 | 10.7 | 7.36 | --- | --- | --- | 1.8 J | 3 | 2.63 | 2.44 U | 4.03 | 3.47 |
| Iron | ug/L | 83.8 J | 27.1 J | 96.6 J | --- | --- | --- | 1900 | 5200 | 3620 | 1430 | 2960 | 3820 |
| Iron (Dissolved) | ug/L | 100 U | 15.0 U | 82.9 U | 15.0 U | 44.7 U | 200 | 55 | 180 | 3340 | 812 | 116 | 136 |
| Lead | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Lead (Dissolved) | ug/L | 0.357 J | 0.260 U | 0.388 J | --- | --- | --- | 1 U | 0.064 J | 0.351 J | 0.260 U | 0.260 U | 0.26 U |
| Lithium | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Lithium (Dissolved) | ug/L | 248 | 256 | 303 | --- | --- | --- | 110 | 110 | 123 | 114 | 131 | 107 |
| Magnesium | ug/L | --- | --- | --- | --- | 172000 | 158000 | --- | --- | --- | --- | --- | --- |
| Magnesium (Dissolved) | ug/L | 158000 | 173000 | 184000 | 128000 | 155000 V | 153000 | 97000 | 110000 | 119000 | 130000 | 127000 | 122000 |
| Manganese | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Manganese (Dissolved) | ug/L | 5.00 U | 0.510 U | 86.8 | --- | --- | --- | 16 | 9.5 | 28.3 | 10.2 | 9.72 | 11.7 |
| Mercury | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Mercury (Dissolved) | ug/L | 0.200 U | 0.0490 U | 0.0490 U | --- | --- | --- | 0.2 U | 0.031 JB | 0.0490 U | 0.0490 U | 0.0490 U | 0.049 U |
| Molybdenum (Dissolved) | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Nickel | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Nickel (Dissolved) | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Potassium | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Potassium (Dissolved) | ug/L | 21500 | 21000 | 21800 | 16900 | 19600 | 17900 | 3400 | 4100 | 4190 | 4440 | 4180 | 4340 |

Table 11. Logan Wash Monitoring Well Analytical Data

| SampleID | | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LWCW-1A | LW-22A | LW-22A | LW-22A | LW-22A | LW-22A | LW-22A |
|--------------------------------------------|------------|----------|------------|------------|------------|-----------|-----------|-----------|------------|-----------|-----------|----------|------------|
| SampleDate | | 6/4/2018 | 11/13/2018 | 05/29/2019 | 10/14/2019 | 5/26/2020 | 10/7/2020 | 5/13/2015 | 10/15/2015 | 5/24/2016 | 10/5/2016 | 5/3/2017 | 10/10/2017 |
| Parameters | Units | | | | | | | | | | | | |
| Metals | | | | | | | | | | | | | |
| Selenium | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Selenium (Dissolved) | ug/L | 47.1 | 48.4 | 54.1 | 44.0 | 45 | 47 | 15 | 19 | 18.4 | 20.5 | 20.5 | 19.2 |
| Silicon | ug/L | 11000 | 6890 | 7980 | 7270 | 7070 | 6990 | --- | --- | 8360 | 9740 | 11700 | 8700 |
| Silicon (Dissolved) | ug/L | --- | --- | --- | --- | --- | --- | 6500 | 8100 | --- | --- | --- | --- |
| Silver | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Silver (Dissolved) | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sodium | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sodium (Dissolved) | ug/L | 582000 | 647000 | 692000 | 547000 | 549000 V | 628000 | 210000 | 250000 | 257000 | 276000 | 272000 | 257000 |
| Strontium | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Strontium (Dissolved) | ug/L | 4660 | 4360 | 4560 | --- | --- | --- | 2200 | 2700 | 3060 | 3170 | 3370 | 3630 |
| Uranium (Dissolved) | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Zinc | ug/L | 9.96 J | 9.49 J | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Zinc (Dissolved) | ug/L | --- | --- | 15.1 | --- | --- | --- | 15 | 23 B | 36.2 | 25.4 | 12.2 | 2.23 U |
| Volatile Organic Compounds - BTEX | | | | | | | | | | | | | |
| Benzene | ug/L | 1.00 U | 0.331 U | 0.331 U | 0.331 U | 0.0941 U | 0.0941 U | 5 U | 5 U | 0.331 U | 0.331 U | 0.331 U | 0.331 U |
| Ethylbenzene | ug/L | 1.00 U | 0.384 U | 0.384 U | 0.384 U | 0.137 U | 0.137 U | 5 U | 5 U | 0.384 U | 0.384 U | 0.384 U | 0.384 U |
| Toluene | ug/L | 1.00 U | 0.412 U | 0.412 U | 0.412 U | 0.278 U | 0.278 U | 5 U | 5 U | 0.780 U | 0.780 U | 0.412 U | 0.412 U |
| Xylenes, Total | ug/L | 3.00 U | 1.06 U | 1.06 U | 1.06 U | 0.174 U | 0.174 U | 10 U | 10 U | 1.06 U | 1.06 U | 1.06 U | 1.06 U |
| Petroleum Products | | | | | | | | | | | | | |
| Diesel fuel | mg/L | 0.198 | 0.159 | 0.0835 U | 0.119 | 0.0317 J | 136 B | 0.46 U | 0.25 J | 0.289 | 24.7 U | 0.0517 U | 0.0247 U |
| 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 | 4281 | 4185 | 3692 | 3737 | 4044 | 4035 | 1700 | 1844 | 1935 | 1814 | 2559 | 2436 |
| Dissolved oxygen (DO), field | mg/L | 9.82 | 7.00 | 13.44 | 6.03 | 6.22 | 9.69 | 6.16 | 7.5 | --- | 6.92 | 7.88 | 6.54 |
| Oxidation reduction potential (ORP), field | millivolts | 93.1 | 126.1 | 17 | 8.3 | 49.5 | 58.3 | 22.9 | 59.0 | 10.7 | 75.3 | 38.8 | 19.7 |
| pH, field | s.u. | 6.89 | 8.77 | 6.52 | 7.09 | 5.91 | 7.57 | 7.28 | 7.32 | 7.44 | 7.19 | 7.39 | 7.31 |
| Temperature, ambient | Deg C | --- | --- | 60 | 60 | 60 | 60 | 21 | 24 | --- | --- | 15.6 | 10 |
| Temperature, field | Deg C | 10.06 | 8.7 | 10.98 | 9.92 | 13.17 | 10.5 | 11 | 11.05 | 11.1 | 10.38 | 11.2 | 11.0 |
| Turbidity, field | NTU | 70.4 | 3.73 | 7.84 | 12.69 | 6.23 | 6.23 | 57.37 | 21.52 | 34.8 | 23.4 | 52.6 | 47.00 |

Table 11. Logan Wash Monitoring Well Analytical Data

| SampleID | | LW-22A | LW-22A | LW-22A | LW-Big Seep | LW-Research Trib | |
|------------------------------------|----------|-----------|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|--------|
| SampleDate | | 5/23/2018 | 10/31/2018 | 05/20/2019 | 5/12/2015 | 10/14/2015 | 5/23/2016 | 10/4/2016 | 5/1/2017 | 10/11/2017 | 5/29/2018 | 10/22/2018 | 05/22/2019 | |
| Parameters | Units | | | | | | | | | | | | 5/12/2015 | |
| General Chemistry | | | | | | | | | | | | | | |
| Alkalinity, Bicarbonate (as CaCO3) | mg/L | 338 J3 | 436 | 455 | 240 | 260 B | 288 | 228 | 243 | 252 | 257 | 246 | 260 | 280 |
| Alkalinity, Carbonate (as CaCO3) | mg/L | 20 U | 2.71 U | 2.71 U | 36 | 16 | 2.71 U | 17.4 J | 7.72 J | 7.98 J | 15.8 J | 8.18 J | 12.8 J | 32 |
| Alkalinity, Total (As CaCO3) | mg/L | 338 J3 | 436 | 455 | 280 | 280 B | 290 | 246 J | 251 | 260 | 273 | 254 | 272 | 320 |
| Ammonia | mg/L | 0.1 U | 0.0317 U | 0.0317 U | 0.1 U | 0.1 U | 0.038 U | 0.038 U | 0.059 U | 0.0317 U | 0.1 U | 0.0317 U | 0.0317 U | 0.1 U |
| Bromide | mg/L | 1 U | 0.395 U | 1.58 U | 0.5 U | 0.5 U | 0.079 U | R | 1.58 U | 0.079 U | 1 U | 0.79 U | 0.79 U | 0.5 U |
| Chemical Oxygen Demand (COD) | mg/L | 12.7 | 9.08 J | 13.5 | 15 | 2.7 J | 12.2 | 54.6 | 4.94 J | 10.6 | 6.66 J | 3 U | 5.35 J | 10 U |
| Chloride | mg/L | 14.9 | 14.8 | 15.2 | 7.2 | 7.8 | 7.85 | 8.98 | 10 | 11.3 | 11.9 | 10.6 | 7.57 | 50 |
| Specific Conductivity | umhos/cm | 2390 | 2500 | 2410 | 1400 | 1700 | 1400 | 1620 | 1560 | 1920 | 1980 | 9030 | 1320 | 1600 |
| Cyanide (free) | mg/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Fluoride | mg/L | 0.568 | 0.66 | --- | --- | --- | 0.0895 J | 0.0538 J | 0.0733 J | 0.0689 J | 0.111 | 0.122 | --- | --- |
| Fluoride (dissolved) | mg/L | --- | --- | 0.656 | 0.14 | 0.086 J | --- | --- | --- | --- | --- | --- | 0.102 | 0.2 |
| Hardness | mg/L | 825000 B | 832 | 919 | 600 | 720 | 561 | 605 | 673 | 832 | 757 | 698 | 535 | 660 |
| Nitrate (as N) | mg/L | 7.36 | 8.62 | 8.36 | 0.53 | 0.07 J | 0.511 | 0.276 | 0.454 UJ | 0.291 | 0.1 U | 0.214 | 0.395 | 2.2 |
| Nitrite (as N) | mg/L | 0.1 U | 0.0277 U | 0.0277 U | 0.05 U | 0.05 U | 0.0277 U | 0.0277 U | 0.0277 U | 0.0277 U | 0.1 U | 0.0277 U | 0.0277 U | 0.05 U |
| Oil and Grease, Total | mg/L | --- | --- | 1.29 U | --- | --- | --- | --- | --- | --- | --- | --- | 1.16 U | --- |
| Oil and grease (HEM), polar | mg/L | --- | --- | --- | 4.3 U | 4 U | --- | --- | --- | --- | --- | --- | --- | 4.5 U |
| Oil and grease (HEM), total | mg/L | 5.56 U | 1.16 U | --- | --- | --- | 1.16 U | 1.16 U | 1.16 U | 1.16 U | 5.05 U | 1.16 U | --- | --- |
| pH | s.u. | 7.41 T8 | 7.52 J | 7.54 J | 8.57 J | 8.52 HF | 7.72 J | 8.55 J | 8.35 J | 8.4 J | 8.45 T8 | 8.38 J | 8.57 | 8.55 J |
| Phenolics (Total) | mg/L | 0.0443 | 0.0083 U | 0.0083 U | 0.01 U | 0.01 U | 0.0083 U | 0.013 U | 0.0083 U | 0.0083 U | 0.04 | 0.0083 U | 0.0164 U | 0.01 U |
| Phosphorus as P, total | mg/L | 0.0558 JB | 0.165 U | 0.396 J | 0.1 U | 0.1 U | 0.048 J | 0.035 U | 0.0362 J | 2.96 | 0.1 U | 0.0473 U | 0.035 U | 0.1 U |
| Silica | mg/L | 25.9 | 21 | 20.2 | --- | --- | 18.5 | 17.9 | 18.9 | 20.3 | 20.3 | 17.5 | 15 | --- |
| Sulfate | mg/L | 1020 | 993 | 982 | 580 | 630 | 472 | 704 | 607 | 755 | 1080 | 849 | 461 | 580 |
| Sulfide | mg/L | 0.05 U | 0.0065 U | 0.0065 U | 3 U | 1.2 J | 0.0065 U | 0.030 J | 0.0065 U | 0.0065 U | 0.05 U | 0.0065 U | 0.014 J | 0.7 J |
| Sulfite | mg/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Thiocyanate | mg/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Thiosulfate | mg/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Total Dissolved Solids (TDS) | mg/L | 1650 | 1850 | 2010 | 1100 | 1400 | 1100 | 1110 | 1170 | 1530 0 | 1480 | 1450 | 956 | 1300 |
| Nitrogen, Total Kjeldahl | mg/L | 0.25 U | 0.55 | 0.35 U | 2.7 J | 5 U | 0.444 | 0.255 | 0.101 J | 0.259 U | 0.190 J6 | 0.254 J | 0.211 U | 3.3 J |
| Total Organic Carbon (TOC) | mg/L | --- | --- | 5.44 | 3.6 | 3 | 43.4 | 3.23 | 2.87 | 3.47 0 | --- | --- | 3.65 | 11 |
| Total Pet_ Hydrocarbons | mg/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Total Suspended Solids (TSS) | mg/L | 5.23 | 5.59 | --- | --- | --- | --- | --- | --- | --- | 3.78 | 3.5 | --- | --- |
| Dissolved Organic Carbon (DOC) | mg/L | 5.22 | 5.25 | 5.46 | 9.5 | 3.7 | 22.5 | 3.38 | 3.13 | 3.62 | 3.53 | 3.74 | 3.57 | 16 |

Table 11. Logan Wash Monitoring Well Analytical Data

| SampleID | | LW-22A | LW-22A | LW-22A | LW-Big Seep | LW-Research Trib |
|------------------------|-------|-----------|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|
| SampleDate | | 5/23/2018 | 10/31/2018 | 05/20/2019 | 5/12/2015 | 10/14/2015 | 5/23/2016 | 10/4/2016 | 5/1/2017 | 10/11/2017 | 5/29/2018 | 10/22/2018 | 05/22/2019 | 5/12/2015 |
| Parameters | Units | | | | | | | | | | | | | |
| Metals | | | | | | | | | | | | | | |
| Arsenic | ug/L | 3.46 | 2.49 | 0.930 J | 4.5 | 4.3 | 3.9 | 3.9 | 4.44 | 4.68 | 5.55 | 5.28 | 3.48 | 4.2 |
| Arsenic (Dissolved) | ug/L | 1.96 | 1.09 | 2.09 | 5 | 4.1 | 3.55 | 3.75 | 6.15 | 6.1 | 5.59 | 4.87 | 3.99 | 4.4 |
| Boron | ug/L | --- | --- | --- | 48 | 70 | --- | --- | --- | --- | --- | --- | --- | 100 |
| Boron (Dissolved) | ug/L | 2960 | 2690 | 2550 | --- | --- | 89.6 | 74.9 | 624 | 93 J | 111 | 153 J | 172 J | --- |
| Cadmium | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Cadmium (Dissolved) | ug/L | 1.00 U | 0.220 U | 0.220 U | 1 U | 1 U | 0.220 U | 0.220 U | 0.220 U | 0.22 U | 1.00 U | 0.220 U | 0.220 U | 1 U |
| Calcium | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Calcium (Dissolved) | ug/L | 148000 | 136000 | 157000 | 87000 | 95000 B | 95000 | 112000 | 98900 | 106000 | 112000 | 116000 | 99500 | 110000 |
| Chromium | ug/L | 1.13 B | 0.830 J | 0.320 U | 0.46 J | 0.76 J | 1.18 | 1.02 U | 0.320 U | 0.701 J | 0.441 J | 0.840 J | 1.17 | 0.74 J |
| Chromium (Dissolved) | ug/L | 0.602 B J | 0.320 U | 1.30 | 0.52 J | 0.89 J | 1.01 | 1.20 U | 0.704 J | 0.686 J | 0.572 J | 0.471 U | 1.26 | 0.58 J |
| Chromium III | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Chromium VI | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Copper | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Copper (Dissolved) | ug/L | 4.4 | 3.34 | 3.18 | 1.7 J | 2.2 | 1.4 | 1.26 | 8.95 | 2.5 | 3.33 | 1.82 | 2.20 | 3.4 |
| Iron | ug/L | 4210 | 3340 | 77.2 J | 15 J | 50 U | 15.0 U | 74.6 J | 15.0 U | 15 U | 100 U | 121 | 39.1 J | 120 |
| Iron (Dissolved) | ug/L | 157 B | 182 | 76.6 J | 10 J | 50 U | 15.0 U | 15.0 U | 15.0 U | 15 U | 100 U | 15.0 U | 15.0 U | 12 J |
| Lead | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Lead (Dissolved) | ug/L | 1.00 U | 0.260 U | 0.535 J | 1 U | 0.066 J | 0.260 U | 0.260 U | 0.260 U | 0.26 U | 1.00 U | 0.260 U | 0.260 U | 1 U |
| Lithium | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Lithium (Dissolved) | ug/L | 112 | 118 | 112 | 44 J | 51 | 53 | 53.3 | 58.4 | 56.1 | 66.3 | 59.7 | 42.1 | 35 J |
| Magnesium | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Magnesium (Dissolved) | ug/L | 133000 | 126000 | 135000 | 69000 | 89000 B | 75600 | 104000 | 103000 | 117000 | 133000 | 121000 | 76400 | 78000 |
| Manganese | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Manganese (Dissolved) | ug/L | 23.8 | 28.4 | 35.6 | 0.9 J | 0.11 JB | 0.611 J | 1.11 J | 0.510 U | 0.561 J | 5.00 U | 44.8 | 0.510 U | 1.3 J |
| Mercury | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Mercury (Dissolved) | ug/L | 0.200 U | 0.0490 U | 0.0490 U | 0.2 U | 0.2 U | 0.0490 U | 0.0490 U | 0.0490 U | 0.049 U | 0.0614 B J | 0.0490 U | 0.341 | 0.2 U |
| Molybdenum (Dissolved) | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Nickel | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Nickel (Dissolved) | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Potassium | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Potassium (Dissolved) | ug/L | 4470 | 3940 | 4620 | 950 | 1200 | 1070 | 1040 | 1550 | 1470 | 1350 | 2040 | 1170 | 1600 |

Table 11. Logan Wash Monitoring Well Analytical Data

| SampleID | | LW-22A | LW-22A | LW-22A | LW-Big Seep | LW-Research Trib |
|--------------------------------------------|------------|-----------|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------|
| SampleDate | | 5/23/2018 | 10/31/2018 | 05/20/2019 | 5/12/2015 | 10/14/2015 | 5/23/2016 | 10/4/2016 | 5/1/2017 | 10/11/2017 | 5/29/2018 | 10/22/2018 | 05/22/2019 | 5/12/2015 |
| Parameters | Units | | | | | | | | | | | | | |
| Metals | | | | | | | | | | | | | | |
| Selenium | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Selenium (Dissolved) | ug/L | 22.1 | 18.5 | 22.6 | 3.5 J | 1.9 J | 2.56 | 1.80 J | 1.73 J | 1.74 J | 1.88 J | 1.56 J | 2.21 | 7.7 |
| Silicon | ug/L | 12100 | 9800 | 9420 | --- | --- | 8620 | 8350 | 8850 | 9470 | 9480 | 8170 | 7000 | --- |
| Silicon (Dissolved) | ug/L | --- | --- | --- | 7200 | 7800 | --- | --- | --- | --- | --- | --- | --- | 8200 |
| Silver | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Silver (Dissolved) | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sodium | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sodium (Dissolved) | ug/L | 296000 | 281000 | 303000 | 100000 | 120000 | 114000 | 138000 | 144000 | 148000 | 182000 | 166000 | 120000 | 110000 |
| Strontium | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Strontium (Dissolved) | ug/L | 3390 | 2960 | 3550 | 3800 | 4500 | 3970 | 5450 | 5680 | 5830 | 6320 | 5050 | 4250 | 3000 |
| Uranium (Dissolved) | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Zinc | ug/L | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Zinc (Dissolved) | ug/L | 17 | 6.64 J | 26.4 | 0.94 J | 1.5 JB | 2.51 U | 4.00 J | 2.83 J | 2.52 U | 10.0 U | 12.2 | 3.07 J | 0.43 J |
| Volatile Organic Compounds - BTEX | | | | | | | | | | | | | | |
| Benzene | ug/L | 1.00 U | 0.331 U | 0.331 U | 5 U | 5 U | 0.331 U | 0.331 U | 0.331 U | 0.331 U | 1.00 U | 0.331 U | 0.331 U | 5 U |
| Ethylbenzene | ug/L | 1.00 U | 0.384 U | 0.384 U | 5 U | 5 U | 0.384 U | 0.384 U | 0.384 U | 0.384 U | 1.00 U | 0.384 U | 0.384 U | 5 U |
| Toluene | ug/L | 1.00 U | 0.412 U | 0.412 U | 5 U | 5 U | 0.780 U | 0.780 U | 0.412 U | 0.412 U | 1.00 U | 0.412 U | 0.412 U | 5 U |
| Xylenes, Total | ug/L | 3.00 U | 1.06 U | 1.06 U | 10 U | 10 U | 1.06 U | 1.06 U | 1.06 U | 1.06 U | 3.00 U | 1.06 U | 1.06 U | 10 U |
| Petroleum Products | | | | | | | | | | | | | | |
| Diesel fuel | mg/L | 0.0293 J | 0.0362 J | 0.0471 J | 0.48 U | 0.22 J | 0.0526 J | 0.0458 J | 0.0781 J | 0.0247 U | 0.0717 B J | 0.0610 J | 0.029 J | 0.5 U |
| 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 | 2548 | 2455 | 2451 | 1445 | 1098 | 896 | 923 | 1542 | 1826 | 1946 | 1941 | 1296 | 1627 |
| Dissolved oxygen (DO), field | mg/L | 7.42 | 6.46 | 1.84 | 8.52 | 8.44 | 11.1 | 13.75 | 8.57 | 7.25 | 9.21 | 9.24 | 13.73 | 7.24 |
| Oxidation reduction potential (ORP), field | millivolts | -14.0 | 87.5 | 37.4 | 341.3 | 306.8 | 343.6 | 234.7 | 257 | 185 | 129.3 | 150.5 | 21 | 222.6 |
| pH, field | s.u. | 6.89 | 6.95 | 7.12 | 8.25 | 6.51 | 6.25 | 6.57 | 6.16 | 8.31 | 7.22 | 6.43 | -- | 8.35 |
| Temperature, ambient | Deg C | --- | --- | 60 | 16 | 24 | --- | --- | 15.6 | 15.6 | --- | --- | 60 | 16 |
| Temperature, field | Deg C | 11.1 | 11.3 | 11.35 | 10.39 | 8.9 | 4.62 | 1.7 | 6.4 | 7.9 | 8.56 | 10.1 | 6.93 | 10.71 |
| Turbidity, field | NTU | 70.4 | 43.18 | 22.51 | 2.89 | 1.48 | --- | 4.51 | 1.42 | 0.87 | 0.98 | 0.19 | 1.21 | 2.67 |