TABLES

Table 1. Reclamation Status at Logan Wash Mine, March 2023

Area Number (Exhibit E & F)	Name	Approved Area	Actual Disturbed Area	Acres Reclaimed (acres/year)	Acres Released (acres/year)
1	Mine Dump[a]	30.00	13.36	13.36/2004	13.36/2022
2	Upper Mine Bench	3.00	0.74	0.74/2005	0.74/2022
3	Lower Mine Bench	3.80	2.10	2.10/2003[b]	NR
4	Research Mine Bench / Dump	5.00	4.26	4.26/2004	4.26/2022
5	Old Surface Process Facility	3.00	1.82	1.82/<1986	1.82/1986
6	Two Overflow Ponds	2.00	2.86	2.86/<1986	2.86/2006
7	Equipment & Parts Storage	2.55	0.67	0.67/<1986	0.67/1986
8	Ventilation Fan Site	1.30	0.41	0.41/1986	0.41/2006
9	Power Substation	0.75	0.75	0.75/1986	0.75/2006
10	Helo Pad	1.00	0.24	0.24/-	0.24/2022
11	Guard Gate Area	5.00	8.30	Not to be reclaimed	Transferred/1983[d]
12	Met Tower	1.00	0.80	0.80/<1982	0.80/2006
13	Misc. Access Roads[e]	11.5	15.58	11.78/2005	8.12/1986
14	Oil Transfer Pipeline	0.5	0.5	0.5/<1998	0.5/2006
15	Heater/Treater	3.00	2.96	2.96/1986	2.96/2006
16	Microwave Tower	1.00	0.11	0.11/<1998	0.11/2006
17	Exhaust Stack	3.00	3.00	3.00	3.00/2006
18	Logan Wash Road	55.55	53.43	Not to be reclaimed[f]	---
19	Surface Process Control	1.00	1.0	1.0/<1998	1.0/2006
20	Top Soil Storage	0.5	0.25	0.25/<1998	0.5/2006
21	Berm Material	0.25	0.33	0.25/<1986	0.33/1986
22	Heater Treater Meteorological	0.18-	0.18	0.18/<1986	0.18./1986
B1-B10	Logan Wash Road Realign	6.0	6.0	6.0/<1986	~5.0/1986
New	Soil Barrow Area (2005)	2.0	0.65	0.65/2005	0.65/2006
23	Evaporation Pond and Pipeline	14.87	14.87	5.07/<1986	NR
Total		157.75	135.17[g]	59.84	48.26[g]

Table 1 Notes: [a] The Mine Dump area is to be reclaimed by establishing "vegetated islands"; the entire acreage will not be vegetated. [b]Conducted hydromulch test on Lower Bench; [c] Area 10 was excavated for a pond for the landowner and is under reclamation; [d]Area 11 transferred to Chevron, not to be reclaimed; [e] See Table 2 for description of access roads, release is assumed;. [f] The original reclamation plan named the Logan Wash Road as disturbed acreage, but noted that it would not be reclaimed because the road serves as a main access road to BLM and private lands; NR = Not Released. [g] This acreage was adjusted to 108.55 acres at suggestion of DRMS during release request in fall of 2022. The October 2022 release resulted in approximately 21.65 acres being released of reclamation warranty and a total of approximately 26.0 acres remaining on the mine permit.

Table 2. Reclamation Status of Miscellaneous Access Roads, March 2023

Area	Estimated Disturbed Area	Acres Reclaimed (as of March 2023)	Acres Remaining to be Reclaimed
Mine Bench and Portal[a]	7.46	5.06	3.8
Old Surface Process	1.51	1.51	0.0
New Surface Process	2.17	2.17	0.0
Heater/Treater[b]	1.36	1.36	1.36
Beyond Microwave	2.33	2.33	0.0
Vicinity of the Microwave	0.75	0.75	0.0
Total	15.58	13.18	2.4 [a]

[a] Based on Upper Access Road and Lower Bench Road, and Upper Bench Road map measurements

[b] Lower Access Road was under reclamation but unsuccessful due to cattle foraging. Road is still used to access Well LWCW-1A.

Table 3. Well Abandonment Schedule, March 2023

Monitoring Well ID	Abandonment Date	Status
LW-22A	**TBD**	**Monitoring Suspended**
LW-32	**TBD**	**To be abandoned**
LW-45	**TBD**	**To be abandoned**
LW-102	**2007**	**Cement plugged**
LW-103	**TBD**	**To be abandoned**
LW-104	**2007**	**Cement plugged**
LW-108	**2005**	**Cement plugged**
LW-112	**2005**	**Cement plugged**
LW-116	**TBD**	**To be abandoned**
LW-242	**2005**	**Cement plugged**
LW-243	**2007**	**Cement plugged**
LWCW-1A	**TBD**	**Monitoring**

Notes: TBD: to be determined

Table 4. Logan Wash Mine Areas Requested for Release in 2022

Area	Description	Acreage
1	Mine Dump	13.36
2	Upper Mine Bench	0.74
4	Research Mine Bench	4.26
10	Helo Pad	0.24
13	Miscellaneous Access Road (Upper Bench Road)	1.4
13	Miscellaneous Access Roads (Road Realignment Areas B2, B3, B5, B5A, B7 and B8)	1.0
New	Soil Barrow Area	0.65
Total Estimated Acreage Requested for Release Reclaimed		**21.65**

Table 5. Logan Wash Mine Areas Not Under Reclamation

Area	Description	Acreage
13	The Upper Access Road	4.8
13	Lower Bench Road	1.5
3	Lower Bench	2.1
13	Lower Access Road	1.4
23	Evaporation Pond Access Road	1.3
23	Evaporation Pond and Pipeline	14.9
Total Estimated Acreage Not Reclaimed		**26.0**

Table 6. Summary of Reclamation Status at Logan Wash Mine

Acreage Status Category	Estimated Acreage
Total original disturbed/used acres	108.55
Acres released prior to 2022	60.9
Acres released from reclamation in 2022	21.65
Total acres released to date	82.55
Total new disturbed acres this reporting period	0.0
Total acres currently under reclamation	0.0
Total estimated acres not currently under reclamation	26.0
Total estimated reclaimed acres needing release	26.0

Table 7. Logan Wash Mine Site Monitoring Events, January 2022 to December 2022

Date	LW-002[1] Manometer (inches)	LW-001[2] (L-1 Portal) (gpm)	Upper Manhole[3] (gpm)	Lower Manhole[4] (gpm)	Other
1/20/22	NM	NM	NM	2.59	Conduct pond monitoring.
3/3/22	NM	NM	NM	2.40	Conduct pond monitoring.
4/21/22	0.00	0.64	2.10	2.14	Site monitoring
5/17/22	NM	NM	NM	1.98	Site sampling
5/26/22	0.0	0.60	2.53	2.06	Site monitoring
6/30/22	0.0	0.67	2.05	2.22	Site monitoring
7/26/22	0.0	0.60	1.62	1.90	Site monitoring
8/23/22	0.0	0.59	Buried by sediment	2.06	Site monitoring
9/26/22	NM	0.63	2.14	2.22	Site monitoring
10/11/22			NM	2.07	Site sampling
10/31/22	0.0	0.66	1.99	2.07	Site monitoring
12/1/22	NM	NM	1.89	2.07	Did not get to Lower Bench

[1] LW-002 discharge originates at the Research Mine portal, the manometer measures head behind a concrete dam inside the sealed adit.
[2] LW-001discharge originates at the L-1 portal of Logan Wash Mine and during the reporting period discharged into the Infiltration Trench. All measurements recorded by electronic flowmeter display.
[3] Upper Manhole is located on Retort Water Pipeline in Logan Wash approximately 3000 ft down drainage of the Lower Dump.
[4] Lower Manhole is located on Retort Water Pipeline immediately north of Evaporation Pond.
NM = not measured

Table 8. Logan Wash Mine LW-001 Mine Water Analytical Data

SampleID		MINE WATER	MINE WATER	MINE WATER	LWM-001	LW-001	LW-001	LW-001	LW-001	LW-001	LW-001
SampleDate		3/9/2000	10/26/2000	9/26/2001	10/2/2002	10/11/2007	3/19/2008	10/30/2008	6/3/2009	11/5/2009	6/2/2010
Parameters	Units										
General Chemistry											
Alkalinity, Bicarbonate (as CaCO3)	mg/L	390	249	278	287	287	288 J	272	290	272	271
Alkalinity, Carbonate (as CaCO3)	mg/L	5 U	30.1	25.1	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Alkalinity, Total (As CaCO3)	mg/L	390	280	303	291	287	288 J	272	290	272	271
Ammonia	mg/L	0.5	0.8 U	0.1 U	0.1 U	0.1 U	0.1 U	5.8 J	0.31	0.25	0.1 U
Bromide	mg/L	---	80	---	0.2 U	0.11 J	0.074 B	0.2 U	0.2 U	0.2 U J	1 U
Chemical Oxygen Demand (COD)	mg/L	---	17	---	64.5	23.4	21.9	104	26.7	19.7	20.3 U
Chloride	mg/L	31 J	35.1	40.3	36	53.4	35.8	37.9	37	36.4	25.5
Cyanide (free)	mg/L	---	---	---	---	---	---	---	---	---	---
Fluoride	mg/L	3.1	2.7	3	---	---	---	---	---	---	---
Fluoride (dissolved)	mg/L	---	2.1	---	2.3	2.5	2.6	2.3	2.7	1.8	2.3
Hardness	mg/L	---	564	---	572	590	540	580	570	590	590
Nitrate (as N)	mg/L	---	3.4	---	2.5	5.4	3.5	3.1	3.1	2.9	2.8
Nitrite (as N)	mg/L	---	0.01 U	---	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U J	0.25 U
Oil and Grease, Total	mg/L	---	3.7	---	---	---	---	---	---	---	---
Oil and grease (HEM), polar	mg/L	---	---	---	---	---	---	---	---	---	---
Oil and grease (HEM), total	mg/L	5 U	---	5 U	4.9 U	4.8 U	4.8 U	4.7 U	4.7 U	4.6 U	4.6 U
pH	s.u.	---	---	---	8.2	8.1 J	8	8.2 J	8.2 J	8.1 J	8.2 J
Phenolics (Total)	mg/L	50 U	50 U	10 U	0.01 U	0.007 J	0.0087 B, J	0.01 U	0.0042 J	0.01 U	0.01 U
Phosphorus as P, total	mg/L	---	0.023	---	0.1 U	0.3	0.044 B	0.1 U	0.1 U	0.1 U	0.1 U
Silica	mg/L	---	16.7	---	---	---	---	---	---	---	---
Sulfate	mg/L	210 J	1060	1170	1080	1510	1140	1170	1140	1150	1220
Sulfide	mg/L	---	---	---	---	3 U	---	3.2	3 U	3 U	1.7 J
Sulfite	mg/L	2 J	2 U	2 U	---	---	---	---	---	---	---
Specific Conductivity	umhos/cm	---	---	---	2600	2830	3640 J	3540	3500	3500	3420
Thiocyanate	mg/L	0.4 U	1 U	0.7 U	---	---	---	---	---	---	---
Thiosulfate	mg/L	0.4 U	1 U	0.7 U	---	---	---	---	---	---	---
Total Dissolved Solids (TDS)	mg/L	1870	1840	2020	1890	2010	1830	1820	2140	1790	2170
Nitrogen, Total Kjeldahl	mg/L	---	---	---	---	3.5	2.8 B	6.2	4.5	4.5	3 U
Total Organic Carbon (TOC)	mg/L	---	---	---	7.7	9.2	---	7.4	7.9	7.6	6.7
Total Suspended Solids (TSS)	mg/L	---	5 U	---	---	4 U	4 U	4 U	3.6 J	4 U	4 U
Dissolved Organic Carbon (DOC)	mg/L	7.8 J	8.5	7.9	7.5	9.2	10.5	7.2	8.2	8.1 J	6.5
Metals											
Arsenic	ug/L	30	31.8	29.5	24.7	19.3	---	19	17.4	18 J	15.8
Arsenic (Dissolved)	ug/L	---	33.2	---	---	---	20.6	---	16.4	17.1	16.3
Boron	ug/L	4300	4540	4580	---	---	---	---	---	---	---
Boron (Dissolved)	ug/L	---	4330	---	4280 J	5510	6210	4030	5260	4740 J	4050
Cadmium	ug/L	2 U	0.22	5 U	---	---	---	---	---	---	---
Cadmium (Dissolved)	ug/L	---	0.05 U	---	0.17	1 U	1 U	0.42 J	1 U	0.12 J	1 U
Calcium	ug/L										
Calcium (Dissolved)	ug/L	---	78100	---	74900	84300	---	73100	78500	83400 J	78600
Chromium	ug/L	---	0.6 U	---	---	0.59 J	0.54 B	0.6 J	0.49 J	2 U	0.6 J
Chromium (Dissolved)	ug/L	---	0.04 U	---	10.7	0.54 J	0.46 B	0.88 J	0.61 J	2 U J	0.44 J
Chromium III	ug/L	---	10 U	---	---	---	---	---	---	---	---
Chromium VI	ug/L	---	0.05 U	---	10 U	---	---	---	---	---	---
Copper	ug/L	---	2.8	---	---	---	---	---	---	---	---
Copper (Dissolved)	ug/L	---	2.7	---	8.9	5.8	5.8	5.9	4.4	4 J	3.5
Iron	ug/L	---	0 U	---	29 U	32.1 J	19.7 B	20.9 J	31.2 J	47.1 J	50.7
Iron (Dissolved)	ug/L	---	10 U	---	---	41.4 J	42 B	50.8	17.1 J	11.4 J	22.5 J
Lead	ug/L	---	0.19 U	---	---	---	---	---	---	---	---
Lead (Dissolved)	ug/L	---	0.03 U	---	1 U	0.38 J	0.064 B, J	1 U	0.24 J	1 U J	0.25 J
Lithium	ug/L	250	368 J	---	---	---	---	---	---	---	---
Lithium (Dissolved)	ug/L	---	382 J	384	386	395	352	372	379	37.8 J	370
Magnesium	ug/L	---	98900	---	---	---	---	---	---	---	---
Magnesium (Dissolved)	ug/L	---	89700	---	90800 J	87300	82700	77100	96100	97700 J	82700
Manganese	ug/L	---	1.2	---	---	---	---	---	---	---	---
Manganese (Dissolved)	ug/L	---	1.5	---	1.4	2.1	1.2	0.88	0.91	0.89 J	1.1 U
Mercury	ug/L	---	0.12 U	---	0.2 U	---	---	---	---	---	---
Mercury (Dissolved)	ug/L	---	0.12 U	---	---	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U J	0.2 U
Molybdenum (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---
Nickel	ug/L	---	8.2	---	---	---	---	---	---	---	---
Nickel (Dissolved)	ug/L	---	10.9	---	6.9	---	---	---	---	---	---
Potassium	ug/L	---	20700	---	---	---	---	---	---	---	---
Potassium (Dissolved)	ug/L	---	15200	---	15600	91400	74600	83700	82200	94000 J	86200
Selenium	ug/L	---	3.3	---	---	---	---	---	---	---	---
Selenium (Dissolved)	ug/L	---	5	---	7.1 J	7	8.7	6.5	7.2 J	5.6 J	5.1
Silicon	ug/L										
Silicon (Dissolved)	ug/L	---	---	---	7850 J	7490	7380	6680	8630	7520 J	6430
Metals											
Silver	ug/L	5 U	0.05 U	10 U	---	---	---	---	---	---	---
Silver (Dissolved)	ug/L	---	0.03 U	---	0.07 J	---	---	---	---	---	---
Sodium (Dissolved)	ug/L	---	374000	---	424000	490000	446000	408000	390000	431000 J	403000
Strontium	ug/L	---	7030 J	---	---	---	---	---	---	---	---
Strontium (Dissolved)	ug/L	---	7060 J	---	6330	5820	5280	5810	5430	6140 J	5560
Uranium (Dissolved)	ug/L	---	---	---	4.1 J	---	---	---	---	---	---
Zinc	ug/L	---	5.6	---	---	---	---	---	---	---	---
Zinc (Dissolved)	ug/L	---	4.9	---	24.1	18.5	10.7	15.5 U	13.6	7.1 J	29.2
Volatile Organic Compounds - BTEX											
Benzene	ug/L	1 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	ug/L	1 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	ug/L	1 U	2 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Xylenes, Total	ug/L	1 U	2 U	1 U	3 U	3 U	1 U	3 U	3 U	3 U	3 U
Petroleum Products											
Diesel fuel	mg/L	---	---	---	---	---	---	---	---	---	---
TPH - Extractable (DRO)	mg/L	---	---	---	---	---	---	---	---	---	---
TPH (non-polar)	mg/L	---	0.1 U	---	0.1 U	42	0.11	0.12 U	0.21	0.21 U	0.16 U
TPH (C21 - C28)	mg/L	---	---	---	---	---	---	---	---	---	---
Radiology											
Gross Alpha Analytes	pci/l	0	14 + or - 16	2 + or - 12	---	---	---	---	---	---	---
Gross Beta Analytes	pci/l	26	18 + or - 9	6.8 + 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 F	---	---	---	---	---	---	---	---	---	---
Temperature, field	Deg C	---	---	---	---	---	---	---	---	---	---
Turbidity, field	NTU	---	---	---	---	---	---	---	---	---	---

Table 8. Logan Wash Mine LW-001 Mine Water Analytical Data

SampleID		LW-001	LW-001	LW-001	LW-001	LW-001	LW-001	LW-001	LW-001	LW-001	LW-001
SampleDate		11/22/2010	5/11/2011	10/19/2011	6/14/2012	10/24/2012	5/28/2013	5/21/2014	10/22/2014	5/12/2015	10/14/2015
Parameters	Units										
General Chemistry											
Alkalinity, Bicarbonate (as CaCO3)	mg/L	261	281	250	260	290	260	250	260 B	360	270 B
Alkalinity, Carbonate (as CaCO3)	mg/L	5 U	5 U	5 U	5 U	5 U	5 U	12	5 U	5 U	5 U
Alkalinity, Total (As CaCO3)	mg/L	261	281	250	260	290	260	260	260 B	360	270
Ammonia	mg/L	0.1 U	0.1 U	0.24 U	0.1 U	0.15	0.12 U	0.1 U	0.1 U	0.1 U	0.1 U
Bromide	mg/L	0.15 J	0.5 U	1 U	0.5 U	1.3 U	1.3 U	1.3 U	1.3 U	0.5 U	2.5 U
Chemical Oxygen Demand (COD)	mg/L	23.8	27.8	17	21	9.1 J	23 U	19	25	19	10 U
Chloride	mg/L	42.4	33.8	32	35	38	32	29	42	31	35
Cyanide (free)	mg/L	---	0.0029 J	0.003 J	---	---	---	---	---	---	---
Fluoride	mg/L	---	---	---	---	---	---	---	---	---	---
Fluoride (dissolved)	mg/L	2.1	3	2.1	2.6	2.6	2.2	2.5	2.4	2.6	2.3
Hardness	mg/L	600	680	690	680	660	640	620	640	520	640
Nitrate (as N)	mg/L	2.9	4.4	3.3	2.9	2.5	2.5	2.5	2.8	2.7	2.3
Nitrite (as N)	mg/L	0.27	1.2 U	0.25 U	0.13 U	0.13 U	0.13 U	0.13 U	0.13 U	0.05 U	0.25 U
Oil and Grease, Total	mg/L	---	---	---	---	---	---	---	1.9 J	---	---
Oil and grease (HEM), polar	mg/L	---	---	4.9 U	4.7 U	1.4 J	4.8 U	4.7 U	---	4.4 U	4.3 U
Oil and grease (HEM), total	mg/L	4.6 U	2.4 J	---	---	---	---	---	---	---	---
pH	s.u.	8 J	8.1 J	7.85 J	8.08 J	8.08 J	7.66 J	8.39 J	7.97 HF	8.25 J	8.13 HF
Phenolics (Total)	mg/L	0.01 U	0.0088 J	0.01 U	0.042	0.02	0.01 U	0.01 U	0.01 U	0.011	0.01 U
Phosphorus as P, total	mg/L	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Silica	mg/L	---	---	---	---	---	---	---	---	---	---
Sulfate	mg/L	1320	1200	1200	1400	1300	1200	1200	1300	1100	1100
Sulfide	mg/L	3 U	3 U	3 U	3 U	3 U	0.24 J	3 U	3 U	0.76 J	1.6 J
Sulfite	mg/L	---	---	---	---	---	---	---	---	---	---
Specific Conductivity	umhos/cm	3560	3390	3900	3600	3600	3300	2600	2900	2500	3000
Thiocyanate	mg/L	---	---	---	---	---	---	---	---	---	---
Thiosulfate	mg/L	---	---	---	---	---	---	---	---	---	---
Total Dissolved Solids (TDS)	mg/L	2230	2100	2100	1900	2100	1700	2000	2100	1900	2300
Nitrogen, Total Kjeldahl	mg/L	5 U	3.3 J	5 U	5 U	0.41	5 U	2.8 J	1.7 J	2.7 J	5 U
Total Organic Carbon (TOC)	mg/L	7.1	8.9	6.9	6.4	5.9	4.8	5.9	5.7	9.4	6.6
Total Suspended Solids (TSS)	mg/L	4 U	4 U	4 U	4 U	4 U	2 U	2 U	2.8	---	---
Dissolved Organic Carbon (DOC)	mg/L	7.4	8.8	7.7	---	6.3	4.8	6	6.9	13	7.8
Metals											
Arsenic	ug/L	18.9	15.9	17	19	16	18	16	15	14	16
Arsenic (Dissolved)	ug/L	20.1	16.5	15	18	17	17	15	15	14	16
Boron	ug/L	---	4800	5100	---	---	---	---	---	5200	5600
Boron (Dissolved)	ug/L	4690	4640	4500	4600	4400	4700	3900	4200 B	---	---
Cadmium	ug/L	---	---	---	---	---	---	---	---	---	---
Cadmium (Dissolved)	ug/L	1 U	1 U	1 U	1 U	1 U	0.13 J	1 U	1 U	1 U	0.47 J
Calcium	ug/L										
Calcium (Dissolved)	ug/L	100000	85700	92000	94000	90000	91000	82000	81000 B	70000	86000 B
Chromium	ug/L	0.54 J	0.37 J	1.4 J	2 U	0.42 J	0.43 J	1 J	0.32 J	2 U	0.8 J
Chromium (Dissolved)	ug/L	0.49 J	0.42 J	0.38 J	2 U	0.56 J	0.46 J	0.89 J	2 U	2 U	0.87 J
Chromium III	ug/L	---	---	---	---	---	---	---	---	---	---
Chromium VI	ug/L	---	---	---	---	---	---	---	---	---	---
Copper	ug/L	---	---	---	---	---	---	---	---	---	---
Copper (Dissolved)	ug/L	4.3	3.3	2.4	4.4	4.2	4.3	3.5	3.3 B	4.1	4.2
Iron	ug/L	235 J	50 U	160	200	50	95	120	24 J	61	20 J
Iron (Dissolved)	ug/L	53.2	50 U	30 J	59	18 J	20 J	50 U	19 J	18 J	12 J
Lead	ug/L	---	---	---	---	---	---	---	---	---	---
Lead (Dissolved)	ug/L	0.32 J	1 U	1 U	1 U	0.034 J	1 U	1 U	0.17 JB	0.082 J	0.12 J
Lithium	ug/L	---	---	---	---	---	---	---	---	---	---
Lithium (Dissolved)	ug/L	398	336	360	400	400	380	350	430	390	430
Magnesium	ug/L	---	---	---	---	---	---	---	---	---	---
Magnesium (Dissolved)	ug/L	116000	95200	100000	110000	96000	110000	98000	89000 B	78000	88000 B
Manganese	ug/L	---	---	---	---	---	---	---	---	---	---
Manganese (Dissolved)	ug/L	1.9	1.3	3 J	5 U	1.7 J	1.7 J	1.8 J	1.9 JB	2.8 J	2 JB
Mercury	ug/L	---	0.2 U	0.2 U	---	---	---	---	---	---	---
Mercury (Dissolved)	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.047 J	0.2 U	0.2 U	0.2 U	0.2 U	0.033 JB
Molybdenum (Dissolved)	ug/L	---	330	300	---	---	---	---	---	---	---
Nickel	ug/L	---	---	---	---	---	---	---	---	---	---
Nickel (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---
Potassium	ug/L	---	---	---	---	---	---	---	---	---	---
Potassium (Dissolved)	ug/L	115000	69600	76000	86000	83000	87000	69000	68000	49000	73000
Selenium	ug/L	---	11	6.5	---	---	---	---	---	---	---
Selenium (Dissolved)	ug/L	7.6	11.6	5.6	7	3.7 J	4.6 J	5.8	3.6 J	8.4	5.2
Silicon	ug/L										
Silicon (Dissolved)	ug/L	9440	7030	7200	8200	7800	8400	8000	6500	6600	8300
Metals											
Silver	ug/L	---	---	---	---	---	---	---	---	---	---
Silver (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---
Sodium (Dissolved)	ug/L	468000	405000	410000	420000	420000	430000	360000	380000	370000	360000
Strontium	ug/L	---	---	---	---	---	---	---	---	---	---
Strontium (Dissolved)	ug/L	8100	5320	5400	6800	6300	6500	5400	5600	4100	5900
Uranium (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---
Zinc	ug/L	---	---	---	---	---	---	---	---	---	---
Zinc (Dissolved)	ug/L	67.5	9.4	6.3 U	7.5	7.4 U	18	12	9.3 B	30	5.1 B
Volatile Organic Compounds - BTEX											
Benzene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	5 U
Ethylbenzene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	5 U
Toluene	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	5 U
Xylenes, Total	ug/L	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U	10 U	10 U
Petroleum Products											
Diesel fuel	mg/L	---	---	---	---	0.35 J	---	0.25 J	0.35 J	0.92	0.51
TPH - Extractable (DRO)	mg/L	---	---	---	---	---	---	---	---	---	---
TPH (non-polar)	mg/L	0.23	0.5 U	0.37 J	0.36 J	---	0.48 U	---	---	---	---
TPH (C21 - C28)	mg/L	---	---	---	---	---	---	---	---	---	---
Radiology											
Gross Alpha Analytes	pci/l	---	---	---	---	---	---	---	---	---	---
Gross Beta Analytes	pci/l	---	---	---	---	---	---	---	---	---	---
Field Parameters										---	---
Specific Conductivity, field	umhos/cm	---	---	---	---	2670	3090	2870	3053	3000	3450
Dissolved oxygen (DO), field	mg/L	---	---	---	---	5.90	6.82	10.39	3.36	6.1	7.13
Oxidation reduction potential (ORP), field	millivolts	---	---	---	---	184.1	183.3	204	86.8	62.4	---
pH, field	s.u.	---	---	---	---	7.58	8.14	7.92	8.12	8.26	8.2
Temperature, ambient	Deg F	---	---	---	---	8.2	32	15.5	---	18	29.4
Temperature, field	Deg C	---	---	---	---	9.5	11.1	9.22	11.5	10.4	13
Turbidity, field	NTU	---	---	---	---	0.28	0.76	3.69	---	2.35	0.02

Table 8. Logan Wash Mine LW-001 Mine Water Analytical Data

SampleID		LW-001	LW-001	LW-001	LW-001	LW-001	LW-001	LW-001	LW-001	LW-001	LW-001	LW-001	LW-001	LW-001	LW-001
SampleDate		5/23/2016	10/4/2016	5/1/2017	10/3/2017	5/29/2018	10/22/2018	05/22/2019	10/09/2019	5/26/2020	10/7/2020	5/5/2021	10/20/2021	5/17/2022	10/20/2022
Parameters	Units														
General Chemistry															
Alkalinity, Bicarbonate (as CaCO3)	mg/L	271	233	234	240	258	245	271	248	249	253	241	231	222	251
Alkalinity, Carbonate (as CaCO3)	mg/L	2.7 U	5.93 J	2.71 U	2.71 U	6.17 J	3.69 J	3.06 J	11.8 J	8.45 U	8.45U	8.45 U	8.45 U	8.45 U	8.45 U
Alkalinity, Total (As CaCO3)	mg/L	271	239 J	234	240	264	249	274	259	252	253	241	237	231	251
Ammonia	mg/L	0.038 U	0.038 U	0.042 U	0.0317 U	0.1 U	0.0317 U	0.0317 U	0.0317 U	0.117 U	0.117U	0.117 U	0.117 U	0.117 U	0.117 U
Bromide	mg/L	0.079 U	R	1.58 U	0.079 U	1 U	1.58 U	3.95 U	1.58 U	7.06 U	0.353U	1.76 U	1.76 U	.353 U	1.76 U
Chemical Oxygen Demand (COD)	mg/L	32.3	21.3	13.2	10.8	15	19	26.7	---	---	---	---	---	---	---
Chloride	mg/L	37.4	38.9	32.3	41.2	34.3	38	38	49.1	43.1	47	33.5	48.9	41.1	43.9
Cyanide (free)	mg/L	---	---	---	---			---	---	---	---	---	---	---	---
Fluoride	mg/L	2.55	2.28	2.25	2.56	2.14	2.49	---	---	---	---	---	---	---	---
Fluoride (dissolved)	mg/L	---	---	---	---	---	---	2.55	2.74	2.51	2.56	2.4	2.7	2.3	2.79
Hardness	mg/L	612	623	674	666	628	637	725	738 B	655	641	584		657	653
Nitrate (as N)	mg/L	1.99	1.8	0.972	1.91	0.655	1.78	4.2	1.74	2.48 T8	2.44	1.52	2.43	2.12	2.75
Nitrite (as N)	mg/L	0.045 J	0.0277 U	0.0277 U	0.0277 U	0.1 U	0.0277 U	0.0277 U	0.0277 U	0.042 U, T8	0.042 U	0.21 U	0.21 U	0.042 U	0.21 U
Oil and Grease, Total	mg/L	---	---	---	---	---	---	1.29 U	1.45 U	1.36 U	---	---	---	1.36 U	1.37 J
Oil and grease (HEM), polar	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Oil and grease (HEM), total	mg/L	1.16 U	1.16 U	1.16 U	1.16 U	5.88 U	2.05 J	---	---	---	---	---	---	---	---
pH	s.u.	7.76 J	8.36 J	8.17 J	8.71 J	8.26 T8	8.23 J	8.24 J	8.19 T8	8.28 T8	8.2T8	8.43 T8	8.25 T8	8.26 T8	8.27 T8
Phenolics (Total)	mg/L	0.008 U	0.0249 U	0.0083 U	0.0083 U	0.0292 J	0.0083 U	0.0144 U	0.0137 B	0.0083 U	0.0083UJ6	0.0083 U	0.0083 U	1.65	0.0083 U
Phosphorus as P, total	mg/L	0.043 J	0.035 U	0.035 U	0.035 U	0.1 U	0.27	0.035 U	0.035 U	0.035 U	0.035U	0.035 U	0.035 U	0.035 U	0.035 U
Silica	mg/L	15.9	16.3	15	15.8	15.8	14.3	11	15.9	15.9	14.8	16.4	16.8	16.8	16.8
Sulfate	mg/L	1280	1320	1330	1440	1410	1290	1310	1440	1330	1350	1260	1430	1430	1280
Sulfide	mg/L	0.0065 U	0.0065 U	0.0065 U	0.007 J	0.05 U	0.0065 U	0.007 J	0.0065 U	0.025 U	0.025U	0.025 U	0.025 U	0.0267 U	0.025 U
Sulfite	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Specific Conductivity	umhos/cm	2910	2890	2840	3030	2870	1920	2990	3040	3010	9150	2870	3110	2950	2860
Thiocyanate	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Thiosulfate	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Total Dissolved Solids (TDS)	mg/L	2120	2210	2050	2220	2010	1930	2280	2330	2100	2270	2090	2280	1530	1540
Nitrogen, Total Kjeldahl	mg/L	0.94	0.444	0.326	0.48	0.425	1.29	1.14	---	---	---	---	---	---	---
Total Organic Carbon (TOC)	mg/L	51.3	5.98	5.67	6.51	5.74	6.73	12	7.79	9.77	7.42	6.07	6.31	7.22	6.33
Total Suspended Solids (TSS)	mg/L	---	---	---	---	0	0	---	0.4 J	1.6 J	3.2	2.65 U	23.6	5.7	2.5 U
Dissolved Organic Carbon (DOC)	mg/L	32.8	6.13	6.13	6.35	5.82	6.4	11.6	---	---	---	---	---	---	---
Metals															
Arsenic	ug/L	17.0	16.2	16.4	14.8	17	16.2	12.2	---	15.1	---	---	---	---	---
Arsenic (Dissolved)	ug/L	14.7	14.7	16.7	14.2	16.6	14.7	14.1	12.6	---	16 J	15.4	14.7	14.4	16.2
Boron	ug/L	---	---	---	---	---	---	---	---	4510	---	---	---	---	---
Boron (Dissolved)	ug/L	5760	4450	5940	3410	3440 O1 V	3920	5070	5160	---	4500	4060	4580	4710	4610
Cadmium	ug/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Cadmium (Dissolved)	ug/L	0.220 U	0.220 U	0.220 U	2.2 U	1.00 U	0.220 U	0.220 U	---	---	---	---	---	---	---
Calcium	ug/L									83000 O1 V	85200	75300			
Calcium (Dissolved)	ug/L	95100	108000	103000	106000	98400 V	116000	123000	108000	97300	104000	87000	102000	83100	89900
Chromium	ug/L	0.320 U	0.499 U	0.320 U	0.32 U	1.00 U	0.970 J	0.320 U	---	---	---	---	---	---	---
Chromium (Dissolved)	ug/L	0.320 U	0.438 U	0.398 J	3.2 U	1.00 U	0.320 U	0.462 J	---	---	---	---	---	---	---
Chromium III	ug/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Chromium VI	ug/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Copper	ug/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Copper (Dissolved)	ug/L	3.25	4.11	9.29	6.56 J	6.24	3.19	6.55	---	---	---	---	---	---	---
Iron	ug/L	33.6 J	21.8 J	15.0 U	32.1 J	100 U	30.1 J	23.2 J	---	---	---	---	---	---	---
Iron (Dissolved)	ug/L	15.0 U	15.0 U	15.0 U	150 U	100 U	17.8 J	29.3 U	15.0 U	44.7 U	894 U	44.7U	44.7U	44.7 U	44.7 U
Lead	ug/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Lead (Dissolved)	ug/L	0.260 U	0.260 U	0.452 J	2.6 U	1.00 U	0.260 U	0.260 U	---	---	---	---	---	---	---
Lithium	ug/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Lithium (Dissolved)	ug/L	415	426	415	388	361	384	336	---	---	---	---	---	---	---
Magnesium	ug/L	---	---	---	---	---	---	---	---	109000 O1,V	104000	96100	---	---	---
Magnesium (Dissolved)	ug/L	92200	92500	102000	99000	97700 O1 V	97700	129000	102000	104000	110000	96500	103000	109000	104000
Manganese	ug/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Manganese (Dissolved)	ug/L	4.38 J	3.01 J	4.99 J	5.1 U	1.65 J	1.93 J	2.85 J	---	---	---	---	---	---	---
Mercury	ug/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Mercury (Dissolved)	ug/L	0.0490 U	0.0490 U	0.0490 U	0.049 U	0.0591 B J	0.0490 U	0.326	---	---	---	---	---	---	---
Molybdenum (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Nickel	ug/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Nickel (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	ug/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Potassium (Dissolved)	ug/L	61800	64300	77300	88000	74800 V	70400	56000	69800	80900	78000	69600	77500	77700	73700
Selenium	ug/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Selenium (Dissolved)	ug/L	5.60	5.22	4.89	3.2 U	3.82	5.01	22.2	4.03	3.13	8.74 U	3.08	4.74	2.78	3.92
Silicon	ug/L	7420	7640	6990	7390	7390	6700	5140	7430	7410 V	6930	7640	7830	7850	7860
Silicon (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Metals															
Silver	ug/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Silver (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Sodium (Dissolved)	ug/L	386000	368000	388000	393000	379000 O1 V	410000	447000	395000	397000	455000	362000	394000	380000	420000
Strontium	ug/L	---	---	---	---	---	---	---		---	---	---	---	---	---
Strontium (Dissolved)	ug/L	5260	7510	6650	5930	6350	5510	5510	---	---	---	---	---	---	---
Uranium (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Zinc	ug/L	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Zinc (Dissolved)	ug/L	10.3 U	22.6	34.8	84.3 U	6.17 J	10.1	27.5	---	---	---	---	---	---	---
Volatile Organic Compounds - BTEX															
Benzene	ug/L	0.331 U	0.331 U	0.331 U	0.331 U	1.00 U	0.331 U	0.331 U	0.331 U	0.0941 U	0.0941 U	0.0941 U	0.0941 U	0.0941 U	0.0941 U
Ethylbenzene	ug/L	0.384 U	0.384 U	0.384 U	0.384 U	1.00 U	0.384 U	0.384 U	0.384 U	0.137 U	0.137 U	0.137 U	0.137 U	0.137 U	0.137 U
Toluene	ug/L	0.780 U	0.780 U	0.412 U	0.412 U	1.00 U	0.412 U	0.412 U	0.412 U	0.278 U	0.278 U	0.278 U	0.278 U	0.278 U	0.278 U
Xylenes, Total	ug/L	1.06 U	1.06 U	1.06 U	1.06 U	3.00 U	1.06 U	1.06 U	1.06 U	0.174 U	0.174 U	0.174 U	0.174 U	0.174 U	0.174 U
Petroleum Products															
Diesel fuel	mg/L	0.83	0.198	0.174	0.33	0.213 B	0.247	0.155	0.4	0.317	0.285	0.191	0.215	0.484	0.31
TPH - Extractable (DRO)	mg/L	---	---	---	---	---	---	---	---	---	---	---	---	0.0314 U	0.0314 U
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	3500	2127	2745	2233	2796	2770	2891	3216	3002	3254	2765	3272	3054	3272
Dissolved oxygen (DO), field	mg/L	4.17	7.83	5.97	63.4	NM	7.44	7.51	4.29	6.63	7.47	10.29	5.63	7.78	5.63
Oxidation reduction potential (ORP), field	millivolts	-43.8	-24.3	153.9	83.7	313.2	178.1	-58.8	42	-33.3	308.2	87.6	27.9	76.8	27.9
pH, field	s.u.	7.47	8.63	7.71	8.54	7.04	7.17	8.74	7.04	8.37	8.1	7.98	7.69	8.14	7.69
Temperature, ambient	Deg F	---	---	15.6	7.2	---	---	60	60	60	60	60	45	69	45
Temperature, field	Deg C	11.21	10.6	9.9	11.2	10.7	11.15	10.5	11.6	10.9	12	10.4	12	10.9	12
Turbidity, field	NTU	2.07	1.39	1.85	1.33	2.17	0.72	4.02	5.07	0.74	0.42	2.43	0.94	0.91	0.94

Table 8. Logan Wash Mine LW-001 Mine Water Analytical Data

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
O1 = failed the method required serial dilution test and or subsequent post spike criteria. Failures indicate matrix interference
V = sample concetration is too high to evaluate accurate spike recoveries
T8 = Sample(s) received past/too close to holding time expiration.
J3 = The associated batch QC was outside the established quality control range for precision.
J4 = The associated batch QC was outside the established quality control range for accuracy.
J5 = The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6 = The sample matrix interfered with the ability to make any accurate determination; spike value is low.
--- = Analysis not performed

Table 9. Logan Wash Mine Retort Water Analytical Data

SampleID		LWRTRT-Pipe	Retort Water	RT-1	Upper Manhole	Retort Water	RW-1	RW-2	Retort Water	Retort Water	Retort Water	LW-RETORT
SampleDate		2/16/2000	10/26/2000	10/26/2000	10/26/2000	10/2/2002	10/2/2002	10/2/2002	10/3/2006	10/11/2007	3/19/2008	10/30/2008
Parameters	**Units**											
General Chemistry												
Alkalinity, Bicarbonate (as CaCO3)	mg/L	---	426	439	---	471	474	487	---	439	436	497
Alkalinity, Carbonate (as CaCO3)	mg/L	---	12.9	5 U	---	43.1	43	72	---	57.1	69.6	5 U
Alkalinity, Total (As CaCO3)	mg/L	---	439	439	---	515	517	559	521	496	506	497
Ammonia	mg/L	26 D	0.8 U	4 U	1.9	11.1	10.7	5.3	7 J	3.5	4.9 J	0.33 U J
Bromide	mg/L	---	240	---	---	0.2	0.2	0.22	---	240	0.24	0.23
Chemical Oxygen Demand (COD)	mg/L	---	135	---	---	167	94.3	67.2	---	142	171	16.7
Chloride	mg/L	---	75.9	---	---	72.7	72.1	77.6	87.8	94.6	86.1	94.2
Specific Conductivity	umhos/cm	1800	---	---	---	6870	6930	8370	---	7750	11200	10800
Cyanide (free)	mg/L	---	---	---	---	---	---	---	---	---	---	---
Fluoride	mg/L	3.5	13.7	14.8	---	---	---	---	8	---	---	---
Fluoride (dissolved)	mg/L	---	11.6	---	---	9.2	9.9	11	---	11.5	10.1	10
Hardness	mg/L	---	279	---	---	224	228	193	---	300	340	310
Nitrate (as N)	mg/L	---	0.8	0.74	---	0.05 U	0.05 U	0.05 U	U	0.05 U	0.05 U	0.05 U
Nitrite (as N)	mg/L	---	0.01 U	0.01 U	---	0.05 U	0.05 U	0.05 U	---	0.05 U	0.05 U	0.05 U
Oil and Grease, Total	mg/L	---	14.5	---	---	---	---	---	---	---	---	---
Oil and grease (HEM), polar	mg/L	---	---	---	---	---	---	---	---	---	---	---
Oil and grease (HEM), total	mg/L	---	---	---	---	4.9 U	---	4.9 U	15.8	4.8 U	11.4	4.7 U
pH	s.u.	8.3	---	---	---	8.7	8.8	8.8	---	8.6 J	8.6	8.4 J
Phenolics (Total)	mg/L	---	50 U	---	---	0.034	---	---	93 J	0.046	0.058 J	0.065
Phosphorus as P, total	mg/L	---	0.15	---	---	0.1 U	0.1 U	0.1 U	---	0.1 U	0.1 U	0.081 J
Silica	mg/L	---	20700	---	---	---	---	---	---	---	11200	---
Sulfate	mg/L	---	3920	---	1810	3110	2770	3740	3790	4060	3650	3680
Sulfide	mg/L	---	---	---	---	---	---	---	---	---	---	23.4
Sulfite	mg/L	---	2 U	---	---	---	---	---	---	---	---	---
Thiocyanate	mg/L	---	1 U	---	---	---	---	---	---	---	---	---
Thiosulfate	mg/L	---	1 U	---	---	---	---	---	---	---	---	---
Total Dissolved Solids (TDS)	mg/L	---	6660	---	---	5350	5290	6380	6180	1470	5990	5730
Nitrogen, Total Kjeldahl	mg/L	---	---	---	---	---	---	---	---	5.8	4.5	10.1
Total Organic Carbon (TOC)	mg/L	---	---	---	---	22.8	---	---	---	---	35.5	24.3
Total Suspended Solids (TSS)	mg/L	---	179	---	---	---	---	---	---	4 U	4.8	2.4 J
Dissolved Organic Carbon (DOC)	mg/L	---	40 U	---	---	23.8	---	---	---	1.4	35.7	24.4
Metals												
Arsenic	ug/L	20	75.2	314	---	28.9	24.9	47.7	---	---	---	33.6
Arsenic (Dissolved)	ug/L	---	128	---	---	---	---	---	25.2	24.9	34.7	---
Boron	ug/L	6700	12900 E	13600 E	---	---	---	---	129000	---	---	---
Boron (Dissolved)	ug/L	---	13500 E	---	---	12800 J	12500 J	13600 J	---	10400	12600	9620
Cadmium	ug/L	2 U	2.4	3.9	---	---	---	---	---	---	---	---
Cadmium (Dissolved)	ug/L	---	2.3	---	---	0.75	0.68	0.64	---	1 U	1 U	0.68 J
Calcium	ug/L	---	---	---	---	---	---	---	61500 J	---	---	---
Calcium (Dissolved)	ug/L	---	68400	---	---	37300	37100	37100	---	51100	60100	49900
Chromium	ug/L	---	0.6 U	0.6 U	---	---	---	---	---	2 U	---	0.38 J
Chromium (Dissolved)	ug/L	---	1.1	---	---	18.6	15.4	19.5	---	0.36 J	0.26	0.67 J
Chromium III	ug/L	---	10 U	---	---	---	---	---	---	---	---	---
Chromium VI	ug/L	---	0.05 U	---	---	10 U	10 U	10 U	---	---	---	---
Copper	ug/L	---	3	16.9	---	---	---	---	---	---	---	---
Copper (Dissolved)	ug/L	---	3.1	---	---	13.5	14	16.4	---	12.1	2.1	5.9
Iron	ug/L	---	13900 E	54800 E	---	741 J	922 J	206 U	---	403	604	110
Iron (Dissolved)	ug/L	---	16800 E	---	---	---	---	---	---	280	114	235
Lead	ug/L	---	1.3	3.6	---	---	---	---	---	---	---	---
Lead (Dissolved)	ug/L	---	1.6	---	---	1 U	1 U	0.12	---	0.63 J	0.089 J	1 U
Lithium	ug/L	---	491 J	407 J	---	---	---	---	---	---	---	---
Lithium (Dissolved)	ug/L	---	582 J	---	---	355	349	367	---	435	489	503
Magnesium	ug/L	---	26700 E	28300 E	---	---	---	---	47200 J	---	---	---
Magnesium (Dissolved)	ug/L	---	26300 E	---	---	30700 J	30100 J	22200 J	---	34100	43300	36300
Manganese	ug/L	---	38	62.1	---	---	---	---	---	---	---	---
Manganese (Dissolved)	ug/L	---	42.1	---	---	70.5	83	13.9	---	19.4	15.4	14.8
Mercury	ug/L	---	0.12 U	0.12 U	---	0.2 U	0.2 U	0.2 U	---	---	---	---
Mercury (Dissolved)	ug/L	---	0.12 U	---	---	---	---	---	---	0.2 U	0.2 U	0.2 U
Molybdenum (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---
Nickel	ug/L	---	3.7	6.4	---	---	---	---	---	---	---	---
Nickel (Dissolved)	ug/L	---	3.9	---	---	0.37	0.29	0.17	---	---	---	---
Potassium	ug/L	---	167000 E	1160000 E	---	---	---	---	559000 J	---	---	---
Potassium (Dissolved)	ug/L	---	858000 E	---	---	754000	743000	917000	---	978000	711000	943000
Selenium	ug/L	---	15.1	57.7	---	---	---	---	3.1 B	---	---	---
Selenium (Dissolved)	ug/L	---	11.8	---	---	14.2 J	14 J	18.6 J	---	3.9 J	5.4	4.6 J
Metals												
Silicon	ug/L											
Silicon (Dissolved)	ug/L	---	---	---	---	11700 J	11400 J	12800 J	---	---	12200	10100
Silver	ug/L	5 U	0.05 U	0.05 U	---	---	---	---	---	---	---	---
Silver (Dissolved)	ug/L	---	0.03 U	---	---	0.049 J	0.028 J	1 U	---	---	---	---
Sodium	ug/L	---	---	---	---	---	---	---	1450000 J	---	---	---
Sodium (Dissolved)	ug/L	---	1070000	---	---	1160000	1140000	1320000	---	740000	1430000	1320000
Strontium	ug/L	---	1300 J	2150 J	---	---	---	---	---	---	---	---
Strontium (Dissolved)	ug/L	---	998 J	---	---	1450	1440	1480	---	1700	1970	1700
Uranium (Dissolved)	ug/L	---	---	---	---	1.6 J	1.5 J	1.7 J	---	---	---	---
Zinc	ug/L	---	4.9	18 U	---	---	---	---	---	---	---	---
Zinc (Dissolved)	ug/L	---	10.6	---	---	1.9	1.8	2.3	---	5.9	4.5 B	14.8 U
Volatile Organic Compounds - BTEX												
Benzene	ug/L	47 D	0.52 J	0.51 J	0.52 J	5.3	5.5	0.47 J	3.0	2.6	1.5	3.5
Ethylbenzene	ug/L	11 D	0.37 J	0.36 J	0.35 J	1.5	1.6	0.23 J	1.2	1.2	0.59 J	1.8
Toluene	ug/L	2 U	0.33 J	0.33 J	0.37 J	0.36 J	0.38 J	0.24 J	3.0	1.4	0.6 J	2.6
Xylenes, Total	ug/L	46 D	0.94 J	0.91 J	1 J	6.3	6.6	0.64 J	7.9	8.2	3.4	12
Petroleum Products												
Diesel fuel	mg/L	---	---	---	---	---	---	---	---	---	---	---
TPH - Extractable	mg/L	---	---	---	---	4.9	---	5.1	7.3	0.36	---	5
TPH (non-polar)	mg/L	---	---	---	---	4.9	---	5.1	7.3	0.36	26	5
TPH (C21 - C28)	mg/L	---	16	---	---	---	---	---	---	---	---	---
Radiology												
Gross Alpha Analytes	pci/l	---	180 + or - 95	---	---	---	---	---	---	---	---	---
Gross Beta Analytes	pci/l	---	650 + or - 80	---	---	---	---	---	---	---	---	---
Field Parameters												
Specific Conductivity, field	uS/cm	---	---	---	---	---	---	---	---	---	---	---
Dissolved oxygen (DO), field	mg/L	---	---	---	---	---	---	---	---	---	---	---
Oxidation reduction potential (ORP), field	millivolts	---	---	---	---	---	---	---	---	---	---	---
pH, field	s.u.	---	---	---	---	---	---	---	---	---	---	---
Temperature, ambient	Deg F	---	---	---	---	---	---	---	---	---	---	---
Temperature, field	Deg C	---	---	---	---	---	---	---	---	---	---	---
Turbidity, field	NTU	---	---	---	---	---	---	---	---	---	---	---

Table 9. Logan Wash Mine Retort Water Analytical Data

SampleID		LW-RETORT	LW-RETORT	Settling Pond	LW-005	LW-RETORT	LW-RETORT	LW-RETORT	LW-RETORT	LW-RETORT	LW-RETORT	LW-RETORT
SampleDate		6/3/2009	11/5/2009	11/5/2009	6/2/2010	6/2/2010	11/22/2010	5/11/2011	10/19/2011	6/14/2012	10/24/2012	5/28/2013
Parameters	**Units**											
General Chemistry												
Alkalinity, Bicarbonate (as CaCO3)	mg/L	557	470	435	474	485	457	515	440	470	410 J	420
Alkalinity, Carbonate (as CaCO3)	mg/L	34.4	46.1	30.5	58.7	58.9	67.8	33.3	70	46	61 J	59
Alkalinity, Total (As CaCO3)	mg/L	592	516	465	532	543	525	572	510	520	470 J	480
Ammonia	mg/L	5.7	5.9	2.3	7.9	5.4	3.5	3.8	3.1	3.6	2.8 J	2.8
Bromide	mg/L	0.2 U	0.2 U J	0.2 U J	2 U	2 U	0.2 U	1 U	2 U	1 U	2.5 U	2.5 U
Chemical Oxygen Demand (COD)	mg/L	138	106	73.4	128	112	267	150	120	110	120 J	100
Chloride	mg/L	73.2	87.9	97	59.5	58.9	65.8	87.3	68	85	75	80
Specific Conductivity	umhos/cm	12500	11300	11500	10500	10300	11000	10000	12000	11000	13000 J	9900
Cyanide (free)	mg/L	---	---	---	---	---	---	---	---	---	---	---
Fluoride	mg/L	---	---	---	---	---	---	---	---	---	---	---
Fluoride (dissolved)	mg/L	13.4	12.6	12.3	9.4	9.3	10.1	12	10	9.9	10	9.7
Hardness	mg/L	352	300	340	320	310	300	400	300	330	330	320
Nitrate (as N)	mg/L	0.05 U	0.05 U	0.98	0.5 U	0.5 U	0.05 U	0.25 U	0.5 U	0.25 U	1 U J	0.5 U
Nitrite (as N)	mg/L	0.031 J	2.5 U J	2.5 U J	0.5 U	0.5 U	0.46	2.5 U	0.5 U	0.25 U	0.25 U J	0.25 U
Oil and Grease, Total	mg/L	---	---	---	---	---	---	---	---	---	---	---
Oil and grease (HEM), polar	mg/L	---	---	---	---	---	---	---	22	10	5 J	4.7 U
Oil and grease (HEM), total	mg/L	4.7 U	11.5	4.8 U	48.8 J	6.8 J	38.5	558	---	---	---	---
pH	s.u.	8.5 J	8.6 J	8.5 J	8.7 J	8.6 J	8.6 J	8.5 J	8.26 J	8.53 J	8.76 J	8.16 J
Phenolics (Total)	mg/L	0.1	0.069	0.018	0.071 J	0.07 J	0.072	0.1	0.06	0.066	0.071 J	0.044
Phosphorus as P, total	mg/L	0.1 U	0.045 J	0.07 J	0.1 U	0.1 U	0.1 U	0.031 J	0.1 U	0.045 J	0.038 J	0.058 J
Silica	mg/L	---	---	---	---	---	---	---	---	---	---	---
Sulfate	mg/L	3930	4150	4140	3980	4210	3310	3820	3600	3700	3600 J	3900
Sulfide	mg/L	5.8	5	2.4 J	5.5	6.4	14.3	18.5	46	20	20 J	46
Sulfite	mg/L	---	---	---	---	---	---	---	---	---	---	---
Thiocyanate	mg/L	---	---	---	---	---	---	---	---	---	---	---
Thiosulfate	mg/L	---	---	---	---	---	---	---	---	---	---	---
Total Dissolved Solids (TDS)	mg/L	6930	5360	7200	7010	6690	6580	1520	6900	6500	6000 J	6100
Nitrogen, Total Kjeldahl	mg/L	11.2	10.4	7.1	7.9	7.3	7.2	11.5	4.6 J	5.6	5.0 J	5.1
Total Organic Carbon (TOC)	mg/L	27.5	31.7	23.9	70.6	240	45.7	21.7	20	20	17 J	13
Total Suspended Solids (TSS)	mg/L	8.8	4 U	2.8 J	11.6 J	5.2 J	100	4 U	16	4 U	4 U J	2 U
Dissolved Organic Carbon (DOC)	mg/L	22	23.3 J	24.2 J	20.9	20.9	21.3	20.6	19	17	17 J	17
Metals												
Arsenic	ug/L	34.6	39.6 J	35.9	26.5	30.4	31.3	19.2	25	39	37	28
Arsenic (Dissolved)	ug/L	29.2	29.2	37.1 J	28.6	25.7	12.1	29.5	31	36	32	36 J
Boron	ug/L	---	---	---	---	---	---	---	---	---	---	---
Boron (Dissolved)	ug/L	11800	11500 J	---	10700	11100	11000	10600	11000	11000	9500	13000 J
Cadmium	ug/L	---	---	---	---	---	---	---	---	---	---	---
Cadmium (Dissolved)	ug/L	1 U	0.23 J	11500 J	1 U	0.2 J	1 U	0.28 J	1 U	0.2 J	0.12 J	0.64 J
Calcium	ug/L	---	---	---	---	---	---	---	---	---	---	---
Calcium (Dissolved)	ug/L	52100	50600 J	54600 J	49600	51500	49500	48100	52000	57000	50000	68000 J
Chromium	ug/L	0.41 J	2 U	2 U J	2 U	0.19 J	2 U	0.24 J	0.91 J	0.18 J	2 U	10 U
Chromium (Dissolved)	ug/L	0.46 J	2 U J	2 U J	0.26 J	0.25 J	0.27 J	0.2 J	2 U	2 U	2 U	10 U J
Chromium III	ug/L	---	---	---	---	---	---	---	---	---	---	---
Chromium VI	ug/L	---	---	---	---	---	---	---	---	---	---	---
Copper	ug/L	---	---	---	---	---	---	---	---	---	---	---
Copper (Dissolved)	ug/L	0.89 J	1.2 J	---	0.42 J	0.46 J	0.1 J	0.54 J	0.41 J	1.5 J	0.89 J	3.6 J
Iron	ug/L	154	112	174	273	70.9	206 J	132	150	130	80	110 J
Iron (Dissolved)	ug/L	75.3	5.1 J	33.1 J	50 U	50 U	3.9 J	50 U	46 J	37 J	15 J	250 U J
Lead	ug/L	---	---	---	---	---	---	---	---	---	---	---
Lead (Dissolved)	ug/L	0.065 J	1 U J	1 U J	0.025 J	0.02 J	1 U	1 U	1 U	1 U	1 U	5 U J
Lithium	ug/L	---	---	---	---	---	---	---	---	---	---	---
Lithium (Dissolved)	ug/L	498	492 J	483 J	519	533	536	472	470	520	450	480 J
Magnesium	ug/L	---	---	---	---	---	---	---	---	---	---	---
Magnesium (Dissolved)	ug/L	43600	42400 J	48700 J	36700	37700	46800	43400	41000	45000	37000	48000 J
Manganese	ug/L	---	---	---	---	---	---	---	---	---	---	---
Manganese (Dissolved)	ug/L	16.2	13.3 J	17 J	11.5	11.7	11.2	11.4	13	11	7.8	9.1 J
Mercury	ug/L	---	---	---	---	---	---	---	---	---	---	---
Mercury (Dissolved)	ug/L	0.2 U	0.2 U J	0.2 U J	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U J
Molybdenum (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---
Nickel	ug/L	---	---	---	---	---	---	---	---	---	---	---
Nickel (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---
Potassium	ug/L	---	---	---	---	---	---	---	---	---	---	---
Potassium (Dissolved)	ug/L	939000	960000 J	950000 J	906000	904000	1050000	865000	950000	930000	890000	1100000 J
Selenium	ug/L	---	---	---	---	---	---	---	---	---	---	---
Selenium (Dissolved)	ug/L	2.6 J	4.3 J	4.4 J	2.2 J	2.1 J	4.4 J	3.7 J	2.2 J	1.8 J	5 U	25 U J
Metals												
Silicon	ug/L	---	---	---	---	---	---	---	---	---	---	---
Silicon (Dissolved)	ug/L	11800	10600 J	11200 J	9130	9270	12600	9590	9600	11000	9100	12000 J
Silver	ug/L	---	---	---	---	---	---	---	---	---	---	---
Silver (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---
Sodium	ug/L	---	---	---	---	---	---	---	---	---	---	---
Sodium (Dissolved)	ug/L	1350000	1320000 J	1780 J	1310000	1310000	1460000	1250000	1300000	1400000	1300000	1700000 J
Strontium	ug/L	---	---	---	---	---	---	---	---	---	---	---
Strontium (Dissolved)	ug/L	1790	1730 J	3.5 J	1690	1730	2170	1780	1800	2300	1900	2400 J
Uranium (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---
Zinc	ug/L	---	---	---	---	---	---	---	---	---	---	---
Zinc (Dissolved)	ug/L	4 J	2.3 J	3.5 J	1.6 J	1 J	2.6 J	2 J	5 U	5.4 U	5 U	25 U J
Volatile Organic Compounds - BTEX												
Benzene	ug/L	5.1	4.3	1 U	3.7	3.8	3.2	4.1	2.5	2.5	2.4 J	2.1
Ethylbenzene	ug/L	1.5	1.6	1 U	1.3	1.7	1.4	1.9	1.6	1.6	1.1 J	1.1
Toluene	ug/L	3.2	2.3	1 U	1.8	1.9	2.3	3.1	1.4	1.8	1 J	1.1
Xylenes, Total	ug/L	9.5	11	3 U	8.4	12	11	12	9.6	11	5.7 J	8.6
Petroleum Products												
Diesel fuel	mg/L	---	---	---	---	---	---	---	---	---	7.3 J	6.3
TPH - Extractable	mg/L	28	7.6	2.9	16 J	7.1 J	47	110	4.5	6.9	---	---
TPH (non-polar)	mg/L	28	7.6	2.9	16 J	7.1 J	47	110	4.5	6.9	---	---
TPH (C21 - C28)	mg/L	---	---	---	---	---	---	---	---	---	---	---
Radiology												
Gross Alpha Analytes	pci/l	---	---	---	---	---	---	---	---	---	---	---
Gross Beta Analytes	pci/l	---	---	---	---	---	---	---	---	---	---	---
Field Parameters												
Specific Conductivity, field	uS/cm	---	---	---	---	---	---	---	5590	5480	6008	8850
Dissolved oxygen (DO), field	mg/L	---	---	---	---	---	---	---	0.58	1.41	0.83	0.37
Oxidation reduction potential (ORP), field	millivolts	---	---	---	---	---	---	---	-182.9	-298	-256	-192.8
pH, field	s.u.	---	---	---	---	---	---	---	8.8	8.92	8.79	8.78
Temperature, ambient	Deg F	---	---	---	---	---	---	---	22	34	8.2	32
Temperature, field	Deg C	---	---	---	---	---	---	---	14.7	15	14.2	14.1
Turbidity, field	NTU	---	---	---	---	---	---	---	1.43	3.34	1.48	1.48

Table 9. Logan Wash Mine Retort Water Analytical Data

SampleID		LW-003 (DUP)	LW-RETORT	LW-RETORT	LW-003 (DUP)	LW-RETORT	LW-RETORT	LW-003 (DUP)	LW-RETORT	LW-003 (DUP)	LW-RETORT	LW-003 (DUP)
SampleDate		5/28/2013	10/24/2013	5/21/2014	5/21/2014	10/22/2014	5/12/2015	5/12/2015	10/14/2015	10/14/2015	5/23/2016	5/23/2016
Parameters	**Units**											
General Chemistry												
Alkalinity, Bicarbonate (as CaCO3)	mg/L	460 J	540	690	680	580 B	410	500	370 B	277 B	354	372
Alkalinity, Carbonate (as CaCO3)	mg/L	410 J	45	120	610	5 U	100	390	76	390 B	21.5	26.9
Alkalinity, Total (As CaCO3)	mg/L	49 J	590	810	69	580 B	520	110	440 B	---	375	399
Ammonia	mg/L	3.9 J	4.8	5.7	6	3.2	2.8	3.2	2.6	2.8	1.7	1.69
Bromide	mg/L	2.5 U J	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	2.5 U	5 U	5 U	0.08 U	0.08 U
Chemical Oxygen Demand (COD)	mg/L	97 J	190	380	100	750	50	83	81	81	114	87.5
Chloride	mg/L	80 J	94	98	91	96	84	83	67	68	76.8	77.3
Specific Conductivity	umhos/cm	---	8800	8300	8400	8700	8500	8600	8700	---	85700	85100
Cyanide (free)	mg/L	---	---	---	---	---	---	---	---	---	---	---
Fluoride	mg/L	---	---	---	---	---	---	---	---	---	9.5	9.72
Fluoride (dissolved)	mg/L	9.6 J	10	14	8.7	10	10	10	8.7	8.9	---	---
Hardness	mg/L	330 J	370	410	390	400	330	310	340	340	332	336
Nitrate (as N)	mg/L	0.5 U J	0.5 U	0.5 U	0.5 U	0.035 J	0.64	0.5 U	1 U	1 U	0.023 U	0.023 U
Nitrite (as N)	mg/L	0.25 U J	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.5 U	0.5 U	0.028 U	0.028 U
Oil and Grease, Total	mg/L	---	---	---	---	560	---	---	---	---	---	---
Oil and grease (HEM), polar	mg/L	4.7 U J	20	14	4.7 U	---	3.4 J	2.9 J	1.6 J	4.1 U	---	---
Oil and grease (HEM), total	mg/L	---	---	---	---	---	---	---	---	---	1.38 J	1.74 J
pH	s.u.	0.00834 J	8.48 J	8.46 J	8.5 J	8.62 HF	8.44 J	8.58 J	8.74 HF	8.76 H F	8.25 J	7.36
Phenolics (Total)	mg/L	0.047 J	0.18	0.25	0.091	0.11	0.033	0.02065 U	0.058	0.031 U	0.014 U	0.046 U
Phosphorus as P, total	mg/L	0.062 J	0.075 J	0.11	0.067 J	1.2	0.056 J	0.087 J	0.077 J	0.059 J	0.064 J	0.054 J
Silica	mg/L	---	---	---	---	---	---	---	---	---	19.7	19.6
Sulfate	mg/L	4000 J	4000	3300	3800	4100	4200	4200	3500	3700	4120	4160
Sulfide	mg/L	38 J	58	110	55	3 U	46	45	46	50	0.34 J	1.32 J
Sulfite	mg/L	---	---	---	---	---	---	---	---	---	---	---
Thiocyanate	mg/L	---	---	---	---	---	---	---	---	---	---	---
Thiosulfate	mg/L	---	---	---	---	---	---	---	---	---	---	---
Total Dissolved Solids (TDS)	mg/L	6300 J	5800	5800	5700	6500	7100	7200	7100	7000	6740	6810
Nitrogen, Total Kjeldahl	mg/L	---	6.8	12	---	15	4.9 J	4.4 J	3.9 J	4.5 J	2.75	2.68
Total Organic Carbon (TOC)	mg/L	13 J	24	27	17	2.6	19	---	19	19	686	166
Total Suspended Solids (TSS)	mg/L	2 U J	7.2	22	2 U	1500	---	---	---	---	---	---
Dissolved Organic Carbon (DOC)	mg/L	13 J	24	25	23	19	20	20	19	18	118	74.8
Metals												
Arsenic	ug/L	28	21	40	34	630	9.5 J	12 J	14	17	32.9	34.3
Arsenic (Dissolved)	ug/L	33 J	19	38	32	39	21 J	23 J	26	30	28.7	26.2
Boron	ug/L	---	---	---	---	---	---	---	---	---	---	---
Boron (Dissolved)	ug/L	12000 J	12000	13000	12000	10000 B	10000	11000	11000	11000	10800	11200
Cadmium	ug/L	---	---	---	---	---	---	---	---	---	---	---
Cadmium (Dissolved)	ug/L	0.61 J	5 U	1 U	1 U	10 U	1 U	1 U	1.9 J	2.2 J	0.52 J	0.568 J
Calcium	ug/L	---	---	---	---	---	---	---	---	---	---	---
Calcium (Dissolved)	ug/L	63000 J	65000	60000	60000	53000 B	53000	53000	58000 B	59000 B	65400	64700
Chromium	ug/L	10 U	2 U	0.77 J	0.79 J	4 J	2 U	2 U	20 U	20 U	0.32 U	0.320 U
Chromium (Dissolved)	ug/L	10 U J	10 U	0.79 J	0.57 J	20 U	2 U	2 U	20 U	20 U	0.32 U	0.320 U
Chromium III	ug/L	---	---	---	---	---	---	---	---	---	---	---
Chromium VI	ug/L	---	---	---	---	---	---	---	---	---	---	---
Copper	ug/L	---	---	---	---	---	---	---	---	---	---	---
Copper (Dissolved)	ug/L	3.6 J	6 J	0.55 J	0.63 J	20 U	1.4 J	1.4 J	7.3 J	7.3 J	16.2	0.412 J
Iron	ug/L	340	820	2900	180	200000	180	120	340 J	210 J	462	123
Iron (Dissolved)	ug/L	250 U J	250 U	50 U	50 U	500 U	9.1 J	12 J	500 U	500 U	227	15 U
Lead	ug/L	---	---	---	---	---	---	---	---	---	---	---
Lead (Dissolved)	ug/L	5 U J	5 U	1 U	1 U	10 U	1 U	1 U	10 U	10 U	1.63	0.26 U
Lithium	ug/L	---	---	---	---	---	---	---	---	---	---	---
Lithium (Dissolved)	ug/L	490 J	520	520	530	530	500	500	550	540	518	513
Magnesium	ug/L	---	---	---	---	---	---	---	---	---	---	---
Magnesium (Dissolved)	ug/L	44000 J	47000	70000	67000	39000 B	36000	37000	41000 B	41000 B	39300	39200
Manganese	ug/L	---	---	---	---	---	---	---	---	---	---	---
Manganese (Dissolved)	ug/L	8.7 J	13 J	1.2	12	12 JB	13	13	15 J	16 J	10.4	9.77
Mercury	ug/L	---	---	---	---	---	---	---	---	---	---	---
Mercury (Dissolved)	ug/L	0.2 U J	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.037 JB	0.04 J B	0.049 U	0.0490 U
Molybdenum (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---
Nickel	ug/L	---	---	---	---	---	---	---	---	---	---	---
Nickel (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---
Potassium	ug/L	---	---	---	---	---	---	---	---	---	---	---
Potassium (Dissolved)	ug/L	1100000 J	920000	760000	780000	870000	930000	920000	910000	940000	968000	994000
Selenium	ug/L	---	---	---	---	---	---	---	---	---	---	---
Selenium (Dissolved)	ug/L	25 U J	6.6 J	2.9 J	3.2 J	50 U	4.5 J	4.1 J	3.6 J	4.8 J	3.18	2.75
Metals												
Silicon	ug/L	---	---	---	---	---	---	---	---	---	9220	9160
Silicon (Dissolved)	ug/L	11000 J	8900	11000	11000	8100	7900	8400	8500	8800	---	---
Silver	ug/L	---	---	---	---	---	---	---	---	---	---	---
Silver (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---
Sodium	ug/L	---	---	---	---	---	---	---	---	---	---	---
Sodium (Dissolved)	ug/L	1500000 J	1500000	1400000	1400000	1200000	1500000	1600000	1300000	1300000	1370000	1400000
Strontium	ug/L	---	---	---	---	---	---	---	---	---	---	---
Strontium (Dissolved)	ug/L	2200 J	2600	2400	2300	1900	1600	1600	1900	2000	2100	2140
Uranium (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---
Zinc	ug/L	---	---	---	---	---	---	---	---	---	---	---
Zinc (Dissolved)	ug/L	25 U J	25 U	5 U	5 U	25 JB	1.1 J	1.5 J	15 JB	14 J B	163	2.39 U
Volatile Organic Compounds - BTEX												
Benzene	ug/L	2.1 J	6.7	10	3.5	0.75 J	4.9 J	3.6 J	5 U	5 U	1.22	1.21
Ethylbenzene	ug/L	1.4 J	1.9	3	2	1 U	3.6 J	3.1 J	5 U	5 U	0.85 J	0.825 J
Toluene	ug/L	1.2 J	7.6	12	3.7	1 U	5 U	5 U	5 U	5 U	0.78 U	0.780 U
Xylenes, Total	ug/L	9 J	16	21	14	1.2 J	24	19	10	9.7 J	4.38	4.14
Petroleum Products												
Diesel fuel	mg/L	5.2 J	15	39	5	1400	5.2	5.4	7.3	7	6.8	7.34
TPH - Extractable	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	uS/cm	---	5690	9230	9500	9600	9730	9660	9670	9670	9550	9520
Dissolved oxygen (DO), field	mg/L	---	0.17	---	---	1.09	0.85	1.44	5.24	5.24	11.7	5.9
Oxidation reduction potential (ORP), field	millivolts	---	-281	-267	-190.1	-266	-226	-259	---	---	-256	-275
pH, field	s.u.	---	8.64	8.16	8.77	8.61	8.92	8.92	8.88	8.77	8.75	8.79
Temperature, ambient	Deg F	---	32	---	---	---	18	65	24	---	---	---
Temperature, field	Deg C	---	14	13.4	14.8	13.7	11.8	12.2	25	14.1	13.2	13.7
Turbidity, field	NTU	---	12.98	10.92	---	---	2.27	1.7	1.93	1.93	3.36	2.73

Table 9. Logan Wash Mine Retort Water Analytical Data

SampleID		LW-RETORT	LW-003 (DUP)	LW-RETORT	LW-003 (DUP)	LW-RETORT	LW-003 (DUP)	LW-RETORT	LW-003 (DUP)	LW-RETORT	LW-003 (DUP)	LW-RETORT
SampleDate		10/4/2016	10/4/2016	5/1/2017	5/1/2017	10/3/2017	10/3/2017	5/29/2018	5/29/2018	10/22/2018	10/22/2018	05/22/2019
Parameters	**Units**											
General Chemistry												
Alkalinity, Bicarbonate (as CaCO3)	mg/L	352	334	307	309	324	348	337	353	346	347	351
Alkalinity, Carbonate (as CaCO3)	mg/L	61.6	64.7	54.8	55.2	79.3	34.2	36.3	14.3 J	10.9 J	11.6 J	2.71 U
Alkalinity, Total (As CaCO3)	mg/L	413 J	399 J	362	364	403	382	373	367	357	359	351
Ammonia	mg/L	2.65	1.85	1 U	1.49	1.52	1.5	0.798	0.802	1.24	1.22	1.02
Bromide	mg/L	R	R	7.9 U	7.9 U	0.079 U	0.079 U	1 U	1 U	3.95 U	3.95 U	990
Chemical Oxygen Demand (COD)	mg/L	102	12.9	173	78.2	75.3	89.4	162	125	53.8	3 U	156
Chloride	mg/L	80.4	80.5	79.1	83.5	84.5	84.4	83.2	83.3	79.7	80.1	79
Specific Conductivity	umhos/cm	8310	8260	8780	8800	9080	9040	9290	9280	9050	8990	9100
Cyanide (free)	mg/L	---	---	---	---	---	---	---	---	---	---	---
Fluoride	mg/L	8.87	8.9	8.53	8.73	8.37	8.49	9.57	9.62	9.95	9.99	---
Fluoride (dissolved)	mg/L	---	---	---	---	---	---	---	---	---	---	9.68
Hardness	mg/L	327	320	520	527	525 0	374	374	378	332	357	329
Nitrate (as N)	mg/L	0.023 U	0.023 U	2.27 UJ	2.27 UJ	0.0227 U	0.0227 U	0.1 U	0.1 U	0.0227 U	0.0227 U	0.0227 U
Nitrite (as N)	mg/L	0.028 U	0.028 U	0.0277 U	0.0277 U	0.0277 U	0.0277 U	0.1 U	0.1 U	0.0277 U	0.0277 U	0.0277 U
Oil and Grease, Total	mg/L	---	---	---	---	---	---	---	---	---	---	88.8
Oil and grease (HEM), polar	mg/L	---	---	---	---	---	---	---	---	---	---	---
Oil and grease (HEM), total	mg/L	3.58 J	1.160 U	157	12.5	25.3	3.51 J	54.5	434	589	327	---
pH	s.u.	8.43 J	8.73 J	8.60 J	8.61 J	8.48 J	8.69 J	8.77 T8	8.74 T8	8.68 J	8.65 J	8.75 J
Phenolics (Total)	mg/L	0.039 UJ	0.188 J	0.0309 J	0.0291 J	0.0137 U	0.0148 U	0.0387 J	0.033 J	0.0356 U	0.0352 U	0.0145 U
Phosphorus as P, total	mg/L	0.059 J	0.058 J	0.109	0.0744 J	0.0526 U	0.0686 U	0.0447 J	0.0414 J	0.344	0.314	0.0499 J
Silica	mg/L	19.6	19.6	15.6	15.8	15.7	16.3	15.9	15.5	15.2	14.4	16.4
Sulfate	mg/L	4010	3930	4090	4980	4400	4460	4570	4760	4660	4640	4840
Sulfide	mg/L	1.77	1.84	0.274	1.12	0.091	0.079	0.043 J	0.027 J	0.019 J	0.007 J	0.07
Sulfite	mg/L	---	---	---	---	---	---	---	---	---	---	---
Thiocyanate	mg/L	---	---	---	---	---	---	---	---	---	---	---
Thiosulfate	mg/L	---	---	---	---	---	---	---	---	---	---	---
Total Dissolved Solids (TDS)	mg/L	6250	6330	6280	6870	6890	5970	7080	6860	6950	7010	7360
Nitrogen, Total Kjeldahl	mg/L	2.98	2.99	3.81	2.85	2.46	2.38	2.18	2.51	3.64	5.28	3.03
Total Organic Carbon (TOC)	mg/L	25.4	16.9	17.7	16.2	19.7	18.1	25	25.1	20.7	20.1	16.6
Total Suspended Solids (TSS)	mg/L	---	---	---	---	---	---	---	---	---	---	---
Dissolved Organic Carbon (DOC)	mg/L	21.1	21.7	17.2	20.3	33.9	18.8	16.7	16.3	17.7	17.8	17.1
Metals												
Arsenic	ug/L	45.6	50.8	34.1	23.7	36.3	38.2	32.1	30.5	73.5	49.4	44.6
Arsenic (Dissolved)	ug/L	32.2	43.0	35.0	37.8	34.9	28.1	29.1	29.4	63.3	60	38.3
Boron	ug/L	---	---	---	---	---	---	---	---	---	---	---
Boron (Dissolved)	ug/L	10800	11500	13600	11900	10100	9470	10500	10900	10600	10400	10000
Cadmium	ug/L	---	---	---	---	---	---	---	---	---	---	---
Cadmium (Dissolved)	ug/L	0.26 J	0.335 J	0.230 J	0.220 U	4.4 U	4.4 U	0.318 J	0.393 J	0.220 U	0.220 U	0.391 J
Calcium	ug/L	---	---	---		---	---	---	---	---	---	---
Calcium (Dissolved)	ug/L	48600	70300	109000	112000	77200	78800	81200	80800	68300	68200	72900
Chromium	ug/L	0.32 U	0.320 U	0.320 U	0.320 U	0.32 U	0.32 U	1.00 U	1.00 U	1.72	0.744 J	0.406 J
Chromium (Dissolved)	ug/L	0.38 U	0.650 U	0.320 U	0.455 J	6.4 U	6.4 U	0.390 J	1.00 U	0.320 U	0.320 U	0.614 J
Chromium III	ug/L	---	---	---	---	---	---	---	---	---	---	---
Chromium VI	ug/L	---	---	---	---	---	---	---	---	---	---	---
Copper	ug/L	---	---	---	---	---	---	---	---	---	---	---
Copper (Dissolved)	ug/L	0.29 J	0.66 J	13.0	15.1	18.1 J	16.7 J	15.9	16.1	0.749 J	1.52	0.503 J
Iron	ug/L	250	228	1380	1030	19.1 J	2480	19.9 J	19.8 J	42700	1020	6440
Iron (Dissolved)	ug/L	15 U	22.1 J	20.6 J	36.4 J	300 U	300 U	21.0 B J	16.8 B J	157	89.2 J	15.0 U
Lead	ug/L	---	---	---	---	---	---	---	---	---	---	---
Lead (Dissolved)	ug/L	0.26 U	0.260 U	0.260 U	0.260 U	5.2 U	5.2 U	1.00 U	1.00 U	0.260 U	0.260 U	0.260 U
Lithium	ug/L	---	---	---	---	---	---	---	---	---	---	---
Lithium (Dissolved)	ug/L	528	524	584	569	475	460	438	463	448	463	476
Magnesium	ug/L	---	---	---	---	---	---	---	---	---	---	---
Magnesium (Dissolved)	ug/L	28200	39300	44400	45100	40900	40200	47100	46000	39300	38800	46500
Manganese	ug/L	---	---	---	---	---	---	---	---	---	---	---
Manganese (Dissolved)	ug/L	14.1	20.5	46.5	47.6	27.4 J	24.9 J	39.9	38.7	24	23.5	15.3
Mercury	ug/L	---	---	---	---	---	---	---	---	---	---	---
Mercury (Dissolved)	ug/L	0.049 U	0.0490 U	0.0490 U	0.0490 U	0.049 U	0.049 U	0.0673 B J	0.0636 B J	0.0490 U	0.0490 U	0.345
Molybdenum (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---
Nickel	ug/L	---	---	---	---	---	---	---	---	---	---	---
Nickel (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---
Potassium	ug/L	---	---	---	---	---	---	---	---	---	---	---
Potassium (Dissolved)	ug/L	670000	963000	1270000	1130000	997000	984000	1100000	1070000	952000	933000	1150000
Selenium	ug/L	---	---	---	---	---	---	---	---	---	---	---
Selenium (Dissolved)	ug/L	2.38	3.07	4.94	5.20	6.4 U	6.4 U	4.24	3.96	4.99	4.88	4.52
Metals												
Silicon	ug/L	9170	9170	7310	7360	7310	7630	7420	7220	7100	6720	7660
Silicon (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---
Silver	ug/L	---	---	---	---	---	---	---	---	---	---	---
Silver (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---
Sodium	ug/L	---	---	---	---	---	---	---	---	---	---	---
Sodium (Dissolved)	ug/L	1560000	1370000	1770000	1570000	1330000	1310000	1520000	1480000	1440000	1390000	1610000
Strontium	ug/L	---	---	---	---	---	---	---	---	---	---	---
Strontium (Dissolved)	ug/L	1530	2400	2790	2900	2070	2080	2430	2560	2200	2250	2380
Uranium (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---
Zinc	ug/L	---	---	---	---	---	---	---	---	---	---	---
Zinc (Dissolved)	ug/L	4.24 J	15.6 J	2.39 J	3.67 J	38.2 U	38.2 U	10.0 U	10.0 U	2.89 J	3.46 J	2.38 J
Volatile Organic Compounds - BTEX												
Benzene	ug/L	1.9	1.85	1.44	1.47	1.59	1.67	1.15	1.17	1.23	1.16	1.78
Ethylbenzene	ug/L	0.92 J	0.845 J	0.857 J	0.807 J	0.732 J	0.743 J	0.484 J	0.501 J	0.427 J	0.436 J	0.448 J
Toluene	ug/L	0.78 U	0.780 U	0.419 J	0.432 J	0.425 J	0.417 J	1.00 U	1.00 U	0.412 U	0.412 U	0.412 U
Xylenes, Total	ug/L	4.86	4.56	4.56	4.38	3.21	3.24	1.57 J	1.55 J	1.37 J	1.38 J	1.35 J
Petroleum Products												
Diesel fuel	mg/L	5.2	4.34	5.9	9.55	5.11	5.7	24.3	3.41	9.55	6.9	5.64
TPH - Extractable	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	uS/cm	8740	8870	8840	8730	9200	9130	8847	8791	8556	8577	9018
Dissolved oxygen (DO), field	mg/L	1.26	1.14	--	6	27.0	28.6	NM	NM	1.46	2.58	1.05
Oxidation reduction potential (ORP), field	millivolts	-220	-249	-166.4	-199.6	-240	-242	-208.9	-241.9	-228.1	-232.5	-256.6
pH, field	s.u.	8.75	8.87	8.67	8.8	8.55	8.65	7.6	7.58	8.53	8.3	9.42
Temperature, ambient	Deg F	---	---	60	60	12.8	12.8	---	---	---	---	60
Temperature, field	Deg C	13.8	13.4	13.4	12.8	12.9	12.9	14.1	14.1	14.1	14.4	11.1
Turbidity, field	NTU	3.17	3.29	11.75	7.31	7.97	7.01	0.79	15.65	6.4	60.5	19.41

Table 9. Logan Wash Mine Retort Water Analytical Data

SampleID		LW-003 (Dup)	LW-RETORT	LW-RETORT	LW-003 (Dup)	LW-RETORT	LW-003 (Dup)	LW-RETORT	LW-RETORT	LW-003 (Dup)	LW-003 (Dup)	LW-RETORT	LW-RETORT
SampleDate		05/22/2019	10/09/2019	5/26/2020	5/26/2020	10/7/2020	10/7/2020	5/5/2021	10/20/2021	5/5/2021	10/20/2021	5/17/2022	10/11/2022
Parameters	**Units**												
General Chemistry													
Alkalinity, Bicarbonate (as CaCO3)	mg/L	353	408	362	371	385	398	367	353	382	380	373	379
Alkalinity, Carbonate (as CaCO3)	mg/L	2.71 U	2.71 U	21.8 P1	11.4 J	31.7	8.45 U	56.4	81.2	29.7	68.1	8.45 U	8.45 U
Alkalinity, Total (As CaCO3)	mg/L	353	409	384	382	417	402	423	434	412	448	373	379
Ammonia	mg/L	0.997	1.91	1.05	1.09	2.09	2.02	1.22	1.43	1.18	1.64	1.07	1.58
Bromide	mg/L	923	7.45 J	17.6 U	17.6 U	17.6 U	17.6 U	3.53 U	3.53 U	3.53 U	3.53 U	3.53 U	7.15 J
Chemical Oxygen Demand (COD)	mg/L	102	---	---	---	---	---	---	---	---	---	---	---
Chloride	mg/L	79.3	87.9	82.6	82.6	91.1	91.4	82.2	93.2	83.7	93.7	81.2	86.9
Specific Conductivity	umhos/cm	9140	7940	9170	9300	9200	9180	9400	9470	9560	9450	9010	9290
Cyanide (free)	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Fluoride	mg/L	---	---	---	---	---	---	---	---	---	---	9.32	11.4
Fluoride (dissolved)	mg/L	9.71	9.65	9.13	9.09	9.93	9.95	9.67	11.5	9.85	11.4	---	---
Hardness	mg/L	338	332 B	316	343	332	335	315		305	---	317	307
Nitrate (as N)	mg/L	0.0227 U	0.0227 U	0.048 U	0.048 U	0.048 U	0.048U	0.48 U	0.48 U	0.48 U	0.48 U	0.48 U	0.48 U
Nitrite (as N)	mg/L	0.0704 J	0.0277 U	0.042 U	0.042 U	0.042 U	0.042U	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U	0.42 U
Oil and Grease, Total	mg/L	16.9	2.56 J	2.07 J	3.82 J	---	---	---	---	---	---	1.67 J	4.74 J
Oil and grease (HEM), polar	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Oil and grease (HEM), total	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
pH	s.u.	8.92 J	8.76 T8	8.43 T8	8.4 T8	8.72 T8	8.75 T8	8.65 T8	8.43 T8	8.74 T8	8.48 T8	8.56 T8	8.57 T8
Phenolics (Total)	mg/L	0.0425 U	0.0385 B	0.011 B,J	0.0146 B,J	0.0636	0.061 B	0.0229	0.00902	0.0083 U	18.7	0.0286 J	0.021 J
Phosphorus as P, total	mg/L	0.054 J	0.035 U	0.286 B	0.0483 B,J	0.04	0.0539 J	0.035 U	0.0479	0.035 U	0.0549	0.035 U	0.0449 BJ
Silica	mg/L	18.1	16.1	16.4	15.6	15.5	14.7	19.2	20	19.6	19.8	19.3	19.1
Sulfate	mg/L	4620	4730	4540	4530	4110	4110	4660	4670	4820	4570	4400	4350
Sulfide	mg/L	0.059	0.026 J	0.722	0.775	0.056	0.058	0.025 U	0.025 U	0.025 U	0.025 U	0.030 J	0.052
Sulfite	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Thiocyanate	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Thiosulfate	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Total Dissolved Solids (TDS)	mg/L	7400	7290	5800	5720	7440	7360	7340	7200	7300	7140	5900	3540
Nitrogen, Total Kjeldahl	mg/L	2.85	---	---	---	---	---	---	---	---	---	---	---
Total Organic Carbon (TOC)	mg/L	16	17.4	17.6	17.6	15.7	15.8	13.8	14.1	15.5	14.5	14	15
Total Suspended Solids (TSS)	mg/L	---	1.4 J	10.8	43	14.5	3.2 J	3.47	2.5 U	5.85	2.5 U	2.5	2.5 U
Dissolved Organic Carbon (DOC)	mg/L	16.9	---	---	---	---	---	---	---	---	---	---	---
Metals													
Arsenic	ug/L	44.3	---	---	---	---	---	---	---	---	---	---	---
Arsenic (Dissolved)	ug/L	35.4	29.5	35.7	33.1	1.21	1.24	35.2	3.2	37.3	2.13	8.74	37.5
Boron	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Boron (Dissolved)	ug/L	11100	12000	11300	11200	12200	12200	11100	11600	10900	11600	12000	11800
Cadmium	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Cadmium (Dissolved)	ug/L	0.396 J	63400	---	---	---	---	---	---	---	---	---	---
Calcium	ug/L	---	---	55500	60100	53500	53900	54000	---	52100	---	---	---
Calcium (Dissolved)	ug/L	69200	---	61100	61000	59000	58400	61000	55000	58500	54700	53900	51300
Chromium	ug/L	0.518 J	---	---	---	---	---	---	---	---	---	---	---
Chromium (Dissolved)	ug/L	0.716 J	---	---	---	---	---	---	---	---	---	---	---
Chromium III	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Chromium VI	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Copper	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Copper (Dissolved)	ug/L	0.587 J	---	---	---	---	---	---	---	---	---	---	---
Iron	ug/L	7310	---	---	---	---	---	---	---	---	---	---	---
Iron (Dissolved)	ug/L	15.0 U	17.8 J	44.7 U	44.7 U	44.7 U	44.7 U	44.7 U	44.7 U	44.7 U	44.7 U	44.7 U	224 U
Lead	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Lead (Dissolved)	ug/L	0.260 U	---	---	---	---	---	---	---	---	---	---	---
Lithium	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Lithium (Dissolved)	ug/L	471	---	---	---	---	---	---	---	---	---	---	---
Magnesium	ug/L	---	---	43000	46900	48200	48700	43800		42600			
Magnesium (Dissolved)	ug/L	46000	44400	43700	44000	47400	46700	43700	39500	45100	40400	44200	43400
Manganese	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Manganese (Dissolved)	ug/L	15.1	---	---	---	---	---	---	---	---	---	---	---
Mercury	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Mercury (Dissolved)	ug/L	0.397	---	---	---	---	---	---	---	---	---	---	---
Molybdenum (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Nickel	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Nickel (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Potassium (Dissolved)	ug/L	1060000	941000	1040000	1010000	1020000	1020000	1090000	1070000	1070000	1030000	1040000	976000
Selenium	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Selenium (Dissolved)	ug/L	4.56	2.95	4.59	4.22	1.03 J	0.938 J	4.81	1.38	6.16	1.28	2.65	3.56 J
Metals													
Silicon	ug/L	8480	7540	7670	7280	7250	6890	8990	9350	9160	9230	9030	8930
Silicon (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Silver	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Silver (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Sodium	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Sodium (Dissolved)	ug/L	1460000	1290000	1480000	1450000	1490000	1430000	1430000	1370000	1390000	1340000	1300000	1410000
Strontium	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Strontium (Dissolved)	ug/L	2140	---	---	---	---	---	---	---	---	---	---	---
Uranium (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Zinc	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Zinc (Dissolved)	ug/L	3.13 J	---	---	---	---	---	---	---	---	---	---	---
Volatile Organic Compounds - BTEX													
Benzene	ug/L	1.82	2.93	1.75	1.73	3.22	2.9	1.77	1.55	1.65	1.88	1.55	1.35
Ethylbenzene	ug/L	0.443 J	0.922 J	0.897 J	0.664 J	1.13	1.13	0.803	0.815	0.813	0.863	0.850 J	0.564 J
Toluene	ug/L	0.412 U	1.03	0.278 U	0.278 U	1.74	1.52	0.278 U	0.278 U	0.278 U	0.473	0.278 U	0.278 U
Xylenes, Total	ug/L	1.49 J	2.81 J	1.43 J	1.4 J	3.3	3.34	1.54	1.67	1.55	1.94	1.43 J	0.987 J
Petroleum Products													
Diesel fuel	mg/L	4.17	4.6	3.93	3.28	4.48	4.06	3.99	7.18	4.29	4.35	4.03	5.27
TPH - Extractable	mg/L	---	---	---	---	---	---	---	---	---	---	0.0475 BJ	0.0314 U
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	uS/cm	9058	9387	9156	9108	9873	9841	8901	8901	9125	9886	5081	9213
Dissolved oxygen (DO), field	mg/L	1.03	0.42	0.99	0.87	1.78	0.81	1.14	1	1.46	1.05	1.25	1.12
Oxidation reduction potential (ORP), field	millivolts	-244.5	-229.8	-254.8	-227	-211.6	-291.3	-193.8	-110.7	-249.4	-114.9	-84.2	-83.7
pH, field	s.u.	9.37	8.62	8.75	8.77	8.75	8.61	8.77	8.59	8.81	8.49	8.75	8.44
Temperature, ambient	Deg F	60	60	60	60	60	60	60	45	60	45	80	75
Temperature, field	Deg C	10.3	14.1	13.2	13.6	14.1	13.6	11.9	12.1	11.7	13.3	12	12.9
Turbidity, field	NTU	22.04	3.99	5.07	7.26	5.94	5.84	5.78	3.2	6.48	2.8	4.43	4.19

Table 9. Logan Wash Mine Retort Water Analytical Data

SampleID		LW-LM	LW-LM	LW-LM	LW-LM	LW-LM	LW-LM	LW-LM	LW-LM	LW-LM	LW-LM	LW-LM	LW-LM
SampleDate		5/13/2015	10/14/2015	5/23/2016	10/4/2016	5/1/2017	10/3/2017	5/29/2018	10/22/2018	05/20/2019	10/09/2019	6/4/2020	10/7/2020
Parameters	Units												
General Chemistry													
Alkalinity, Bicarbonate (as CaCO3)	mg/L	490	410 B	391	391	342	374	348	350	350	363	363	3.82
Alkalinity, Carbonate (as CaCO3)	mg/L	5 U	5 U	2.71 U	2.71 U	2.71 U	7.7 J	20 U	2.71 U	2.71 U	14 J	8.45 U	8.45 U
Alkalinity, Total (As CaCO3)	mg/L	490	410 B	391	391 J	342	382	348	350	350	377	363	3.85
Ammonia	mg/L	0.1	0.1 U	0.038 U	0.038 U	0.05 U	0.0317 U	0.1 U	0.0317 U	0.0317 U	0.0317 U	0.117 U	.117 U
Bromide	mg/L	2.5 U	5 U	0.079 U	R	7.9 U	0.079 U	1 U	3.95 U	3.95 U	7.9 U	3.53 U	3.53 U
Chemical Oxygen Demand (COD)	mg/L	30	39	49.9	83.9	41.2	44.3	38.4	3 U	45.8	---	---	---
Chloride	mg/L	80	66	78.8	82.4	81.8	86.4	82.9	80.4	79.7	84.6	81.3	87.2
Specific Conductivity	umhos/cm	8500	8700	86000	8300	8760	8920	9310	9000	27900	8480	9360	9210
Cyanide (free)	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Fluoride	mg/L	---	---	9.6	8.95	8.81	8.57	9.55	9.99	---	---	---	---
Fluoride (dissolved)	mg/L	10	8.7	---	---	---	---	---	---	9.78	9.79	8.48	10.2
Hardness	mg/L	350	330	351	325	526	376	396	330	364	303 B	326	318
Nitrate (as N)	mg/L	3	2.1	0.0227 U	0.0227 U	2.27 U	1.01	0.1 U	0.807	0.785	0.0227 U	0.048 U	1.01 U
Nitrite (as N)	mg/L	0.25 U	0.24 U	0.0277 U	0.0227 U	0.0277 U	0.0277 U	0.1 U	0.0277 U	0.0277 U	0.0277 U	0.0579 J	0.42 U
Oil and Grease, Total	mg/L	---		---	---	---	---	---	---	2.33 J	1.3 U	2.35 J	---
Oil and grease (HEM), polar	mg/L	4.7 U		---	---	---	---	---	---	---	---	---	---
Oil and grease (HEM), total	mg/L	---		1.86 J	1.16 U	1.16 U	1.16 U	5.56 U	1.16 U	---	---	---	---
pH	s.u.	8.04 J	8.1	7.36 J	8.22 J	8.36 J	8.15 T8	7.75 T8	7.93 J	7.79 J	8.11 T8	8.1 T8	8.18 T8
Phenolics (Total)	mg/L	0.027	0.024	0.0188 U	0.0215 U	0.0142 J	0.0083 U	0.00934 J	0.012 U	0.0083 U	0.0101 B	0.0083 U	0.0154 BJ
Phosphorus as P, total	mg/L	0.055 J	0.071	0.0814 J	0.0541 J	0.0738 J	0.0737 B J	0.1 U	0.14 U	0.035 U	0.0564 J	0.0706 J	0.0903 J
Silica	mg/L	---		19.6	19.6	17.4	17.2	14.6	15	18.2	17	17.1	170
Sulfate	mg/L	4000	3600	4020	4100	4830	4580	4580	4330	4330	4950	4360	43300
Sulfide	mg/L	1.8 J	0.47 U	0.0065 U	0.0065 U	0.0065 U	0.0065 U	0.05 U	0.0065 U	0.0065 U	0.0065 U	0.025 U	0.025 J
Sulfite	mg/L	---		---	---	---	---	---	---	---	---	---	---
Thiocyanate	mg/L	---		---	---	---	---	---	---	---	---	---	---
Thiosulfate	mg/L	---		---	---	---	---	---	---	---	---	---	---
Total Dissolved Solids (TDS)	mg/L	6900	7000	6770	6470	7460	5860	7040	6980	7260	7470000 4	7380	7380
Nitrogen, Total Kjeldahl	mg/L	3.3 J	1.7 J	1.21	1.1	1.16	1.26	0.979	1.22	1.03	---	---	---
Total Organic Carbon (TOC)	mg/L	15	14	68.3	14	16.2	15.6	---	---	14.5	13.8	14.5	13.3
Total Suspended Solids (TSS)	mg/L	---	---	---	---	---	---	14.8	15.9	---	1.3 J	2.6	2.0 J
Dissolved Organic Carbon (DOC)	mg/L	15	24	20 J	17.2	15	15.6	13.9	15.1	13.6	---	---	---
Metals													
Arsenic	ug/L	33	41	33.1	32.7	20.1	31.7	25.1	44.1	34.2	---	---	---
Arsenic (Dissolved)	ug/L	33	39	34.7	29.5	20.5	28.1	25.8	41.3	44.6	40.8	50	12 J
Boron	ug/L	9600	11000	---	---	---	---	---	---	---	---	---	---
Boron (Dissolved)	ug/L	---	---	11200	11200	11300	9690 V	11300	10900	8970	11400	11500	11900
Cadmium	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Cadmium (Dissolved)	ug/L	1 U	2.7 J	0.663 J	0.263 J	0.240 J	4.40 U	0.352 J	0.220 U	0.428 J	63700	---	---
Calcium	ug/L	---	---	---	---	---	---	---	---	---	---	56600	51900
Calcium (Dissolved)	ug/L	55000	59000 B	74600	62600	107000	79800 V	82100	68000	70400	---	60300	14600 J
Chromium	ug/L	2 U	20 U	0.320 U	0.320 U	0.320 U	0.649 J	1.00 U	0.407 J	0.320 U	---	---	---
Chromium (Dissolved)	ug/L	2 U	20 U	0.536 J	0.386 U	0.320 U	6.40 U	1.00 U	0.320 U	0.852 J	---	---	---
Chromium III	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Chromium VI	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Copper	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Copper (Dissolved)	ug/L	1.6 J	6.8 J	1.02	0.270 U	14.4	19.5 J	16.2	0.631 J	0.467 J	---	---	---
Iron	ug/L	61	81 J	67.5 J	105	46.3 J	67.9 J	19.1 J	89.2 J	31.6 J	---	---	---
Iron (Dissolved)	ug/L	40 J	500 U	15.0 U	22.5 J	25.9 J	300 U	18.8 B J	55.2 J	27.8 U	27.9 J	263	2240 U
Lead	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Lead (Dissolved)	ug/L	1 U	10 U	0.260 U	0.260 U	1.01	5.20 U	1.00 U	0.260 U	0.260 U	---	---	---
Lithium	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Lithium (Dissolved)	ug/L	480	530	510	525	607	469 O1	453 O1	455	462	---	---	---
Magnesium	ug/L	---	---	---	---	---	---	---	---	---	---	44900	45800
Magnesium (Dissolved)	ug/L	38000	43000 B	46500	36500	46100	43300 V	46400	38100	47500	42400	43300	12300
Manganese	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Manganese (Dissolved)	ug/L	14	3.4 J	4.72 J	7.65	17.4	29.7 B J	18.7	37	18.4	---	---	---
Mercury	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Mercury (Dissolved)	ug/L	0.2 U	0.034 JB	0.0490 U	0.0490 U	0.0490 U	0.0677 J	0.0605 B J	0.0490 U	0.0490 U	---	---	---
Molybdenum (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Nickel	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Nickel (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Potassium (Dissolved)	ug/L	890000	950000	1030000	837000	1050000	994000 V	1110000	957000	1050000	992000	989000	268000
Selenium	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Selenium (Dissolved)	ug/L	4.4 J	6.3 J	4.48	4	7.81	6.40 U	10	6.34	8.84	6.39	7.45	21.8 U
Metals													
Silicon	ug/L	---	---	9150	9170	8150	8030	6840	7030	8500	7960	7990	
Silicon (Dissolved)	ug/L	7800	9000	---	---	---	---	---	---	---	---	---	---
Silver	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Silver (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Sodium	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Sodium (Dissolved)	ug/L	1500000	1400000	1520000	1400000	1510000	1360000 V	1520000	1420000	1510000	1340000	1330000	394000
Strontium	ug/L	---	---			---	---	---	---	---	---	---	---
Strontium (Dissolved)	ug/L	1900	2000	2510	2510	2790	2140 V	2580	2250	2210	---	---	---
Uranium (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Zinc	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Zinc (Dissolved)	ug/L	2 J	14 JB	6.41 U	4.21 J	12	38.2 U	2.69 J	1.91 J	4.09 J	---	---	---
Volatile Organic Compounds - BTEX													
Benzene	ug/L	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	0.331 U	0.0941 U	0.0941 U
Ethylbenzene	ug/L	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	0.384 U	0.137 U	0.137 U
Toluene	ug/L	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	0.412 U	0.278 U	0.278 U
Xylenes, Total	ug/L	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	1.06 U	0.174 U	0.174 U
Petroleum Products													
Diesel fuel	mg/L	2.2	3.2	3.41	2.24	3.24	2.67	1890	3340	1.91	2.06	1.91	1.73
TPH - Extractable	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	uS/cm	8866	8851	9730	8510	8980	8980	8783	8663	9100	9058	9460	10063
Dissolved oxygen (DO), field	mg/L	7.04	5.37	---	5.22	--	12.12	NM	5.39	--	5.1	8.21	6.74
Oxidation reduction potential (ORP), field	millivolts	-7.6	26.5	236	208	172.5	69.1	194.7	176.5	70.3	-83	6.4	25.1
pH, field	s.u.	7.91	7.98	7.52	8.04	7.74	7.26	7.9	7.74	7.15	7.99	6.46	8.44
Temperature, ambient	Deg F	21	24	---	---	60	---	---	---	60	60	60	60
Temperature, field	Deg C	11.25	16.8	12.8	15.6	12.2	17.9	12.8	16.6	10.9	17.1	12.9	17.2
Turbidity, field	NTU	1.07	1.43	1.32	4.29	3.21	0.73	4.46	1.98	3.7	1.03	7.61	1.26

Table 9. Logan Wash Mine Retort Water Analytical Data

SampleID		LW-LM	LW-LM	LW-LM	LW-LM	LW-POND	LW-POND	LW-POND	LW-POND	LW-POND	LW-POND	LW-POND	LW-POND
SampleDate		5/5/2021	10/20/2021	5/17/2022	10/20/20222	05/20/2019	10/9/2019	5/26/2020	10/7/2020	5/5/2021	10/20/2021	5/17/2022	10/11/2022
Parameters	**Units**												
General Chemistry													
Alkalinity, Bicarbonate (as CaCO3)	mg/L	418	401	376	387	312	1150	2900	9880	942	369	1060	670
Alkalinity, Carbonate (as CaCO3)	mg/L	8.45 U	8.45 U	8.45 U	8.45 U	64.3	1330	2340	18300	1350	838	986	1990
Alkalinity, Total (As CaCO3)	mg/L	418	401	376	387	376	2470	5240	28100	2290	1210	2040	2660
Ammonia	mg/L	0.117 U	0.117 U	0.117 U	0.117 U	0.0317 U	0.143	0.215 J	1.17	0.117 U	0.117 U	0.117 U	0.147 J
Bromide	mg/L	3.53 U	3.53 U	3.53 U	3.53 U	3.95 U	7.9 U	353 U	35.3	3.53 U	3.53 U	3.53 U	3.53 U
Chemical Oxygen Demand (COD)	mg/L	---	---	---	---	48.7	---	---	---	---	---	---	---
Chloride	mg/L	83.3	90.9	86.5	89.8	83.6	0.0519 U	1930	13500	904	952	902	2210
Specific Conductivity	umhos/cm	9330	9190	9220	9220	27900	75100	105000	97000	68800	60200	66100	111000
Cyanide (free)	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Fluoride	mg/L	---	---	10.1	11.6	---	---	---	---	---	---	---	---
Fluoride (dissolved)	mg/L	9.39	11.2	---	---	10	7.28	187	583	74.8	19.9	66.7	36.5
Hardness	mg/L	318		310	311	368	1640	3730	19700	1380		1450	1050
Nitrate (as N)	mg/L	0.919	2.06	0.842	0.48 U	0.764	0.0227 U	0.48 U	4.8	0.48 U	4.80 UQ	4.80 U	0.48 U
Nitrite (as N)	mg/L	0.42 U	0.42 U	0.42 U	0.42 U	0.0277 U	0.0277 U	0.42 U	4.2	0.42 U	4.20 UQ	4.20 U	0.42 U
Oil and Grease, Total	mg/L	---	---	1.29 U	1.49 J	2.16 J	1.35 U	4.19 J	---	---	---	1.29 U	1.41 J
Oil and grease (HEM), polar	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Oil and grease (HEM), total	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
pH	s.u.	8.19 T8	8.23	8.13 T8	7.96 T8	8.88 J	9.05 T8	8.93 T8	9.17 T8	9.23 T8	9.13 T8	9.06 T8	9.2 T8
Phenolics (Total)	mg/L	0.0083 U	0.0083 U	0.223	0.0083 UJ6	0.0083 U	0.015 B	0.0083 U	0.083	0.0083 U	0.0083 U	0.223 J6	0.0083 U
Phosphorus as P, total	mg/L	0.035 U	0.0083 U	0.035 U	0.0395 BJ	0.035 U	0.359	0.162 B	1.76	0.035 U	0.0541	0.035 U	0.129 B
Silica	mg/L	19.3	19.7	19.4	19.6	14.2	31.8	73.4	238	6.61	7.66	9.33	6
Sulfate	mg/L	4540	4500	5100	4290	4300	58300	90400	784000	50900	43900	49700	97800
Sulfide	mg/L	0.025 U	0.025 U	0.025 U	0.025 U	0.0065 U	0.092	0.624	2.48	0.025 U	0.025 U	0.0267 U	0.025 U
Sulfite	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Thiocyanate	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Thiosulfate	mg/L	---	---	---	---	---	---	---	---	---	---	---	---
Total Dissolved Solids (TDS)	mg/L	6250	7320	6920	5140	7270	42300	138000 J4	1110000	75600	63400	86500	130000 Q
Nitrogen, Total Kjeldahl	mg/L	---	---	---	---	1.3	---	---	---	---	---	---	---
Total Organic Carbon (TOC)	mg/L	13.4	12.5	13.1	12.6	15.4	174	276	2430	118	122	138	310
Total Suspended Solids (TSS)	mg/L	2.6 U	2.5 U	2.5 U	6.1	---	36.8	219	6880	8.28	17.3	5.3	60
Dissolved Organic Carbon (DOC)	mg/L	---	---	---	---	13.8	---	---	---	---	---	---	---
Metals													
Arsenic	ug/L	---	---	---	---	37.5	---	---	---	---	---	---	---
Arsenic (Dissolved)	ug/L	40.4	36.9	30.9	33.5	47.7	490	446	369	284	214	256	397
Boron	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Boron (Dissolved)	ug/L	11100	11500	12000	11900	11000	146000	255000	181000	116000	111000	111000	208000
Cadmium	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Cadmium (Dissolved)	ug/L	---	---	---	---	0.444 J	153000	---	---	---	---	---	---
Calcium	ug/L	52800	---	---	---	---	---	163000	91400	69200	---	---	---
Calcium (Dissolved)	ug/L	55700	55000	52200	50600	74200	---	198000	91600	96000	28400	78900	47300
Chromium	ug/L	---	---	---	---	0.320 U	---	---	---	---	---	---	---
Chromium (Dissolved)	ug/L	---	---	---	---	0.952 J	---	---	---	---	---	---	---
Chromium III	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Chromium VI	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Copper	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Copper (Dissolved)	ug/L	---	---	---	---	2.68	---	---	---	---	---	---	---
Iron	ug/L	---	---	---	---	30.8 J	---	---	---	---	---	---	---
Iron (Dissolved)	ug/L	44.8	44.7 U	44.7 U	224 U	15.0 U	19.0 J	2240 U	4470	44.7 U	44.7U	74.6 J	4470 U
Lead	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Lead (Dissolved)	ug/L	---	---	---	---	0.260 U	---	---	---	---	---	---	---
Lithium	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Lithium (Dissolved)	ug/L	---	---	---	---	488	---	---	---	---	---	---	---
Magnesium	ug/L	45200	41900	---	---	---	---	807000	424000	294000	---	---	---
Magnesium (Dissolved)	ug/L	44500	---	43700	44800	48200	371000	882000	359000	339000	105000	305000	226000
Manganese	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Manganese (Dissolved)	ug/L	---	---	---	---	5.73	---	---	---	---	---	---	---
Mercury	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Mercury (Dissolved)	ug/L	---	---	---	---	0.0490 U	---	---	---	---	---	---	---
Molybdenum (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Nickel	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Nickel (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Potassium	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Potassium (Dissolved)	ug/L	1000000	1070000	1010000	954000	1030000	12800000	23900000	16400000	11400000	10700000	10400000	20600000
Selenium	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Selenium (Dissolved)	ug/L	8.59	7.89	8.44	6.22	8.79	88.7	155	78.3	74.9	59.3	62.3	61.2 J
Metals													
Silicon	ug/L	9030	9190	9070	9140	6660	14900	34300	11100	3090	3580	4360	2800
Silicon (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Silver	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Silver (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Sodium	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Sodium (Dissolved)	ug/L	1340000	1380000	1300000	1410000	1560000	16900000	24900000	22600000	14800000	12700000	13500000	27600000
Strontium	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Strontium (Dissolved)	ug/L	---	---	---	---	2190	---	---	---	---	---	---	---
Uranium (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Zinc	ug/L	---	---	---	---	---	---	---	---	---	---	---	---
Zinc (Dissolved)	ug/L	---	---	---	---	4.60 J	---	---	---	---	---	---	---
Volatile Organic Compounds - BTEX													
Benzene	ug/L	0.0941 U	0.0941 U	0.0941 U	0.0941 U	0.331 U	0.331 U	0.0941 U	0.0941	0.0941U	0.0941 U	0.0941 U	0.0941 U
Ethylbenzene	ug/L	0.137 U	0.137 U	0.137 U	0.137 U	0.384 U	0.384 U	0.137 U	0.137	0.137U	0.137 U	0.137 U	0.137 U
Toluene	ug/L	0.278 U	0.278 U	0.278 U	0.278 U	0.412 U	0.412 U	0.278 U	0.278	0.278U	0.278 U	0.278 U	0.278 U
Xylenes, Total	ug/L	0.174 U	0.174 U	0.174 U	0.174 U	1.06 U	1.06 U	0.174 U	0.174	0.174U	0.174 U	0.174 U	0.174 U
Petroleum Products													
Diesel fuel	mg/L	2.1	1.91	2.36	2.79	0.973	3.66	5.33	3.26	2.97	3.2	2.7	3.54
TPH - Extractable	mg/L	---	---	0.0314 U	0.0314 U	---	---	---	---	---	---	0.0314 U	0.0314 U
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	uS/cm	9007	9654	10022	9097	8998	79473	104962	113115	67430	69578	65799	115562
Dissolved oxygen (DO), field	mg/L	9.32	4.93	6.42	4.77	--	2.11	1.57	0.76	6.39	3.46	4.16	0.54
Oxidation reduction potential (ORP), field	millivolts	103.2	89.9	19.6	-27.9	3.3	97.4	-37.8	-61.2	55.8	77.9	41.7	-37.1
pH, field	s.u.	7.81	8.19	8.23	7.62	8.62	9.18	8.99	9.29	9.45	9.52	9.17	9.39
Temperature, ambient	Deg F	60	37	72	60	60	60	60	60	60	45	70	65
Temperature, field	Deg C	10.7	15.9	14.4	17.3	18.6	8.5	30.1	14.6	19.3	11.3	16	19.3
Turbidity, field	NTU	1.67	0.75	5.65	2.58	2.94	13.13	5.09	14.47	4.07	4.68	1.94	8.38

Table 9. Logan Wash Mine Retort Water Analytical Data

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
O1 = failed the method required serial dilution test and or subsequent post spike criteria. Failures indicate matrix interference
V = sample concetration is too high to evaluate accurate spike recoveries
T8 = Sample(s) received past/too close to holding time expiration.
J3 = The associated batch QC was outside the established quality control range for precision.
J4 = The associated batch QC was outside the established quality control range for accuracy.
J5 = The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6 = The sample matrix interfered with the ability to make any accurate determination; spike value is low.
--- = Analysis not performed

Table 10. Logan Wash Mine 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
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
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), fiel	millivolts	---	---	---	---	---	---	---	---	---	---	---
pH, field	s.u.	---	---	---	---	---	---	---	---	---	---	---
Temperature, ambient	Deg C	---	---	---	---	---	---	---	---	---	---	---
Temperature, field	Deg C	---	---	---	---	---	---	---	---	---	---	---
Turbidity, field	NTU	---	---	---	---	---	---	---	---	---	---	---

Table 10. Logan Wash Mine 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
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
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), fiel	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 10. Logan Wash Mine 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
SampleDate		6/4/2018	11/13/2018	05/29/2019	10/14/2019	5/26/2020	10/7/2020	5/5/2021	10/21/2021	5/17/2022	10/11/2022
Parameters	Units										
General Chemistry											
Alkalinity, Bicarbonate (as CaCO3)	mg/L	432	411	395	369	418	379	429	419	416	399
Alkalinity, Carbonate (as CaCO3)	mg/L	20 U	2.71 U	2.71 U	2.71 U	8.45 U	8.45 U	8.45 U	8.45 U	8.45 U	8.45 U
Alkalinity, Total (As CaCO3)	mg/L	432	411	395	369	418	379	429	419	416	399
Ammonia	mg/L	0.1 U	0.0317 U	0.0317 U	0.0317 U	0.117 U	0.117 U	0.117 U	0.117 U	0.117 U	0.117 U
Bromide	mg/L	1 U	1.58 U	0.079 U	0.079 U	17.6 U	35.3 U	3.53 U	3.53 U	3.53 U	3.53 U
Chemical Oxygen Demand (COD)	mg/L	56.8	33	32.8	---	---	---	---	---	---	---
Chloride	mg/L	25.2	28.1	17.9	18.7	23.1	24.5	27.1	23.7	24.3	18.9
Specific Conductivity	umhos/cm	3510	4240	3970	3280	4090	3970	4290	4000	4060	3780
Cyanide (free)	mg/L	---	---	---	---	---	---	---	---	---	---
Fluoride	mg/L	1.11	1.28	---	---	---	---			1.31	1.12
Fluoride (dissolved)	mg/L	---	---	1.48	1.47	1.1	1.19	1.25 J	1.55	---	---
Hardness	mg/L	1070	935	629	756 B	1060	985	1090		959	919
Nitrate (as N)	mg/L	16.6	19	15.3	16.1	17.8 T8	15.3	17.8	20.8	21.6	18.6
Nitrite (as N)	mg/L	0.1 U	0.0277 U	0.0277 U	0.0277 U	0.042 U,T8	0.042 U	0.42 U	0.42 U	0.42 U	0.42 U
Oil and Grease, Total	mg/L	---	---	1.35 U	1.29 U	1.32 U	---	---	---	1.22 U	1.22 U
Oil and grease (HEM), polar	mg/L	---	---	---	---	---	---	---	---	---	---
Oil and grease (HEM), total	mg/L	5.56 U	1.29 U	---	---	---	---	---	---	---	---
pH	s.u.	7.70 T8	7.65 J	7.92 J	7.88 T8	7.84 T8	7.69 T8	7.68 T8	8 T8	7.82 T8	7.78 T8
Phenolics (Total)	mg/L	0.0126 J	0.0083 U	0.0083 U	0.026 J	0.0083 U	0.0083 U	0.0083 UJ6	0.0083 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	0.035 U	0.0564 BJ	0.035 U	0.035 U
Silica	mg/L	23.6	14.7	17.1	15.5	15.1	15	17.9	18.1	18.4	18.4
Sulfate	mg/L	2030	2000	1780	1560	1900	1850	1910	1870	1970	1740
Sulfide	mg/L	0.05 U	0.0065 U	0.0065 U	0.0065 U	0.025 U	0.025 U	0.025 U	0.025 U	0.0267 U	0.025 U
Sulfite	mg/L	---	---	---	---	---	---	---	---	---	---
Thiocyanate	mg/L	---	---	---	---	---	---	---	---	---	---
Thiosulfate	mg/L	---	---	---	---	---	---	---	---	---	---
Total Dissolved Solids (TDS)	mg/L	2790	3320	2760	2490	2610 J3	3100	3180	3110	2650	2160
Nitrogen, Total Kjeldahl	mg/L	1.1 J6	1.2	0.522	---	---	---	---	---	---	---
Total Organic Carbon (TOC)	mg/L	11.7	13.6	13	10.8	13	9.81	11.4	9.87	12.4	10.7
Total Pet_ Hydrocarbons	mg/L	---	---	---	---	---	---	---	---	---	---
Total Suspended Solids (TSS)	mg/L	---	---	---	4.4	1.6 J	1.1 J	25.5	4.3	240	8.2
Dissolved Organic Carbon (DOC)	mg/L	10.9	12.5	12.7	---	---	---	---	---	---	---
Metals											
Arsenic	ug/L	13.4	12.6	12.6	---	---	---	---	---	---	---
Arsenic (Dissolved)	ug/L	13.6	13	14.4	12.3	12.6	13.1	12.7	13.3	13.1	11.8
Boron	ug/L	---	---	---	---	---	---	---	---	---	---
Boron (Dissolved)	ug/L	10700	9890	9700	10200 V	11900	11800	11100	11200	12500	11300
Cadmium	ug/L	---	---	---	---	---	---	---	---	---	---
Cadmium (Dissolved)	ug/L	1.00 U	0.220 U	0.352 J	116000	---	---	---	---	---	---
Calcium	ug/L	---	---	---	---	142000	134000	149000	---	---	---
Calcium (Dissolved)	ug/L	159000	148000	162000	---	148000	130000	149000	151000	132000	127000
Chromium	ug/L	3.61	2.52	3.21	---	---	---	---	---	---	---
Chromium (Dissolved)	ug/L	3.15	3.22	4.04	---	---	---	---	---	---	---
Chromium III	ug/L	---	---	---	---	---	---	---	---	---	---
Chromium VI	ug/L	---	---	---	---	---	---	---	---	---	---
Copper	ug/L	---	---	---	---	---	---	---	---	---	---
Copper (Dissolved)	ug/L	13	10.7	7.36	---	---	---	---	---	---	---
Iron	ug/L	83.8 J	27.1 J	96.6 J	---	---	---	---	---	---	---
Iron (Dissolved)	ug/L	100 U	15.0 U	82.9 U	15.0 U	44.7 U	200	44.7 U	44.7 U	44.7 U	44.7 U
Lead	ug/L	---	---	---	---	---	---	---	---	---	---
Lead (Dissolved)	ug/L	0.357 J	0.260 U	0.388 J	---	---	---	---	---	---	---
Lithium	ug/L	---	---	---	---	---	---	---	---	---	---
Lithium (Dissolved)	ug/L	248	256	303	---	---	---	---	---	---	---
Magnesium	ug/L	---	---	---	---	172000	158000	175000			
Magnesium (Dissolved)	ug/L	158000	173000	184000	128000	155000 V	153000	171000	155000	153000	146000
Manganese	ug/L	---	---	---	---	---	---	---	---	---	---
Manganese (Dissolved)	ug/L	5.00 U	0.510 U	86.8	---	---	---	---	---	---	---
Mercury	ug/L	---	---	---	---	---	---	---	---	---	---
Mercury (Dissolved)	ug/L	0.200 U	0.0490 U	0.0490 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	19000	21200	18200	17500
Metals											
Selenium	ug/L	---	---	---	---	---	---	---	---	---	---
Selenium (Dissolved)	ug/L	47.1	48.4	54.1	44.0	45	47	46.6	46.4	48.3	47.4
Silicon	ug/L	11000	6890	7980	7270	7070	6990	8380	8460	8580	8590
Silicon (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---
Silver	ug/L	---	---	---	---	---	---	---	---	---	---
Silver (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---
Sodium	ug/L	---	---	---	---	---	---	---	---	---	---
Sodium (Dissolved)	ug/L	582000	647000	692000	547000	549000 V	628000	612000	548000	575000	602000
Strontium	ug/L	---	---	---	---	---	---	---	---	---	---
Strontium (Dissolved)	ug/L	4660	4360	4560	---	---	---	---	---	---	---
Uranium (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---	---
Zinc	ug/L	9.96 J	9.49 J	---	---	---	---	---	---	---	---
Zinc (Dissolved)	ug/L	---	---	15.1	---	---	---	---	---	---	---
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	0.0941 U	0.0941 U	0.0941 U	0.0941 U
Ethylbenzene	ug/L	1.00 U	0.384 U	0.384 U	0.384 U	0.137 U	0.137 U	0.137 U	0.137 U	0.137 U	0.137 U
Toluene	ug/L	1.00 U	0.412 U	0.412 U	0.412 U	0.278 U	0.278 U	0.278 U	0.278 U	0.278 U	0.278 U
Xylenes, Total	ug/L	3.00 U	1.06 U	1.06 U	1.06 U	0.174 U	0.174 U	0.174 U	0.432 J	0.174 U	0.174 U
Petroleum Products											
Diesel fuel	mg/L	0.198	0.159	0.0835 U	0.119	0.0317 J	136 B	0.15	0.109	0.146	0.146
TPH - Extractable (DRO)	mg/L	---	---	---	---	---	---	#VALUE!	---	0.0314 U	0.0314 U
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	4073	3964	4320	3964
Dissolved oxygen (DO), field	mg/L	9.82	7.00	13.44	6.03	6.22	9.69	10.56	10.07	6.91	10.07
Oxidation reduction potential (ORP), fiel	millivolts	93.1	126.1	17	8.3	49.5	58.3	-1	48.8	-25.7	48.8
pH, field	s.u.	6.89	8.77	6.52	7.09	5.91	7.57	7.51	7.14	6.71	7.14
Temperature, ambient	Deg C	---	---	60	60	60	60	60	50	69	50
Temperature, field	Deg C	10.06	8.7	10.98	9.92	13.17	10.5	12.5	9.1	11.9	9.1
Turbidity, field	NTU	70.4	3.73	7.84	12.69	6.23	6.23	21.67	10	15.58	10

Table 10. Logan Wash Mine Monitoring Well Analytical Data

SampleID		LW-22A	LW-22A	LW-22A	LW-22A	LW-22A	LW-22A	LW-22A	LW-22A	LW-22A
SampleDate		5/13/2015	10/15/2015	5/24/2016	10/5/2016	5/3/2017	10/10/2017	5/23/2018	10/31/2018	05/20/2019
Parameters	Units									
General Chemistry										
Alkalinity, Bicarbonate (as CaCO3)	mg/L	520	480 B	412	435	448	451	338 J3	436	455
Alkalinity, Carbonate (as CaCO3)	mg/L	5 U	5 U	2.71 U	2.71 U	2.71 U	2.71 U	20 U	2.71 U	2.71 U
Alkalinity, Total (As CaCO3)	mg/L	520	480 B	412	435	448	451	338 J3	436	455
Ammonia	mg/L	0.1 U	0.1 U	0.038 U	0.038 U	0.0317 U	0.0317 U	0.1 U	0.0317 U	0.0317 U
Bromide	mg/L	0.5 U	1.3 U	0.079 U	0.079 U	0.079 U	0.079 U	1 U	0.395 U	1.58 U
Chemical Oxygen Demand (COD)	mg/L	9.4 J	11	10.9	26.8	20.7	14.4	12.7	9.08 J	13.5
Chloride	mg/L	15	14	16.7	16.9	15.9	15.5	14.9	14.8	15.2
Specific Conductivity	umhos/cm	2400	2500	37600	2750	1430	2500	2390	2500	2410
Cyanide (free)	mg/L	---	---	---	---	---	---	---	---	---
Fluoride	mg/L	---	---	0.679	0.683	0.603	0.611	0.568	0.66	---
Fluoride (dissolved)	mg/L	0.66	0.56	---	---	---	---	---	---	0.656
Hardness	mg/L	870	900	924	930	970	861	825000 B	832	919
Nitrate (as N)	mg/L	8.3	9.3	6.76	7.81	8.91	6.65	7.36	8.62	8.36
Nitrite (as N)	mg/L	0.05 U	0.13 U	0.0277 U	0.0277 U	0.0277 U	0.0277 U	0.1 U	0.0277 U	0.0277 U
Oil and Grease, Total	mg/L	---	---	---	---	---	---	---	---	1.29 U
Oil and grease (HEM), polar	mg/L	4.3 U	4.5 U	---	---	---	---	---	---	---
Oil and grease (HEM), total	mg/L	---	---	1.16 U	1.16 U	1.16 U	1.16 U	5.56 U	1.16 U	---
pH	s.u.	7.62 J	7.39 HF	7.44 J	7.70 J	8.42 J	7.53 J	7.41 T8	7.52 J	7.54 J
Phenolics (Total)	mg/L	0.01 U	0.014	0.015 J	0.0207 U	0.0083 U	0.0083 U	0.0443	0.0083 U	0.0083 U
Phosphorus as P, total	mg/L	0.1 U	0.1 U	0.0414 U	0.035 U	0.0693 J	0.0748 U	0.0558 JB	0.165 U	0.396 J
Silica	mg/L	---	---	17.9	20.8	25	18.6	25.9	21	20.2
Sulfate	mg/L	950	910	986	1100	1030	880	1020	993	982
Sulfide	mg/L	3 U	7.5	0.0065 U	0.0065 U	0.0065 U	0.0065 U	0.05 U	0.0065 U	0.0065 U
Sulfite	mg/L	---	---	---	---	---	---	---	---	---
Thiocyanate	mg/L	---	---	---	---	---	---	---	---	---
Thiosulfate	mg/L	---	---	---	---	---	---	---	---	---
Total Dissolved Solids (TDS)	mg/L	1900	2000	1730	1840 J	1970	1900	1650	1850	2010
Nitrogen, Total Kjeldahl	mg/L	5 U	5 U	0.633	0.608	0.208 J	0.035 U	0.25 U	0.55	0.35 U
Total Organic Carbon (TOC)	mg/L	5.3	5.6	92.8	5.5	5.91	5.73	---	---	5.44
Total Pet_ Hydrocarbons	mg/L									---
Total Suspended Solids (TSS)	mg/L	---	---	---	---	---	---	5.23	5.59	---
Dissolved Organic Carbon (DOC)	mg/L	12	5.5	96.1	5.13	5.65	6.45	5.22	5.25	5.46
Metals										
Arsenic	ug/L	2.4	2.5	2.14	1.92	2.5	2.47	3.46	2.49	0.930 J
Arsenic (Dissolved)	ug/L	0.92 J	1.9	1.97	1.78	1.15	1.24	1.96	1.09	2.09
Boron	ug/L	2200	2600	---	---	---	---	---	---	---
Boron (Dissolved)	ug/L	---	---	1720	2380	2590	2850	2960	2690	2550
Cadmium	ug/L	---	---	---	---	---	---	---	---	---
Cadmium (Dissolved)	ug/L	1 U	0.28 J	0.220 U	0.220 U	0.220 U	0.22 U	1.00 U	0.220 U	0.220 U
Calcium	ug/L	---	---	---	---	---	---	---	---	---
Calcium (Dissolved)	ug/L	110000	140000 B	145000	162000	149000	140000	148000	136000	157000
Chromium	ug/L	0.78 J	1.5 J	1.34	0.460 U	1.7 U	0.958 J	1.13 B	0.830 J	0.320 U
Chromium (Dissolved)	ug/L	2 U	0.97 J	1.18	1.29 U	0.320 U	0.342 J	0.602 B J	0.320 U	1.30
Chromium III	ug/L	---	---	---	---	---	---	---	---	---
Chromium VI	ug/L	---	---	---	---	---	---	---	---	---
Copper	ug/L	---	---	---	---	---	---	---	---	---
Copper (Dissolved)	ug/L	1.8 J	3	2.63	2.44 U	4.03	3.47	4.4	3.34	3.18
Iron	ug/L	1900	5200	3620	1430	2960	3820	4210	3340	77.2 J
Iron (Dissolved)	ug/L	55	180	3340	812	116	136	157 B	182	76.6 J
Lead	ug/L	---	---	---	---	---	---	---	---	---
Lead (Dissolved)	ug/L	1 U	0.064 J	0.351 J	0.260 U	0.260 U	0.26 U	1.00 U	0.260 U	0.535 J
Lithium	ug/L	---	---	---	---	---	---	---	---	---
Lithium (Dissolved)	ug/L	110	110	123	114	131	107	112	118	112
Magnesium	ug/L	---	---	---	---	---	---	---	---	---
Magnesium (Dissolved)	ug/L	97000	110000	119000	130000	127000	122000	133000	126000	135000
Manganese	ug/L	---	---			---	---	---	---	---
Manganese (Dissolved)	ug/L	16	9.5	28.3	10.2	9.72	11.7	23.8	28.4	35.6
Mercury	ug/L	---	---			---	---	---	---	---
Mercury (Dissolved)	ug/L	0.2 U	0.031 JB	0.0490 U	0.0490 U	0.0490 U	0.049 U	0.200 U	0.0490 U	0.0490 U
Molybdenum (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---
Nickel	ug/L	---	---	---	---	---	---	---	---	---
Nickel (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---
Potassium	ug/L	---	---	---	---	---	---	---	---	---
Potassium (Dissolved)	ug/L	3400	4100	4190	4440	4180	4340	4470	3940	4620
Metals										
Selenium	ug/L	---	---	---	---	---	---	---	---	---
Selenium (Dissolved)	ug/L	15	19	18.4	20.5	20.5	19.2	22.1	18.5	22.6
Silicon	ug/L	---	---	8360	9740	11700	8700	12100	9800	9420
Silicon (Dissolved)	ug/L	6500	8100	---	---	---	---	---	---	---
Silver	ug/L	---	---	---	---	---	---	---	---	---
Silver (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---
Sodium	ug/L	---	---	---	---	---	---	---	---	---
Sodium (Dissolved)	ug/L	210000	250000	257000	276000	272000	257000	296000	281000	303000
Strontium	ug/L	---	---	---	---	---	---	---	---	---
Strontium (Dissolved)	ug/L	2200	2700	3060	3170	3370	3630	3390	2960	3550
Uranium (Dissolved)	ug/L	---	---	---	---	---	---	---	---	---
Zinc	ug/L	---	---	---	---	---	---	---	---	---
Zinc (Dissolved)	ug/L	15	23 B	36.2	25.4	12.2	2.23 U	17	6.64 J	26.4
Volatile Organic Compounds - BTEX										
Benzene	ug/L	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
Ethylbenzene	ug/L	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
Toluene	ug/L	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
Xylenes, Total	ug/L	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
Petroleum Products										
Diesel fuel	mg/L	0.46 U	0.25 J	0.289	24.7 U	0.0517 U	0.0247 U	0.0293 J	0.0362 J	0.0471 J
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	1700	1844	1935	1814	2559	2436	2548	2455	2451
Dissolved oxygen (DO), field	mg/L	6.16	7.5	---	6.92	7.88	6.54	7.42	6.46	1.84
Oxidation reduction potential (ORP), fiel	millivolts	22.9	59.0	10.7	75.3	38.8	19.7	-14.0	87.5	37.4
pH, field	s.u.	7.28	7.32	7.44	7.19	7.39	7.31	6.89	6.95	7.12
Temperature, ambient	Deg C	21	24	---	---	15.6	10	---	---	60
Temperature, field	Deg C	11	11.05	11.1	10.38	11.2	11.0	11.1	11.3	11.35
Turbidity, field	NTU	57.37	21.52	34.8	23.4	52.6	47.00	70.4	43.18	22.51

Table 10. Logan Wash Mine Monitoring Well Analytical Data

SampleID		LW-Big Seep	LW-Big Seep	LW-Big Seep	LW-Big Seep	LW-Big Seep	LW-Big Seep	LW-Big Seep	LW-Big Seep	LW-BIG SEEP	LW-Research Trib
SampleDate		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	240	260 B	288	228	243	252	257	246	260	280
Alkalinity, Carbonate (as CaCO3)	mg/L	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	280	280 B	290	246 J	251	260	273	254	272	320
Ammonia	mg/L	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	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	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	7.2	7.8	7.85	8.98	10	11.3	11.9	10.6	7.57	50
Specific Conductivity	umhos/cm	1400	1700	1400	1620	1560	1920	1980	9030	1320	1600
Cyanide (free)	mg/L	---	---	---	---	---	---	---	---	---	---
Fluoride	mg/L	---	---	0.0895 J	0.0538 J	0.0733 J	0.0689 J	0.111	0.122	---	---
Fluoride (dissolved)	mg/L	0.14	0.086 J	---	---	---	---	---	---	0.102	0.2
Hardness	mg/L	600	720	561	605	673	832	757	698	535	660
Nitrate (as N)	mg/L	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	0.05 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	---	---	---	---	---	---	---	---	1.16 U	---
Oil and grease (HEM), polar	mg/L	4.3 U	4 U	---	---	---	---	---	---	---	4.5 U
Oil and grease (HEM), total	mg/L	---	---	1.16 U	1.16 U	1.16 U	1.16 U	5.05 U	1.16 U	---	---
pH	s.u.	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	0.01 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	0.1 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	---	---	18.5	17.9	18.9	20.3	20.3	17.5	15	---
Sulfate	mg/L	580	630	472	704	607	755	1080	849	461	580
Sulfide	mg/L	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	1100	1400	1100	1110	1170	1530 0	1480	1450	956	1300
Nitrogen, Total Kjeldahl	mg/L	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	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	---	---	---	---	---	---	3.78	3.5	---	---
Dissolved Organic Carbon (DOC)	mg/L	9.5	3.7	22.5	3.38	3.13	3.62	3.53	3.74	3.57	16
Metals											
Arsenic	ug/L	4.5	4.3	3.9	3.9	4.44	4.68	5.55	5.28	3.48	4.2
Arsenic (Dissolved)	ug/L	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	---	---	89.6	74.9	624	93 J	111	153 J	172 J	---
Cadmium	ug/L	---	---	---	---	---	---	---	---	---	---
Cadmium (Dissolved)	ug/L	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	87000	95000 B	95000	112000	98900	106000	112000	116000	99500	110000
Chromium	ug/L	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	0.52 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	1.7 J	2.2	1.4	1.26	8.95	2.5	3.33	1.82	2.20	3.4
Iron	ug/L	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	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 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	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	69000	89000 B	75600	104000	103000	117000	133000	121000	76400	78000
Manganese	ug/L	---	---	---	---	---	---	---	---	---	---
Manganese (Dissolved)	ug/L	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	0.2 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	950	1200	1070	1040	1550	1470	1350	2040	1170	1600
Metals											
Selenium	ug/L	---	---	---	---	---	---	---	---	---	---
Selenium (Dissolved)	ug/L	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	---	---	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	100000	120000	114000	138000	144000	148000	182000	166000	120000	110000
Strontium	ug/L	---	---	---	---	---	---	---	---	---	---
Strontium (Dissolved)	ug/L	3800	4500	3970	5450	5680	5830	6320	5050	4250	3000
Uranium (Dissolved)	ug/L	---	---	---	---	---		---	---	---	---
Zinc	ug/L	---	---	---	---	---		---	---	---	---
Zinc (Dissolved)	ug/L	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	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	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	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	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	0.48 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	1445	1098	896	923	1542	1826	1946	1941	1296	1627
Dissolved oxygen (DO), field	mg/L	8.52	8.44	11.1	13.75	8.57	7.25	9.21	9.24	13.73	7.24
Oxidation reduction potential (ORP), fiel	millivolts	341.3	306.8	343.6	234.7	257	185	129.3	150.5	21	222.6
pH, field	s.u.	8.25	6.51	6.25	6.57	6.16	8.31	7.22	6.43	--	8.35
Temperature, ambient	Deg C	16	24	---	---	15.6	15.6	---	---	60	16
Temperature, field	Deg C	10.39	8.9	4.62	1.7	6.4	7.9	8.56	10.1	6.93	10.71
Turbidity, field	NTU	2.89	1.48	---	4.51	1.42	0.87	0.98	0.19	1.21	2.67

Table 10. Logan Wash Mine Monitoring Well Analytical Data

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
O1 = failed the method required serial dilution test and or subsequent post spike criteria. Failures indicate matrix interference
V = sample concetration is too high to evaluate accurate spike recoveries
T8 = Sample(s) received past/too close to holding time expiration.
J3 = The associated batch QC was outside the established quality control range for precision.
J4 = The associated batch QC was outside the established quality control range for accuracy.
J5 = The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6 = The sample matrix interfered with the ability to make any accurate determination; spike value is low.
--- = Analysis not performed