

Table 2.1-1 Estimated Concentrations in the Large Tailings Pile

Parameter	Uranium	Molybdenum
Mass of Tailings (kg)	1.91 x 10 ¹⁰	
Bulk Density (kg/m ³)	1,600	
Bulk Porosity	0.2	
Pore Volume (L)	2.38 x 10 ⁹	
Median Mass Released ¹ (mg/kg)	0.291	0.108
Maximum Mass Released ¹ (mg/kg)	11.2	3.6
Calculated Median Pore Volume Concentration ² (mg/L)	2.3	0.86
Calculated Maximum Pore Volume Concentration ² (mg/L)	89.9	28.8
2020 Large Tailings Pile Average Saturated Concentration ³ (mg/L)	5.13	13
2020 Large Tailings Pile Maximum Sump Concentration ⁴ (mg/L)	20.5	46.9
Reasonable Upper Bound Average Unsaturated Tailings Concentration (mg/L)	10	25

¹ Median and maximum values from weekly tests during the 20-week humidity cell test (Appendix 2.1-A).

² Concentration = (mg/kg released x kg tailings)/1 PV.

³ HMC and Hydro-Engineering, 2021 Table 3.3-1

⁴ HMC and Hydro-Engineering, 2021, Table B.2-2

Table 2.1-2 Simulated Large Tailings Pile Seepage Recharge Rates

Stress Period	Simulation Time	Large Tailings Pile Seepage Recharge Volumetric Rate (gpm)
1	Pre-2002 initialization	40.4
2	2002	62.5
3	2003	151
4	2004	201
5	2005	187
6	2006	142
7	2007	142
8	2008	138
9	2009	184
10	2010	178
11	2011	150
12	2012	139
13	First Half 2013	149
14	Second Half 2013	164
15	First Half 2014	194
16	Second Half 2014	180
17	First Half 2015	131
18	Second Half 2015	99.5
19	First Half 2016	76.8
20	Second Half 2017	60.1
21	2017	42.6
22	2018	28.1
23	2019	19.4

Table 2.2-1 Summary of Constituent Characterization in Large Tailings Pond and Groundwater

	EPA Tapwater Screening Level	Lowest Promulgated Standard	NRC & HMC Large Tailings Pile Sampling		HMC Large Tailings Pile Sampling			Groundwater Sampling	
			Not Retained	Retained	Excluded	Retained	Indeterminate	Not Retained	Retained
Metals (mg/L)									
Silver (Ag)		0.05	✓		✓			✓	
Aluminum (Al)		5	✓		✓			✓	
Arsenic (As)		0.01		✓		✓			✓
Boron (B)		0.75		✓			✓		✓
Barium (Ba)		1	✓		✓			✓	
Beryllium (Be)		0.004		✓			✓	✓	
Cadmium (Cd)		0.005		✓	✓				✓
Cobalt (Co)		0.05	✓		✓			✓	
Chromium (Cr)		0.05	✓		✓			✓	
Copper (Cu)		1	✓		✓			✓	
Iron (Fe)		1	✓			✓		✓	
Gallium (Ga)	NA	NA	✓		✓			✓	
Mercury (Hg)		0.002	✓			✓		✓	
Lithium (Li)	0.004	NA		✓			✓	✓	
Manganese (Mn)		0.2	✓			✓		✓	
Molybdenum (Mo)		0.1		✓		✓			✓
Nickel (Ni)		0.2	✓		✓			✓	
Lead (Pb)		0.015		✓			✓	✓	
Antimony (Sb)		0.006		✓			✓	✓	
Selenium (Se)		0.01		✓		✓		✓	✓
Silica (Si)	NA	NA	✓		✓			✓	
Tin (Sn)	1.2	NA	✓				✓	✓	
Strontium (Sr)	1.2	NA	✓				✓	✓	
Titanium (Ti)	NA	NA	✓		✓			✓	
Thallium (Tl)		0.002	✓				✓	✓	
Uranium (U)		0.03		✓			✓	✓	
Vanadium (V)		0.02		✓		✓			✓
Zinc (Zn)	0.6	NA	✓		✓			✓	
Zirconium (Zr)	0.00016	NA					✓		
Major Ions (mg/L)									
Bromine (Br)	NA	NA	✓		✓			✓	
Calcium (Ca)	NA	NA	✓		✓			✓	
Magnesium (Mg)	NA	NA	✓		✓			✓	
Sodium (Na)	NA	NA	✓		✓			✓	
Other Compounds/Parameters (mg/L unless noted otherwise)									
Cyanide (CN)		0.2	✓		✓			✓	
Carbonate	NA	NA	✓		✓			✓	
Bicarbonate	NA	NA	✓		✓			✓	
Chloride (Cl)		250		✓		✓			✓
Fluoride (F)		1.6		✓		✓			✓
Ammonia as Nitrogen	NA	NA		✓		✓		✓	
Nitrite as Nitrogen		1		✓		✓			
Nitrate as Nitrogen		10		✓		✓			✓
Phosphorus	NA	NA	✓		✓			✓	
Phosphate	NA	NA	✓		✓			✓	
Sulfate	-	600		✓		✓			✓
Total Organic Halides	NA	NA	✓		✓			✓	
Total Kjeldahl Nitrogen (TKN)	NA	NA	✓		✓			✓	
Total Organic Carbon (TOC)	NA	NA	✓		✓			✓	
Total Dissolved Solids		1000	✓				✓	✓	
Total Suspended Solids	NA	NA	✓		✓			✓	
Radionuclides (pCi/L)									
Adjusted Gross Alpha		15	✓				✓	✓	
Lead-210 (diss)	NA	NA		✓			✓		
Thorium-230 (diss)		0.3		✓		✓			✓
Combined Radium-226 + Radium-228 (diss)		5		✓		✓			✓
Organics									
All organics		Varies	✓		✓			✓	