Appendix F.1 Embarrass River Proposed Action Year 1

FLOWS

Case	Year 1				
Flows	Low Flow Conditions (no surface runoff)				Node
flow in rrass River	flow in river at PM-12 flow in river at PM-13	Q_r12_L = Q_r13_L =	1.19	(cfs) (cfs)	PM-12 PM-13
Total 1 Emba	flow check	Q_ck_L =	10.84	(cfs)	
	surface water flow into PM-12	Q_s12_L =	0.00	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_L =	0.00	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_L =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_L =	0.26	(cfs)	PM-13
Ita	seepage from Tailings Basin Cells 1E and 2E	Q_fs_L =	3.19	(cfs)	PM-13
v da	hydrometallurgical residue cells liner leakage	Q_rrs_L =	0.00	(cfs)	PM-13
flov	seepage from cell 2W	Q_s2w_L =	1.99	(cfs)	PM-13
ut f	ground water flow into PM-12	Q_g12_L =	0.86	(cfs)	PM-12
dul	ground water flow into PM-13	Q_g13_L =	4.21	(cfs)	PM-13

Case	Year 1				
Flow	Average Flow Conditions (mean annual)				
liver	flow in river at PM-12	Q_r12_M =	13.80	(cfs)	PM-12
l flow in arrass F	flow in river at PM-13	Q_r13_M =	86.71	(cfs)	PM-13
Tota Emb	flow check	Q_ck_M =	86.71	(cfs)	4
	surface water flow into PM-12	Q_s12_M =	12.61	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_M =	61.53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_M =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_M =	1.99	(cfs)	PM-13
<u>a</u>	seepage from Tailings Basin Cells 1E and 2E	Q_fs_M =	3.19	(cfs)	PM-13
r da	hydrometallurgical residue cells liner leakage	Q_rrs_M =	0.00	(cfs)	PM-13
Noli	seepage from cell 2W	Q_s2w_M =	1.99	(cfs)	PM-13
g at t	ground water flow into PM-12	Q_g12_M =	0.86	(cfs)	PM-12
au	ground water flow into PM-13	Q_g13_M =	4.21	(cfs)	PM-13

Case	Year 1				
Flow	High Flow Conditions (avg. annual 1-day max flow)				
ر River	flow in river at PM-12	Q_r12_H =	144.35	(cfs)	PM-12
flow ir ırrass	flow in river at PM-13	Q_r13_H =	858.26	(cfs)	PM-13
Total Emba	flow check	Q_ck_H =	858.26	(cfs)	
	surface water flow into PM-12	Q_s12_H =	143.16	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_H =	702.53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_H =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_H =	1.99	(cfs)	PM-13
ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_H =	3.19	(cfs)	PM-13
/ da	hydrometallurgical residue cells liner leakage	Q_rrs_H =	0.00	(cfs)	PM-13
lo V	seepage from cell 2W	Q_s2w_H =	1.99	(cfs)	PM-13
Ţ	ground water flow into PM-12	Q_g12_H =	0.86	(cfs)	PM-12
du	ground water flow into PM-13	Q g13 H =	4.21	(cfs)	PM-13

Case Parameter	Year 1 Silver			
	concentration of surface water into PM-12	C_s12 =	0.00011	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00011	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.00011	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.00015	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.00096	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.000125	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.000100	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.00008	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.00008	(mg/L)

			Low Flo	w	Avera	e Flow		High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.0	4 (mg/s)		0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.0	0 (mg/s)		0.00	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.0	0 (mg/s)		0.00	(mg/s)
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.1	9 (mg/s)		2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.0	0 (mg/s)		0.00	(mg/s)
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.0	1 (mg/s)		0.01	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.09	(mg/s)	0.0	9 (mg/s)		0.09	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.0	0 (mg/s)		0.00	(mg/s)
<u>۽</u> دُ	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.0	1 (mg/s)		0.01	(mg/s)
			Low Flo	w	Avera	e Flow		High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.0	4 (mg/s)		0.45	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	0.10	(mg/s)	0.3	3 (mg/s)		2.74	(mg/s)
			LOW FIO	w	Avera	eFlow	_	High Fi	ow
ert mass o intration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.00	0 (mg/L)		0.000	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.00	0 (mg/L)		0.000	(mg/L)

Case	Year 1			
Parameter	Aluminum			
	concentration of surface water into PM-12	C_s12 =	0.12	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.12	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.12	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.01325	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.01	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.18	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	1.5788	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.025	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.025	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	42.82	(mg/s)	486	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.61	(mg/s)	0.61	(mg/s)	0.61	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	1.12	(mg/s)	1.12	(mg/s)	1.12	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	208.96	(mg/s)	2,386	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2.98	(mg/s)	2.98	(mg/s)	2.98	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.10	(mg/s)	0.75	(mg/s)	0.75	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.90	(mg/s)	0.90	(mg/s)	0.90	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	89.13	(mg/s)	89.13	(mg/s)	89.13	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	1.73	(mg/s)	44.55	(mg/s)	487.90	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	94.84	(mg/s)	347.27	(mg/s)	2,967.45	(mg/s)
			LOWIN	~	Average		riigii i	000
ert mass o entration	concentration in river at PM-12	C_r12 =	0.051	(mg/L)	 0.114	(mg/L)	0.119	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.309	(mg/L)	0.142	(mg/L)	0.122	(mg/L)

Case	Year 1			
Parameter	Arsenic			
	concentration of surface water into PM-12	C_s12 =	0.00075	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00075	(mg/L)
р р	concentration in Babbitt WWTP discharge	C_sBab =	0.00075	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.001325	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.005946518	(mg/L)
ICel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.00291	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.00273	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.00273	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.27	(mg/s)	3	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.31	(mg/s)	15	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.33	(mg/s)	0.33	(mg/s)	0.33	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.54	(mg/s)	0.54	(mg/s)	0.54	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.16	(mg/s)	0.16	(mg/s)	0.16	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance h node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	0.34	(mg/s)	3.11	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	1.11	(mg/s)	2.75	(mg/s)	19.12	(mg/s)
		-	LOW FIO	w	Average	FIOW	High Fi	ow
ert mass o entration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	 0.001	(mg/L)	0.001	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.004	(mg/L)	0.001	(mg/L)	0.001	(mg/L)

Case	Year 1			
Parameter	Boron			
		-		
	concentration of surface water into PM-12	C_s12 =	0.027	(mg/L)
n data	concentration of surface water into PM-13	C_s13 =	0.027	(mg/L)
	concentration in Babbitt WWTP discharge	C_sBab =	0.027	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.1315	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.138981444	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.11	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.33	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.0212	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.0212	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	9.64	(mg/s)	109	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.52	(mg/s)	0.52	(mg/s)	0.52	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	0.25	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	47.02	(mg/s)	537	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2.53	(mg/s)	2.53	(mg/s)	2.53	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.97	(mg/s)	7.41	(mg/s)	7.41	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	12.53	(mg/s)	12.53	(mg/s)	12.53	(mg/s)
m ke	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
<u>۽</u> ک	mass flux in seepage from cell 2W	M_s2w =	18.63	(mg/s)	18.63	(mg/s)	18.63	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance sch node	mass flux in river at PM-12	M_r12 =	0.77	(mg/s)	10.40	(mg/s)	110.16	(mg/s)
Mas: at ea	mass flux in river at PM-13	M_r13 =	35.43	(mg/s)	98.51	(mg/s)	688.06	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
onvert mass ux to oncentration	concentration in river at PM-12	C_r12 =	0.023	(mg/L)	0.027	(mg/L)	0.027	(mg/L)
ŬĘŭ	concentration in river at PM-13	C_r13 =	0.115	(mg/L)	0.040	(mg/L)	0.028	(mg/L)

Case Parameter	Year 1 Barium			
rarameter	Bandin	1		
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
n data	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0044	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	5.29E-02	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	5.00E-03	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.09298	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0681	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.0681	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5.71	(mg/s)	65	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	1.66	(mg/s)	1.66	(mg/s)	1.66	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.86	(mg/s)	318	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	8.11	(mg/s)	8.11	(mg/s)	8.11	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	4.77	(mg/s)	4.77	(mg/s)	4.77	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	5.25	(mg/s)	5.25	(mg/s)	5.25	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance h node	mass flux in river at PM-12	M_r12 =	1.81	(mg/s)	7.52	(mg/s)	66.63	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	19.97	(mg/s)	53.76	(mg/s)	403.11	(mg/s)
			LOW FIO	w	Average	FIOW	High Fi	ow
ert mass o entration	concentration in river at PM-12	C_r12 =	0.054	(mg/L)	0.019	(mg/L)	0.016	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.065	(mg/L)	0.022	(mg/L)	0.017	(mg/L)

Case Parameter	Year 1 Bervllium			
		1		
	concentration of surface water into PM-12	C_s12 =	0.0001	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0001	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.0001	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000271356	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.00075	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.000023	(mg/L)
별	concentration of ground water into PM-13	C_g13 =	0.000023	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.04	(mg/s)	0	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.17	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert c ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.02	(mg/s)	0.02	(mg/s)	0.02	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	-	(mg/s)	-	(mg/s)	-	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
iss balance each node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.04	(mg/s)	0.41	(mg/s)
Ma at	mass flux in river at PM-13	M_r13 =	0.07	(mg/s)	0.29	(mg/s)	2.47	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
onvert mass ux to oncentration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
ŬĘŏ	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Year 1			
Parameter	Calcium			
			-	
	concentration of surface water into PM-12	C_s12 =	15	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	15	(mg/L)
p c	concentration in Babbitt WWTP discharge C		15	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	95.35	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	45.78662467	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	416	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	59.78	(mg/L)
ont	concentration of ground water into PM-12	C_g12 =	19	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	19	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5,352.95	(mg/s)	60,771	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	462.42	(mg/s)	462.42	(mg/s)	462.42	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	140.09	(mg/s)	140.09	(mg/s)	140.09	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	26,119.49	(mg/s)	298,224	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2,263.72	(mg/s)	2,263.72	(mg/s)	2,263.72	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	701.59	(mg/s)	5,369.83	(mg/s)	5,369.83	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	4,128.35	(mg/s)	4,128.35	(mg/s)	4,128.35	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	12.28	(mg/s)	12.28	(mg/s)	12.28	(mg/s)
ទ បិ	mass flux in seepage from cell 2W	M_s2w =	3,374.76	(mg/s)	3,374.76	(mg/s)	1.77	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance h node	mass flux in river at PM-12	M_r12 =	602.51	(mg/s)	5,955.45	(mg/s)	61,373.93	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	11,083.21	(mg/s)	47,223.88	(mg/s)	371,373.85	(mg/s)
		_	Low Flo	w	Average	Flow	 High Fl	ow
ert mass ntration	concentration in river at PM-12	C_r12 =	17.891	(mg/L)	15.249	(mg/l)	15.024	(mg/l)
Conve flux to conce	concentration in river at PM-13	C_r13 =	36.122	(mg/L)	19.244	(mg/l)	15.290	(mg/l)

Case Parameter	Year 1 Cadmium			
		4		
	concentration of surface water into PM-12	C_s12 =	0.00008	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00008	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.00008	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000117453	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0004	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.000188	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0003	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.0003	(mg/L)

ma ma ma	ass flux of surface water into PM-12 ass flux of ground water into PM-12 ass flux in Babbitt WWTP discharge	M_s12 = M_g12 =	- 0.01	(mg/s)	0.03	(mg/s)	0	(ma/s)
ma iti ma	ass flux of ground water into PM-12 ass flux in Babbitt WWTP discharge	M_g12 =	0.01				•	(mg/3)
ma tio	ass flux in Babbitt WWTP discharge			(mg/s)	0.01	(mg/s)	0.01	(mg/s)
		M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ma ma	ass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.14	(mg/s)	2	(mg/s)
Les ma	ass flux of ground water into PM-13	M_g13 =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
uo: n ma	ass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
s t s ma	ass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
u a a ma	ass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
<mark>ပိ Չ</mark> ma	ass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ach node	ass flux in river at PM-12	M_r12 =	0.01	(mg/s)	 0.04	(mg/s)	0.33	(mg/s)
Mas at ea	ass flux in river at PM-13	M r13 =	0.07	(ma/s)	0.24	(ma/s)	1.99	(ma/s)
			Low Flo	w	Average I	Flow	High Fl	ow
convert mass lux to oncentration	ncentration in river at PM-12	C_r12 =	0.000	(mg/L)	 0.000	(mg/L)	0.000	(mg/L)

Case	Year 1			
Parameter	Chloride			
	concentration of surface water into PM-12	C_s12 =	6.5	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	6.5	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	6.5	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	5.95	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	1.89E+01	(mg/L)
ICel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.76E+03	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	21.54	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	1.8	(mg/L)
du du	concentration of ground water into PM-13	C_g13 =	1.8	(mg/L)

			Low Flo	w	Average I	Flow	High Fl	low
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,319.61	(mg/s)	26,334	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	43.81	(mg/s)	43.81	(mg/s)	43.81	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	60.70	(mg/s)	60.70	(mg/s)	60.70	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	11,318.44	(mg/s)	129,230	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	214.46	(mg/s)	214.46	(mg/s)	214.46	(mg/s)
u xnl	mass flux of Area 5 Pit NW discharge	M_spit =	43.78	(mg/s)	335.09	(mg/s)	335.09	(mg/s)
ert o ss 1	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1,700.65	(mg/s)	1,700.65	(mg/s)	1,700.65	(mg/s)
ma ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	51.97	(mg/s)	51.97	(mg/s)	51.97	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	1,216.00	(mg/s)	1,216.00	(mg/s)	1,216.00	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance 1 node	mass flux in river at PM-12	M_r12 =	104.51	(mg/s)	2,424.12	(mg/s)	26,438.79	(mg/s)
Mass k at each	mass flux in river at PM-13	M_r13 =	3,331.37	(mg/s)	17,260.73	(mg/s)	159,187.35	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	3.103	(mg/L)	6.207	(mg/L)	6.472	(mg/L)
Conve flux to concei	concentration in river at PM-13	C_r13 =	10.858	(mg/L)	7.034	(mg/L)	6.554	(mg/L)

Case Parameter	Year 1 Cobalt			
	concentration of surface water into PM-12	C s12 =	0.0006	(mg/L)
Ita	concentration of surface water into PM-13	C_s13 =	0.0006	(mg/L)
n dê	concentration in Babbitt WWTP discharge	C_sBab =	0.0006	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.000555	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001174401	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.005	(mg/L)
Co	concentration in tailings basin cell 2W	C_s2w =	0.001556	(mg/L)
out	concentration of ground water into PM-12	C_g12 =	0.0011	(mg/L)
<u>u</u>	concentration of ground water into PM-13	C_g13 =	0.0011	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.21	(mg/s)	2	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.04	(mg/s)	12	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.13	(mg/s)	0.13	(mg/s)	0.13	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.11	(mg/s)	0.11	(mg/s)	0.11	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.09	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance h node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.25	(mg/s)	2.46	(mg/s)
Mass h at eacl	mass flux in river at PM-13	M_r13 =	0.36	(mg/s)	1.65	(mg/s)	14.75	(mg/s)
		-	LOW FIO	W	Average	Flow	High Fi	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.001	(mg/L)	0.001	(mg/L)
Conve flux to concei	concentration in river at PM-13	C_r13 =	0.001	(mg/L)	0.001	(mg/L)	0.001	(mg/L)

Case	Year 1			
Parameter	Copper			
			-	
	concentration of surface water into PM-12	C_s12 =	0.0015	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0015	(mg/L)
, p c	concentration in Babbitt WWTP discharge	C_sBab =	0.0015	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.00345	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.005888719	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0015	(mg/L)
CO CO	concentration in tailings basin cell 2W		0.004555	(mg/L)
t	concentration of ground water into PM-12	C_g12 =	0.004	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.004	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.54	(mg/s)	6	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.10	(mg/s)	0.10	(mg/s)	0.10	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.61	(mg/s)	30	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.48	(mg/s)	0.48	(mg/s)	0.48	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.19	(mg/s)	0.19	(mg/s)
ert e ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.53	(mg/s)	0.53	(mg/s)	0.53	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.26	(mg/s)	0.26	(mg/s)	0.26	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	0.11	(mg/s)	0.65	(mg/s)	6.19	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	1.40	(mg/s)	4.72	(mg/s)	37.47	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
nvert mass k to ncentration	concentration in river at PM-12	C_r12 =	0.003	(mg/L)	0.002	(mg/L)	0.002	(mg/L)
flu) cor	concentration in river at PM-13	C_r13 =	0.005	(mg/L)	0.002	(mg/L)	0.002	(mg/L)

Case	Year 1			
Parameter	Fluoride			
	concentration of surface water into PM-12	C_s12 =	0.2	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.2	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	0.2	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.125	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	4.57E+00	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	2.85E+00	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	1.55	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.385	(mg/L)
브	concentration of ground water into PM-13	C_g13 =	0.385	(mg/L)

			Low Floy	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	71.37	(mg/s)	810	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	9.37	(mg/s)	9.37	(mg/s)	9.37	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	1.87	(mg/s)	1.87	(mg/s)	1.87	(mg/s)
tral	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	348.26	(mg/s)	3,976	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	45.87	(mg/s)	45.87	(mg/s)	45.87	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.92	(mg/s)	7.04	(mg/s)	7.04	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	412.18	(mg/s)	412.18	(mg/s)	412.18	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.08	(mg/s)	0.08	(mg/s)	0.08	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	87.50	(mg/s)	87.50	(mg/s)	87.50	(mg/s)
			Low Flor	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	11.24	(mg/s)	82.61	(mg/s)	821.52	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	557.79	(mg/s)	983.54	(mg/s)	5,350.52	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass itration	concentration in river at PM-12	C_r12 =	0.334	(mg/L)	0.212	(mg/L)	0.201	(mg/L)
Conver flux to concen	concentration in river at PM-13	C_r13 =	1.818	(mg/L)	0.401	(mg/L)	0.220	(mg/L)

Case	Year 1			
Parameter	Iron			
	concentration of surface water into PM-12	C_s12 =	2.9	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	2.9	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	2.9	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.037761905	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	4.00E-03	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	4.00E-01	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	4.594	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.035	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.035	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,034.90	(mg/s)	11,749	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.85	(mg/s)	0.85	(mg/s)	0.85	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	27.08	(mg/s)	27.08	(mg/s)	27.08	(mg/s)
ntra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	5,049.77	(mg/s)	57,657	(mg/s)
cer	mass flux of ground water into PM-13	M_g13 =	4.17	(mg/s)	4.17	(mg/s)	4.17	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.28	(mg/s)	2.13	(mg/s)	2.13	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.36	(mg/s)	0.36	(mg/s)	0.36	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	259.35	(mg/s)	259.35	(mg/s)	259.35	(mg/s)
	-		Low Flo	w	Average	Flow	High Fl	ow
balance h node	mass flux in river at PM-12	M_r12 =	27.93	(mg/s)	 1,062.84	(mg/s)	11,777.08	(mg/s)
Mass I at eacl	mass flux in river at PM-13	M_r13 =	292.10	(mg/s)	6,378.62	(mg/s)	69,699.73	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.829	(mg/L)	 2.721	(mg/L)	2.883	(mg/L)
Conve flux to concei	concentration in river at PM-13	C_r13 =	0.952	(mg/L)	2.599	(mg/L)	2.870	(mg/L)

Case Parameter	Year 1 Hardness			
. arameter		1		
	concentration of surface water into PM-12	C_s12 =	70	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	70	(mg/L)
p di	concentration in Babbitt WWTP discharge	C_sBab =	70	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	942.7142857	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	3.15E+02	(mg/L)
Icer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	8.61E+03	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	436.6	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	87.5	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	87.5	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	24,980.41	(mg/s)	283,600	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	2,129.58	(mg/s)	2,129.58	(mg/s)	2,129.58	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	653.73	(mg/s)	653.73	(mg/s)	653.73	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	121,890.93	(mg/s)	1,391,712	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	10,425.01	(mg/s)	10,425.01	(mg/s)	10,425.01	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	6,936.49	(mg/s)	53,090.84	(mg/s)	53,090.84	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	28,397.48	(mg/s)	28,397.48	(mg/s)	28,397.48	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	254.25	(mg/s)	254.25	(mg/s)	254.25	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	24,647.41	(mg/s)	24,647.41	(mg/s)	24,647.41	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	2,783.31	(mg/s)	27,763.72	(mg/s)	286,383.27	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	73,443.94	(mg/s)	266,469.63	(mg/s)	1,794,910.18	(mg/s)
			LOW FIO	w	 Average	FIOW	 Fign Fi	ow
invert mass x to ncentration	concentration in river at PM-12	C_r12 =	82.647	(mg/L)	 71.091	(mg/L)	70.104	(mg/L)
S ⊒ S	concentration in river at PM-13	C_r13 =	239.367	(mg/L)	108.588	(mg/L)	73.899	(mg/L)

Case Parameter	Year 1 Potassium			
	concentration of surface water into PM-12	C_s12 =	0.60	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.60	(mg/L)
ep r	concentration in Babbitt WWTP discharge	C_sBab =	0.60	(mg/L)
tion	concentration in Area 5 Pit NW discharge	C_spit =	53.80	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	9.15	(mg/L)
Icer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.80	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	7.77	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	1.60	(mg/L)
du du	concentration of ground water into PM-13	C_g13 =	1.60	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	214.12	(mg/s)	2,431	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	38.94	(mg/s)	38.94	(mg/s)	38.94	(mg/s)
tion	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.05	(mg/s)	0.05	(mg/s)	0.05	(mg/s)
ntral	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1,044.78	(mg/s)	11,929	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	190.63	(mg/s)	190.63	(mg/s)	190.63	(mg/s)
u s l	mass flux in Babbitt WWTP discharge	M_sBab =	5.60	(mg/s)	5.60	(mg/s)	5.60	(mg/s)
ert o ss t	mass flux of Area 5 Pit NW discharge	M_spit =	395.86	(mg/s)	3,029.85	(mg/s)	3,029.85	(mg/s)
ma	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	825.45	(mg/s)	825.45	(mg/s)	825.45	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	438.64	(mg/s)	438.64	(mg/s)	438.64	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	38.99	(mg/s)	253.11	(mg/s)	2,469.85	(mg/s)
Mass at ea	mass flux in river at PM-13	M_r13 =	1,895.18	(mg/s)	5,788.07	(mg/s)	18,888.99	(mg/s)
			Low Flo	W	Average	Flow	High Fl	ow
ert mass o entration	concentration in river at PM-12	C_r12 =	1.158	(mg/L)	0.648	(mg/L)	0.605	(mg/l)
Conv flux t	concentration in river at PM-13	C_r13 =	6.177	(mg/L)	2.359	(mg/L)	0.778	(mg/l)

Case	Year 1			
Parameter	Magnesium			
-		-		
	concentration of surface water into PM-12	C_s12 =	5.90	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	5.90	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	5.90	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	271.00	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	48.72	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	213.00	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	69.97	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	10.65	(mg/L)
별	concentration of ground water into PM-13	C_g13 =	10.65	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,105.49	(mg/s)	23,903	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	259.20	(mg/s)	259.20	(mg/s)	259.20	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	55.10	(mg/s)	55.10	(mg/s)	55.10	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,273.66	(mg/s)	117,301	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1,268.87	(mg/s)	1,268.87	(mg/s)	1,268.87	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	1,994.02	(mg/s)	15,261.91	(mg/s)	15,261.91	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	4,392.66	(mg/s)	4,392.66	(mg/s)	4,392.66	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	6.29	(mg/s)	6.29	(mg/s)	6.29	(mg/s)
မ ပိ	mass flux in seepage from cell 2W	M_s2w =	3,950.02	(mg/s)	3,950.02	(mg/s)	3,950.02	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	314.30	(mg/s)	2,419.79	(mg/s)	24,217.73	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	11,926.17	(mg/s)	37,573.21	(mg/s)	166,398.91	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
onvert mass ix to incentration	concentration in river at PM-12	C_r12 =	9.333	(mg/L)	6.196	(mg/l)	5.928	(mg/l)
s ≣ c	concentration in river at PM-13	C_r13 =	38.870	(mg/L)	15.311	(mg/l)	6.851	(mg/l)

Case	Year 1			
Parameter	Manganese			
			-	
	concentration of surface water into PM-12	C_s12 =	0.30	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.30	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.30	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.49	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.29	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.00	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	1.18	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.19	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.19	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	107.06	(mg/s)	1,215	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	4.58	(mg/s)	4.58	(mg/s)	4.58	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	2.80	(mg/s)	2.80	(mg/s)	2.80	(mg/s)
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	522.39	(mg/s)	5,964	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	22.40	(mg/s)	22.40	(mg/s)	22.40	(mg/s)
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	3.57	(mg/s)	27.31	(mg/s)	27.31	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	26.10	(mg/s)	26.10	(mg/s)	26.10	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	66.78	(mg/s)	66.78	(mg/s)	66.78	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	7.38	(mg/s)	114.44	(mg/s)	1,222.81	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	126.23	(mg/s)	779.42	(mg/s)	7,329.88	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
nvert mass x to ncentration	concentration in river at PM-12	C_r12 =	0.219	(mg/L)	0.293	(mg/l)	0.299	(mg/l)
C III C	concentration in river at PM-13	C_r13 =	0.411	(mg/L)	0.318	(mg/l)	0.302	(mg/l)

Case	Year 1			
Parameter	Sodium			
	concentration of surface water into PM-12	C_s12 =	6.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	6.00	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	6.00	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	119.50	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	66.13	(mg/L)
ICel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	255.00	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	44.31	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	4.90	(mg/L)
du du	concentration of ground water into PM-13	C_g13 =	4.90	(mg/L)

			Low Flo	W	Average	Flow	High F	low
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,141.18	(mg/s)	24,309	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	119.26	(mg/s)	119.26	(mg/s)	119.26	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	56.03	(mg/s)	56.03	(mg/s)	56.03	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,447.79	(mg/s)	119,290	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	583.80	(mg/s)	583.80	(mg/s)	583.80	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	879.28	(mg/s)	6,729.88	(mg/s)	6,729.88	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	5,962.27	(mg/s)	5,962.27	(mg/s)	5,962.27	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	7.53	(mg/s)	7.53	(mg/s)	7.53	(mg/s)
ဒ ပိ	mass flux in seepage from cell 2W	M_s2w =	2,501.44	(mg/s)	2,501.44	(mg/s)	2,501.44	(mg/s)
			Low Flo	W	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	175.29	(mg/s)	2,316.47	(mg/s)	24,483.86	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	10,109.61	(mg/s)	28,549.18	(mg/s)	159,558.37	(mg/s)
			Low Flo	w	Average	Flow	High F	low
rt mass utration	concentration in river at PM-12	C_r12 =	5.205	(mg/L)	5.931	(mg/l)	5.993	(mg/l)
Convel flux to concer	concentration in river at PM-13	C_r13 =	32.949	(mg/L)	11.634	(mg/l)	6.569	(mg/l)

Case Parameter	Year 1 Nickel			
	concentration of surface water into PM-12	C_s12 =	0.0012	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0012	(mg/L)
ip u	concentration in Babbitt WWTP discharge	C_sBab =	0.0012	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0052	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.009513833	(mg/L)
ICEI	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.098	(mg/L)
cou	concentration in tailings basin cell 2W	C_s2w =	0.00688	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.007	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.007	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.43	(mg/s)	5	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.17	(mg/s)	0.17	(mg/s)	0.17	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.09	(mg/s)	24	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.83	(mg/s)	0.83	(mg/s)	0.83	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.04	(mg/s)	0.29	(mg/s)	0.29	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.86	(mg/s)	0.86	(mg/s)	0.86	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.39	(mg/s)	0.39	(mg/s)	0.39	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lass balance t each node	mass flux in river at PM-12	M_r12 =	0.18	(mg/s)	0.61	(mg/s)	5.04	(mg/s)
<u> </u>	mass flux in river at PM-13	M_r13 =	2.30	(mg/s)	 5.08	(mg/s)	 31.28	(mg/s)
				vv	Average	1000	nigh ri	0
nvert mass k to ncentration	concentration in river at PM-12	C_r12 =	0.005	(mg/L)	0.002	(mg/L)	 0.001	(mg/L)
C III	concentration in river at PM-13	C_r13 =	0.008	(mg/L)	0.002	(mg/L)	0.001	(mg/L)

Case	Year 1			
Parameter	Lead			
	concentration of surface water into PM-12	C_s12 =	0.00015	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00015	(mg/L)
βρι	concentration in Babbitt WWTP discharge	C_sBab =	0.00015	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0003	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000585798	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage		0.0005	(mg/L)
cor	concentration in tailings basin cell 2W		0.0012	(mg/L)
ont	concentration of ground water into PM-12	C_g12 =	0.0012	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.0012	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.05	(mg/s)	1	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.26	(mg/s)	3	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.14	(mg/s)	0.14	(mg/s)	0.14	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.02	(mg/s)	0.02	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.05	(mg/s)	0.05	(mg/s)	0.05	(mg/s)
ma ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance h node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.08	(mg/s)	0.64	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	0.30	(mg/s)	0.63	(mg/s)	3.90	(mg/s)
			LOW FIU	vv	Average	100	nigii Fi	0₩
rt mass ntration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conve flux to concei	concentration in river at PM-13	C_r13 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Year 1			
Parameter	Antimony			
		-		
	concentration of surface water into PM-12	C_s12 =	4.00E-05	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00E-05	(mg/L)
βρι	concentration in Babbitt WWTP discharge	C_sBab =	4.00E-05	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	2.50E-04	(mg/L)
tra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	4.83E-03	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage		0.004	(mg/L)
co	concentration in tailings basin cell 2W		2.50E-04	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	1.50E-03	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	1.50E-03	(mg/L)

			Low Flo	w	Average I	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.01	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.07	(mg/s)	1	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.18	(mg/s)	0.18	(mg/s)	0.18	(mg/s)
u s n	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.44	(mg/s)	0.44	(mg/s)	0.44	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lass balance t each node	mass flux in river at PM-12	M_r12 =	0.04	(mg/s)	 0.05	(mg/s)	0.20	(mg/s)
≥ ø	mass flux in river at PM-13	M_r13 =	0.67	(mg/s)	 0.76	(mg/s)	1.64 High El	(mg/s)
			LOWIO		 Average	1011	Tilgit ti	
nvert mass t to icentration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	 0.000	<u>(mg/L)</u>	0.000	(mg/L)
Col Col	concentration in river at PM-13	C_r13 =	0.002	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Year 1 Selenium			
	concentration of surface water into PM-12	C_s12 =	0.0003	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0003	(mg/L)
3 de	concentration in Babbitt WWTP discharge	C_sBab =	0.0003	(mg/L)
tior	concentration in Area 5 Pit NW discharge		0.0016	(mg/L)
itra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000967892	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.054	(mg/L)
COL	concentration in tailings basin cell 2W	C_s2w =	0.00109	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.00295	(mg/L)
<u> </u>	concentration of ground water into PM-13	C_g13 =	0.00295	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.11	(mg/s)	1	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.52	(mg/s)	6	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.35	(mg/s)	0.35	(mg/s)	0.35	(mg/s)
u xnl	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
ert e ss 1	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.09	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
ma en	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
	-		Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	0.18	(mg/s)	1.29	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	0.59	(mg/s)	1.30	(mg/s)	7.85	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
nvert mass x to ncentration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
CO CO	concentration in river at PM-13	C_r13 =	0.002	(mg/L)	0.001	(mg/L)	0.000	(mg/L)

Case Parameter	Year 1 Sulfate			
		1		
	concentration of surface water into PM-12	C_s12 =	4.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	4.00	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	1046.27	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	142.79	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	7347.00	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	152.40	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	8.50	(mg/L)
	concentration of ground water into PM-13	C_g13 =	8.50	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,427.45	(mg/s)	16,206	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	206.87	(mg/s)	206.87	(mg/s)	206.87	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	37.36	(mg/s)	37.36	(mg/s)	37.36	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	6,965.20	(mg/s)	79,526	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1,012.72	(mg/s)	1,012.72	(mg/s)	1,012.72	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	7,698.43	(mg/s)	58,922.60	(mg/s)	58,922.60	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	12,874.84	(mg/s)	12,874.84	(mg/s)	12,874.84	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	216.95	(mg/s)	216.95	(mg/s)	216.95	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	8,603.45	(mg/s)	8,603.45	(mg/s)	8,603.45	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	244.23	(mg/s)	1,671.68	(mg/s)	16,449.94	(mg/s)
Mass at ea	mass flux in river at PM-13	M_r13 =	30,650.62	(mg/s)	90,267.44	(mg/s)	177,606.90	(mg/s)
		-	Low Flo	w	 Average	Flow	High Fl	ow
ert mass o entration	concentration in river at PM-12	C_r12 =	7.252	(mg/L)	4.280	(mg/l)	4.027	(mg/l)
Conv flux to conce	concentration in river at PM-13	C_r13 =	99.896	(mg/L)	36.785	(mg/l)	7.312	(mg/l)

Case Parameter	Year 1 Thallium			
	concentration of surface water into PM-12	C_s12 =	0.0002	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0002	(mg/L)
sb r	concentration in Babbitt WWTP discharge	C_sBab =	0.0002	(mg/L)
tion	concentration in Area 5 Pit NW discharge	C_spit =	0.0006	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.00096816	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0002	(mg/L)
Con	concentration in tailings basin cell 2W	C_s2w =	0.0002	(mg/L)
t	concentration of ground water into PM-12	C_g12 =	0.000004	(mg/L)
dul	concentration of ground water into PM-13	C_g13 =	0.000004	(mg/L)

			Low Flo	w	Average I	Flow	High Flo	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.07	(mg/s)	1	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.35	(mg/s)	4	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.09	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average I	Flow	High Flo	ow
alance node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.07	(mg/s)	0.81	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	0.11	(mg/s)	0.55	(mg/s)	4.92	(mg/s)
			Low Flo	w	Average I	Flow	High Flo	ow
rt mass htration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Convel flux to concer	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Year 1			
Parameter	Zinc			
		_	-	
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
, p c	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.003	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.009842772	(mg/L)
Cei	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.01	(mg/L)
Loo Cor	concentration in tailings basin cell 2W	C_s2w =	0.01435	(mg/L)
t	concentration of ground water into PM-12	C_g12 =	0.0115	(mg/L)
	concentration of ground water into PM-13	C_g13 =	0.0115	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5.71	(mg/s)	65	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.28	(mg/s)	0.28	(mg/s)	0.28	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.86	(mg/s)	318	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1.37	(mg/s)	1.37	(mg/s)	1.37	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.02	(mg/s)	0.17	(mg/s)	0.17	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.89	(mg/s)	0.89	(mg/s)	0.89	(mg/s)
m ke	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.81	(mg/s)	0.81	(mg/s)	0.81	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	0.43	(mg/s)	6.14	(mg/s)	65.25	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	3.52	(mg/s)	37.24	(mg/s)	386.59	(mg/s)
			Low Ho	vv	Average	101	Tigitti	
nvert mass t to icentration	concentration in river at PM-12	C_r12 =	0.013	(mg/L)	0.016	(mg/L)	0.016	(mg/L)
Col Col	concentration in river at PM-13	C_r13 =	0.011	(mg/L)	0.015	(mg/L)	0.016	(mg/L)

Appendix F.2 Embarrass River Proposed Action Year 5

FLOWS

Case	Year 5				
Flows	Low Flow Conditions (no surface runoff)				Node
r in is River	flow in river at PM-12	Q_r12_L =	1.19	(cfs)	PM-12
low ras	flow in river at PM-13	Q_r13_L =	11.77	(cfs)	PM-13
Total f Embar	flow check	Q_ck_L =	11.77	(cfs)	
	surface water flow into PM-12	Q_s12_L =	0.00	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_L =	0.00	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_L =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_L =	0.26	(cfs)	PM-13
Ita	seepage from Tailings Basin Cells 1E and 2E	Q_fs_L =	4.10	(cfs)	PM-13
v da	hydrometallurgical residue cells liner leakage	Q_rrs_L =	0.01	(cfs)	PM-13
flov	seepage from cell 2W	Q_s2w_L =	1.99	(cfs)	PM-13
out	ground water flow into PM-12	Q_g12_L =	0.86	(cfs)	PM-12
dul	ground water flow into PM-13	Q_g13_L =	4.21	(cfs)	PM-13

Case	Year 5				
Flow	Average Flow Conditions (mean annual)				
liver	flow in river at PM-12	Q_r12_M =	13.80	(cfs)	PM-12
l flow in arrass F	flow in river at PM-13	Q_r13_M =	87.64	(cfs)	PM-13
Tota Emb	flow check	Q_ck_M =	87.64	(cfs)	_
	surface water flow into PM-12	Q_s12_M =	12.61	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_M =	61.53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_M =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_M =	1.99	(cfs)	PM-13
ţ.	seepage from Tailings Basin Cells 1E and 2E	Q_fs_M =	4.10	(cfs)	PM-13
da da	hydrometallurgical residue cells liner leakage	Q_rrs_M =	0.01	(cfs)	PM-13
No l	seepage from cell 2W	Q_s2w_M =	1.99	(cfs)	PM-13
t t	ground water flow into PM-12	Q_g12_M =	0.86	(cfs)	PM-12
a d	ground water flow into PM-13	Q_g13_M =	4.21	(cfs)	PM-13

Case	Year 5				
Flow	High Flow Conditions (avg. annual 1-day max flow)				
ו River	flow in river at PM-12	Q_r12_H =	144.35	(cfs)	PM-12
flow ir rrass I	flow in river at PM-13	Q_r13_H =	859.19	(cfs)	PM-13
Total Emba	flow check	Q_ck_H =	859.19	(cfs)	
	surface water flow into PM-12	Q_s12_H =	143.16	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_H =	702.53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_H =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_H =	1.99	(cfs)	PM-13
ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_H =	4.10	(cfs)	PM-13
/ da	hydrometallurgical residue cells liner leakage	Q_rrs_H =	0.01	(cfs)	PM-13
low	seepage from cell 2W	Q_s2w_H =	1.99	(cfs)	PM-13
nt 1	ground water flow into PM-12	Q_g12_H =	0.86	(cfs)	PM-12
d u	ground water flow into PM-13	Q q13 H =	4.21	(cfs)	PM-13

Case Parameter	Year 5 Silver			
	concentration of surface water into PM-12	C_s12 =	0.00011	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00011	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.00011	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.00015	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.00090	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.000125	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.000100	(mg/L)
t	concentration of ground water into PM-12	C_g12 =	0.00008	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.00008	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.04	(mg/s)	0	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.19	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.10	(mg/s)	0.10	(mg/s)	0.10	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance th node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.04	(mg/s)	0.45	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	0.11	(mg/s)	0.35	(mg/s)	2.75	(mg/s)
		-	LOW FIO	w	Average	FIOW	High Fi	ow
ert mass ntration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Year 5			
Parameter	Aluminum	l		
	concentration of surface water into PM-12	C_s12 =	0.12	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.12	(mg/L)
ې م	concentration in Babbitt WWTP discharge	C_sBab =	0.12	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.01325	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	9.61E-02	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.80E-01	(mg/L)
CO CO	concentration in tailings basin cell 2W	C_s2w =	1.5788	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.025	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.025	(mg/L)

			Low Flo	w	Average I	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	42.82	(mg/s)	486	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.61	(mg/s)	0.61	(mg/s)	0.61	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	1.12	(mg/s)	1.12	(mg/s)	1.12	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	208.96	(mg/s)	2,386	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2.98	(mg/s)	2.98	(mg/s)	2.98	(mg/s)
u s n	mass flux of Area 5 Pit NW discharge	M_spit =	0.10	(mg/s)	0.75	(mg/s)	0.75	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	11.16	(mg/s)	11.16	(mg/s)	11.16	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.08	(mg/s)	0.08	(mg/s)	0.08	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	89.13	(mg/s)	89.13	(mg/s)	89.13	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lass balance t each node	mass flux in river at PM-12	M_r12 =	1.73	(mg/s)	44.55	(mg/s)	487.90	(mg/s)
a⊺ ⊠	mass flux in river at PM-13	M_r13 =	105.17	(mg/s)	 357.60	(mg/s)	2,977.78	(mg/s)
			LOW FIO	w	 Average	riow	Figh Fi	ow
ivert mass to centration	concentration in river at PM-12	C_r12 =	0.051	(mg/L)	 0.114	(mg/L)	0.119	(mg/L)
Cor flux con	concentration in river at PM-13	C_r13 =	0.316	(mg/L)	0.144	(mg/L)	0.122	(mg/L)

Case	Year 5			
Parameter	Arsenic			
	concentration of surface water into PM-12	C_s12 =	0.00075	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00075	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.00075	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.001325	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.006775027	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004	(mg/L)
CO CO	concentration in tailings basin cell 2W	C_s2w =	0.00291	(mg/L)
t	concentration of ground water into PM-12	C_g12 =	0.00273	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.00273	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow	
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.27	(mg/s)	3	(mg/s)	
_	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)	
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)	
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.31	(mg/s)	15	(mg/s)	
cen	mass flux of ground water into PM-13	M_g13 =	0.33	(mg/s)	0.33	(mg/s)	0.33	(mg/s)	
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.07	(mg/s)	0.07	(mg/s)	
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.79	(mg/s)	0.79	(mg/s)	0.79	(mg/s)	
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)	
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.16	(mg/s)	0.16	(mg/s)	0.16	(mg/s)	
			Low Flo	w	Average	Flow	High Flow		
oalance h node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	 0.34	(mg/s)	3.11	(mg/s)	
Mass I at eacl	mass flux in river at PM-13	M_r13 =	1.36	(mg/s)	3.00	(mg/s)	19.38	(mg/s)	
			LOW FIO	W	Average	FIOW	High Fi	ow	
ert mass htration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	0.001	(mg/L)	0.001	(mg/L)	
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.004	(mg/L)	0.001	(mg/L)	0.001	(mg/L)	

Case	Year 5			
Parameter	Boron			
	concentration of surface water into PM-12	C_s12 =	0.027	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.027	(mg/L)
βρι	concentration in Babbitt WWTP discharge	C_sBab =	0.027	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.1315	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.135355742	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.11	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.33	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0212	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.0212	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow		
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	9.64	(mg/s)	109	(mg/s)		
_	mass flux of ground water into PM-12	M_g12 =	0.52	(mg/s)	0.52	(mg/s)	0.52	(mg/s)		
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.25	(mg/s)	0.25	(mg/s)	0.25	(mg/s)		
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	47.02	(mg/s)	537	(mg/s)		
cen	mass flux of ground water into PM-13	M_g13 =	2.53	(mg/s)	2.53	(mg/s)	2.53	(mg/s)		
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	0.97	(mg/s)	7.41	(mg/s)	7.41	(mg/s)		
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	15.72	(mg/s)	15.72	(mg/s)	15.72	(mg/s)		
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.05	(mg/s)	0.05	(mg/s)	0.05	(mg/s)		
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	18.63	(mg/s)	18.63	(mg/s)	18.63	(mg/s)		
			Low Flo	w	Average	Flow	High Fl	ow		
lance node	mass flux in river at PM-12	M_r12 =	0.77	(mg/s)	10.40	(mg/s)	110.16	(mg/s)		
Mass ba at each	mass flux in river at PM-13	M_r13 =	38.65	(mg/s)	101.74	(mg/s)	691.28	(mg/s)		
			Low Flo	w	Average	Flow	High Fl	691.28 (mg/s) High Flow		
nvert mass x to ncentration	concentration in river at PM-12	C_r12 =	0.023	(mg/L)	0.027	(mg/L)	0.027	(mg/L)		
C III C	concentration in river at PM-13	C_r13 =	0.116	(mg/L)	0.041	(mg/L)	0.028	(mg/L)		

Case Parameter	Year 5 Barium			
		1		
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
р ц	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0044	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	5.03E-02	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	5.00E-03	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.09298	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0681	(mg/L)
<u> </u>	concentration of ground water into PM-13	C_g13 =	0.0681	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5.71	(mg/s)	65	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	1.66	(mg/s)	1.66	(mg/s)	1.66	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.86	(mg/s)	318	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	8.11	(mg/s)	8.11	(mg/s)	8.11	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	5.84	(mg/s)	5.84	(mg/s)	5.84	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	5.25	(mg/s)	5.25	(mg/s)	5.25	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	1.81	(mg/s)	7.52	(mg/s)	66.63	(mg/s)
Mass at ea	mass flux in river at PM-13	M_r13 =	21.05	(mg/s)	54.83	(mg/s)	404.19	(mg/s)
			LOW FIO	W	Average	FIOW	High Fi	ow
ert mass o entration	concentration in river at PM-12	C_r12 =	0.054	(mg/L)	0.019	(mg/L)	0.016	(mg/L)
Conv filux to conce	concentration in river at PM-13	C_r13 =	0.063	(mg/L)	0.022	(mg/L)	0.017	(mg/L)

Case Parameter	Year 5 Beryllium			
	concentration of surface water into PM-12	C_s12 =	0.0001	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0001	(mg/L)
, p	concentration in Babbitt WWTP discharge	C_sBab =	0.0001	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000454842	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0	(mg/L)
CO	concentration in tailings basin cell 2W	C_s2w =	0.00075	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.000023	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.000023	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.04	(mg/s)	0	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.17	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
u xnl	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert e ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.05	(mg/s)	0.05	(mg/s)	0.05	(mg/s)
ma en	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	-	(mg/s)	-	(mg/s)	-	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
	-		Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.04	(mg/s)	0.41	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	0.10	(mg/s)	0.31	(mg/s)	2.50	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
nvert mass x to ncentration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	 0.000	(mg/L)	0.000	(mg/L)
Co Co	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Year 5			
Parameter	Calcium			
		1		
	concentration of surface water into PM-12	C_s12 =	15	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	15	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	15	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	95.35	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	55.55427025	(mg/L)
ICel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	416	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	59.78	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	19	(mg/L)
브	concentration of ground water into PM-13	C_g13 =	19	(mg/L)

			Low Flo	w	Average	Flow		High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5,352.95	(mg/s)		60,771	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	462.42	(mg/s)	462.42	(mg/s)		462.42	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	140.09	(mg/s)	140.09	(mg/s)		140.09	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	26,119.49	(mg/s)		298,224	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2,263.72	(mg/s)	2,263.72	(mg/s)		2,263.72	(mg/s)
u xnl	mass flux of Area 5 Pit NW discharge	M_spit =	701.59	(mg/s)	5,369.83	(mg/s)		5,369.83	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	6,450.21	(mg/s)	6,450.21	(mg/s)		6,450.21	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	176.59	(mg/s)	176.59	(mg/s)		176.59	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	3,374.76	(mg/s)	3,374.76	(mg/s)		25.38	(mg/s)
			Low Flo	w	Average	Flow		High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	602.51	(mg/s)	5,955.45	(mg/s)		61,373.93	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	13,569.37	(mg/s)	49,710.04	(mg/s)		373,883.63	(mg/s)
			Low Flo	w	Average	14 (mg/s) 373,883.63 (mg/s) 36 Flow High Flow			ow
onvert mass ux to sncentration	concentration in river at PM-12	C_r12 =	17.891	(mg/L)	15.249	(mg/l)		15.024	(mg/l)
3 ≓ 3	concentration in river at PM-13	C_r13 =	40.729	(mg/L)	20.042	(mg/l)		15.377	(mg/l)
Case Parameter	Year 5 Cadmium								
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			r						
	concentration of surface water into PM-12	C_s12 =	0.00008	(mg/L)					
ata	concentration of surface water into PM-13	C_s13 =	0.00008	(mg/L)					
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.00008	(mg/L)					
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)					
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000238486	(mg/L)					
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0004	(mg/L)					
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.000188	(mg/L)					
nt	concentration of ground water into PM-12	C_g12 =	0.0003	(mg/L)					
du	concentration of ground water into PM-13	C_g13 =	0.0003	(mg/L)					

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.03	(mg/s)	0	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.14	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss 1	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ma ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	0.01	(mg/s)	0.04	(mg/s)	0.33	(mg/s)
Mass at ea	mass flux in river at PM-13	M_r13 =	0.08	(mg/s)	0.26	(mg/s)	2.00	(mg/s)
		_	Low Flo	w	Average	Flow	High Fl	ow
vert mass to :entration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	 0.000	(mg/L)	0.000	(mg/L)
Con	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Year 5 Chloride			
		-		
	concentration of surface water into PM-12	C_s12 =	6.5	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	6.5	(mg/L)
р и р	concentration in Babbitt WWTP discharge	C_sBab =	6.5	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	5.95	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	1.07E+01	(mg/L)
ICEI	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.76E+03	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	21.54	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	1.8	(mg/L)
u u	concentration of ground water into PM-13	C_g13 =	1.8	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,319.61	(mg/s)	26,334	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	43.81	(mg/s)	43.81	(mg/s)	43.81	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	60.70	(mg/s)	60.70	(mg/s)	60.70	(mg/s)
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	11,318.44	(mg/s)	129,230	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	214.46	(mg/s)	214.46	(mg/s)	214.46	(mg/s)
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	43.78	(mg/s)	335.09	(mg/s)	335.09	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1,244.90	(mg/s)	1,244.90	(mg/s)	1,244.90	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	747.10	(mg/s)	747.10	(mg/s)	747.10	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	1,216.00	(mg/s)	1,216.00	(mg/s)	1,216.00	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance node	mass flux in river at PM-12	M_r12 =	104.51	(mg/s)	2,424.12	(mg/s)	26,438.79	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	3,570.75	(mg/s)	17,500.11	(mg/s)	159,426.73	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass tration	concentration in river at PM-12	C_r12 =	3.103	(mg/L)	6.207	(mg/L)	6.472	(mg/L)
Convel flux to concer	concentration in river at PM-13	C_r13 =	10.718	(mg/L)	7.056	(mg/L)	6.557	(mg/L)

Case Parameter	Year 5 Cobalt			
		-		
	concentration of surface water into PM-12	C_s12 =	0.0006	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0006	(mg/L)
р с р	concentration in Babbitt WWTP discharge	C_sBab =	0.0006	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.000555	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.00200513	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.005	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.001556	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0011	(mg/L)
L L	concentration of ground water into PM-13	C_g13 =	0.0011	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.21	(mg/s)	2	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.04	(mg/s)	12	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.13	(mg/s)	0.13	(mg/s)	0.13	(mg/s)
nos	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.23	(mg/s)	0.23	(mg/s)	0.23	(mg/s)
n xe	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.09	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.25	(mg/s)	2.46	(mg/s)
Mass bŕ at each	mass flux in river at PM-13	M_r13 =	0.49	(mg/s)	1.78	(mg/s)	14.88	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.001	(mg/L)	0.001	(mg/L)
Convert flux to concent	concentration in river at PM-13	C r13 =	0.001	(ma/L)	0.001	(ma/L)	0.001	(ma/L)

Case	Year 5			
Parameter	Copper			
	concentration of surface water into PM-12	C_s12 =	0.0015	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0015	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	0.0015	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.00345	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.007797191	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0015	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.004555	(mg/L)
ont	concentration of ground water into PM-12	C_g12 =	0.004	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.004	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.54	(mg/s)	6	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.10	(mg/s)	0.10	(mg/s)	0.10	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.61	(mg/s)	30	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.48	(mg/s)	0.48	(mg/s)	0.48	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.19	(mg/s)	0.19	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.91	(mg/s)	0.91	(mg/s)	0.91	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.26	(mg/s)	0.26	(mg/s)	0.26	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance n node	mass flux in river at PM-12	M_r12 =	0.11	(mg/s)	0.65	(mg/s)	6.19	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	1.78	(mg/s)	5.09	(mg/s)	37.84	(mg/s)
			Low Flo	W	Average	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.003	(mg/L)	0.002	(mg/L)	0.002	(mg/L)
Convel flux to concer	concentration in river at PM-13	C_r13 =	0.005	(mg/L)	0.002	(mg/L)	0.002	(mg/L)

Case Parameter	Year 5 Fluoride			
		_		
	concentration of surface water into PM-12	C_s12 =	0.2	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.2	(mg/L)
ip u	concentration in Babbitt WWTP discharge	C_sBab =	0.2	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.125	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	2.25E+00	(mg/L)
Icer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	2.85E+00	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	1.55	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.385	(mg/L)
dul	concentration of ground water into PM-13	C_g13 =	0.385	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	71.37	(mg/s)	810	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	9.37	(mg/s)	9.37	(mg/s)	9.37	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	1.87	(mg/s)	1.87	(mg/s)	1.87	(mg/s)
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	348.26	(mg/s)	3,976	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	45.87	(mg/s)	45.87	(mg/s)	45.87	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.92	(mg/s)	7.04	(mg/s)	7.04	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	260.89	(mg/s)	260.89	(mg/s)	260.89	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	1.21	(mg/s)	1.21	(mg/s)	1.21	(mg/s)
<u>۽</u> ک	mass flux in seepage from cell 2W	M_s2w =	87.50	(mg/s)	87.50	(mg/s)	87.50	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
/ass balance tt each node	mass flux in river at PM-12	M_r12 =	11.24	(mg/s)	82.61	(mg/s)	821.52	(mg/s)
< a	mass flux in river at PM-13	IVI_13 =	407.63	(mg/s)	833.39 Average	(mg/s)	5,200.36 High Fl	(mg/s)
Convert mass lux to concentration	concentration in river at PM-12	C_r12 =	0.334	(mg/L)	 0.212	(mg/L)	0.201	(mg/L)

Case	Year 5			
Parameter	Iron			
	concentration of surface water into PM-12	C_s12 =	2.9	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	2.9	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	2.9	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.037761905	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	5.96E-02	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	4.00E-01	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	4.594	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.035	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.035	(mg/L)

			Low Flo	w	Average	Flow	High Fl	low
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,034.90	(mg/s)	11,749	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.85	(mg/s)	0.85	(mg/s)	0.85	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	27.08	(mg/s)	27.08	(mg/s)	27.08	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	5,049.77	(mg/s)	57,657	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	4.17	(mg/s)	4.17	(mg/s)	4.17	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.28	(mg/s)	2.13	(mg/s)	2.13	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	6.92	(mg/s)	6.92	(mg/s)	6.92	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.17	(mg/s)	0.17	(mg/s)	0.17	(mg/s)
ទ បិ	mass flux in seepage from cell 2W	M_s2w =	259.35	(mg/s)	259.35	(mg/s)	259.35	(mg/s)
			Low Flo	w	Average	Flow	High Fl	low
Mass balance at each node	mass flux in river at PM-12	M_r12 =	27.93	(mg/s)	1,062.84	(mg/s)	69 706 44	(mg/s)
			Low Flo	w	Average I	Flow	High Fl	low
Convert mass lux to concentration	concentration in river at PM-12	C_r12 =	0.829	(mg/L)	2.721	(mg/L)	2.883	(mg/L)

Case Parameter	Year 5 Hardness			
		-		
	concentration of surface water into PM-12	C_s12 =	70	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	70	(mg/L)
ů č	concentration in Babbitt WWTP discharge	C_sBab =	70	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	942.7142857	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	2.61E+02	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	8.61E+03	(mg/L)
CO	concentration in tailings basin cell 2W	C_s2w =	436.6	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	87.5	(mg/L)
<u> </u>	concentration of ground water into PM-13	C_g13 =	87.5	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	24,980.41	(mg/s)	283,600	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	2,129.58	(mg/s)	2,129.58	(mg/s)	2,129.58	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	653.73	(mg/s)	653.73	(mg/s)	653.73	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	121,890.93	(mg/s)	1,391,712	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	10,425.01	(mg/s)	10,425.01	(mg/s)	10,425.01	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	6,936.49	(mg/s)	53,090.84	(mg/s)	53,090.84	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	30,336.71	(mg/s)	30,336.71	(mg/s)	30,336.71	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	3,654.83	(mg/s)	3,654.83	(mg/s)	3,654.83	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	24,647.41	(mg/s)	24,647.41	(mg/s)	24,647.41	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance h node	mass flux in river at PM-12	M_r12 =	2,783.31	(mg/s)	27,763.72	(mg/s)	286,383.27	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	78,783.76	(mg/s)	271,809.45	(mg/s)	1,800,250.00	(mg/s)
		_	LOW FIO	w	Average	FIOW	Fign Fi	ow
nvert mass x to ncentration	concentration in river at PM-12	C_r12 =	82.647	(mg/L)	71.091	(mg/L)	70.104	(mg/L)
SĒS	concentration in river at PM-13	C_r13 =	236.473	(mg/L)	109.588	(mg/L)	74.038	(mg/L)

Case Parameter	Year 5 Potassium			
	concentration of surface water into PM-12	C s12 =	0.60	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.60	(mg/L)
sh r	concentration in Babbitt WWTP discharge	C_sBab =	0.60	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	53.80	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	7.67	(mg/L)
Icer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.80	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	7.77	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	1.60	(mg/L)
ů du	concentration of ground water into PM-13	C_g13 =	1.60	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	214.12	(mg/s)	2,431	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	38.94	(mg/s)	38.94	(mg/s)	38.94	(mg/s)
tion	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.76	(mg/s)	0.76	(mg/s)	0.76	(mg/s)
ntrai	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1,044.78	(mg/s)	11,929	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	190.63	(mg/s)	190.63	(mg/s)	190.63	(mg/s)
u Xn	mass flux in Babbitt WWTP discharge	M_sBab =	5.60	(mg/s)	5.60	(mg/s)	5.60	(mg/s)
ert e ss t	mass flux of Area 5 Pit NW discharge	M_spit =	395.86	(mg/s)	3,029.85	(mg/s)	3,029.85	(mg/s)
ma	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	890.78	(mg/s)	890.78	(mg/s)	890.78	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	438.64	(mg/s)	438.64	(mg/s)	438.64	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	39.70	(mg/s)	253.82	(mg/s)	 2,470.56	(mg/s)
Mass at ead	mass flux in river at PM-13	M_r13 =	1,961.22	(mg/s)	5,854.11	(mg/s)	18,955.03	(mg/s)
			LOW FIO	W	Average	low	High Fi	ow
ert mass o entration	concentration in river at PM-12	C_r12 =	1.179	(mg/L)	0.650	(mg/L)	0.605	(mg/l)
Conv flux te conce	concentration in river at PM-13	C_r13 =	5.887	(mg/L)	2.360	(mg/L)	0.780	(mg/l)

Case	Year 5			
Parameter	Magnesium			
	concentration of surface water into PM-12	C_s12 =	5.90	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	5.90	(mg/L)
р р	concentration in Babbitt WWTP discharge	C_sBab =	5.90	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	271.00	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	29.76	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	213.00	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	69.97	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	10.65	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	10.65	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,105.49	(mg/s)	23,903	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	259.20	(mg/s)	259.20	(mg/s)	259.20	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	55.10	(mg/s)	55.10	(mg/s)	55.10	(mg/s)
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,273.66	(mg/s)	117,301	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1,268.87	(mg/s)	1,268.87	(mg/s)	1,268.87	(mg/s)
u si l	mass flux of Area 5 Pit NW discharge	M_spit =	1,994.02	(mg/s)	15,261.91	(mg/s)	15,261.91	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	3,455.69	(mg/s)	3,455.69	(mg/s)	3,455.69	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	90.42	(mg/s)	90.42	(mg/s)	90.42	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	3,950.02	(mg/s)	3,950.02	(mg/s)	3,950.02	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
oalance n node	mass flux in river at PM-12	M_r12 =	314.30	(mg/s)	2,419.79	(mg/s)	24,217.73	(mg/s)
Mass k at each	mass flux in river at PM-13	M_r13 =	11,073.32	(mg/s)	36,720.36	(mg/s)	165,546.07	(mg/s)
		_	Low Flo	W	Average	Flow	High Fl	ow
ert mass htration	concentration in river at PM-12	C_r12 =	9.333	(mg/L)	6.196	(mg/l)	5.928	(mg/l)
Conve flux to conce	concentration in river at PM-13	C_r13 =	33.237	(mg/L)	14.805	(mg/l)	6.808	(mg/l)

Case	Year 5			
Parameter	Manganese			
		-	-	-
	concentration of surface water into PM-12	C_s12 =	0.30	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.30	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	0.30	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.49	(mg/L)
tra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.31	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.00	(mg/L)
Con	concentration in tailings basin cell 2W	C_s2w =	1.18	(mg/L)
ont	concentration of ground water into PM-12	C_g12 =	0.19	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.19	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	107.06	(mg/s)	1,215	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	4.58	(mg/s)	4.58	(mg/s)	4.58	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	2.80	(mg/s)	2.80	(mg/s)	2.80	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	522.39	(mg/s)	5,964	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	22.40	(mg/s)	22.40	(mg/s)	22.40	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	3.57	(mg/s)	27.31	(mg/s)	27.31	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	36.00	(mg/s)	36.00	(mg/s)	36.00	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	66.78	(mg/s)	66.78	(mg/s)	66.78	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ss balance ach node	mass flux in river at PM-12	M_r12 =	7.38	(mg/s)	114.44	(mg/s)	1,222.81	(mg/s)
Mas ate	mass flux in river at PM-13	M r13 =	136.13	(mg/s)	789.32	(mg/s)	7,339.78	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
onvert mass ux to oncentration	concentration in river at PM-12	C_r12 =	0.219	(mg/L)	0.293	(mg/l)	0.299	(mg/l)
ర≓ర	concentration in river at PM-13	C_r13 =	0.409	(mg/L)	0.318	(mg/l)	0.302	(mg/l)

Case	Year 5			
Parameter	Sodium			
		-		
	concentration of surface water into PM-12	C_s12 =	6.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	6.00	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	6.00	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	119.50	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	34.82	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	255.00	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	44.31	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	4.90	(mg/L)
du du	concentration of ground water into PM-13	C_g13 =	4.90	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,141.18	(mg/s)	24,309	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	119.26	(mg/s)	119.26	(mg/s)	119.26	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	56.03	(mg/s)	56.03	(mg/s)	56.03	(mg/s)
ntra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,447.79	(mg/s)	119,290	(mg/s)
cer	mass flux of ground water into PM-13	M_g13 =	583.80	(mg/s)	583.80	(mg/s)	583.80	(mg/s)
Lo n	mass flux of Area 5 Pit NW discharge	M_spit =	879.28	(mg/s)	6,729.88	(mg/s)	6,729.88	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	4,042.46	(mg/s)	4,042.46	(mg/s)	4,042.46	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	108.24	(mg/s)	108.24	(mg/s)	108.24	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	2,501.44	(mg/s)	2,501.44	(mg/s)	2,501.44	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
iss balance each node	mass flux in river at PM-12	M_r12 =	175.29	(mg/s)	2,316.47	(mg/s)	24,483.86	(mg/s)
Ma	mass flux in river at PM-13	M_r13 =	8,290.51	(mg/s)	26,730.09	(mg/s)	157,739.28	(mg/s)
			Low Flo	w	 Average I	Flow	High Fl	ow
onvert mass ix to incentration	concentration in river at PM-12	C_r12 =	5.205	(mg/L)	 5.931	(mg/l)	5.993	(mg/l)
5 ≣ 3	concentration in river at PM-13	C_r13 =	24.884	(mg/L)	10.777	(mg/l)	6.487	(mg/l)

Case Parameter	Year 5 Nickel			
	concentration of surface water into PM-12	C_s12 =	0.0012	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0012	(mg/L)
a b c	concentration in Babbitt WWTP discharge	C_sBab =	0.0012	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0052	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.029814715	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.098	(mg/L)
	concentration in tailings basin cell 2W	C_s2w =	0.00688	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.007	(mg/L)
<u>u</u>	concentration of ground water into PM-13	C_g13 =	0.007	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.43	(mg/s)	5	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.17	(mg/s)	0.17	(mg/s)	0.17	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.09	(mg/s)	24	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.83	(mg/s)	0.83	(mg/s)	0.83	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.04	(mg/s)	0.29	(mg/s)	0.29	(mg/s)
ert e ss 1	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	3.46	(mg/s)	3.46	(mg/s)	3.46	(mg/s)
ma en	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.39	(mg/s)	0.39	(mg/s)	0.39	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ach node	mass flux in river at PM-12	M_r12 =	0.18	(mg/s)	0.61	(mg/s)	5.04	(mg/s)
Mas at e	mass flux in river at PM-13	M r13 =	4.95	(ma/s)	7.72	(ma/s)	33.92	(ma/s)
			Low Flo	w	Average	Flow	High Fl	ow
convert mass lux to oncentration	concentration in river at PM-12	C_r12 =	0.005	(mg/L)	0.002	(mg/L)	0.001	(mg/L)
0 = 0	concentration in river at Pivi-13	6_ri3 =	0.015	(mg/L)	0.003	(mg/L)	0.001	(mg/L)

Case	Year 5			
Parameter	Lead			
-		-		-
	concentration of surface water into PM-12	C_s12 =	0.00015	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00015	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.00015	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0003	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000769203	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0005	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.0012	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0012	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.0012	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.05	(mg/s)	1	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.26	(mg/s)	3	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.14	(mg/s)	0.14	(mg/s)	0.14	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.02	(mg/s)	0.02	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.09	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t balance ch node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.08	(mg/s)	0.64	(mg/s)
Mass at ea	mass flux in river at PM-13	M_r13 =	0.33	(mg/s)	0.66	(mg/s)	3.94	(mg/s)
		-	LOW FIO	w	Average	FIOW	High Fi	ow
/ert mass o entration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conv flux t conc	concentration in river at PM-13	C_r13 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Year 5			
Parameter	Antimony			
	concentration of surface water into PM-12	C_s12 =	4.00E-05	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00E-05	(mg/L)
βρι	concentration in Babbitt WWTP discharge	C_sBab =	4.00E-05	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	2.50E-04	(mg/L)
tra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	6.47E-03	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	2.50E-04	(mg/L)
ont	concentration of ground water into PM-12	C_g12 =	1.50E-03	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	1.50E-03	(mg/L)

			Low Flo	w	4	verage	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)		0.01	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.04	(mg/s)		0.04	(mg/s)	0.04	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)		0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)		0.07	(mg/s)	1	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.18	(mg/s)		0.18	(mg/s)	0.18	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)		0.01	(mg/s)	0.01	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.75	(mg/s)		0.75	(mg/s)	0.75	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)		0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)		0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	4	verage	Flow	High Fl	ow
balance h node	mass flux in river at PM-12	M_r12 =	0.04	(mg/s)		0.05	(mg/s)	0.20	(mg/s)
Mass k at each	mass flux in river at PM-13	M_r13 =	0.98	(mg/s)		1.08	(mg/s)	1.95	(mg/s)
			Low Flo	W	4	verage	Flow	High Fl	ow
rt mass	concentration in river at PM-12	C_r12 =	0.001	(mg/L)		0.000	(mg/L)	0.000	(mg/L)
Conve flux to concer	concentration in river at PM-13	C_r13 =	0.003	(mg/L)		0.000	(mg/L)	0.000	(mg/L)

Case	Year 5			
Parameter	Selenium			
		-		
	concentration of surface water into PM-12	C_s12 =	0.0003	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0003	(mg/L)
p c	concentration in Babbitt WWTP discharge		0.0003	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0016	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001159434	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.054	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.00109	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.00295	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.00295	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.11	(mg/s)	1	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.52	(mg/s)	6	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.35	(mg/s)	0.35	(mg/s)	0.35	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
ert o ss 1	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.13	(mg/s)	0.13	(mg/s)	0.13	(mg/s)
ma ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.02	(mg/s)	0.02	(mg/s)	0.02	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance sch node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	 0.18	(mg/s)	1.29	(mg/s)
Mas: at ea	mass flux in river at PM-13	M_r13 =	0.66	(mg/s)	1.36	(mg/s)	7.92	(mg/s)
			Low Flo	W	Average	Flow	High Fl	ow
onvert mass ux to oncentration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
ర≓ర	concentration in river at PM-13	C_r13 =	0.002	(mg/L)	0.001	(mg/L)	0.000	(mg/L)

Case Parameter	Year 5 Sulfate			
	concentration of surface water into PM-12	C_s12 =	4.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00	(mg/L)
ab r	concentration in Babbitt WWTP discharge	C_sBab =	4.00	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	1046.27	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	140.42	(mg/L)
Icer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	7347.00	(mg/L)
cou	concentration in tailings basin cell 2W	C_s2w =	152.40	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	8.50	(mg/L)
ů L	concentration of ground water into PM-13	C_g13 =	8.50	(mg/L)

			Low Flo	W	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,427.45	(mg/s)	16,206	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	206.87	(mg/s)	206.87	(mg/s)	206.87	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	37.36	(mg/s)	37.36	(mg/s)	37.36	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	6,965.20	(mg/s)	79,526	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1,012.72	(mg/s)	1,012.72	(mg/s)	1,012.72	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	7,698.43	(mg/s)	58,922.60	(mg/s)	58,922.60	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	16,304.02	(mg/s)	16,304.02	(mg/s)	16,304.02	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	3,118.71	(mg/s)	3,118.71	(mg/s)	3,118.71	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	8,603.45	(mg/s)	8,603.45	(mg/s)	8,603.45	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ch node	mass flux in river at PM-12	M_r12 =	244.23	(mg/s)	1,671.68	(mg/s)	16,449.94	(mg/s)
Mas: at ea	mass flux in river at PM-13	M_r13 =	36,981.55	(mg/s)	96,598.37	(mg/s)	183,937.83	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	7.252	(mg/L)	4.280	(mg/l)	4.027	(mg/l)
Conve flux to concer	concentration in river at PM-13	C_r13 =	111.002	(mg/L)	38.947	(mg/l)	7.565	(mg/l)

Case Parameter	Year 5 Thallium			
	concentration of surface water into PM-12	C s12 =	0.0002	(mg/L)
Ita	concentration of surface water into PM-13	C_s13 =	0.0002	(mg/L)
a de	concentration in Babbitt WWTP discharge	C_sBab =	0.0002	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0006	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000906999	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0002	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.0002	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	0.000004	(mg/L)
L L	concentration of ground water into PM-13	C_g13 =	0.000004	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.07	(mg/s)	1	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.35	(mg/s)	4	(mg/s)
cer	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ert e ss †	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.11	(mg/s)	0.11	(mg/s)	0.11	(mg/s)
ma ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ach node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	 0.07	(mg/s)	0.81	(mg/s)
Mas at ea	mass flux in river at PM-13	M r13 =	0.12	(mg/s)	0.57	(mg/s)	4.94	(mg/s)
		•	Low Flo	w	Average	Flow	High Fl	ow
onvert mass ux to oncentration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
υ≢ö	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Year 5 Zinc			
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
ab c	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.003	(mg/L)
utra 1	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.017646569	(mg/L)
Cei	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.01	(mg/L)
Lo So	concentration in tailings basin cell 2W	C_s2w =	0.01435	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.0115	(mg/L)
<u>u</u>	concentration of ground water into PM-13	C_g13 =	0.0115	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5.71	(mg/s)	65	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.28	(mg/s)	0.28	(mg/s)	0.28	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.86	(mg/s)	318	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1.37	(mg/s)	1.37	(mg/s)	1.37	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.02	(mg/s)	0.17	(mg/s)	0.17	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	2.05	(mg/s)	2.05	(mg/s)	2.05	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.81	(mg/s)	0.81	(mg/s)	0.81	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	0.43	(mg/s)	 6.14	(mg/s)	65.25	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	4.68	(mg/s)	38.40	(mg/s)	387.76	(mg/s)
			LOW TIO	vv	Average		riigii i	000
ert mass o entration	concentration in river at PM-12	C_r12 =	0.013	(mg/L)	0.016	(mg/L)	0.016	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.014	(mg/L)	0.015	(mg/L)	0.016	(mg/L)

Appendix F.3 Embarrass River Proposed Action Year 8

FLOWS

Case	Year 8				
Flows	Low Flow Conditions (no surface runoff)				Node
<i>w</i> in ss River	flow in river at PM-12	Q_r12_L =	1.19	(cfs)	PM-12
Total flov Embarras	flow in river at PM-13 flow check	Q_r13_L = Q_ck_L =	12.46 12.46	(cfs) (cfs)	_PM-13
	aurface water flow into PM 12	0 012 1	0.00	(ofo)	DM 10
	surface water flow into PM-13	$Q_{312}L =$	0.00	(cfs)	PM-13
	Babbitt WWTP discharge	Q_310_L =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q spit L =	0.26	(cfs)	PM-13
ta	seepage from Tailings Basin Cells 1E and 2E	Q fs L =	4.79	(cfs)	PM-13
da	hydrometallurgical residue cells liner leakage	Q_rrs_L =	0.01	(cfs)	PM-13
ut flow	seepage from cell 2W	Q_s2w_L =	1.99	(cfs)	PM-13
	ground water flow into PM-12	Q_g12_L =	0.86	(cfs)	PM-12
dul	ground water flow into PM-13	Q_g13_L =	4.21	(cfs)	PM-13

Case	Year 8				
Flow	Average Flow Conditions (mean annual)				
n River	flow in river at PM-12	Q_r12_M =	13.80	(cfs)	PM-12
l flow ir arrass I	flow in river at PM-13	Q_r13_M =	88.33	(cfs)	PM-13
Tota Emb	flow check	Q_ck_M =	88.33	(cfs)	
	surface water flow into PM-12	Q_s12_M =	12.61	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_M =	61.53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_M =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_M =	1.99	(cfs)	PM-13
ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_M =	4.79	(cfs)	PM-13
, da	hydrometallurgical residue cells liner leakage	Q_rrs_M =	0.01	(cfs)	PM-13
No.	seepage from cell 2W	Q_s2w_M =	1.99	(cfs)	PM-13
nt 1	ground water flow into PM-12	Q_g12_M =	0.86	(cfs)	PM-12
au	ground water flow into PM-13	Q_g13_M =	4.21	(cfs)	PM-13

Case	Year 8				
Flow	High Flow Conditions (avg. annual 1-day max flow)				
n River	flow in river at PM-12	Q_r12_H =	144.35	(cfs)	PM-12
flow i ırrass	flow in river at PM-13	Q_r13_H =	859.88	(cfs)	PM-13
Total Emba	flow check	Q_ck_H =	859.88	(cfs)	
	surface water flow into PM-12	Q_s12_H =	143.16	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_H =	702.53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_H =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_H =	1.99	(cfs)	PM-13
ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_H =	4.79	(cfs)	PM-13
/ da	hydrometallurgical residue cells liner leakage	Q_rrs_H =	0.01	(cfs)	PM-13
lo v	seepage from cell 2W	Q_s2w_H =	1.99	(cfs)	PM-13
t T	ground water flow into PM-12	Q_g12_H =	0.86	(cfs)	PM-12
ů L	ground water flow into PM-13	Q q13 H=	4.21	(cfs)	PM-13

Case Parameter	Year 8 Silver			
		4		
	concentration of surface water into PM-12	C_s12 =	0.00011	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00011	(mg/L)
р с	concentration in Babbitt WWTP discharge	C_sBab =	0.00011	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.00015	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.00089	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.000125	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.000100	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.00008	(mg/L)
L L	concentration of ground water into PM-13	C_g13 =	0.00008	(mg/L)

			Low Flo	w	Average	Flow	High Flo	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.04	(mg/s)	0	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.19	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.0	(mg/s)	0.01	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.12	(mg/s)	0.12	(mg/s)	0.12	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.0	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Flo	W
balance ch node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.04	(mg/s)	0.45	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	0.13	(mg/s)	0.3	(mg/s)	2.77	(mg/s)
		-	LOW FIU	vv	Average	FIOW	rigii ric	JW
rt mass ntration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000) (mg/L)	0.000	(mg/L)
Conve flux to concei	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000) (mg/L)	0.000	(mg/L)

Case	Year 8			
Parameter	Aluminum			
		1		
	concentration of surface water into PM-12	C_s12 =	0.12	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.12	(mg/L)
р с р	concentration in Babbitt WWTP discharge	C_sBab =	0.12	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.01325	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	1.01E-01	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.80E-01	(mg/L)
Cor Cor	concentration in tailings basin cell 2W	C_s2w =	1.5788	(mg/L)
out	concentration of ground water into PM-12	C_g12 =	0.025	(mg/L)
L L	concentration of ground water into PM-13	C_g13 =	0.025	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	42.82	(mg/s)	486	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.61	(mg/s)	0.61	(mg/s)	0.61	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	1.12	(mg/s)	1.12	(mg/s)	1.12	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	208.96	(mg/s)	2,386	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2.98	(mg/s)	2.98	(mg/s)	2.98	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.10	(mg/s)	0.75	(mg/s)	0.75	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	13.63	(mg/s)	13.63	(mg/s)	13.63	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	89.13	(mg/s)	89.13	(mg/s)	89.13	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	1.73	(mg/s)	44.55	(mg/s)	487.90	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	107.62	(mg/s)	360.05	(mg/s)	2,980.23	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass tration	concentration in river at PM-12	C_r12 =	0.051	(mg/L)	0.114	(mg/L)	0.119	(mg/L)
Convei flux to concer	concentration in river at PM-13	C_r13 =	0.305	(mg/L)	0.144	(mg/L)	0.122	(mg/L)

Case	Year 8			
Parameter	Arsenic			
	concentration of surface water into PM-12	C_s12 =	0.00075	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00075	(mg/L)
р р	concentration in Babbitt WWTP discharge	C_sBab =	0.00075	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.001325	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.007035766	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.00291	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.00273	(mg/L)
di di	concentration of ground water into PM-13	C_g13 =	0.00273	(mg/L)

				44	Average	100	Fight Fi	0₩
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.27	(mg/s)	3	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itrai	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.31	(mg/s)	15	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.33	(mg/s)	0.33	(mg/s)	0.33	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.95	(mg/s)	0.95	(mg/s)	0.95	(mg/s)
mä	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
<u>۽</u> ک	mass flux in seepage from cell 2W	M_s2w =	0.16	(mg/s)	0.16	(mg/s)	0.16	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
is balance ach node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	0.34	(mg/s)	3.11	(mg/s)
Mas ate	mass flux in river at PM-13	M r13 =	1.53	(mg/s)	3.17	(mg/s)	19.54	(mg/s)
			Low Flo	w	Average I	Flow	High Fl	ow
Convert mass lux to concentration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	0.001	(mg/L)	0.001	(mg/L)

Case Parameter	Year 8 Boron			
	concentration of surface water into PM-12	C e12 -	0.027	(mg/L)
ata	concentration of surface water into PM-12	C_s12 = C_s13 =	0.027	(mg/L)
3 de	concentration in Babbitt WWTP discharge	C_sBab =	0.027	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.1315	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.140897597	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.11	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.33	(mg/L)
rt .	concentration of ground water into PM-12	C_g12 =	0.0212	(mg/L)
u 1	concentration of ground water into PM-13	C_g13 =	0.0212	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	9.64	(mg/s)	109	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.52	(mg/s)	0.52	(mg/s)	0.52	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.25	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	47.02	(mg/s)	537	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2.53	(mg/s)	2.53	(mg/s)	2.53	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.97	(mg/s)	7.41	(mg/s)	7.41	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	19.10	(mg/s)	19.10	(mg/s)	19.10	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	18.63	(mg/s)	18.63	(mg/s)	18.63	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ch node	mass flux in river at PM-12	M_r12 =	0.77	(mg/s)	10.40	(mg/s)	110.16	(mg/s)
Mass at ea	mass flux in river at PM-13	M_r13 =	42.03	(mg/s)	105.11	(mg/s)	694.66	(mg/s)
		_	Low Flo	w	Average	Flow	High Fl	ow
ert mass o entration	concentration in river at PM-12	C_r12 =	0.023	(mg/L)	0.027	(mg/L)	0.027	(mg/L)
Conv flux to conce	concentration in river at PM-13	C_r13 =	0.119	(mg/L)	0.042	(mg/L)	0.029	(mg/L)

Case Parameter	Year 8 Barium			
rarameter	Bandin	1		
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
n data	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0044	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	5.04E-02	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	5.00E-03	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.09298	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0681	(mg/L)
	concentration of ground water into PM-13	C_g13 =	0.0681	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5.71	(mg/s)	65	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	1.66	(mg/s)	1.66	(mg/s)	1.66	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.86	(mg/s)	318	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	8.11	(mg/s)	8.11	(mg/s)	8.11	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	6.84	(mg/s)	6.84	(mg/s)	6.84	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	5.25	(mg/s)	5.25	(mg/s)	5.25	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	1.81	(mg/s)	7.52	(mg/s)	66.63	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	22.04	(mg/s)	55.82	(mg/s)	405.18	(mg/s)
			LOW FIO	W	Average	FIOW	High Fi	ow
ert mass o entration	concentration in river at PM-12	C_r12 =	0.054	(mg/L)	0.019	(mg/L)	0.016	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.063	(mg/L)	0.022	(mg/L)	0.017	(mg/L)

Case Parameter	Year 8 Beryllium			
		-		
	concentration of surface water into PM-12	C_s12 =	0.0001	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0001	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.0001	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000543459	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.00075	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.000023	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.000023	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.04	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.17	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
u xnl	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	-	(mg/s)	-	(mg/s)	-	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
is balance ach node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.04	(mg/s)	0.41	(mg/s)
Mas at e	mass flux in river at PM-13	M r13 =	0.12	(mg/s)	0.34	(mg/s)	2.52	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
Convert mass lux to concentration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Year 8 Calcium			
		-		
	concentration of surface water into PM-12	C_s12 =	15	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	15	(mg/L)
р с р	concentration in Babbitt WWTP discharge	C_sBab =	15	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	95.35	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	72.53696661	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	416	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	59.78	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	19	(mg/L)
u u	concentration of ground water into PM-13	C_g13 =	19	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5,352.95	(mg/s)	60,771	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	462.42	(mg/s)	462.42	(mg/s)	462.42	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	140.09	(mg/s)	140.09	(mg/s)	140.09	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	26,119.49	(mg/s)	298,224	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2,263.72	(mg/s)	2,263.72	(mg/s)	2,263.72	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	701.59	(mg/s)	5,369.83	(mg/s)	5,369.83	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	9,833.30	(mg/s)	9,833.30	(mg/s)	9,833.30	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	132.27	(mg/s)	132.27	(mg/s)	132.27	(mg/s)
ي <u>د</u>	mass flux in seepage from cell 2W	M_s2w =	3,374.76	(mg/s)	3,374.76	(mg/s)	19.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance n node	mass flux in river at PM-12	M_r12 =	602.51	(mg/s)	5,955.45	(mg/s)	61,373.93	(mg/s)
Mass t at each	mass flux in river at PM-13	M_r13 =	16,908.15	(mg/s)	53,048.82	(mg/s)	377,216.04	(mg/s)
			Low Flo	W	Average	Flow	High Fl	ow
rt mass	concentration in river at PM-12	C_r12 =	17.891	(mg/L)	15.249	(mg/l)	15.024	(mg/l)
Conve flux to concer	concentration in river at PM-13	C_r13 =	47.965	(mg/L)	21.223	(mg/l)	15.501	(mg/l)

Case	Year 8			
Parameter	Cadmium	J		
	concentration of surface water into PM-12	C s12 =	0.00008	(mg/L)
Ita	concentration of surface water into PM-13	 C_s13 =	0.00008	(mg/L)
3 de	concentration in Babbitt WWTP discharge	C_sBab =	0.00008	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000383404	(mg/L)
	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0004	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.000188	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	0.0003	(mg/L)
du du	concentration of ground water into PM-13	C_g13 =	0.0003	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.03	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.14	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.05	(mg/s)	0.05	(mg/s)	0.05	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
is balance ach node	mass flux in river at PM-12	M_r12 =	0.01	(mg/s)	0.04	(mg/s)	0.33	(mg/s)
Mas at e	mass flux in river at PM-13	M r13 =	0.11	(mg/s)	0.28	(mg/s)	2.03	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
Convert mass lux to concentration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Year 8			
Parameter	Chioride	I		
	concentration of surface water into PM-12	C_s12 =	6.5	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	6.5	(mg/L)
sp r	concentration in Babbitt WWTP discharge	C_sBab =	6.5	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	5.95	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	6.07E+00	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.76E+03	(mg/L)
CO	concentration in tailings basin cell 2W	C_s2w =	21.54	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	1.8	(mg/L)
dul	concentration of ground water into PM-13	C_g13 =	1.8	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,319.61	(mg/s)	26,334	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	43.81	(mg/s)	43.81	(mg/s)	43.81	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	60.70	(mg/s)	60.70	(mg/s)	60.70	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	11,318.44	(mg/s)	129,230	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	214.46	(mg/s)	214.46	(mg/s)	214.46	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	43.78	(mg/s)	335.09	(mg/s)	335.09	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	823.25	(mg/s)	823.25	(mg/s)	823.25	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	559.62	(mg/s)	559.62	(mg/s)	559.62	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	1,216.00	(mg/s)	1,216.00	(mg/s)	1,216.00	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	104.51	(mg/s)	2,424.12	(mg/s)	26,438.79	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	2,961.63	(mg/s)	16,890.98	(mg/s)	158,817.61	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass htration	concentration in river at PM-12	C_r12 =	3.103	(mg/L)	6.207	(mg/L)	6.472	(mg/L)
Conver flux to concer	concentration in river at PM-13	C_r13 =	8.401	(mg/L)	6.757	(mg/L)	6.526	(mg/L)

Case	Year 8			
Parameter	Cobalt			
		-		
	concentration of surface water into PM-12	C_s12 =	0.0006	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0006	(mg/L)
βρι	concentration in Babbitt WWTP discharge	C_sBab =	0.0006	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.000555	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.002321539	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.005	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.001556	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0011	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.0011	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.21	(mg/s)	2	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.04	(mg/s)	12	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.13	(mg/s)	0.13	(mg/s)	0.13	(mg/s)
u si l	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.31	(mg/s)	0.31	(mg/s)	0.31	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.09	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.25	(mg/s)	2.46	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	0.57	(mg/s)	1.86	(mg/s)	14.96	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.001	(mg/L)	0.001	(mg/L)
Conver flux to concen	concentration in river at PM-13	C_r13 =	0.002	(mg/L)	0.001	(mg/L)	0.001	(mg/L)

Case	Year 8			
Parameter	Copper			
	concentration of surface water into PM-12	C_s12 =	0.0015	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0015	(mg/L)
р р	concentration in Babbitt WWTP discharge	C_sBab =	0.0015	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.00345	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.00854201	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0015	(mg/L)
LO L	concentration in tailings basin cell 2W	C_s2w =	0.004555	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.004	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.004	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.54	(mg/s)	6	(mg/s)
ntration	mass flux of ground water into PM-12	M_g12 =	0.10	(mg/s)	0.10	(mg/s)	0.10	(mg/s)
	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.61	(mg/s)	30	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.48	(mg/s)	0.48	(mg/s)	0.48	(mg/s)
li n	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.19	(mg/s)	0.19	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.16	(mg/s)	1.16	(mg/s)	1.16	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
မ ပိ	mass flux in seepage from cell 2W	M_s2w =	0.26	(mg/s)	0.26	(mg/s)	0.26	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	0.11	(mg/s)	0.65	(mg/s)	6.19	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	2.03	(mg/s)	5.35	(mg/s)	38.10	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
onvert mass ux to oncentration	concentration in river at PM-12	C_r12 =	0.003	(mg/L)	0.002	(mg/L)	0.002	(mg/L)
ŬĘŭ	concentration in river at PM-13	C_r13 =	0.006	(mg/L)	0.002	(mg/L)	0.002	(mg/L)

Case Parameter	Year 8 Fluoride			
	concentration of surface water into PM-12	C s12 =	0.2	(mg/L)
ata	concentration of surface water into PM-13	 C_s13 =	0.2	(mg/L)
n da	concentration in Babbitt WWTP discharge	C_sBab =	0.2	(mg/L)
tior	concentration in Area 5 Pit NW discharge	C_spit =	0.125	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	7.89E-01	(mg/L)
Icer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	2.85E+00	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	1.55	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.385	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.385	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	71.37	(mg/s)	810	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	9.37	(mg/s)	9.37	(mg/s)	9.37	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	1.87	(mg/s)	1.87	(mg/s)	1.87	(mg/s)
ıtrat	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	348.26	(mg/s)	3,976	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	45.87	(mg/s)	45.87	(mg/s)	45.87	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.92	(mg/s)	7.04	(mg/s)	7.04	(mg/s)
ert e ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	106.94	(mg/s)	106.94	(mg/s)	106.94	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.91	(mg/s)	0.91	(mg/s)	0.91	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	87.50	(mg/s)	87.50	(mg/s)	87.50	(mg/s)
			Low Flow		Average	Flow	High Fl	ow
balance th node	mass flux in river at PM-12	M_r12 =	11.24	(mg/s)	82.61	(mg/s)	821.52	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	253.37	(mg/s)	679.12	(mg/s)	5,046.10	(mg/s)
		-	LOW FIO	w	Average	FIOW	Fign Fi	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.334	(mg/L)	 0.212	(mg/L)	 0.201	(mg/L)
Conve flux to concei	concentration in river at PM-13	C_r13 =	0.719	(mg/L)	0.272	(mg/L)	0.207	(mg/L)

Case Parameter	Year 8 Iron			
	concentration of surface water into PM-12	C c12 -	2.0	(mg/L)
ta	concentration of surface water into PM-12	C_s12 =	2.9	(mg/L)
ab r	concentration in Babbitt WWTP discharge	C_sBab =	2.9	(mg/L)
tion	concentration in Area 5 Pit NW discharge	C_spit =	0.037761905	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	5.80E-02	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	4.00E-01	(mg/L)
Cor	concentration in tailings basin cell 2W	C_s2w =	4.594	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.035	(mg/L)
<u> </u>	concentration of ground water into PM-13	C_g13 =	0.035	(mg/L)

			Low Flow		Average Flow		High Fl	High Flow	
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,034.90	(mg/s)	11,749	(mg/s)	
_	mass flux of ground water into PM-12	M_g12 =	0.85	(mg/s)	0.85	(mg/s)	0.85	(mg/s)	
tion	mass flux in Babbitt WWTP discharge	M_sBab =	27.08	(mg/s)	27.08	(mg/s)	27.08	(mg/s)	
ıtrat	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	5,049.77	(mg/s)	57,657	(mg/s)	
cen	mass flux of ground water into PM-13	M_g13 =	4.17	(mg/s)	4.17	(mg/s)	4.17	(mg/s)	
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.28	(mg/s)	2.13	(mg/s)	2.13	(mg/s)	
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	7.86	(mg/s)	7.86	(mg/s)	7.86	(mg/s)	
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.13	(mg/s)	0.13	(mg/s)	0.13	(mg/s)	
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	259.35	(mg/s)	259.35	(mg/s)	259.35	(mg/s)	
			Low Flo	w	Average	Flow	High Fl	ow	
balance ch node	mass flux in river at PM-12	M_r12 =	27.93	(mg/s)	1,062.84	(mg/s)	11,777.08	(mg/s)	
Mass at eac	mass flux in river at PM-13	M_r13 =	299.72	(mg/s)	6,386.23	(mg/s)	69,707.34	(mg/s)	
			Low 110		Average	101	Ingili		
wert mass to centration	concentration in river at PM-12	C_r12 =	0.829	(mg/L)	2.721	(mg/L)	2.883	(mg/L)	
Cor flux con	concentration in river at PM-13	C_r13 =	0.850	(mg/L)	2.555	(mg/L)	2.865	(mg/L)	

Case	Year 8			
Parameter	Hardness			
		-		
	concentration of surface water into PM-12	C_s12 =	70	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	70	(mg/L)
β	concentration in Babbitt WWTP discharge	C_sBab =	70	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	942.7142857	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	2.52E+02	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	8.61E+03	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	436.6	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	87.5	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	87.5	(mg/L)

			Low Flow		Average Flo		low		High Flow	
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)		24,980.41	(mg/s)		283,600	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	2,129.58	(mg/s)		2,129.58	(mg/s)		2,129.58	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	653.73	(mg/s)		653.73	(mg/s)		653.73	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)		121,890.93	(mg/s)		1,391,712	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	10,425.01	(mg/s)		10,425.01	(mg/s)		10,425.01	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	6,936.49	(mg/s)		53,090.84	(mg/s)		53,090.84	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	34,228.62	(mg/s)		34,228.62	(mg/s)		34,228.62	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	2,737.70	(mg/s)		2,737.70	(mg/s)		2,737.70	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	24,647.41	(mg/s)		24,647.41	(mg/s)		24,647.41	(mg/s)
			Low Flow			Average	Flow	High		low
ass balance each node	mass flux in river at PM-12	M_r12 =	2,783.31	(mg/s)		27,763.72	(mg/s)		286,383.27	(mg/s)
Mi at	mass flux in river at PM-13	M_r13 =	81,758.54	(mg/s)		274,784.23	(mg/s)		1,803,224.78	(mg/s)
			Low Flo	w		Average	Flow		High Fl	low
onvert mass ux to oncentration	concentration in river at PM-12	C_r12 =	82.647	(mg/L)		71.091	(mg/L)		70.104	(mg/L)
ŬĘŏ	concentration in river at PM-13	C_r13 =	231.931	(mg/L)		109.930	(mg/L)		74.102	(mg/L)

Case	Year 8			
Parameter	Potassium			
	concentration of surface water into PM-12	C_s12 =	0.60	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.60	(mg/L)
р с	concentration in Babbitt WWTP discharge	C_sBab =	0.60	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	53.80	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	6.73	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.80	(mg/L)
CO	concentration in tailings basin cell 2W	C_s2w =	7.77	(mg/L)
t	concentration of ground water into PM-12	C_g12 =	1.60	(mg/L)
<u> </u>	concentration of ground water into PM-13	C_g13 =	1.60	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	214.12	(mg/s)	2,431	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	38.94	(mg/s)	38.94	(mg/s)	38.94	(mg/s)
tio	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.57	(mg/s)	0.57	(mg/s)	0.57	(mg/s)
ıtrat	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1,044.78	(mg/s)	11,929	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	190.63	(mg/s)	190.63	(mg/s)	190.63	(mg/s)
u xnl	mass flux in Babbitt WWTP discharge	M_sBab =	5.60	(mg/s)	5.60	(mg/s)	5.60	(mg/s)
ert o ss t	mass flux of Area 5 Pit NW discharge	M_spit =	395.86	(mg/s)	3,029.85	(mg/s)	3,029.85	(mg/s)
ma	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	912.75	(mg/s)	912.75	(mg/s)	912.75	(mg/s)
မ ပိ	mass flux in seepage from cell 2W	M_s2w =	438.64	(mg/s)	438.64	(mg/s)	438.64	(mg/s)
			Low Flow		Average	Flow	High Fl	ow
Mass balance at each node	mass flux in river at PM-12 mass flux in river at PM-13	M_r12 =	39.51	(mg/s) (mg/s)	253.63	(mg/s)	2,470.37	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
Convert mass flux to concentration	concentration in river at PM-12	C_r12 =	1.173	(mg/L)	0.649	(mg/L)	0.605	(mg/l)

Case	Year 8			
Parameter	Magnesium			
	concentration of surface water into PM-12	C_s12 =	5.90	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	5.90	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	5.90	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	271.00	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	17.33	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	213.00	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	69.97	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	10.65	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	10.65	(mg/L)

			Low Flo	w	Average	Flow		High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,105.49	(mg/s)		23,903	(mg/s)
	mass flux of ground water into PM-12	M_g12 =	259.20	(mg/s)	259.20	(mg/s)		259.20	(mg/s)
ntration	mass flux in Babbitt WWTP discharge	M_sBab =	55.10	(mg/s)	55.10	(mg/s)		55.10	(mg/s)
	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,273.66	(mg/s)		117,301	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1,268.87	(mg/s)	1,268.87	(mg/s)		1,268.87	(mg/s)
son Xul	mass flux of Area 5 Pit NW discharge	M_spit =	1,994.02	(mg/s)	15,261.91	(mg/s)		15,261.91	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	2,349.41	(mg/s)	2,349.41	(mg/s)		2,349.41	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	67.73	(mg/s)	67.73	(mg/s)		67.73	(mg/s)
<u>۽</u> ک	mass flux in seepage from cell 2W	M_s2w =	3,950.02	(mg/s)	3,950.02	(mg/s)		3,950.02	(mg/s)
			Low Flow		Average	Flow	High F		ow
alance n node	mass flux in river at PM-12	M_r12 =	314.30	(mg/s)	2,419.79	(mg/s)		24,217.73	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	9,944.35	(mg/s)	35,591.39	(mg/s)		164,417.09	(mg/s)
			Low Flo	w	Average	Flow		High Fl	ow
't mass Itration	concentration in river at PM-12	C_r12 =	9.333	(mg/L)	6.196	(mg/l)		5.928	(mg/l)
Conve flux to concer	concentration in river at PM-13	C_r13 =	28.210	(mg/L)	14.239	(mg/l)		6.757	(mg/l)
Case	Year 8								
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Parameter	Manganese	l							
	concentration of surface water into PM-12	C_s12 =	0.30	(mg/L)					
ata	concentration of surface water into PM-13	C_s13 =	0.30	(mg/L)					
ې م	concentration in Babbitt WWTP discharge	C_sBab =	0.30	(mg/L)					
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.49	(mg/L)					
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.30	(mg/L)					
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.00	(mg/L)					
co	concentration in tailings basin cell 2W	C_s2w =	1.18	(mg/L)					
nt	concentration of ground water into PM-12	C_g12 =	0.19	(mg/L)					
du	concentration of ground water into PM-13	C_g13 =	0.19	(mg/L)					

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	107.06	(mg/s)	1,215	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	4.58	(mg/s)	4.58	(mg/s)	4.58	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	2.80	(mg/s)	2.80	(mg/s)	2.80	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	522.39	(mg/s)	5,964	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	22.40	(mg/s)	22.40	(mg/s)	22.40	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	3.57	(mg/s)	27.31	(mg/s)	27.31	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	40.29	(mg/s)	40.29	(mg/s)	40.29	(mg/s)
n ve mas	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	66.78	(mg/s)	66.78	(mg/s)	66.78	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	7.38	(mg/s)	114.44	(mg/s)	1,222.81	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	140.42	(mg/s)	793.61	(mg/s)	7,344.07	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
nvert mass x to ncentration	concentration in river at PM-12	C_r12 =	0.219	(mg/L)	0.293	(mg/l)	0.299	(mg/l)
C III	concentration in river at PM-13	C_r13 =	0.398	(mg/L)	0.317	(mg/l)	0.302	(mg/l)

Case	Year 8			
Parameter	Sodium			
		-		
	concentration of surface water into PM-12	C_s12 =	6.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	6.00	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	6.00	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	119.50	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	18.93	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	255.00	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	44.31	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	4.90	(mg/L)
du du	concentration of ground water into PM-13	C_g13 =	4.90	(mg/L)

			Low Flo	w	Average	Flow	High Fl	low
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,141.18	(mg/s)	24,309	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	119.26	(mg/s)	119.26	(mg/s)	119.26	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	56.03	(mg/s)	56.03	(mg/s)	56.03	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,447.79	(mg/s)	119,290	(mg/s)
cer	mass flux of ground water into PM-13	M_g13 =	583.80	(mg/s)	583.80	(mg/s)	583.80	(mg/s)
u s n	mass flux of Area 5 Pit NW discharge	M_spit =	879.28	(mg/s)	6,729.88	(mg/s)	6,729.88	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	2,566.23	(mg/s)	2,566.23	(mg/s)	2,566.23	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	81.08	(mg/s)	81.08	(mg/s)	81.08	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	2,501.44	(mg/s)	2,501.44	(mg/s)	2,501.44	(mg/s)
			Low Flo	W	Average	Flow	High Fl	low
lass balance t each node	mass flux in river at PM-12	M_r12 =	175.29	(mg/s)	2,316.47	(mg/s)	24,483.86	(mg/s)
a ≥	mass flux in river at PM-13	IVI_13 =	6,787.12	(mg/s) w	25,226.70	(mg/s)	156,235.89 High F	(mg/s)
convert mass ux to oncentration	concentration in river at PM-12	C_r12 =	5.205	(mg/L)	5.931	(mg/l)	5.993	(mg/l)

Case Parameter	Year 8 Nickel			
	concentration of surface water into PM-12	C_s12 =	0.0012	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0012	(mg/L)
a b c	concentration in Babbitt WWTP discharge	C_sBab =	0.0012	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0052	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.038551821	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.098	(mg/L)
	concentration in tailings basin cell 2W	C_s2w =	0.00688	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.007	(mg/L)
<u>u</u>	concentration of ground water into PM-13	C_g13 =	0.007	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.43	(mg/s)	5	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.17	(mg/s)	0.17	(mg/s)	0.17	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.09	(mg/s)	24	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.83	(mg/s)	0.83	(mg/s)	0.83	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.04	(mg/s)	0.29	(mg/s)	0.29	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	5.23	(mg/s)	5.23	(mg/s)	5.23	(mg/s)
ma ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ရ ပိ	mass flux in seepage from cell 2W	M_s2w =	0.39	(mg/s)	0.39	(mg/s)	0.39	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ach node	mass flux in river at PM-12	M_r12 =	0.18	(mg/s)	0.61	(mg/s)	5.04	(mg/s)
Mas at ea	mass flux in river at PM-13	M r13 =	6 70	(ma/s)	9 47	(ma/s)	35.67	(ma/s)
			Low Flo	w	Average	Flow	High Fl	ow
convert mass ux to oncentration	concentration in river at PM-12	C_r12 =	0.005	(mg/L)	0.002	(mg/L)	0.001	(mg/L)
0000	concentration in river at PIVI-13	C_r13 =	0.019	(mg/L)	0.004	(mg/L)	0.001	(mg/L)

Case	Year 8			
Parameter	Lead			
-		-		
	concentration of surface water into PM-12	C_s12 =	0.00015	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00015	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	0.00015	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0003	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001239552	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0005	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.0012	(mg/L)
t	concentration of ground water into PM-12	C_g12 =	0.0012	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.0012	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.05	(mg/s)	1	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.26	(mg/s)	3	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.14	(mg/s)	0.14	(mg/s)	0.14	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.02	(mg/s)	0.02	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.17	(mg/s)	0.17	(mg/s)	0.17	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance h node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.08	(mg/s)	0.64	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	0.41	(mg/s)	0.74	(mg/s)	4.02	(mg/s)
		-	LOW FID	vv	Average	TOW	підії гі	0₩
ert mass n ntration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Year 8			
Parameter	Antimony			
	concentration of surface water into PM-12	C_s12 =	4.00E-05	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00E-05	(mg/L)
р с	concentration in Babbitt WWTP discharge	C_sBab =	4.00E-05	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	2.50E-04	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	8.28E-03	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	2.50E-04	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	1.50E-03	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	1.50E-03	(mg/L)

				••			Ingil I	011
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.01	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.07	(mg/s)	1	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.18	(mg/s)	0.18	(mg/s)	0.18	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.12	(mg/s)	1.12	(mg/s)	1.12	(mg/s)
ma k	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
<u>۽</u> ک	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ss balance ach node	mass flux in river at PM-12	M_r12 =	0.04	(mg/s)	0.05	(mg/s)	 0.20	(mg/s)
Ma: ate	mass flux in river at PM-13	M r13 =	1.35	(mg/s)	1.45	(mg/s)	2.32	(mg/s)
		. –	Low Flo	w	Average	Flow	High Fl	ow
Convert mass lux to concentration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Year 8 Selenium			
		-	n	1
	concentration of surface water into PM-12	C_s12 =	0.0003	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0003	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.0003	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0016	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001331851	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.054	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.00109	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.00295	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.00295	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.11	(mg/s)	1	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.52	(mg/s)	6	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.35	(mg/s)	0.35	(mg/s)	0.35	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
ert e SS †	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.18	(mg/s)	0.18	(mg/s)	0.18	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.02	(mg/s)	0.02	(mg/s)	0.02	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
		_	Low Flo	w	Average	Flow	High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	 0.18	(mg/s)	1.29	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	0.70	(mg/s)	1.40	(mg/s)	7.96	(mg/s)
			LOW FIO	w	Average	FIOW	Fign Fi	ow
ert mass htration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.002	(mg/L)	0.001	(mg/L)	0.000	(mg/L)

Case Parameter	Year 8 Sulfate			
	concentration of surface water into PM-12	C_s12 =	4.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00	(mg/L)
sh r	concentration in Babbitt WWTP discharge	C_sBab =	4.00	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	1046.27	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	153.28	(mg/L)
Icer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	7347.00	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	152.40	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	8.50	(mg/L)
<u>u</u>	concentration of ground water into PM-13	C_g13 =	8.50	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,427.45	(mg/s)	16,206	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	206.87	(mg/s)	206.87	(mg/s)	206.87	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	37.36	(mg/s)	37.36	(mg/s)	37.36	(mg/s)
trai	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	6,965.20	(mg/s)	79,526	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1,012.72	(mg/s)	1,012.72	(mg/s)	1,012.72	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	7,698.43	(mg/s)	58,922.60	(mg/s)	58,922.60	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	20,779.12	(mg/s)	20,779.12	(mg/s)	20,779.12	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	2,336.11	(mg/s)	2,336.11	(mg/s)	2,336.11	(mg/s)
ធ បំ	mass flux in seepage from cell 2W	M_s2w =	8,603.45	(mg/s)	8,603.45	(mg/s)	8,603.45	(mg/s)
			Low Flo	Low Flow Averag		Flow	High Fl	ow
/ass balance tt each node	mass flux in river at PM-12	M_r12 =	244.23	(mg/s)	1,671.68	(mg/s)	16,449.94	(mg/s)
2.0		M_110 =	Low Flo	(iiig/3) w	Average	Flow	High Fl	ow
convert mass lux to oncentration	concentration in river at PM-12	C_r12 =	7.252	(mg/L)	4.280	(mg/l)	4.027	(mg/l)

Case Parameter	Year 8 Thallium			
	concentration of surface water into PM-12	C s12 =	0.0002	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0002	(mg/L)
n da	concentration in Babbitt WWTP discharge	C_sBab =	0.0002	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0006	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000934618	(mg/L)
Icel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0002	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.0002	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.000004	(mg/L)
<u>u</u>	concentration of ground water into PM-13	C_g13 =	0.000004	(mg/L)

			LOW FIO	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.07	(mg/s)	1	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.35	(mg/s)	4	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
nos	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ert e ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.13	(mg/s)	0.13	(mg/s)	0.13	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
te C	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ach node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.07	(mg/s)	0.81	(mg/s)
Mas at e	mass flux in river at PM-13	M r13 =	0.14	(ma/s)	0.59	(ma/s)	4.96	(ma/s)
			Low Flo	w	Average	Flow	High Fl	ow
Convert mass lux to concentration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Year 8			
Parameter	Zinc			
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
n data	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.003	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.029073121	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.01	(mg/L)
l log	concentration in tailings basin cell 2W	C_s2w =	0.01435	(mg/L)
out	concentration of ground water into PM-12	C_g12 =	0.0115	(mg/L)
<u>d</u>	concentration of ground water into PM-13	C_g13 =	0.0115	(mg/L)

			Low Flo	w	Averag	e Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5.7	(mg/s)	65	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.28	(mg/s)	0.2	8 (mg/s)	0.28	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.1	5 (mg/s)	0.15	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.8	6 (mg/s)	318	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1.37	(mg/s)	1.3	7 (mg/s)	1.37	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.02	(mg/s)	0.1	7 (mg/s)	0.17	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	3.94	(mg/s)	3.9	l (mg/s)	3.94	(mg/s)
n ve	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.0) (mg/s)	0.00	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	0.81	(mg/s)	0.8	(mg/s)	0.81	(mg/s)
			Low Flo	w	Averag	e Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.43	(mg/s)	6.1	l (mg/s)	65.25	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	6.58	(mg/s)	40.2) (mg/s)	389.65	(mg/s)
			Low Flo	w	Averag	Flow	High Fl	ow
onvert mass ix to ncentration	concentration in river at PM-12	C_r12 =	0.013	(mg/L)	0.01	6 (mg/L)	0.016	(mg/L)
s te c	concentration in river at PM-13	C_r13 =	0.019	(mg/L)	0.01	6 (mg/L)	0.016	(mg/L)

Appendix F.4 Embarrass River Proposed Action Year 9

FLOWS

Case	Year 9				
Flows	Low Flow Conditions (no surface runoff)				Node
in s River	flow in river at PM-12	Q_r12_L =	1.19	(cfs)	PM-12
flow arrass	flow in river at PM-13	Q_r13_L =	12.93	(cfs)	PM-13
Total Embé	flow check	Q_ck_L =	12.93	(cfs)	
	surface water flow into PM-12	Q_s12_L =	0.00	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_L =	0.00	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_L =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_L =	0.26	(cfs)	PM-13
ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_L =	5.26	(cfs)	PM-13
/ da	hydrometallurgical residue cells liner leakage	Q_rrs_L =	0.01	(cfs)	PM-13
low	seepage from cell 2W	Q_s2w_L =	1.99	(cfs)	PM-13
nt i	ground water flow into PM-12	Q_g12_L =	0.86	(cfs)	PM-12
dul	ground water flow into PM-13	Q_g13_L =	4.21	(cfs)	PM-13

Case	Year 9				
Flow	Average Flow Conditions (mean annual)				
in River	flow in river at PM-12	Q_r12_M =	13.80	(cfs)	PM-12
flow i arrass	flow in river at PM-13	Q_r13_M =	88.80	(cfs)	PM-13
Total Embi	flow check	Q_ck_M =	88.80	(cfs)	
	ourfage water flow into PM 12	0 a12 M	10.61	(ofo)	DM 10
	surface water flow into PM-12	Q_\$12_M =	61 53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_ <u>315_</u> M =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q spit M =	1.99	(cfs)	PM-13
ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_M =	5.26	(cfs)	PM-13
/ da	hydrometallurgical residue cells liner leakage	Q_rrs_M =	0.01	(cfs)	PM-13
lo w	seepage from cell 2W	Q_s2w_M =	1.99	(cfs)	PM-13
out 1	ground water flow into PM-12	Q_g12_M =	0.86	(cfs)	PM-12
lnp	ground water flow into PM-13	Q_g13_M =	4.21	(cfs)	PM-13

Case	Year 9				
Flow	High Flow Conditions (avg. annual 1-day ma	ax flow)			
n River	flow in river at PM-12	Q_r12_H =	144.35	(cfs)	PM-12
flow i arrass	flow in river at PM-13	Q_r13_H =	860.35	(cfs)	PM-13
Total Emba	flow check	Q_ck_H =	860.35	(cfs)	_
	surface water flow into PM-12	Q_s12_H =	143.16	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_H =	702.53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_H =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_H =	1.99	(cfs)	PM-13
Ita	seepage from Tailings Basin Cells 1E and 2E	Q_fs_H =	5.26	(cfs)	PM-13
/ da	hydrometallurgical residue cells liner leakage	Q_rrs_H =	0.01	(cfs)	PM-13
flow	seepage from cell 2W	Q_s2w_H =	1.99	(cfs)	PM-13
, t	ground water flow into PM-12	Q_g12_H =	0.86	(cfs)	PM-12
<u> </u>	ground water flow into PM-13	Q g13 H =	4.21	(cfs)	PM-13

Case	Year 9			
Parameter	Silver			
	concentration of surface water into PM-12	C_s12 =	0.00011	(mg/L)
n data	concentration of surface water into PM-13	C_s13 =	0.00011	(mg/L)
	concentration in Babbitt WWTP discharge	C_sBab =	0.00011	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.00015	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.00090	(mg/L)
ICel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.000125	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.000100	(mg/L)
t	concentration of ground water into PM-12	C_g12 =	0.00008	(mg/L)
du du	concentration of ground water into PM-13	C_g13 =	0.00008	(mg/L)

			Low Flo	w	Average	Flow		High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0	(mg/s)		0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0	(mg/s)		2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)		0.01	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.13	(mg/s)	0.13	(mg/s)		0.13	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)		0.01	(mg/s)
			Low Flo	w	Average	Flow	High Flow		ow
balance h node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.04	(mg/s)		0.45	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	0.14	(mg/s)	 0.38	(mg/s)		2.78	(mg/s)
			LOW FIO	w	Average	FIOW		High Fi	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)		0.000	(mg/L)
Conve flux to concer	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)		0.000	(mg/L)

Case	Year 9			
Parameter	Aluminum			
-		-		-
	concentration of surface water into PM-12	C_s12 =	0.12	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.12	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.12	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.01325	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	1.07E-01	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.80E-01	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	1.5788	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.025	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.025	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	43	(mg/s)	486	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.61	(mg/s)	0.61	(mg/s)	0.61	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	1.12	(mg/s)	1.12	(mg/s)	1.12	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	209	(mg/s)	2,386	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2.98	(mg/s)	2.98	(mg/s)	2.98	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.10	(mg/s)	0.75	(mg/s)	0.75	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	15.88	(mg/s)	15.88	(mg/s)	15.88	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	89.13	(mg/s)	89.13	(mg/s)	89.13	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	1.73	(mg/s)	44.55	(mg/s)	487.90	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	109.89	(mg/s)	362.31	(mg/s)	2,982.50	(mg/s)
			Low 110	~~	Average		ngnin	011
ert mass o entration	concentration in river at PM-12	C_r12 =	0.051	(mg/L)	0.114	(mg/L)	0.119	(mg/L)
Conv flux tu conce	concentration in river at PM-13	C_r13 =	0.300	(mg/L)	0.144	(mg/L)	0.122	(mg/L)

Case	Year 9			
Parameter	Arsenic			
	concentration of surface water into PM-12	C_s12 =	0.00075	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00075	(mg/L)
βρι	concentration in Babbitt WWTP discharge	C_sBab =	0.00075	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.001325	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.007592467	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.00291	(mg/L)
ont	concentration of ground water into PM-12	C_g12 =	0.00273	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.00273	(mg/L)

			Low Flo	w	Average	Flow	High Flo	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	((mg/s)	3	(mg/s)
	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.0	(mg/s)	0.01	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	-	(mg/s)	15	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.33	(mg/s)	0.33	(mg/s)	0.33	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.13	(mg/s)	1.10	(mg/s)	1.13	(mg/s)
n ve	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	0.16	(mg/s)	0.16	(mg/s)	0.16	(mg/s)
			Low Flo	w	Average	Flow	High Flo	ow
balance ch node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	0.34	(mg/s)	3.11	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	1.70	(mg/s)	3.34	(mg/s)	19.72	(mg/s)
			LOWIN	~~	Average	1100	 Tiigii Fic	0
invert mass x to ncentration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	0.00	(mg/L)	0.001	(mg/L)
co Lo	concentration in river at PM-13	C_r13 =	0.005	(mg/L)	0.00	(mg/L)	0.001	(mg/L)

Case	Year 9			
Parameter	Boron			
	concentration of surface water into PM-12	C_s12 =	0.027	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.027	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	0.027	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.1315	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.145082047	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.11	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.33	(mg/L)
ont	concentration of ground water into PM-12	C_g12 =	0.0212	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.0212	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	10	(mg/s)	109	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.52	(mg/s)	0.52	(mg/s)	0.52	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.25	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	47	(mg/s)	537	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2.53	(mg/s)	2.53	(mg/s)	2.53	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.97	(mg/s)	7.41	(mg/s)	7.41	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	21.59	(mg/s)	21.59	(mg/s)	21.59	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	18.63	(mg/s)	18.63	(mg/s)	18.63	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance th node	mass flux in river at PM-12	M_r12 =	0.77	(mg/s)	10.40	(mg/s)	110.16	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	44.52	(mg/s)	107.61	(mg/s)	697.15	(mg/s)
			Low Flo	W	 Average	low	High Fl	ow
ert mass htration	concentration in river at PM-12	C_r12 =	0.023	(mg/L)	0.027	(mg/L)	0.027	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.122	(mg/L)	0.043	(mg/L)	0.029	(mg/L)

Case Paramotor	Year 9 Barium			
Farameter	Banum	1		
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0044	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	5.05E-02	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	5.00E-03	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.09298	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0681	(mg/L)
	concentration of ground water into PM-13	C_g13 =	0.0681	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	6	(mg/s)	65	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	1.66	(mg/s)	1.66	(mg/s)	1.66	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	28	(mg/s)	318	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	8.11	(mg/s)	8.11	(mg/s)	8.11	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	7.51	(mg/s)	7.51	(mg/s)	7.51	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	5.25	(mg/s)	5.25	(mg/s)	5.25	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance h node	mass flux in river at PM-12	M_r12 =	1.81	(mg/s)	7.52	(mg/s)	66.63	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	22.72	(mg/s)	56.50	(mg/s)	405.86	(mg/s)
		_	Low Flo	W	Average	Flow	High Fl	ow
ert mass o intration	concentration in river at PM-12	C_r12 =	0.054	(mg/L)	0.019	(mg/L)	0.016	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.062	(mg/L)	0.022	(mg/L)	0.017	(mg/L)

Case Parameter	Year 9 Bervllium			
		J		
	concentration of surface water into PM-12	C_s12 =	0.0001	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0001	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	0.0001	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.00056357	(mg/L)
ICel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.00075	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.000023	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.000023	(mg/L)

ma ma oj ma					•			011
.co ma	ass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0	(mg/s)	0	(mg/s)
jo ma	ass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
	ass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
am tra	ass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0	(mg/s)	2	(mg/s)
B ma	ass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
	ass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ss te	ass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.08	(mg/s)	0.08	(mg/s)	0.08	(mg/s)
na na	ass flux in hydrometallurgical residue cells liner leakage	M_rrs =	-	(mg/s)	-	(mg/s)	-	(mg/s)
ပိ ဥ ma	ass flux in seepage from cell 2W	M_s2w =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
is balance ach node	ass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.04	(mg/s)	0.41	(mg/s)
ate ma	ass flux in river at PM-13	M r13 =	0.13	(mg/s)	0.35	(mg/s)	2.53	(mg/s)
		_	Low Flo	w	Average	Flow	High Fl	ow
Convert mass lux to oncentration	oncentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Year 9 Calcium			
_		1		
	concentration of surface water into PM-12	C_s12 =	15	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	15	(mg/L)
р с р	concentration in Babbitt WWTP discharge	C_sBab =	15	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	95.35	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	75.53238205	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	416	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	59.78	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	19	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	19	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5,352.95	(mg/s)	60,771	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	462.42	(mg/s)	462.42	(mg/s)	462.42	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	140.09	(mg/s)	140.09	(mg/s)	140.09	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	26,119.49	(mg/s)	298,224	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2,263.72	(mg/s)	2,263.72	(mg/s)	2,263.72	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	701.59	(mg/s)	5,369.83	(mg/s)	5,369.83	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	11,239.50	(mg/s)	11,239.50	(mg/s)	11,239.50	(mg/s)
nve mas	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	156.22	(mg/s)	156.22	(mg/s)	156.22	(mg/s)
ធ បិ	mass flux in seepage from cell 2W	M_s2w =	3,374.76	(mg/s)	3,374.76	(mg/s)	22.45	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance n node	mass flux in river at PM-12	M_r12 =	602.51	(mg/s)	5,955.45	(mg/s)	61,373.93	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	18,338.29	(mg/s)	54,478.96	(mg/s)	378,649.62	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	17.891	(mg/L)	15.249	(mg/L)	15.024	(mg/l)
Conve flux to concei	concentration in river at PM-13	C_r13 =	50.131	(mg/L)	21.679	(mg/L)	15.552	(mg/l)

Case Parameter	Year 9 Cadmium			
	concentration of surface water into PM-12	C_s12 =	0.00008	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00008	(mg/L)
, p	concentration in Babbitt WWTP discharge	C_sBab =	0.00008	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000407879	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0004	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.000188	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0003	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.0003	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.03	(mg/s)	0	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.14	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss 1	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
ma ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ch node	mass flux in river at PM-12	M_r12 =	0.01	(mg/s)	0.04	(mg/s)	0.33	(mg/s)
Mass at ea	mass flux in river at PM-13	M_r13 =	0.12	(mg/s)	0.29	(mg/s)	2.04	(mg/s)
			LOW FIO	W	Average	FIOW	High Fi	ow
/ert mass o entration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conv Conv filux 1 conc	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Year 9 Chloride			
	concentration of surface water into PM-12	C s12 =	6.5	(ma/L)
Ita	concentration of surface water into PM-13	 C_s13 =	6.5	(mg/L)
3 de	concentration in Babbitt WWTP discharge		6.5	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	5.95	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	5.89E+00	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.76E+03	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	21.54	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	1.8	(mg/L)
du du	concentration of ground water into PM-13	C_g13 =	1.8	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,319.61	(mg/s)	26,334	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	43.81	(mg/s)	43.81	(mg/s)	43.81	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	60.70	(mg/s)	60.70	(mg/s)	60.70	(mg/s)
Itral	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	11,318.44	(mg/s)	129,230	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	214.46	(mg/s)	214.46	(mg/s)	214.46	(mg/s)
uo Xn	mass flux of Area 5 Pit NW discharge	M_spit =	43.78	(mg/s)	335.09	(mg/s)	335.09	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	876.22	(mg/s)	876.22	(mg/s)	876.22	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	660.93	(mg/s)	660.93	(mg/s)	660.93	(mg/s)
ទ បិ	mass flux in seepage from cell 2W	M_s2w =	1,216.00	(mg/s)	1,216.00	(mg/s)	1,216.00	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	104.51	(mg/s)	2,424.12	(mg/s)	26,438.79	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	3,115.90	(mg/s)	17,045.26	(mg/s)	158,971.88	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	3.103	(mg/L)	6.207	(mg/L)	6.472	(mg/L)
Conver flux to concen	concentration in river at PM-13	C_r13 =	8.518	(mg/L)	6.783	(mg/L)	6.529	(mg/L)

Case	Year 9			
Parameter	Cobalt	J		
	concentration of surface water into PM-12	C s12 =	0.0006	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0006	(mg/L)
sp r	concentration in Babbitt WWTP discharge	C_sBab =	0.0006	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.000555	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.002481389	(mg/L)
ICEI	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.005	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.001556	(mg/L)
<u>et</u>	concentration of ground water into PM-12	C_g12 =	0.0011	(mg/L)
ů –	concentration of ground water into PM-13	C_g13 =	0.0011	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.21	(mg/s)	2	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.04	(mg/s)	12	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.13	(mg/s)	0.13	(mg/s)	0.13	(mg/s)
u s n	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.37	(mg/s)	0.37	(mg/s)	0.37	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
<u>۽</u> ک	mass flux in seepage from cell 2W	M_s2w =	0.09	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ss balance ach node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.25	(mg/s)	2.46	(mg/s)
Ma: at e	mass flux in river at PM-13	M r13 =	0.63	(mg/s)	1.91	(mg/s)	15.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
Convert mass lux to concentration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.001	(mg/L)	0.001	(mg/L)

Case	Year 9			
Parameter	Copper			
			-	
	concentration of surface water into PM-12	C_s12 =	0.0015	(mg/L)
ata	concentration of surface water into PM-13		0.0015	(mg/L)
р р	concentration in Babbitt WWTP discharge	C_sBab =	0.0015	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.00345	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.008625606	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0015	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.004555	(mg/L)
ont	concentration of ground water into PM-12	C_g12 =	0.004	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.004	(mg/L)

			Low Flo	w	Average I	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.54	(mg/s)	6	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.10	(mg/s)	0.10	(mg/s)	0.10	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.61	(mg/s)	30	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.48	(mg/s)	0.48	(mg/s)	0.48	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.19	(mg/s)	0.19	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.28	(mg/s)	1.28	(mg/s)	1.28	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.26	(mg/s)	0.26	(mg/s)	0.26	(mg/s)
			Low Flo	w	Average I	Flow	High Fl	ow
balance n node	mass flux in river at PM-12	M_r12 =	0.11	(mg/s)	0.65	(mg/s)	6.19	(mg/s)
Mass k at each	mass flux in river at PM-13	M_r13 =	2.15	(mg/s)	5.47	(mg/s)	38.22	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.003	(mg/L)	0.002	(mg/L)	0.002	(mg/L)
Convel flux to concer	concentration in river at PM-13	C_r13 =	0.006	(mg/L)	0.002	(mg/L)	0.002	(mg/L)

Case Parameter	Year 9 Fluoride			
	concentration of surface water into PM-12	C s12 =	0.2	(mg/L)
ata	concentration of surface water into PM-13	 C_s13 =	0.2	(mg/L)
sb r	concentration in Babbitt WWTP discharge	C_sBab =	0.2	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.125	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	6.91E-01	(mg/L)
Icer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	2.85E+00	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	1.55	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.385	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.385	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	71.37	(mg/s)	810	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	9.37	(mg/s)	9.37	(mg/s)	9.37	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	1.87	(mg/s)	1.87	(mg/s)	1.87	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	348.26	(mg/s)	3,976	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	45.87	(mg/s)	45.87	(mg/s)	45.87	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.92	(mg/s)	7.04	(mg/s)	7.04	(mg/s)
ert e ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	102.84	(mg/s)	102.84	(mg/s)	102.84	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	1.07	(mg/s)	1.07	(mg/s)	1.07	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	87.50	(mg/s)	87.50	(mg/s)	87.50	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance sch node	mass flux in river at PM-12	M_r12 =	11.24	(mg/s)	82.61	(mg/s)	821.52	(mg/s)
Mas: at ea	mass flux in river at PM-13	M_r13 =	249.44	(mg/s)	675.19	(mg/s)	5,042.16	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
vert mass to centration	concentration in river at PM-12	C_r12 =	0.334	(mg/L)	0.212	(mg/L)	 0.201	(mg/L)
Con Con con	concentration in river at PM-13	C_r13 =	0.682	(mg/L)	0.269	(mg/L)	0.207	(mg/L)

Case	Year 9			
Parameter	Iron			
-		1		
	concentration of surface water into PM-12	C_s12 =	2.9	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	2.9	(mg/L)
βρι	concentration in Babbitt WWTP discharge	C_sBab =	2.9	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.037761905	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	5.91E-02	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	4.00E-01	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	4.594	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.035	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.035	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,034.90	(mg/s)	11,749	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.85	(mg/s)	0.85	(mg/s)	0.85	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	27.08	(mg/s)	27.08	(mg/s)	27.08	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	5,049.77	(mg/s)	57,657	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	4.17	(mg/s)	4.17	(mg/s)	4.17	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.28	(mg/s)	2.13	(mg/s)	2.13	(mg/s)
ert e ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	8.80	(mg/s)	8.80	(mg/s)	8.80	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	259.35	(mg/s)	259.35	(mg/s)	259.35	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	27.93	(mg/s)	1,062.84	(mg/s)	11,777.08	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	300.68	(mg/s)	6,387.20	(mg/s)	69,708.30	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
vert mass to centration	concentration in river at PM-12	C_r12 =	0.829	(mg/L)	2.721	(mg/L)	2.883	(mg/L)
Con flux conc	concentration in river at PM-13	C_r13 =	0.822	(mg/L)	2.542	(mg/L)	2.863	(mg/L)

Case Parameter	Year 9 Hardness			
		3		
	concentration of surface water into PM-12	C_s12 =	70	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	70	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	70	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	942.7142857	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	2.56E+02	(mg/L)
ICEI	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	8.61E+03	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	436.6	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	87.5	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	87.5	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	24,980.41	(mg/s)	283,600	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	2,129.58	(mg/s)	2,129.58	(mg/s)	2,129.58	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	653.73	(mg/s)	653.73	(mg/s)	653.73	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	121,890.93	(mg/s)	1,391,712	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	10,425.01	(mg/s)	10,425.01	(mg/s)	10,425.01	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	6,936.49	(mg/s)	53,090.84	(mg/s)	53,090.84	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	38,042.63	(mg/s)	38,042.63	(mg/s)	38,042.63	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	3,233.31	(mg/s)	3,233.31	(mg/s)	3,233.31	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	24,647.41	(mg/s)	24,647.41	(mg/s)	24,647.41	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	2,783.31	(mg/s)	 27,763.72	(mg/s)	286,383.27	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	86,068.16	(mg/s)	279,093.85	(mg/s)	1,807,534.40	(mg/s)
			LOW FIO	vv	Average	FIOW	підії гі	UW
nvert mass < to ncentration	concentration in river at PM-12	C_r12 =	82.647	(mg/L)	71.091	(mg/L)	70.104	(mg/L)
Co Co Co Co	concentration in river at PM-13	C_r13 =	235.281	(mg/L)	111.063	(mg/L)	74.238	(mg/L)

Case Parameter	Year 9 Potassium			
		-	n	
	concentration of surface water into PM-12	C_s12 =	0.60	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.60	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.60	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	53.80	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	7.04	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.80	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	7.77	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	1.60	(mg/L)
dul	concentration of ground water into PM-13	C_g13 =	1.60	(mg/L)

			Low Flo	w	Average	Flow	High Fl	low
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	214.12	(mg/s)	2,431	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	38.94	(mg/s)	38.94	(mg/s)	38.94	(mg/s)
tio	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.68	(mg/s)	5.60	(mg/s)	0.68	(mg/s)
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1,044.78	(mg/s)	11,929	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	190.63	(mg/s)	190.63	(mg/s)	190.63	(mg/s)
u su l	mass flux in Babbitt WWTP discharge	M_sBab =	5.60	(mg/s)	3,029.85	(mg/s)	5.60	(mg/s)
ert o ss f	mass flux of Area 5 Pit NW discharge	M_spit =	395.86	(mg/s)	1,048.24	(mg/s)	3,029.85	(mg/s)
ma	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1,048.24	(mg/s)	0.68	(mg/s)	1,048.24	(mg/s)
ဒ္ ပိ	mass flux in seepage from cell 2W	M_s2w =	438.64	(mg/s)	438.64	(mg/s)	438.64	(mg/s)
			Low Flo	w	Average	Flow	High F	ow
Mass balance at each node	mass flux in river at PM-12	M_r12 =	39.62	(mg/s)	6 011 48	(mg/s)	2,470.47	(mg/s)
			Low Flo	w	Average	Flow	High F	low
Convert mass flux to concentration	concentration in river at PM-12	C_r12 =	1.176	(mg/L)	0.662	(mg/L)	0.605	(mg/l)

Case	Year 9			
Parameter	Magnesium			
	concentration of surface water into PM-12	C_s12 =	5.90	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	5.90	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	5.90	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	271.00	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	16.28	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	213.00	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	69.97	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	10.65	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	10.65	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,105.49	(mg/s)	23,903	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	259.20	(mg/s)	259.20	(mg/s)	259.20	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	55.10	(mg/s)	55.10	(mg/s)	55.10	(mg/s)
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,273.66	(mg/s)	117,301	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1,268.87	(mg/s)	1,268.87	(mg/s)	1,268.87	(mg/s)
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	1,994.02	(mg/s)	15,261.91	(mg/s)	15,261.91	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	2,422.93	(mg/s)	2,422.93	(mg/s)	2,422.93	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	79.99	(mg/s)	79.99	(mg/s)	79.99	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	3,950.02	(mg/s)	3,950.02	(mg/s)	3,950.02	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
oalance n node	mass flux in river at PM-12	M_r12 =	314.30	(mg/s)	2,419.79	(mg/s)	24,217.73	(mg/s)
Mass k at each	mass flux in river at PM-13	M_r13 =	10,030.13	(mg/s)	35,677.17	(mg/s)	164,502.88	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	9.333	(mg/L)	6.196	(mg/L)	5.928	(mg/l)
Conve flux to concel	concentration in river at PM-13	C_r13 =	27.419	(mg/L)	14.197	(mg/L)	6.756	(mg/l)

Case	Year 9			
Parameter	Manganese			
			-	
	concentration of surface water into PM-12	C_s12 =	0.30	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.30	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	0.30	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.49	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.29	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.00	(mg/L)
LO LO	concentration in tailings basin cell 2W	C_s2w =	1.18	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.19	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.19	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	107.06	(mg/s)	1,215	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	4.58	(mg/s)	4.58	(mg/s)	4.58	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	2.80	(mg/s)	2.80	(mg/s)	2.80	(mg/s)
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	522.39	(mg/s)	5,964	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	22.40	(mg/s)	22.40	(mg/s)	22.40	(mg/s)
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	3.57	(mg/s)	27.31	(mg/s)	27.31	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	42.96	(mg/s)	42.96	(mg/s)	42.96	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	66.78	(mg/s)	66.78	(mg/s)	66.78	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
llance node	mass flux in river at PM-12	M_r12 =	7.38	(mg/s)	114.44	(mg/s)	1,222.81	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	143.09	(mg/s)	796.28	(mg/s)	7,346.74	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
nvert mass k to ncentration	concentration in river at PM-12	C_r12 =	0.219	(mg/L)	0.293	(mg/L)	0.299	(mg/l)
c thus	concentration in river at PM-13	C_r13 =	0.391	(mg/L)	0.317	(mg/L)	0.302	(mg/l)

Case	Year 9			
Parameter	Sodium			
		-		
	concentration of surface water into PM-12	C_s12 =	6.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	6.00	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	6.00	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	119.50	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	22.11	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	255.00	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	44.31	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	4.90	(mg/L)
별	concentration of ground water into PM-13	C_g13 =	4.90	(mg/L)

			Low Flo	w	Average I	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,141.18	(mg/s)	24,309	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	119.26	(mg/s)	119.26	(mg/s)	119.26	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	56.03	(mg/s)	56.03	(mg/s)	56.03	(mg/s)
htra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,447.79	(mg/s)	119,290	(mg/s)
cer	mass flux of ground water into PM-13	M_g13 =	583.80	(mg/s)	583.80	(mg/s)	583.80	(mg/s)
Lo n	mass flux of Area 5 Pit NW discharge	M_spit =	879.28	(mg/s)	6,729.88	(mg/s)	6,729.88	(mg/s)
ert e SS †	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	3,289.71	(mg/s)	3,289.71	(mg/s)	3,289.71	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	95.76	(mg/s)	95.76	(mg/s)	95.76	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	2,501.44	(mg/s)	2,501.44	(mg/s)	2,501.44	(mg/s)
			Low Flo	w	Average I	Flow	High Fl	ow
iss balance each node	mass flux in river at PM-12	M_r12 =	175.29	(mg/s)	 2,316.47	(mg/s)	24,483.86	(mg/s)
Ma at	mass flux in river at PM-13	M_r13 =	7,525.28	(mg/s)	25,964.85	(mg/s)	156,974.04	(mg/s)
			Low Flo	w	Average I	Flow	High Fl	ow
nvert mass k to 1centration	concentration in river at PM-12	C_r12 =	5.205	(mg/L)	 5.931	(mg/L)	5.993	(mg/l)
cor tin	concentration in river at PM-13	C_r13 =	20.572	(mg/L)	10.332	(mg/L)	6.447	(mg/l)

Case Parameter	Year 9 Nickel			
	concentration of surface water into PM-12	C_s12 =	0.0012	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0012	(mg/L)
a b c	concentration in Babbitt WWTP discharge	C_sBab =	0.0012	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0052	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.041162911	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.098	(mg/L)
	concentration in tailings basin cell 2W	C_s2w =	0.00688	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.007	(mg/L)
<u>u</u>	concentration of ground water into PM-13	C_g13 =	0.007	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.43	(mg/s)	5	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.17	(mg/s)	0.17	(mg/s)	0.17	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.09	(mg/s)	24	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.83	(mg/s)	0.83	(mg/s)	0.83	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.04	(mg/s)	0.29	(mg/s)	0.29	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	6.13	(mg/s)	6.13	(mg/s)	6.13	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.39	(mg/s)	0.39	(mg/s)	0.39	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	0.18	(mg/s)	0.61	(mg/s)	5.04	(mg/s)
Mass at ea	mass flux in river at PM-13	M_r13 =	7.60	(mg/s)	10.38	(mg/s)	36.58	(mg/s)
		1	LOW FIO	w	Average	FIOW	підп гі	ow
ert mass o entration	concentration in river at PM-12	C_r12 =	0.005	(mg/L)	0.002	(mg/L)	0.001	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.021	(mg/L)	0.004	(mg/L)	0.002	(mg/L)

Case	Year 9			
Parameter	Lead			
-		-		-
	concentration of surface water into PM-12	C_s12 =	0.00015	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00015	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.00015	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0003	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001749429	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0005	(mg/L)
CO CO	concentration in tailings basin cell 2W	C_s2w =	0.0012	(mg/L)
t	concentration of ground water into PM-12	C_g12 =	0.0012	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.0012	(mg/L)

			Low Flo	w	Average	Flow	High Flo	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.05	(mg/s)	1	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.26	(mg/s)	3	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.14	(mg/s)	0.14	(mg/s)	0.14	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.02	(mg/s)	0.02	(mg/s)
ert o ss 1	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.26	(mg/s)	0.26	(mg/s)	0.26	(mg/s)
ma ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
			Low Flo	w	Average	Flow	High Flo	ow
s balance ch node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.08	(mg/s)	0.64	(mg/s)
Mass at ea	mass flux in river at PM-13	M_r13 =	0.50	(mg/s)	0.83	(mg/s)	4.11	(mg/s)
		_	Low Flo	W	 Average I	Flow	High Flo	ow
wert mass to centration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Con Con Con	concentration in river at PM-13	C_r13 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Year 9			
Parameter	Antimony			
	concentration of surface water into PM-12	C_s12 =	4.00E-05	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00E-05	(mg/L)
р с	concentration in Babbitt WWTP discharge	C_sBab =	4.00E-05	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	2.50E-04	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	8.83E-03	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	2.50E-04	(mg/L)
ont	concentration of ground water into PM-12	C_g12 =	1.50E-03	(mg/L)
du du	concentration of ground water into PM-13	C_g13 =	1.50E-03	(mg/L)

			Low Flo	w		Average I	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)		0.01	(mg/s)	0	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.04	(mg/s)		0.04	(mg/s)	0.04	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)		0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)		0.07	(mg/s)	1	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.18	(mg/s)		0.18	(mg/s)	0.18	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)		0.01	(mg/s)	0.01	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.31	(mg/s)		1.31	(mg/s)	1.31	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)		0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)		0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average Flow		Flow	High Fl	ow
alance	mass flux in river at PM-12	M_r12 =	0.04	(mg/s)		0.05	(mg/s)	0.20	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	1.55	(mg/s)		1.64	(mg/s)	2.52	(mg/s)
			Low Flo	w		Average I	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)		0.000	(mg/L)	0.000	(mg/L)
Convel flux to concer	concentration in river at PM-13	C_r13 =	0.004	(mg/L)		0.001	(mg/L)	0.000	(mg/L)

Case	Year 9			
Parameter	Selenium			
	concentration of surface water into PM-12	C_s12 =	0.0003	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0003	(mg/L)
sh r	concentration in Babbitt WWTP discharge	C_sBab =	0.0003	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0016	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001403839	(mg/L)
cei	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.054	(mg/L)
Lo L	concentration in tailings basin cell 2W	C_s2w =	0.00109	(mg/L)
t	concentration of ground water into PM-12	C_g12 =	0.00295	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.00295	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.11	(mg/s)	1	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ntra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.52	(mg/s)	6	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.35	(mg/s)	0.35	(mg/s)	0.35	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
ert e ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.21	(mg/s)	0.21	(mg/s)	0.21	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.02	(mg/s)	0.02	(mg/s)	0.02	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
			Low Flow		Average	Flow	High Fl	ow
ss balance sach node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	0.18	(mg/s)	1.29	(mg/s)
Ma at e	mass flux in river at PM-13	M_r13 =	0.73	(mg/s)	1.44	(mg/s)	7.99	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
onvert mass ux to oncentration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	 0.000	(mg/L)	0.000	(mg/L)
ŬĘŏ	concentration in river at PM-13	C_r13 =	0.002	(mg/L)	0.001	(mg/L)	0.000	(mg/L)

Case Parameter	Year 9 Sulfate			
	concentration of surface water into PM-12	C_s12 =	4.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00	(mg/L)
sb r	concentration in Babbitt WWTP discharge	C_sBab =	4.00	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	1046.27	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	166.62	(mg/L)
Icer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	7347.00	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	152.40	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	8.50	(mg/L)
du du	concentration of ground water into PM-13	C_g13 =	8.50	(mg/L)

			Low Flo	w	Average	Flow		High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,427.45	(mg/s)		16,206	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	206.87	(mg/s)	206.87	(mg/s)		206.87	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	37.36	(mg/s)	37.36	(mg/s)		37.36	(mg/s)
itrat	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	6,965.20	(mg/s)		79,526	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1,012.72	(mg/s)	1,012.72	(mg/s)		1,012.72	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	7,698.43	(mg/s)	58,922.60	(mg/s)		58,922.60	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	24,792.97	(mg/s)	24,792.97	(mg/s)		24,792.97	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	2,759.02	(mg/s)	2,759.02	(mg/s)		2,759.02	(mg/s)
ခ် ပိ	mass flux in seepage from cell 2W	M_s2w =	8,603.45	(mg/s)	8,603.45	(mg/s)		8,603.45	(mg/s)
			Low Flow		Average	Flow	High F		ow
/ass balance tt each node	mass flux in river at PM-12	M_r12 =	244.23	(mg/s)	1,671.68	(mg/s)		16,449.94	(mg/s)
< ¢	Inass hux in river at PM-13	IVI_113 =	45,110.61	(mg/s) w	104,727.62	(mg/s)		192,067.06	(mg/s) ow
Convert mass lux to oncentration	concentration in river at PM-12	C_r12 =	7.252	(mg/L)	4.280	(mg/L)		4.027	(mg/l)

Case Parameter	Year 9 Thallium			
		0	0.0000	(
	concentration of surface water into PM-12	C_\$12 =	0.0002	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0002	(mg/L)
pu	concentration in Babbitt WWTP discharge	C_sBab =	0.0002	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0006	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000967503	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0002	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.0002	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.000004	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.000004	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.07	(mg/s)	1	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.35	(mg/s)	4	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.14	(mg/s)	0.14	(mg/s)	0.14	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
<u>۽</u> ک	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ach node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.07	(mg/s)	0.81	(mg/s)
Mas at ea	mass flux in river at PM-13	M r13 =	0.16	(ma/s)	0.61	(ma/s)	4 98	(ma/s)
			Low Flo	w	Average	Flow	High Fl	ow
Convert mass flux to concentration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Year 9 Zinc			
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.003	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.039738069	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.01	(mg/L)
COL	concentration in tailings basin cell 2W	C_s2w =	0.01435	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.0115	(mg/L)
<u> </u>	concentration of ground water into PM-13	C_g13 =	0.0115	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5.71	(mg/s)	65	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.28	(mg/s)	0.28	(mg/s)	0.28	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.86	(mg/s)	318	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1.37	(mg/s)	1.37	(mg/s)	1.37	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.02	(mg/s)	0.17	(mg/s)	0.17	(mg/s)
ert e ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	5.91	(mg/s)	5.91	(mg/s)	5.91	(mg/s)
ma en	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.81	(mg/s)	0.81	(mg/s)	0.81	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
fass balance t each node	mass flux in river at PM-12	M_r12 =	0.43	(mg/s)	6.14	(mg/s)	65.25	(mg/s)
2 0	mass flux in river at PM-13	M_r13 =	8.55	(mg/s)	42.27	(mg/s)	391.62	(mg/s)
onvert mass ux to oncentration	concentration in river at PM-12	C_r12 =	0.013	(mg/L)	0.016	(mg/L)	0.016	(mg/L)
o∉ ö	concentration in river at PM-13	C_r13 =	0.023	(mg/L)	0.017	(mg/L)	0.016	(mg/L)
Appendix F.5 Embarrass River Proposed Action Year 15

FLOWS

Case	Year 15				
Flows	Low Flow Conditions (no surface runoff)				Node
l flow in arrass River	flow in river at PM-12 flow in river at PM-13	Q_r12_L = Q_r13_L =	1.19 13.32	(cfs) (cfs)	PM-12 PM-13
Tota Emb	flow check	Q_ck_L =	13.32	(cfs)	_
	surface water flow into PM-12	Q_s12_L =	0.00	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_L =	0.00	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_L =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_L =	0.26	(cfs)	PM-13
Ita	seepage from Tailings Basin Cells 1E and 2E	Q_fs_L =	5.65	(cfs)	PM-13
v da	hydrometallurgical residue cells liner leakage	Q_rrs_L =	0.02	(cfs)	PM-13
flov	seepage from cell 2W	Q_s2w_L =	1.99	(cfs)	PM-13
out	ground water flow into PM-12	Q_g12_L =	0.86	(cfs)	PM-12
Ing	ground water flow into PM-13	Q_g13_L =	4.21	(cfs)	PM-13

Case	Year 15				
Flow	Average Flow Conditions (mean annual)				
River	flow in river at PM-12	Q_r12_M =	13.80	(cfs)	PM-12
flow in arrass F	flow in river at PM-13	Q_r13_M =	89.19	(cfs)	PM-13
Total Embi	flow check	Q_ck_M =	89.19	(cfs)	4
	surface water flow into PM-12	Q_s12_M =	12.61	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_M =	61.53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_M =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_M =	1.99	(cfs)	PM-13
ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_M =	5.65	(cfs)	PM-13
, da	hydrometallurgical residue cells liner leakage	Q_rrs_M =	0.02	(cfs)	PM-13
Nol 1	seepage from cell 2W	Q_s2w_M =	1.99	(cfs)	PM-13
ut f	ground water flow into PM-12	Q_g12_M =	0.86	(cfs)	PM-12
au	ground water flow into PM-13	Q_g13_M =	4.21	(cfs)	PM-13

Case	Year 15				
Flow	High Flow Conditions (avg. annual 1-day max flow)				_
n River	flow in river at PM-12	Q_r12_H =	144.35	(cfs)	PM-12
flow i rrass	flow in river at PM-13	Q_r13_H =	860.74	(cfs)	PM-13
Total Emba	flow check	Q_ck_H =	860.74	(cfs)	
	surface water flow into PM-12	Q_s12_H =	143.16	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_H =	702.53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_H =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_H =	1.99	(cfs)	PM-13
ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_H =	5.65	(cfs)	PM-13
/ da	hydrometallurgical residue cells liner leakage	Q_rrs_H =	0.02	(cfs)	PM-13
lov	seepage from cell 2W	Q_s2w_H =	1.99	(cfs)	PM-13
rt j	ground water flow into PM-12	Q_g12_H =	0.86	(cfs)	PM-12
du	ground water flow into PM-13	Q g13 H =	4.21	(cfs)	PM-13

Case Parameter	Year 15 Silver			
	concentration of surface water into PM-12	C_s12 =	0.00011	(mg/L)
n data	concentration of surface water into PM-13	C_s13 =	0.00011	(mg/L)
	concentration in Babbitt WWTP discharge	C_sBab =	0.00011	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.00015	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.00122	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.000125	(mg/L)
L L C	concentration in tailings basin cell 2W	C_s2w =	0.000100	(mg/L)
t	concentration of ground water into PM-12	C_g12 =	0.00008	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.000000	(mg/L)

			Low Flo	w	Average I	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.04	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.19	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	-	(mg/s)	-	(mg/s)	-	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o Ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.19	(mg/s)	0.19	(mg/s)	0.19	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័ ខ	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.04	(mg/s)	0.45	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	0.20	(mg/s)	0.44	(mg/s)	2.84	(mg/s)
			Low Flo	w	Average I	Flow	High Fl	ow
nvert mass k to 1centration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Cor Co	concentration in river at PM-13	C_r13 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Year 15			
Parameter	Aluminum			
-		-		
	concentration of surface water into PM-12	C_s12 =	0.12	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.12	(mg/L)
ů p c	concentration in Babbitt WWTP discharge	C_sBab =	0.12	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.01325	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	4.43E-01	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.80E-01	(mg/L)
Co Co	concentration in tailings basin cell 2W	C_s2w =	1.5788	(mg/L)
t	concentration of ground water into PM-12	C_g12 =	0.025	(mg/L)
du du	concentration of ground water into PM-13	C_g13 =	0	(mg/L)

			Low Flo	w	Average	Flow	High	Flow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	42.82	(mg/s)	486	δ (mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.61	(mg/s)	0.61	(mg/s)	0.6	l (mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	1.12	(mg/s)	1.12	(mg/s)	1.1:	2 (mg/s)
Itrai	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	208.96	(mg/s)	2,38	δ (mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	-	(mg/s)	-	(mg/s)	-	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.10	(mg/s)	0.75	(mg/s)	0.7	ō (mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	70.86	(mg/s)	70.86	(mg/s)	70.86	δ (mg/s)
mag	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.09	(mg/s)	0.09	(mg/s)	0.09) (mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	89.13	(mg/s)	89.13	(mg/s)	89.13	3 (mg/s)
			Low Flo	w	Average	Flow	High	Flow
alance node	mass flux in river at PM-12	M_r12 =	1.73	(mg/s)	44.55	(mg/s)	487.9) (mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	161.90	(mg/s)	414.33	(mg/s)	3,034.5	l (mg/s)
			Low Flo	w	Average	Flow	High	Flow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.051	(mg/L)	0.114	(mg/L)	0.115	9 (mg/L)
Conve flux to concei	concentration in river at PM-13	C_r13 =	0.430	(mg/L)	0.164	(mg/L)	0.12	5 (mg/L)

Case	Year 15			
Parameter	Arsenic			
		-	-	
	concentration of surface water into PM-12	C_s12 =	0.00075	(mg/L)
ta	concentration of surface water into PM-13	C_s13 =	0.00075	(mg/L)
, pr	concentration in Babbitt WWTP discharge	C_sBab =	0.00075	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.001325	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.015514819	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	0.00291	(mg/L)
it	concentration of ground water into PM-12	C_g12 =	0.00273	(mg/L)
ln p	concentration of ground water into PM-13	C_g13 =	0	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.27	(mg/s)	3	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.31	(mg/s)	15	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	-	(mg/s)	-	(mg/s)	-	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
ert e ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	2.48	(mg/s)	2.48	(mg/s)	2.48	(mg/s)
mag	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	0.16	(mg/s)	0.16	(mg/s)	0.16	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance n node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	0.34	(mg/s)	3.11	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	2.73	(mg/s)	4.37	(mg/s)	20.74	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	0.001	(mg/L)	0.001	(mg/L)
Conve flux to concer	concentration in river at PM-13	C_r13 =	0.007	(mg/L)	0.002	(mg/L)	0.001	(mg/L)

Case	Year 15			
Parameter	Boron			
		-		
	concentration of surface water into PM-12	C_s12 =	0.027	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.027	(mg/L)
р с р	concentration in Babbitt WWTP discharge	C_sBab =	0.027	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.1315	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.173169588	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.11	(mg/L)
Con	concentration in tailings basin cell 2W	C_s2w =	0.33	(mg/L)
t .	concentration of ground water into PM-12	C_g12 =	0.0212	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	9.64	(mg/s)	109	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.52	(mg/s)	0.52	(mg/s)	0.52	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.25	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
itrat	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	47.02	(mg/s)	537	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	-	(mg/s)	-	(mg/s)	-	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.97	(mg/s)	7.41	(mg/s)	7.41	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	27.67	(mg/s)	27.67	(mg/s)	27.67	(mg/s)
mag	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.05	(mg/s)	0.05	(mg/s)	0.05	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	18.63	(mg/s)	18.63	(mg/s)	18.63	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance h node	mass flux in river at PM-12	M_r12 =	0.77	(mg/s)	10.40	(mg/s)	110.16	(mg/s)
Mass k at each	mass flux in river at PM-13	M_r13 =	48.09	(mg/s)	111.18	(mg/s)	700.72	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.023	(mg/L)	0.027	(mg/L)	0.027	(mg/L)
Conve flux to concer	concentration in river at PM-13	C_r13 =	0.128	(mg/L)	0.044	(mg/L)	0.029	(mg/L)

Case	Year 15			
Parameter	Barium			
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0044	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	6.35E-02	(mg/L)
ICel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	5.00E-03	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.09298	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	0.0681	(mg/L)
d L	concentration of ground water into PM-13	C_g13 =	0	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5.71	(mg/s)	65	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	1.66	(mg/s)	1.66	(mg/s)	1.66	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.86	(mg/s)	318	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	-	(mg/s)	-	(mg/s)	-	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
ert e ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	10.14	(mg/s)	10.14	(mg/s)	10.14	(mg/s)
mag	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	5.25	(mg/s)	5.25	(mg/s)	5.25	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	1.81	(mg/s)	7.52	(mg/s)	66.63	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	17.23	(mg/s)	51.02	(mg/s)	400.37	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.054	(mg/L)	0.019	(mg/L)	0.016	(mg/L)
Conver flux to concen	concentration in river at PM-13	C_r13 =	0.046	(mg/L)	0.020	(mg/L)	0.016	(mg/L)

Case Parameter	Year 15 Beryllium			
i alameter	Berymuni	1		
	concentration of surface water into PM-12	C_s12 =	0.0001	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0001	(mg/L)
ů p c	concentration in Babbitt WWTP discharge	C_sBab =	0.0001	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001410903	(mg/L)
Icel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	0.00075	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.000023	(mg/L)
du du	concentration of ground water into PM-13	C_g13 =	0	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.04	(mg/s)	0	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.17	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	-	(mg/s)	-	(mg/s)	-	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert e ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.23	(mg/s)	0.23	(mg/s)	0.23	(mg/s)
mag	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	-	(mg/s)	-	(mg/s)	-	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance h node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.04	(mg/s)	0.41	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	0.27	(mg/s)	0.48	(mg/s)	2.67	(mg/s)
			LOW FIO	w	Average	Flow	 High Fi	ow
ert mass o entration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Year 15			
Parameter	Calcium			
	concentration of surface water into PM-12	C_s12 =	15	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	15	(mg/L)
ip u	concentration in Babbitt WWTP discharge	C_sBab =	15	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	95.35	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	95.38057957	(mg/L)
ICel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	416	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	59.78	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	19	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5,352.95	(mg/s)	60,771	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	462.42	(mg/s)	462.42	(mg/s)	462.42	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	140.09	(mg/s)	140.09	(mg/s)	140.09	(mg/s)
Itrai	mass flux of surface water into PM-13	M_s13 =	•	(mg/s)	26,119.49	(mg/s)	298,224	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	-	(mg/s)	-	(mg/s)	-	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	701.59	(mg/s)	5,369.83	(mg/s)	5,369.83	(mg/s)
ert e ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	15,242.69	(mg/s)	15,242.69	(mg/s)	15,242.69	(mg/s)
mag	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	205.46	(mg/s)	205.46	(mg/s)	205.46	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	3,374.76	(mg/s)	3,374.76	(mg/s)	29.52	(mg/s)
			Low Flow		Average Flow		High Fl	ow
s balance ch node	mass flux in river at PM-12	M_r12 =	602.51	(mg/s)	5,955.45	(mg/s)	61,373.93	(mg/s)
Mass at ea	mass flux in river at PM-13	M_r13 =	20,127.01	(mg/s)	56,267.68	(mg/s)	380,445.41	(mg/s)
			LOW FIO	w	Average	FIOW	High Fi	ow
nvert mass k to ncentration	concentration in river at PM-12	C_r12 =	17.891	(mg/L)	15.249	(mg/l)	15.024	(mg/l)
co Lin	concentration in river at PM-13	C_r13 =	53.397	(mg/L)	22.293	(mg/l)	15.618	(mg/l)

Case	Year 15			
Parameter	Cadmium			
		-		
	concentration of surface water into PM-12	C_s12 =	0.00008	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00008	(mg/L)
βρι	concentration in Babbitt WWTP discharge	C_sBab =	0.00008	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000705708	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0004	(mg/L)
Lo L	concentration in tailings basin cell 2W	C_s2w =	0.000188	(mg/L)
ort .	concentration of ground water into PM-12	C_g12 =	0.0003	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.03	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
Itrai	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.14	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	-	(mg/s)	-	(mg/s)	-	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert e ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.11	(mg/s)	0.11	(mg/s)	0.11	(mg/s)
mag	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
oalance 1 node	mass flux in river at PM-12	M_r12 =	0.01	(mg/s)	0.04	(mg/s)	0.33	(mg/s)
Mass k at each	mass flux in river at PM-13	M_r13 =	0.13	(mg/s)	0.31	(mg/s)	2.05	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conve flux to concei	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Year 15			
Parameter	Chloride			
	concentration of surface water into PM-12	C_s12 =	6.5	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	6.5	(mg/L)
р р	concentration in Babbitt WWTP discharge	C_sBab =	6.5	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	5.95	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	7.60E+00	(mg/L)
Icer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.76E+03	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	21.54	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	1.8	(mg/L)
브	concentration of ground water into PM-13	C_g13 =	0	(mg/L)

			Low Flo	w	Average	Flow	High Flow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,319.61	(mg/s)	26,334 (mg/s)
_	mass flux of ground water into PM-12	M_g12 =	43.81	(mg/s)	43.81	(mg/s)	43.81 (mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	60.70	(mg/s)	60.70	(mg/s)	60.70 (mg/s)
Itrai	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	11,318.44	(mg/s)	129,230 (mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	-	(mg/s)	-	(mg/s)	- (mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	43.78	(mg/s)	335.09	(mg/s)	335.09 (mg/s)
ert e ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1,215.25	(mg/s)	1,215.25	(mg/s)	1,215.25 (mg/s)
mag	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	869.24	(mg/s)	869.24	(mg/s)	869.24 (mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	1,216.00	(mg/s)	1,216.00	(mg/s)	1,216.00 (mg/s)
			Low Flow		Average	Flow	High Flow
oalance node	mass flux in river at PM-12	M_r12 =	104.51	(mg/s)	2,424.12	(mg/s)	26,438.79 (mg/s)
Mass k at each	mass flux in river at PM-13	M_r13 =	3,448.78	(mg/s)	17,378.14	(mg/s)	159,304.77 (mg/s)
		-	Low Flo	W	Average	Flow	High Flow
ert mass o intration	concentration in river at PM-12	C_r12 =	3.103	(mg/L)	6.207	(mg/L)	6.472 (mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	9.150	(mg/L)	6.885	(mg/L)	6.540 (mg/L)

Case Parameter	Year 15 Cobalt			
		1		
	concentration of surface water into PM-12	C_s12 =	0.0006	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0006	(mg/L)
р с р с	concentration in Babbitt WWTP discharge	C_sBab =	0.0006	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.000555	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.008661931	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.005	(mg/L)
L L L L L L L L L L L L L L L L L L L	concentration in tailings basin cell 2W	C_s2w =	0.001556	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0011	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0	(mg/L)

			Low Flo	W	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.21	(mg/s)	2	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itrai	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.04	(mg/s)	12	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	-	(mg/s)	-	(mg/s)	-	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ssfo	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.38	(mg/s)	1.38	(mg/s)	1.38	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.09	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
			Low Flo	W	Average	Flow	High Fl	ow
balance h node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.25	(mg/s)	2.46	(mg/s)
Mass t at eacl	mass flux in river at PM-13	M_r13 =	1.51	(mg/s)	2.80	(mg/s)	15.90	(mg/s)
			Low Flo	W	Average	Flow	High Fl	ow
wert mass to centration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.001	(mg/L)	0.001	(mg/L)
Cor flux con	concentration in river at PM-13	C_r13 =	0.004	(mg/L)	0.001	(mg/L)	0.001	(mg/L)

Case	Year 15			
Parameter	Copper			
			-	
	concentration of surface water into PM-12	C_s12 =	0.0015	(mg/L)
n data	concentration of surface water into PM-13	C_s13 =	0.0015	(mg/L)
	concentration in Babbitt WWTP discharge	C_sBab =	0.0015	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.00345	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.020766721	(mg/L)
ICEI	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0015	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	0.004555	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.004	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0	(mg/L)

			Low Flo	w	Avera	e Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.5	4 (mg/s)	6	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.10	(mg/s)	0.1	0 (mg/s)	0.10	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.0	1 (mg/s)	0.01	(mg/s)
itrai	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.6	1 (mg/s)	30	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	-	(mg/s)	-	(mg/s)	-	(mg/s)
uo Xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.1	9 (mg/s)	0.19	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	3.32	(mg/s)	3.3	2 (mg/s)	3.32	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.0	0 (mg/s)	0.00	(mg/s)
<u>۽</u> دُ	mass flux in seepage from cell 2W	M_s2w =	0.26	(mg/s)	0.2	6 (mg/s)	0.26	(mg/s)
			Low Flo	w	Averag	e Flow	High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	0.11	(mg/s)	0.6	5 (mg/s)	6.19	(mg/s)
Mass at ear	mass flux in river at PM-13	M_r13 =	3.71	(mg/s)	7.0	3 (mg/s)	39.78	(mg/s)
			Low Flo	w	Avera	e Flow	High Fl	ow
vert mass to centration	concentration in river at PM-12	C_r12 =	0.003	(mg/L)	0.001	7 (mg/L)	0.002	(mg/L)
Con ⁷ flux conc	concentration in river at PM-13	C_r13 =	0.010	(mg/L)	0.002	8 (mg/L)	0.002	(mg/L)

Case	Year 15			
Parameter	Fluoride	l		
	concentration of surface water into PM-12	C_s12 =	0.2	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.2	(mg/L)
ab r	concentration in Babbitt WWTP discharge	C_sBab =	0.2	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.125	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	8.26E-01	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	2.85E+00	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	1.55	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.385	(mg/L)
du du	concentration of ground water into PM-13	C_g13 =	0	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	71.37	(mg/s)	810	(mg/s)
	mass flux of ground water into PM-12	M_g12 =	9.37	(mg/s)	9.37	(mg/s)	9.37	(mg/s)
ntratior	mass flux in Babbitt WWTP discharge	M_sBab =	1.87	(mg/s)	1.87	(mg/s)	1.87	(mg/s)
	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	348.26	(mg/s)	3,976	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	-	(mg/s)	-	(mg/s)	-	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.92	(mg/s)	7.04	(mg/s)	7.04	(mg/s)
ert o Ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	132.08	(mg/s)	132.08	(mg/s)	132.08	(mg/s)
mag	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	1.41	(mg/s)	1.41	(mg/s)	1.41	(mg/s)
ទ ប័ ខ	mass flux in seepage from cell 2W	M_s2w =	87.50	(mg/s)	87.50	(mg/s)	87.50	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	11.24	(mg/s)	82.61	(mg/s)	821.52	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	233.15	(mg/s)	658.90	(mg/s)	5,025.87	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ert mass b intration	concentration in river at PM-12	C_r12 =	0.334	(mg/L)	0.212	(mg/L)	0.201	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.619	(mg/L)	0.261	(mg/L)	0.206	(mg/L)

Case	Year 15			
Parameter	Iron			
-		-		
	concentration of surface water into PM-12	C_s12 =	2.9	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	2.9	(mg/L)
p u	concentration in Babbitt WWTP discharge	C_sBab =	2.9	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.037761905	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	9.82E-02	(mg/L)
Icer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	4.00E-01	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	4.594	(mg/L)
ort	concentration of ground water into PM-12		0.035	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0	(mg/L)

			Low Flo	W	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,034.90	(mg/s)	11,749	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.85	(mg/s)	0.85	(mg/s)	0.85	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	27.08	(mg/s)	27.08	(mg/s)	27.08	(mg/s)
itrai	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	5,049.77	(mg/s)	57,657	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	-	(mg/s)	-	(mg/s)	-	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.28	(mg/s)	2.13	(mg/s)	2.13	(mg/s)
ssfo	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	15.69	(mg/s)	15.69	(mg/s)	15.69	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.20	(mg/s)	0.20	(mg/s)	0.20	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	259.35	(mg/s)	259.35	(mg/s)	259.35	(mg/s)
			Low Flo	W	Average	Flow	High Fl	ow
alance n node	mass flux in river at PM-12	M_r12 =	27.93	(mg/s)	1,062.84	(mg/s)	11,777.08	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	303.44	(mg/s)	6,389.96	(mg/s)	69,711.07	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
vert mass to entration	concentration in river at PM-12	C_r12 =	0.829	(mg/L)	2.721	(mg/L)	2.883	(mg/L)
Com flux	concentration in river at PM-13	C_r13 =	0.805	(mg/L)	2.532	(mg/L)	2.862	(mg/L)

Case Parameter	Year 15 Hardness			
		1		
	concentration of surface water into PM-12	C_s12 =	70	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	70	(mg/L)
, p u	concentration in Babbitt WWTP discharge	C_sBab =	70	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	942.7142857	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	3.20E+02	(mg/L)
ICEI	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	8.61E+03	(mg/L)
cou	concentration in tailings basin cell 2W	C_s2w =	436.6	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	87.5	(mg/L)
ů du	concentration of ground water into PM-13	C_g13 =	0	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	24,980.41	(mg/s)	283,600	(mg/s)
	mass flux of ground water into PM-12	M_g12 =	2,129.58	(mg/s)	2,129.58	(mg/s)	2,129.58	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	653.73	(mg/s)	653.73	(mg/s)	653.73	(mg/s)
ntra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	121,890.93	(mg/s)	1,391,712	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	-	(mg/s)	-	(mg/s)	-	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	6,936.49	(mg/s)	53,090.84	(mg/s)	53,090.84	(mg/s)
ert o Ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	51,106.04	(mg/s)	51,106.04	(mg/s)	51,106.04	(mg/s)
mag	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	4,252.38	(mg/s)	4,252.38	(mg/s)	4,252.38	(mg/s)
ទ ប័ ខ	mass flux in seepage from cell 2W	M_s2w =	24,647.41	(mg/s)	24,647.41	(mg/s)	24,647.41	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance node	mass flux in river at PM-12	M_r12 =	2,783.31	(mg/s)	27,763.72	(mg/s)	286,383.27	(mg/s)
Mass k at each	mass flux in river at PM-13	M_r13 =	89,725.62	(mg/s)	282,751.31	(mg/s)	1,811,191.86	(mg/s)
		-	Low Flo	W	 Average	Flow	High Fl	ow
nvert mass x to ncentration	concentration in river at PM-12	C_r12 =	82.647	(mg/L)	71.091	(mg/L)	70.104	(mg/L)
CO CO	concentration in river at PM-13	C_r13 =	238.041	(mg/L)	112.023	(mg/L)	74.354	(mg/L)

Case Parameter	Year 15 Potassium			
i arameter	i otassium	1		
	concentration of surface water into PM-12	C_s12 =	0.60	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.60	(mg/L)
р с р с	concentration in Babbitt WWTP discharge	C_sBab =	0.60	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	53.80	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	14.58	(mg/L)
cei	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.80	(mg/L)
Lo L	concentration in tailings basin cell 2W	C_s2w =	7.77	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	1.60	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.00	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	214.12	(mg/s)	2,431	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	38.94	(mg/s)	38.94	(mg/s)	38.94	(mg/s)
tion	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.89	(mg/s)	0.89	(mg/s)	0.89	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1,044.78	(mg/s)	11,929	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	-	(mg/s)	-	(mg/s)	-	(mg/s)
u Xn	mass flux in Babbitt WWTP discharge	M_sBab =	5.60	(mg/s)	5.60	(mg/s)	5.60	(mg/s)
ssf	mass flux of Area 5 Pit NW discharge	M_spit =	395.86	(mg/s)	3,029.85	(mg/s)	3,029.85	(mg/s)
n ve ma:	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	2,330.24	(mg/s)	2,330.24	(mg/s)	2,330.24	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	438.64	(mg/s)	438.64	(mg/s)	438.64	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	39.83	(mg/s)	253.95	(mg/s)	2,470.69	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	3,210.18	(mg/s)	7,103.07	(mg/s)	20,203.99	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
/ert mass to :entration	concentration in river at PM-12	C_r12 =	1.183	(mg/L)	0.650	(mg/L)	0.605	(mg/l)
Conv flux 1 conc	concentration in river at PM-13	C_r13 =	8.517	(mg/L)	2.814	(mg/L)	0.829	(mg/l)

Case	Year 15			
Parameter	Magnesium			
		-	-	
	concentration of surface water into PM-12	C_s12 =	5.90	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	5.90	(mg/L)
p u	concentration in Babbitt WWTP discharge	C_sBab =	5.90	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	271.00	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	19.82	(mg/L)
ICel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	213.00	(mg/L)
- S	concentration in tailings basin cell 2W	C_s2w =	69.97	(mg/L)
ort .	concentration of ground water into PM-12	C_g12 =	10.65	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.00	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,105.49	(mg/s)	23,903	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	259.20	(mg/s)	259.20	(mg/s)	259.20	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	55.10	(mg/s)	55.10	(mg/s)	55.10	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,273.66	(mg/s)	117,301	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	-	(mg/s)	-	(mg/s)	-	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	1,994.02	(mg/s)	15,261.91	(mg/s)	15,261.91	(mg/s)
ert e ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	3,167.81	(mg/s)	3,167.81	(mg/s)	3,167.81	(mg/s)
mag	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	105.20	(mg/s)	105.20	(mg/s)	105.20	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	3,950.02	(mg/s)	3,950.02	(mg/s)	3,950.02	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance th node	mass flux in river at PM-12	M_r12 =	314.30	(mg/s)	2,419.79	(mg/s)	24,217.73	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	9,531.35	(mg/s)	35,178.39	(mg/s)	164,004.09	(mg/s)
			LOW FIO	w	Average	FIOW	High Fi	ow
ert mass ntration	concentration in river at PM-12	C_r12 =	9.333	(mg/L)	6.196	(mg/l)	5.928	(mg/l)
Conve flux to conce	concentration in river at PM-13	C_r13 =	25.287	(mg/L)	13.937	(mg/l)	6.733	(mg/l)

Case	Year 15			
Parameter	Manganese			
	concentration of surface water into PM-12	C_s12 =	0.30	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.30	(mg/L)
p u	concentration in Babbitt WWTP discharge	C_sBab =	0.30	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.49	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.43	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.00	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	1.18	(mg/L)
int	concentration of ground water into PM-12	C_g12 =	0.19	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.00	(mg/L)

			Low Flo	w	Average	Flow	Higl	n Flow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	107.06	(mg/s)	1,2	15 (mg/s)
_	mass flux of ground water into PM-12	M_g12 =	4.58	(mg/s)	4.58	(mg/s)	4.	58 (mg/s)
ntration	mass flux in Babbitt WWTP discharge	M_sBab =	2.80	(mg/s)	2.80	(mg/s)	2.	80 (mg/s)
	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	522.39	(mg/s)	5,9	64 (mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	-	(mg/s)	-	(mg/s)	-	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	3.57	(mg/s)	27.31	(mg/s)	27.	31 (mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	69.10	(mg/s)	69.10	(mg/s)	69.	10 (mg/s)
mag	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.	00 (mg/s)
<u>۽</u> ک	mass flux in seepage from cell 2W	M_s2w =	66.78	(mg/s)	66.78	(mg/s)	66.	78 (mg/s)
			Low Flo	w	Average	Flow	Higl	n Flow
balance ch node	mass flux in river at PM-12	M_r12 =	7.38	(mg/s)	114.44	(mg/s)	1,222.	81 (mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	146.83	(mg/s)	800.03	(mg/s)	7,350.	49 (mg/s)
			LOW FIO	W	Average	FIOW	Higi	1 FIOW
ert mass o entration	concentration in river at PM-12	C_r12 =	0.219	(mg/L)	0.293	(mg/l)	0.2	99 (mg/l)
Conv flux t	concentration in river at PM-13	C_r13 =	0.390	(mg/L)	0.317	(mg/l)	0.3	02 (mg/l)

Case	Year 15			
Parameter	Sodium			
	concentration of surface water into PM-12	C_s12 =	6.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	6.00	(mg/L)
р р	concentration in Babbitt WWTP discharge	C_sBab =	6.00	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	119.50	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	22.52	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	255.00	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	44.31	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	4.90	(mg/L)
du du	concentration of ground water into PM-13	C_g13 =	0.00	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,141.18	(mg/s)	24,309	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	119.26	(mg/s)	119.26	(mg/s)	119.26	(mg/s)
Itration	mass flux in Babbitt WWTP discharge	M_sBab =	56.03	(mg/s)	56.03	(mg/s)	56.03	(mg/s)
	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,447.79	(mg/s)	119,290	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	-	(mg/s)	-	(mg/s)	-	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	879.28	(mg/s)	6,729.88	(mg/s)	6,729.88	(mg/s)
ert o Ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	3,599.56	(mg/s)	3,599.56	(mg/s)	3,599.56	(mg/s)
mas	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	125.94	(mg/s)	125.94	(mg/s)	125.94	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	2,501.44	(mg/s)	2,501.44	(mg/s)	2,501.44	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance n node	mass flux in river at PM-12	M_r12 =	175.29	(mg/s)	2,316.47	(mg/s)	24,483.86	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	7,281.51	(mg/s)	25,721.08	(mg/s)	156,730.27	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass itration	concentration in river at PM-12	C_r12 =	5.205	(mg/L)	5.931	(mg/l)	5.993	(mg/l)
Conve flux to concer	concentration in river at PM-13	C_r13 =	19.318	(mg/L)	10.190	(mg/l)	6.434	(mg/l)

Case Parameter	Year 15 Nickel			
	concentration of surface water into PM-12	C_s12 =	0.0012	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0012	(mg/L)
p d	concentration in Babbitt WWTP discharge	C_sBab =	0.0012	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0052	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.153655831	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.098	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	0.00688	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.007	(mg/L)
d d	concentration of ground water into PM-13	C_g13 =	0	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.43	(mg/s)	5	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.17	(mg/s)	0.17	(mg/s)	0.17	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
central	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.09	(mg/s)	24	(mg/s)
	mass flux of ground water into PM-13	M_g13 =	-	(mg/s)	-	(mg/s)	-	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.04	(mg/s)	0.29	(mg/s)	0.29	(mg/s)
ert e ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	24.56	(mg/s)	24.56	(mg/s)	24.56	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.05	(mg/s)	0.05	(mg/s)	0.05	(mg/s)
ទ ប័ ខ	mass flux in seepage from cell 2W	M_s2w =	0.39	(mg/s)	0.39	(mg/s)	0.39	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.18	(mg/s)	0.61	(mg/s)	5.04	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	25.21	(mg/s)	27.98	(mg/s)	54.19	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.005	(mg/L)	0.002	(mg/L)	0.001	(mg/L)
Conver filux to concen	concentration in river at PM-13	C_r13 =	0.067	(mg/L)	0.011	(mg/L)	0.002	(mg/L)

Case	Year 15			
Parameter	Lead			
			-	
	concentration of surface water into PM-12	C_s12 =	0.00015	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00015	(mg/L)
β β	concentration in Babbitt WWTP discharge	C_sBab =	0.00015	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0003	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.002409879	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0005	(mg/L)
L L L L L L L L L L L L L L L L L L L	concentration in tailings basin cell 2W	C_s2w =	0.0012	(mg/L)
rt .	concentration of ground water into PM-12	C_g12 =	0.0012	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.05	(mg/s)	1	(mg/s)
ntration	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.26	(mg/s)	3	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	-	(mg/s)	-	(mg/s)	-	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.02	(mg/s)	0.02	(mg/s)
ert e ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.39	(mg/s)	0.39	(mg/s)	0.39	(mg/s)
mag	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance h node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.08	(mg/s)	0.64	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	0.49	(mg/s)	0.82	(mg/s)	4.09	(mg/s)
		-	Low Flo	w	Average	Flow	High Fl	ow
ert mass ntration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Year 15 Antimony			
R	· · · · · · · · · · · · · · · · · · ·	4		
	concentration of surface water into PM-12	C_s12 =	4.00E-05	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00E-05	(mg/L)
ů p c	concentration in Babbitt WWTP discharge	C_sBab =	4.00E-05	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	2.50E-04	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	1.13E-02	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004	(mg/L)
L L L L L L L L L L L L L L L L L L L	concentration in tailings basin cell 2W	C_s2w =	2.50E-04	(mg/L)
t	concentration of ground water into PM-12	C_g12 =	1.50E-03	(mg/L)
lnp	concentration of ground water into PM-13	C_g13 =	0.00E+00	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.01	(mg/s)	0	(mg/s)
itration	mass flux of ground water into PM-12	M_g12 =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.07	(mg/s)	1	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	-	(mg/s)	-	(mg/s)	-	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o Ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.81	(mg/s)	1.81	(mg/s)	1.81	(mg/s)
mag	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance n node	mass flux in river at PM-12	M_r12 =	0.04	(mg/s)	0.05	(mg/s)	0.20	(mg/s)
Mass t at each	mass flux in river at PM-13	M_r13 =	1.87	(mg/s)	1.96	(mg/s)	2.84	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conve flux to concei	concentration in river at PM-13	C_r13 =	0.005	(mg/L)	0.001	(mg/L)	0.000	(mg/L)

Case	Year 15			
Parameter	Selenium			
-				
	concentration of surface water into PM-12	C_s12 =	0.0003	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0003	(mg/L)
β β	concentration in Babbitt WWTP discharge	C_sBab =	0.0003	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0016	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.002521801	(mg/L)
Icer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.054	(mg/L)
cou	concentration in tailings basin cell 2W	C_s2w =	0.00109	(mg/L)
ont	concentration of ground water into PM-12	C_g12 =	0.00295	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.11	(mg/s)	1	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
centration	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.52	(mg/s)	6	(mg/s)
	mass flux of ground water into PM-13	M_g13 =	-	(mg/s)	-	(mg/s)	-	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
ert e ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.40	(mg/s)	0.40	(mg/s)	0.40	(mg/s)
mag	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	0.18	(mg/s)	1.29	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	0.58	(mg/s)	1.29	(mg/s)	7.84	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conver flux to concen	concentration in river at PM-13	C_r13 =	0.002	(mg/L)	0.001	(mg/L)	0.000	(mg/L)

Case Doromotor	Year 15 Sulfate			
Farameter	Sunate	l		
	concentration of surface water into PM-12	C_s12 =	4.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00	(mg/L)
p u	concentration in Babbitt WWTP discharge	C_sBab =	4.00	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	1046.27	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	241.92	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	7347.00	(mg/L)
- S	concentration in tailings basin cell 2W	C_s2w =	152.40	(mg/L)
ort .	concentration of ground water into PM-12	C_g12 =	8.50	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.00	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,427.45	(mg/s)	16,206	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	206.87	(mg/s)	206.87	(mg/s)	206.87	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	37.36	(mg/s)	37.36	(mg/s)	37.36	(mg/s)
Itral	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	6,965.20	(mg/s)	79,526	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	-	(mg/s)	-	(mg/s)	-	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	7,698.43	(mg/s)	58,922.60	(mg/s)	58,922.60	(mg/s)
ert o Ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	38,661.16	(mg/s)	38,661.16	(mg/s)	38,661.16	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	3,628.60	(mg/s)	3,628.60	(mg/s)	3,628.60	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	8,603.45	(mg/s)	8,603.45	(mg/s)	8,603.45	(mg/s)
			Low Flow		Average	Flow	High Fl	ow
alance	mass flux in river at PM-12	M_r12 =	244.23	(mg/s)	1,671.68	(mg/s)	16,449.94	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	58,835.87	(mg/s)	118,452.69	(mg/s)	205,792.15	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
nvert mass to centration	concentration in river at PM-12	C_r12 =	7.252	(mg/L)	4.280	(mg/l)	4.027	(mg/l)
flux con	concentration in river at PM-13	C_r13 =	156.091	(mg/L)	46.930	(mg/l)	8.448	(mg/l)

Case	Year 15			
Parameter	Thallium			
		-	-	
	concentration of surface water into PM-12	C_s12 =	0.0002	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0002	(mg/L)
βρι	concentration in Babbitt WWTP discharge	C_sBab =	0.0002	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0006	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001193197	(mg/L)
ICel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0002	(mg/L)
CO CO	concentration in tailings basin cell 2W	C_s2w =	0.0002	(mg/L)
int	concentration of ground water into PM-12	C_g12 =	0.000004	(mg/L)
d L	concentration of ground water into PM-13	C_g13 =	0	(mg/L)

		Low Flow		Average Flow		High Flo		ow	
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.07	(mg/s)		1	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.35	(mg/s)		4	(mg/s)
cer	mass flux of ground water into PM-13	M_g13 =	-	(mg/s)	-	(mg/s)		-	(mg/s)
l no xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)		0.03	(mg/s)
ert e ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.19	(mg/s)	0.19	(mg/s)		0.19	(mg/s)
ma ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
<u>ع</u> ٽ	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)		0.01	(mg/s)
			Low Flow		Average Flow			High Fl	ow
ss balance each node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.07	(mg/s)		0.81	(mg/s)
Ma	mass flux in river at PM-13	M_r13 =	0.21	(mg/s)	0.66	(mg/s)		5.02	(mg/s)
			Low Flo	w	Average	Flow		High Fl	ow
onvert mass ux to oncentration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)		0.000	(mg/L)
ŭĘŭ	concentration in river at PM-13	C_r13 =	0.001	(mg/L)	0.000	(mg/L)		0.000	(mg/L)

Case	Year 15			
Parameter	ZINC	I		
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
, de	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.003	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.081197396	(mg/L)
Cei	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.01	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	0.01435	(mg/L)
ort .	concentration of ground water into PM-12	C_g12 =	0.0115	(mg/L)
<u>u</u>	concentration of ground water into PM-13	C_g13 =	0	(mg/L)

			Low Flo	W	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5.71	(mg/s)	65	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.28	(mg/s)	0.28	(mg/s)	0.28	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.86	(mg/s)	318	(mg/s)
lcen	mass flux of ground water into PM-13	M_g13 =	-	(mg/s)	-	(mg/s)	-	(mg/s)
con con	mass flux of Area 5 Pit NW discharge	M_spit =	0.02	(mg/s)	0.17	(mg/s)	0.17	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	12.98	(mg/s)	12.98	(mg/s)	12.98	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.81	(mg/s)	0.81	(mg/s)	0.81	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ach node	mass flux in river at PM-12	M_r12 =	0.43	(mg/s)	6.14	(mg/s)	 65.25	(mg/s)
Mas: at ea	mass flux in river at PM-13	M_r13 =	14.24	(mg/s)	47.96	(mg/s)	397.32	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
onvert mass ux to oncentration	concentration in river at PM-12	C_r12 =	0.013	(mg/L)	0.016	(mg/L)	0.016	(mg/L)
ర≓ర	concentration in river at PM-13	C_r13 =	0.038	(mg/L)	0.019	(mg/L)	0.016	(mg/L)

Appendix F.6 Embarrass River Proposed Action Year 20

FLOWS

Case	Year 20				
Flows	Low Flow Conditions (no surface runoff)				Node
n River	flow in river at PM-12	Q_r12_L =	1.19	(cfs)	PM-12
l flow i arrass	flow in river at PM-13	Q_r13_L =	13.64	(cfs)	PM-13
Total Embi	flow check	Q_ck_L =	13.64	(cfs)	_
	surface water flow into PM-12	Q_s12_L =	0.00	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_L =	0.00	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_L =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_L =	0.26	(cfs)	PM-13
ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_L =	5.97	(cfs)	PM-13
v da	hydrometallurgical residue cells liner leakage	Q_rrs_L =	0.02	(cfs)	PM-13
lov	seepage from cell 2W	Q_s2w_L =	1.99	(cfs)	PM-13
rt i	ground water flow into PM-12	Q_g12_L =	0.86	(cfs)	PM-12
dul	ground water flow into PM-13	Q_g13_L =	4.21	(cfs)	PM-13

Case	Year 20				
Flow	Average Flow Conditions (mean annual)				
n River	flow in river at PM-12	Q_r12_M =	13.80	(cfs)	PM-12
l flow ir arrass I	flow in river at PM-13	Q_r13_M =	89.51	(cfs)	PM-13
Tota Emb	flow check	Q_ck_M =	89.51	(cfs)	_
	surface water flow into PM-12	Q_s12_M =	12.61	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_M =	61.53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_M =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_M =	1.99	(cfs)	PM-13
ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_M =	5.97	(cfs)	PM-13
, da	hydrometallurgical residue cells liner leakage	Q_rrs_M =	0.02	(cfs)	PM-13
No.	seepage from cell 2W	Q_s2w_M =	1.99	(cfs)	PM-13
nt 1	ground water flow into PM-12	Q_g12_M =	0.86	(cfs)	PM-12
du	ground water flow into PM-13	Q_g13_M =	4.21	(cfs)	PM-13

Case	Year 20				
Flow	High Flow Conditions (avg. annual 1-day max flow)				_
n River	flow in river at PM-12	Q_r12_H =	144.35	(cfs)	PM-12
flow in arrass	flow in river at PM-13	Q_r13_H =	861.06	(cfs)	PM-13
Total Emba	flow check	Q_ck_H =	861.06	(cfs)	_
	surface water flow into PM-12	Q_s12_H =	143.16	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_H =	702.53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_H =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_H =	1.99	(cfs)	PM-13
Ita	seepage from Tailings Basin Cells 1E and 2E	Q_fs_H =	5.97	(cfs)	PM-13
v da	hydrometallurgical residue cells liner leakage	Q_rrs_H =	0.02	(cfs)	PM-13
flow	seepage from cell 2W	Q_s2w_H =	1.99	(cfs)	PM-13
et .	ground water flow into PM-12	Q_g12_H =	0.86	(cfs)	PM-12
du	ground water flow into PM-13	Q a13 H=	4.21	(cfs)	PM-13

Case	Year 20			
Parameter	Silver			
	concentration of surface water into PM-12	C_s12 =	0.00011	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00011	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	0.00011	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.00015	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.00124	(mg/L)
ICel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.000125	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.000100	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.00008	(mg/L)
du du	concentration of ground water into PM-13	C_g13 =	0.00008	(mg/L)

			Low Flo	w	Average	Flow		High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.04	(mg/s)		0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.19	(mg/s)		2	(mg/s)
Icen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
u s l	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)		0.01	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.21	(mg/s)	0.21	(mg/s)		0.21	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
<u>۽</u> ک	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)		0.01	(mg/s)
			Low Flow		Average	Flow	High Flov		ow
s balance sch node	mass flux in river at PM-12	<u>M_</u> r12 =	0.00	(mg/s)	 0.04	(mg/s)		0.45	(mg/s)
Mas: at ea	mass flux in river at PM-13	M_r13 =	0.22	(mg/s)	0.46	(mg/s)		2.86	(mg/s)
			Low Flo	w	Average	Flow		High Fl	ow
ert mass o entration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)		0.000	(mg/L)
Con Con conc	concentration in river at PM-13	C_r13 =	0.001	(mg/L)	0.000	(mg/L)		0.000	(mg/L)

Case Parameter	Year 20 Aluminum			
	concentration of surface water into PM-12	C s12 =	0.12	(mg/L)
ata	concentration of surface water into PM-13	 C_s13 =	0.12	(mg/L)
ab r	concentration in Babbitt WWTP discharge	C_sBab =	0.12	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.01325	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	3.74E-01	(mg/L)
Icer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.80E-01	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	1.5788	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.025	(mg/L)
ů L	concentration of ground water into PM-13	C_g13 =	0.025	(mg/L)

			Low Flo	w	Ave	rage F	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)		2.82	(mg/s)	486	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.61	(mg/s)		0.61	(mg/s)	0.61	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	1.12	(mg/s)		1.12	(mg/s)	1.12	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	20	8.96	(mg/s)	2,386	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2.98	(mg/s)		2.98	(mg/s)	2.98	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.10	(mg/s)		0.75	(mg/s)	0.75	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	63.12	(mg/s)	(3.12	(mg/s)	63.12	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.10	(mg/s)		0.10	(mg/s)	0.10	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	89.10	(mg/s)	8	9.10	(mg/s)	89.10	(mg/s)
			Low Flow		Ave	rage F	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	1.73	(mg/s)		4.55	(mg/s)	487.90	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	157.12	(mg/s)	4(9.55	(mg/s)	3,029.73	(mg/s)
			Low Flo	w	Ave	rage F	Flow	High Fl	ow
t mass itration	concentration in river at PM-12	C_r12 =	0.051	(mg/L)	(.114	(mg/L)	0.119	(mg/L)
Convel flux to concer	concentration in river at PM-13	C_r13 =	0.407	(mg/L)	(.162	(mg/L)	0.124	(mg/L)

Case	Year 20			
Parameter	Arsenic			
	concentration of surface water into PM-12	C_s12 =	0.00075	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00075	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	0.00075	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.001325	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.014389887	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.00291	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.00273	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.00273	(mg/L)

		Low Flo	w	Average	Flow	High Flo	ow	
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.27	(mg/s)	3	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.31	(mg/s)	15	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.33	(mg/s)	0.33	(mg/s)	0.33	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	2.43	(mg/s)	2.43	(mg/s)	2.43	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.16	(mg/s)	0.16	(mg/s)	0.16	(mg/s)
			Low Flo	w	Average	Flow	High Flo	ow
balance th node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	0.34	(mg/s)	3.11	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	3.01	(mg/s)	4.64	(mg/s)	21.02	(mg/s)
		-	LOW FIO	w	Average	FIOW	High Fi	ow
ert mass o entration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	0.001	(mg/L)	0.001	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.008	(mg/L)	0.002	(mg/L)	0.001	(mg/L)

Case	Year 20			
Parameter	Boron			
		-		
	concentration of surface water into PM-12	C_s12 =	0.027	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.027	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	0.027	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.1315	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.174123916	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.11	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.33	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.0212	(mg/L)
별	concentration of ground water into PM-13	C_g13 =	0.0212	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	9.64	(mg/s)	109	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.52	(mg/s)	0.52	(mg/s)	0.52	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.25	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	47.02	(mg/s)	537	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2.53	(mg/s)	2.53	(mg/s)	2.53	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.97	(mg/s)	7.41	(mg/s)	7.41	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	29.42	(mg/s)	29.42	(mg/s)	29.42	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	18.62	(mg/s)	18.62	(mg/s)	18.62	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ch node	mass flux in river at PM-12	M_r12 =	0.77	(mg/s)	10.40	(mg/s)	110.16	(mg/s)
Mass at ea	mass flux in river at PM-13	M_r13 =	52.37	(mg/s)	115.46	(mg/s)	705.00	(mg/s)
	1		Low Flo	W	Average	Flow	High Fl	ow
/ert mass to entration	concentration in river at PM-12	C_r12 =	0.023	(mg/L)	0.027	(mg/L)	0.027	(mg/L)
Conv Conv filux 1 conc	concentration in river at PM-13	C_r13 =	0.136	(mg/L)	0.046	(mg/L)	0.029	(mg/L)

Case Parameter	Year 20 Barium			
		-		
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0044	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	6.60E-02	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	5.00E-03	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.09298	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0681	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.0681	(mg/L)

		Low Flo	w	Average	Flow	High Fl	ow	
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5.71	(mg/s)	65	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	1.66	(mg/s)	1.66	(mg/s)	1.66	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.86	(mg/s)	318	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	8.11	(mg/s)	8.11	(mg/s)	8.11	(mg/s)
u s n	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	11.15	(mg/s)	11.15	(mg/s)	11.15	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	5.25	(mg/s)	5.25	(mg/s)	5.25	(mg/s)
			Low Flo	w	Average	Flow	High Flow	
balance node	mass flux in river at PM-12	M_r12 =	1.81	(mg/s)	7.52	(mg/s)	66.63	(mg/s)
Mass k at each	mass flux in river at PM-13	M_r13 =	26.36	(mg/s)	60.14	(mg/s)	409.50	(mg/s)
			Low Flo	W	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.054	(mg/L)	0.019	(mg/L)	0.016	(mg/L)
Conver flux to concen	concentration in river at PM-13	C_r13 =	0.068	(mg/L)	0.024	(mg/L)	0.017	(mg/L)

Case Parameter	Year 20 Beryllium			
		-		
	concentration of surface water into PM-12	C_s12 =	0.0001	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0001	(mg/L)
βρι	concentration in Babbitt WWTP discharge	C_sBab =	0.0001	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.00131326	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.00075	(mg/L)
t	concentration of ground water into PM-12	C_g12 =	0.000023	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.000023	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.04	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.17	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.22	(mg/s)	0.22	(mg/s)	0.22	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	-	(mg/s)	-	(mg/s)	-	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
llance node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.04	(mg/s)	0.41	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	0.27	(mg/s)	0.48	(mg/s)	2.67	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
onvert mass ix to incentration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
s the Cc	concentration in river at PM-13	C_r13 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Year 20 Calcium			
		1		
	concentration of surface water into PM-12	C_s12 =	15	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	15	(mg/L)
р с р	concentration in Babbitt WWTP discharge	C_sBab =	15	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	95.35	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	76.37590202	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	416	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	59.78	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	19	(mg/L)
	concentration of ground water into PM-13	C_g13 =	19	(mg/L)

		Low Flo	w	Average	Flow	High Fl	ow			
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5,352.95	(mg/s)	60,771	(mg/s)		
_	mass flux of ground water into PM-12	M_g12 =	462.42	(mg/s)	462.42	(mg/s)	462.42	(mg/s)		
tion	mass flux in Babbitt WWTP discharge	M_sBab =	140.09	(mg/s)	140.09	(mg/s)	140.09	(mg/s)		
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	26,119.49	(mg/s)	298,224	(mg/s)		
cen	mass flux of ground water into PM-13	M_g13 =	2,263.72	(mg/s)	2,263.72	(mg/s)	2,263.72	(mg/s)		
	mass flux of Area 5 Pit NW discharge	M_spit =	701.59	(mg/s)	5,369.83	(mg/s)	5,369.83	(mg/s)		
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	12,906.03	(mg/s)	12,906.03	(mg/s)	12,906.03	(mg/s)		
nve mas	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	227.25	(mg/s)	227.25	(mg/s)	227.25	(mg/s)		
ធ បិ	mass flux in seepage from cell 2W	M_s2w =	3,373.51	(mg/s)	3,373.51	(mg/s)	32.66	(mg/s)		
			Low Flo	w	Average	Flow	High Fl	227.25 (mg/s) 32.66 (mg/s) High Flow		
alance n node	mass flux in river at PM-12	M_r12 =	602.51	(mg/s)	5,955.45	(mg/s)	61,373.93	(mg/s)		
Mass b at each	mass flux in river at PM-13	M_r13 =	20,074.61	(mg/s)	56,215.28	(mg/s)	380,397.40	(mg/s)		
			Low Flo	w	Average	Flow	High Fl	61,373.93 (mg/s) 380,397.40 (mg/s) High Flow		
't mass itration	concentration in river at PM-12	C_r12 =	17.891	(mg/L)	15.249	(mg/l)	15.024	(mg/l)		
Conve flux to concei	concentration in river at PM-13	C_r13 =	51.988	(mg/L)	22.191	(mg/l)	15.610	(mg/l)		
Case Parameter	Year 20 Cadmium									
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	concentration of surface water into PM-12	C s12 =	0.00008	(mg/L)						
ata	concentration of surface water into PM-13	C_s13 =	0.00008	(mg/L)						
ab r	concentration in Babbitt WWTP discharge	C_sBab =	0.00008	(mg/L)						
tior	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)						
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000534314	(mg/L)						
Icer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0004	(mg/L)						
con	concentration in tailings basin cell 2W	C_s2w =	0.000188	(mg/L)						
ort	concentration of ground water into PM-12	C_g12 =	0.0003	(mg/L)						
du	concentration of ground water into PM-13	C_g13 =	0.0003	(mg/L)						

			Low Flow		Average	Flow	High Flow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.03	(mg/s)	0 (mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.01	(mg/s)	0.01	(mg/s)	0.01 (mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00 (mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.14	(mg/s)	2 (mg/s)
concent	mass flux of ground water into PM-13	M_g13 =	0.04	(mg/s)	0.04	(mg/s)	0.04 (mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01 (mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.09	(mg/s)	0.09	(mg/s)	0.09 (mg/s)
n ve	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00 (mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01 (mg/s)
			Low Flo	w	Average	Flow	High Flow
s balance ach node	mass flux in river at PM-12	M_r12 =	0.01	(mg/s)	0.04	(mg/s)	0.33 (mg/s)
Mas at e	mass flux in river at PM-13	M r13 =	0.15	(ma/s)	0.32	(ma/s)	2.07 (mg/s)
			Low Flo	w	Average	Flow	High Flow
Convert mass flux to concentration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000 (mg/L)

Case	Year 20			
Parameter	Chloride			
	concentration of surface water into PM-12	C_s12 =	6.5	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	6.5	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	6.5	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	5.95	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	7.66E+00	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.76E+03	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	21.54	(mg/L)
ont	concentration of ground water into PM-12	C_g12 =	1.8	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	1.8	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,319.61	(mg/s)	26,334	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	43.81	(mg/s)	43.81	(mg/s)	43.81	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	60.70	(mg/s)	60.70	(mg/s)	60.70	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	11,318.44	(mg/s)	129,230	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	214.46	(mg/s)	214.46	(mg/s)	214.46	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	43.78	(mg/s)	335.09	(mg/s)	335.09	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1,293.94	(mg/s)	1,293.94	(mg/s)	1,293.94	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	961.45	(mg/s)	961.45	(mg/s)	961.45	(mg/s)
ទ បិ	mass flux in seepage from cell 2W	M_s2w =	1,215.55	(mg/s)	1,215.55	(mg/s)	1,215.55	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	104.51	(mg/s)	2,424.12	(mg/s)	26,438.79	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	3,833.69	(mg/s)	17,763.05	(mg/s)	159,689.67	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
/ert mass to :entration	concentration in river at PM-12	C_r12 =	3.103	(mg/L)	6.207	(mg/L)	6.472	(mg/L)
Com	concentration in river at PM-13	C_r13 =	9.928	(mg/L)	7.012	(mg/L)	6.553	(mg/L)

Case Parameter	Year 20 Cobalt			
	concentration of surface water into PM-12	C s12 =	0.0006	(ma/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0006	(mg/L)
ар с зр с	concentration in Babbitt WWTP discharge	C_sBab =	0.0006	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.000555	(mg/L)
itra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.007940593	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.005	(mg/L)
COL	concentration in tailings basin cell 2W	C_s2w =	0.001556	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.0011	(mg/L)
<u>u</u>	concentration of ground water into PM-13	C_g13 =	0.0011	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.21	(mg/s)	2	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
centrat	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.04	(mg/s)	12	(mg/s)
	mass flux of ground water into PM-13	M_g13 =	0.13	(mg/s)	0.13	(mg/s)	0.13	(mg/s)
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ert e ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.34	(mg/s)	1.34	(mg/s)	1.34	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
<u>د</u> د د	mass flux in seepage from cell 2W	M_s2w =	0.09	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ich node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.25	(mg/s)	2.46	(mg/s)
Mass at ea	mass flux in river at PM-13	M_r13 =	1.60	(mg/s)	2.89	(mg/s)	15.99	(mg/s)
		-	Low Flo	w	Average	Flow	 High Fl	ow
rert mass .o entration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.001	(mg/L)	0.001	(mg/L)
Con flux conc	concentration in river at PM-13	C_r13 =	0.004	(mg/L)	0.001	(mg/L)	0.001	(mg/L)

Case	Year 20			
Parameter	Copper			
		-		-
	concentration of surface water into PM-12	C_s12 =	0.0015	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0015	(mg/L)
р р	concentration in Babbitt WWTP discharge	C_sBab =	0.0015	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.00345	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.020208301	(mg/L)
Icer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0015	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.004555	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.004	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.004	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.54	(mg/s)	6	(mg/s)
	mass flux of ground water into PM-12	M_g12 =	0.10	(mg/s)	0.10	(mg/s)	0.10	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.61	(mg/s)	30	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.48	(mg/s)	0.48	(mg/s)	0.48	(mg/s)
ŭ Xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.19	(mg/s)	0.19	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	3.41	(mg/s)	3.41	(mg/s)	3.41	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	0.26	(mg/s)	0.26	(mg/s)	0.26	(mg/s)
			Low Flo	W	Average	Flow	High Fl	ow
oalance h node	mass flux in river at PM-12	M_r12 =	0.11	(mg/s)	0.65	(mg/s)	6.19	(mg/s)
Mass I at eacl	mass flux in river at PM-13	M_r13 =	4.29	(mg/s)	7.60	(mg/s)	40.35	(mg/s)
			Low Flo	w	 Average	low	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.003	(mg/L)	0.002	(mg/L)	0.002	(mg/L)
Conve flux to concer	concentration in river at PM-13	C_r13 =	0.011	(mg/L)	0.003	(mg/L)	0.002	(mg/L)

Case Parameter	Year 20 Fluoride			
	concentration of surface water into PM-12	C_s12 =	0.2	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.2	(mg/L)
ab r	concentration in Babbitt WWTP discharge	C_sBab =	0.2	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.125	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	7.70E-01	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	2.85E+00	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	1.55	(mg/L)
but	concentration of ground water into PM-12	C_g12 =	0.385	(mg/L)
<u>u</u>	concentration of ground water into PM-13	C_g13 =	0.385	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	71.37	(mg/s)	810	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	9.37	(mg/s)	9.37	(mg/s)	9.37	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	1.87	(mg/s)	1.87	(mg/s)	1.87	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	348.26	(mg/s)	3,976	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	45.87	(mg/s)	45.87	(mg/s)	45.87	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.92	(mg/s)	7.04	(mg/s)	7.04	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	130.19	(mg/s)	130.19	(mg/s)	130.19	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	1.56	(mg/s)	1.56	(mg/s)	1.56	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	87.47	(mg/s)	87.47	(mg/s)	87.47	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance h node	mass flux in river at PM-12	M_r12 =	11.24	(mg/s)	82.61	(mg/s)	821.52	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	277.25	(mg/s)	703.00	(mg/s)	5,069.97	(mg/s)
			LOW FIO	W	Average	FIOW	High Fi	ow
ert mass ntration	concentration in river at PM-12	C_r12 =	0.334	(mg/L)	0.212	(mg/L)	0.201	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.718	(mg/L)	0.278	(mg/L)	0.208	(mg/L)

Case	Year 20			
Parameter	Iron			
		-		
	concentration of surface water into PM-12	C_s12 =	2.9	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	2.9	(mg/L)
, p	concentration in Babbitt WWTP discharge	C_sBab =	2.9	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.037761905	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	8.72E-02	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	4.00E-01	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	4.594	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.035	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.035	(mg/L)

			Low Flo	w	Average	Flow	High Fl	low
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,034.90	(mg/s)	11,749	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.85	(mg/s)	0.85	(mg/s)	0.85	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	27.08	(mg/s)	27.08	(mg/s)	27.08	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	5,049.77	(mg/s)	57,657	(mg/s)
ert concen ss flux	mass flux of ground water into PM-13	M_g13 =	4.17	(mg/s)	4.17	(mg/s)	4.17	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.28	(mg/s)	2.13	(mg/s)	2.13	(mg/s)
	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	14.74	(mg/s)	14.74	(mg/s)	14.74	(mg/s)
m ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.22	(mg/s)	0.22	(mg/s)	0.22	(mg/s)
ទ បិ	mass flux in seepage from cell 2W	M_s2w =	259.25	(mg/s)	259.25	(mg/s)	259.25	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance n node	mass flux in river at PM-12	M_r12 =	27.93	(mg/s)	1,062.84	(mg/s)	11,777.08	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	306.59	(mg/s)	6,393.11	(mg/s)	69,714.22	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.829	(mg/L)	2.721	(mg/L)	2.883	(mg/L)
Convel flux to concer	concentration in river at PM-13	C_r13 =	0.794	(mg/L)	2.524	(mg/L)	2.861	(mg/L)

Case	Year 20			
Parameter	Hardness			
		-		
	concentration of surface water into PM-12	C_s12 =	70	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	70	(mg/L)
β	concentration in Babbitt WWTP discharge	C_sBab =	70	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	942.7142857	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	2.71E+02	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	8.61E+03	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	436.6	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	87.5	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	87.5	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	24,980.41	(mg/s)	283,600	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	2,129.58	(mg/s)	2,129.58	(mg/s)	2,129.58	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	653.73	(mg/s)	653.73	(mg/s)	653.73	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	121,890.93	(mg/s)	1,391,712	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	10,425.01	(mg/s)	10,425.01	(mg/s)	10,425.01	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	6,936.49	(mg/s)	53,090.84	(mg/s)	53,090.84	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	45,758.38	(mg/s)	45,758.38	(mg/s)	45,758.38	(mg/s)
nve mas	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	4,703.46	(mg/s)	4,703.46	(mg/s)	4,703.46	(mg/s)
ទ បិ	mass flux in seepage from cell 2W	M_s2w =	24,638.27	(mg/s)	24,638.27	(mg/s)	24,638.27	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	2,783.31	(mg/s)	27,763.72	(mg/s)	286,383.27	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	95,244.92	(mg/s)	288,270.61	(mg/s)	 1,816,711.16	(mg/s)
			Low Ho	**	Average		riigii ri	011
ert mass o intration	concentration in river at PM-12	C_r12 =	82.647	(mg/L)	71.091	(mg/L)	70.104	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	246.661	(mg/L)	113.794	(mg/L)	74.553	(mg/L)

Case Parameter	Year 20 Potassium			
		-		
	concentration of surface water into PM-12	C_s12 =	0.60	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.60	(mg/L)
р с	concentration in Babbitt WWTP discharge	C_sBab =	0.60	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	53.80	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	13.45	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.80	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	7.77	(mg/L)
put	concentration of ground water into PM-12	C_g12 =	1.60	(mg/L)
L L	concentration of ground water into PM-13	C_g13 =	1.60	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	214.12	(mg/s)	2,431	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	38.94	(mg/s)	38.94	(mg/s)	38.94	(mg/s)
tion	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.98	(mg/s)	0.98	(mg/s)	0.98	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1,044.78	(mg/s)	11,929	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	190.63	(mg/s)	190.63	(mg/s)	190.63	(mg/s)
u xn	mass flux in Babbitt WWTP discharge	M_sBab =	5.60	(mg/s)	5.60	(mg/s)	5.60	(mg/s)
ert e ss t	mass flux of Area 5 Pit NW discharge	M_spit =	395.86	(mg/s)	3,029.85	(mg/s)	3,029.85	(mg/s)
ma	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	2,272.35	(mg/s)	2,272.35	(mg/s)	2,272.35	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	438.48	(mg/s)	438.48	(mg/s)	438.48	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance h node	mass flux in river at PM-12	M_r12 =	39.92	(mg/s)	254.04	(mg/s)	2,470.78	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	3,342.85	(mg/s)	7,235.74	(mg/s)	20,336.66	(mg/s)
			Low Flo	w	Average	Flow	 High Fl	ow
ert mass o entration	concentration in river at PM-12	C_r12 =	1.186	(mg/L)	0.650	(mg/L)	0.605	(mg/l)
Conv flux t	concentration in river at PM-13	C_r13 =	8.657	(mg/L)	2.856	(mg/L)	0.835	(mg/l)

Case	Year 20			
Parameter	Magnesium			
	concentration of surface water into PM-12	C_s12 =	5.90	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	5.90	(mg/L)
βρι	concentration in Babbitt WWTP discharge	C_sBab =	5.90	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	271.00	(mg/L)
tra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	19.45	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	213.00	(mg/L)
Con	concentration in tailings basin cell 2W	C_s2w =	69.97	(mg/L)
t	concentration of ground water into PM-12	C_g12 =	10.65	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	10.65	(mg/L)

			Low Flo	w	Average	Flow	High Fl	low
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,105.49	(mg/s)	23,903	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	259.20	(mg/s)	259.20	(mg/s)	259.20	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	55.10	(mg/s)	55.10	(mg/s)	55.10	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,273.66	(mg/s)	117,301	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1,268.87	(mg/s)	1,268.87	(mg/s)	1,268.87	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	1,994.02	(mg/s)	15,261.91	(mg/s)	15,261.91	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	3,286.07	(mg/s)	3,286.07	(mg/s)	3,286.07	(mg/s)
m ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	116.36	(mg/s)	116.36	(mg/s)	116.36	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	3,948.56	(mg/s)	3,948.56	(mg/s)	3,948.56	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance n node	mass flux in river at PM-12	M_r12 =	314.30	(mg/s)	2,419.79	(mg/s)	24,217.73	(mg/s)
Mass k at each	mass flux in river at PM-13	M_r13 =	10,928.17	(mg/s)	36,575.21	(mg/s)	165,400.92	(mg/s)
			Low Flo	w	Average	Flow	High Fl	low
rt mass ntration	concentration in river at PM-12	C_r12 =	9.333	(mg/L)	 6.196	(mg/l)	5.928	(mg/l)
Conve flux to conce	concentration in river at PM-13	C_r13 =	28.301	(mg/L)	14.438	(mg/l)	6.788	(mg/l)

Case	Year 20			
Parameter	Manganese			
		-		
	concentration of surface water into PM-12	C_s12 =	0.30	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.30	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.30	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.49	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.45	(mg/L)
Icel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.00	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	1.18	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.19	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.19	(mg/L)

			Low Flo	w	Average I	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	107.06	(mg/s)	1,215	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	4.58	(mg/s)	4.58	(mg/s)	4.58	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	2.80	(mg/s)	2.80	(mg/s)	2.80	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	522.39	(mg/s)	5,964	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	22.40	(mg/s)	22.40	(mg/s)	22.40	(mg/s)
u xnl	mass flux of Area 5 Pit NW discharge	M_spit =	3.57	(mg/s)	27.31	(mg/s)	27.31	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	76.11	(mg/s)	76.11	(mg/s)	76.11	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ បិ	mass flux in seepage from cell 2W	M_s2w =	66.76	(mg/s)	66.76	(mg/s)	66.76	(mg/s)
			Low Flo	w	Average I	Flow	High Fl	ow
alance	mass flux in river at PM-12	M_r12 =	7.38	(mg/s)	114.44	(mg/s)	1,222.81	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	176.22	(mg/s)	829.41	(mg/s)	7,379.87	(mg/s)
			Low Flo	w	Average I	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.219	(mg/L)	0.293	(mg/l)	0.299	(mg/l)
Conve flux to concei	concentration in river at PM-13	C_r13 =	0.456	(mg/L)	0.327	(mg/l)	0.303	(mg/l)

Case	Year 20			
Parameter	Sodium			
	concentration of surface water into PM-12	C_s12 =	6.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	6.00	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	6.00	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	119.50	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	19.36	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	255.00	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	44.31	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	4.90	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	4.90	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,141.18	(mg/s)	24,309	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	119.26	(mg/s)	119.26	(mg/s)	119.26	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	56.03	(mg/s)	56.03	(mg/s)	56.03	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,447.79	(mg/s)	119,290	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	583.80	(mg/s)	583.80	(mg/s)	583.80	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	879.28	(mg/s)	6,729.88	(mg/s)	6,729.88	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	3,272.20	(mg/s)	3,272.20	(mg/s)	3,272.20	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	139.30	(mg/s)	139.30	(mg/s)	139.30	(mg/s)
ទ បិ	mass flux in seepage from cell 2W	M_s2w =	2,500.51	(mg/s)	2,500.51	(mg/s)	2,500.51	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	175.29	(mg/s)	2,316.47	(mg/s)	24,483.86	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	7,550.38	(mg/s)	25,989.95	(mg/s)	156,999.14	(mg/s)
			Low Flo	w	Average	Flow	High Fl	low
vert mass to centration	concentration in river at PM-12	C_r12 =	5.205	(mg/L)	5.931	(mg/l)	5.993	(mg/l)
Con Con con	concentration in river at PM-13	C_r13 =	19.554	(mg/L)	10.259	(mg/l)	6.443	(mg/l)

Case Parameter	Year 20 Nickel			
	concentration of surface water into PM-12	C_s12 =	0.0012	(mg/L)
ta	concentration of surface water into PM-13	C_s13 =	0.0012	(mg/L)
a b c	concentration in Babbitt WWTP discharge	C_sBab =	0.0012	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0052	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.141786777	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.098	(mg/L)
	concentration in tailings basin cell 2W	C_s2w =	0.00688	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.007	(mg/L)
<u>u</u>	concentration of ground water into PM-13	C_g13 =	0.007	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.43	(mg/s)	5	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.17	(mg/s)	0.17	(mg/s)	0.17	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.09	(mg/s)	24	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.83	(mg/s)	0.83	(mg/s)	0.83	(mg/s)
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	0.04	(mg/s)	0.29	(mg/s)	0.29	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	23.96	(mg/s)	23.96	(mg/s)	23.96	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.05	(mg/s)	0.05	(mg/s)	0.05	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	0.39	(mg/s)	0.39	(mg/s)	0.39	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance sch node	mass flux in river at PM-12	M_r12 =	0.18	(mg/s)	0.61	(mg/s)	5.04	(mg/s)
Mas: at ea	mass flux in river at PM-13	M_r13 =	25.45	(mg/s)	28.23	(mg/s)	54.43	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
nvert mass k to ncentration	concentration in river at PM-12	C_r12 =	0.005	(mg/L)	0.002	(mg/L)	0.001	(mg/L)
CO Co	concentration in river at PM-13	C_r13 =	0.066	(mg/L)	0.011	(mg/L)	0.002	(mg/L)

Case	Year 20			
Parameter	Lead			
	concentration of surface water into PM-12	C_s12 =	0.00015	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00015	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	0.00015	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0003	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001841737	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0005	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.0012	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0012	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.0012	(mg/L)

		Low Flow		Average Flow		High Flow		
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.05	(mg/s)	1	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.26	(mg/s)	3	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.14	(mg/s)	0.14	(mg/s)	0.14	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.02	(mg/s)	0.02	(mg/s)
ert e ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.31	(mg/s)	0.31	(mg/s)	0.31	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.08	(mg/s)	0.64	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	0.55	(mg/s)	0.88	(mg/s)	4.16	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
/ert mass to entration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conv flux 1 conc	concentration in river at PM-13	C_r13 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Year 20			
Parameter	Antimony			
		-		
	concentration of surface water into PM-12	C_s12 =	4.00E-05	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00E-05	(mg/L)
р р	concentration in Babbitt WWTP discharge	C_sBab =	4.00E-05	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	2.50E-04	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	1.02E-02	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	2.50E-04	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	1.50E-03	(mg/L)
di di	concentration of ground water into PM-13	C_g13 =	1.50E-03	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.01	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ntrai	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.07	(mg/s)	1	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.18	(mg/s)	0.18	(mg/s)	0.18	(mg/s)
u si l	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.73	(mg/s)	1.73	(mg/s)	1.73	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance th node	mass flux in river at PM-12	M_r12 =	0.04	(mg/s)	0.05	(mg/s)	0.20	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	1.96	(mg/s)	2.06	(mg/s)	2.93	(mg/s)
	1		LOW FIO	w	 Average	TIOW	rign Fi	ow
ert mass n ntration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.005	(mg/L)	0.001	(mg/L)	0.000	(mg/L)

Case	Year 20			
Parameter	Selenium			
	concentration of surface water into PM-12	C_s12 =	0.0003	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0003	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	0.0003	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0016	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.002326015	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.054	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.00109	(mg/L)
t	concentration of ground water into PM-12	C_g12 =	0.00295	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.00295	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.11	(mg/s)	1	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itrat	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.52	(mg/s)	6	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.35	(mg/s)	0.35	(mg/s)	0.35	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.39	(mg/s)	0.39	(mg/s)	0.39	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ch node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	0.18	(mg/s)	1.29	(mg/s)
Mass at ea	mass flux in river at PM-13	M_r13 =	0.92	(mg/s)	1.63	(mg/s)	8.18	(mg/s)
		_	Low Flo	w	Average	Flow	High Fl	ow
/ert mass o entration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conv Conv conc	concentration in river at PM-13	C_r13 =	0.002	(mg/L)	0.001	(mg/L)	0.000	(mg/L)

Case Parameter	Year 20 Sulfate			
	concentration of surface water into PM-12	C_s12 =	4.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00	(mg/L)
sp r	concentration in Babbitt WWTP discharge	C_sBab =	4.00	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	1046.27	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	211.97	(mg/L)
Icer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	7347.00	(mg/L)
cou	concentration in tailings basin cell 2W	C_s2w =	152.40	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	8.50	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	8.50	(mg/L)

		Low Flow		Average Flow		High Flov		
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,427.45	(mg/s)	16,206	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	206.87	(mg/s)	206.87	(mg/s)	206.87	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	37.36	(mg/s)	37.36	(mg/s)	37.36	(mg/s)
trat	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	6,965.20	(mg/s)	79,526	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1,012.72	(mg/s)	1,012.72	(mg/s)	1,012.72	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	7,698.43	(mg/s)	58,922.60	(mg/s)	58,922.60	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	35,819.52	(mg/s)	35,819.52	(mg/s)	35,819.52	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	4,013.51	(mg/s)	4,013.51	(mg/s)	4,013.51	(mg/s)
ច បិ	mass flux in seepage from cell 2W	M_s2w =	8,600.26	(mg/s)	8,600.26	(mg/s)	8,600.26	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lass balance t each node	mass flux in river at PM-12	M_r12 =	244.23	(mg/s)	1,671.68	(mg/s)	16,449.94	(mg/s)
a	mass flux in river at PM-13	M_r13 =	57,388.66	(mg/s)	117,005.48	(mg/s)	204,344.94	(mg/s)
			LOW FIU	vv	Average		nigii ri	
nvert mass to centration	concentration in river at PM-12	C_r12 =	7.252	(mg/L)	4.280	(mg/l)	 4.027	(mg/l)
Con Con con	concentration in river at PM-13	C_r13 =	148.623	(mg/L)	46.188	(mg/l)	8.386	(mg/l)

Case Parameter	Year 20 Thallium			
		0		
	concentration of surface water into PM-12	C_\$12 =	0.0002	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0002	(mg/L)
p n	concentration in Babbitt WWTP discharge	C_sBab =	0.0002	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0006	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001147722	(mg/L)
ICel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0002	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.0002	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.000004	(mg/L)
브	concentration of ground water into PM-13	C_g13 =	0.000004	(mg/L)

			Low Flow		Average	low		High Flow	
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.07	(mg/s)		1	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
trat	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.35	(mg/s)		4	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)		0.03	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.19	(mg/s)	0.19	(mg/s)		0.19	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)		0.01	(mg/s)
			Low Flo	w	Average	Flow		High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.07	(mg/s)		0.81	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	0.21	(mg/s)	0.66	(mg/s)		5.03	(mg/s)
			LOW FIO	w	Average	FIOW		High Fi	ow
ert mass o intration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)		0.000	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.001	(mg/L)	0.000	(mg/L)		0.000	(mg/L)

Case	Year 20			
Parameter	Zinc			
-		-		-
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
n da	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
tion	concentration in Area 5 Pit NW discharge	C_spit =	0.003	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.061124366	(mg/L)
Icel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.01	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	0.01435	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0115	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.0115	(mg/L)

			Low Flo	W	Average	Flow	High Fl	low
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5.71	(mg/s)	65	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.28	(mg/s)	0.28	(mg/s)	0.28	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
ntrat	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.86	(mg/s)	318	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1.37	(mg/s)	1.37	(mg/s)	1.37	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.02	(mg/s)	0.17	(mg/s)	0.17	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	10.33	(mg/s)	10.33	(mg/s)	10.33	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ទ បិ	mass flux in seepage from cell 2W	M_s2w =	0.81	(mg/s)	0.81	(mg/s)	0.81	(mg/s)
			Low Flo	w	Average	Flow	High Fl	low
lance node	mass flux in river at PM-12	M_r12 =	0.43	(mg/s)	6.14	(mg/s)	65.25	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	12.97	(mg/s)	46.68	(mg/s)	396.04	(mg/s)
			Low Flo	W	Average	Flow	High Fl	low
t mass tration	concentration in river at PM-12	C_r12 =	0.013	(mg/L)	0.016	(mg/L)	0.016	(mg/L)
Convert flux to concent	concentration in river at PM-13	C r13 =	0.034	(mg/L)	0.018	(mg/L)	0.016	(mg/L)

Appendix F.7 Embarrass River Proposed Action Closure

FLOWS

Case	Closure				
Flows	Low Flow Conditions (no surface runoff)				Node
in s River	flow in river at PM-12	Q_r12_L =	1.19	(cfs)	PM-12
low 'ras:	flow in river at PM-13	Q_r13_L =	9.78	(cfs)	PM-13
Total fl Embari	flow check	Q_ck_L =	9.78	(cfs)	
	surface water flow into PM-12	Q_s12_L =	0.00	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_L =	0.00	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_L =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_L =	0.26	(cfs)	PM-13
Ita	seepage from Tailings Basin Cells 1E and 2E	Q_fs_L =	2.45	(cfs)	PM-13
v da	hydrometallurgical residue cells liner leakage	Q_rrs_L =	0.00	(cfs)	PM-13
flov	seepage from cell 2W	Q_s2w_L =	1.67	(cfs)	PM-13
out f	ground water flow into PM-12	Q_g12_L =	0.86	(cfs)	PM-12
Ing	ground water flow into PM-13	Q_g13_L =	4.21	(cfs)	PM-13

Case	Closure				
Flow	Average Flow Conditions (mean annual)				_
n River	flow in river at PM-12	Q_r12_M =	13.80	(cfs)	PM-12
l flow ir arrass	flow in river at PM-13	Q_r13_M =	85.65	(cfs)	PM-13
Tota Emb	flow check	Q_ck_M =	85.65	(cfs)	_
	surface water flow into PM-12	Q_s12_M =	12.61	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_M =	61.53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_M =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_M =	1.99	(cfs)	PM-13
ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_M =	2.45	(cfs)	PM-13
, da	hydrometallurgical residue cells liner leakage	Q_rrs_M =	0.00	(cfs)	PM-13
No	seepage from cell 2W	Q_s2w_M =	1.67	(cfs)	PM-13
ut f	ground water flow into PM-12	Q_g12_M =	0.86	(cfs)	PM-12
au	ground water flow into PM-13	Q_g13_M =	4.21	(cfs)	PM-13

Case	Closure				
Flow	High Flow Conditions (avg. annual 1-day max flow)				
ר River	flow in river at PM-12	Q_r12_H =	144.35	(cfs)	PM-12
flow in ırrass	flow in river at PM-13	Q_r13_H =	857.20	(cfs)	PM-13
Total Emba	flow check	Q_ck_H =	857.20	(cfs)	
	surface water flow into PM-12	Q_s12_H =	143.16	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_H =	702.53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_H =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_H =	1.99	(cfs)	PM-13
Ita	seepage from Tailings Basin Cells 1E and 2E	Q_fs_H =	2.45	(cfs)	PM-13
v da	hydrometallurgical residue cells liner leakage	Q_rrs_H =	0.00	(cfs)	PM-13
lov	seepage from cell 2W	Q_s2w_H =	1.67	(cfs)	PM-13
nt	ground water flow into PM-12	Q_g12_H =	0.86	(cfs)	PM-12
<u> </u>	ground water flow into PM-13	Q a13 H=	4.21	(cfs)	PM-13

Case	Closure			
Parameter	Silver			
	concentration of surface water into PM-12	C_s12 =	0.00011	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00011	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.00011	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.00015	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.00097	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.000125	(mg/L)
CO	concentration in tailings basin cell 2W	C_s2w =	0.000100	(mg/L)
t	concentration of ground water into PM-12	C_g12 =	0.00008	(mg/L)
<u> </u>	concentration of ground water into PM-13	C_g13 =	0.00008	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.04	(mg/s)	0	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.19	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert c ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ss balance each node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.04	<u>(mg/s)</u>	0.45	(mg/s)
Ma at	mass flux in river at PM-13	M_r13 =	0.08	(mg/s)	0.31	(mg/s)	2.72	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
onvert mass ux to oncentration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	 0.000	(mg/L)	0.000	(mg/L)
č≓ č	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Closure Aluminum			
	concentration of conference into DM 10	0 -10	0.10	(
ta	concentration of surface water into PM-12	$C_{s12} = C_{s13} =$	0.12	(mg/L) (mg/L)
n da	concentration in Babbitt WWTP discharge	C_sBab =	0.12	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.01325	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	6.37E-01	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.80E-01	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	1.5788	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	0.025	(mg/L)
비	concentration of ground water into PM-13	C_g13 =	0.025	(mg/L)

			Low Flo	w	Average I	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	42.82	(mg/s)	486	(mg/s)
	mass flux of ground water into PM-12	M_g12 =	0.61	(mg/s)	0.61	(mg/s)	0.61	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	1.12	(mg/s)	1.12	(mg/s)	1.12	(mg/s)
itrai	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	208.96	(mg/s)	2,386	(mg/s)
Icer	mass flux of ground water into PM-13	M_g13 =	2.98	(mg/s)	2.98	(mg/s)	2.98	(mg/s)
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	0.10	(mg/s)	0.75	(mg/s)	0.75	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	44.20	(mg/s)	44.20	(mg/s)	44.20	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	74.66	(mg/s)	74.66	(mg/s)	74.66	(mg/s)
			Low Flow		Average Flow		High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	1.73	(mg/s)	44.55	(mg/s)	487.90	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	123.68	(mg/s)	376.10	(mg/s)	2,996.29	(mg/s)
			Low Flo	w	Average I	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.051	(mg/L)	0.114	(mg/L)	0.119	(mg/L)
Conver flux to concen	concentration in river at PM-13	C_r13 =	0.447	(mg/L)	0.155	(mg/L)	0.124	(mg/L)

Case Parameter	Closure Arsenic			
	concentration of surface water into PM-12	C_s12 =	0.00075	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00075	(mg/L)
, p	concentration in Babbitt WWTP discharge	C_sBab =	0.00075	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.001325	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.012359831	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004	(mg/L)
Lo L	concentration in tailings basin cell 2W	C_s2w =	0.00291	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.00273	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.00273	(mg/L)

			Low Flo	w	Average	Flow	High Flo	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.27	(mg/s)	3	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.31	(mg/s)	15	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.33	(mg/s)	0.33	(mg/s)	0.33	(mg/s)
u xnl	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.86	(mg/s)	0.86	(mg/s)	0.86	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.14	(mg/s)	0.14	(mg/s)	0.14	(mg/s)
			Low Flo	w	Average	Flow	High Flo	ow
balance ch node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	 0.34	(mg/s)	3.11	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	1.40	(mg/s)	3.04	(mg/s)	19.42	(mg/s)
		-	LOW FIO	w	Average	FIOW	High Fi	ow
ert mass o entration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	0.001	(mg/L)	0.001	(mg/L)
Conv flux te conce	concentration in river at PM-13	C_r13 =	0.005	(mg/L)	0.001	(mg/L)	0.001	(mg/L)

Case	Closure			
Parameter	Boron			
		-		
	concentration of surface water into PM-12	C_s12 =	0.027	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.027	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	0.027	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.1315	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.198832748	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.11	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.33	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.0212	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.0212	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	9.64	(mg/s)	109	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.52	(mg/s)	0.52	(mg/s)	0.52	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.25	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	47.02	(mg/s)	537	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2.53	(mg/s)	2.53	(mg/s)	2.53	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.97	(mg/s)	7.41	(mg/s)	7.41	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	13.79	(mg/s)	13.79	(mg/s)	13.79	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	15.61	(mg/s)	15.61	(mg/s)	15.61	(mg/s)
			Low Flow		Average Flow		High Flow	
s balance ich node	mass flux in river at PM-12	M_r12 =	0.77	(mg/s)	10.40	(mg/s)	110.16	(mg/s)
Mas: at ea	mass flux in river at PM-13	M_r13 =	33.66	(mg/s)	96.75	(mg/s)	686.29	(mg/s)
		-	Low Flo	W	Average	Flow	High Fl	ow
ert mass o entration	concentration in river at PM-12	C_r12 =	0.023	(mg/L)	0.027	(mg/L)	0.027	(mg/L)
Conv flux to conce	concentration in river at PM-13	C_r13 =	0.122	(mg/L)	0.040	(mg/L)	0.028	(mg/L)

Case Parameter	Closure Barium			
		-		1
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
ר data	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0044	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	4.81E-02	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	5.00E-03	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.09298	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	0.0681	(mg/L)
<u>d</u>	concentration of ground water into PM-13	C_g13 =	0.0681	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5.71	(mg/s)	65	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	1.66	(mg/s)	1.66	(mg/s)	1.66	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.86	(mg/s)	318	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	8.11	(mg/s)	8.11	(mg/s)	8.11	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
ss to	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	3.34	(mg/s)	3.34	(mg/s)	3.34	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	4.40	(mg/s)	4.40	(mg/s)	4.40	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	1.81	(mg/s)	7.52	(mg/s)	66.63	(mg/s)
Mass bé at each	mass flux in river at PM-13	M_r13 =	17.69	(mg/s)	51.47	(mg/s)	400.83	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass itration	concentration in river at PM-12	C_r12 =	0.054	(mg/L)	0.019	(mg/L)	0.016	(mg/L)
Conver flux to concen	concentration in river at PM-13	C r13 =	0.064	(mg/L)	0.021	(mg/L)	0.017	(mg/L)

Case Parameter	Closure Beryllium			
		-		
	concentration of surface water into PM-12	C_s12 =	0.0001	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0001	(mg/L)
ů p c	concentration in Babbitt WWTP discharge	C_sBab =	0.0001	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000808254	(mg/L)
cei	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0	(mg/L)
Lo L	concentration in tailings basin cell 2W	C_s2w =	0.00075	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.000023	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.000023	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.04	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.17	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	-	(mg/s)	-	(mg/s)	-	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
llance node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.04	(mg/s)	0.41	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	0.10	(mg/s)	0.31	(mg/s)	2.49	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
onvert mass ux to oncentration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
č≓ S	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Closure Calcium			
			n	
	concentration of surface water into PM-12	C_s12 =	15	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	15	(mg/L)
p c	concentration in Babbitt WWTP discharge		15	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	95.35	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	59.94387899	(mg/L)
ICel	concentration in hydrometallurgical residue cells liner leakage		416	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	59.78	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	19	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	19	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5,352.95	(mg/s)	60,771	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	462.42	(mg/s)	462.42	(mg/s)	462.42	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	140.09	(mg/s)	140.09	(mg/s)	140.09	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	26,119.49	(mg/s)	298,224	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2,263.72	(mg/s)	2,263.72	(mg/s)	2,263.72	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	701.59	(mg/s)	5,369.83	(mg/s)	5,369.83	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	4,157.57	(mg/s)	4,157.57	(mg/s)	4,157.57	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	19.51	(mg/s)	19.51	(mg/s)	19.51	(mg/s)
<u>ب</u> د	mass flux in seepage from cell 2W	M_s2w =	2,826.97	(mg/s)	2,826.97	(mg/s)	2.80	(mg/s)
			Low Flo	W	Average	Flow	High Fl	ow
alance n node	mass flux in river at PM-12	M_r12 =	602.51	(mg/s)	5,955.45	(mg/s)	61,373.93	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	10,571.86	(mg/s)	46,712.53	(mg/s)	371,411.34	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	17.891	(mg/L)	15.249	(mg/l)	15.024	(mg/l)
Convel flux to concer	concentration in river at PM-13	C_r13 =	38.183	(mg/L)	19.271	(mg/l)	15.310	(mg/l)

Case	Closure			
Parameter	Cadmium			
	concentration of surface water into PM-12	C_s12 =	0.00008	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00008	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	0.00008	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000227872	(mg/L)
Icer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0004	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	0.000188	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0003	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.0003	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.03	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.14	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.02	(mg/s)	0.02	(mg/s)	0.02	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance h node	mass flux in river at PM-12	M_r12 =	0.01	(mg/s)	0.04	(mg/s)	0.33	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	0.07	(mg/s)	0.24	(mg/s)	1.99	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ert mass ntration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Closure Chloride			
		a 1		r
	concentration of surface water into PM-12	C_s12 =	6.5	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	6.5	(mg/L)
р ц	concentration in Babbitt WWTP discharge	C_sBab =	6.5	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	5.95	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	6.29E+00	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.76E+03	(mg/L)
COL	concentration in tailings basin cell 2W	C_s2w =	21.54	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	1.8	(mg/L)
별	concentration of ground water into PM-13	C_g13 =	1.8	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,319.61	(mg/s)	26,334	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	43.81	(mg/s)	43.81	(mg/s)	43.81	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	60.70	(mg/s)	60.70	(mg/s)	60.70	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	11,318.44	(mg/s)	129,230	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	214.46	(mg/s)	214.46	(mg/s)	214.46	(mg/s)
u xnl	mass flux of Area 5 Pit NW discharge	M_spit =	43.78	(mg/s)	335.09	(mg/s)	335.09	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	436.24	(mg/s)	436.24	(mg/s)	436.24	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	82.56	(mg/s)	82.56	(mg/s)	82.56	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	1,018.62	(mg/s)	1,018.62	(mg/s)	1,018.62	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance h node	mass flux in river at PM-12	M_r12 =	104.51	(mg/s)	2,424.12	(mg/s)	26,438.79	(mg/s)
Mass t at eacl	mass flux in river at PM-13	M_r13 =	1,900.17	(mg/s)	15,829.53	(mg/s)	157,756.15	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	3.103	(mg/L)	 6.207	(mg/L)	6.472	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	6.863	(mg/L)	6.530	(mg/L)	6.503	(mg/L)

Case Parameter	Closure Cobalt			
		-		1
	concentration of surface water into PM-12	C_s12 =	0.0006	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0006	(mg/L)
р ц	concentration in Babbitt WWTP discharge	C_sBab =	0.0006	(mg/L)
Ę	concentration in Area 5 Pit NW discharge	C_spit =	0.000555	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001356866	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.005	(mg/L)
CO	concentration in tailings basin cell 2W	C_s2w =	0.001556	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.0011	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.0011	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.21	(mg/s)	2	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.04	(mg/s)	12	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.13	(mg/s)	0.13	(mg/s)	0.13	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.09	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
<u>۽</u> ک	mass flux in seepage from cell 2W	M_s2w =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ach node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.25	(mg/s)	2.46	(mg/s)
Mas at e	mass flux in river at PM-13	M r13 =	0.34	(ma/s)	1.62	(ma/s)	14.72	(ma/s)
			Low Flo	w	Average	Flow	High Fl	ow
Convert mass lux to concentration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.001	(mg/L)	0.001	(mg/L)

Case	Closure			
Parameter	Copper			
	concentration of surface water into PM-12	C_s12 =	0.0015	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0015	(mg/L)
βρι	concentration in Babbitt WWTP discharge	C_sBab =	0.0015	(mg/L)
tio	concentration in Area 5 Pit NW discharge		0.00345	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.018240705	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0015	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.004555	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.004	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.004	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.54	(mg/s)	6	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.10	(mg/s)	0.10	(mg/s)	0.10	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.61	(mg/s)	30	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.48	(mg/s)	0.48	(mg/s)	0.48	(mg/s)
u xnl	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.19	(mg/s)	0.19	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.27	(mg/s)	1.27	(mg/s)	1.27	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.22	(mg/s)	0.22	(mg/s)	0.22	(mg/s)
			Low Flow		Average	Flow	High Flov	
alance node	mass flux in river at PM-12	M_r12 =	0.11	(mg/s)	0.65	(mg/s)	6.19	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	2.09	(mg/s)	5.41	(mg/s)	38.16	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.003	(mg/L)	0.002	(mg/L)	0.002	(mg/L)
Conver flux to concen	concentration in river at PM-13	C_r13 =	0.008	(mg/L)	0.002	(mg/L)	0.002	(mg/L)

Case Parameter	Closure Fluoride			
	concentration of surface water into PM-12	C_s12 =	0.2	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.2	(mg/L)
3 de	concentration in Babbitt WWTP discharge	C_sBab =	0.2	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.125	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	1.82E-02	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	2.85E+00	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	1.55	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.385	(mg/L)
du du	concentration of ground water into PM-13	C_g13 =	0.385	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	71.37	(mg/s)	810	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	9.37	(mg/s)	9.37	(mg/s)	9.37	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	1.87	(mg/s)	1.87	(mg/s)	1.87	(mg/s)
ntra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	348.26	(mg/s)	3,976	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	45.87	(mg/s)	45.87	(mg/s)	45.87	(mg/s)
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	0.92	(mg/s)	7.04	(mg/s)	7.04	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.27	(mg/s)	1.27	(mg/s)	1.27	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.13	(mg/s)	0.13	(mg/s)	0.13	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	73.30	(mg/s)	73.30	(mg/s)	73.30	(mg/s)
			Low Flow		Average	Flow	High Fl	ow
balance h node	mass flux in river at PM-12	M_r12 =	11.24	(mg/s)	82.61	(mg/s)	821.52	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	132.73	(mg/s)	558.48	(mg/s)	4,925.45	(mg/s)
		1	LOW FIO	w	 Average	FIOW	High Fi	ow
ert mass o intration	concentration in river at PM-12	C_r12 =	0.334	(mg/L)	 0.212	(mg/L)	0.201	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.479	(mg/L)	0.230	(mg/L)	0.203	(mg/L)

Case	Closure			
Parameter	Iron			
	concentration of surface water into PM-12	C_s12 =	2.9	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	2.9	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	2.9	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.037761905	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	6.75E-01	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	4.00E-01	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	4.594	(mg/L)
ont	concentration of ground water into PM-12	C_g12 =	0.035	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.035	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,034.90	(mg/s)	11,749	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.85	(mg/s)	0.85	(mg/s)	0.85	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	27.08	(mg/s)	27.08	(mg/s)	27.08	(mg/s)
itrai	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	5,049.77	(mg/s)	57,657	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	4.17	(mg/s)	4.17	(mg/s)	4.17	(mg/s)
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	0.28	(mg/s)	2.13	(mg/s)	2.13	(mg/s)
ert c ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	46.80	(mg/s)	46.80	(mg/s)	46.80	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.02	(mg/s)	0.02	(mg/s)	0.02	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	217.25	(mg/s)	217.25	(mg/s)	217.25	(mg/s)
			Low Flow		Average	Flow	High Fl	ow
balance node	mass flux in river at PM-12	M_r12 =	27.93	(mg/s)	1,062.84	(mg/s)	11,777.08	(mg/s)
Mass k at each	mass flux in river at PM-13	M_r13 =	296.45	(mg/s)	6,382.97	(mg/s)	69,704.07	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass utration	concentration in river at PM-12	C_r12 =	0.829	(mg/L)	2.721	(mg/L)	2.883	(mg/L)
Convel flux to concer	concentration in river at PM-13	C_r13 =	1.071	(mg/L)	2.633	(mg/L)	2.873	(mg/L)

Case	Closure			
Parameter	Hardness			
		-		
	concentration of surface water into PM-12	C_s12 =	70	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	70	(mg/L)
β	concentration in Babbitt WWTP discharge	C_sBab =	70	(mg/L)
ţi	concentration in Area 5 Pit NW discharge		942.7142857	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	227	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	8610	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	436.6	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	87.5	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	87.5	(mg/L)

			Low Flow		Average	Flow		High Flow	
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	24,980.41	(mg/s)		283,600	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	2,129.58	(mg/s)	2,129.58	(mg/s)		2,129.58	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	653.73	(mg/s)	653.73	(mg/s)		653.73	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	121,890.93	(mg/s)		1,391,712	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	10,425.01	(mg/s)	10,425.01	(mg/s)		10,425.01	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	6,936.49	(mg/s)	53,090.84	(mg/s)		53,090.84	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	15,770.06	(mg/s)	15,770.06	(mg/s)		15,770.06	(mg/s)
nve	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	403.90	(mg/s)	403.90	(mg/s)		403.90	(mg/s)
<u>م</u> ک	mass flux in seepage from cell 2W	M_s2w =	20,646.59	(mg/s)	20,646.59	(mg/s)		20,646.59	(mg/s)
			Low Flow		Average	Average Flow		High Flo	
balance h node	mass flux in river at PM-12	M_r12 =	2,783.31	(mg/s)	27,763.72	(mg/s)		286,383.27	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	56,965.36	(mg/s)	249,991.05	(mg/s)		1,778,431.60	(mg/s)
			LOW FIO	w	Average	Flow		Fign Fi	ow
ert mass o entration	concentration in river at PM-12	C_r12 =	82.647	(mg/L)	71.091	(mg/L)		70.104	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	205.746	(mg/L)	103.132	(mg/L)		73.311	(mg/L)

Case Parameter	Closure Potassium			
		-		1
	concentration of surface water into PM-12	C_s12 =	0.60	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.60	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.60	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	53.80	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	13.37	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.80	(mg/L)
CO CO	concentration in tailings basin cell 2W	C_s2w =	7.77	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	1.60	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	1.60	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	214.12	(mg/s)	2,431	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	38.94	(mg/s)	38.94	(mg/s)	38.94	(mg/s)
tion	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.08	(mg/s)	0.08	(mg/s)	0.08	(mg/s)
ntra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1,044.78	(mg/s)	11,929	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	190.63	(mg/s)	190.63	(mg/s)	190.63	(mg/s)
u xn	mass flux in Babbitt WWTP discharge	M_sBab =	5.60	(mg/s)	5.60	(mg/s)	5.60	(mg/s)
ert e ss t	mass flux of Area 5 Pit NW discharge	M_spit =	395.86	(mg/s)	3,029.85	(mg/s)	3,029.85	(mg/s)
ma	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	927.38	(mg/s)	927.38	(mg/s)	927.38	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	367.44	(mg/s)	367.44	(mg/s)	367.44	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ich node	mass flux in river at PM-12	M_r12 =	39.03	(mg/s)	253.14	(mg/s)	2,469.88	(mg/s)
Mas: at ea	mass flux in river at PM-13	M_r13 =	1,925.94	(mg/s)	5,818.83	(mg/s)	18,919.75	(mg/s)
			Low Flo	W	Average	Flow	High Fl	ow
vert mass to centration	concentration in river at PM-12	C_r12 =	1.159	(mg/L)	0.648	(mg/L)	0.605	(mg/l)
Con Con con	concentration in river at PM-13	C_r13 =	6.956	(mg/L)	2.401	(mg/L)	0.780	(mg/l)

Case	Closure			
Parameter	Magnesium			
	concentration of surface water into PM-12	C_s12 =	5.90	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	5.90	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	5.90	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	271.00	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	18.87	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	213.00	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	69.97	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	10.65	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	10.65	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,105.49	(mg/s)	23,903	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	259.20	(mg/s)	259.20	(mg/s)	259.20	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	55.10	(mg/s)	55.10	(mg/s)	55.10	(mg/s)
itrai	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,273.66	(mg/s)	117,301	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1,268.87	(mg/s)	1,268.87	(mg/s)	1,268.87	(mg/s)
u s n	mass flux of Area 5 Pit NW discharge	M_spit =	1,994.02	(mg/s)	15,261.91	(mg/s)	15,261.91	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1,308.55	(mg/s)	1,308.55	(mg/s)	1,308.55	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	9.99	(mg/s)	9.99	(mg/s)	9.99	(mg/s)
<u>۽</u> ک	mass flux in seepage from cell 2W	M_s2w =	3,308.85	(mg/s)	3,308.85	(mg/s)	3,308.85	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ach node	mass flux in river at PM-12	M_r12 =	314.30	(mg/s)	2,419.79	(mg/s)	24,217.73	(mg/s)
Mas at e	mass flux in river at PM-13	M r13 =	8.204.58	(ma/s)	33.851.63	(ma/s)	162.677.33	(ma/s)
			Low Flo	w	Average	Flow	High Fl	ow
Convert mass lux to concentration	concentration in river at PM-12	C_r12 =	9.333	(mg/L)	6.196	(mg/l)	5.928	(mg/l)
Case	Closure							
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Parameter	Manganese							
			-					
	concentration of surface water into PM-12	C_s12 =	0.30	(mg/L)				
ata	concentration of surface water into PM-13	C_s13 =	0.30	(mg/L)				
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.30	(mg/L)				
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.49	(mg/L)				
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.28	(mg/L)				
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.00	(mg/L)				
CO CO	concentration in tailings basin cell 2W	C_s2w =	1.18	(mg/L)				
nt	concentration of ground water into PM-12	C_g12 =	0.19	(mg/L)				
법	concentration of ground water into PM-13	C_g13 =	0.19	(mg/L)				

			Low Flo	w	Average	Flow		High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	107.06	(mg/s)		1,215	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	4.58	(mg/s)	4.58	(mg/s)		4.58	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	2.80	(mg/s)	2.80	(mg/s)		2.80	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	522.39	(mg/s)		5,964	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	22.40	(mg/s)	22.40	(mg/s)		22.40	(mg/s)
u xnl	mass flux of Area 5 Pit NW discharge	M_spit =	3.57	(mg/s)	27.31	(mg/s)		27.31	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	19.17	(mg/s)	19.17	(mg/s)		19.17	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
ទ បិ	mass flux in seepage from cell 2W	M_s2w =	55.94	(mg/s)	55.94	(mg/s)		55.94	(mg/s)
			Low Flow		Average	Average Flow		High Flow	
alance n node	mass flux in river at PM-12	M_r12 =	7.38	(mg/s)	114.44	(mg/s)		1,222.81	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	108.46	(mg/s)	761.65	(mg/s)		7,312.11	(mg/s)
			Low Flo	w	Average	Flow		High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.219	(mg/L)	0.293	(mg/l)		0.299	(mg/l)
Conve flux to concei	concentration in river at PM-13	C_r13 =	0.392	(mg/L)	0.314	(mg/l)		0.301	(mg/l)

Case	Closure			
Parameter	Sodium			
	concentration of surface water into PM-12	C_s12 =	6.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	6.00	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	6.00	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	119.50	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	12.15	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	255.00	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	44.31	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	4.90	(mg/L)
별	concentration of ground water into PM-13	C_g13 =	4.90	(mg/L)

			Low Flo	w	Average	Flow	High F	low
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,141.18	(mg/s)	24,309	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	119.26	(mg/s)	119.26	(mg/s)	119.26	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	56.03	(mg/s)	56.03	(mg/s)	56.03	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,447.79	(mg/s)	119,290	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	583.80	(mg/s)	583.80	(mg/s)	583.80	(mg/s)
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	879.28	(mg/s)	6,729.88	(mg/s)	6,729.88	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	842.70	(mg/s)	842.70	(mg/s)	842.70	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	11.96	(mg/s)	11.96	(mg/s)	11.96	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	2,095.40	(mg/s)	2,095.40	(mg/s)	2,095.40	(mg/s)
			Low Flo	w	Average	Flow	High Fl	low
Mass balance at each node	mass flux in river at PM-12	M_r12 =	4 588 43	(mg/s)	2,316.47	(mg/s)	24,483.86	(mg/s)
			Low Flo	w	Average	Flow	High F	low
Convert mass lux to concentration	concentration in river at PM-12	C_r12 =	5.205	(mg/L)	5.931	(mg/l)	5.993	(mg/l)

Case Parameter	Closure Nickel			
	concentration of surface water into PM-12	C s12 =	0.0012	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0012	(mg/L)
b c	concentration in Babbitt WWTP discharge	C_sBab =	0.0012	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0052	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.015125217	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.098	(mg/L)
Co	concentration in tailings basin cell 2W	C_s2w =	0.00688	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.007	(mg/L)
ln	concentration of ground water into PM-13	C_g13 =	0.007	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.43	(mg/s)	5	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.17	(mg/s)	0.17	(mg/s)	0.17	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.09	(mg/s)	24	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.83	(mg/s)	0.83	(mg/s)	0.83	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.04	(mg/s)	0.29	(mg/s)	0.29	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.05	(mg/s)	1.05	(mg/s)	1.05	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.33	(mg/s)	0.33	(mg/s)	0.33	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance sch node	mass flux in river at PM-12	M_r12 =	0.18	(mg/s)	0.61	(mg/s)	5.04	(mg/s)
Mas: at ea	mass flux in river at PM-13	M_r13 =	2.43	(mg/s)	5.21	(mg/s)	31.41	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
nvert mass k to 1centration	concentration in river at PM-12	C_r12 =	0.005	(mg/L)	 0.002	(mg/L)	0.001	(mg/L)
S thus	concentration in river at PM-13	C_r13 =	0.009	(mg/L)	0.002	(mg/L)	0.001	(mg/L)

Case Parameter	Closure Lead			
		4		
	concentration of surface water into PM-12	C_s12 =	0.00015	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00015	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.00015	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0003	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001097329	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0005	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.0012	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0012	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.0012	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.05	(mg/s)	1	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.26	(mg/s)	3	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.14	(mg/s)	0.14	(mg/s)	0.14	(mg/s)
u s l	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.02	(mg/s)	0.02	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.08	(mg/s)	0.08	(mg/s)	0.08	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
<u>۽</u> ک	mass flux in seepage from cell 2W	M_s2w =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t balance ch node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.08	(mg/s)	0.64	(mg/s)
Mass at ea	mass flux in river at PM-13	M_r13 =	0.31	(mg/s)	0.64	(mg/s)	3.91	(mg/s)
		-	Low Flo	W	Average	Flow	 High Fl	ow
ert mass o entration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conv flux te conce	concentration in river at PM-13	C_r13 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Closure			
Parameter	Antimony			
		-		
	concentration of surface water into PM-12	C_s12 =	4.00E-05	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00E-05	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	4.00E-05	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	2.50E-04	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	5.37E-03	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	2.50E-04	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	1.50E-03	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	1.50E-03	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.01	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.07	(mg/s)	1	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.18	(mg/s)	0.18	(mg/s)	0.18	(mg/s)
u s l	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.37	(mg/s)	0.37	(mg/s)	0.37	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
oalance n node	mass flux in river at PM-12	M_r12 =	0.04	(mg/s)	0.05	(mg/s)	0.20	(mg/s)
Mass b at eacl	mass flux in river at PM-13	M_r13 =	0.60	(mg/s)	0.70	(mg/s)	1.57	(mg/s)
			LOW FIO	W	Average	FIOW	High Fi	ow
't mass ntration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conver flux to concer	concentration in river at PM-13	C_r13 =	0.002	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Closure Selenium			
	concentration of surface water into PM-12	C_s12 =	0.0003	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0003	(mg/L)
р с р	concentration in Babbitt WWTP discharge	C_sBab =	0.0003	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0016	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001503093	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.054	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.00109	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.00295	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.00295	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.11	(mg/s)	1	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.52	(mg/s)	6	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.35	(mg/s)	0.35	(mg/s)	0.35	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
ert o ss 1	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.10	(mg/s)	0.10	(mg/s)	0.10	(mg/s)
ma ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.05	(mg/s)	0.05	(mg/s)	0.05	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	0.18	(mg/s)	1.29	(mg/s)
Mass at ea	mass flux in river at PM-13	M_r13 =	0.60	(mg/s)	1.30	(mg/s)	7.85	(mg/s)
			LOW FIO	w	Average	FIOW	High Fi	ow
ert mass o entration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	 0.000	(mg/L)	0.000	(mg/L)
Conv filux ti conci	concentration in river at PM-13	C_r13 =	0.002	(mg/L)	0.001	(mg/L)	0.000	(mg/L)

Case Parameter	Closure Sulfate			
	concentration of surface water into PM-12	C_s12 =	4.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00	(mg/L)
sh r	concentration in Babbitt WWTP discharge	C_sBab =	4.00	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	1046.27	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	110.25	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	7347.00	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	152.40	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	8.50	(mg/L)
dul	concentration of ground water into PM-13	C_g13 =	8.50	(mg/L)

			Low Flo	w	Average	Flow		High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,427.45	(mg/s)		16,206	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	206.87	(mg/s)	206.87	(mg/s)		206.87	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	37.36	(mg/s)	37.36	(mg/s)		37.36	(mg/s)
trai	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	6,965.20	(mg/s)		79,526	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1,012.72	(mg/s)	1,012.72	(mg/s)		1,012.72	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	7,698.43	(mg/s)	58,922.60	(mg/s)		58,922.60	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	7,646.82	(mg/s)	7,646.82	(mg/s)		7,646.82	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	344.66	(mg/s)	344.66	(mg/s)		344.66	(mg/s)
ធ បំ	mass flux in seepage from cell 2W	M_s2w =	7,206.92	(mg/s)	7,206.92	(mg/s)		7,206.92	(mg/s)
			Low Flow		Average	Flow	High Flow		ow
Mass balance at each node	mass flux in river at PM-12	M_r12 =	244.23	(mg/s)	1,671.68	(mg/s)		16,449.94	(mg/s)
			Low Flo	w	Average	Flow		High Fl	ow
convert mass lux to oncentration	concentration in river at PM-12	C_r12 =	7.252	(mg/L)	4.280	(mg/l)		4.027	(mg/l)

Case Parameter	Closure Thallium			
	concentration of surface water into PM-12	C_s12 =	0.0002	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0002	(mg/L)
a de	concentration in Babbitt WWTP discharge	C_sBab =	0.0002	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0006	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000917488	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0002	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.0002	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.000004	(mg/L)
du du	concentration of ground water into PM-13	C_g13 =	0.000004	(mg/L)

			Low Flo	w	Average	Flow		High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.07	(mg/s)		1	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.35	(mg/s)		4	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
u s n	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)		0.03	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.06	(mg/s)	0.06	(mg/s)		0.06	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)		0.01	(mg/s)
			Low Flow		Average Flow		High Flow		ow
balance h node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.07	(mg/s)		0.81	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	0.08	(mg/s)	0.53	(mg/s)		4.90	(mg/s)
		_	LOW FIO	w	Average	TIOW		High Fi	ow
rt mass utration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)		0.000	(mg/L)
Convel flux to concer	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)		0.000	(mg/L)

Case Parameter	Closure Zinc			
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
n dê	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.003	(mg/L)
utra 1	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.020231354	(mg/L)
Cei	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.01	(mg/L)
Lo So	concentration in tailings basin cell 2W	C_s2w =	0.01435	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	0.0115	(mg/L)
<u>u</u>	concentration of ground water into PM-13	C_g13 =	0.0115	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5.71	(mg/s)	65	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.28	(mg/s)	0.28	(mg/s)	0.28	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.86	(mg/s)	318	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1.37	(mg/s)	1.37	(mg/s)	1.37	(mg/s)
u xnl	mass flux of Area 5 Pit NW discharge	M_spit =	0.02	(mg/s)	0.17	(mg/s)	0.17	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.40	(mg/s)	1.40	(mg/s)	1.40	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.68	(mg/s)	0.68	(mg/s)	0.68	(mg/s)
			Low Flow		Average Flow		High Fl	ow
alance n node	mass flux in river at PM-12	M_r12 =	0.43	(mg/s)	6.14	(mg/s)	65.25	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	3.90	(mg/s)	37.62	(mg/s)	386.98	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass	concentration in river at PM-12	C_r12 =	0.013	(mg/L)	0.016	(mg/L)	0.016	(mg/L)
Conve flux to concer	concentration in river at PM-13	C_r13 =	0.014	(mg/L)	0.016	(mg/L)	0.016	(mg/L)

Appendix F.8 Embarrass River Proposed Action Post-Closure

FLOWS

Case	Post-Closure				
Flows	Low Flow Conditions (no surface runoff)				Node
in s River	flow in river at PM-12	Q_r12_L =	1.19	(cfs)	PM-12
al flow barrass	flow in river at PM-13	Q_r13_L =	9.47	(cfs)	PM-13
Tota Emt	flow check	Q_ck_L =	9.47	(cfs)	_
	surface water flow into PM-12	Q_s12_L =	0.00	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_L =	0.00	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_L =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_L =	0.26	(cfs)	PM-13
ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_L =	2.45	(cfs)	PM-13
/ da	hydrometallurgical residue cells liner leakage	Q_rrs_L =	0.00	(cfs)	PM-13
low	seepage from cell 2W	Q_s2w_L =	1.36	(cfs)	PM-13
it	ground water flow into PM-12	Q_g12_L =	0.86	(cfs)	PM-12
dul	ground water flow into PM-13	Q_g13_L =	4.21	(cfs)	PM-13

Case	Post-Closure				
Flow	Average Flow Conditions (mean annual)				_
in River	flow in river at PM-12	Q_r12_M =	13.80	(cfs)	PM-12
flow i arrass	flow in river at PM-13	Q_r13_M =	85.34	(cfs)	PM-13
Total Embi	flow check	Q_ck_M =	85.34	(cfs)	
	surface water flow into PM-12	Q s12 M =	12.61	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_M =	61.53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_M =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_M =	1.99	(cfs)	PM-13
ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_M =	2.45	(cfs)	PM-13
/ da	hydrometallurgical residue cells liner leakage	Q_rrs_M =	0.00	(cfs)	PM-13
flow	seepage from cell 2W	Q_s2w_M =	1.36	(cfs)	PM-13
outi	ground water flow into PM-12	Q_g12_M =	0.86	(cfs)	PM-12
u u	ground water flow into PM-13	Q_g13_M =	4.21	(cfs)	PM-13

Case	Post-Closure				
Flow	High Flow Conditions (avg. annual 1-day ma	ax flow)			
n River	flow in river at PM-12	Q_r12_H =	144.35	(cfs)	PM-12
flow i arrass	flow in river at PM-13	Q_r13_H =	856.89	(cfs)	PM-13
Total Emba	flow check	Q_ck_H =	856.89	(cfs)	_
	surface water flow into PM-12	Q_s12_H =	143.16	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_H =	702.53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_H =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_H =	1.99	(cfs)	PM-13
ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_H =	2.45	(cfs)	PM-13
/ da	hydrometallurgical residue cells liner leakage	Q_rrs_H =	0.00	(cfs)	PM-13
low	seepage from cell 2W	Q_s2w_H =	1.36	(cfs)	PM-13
et 1	ground water flow into PM-12	Q_g12_H =	0.86	(cfs)	PM-12
u u	ground water flow into PM-13	Q q13 H =	4.21	(cfs)	PM-13

Case Parameter	Post-Closure Silver			
	concentration of surface water into PM-12	C s12 -	0.00011	(ma/L)
ata	concentration of surface water into PM-12	C_s12 =	0.00011	(mg/L)
sb r	concentration in Babbitt WWTP discharge	C_sBab =	0.00011	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.00015	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.00097	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.000125	(mg/L)
CO	concentration in tailings basin cell 2W	C_s2w =	0.000100	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	0.000008	(mg/L)
ц Ц	concentration of ground water into PM-13	C_g13 =	0.00008	(mg/L)

			Low Flo	w	Average I	Flow		High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.04	(mg/s)		0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
centra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.19	(mg/s)		2	(mg/s)
	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)		0.01	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.07	(mg/s)	0.07	(mg/s)		0.07	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
			Low Flow		Average Flow		High Flow		ow
balance node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.04	(mg/s)		0.45	(mg/s)
Mass k at each	mass flux in river at PM-13	M_r13 =	0.07	(mg/s)	0.31	(mg/s)		2.71	(mg/s)
			Low Flo	w	Average I	Flow		High Fl	ow
ert mass o intration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)		0.000	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)		0.000	(mg/L)

Case Parameter	Post-Closure Aluminum			
	1	1		
	concentration of surface water into PM-12	C_s12 =	0.12	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.12	(mg/L)
р с р	concentration in Babbitt WWTP discharge	C_sBab =	0.12	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.01325	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	6.37E-01	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.80E-01	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	1.5788	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.025	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.025	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	42.82	(mg/s)	486	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.61	(mg/s)	0.61	(mg/s)	0.61	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	1.12	(mg/s)	1.12	(mg/s)	1.12	(mg/s)
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	208.96	(mg/s)	2,386	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2.98	(mg/s)	2.98	(mg/s)	2.98	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.10	(mg/s)	0.75	(mg/s)	0.75	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	44.20	(mg/s)	44.20	(mg/s)	44.20	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	60.72	(mg/s)	60.72	(mg/s)	60.72	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	1.73	(mg/s)	44.55	(mg/s)	487.90	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	109.74	(mg/s)	362.17	(mg/s)	2,982.35	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.051	(mg/L)	0.114	(mg/L)	0.119	(mg/L)
Conver flux to concen	concentration in river at PM-13	C r13 =	0.409	(mg/L)	0.150	(mg/L)	0.123	(mg/L)

Case Parameter	Post-Closure Arsenic			
		1		
	concentration of surface water into PM-12	C_s12 =	0.00075	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00075	(mg/L)
р с р	concentration in Babbitt WWTP discharge	C_sBab =	0.00075	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.001325	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.012359831	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.00291	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.00273	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.00273	(mg/L)

			Low Flo	W	Average	Flow	High Flow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.27	(mg/s)	3 (mg/s)
	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07 (mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01 (mg/s)
ıtral	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.31	(mg/s)	15 (mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.33	(mg/s)	0.33	(mg/s)	0.33 (mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.07	(mg/s)	0.07 (mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.86	(mg/s)	0.86	(mg/s)	0.86 (mg/s)
n ve mas	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00 (mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	0.11	(mg/s)	0.11	(mg/s)	0.11 (mg/s)
			Low Flo	w	Average	Flow	High Flow
lance node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	0.34	(mg/s)	3.11 (mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	1.38	(mg/s)	3.02	(mg/s)	19.39 (mg/s)
			Low Flo	w	Average	Flow	High Flow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.0022	(mg/L)	0.001	(mg/L)	0.001 (mg/L)
Conve flux to concel	concentration in river at PM-13	C_r13 =	0.0051	(mg/L)	0.001	(mg/L)	0.001 (mg/L)

Case	Post-Closure			
Parameter	Boron			
	concentration of surface water into PM-12	C_s12 =	0.027	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.027	(mg/L)
ů pr	concentration in Babbitt WWTP discharge		0.027	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.1315	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.198832748	(mg/L)
cei	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.11	(mg/L)
Lo L	concentration in tailings basin cell 2W	C_s2w =	0.33	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0212	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.0212	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	9.64	(mg/s)	109	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.52	(mg/s)	0.52	(mg/s)	0.52	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.25	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	47.02	(mg/s)	537	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2.53	(mg/s)	2.53	(mg/s)	2.53	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.97	(mg/s)	7.41	(mg/s)	7.41	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	13.79	(mg/s)	13.79	(mg/s)	13.79	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
<u>۽</u> ک	mass flux in seepage from cell 2W	M_s2w =	12.69	(mg/s)	12.69	(mg/s)	12.69	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ss balance ach node	mass flux in river at PM-12	M_r12 =	0.77	(mg/s)	10.40	(mg/s)	110.16	(mg/s)
Mas at e	mass flux in river at PM-13	M r13 =	30.75	(mg/s)	93.84	(mg/s)	683.38	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
Convert mass lux to concentration	concentration in river at PM-12	C_r12 =	0.023	(mg/L)	0.027	(mg/L)	0.027	(mg/L)

Case Parameter	Post-Closure Barium			
-		-	-	
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
p di	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0044	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	4.81E-02	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	5.00E-03	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	0.09298	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.0681	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.0681	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5.71	(mg/s)	65	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	1.66	(mg/s)	1.66	(mg/s)	1.66	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
ıtrai	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.86	(mg/s)	318	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	8.11	(mg/s)	8.11	(mg/s)	8.11	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	3.34	(mg/s)	3.34	(mg/s)	3.34	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	3.58	(mg/s)	3.58	(mg/s)	3.58	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	1.81	(mg/s)	7.52	(mg/s)	66.63	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	16.87	(mg/s)	50.65	(mg/s)	400.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.054	(mg/L)	0.019	(mg/L)	0.016	(mg/L)
Conver flux to concen	concentration in river at PM-13	C r13 =	0.063	(mg/L)	0.021	(mg/L)	0.016	(mg/L)

Case Parameter	Post-Closure Bervllium			
	concentration of surface water into PM-12	C_s12 =	0.0001	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0001	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.0001	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000808254	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage		0	(mg/L)
CO	concentration in tailings basin cell 2W	C_s2w =	0.00075	(mg/L)
rt .	concentration of ground water into PM-12	C_g12 =	0.000023	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.000023	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.04	(mg/s)	0	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.17	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	-	(mg/s)	-	(mg/s)	-	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance n node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.04	(mg/s)	0.41	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	0.09	(mg/s)	0.30	(mg/s)	2.49	(mg/s)
			Low Flo	W	Average	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Convel flux to concer	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Post-Closure Calcium			
	concentration of surface water into PM-12	C_s12 =	15	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	15	(mg/L)
n de	concentration in Babbitt WWTP discharge	C_sBab =	15	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	95.35	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	59.94387899	(mg/L)
ICEI	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	416	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	59.78	(mg/L)
out	concentration of ground water into PM-12	C_g12 =	19	(mg/L)
dul	concentration of ground water into PM-13	C_g13 =	19	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5,352.95	(mg/s)	60,771	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	462.42	(mg/s)	462.42	(mg/s)	462.42	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	140.09	(mg/s)	140.09	(mg/s)	140.09	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	26,119.49	(mg/s)	298,224	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2,263.72	(mg/s)	2,263.72	(mg/s)	2,263.72	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	701.59	(mg/s)	5,369.83	(mg/s)	5,369.83	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	4,157.57	(mg/s)	4,157.57	(mg/s)	4,157.57	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	19.51	(mg/s)	19.51	(mg/s)	19.51	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	2,299.27	(mg/s)	2,299.27	(mg/s)	2.80	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	602.51	(mg/s)	5,955.45	(mg/s)	61,373.93	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	10,044.16	(mg/s)	46,184.83	(mg/s)	371,411.34	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	17.891	(mg/L)	15.249	(mg/l)	15.024	(mg/l)
Convert flux to concent	concentration in river at PM-13	C r13 =	37.472	(mg/L)	19.123	(mg/l)	15.316	(mg/l)

Case Parameter	Post-Closure Cadmium			
		0	0.00000	(
_	concentration of surface water into PM-12	$C_{$12} =$	0.00008	(mg/L)
ate	concentration of surface water into PM-13	C_s13 =	0.00008	(mg/L)
pu	concentration in Babbitt WWTP discharge	C_sBab =	0.00008	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000227872	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0004	(mg/L)
Lo S	concentration in tailings basin cell 2W	C_s2w =	0.000188	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.0003	(mg/L)
<u> </u>	concentration of ground water into PM-13	C_g13 =	0.0003	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.03	(mg/s)	0	(mg/s)
	mass flux of ground water into PM-12	M_g12 =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.14	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
u no	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.02	(mg/s)	0.02	(mg/s)	0.02	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
<u>۽</u> ٽ	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance th node	mass flux in river at PM-12	M_r12 =	0.01	(mg/s)	0.04	(mg/s)	0.33	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	0.07	(mg/s)	0.24	(mg/s)	1.99	(mg/s)
			Low Flo	W	Average	Flow	High Fl	ow
/ert mass to entration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conv flux 1 conc	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Post-Closure Chloride			
	concentration of surface water into PM-12	C_s12 =	6.5	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	6.5	(mg/L)
م م	concentration in Babbitt WWTP discharge	C_sBab =	6.5	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	5.95	(mg/L)
ut ra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	6.29E+00	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.76E+03	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	21.54	(mg/L)
rt .	concentration of ground water into PM-12	C_g12 =	1.8	(mg/L)
ä	concentration of ground water into PM-13	C_g13 =	1.8	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,319.61	(mg/s)	26,334	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	43.81	(mg/s)	43.81	(mg/s)	43.81	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	60.70	(mg/s)	60.70	(mg/s)	60.70	(mg/s)
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	11,318.44	(mg/s)	129,230	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	214.46	(mg/s)	214.46	(mg/s)	214.46	(mg/s)
u s l	mass flux of Area 5 Pit NW discharge	M_spit =	43.78	(mg/s)	335.09	(mg/s)	335.09	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	436.24	(mg/s)	436.24	(mg/s)	436.24	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	82.56	(mg/s)	82.56	(mg/s)	82.56	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	828.47	(mg/s)	828.47	(mg/s)	828.47	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
oalance h node	mass flux in river at PM-12	M_r12 =	104.51	(mg/s)	 2,424.12	(mg/s)	26,438.79	(mg/s)
Mass ł at eacl	mass flux in river at PM-13	M_r13 =	1,710.03	(mg/s)	15,639.39	(mg/s)	157,566.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	3.103	(mg/L)	 6.207	(mg/L)	6.472	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	6.380	(mg/L)	6.475	(mg/L)	6.498	(mg/L)

Case	Post-Closure			
Parameter	Cobalt			
		-	-	
	concentration of surface water into PM-12	C_s12 =	0.0006	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0006	(mg/L)
n dâ	concentration in Babbitt WWTP discharge	C_sBab =	0.0006	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.000555	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001356866	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.005	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.001556	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0011	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.0011	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.21	(mg/s)	2	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.04	(mg/s)	12	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.13	(mg/s)	0.13	(mg/s)	0.13	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.09	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ulance node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.25	(mg/s)	2.46	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	0.32	(mg/s)	1.61	(mg/s)	14.71	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.001	(mg/L)	0.001	(mg/L)
Conver flux to concen	concentration in river at PM-13	C r13 =	0.001	(mg/L)	0.001	(mg/L)	0.001	(mg/L)

Case Parameter	Post-Closure Copper			
		-		
	concentration of surface water into PM-12	C_s12 =	0.0015	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0015	(mg/L)
р р	concentration in Babbitt WWTP discharge	C_sBab =	0.0015	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.00345	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.018240705	(mg/L)
ICEI	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0015	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.004555	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.004	(mg/L)
<u> </u>	concentration of ground water into PM-13	C_g13 =	0.004	(mg/L)

			Low Flo	W	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.54	(mg/s)	6	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.10	(mg/s)	0.10	(mg/s)	0.10	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.61	(mg/s)	30	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.48	(mg/s)	0.48	(mg/s)	0.48	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.19	(mg/s)	0.19	(mg/s)
ert e ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.27	(mg/s)	1.27	(mg/s)	1.27	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.18	(mg/s)	0.18	(mg/s)	0.18	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.11	(mg/s)	0.65	(mg/s)	6.19	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	2.05	(mg/s)	5.37	(mg/s)	38.12	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.00331	(mg/L)	 0.002	(mg/L)	0.002	(mg/L)
Conve flux to concei	concentration in river at PM-13	C_r13 =	0.00766	(mg/L)	0.002	(mg/L)	0.002	(mg/L)

Case Parameter	Post-Closure Fluoride			
	concentration of surface water into PM-12	C s12 =	0.2	(ma/L)
ata	concentration of surface water into PM-13	C_s13 =	0.2	(mg/L)
n de	concentration in Babbitt WWTP discharge	C_sBab =	0.2	(mg/L)
tior	concentration in Area 5 Pit NW discharge	C_spit =	0.125	(mg/L)
itra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	1.82E-02	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	2.85E+00	(mg/L)
COL	concentration in tailings basin cell 2W	C_s2w =	1.55	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.385	(mg/L)
<u> </u>	concentration of ground water into PM-13	C_g13 =	0.385	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	71.37	(mg/s)	810	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	9.37	(mg/s)	9.37	(mg/s)	9.37	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	1.87	(mg/s)	1.87	(mg/s)	1.87	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	348.26	(mg/s)	3,976	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	45.87	(mg/s)	45.87	(mg/s)	45.87	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.92	(mg/s)	7.04	(mg/s)	7.04	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.27	(mg/s)	1.27	(mg/s)	1.27	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.13	(mg/s)	0.13	(mg/s)	0.13	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	59.62	(mg/s)	59.62	(mg/s)	59.62	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance h node	mass flux in river at PM-12	M_r12 =	11.24	(mg/s)	82.61	(mg/s)	821.52	(mg/s)
Mass I at eacl	mass flux in river at PM-13	M_r13 =	119.04	(mg/s)	544.80	(mg/s)	4,911.77	(mg/s)
			Low Flo	W	Average	Flow	High Fl	ow
rt mass htration	concentration in river at PM-12	C_r12 =	0.334	(mg/L)	0.212	(mg/L)	0.201	(mg/L)
Conve flux to concer	concentration in river at PM-13	C_r13 =	0.444	(mg/L)	0.226	(mg/L)	0.203	(mg/L)

Case Parameter	Post-Closure Iron			
		-		
	concentration of surface water into PM-12	C_s12 =	2.9	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	2.9	(mg/L)
р ц	concentration in Babbitt WWTP discharge	C_sBab =	2.9	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.037761905	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	6.75E-01	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	4.00E-01	(mg/L)
Lo S	concentration in tailings basin cell 2W	C_s2w =	4.594	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.035	(mg/L)
<u>u</u>	concentration of ground water into PM-13	C_g13 =	0.035	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,034.90	(mg/s)	11,749	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.85	(mg/s)	0.85	(mg/s)	0.85	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	27.08	(mg/s)	27.08	(mg/s)	27.08	(mg/s)
ntra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	5,049.77	(mg/s)	57,657	(mg/s)
cer	mass flux of ground water into PM-13	M_g13 =	4.17	(mg/s)	4.17	(mg/s)	4.17	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.28	(mg/s)	2.13	(mg/s)	2.13	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	46.80	(mg/s)	46.80	(mg/s)	46.80	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.02	(mg/s)	0.02	(mg/s)	0.02	(mg/s)
<u>۽</u> ک	mass flux in seepage from cell 2W	M_s2w =	176.69	(mg/s)	176.69	(mg/s)	176.69	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ss balance ach node	mass flux in river at PM-12	M_r12 =	27.93	(mg/s)	 1,062.84	(mg/s)	11,777.08	(mg/s)
Ma: at e	mass flux in river at PM-13	M_r13 =	255.89	(mg/s)	6,342.41	(mg/s)	69,663.52	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
Convert mass lux to concentration	concentration in river at PM-12	C_r12 =	0.829	(mg/L)	2.721	(mg/L)	2.883	(mg/L)

Case	Post-Closure			
Parameter	Hardness			
		-		
	concentration of surface water into PM-12	C_s12 =	70	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	70	(mg/L)
βρι	concentration in Babbitt WWTP discharge	C_sBab =	70	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	942.7142857	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	2.27E+02	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	8.61E+03	(mg/L)
- D	concentration in tailings basin cell 2W	C_s2w =	436.6	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	87.5	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	87.5	(mg/L)

			Low Flo	W	Average	Flow	High Fl	low
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	24,980.41	(mg/s)	283,600	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	2,129.58	(mg/s)	2,129.58	(mg/s)	2,129.58	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	653.73	(mg/s)	653.73	(mg/s)	653.73	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	121,890.93	(mg/s)	1,391,712	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	10,425.01	(mg/s)	10,425.01	(mg/s)	10,425.01	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	6,936.49	(mg/s)	53,090.84	(mg/s)	53,090.84	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	15,770.06	(mg/s)	15,770.06	(mg/s)	15,770.06	(mg/s)
m ke	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	403.90	(mg/s)	403.90	(mg/s)	403.90	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	16,792.56	(mg/s)	16,792.56	(mg/s)	16,792.56	(mg/s)
			Low Flo	W	Average	Flow	High Fl	low
lance node	mass flux in river at PM-12	M_r12 =	2,783.31	(mg/s)	27,763.72	(mg/s)	286,383.27	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	53,111.33	(mg/s)	246,137.02	(mg/s)	1,774,577.57	(mg/s)
			Low Flo	W	Average	Flow	High Fl	low
ert mass o entration	concentration in river at PM-12	C_r12 =	82.647	(mg/L)	71.091	(mg/L)	70.104	(mg/L)
Conv flux tu conce	concentration in river at PM-13	C_r13 =	198.144	(mg/L)	101.913	(mg/L)	73.178	(mg/L)

Case Parameter	Post-Closure Potassium			
	concentration of surface water into PM-12	C_s12 =	0.60	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.60	(mg/L)
sp r	concentration in Babbitt WWTP discharge	C_sBab =	0.60	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	53.80	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	13.37	(mg/L)
ICEI	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.80	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	7.77	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	1.60	(mg/L)
벸	concentration of ground water into PM-13	C_g13 =	1.60	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	214.12	(mg/s)	2,431	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	38.94	(mg/s)	38.94	(mg/s)	38.94	(mg/s)
tior	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.08	(mg/s)	0.08	(mg/s)	0.08	(mg/s)
ntrat	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1,044.78	(mg/s)	11,929	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	190.63	(mg/s)	190.63	(mg/s)	190.63	(mg/s)
u xnt	mass flux in Babbitt WWTP discharge	M_sBab =	5.60	(mg/s)	5.60	(mg/s)	5.60	(mg/s)
ert o ss f	mass flux of Area 5 Pit NW discharge	M_spit =	395.86	(mg/s)	3,029.85	(mg/s)	3,029.85	(mg/s)
ma	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	927.38	(mg/s)	927.38	(mg/s)	927.38	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	298.85	(mg/s)	298.85	(mg/s)	298.85	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t balance ch node	mass flux in river at PM-12	M_r12 =	39.03	(mg/s)	253.14	(mg/s)	2,469.88	(mg/s)
Mass at ea	mass flux in river at PM-13	M_r13 =	1,857.35	(mg/s)	5,750.24	(mg/s)	18,851.16	(mg/s)
			Low Flo	W	Average	Flow	High Fl	ow
vert mass to entration	concentration in river at PM-12	C_r12 =	1.159	(mg/L)	0.648	(mg/L)	0.605	(mg/l)
Conc	concentration in river at PM-13	C_r13 =	6.929	(mg/L)	2.381	(mg/L)	0.777	(mg/l)

Case Parameter	Post-Closure Magnesium			
	concentration of surface water into PM-12	C_s12 =	5.90	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	5.90	(mg/L)
sp r	concentration in Babbitt WWTP discharge	C_sBab =	5.90	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	271.00	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	18.87	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	213.00	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	69.97	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	10.65	(mg/L)
ů L	concentration of ground water into PM-13	C_g13 =	10.65	(mg/L)

			Low Flo	w	Average I	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,105.49	(mg/s)	23,903	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	259.20	(mg/s)	259.20	(mg/s)	259.20	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	55.10	(mg/s)	55.10	(mg/s)	55.10	(mg/s)
central	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,273.66	(mg/s)	117,301	(mg/s)
	mass flux of ground water into PM-13	M_g13 =	1,268.87	(mg/s)	1,268.87	(mg/s)	1,268.87	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	1,994.02	(mg/s)	15,261.91	(mg/s)	15,261.91	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1,308.55	(mg/s)	1,308.55	(mg/s)	1,308.55	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	9.99	(mg/s)	9.99	(mg/s)	9.99	(mg/s)
ធ បិ	mass flux in seepage from cell 2W	M_s2w =	2,691.19	(mg/s)	2,691.19	(mg/s)	2,691.19	(mg/s)
			Low Flo	w	Average I	Flow	High Fl	ow
ulance node	mass flux in river at PM-12	M_r12 =	314.30	(mg/s)	2,419.79	(mg/s)	24,217.73	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	7,586.93	(mg/s)	33,233.97	(mg/s)	162,059.68	(mg/s)
			Low Flo	w	Average I	Flow	High Fl	ow
ert mass ntration	concentration in river at PM-12	C_r12 =	9.333	(mg/L)	6.196	(mg/l)	5.928	(mg/l)
Conve flux to conce	concentration in river at PM-13	C_r13 =	28.305	(mg/L)	13.761	(mg/l)	6.683	(mg/l)

Case	Post-Closure			
Parameter	Manganese			
	concentration of surface water into PM-12	C_s12 =	0.30	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.30	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.30	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.49	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.28	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.00	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	1.18	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.19	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.19	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	107.06	(mg/s)	1,215	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	4.58	(mg/s)	4.58	(mg/s)	4.58	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	2.80	(mg/s)	2.80	(mg/s)	2.80	(mg/s)
ntral	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	522.39	(mg/s)	5,964	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	22.40	(mg/s)	22.40	(mg/s)	22.40	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	3.57	(mg/s)	27.31	(mg/s)	27.31	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	19.17	(mg/s)	19.17	(mg/s)	19.17	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	45.50	(mg/s)	45.50	(mg/s)	45.50	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance node	mass flux in river at PM-12	M_r12 =	7.38	(mg/s)	114.44	(mg/s)	1,222.81	(mg/s)
Mass k at each	mass flux in river at PM-13	M_r13 =	98.02	(mg/s)	751.21	(mg/s)	7,301.67	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.219	(mg/L)	0.293	(mg/l)	0.299	(mg/l)
Convel flux to concer	concentration in river at PM-13	C_r13 =	0.366	(mg/L)	0.311	(mg/l)	0.301	(mg/l)

Case	Post-Closure			
Parameter	Sodium	1		
	concentration of surface water into PM-12	C_s12 =	6.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	6.00	(mg/L)
p di	concentration in Babbitt WWTP discharge	C_sBab =	6.00	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	119.50	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	12.15	(mg/L)
Icel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	255.00	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	44.31	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	4.90	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	4.90	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,141.18	(mg/s)	24,309	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	119.26	(mg/s)	119.26	(mg/s)	119.26	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	56.03	(mg/s)	56.03	(mg/s)	56.03	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,447.79	(mg/s)	119,290	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	583.80	(mg/s)	583.80	(mg/s)	583.80	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	879.28	(mg/s)	6,729.88	(mg/s)	6,729.88	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	842.70	(mg/s)	842.70	(mg/s)	842.70	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	11.96	(mg/s)	11.96	(mg/s)	11.96	(mg/s)
ي د د	mass flux in seepage from cell 2W	M_s2w =	1,704.26	(mg/s)	1,704.26	(mg/s)	1,704.26	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
oalance n node	mass flux in river at PM-12	M_r12 =	175.29	(mg/s)	2,316.47	(mg/s)	24,483.86	(mg/s)
Mass k at each	mass flux in river at PM-13	M_r13 =	4,197.29	(mg/s)	22,636.87	(mg/s)	153,646.06	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	5.205	(mg/L)	5.931	(mg/l)	5.993	(mg/l)
Conver flux to concen	concentration in river at PM-13	C_r13 =	15.659	(mg/L)	9.373	(mg/l)	6.336	(mg/l)

Case Parameter	Post-Closure Nickel			
	concentration of surface water into PM-12	C_s12 =	0.0012	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0012	(mg/L)
b c	concentration in Babbitt WWTP discharge	C_sBab =	0.0012	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0052	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.015125217	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.098	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.00688	(mg/L)
out	concentration of ground water into PM-12	C_g12 =	0.007	(mg/L)
ln	concentration of ground water into PM-13	C_g13 =	0.007	(mg/L)

			Low Flo	W	Average I	Flow	High Flow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.43	(mg/s)	5 (mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.17	(mg/s)	0.17	(mg/s)	0.17 (mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01 (mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.09	(mg/s)	24 (mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.83	(mg/s)	0.83	(mg/s)	0.83 (mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.04	(mg/s)	0.29	(mg/s)	0.29 (mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.05	(mg/s)	1.05	(mg/s)	1.05 (mg/s)
nve	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00 (mg/s)
ទ បិ	mass flux in seepage from cell 2W	M_s2w =	0.26	(mg/s)	0.26	(mg/s)	0.26 (mg/s)
			Low Flo	W	Average	Flow	High Flow
alance node	mass flux in river at PM-12	M_r12 =	0.18	(mg/s)	0.61	(mg/s)	5.04 (mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	2.37	(mg/s)	5.14	(mg/s)	31.35 (mg/s)
			Low Flo	w	Average I	Flow	High Flow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.005	(mg/L)	0.002	(mg/L)	0.001 (mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.009	(mg/L)	0.002	(mg/L)	0.001 (mg/L)

Case	Post-Closure			
Parameter	Lead			
	concentration of surface water into PM-12	C_s12 =	0.00015	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00015	(mg/L)
р ц	concentration in Babbitt WWTP discharge	C_sBab =	0.00015	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0003	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001097329	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0005	(mg/L)
Loo Co	concentration in tailings basin cell 2W	C_s2w =	0.0012	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0012	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.0012	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.05	(mg/s)	1	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.26	(mg/s)	3	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.14	(mg/s)	0.14	(mg/s)	0.14	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.02	(mg/s)	0.02	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.08	(mg/s)	0.08	(mg/s)	0.08	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ បិ	mass flux in seepage from cell 2W	M_s2w =	0.05	(mg/s)	0.05	(mg/s)	0.05	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.08	(mg/s)	0.64	(mg/s)
Mass bê at each	mass flux in river at PM-13	M_r13 =	0.30	(mg/s)	0.63	(mg/s)	3.90	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ert mass o ntration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Post-Closure Antimony			
	concentration of surface water into PM-12	C_s12 =	4.00E-05	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00E-05	(mg/L)
p di	concentration in Babbitt WWTP discharge	C_sBab =	4.00E-05	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	2.50E-04	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	5.37E-03	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	2.50E-04	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	1.50E-03	(mg/L)
dul	concentration of ground water into PM-13	C_g13 =	1.50E-03	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.01	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.07	(mg/s)	1	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.18	(mg/s)	0.18	(mg/s)	0.18	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.37	(mg/s)	0.37	(mg/s)	0.37	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance n node	mass flux in river at PM-12	M_r12 =	0.04	(mg/s)	0.05	(mg/s)	0.20	(mg/s)
Mass k at each	mass flux in river at PM-13	M_r13 =	0.60	(mg/s)	0.70	(mg/s)	1.57	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conve flux to concer	concentration in river at PM-13	C_r13 =	0.002	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Post-Closure Selenium			
		_	n	
	concentration of surface water into PM-12	C_s12 =	0.0003	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0003	(mg/L)
ip u	concentration in Babbitt WWTP discharge	C_sBab =	0.0003	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0016	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001503093	(mg/L)
ICEI	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.054	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	0.00109	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.00295	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.00295	(mg/L)

			Low Flo	w	Average I	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.11	(mg/s)	1	(mg/s)
	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.52	(mg/s)	6	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.35	(mg/s)	0.35	(mg/s)	0.35	(mg/s)
u s n	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.10	(mg/s)	0.10	(mg/s)	0.10	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	0.18	(mg/s)	1.29	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	0.59	(mg/s)	1.29	(mg/s)	7.84	(mg/s)
			Low Flo	w	Average I	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conver filux to concen	concentration in river at PM-13	C_r13 =	0.002	(mg/L)	0.001	(mg/L)	0.000	(mg/L)

Case Parameter	Post-Closure Sulfate			
		-		
	concentration of surface water into PM-12	C_s12 =	4.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00	(mg/L)
ip u	concentration in Babbitt WWTP discharge	C_sBab =	4.00	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	1046.27	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	110.25	(mg/L)
ICEI	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	7347.00	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	152.40	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	8.50	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	8.50	(mg/L)

			Low Flo	w	Average I	Flow	High Fl	low
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,427.45	(mg/s)	16,206	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	206.87	(mg/s)	206.87	(mg/s)	206.87	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	37.36	(mg/s)	37.36	(mg/s)	37.36	(mg/s)
tral	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	6,965.20	(mg/s)	79,526	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1,012.72	(mg/s)	1,012.72	(mg/s)	1,012.72	(mg/s)
uo Xn	mass flux of Area 5 Pit NW discharge	M_spit =	7,698.43	(mg/s)	58,922.60	(mg/s)	58,922.60	(mg/s)
ss fo	mass flux in seepage from Tailings Basin Cells 1E and 2E	M fs =	7,646.82	(mg/s)	7,646.82	(mg/s)	7,646.82	(mg/s)
nve mas	mass flux in hydrometallurgical residue cells liner leakage	M rrs =	344.66	(mg/s)	344.66	(mg/s)	344.66	(mg/s)
<u>ء</u> ک	mass flux in seepage from cell 2W	M_s2w =	5,861.63	(mg/s)	5,861.63	(mg/s)	5,861.63	(mg/s)
			Low Flo	w	Average I	Flow	High Fl	low
balance 1 node	mass flux in river at PM-12	M_r12 =	244.23	(mg/s)	1,671.68	(mg/s)	16,449.94	(mg/s)
Mass t at eacl	mass flux in river at PM-13	M_r13 =	22,808.48	(mg/s)	82,425.30	(mg/s)	169,764.76	(mg/s)
			Low Flo	w	Average I	Flow	High Fl	ow
't mass ntration	concentration in river at PM-12	C_r12 =	7.252	(mg/L)	4.280	(mg/l)	4.027	(mg/l)
Convel flux to concer	concentration in river at PM-13	C r13 =	85.092	(mg/L)	34.128	(mg/l)	7.001	(mg/l)

Case Parameter	Post-Closure Thallium			
		2		
	concentration of surface water into PM-12	C_s12 =	0.0002	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0002	(mg/L)
ip u	concentration in Babbitt WWTP discharge	C_sBab =	0.0002	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0006	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000917488	(mg/L)
ICEI	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0002	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	0.0002	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.000004	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.000004	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.07	(mg/s)	1	(mg/s)
	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.35	(mg/s)	4	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
u s n	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.07	(mg/s)	0.81	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	0.08	(mg/s)	0.53	(mg/s)	4.89	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conver filux to concen	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Post-Closure Zinc			
	concentration of surface water into PM-12	C s12 =	0.016	(mg/L)
ta	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
ab r	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
tior	concentration in Area 5 Pit NW discharge	C_spit =	0.003	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.020231354	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.01	(mg/L)
Cor	concentration in tailings basin cell 2W	C_s2w =	0.01435	(mg/L)
ont	concentration of ground water into PM-12	C_g12 =	0.0115	(mg/L)
u u	concentration of ground water into PM-13	C_g13 =	0.0115	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5.71	(mg/s)	65	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.28	(mg/s)	0.28	(mg/s)	0.28	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.86	(mg/s)	318	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1.37	(mg/s)	1.37	(mg/s)	1.37	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.02	(mg/s)	0.17	(mg/s)	0.17	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.40	(mg/s)	1.40	(mg/s)	1.40	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
<u>۽</u> ک	mass flux in seepage from cell 2W	M_s2w =	0.55	(mg/s)	0.55	(mg/s)	0.55	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ass balance each node	mass flux in river at PM-12	M_r12 =	0.43	(mg/s)	6.14	(mg/s)	65.25	(mg/s)
M, at	mass flux in river at PM-13	M_r13 =	3.78	(mg/s)	37.49	(mg/s)	386.85	(mg/s)
		-	Low Flo	w	Average	Flow	High Fl	ow
onvert mass ux to oncentration	concentration in river at PM-12	C_r12 =	0.013	(mg/L)	0.016	(mg/L)	0.016	(mg/L)
CĘδ	concentration in river at PM-13	C_r13 =	0.014	(mg/L)	0.016	(mg/L)	0.016	(mg/L)
Appendix F.9 Embarrass River Geotechnical Mitigation Year 1

FLOWS

Case	Year 1				
Flows	Low Flow Conditions (no surface runoff)				Node
r in is River	flow in river at PM-12	Q_r12_L =	1.19	(cfs)	PM-12
low ras	flow in river at PM-13	Q_r13_L =	11.22	(cfs)	PM-13
Total f Embar	flow check	Q_ck_L =	11.22	(cfs)	
	surface water flow into PM-12	Q_s12_L =	0.00	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_L =	0.00	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_L =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_L =	0.26	(cfs)	PM-13
Ita	seepage from Tailings Basin Cells 1E and 2E	Q_fs_L =	3.56	(cfs)	PM-13
v da	hydrometallurgical residue cells liner leakage	Q_rrs_L =	0.0010	(cfs)	PM-13
flov	seepage from cell 2W	Q_s2w_L =	1.99	(cfs)	PM-13
nt	ground water flow into PM-12	Q_g12_L =	0.86	(cfs)	PM-12
dul	ground water flow into PM-13	Q_g13_L =	4.21	(cfs)	PM-13

Case	Year 1				
Flow	Average Flow Conditions (mean annual)				
/ in is River	flow in river at PM-12	Q_r12_M =	13.80	(cfs)	PM-12
low ras	flow in river at PM-13	Q_r13_M =	87.09	(cfs)	PM-13
Total f Embar	flow check	Q_ck_M =	87.09	(cfs)	
	surface water flow into PM-12	Q_s12_M =	12.61	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_M =	61.53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_M =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_M =	1.99	(cfs)	PM-13
Ita	seepage from Tailings Basin Cells 1E and 2E	Q_fs_M =	3.56	(cfs)	PM-13
/ da	hydrometallurgical residue cells liner leakage	Q_rrs_M =	0.0010	(cfs)	PM-13
low	seepage from cell 2W	Q_s2w_M =	1.99	(cfs)	PM-13
nt	ground water flow into PM-12	Q_g12_M =	0.86	(cfs)	PM-12
dul	ground water flow into PM-13	Q_g13_M =	4.21	(cfs)	PM-13

Case	Year 1				
Flow	High Flow Conditions (avg. annual 1-day ma	ax flow)			
n River	flow in river at PM-12	Q_r12_H =	144.35	(cfs)	PM-12
flow iı ırrass	flow in river at PM-13	Q_r13_H =	858.64	(cfs)	PM-13
Total Emba	flow check	Q_ck_H =	858.64	(cfs)	
	surface water flow into PM-12	Q_s12_H =	143.16	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_H =	702.53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_H =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_H =	1.99	(cfs)	PM-13
ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_H =	3.56	(cfs)	PM-13
/ da	hydrometallurgical residue cells liner leakage	Q_rrs_H =	0.0010	(cfs)	PM-13
lov	seepage from cell 2W	Q_s2w_H =	1.99	(cfs)	PM-13
rt j	ground water flow into PM-12	Q_g12_H =	0.86	(cfs)	PM-12
aul	ground water flow into PM-13	Q g13 H =	4.21	(cfs)	PM-13

Case Parameter	Year 1 Silver			
	concentration of surface water into PM-12	C_s12 =	0.00011	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00011	(mg/L)
ab r	concentration in Babbitt WWTP discharge	C_sBab =	0.00011	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.00015	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.00086	(mg/L)
Icer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.000125	(mg/L)
cou	concentration in tailings basin cell 2W	C_s2w =	0.000100	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.00008	(mg/L)
별	concentration of ground water into PM-13	C_g13 =	0.00008	(mg/L)

			Low Flo	W	Average I	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.04	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.19	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.09	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
m ke	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	W	Average I	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.04	(mg/s)	0.45	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	0.10	(mg/s)	0.33	(mg/s)	2.74	(mg/s)
			Low Flo	w	Average I	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.00004	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conve flux to concer	concentration in river at PM-13	C_r13 =	0.00030	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Year 1			
Parameter	Aluminum			
	concentration of surface water into PM-12	C_s12 =	0.12	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.12	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.12	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.01325	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.01	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.18	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	1.5788	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.025	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.025	(mg/L)

			Low Flo	W	Average	Flow	High F	low
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	42.82	(mg/s)	486	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.61	(mg/s)	0.61	(mg/s)	0.61	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	1.12	(mg/s)	1.12	(mg/s)	1.12	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	208.96	(mg/s)	2,386	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2.98	(mg/s)	2.98	(mg/s)	2.98	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.10	(mg/s)	0.75	(mg/s)	0.75	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.01	(mg/s)	1.01	(mg/s)	1.01	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ទ បិ	mass flux in seepage from cell 2W	M_s2w =	89.10	(mg/s)	89.10	(mg/s)	89.10	(mg/s)
			Low Flo	w	Average	Flow	High F	low
ulance node	mass flux in river at PM-12	M_r12 =	1.73	(mg/s)	44.55	(mg/s)	487.90	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	94.91	(mg/s)	347.34	(mg/s)	2,967.53	(mg/s)
			Low Flo	w	Average	Flow	High F	low
ert mass o entration	concentration in river at PM-12	C_r12 =	0.051	(mg/L)	0.114	(mg/L)	0.119	(mg/L)
Conv filux t	concentration in river at PM-13	C_r13 =	0.299	(mg/L)	0.141	(mg/L)	0.122	(mg/L)

Case	Year 1			
Parameter	Arsenic			
		-		
	concentration of surface water into PM-12	C_s12 =	0.00075	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00075	(mg/L)
р с р	concentration in Babbitt WWTP discharge	C_sBab =	0.00075	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.001325	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.006769615	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.00291	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.00273	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.00273	(mg/L)

			Low Flo	W	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.27	(mg/s)	3	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.31	(mg/s)	15	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.33	(mg/s)	0.33	(mg/s)	0.33	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.68	(mg/s)	0.68	(mg/s)	0.68	(mg/s)
m ke	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	0.16	(mg/s)	0.16	(mg/s)	0.16	(mg/s)
			Low Flo	W	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	0.34	(mg/s)	3.11	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	1.26	(mg/s)	2.89	(mg/s)	19.27	(mg/s)
			Low Flo	W	Average	Flow	High Fl	ow
rt mass itration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	0.001	(mg/L)	0.001	(mg/L)
Convel flux to concer	concentration in river at PM-13	C_r13 =	0.004	(mg/L)	0.001	(mg/L)	0.001	(mg/L)

Case	Year 1			
Parameter	Boron			
	concentration of surface water into PM-12	C_s12 =	0.027	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.027	(mg/L)
p di	concentration in Babbitt WWTP discharge	C_sBab =	0.027	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.1315	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.137838474	(mg/L)
ICEI	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.11	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	0.33	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.0212	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.0212	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	9.64	(mg/s)	109	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.52	(mg/s)	0.52	(mg/s)	0.52	(mg/s)
tration	mass flux in Babbitt WWTP discharge	M_sBab =	0.25	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	47.02	(mg/s)	537	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2.53	(mg/s)	2.53	(mg/s)	2.53	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.97	(mg/s)	7.41	(mg/s)	7.41	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	13.91	(mg/s)	13.91	(mg/s)	13.91	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	18.62	(mg/s)	18.62	(mg/s)	18.62	(mg/s)
			Low Flo	w	Average	Flow	High Flow	
alance node	mass flux in river at PM-12	M_r12 =	0.77	(mg/s)	10.40	(mg/s)	110.16	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	36.79	(mg/s)	99.88	(mg/s)	689.42	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.023	(mg/L)	0.027	(mg/L)	0.027	(mg/L)
Conve flux to concel	concentration in river at PM-13	C_r13 =	0.116	(mg/L)	0.041	(mg/L)	0.028	(mg/L)

Case Parameter	Year 1 Barium			
rarameter	Bandin	1		
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0044	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	5.05E-02	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	5.00E-03	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.09298	(mg/L)
out	concentration of ground water into PM-12	C_g12 =	0.0681	(mg/L)
L L	concentration of ground water into PM-13	C_g13 =	0.0681	(mg/L)

			Low Flo	W	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5.71	(mg/s)	65	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	1.66	(mg/s)	1.66	(mg/s)	1.66	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.86	(mg/s)	318	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	8.11	(mg/s)	8.11	(mg/s)	8.11	(mg/s)
u xni	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	5.09	(mg/s)	5.09	(mg/s)	5.09	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	5.25	(mg/s)	5.25	(mg/s)	5.25	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	1.81	(mg/s)	7.52	(mg/s)	66.63	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	20.29	(mg/s)	54.08	(mg/s)	403.43	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ivert mass to centration	concentration in river at PM-12	C_r12 =	0.054	(mg/L)	0.019	(mg/L)	0.016	(mg/L)
Cor flux con	concentration in river at PM-13	C_r13 =	0.064	(mg/L)	0.022	(mg/L)	0.017	(mg/L)

Case	Year 1			
Parameter	Beryllium			
			-	
	concentration of surface water into PM-12	C_s12 =	0.0001	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0001	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.0001	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000376001	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.00075	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.000023	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.000023	(mg/L)

			Low Flo	w	Average I	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.04	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.17	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
m ke	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	-	(mg/s)	-	(mg/s)	-	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
			Low Flo	W	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.04	(mg/s)	0.41	(mg/s)
Mass bé at each	mass flux in river at PM-13	M_r13 =	0.09	(mg/s)	0.30	(mg/s)	2.48	(mg/s)
			Low Flo	w	Average I	Flow	High Fl	ow
t mass ntration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conver filux to concer	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Year 1			
Parameter	Calcium			
		-		
	concentration of surface water into PM-12	C_s12 =	15	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	15	(mg/L)
р с р	concentration in Babbitt WWTP discharge	C_sBab =	15	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	95.35	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	77.28097689	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	416	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	59.78	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	19	(mg/L)
u u	concentration of ground water into PM-13	C_g13 =	19	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5,352.95	(mg/s)	60,771	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	462.42	(mg/s)	462.42	(mg/s)	462.42	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	140.09	(mg/s)	140.09	(mg/s)	140.09	(mg/s)
itrai	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	26,119.49	(mg/s)	298,224	(mg/s)
, ,	mass flux of ground water into PM-13	M_g13 =	2,263.72	(mg/s)	2,263.72	(mg/s)	2,263.72	(mg/s)
u si l	mass flux of Area 5 Pit NW discharge	M_spit =	701.59	(mg/s)	5,369.83	(mg/s)	5,369.83	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	7,796.40	(mg/s)	7,796.40	(mg/s)	7,796.40	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	12.28	(mg/s)	12.28	(mg/s)	12.28	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	3,373.51	(mg/s)	3,373.51	(mg/s)	1.77	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	602.51	(mg/s)	5,955.45	(mg/s)	61,373.93	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	14,750.01	(mg/s)	50,890.68	(mg/s)	 375,041.91	(mg/s)
			LOW TIO		Average	1100	Ingili	011
ert mass o entration	concentration in river at PM-12	C_r12 =	17.891	(mg/L)	15.249	(mg/l)	15.024	(mg/l)
Conv flux t	concentration in river at PM-13	C_r13 =	46.453	(mg/L)	20.648	(mg/l)	15.434	(mg/l)

Case	Year 1			
Parameter	Cadmium			
	concentration of surface water into PM-12	C_s12 =	0.00008	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00008	(mg/L)
р ц	concentration in Babbitt WWTP discharge	C_sBab =	0.00008	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.00032784	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0004	(mg/L)
COL	concentration in tailings basin cell 2W	C_s2w =	0.000188	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0003	(mg/L)
<u>u</u>	concentration of ground water into PM-13	C_g13 =	0.0003	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.03	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.14	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert c ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	W	Average Flow		High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	0.01	(mg/s)	0.04	(mg/s)	0.33	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	0.09	(mg/s)	0.26	(mg/s)	2.01	(mg/s)
			Low Flo	w	Average I	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conve flux to concei	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Year 1			
Parameter	Chloride			
	concentration of surface water into PM-12	C_s12 =	6.5	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	6.5	(mg/L)
р р	concentration in Babbitt WWTP discharge	C_sBab =	6.5	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	5.95	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	1.52E+01	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.76E+03	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	21.54	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	1.8	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	1.8	(mg/L)

			Low Flo	w		Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)		2,319.61	(mg/s)	26,334	(mg/s)
	mass flux of ground water into PM-12	M_g12 =	43.81	(mg/s)		43.81	(mg/s)	43.81	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	60.70	(mg/s)		60.70	(mg/s)	60.70	(mg/s)
Itral	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)		11,318.44	(mg/s)	129,230	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	214.46	(mg/s)		214.46	(mg/s)	214.46	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	43.78	(mg/s)		335.09	(mg/s)	335.09	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1,538.17	(mg/s)		1,538.17	(mg/s)	1,538.17	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	51.97	(mg/s)		51.97	(mg/s)	51.97	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	1,215.55	(mg/s)		1,215.55	(mg/s)	1,215.55	(mg/s)
			Low Flo	Low Flow Ave		Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	104.51	(mg/s)		2,424.12	(mg/s)	26,438.79	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	3,168.44	(mg/s)		17,097.80	(mg/s)	159,024.42	(mg/s)
			Low Flo	w		Average	Flow	High Fl	ow
rt mass htration	concentration in river at PM-12	C_r12 =	3.103	(mg/L)		6.207	(mg/L)	6.472	(mg/L)
Convel flux to concer	concentration in river at PM-13	C_r13 =	9.979	(mg/L)		6.937	(mg/L)	6.544	(mg/L)

Case	Year 1			
Parameter	Cobalt			
	concentration of surface water into PM-12	C_s12 =	0.0006	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0006	(mg/L)
р р	concentration in Babbitt WWTP discharge	C_sBab =	0.0006	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.000555	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001495727	(mg/L)
ICEI	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.005	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.001556	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.0011	(mg/L)
브	concentration of ground water into PM-13	C_g13 =	0.0011	(mg/L)

			Low Flo	W	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.21	(mg/s)	2	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.04	(mg/s)	12	(mg/s)
Icen	mass flux of ground water into PM-13	M_g13 =	0.13	(mg/s)	0.13	(mg/s)	0.13	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.09	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ulance node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.25	(mg/s)	2.46	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	0.41	(mg/s)	1.69	(mg/s)	14.79	(mg/s)
			Low Flo	W	Average	Flow	High Fl	ow
ert mass o entration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.001	(mg/L)	 0.001	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.001	(mg/L)	0.001	(mg/L)	0.001	(mg/L)

Case Parameter	Year 1 Copper			
		-		
	concentration of surface water into PM-12	C_s12 =	0.0015	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0015	(mg/L)
р р	concentration in Babbitt WWTP discharge	C_sBab =	0.0015	(mg/L)
Ę	concentration in Area 5 Pit NW discharge	C_spit =	0.00345	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.0068095	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0015	(mg/L)
CO	concentration in tailings basin cell 2W	C_s2w =	0.004555	(mg/L)
out	concentration of ground water into PM-12	C_g12 =	0.004	(mg/L)
<u> </u>	concentration of ground water into PM-13	C_g13 =	0.004	(mg/L)

			Low Flo	W	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.54	(mg/s)	6	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.10	(mg/s)	0.10	(mg/s)	0.10	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.61	(mg/s)	30	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.48	(mg/s)	0.48	(mg/s)	0.48	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.19	(mg/s)	0.19	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.69	(mg/s)	0.69	(mg/s)	0.69	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.26	(mg/s)	0.26	(mg/s)	0.26	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	0.11	(mg/s)	0.65	(mg/s)	6.19	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	1.56	(mg/s)	4.87	(mg/s)	37.63	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ert mass ntration	concentration in river at PM-12	C_r12 =	0.003	(mg/L)	0.002	(mg/L)	0.002	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.005	(mg/L)	0.002	(mg/L)	0.002	(mg/L)

Case	Year 1			
Parameter	Fluoride	l		
	concentration of surface water into PM-12	C_s12 =	0.2	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.2	(mg/L)
ې م	concentration in Babbitt WWTP discharge	C_sBab =	0.2	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.125	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	2.90E+00	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	2.85E+00	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	1.55	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.385	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.385	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	71.37	(mg/s)	810	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	9.37	(mg/s)	9.37	(mg/s)	9.37	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	1.87	(mg/s)	1.87	(mg/s)	1.87	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	348.26	(mg/s)	3,976	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	45.87	(mg/s)	45.87	(mg/s)	45.87	(mg/s)
u xnl	mass flux of Area 5 Pit NW discharge	M_spit =	0.92	(mg/s)	7.04	(mg/s)	7.04	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	292.90	(mg/s)	292.90	(mg/s)	292.90	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.08	(mg/s)	0.08	(mg/s)	0.08	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	87.47	(mg/s)	87.47	(mg/s)	87.47	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
Mass balance at each node	mass flux in river at PM-12	M_r12 =	11.24	(mg/s)	 82.61	(mg/s)	<u>821.52</u>	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
Convert mass flux to concentration	concentration in river at PM-12	C_r12 =	0.334	(mg/L)	0.212	(mg/L)	0.201	(mg/L)

Case	Year 1			
Parameter	Iron			
			-	
	concentration of surface water into PM-12	C_s12 =	2.9	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	2.9	(mg/L)
р р	concentration in Babbitt WWTP discharge	C_sBab =	2.9	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.037761905	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	4.00E-03	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	4.00E-01	(mg/L)
Lo S	concentration in tailings basin cell 2W	C_s2w =	4.594	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.035	(mg/L)
<u>d</u>	concentration of ground water into PM-13	C_g13 =	0.035	(mg/L)

			Low Flo	W	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,034.90	(mg/s)	11,749	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.85	(mg/s)	0.85	(mg/s)	0.85	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	27.08	(mg/s)	27.08	(mg/s)	27.08	(mg/s)
Itral	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	5,049.77	(mg/s)	57,657	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	4.17	(mg/s)	4.17	(mg/s)	4.17	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.28	(mg/s)	2.13	(mg/s)	2.13	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.40	(mg/s)	0.40	(mg/s)	0.40	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	259.25	(mg/s)	259.25	(mg/s)	259.25	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	27.93	(mg/s)	1,062.84	(mg/s)	11,777.08	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	292.05	(mg/s)	6,378.57	(mg/s)	69,699.67	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.829	(mg/L)	2.721	(mg/L)	2.883	(mg/L)
Conve flux to concer	concentration in river at PM-13	C_r13 =	0.920	(mg/L)	2.588	(mg/L)	2.868	(mg/L)

Case Parameter	Year 1 Hardness			
	concentration of surface water into PM-12	C s12 =	70	(mg/L)
ta	concentration of surface water into PM-13	 C_s13 =	70	(mg/L)
ep u	concentration in Babbitt WWTP discharge	C_sBab =	70	(mg/L)
tion	concentration in Area 5 Pit NW discharge	C_spit =	942.7142857	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	3.74E+02	(mg/L)
Icer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	8.61E+03	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	436.6	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	87.5	(mg/L)
<u>u</u>	concentration of ground water into PM-13	C_g13 =	87.5	(mg/L)

			Low Flo	w	Average	Flow	High F	low
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	24,980.41	(mg/s)	283,600	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	2,129.58	(mg/s)	2,129.58	(mg/s)	2,129.58	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	653.73	(mg/s)	653.73	(mg/s)	653.73	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	121,890.93	(mg/s)	1,391,712	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	10,425.01	(mg/s)	10,425.01	(mg/s)	10,425.01	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	6,936.49	(mg/s)	53,090.84	(mg/s)	53,090.84	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	37,758.64	(mg/s)	37,758.64	(mg/s)	37,758.64	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	254.25	(mg/s)	254.25	(mg/s)	254.25	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	24,638.27	(mg/s)	24,638.27	(mg/s)	24,638.27	(mg/s)
			Low Flo	W	Average	Flow	High F	low
alance node	mass flux in river at PM-12	M_r12 =	2,783.31	(mg/s)	27,763.72	(mg/s)	286,383.27	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	82,795.96	(mg/s)	275,821.65	(mg/s)	1,804,262.20	(mg/s)
			Low Flo	w	Average	Flow	High F	low
ert mass o entration	concentration in river at PM-12	C_r12 =	82.647	(mg/L)	71.091	(mg/L)	70.104	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	260.755	(mg/L)	111.911	(mg/L)	74.251	(mg/L)

Case	Year 1			
Parameter	Potassium			
	concentration of surface water into PM-12	C_s12 =	0.60	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.60	(mg/L)
р и р	concentration in Babbitt WWTP discharge	C_sBab =	0.60	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	53.80	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	9.31	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.80	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	7.77	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	1.60	(mg/L)
<u>u</u>	concentration of ground water into PM-13	C_g13 =	1.60	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	214.12	(mg/s)	2,431	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	38.94	(mg/s)	38.94	(mg/s)	38.94	(mg/s)
tion	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.05	(mg/s)	0.05	(mg/s)	0.05	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1,044.78	(mg/s)	11,929	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	190.63	(mg/s)	190.63	(mg/s)	190.63	(mg/s)
u xn	mass flux in Babbitt WWTP discharge	M_sBab =	5.60	(mg/s)	5.60	(mg/s)	5.60	(mg/s)
ert o ss f	mass flux of Area 5 Pit NW discharge	M_spit =	395.86	(mg/s)	3,029.85	(mg/s)	3,029.85	(mg/s)
ma: ma:	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	938.93	(mg/s)	938.93	(mg/s)	938.93	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	438.48	(mg/s)	438.48	(mg/s)	438.48	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ss balance each node	mass flux in river at PM-12	M_r12 =	38.99	(mg/s)	253.11	<u>(mg/s)</u>	2,469.85	(mg/s)
Ma at e	mass flux in river at PM-13	M_r13 =	2,008.49	(mg/s)	5,901.39	(mg/s)	19,002.31	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
convert mass ux to oncentration	concentration in river at PM-12	C_r12 =	1.158	(mg/L)	0.648	(mg/L)	0.605	(mg/l)
o∉ o	concentration in river at PM-13	C_r13 =	6.326	(mg/L)	2.394	(mg/L)	0.782	(mg/l)

Case Parameter	Year 1 Magnesium			
		•		r
	concentration of surface water into PM-12	C_s12 =	5.90	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	5.90	(mg/L)
р р	concentration in Babbitt WWTP discharge	C_sBab =	5.90	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	271.00	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	44.03	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	213.00	(mg/L)
COL	concentration in tailings basin cell 2W	C_s2w =	69.97	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	10.65	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	10.65	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,105.49	(mg/s)	23,903	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	259.20	(mg/s)	259.20	(mg/s)	259.20	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	55.10	(mg/s)	55.10	(mg/s)	55.10	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,273.66	(mg/s)	117,301	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1,268.87	(mg/s)	1,268.87	(mg/s)	1,268.87	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	1,994.02	(mg/s)	15,261.91	(mg/s)	15,261.91	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	4,441.73	(mg/s)	4,441.73	(mg/s)	4,441.73	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	6.29	(mg/s)	6.29	(mg/s)	6.29	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	3,948.56	(mg/s)	3,948.56	(mg/s)	3,948.56	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t balance ch node	mass flux in river at PM-12	M_r12 =	314.30	(mg/s)	2,419.79	(mg/s)	24,217.73	(mg/s)
Mass at ea	mass flux in river at PM-13	M_r13 =	11,973.76	(mg/s)	37,620.81	(mg/s)	166,446.51	(mg/s)
		_	Low Flo	W	 Average	Flow	 High Fl	ow
nvert mass < to \centration	concentration in river at PM-12	C_r12 =	9.333	(mg/L)	 6.196	(mg/l)	5.928	(mg/l)
c th C	concentration in river at PM-13	C_r13 =	37.710	(mg/L)	15.264	(mg/l)	6.850	(mg/l)

Case Parameter	Year 1 Manganese			
	concentration of surface water into PM-12	C s12 =	0.30	(mg/L)
ta	concentration of surface water into PM-13	C_s13 =	0.30	(mg/L)
n de	concentration in Babbitt WWTP discharge	C_sBab =	0.30	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.49	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.24	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.00	(mg/L)
Lo S	concentration in tailings basin cell 2W	C_s2w =	1.18	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.19	(mg/L)
u du	concentration of ground water into PM-13	C_g13 =	0.19	(mg/L)

			Low Flo	w	Average	Flow	High Flow	
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	107.06	(mg/s)	1,215 (mg/s)	
-	mass flux of ground water into PM-12	M_g12 =	4.58	(mg/s)	4.58	(mg/s)	4.58 (mg/s)	
tion	mass flux in Babbitt WWTP discharge	M_sBab =	2.80	(mg/s)	2.80	(mg/s)	2.80 (mg/s)	
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	522.39	(mg/s)	5,964 (mg/s)	
cen	mass flux of ground water into PM-13	M_g13 =	22.40	(mg/s)	22.40	(mg/s)	22.40 (mg/s)	
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	3.57	(mg/s)	27.31	(mg/s)	27.31 (mg/s)	
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	24.25	(mg/s)	24.25	(mg/s)	24.25 (mg/s)	
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00 (mg/s)	
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	66.76	(mg/s)	66.76	(mg/s)	66.76 (mg/s)	
			Low Flo	W	Average	Flow	High Flow	
ulance node	mass flux in river at PM-12	M_r12 =	7.38	(mg/s)	114.44	(mg/s)	1,222.81 (mg/s)	
Mass ba at each	mass flux in river at PM-13	M_r13 =	124.35	(mg/s)	777.54	(mg/s)	7,328.00 (mg/s)	
			Low Flo	W	Average	Flow	High Flow	
vert mass to entration	concentration in river at PM-12	C_r12 =	0.219	(mg/L)	0.293	(mg/l)	0.299 (mg/l)	
Con Con conc	concentration in river at PM-13	C_r13 =	0.392	(mg/L)	0.315	(mg/l)	0.302 (mg/l)	

Case	Year 1			
Parameter	Sodium			
	concentration of surface water into PM-12	C_s12 =	6.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	6.00	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	6.00	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	119.50	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	52.95	(mg/L)
ICEI	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	255.00	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	44.31	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	4.90	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	4.90	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,141.18	(mg/s)	24,309	(mg/s)
	mass flux of ground water into PM-12	M_g12 =	119.26	(mg/s)	119.26	(mg/s)	119.26	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	56.03	(mg/s)	56.03	(mg/s)	56.03	(mg/s)
itral	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,447.79	(mg/s)	119,290	(mg/s)
concen flux	mass flux of ground water into PM-13	M_g13 =	583.80	(mg/s)	583.80	(mg/s)	583.80	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	879.28	(mg/s)	6,729.88	(mg/s)	6,729.88	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	5,341.70	(mg/s)	5,341.70	(mg/s)	5,341.70	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	7.53	(mg/s)	7.53	(mg/s)	7.53	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	2,500.51	(mg/s)	2,500.51	(mg/s)	2,500.51	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	175.29	(mg/s)	2,316.47	(mg/s)	24,483.86	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	9,488.11	(mg/s)	27,927.68	(mg/s)	158,936.87	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	5.205	(mg/L)	5.931	(mg/l)	5.993	(mg/l)
Conver filux to concen	concentration in river at PM-13	C_r13 =	29.882	(mg/L)	11.331	(mg/l)	6.541	(mg/l)

Case Parameter	Year 1 Nickel			
	concentration of surface water into PM-12	C_s12 =	0.0012	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0012	(mg/L)
p r	concentration in Babbitt WWTP discharge	C_sBab =	0.0012	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0052	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.019144051	(mg/L)
ICEI	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.098	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	0.00688	(mg/L)
or t	concentration of ground water into PM-12	C_g12 =	0.007	(mg/L)
<u>u</u>	concentration of ground water into PM-13	C_g13 =	0.007	(mg/L)

			Low Flow		Average Flow		High Flow		ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.43	(mg/s)		5	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.17	(mg/s)	0.17	(mg/s)		0.17	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)		0.01	(mg/s)
ncentrai ć	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.09	(mg/s)		24	(mg/s)
	mass flux of ground water into PM-13	M_g13 =	0.83	(mg/s)	0.83	(mg/s)		0.83	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.04	(mg/s)	0.29	(mg/s)		0.29	(mg/s)
ert e ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.93	(mg/s)	1.93	(mg/s)		1.93	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.39	(mg/s)	0.39	(mg/s)		0.39	(mg/s)
	-		Low Flo	w	Average	Flow		High Flo	ow
alance node	mass flux in river at PM-12	M_r12 =	0.18	(mg/s)	0.61	(mg/s)		5.04	(mg/s)
Mass bê at each	mass flux in river at PM-13	M_r13 =	3.38	(mg/s)	6.15	(mg/s)		32.35	(mg/s)
			Low Flo	w	Average	Flow		High Flo	ow
ert mass o intration	concentration in river at PM-12	C_r12 =	0.005	(mg/L)	0.002	(mg/L)		0.001	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.011	(mg/L)	0.002	(mg/L)		0.001	(mg/L)

Case	Year 1			
Parameter	Lead			
	concentration of surface water into PM-12	C_s12 =	0.00015	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00015	(mg/L)
p di	concentration in Babbitt WWTP discharge	C_sBab =	0.00015	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0003	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000886329	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0005	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	0.0012	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.0012	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.0012	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.05	(mg/s)	1	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ntra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.26	(mg/s)	3	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.14	(mg/s)	0.14	(mg/s)	0.14	(mg/s)
u x nji	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.02	(mg/s)	0.02	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.09	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
oalance n node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.08	(mg/s)	0.64	(mg/s)
Mass k at each	mass flux in river at PM-13	M_r13 =	0.33	(mg/s)	0.66	(mg/s)	3.94	(mg/s)
		-	LOW FIO	w	Average	FIOW	High Fi	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Year 1			
Parameter	Antimony			
	concentration of surface water into PM-12	C_s12 =	4.00E-05	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00E-05	(mg/L)
p n	concentration in Babbitt WWTP discharge	C_sBab =	4.00E-05	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	2.50E-04	(mg/L)
ntre	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	8.05E-03	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	2.50E-04	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	1.50E-03	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	1.50E-03	(mg/L)

			Low Flow		Average Flow		High Flow		ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.01	(mg/s)		0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.04	(mg/s)	0.04	(mg/s)		0.04	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
ntral	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.07	(mg/s)		1	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.18	(mg/s)	0.18	(mg/s)		0.18	(mg/s)
uo Xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)		0.01	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.81	(mg/s)	0.81	(mg/s)		0.81	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
ទ បិ	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)		0.01	(mg/s)
			Low Flow		Average Flow			High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.04	(mg/s)	0.05	(mg/s)		0.20	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	1.04	(mg/s)	1.14	(mg/s)		2.01	(mg/s)
			Low Flo	w	Average I	Flow		High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.000	(mg/L)		0.000	(mg/L)
Convel flux to concer	concentration in river at PM-13	C_r13 =	0.003	(mg/L)	0.000	(mg/L)		0.000	(mg/L)

Case	Year 1			
Parameter	Selenium			
	1			
	concentration of surface water into PM-12	C_s12 =	0.0003	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0003	(mg/L)
р с р	concentration in Babbitt WWTP discharge	C_sBab =	0.0003	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0016	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001106406	(mg/L)
Ce I	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.054	(mg/L)
Cor Cor	concentration in tailings basin cell 2W	C_s2w =	0.00109	(mg/L)
out	concentration of ground water into PM-12	C_g12 =	0.00295	(mg/L)
L L	concentration of ground water into PM-13	C_g13 =	0.00295	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.11	(mg/s)	1	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.52	(mg/s)	6	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.35	(mg/s)	0.35	(mg/s)	0.35	(mg/s)
con	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.11	(mg/s)	0.11	(mg/s)	0.11	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	0.18	(mg/s)	1.29	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	0.61	(mg/s)	1.32	(mg/s)	7.87	(mg/s)
			Low Flo	w	Average I	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conver flux to concen	concentration in river at PM-13	C_r13 =	0.002	(mg/L)	0.001	(mg/L)	0.000	(mg/L)

Case	Year 1			
Parameter	Sulfate			
-		-		
	concentration of surface water into PM-12	C_s12 =	4.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	4.00	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	1046.27	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	190.00	(mg/L)
Ce I	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	7347.00	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	152.40	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	8.50	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	8.50	(mg/L)

			Low Flo	W	Average	Flow		High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,427.45	(mg/s)		16,206	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	206.87	(mg/s)	206.87	(mg/s)		206.87	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	37.36	(mg/s)	37.36	(mg/s)		37.36	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	6,965.20	(mg/s)		79,526	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1,012.72	(mg/s)	1,012.72	(mg/s)		1,012.72	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	7,698.43	(mg/s)	58,922.60	(mg/s)		58,922.60	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	19,167.71	(mg/s)	19,167.71	(mg/s)		19,167.71	(mg/s)
m ke	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	216.95	(mg/s)	216.95	(mg/s)		216.95	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	8,600.26	(mg/s)	8,600.26	(mg/s)		8,600.26	(mg/s)
			Low Flow		Average	Average Flow		High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	244.23	(mg/s)	1,671.68	(mg/s)		16,449.94	(mg/s)
Mass bê at each	mass flux in river at PM-13	M_r13 =	36,940.30	(mg/s)	96,557.11	(mg/s)		183,896.57	(mg/s)
			Low Flo	w	Average	Flow		High Fl	ow
rt mass tration	concentration in river at PM-12	C_r12 =	7.252	(mg/L)	4.280	(mg/l)		4.027	(mg/l)
Conve flux to concei	concentration in river at PM-13	C_r13 =	116.339	(mg/L)	39.177	(mg/l)		7.568	(mg/l)

Case	Year 1			
Parameter	Thallium			
			0	
	concentration of surface water into PM-12	C_s12 =	0.0002	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0002	(mg/L)
p u	concentration in Babbitt WWTP discharge	C_sBab =	0.0002	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0006	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000907911	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0002	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	0.0002	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.000004	(mg/L)
<u>u</u>	concentration of ground water into PM-13	C_g13 =	0.000004	(mg/L)

			Low Flow		Average Flow		High Flow		ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.07	(mg/s)		1	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
ntra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.35	(mg/s)		4	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)		0.03	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.09	(mg/s)	0.09	(mg/s)		0.09	(mg/s)
m ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
ធ បិ	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)		0.01	(mg/s)
			Low Flo	W	Average	Flow		High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.07	(mg/s)		0.81	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	0.11	(mg/s)	0.56	(mg/s)		4.93	(mg/s)
			Low Flo	w	Average I	Flow		High Fl	ow
ert mass n ntration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)		0.000	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)		0.000	(mg/L)

Case	Year 1			
Parameter	Zinc			
		-		
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.003	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.0182086	(mg/L)
Ce I	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.01	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.01435	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0115	(mg/L)
	concentration of ground water into PM-13	C_g13 =	0.0115	(mg/L)

			Low Flow		Average F		High Flow	
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5.71	(mg/s)	65	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.28	(mg/s)	0.28	(mg/s)	0.28	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
tra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.86	(mg/s)	318	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1.37	(mg/s)	1.37	(mg/s)	1.37	(mg/s)
uo Xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.02	(mg/s)	0.17	(mg/s)	0.17	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.84	(mg/s)	1.84	(mg/s)	1.84	(mg/s)
m ke	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	0.81	(mg/s)	0.81	(mg/s)	0.81	(mg/s)
			Low Flow		Average Flow		High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.43	(mg/s)	6.14	(mg/s)	65.25	(mg/s)
Mass bé at each	mass flux in river at PM-13	M_r13 =	4.47	(mg/s)	38.19	(mg/s)	387.54	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass htration	concentration in river at PM-12	C_r12 =	0.013	(mg/L)	0.016	(mg/L)	0.016	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.014	(mg/L)	0.015	(mg/L)	0.016	(mg/L)

Appendix F.10 Embarrass River Geotechnical Mitigation Year 5

FLOWS

Case	Year 5				
Flows	Low Flow Conditions (no surface runoff)				Node
w in ss River	flow in river at PM-12	Q_r12_L =	1.19	(cfs)	PM-12
flo	flow in river at PM-13	Q_r13_L =	12.70	(cfs)	PM-13
Total Emba	flow check	Q_ck_L =	12.70	(cfs)	
	surface water flow into PM-12	Q_s12_L =	0.00	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_L =	0.00	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_L =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_L =	0.26	(cfs)	PM-13
ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_L =	5.04	(cfs)	PM-13
v da	hydrometallurgical residue cells liner leakage	Q_rrs_L =	0.015	(cfs)	PM-13
flow	seepage from cell 2W	Q_s2w_L =	1.99	(cfs)	PM-13
nt	ground water flow into PM-12	Q_g12_L =	0.86	(cfs)	PM-12
lnp	ground water flow into PM-13	Q_g13_L =	4.21	(cfs)	PM-13

Case	Year 5				
Flow	Average Flow Conditions (mean annual)				_
ר River	flow in river at PM-12	Q_r12_M =	13.80	(cfs)	PM-12
l flow ir arrass	flow in river at PM-13	Q_r13_M =	88.57	(cfs)	PM-13
Tota Emb	flow check	Q_ck_M =	88.57	(cfs)	
	surface water flow into PM-12	Q_s12_M =	12.61	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_M =	61.53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_M =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_M =	1.99	(cfs)	PM-13
ta ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_M =	5.04	(cfs)	PM-13
, da	hydrometallurgical residue cells liner leakage	Q_rrs_M =	0.015	(cfs)	PM-13
No l	seepage from cell 2W	Q_s2w_M =	1.99	(cfs)	PM-13
nt 1	ground water flow into PM-12	Q_g12_M =	0.86	(cfs)	PM-12
ů	ground water flow into PM-13	Q_g13_M =	4.21	(cfs)	PM-13

Case	Year 5				
Flow	High Flow Conditions (avg. annual 1-day max flow)				
n River	flow in river at PM-12	Q_r12_H =	144.35	(cfs)	PM-12
flow i arrass	flow in river at PM-13	Q_r13_H =	860.12	(cfs)	PM-13
Total Emba	flow check	Q_ck_H =	860.12	(cfs)	
	surface water flow into PM-12	Q_s12_H =	143.16	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_H =	702.53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_H =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_H =	1.99	(cfs)	PM-13
Ita	seepage from Tailings Basin Cells 1E and 2E	Q_fs_H =	5.04	(cfs)	PM-13
v da	hydrometallurgical residue cells liner leakage	Q_rrs_H =	0.015	(cfs)	PM-13
flow	seepage from cell 2W	Q_s2w_H =	1.99	(cfs)	PM-13
rt .	ground water flow into PM-12	Q_g12_H =	0.86	(cfs)	PM-12
<u> </u>	ground water flow into PM-13	Q a13 H=	4.21	(cfs)	PM-13

Case Parameter	Year 5 Silver			
		-		
	concentration of surface water into PM-12	C_s12 =	0.00011	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00011	(mg/L)
р с р	concentration in Babbitt WWTP discharge	C_sBab =	0.00011	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.00015	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.00086	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.000125	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.000100	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.00008	(mg/L)
L L	concentration of ground water into PM-13	C_g13 =	0.00008	(mg/L)

			Low Flo	W	Average I	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.04	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.19	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
uo Xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.12	(mg/s)	0.12	(mg/s)	0.12	(mg/s)
m ke	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flow		Average I	Flow	High Flow	
lance node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.04	(mg/s)	0.45	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	0.13	(mg/s)	0.37	(mg/s)	2.77	(mg/s)
			Low Flo	W	Average I	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conver flux to concen	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Year 5			
Parameter	Aluminum			
		-		
	concentration of surface water into PM-12	C_s12 =	0.12	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.12	(mg/L)
βρι	concentration in Babbitt WWTP discharge		0.12	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.01325	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	1.00E-02	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.80E-01	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	1.5788	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.025	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.025	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	42.82	(mg/s)	486	(mg/s)
	mass flux of ground water into PM-12	M_g12 =	0.61	(mg/s)	0.61	(mg/s)	0.61	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	1.12	(mg/s)	1.12	(mg/s)	1.12	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	208.96	(mg/s)	2,386	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2.98	(mg/s)	2.98	(mg/s)	2.98	(mg/s)
u s n	mass flux of Area 5 Pit NW discharge	M_spit =	0.10	(mg/s)	0.75	(mg/s)	0.75	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.42	(mg/s)	1.42	(mg/s)	1.42	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.08	(mg/s)	0.08	(mg/s)	0.08	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	89.10	(mg/s)	89.10	(mg/s)	89.10	(mg/s)
			Low Flow		Average Flow		High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	1.73	(mg/s)	44.55	(mg/s)	487.90	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	95.40	(mg/s)	347.83	(mg/s)	2,968.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.051	(mg/L)	0.114	(mg/L)	0.119	(mg/L)
Conver filux to concen	concentration in river at PM-13	C_r13 =	0.265	(mg/L)	0.139	(mg/L)	0.122	(mg/L)

Case	Year 5			
Parameter	Arsenic			
-		-		
	concentration of surface water into PM-12	C_s12 =	0.00075	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00075	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	0.00075	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.001325	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.006769615	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.00291	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.00273	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.00273	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.27	(mg/s)	3	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.31	(mg/s)	15	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.33	(mg/s)	0.33	(mg/s)	0.33	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.96	(mg/s)	0.96	(mg/s)	0.96	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.16	(mg/s)	0.16	(mg/s)	0.16	(mg/s)
			Low Flo	w	Average I	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	0.34	(mg/s)	3.11	(mg/s)
Mass bê at each	mass flux in river at PM-13	M_r13 =	1.54	(mg/s)	3.18	(mg/s)	19.55	(mg/s)
			Low Flo	w	Average I	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	0.001	(mg/L)	0.001	(mg/L)
Conver flux to concen	concentration in river at PM-13	C_r13 =	0.004	(mg/L)	0.001	(mg/L)	0.001	(mg/L)

Case	Year 5			
Parameter	Boron			
-		-		
	concentration of surface water into PM-12	C_s12 =	0.027	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.027	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.027	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.1315	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.137838474	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.11	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.33	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0212	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.0212	(mg/L)

			Low Flo	W	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	9.64	(mg/s)	109	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.52	(mg/s)	0.52	(mg/s)	0.52	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.25	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	47.02	(mg/s)	537	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2.53	(mg/s)	2.53	(mg/s)	2.53	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.97	(mg/s)	7.41	(mg/s)	7.41	(mg/s)
ert e ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	19.64	(mg/s)	19.64	(mg/s)	19.64	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.05	(mg/s)	0.05	(mg/s)	0.05	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	18.62	(mg/s)	18.62	(mg/s)	18.62	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.77	(mg/s)	10.40	(mg/s)	110.16	(mg/s)
Mass bé at each	mass flux in river at PM-13	M_r13 =	42.57	(mg/s)	105.66	(mg/s)	695.20	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.023	(mg/L)	0.027	(mg/L)	0.027	(mg/L)
Conver flux to concen	concentration in river at PM-13	C_r13 =	0.118	(mg/L)	0.042	(mg/L)	0.029	(mg/L)

Case Parameter	Year 5 Barium			
		1		
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0044	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	5.05E-02	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	5.00E-03	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.09298	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.0681	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.0681	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5.71	(mg/s)	65	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	1.66	(mg/s)	1.66	(mg/s)	1.66	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.86	(mg/s)	318	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	8.11	(mg/s)	8.11	(mg/s)	8.11	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	7.19	(mg/s)	7.19	(mg/s)	7.19	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	5.25	(mg/s)	5.25	(mg/s)	5.25	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ulance node	mass flux in river at PM-12	M_r12 =	1.81	(mg/s)	7.52	(mg/s)	66.63	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	22.39	(mg/s)	56.18	(mg/s)	405.54	(mg/s)
			Low Flo	W	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.054	(mg/L)	0.019	(mg/L)	0.016	(mg/L)
Conver flux to concen	concentration in river at PM-13	C_r13 =	0.062	(mg/L)	0.022	(mg/L)	0.017	(mg/L)

Case	Year 5 Bouillium			
Parameter	Beryllium]		
	concentration of surface water into PM-12	C_s12 =	0.0001	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0001	(mg/L)
sp r	concentration in Babbitt WWTP discharge	C_sBab =	0.0001	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000376001	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0	(mg/L)
Con	concentration in tailings basin cell 2W	C_s2w =	0.00075	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	0.000023	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.000023	(mg/L)

			Low Flo	w	Average I	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.04	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.17	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.05	(mg/s)	0.05	(mg/s)	0.05	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	-	(mg/s)	-	(mg/s)	-	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
			Low Flo	w	Average I	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.04	(mg/s)	0.41	(mg/s)
Mass bé at each	mass flux in river at PM-13	M_r13 =	0.10	(mg/s)	0.32	(mg/s)	2.50	(mg/s)
			Low Flo	w	Average I	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Convel flux to concer	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Year 5			
Parameter	Calcium			
		-		
	concentration of surface water into PM-12	C_s12 =	15	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	15	(mg/L)
βρι	concentration in Babbitt WWTP discharge	C_sBab =	15	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	95.35	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	77.28097689	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	416	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	59.78	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	19	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	19	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5,352.95	(mg/s)	60,771	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	462.42	(mg/s)	462.42	(mg/s)	462.42	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	140.09	(mg/s)	140.09	(mg/s)	140.09	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	26,119.49	(mg/s)	298,224	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2,263.72	(mg/s)	2,263.72	(mg/s)	2,263.72	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	701.59	(mg/s)	5,369.83	(mg/s)	5,369.83	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	11,012.42	(mg/s)	11,012.42	(mg/s)	11,012.42	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	176.59	(mg/s)	176.59	(mg/s)	176.59	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	3,373.51	(mg/s)	3,373.51	(mg/s)	25.38	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	602.51	(mg/s)	5,955.45	(mg/s)	61,373.93	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	18,130.33	(mg/s)	54,271.00	(mg/s)	378,445.83	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	17.891	(mg/L)	15.249	(mg/l)	15.024	(mg/l)
Conver filux to concen	concentration in river at PM-13	C_r13 =	50.427	(mg/L)	21.651	(mg/l)	15.547	(mg/l)
Case	Year 5							
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Parameter	Cadmium							
	concentration of surface water into PM-12	C_s12 =	0.00008	(mg/L)				
ata	concentration of surface water into PM-13	C_s13 =	0.00008	(mg/L)				
р р	concentration in Babbitt WWTP discharge	C_sBab =	0.00008	(mg/L)				
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)				
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.00032784	(mg/L)				
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0004	(mg/L)				
co	concentration in tailings basin cell 2W	C_s2w =	0.000188	(mg/L)				
nt	concentration of ground water into PM-12	C_g12 =	0.0003	(mg/L)				
du du	concentration of ground water into PM-13	C_g13 =	0.0003	(mg/L)				

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.03	(mg/s)	0	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.14	(mg/s)	2	(mg/s)
cer	mass flux of ground water into PM-13	M_g13 =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
ux n	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ss t o	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.05	(mg/s)	0.05	(mg/s)	0.05	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.01	(mg/s)	0.04	(mg/s)	0.33	(mg/s)
Mass bí at each	mass flux in river at PM-13	M_r13 =	0.10	(mg/s)	0.27	<u>(mg</u> /s)	2.02	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conver flux to concen	concentration in river at PM-13	C r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Year 5			
Parameter	Chloride			
	concentration of surface water into PM-12	C_s12 =	6.5	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	6.5	(mg/L)
βρι	concentration in Babbitt WWTP discharge	C_sBab =	6.5	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	5.95	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	1.52E+01	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.76E+03	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	21.54	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	1.8	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	1.8	(mg/L)

			Low Flo	w	Average I	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,319.61	(mg/s)	26,334	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	43.81	(mg/s)	43.81	(mg/s)	43.81	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	60.70	(mg/s)	60.70	(mg/s)	60.70	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	11,318.44	(mg/s)	129,230	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	214.46	(mg/s)	214.46	(mg/s)	214.46	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	43.78	(mg/s)	335.09	(mg/s)	335.09	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	2,172.67	(mg/s)	2,172.67	(mg/s)	2,172.67	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	747.10	(mg/s)	747.10	(mg/s)	747.10	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	1,215.55	(mg/s)	1,215.55	(mg/s)	1,215.55	(mg/s)
			Low Flow		Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	104.51	(mg/s)	2,424.12	(mg/s)	26,438.79	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	4,498.06	(mg/s)	18,427.42	(mg/s)	160,354.05	(mg/s)
			Low Flo	w	Average I	Flow	High Fl	ow
't mass ntration	concentration in river at PM-12	C_r12 =	3.103	(mg/L)	6.207	(mg/L)	6.472	(mg/L)
Conver flux to concer	concentration in river at PM-13	C_r13 =	12.511	(mg/L)	7.351	(mg/L)	6.588	(mg/L)

Case	Year 5			
Parameter	Cobalt			
		-		
	concentration of surface water into PM-12	C_s12 =	0.0006	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0006	(mg/L)
β	concentration in Babbitt WWTP discharge	C_sBab =	0.0006	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.000555	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001495727	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.005	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.001556	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0011	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.0011	(mg/L)

			Low Flo	W	Average I	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.21	(mg/s)	2	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.04	(mg/s)	12	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.13	(mg/s)	0.13	(mg/s)	0.13	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
sste	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.21	(mg/s)	0.21	(mg/s)	0.21	(mg/s)
n ve	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ បិ	mass flux in seepage from cell 2W	M_s2w =	0.09	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.25	(mg/s)	2.46	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	0.47	(mg/s)	1.76	(mg/s)	14.86	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.001	(mg/L)	0.001	(mg/L)
Conver flux to concen	concentration in river at PM-13	C r13 =	0.001	(mg/L)	0.001	(mg/L)	0.001	(mg/L)

Case	Year 5			
Parameter	Copper			
			-	
	concentration of surface water into PM-12	C_s12 =	0.0015	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0015	(mg/L)
ip u	concentration in Babbitt WWTP discharge	C_sBab =	0.0015	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.00345	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.0068095	(mg/L)
ICEI	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0015	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	0.004555	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.004	(mg/L)
<u>u</u>	concentration of ground water into PM-13	C_g13 =	0.004	(mg/L)

		Low Flow		Average Flow		High Flow		ow	
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.54	(mg/s)		6	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.10	(mg/s)	0.10	(mg/s)		0.10	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)		0.01	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.61	(mg/s)		30	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.48	(mg/s)	0.48	(mg/s)		0.48	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.19	(mg/s)		0.19	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.97	(mg/s)	0.97	(mg/s)		0.97	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.26	(mg/s)	0.26	(mg/s)		0.26	(mg/s)
			Low Flo	w	Average	Flow		High Fl	ow
ulance node	mass flux in river at PM-12	M_r12 =	0.11	(mg/s)	0.65	(mg/s)		6.19	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	1.84	(mg/s)	5.16	(mg/s)		37.91	(mg/s)
			Low Flo	w	Average	Flow		High Fl	ow
ert mass n ntration	concentration in river at PM-12	C_r12 =	0.003	(mg/L)	0.002	(mg/L)		0.002	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.005	(mg/L)	0.002	(mg/L)		0.002	(mg/L)

Case	Year 5			
Parameter	Fluoride			
-		-		
	concentration of surface water into PM-12	C_s12 =	0.2	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.2	(mg/L)
βρι	concentration in Babbitt WWTP discharge	C_sBab =	0.2	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.125	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	2.90E+00	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	2.85E+00	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	1.55	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.385	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.385	(mg/L)

			Low Flow		Average F		low		High Flow	
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)		71.37	(mg/s)		810	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	9.37	(mg/s)		9.37	(mg/s)		9.37	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	1.87	(mg/s)		1.87	(mg/s)		1.87	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)		348.26	(mg/s)		3,976	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	45.87	(mg/s)		45.87	(mg/s)		45.87	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.92	(mg/s)		7.04	(mg/s)		7.04	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	413.72	(mg/s)		413.72	(mg/s)		413.72	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	1.21	(mg/s)		1.21	(mg/s)		1.21	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	87.47	(mg/s)		87.47	(mg/s)		87.47	(mg/s)
			Low Flo	w		Average	Flow		High Fl	low
balance n node	mass flux in river at PM-12	M_r12 =	11.24	(mg/s)		82.61	(mg/s)		821.52	(mg/s)
Mass h at each	mass flux in river at PM-13	M_r13 =	560.43	(mg/s)		986.18	(mg/s)		5,353.16	(mg/s)
			LOW FIO	w		Average	FIOW		High Fi	ow
ert mass ntration	concentration in river at PM-12	C_r12 =	0.334	(mg/L)		0.212	(mg/L)		0.201	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	1.559	(mg/L)		0.393	(mg/L)		0.220	(mg/L)

Case	Year 5			
Parameter	Iron			
-		-		
	concentration of surface water into PM-12	C_s12 =	2.9	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	2.9	(mg/L)
β	concentration in Babbitt WWTP discharge	C_sBab =	2.9	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.037761905	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	4.00E-03	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	4.00E-01	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	4.594	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.035	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.035	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,034.90	(mg/s)	11,749	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.85	(mg/s)	0.85	(mg/s)	0.85	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	27.08	(mg/s)	27.08	(mg/s)	27.08	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	5,049.77	(mg/s)	57,657	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	4.17	(mg/s)	4.17	(mg/s)	4.17	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.28	(mg/s)	2.13	(mg/s)	2.13	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.57	(mg/s)	0.57	(mg/s)	0.57	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.17	(mg/s)	0.17	(mg/s)	0.17	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	259.25	(mg/s)	259.25	(mg/s)	259.25	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	27.93	(mg/s)	1,062.84	(mg/s)	11,777.08	(mg/s)
Mass bê at each	mass flux in river at PM-13	M_r13 =	292.37	(mg/s)	6,378.89	(mg/s)	69,700.00	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.829	(mg/L)	2.721	(mg/L)	2.883	(mg/L)
Convel flux to concer	concentration in river at PM-13	C_r13 =	0.813	(mg/L)	2.545	(mg/L)	2.863	(mg/L)

Case Parameter	Year 5 Hardness			
	concentration of surface water into PM-12	C_s12 =	70	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	70	(mg/L)
sp r	concentration in Babbitt WWTP discharge	C_sBab =	70	(mg/L)
tior	concentration in Area 5 Pit NW discharge	C_spit =	942.7142857	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	3.74E+02	(mg/L)
Icer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	8.61E+03	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	436.6	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	87.5	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	87.5	(mg/L)

			Low Flo	w	Average I	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	24,980.41	(mg/s)	283,600	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	2,129.58	(mg/s)	2,129.58	(mg/s)	2,129.58	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	653.73	(mg/s)	653.73	(mg/s)	653.73	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	121,890.93	(mg/s)	1,391,712	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	10,425.01	(mg/s)	10,425.01	(mg/s)	10,425.01	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	6,936.49	(mg/s)	53,090.84	(mg/s)	53,090.84	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	53,334.08	(mg/s)	53,334.08	(mg/s)	53,334.08	(mg/s)
nve mas	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	3,654.83	(mg/s)	3,654.83	(mg/s)	3,654.83	(mg/s)
<u>ء</u> ک	mass flux in seepage from cell 2W	M_s2w =	24,638.27	(mg/s)	24,638.27	(mg/s)	24,638.27	(mg/s)
			Low Flo	W	Average I	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	2,783.31	(mg/s)	27,763.72	(mg/s)	286,383.27	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	101,771.99	(mg/s)	294,797.68	(mg/s)	1,823,238.23	(mg/s)
			Low Flo	w	Average I	Flow	High Fl	ow
ert mass o entration	concentration in river at PM-12	C_r12 =	82.647	(mg/L)	71.091	(mg/L)	70.104	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	283.067	(mg/L)	117.606	(mg/L)	74.902	(mg/L)

Case	Year 5			
Parameter	Potassium			
	concentration of surface water into PM-12	C_s12 =	0.60	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.60	(mg/L)
р ц	concentration in Babbitt WWTP discharge	C_sBab =	0.60	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	53.80	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	9.31	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.80	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	7.77	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	1.60	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	1.60	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	214.12	(mg/s)	2,431	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	38.94	(mg/s)	38.94	(mg/s)	38.94	(mg/s)
tion	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.76	(mg/s)	0.76	(mg/s)	0.76	(mg/s)
tra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1,044.78	(mg/s)	11,929	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	190.63	(mg/s)	190.63	(mg/s)	190.63	(mg/s)
	mass flux in Babbitt WWTP discharge	M_sBab =	5.60	(mg/s)	5.60	(mg/s)	5.60	(mg/s)
ert o ss f	mass flux of Area 5 Pit NW discharge	M_spit =	395.86	(mg/s)	3,029.85	(mg/s)	3,029.85	(mg/s)
nye	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1,326.24	(mg/s)	1,326.24	(mg/s)	1,326.24	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	438.48	(mg/s)	438.48	(mg/s)	438.48	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	39.70	(mg/s)	253.82	(mg/s)	2,470.56	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	2,396.51	(mg/s)	6,289.41	(mg/s)	19,390.33	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	1.179	(mg/L)	0.650	(mg/L)	0.605	(mg/l)
Conve flux to concel	concentration in river at PM-13	C_r13 =	6.666	(mg/L)	2.509	(mg/L)	0.797	(mg/l)

Case	Year 5			
Parameter	magnesium	I		
	concentration of surface water into PM-12	C_s12 =	5.90	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	5.90	(mg/L)
ů p c	concentration in Babbitt WWTP discharge	C_sBab =	5.90	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	271.00	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	44.03	(mg/L)
cei	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	213.00	(mg/L)
COL	concentration in tailings basin cell 2W	C_s2w =	69.97	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	10.65	(mg/L)
<u>u</u>	concentration of ground water into PM-13	C_g13 =	10.65	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,105.49	(mg/s)	23,903	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	259.20	(mg/s)	259.20	(mg/s)	259.20	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	55.10	(mg/s)	55.10	(mg/s)	55.10	(mg/s)
tra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,273.66	(mg/s)	117,301	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1,268.87	(mg/s)	1,268.87	(mg/s)	1,268.87	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	1,994.02	(mg/s)	15,261.91	(mg/s)	15,261.91	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	6,273.94	(mg/s)	6,273.94	(mg/s)	6,273.94	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	90.42	(mg/s)	90.42	(mg/s)	90.42	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	3,948.56	(mg/s)	3,948.56	(mg/s)	3,948.56	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	314.30	(mg/s)	2,419.79	(mg/s)	24,217.73	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	13,890.10	(mg/s)	39,537.14	(mg/s)	168,362.85	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ert mass o intration	concentration in river at PM-12	C_r12 =	9.333	(mg/L)	6.196	(mg/l)	5.928	(mg/l)
Conve flux to conce	concentration in river at PM-13	C_r13 =	38.634	(mg/L)	15.773	(mg/l)	6.917	(mg/l)

Case	Year 5			
Parameter	Manganese			
-		-		
	concentration of surface water into PM-12	C_s12 =	0.30	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.30	(mg/L)
р ц	concentration in Babbitt WWTP discharge	C_sBab =	0.30	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.49	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.24	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.00	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	1.18	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.19	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.19	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	107.06	(mg/s)	1,215	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	4.58	(mg/s)	4.58	(mg/s)	4.58	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	2.80	(mg/s)	2.80	(mg/s)	2.80	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	522.39	(mg/s)	5,964	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	22.40	(mg/s)	22.40	(mg/s)	22.40	(mg/s)
nos	mass flux of Area 5 Pit NW discharge	M_spit =	3.57	(mg/s)	27.31	(mg/s)	27.31	(mg/s)
ert (ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	34.25	(mg/s)	34.25	(mg/s)	34.25	(mg/s)
n xe	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	66.76	(mg/s)	66.76	(mg/s)	66.76	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	7.38	(mg/s)	114.44	(mg/s)	1,222.81	(mg/s)
Mass bê at each	mass flux in river at PM-13	M_r13 =	134.35	(mg/s)	787.55	(mg/s)	7,338.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.219	(mg/L)	0.293	(mg/l)	0.299	(mg/l)
Conver flux to concen	concentration in river at PM-13	C r13 =	0.374	(mg/L)	0.314	(mg/l)	0.301	(mg/l)

Case	Year 5			
Parameter	Sodium			
	concentration of surface water into PM-12	C_s12 =	6.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	6.00	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	6.00	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	119.50	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	52.95	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	255.00	(mg/L)
CO CO	concentration in tailings basin cell 2W	C_s2w =	44.31	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	4.90	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	4.90	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,141.18	(mg/s)	24,309	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	119.26	(mg/s)	119.26	(mg/s)	119.26	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	56.03	(mg/s)	56.03	(mg/s)	56.03	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,447.79	(mg/s)	119,290	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	583.80	(mg/s)	583.80	(mg/s)	583.80	(mg/s)
uo	mass flux of Area 5 Pit NW discharge	M_spit =	879.28	(mg/s)	6,729.88	(mg/s)	6,729.88	(mg/s)
ert c ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	7,545.15	(mg/s)	7,545.15	(mg/s)	7,545.15	(mg/s)
mai	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	108.24	(mg/s)	108.24	(mg/s)	108.24	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	2,500.51	(mg/s)	2,500.51	(mg/s)	2,500.51	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	175.29	(mg/s)	2,316.47	(mg/s)	24,483.86	(mg/s)
Mass bé at each	mass flux in river at PM-13	M_r13 =	11,792.27	(mg/s)	30,231.84	(mg/s)	161,241.03	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	5.205	(mg/L)	5.931	(mg/l)	5.993	(mg/l)
Conver flux to concen	concentration in river at PM-13	C r13 =	32.799	(mg/L)	12.061	(mg/l)	6.624	(mg/l)

Case Parameter	Year 5 Nickel			
		-		
	concentration of surface water into PM-12	C_s12 =	0.0012	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0012	(mg/L)
р р	concentration in Babbitt WWTP discharge	C_sBab =	0.0012	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0052	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.019144051	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.098	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.00688	(mg/L)
out	concentration of ground water into PM-12	C_g12 =	0.007	(mg/L)
<u> </u>	concentration of ground water into PM-13	C_g13 =	0.007	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.43	(mg/s)	5	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.17	(mg/s)	0.17	(mg/s)	0.17	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ntra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.09	(mg/s)	24	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.83	(mg/s)	0.83	(mg/s)	0.83	(mg/s)
nos	mass flux of Area 5 Pit NW discharge	M_spit =	0.04	(mg/s)	0.29	(mg/s)	0.29	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	2.73	(mg/s)	2.73	(mg/s)	2.73	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.39	(mg/s)	0.39	(mg/s)	0.39	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.18	(mg/s)	0.61	(mg/s)	5.04	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	4.21	(mg/s)	6.98	(mg/s)	33.19	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.005	(mg/L)	0.002	(mg/L)	0.001	(mg/L)
Conver flux to concen	concentration in river at PM-13	C r13 =	0.012	(mg/L)	0.003	(mg/L)	0.001	(mg/L)

Case	Year 5			
Parameter	Lead	l		
	concentration of surface water into PM-12	C_s12 =	0.00015	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00015	(mg/L)
ې م	concentration in Babbitt WWTP discharge	C_sBab =	0.00015	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0003	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000886329	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0005	(mg/L)
CO CO	concentration in tailings basin cell 2W	C_s2w =	0.0012	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0012	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.0012	(mg/L)

			Low Flo	W	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.05	(mg/s)	1	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.26	(mg/s)	3	(mg/s)
cer	mass flux of ground water into PM-13	M_g13 =	0.14	(mg/s)	0.14	(mg/s)	0.14	(mg/s)
no	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.02	(mg/s)	0.02	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.13	(mg/s)	0.13	(mg/s)	0.13	(mg/s)
n xe	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
			Low Flow		Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.08	(mg/s)	0.64	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	0.37	(mg/s)	0.70	(mg/s)	3.97	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conver flux to concen	concentration in river at PM-13	C r13 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Year 5			
Parameter	Antimony]		
	concentration of surface water into PM-12	C_s12 =	4.00E-05	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00E-05	(mg/L)
ab r	concentration in Babbitt WWTP discharge	C_sBab =	4.00E-05	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	2.50E-04	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	8.05E-03	(mg/L)
cei	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004	(mg/L)
LO L	concentration in tailings basin cell 2W	C_s2w =	2.50E-04	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	1.50E-03	(mg/L)
dul	concentration of ground water into PM-13	C_g13 =	1.50E-03	(mg/L)

			Low Flow		Average Flow		High Flow		ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.01	(mg/s)		0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.04	(mg/s)	0.04	(mg/s)		0.04	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
tra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.07	(mg/s)		1	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.18	(mg/s)	0.18	(mg/s)		0.18	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)		0.01	(mg/s)
ert c ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.15	(mg/s)	1.15	(mg/s)		1.15	(mg/s)
ma: ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
ទ បិ	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)		0.01	(mg/s)
			Low Flow		Average Flow			High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.04	(mg/s)	0.05	(mg/s)		0.20	(mg/s)
Mass bê at each	mass flux in river at PM-13	M_r13 =	1.38	(mg/s)	1.48	(mg/s)		2.35	(mg/s)
			Low Flo	w	Average	Flow		High Fl	ow
rt mass	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.000	(mg/L)		0.000	(mg/L)
Convei flux to concer	concentration in river at PM-13	C_r13 =	0.004	(mg/L)	0.001	(mg/L)		0.000	(mg/L)

Case	Year 5			
Parameter	Selenium			
			-	
	concentration of surface water into PM-12	C_s12 =	0.0003	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0003	(mg/L)
, p c	concentration in Babbitt WWTP discharge	C_sBab =	0.0003	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0016	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001106406	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.054	(mg/L)
CO	concentration in tailings basin cell 2W	C_s2w =	0.00109	(mg/L)
rt .	concentration of ground water into PM-12	C_g12 =	0.00295	(mg/L)
별	concentration of ground water into PM-13	C_g13 =	0.00295	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.11	(mg/s)	1	(mg/s)
	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.52	(mg/s)	6	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.35	(mg/s)	0.35	(mg/s)	0.35	(mg/s)
u o xnl	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
sste	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.16	(mg/s)	0.16	(mg/s)	0.16	(mg/s)
n ve	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.02	(mg/s)	0.02	(mg/s)	0.02	(mg/s)
ទ បិ	mass flux in seepage from cell 2W	M_s2w =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	0.18	(mg/s)	1.29	(mg/s)
Mass bé at each	mass flux in river at PM-13	M_r13 =	0.68	(mg/s)	1.39	(mg/s)	7.94	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Convert flux to concent	concentration in river at PM-13	C r13 =	0.002	(mg/L)	0.001	(mg/L)	0.000	(mg/L)

Case	Year 5			
Parameter	Sulfate			
		-		
	concentration of surface water into PM-12	C_s12 =	4.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	4.00	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	1046.27	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	190.00	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	7347.00	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	152.40	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	8.50	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	8.50	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,427.45	(mg/s)	16,206	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	206.87	(mg/s)	206.87	(mg/s)	206.87	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	37.36	(mg/s)	37.36	(mg/s)	37.36	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	6,965.20	(mg/s)	79,526	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1,012.72	(mg/s)	1,012.72	(mg/s)	1,012.72	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	7,698.43	(mg/s)	58,922.60	(mg/s)	58,922.60	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	27,074.39	(mg/s)	27,074.39	(mg/s)	27,074.39	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	3,118.71	(mg/s)	3,118.71	(mg/s)	3,118.71	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	8,600.26	(mg/s)	8,600.26	(mg/s)	8,600.26	(mg/s)
			Low Flow		Average Flow		High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	244.23	(mg/s)	 1,671.68	(mg/s)	16,449.94	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	47,748.73	(mg/s)	107,365.55	(mg/s)	194,705.01	(mg/s)
			LOW FIO	w	Average	FIOW	Fign Fi	ow
wert mass to centration	concentration in river at PM-12	C_r12 =	7.252	(mg/L)	4.280	(mg/l)	4.027	(mg/l)
Con Con Con	concentration in river at PM-13	C_r13 =	132.808	(mg/L)	42.832	(mg/l)	7.999	(mg/l)

Case	Year 5			
Parameter	Thallium			
	concentration of surface water into PM-12	C_s12 =	0.0002	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0002	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.0002	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0006	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000907911	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0002	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.0002	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.000004	(mg/L)
<u> </u>	concentration of ground water into PM-13	C_g13 =	0.000004	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.07	(mg/s)	1	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.35	(mg/s)	4	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.13	(mg/s)	0.13	(mg/s)	0.13	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.07	(mg/s)	0.81	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	0.15	(mg/s)	0.60	(mg/s)	4.96	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conver flux to concen	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Year 5			
Parameter	Zinc			
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.003	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.0182086	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.01	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.01435	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.0115	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.0115	(mg/L)

			Low Flo	w	Average I	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5.71	(mg/s)	65	(mg/s)
	mass flux of ground water into PM-12	M_g12 =	0.28	(mg/s)	0.28	(mg/s)	0.28	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
ntrat	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.86	(mg/s)	318	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1.37	(mg/s)	1.37	(mg/s)	1.37	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.02	(mg/s)	0.17	(mg/s)	0.17	(mg/s)
ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	2.59	(mg/s)	2.59	(mg/s)	2.59	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
<u>و</u> د د	mass flux in seepage from cell 2W	M_s2w =	0.81	(mg/s)	0.81	(mg/s)	0.81	(mg/s)
			Low Flow		Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	0.43	(mg/s)	6.14	(mg/s)	65.25	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	5.23	(mg/s)	38.95	(mg/s)	388.31	(mg/s)
			Low Flo	w	Average I	Flow	High Fl	low
t mass tration	concentration in river at PM-12	C_r12 =	0.013	(mg/L)	0.016	(mg/L)	0.016	(mg/L)
Conver lux to concen	concentration in river at PM-13	C r13 =	0.015	(ma/L)	0.016	(ma/L)	0.016	(ma/L)

Appendix F.11 Embarrass River Geotechnical Mitigation Year 10

FLOWS

Case	Year 10				
Flows	Low Flow Conditions (no surface runoff)				Node
in River	flow in river at PM-12	Q_r12_L =	1.19	(cfs)	PM-12
ll flow barrass	flow in river at PM-13	Q_r13_L =	13.22	(cfs)	PM-13
Total Emba	flow check	Q_ck_L =	13.22	(cfs)	
	surface water flow into PM-12	Q_s12_L =	0.00	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_L =	0.00	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_L =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_L =	0.26	(cfs)	PM-13
ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_L =	5.55	(cfs)	PM-13
v da	hydrometallurgical residue cells liner leakage	Q_rrs_L =	0.017	(cfs)	PM-13
flov	seepage from cell 2W	Q_s2w_L =	1.99	(cfs)	PM-13
out f	ground water flow into PM-12	Q_g12_L =	0.86	(cfs)	PM-12
dul	ground water flow into PM-13	Q_g13_L =	4.21	(cfs)	PM-13

Case	Year 10				
Flow	Average Flow Conditions (mean annual)				
n River	flow in river at PM-12	Q_r12_M =	13.80	(cfs)	PM-12
l flow in arrass	flow in river at PM-13	Q_r13_M =	89.09	(cfs)	PM-13
Tota Emb	flow check	Q_ck_M =	89.09	(cfs)	
	surface water flow into PM-12	Q_s12_M =	12.61	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_M =	61.53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_M =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_M =	1.99	(cfs)	PM-13
ta ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_M =	5.55	(cfs)	PM-13
, da	hydrometallurgical residue cells liner leakage	Q_rrs_M =	0.017	(cfs)	PM-13
No.	seepage from cell 2W	Q_s2w_M =	1.99	(cfs)	PM-13
t t	ground water flow into PM-12	Q_g12_M =	0.86	(cfs)	PM-12
aul	ground water flow into PM-13	Q_g13_M =	4.21	(cfs)	PM-13

Case	Year 10				
Flow	High Flow Conditions (avg. annual 1-day max flow)				
n River	flow in river at PM-12	Q_r12_H =	144.35	(cfs)	PM-12
flow i arrass	flow in river at PM-13	Q_r13_H =	860.64	(cfs)	PM-13
Total Emba	flow check	Q_ck_H =	860.64	(cfs)	
	surface water flow into PM-12	Q_s12_H =	143.16	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_H =	702.53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_H =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_H =	1.99	(cfs)	PM-13
ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_H =	5.55	(cfs)	PM-13
/ da	hydrometallurgical residue cells liner leakage	Q_rrs_H =	0.017	(cfs)	PM-13
low	seepage from cell 2W	Q_s2w_H =	1.99	(cfs)	PM-13
nt 1	ground water flow into PM-12	Q_g12_H =	0.86	(cfs)	PM-12
d	ground water flow into PM-13	Q a13 H =	4.21	(cfs)	PM-13

Case Parameter	Year 10 Silver			
	concentration of surface water into PM-12	C_s12 =	0.00011	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00011	(mg/L)
p n	concentration in Babbitt WWTP discharge	C_sBab =	0.00011	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.00015	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.00084	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.000125	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.000100	(mg/L)
out	concentration of ground water into PM-12	C_g12 =	0.00008	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.00008	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.04	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.19	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.13	(mg/s)	0.13	(mg/s)	0.13	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flow		Average Flow		High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.04	(mg/s)	0.45	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	0.14	(mg/s)	0.38	(mg/s)	2.78	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass itration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conver filux to concen	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Year 10 Aluminum			
				•
	concentration of surface water into PM-12	C_s12 =	0.12	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.12	(mg/L)
р с	concentration in Babbitt WWTP discharge	C_sBab =	0.12	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.01325	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	1.25E-01	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.80E-01	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	1.5788	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.025	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.025	(mg/L)

			Low Flo	W	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	42.82	(mg/s)	486	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.61	(mg/s)	0.61	(mg/s)	0.61	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	1.12	(mg/s)	1.12	(mg/s)	1.12	(mg/s)
itral	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	208.96	(mg/s)	2,386	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2.98	(mg/s)	2.98	(mg/s)	2.98	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.10	(mg/s)	0.75	(mg/s)	0.75	(mg/s)
ert o ss 1	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	19.65	(mg/s)	19.65	(mg/s)	19.65	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.09	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
ទ បិ	mass flux in seepage from cell 2W	M_s2w =	89.10	(mg/s)	89.10	(mg/s)	89.10	(mg/s)
			Low Flow		Average Flow		High Flow	
lance node	mass flux in river at PM-12	M_r12 =	1.73	(mg/s)	44.55	(mg/s)	487.90	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	113.63	(mg/s)	366.06	(mg/s)	2,986.25	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.051	(mg/L)	0.114	(mg/L)	0.119	(mg/L)
Conve flux to concei	concentration in river at PM-13	C_r13 =	0.304	(mg/L)	0.145	(mg/L)	0.123	(mg/L)

Case Parameter	Year 10 Arsenic			
	concentration of surface water into PM-12	C s12 =	0.00075	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00075	(mg/L)
ع ر	concentration in Babbitt WWTP discharge	C_sBab =	0.00075	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.001325	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.009432521	(mg/L)
	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.00291	(mg/L)
Ĕ	concentration of ground water into PM-12	C_g12 =	0.00273	(mg/L)
L L	concentration of ground water into PM-13	C_g13 =	0.00273	(mg/L)

			Low Flo	W	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.27	(mg/s)	3	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.31	(mg/s)	15	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.33	(mg/s)	0.33	(mg/s)	0.33	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.48	(mg/s)	1.48	(mg/s)	1.48	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.16	(mg/s)	0.16	(mg/s)	0.16	(mg/s)
			Low Flow		Average Flow		High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	0.34	(mg/s)	3.11	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	2.06	(mg/s)	3.69	(mg/s)	20.07	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass ntration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	0.001	(mg/L)	0.001	(mg/L)
Conver flux to concen	concentration in river at PM-13	C_r13 =	0.005	(mg/L)	0.001	(mg/L)	0.001	(mg/L)

Case	Year 10			
Parameter	Boron			
	concentration of surface water into PM-12	C_s12 =	0.027	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.027	(mg/L)
p n	concentration in Babbitt WWTP discharge	C_sBab =	0.027	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.1315	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.149974322	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.11	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.33	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.0212	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.0212	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	9.64	(mg/s)	109	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.52	(mg/s)	0.52	(mg/s)	0.52	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.25	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
trai	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	47.02	(mg/s)	537	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2.53	(mg/s)	2.53	(mg/s)	2.53	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.97	(mg/s)	7.41	(mg/s)	7.41	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	23.55	(mg/s)	23.55	(mg/s)	23.55	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.05	(mg/s)	0.05	(mg/s)	0.05	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	18.62	(mg/s)	18.62	(mg/s)	18.62	(mg/s)
			Low Flow		Average Flow		High Flow	
alance node	mass flux in river at PM-12	M_r12 =	0.77	(mg/s)	10.40	(mg/s)	110.16	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	46.48	(mg/s)	109.57	(mg/s)	699.11	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.023	(mg/L)	0.027	(mg/L)	0.027	(mg/L)
Conve flux to concel	concentration in river at PM-13	C_r13 =	0.124	(mg/L)	0.043	(mg/L)	0.029	(mg/L)

Case Parameter	Year 10 Barium			
rarameter	banum			
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
р ц	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0044	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	4.92E-02	(mg/L)
	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	5.00E-03	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.09298	(mg/L)
out	concentration of ground water into PM-12	C_g12 =	0.0681	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.0681	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5.71	(mg/s)	65	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	1.66	(mg/s)	1.66	(mg/s)	1.66	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.86	(mg/s)	318	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	8.11	(mg/s)	8.11	(mg/s)	8.11	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
ert c ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	7.73	(mg/s)	7.73	(mg/s)	7.73	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	5.25	(mg/s)	5.25	(mg/s)	5.25	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	1.81	(mg/s)	7.52	(mg/s)	66.63	(mg/s)
Mass bi at each	mass flux in river at PM-13	M_r13 =	22.93	(mg/s)	56.71	(mg/s)	406.07	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.054	(mg/L)	0.019	(mg/L)	0.016	(mg/L)
Conver flux to concen	concentration in river at PM-13	C r13 =	0.061	(mg/L)	0.022	(mg/L)	0.017	(mg/L)

Case Parameter	Year 10 Beryllium			
	concentration of surface water into PM-12	C s12 =	0.0001	(mg/L)
ita	concentration of surface water into PM-13	C_s13 =	0.0001	(mg/L)
ab r	concentration in Babbitt WWTP discharge	C_sBab =	0.0001	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000587308	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.00075	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	0.000023	(mg/L)
Ц Ц	concentration of ground water into PM-13	C_g13 =	0.000023	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.04	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.17	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
u s n	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.09	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	-	(mg/s)	-	(mg/s)	-	(mg/s)
<u>۽</u> ک	mass flux in seepage from cell 2W	M_s2w =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
is balance ach node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.04	(mg/s)	0.41	(mg/s)
Mas at e	mass flux in river at PM-13	M r13 =	0.14	(mg/s)	0.35	(mg/s)	2.54	(mg/s)
		•	Low Flo	w	Average	Flow	High Fl	ow
Convert mass lux to concentration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Year 10			
Parameter	Calcium			
	concentration of surface water into PM-12	C_s12 =	15	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	15	(mg/L)
р ц	concentration in Babbitt WWTP discharge	C_sBab =	15	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	95.35	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	107.272439	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	416	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	59.78	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	19	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	19	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5,352.95	(mg/s)	60,771	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	462.42	(mg/s)	462.42	(mg/s)	462.42	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	140.09	(mg/s)	140.09	(mg/s)	140.09	(mg/s)
tra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	26,119.49	(mg/s)	298,224	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2,263.72	(mg/s)	2,263.72	(mg/s)	2,263.72	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	701.59	(mg/s)	5,369.83	(mg/s)	5,369.83	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	16,841.82	(mg/s)	16,841.82	(mg/s)	16,841.82	(mg/s)
nve	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	202.28	(mg/s)	202.28	(mg/s)	202.28	(mg/s)
<u>ء</u> ک	mass flux in seepage from cell 2W	M_s2w =	3,373.51	(mg/s)	3,373.51	(mg/s)	29.07	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance n node	mass flux in river at PM-12	M_r12 =	602.51	(mg/s)	5,955.45	(mg/s)	61,373.93	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	23,985.42	(mg/s)	60,126.09	(mg/s)	384,304.62	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	17.891	(mg/L)	15.249	(mg/l)	15.024	(mg/l)
Conver filux to concen	concentration in river at PM-13	C_r13 =	64.116	(mg/L)	23.848	(mg/l)	15.779	(mg/l)

Case Parameter	Year 10 Cadmium			
	concentration of surface water into PM-12	C s12 =	0 00008	(ma/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00008	(mg/L)
р с р с	concentration in Babbitt WWTP discharge	C_sBab =	0.00008	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000645923	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0004	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.000188	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.0003	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.0003	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.03	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.14	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.10	(mg/s)	0.10	(mg/s)	0.10	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	0.01	(mg/s)	0.04	(mg/s)	0.33	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	0.16	(mg/s)	0.33	(mg/s)	2.08	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conver filux to concen	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Year 10 Chloride			
	concentration of surface water into PM-12	C_s12 =	6.5	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	6.5	(mg/L)
ip u	concentration in Babbitt WWTP discharge	C_sBab =	6.5	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	5.95	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	5.09E+00	(mg/L)
	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.76E+03	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	21.54	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	1.8	(mg/L)
du du	concentration of ground water into PM-13	C_g13 =	1.8	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,319.61	(mg/s)	26,334	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	43.81	(mg/s)	43.81	(mg/s)	43.81	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	60.70	(mg/s)	60.70	(mg/s)	60.70	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	11,318.44	(mg/s)	129,230	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	214.46	(mg/s)	214.46	(mg/s)	214.46	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	43.78	(mg/s)	335.09	(mg/s)	335.09	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	799.23	(mg/s)	799.23	(mg/s)	799.23	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	855.78	(mg/s)	855.78	(mg/s)	855.78	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	1,215.55	(mg/s)	1,215.55	(mg/s)	1,215.55	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	104.51	(mg/s)	2,424.12	(mg/s)	26,438.79	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	3,233.31	(mg/s)	17,162.67	(mg/s)	159,089.29	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	3.103	(mg/L)	6.207	(mg/L)	6.472	(mg/L)
Conver flux to concen	concentration in river at PM-13	C_r13 =	8.643	(mg/L)	6.807	(mg/L)	6.532	(mg/L)

Case Parameter	Year 10 Cobalt			
	concentration of surface water into PM-12	C_s12 =	0.0006	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0006	(mg/L)
р с р	concentration in Babbitt WWTP discharge	C_sBab =	0.0006	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.000555	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001629161	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.005	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.001556	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0011	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.0011	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.21	(mg/s)	2	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.04	(mg/s)	12	(mg/s)
cer	mass flux of ground water into PM-13	M_g13 =	0.13	(mg/s)	0.13	(mg/s)	0.13	(mg/s)
u s n	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.26	(mg/s)	0.26	(mg/s)	0.26	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
မ ပိ	mass flux in seepage from cell 2W	M_s2w =	0.09	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ss balance ach node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.25	(mg/s)	2.46	(mg/s)
Mas at e	mass flux in river at PM-13	M r13 =	0.51	(mg/s)	1.80	(mg/s)	14.90	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
Convert mass lux to concentration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.001	(mg/L)	0.001	(mg/L)

Case Parameter	Year 10 Copper			
	concentration of surface water into PM-12	C s12 =	0.0015	(ma/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0015	(mg/L)
sp r	concentration in Babbitt WWTP discharge	C_sBab =	0.0015	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.00345	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.006983188	(mg/L)
ICEI	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0015	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.004555	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.004	(mg/L)
ů L	concentration of ground water into PM-13	C_g13 =	0.004	(mg/L)

		Low Flow		Average Flow		High Flow		ow	
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.54	(mg/s)		6	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.10	(mg/s)	0.10	(mg/s)		0.10	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)		0.01	(mg/s)
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.61	(mg/s)		30	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.48	(mg/s)	0.48	(mg/s)		0.48	(mg/s)
u s n	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.19	(mg/s)		0.19	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.10	(mg/s)	1.10	(mg/s)		1.10	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
<u>۽</u> ک	mass flux in seepage from cell 2W	M_s2w =	0.26	(mg/s)	0.26	(mg/s)		0.26	(mg/s)
			Low Flow		Average Flow		High Flow		ow
lance node	mass flux in river at PM-12	M_r12 =	0.11	(mg/s)	0.65	(mg/s)		6.19	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	1.97	(mg/s)	5.28	(mg/s)		38.04	(mg/s)
			Low Flo	w	Average I	Flow		High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.003	(mg/L)	0.002	(mg/L)		0.002	(mg/L)
Conver filux to concen	concentration in river at PM-13	C_r13 =	0.005	(mg/L)	0.002	(mg/L)		0.002	(mg/L)

Case	Year 10			
Parameter	Fluoride			
	concentration of surface water into PM-12	C_s12 =	0.2	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.2	(mg/L)
βρι	concentration in Babbitt WWTP discharge	C_sBab =	0.2	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.125	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	5.07E-01	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	2.85E+00	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	1.55	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.385	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.385	(mg/L)

		Low Flow		Average Flow		High Flow		low	
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	71.37	(mg/s)		810	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	9.37	(mg/s)	9.37	(mg/s)		9.37	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	1.87	(mg/s)	1.87	(mg/s)		1.87	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	348.26	(mg/s)		3,976	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	45.87	(mg/s)	45.87	(mg/s)		45.87	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.92	(mg/s)	7.04	(mg/s)		7.04	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	79.61	(mg/s)	79.61	(mg/s)		79.61	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	1.39	(mg/s)	1.39	(mg/s)		1.39	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	87.47	(mg/s)	87.47	(mg/s)		87.47	(mg/s)
			Low Flow		Average Flow			High Flow	
alance n node	mass flux in river at PM-12	M_r12 =	11.24	(mg/s)	82.61	(mg/s)		821.52	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	226.49	(mg/s)	652.24	(mg/s)		5,019.21	(mg/s)
			Low Flo	w	Average	Flow		High Fl	low
t mass tration	concentration in river at PM-12	C_r12 =	0.334	(mg/L)	0.212	(mg/L)		0.201	(mg/L)
Convel flux to concer	concentration in river at PM-13	C_r13 =	0.605	(mg/L)	0.259	(mg/L)		0.206	(mg/L)

Case	Year 10			
Parameter	Iron			
		-		
	concentration of surface water into PM-12	C_s12 =	2.9	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	2.9	(mg/L)
, p c	concentration in Babbitt WWTP discharge	C_sBab =	2.9	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.037761905	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	3.97E-02	(mg/L)
cei	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	4.00E-01	(mg/L)
CO CO	concentration in tailings basin cell 2W	C_s2w =	4.594	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.035	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.035	(mg/L)

			Low Flow			Average Flow		High Flow		ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)		1,034.90	(mg/s)		11,749	(mg/s)
	mass flux of ground water into PM-12	M_g12 =	0.85	(mg/s)		0.85	(mg/s)		0.85	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	27.08	(mg/s)		27.08	(mg/s)		27.08	(mg/s)
itral	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)		5,049.77	(mg/s)		57,657	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	4.17	(mg/s)		4.17	(mg/s)		4.17	(mg/s)
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	0.28	(mg/s)		2.13	(mg/s)		2.13	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	6.24	(mg/s)		6.24	(mg/s)		6.24	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.19	(mg/s)		0.19	(mg/s)		0.19	(mg/s)
<u>د</u> د ک	mass flux in seepage from cell 2W	M_s2w =	259.25	(mg/s)		259.25	(mg/s)		259.25	(mg/s)
			Low Flo	Low Flow		Average Flow			High Flow	
alance node	mass flux in river at PM-12	M_r12 =	27.93	(mg/s)		1,062.84	(mg/s)		11,777.08	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	298.06	(mg/s)		6,384.58	(mg/s)		69,705.69	(mg/s)
			Low Flo	w		Average	Flow		High Fl	ow
t mass ntration	concentration in river at PM-12	C_r12 =	0.829	(mg/L)		2.721	(mg/L)		2.883	(mg/L)
Conver flux to concen	concentration in river at PM-13	C r13 =	0.797	(mg/L)		2.532	(mg/L)		2.862	(mg/L)

Case	Year 10			
Parameter	Hardness			
		-		
	concentration of surface water into PM-12	C_s12 =	70	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	70	(mg/L)
ΰ	concentration in Babbitt WWTP discharge	C_sBab =	70	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	942.7142857	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	3.11E+02	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	8.61E+03	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	436.6	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	87.5	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	87.5	(mg/L)

		Low Flow		Average Flow		High Flow		
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	24,980.41	(mg/s)	283,600 (mg/s)	
-	mass flux of ground water into PM-12	M_g12 =	2,129.58	(mg/s)	2,129.58	(mg/s)	2,129.58 (mg/s)	
tion	mass flux in Babbitt WWTP discharge	M_sBab =	653.73	(mg/s)	653.73	(mg/s)	653.73 (mg/s)	
trat	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	121,890.93	(mg/s)	1,391,712 (mg/s)	
cen	mass flux of ground water into PM-13	M_g13 =	10,425.01	(mg/s)	10,425.01	(mg/s)	10,425.01 (mg/s)	
	mass flux of Area 5 Pit NW discharge	M_spit =	6,936.49	(mg/s)	53,090.84	(mg/s)	53,090.84 (mg/s)	
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	48,800.08	(mg/s)	48,800.08	(mg/s)	48,800.08 (mg/s)	
nve mas	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	4,186.52	(mg/s)	4,186.52	(mg/s)	4,186.52 (mg/s)	
<u>ء</u> ک	mass flux in seepage from cell 2W	M_s2w =	24,638.27	(mg/s)	24,638.27	(mg/s)	24,638.27 (mg/s)	
			Low Flo	W	Average	Flow	High Flow	
alance node	mass flux in river at PM-12	M_r12 =	2,783.31	(mg/s)	27,763.72	(mg/s)	286,383.27 (mg/s)	
Mass ba at each	mass flux in river at PM-13	M_r13 =	97,769.68	(mg/s)	290,795.36	(mg/s)	1,819,235.91 (mg/s)	
			Low Flo	w	Average	Flow	High Flow	
ert mass n ntration	concentration in river at PM-12	C_r12 =	82.647	(mg/L)	71.091	(mg/L)	70.104 (mg/L)	
Conv flux to conce	concentration in river at PM-13	C_r13 =	261.349	(mg/L)	115.339	(mg/L)	74.693 (mg/L)	

Case	Year 10			
Parameter	Potassium			
	concentration of surface water into PM-12	C_s12 =	0.60	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.60	(mg/L)
р р	concentration in Babbitt WWTP discharge	C_sBab =	0.60	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	53.80	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	7.98	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.80	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	7.77	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	1.60	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	1.60	(mg/L)

		Low Flow		Avera	Average Flow		High Flow		
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	214	12 (mg/s)		2,431	(mg/s)
	mass flux of ground water into PM-12	M_g12 =	38.94	(mg/s)	38	94 (mg/s)		38.94	(mg/s)
tion	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.88	(mg/s)	0	38 (mg/s)		0.88	(mg/s)
trat	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1,044	78 (mg/s)		11,929	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	190.63	(mg/s)	190	63 (mg/s)		190.63	(mg/s)
u Xn	mass flux in Babbitt WWTP discharge	M_sBab =	5.60	(mg/s)	5	60 (mg/s)		5.60	(mg/s)
ert o ss f	mass flux of Area 5 Pit NW discharge	M_spit =	395.86	(mg/s)	3,029	35 (mg/s)		3,029.85	(mg/s)
n ve mas	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1,252.62	(mg/s)	1,252	62 (mg/s)		1,252.62	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	438.48	(mg/s)	438	48 (mg/s)		438.48	(mg/s)
			Low Flow		Avera	Average Flow		High Flow	
alance node	mass flux in river at PM-12	M_r12 =	39.82	(mg/s)	253	93 (mg/s)		2,470.67	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	2,323.01	(mg/s)	6,215	90 (mg/s)		19,316.82	(mg/s)
			Low Flo	w	Avera	ge Flow		High Fl	low
t mass tration	concentration in river at PM-12	C_r12 =	1.182	(mg/L)	0.6	50 (mg/L)		0.605	(mg/l)
Convel flux to concer	concentration in river at PM-13	C_r13 =	6.210	(mg/L)	2.4	65 (mg/L)		0.793	(mg/l)

Case Parameter	Year 10 Magnesium			
	concentration of surface water into PM-12	C_s12 =	5.90	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	5.90	(mg/L)
sp r	concentration in Babbitt WWTP discharge	C_sBab =	5.90	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	271.00	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	10.43	(mg/L)
ICer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	213.00	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	69.97	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	10.65	(mg/L)
gri	concentration of ground water into PM-13	C_g13 =	10.65	(mg/L)

			Low Flo	w	Average I	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,105.49	(mg/s)	23,903	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	259.20	(mg/s)	259.20	(mg/s)	259.20	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	55.10	(mg/s)	55.10	(mg/s)	55.10	(mg/s)
concentra lux	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,273.66	(mg/s)	117,301	(mg/s)
	mass flux of ground water into PM-13	M_g13 =	1,268.87	(mg/s)	1,268.87	(mg/s)	1,268.87	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	1,994.02	(mg/s)	15,261.91	(mg/s)	15,261.91	(mg/s)
ert c ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1,638.19	(mg/s)	1,638.19	(mg/s)	1,638.19	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	103.57	(mg/s)	103.57	(mg/s)	103.57	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	3,948.56	(mg/s)	3,948.56	(mg/s)	3,948.56	(mg/s)
			Low Flow		Average Flow		High Flow	
alance n node	mass flux in river at PM-12	M_r12 =	314.30	(mg/s)	2,419.79	(mg/s)	24,217.73	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	9,267.50	(mg/s)	34,914.55	(mg/s)	163,740.25	(mg/s)
			Low Flo	w	Average I	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	9.333	(mg/L)	6.196	(mg/l)	5.928	(mg/l)
Conver flux to concen	concentration in river at PM-13	C_r13 =	24.773	(mg/L)	13.848	(mg/l)	6.723	(mg/l)
Case	Year 10							
-----------	---	----------	------	--------				
Parameter	Manganese							
		-		-				
	concentration of surface water into PM-12	C_s12 =	0.30	(mg/L)				
ata	concentration of surface water into PM-13	C_s13 =	0.30	(mg/L)				
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.30	(mg/L)				
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.49	(mg/L)				
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.16	(mg/L)				
ICEI	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.00	(mg/L)				
cor	concentration in tailings basin cell 2W	C_s2w =	1.18	(mg/L)				
nt	concentration of ground water into PM-12	C_g12 =	0.19	(mg/L)				
u u	concentration of ground water into PM-13	C_g13 =	0.19	(mg/L)				

			Low Flow		Average Flow		Flow	High Fl	High Flow	
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)		107.06	(mg/s)	1,215	(mg/s)	
_	mass flux of ground water into PM-12	M_g12 =	4.58	(mg/s)		4.58	(mg/s)	4.58	(mg/s)	
tion	mass flux in Babbitt WWTP discharge	M_sBab =	2.80	(mg/s)		2.80	(mg/s)	2.80	(mg/s)	
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)		522.39	(mg/s)	5,964	(mg/s)	
cen	mass flux of ground water into PM-13	M_g13 =	22.40	(mg/s)		22.40	(mg/s)	22.40	(mg/s)	
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	3.57	(mg/s)		27.31	(mg/s)	27.31	(mg/s)	
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	24.88	(mg/s)		24.88	(mg/s)	24.88	(mg/s)	
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)		0.00	(mg/s)	0.00	(mg/s)	
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	66.76	(mg/s)		66.76	(mg/s)	66.76	(mg/s)	
			Low Flow			Average	Flow	High Fl	ow	
alance node	mass flux in river at PM-12	M_r12 =	7.38	(mg/s)		114.44	(mg/s)	1,222.81	(mg/s)	
Mass be at each	mass flux in river at PM-13	M_r13 =	124.99	(mg/s)		778.18	(mg/s)	7,328.64	(mg/s)	
			Low Flo	w		Average	Flow	High Fl	ow	
rt mass ntration	concentration in river at PM-12	C_r12 =	0.219	(mg/L)		0.293	(mg/l)	0.299	(mg/l)	
Conve flux to concel	concentration in river at PM-13	C_r13 =	0.334	(mg/L)		0.309	(mg/l)	0.301	(mg/l)	

Case	Year 10			
Parameter	Sodium			
	concentration of surface water into PM-12	C_s12 =	6.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	6.00	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	6.00	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	119.50	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	31.37	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	255.00	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	44.31	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	4.90	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	4.90	(mg/L)

			Low Flow		Average	Flow		High Flow	
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,141.18	(mg/s)		24,309	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	119.26	(mg/s)	119.26	(mg/s)		119.26	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	56.03	(mg/s)	56.03	(mg/s)		56.03	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,447.79	(mg/s)		119,290	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	583.80	(mg/s)	583.80	(mg/s)		583.80	(mg/s)
u xnl	mass flux of Area 5 Pit NW discharge	M_spit =	879.28	(mg/s)	6,729.88	(mg/s)		6,729.88	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	4,924.53	(mg/s)	4,924.53	(mg/s)		4,924.53	(mg/s)
m ke	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	123.99	(mg/s)	123.99	(mg/s)		123.99	(mg/s)
<u>۽</u> ک	mass flux in seepage from cell 2W	M_s2w =	2,500.51	(mg/s)	2,500.51	(mg/s)		2,500.51	(mg/s)
			Low Flow		Average	Flow		High Fl	low
alance	mass flux in river at PM-12	M_r12 =	175.29	(mg/s)	2,316.47	(mg/s)		24,483.86	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	9,187.40	(mg/s)	27,626.97	(mg/s)		158,636.16	(mg/s)
			Low Flo	w	Average	Flow		High Fl	low
t mass tration	concentration in river at PM-12	C_r12 =	5.205	(mg/L)	5.931	(mg/l)		5.993	(mg/l)
Conver flux to concent	concentration in river at PM-13	C_r13 =	24.559	(mg/L)	10.958	(mg/l)		6.513	(mg/l)

Case	Year 10			
Parameter	Nickel			
-		-		-
	concentration of surface water into PM-12	C_s12 =	0.0012	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0012	(mg/L)
β	concentration in Babbitt WWTP discharge	C_sBab =	0.0012	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0052	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.024818317	(mg/L)
Ce I	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.098	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.00688	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.007	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.007	(mg/L)

			Low Flow		Average Flow		High Flow		ow	
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)		0.43	(mg/s)		5	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.17	(mg/s)		0.17	(mg/s)		0.17	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)		0.01	(mg/s)		0.01	(mg/s)
ntra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)		2.09	(mg/s)		24	(mg/s)
lcen	mass flux of ground water into PM-13	M_g13 =	0.83	(mg/s)		0.83	(mg/s)		0.83	(mg/s)
nos	mass flux of Area 5 Pit NW discharge	M_spit =	0.04	(mg/s)		0.29	(mg/s)		0.29	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	3.90	(mg/s)		3.90	(mg/s)		3.90	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.05	(mg/s)		0.05	(mg/s)		0.05	(mg/s)
<u>ې</u> کې	mass flux in seepage from cell 2W	M_s2w =	0.39	(mg/s)		0.39	(mg/s)		0.39	(mg/s)
			Low Flow			Average	Flow		High Flo	ow
balance node	mass flux in river at PM-12	M_r12 =	0.18	(mg/s)		0.61	(mg/s)		5.04	(mg/s)
Mass	mass flux in river at PM-13	M_r13 =	5.39	(mg/s)		8.16	(mg/s)		34.36	(mg/s)
			Low Flo	w		Average I	Flow		High Flo	ow
t mass itration	concentration in river at PM-12	C_r12 =	0.005	(mg/L)		0.002	(mg/L)		0.001	(mg/L)
Conver flux to concen	concentration in river at PM-13	C r13 =	0.014	(mg/L)		0.003	(mg/L)		0.001	(mg/L)

Case	Year 10			
Parameter	Lead			
	concentration of surface water into PM-12	C_s12 =	0.00015	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00015	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.00015	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0003	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.002998768	(mg/L)
Icel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0005	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	0.0012	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.0012	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.0012	(mg/L)

			Low Flow		Average Flow		High Flow		ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.05	(mg/s)		1	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)		0.03	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.26	(mg/s)		3	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.14	(mg/s)	0.14	(mg/s)		0.14	(mg/s)
nos	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.02	(mg/s)		0.02	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.47	(mg/s)	0.47	(mg/s)		0.47	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.07	(mg/s)	0.07	(mg/s)		0.07	(mg/s)
			Low Flow		Average	Flow		High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.08	(mg/s)		0.64	(mg/s)
Mass bi at each	mass flux in river at PM-13	M_r13 =	0.71	(mg/s)	1.04	(mg/s)		4.32	(mg/s)
			Low Flo	w	Average	Flow		High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.000	(mg/L)		0.000	(mg/L)
Conver flux to concen	concentration in river at PM-13	C r13 =	0.002	(mg/L)	0.000	(mg/L)		0.000	(mg/L)

Case Parameter	Year 10 Antimony			
		•		•
	concentration of surface water into PM-12	C_s12 =	4.00E-05	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00E-05	(mg/L)
р с р	concentration in Babbitt WWTP discharge	C_sBab =	4.00E-05	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	2.50E-04	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	1.17E-02	(mg/L)
Ce I	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	2.50E-04	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	1.50E-03	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	1.50E-03	(mg/L)

			Low Flow		Average Flow		High Flow	
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.01	(mg/s)		0 (mg/s)
Ę	mass flux of ground water into PM-12	M_g12 =	0.04	(mg/s)	0.04	(mg/s)		0.04 (mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)		0.00 (mg/s)
central	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.07	(mg/s)		1 (mg/s)
	mass flux of ground water into PM-13	M_g13 =	0.18	(mg/s)	0.18	(mg/s)		0.18 (mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)		0.01 (mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.84	(mg/s)	1.84	(mg/s)		1.84 (mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)		0.00 (mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)		0.01 (mg/s)
			Low Flow		Average	Average Flow		gh Flow
ulance node	mass flux in river at PM-12	M_r12 =	0.04	(mg/s)	0.05	(mg/s)		0.20 (mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	2.08	(mg/s)	2.17	(mg/s)		3.04 (mg/s)
			Low Flo	w	Average	Flow	Hi	gh Flow
t mass tration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.000	(mg/L)	0	.000 (mg/L)
Conver flux to concen	concentration in river at PM-13	C r13 =	0.006	(ma/L)	0.001	(ma/L)	0	.000 (ma/L)

Case Parameter	Year 10 Selenium			
	concentration of surface water into PM-12	C_s12 =	0.0003	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0003	(mg/L)
р и	concentration in Babbitt WWTP discharge	C_sBab =	0.0003	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0016	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.00156894	(mg/L)
G	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.054	(mg/L)
Cor Cor	concentration in tailings basin cell 2W	C_s2w =	0.00109	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	0.00295	(mg/L)
L L	concentration of ground water into PM-13	C_g13 =	0.00295	(mg/L)

			Low Flow		Average	Flow	High Fl	High Flow	
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.11	(mg/s)	1	(mg/s)	
c	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)	
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)	
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.52	(mg/s)	6	(mg/s)	
cen	mass flux of ground water into PM-13	M_g13 =	0.35	(mg/s)	0.35	(mg/s)	0.35	(mg/s)	
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.09	(mg/s)	0.09	(mg/s)	
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.25	(mg/s)	0.25	(mg/s)	0.25	(mg/s)	
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)	
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)	
			Low Flow		Average I	Flow	High Fl	ow	
lance node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	0.18	(mg/s)	1.29	(mg/s)	
Mass ba at each	mass flux in river at PM-13	M_r13 =	0.77	(mg/s)	1.48	(mg/s)	8.03	(mg/s)	
			Low Flo	w	Average I	Flow	High Fl	ow	
t mass tration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	0.000	(mg/L)	0.000	(mg/L)	
Conver flux to concen	concentration in river at PM-13	C_r13 =	0.002	(mg/L)	0.001	(mg/L)	0.000	(mg/L)	

Case	Year 10			
Parameter	Sulfate			
	concentration of surface water into PM-12	C_s12 =	4.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00	(mg/L)
i p u	concentration in Babbitt WWTP discharge	C_sBab =	4.00	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	1046.27	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	223.12	(mg/L)
	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	7347.00	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	152.40	(mg/L)
out	concentration of ground water into PM-12	C_g12 =	8.50	(mg/L)
du du	concentration of ground water into PM-13	C_g13 =	8.50	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,427.45	(mg/s)	16,206	(mg/s)
	mass flux of ground water into PM-12	M_g12 =	206.87	(mg/s)	206.87	(mg/s)	206.87	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	37.36	(mg/s)	37.36	(mg/s)	37.36	(mg/s)
trai	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	6,965.20	(mg/s)	79,526	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1,012.72	(mg/s)	1,012.72	(mg/s)	1,012.72	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	7,698.43	(mg/s)	58,922.60	(mg/s)	58,922.60	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	35,029.37	(mg/s)	35,029.37	(mg/s)	35,029.37	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	3,572.40	(mg/s)	3,572.40	(mg/s)	3,572.40	(mg/s)
ຊີ ບິ	mass flux in seepage from cell 2W	M_s2w =	8,600.26	(mg/s)	8,600.26	(mg/s)	8,600.26	(mg/s)
			Low Flow		Average Flow		High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	244.23	(mg/s)	1,671.68	(mg/s)	16,449.94	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	56,157.40	(mg/s)	115,774.21	(mg/s)	203,113.67	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass ntration	concentration in river at PM-12	C_r12 =	7.252	(mg/L)	4.280	(mg/l)	4.027	(mg/l)
Conver flux to concen	concentration in river at PM-13	C_r13 =	150.115	(mg/L)	45.920	(mg/l)	8.339	(mg/l)

Case	Year 10			
Parameter	Thallium			
	concentration of surface water into PM-12	C_s12 =	0.0002	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0002	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.0002	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0006	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001032064	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0002	(mg/L)
CO CO	concentration in tailings basin cell 2W	C_s2w =	0.0002	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.000004	(mg/L)
<u> </u>	concentration of ground water into PM-13	C_g13 =	0.000004	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.07	(mg/s)	1	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.35	(mg/s)	4	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
uo	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ert c ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.16	(mg/s)	0.16	(mg/s)	0.16	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ဒ္ ပိ	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	 0.01	(mg/s)
			Low Flow		Average Flow		High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.07	(mg/s)	0.81	(mg/s)
Mass bé at each	mass flux in river at PM-13	M_r13 =	0.18	(mg/s)	0.63	(mg/s)	5.00	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass htration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conve flux to concer	concentration in river at PM-13	C r13 =	0.000	(ma/L)	0.000	(ma/L)	0.000	(mg/L)

Case	Year 10			
Parameter	Zinc			
		-		
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
βρι	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.003	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.063569909	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.01	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.01435	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0115	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.0115	(mg/L)

		· · · · ·	Low Flo	w	Average	Flow		High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	_	(mg/s)	5.71	(mg/s)		65	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.28	(mg/s)	0.28	(mg/s)		0.28	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)		0.15	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.86	(mg/s)		318	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1.37	(mg/s)	1.37	(mg/s)		1.37	(mg/s)
uo	mass flux of Area 5 Pit NW discharge	M_spit =	0.02	(mg/s)	0.17	(mg/s)		0.17	(mg/s)
ert c ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	9.98	(mg/s)	9.98	(mg/s)		9.98	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	0.81	(mg/s)	0.81	(mg/s)		0.81	(mg/s)
			Low Flow		Average	Average Flow		High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.43	(mg/s)	6.14	(mg/s)		65.25	(mg/s)
Mass bé at each	mass flux in river at PM-13	M_r13 =	12.62	(mg/s)	46.33	(mg/s)		395.69	(mg/s)
			Low Flo	w	Average	Flow		High Fl	ow
t mass itration	concentration in river at PM-12	C_r12 =	0.013	(mg/L)	0.016	(mg/L)		0.016	(mg/L)
Conver filux to concen	concentration in river at PM-13	C r13 =	0.034	(mg/L)	0.018	(mg/L)		0.016	(mg/L)

Appendix F.12 Embarrass River Geotechnical Mitigation Year 15

FLOWS

Case	Year 15				
Flows	Low Flow Conditions (no surface runoff)				Node
in s River	flow in river at PM-12	Q_r12_L =	1.19	(cfs)	PM-12
flow arrass	flow in river at PM-13	Q_r13_L =	13.69	(cfs)	PM-13
Total Embê	flow check	Q_ck_L =	13.69	(cfs)	
	surface water flow into PM-12	Q_s12_L =	0.00	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_L =	0.00	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_L =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_L =	0.26	(cfs)	PM-13
Ita	seepage from Tailings Basin Cells 1E and 2E	Q_fs_L =	6.02	(cfs)	PM-13
/ da	hydrometallurgical residue cells liner leakage	Q_rrs_L =	0.02	(cfs)	PM-13
flow	seepage from cell 2W	Q_s2w_L =	1.99	(cfs)	PM-13
out 1	ground water flow into PM-12	Q_g12_L =	0.86	(cfs)	PM-12
du l	ground water flow into PM-13	Q_g13_L =	4.21	(cfs)	PM-13

Case	Year 15				
Flow	Average Flow Conditions (mean annual)				_
n River	flow in river at PM-12	Q_r12_M =	13.80	(cfs)	PM-12
il flow i arrass	flow in river at PM-13	Q_r13_M =	89.56	(cfs)	PM-13
Tota Emb	flow check	Q_ck_M =	89.56	(cfs)	
	surface water flow into PM-12	Q_s12_M =	12.61	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_M =	61.53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_M =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_M =	1.99	(cfs)	PM-13
ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_M =	6.02	(cfs)	PM-13
, da	hydrometallurgical residue cells liner leakage	Q_rrs_M =	0.02	(cfs)	PM-13
low	seepage from cell 2W	Q_s2w_M =	1.99	(cfs)	PM-13
nt i	ground water flow into PM-12	Q_g12_M =	0.86	(cfs)	PM-12
dul	ground water flow into PM-13	Q_g13_M =	4.21	(cfs)	PM-13

Case	Year 15				
Flow	High Flow Conditions (avg. annual 1-day max flow)				_
ר River	flow in river at PM-12	Q_r12_H =	144.35	(cfs)	PM-12
al flow in oarrass	flow in river at PM-13	Q_r13_H =	861.11	(cfs)	PM-13
Tota Emk	flow check	Q_ck_H =	861.11	(cfs)	
	surface water flow into PM-12	Q_s12_H =	143.16	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_H =	702.53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_H =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_H =	1.99	(cfs)	PM-13
ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_H =	6.02	(cfs)	PM-13
/ da	hydrometallurgical residue cells liner leakage	Q_rrs_H =	0.02	(cfs)	PM-13
lov	seepage from cell 2W	Q_s2w_H =	1.99	(cfs)	PM-13
rt i	ground water flow into PM-12	Q_g12_H =	0.86	(cfs)	PM-12
dul	ground water flow into PM-13	Q_g13_H =	4.21	(cfs)	PM-13

81.53

Case Parameter	Year 15 Silver			
	concentration of ourface water into DM 10	0. 10	0.00011	(mg/l)
ta	concentration of surface water into PM-12	$C_{s12} = C_{s13} = C_{s$	0.00011	(mg/L)
n da	concentration in Babbitt WWTP discharge	C_sBab =	0.00011	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.00015	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.00089	(mg/L)
	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.000125	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.000100	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	0.00008	(mg/L)
du du	concentration of ground water into PM-13	C_g13 =	0.00008	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	_	(mg/s)	0.04	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.19	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
nos	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert c ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
a r	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flow		Average Flow		High Flow	
alance node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.04	(mg/s)	0.45	(mg/s)
Mass bé at each	mass flux in river at PM-13	M_r13 =	0.16	(mg/s)	0.40	(mg/s)	2.80	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conver flux to concen	concentration in river at PM-13	C r13 =	0.000	(ma/L)	0.000	(ma/L)	0.000	(ma/L)

Case Parameter	Year 15 Aluminum			
	concentration of surface water into PM-12	C s12 =	0 12	(ma/L)
ata	concentration of surface water into PM-13	C_s13 =	0.12	(mg/L)
р с р с	concentration in Babbitt WWTP discharge	C_sBab =	0.12	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.01325	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	8.74E-02	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.80E-01	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	1.5788	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.025	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.025	(mg/L)

			Low Flo	w	Ave	age Flow		High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	4	2.82 (mg/s)	486	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.61	(mg/s)).61 (mg/s)	0.61	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	1.12	(mg/s)		.12 (mg/s)	1.12	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	20	8.96 (mg/s)	2,386	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2.98	(mg/s)		2.98 (mg/s)	2.98	(mg/s)
u xni	mass flux of Area 5 Pit NW discharge	M_spit =	0.10	(mg/s)).75 (mg/s)	0.75	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	14.87	(mg/s)	1	.87 (mg/s)	14.87	(mg/s)
nve	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.09	(mg/s)		0.09 (mg/s)	0.09	(mg/s)
ទ បិ	mass flux in seepage from cell 2W	M_s2w =	89.10	(mg/s)	8	0.10 (mg/s)	89.10	(mg/s)
			Low Flo	w	Ave	age Flow		High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	1.73	(mg/s)	4	.55 (mg/s)	487.90	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	108.86	(mg/s)	36	.29 (mg/s)	2,981.47	(mg/s)
			Low Flo	w	Ave	age Flow		High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.051	(mg/L)	0	114 (mg/L)	0.119	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.281	(mg/L)	0	143 (mg/L)	0.122	(mg/L)

Case Parameter	Year 15 Arsenic			
	concentration of surface water into PM-12	C_s12 =	0.00075	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00075	(mg/L)
ع ر	concentration in Babbitt WWTP discharge	C_sBab =	0.00075	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.001325	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.007825647	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.00291	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	0.00273	(mg/L)
L L	concentration of ground water into PM-13	C_g13 =	0.00273	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.27	(mg/s)	3	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.31	(mg/s)	15	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.33	(mg/s)	0.33	(mg/s)	0.33	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.33	(mg/s)	1.33	(mg/s)	1.33	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.16	(mg/s)	0.16	(mg/s)	0.16	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	0.34	(mg/s)	3.11	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	1.91	(mg/s)	3.55	(mg/s)	19.92	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
't mass ntration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	0.001	(mg/L)	0.001	(mg/L)
Conver filux to concer	concentration in river at PM-13	C_r13 =	0.005	(mg/L)	0.001	(mg/L)	0.001	(mg/L)

Case	Year 15			
Parameter	Boron			
	concentration of surface water into PM-12	C_s12 =	0.027	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.027	(mg/L)
p n	concentration in Babbitt WWTP discharge	C_sBab =	0.027	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.1315	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.153530941	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.11	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.33	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.0212	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.0212	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	9.64	(mg/s)	109	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.52	(mg/s)	0.52	(mg/s)	0.52	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.25	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	47.02	(mg/s)	537	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2.53	(mg/s)	2.53	(mg/s)	2.53	(mg/s)
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	0.97	(mg/s)	7.41	(mg/s)	7.41	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	26.14	(mg/s)	26.14	(mg/s)	26.14	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.05	(mg/s)	0.05	(mg/s)	0.05	(mg/s)
<u>۽</u> ک	mass flux in seepage from cell 2W	M_s2w =	18.62	(mg/s)	18.62	(mg/s)	18.62	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ss balance sach node	mass flux in river at PM-12	M_r12 =	0.77	(mg/s)	 10.40	(mg/s)	110.16	(mg/s)
Ma: ate	mass flux in river at PM-13	M_r13 =	49.08	(mg/s)	112.16	(mg/s)	701.71	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
onvert mass ux to oncentration	concentration in river at PM-12	C_r12 =	0.023	(mg/L)	 0.027	(mg/L)	0.027	(mg/L)
ŬĘŏ	concentration in river at PM-13	C_r13 =	0.127	(mg/L)	0.044	(mg/L)	0.029	(mg/L)

Case Parameter	Year 15 Barium			
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
p n	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0044	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	5.00E-02	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	5.00E-03	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.09298	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.0681	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.0681	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5.71	(mg/s)	65	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	1.66	(mg/s)	1.66	(mg/s)	1.66	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.86	(mg/s)	318	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	8.11	(mg/s)	8.11	(mg/s)	8.11	(mg/s)
u s n	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	8.50	(mg/s)	8.50	(mg/s)	8.50	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
<u>۽</u> ک	mass flux in seepage from cell 2W	M_s2w =	5.25	(mg/s)	5.25	(mg/s)	5.25	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ch node	mass flux in river at PM-12	M_r12 =	1.81	(mg/s)	7.52	(mg/s)	66.63	(mg/s)
Mass at ea	mass flux in river at PM-13	M_r13 =	23.71	(mg/s)	57.49	(mg/s)	406.85	(mg/s)
			LOW FIO	W	Average	FIOW	High Fi	ow
ivert mass to centration	concentration in river at PM-12	C_r12 =	0.054	(mg/L)	0.019	(mg/L)	0.016	(mg/L)
t fux con	concentration in river at PM-13	C_r13 =	0.061	(mg/L)	0.023	(mg/L)	0.017	(mg/L)

Case Parameter	Year 15 Beryllium			
		1		
	concentration of surface water into PM-12	C_s12 =	0.0001	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0001	(mg/L)
p u	concentration in Babbitt WWTP discharge	C_sBab =	0.0001	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000487063	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.00075	(mg/L)
out	concentration of ground water into PM-12	C_g12 =	0.000023	(mg/L)
브	concentration of ground water into PM-13	C_g13 =	0.000023	(mg/L)

			Low Flo	W	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.04	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
Itrai	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.17	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.08	(mg/s)	0.08	(mg/s)	0.08	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	-	(mg/s)	-	(mg/s)	-	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
			Low Flo	W	Average	Flow	High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.04	(mg/s)	0.41	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	0.13	(mg/s)	0.34	(mg/s)	2.53	(mg/s)
		_	LOW FIO	w	 Average	FIOW	 Fign Fi	ow
invert mass x to ncentration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
C III	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Year 15			
Parameter	Calcium			
-		-		
	concentration of surface water into PM-12	C_s12 =	15	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	15	(mg/L)
р ц	concentration in Babbitt WWTP discharge	C_sBab =	15	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	95.35	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	81.6110992	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	416	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	59.78	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	19	(mg/L)
브	concentration of ground water into PM-13	C_g13 =	19	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5,352.95	(mg/s)	60,771	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	462.42	(mg/s)	462.42	(mg/s)	462.42	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	140.09	(mg/s)	140.09	(mg/s)	140.09	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	26,119.49	(mg/s)	298,224	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2,263.72	(mg/s)	2,263.72	(mg/s)	2,263.72	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	701.59	(mg/s)	5,369.83	(mg/s)	5,369.83	(mg/s)
ert e	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	13,893.59	(mg/s)	13,893.59	(mg/s)	13,893.59	(mg/s)
nve mas	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	205.46	(mg/s)	205.46	(mg/s)	205.46	(mg/s)
ធ បំ	mass flux in seepage from cell 2W	M_s2w =	3,373.51	(mg/s)	3,373.51	(mg/s)	29.52	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	602.51	(mg/s)	5,955.45	(mg/s)	61,373.93	(mg/s)
Mass at ear	mass flux in river at PM-13	M_r13 =	21,040.37	(mg/s)	57,181.04	(mg/s)	381,360.03	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rert mass o entration	concentration in river at PM-12	C_r12 =	17.891	(mg/L)	15.249	(mg/L)	15.024	(mg/l)
Conv Conv conc	concentration in river at PM-13	C_r13 =	54.319	(mg/L)	22.561	(mg/L)	15.649	(mg/l)

Case Parameter	Year 15 Cadmium			
	concentration of surface water into PM-12	C s12 =	0.0008	(ma/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00008	(mg/L)
ab r	concentration in Babbitt WWTP discharge	C_sBab =	0.00008	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000567381	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0004	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.000188	(mg/L)
t t	concentration of ground water into PM-12	C_g12 =	0.0003	(mg/L)
<u> </u>	concentration of ground water into PM-13	C_g13 =	0.0003	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.03	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
entral	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.14	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.10	(mg/s)	0.10	(mg/s)	0.10	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ch node	mass flux in river at PM-12	M_r12 =	0.01	(mg/s)	0.04	(mg/s)	0.33	(mg/s)
Mass at ea	mass flux in river at PM-13	M_r13 =	0.15	(mg/s)	0.32	(mg/s)	2.07	(mg/s)
			LOW FIO	w	Average	FIOW	Fign Fi	ow
vert mass to centration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	 0.000	(mg/L)	0.000	(mg/L)
Con Con con	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Year 15 Chloride			
	concentration of surface water into PM-12	C_s12 =	6.5	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	6.5	(mg/L)
p n	concentration in Babbitt WWTP discharge	C_sBab =	6.5	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	5.95	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	5.66E+00	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.76E+03	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	21.54	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	1.8	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	1.8	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,319.61	(mg/s)	26,334	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	43.81	(mg/s)	43.81	(mg/s)	43.81	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	60.70	(mg/s)	60.70	(mg/s)	60.70	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	11,318.44	(mg/s)	129,230	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	214.46	(mg/s)	214.46	(mg/s)	214.46	(mg/s)
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	43.78	(mg/s)	335.09	(mg/s)	335.09	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	963.96	(mg/s)	963.96	(mg/s)	963.96	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	869.24	(mg/s)	869.24	(mg/s)	869.24	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	1,215.55	(mg/s)	1,215.55	(mg/s)	1,215.55	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	104.51	(mg/s)	2,424.12	(mg/s)	26,438.79	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	3,411.50	(mg/s)	17,340.86	(mg/s)	159,267.48	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass utration	concentration in river at PM-12	C_r12 =	3.103	(mg/L)	6.207	(mg/L)	6.472	(mg/L)
Conver flux to concer	concentration in river at PM-13	C_r13 =	8.807	(mg/L)	6.842	(mg/L)	6.536	(mg/L)

Case Parameter	Year 15 Cobalt			
	concentration of surface water into PM-12	C_s12 =	0.0006	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0006	(mg/L)
р с р	concentration in Babbitt WWTP discharge	C_sBab =	0.0006	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.000555	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001926627	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.005	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.001556	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0011	(mg/L)
별	concentration of ground water into PM-13	C_g13 =	0.0011	(mg/L)

			Low Flo	W	Average I	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.21	(mg/s)	2	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.04	(mg/s)	12	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.13	(mg/s)	0.13	(mg/s)	0.13	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.33	(mg/s)	0.33	(mg/s)	0.33	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	0.09	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
			Low Flo	w	Average I	Flow	High Fl	ow
alance n node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.25	(mg/s)	2.46	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	0.59	(mg/s)	1.87	(mg/s)	14.97	(mg/s)
			Low Flo	w	Average I	Flow	High Fl	ow
ert mass o entration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.001	(mg/L)	0.001	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.002	(mg/L)	0.001	(mg/L)	0.001	(mg/L)

Case Parameter	Year 15 Copper			
	concentration of surface water into PM-12	C s12 =	0.0015	(ma/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0015	(mg/L)
ab r	concentration in Babbitt WWTP discharge	C_sBab =	0.0015	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.00345	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.009053616	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0015	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.004555	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	0.004	(mg/L)
<u> </u>	concentration of ground water into PM-13	C_g13 =	0.004	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.54	(mg/s)	6	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.10	(mg/s)	0.10	(mg/s)	0.10	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.61	(mg/s)	30	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.48	(mg/s)	0.48	(mg/s)	0.48	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.19	(mg/s)	0.19	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.54	(mg/s)	1.54	(mg/s)	1.54	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	0.26	(mg/s)	0.26	(mg/s)	0.26	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance th node	mass flux in river at PM-12	M_r12 =	0.11	(mg/s)	0.65	(mg/s)	6.19	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	2.41	(mg/s)	5.73	(mg/s)	38.48	(mg/s)
		_	LOW FIO	w	Average	FIOW	Fign Fi	ow
wert mass to centration	concentration in river at PM-12	C_r12 =	0.003	(mg/L)	0.002	(mg/L)	0.002	(mg/L)
Con Con Con	concentration in river at PM-13	C_r13 =	0.006	(mg/L)	0.002	(mg/L)	0.002	(mg/L)

Case Parameter	Year 15 Fluoride			
	concentration of surface water into PM-12	C_s12 =	0.2	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.2	(mg/L)
a de	concentration in Babbitt WWTP discharge	C_sBab =	0.2	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.125	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	5.63E-01	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	2.85E+00	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	1.55	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.385	(mg/L)
L L	concentration of ground water into PM-13	C_g13 =	0.385	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	71.37	(mg/s)	810	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	9.37	(mg/s)	9.37	(mg/s)	9.37	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	1.87	(mg/s)	1.87	(mg/s)	1.87	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	348.26	(mg/s)	3,976	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	45.87	(mg/s)	45.87	(mg/s)	45.87	(mg/s)
u Sul	mass flux of Area 5 Pit NW discharge	M_spit =	0.92	(mg/s)	7.04	(mg/s)	7.04	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	95.87	(mg/s)	95.87	(mg/s)	95.87	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	1.41	(mg/s)	1.41	(mg/s)	1.41	(mg/s)
မ ပိ	mass flux in seepage from cell 2W	M_s2w =	87.47	(mg/s)	87.47	(mg/s)	87.47	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
is balance ach node	mass flux in river at PM-12	M_r12 =	11.24	(mg/s)	82.61	(mg/s)	821.52	(mg/s)
Mas at e	mass flux in river at PM-13	M r13 =	242.78	(ma/s)	668.53	(mg/s)	5,035.50	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
Convert mass lux to concentration	concentration in river at PM-12	C_r12 =	0.334	(mg/L)	0.212	(mg/L)	0.201	(mg/L)

Case Parameter	Year 15 Iron			
		0		
	concentration of surface water into PM-12	C_s12 =	2.9	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	2.9	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	2.9	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.037761905	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	3.86E-02	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	4.00E-01	(mg/L)
CO	concentration in tailings basin cell 2W	C_s2w =	4.594	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.035	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.035	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,034.90	(mg/s)	11,749	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.85	(mg/s)	0.85	(mg/s)	0.85	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	27.08	(mg/s)	27.08	(mg/s)	27.08	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	5,049.77	(mg/s)	57,657	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	4.17	(mg/s)	4.17	(mg/s)	4.17	(mg/s)
u Xi	mass flux of Area 5 Pit NW discharge	M_spit =	0.28	(mg/s)	2.13	(mg/s)	2.13	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	6.57	(mg/s)	6.57	(mg/s)	6.57	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.20	(mg/s)	0.20	(mg/s)	0.20	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	259.25	(mg/s)	259.25	(mg/s)	259.25	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ss balance sach node	mass flux in river at PM-12	M_r12 =	27.93	(mg/s)	 1,062.84	(mg/s)	11,777.08	(mg/s)
Ma: ate	mass flux in river at PM-13	M_r13 =	298.40	(mg/s)	6,384.92	(mg/s)	69,706.03	(mg/s)
			Low Flo	W	Average	Flow	High Fl	ow
Convert mass lux to concentration	concentration in river at PM-12	C_r12 =	0.829	(mg/L)	2.721	(mg/L)	2.883	(mg/L)

Case	Year 15			
Parameter	Hardness			
-		-		
	concentration of surface water into PM-12	C_s12 =	70	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	70	(mg/L)
β	concentration in Babbitt WWTP discharge	C_sBab =	70	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	942.7142857	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	2.55E+02	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	8.61E+03	(mg/L)
CO	concentration in tailings basin cell 2W	C_s2w =	436.6	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	87.5	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	87.5	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	24,980.41	(mg/s)	283,600	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	2,129.58	(mg/s)	2,129.58	(mg/s)	2,129.58	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	653.73	(mg/s)	653.73	(mg/s)	653.73	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	121,890.93	(mg/s)	1,391,712	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	10,425.01	(mg/s)	10,425.01	(mg/s)	10,425.01	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	6,936.49	(mg/s)	53,090.84	(mg/s)	53,090.84	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	43,358.02	(mg/s)	43,358.02	(mg/s)	43,358.02	(mg/s)
m ke	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	4,252.38	(mg/s)	4,252.38	(mg/s)	4,252.38	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	24,638.27	(mg/s)	24,638.27	(mg/s)	24,638.27	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	2,783.31	(mg/s)	 27,763.72	(mg/s)	286,383.27	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	92,393.48	(mg/s)	285,419.17	(mg/s)	1,813,859.72	(mg/s)
			LOW FIO	w	 Average	FIOW	High Fi	ow
wert mass to centration	concentration in river at PM-12	C_r12 =	82.647	(mg/L)	71.091	(mg/L)	70.104	(mg/L)
Cor Cor Cor	concentration in river at PM-13	C_r13 =	238.530	(mg/L)	112.615	(mg/L)	74.432	(mg/L)

Case Parameter	Year 15 Potassium			
	concentration of surface water into PM-12	C_s12 =	0.60	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.60	(mg/L)
sp r	concentration in Babbitt WWTP discharge	C_sBab =	0.60	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	53.80	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	6.68	(mg/L)
cei	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.80	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	7.77	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	1.60	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	1.60	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	214.12	(mg/s)	2,431	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	38.94	(mg/s)	38.94	(mg/s)	38.94	(mg/s)
tion	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.89	(mg/s)	5.60	(mg/s)	0.89	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1,044.78	(mg/s)	11,929	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	190.63	(mg/s)	190.63	(mg/s)	190.63	(mg/s)
u xni	mass flux in Babbitt WWTP discharge	M_sBab =	5.60	(mg/s)	3,029.85	(mg/s)	5.60	(mg/s)
ert o ss f	mass flux of Area 5 Pit NW discharge	M_spit =	395.86	(mg/s)	1,137.30	(mg/s)	3,029.85	(mg/s)
n ve ma:	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1,137.30	(mg/s)	0.89	(mg/s)	1,137.30	(mg/s)
ទ បិ	mass flux in seepage from cell 2W	M_s2w =	438.48	(mg/s)	438.48	(mg/s)	438.48	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance h node	mass flux in river at PM-12	M_r12 =	39.83	(mg/s)	258.66	(mg/s)	2,470.69	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	2,207.70	(mg/s)	6,100.59	(mg/s)	19,201.51	(mg/s)
		-	Low Flo	w	Average	Flow	High Fl	ow
ert mass ortration	concentration in river at PM-12	C_r12 =	1.183	(mg/L)	0.662	(mg/L)	0.605	(mg/l)
Conve flux to conce	concentration in river at PM-13	C_r13 =	5.700	(mg/L)	2.407	(mg/L)	0.788	(mg/l)

Case	Year 15			
Parameter	Magnesium			
-		-		
	concentration of surface water into PM-12	C_s12 =	5.90	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	5.90	(mg/L)
p n	concentration in Babbitt WWTP discharge	C_sBab =	5.90	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	271.00	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	12.36	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	213.00	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	69.97	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	10.65	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	10.65	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,105.49	(mg/s)	23,903	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	259.20	(mg/s)	259.20	(mg/s)	259.20	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	55.10	(mg/s)	55.10	(mg/s)	55.10	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,273.66	(mg/s)	117,301	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1,268.87	(mg/s)	1,268.87	(mg/s)	1,268.87	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	1,994.02	(mg/s)	15,261.91	(mg/s)	15,261.91	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	2,104.35	(mg/s)	2,104.35	(mg/s)	2,104.35	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	105.20	(mg/s)	105.20	(mg/s)	105.20	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	3,948.56	(mg/s)	3,948.56	(mg/s)	3,948.56	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	314.30	(mg/s)	2,419.79	(mg/s)	24,217.73	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	9,735.30	(mg/s)	35,382.34	(mg/s)	164,208.04	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	9.333	(mg/L)	6.196	(mg/L)	5.928	(mg/l)
Convert flux to concent	concentration in river at PM-13	C_r13 =	25.133	(mg/L)	13.960	(mg/L)	6.738	(mg/l)

Case	Year 15			
Parameter	Manganese			
		-		
	concentration of surface water into PM-12	C_s12 =	0.30	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.30	(mg/L)
p n	concentration in Babbitt WWTP discharge	C_sBab =	0.30	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.49	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.19	(mg/L)
	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.00	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	1.18	(mg/L)
out	concentration of ground water into PM-12	C_g12 =	0.19	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.19	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	107.06	(mg/s)	1,215	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	4.58	(mg/s)	4.58	(mg/s)	4.58	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	2.80	(mg/s)	2.80	(mg/s)	2.80	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	522.39	(mg/s)	5,964	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	22.40	(mg/s)	22.40	(mg/s)	22.40	(mg/s)
u xni	mass flux of Area 5 Pit NW discharge	M_spit =	3.57	(mg/s)	27.31	(mg/s)	27.31	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	33.00	(mg/s)	33.00	(mg/s)	33.00	(mg/s)
nve	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
<u>ب</u> د	mass flux in seepage from cell 2W	M_s2w =	66.76	(mg/s)	66.76	(mg/s)	66.76	(mg/s)
			Low Flo	W	Average	Flow	High Fl	ow
balance n node	mass flux in river at PM-12	M_r12 =	7.38	(mg/s)	114.44	(mg/s)	1,222.81	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	133.10	(mg/s)	786.29	(mg/s)	7,336.75	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass	concentration in river at PM-12	C_r12 =	0.219	(mg/L)	0.293	(mg/L)	0.299	(mg/l)
Conver flux to concen	concentration in river at PM-13	C_r13 =	0.344	(mg/L)	0.310	(mg/L)	0.301	(mg/l)

Case Parameter	Year 15 Sodium			
	concentration of surface water into PM-12	C_s12 =	6.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	6.00	(mg/L)
ع ر	concentration in Babbitt WWTP discharge	C_sBab =	6.00	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	119.50	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	26.02	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	255.00	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	44.31	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	4.90	(mg/L)
L L	concentration of ground water into PM-13	C_g13 =	4.90	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,141.18	(mg/s)	24,309	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	119.26	(mg/s)	119.26	(mg/s)	119.26	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	56.03	(mg/s)	56.03	(mg/s)	56.03	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,447.79	(mg/s)	119,290	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	583.80	(mg/s)	583.80	(mg/s)	583.80	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	879.28	(mg/s)	6,729.88	(mg/s)	6,729.88	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	4,430.53	(mg/s)	4,430.53	(mg/s)	4,430.53	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	125.94	(mg/s)	125.94	(mg/s)	125.94	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	2,500.51	(mg/s)	2,500.51	(mg/s)	2,500.51	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ulance node	mass flux in river at PM-12	M_r12 =	175.29	(mg/s)	2,316.47	(mg/s)	24,483.86	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	8,695.35	(mg/s)	27,134.93	(mg/s)	158,144.12	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	5.205	(mg/L)	5.931	(mg/L)	5.993	(mg/l)
Conver' flux to concen'	concentration in river at PM-13	C r13 =	22.449	(mg/L)	10.706	(mg/L)	6.489	(mg/l)

Case Parameter	Year 15 Nickel			
		-		
	concentration of surface water into PM-12	C_s12 =	0.0012	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0012	(mg/L)
p n	concentration in Babbitt WWTP discharge	C_sBab =	0.0012	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0052	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.022174447	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.098	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.00688	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.007	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.007	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.43	(mg/s)	5	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.17	(mg/s)	0.17	(mg/s)	0.17	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.09	(mg/s)	24	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.83	(mg/s)	0.83	(mg/s)	0.83	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.04	(mg/s)	0.29	(mg/s)	0.29	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	3.78	(mg/s)	3.78	(mg/s)	3.78	(mg/s)
ma ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.05	(mg/s)	0.05	(mg/s)	0.05	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.39	(mg/s)	0.39	(mg/s)	0.39	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ss balance ach node	mass flux in river at PM-12	M_r12 =	0.18	(mg/s)	 0.61	(mg/s)	 5.04	(mg/s)
Ma: ate	mass flux in river at PM-13	M_r13 =	5.27	(mg/s)	8.04	(mg/s)	34.24	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
onvert mass ux to oncentration	concentration in river at PM-12	C_r12 =	0.005	(mg/L)	0.002	(mg/L)	0.001	(mg/L)
ర≓ర	concentration in river at PM-13	C_r13 =	0.014	(mg/L)	0.003	(mg/L)	0.001	(mg/L)

Case	Year 15			
Parameter	Lead			
	concentration of surface water into PM-12	C_s12 =	0.00015	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00015	(mg/L)
βρι	concentration in Babbitt WWTP discharge	C_sBab =	0.00015	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0003	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.002700416	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0005	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.0012	(mg/L)
t	concentration of ground water into PM-12	C_g12 =	0.0012	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.0012	(mg/L)

			Low Flo	W	Average	Flow		High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.05	(mg/s)		1	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)		0.03	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
ert concentral ss flux	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.26	(mg/s)		3	(mg/s)
	mass flux of ground water into PM-13	M_g13 =	0.14	(mg/s)	0.14	(mg/s)		0.14	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.02	(mg/s)		0.02	(mg/s)
	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.46	(mg/s)	0.46	(mg/s)		0.46	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	0.07	(mg/s)	0.07	(mg/s)		0.07	(mg/s)
			Low Flow		Average	Average Flow		High Fl	ow
ulance node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.08	(mg/s)		0.64	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	0.70	(mg/s)	1.03	(mg/s)		4.31	(mg/s)
			Low Flo	w	Average	Flow		High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.000	(mg/L)		0.000	(mg/L)
Converl flux to concent	concentration in river at PM-13	C r13 =	0.002	(mg/L)	0.000	(mg/L)		0.000	(mg/L)

Case	Year 15			
Parameter	Antimony			
		1		
	concentration of surface water into PM-12	C_s12 =	4.00E-05 (r	mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00E-05 (I	mg/L)
р ч	concentration in Babbitt WWTP discharge	C_sBab =	4.00E-05 (r	mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	2.50E-04 (r	mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	9.29E-03 (I	mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004 (1	mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	2.50E-04 (I	mg/L)
put	concentration of ground water into PM-12	C_g12 =	1.50E-03 (r	mg/L)
법	concentration of ground water into PM-13	C_g13 =	1.50E-03 (r	mg/L)

		Low Flow		Average Flow		High Flow		ow	
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.01	(mg/s)		0	(mg/s)
tion	mass flux of ground water into PM-12	M_g12 =	0.04	(mg/s)	0.04	(mg/s)		0.04	(mg/s)
	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.07	(mg/s)		1	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.18	(mg/s)	0.18	(mg/s)		0.18	(mg/s)
u n	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)		0.01	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.58	(mg/s)	1.58	(mg/s)		1.58	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
<u>د</u> د ک	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)		0.01	(mg/s)
			Low Flo	w	Average	Flow		High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.04	(mg/s)	0.05	(mg/s)		0.20	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	1.82	(mg/s)	1.91	(mg/s)		2.78	(mg/s)
			Low Flo	w	Average	Flow		High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.000	(mg/L)		0.000	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.005	(mg/L)	0.001	(mg/L)		0.000	(mg/L)

Case	Year 15			
Parameter	Selenium			
-		-		-
	concentration of surface water into PM-12	C_s12 =	0.0003	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0003	(mg/L)
, p	concentration in Babbitt WWTP discharge	C_sBab =	0.0003	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0016	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001534421	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.054	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.00109	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.00295	(mg/L)
du du	concentration of ground water into PM-13	C_g13 =	0.00295	(mg/L)

			Low Flo	W	Average I	Flow	High Flo	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.11	(mg/s)	1	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.52	(mg/s)	6	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.35	(mg/s)	0.35	(mg/s)	0.35	(mg/s)
u xnl	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
ert e ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.26	(mg/s)	0.26	(mg/s)	0.26	(mg/s)
ma en	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
			Low Flow		Average Flow		High Flo	ow
alance	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	0.18	(mg/s)	1.29	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	0.79	(mg/s)	1.50	(mg/s)	8.05	(mg/s)
			Low Flo	w	Average I	Flow	High Flo	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conver flux to concen	concentration in river at PM-13	C_r13 =	0.002	(mg/L)	0.001	(mg/L)	0.000	(mg/L)

Case	Year 15			
Parameter	Sulfate			
-				
	concentration of surface water into PM-12	C_s12 =	4.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00	(mg/L)
р р	concentration in Babbitt WWTP discharge	C_sBab =	4.00	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	1046.27	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	183.93	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	7347.00	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	152.40	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	8.50	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	8.50	(mg/L)

			Low Flow		Average Flow		High Flow		ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,427.45	(mg/s)		16,206	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	206.87	(mg/s)	206.87	(mg/s)		206.87	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	37.36	(mg/s)	37.36	(mg/s)		37.36	(mg/s)
centra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	6,965.20	(mg/s)		79,526	(mg/s)
	mass flux of ground water into PM-13	M_g13 =	1,012.72	(mg/s)	1,012.72	(mg/s)		1,012.72	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	7,698.43	(mg/s)	58,922.60	(mg/s)		58,922.60	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	31,312.16	(mg/s)	31,312.16	(mg/s)		31,312.16	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	3,628.60	(mg/s)	3,628.60	(mg/s)		3,628.60	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	8,600.26	(mg/s)	8,600.26	(mg/s)		8,600.26	(mg/s)
			Low Flow		Average Flow			High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	244.23	(mg/s)	1,671.68	(mg/s)		16,449.94	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	52,496.39	(mg/s)	112,113.21	(mg/s)		199,452.67	(mg/s)
			Low Flo	w	Average	Flow		High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	7.252	(mg/L)	4.280	(mg/L)		4.027	(mg/l)
Conver filux to concen	concentration in river at PM-13	C r13 =	135.529	(mg/L)	44.235	(mg/L)		8.185	(mg/l)

Case	Year 15			
Parameter	Thallium			
		-	-	
	concentration of surface water into PM-12	C_s12 =	0.0002	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0002	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.0002	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0006	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001032291	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0002	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.0002	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.000004	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.000004	(mg/L)

			Low Flow		Average I	Flow	High Flow	
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.07	(mg/s)	1	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tratior	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.35	(mg/s)	4	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
uo Xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.18	(mg/s)	0.18	(mg/s)	0.18	(mg/s)
m ke	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flow		Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.07	(mg/s)	0.81	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	0.19	(mg/s)	0.64	(mg/s)	5.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conver filux to concen	concentration in river at PM-13	C_r13 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Year 15			
Parameter	Zinc			
		-		
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
ů pr	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.003	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.066565637	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.01	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.01435	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0115	(mg/L)
L L	concentration of ground water into PM-13	C_g13 =	0.0115	(mg/L)

			Low Flow		Average Flow		High Flow	
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5.71	(mg/s)	65	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.28	(mg/s)	0.28	(mg/s)	0.28	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.86	(mg/s)	318	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1.37	(mg/s)	1.37	(mg/s)	1.37	(mg/s)
u xnt	mass flux of Area 5 Pit NW discharge	M_spit =	0.02	(mg/s)	0.17	(mg/s)	0.17	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	11.33	(mg/s)	11.33	(mg/s)	11.33	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.81	(mg/s)	0.81	(mg/s)	0.81	(mg/s)
			Low Flow		Average	Average Flow		ow
lance node	mass flux in river at PM-12	M_r12 =	0.43	(mg/s)	6.14	(mg/s)	65.25	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	13.97	(mg/s)	47.69	(mg/s)	397.04	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.013	(mg/L)	0.016	(mg/L)	0.016	(mg/L)
Conver flux to concen	concentration in river at PM-13	C_r13 =	0.036	(mg/L)	0.019	(mg/L)	0.016	(mg/L)
Appendix F.13 Embarrass River Geotechnical Mitigation Year 20

FLOWS

Case	Year 20				
Flows	Low Flow Conditions (no surface runoff)				Node
v in ss River	flow in river at PM-12	Q_r12_L =	1.19	(cfs)	PM-12
flov	flow in river at PM-13	Q_r13_L =	14.13	(cfs)	PM-13
Total 1 Emba	flow check	Q_ck_L =	14.13	(cfs)	
	surface water flow into PM-12	Q_s12_L =	0.00	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_L =	0.00	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_L =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_L =	0.26	(cfs)	PM-13
Ita	seepage from Tailings Basin Cells 1E and 2E	Q_fs_L =	6.46	(cfs)	PM-13
v de	hydrometallurgical residue cells liner leakage	Q_rrs_L =	0.0193	(cfs)	PM-13
flov	seepage from cell 2W	Q_s2w_L =	1.99	(cfs)	PM-13
nt	ground water flow into PM-12	Q_g12_L =	0.86	(cfs)	PM-12
dul	ground water flow into PM-13	Q_g13_L =	4.21	(cfs)	PM-13

Case	Year 20				
Flow	Average Flow Conditions (mean annual)				_
/ in is River	flow in river at PM-12	Q_r12_M =	13.80	(cfs)	PM-12
'low 'ras	flow in river at PM-13	Q_r13_M =	90.00	(cfs)	PM-13
Total fl Embari	flow check	Q_ck_M =	90.00	(cfs)	
	surface water flow into PM-12	Q_s12_M =	12.61	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_M =	61.53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_M =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_M =	1.99	(cfs)	PM-13
ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_M =	6.46	(cfs)	PM-13
v da	hydrometallurgical residue cells liner leakage	Q_rrs_M =	0.0193	(cfs)	PM-13
flow	seepage from cell 2W	Q_s2w_M =	1.99	(cfs)	PM-13
outi	ground water flow into PM-12	Q_g12_M =	0.86	(cfs)	PM-12
dul	ground water flow into PM-13	Q_g13_M =	4.21	(cfs)	PM-13

Case	Year 20				
Flow	High Flow Conditions (avg. annual 1-day ma	ax flow)			
n River	flow in river at PM-12	Q_r12_H =	144.35	(cfs)	PM-12
flow i arrass	flow in river at PM-13	Q_r13_H =	861.55	(cfs)	PM-13
Total Emba	flow check	Q_ck_H =	861.55	(cfs)	
	surface water flow into PM-12	Q_s12_H =	143.16	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_H =	702.53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_H =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_H =	1.99	(cfs)	PM-13
ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_H =	6.46	(cfs)	PM-13
/ da	hydrometallurgical residue cells liner leakage	Q_rrs_H =	0.0193	(cfs)	PM-13
lov	seepage from cell 2W	Q_s2w_H =	1.99	(cfs)	PM-13
Ē	ground water flow into PM-12	Q_g12_H =	0.86	(cfs)	PM-12
d L	ground water flow into PM-13	Q g13 H =	4.21	(cfs)	PM-13

Case Parameter	Year 20 Silver			
		a (a		
	concentration of surface water into PM-12	C_s12 =	0.00011	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00011	(mg/L)
p n	concentration in Babbitt WWTP discharge	C_sBab =	0.00011	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.00015	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.00095	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.000125	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.000100	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.00008	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.00008	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.04	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.19	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.17	(mg/s)	0.17	(mg/s)	0.17	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flow		Average Flow		High Flow	
alance node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.04	(mg/s)	0.45	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	0.18	(mg/s)	0.42	(mg/s)	2.82	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass ntration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conver flux to concen	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Year 20 Aluminum			
	concentration of surface water into PM-12	C s12 =	0.12	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.12	(mg/L)
ع ر	concentration in Babbitt WWTP discharge	C_sBab =	0.12	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.01325	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	6.88E-02	(mg/L)
	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.80E-01	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	1.5788	(mg/L)
Ĕ	concentration of ground water into PM-12	C_g12 =	0.025	(mg/L)
L L	concentration of ground water into PM-13	C_g13 =	0.025	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	42.82	(mg/s)	486	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.61	(mg/s)	0.61	(mg/s)	0.61	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	1.12	(mg/s)	1.12	(mg/s)	1.12	(mg/s)
Itral	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	208.96	(mg/s)	2,386	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2.98	(mg/s)	2.98	(mg/s)	2.98	(mg/s)
u xni	mass flux of Area 5 Pit NW discharge	M_spit =	0.10	(mg/s)	0.75	(mg/s)	0.75	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	12.58	(mg/s)	12.58	(mg/s)	12.58	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.10	(mg/s)	0.10	(mg/s)	0.10	(mg/s)
ទ បិ	mass flux in seepage from cell 2W	M_s2w =	89.10	(mg/s)	89.10	(mg/s)	89.10	(mg/s)
			Low Flow		Average Flow		High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	1.73	(mg/s)	44.55	(mg/s)	487.90	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	106.58	(mg/s)	359.01	(mg/s)	2,979.19	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ert mass o ntration	concentration in river at PM-12	C_r12 =	0.051	(mg/L)	0.114	(mg/L)	0.119	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.266	(mg/L)	0.141	(mg/L)	0.122	(mg/L)

Case Parameter	Year 20 Arsenic			
	concentration of surface water into PM-12	C_s12 =	0.00075	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00075	(mg/L)
ع ر	concentration in Babbitt WWTP discharge	C_sBab =	0.00075	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.001325	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.007453418	(mg/L)
	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.00291	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	0.00273	(mg/L)
L L	concentration of ground water into PM-13	C_g13 =	0.00273	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.27	(mg/s)	3	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.31	(mg/s)	15	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.33	(mg/s)	0.33	(mg/s)	0.33	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.36	(mg/s)	1.36	(mg/s)	1.36	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.16	(mg/s)	0.16	(mg/s)	0.16	(mg/s)
			Low Flow		Average Flow		High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	0.34	(mg/s)	3.11	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	1.94	(mg/s)	3.58	(mg/s)	19.95	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	0.001	(mg/L)	0.001	(mg/L)
Conver filux to concen	concentration in river at PM-13	C_r13 =	0.005	(mg/L)	0.001	(mg/L)	0.001	(mg/L)

Case Parameter	Year 20 Boron			
	concentration of surface water into PM-12	C_s12 =	0.027	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.027	(mg/L)
ع ر	concentration in Babbitt WWTP discharge	C_sBab =	0.027	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.1315	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.158659552	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.11	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.33	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	0.0212	(mg/L)
L L	concentration of ground water into PM-13	C_g13 =	0.0212	(mg/L)

			Low Flo	W	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	9.64	(mg/s)	109	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.52	(mg/s)	0.52	(mg/s)	0.52	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.25	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
tra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	47.02	(mg/s)	537	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2.53	(mg/s)	2.53	(mg/s)	2.53	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.97	(mg/s)	7.41	(mg/s)	7.41	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	29.01	(mg/s)	29.01	(mg/s)	29.01	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
ទ បិ	mass flux in seepage from cell 2W	M_s2w =	18.62	(mg/s)	18.62	(mg/s)	18.62	(mg/s)
			Low Flow		Average Flow		High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.77	(mg/s)	10.40	(mg/s)	110.16	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	51.96	(mg/s)	115.04	(mg/s)	704.59	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.023	(mg/L)	0.027	(mg/L)	0.027	(mg/L)
Conve flux to concei	concentration in river at PM-13	C_r13 =	0.130	(mg/L)	0.045	(mg/L)	0.029	(mg/L)

Case Parameter	Year 20 Barium			
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
ع ر	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0044	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	5.40E-02	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	5.00E-03	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.09298	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	0.0681	(mg/L)
L L	concentration of ground water into PM-13	C_g13 =	0.0681	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5.71	(mg/s)	65	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	1.66	(mg/s)	1.66	(mg/s)	1.66	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
ıtra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.86	(mg/s)	318	(mg/s)
cer	mass flux of ground water into PM-13	M_g13 =	8.11	(mg/s)	8.11	(mg/s)	8.11	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	9.87	(mg/s)	9.87	(mg/s)	9.87	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
<u>۽</u> ٽ	mass flux in seepage from cell 2W	M_s2w =	5.25	(mg/s)	5.25	(mg/s)	5.25	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ach node	mass flux in river at PM-12	M_r12 =	1.81	(mg/s)	7.52	(mg/s)	66.63	(mg/s)
Mas at e	mass flux in river at PM-13	M r13 =	25.08	(ma/s)	58.86	(ma/s)	408.22	(ma/s)
			Low Flo	w	Average	Flow	High Fl	ow
Convert mass flux to soncentration	concentration in river at PM-12	C_r12 =	0.054	(mg/L)	0.019	(mg/L)	0.016	(mg/L)

Case Parameter	Year 20 Beryllium			
		-		
	concentration of surface water into PM-12	C_s12 =	0.0001	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0001	(mg/L)
p u	concentration in Babbitt WWTP discharge	C_sBab =	0.0001	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000472927	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.00075	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.000023	(mg/L)
브	concentration of ground water into PM-13	C_g13 =	0.000023	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.04	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.17	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.09	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	-	(mg/s)	-	(mg/s)	-	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
iss balance each node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.04	(mg/s)	0.41	(mg/s)
Ma at	mass flux in river at PM-13	M_r13 =	0.13	(mg/s)	0.35	(mg/s)	2.53	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
onvert mass ux to oncentration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
õ≓ö	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Year 20			
Parameter	Calcium			
-		-		-
	concentration of surface water into PM-12	C_s12 =	15	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	15	(mg/L)
βρι	concentration in Babbitt WWTP discharge	C_sBab =	15	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	95.35	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	65.23766506	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	416	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	59.78	(mg/L)
t	concentration of ground water into PM-12	C_g12 =	19	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	19	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5,352.95	(mg/s)	60,771	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	462.42	(mg/s)	462.42	(mg/s)	462.42	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	140.09	(mg/s)	140.09	(mg/s)	140.09	(mg/s)
tra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	26,119.49	(mg/s)	298,224	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2,263.72	(mg/s)	2,263.72	(mg/s)	2,263.72	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	701.59	(mg/s)	5,369.83	(mg/s)	5,369.83	(mg/s)
ert e	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	11,928.83	(mg/s)	11,928.83	(mg/s)	11,928.83	(mg/s)
nve mas	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	227.25	(mg/s)	227.25	(mg/s)	227.25	(mg/s)
ធ បំ	mass flux in seepage from cell 2W	M_s2w =	3,373.51	(mg/s)	3,373.51	(mg/s)	32.66	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t balance ch node	mass flux in river at PM-12	M_r12 =	602.51	(mg/s)	5,955.45	(mg/s)	61,373.93	(mg/s)
Mass at ear	mass flux in river at PM-13	M_r13 =	19,097.41	(mg/s)	55,238.08	(mg/s)	379,420.20	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
vert mass to centration	concentration in river at PM-12	C_r12 =	17.891	(mg/L)	15.249	(mg/l)	15.024	(mg/l)
Con Con Con	concentration in river at PM-13	C_r13 =	47.743	(mg/L)	21.686	(mg/l)	15.561	(mg/l)

Case Parameter	Year 20 Cadmium			
	concentration of surface water into PM-12	C s12 =	0 00008	(ma/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00008	(mg/L)
р с р с	concentration in Babbitt WWTP discharge	C_sBab =	0.00008	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000503271	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0004	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.000188	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.0003	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.0003	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.03	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.14	(mg/s)	2	(mg/s)
cer	mass flux of ground water into PM-13	M_g13 =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
u s n	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.09	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
မ ပိ	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
is balance ach node	mass flux in river at PM-12	M_r12 =	0.01	(mg/s)	0.04	(mg/s)	0.33	(mg/s)
Mas at e	mass flux in river at PM-13	M r13 =	0.15	(ma/s)	0.32	(mg/s)	2.07	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
Convert mass lux to concentration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Year 20			
Parameter	Chioride			
	concentration of surface water into PM-12	C_s12 =	6.5	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	6.5	(mg/L)
3 D C	concentration in Babbitt WWTP discharge	C_sBab =	6.5	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	5.95	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	5.85E+00	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.76E+03	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	21.54	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	1.8	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	1.8	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,319.61	(mg/s)	26,334	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	43.81	(mg/s)	43.81	(mg/s)	43.81	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	60.70	(mg/s)	60.70	(mg/s)	60.70	(mg/s)
tra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	11,318.44	(mg/s)	129,230	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	214.46	(mg/s)	214.46	(mg/s)	214.46	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	43.78	(mg/s)	335.09	(mg/s)	335.09	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1,070.58	(mg/s)	1,070.58	(mg/s)	1,070.58	(mg/s)
nve mas	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	961.45	(mg/s)	961.45	(mg/s)	961.45	(mg/s)
<u>ء</u> ک	mass flux in seepage from cell 2W	M_s2w =	1,215.55	(mg/s)	1,215.55	(mg/s)	1,215.55	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	104.51	(mg/s)	2,424.12	(mg/s)	26,438.79	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	3,610.33	(mg/s)	17,539.69	(mg/s)	159,466.31	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	3.103	(mg/L)	6.207	(mg/L)	6.472	(mg/L)
Conver flux to concen	concentration in river at PM-13	C_r13 =	9.026	(mg/L)	6.886	(mg/L)	6.540	(mg/L)

Case	Year 20			
Parameter	Cobalt			
	concentration of surface water into PM-12	C_s12 =	0.0006	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0006	(mg/L)
р с р с	concentration in Babbitt WWTP discharge	C_sBab =	0.0006	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.000555	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.00218589	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.005	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.001556	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.0011	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.0011	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.21	(mg/s)	2	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.04	(mg/s)	12	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.13	(mg/s)	0.13	(mg/s)	0.13	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.40	(mg/s)	0.40	(mg/s)	0.40	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	0.09	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ch node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.25	(mg/s)	2.46	(mg/s)
Mass at ea	mass flux in river at PM-13	M_r13 =	0.66	(mg/s)	 1.94	(mg/s)	15.04	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
onvert mass ix to incentration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.001	(mg/L)	0.001	(mg/L)
5 ≓ 3	concentration in river at PM-13	C_r13 =	0.002	(mg/L)	0.001	(mg/L)	0.001	(mg/L)

Case	Year 20			
Parameter	Copper			
	concentration of surface water into PM-12	C_s12 =	0.0015	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0015	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	0.0015	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.00345	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.011428793	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0015	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.004555	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.004	(mg/L)
별	concentration of ground water into PM-13	C_g13 =	0.004	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.54	(mg/s)	6	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.10	(mg/s)	0.10	(mg/s)	0.10	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.61	(mg/s)	30	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.48	(mg/s)	0.48	(mg/s)	0.48	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.19	(mg/s)	0.19	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	2.09	(mg/s)	2.09	(mg/s)	2.09	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.26	(mg/s)	0.26	(mg/s)	0.26	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	0.11	(mg/s)	0.65	(mg/s)	6.19	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	2.96	(mg/s)	6.28	(mg/s)	39.03	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass itration	concentration in river at PM-12	C_r12 =	0.003	(mg/L)	0.002	(mg/L)	0.002	(mg/L)
Conver filux to concen	concentration in river at PM-13	C_r13 =	0.007	(mg/L)	0.002	(mg/L)	0.002	(mg/L)

Case Parameter	Year 20 Fluoride			
	concentration of surface water into PM-12	C_s12 =	0.2	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.2	(mg/L)
р и	concentration in Babbitt WWTP discharge	C_sBab =	0.2	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.125	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	5.99E-01	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	2.85E+00	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	1.55	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	0.385	(mg/L)
L L	concentration of ground water into PM-13	C_g13 =	0.385	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	71.37	(mg/s)	810	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	9.37	(mg/s)	9.37	(mg/s)	9.37	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	1.87	(mg/s)	1.87	(mg/s)	1.87	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	348.26	(mg/s)	3,976	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	45.87	(mg/s)	45.87	(mg/s)	45.87	(mg/s)
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	0.92	(mg/s)	7.04	(mg/s)	7.04	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	109.60	(mg/s)	109.60	(mg/s)	109.60	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	1.56	(mg/s)	1.56	(mg/s)	1.56	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	87.47	(mg/s)	87.47	(mg/s)	87.47	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ss balance sach node	mass flux in river at PM-12	M_r12 =	11.24	(mg/s)	 82.61	(mg/s)	821.52	(mg/s)
Ma at e	mass flux in river at PM-13	M_r13 =	256.65	(mg/s)	682.40	(mg/s)	5,049.38	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
onvert mass ux to oncentration	concentration in river at PM-12	C_r12 =	0.334	(mg/L)	0.212	(mg/L)	0.201	(mg/L)
Ω≓ö	concentration in river at PM-13	C_r13 =	0.642	(mg/L)	0.268	(mg/L)	0.207	(mg/L)

Case Parameter	Year 20 Iron			
		0		(
	concentration of surface water into PM-12	C_s12 =	2.9	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	2.9	(mg/L)
р с р	concentration in Babbitt WWTP discharge	C_sBab =	2.9	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.037761905	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	2.17E-02	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	4.00E-01	(mg/L)
CO	concentration in tailings basin cell 2W	C_s2w =	4.594	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.035	(mg/L)
L L	concentration of ground water into PM-13	C_g13 =	0.035	(mg/L)

			LOW FIO	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,034.90	(mg/s)	11,749	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.85	(mg/s)	0.85	(mg/s)	0.85	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	27.08	(mg/s)	27.08	(mg/s)	27.08	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	5,049.77	(mg/s)	57,657	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	4.17	(mg/s)	4.17	(mg/s)	4.17	(mg/s)
nos	mass flux of Area 5 Pit NW discharge	M_spit =	0.28	(mg/s)	2.13	(mg/s)	2.13	(mg/s)
ert e ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	3.97	(mg/s)	3.97	(mg/s)	3.97	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.22	(mg/s)	0.22	(mg/s)	0.22	(mg/s)
4 ů	mass flux in seepage from cell 2W	M_s2w =	259.25	(mg/s)	259.25	(mg/s)	259.25	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ss balance ach node	mass flux in river at PM-12	M_r12 =	27.93	(mg/s)	1,062.84	(mg/s)	11,777.08	(mg/s)
Ma: at e	mass flux in river at PM-13	M_r13 =	295.82	(mg/s)	6,382.34	(mg/s)	69,703.45	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
Convert mass lux to concentration	concentration in river at PM-12	C_r12 =	0.829	(mg/L)	2.721	(mg/L)	2.883	(mg/L)

Case	Year 20			
Parameter	Hardness			
	concentration of surface water into PM-12	C_s12 =	70	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	70	(mg/L)
β	concentration in Babbitt WWTP discharge	C_sBab =	70	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	942.7142857	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	2.18E+02	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	8.61E+03	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	436.6	(mg/L)
t	concentration of ground water into PM-12	C_g12 =	87.5	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	87.5	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	24,980.41	(mg/s)	283,600	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	2,129.58	(mg/s)	2,129.58	(mg/s)	2,129.58	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	653.73	(mg/s)	653.73	(mg/s)	653.73	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	121,890.93	(mg/s)	1,391,712	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	10,425.01	(mg/s)	10,425.01	(mg/s)	10,425.01	(mg/s)
u xni	mass flux of Area 5 Pit NW discharge	M_spit =	6,936.49	(mg/s)	53,090.84	(mg/s)	53,090.84	(mg/s)
ert c ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	39,904.86	(mg/s)	39,904.86	(mg/s)	39,904.86	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	4,703.46	(mg/s)	4,703.46	(mg/s)	4,703.46	(mg/s)
ទ បិ	mass flux in seepage from cell 2W	M_s2w =	24,638.27	(mg/s)	24,638.27	(mg/s)	24,638.27	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance th node	mass flux in river at PM-12	M_r12 =	2,783.31	(mg/s)	27,763.72	(mg/s)	286,383.27	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	89,391.40	(mg/s)	282,417.09	(mg/s)	1,810,857.64	(mg/s)
		-	LOW FIO	vv	Average	FIOW	підії гі	0₩
vert mass to centration	concentration in river at PM-12	C_r12 =	82.647	(mg/L)	 71.091	(mg/L)	70.104	(mg/L)
Con Con con	concentration in river at PM-13	C_r13 =	223.474	(mg/L)	110.877	(mg/L)	74.270	(mg/L)

Case Parameter	Year 20 Potassium			
	concentration of surface water into PM-12	C_s12 =	0.60	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.60	(mg/L)
ع ر	concentration in Babbitt WWTP discharge	C_sBab =	0.60	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	53.80	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	6.23	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.80	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	7.77	(mg/L)
out	concentration of ground water into PM-12	C_g12 =	1.60	(mg/L)
L L	concentration of ground water into PM-13	C_g13 =	1.60	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	214.12	(mg/s)	2,431	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	38.94	(mg/s)	38.94	(mg/s)	38.94	(mg/s)
tion	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.98	(mg/s)	0.98	(mg/s)	0.98	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1,044.78	(mg/s)	11,929	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	190.63	(mg/s)	190.63	(mg/s)	190.63	(mg/s)
	mass flux in Babbitt WWTP discharge	M_sBab =	5.60	(mg/s)	5.60	(mg/s)	5.60	(mg/s)
ert o ss f	mass flux of Area 5 Pit NW discharge	M_spit =	395.86	(mg/s)	3,029.85	(mg/s)	3,029.85	(mg/s)
n ve ma:	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1,138.87	(mg/s)	1,138.87	(mg/s)	1,138.87	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	438.48	(mg/s)	438.48	(mg/s)	438.48	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	39.92	(mg/s)	254.04	(mg/s)	2,470.78	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	2,209.36	(mg/s)	6,102.25	(mg/s)	19,203.17	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	1.186	(mg/L)	0.650	(mg/L)	0.605	(mg/l)
Conver flux to concen	concentration in river at PM-13	C r13 =	5.523	(mg/L)	2.396	(mg/L)	0.788	(mg/l)

Case	Year 20			
Parameter	Magnesium			
-		-		
	concentration of surface water into PM-12	C_s12 =	5.90	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	5.90	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	5.90	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	271.00	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	13.44	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	213.00	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	69.97	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	10.65	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	10.65	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,105.49	(mg/s)	23,903	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	259.20	(mg/s)	259.20	(mg/s)	259.20	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	55.10	(mg/s)	55.10	(mg/s)	55.10	(mg/s)
tra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,273.66	(mg/s)	117,301	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1,268.87	(mg/s)	1,268.87	(mg/s)	1,268.87	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	1,994.02	(mg/s)	15,261.91	(mg/s)	15,261.91	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	2,457.15	(mg/s)	2,457.15	(mg/s)	2,457.15	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	116.36	(mg/s)	116.36	(mg/s)	116.36	(mg/s)
ទ បិ	mass flux in seepage from cell 2W	M_s2w =	3,948.56	(mg/s)	3,948.56	(mg/s)	3,948.56	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	314.30	(mg/s)	2,419.79	(mg/s)	24,217.73	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	10,099.26	(mg/s)	35,746.30	(mg/s)	164,572.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	9.333	(mg/L)	6.196	(mg/l)	5.928	(mg/l)
Conver filux to concen	concentration in river at PM-13	C_r13 =	25.248	(mg/L)	14.034	(mg/l)	6.750	(mg/l)

Case	Year 20			
Parameter	Manganese			
	concentration of surface water into PM-12	C_s12 =	0.30	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.30	(mg/L)
р с	concentration in Babbitt WWTP discharge	C_sBab =	0.30	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.49	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.23	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.00	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	1.18	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.19	(mg/L)
별	concentration of ground water into PM-13	C_g13 =	0.19	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	107.06	(mg/s)	1,215	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	4.58	(mg/s)	4.58	(mg/s)	4.58	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	2.80	(mg/s)	2.80	(mg/s)	2.80	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	522.39	(mg/s)	5,964	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	22.40	(mg/s)	22.40	(mg/s)	22.40	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	3.57	(mg/s)	27.31	(mg/s)	27.31	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	42.20	(mg/s)	42.20	(mg/s)	42.20	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	66.76	(mg/s)	66.76	(mg/s)	66.76	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
oalance n node	mass flux in river at PM-12	M_r12 =	7.38	(mg/s)	114.44	(mg/s)	1,222.81	(mg/s)
Mass k at each	mass flux in river at PM-13	M_r13 =	142.30	(mg/s)	795.50	(mg/s)	7,345.96	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass htration	concentration in river at PM-12	C_r12 =	0.219	(mg/L)	0.293	(mg/l)	0.299	(mg/l)
Conver flux to concer	concentration in river at PM-13	C_r13 =	0.356	(mg/L)	0.312	(mg/l)	0.301	(mg/l)

Case Parameter	Year 20 Sodium			
		-		
	concentration of surface water into PM-12	C_s12 =	6.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	6.00	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	6.00	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	119.50	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	22.22	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	255.00	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	44.31	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	4.90	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	4.90	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,141.18	(mg/s)	24,309	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	119.26	(mg/s)	119.26	(mg/s)	119.26	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	56.03	(mg/s)	56.03	(mg/s)	56.03	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,447.79	(mg/s)	119,290	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	583.80	(mg/s)	583.80	(mg/s)	583.80	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	879.28	(mg/s)	6,729.88	(mg/s)	6,729.88	(mg/s)
ss to	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	4,062.28	(mg/s)	4,062.28	(mg/s)	4,062.28	(mg/s)
n ve ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	139.30	(mg/s)	139.30	(mg/s)	139.30	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	2,500.51	(mg/s)	2,500.51	(mg/s)	2,500.51	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	175.29	(mg/s)	2,316.47	(mg/s)	24,483.86	(mg/s)
Mass bé at each	mass flux in river at PM-13	M_r13 =	8,340.46	(mg/s)	26,780.03	(mg/s)	157,789.22	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	5.205	(mg/L)	5.931	(mg/l)	5.993	(mg/l)
Conver flux to concen	concentration in river at PM-13	C r13 =	20.851	(ma/L)	10.514	(ma/l)	6.472	(ma/l)

Case Parameter	Year 20 Nickel			
	concentration of surface water into PM-12	C_s12 =	0.0012	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0012	(mg/L)
ab r	concentration in Babbitt WWTP discharge	C_sBab =	0.0012	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0052	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.023571036	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.098	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.00688	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.007	(mg/L)
<u> </u>	concentration of ground water into PM-13	C_g13 =	0.007	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.43	(mg/s)	5	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.17	(mg/s)	0.17	(mg/s)	0.17	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.09	(mg/s)	24	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.83	(mg/s)	0.83	(mg/s)	0.83	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.04	(mg/s)	0.29	(mg/s)	0.29	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	4.31	(mg/s)	4.31	(mg/s)	4.31	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.05	(mg/s)	0.05	(mg/s)	0.05	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	0.39	(mg/s)	0.39	(mg/s)	0.39	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	0.18	(mg/s)	0.61	(mg/s)	5.04	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	5.81	(mg/s)	8.58	(mg/s)	34.78	(mg/s)
			LOW FIO	w	Average	FIOW	High Fi	ow
nvert mass k to icentration	concentration in river at PM-12	C_r12 =	0.005	(mg/L)	0.002	(mg/L)	0.001	(mg/L)
fluy cor	concentration in river at PM-13	C_r13 =	0.015	(mg/L)	0.003	(mg/L)	0.001	(mg/L)

Case Parameter	Year 20 Lead			
	concontration of surface water into PM-12	C c12 -	0.00015	(mg/L)
ta	concentration of surface water into PM-12	C_s12 =	0.00015	(mg/L)
da n	concentration in Babbitt WWTP discharge	C_sBab =	0.00015	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0003	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.002295615	(mg/L)
	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0005	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.0012	(mg/L)
rt (concentration of ground water into PM-12	C_g12 =	0.0012	(mg/L)
<u> </u>	concentration of ground water into PM-13	C_g13 =	0.0012	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.05	(mg/s)	1	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.26	(mg/s)	3	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.14	(mg/s)	0.14	(mg/s)	0.14	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.02	(mg/s)	0.02	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.42	(mg/s)	0.42	(mg/s)	0.42	(mg/s)
ma ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance th node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.08	(mg/s)	0.64	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	0.66	(mg/s)	0.99	(mg/s)	4.27	(mg/s)
			LOW FIO	w	Average	FIOW	High Fi	ow
ert mass o intration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.002	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Year 20 Antimony			
		-		
	concentration of surface water into PM-12	C_s12 =	4.00E-05	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00E-05	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	4.00E-05	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	2.50E-04	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	8.78E-03	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	2.50E-04	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	1.50E-03	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	1.50E-03	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	_	(mg/s)	0.01	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.07	(mg/s)	1	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.18	(mg/s)	0.18	(mg/s)	0.18	(mg/s)
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.61	(mg/s)	1.61	(mg/s)	1.61	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
<u>۽</u>	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.04	(mg/s)	0.05	(mg/s)	0.20	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	1.84	(mg/s)	1.94	(mg/s)	2.81	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conver flux to concen	concentration in river at PM-13	C_r13 =	0.005	(mg/L)	0.001	(mg/L)	0.000	(mg/L)

Case Parameter	Year 20 Selenium			
	concentration of surface water into PM-12	C s12 =	0.0003	(mg/L)
ita	concentration of surface water into PM-13	 C_s13 =	0.0003	(mg/L)
ع ر	concentration in Babbitt WWTP discharge	C_sBab =	0.0003	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0016	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001434159	(mg/L)
	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.054	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.00109	(mg/L)
Ĕ	concentration of ground water into PM-12	C_g12 =	0.00295	(mg/L)
L L	concentration of ground water into PM-13	C_g13 =	0.00295	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.11	(mg/s)	1	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.52	(mg/s)	6	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.35	(mg/s)	0.35	(mg/s)	0.35	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
ert c ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.26	(mg/s)	0.26	(mg/s)	0.26	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	0.18	(mg/s)	1.29	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	0.79	(mg/s)	1.50	(mg/s)	8.05	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conver filux to concen	concentration in river at PM-13	C_r13 =	0.002	(mg/L)	0.001	(mg/L)	0.000	(mg/L)

Case Parameter	Year 20 Sulfate			
	concentration of surface water into PM-12	C_s12 =	4.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00	(mg/L)
sb r	concentration in Babbitt WWTP discharge	C_sBab =	4.00	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	1046.27	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	163.33	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	7347.00	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	152.40	(mg/L)
ont	concentration of ground water into PM-12	C_g12 =	8.50	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	8.50	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,427.45	(mg/s)	16,206	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	206.87	(mg/s)	206.87	(mg/s)	206.87	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	37.36	(mg/s)	37.36	(mg/s)	37.36	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	6,965.20	(mg/s)	79,526	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1,012.72	(mg/s)	1,012.72	(mg/s)	1,012.72	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	7,698.43	(mg/s)	58,922.60	(mg/s)	58,922.60	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	29,864.60	(mg/s)	29,864.60	(mg/s)	29,864.60	(mg/s)
nve mas	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	4,013.51	(mg/s)	4,013.51	(mg/s)	4,013.51	(mg/s)
<u>ء</u> ک	mass flux in seepage from cell 2W	M_s2w =	8,600.26	(mg/s)	8,600.26	(mg/s)	8,600.26	(mg/s)
			Low Flo	W	Average	Flow	High Fl	ow
ulance node	mass flux in river at PM-12	M_r12 =	244.23	(mg/s)	1,671.68	(mg/s)	16,449.94	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	51,433.74	(mg/s)	111,050.56	(mg/s)	198,390.02	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
vert mass to sentration	concentration in river at PM-12	C_r12 =	7.252	(mg/L)	4.280	(mg/l)	4.027	(mg/l)
Con flux	concentration in river at PM-13	C_r13 =	128.582	(mg/L)	43.598	(mg/l)	8.137	(mg/l)

Case	Year 20			
Parameter	Thallium			
-				
	concentration of surface water into PM-12	C_s12 =	0.0002	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0002	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	0.0002	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0006	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001001115	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0002	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.0002	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.000004	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.000004	(mg/L)

		Low Flow		Average Flow		High		ow	
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.07	(mg/s)		1	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.35	(mg/s)		4	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)		0.03	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.18	(mg/s)	0.18	(mg/s)		0.18	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)		0.01	(mg/s)
			Low Flo	w	Average	Flow		High Fl	ow
balance th node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	 0.07	(mg/s)		0.81	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	0.20	(mg/s)	0.65	(mg/s)		5.02	(mg/s)
		-	LOW FIO	w	Average	FIOW		підп гі	ow
nvert mass k to icentration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)		0.000	(mg/L)
S thus	concentration in river at PM-13	C_r13 =	0.001	(mg/L)	0.000	(mg/L)		0.000	(mg/L)

Case Parameter	Year 20 Zinc			
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
ع ر	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.003	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.058688337	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.01	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.01435	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	0.0115	(mg/L)
L L	concentration of ground water into PM-13	C_g13 =	0.0115	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5.71	(mg/s)	65	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.28	(mg/s)	0.28	(mg/s)	0.28	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.86	(mg/s)	318	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1.37	(mg/s)	1.37	(mg/s)	1.37	(mg/s)
u xni	mass flux of Area 5 Pit NW discharge	M_spit =	0.02	(mg/s)	0.17	(mg/s)	0.17	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	10.73	(mg/s)	10.73	(mg/s)	10.73	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.81	(mg/s)	0.81	(mg/s)	0.81	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance th node	mass flux in river at PM-12	M_r12 =	0.43	(mg/s)	6.14	(mg/s)	65.25	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	13.37	(mg/s)	47.09	(mg/s)	396.44	(mg/s)
			LOW FIO	W	 Average	FIOW	High Fi	ow
ert mass o entration	concentration in river at PM-12	C_r12 =	0.013	(mg/L)	0.016	(mg/L)	0.016	(mg/L)
Conv flux to conce	concentration in river at PM-13	C_r13 =	0.033	(mg/L)	0.018	(mg/L)	0.016	(mg/L)

Appendix F.14 Embarrass River Geotechnical Mitigation Closure

FLOWS

Case	Closure				
Flows	Low Flow Conditions (no surface runoff)				Node
in s River	flow in river at PM-12	Q_r12_L =	1.19	(cfs)	PM-12
low ras	flow in river at PM-13	Q r13 L =	9.06	(cfs)	PM-13
Total fi Embar	flow check	Q_ck_L =	9.06	(cfs)	
	surface water flow into PM-12	Q_s12_L =	0.00	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_L =	0.00	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_L =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_L =	0.26	(cfs)	PM-13
Ita	seepage from Tailings Basin Cells 1E and 2E	Q_fs_L =	1.73	(cfs)	PM-13
v da	hydrometallurgical residue cells liner leakage	Q_rrs_L =	0.0017	(cfs)	PM-13
flov	seepage from cell 2W	Q_s2w_L =	1.67	(cfs)	PM-13
out	ground water flow into PM-12	Q_g12_L =	0.86	(cfs)	PM-12
dul	ground water flow into PM-13	Q_g13_L =	4.21	(cfs)	PM-13

Case	Closure				
Flow	Average Flow Conditions (mean annual)				
in s River	flow in river at PM-12	Q_r12_M =	13.80	(cfs)	PM-12
flow ırrass	flow in river at PM-13	Q_r13_M =	84.93	(cfs)	PM-13
Total Emba	flow check	Q_ck_M =	84.93	(cfs)	
	surface water flow into PM 12	O a12 M	10.61	(ofo)	BM 10
	surface water flow into PM-12	$Q_{S12}W =$	61.53	(CIS)	PIVI-12
	Babbitt WWTP discharge	$Q_srs_w =$ Q_sBab_M =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_M =	1.99	(cfs)	PM-13
ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_M =	1.73	(cfs)	PM-13
da	hydrometallurgical residue cells liner leakage	Q_rrs_M =	0.0017	(cfs)	PM-13
No	seepage from cell 2W	Q_s2w_M =	1.67	(cfs)	PM-13
ut 1	ground water flow into PM-12	Q_g12_M =	0.86	(cfs)	PM-12
dul	ground water flow into PM-13	Q_g13_M =	4.21	(cfs)	PM-13

Case	Closure				
Flow	High Flow Conditions (avg. annual 1-day ma	ax flow)			
n River	flow in river at PM-12	Q_r12_H =	144.35	(cfs)	PM-12
flow i arrass	flow in river at PM-13	Q_r13_H =	856.48	(cfs)	PM-13
Total Emba	flow check	Q_ck_H =	856.48	(cfs)	
	surface water flow into PM-12	Q_s12_H =	143.16	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_H =	702.53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_H =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_H =	1.99	(cfs)	PM-13
ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_H =	1.73	(cfs)	PM-13
/ da	hydrometallurgical residue cells liner leakage	Q_rrs_H =	0.00	(cfs)	PM-13
<u>o</u> l	seepage from cell 2W	Q_s2w_H =	1.67	(cfs)	PM-13
Ē	ground water flow into PM-12	Q_g12_H =	0.86	(cfs)	PM-12
<u>u</u>	ground water flow into PM-13	Q g13 H =	4.21	(cfs)	PM-13

Case Parameter	Closure Silver			
		a		
	concentration of surface water into PM-12	C_s12 =	0.00011	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00011	(mg/L)
p n	concentration in Babbitt WWTP discharge	C_sBab =	0.00011	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.00015	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.00124	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.000125	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.000100	(mg/L)
out	concentration of ground water into PM-12	C_g12 =	0.00008	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.00008	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.04	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.19	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.04	(mg/s)	0.45	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	0.07	(mg/s)	0.31	(mg/s)	2.71	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conver filux to concer	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Closure Aluminum			
	concentration of surface water into PM-12	C s12 =	0.12	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.12	(mg/L)
a de	concentration in Babbitt WWTP discharge	C_sBab =	0.12	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.01325	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	6.15E-01	(mg/L)
ICEI	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.80E-01	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	1.5788	(mg/L)
rt j	concentration of ground water into PM-12	C_g12 =	0.025	(mg/L)
u L	concentration of ground water into PM-13	C_g13 =	0.025	(mg/L)

			Low Flo	W	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	42.82	(mg/s)	486	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.61	(mg/s)	0.61	(mg/s)	0.61	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	1.12	(mg/s)	1.12	(mg/s)	1.12	(mg/s)
tra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	208.96	(mg/s)	2,386	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2.98	(mg/s)	2.98	(mg/s)	2.98	(mg/s)
uo Xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.10	(mg/s)	0.75	(mg/s)	0.75	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	30.13	(mg/s)	30.13	(mg/s)	30.13	(mg/s)
m ke	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	74.66	(mg/s)	74.66	(mg/s)	74.66	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	1.73	(mg/s)	44.55	(mg/s)	487.90	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	109.60	(mg/s)	362.03	(mg/s)	2,982.21	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.051	(mg/L)	0.114	(mg/L)	0.119	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.427	(mg/L)	0.151	(mg/L)	0.123	(mg/L)

Case Parameter	Closure Arsenic			
	concentration of surface water into PM-12	C s12 =	0.00075	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00075	(mg/L)
ع ر	concentration in Babbitt WWTP discharge	C_sBab =	0.00075	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.001325	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.027915158	(mg/L)
	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.00291	(mg/L)
Ĕ	concentration of ground water into PM-12	C_g12 =	0.00273	(mg/L)
L L	concentration of ground water into PM-13	C_g13 =	0.00273	(mg/L)

		Low Flo	w	Average	Flow	High Fl	ow	
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.27	(mg/s)	3	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.31	(mg/s)	15	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.33	(mg/s)	0.33	(mg/s)	0.33	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.37	(mg/s)	1.37	(mg/s)	1.37	(mg/s)
mag	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
<u>۽</u> ک	mass flux in seepage from cell 2W	M_s2w =	0.14	(mg/s)	0.14	(mg/s)	0.14	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ich node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	0.34	(mg/s)	3.11	(mg/s)
Mas: at ea	mass flux in river at PM-13	M_r13 =	1.91	(mg/s)	3.55	(mg/s)	19.93	(mg/s)
			Low Flo	w	Average	Flow	 High Fl	ow
onvert mass ux to oncentration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	0.001	(mg/L)	0.001	(mg/L)
S ≓ S	concentration in river at PM-13	C_r13 =	0.007	(mg/L)	0.001	(mg/L)	0.001	(mg/L)

Case Parameter	Closure Boron			
	concentration of surface water into PM-12	C s12 =	0.027	(mg/L)
ita	concentration of surface water into PM-13	C_s13 =	0.027	(mg/L)
ab r	concentration in Babbitt WWTP discharge	C_sBab =	0.027	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.1315	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.150573845	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.11	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.33	(mg/L)
t t	concentration of ground water into PM-12	C_g12 =	0.0212	(mg/L)
ц Ц	concentration of ground water into PM-13	C_g13 =	0.0212	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	9.64	(mg/s)	109	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.52	(mg/s)	0.52	(mg/s)	0.52	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.25	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	47.02	(mg/s)	537	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2.53	(mg/s)	2.53	(mg/s)	2.53	(mg/s)
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	0.97	(mg/s)	7.41	(mg/s)	7.41	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	7.38	(mg/s)	7.38	(mg/s)	7.38	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	15.61	(mg/s)	15.61	(mg/s)	15.61	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ss balance each node	mass flux in river at PM-12	M_r12 =	0.77	(mg/s)	10.40	(mg/s)	110.16	(mg/s)
Ma at c	mass flux in river at PM-13	M_r13 =	27.25	(mg/s)	90.34	(mg/s)	679.88	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
onvert mass ux to oncentration	concentration in river at PM-12	C_r12 =	0.023	(mg/L)	 0.027	(mg/L)	0.027	(mg/L)
õ≓ö	concentration in river at PM-13	C_r13 =	0.106	(mg/L)	0.038	(mg/L)	0.028	(mg/L)

Case Parameter	Closure Barium			
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
р с	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0044	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	1.95E-02	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	5.00E-03	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.09298	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0681	(mg/L)
<u> </u>	concentration of ground water into PM-13	C_g13 =	0.0681	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5.71	(mg/s)	65	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	1.66	(mg/s)	1.66	(mg/s)	1.66	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.86	(mg/s)	318	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	8.11	(mg/s)	8.11	(mg/s)	8.11	(mg/s)
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.95	(mg/s)	0.95	(mg/s)	0.95	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	4.40	(mg/s)	4.40	(mg/s)	4.40	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ich node	mass flux in river at PM-12	M_r12 =	1.81	(mg/s)	7.52	(mg/s)	66.63	(mg/s)
Mas: at ea	mass flux in river at PM-13	M_r13 =	15.30	(mg/s)	49.09	(mg/s)	398.45	(mg/s)
		_	Low Flo	W	Average	Flow	High Fl	ow
wert mass to centration	concentration in river at PM-12	C_r12 =	0.054	(mg/L)	0.019	(mg/L)	0.016	(mg/L)
Con Con Con	concentration in river at PM-13	C_r13 =	0.060	(mg/L)	0.020	(mg/L)	0.016	(mg/L)

Case Parameter	Closure Beryllium			
	and the standard state and the state and the	0 -10	0.0001	(
a a	concentration of surface water into PM-12	C_\$12 =	0.0001	(mg/L) (mg/L)
n dai	concentration in Babbitt WWTP discharge	C_sBab =	0.0001	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001323498	(mg/L)
	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.00075	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	0.000023	(mg/L)
Ĭ	concentration of ground water into PM-13	C_g13 =	0.000023	(mg/L)

		Low Flo	w	Average	Flow	High Fl	ow	
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.04	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.17	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
ma ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	-	(mg/s)	-	(mg/s)	-	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.04	(mg/s)	0.41	(mg/s)
Mass at ea	mass flux in river at PM-13	M_r13 =	0.11	(mg/s)	0.32	(mg/s)	2.50	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
vert mass to centration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	 0.000	(mg/L)	0.000	(mg/L)
Con Con Con	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case	Closure			
Parameter	Calcium			
	concentration of surface water into PM-12	C_s12 =	15	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	15	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	15	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	95.35	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	68.73996034	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	416	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	59.78	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	19	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	19	(mg/L)

		Low Flo	w	Average	Flow		High Fl	ow	
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5,352.95	(mg/s)		60,771	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	462.42	(mg/s)	462.42	(mg/s)		462.42	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	140.09	(mg/s)	140.09	(mg/s)		140.09	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	26,119.49	(mg/s)		298,224	(mg/s)
cer	mass flux of ground water into PM-13	M_g13 =	2,263.72	(mg/s)	2,263.72	(mg/s)		2,263.72	(mg/s)
lo Xn	mass flux of Area 5 Pit NW discharge	M_spit =	701.59	(mg/s)	5,369.83	(mg/s)		5,369.83	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	3,367.90	(mg/s)	3,367.90	(mg/s)		3,367.90	(mg/s)
n ke	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	19.51	(mg/s)	19.51	(mg/s)		19.51	(mg/s)
မ ပိ	mass flux in seepage from cell 2W	M_s2w =	2,826.97	(mg/s)	2,826.97	(mg/s)		2.80	(mg/s)
			Low Flo	w	Average Flow High F			ow	
s balance ach node	mass flux in river at PM-12	M_r12 =	602.51	(mg/s)	 5,955.45	(mg/s)		61,373.93	(mg/s)
Mas at ea	mass flux in river at PM-13	M r13 =	9 782 19	(ma/s)	45 922 86	(ma/s)		370 621 67	(ma/s)
		<u></u>	Low Flo	w	Average	Flow		High Fl	ow
Convert mass lux to concentration	concentration in river at PM-12	C_r12 =	17.891	(mg/L)	15.249	(mg/l)		15.024	(mg/l)
Case Parameter	Closure Cadmium								
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	concentration of surface water into DM 10	0. 10	0.00008	(mg/l)					
ta	concentration of surface water into PM-12	$C_{s12} = C_{s13} = C_{s$	0.00008	(mg/L)					
n da	concentration in Babbitt WWTP discharge	C_sBab =	0.00008	(mg/L)					
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)					
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001182282	(mg/L)					
ICEI	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0004	(mg/L)					
con	concentration in tailings basin cell 2W	C_s2w =	0.000188	(mg/L)					
rt	concentration of ground water into PM-12	C_g12 =	0.0003	(mg/L)					
<u>u</u>	concentration of ground water into PM-13	C_g13 =	0.0003	(mg/L)					

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.03	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ntrai	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.14	(mg/s)	2	(mg/s)
cer	mass flux of ground water into PM-13	M_g13 =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
u s n	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
မ ပိ	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ach node	mass flux in river at PM-12	M_r12 =	0.01	(mg/s)	0.04	(mg/s)	0.33	(mg/s)
Mas at e	mass flux in river at PM-13	M r13 =	0.11	(ma/s)	0.28	(ma/s)	2.03	(ma/s)
			Low Flo	w	Average	Flow	High Fl	ow
Convert mass flux to soncentration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Paramotor	Closure			
Falameter	Chionae			
	concentration of surface water into PM-12	C_s12 =	6.5	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	6.5	(mg/L)
р ц	concentration in Babbitt WWTP discharge	C_sBab =	6.5	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	5.95	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	3.97E+00	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.76E+03	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	21.54	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	1.8	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	1.8	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,319.61	(mg/s)	26,334	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	43.81	(mg/s)	43.81	(mg/s)	43.81	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	60.70	(mg/s)	60.70	(mg/s)	60.70	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	11,318.44	(mg/s)	129,230	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	214.46	(mg/s)	214.46	(mg/s)	214.46	(mg/s)
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	43.78	(mg/s)	335.09	(mg/s)	335.09	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	194.68	(mg/s)	194.68	(mg/s)	194.68	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	82.56	(mg/s)	82.56	(mg/s)	82.56	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	1,018.62	(mg/s)	1,018.62	(mg/s)	1,018.62	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	104.51	(mg/s)	2,424.12	(mg/s)	26,438.79	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	1,658.61	(mg/s)	15,587.96	(mg/s)	157,514.59	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
't mass htration	concentration in river at PM-12	C_r12 =	3.103	(mg/L)	6.207	(mg/L)	6.472	(mg/L)
Conver flux to concer	concentration in river at PM-13	C_r13 =	6.466	(mg/L)	6.485	(mg/L)	6.499	(mg/L)

Case	Closure			
Parameter	Cobalt			
	concentration of surface water into PM-12	C_s12 =	0.0006	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0006	(mg/L)
р с р с	concentration in Babbitt WWTP discharge	C_sBab =	0.0006	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.000555	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.002707554	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.005	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.001556	(mg/L)
ont	concentration of ground water into PM-12	C_g12 =	0.0011	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.0011	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.21	(mg/s)	2	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ıtrai	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.04	(mg/s)	12	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.13	(mg/s)	0.13	(mg/s)	0.13	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.13	(mg/s)	0.13	(mg/s)	0.13	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ch node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.25	(mg/s)	2.46	(mg/s)
Mass at ea	mass flux in river at PM-13	M_r13 =	0.37	(mg/s)	1.66	(mg/s)	14.76	(mg/s)
			LOW FIO	w	Average	FIOW	High Fi	ow
invert mass x to ncentration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.001	(mg/L)	0.001	(mg/L)
ິ ⊒ີ ເ	concentration in river at PM-13	C_r13 =	0.001	(mg/L)	0.001	(mg/L)	0.001	(mg/L)

Case Parameter	Closure Copper			
	concentration of surface water into PM-12	C_s12 =	0.0015	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0015	(mg/L)
р с	concentration in Babbitt WWTP discharge	C_sBab =	0.0015	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.00345	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.014116893	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0015	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.004555	(mg/L)
put	concentration of ground water into PM-12	C_g12 =	0.004	(mg/L)
별	concentration of ground water into PM-13	C_g13 =	0.004	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.54	(mg/s)	6	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.10	(mg/s)	0.10	(mg/s)	0.10	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ntrai	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.61	(mg/s)	30	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.48	(mg/s)	0.48	(mg/s)	0.48	(mg/s)
u s n	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.19	(mg/s)	0.19	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.69	(mg/s)	0.69	(mg/s)	0.69	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
<u>۽</u> ک	mass flux in seepage from cell 2W	M_s2w =	0.22	(mg/s)	0.22	(mg/s)	0.22	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ach node	mass flux in river at PM-12	M_r12 =	0.11	(mg/s)	0.65	(mg/s)	6.19	(mg/s)
Mas at ea	mass flux in river at PM-13	M r13 =	1.52	(mg/s)	4.84	(mg/s)	37.59	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
Convert mass lux to concentration	concentration in river at PM-12	C_r12 =	0.003	(mg/L)	0.002	(mg/L)	0.002	(mg/L)

Case Parameter	Closure Fluoride			
	concentration of surface water into PM-12	C_s12 =	0.2	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.2	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	0.2	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.125	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	1.14E+00	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	2.85E+00	(mg/L)
CO	concentration in tailings basin cell 2W	C_s2w =	1.55	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.385	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.385	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	71.37	(mg/s)	810	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	9.37	(mg/s)	9.37	(mg/s)	9.37	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	1.87	(mg/s)	1.87	(mg/s)	1.87	(mg/s)
Itrat	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	348.26	(mg/s)	3,976	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	45.87	(mg/s)	45.87	(mg/s)	45.87	(mg/s)
u s n	mass flux of Area 5 Pit NW discharge	M_spit =	0.92	(mg/s)	7.04	(mg/s)	7.04	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	55.70	(mg/s)	55.70	(mg/s)	55.70	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.13	(mg/s)	0.13	(mg/s)	0.13	(mg/s)
<u>۽</u> ک	mass flux in seepage from cell 2W	M_s2w =	73.30	(mg/s)	73.30	(mg/s)	73.30	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ach node	mass flux in river at PM-12	M_r12 =	11.24	(mg/s)	82.61	(mg/s)	821.52	(mg/s)
Mas at ea	mass flux in river at PM-13	M r13 =	187.16	(ma/s)	612.92	(ma/s)	4.979.89	(ma/s)
			Low Flo	w	Average	Flow	High Fl	ow
Convert mass lux to concentration	concentration in river at PM-12	C_r12 =	0.334	(mg/L)	0.212	(mg/L)	0.201	(mg/L)

Case Parameter	Closure Iron			
	concentration of surface water into PM-12	C s12 -	29	(ma/L)
ata	concentration of surface water into PM-13	C_s13 =	2.9	(mg/L)
ι di	concentration in Babbitt WWTP discharge	C_sBab =	2.9	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.037761905	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	9.94E-02	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	4.00E-01	(mg/L)
CO	concentration in tailings basin cell 2W	C_s2w =	4.594	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.035	(mg/L)
L L	concentration of ground water into PM-13	C_g13 =	0.035	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,034.90	(mg/s)	11,749	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.85	(mg/s)	0.85	(mg/s)	0.85	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	27.08	(mg/s)	27.08	(mg/s)	27.08	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	5,049.77	(mg/s)	57,657	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	4.17	(mg/s)	4.17	(mg/s)	4.17	(mg/s)
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	0.28	(mg/s)	2.13	(mg/s)	2.13	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	4.87	(mg/s)	4.87	(mg/s)	4.87	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.02	(mg/s)	0.02	(mg/s)	0.02	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	217.25	(mg/s)	217.25	(mg/s)	217.25	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ach node	mass flux in river at PM-12	M_r12 =	27.93	(mg/s)	1,062.84	(mg/s)	11,777.08	(mg/s)
Mas at e	mass flux in river at PM-13	M r13 =	254.52	(mg/s)	6,341.04	(mg/s)	69,662.15	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
Convert mass flux to concentration	concentration in river at PM-12	C_r12 =	0.829	(mg/L)	2.721	(mg/L)	2.883	(mg/L)

Case	Closure			
Parameter	Hardness			
	concentration of surface water into PM-12	C_s12 =	70	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	70	(mg/L)
βρι	concentration in Babbitt WWTP discharge	C_sBab =	70	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	942.7142857	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	402	(mg/L)
Cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	8610	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	436.6	(mg/L)
t	concentration of ground water into PM-12	C_g12 =	87.5	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	87.5	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	24,980.41	(mg/s)	283,600	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	2,129.58	(mg/s)	2,129.58	(mg/s)	2,129.58	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	653.73	(mg/s)	653.73	(mg/s)	653.73	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	121,890.93	(mg/s)	1,391,712	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	10,425.01	(mg/s)	10,425.01	(mg/s)	10,425.01	(mg/s)
u xni	mass flux of Area 5 Pit NW discharge	M_spit =	6,936.49	(mg/s)	53,090.84	(mg/s)	53,090.84	(mg/s)
ert c ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	19,699.16	(mg/s)	19,699.16	(mg/s)	19,699.16	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	403.90	(mg/s)	403.90	(mg/s)	403.90	(mg/s)
ទ បិ	mass flux in seepage from cell 2W	M_s2w =	20,646.59	(mg/s)	20,646.59	(mg/s)	20,646.59	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance th node	mass flux in river at PM-12	M_r12 =	2,783.31	(mg/s)	27,763.72	(mg/s)	286,383.27	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	60,894.46	(mg/s)	253,920.15	(mg/s)	1,782,360.70	(mg/s)
		1	LOW FIO	w	Average	FIOW	 High Fi	ow
ivert mass to centration	concentration in river at PM-12	C_r12 =	82.647	(mg/L)	71.091	(mg/L)	70.104	(mg/L)
Cor Cor	concentration in river at PM-13	C_r13 =	237.397	(mg/L)	105.640	(mg/L)	73.534	(mg/L)

Case	Closure			
Parameter	Potassium			
			-	
	concentration of surface water into PM-12	C_s12 =	0.60	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.60	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	0.60	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	53.80	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	21.31	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.80	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	7.77	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	1.60	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	1.60	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	214.12	(mg/s)	2,431	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	38.94	(mg/s)	38.94	(mg/s)	38.94	(mg/s)
tion	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.08	(mg/s)	0.08	(mg/s)	0.08	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1,044.78	(mg/s)	11,929	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	190.63	(mg/s)	190.63	(mg/s)	190.63	(mg/s)
	mass flux in Babbitt WWTP discharge	M_sBab =	5.60	(mg/s)	5.60	(mg/s)	5.60	(mg/s)
ert o ss f	mass flux of Area 5 Pit NW discharge	M_spit =	395.86	(mg/s)	3,029.85	(mg/s)	3,029.85	(mg/s)
n ve ma:	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1,043.93	(mg/s)	1,043.93	(mg/s)	1,043.93	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	367.44	(mg/s)	367.44	(mg/s)	367.44	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	39.03	(mg/s)	253.14	(mg/s)	2,469.88	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	2,042.48	(mg/s)	5,935.37	(mg/s)	19,036.29	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	1.159	(mg/L)	0.648	(mg/L)	0.605	(mg/l)
Conver flux to concen	concentration in river at PM-13	C_r13 =	7.963	(mg/L)	2.469	(mg/L)	0.785	(mg/l)

Case Parameter	Closure Magnesium			
	concentration of surface water into PM-12	C_s12 =	5.90	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	5.90	(mg/L)
žp u	concentration in Babbitt WWTP discharge	C_sBab =	5.90	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	271.00	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	55.96	(mg/L)
Icer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	213.00	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	69.97	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	10.65	(mg/L)
ů –	concentration of ground water into PM-13	C_g13 =	10.65	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,105.49	(mg/s)	23,903	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	259.20	(mg/s)	259.20	(mg/s)	259.20	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	55.10	(mg/s)	55.10	(mg/s)	55.10	(mg/s)
trai	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,273.66	(mg/s)	117,301	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1,268.87	(mg/s)	1,268.87	(mg/s)	1,268.87	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	1,994.02	(mg/s)	15,261.91	(mg/s)	15,261.91	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	2,741.51	(mg/s)	2,741.51	(mg/s)	2,741.51	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	9.99	(mg/s)	9.99	(mg/s)	9.99	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	3,308.85	(mg/s)	3,308.85	(mg/s)	3,308.85	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	314.30	(mg/s)	2,419.79	(mg/s)	24,217.73	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	9,637.53	(mg/s)	35,284.58	(mg/s)	164,110.28	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ert mass o entration	concentration in river at PM-12	C_r12 =	9.333	(mg/L)	6.196	(mg/l)	5.928	(mg/l)
Conve flux to conce	concentration in river at PM-13	C_r13 =	37.572	(mg/L)	14.680	(mg/l)	6.771	(mg/l)

Case	Closure			
Parameter	Manganese			
-		-		-
	concentration of surface water into PM-12	C_s12 =	0.30	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.30	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	0.30	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.49	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.14	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.00	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	1.18	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.19	(mg/L)
브	concentration of ground water into PM-13	C_g13 =	0.19	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	107.06	(mg/s)	1,215	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	4.58	(mg/s)	4.58	(mg/s)	4.58	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	2.80	(mg/s)	2.80	(mg/s)	2.80	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	522.39	(mg/s)	5,964	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	22.40	(mg/s)	22.40	(mg/s)	22.40	(mg/s)
nos	mass flux of Area 5 Pit NW discharge	M_spit =	3.57	(mg/s)	27.31	(mg/s)	27.31	(mg/s)
ert (ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	7.03	(mg/s)	7.03	(mg/s)	7.03	(mg/s)
n xe	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	55.94	(mg/s)	55.94	(mg/s)	55.94	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	7.38	(mg/s)	114.44	(mg/s)	1,222.81	(mg/s)
Mass bé at each	mass flux in river at PM-13	M_r13 =	96.32	(mg/s)	749.51	(mg/s)	7,299.97	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.219	(mg/L)	0.293	(mg/l)	0.299	(mg/l)
Conver flux to concen	concentration in river at PM-13	C r13 =	0.376	(mg/L)	0.312	(mg/l)	0.301	(mg/l)

Case Parameter	Closure Sodium			
	encodential of engine and when into DM 10	0 -10	C 00	(
ta	concentration of surface water into PM-12	C_s12 = C_s13 =	6.00	(mg/L) (ma/L)
n da	concentration in Babbitt WWTP discharge	C_sBab =	6.00	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	119.50	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	26.63	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	255.00	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	44.31	(mg/L)
ort .	concentration of ground water into PM-12	C_g12 =	4.90	(mg/L)
Ľ,	concentration of ground water into PM-13	C_g13 =	4.90	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,141.18	(mg/s)	24,309	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	119.26	(mg/s)	119.26	(mg/s)	119.26	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	56.03	(mg/s)	56.03	(mg/s)	56.03	(mg/s)
ntrat	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,447.79	(mg/s)	119,290	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	583.80	(mg/s)	583.80	(mg/s)	583.80	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	879.28	(mg/s)	6,729.88	(mg/s)	6,729.88	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1,304.55	(mg/s)	1,304.55	(mg/s)	1,304.55	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	11.96	(mg/s)	11.96	(mg/s)	11.96	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	2,095.40	(mg/s)	2,095.40	(mg/s)	2,095.40	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ass balance each node	mass flux in river at PM-12	M_r12 =	175.29	(mg/s)	2,316.47	<u>(mg/s)</u>	24,483.86	(mg/s)
Mi at	mass flux in river at PM-13	M_r13 =	5,050.29	(mg/s)	23,489.86	(mg/s)	154,499.05	(mg/s)
		_	Low Flo	w	Average	Flow	High Fl	ow
invert mass x to ncentration	concentration in river at PM-12	C_r12 =	5.205	(mg/L)	5.931	(mg/l)	5.993	(mg/l)
co II Lo	concentration in river at PM-13	C_r13 =	19.689	(mg/L)	9.773	(mg/l)	6.374	(mg/l)

Case	Closure			
Parameter	NICKEI			
	concentration of surface water into PM-12	C_s12 =	0.0012	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0012	(mg/L)
sb r	concentration in Babbitt WWTP discharge	C_sBab =	0.0012	(mg/L)
tion	concentration in Area 5 Pit NW discharge	C_spit =	0.0052	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.005498724	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.098	(mg/L)
Lo L	concentration in tailings basin cell 2W	C_s2w =	0.00688	(mg/L)
at 1	concentration of ground water into PM-12	C_g12 =	0.007	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.007	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.43	(mg/s)	5	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.17	(mg/s)	0.17	(mg/s)	0.17	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ntral	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.09	(mg/s)	24	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.83	(mg/s)	0.83	(mg/s)	0.83	(mg/s)
u xni	mass flux of Area 5 Pit NW discharge	M_spit =	0.04	(mg/s)	0.29	(mg/s)	0.29	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.27	(mg/s)	0.27	(mg/s)	0.27	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ បិ	mass flux in seepage from cell 2W	M_s2w =	0.33	(mg/s)	0.33	(mg/s)	0.33	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	0.18	(mg/s)	0.61	(mg/s)	5.04	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	1.65	(mg/s)	4.43	(mg/s)	30.63	(mg/s)
			LOW FIO	w	Average	FIOW	High Fi	ow
nvert mass k to 1centration	concentration in river at PM-12	C_r12 =	0.005	(mg/L)	0.002	(mg/L)	0.001	(mg/L)
Cor Co	concentration in river at PM-13	C_r13 =	0.006	(mg/L)	0.002	(mg/L)	0.001	(mg/L)

Case Parameter	Closure Lead			
	encodential of enclose under inte DM 10	0 -10	0.00015	(
, D	concentration of surface water into PN-12	$C_{12} = 0$	0.00015	(mg/L)
dat	concentration in Babbitt WWTP discharge	C_s13 = C_sBab =	0.00015	(mg/L)
tion	concentration in Area 5 Pit NW discharge	C_spit =	0.0003	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.00095888	(mg/L)
G	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0005	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.0012	(mg/L)
ort .	concentration of ground water into PM-12	C_g12 =	0.0012	(mg/L)
<u> </u>	concentration of ground water into PM-13	C_g13 =	0.0012	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.05	(mg/s)	1	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.26	(mg/s)	3	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.14	(mg/s)	0.14	(mg/s)	0.14	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.02	(mg/s)	0.02	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.05	(mg/s)	0.05	(mg/s)	0.05	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.08	(mg/s)	0.64	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	0.28	(mg/s)	0.61	(mg/s)	3.88	(mg/s)
		-	LOW FIO	vv	Average	FIOW	підії гі	0
nvert mass k to ncentration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
c thus	concentration in river at PM-13	C_r13 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Closure Antimony			
	concentration of surface water into PM-12	C_s12 =	4.00E-05	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00E-05	(mg/L)
p n	concentration in Babbitt WWTP discharge	C_sBab =	4.00E-05	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	2.50E-04	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	1.16E-03	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	2.50E-04	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	1.50E-03	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	1.50E-03	(mg/L)

			Low Flo	W	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.01	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.07	(mg/s)	1	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.18	(mg/s)	0.18	(mg/s)	0.18	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ បិ	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	W	Average	Flow	High Flo	ow
lance node	mass flux in river at PM-12	M_r12 =	0.04	(mg/s)	0.05	(mg/s)	0.20	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	0.29	(mg/s)	0.38	(mg/s)	1.26	(mg/s)
			Low Flo	W	Average	Flow	High Fl	ow
ert mass o entration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Closure Selenium			
	concentration of surface water into PM-12	C_s12 =	0.0003	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0003	(mg/L)
ab r	concentration in Babbitt WWTP discharge	C_sBab =	0.0003	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0016	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.003346354	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.054	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.00109	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	0.00295	(mg/L)
Ц Ц	concentration of ground water into PM-13	C_g13 =	0.00295	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.11	(mg/s)	1	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.52	(mg/s)	6	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.35	(mg/s)	0.35	(mg/s)	0.35	(mg/s)
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.16	(mg/s)	0.16	(mg/s)	0.16	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.05	(mg/s)	0.05	(mg/s)	0.05	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
oalance n node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	0.18	(mg/s)	1.29	(mg/s)
Mass ł at eacl	mass flux in river at PM-13	M_r13 =	0.66	(mg/s)	1.36	(mg/s)	7.91	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ert mass htration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.003	(mg/L)	0.001	(mg/L)	0.000	(mg/L)

Case Parameter	Closure Sulfate			
	concentration of surface water into PM-12	C_s12 =	4.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00	(mg/L)
р с р с	concentration in Babbitt WWTP discharge	C_sBab =	4.00	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	1046.27	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	176.50	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	7347.00	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	152.40	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	8.50	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	8.50	(mg/L)

			Low Flow		Average	Flow	High Flow	
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,427.45	(mg/s)	16,206	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	206.87	(mg/s)	206.87	(mg/s)	206.87	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	37.36	(mg/s)	37.36	(mg/s)	37.36	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	6,965.20	(mg/s)	79,526	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1,012.72	(mg/s)	1,012.72	(mg/s)	1,012.72	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	7,698.43	(mg/s)	58,922.60	(mg/s)	58,922.60	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	8,647.39	(mg/s)	8,647.39	(mg/s)	8,647.39	(mg/s)
nve mas	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	344.66	(mg/s)	344.66	(mg/s)	344.66	(mg/s)
<u>م</u> ک	mass flux in seepage from cell 2W	M_s2w =	7,206.92	(mg/s)	7,206.92	(mg/s)	7,206.92	(mg/s)
			Low Flo	W	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	244.23	(mg/s)	1,671.68	(mg/s)	16,449.94	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	25,154.34	(mg/s)	84,771.16	(mg/s)	172,110.62	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
/ert mass to entration	concentration in river at PM-12	C_r12 =	7.252	(mg/L)	4.280	(mg/l)	4.027	(mg/l)
Con flux t conc	concentration in river at PM-13	C_r13 =	98.064	(mg/L)	35.268	(mg/l)	7.101	(mg/l)

Case	Closure			
Parameter	Thallium			
	concentration of surface water into PM-12	C_s12 =	0.0002	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0002	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	0.0002	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.0006	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000106288	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0002	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.0002	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.000004	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.000004	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.07	(mg/s)	1	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.35	(mg/s)	4	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ss balance sach node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	 0.07	(mg/s)	0.81	(mg/s)
Ma: ate	mass flux in river at PM-13	M_r13 =	0.02	(mg/s)	0.47	(mg/s)	4.84	(mg/s)
			Low Flo	W	Average	Flow	High Fl	ow
convert mass lux to oncentration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
o ≑ o	concentration in river at PIM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Closure Zinc			
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
a de	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.003	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.012754048	(mg/L)
Icer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.01	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	0.01435	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.0115	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	0.0115	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5.71	(mg/s)	65	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.28	(mg/s)	0.28	(mg/s)	0.28	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.86	(mg/s)	318	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1.37	(mg/s)	1.37	(mg/s)	1.37	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.02	(mg/s)	0.17	(mg/s)	0.17	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.62	(mg/s)	0.62	(mg/s)	0.62	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.68	(mg/s)	0.68	(mg/s)	0.68	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.43	(mg/s)	6.14	(mg/s)	65.25	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	3.13	(mg/s)	36.84	(mg/s)	386.20	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
't mass ntration	concentration in river at PM-12	C_r12 =	0.013	(mg/L)	 0.016	(mg/L)	0.016	(mg/L)
Conver flux to concer	concentration in river at PM-13	C_r13 =	0.012	(mg/L)	0.015	(mg/L)	0.016	(mg/L)

Appendix F.15 Embarrass River Geotechnical Mitigation Post-Closure

FLOWS

Case	Post-Closure				
Flows	Low Flow Conditions (no surface runoff)				Node
in s River	flow in river at PM-12	Q_r12_L =	1.19	(cfs)	PM-12
l flow arrass	flow in river at PM-13	Q_r13_L =	8.75	(cfs)	PM-13
Tota Emb	flow check	Q_ck_L =	8.75	(cfs)	4
	surface water flow into PM-12	Q_s12_L =	0.00	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_L =	0.00	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_L =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_L =	0.26	(cfs)	PM-13
ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_L =	1.73	(cfs)	PM-13
/ da	hydrometallurgical residue cells liner leakage	Q_rrs_L =	0.00	(cfs)	PM-13
llow	seepage from cell 2W	Q_s2w_L =	1.36	(cfs)	PM-13
out 1	ground water flow into PM-12	Q_g12_L =	0.86	(cfs)	PM-12
dul	ground water flow into PM-13	Q_g13_L =	4.21	(cfs)	PM-13

Case	Post-Closure				
Flow	Average Flow Conditions (mean annual)				
n River	flow in river at PM-12	Q_r12_M =	13.80	(cfs)	PM-12
flow i arrass	flow in river at PM-13	Q_r13_M =	84.62	(cfs)	PM-13
Total Embi	flow check	Q_ck_M =	84.62	(cfs)	
	surface water flow into PM-12	Q s12 M =	12.61	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_M =	61.53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_M =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_M =	1.99	(cfs)	PM-13
ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_M =	1.73	(cfs)	PM-13
/ da	hydrometallurgical residue cells liner leakage	Q_rrs_M =	0.00	(cfs)	PM-13
low	seepage from cell 2W	Q_s2w_M =	1.36	(cfs)	PM-13
outi	ground water flow into PM-12	Q_g12_M =	0.86	(cfs)	PM-12
dul	ground water flow into PM-13	Q_g13_M =	4.21	(cfs)	PM-13

Case	Post-Closure				
Flow	High Flow Conditions (avg. annual 1-day ma	ax flow)			
n River	flow in river at PM-12	Q_r12_H =	144.35	(cfs)	PM-12
flow i rrass	flow in river at PM-13	Q_r13_H =	856.17	(cfs)	PM-13
Total Emba	flow check	Q_ck_H =	856.17	(cfs)	_
	surface water flow into PM-12	Q_s12_H =	143.16	(cfs)	PM-12
	surface water flow into PM-13	Q_s13_H =	702.53	(cfs)	PM-13
	Babbitt WWTP discharge	Q_sBab_H =	0.33	(cfs)	PM-12
	Area 5 Pit NW discharge	Q_spit_H =	1.99	(cfs)	PM-13
ta	seepage from Tailings Basin Cells 1E and 2E	Q_fs_H =	1.73	(cfs)	PM-13
/ da	hydrometallurgical residue cells liner leakage	Q_rrs_H =	0.00	(cfs)	PM-13
llov	seepage from cell 2W	Q_s2w_H =	1.36	(cfs)	PM-13
t	ground water flow into PM-12	Q_g12_H =	0.86	(cfs)	PM-12
<u> </u>	ground water flow into PM-13	Q q13 H =	4.21	(cfs)	PM-13

Case Parameter	Post-Closure Silver			
	concentration of surface water into PM-12	C_s12 =	0.00011	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00011	(mg/L)
žp u	concentration in Babbitt WWTP discharge	C_sBab =	0.00011	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.00015	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.00124	(mg/L)
Icer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.000125	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	0.000100	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.00008	(mg/L)
ů –	concentration of ground water into PM-13	C_g13 =	0.00008	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.04	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.19	(mg/s)	2	(mg/s)
cer	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
u s n	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
မ ပိ	mass flux in seepage from cell 2W	M_s2w =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
is balance ach node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.04	(mg/s)	0.45	(mg/s)
Mas at e	mass flux in river at PM-13	M r13 =	0.07	(ma/s)	0.31	(mg/s)	2.71	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
Convert mass lux to concentration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Post-Closure Aluminum			
	concentration of surface water into PM 12	C a12	0.12	(mg/L)
ta	concentration of surface water into PM-12	$C_{s12} = C_{s13} =$	0.12	(mg/L)
ן da	concentration in Babbitt WWTP discharge	 C_sBab =	0.12	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.01325	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	6.15E-01	(mg/L)
ICEI	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.80E-01	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	1.5788	(mg/L)
rt j	concentration of ground water into PM-12	C_g12 =	0.025	(mg/L)
ln An	concentration of ground water into PM-13	C_g13 =	0.025	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	42.82	(mg/s)	486	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.61	(mg/s)	0.61	(mg/s)	0.61	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	1.12	(mg/s)	1.12	(mg/s)	1.12	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	208.96	(mg/s)	2,386	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2.98	(mg/s)	2.98	(mg/s)	2.98	(mg/s)
u s n	mass flux of Area 5 Pit NW discharge	M_spit =	0.10	(mg/s)	0.75	(mg/s)	0.75	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	30.13	(mg/s)	30.13	(mg/s)	30.13	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
<u>۽</u> ک	mass flux in seepage from cell 2W	M_s2w =	60.72	(mg/s)	60.72	(mg/s)	60.72	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ich node	mass flux in river at PM-12	M_r12 =	1.73	(mg/s)	44.55	(mg/s)	487.90	(mg/s)
Mass at ea	mass flux in river at PM-13	M_r13 =	95.66	(mg/s)	348.09	(mg/s)	2,968.28	(mg/s)
		_	Low Flo	w	Average	Flow	High Fl	ow
vert mass to centration	concentration in river at PM-12	C_r12 =	0.051	(mg/L)	 0.114	(mg/L)	0.119	(mg/L)
Con flux conc	concentration in river at PM-13	C_r13 =	0.386	(mg/L)	0.145	(mg/L)	0.123	(mg/L)

Case Parameter	Post-Closure Arsenic			
	concentration of surface water into PM-12	C e12 -	0 00075	(mg/L)
ita	concentration of surface water into PM-12	C_s12 =	0.00075	(mg/L)
ep u	concentration in Babbitt WWTP discharge	C_sBab =	0.00075	(mg/L)
tion	concentration in Area 5 Pit NW discharge	C_spit =	0.001325	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.027915158	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.00291	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	0.00273	(mg/L)
Ц Ц	concentration of ground water into PM-13	C_g13 =	0.00273	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.27	(mg/s)	3	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.31	(mg/s)	15	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.33	(mg/s)	0.33	(mg/s)	0.33	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1.37	(mg/s)	1.37	(mg/s)	1.37	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.11	(mg/s)	0.11	(mg/s)	0.11	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	0.34	(mg/s)	3.11	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	1.89	(mg/s)	3.53	(mg/s)	19.90	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass ntration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	0.001	(mg/L)	0.001	(mg/L)
Conver flux to concen	concentration in river at PM-13	C_r13 =	0.008	(mg/L)	0.001	(mg/L)	0.001	(mg/L)

Case Parameter	Post-Closure Boron			
		_		
	concentration of surface water into PM-12	C_s12 =	0.027	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.027	(mg/L)
р с р	concentration in Babbitt WWTP discharge	C_sBab =	0.027	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.1315	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.150573845	(mg/L)
Cet	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.11	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	0.33	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0212	(mg/L)
L L	concentration of ground water into PM-13	C_g13 =	0.0212	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	9.64	(mg/s)	109	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.52	(mg/s)	0.52	(mg/s)	0.52	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.25	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
trai	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	47.02	(mg/s)	537	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2.53	(mg/s)	2.53	(mg/s)	2.53	(mg/s)
u xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.97	(mg/s)	7.41	(mg/s)	7.41	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	7.38	(mg/s)	7.38	(mg/s)	7.38	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	12.69	(mg/s)	12.69	(mg/s)	12.69	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.77	(mg/s)	10.40	(mg/s)	110.16	(mg/s)
Mass be at each	mass flux in river at PM-13	M_r13 =	24.34	(mg/s)	87.42	(mg/s)	676.97	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
rt mass ntration	concentration in river at PM-12	C_r12 =	0.023	(mg/L)	0.027	(mg/L)	0.027	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.098	(mg/L)	0.037	(mg/L)	0.028	(mg/L)

Case Parameter	Post-Closure Barium			
		-		
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
p u	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0044	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	1.95E-02	(mg/L)
ICEI	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	5.00E-03	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	0.09298	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.0681	(mg/L)
ů –	concentration of ground water into PM-13	C_g13 =	0.0681	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5.71	(mg/s)	65	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	1.66	(mg/s)	1.66	(mg/s)	1.66	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)	0.15	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.86	(mg/s)	318	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	8.11	(mg/s)	8.11	(mg/s)	8.11	(mg/s)
u su l	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.25	(mg/s)	0.25	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.95	(mg/s)	0.95	(mg/s)	0.95	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
e ů	mass flux in seepage from cell 2W	M_s2w =	3.58	(mg/s)	3.58	(mg/s)	3.58	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance th node	mass flux in river at PM-12	M_r12 =	1.81	(mg/s)	7.52	(mg/s)	66.63	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	14.48	(mg/s)	48.27	(mg/s)	397.63	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
vert mass to :entration	concentration in river at PM-12	C_r12 =	0.054	(mg/L)	0.019	(mg/L)	0.016	(mg/L)
Con flux	concentration in river at PM-13	C_r13 =	0.058	(mg/L)	0.020	(mg/L)	0.016	(mg/L)

Case Parameter	Post-Closure Beryllium			
	and the standard state and the state and the	0 -10	0.0001	(
a	concentration of surface water into PM-12	C_\$12 =	0.0001	(mg/L) (mg/L)
dai	concentration in Babbitt WWTP discharge	C_sBab =	0.0001	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001323498	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0	(mg/L)
Lo Lo	concentration in tailings basin cell 2W	C_s2w =	0.00075	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	0.000023	(mg/L)
<u> </u>	concentration of ground water into PM-13	C_g13 =	0.000023	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.04	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.17	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	-	(mg/s)	-	(mg/s)	-	(mg/s)
۹ ٽ ۱	mass flux in seepage from cell 2W	M_s2w =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t balance ch node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	 0.04	(mg/s)	0.41	(mg/s)
Mass at ea	mass flux in river at PM-13	M_r13 =	0.10	(mg/s)	0.31	(mg/s)	2.50	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
vert mass to centration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	 0.000	(mg/L)	0.000	(mg/L)
Con Con Con	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Post-Closure Calcium			
	concentration of surface water into PM-12	C_s12 =	15	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	15	(mg/L)
р с р	concentration in Babbitt WWTP discharge	C_sBab =	15	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	95.35	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	68.73996034	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	416	(mg/L)
CO	concentration in tailings basin cell 2W	C_s2w =	59.78	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	19	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	19	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5,352.95	(mg/s)	60,771	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	462.42	(mg/s)	462.42	(mg/s)	462.42	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	140.09	(mg/s)	140.09	(mg/s)	140.09	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	26,119.49	(mg/s)	298,224	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	2,263.72	(mg/s)	2,263.72	(mg/s)	2,263.72	(mg/s)
u Xi	mass flux of Area 5 Pit NW discharge	M_spit =	701.59	(mg/s)	5,369.83	(mg/s)	5,369.83	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	3,367.90	(mg/s)	3,367.90	(mg/s)	3,367.90	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	19.51	(mg/s)	19.51	(mg/s)	19.51	(mg/s)
ຊີ ບິ	mass flux in seepage from cell 2W	M_s2w =	2,299.27	(mg/s)	2,299.27	(mg/s)	2.80	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
is balance ach node	mass flux in river at PM-12	M_r12 =	602.51	(mg/s)	5,955.45	(mg/s)	61,373.93	(mg/s)
Mas at e	mass flux in river at PM-13	M r13 =	9,254.49	(mg/s)	45,395.16	(mg/s)	370,621.67	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
Convert mass lux to concentration	concentration in river at PM-12	C_r12 =	17.891	(mg/L)	15.249	(mg/l)	15.024	(mg/l)

Case Parameter	Post-Closure Cadmium			
			-	
	concentration of surface water into PM-12	C_s12 =	0.00008	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00008	(mg/L)
p u	concentration in Babbitt WWTP discharge	C_sBab =	0.00008	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0001	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.001182282	(mg/L)
Icer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0004	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	0.000188	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.0003	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.0003	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.03	(mg/s)	0	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.14	(mg/s)	2	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
ma ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
iss balance each node	mass flux in river at PM-12	M_r12 =	0.01	(mg/s)	0.04	(mg/s)	0.33	(mg/s)
Ma	mass flux in river at PM-13	M_r13 =	0.11	(mg/s)	0.28	(mg/s)	2.03	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
onvert mass ux to oncentration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	 0.000	(mg/L)	0.000	(mg/L)
° ≓ S	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Post-Closure Chloride			
	concentration of surface water into PM-12	C_s12 =	6.5	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	6.5	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	6.5	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	5.95	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	3.97E+00	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.76E+03	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	21.54	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	1.8	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	1.8	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,319.61	(mg/s)	26,334	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	43.81	(mg/s)	43.81	(mg/s)	43.81	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	60.70	(mg/s)	60.70	(mg/s)	60.70	(mg/s)
Itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	11,318.44	(mg/s)	129,230	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	214.46	(mg/s)	214.46	(mg/s)	214.46	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	43.78	(mg/s)	335.09	(mg/s)	335.09	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	194.68	(mg/s)	194.68	(mg/s)	194.68	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	82.56	(mg/s)	82.56	(mg/s)	82.56	(mg/s)
ធ បំ	mass flux in seepage from cell 2W	M_s2w =	828.47	(mg/s)	828.47	(mg/s)	828.47	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	104.51	(mg/s)	2,424.12	(mg/s)	26,438.79	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	1,468.46	(mg/s)	15,397.82	(mg/s)	157,324.45	(mg/s)
			Low Flo	w	Average	Flow	 High Fl	ow
ert mass o entration	concentration in river at PM-12	C_r12 =	3.103	(mg/L)	6.207	(mg/L)	6.472	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	5.929	(mg/L)	6.430	(mg/L)	6.493	(mg/L)

Case Parameter	Post-Closure Cobalt			
		-	n	
	concentration of surface water into PM-12	C_s12 =	0.0006	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0006	(mg/L)
, p u	concentration in Babbitt WWTP discharge	C_sBab =	0.0006	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.000555	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.002707554	(mg/L)
Icer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.005	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	0.001556	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.0011	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	0.0011	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.21	(mg/s)	2	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1.04	(mg/s)	12	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.13	(mg/s)	0.13	(mg/s)	0.13	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.13	(mg/s)	0.13	(mg/s)	0.13	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance n node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.25	(mg/s)	2.46	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	0.36	(mg/s)	1.65	(mg/s)	14.75	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.001	(mg/L)	0.001	(mg/L)
Conver filux to concen	concentration in river at PM-13	C_r13 =	0.001	(mg/L)	0.001	(mg/L)	0.001	(mg/L)

Case Parameter	Post-Closure Copper			
		4		
	concentration of surface water into PM-12	C_s12 =	0.0015	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0015	(mg/L)
p c	concentration in Babbitt WWTP discharge	C_sBab =	0.0015	(mg/L)
ţi	concentration in Area 5 Pit NW discharge	C_spit =	0.00345	(mg/L)
ıtra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.014116893	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0015	(mg/L)
CO	concentration in tailings basin cell 2W	C_s2w =	0.004555	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.004	(mg/L)
별	concentration of ground water into PM-13	C_g13 =	0.004	(mg/L)

			Low Flo	w	Average	Flow		High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.54	(mg/s)		6	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.10	(mg/s)	0.10	(mg/s)		0.10	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)		0.01	(mg/s)
trai	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.61	(mg/s)		30	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.48	(mg/s)	0.48	(mg/s)		0.48	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	0.03	(mg/s)	0.19	(mg/s)		0.19	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.69	(mg/s)	0.69	(mg/s)		0.69	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	0.18	(mg/s)	0.18	(mg/s)		0.18	(mg/s)
			Low Flow		Average Flow		High Flow		ow
alance node	mass flux in river at PM-12	M_r12 =	0.11	(mg/s)	0.65	(mg/s)		6.19	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	1.48	(mg/s)	4.80	(mg/s)		37.55	(mg/s)
			Low Flo	w	Average	Flow		High Fl	ow
rt mass itration	concentration in river at PM-12	C_r12 =	0.003	(mg/L)	0.002	(mg/L)		0.002	(mg/L)
Conve flux to concer	concentration in river at PM-13	C_r13 =	0.006	(mg/L)	0.002	(mg/L)		0.002	(mg/L)

Case Parameter	Post-Closure Fluoride			
	concentration of surface water into PM-12	C s12 =	0.2	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.2	(mg/L)
sh r	concentration in Babbitt WWTP discharge	C_sBab =	0.2	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.125	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	1.14E+00	(mg/L)
ICEI	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	2.85E+00	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	1.55	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	0.385	(mg/L)
ln g	concentration of ground water into PM-13	C_g13 =	0.385	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	71.37	(mg/s)	810	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	9.37	(mg/s)	9.37	(mg/s)	9.37	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	1.87	(mg/s)	1.87	(mg/s)	1.87	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	348.26	(mg/s)	3,976	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	45.87	(mg/s)	45.87	(mg/s)	45.87	(mg/s)
uo Xnli	mass flux of Area 5 Pit NW discharge	M_spit =	0.92	(mg/s)	7.04	(mg/s)	7.04	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	55.70	(mg/s)	55.70	(mg/s)	55.70	(mg/s)
ma ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.13	(mg/s)	0.13	(mg/s)	0.13	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	59.62	(mg/s)	59.62	(mg/s)	59.62	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ach node	mass flux in river at PM-12	M_r12 =	11.24	(mg/s)	82.61	(mg/s)	821.52	(mg/s)
Mas at e	mass flux in river at PM-13	M r13 =	173.48	(ma/s)	599.23	(ma/s)	4.966.21	(ma/s)
		<u></u>	Low Flo	w	Average	Flow	High Flow	
convert mass lux to oncentration	concentration in river at PM-12	C_r12 =	0.334	(mg/L)	0.212	(mg/L)	0.201	(mg/L)
0000	concentration in river at PM-13	C_r13 =	0.700	(mg/L)	0.250	(mg/L)	0.205	(mg/L)

Case Parameter	Post-Closure Iron			
	concentration of surface water into PM-12	C_s12 =	2.9	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	2.9	(mg/L)
n då	concentration in Babbitt WWTP discharge	C_sBab =	2.9	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.037761905	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	9.94E-02	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	4.00E-01	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	4.594	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.035	(mg/L)
<u> </u>	concentration of ground water into PM-13	C_g13 =	0.035	(mg/L)

			Low Flo	W	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,034.90	(mg/s)	11,749	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.85	(mg/s)	0.85	(mg/s)	0.85	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	27.08	(mg/s)	27.08	(mg/s)	27.08	(mg/s)
itral	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	5,049.77	(mg/s)	57,657	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	4.17	(mg/s)	4.17	(mg/s)	4.17	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	0.28	(mg/s)	2.13	(mg/s)	2.13	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	4.87	(mg/s)	4.87	(mg/s)	4.87	(mg/s)
m ke	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.02	(mg/s)	0.02	(mg/s)	0.02	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	176.69	(mg/s)	176.69	(mg/s)	176.69	(mg/s)
			Low Flow		Average Flow		High Fl	ow
lance node	mass flux in river at PM-12	M_r12 =	27.93	(mg/s)	1,062.84	(mg/s)	11,777.08	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	213.97	(mg/s)	6,300.48	(mg/s)	69,621.59	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ert mass ntration	concentration in river at PM-12	C_r12 =	0.829	(mg/L)	2.721	(mg/L)	2.883	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.864	(mg/L)	2.631	(mg/L)	2.873	(mg/L)

Case	Post-Closure			
Parameter	Hardness			
		-		-
	concentration of surface water into PM-12	C_s12 =	70	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	70	(mg/L)
ů p c	concentration in Babbitt WWTP discharge	C_sBab =	70	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	942.7142857	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	4.02E+02	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	8.61E+03	(mg/L)
COL	concentration in tailings basin cell 2W	C_s2w =	436.6	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	87.5	(mg/L)
du	concentration of ground water into PM-13	C_g13 =	87.5	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	24,980.41	(mg/s)	283,600	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	2,129.58	(mg/s)	2,129.58	(mg/s)	2,129.58	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	653.73	(mg/s)	653.73	(mg/s)	653.73	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	121,890.93	(mg/s)	1,391,712	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	10,425.01	(mg/s)	10,425.01	(mg/s)	10,425.01	(mg/s)
u Xn	mass flux of Area 5 Pit NW discharge	M_spit =	6,936.49	(mg/s)	53,090.84	(mg/s)	53,090.84	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	19,699.16	(mg/s)	19,699.16	(mg/s)	19,699.16	(mg/s)
n ve ma:	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	403.90	(mg/s)	403.90	(mg/s)	403.90	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	16,792.56	(mg/s)	16,792.56	(mg/s)	16,792.56	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ach node	mass flux in river at PM-12	M_r12 =	2,783.31	(mg/s)	27,763.72	(mg/s)	286,383.27	(mg/s)
Mas at ea	mass flux in river at PM-13	M r13 =	57 040 43	(ma/s)	250 066 12	(ma/s)	1 778 506 67	(ma/s)
			Low Flo	w	Average	Flow	High Fl	ow
Convert mass lux to :oncentration	concentration in river at PM-12	C_r12 =	82.647	(mg/L)	71.091	(mg/L)	70.104	(mg/L)

Case Parameter	Post-Closure Potassium			
i didiletei	i otassium			
	concentration of surface water into PM-12	C_s12 =	0.60	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.60	(mg/L)
р ц	concentration in Babbitt WWTP discharge	C_sBab =	0.60	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	53.80	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	21.31	(mg/L)
ICE	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	1.80	(mg/L)
co	concentration in tailings basin cell 2W	C_s2w =	7.77	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	1.60	(mg/L)
<u> </u>	concentration of ground water into PM-13	C_g13 =	1.60	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	214.12	(mg/s)	2,431	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	38.94	(mg/s)	38.94	(mg/s)	38.94	(mg/s)
tion	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.08	(mg/s)	0.08	(mg/s)	0.08	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	1,044.78	(mg/s)	11,929	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	190.63	(mg/s)	190.63	(mg/s)	190.63	(mg/s)
u Xn	mass flux in Babbitt WWTP discharge	M_sBab =	5.60	(mg/s)	5.60	(mg/s)	5.60	(mg/s)
ert o ss f	mass flux of Area 5 Pit NW discharge	M_spit =	395.86	(mg/s)	3,029.85	(mg/s)	3,029.85	(mg/s)
ma	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1,043.93	(mg/s)	1,043.93	(mg/s)	1,043.93	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	298.85	(mg/s)	298.85	(mg/s)	298.85	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ulance node	mass flux in river at PM-12	M_r12 =	39.03	(mg/s)	253.14	(mg/s)	2,469.88	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	1,973.89	(mg/s)	5,866.78	(mg/s)	18,967.70	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
nvert mass x to ncentration	concentration in river at PM-12	C_r12 =	1.159	(mg/L)	0.648	(mg/L)	0.605	(mg/l)
co II Lo	concentration in river at PM-13	C_r13 =	7.969	(mg/L)	2.450	(mg/L)	0.783	(mg/l)

Case Parameter	Post-Closure Magnesium			
	concentration of surface water into PM-12	C_s12 =	5.90	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	5.90	(mg/L)
a de	concentration in Babbitt WWTP discharge	C_sBab =	5.90	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	271.00	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	55.96	(mg/L)
Icer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	213.00	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	69.97	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	10.65	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	10.65	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,105.49	(mg/s)	23,903	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	259.20	(mg/s)	259.20	(mg/s)	259.20	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	55.10	(mg/s)	55.10	(mg/s)	55.10	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,273.66	(mg/s)	117,301	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1,268.87	(mg/s)	1,268.87	(mg/s)	1,268.87	(mg/s)
u xnl	mass flux of Area 5 Pit NW discharge	M_spit =	1,994.02	(mg/s)	15,261.91	(mg/s)	15,261.91	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	2,741.51	(mg/s)	2,741.51	(mg/s)	2,741.51	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	9.99	(mg/s)	9.99	(mg/s)	9.99	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	2,691.19	(mg/s)	2,691.19	(mg/s)	2,691.19	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ach node	mass flux in river at PM-12	M_r12 =	314.30	(mg/s)	2,419.79	(mg/s)	24,217.73	(mg/s)
Mas at e	mass flux in river at PM-13	M r13 =	9.019.88	(ma/s)	34.666.93	(ma/s)	163.492.63	(ma/s)
			Low Flo	w	Average	Flow	High Flow	
Convert mass lux to concentration	concentration in river at PM-12	C_r12 =	9.333	(mg/L)	6.196	(mg/l)	5.928	(mg/l)
Case Parameter	Post-Closure Manganese							
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	concentration of surface water into PM-12	C_s12 =	0.30	(mg/L)				
ata	concentration of surface water into PM-13	C_s13 =	0.30	(mg/L)				
p r	concentration in Babbitt WWTP discharge	C_sBab =	0.30	(mg/L)				
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.49	(mg/L)				
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.14	(mg/L)				
Icer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.00	(mg/L)				
con	concentration in tailings basin cell 2W	C_s2w =	1.18	(mg/L)				
ort	concentration of ground water into PM-12	C_g12 =	0.19	(mg/L)				
법	concentration of ground water into PM-13	C_g13 =	0.19	(mg/L)				

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	107.06	(mg/s)	1,215	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	4.58	(mg/s)	4.58	(mg/s)	4.58	(mg/s)
tior	mass flux in Babbitt WWTP discharge	M_sBab =	2.80	(mg/s)	2.80	(mg/s)	2.80	(mg/s)
ntra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	522.39	(mg/s)	5,964	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	22.40	(mg/s)	22.40	(mg/s)	22.40	(mg/s)
nos	mass flux of Area 5 Pit NW discharge	M_spit =	3.57	(mg/s)	27.31	(mg/s)	27.31	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	7.03	(mg/s)	7.03	(mg/s)	7.03	(mg/s)
n xe	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	45.50	(mg/s)	45.50	(mg/s)	45.50	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	7.38	(mg/s)	114.44	(mg/s)	1,222.81	(mg/s)
Mass bé at each	mass flux in river at PM-13	M_r13 =	85.88	(mg/s)	739.07	(mg/s)	7,289.53	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
t mass tration	concentration in river at PM-12	C_r12 =	0.219	(mg/L)	0.293	(mg/l)	0.299	(mg/l)
Conver flux to concen	concentration in river at PM-13	C r13 =	0.347	(mg/L)	0.309	(mg/l)	0.301	(mg/l)

Case Parameter	Post-Closure Sodium			
	concentration of surface water into PM-12	C_s12 =	6.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	6.00	(mg/L)
p r	concentration in Babbitt WWTP discharge	C_sBab =	6.00	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	119.50	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	26.63	(mg/L)
ICEL	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	255.00	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	44.31	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	4.90	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	4.90	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	2,141.18	(mg/s)	24,309	(mg/s)
-	mass flux of ground water into PM-12	M_g12 =	119.26	(mg/s)	119.26	(mg/s)	119.26	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	56.03	(mg/s)	56.03	(mg/s)	56.03	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	10,447.79	(mg/s)	119,290	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	583.80	(mg/s)	583.80	(mg/s)	583.80	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	879.28	(mg/s)	6,729.88	(mg/s)	6,729.88	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	1,304.55	(mg/s)	1,304.55	(mg/s)	1,304.55	(mg/s)
ma ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	11.96	(mg/s)	11.96	(mg/s)	11.96	(mg/s)
ទ បិ	mass flux in seepage from cell 2W	M_s2w =	1,704.26	(mg/s)	1,704.26	(mg/s)	1,704.26	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance ch node	mass flux in river at PM-12	M_r12 =	175.29	(mg/s)	2,316.47	(mg/s)	24,483.86	(mg/s)
Mass at eac	mass flux in river at PM-13	M_r13 =	4,659.15	(mg/s)	23,098.72	(mg/s)	154,107.91	(mg/s)
		-	Low Flo	w	Average	Flow	High Fl	ow
wert mass to centration	concentration in river at PM-12	C_r12 =	5.205	(mg/L)	5.931	(mg/l)	5.993	(mg/l)
flux con	concentration in river at PM-13	C_r13 =	18.811	(mg/L)	9.645	(mg/l)	6.360	(mg/l)

Case Parameter	Post-Closure Nickel			
	concentration of surface water into PM-12	C c12 -	0.0012	(mg/L)
ta	concentration of surface water into PM-12	C_s12 = C_s13 =	0.0012	(mg/L)
ן da	concentration in Babbitt WWTP discharge	C_sBab =	0.0012	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0052	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.005498724	(mg/L)
ICEI	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.098	(mg/L)
cor	concentration in tailings basin cell 2W	C_s2w =	0.00688	(mg/L)
rt	concentration of ground water into PM-12	C_g12 =	0.007	(mg/L)
u	concentration of ground water into PM-13	C_g13 =	0.007	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.43	(mg/s)	5	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.17	(mg/s)	0.17	(mg/s)	0.17	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	2.09	(mg/s)	24	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.83	(mg/s)	0.83	(mg/s)	0.83	(mg/s)
uo:	mass flux of Area 5 Pit NW discharge	M_spit =	0.04	(mg/s)	0.29	(mg/s)	0.29	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.27	(mg/s)	0.27	(mg/s)	0.27	(mg/s)
ma ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.26	(mg/s)	0.26	(mg/s)	0.26	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ss balance ach node	mass flux in river at PM-12	M_r12 =	0.18	(mg/s)	0.61	(mg/s)	5.04	(mg/s)
Ma: at e	mass flux in river at PM-13	M_r13 =	1.59	(mg/s)	4.36	(mg/s)	30.57	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
convert mass lux to oncentration	concentration in river at PM-12	C_r12 =	0.005	(mg/L)	0.002	(mg/L)	0.001	(mg/L)
Ö∓ö	concentration in river at PM-13	C_r13 =	0.006	(mg/L)	0.002	(mg/L)	0.001	(mg/L)

Case Parameter	Post-Closure Lead			
	concentration of surface water into PM-12	C_s12 =	0.00015	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.00015	(mg/L)
a de	concentration in Babbitt WWTP discharge	C_sBab =	0.00015	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0003	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.00095888	(mg/L)
ICEI	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0005	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	0.0012	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.0012	(mg/L)
ů L	concentration of ground water into PM-13	C_g13 =	0.0012	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.05	(mg/s)	1	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.03	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.26	(mg/s)	3	(mg/s)
cer	mass flux of ground water into PM-13	M_g13 =	0.14	(mg/s)	0.14	(mg/s)	0.14	(mg/s)
u s n	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.02	(mg/s)	0.02	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.05	(mg/s)	0.05	(mg/s)	0.05	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
မ ပိ	mass flux in seepage from cell 2W	M_s2w =	0.05	(mg/s)	0.05	(mg/s)	0.05	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ss balance ach node	mass flux in river at PM-12	M_r12 =	0.03	(mg/s)	0.08	(mg/s)	0.64	(mg/s)
Mas at e	mass flux in river at PM-13	M r13 =	0.27	(mg/s)	0.60	(mg/s)	3.87	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
Convert mass lux to concentration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Post-Closure Antimony			
	concentration of surface water into PM-12	C_s12 =	4.00E-05	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00E-05	(mg/L)
p r	concentration in Babbitt WWTP discharge	C_sBab =	4.00E-05	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	2.50E-04	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	1.16E-03	(mg/L)
Icer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.004	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	2.50E-04	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	1.50E-03	(mg/L)
법	concentration of ground water into PM-13	C_g13 =	1.50E-03	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.01	(mg/s)	0	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.07	(mg/s)	1	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.18	(mg/s)	0.18	(mg/s)	0.18	(mg/s)
u son	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.06	(mg/s)	0.06	(mg/s)	0.06	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
alance node	mass flux in river at PM-12	M_r12 =	0.04	(mg/s)	0.05	(mg/s)	0.20	(mg/s)
Mass b at each	mass flux in river at PM-13	M_r13 =	0.28	(mg/s)	0.38	(mg/s)	1.25	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
ert mass ortration	concentration in river at PM-12	C_r12 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.001	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Post-Closure Selenium			
		a (a		<i>/</i> // // // // // // // // // // // // /
	concentration of surface water into PM-12	C_s12 =	0.0003	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0003	(mg/L)
p u	concentration in Babbitt WWTP discharge	C_sBab =	0.0003	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0016	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.003346354	(mg/L)
ICEI	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.054	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	0.00109	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.00295	(mg/L)
ů –	concentration of ground water into PM-13	C_g13 =	0.00295	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.11	(mg/s)	1	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.07	(mg/s)	0.07	(mg/s)	0.07	(mg/s)
tio	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.52	(mg/s)	6	(mg/s)
cer	mass flux of ground water into PM-13	M_g13 =	0.35	(mg/s)	0.35	(mg/s)	0.35	(mg/s)
u s n	mass flux of Area 5 Pit NW discharge	M_spit =	0.01	(mg/s)	0.09	(mg/s)	0.09	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.16	(mg/s)	0.16	(mg/s)	0.16	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
မ ပိ	mass flux in seepage from cell 2W	M_s2w =	0.04	(mg/s)	0.04	(mg/s)	0.04	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
s balance ach node	mass flux in river at PM-12	M_r12 =	0.07	(mg/s)	0.18	(mg/s)	1.29	(mg/s)
Mas at ea	mass flux in river at PM-13	M r13 =	0.65	(ma/s)	1.35	(ma/s)	7.90	(ma/s)
			Low Flo	w	Average	Flow	High Fl	ow
Convert mass flux to concentration	concentration in river at PM-12	C_r12 =	0.002	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Post-Closure Sulfate			
	concentration of surface water into PM-12	C_s12 =	4.00	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	4.00	(mg/L)
, da	concentration in Babbitt WWTP discharge	C_sBab =	4.00	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	1046.27	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	176.50	(mg/L)
cer	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	7347.00	(mg/L)
COL	concentration in tailings basin cell 2W	C_s2w =	152.40	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	8.50	(mg/L)
dul	concentration of ground water into PM-13	C_g13 =	8.50	(mg/L)

		Low Flow		Average Flow			High Flow		
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	1,427.45	(mg/s)		16,206	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	206.87	(mg/s)	206.87	(mg/s)		206.87	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	37.36	(mg/s)	37.36	(mg/s)		37.36	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	6,965.20	(mg/s)		79,526	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1,012.72	(mg/s)	1,012.72	(mg/s)		1,012.72	(mg/s)
	mass flux of Area 5 Pit NW discharge	M_spit =	7,698.43	(mg/s)	58,922.60	(mg/s)		58,922.60	(mg/s)
ert o ss f	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	8,647.39	(mg/s)	8,647.39	(mg/s)		8,647.39	(mg/s)
m ke	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	344.66	(mg/s)	344.66	(mg/s)		344.66	(mg/s)
ទ ប្	mass flux in seepage from cell 2W	M_s2w =	5,861.63	(mg/s)	5,861.63	(mg/s)		5,861.63	(mg/s)
			Low Flow		Average Flow			High Flow	
iss balance each node	mass flux in river at PM-12	M_r12 =	244.23	(mg/s)	1,671.68	(mg/s)		16,449.94	(mg/s)
Ma at	mass flux in river at PM-13	M_r13 =	23,809.05	(mg/s)	83,425.87	(mg/s)		170,765.33	(mg/s)
			Low Flow		Average Flow			High Flow	
convert mass lux to oncentration	concentration in river at PM-12	C_r12 =	7.252	(mg/L)	4.280	(mg/l)		4.027	(mg/l)
O ∓ õ	concentration in river at PM-13	C_r13 =	96.128	(mg/L)	34.836	(mg/l)	1	7.048	(mg/l)

Case Parameter	Post-Closure Thallium			
	concentration of surface water into PM-12	C_s12 =	0.0002	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.0002	(mg/L)
ů p	concentration in Babbitt WWTP discharge	C_sBab =	0.0002	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.0006	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.000106288	(mg/L)
Cel	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.0002	(mg/L)
COL	concentration in tailings basin cell 2W	C_s2w =	0.0002	(mg/L)
nt	concentration of ground water into PM-12	C_g12 =	0.000004	(mg/L)
<u> </u>	concentration of ground water into PM-13	C_g13 =	0.000004	(mg/L)

			Low Flo	w	Average	Flow	High Fl	ow
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	0.07	(mg/s)	1	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	0.35	(mg/s)	4	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
u x n	mass flux of Area 5 Pit NW discharge	M_spit =	0.00	(mg/s)	0.03	(mg/s)	0.03	(mg/s)
ert e ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
n ve	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)	0.00	(mg/s)
ទ ប័	mass flux in seepage from cell 2W	M_s2w =	0.01	(mg/s)	0.01	(mg/s)	0.01	(mg/s)
			Low Flo	w	Average	Flow	High Fl	ow
balance n node	mass flux in river at PM-12	M_r12 =	0.00	(mg/s)	0.07	(mg/s)	0.81	(mg/s)
Mass k at each	mass flux in river at PM-13	M_r13 =	0.02	(mg/s)	0.47	(mg/s)	4.84	(mg/s)
			Low Flow		Average Flow		High Flow	
t mass tration	concentration in river at PM-12	C_r12 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)
Conver flux to concen	concentration in river at PM-13	C_r13 =	0.000	(mg/L)	0.000	(mg/L)	0.000	(mg/L)

Case Parameter	Post-Closure Zinc			
	concentration of surface water into PM-12	C_s12 =	0.016	(mg/L)
ata	concentration of surface water into PM-13	C_s13 =	0.016	(mg/L)
a de	concentration in Babbitt WWTP discharge	C_sBab =	0.016	(mg/L)
tio	concentration in Area 5 Pit NW discharge	C_spit =	0.003	(mg/L)
ntra	concentration in seepage from Tailings Basin Cells 1E and 2E	C_fs =	0.012754048	(mg/L)
ICEL	concentration in hydrometallurgical residue cells liner leakage	C_rrs =	0.01	(mg/L)
con	concentration in tailings basin cell 2W	C_s2w =	0.01435	(mg/L)
ort	concentration of ground water into PM-12	C_g12 =	0.0115	(mg/L)
ů du	concentration of ground water into PM-13	C_g13 =	0.0115	(mg/L)

		Low Flo	w	Average	Flow		High Fl	ow	
	mass flux of surface water into PM-12	M_s12 =	-	(mg/s)	5.71	(mg/s)		65	(mg/s)
_	mass flux of ground water into PM-12	M_g12 =	0.28	(mg/s)	0.28	(mg/s)		0.28	(mg/s)
tion	mass flux in Babbitt WWTP discharge	M_sBab =	0.15	(mg/s)	0.15	(mg/s)		0.15	(mg/s)
itra	mass flux of surface water into PM-13	M_s13 =	-	(mg/s)	27.86	(mg/s)		318	(mg/s)
cen	mass flux of ground water into PM-13	M_g13 =	1.37	(mg/s)	1.37	(mg/s)		1.37	(mg/s)
u son	mass flux of Area 5 Pit NW discharge	M_spit =	0.02	(mg/s)	0.17	(mg/s)		0.17	(mg/s)
ert o ss t	mass flux in seepage from Tailings Basin Cells 1E and 2E	M_fs =	0.62	(mg/s)	0.62	(mg/s)		0.62	(mg/s)
ma	mass flux in hydrometallurgical residue cells liner leakage	M_rrs =	0.00	(mg/s)	0.00	(mg/s)		0.00	(mg/s)
ទ បំ	mass flux in seepage from cell 2W	M_s2w =	0.55	(mg/s)	0.55	(mg/s)		0.55	(mg/s)
			Low Flow		Average Flow		High Flow		
alance node	mass flux in river at PM-12	M_r12 =	0.43	(mg/s)	6.14	(mg/s)		65.25	(mg/s)
Mass ba at each	mass flux in river at PM-13	M_r13 =	3.00	(mg/s)	36.72	(mg/s)		386.07	(mg/s)
			Low Flow		Average Flow			High Flow	
rt mass ntration	concentration in river at PM-12	C_r12 =	0.013	(mg/L)	0.016	(mg/L)		0.016	(mg/L)
Conve flux to conce	concentration in river at PM-13	C_r13 =	0.012	(mg/L)	0.015	(mg/L)		0.016	(mg/L)