Appendix G

Calibration of Mass Balance Models for Partridge River Watershed

	Silver			
	Olivei			
		IO -1	1.50	(-f-)
	surface water flow into SW-001	Q_s1 =	1.52	
	surface water flow into SW-002	Q_s2 =	1.76	(cfs)
	surface water flow into SW-003	$Q_s3 =$	0.51	(cfs)
	surface water flow into SW-004	Q s4 =	2.17	(cfs)
	surface water flow into SW-004A	Q_s4A =	7.85	
	surface water flow into SW-005	Q_s5 =	11.55	
	surface water inflow from upstream of PM-1	Q_sns =	0.00	(cfs)
	surface water flow from West Pit Overflow	Q sms =	0.00	(cfs)
	ground water flow into SW-001	Q_g1 =	0.18	
	ground water flow into SW-002	Q_g2 =	0.38	(cfs)
ğ	ground water flow into SW-003	Q_g3 =	0.11	(cfs)
	ground water flow into SW-004	Q g4 =	0.32	
>	ground water flow into SW-004A	Q_g4A =	1.39	(cfs)
Flow	ground water flow into SW-005	Q_g5 =	2.27	(cfs)
	ground water seepage from East Pit	Q gep =	0.00	
5	ground water seepage from West Pit	Q_gwp =	0.00	
	combined ground water liner leakage from stockpiles	$Q_gl4 =$	0.00	
	combined ground water liner leakage/seepage from other mine features	Q gl4a =	0.00	
		-y. γα =	0.00	(5/5)
	concentration of surface water into SW-001	C_s1 =	0	μg/L
	concentration of surface water into SW-002	C s2 =		μg/L
	concentration of surface water into SW-003	C_s3 =		μg/L
	concentration of surface water into SW-004	C_s4 =		μg/L
	concentration of surface water into SW-004A	C s4A =		μg/L
	concentration of surface water into SW-005	C_s5 =		
				μg/L
ਲ	concentration of surface water inflow from upstream of PM-1	C_sns =	0.12	μg/L
	concentration of surface water flow from West Pit Overflow	C sms =	0	μg/L
	concentration of ground water into SW-001	C q1 =	0.55	
ō				
Ξ	concentration of ground water into SW-002	C_g2 =	0.55	
ū	concentration of ground water into SW-003	C_g3 =	0.55	μg/L
Ħ	concentration of ground water into SW-004	C_g4 =	0.55	
Ō	concentration of ground water into SW-004A			
ပ		C_g4A =	0.55	
5	concentration of ground water into SW-005	C_g5 =	0.55	μg/L
റ്	concentration of ground water seepage from East Pit	C_gep =	0	μg/L
\sim	concentration of ground water seepage from West Pit	C gwp =		μg/L
₽.	concentration of combined ground water liner leakage from stockpiles	C_gl4 =	0	μg/L
	concentration of combined ground water liner leakage/seepage from other mine features	C_gl4a =	0	μg/L
	<u> </u>			
/ater alance	flow in river at SW-002 flow in river at SW-003 flow in river at SW-004 flow in river at SW-004 flow in river at SW-004A flow in river at SW-005 flow check	Q_r2 = Q_r3 = Q_r4 = Q_r4A = Q_r5 =	4.45 6.94 16.18 30.00	(cfs) (cfs) (cfs) (cfs)
> ш	now check	Q_ck =	30.00	(CIS)
	mass flux of surface water into SW-001	M s1 =	0	(μg/s
	mass flux of surface water into SW-002	M s2 =		(μg/s
	mass flux of surface water into SW-003	M_s3 =		(μg/s
	mass flux of surface water into SW-004	$M_s4 =$	0	(μg/s
	mass flux of surface water into SW-004A	M s4A =		(μg/s
	mass flux of surface water into SW-005	$M_s5 =$	0	(μg/s
≘i	mass flux of surface water inflow from upstream of PM-1	M sns =	0	(μg/s
	mass flux of surface water flow from West Pit Overflow			
		M_sms =		(μg/s
SS	mass flux of ground water into SW-001	$M_g1 =$		(μg/s
й	mass flux of ground water into SW-002	$M_g2 =$	6	(μg/s
	mass flux of ground water into SW-003	M g3 =		(μg/s
	mass flux of ground water into SW-004	M_g4 =		(μg/s
Ĕ	mass flux of ground water into SW-004A	M_g4A =		(μg/s
.0	mass flux of ground water into SW-005	$M_g5 =$	35	(μg/s
at	mass flux of seepage from East Pit	M_gep =		(μg/s
==				
	mass flux of seepage from West Pit	M_gwp =		(μg/s
ਯ	mass flux of combined ground water liner leakage from stockpiles	$M_gl4 =$		(μg/s
O	mass flux of combined ground water liner leakage/seepage from other mine features	$M_gl4a =$	0	(μg/s
	mane flux in viver at CW 001	M ~4		/ /
	mass flux in river at SW-001	M_r1 =		(μg/s
	mass flux in river at SW-002	M_r2 =		(μg/s
Ä	mass flux in river at SW-003	M r3 =		(μg/s
()	mass flux in river at SW-004	M r4 =		(μg/s
S				
ıss lanc	mass flux in river at SW-004A	M_r4A =		(μg/s
lass alanc	mass flux in river at SW-005	M_r5 =	72	(μg/s
ass				
Mass Baland		01	0.1	"
	concentration in river at SW-001	C_r1 =	0.1	μg/L
		C_r2 =	0.1	μg/L
	concentration in river at SW-002			
	concentration in river at SW-002			. /
	concentration in river at SW-002 concentration in river at SW-003	C_r3 =	0.1	μg/L
	concentration in river at SW-003	C_r3 =	0.1	
			0.1	μg/L μg/L
	concentration in river at SW-003 concentration in river at SW-004	C_r3 = C_r4 =	0.1 0.1	μg/L
alculation of oncentration	concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004A	C_r3 = C_r4 = C_r4A =	0.1 0.1 0.1	μg/L μg/L
alculation of oncentration	concentration in river at SW-003 concentration in river at SW-004	C_r3 = C_r4 =	0.1 0.1 0.1	μg/L μg/L
alculation of oncentration	concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004A	C_r3 = C_r4 = C_r4A =	0.1 0.1 0.1	μg/L μg/L
Calculation of Concentration	concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004A concentration in river at SW-005	C_r3 = C_r4 = C_r4A =	0.1 0.1 0.1 0.1	μg/L μg/L μg/L
Calculation of Concentration	concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004A	C_r3 = C_r4 = C_r4A =	0.1 0.1 0.1	μg/L μg/L
Calculation of Concentration	concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004A concentration in river at SW-005 Observed concentration in river at SW-002	C_r3 = C_r4 = C_r4A =	0.1 0.1 0.1 0.1 ND (0.2)	μg/L μg/L μg/L μg/L
line Calculation of Concentration	concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004A concentration in river at SW-005	C_r3 = C_r4 = C_r4A =	0.1 0.1 0.1 0.1	μg/L μg/L μg/L
eline Calculation of Concentration	concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004A concentration in river at SW-005 Observed concentration in river at SW-002	C_r3 = C_r4 = C_r4A =	0.1 0.1 0.1 0.1 ND (0.2)	μg/L μg/L μg/L μg/L

vom et - ···	River Model - Calibration to Baseline Water Quality Dat	а		
rameter:	Aluminum			
	surface water flow into SW-001	Q s1 =	4.34	(cfs)
	surface water flow into SW-002	Q s2 =	5.32	
	surface water flow into SW-003	Q_s3 =	1.53	
	surface water flow into SW-004	Q_s4 =	6.32	
	surface water flow into SW-004A	Q_s4A =	23.25	
	surface water flow into SW-005	Q_5471=	34.59	
	surface water inflow from upstream of PM-1	Q_sns =	0.00	
	surface water fillow from West Pit Overflow	Q_sms =	0.00	
	ground water flow into SW-001	Q_g1 =	0.18	
	ground water flow into SW-002	Q_g2 =	0.38	
ata	ground water flow into SW-003	Q_g3 =	0.11	
Dat	ground water flow into SW-004	Q_g4 =	0.32	
_	ground water flow into SW-004A	Q_g4A =	1.39	
<u>0</u>	ground water flow into SW-005	Q_g5 =	2.27	
ᄔ	ground water seepage from East Pit	Q_gep =	0.00	(cfs
but	ground water seepage from West Pit	$Q_gwp =$	0.00	(cfs
₫	combined ground water liner leakage from stockpiles	$Q_gl4 =$	0.00	(cfs
드	combined ground water liner leakage/seepage from other mine features	Q_gl4a =	0.00	(cfs
	concentration of surface water into SW-001	C_s1 =	70	μg/
	concentration of surface water into SW-002	C_s2 =		μg/
	concentration of surface water into SW-003	C s3 =		μg/
	concentration of surface water into SW-003	C s4 =		μg/
	concentration of surface water into SW-004	C_s4 =		μg/
ta	concentration of surface water into SW-005	C_s5 =		μg/
Dat	concentration of surface water inflow from upstream of PM-1	C_sns =	17.3	
	concentration of surface water flow from West Pit Overflow	C_sms =		μg/
L C	concentration of ground water into SW-001	C_g1 =	125	
ij	concentration of ground water into SW-002	C_g2 =	125	
7.	concentration of ground water into SW-003	C_g3 =	125	
Concentration	concentration of ground water into SW-004	C_g4 =	125	
Ö	concentration of ground water into SW-004A	C_g4A =	125	
듬	concentration of ground water into SW-005	C_g5 =	125	μg/
ŏ	concentration of ground water seepage from East Pit	C_gep =	0	μg/
=	concentration of ground water seepage from West Pit	C_gwp =		μg/
nput	concentration of combined ground water liner leakage from stockpiles	C gl4 =	0	μg/
드	concentration of combined ground water liner leakage/seepage from other mine features	C_gl4a =	0	μg/
	flow in river at SW-001	Q_r1 =	4.52	(cfc)
	flow in river at SW-002	Q_r2 =	10.22	
	flow in river at SW-003	Q_r3 =	11.86	
Ø.	flow in river at SW-004	Q_r4 =		
ے د			18.50	
필 및	flow in river at SW-004A	Q_r4A =	43.14	
Water Balance	flow in river at SW-005 flow check	Q_r5 = Q_ck =	80.00 80.00	
		1		
	mass flux of surface water into SW-001	M_s1 =	8598	
	mass flux of surface water into SW-002	M_s2 =	10547	
	mass flux of surface water into SW-003	M_s3 =	3031	
	mass flux of surface water into SW-004	M_s4 =	12520	
	mass flux of surface water into SW-004A	$M_s4A =$	46058	(µg/
	mass flux of surface water into SW-005	$M_s5 =$	68515	(μg/
š	mass flux of surface water inflow from upstream of PM-1	M sns =	0	(µg/
正	mass flux of surface water flow from West Pit Overflow	M sms =		(μg/
	mass flux of ground water into SW-001	M g1 =	637	
38	mass flux of ground water into SW-002	M g2 =	1344	
Mass	mass flux of ground water into SW-003	M g3 =	389	
Ē	mass flux of ground water into SW-004	M_g4 =	1132	
0	mass flux of ground water into SW-004A	M_g4A =	4917	
ō	mass flux of ground water into SW-005	M_g5 =	8030	
Ħ	mass flux of seepage from East Pit	M_gep =		(μg/
	mass flux of seepage from West Pit			(μg/
ij	HIGGS HUN OF SCEPAGE HOTH VVEST FIL	$M_gwp =$		(µg/
lcul	mass flux of combined ground water liner leakage from stockpiles		^	(110
Calculation	mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features	M_gl4 =		
Calcula	mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features			
Calcula	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001	M_gl4 = M_gl4a = M_r1 =	9234	(μg/
	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002	M_gl4 = M_gl4a = M_r1 = M_r2 =	9234 21125	(μg/ (μg/
8	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003	M_gl4 = M_gl4a = M_r1 = M_r2 = M_r3 =	9234 21125 24545	(μg/ (μg/ (μg/
8	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004	M_gl4 = M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 =	9234 21125 24545 38197	(µg/ (µg/ (µg/ (µg/ (µg/
8	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004	M_gl4 = M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 = M_r4A =	9234 21125 24545 38197 89173	(µg/ (µg/ (µg/ (µg/ (µg/
Mass Balance Calcula	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004	M_gl4 = M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 =	9234 21125 24545 38197	(ha) (ha) (ha)
Mass Balance	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005	M_gl4 = M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 = M_r4A = M_r5 =	9234 21125 24545 38197 89173 165718	(µg/ (µg/ (µg/ (µg/ (µg/
Mass Balance	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001	M gl4 = M_gl4a = M_r1 = M r2 = M r3 = M r4 = M r4A = M r4A = M r5 = C_r1 =	9234 21125 24545 38197 89173 165718	(µg/ (µg/ (µg/ (µg/ (µg/ (µg/
Mass Balance	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002	M gl4 = M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 = M_r5 =	9234 21125 24545 38197 89173 165718 72.2 73.0	(µg/ (µg/ (µg/ (µg/ (µg/ (µg/
Mass Balance	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001	M gl4 = M_gl4a = M_r1 = M r2 = M r3 = M r4 = M r4A = M r4A = M r5 = C_r1 =	9234 21125 24545 38197 89173 165718	(µg/ (µg/ (µg/ (µg/ (µg/ (µg/
Mass Balance	mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-003	M gl4 = M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 = M_r5 = M_r5 = C_r1 = C_r3 = M_r3 = M_r5 =	9234 21125 24545 38197 89173 165718 72.2 73.0	ha) ha) ha) (ha) (ha) (ha)
Mass Balance	mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004	M gl4 = M gl4a = M gl4 = G	9234 21125 24545 38197 89173 165718 72.2 73.0 73.1 72.9	Ha) Ha) Ha) (Ha) (Ha) (Ha)
Mass Balance	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-003 concentration in river at SW-004	M gl4 = M_gl4a = M_gl4a = M_gl4a = M_r1 = M_r2 = M_r3 = M_r4A = M_r5 = C_r1 = C_r2 = C_r3 = C_r4 = C_r4A =	9234 21125 24545 38197 89173 165718 72.2 73.0 73.1 72.9	(Ha) (Ha) (Ha) (Ha) (Ha) (Ha) (Ha) (Ha)
8	mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004	M gl4 = M gl4a = M gl4 = G	9234 21125 24545 38197 89173 165718 72.2 73.0 73.1 72.9	Ha, Ha, Ha, Ha, Ha, Ha, Ha, Ha, Ha, Ha,
Calculation of Mass Concentration	mass flux in river at SW-001 mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-004 concentration in river at SW-005	M gl4 = M_gl4a = M_gl4a = M_gl4a = M_r1 = M_r2 = M_r3 = M_r4A = M_r5 = C_r1 = C_r2 = C_r3 = C_r4 = C_r4A =	9234 21125 24545 38197 89173 165718 72.2 73.0 73.1 72.9 73.0 73.2	на/ на/ на/ на/ на/ на/ на/ на/ на/ на/
line Calculation of Mass Concentration Balance	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-003 concentration in river at SW-004	M gl4 = M_gl4a = M_gl4a = M_gl4a = M_r1 = M_r2 = M_r3 = M_r4A = M_r5 = C_r1 = C_r2 = C_r3 = C_r4 = C_r4A =	9234 21125 24545 38197 89173 165718 72.2 73.0 73.1 72.9	(Ha) (Ha) (Ha) (Ha) (Ha) (Ha) (Ha) (Ha)
line Calculation of Mass Concentration Balance	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-005 Observed concentration in river at SW-002 Observed concentration in river at SW-002 Observed concentration in river at SW-003	M gl4 = M_gl4a = M_gl4a = M_gl4a = M_r1 = M_r2 = M_r3 = M_r4A = M_r5 = C_r1 = C_r2 = C_r3 = C_r4 = C_r4A =	9234 21125 24545 38197 89173 165718 72.2 73.0 73.1 72.9 73.0 73.2	(Ha) (Ha) (Ha) (Ha) (Ha) (Ha) (Ha) (Ha)
Mass Balance	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-005 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-005 Observed concentration in river at SW-005	M gl4 = M_gl4a = M_gl4a = M_gl4a = M_r1 = M_r2 = M_r3 = M_r4A = M_r5 = C_r1 = C_r2 = C_r3 = C_r4 = C_r4A =	9234 21125 24545 38197 89173 165718 72.2 73.0 73.1 72.9 73.0 73.2	(Hg/ (Hg/ (Hg/ (Hg/ (Hg/ (Hg/ (Hg/ (Hg/

neter:	Arsenic			
	surface water flow into SW-001	Q s1 =	2.81	(cfs
	surface water flow into SW-002	Q s2 =	3.40	
	surface water flow into SW-003	Q s3 =	0.98	
	surface water flow into SW-004	Q s4 =	4.08	
	surface water flow into SW-004A	Q s4A =	14.93	
	surface water flow into SW-005	Q s5 =	22.15	
	surface water inflow from upstream of PM-1	Q sns =	1.00	
	surface water flow from West Pit Overflow	Q_sms =	0.00	
	ground water flow into SW-001	Q_g1 =	0.18	
	ground water flow into SW-002	Q_g2 =	0.38	
ď	ground water flow into SW-003	Q_g3 =	0.11	
Dat	ground water flow into SW-004	Q_g6 =	0.32	
	ground water flow into SW-004A	Q_g4A =	1.39	
Flow	ground water flow into SW-005	Q_g5 =	2.27	
은	ground water new into 500-003 ground water seepage from East Pit	Q_gep =	0.00	
	ground water seepage from West Pit	Q_gwp =	0.00	
but	combined ground water liner leakage from stockpiles	Q_gl4 =	0.00	
Ξ	combined ground water liner leakage/seepage from other mine features	Q_gl4a =	0.00	
	combined ground water liner reakage/seepage from other milite reatures	Q_gi+a =	0.00	(CIS
	concentration of surface water into SW-001	C_s1 =	0	μg/l
	concentration of surface water into SW-001	C_s2 =		μg/l
	concentration of surface water into SW-002	C_s2 =		μg/l
	concentration of surface water into SW-003	C_s3 =		μg/I μg/I
	concentration of surface water into SW-004 concentration of surface water into SW-004A	C_s4 = C_s4A =		μg/I μg/I
	concentration of surface water into SW-004A concentration of surface water into SW-005	C_s4A = C_s5 =		μg/l
ta	concentration of surface water into SW-005 concentration of surface water inflow from upstream of PM-1			
)ai		C_sns =		μg/l
	concentration of surface water flow from West Pit Overflow	C_sms =		μg/l
Ö	concentration of ground water into SW-001	C_g1 =	2.16	
ij	concentration of ground water into SW-002	C_g2 =	2.16	
tre	concentration of ground water into SW-003	C_g3 =	2.16	
e L	concentration of ground water into SW-004	C_g4 =	2.16	
Concentration Dat	concentration of ground water into SW-004A	C_g4A =	2.16	
٥	concentration of ground water into SW-005	C_g5 =	2.16	
Ö	concentration of ground water seepage from East Pit	C_gep =		μg/l
Ħ	concentration of ground water seepage from West Pit	C_gwp =		μg/l
nput	concentration of combined ground water liner leakage from stockpiles	C_gl4 =		μg/l
	concentration of combined ground water liner leakage/seepage from other mine features	C_gl4a =	0	μg/l
	[] OW 004	lo 4	0.00	/ · r ·
	flow in river at SW-001 flow in river at SW-002	Q_r1 = Q_r2 =	3.99 7.77	
	flow in river at SW-003	Q_r3 =	8.86	
ø	flow in river at SW-003	Q_r4 =		
ے د			13.26	
ᆵ	flow in river at SW-004A	Q_r4A =	29.58	
Water Balance	flow in river at SW-005 flow check	Q_r5 = Q_ck =	54.00 54.00	
	TOW CHOCK	Q_on =	04.00	(010
	mass flux of surface water into SW-001	M s1 =	0	(μg/
	mass flux of surface water into SW-002	M s2 =		(μg/
	mass flux of surface water into SW-003	M s3 =		(μg
	mass flux of surface water into SW-004	M s4 =		(μg/
	mass flux of surface water into SW-004A	M s4A =		(μg/
	mass flux of surface water into SW-005	M s5 =		(μg/
×	mass flux of surface water inflow from upstream of PM-1	M sns =		(μg/
문	mass flux of surface water flow from West Pit Overflow	M_sms =		(μg/
	mass flux of ground water into SW-001	M_g1 =		(μg/
Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002	M_g2 =		(μg/
<u>_a</u>	mass flux of ground water into SW-002 mass flux of ground water into SW-003			
2		M_g3 =		(μg/
of	mass flux of ground water into SW-004	M_g4 =		(μg/
H	mass flux of ground water into SW-004A	M_g4A =		(μg/
ij	mass flux of ground water into SW-005	M_g5 =		(μg/
<u></u>	mass flux of seepage from East Pit	M_gep =		(μg/
ಕ	mass flux of seepage from West Pit	M_gwp =		(μg/
Calculation	mass flux of combined ground water liner leakage from stockpiles	M_gl4 =		(μg/
U	mass flux of combined ground water liner leakage/seepage from other mine features	M_gl4a =	0	(µg
	mace flux in river at SW 001	IM r1	105	/
	mass flux in river at SW-001 mass flux in river at SW-002	M_r1 =	195	
Φ	mass flux in river at SW-002 mass flux in river at SW-003	M_r2 =	218	
O		M_r3 =	225	
w E	mass flux in river at SW-004	M_r4 =		(μg/
ISS	mass flux in river at SW-004A	M_r4A =		(μg/
dass 3alan	mass flux in river at SW-005	M_r5 =	468	(μg/
Mass Balance				
Mass Balan				μg/l
	concentration in river at SW-001	C_r1 =	1.7	
		C_r1 = C_r2 =	1.7	μg/I
	concentration in river at SW-001 concentration in river at SW-002	C_r2 =	1.0	
	concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003	C_r2 = C_r3 =	1.0	μg/l
	concentration in river at SW-001 concentration in river at SW-002	C_r2 =	1.0 0.9 0.7	μg/l μg/l
	concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003	C_r2 = C_r3 =	1.0 0.9 0.7	μg/l μg/l
Calculation of Mass Concentration	concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004	C_r2 = C_r3 = C_r4 =	1.0 0.9 0.7 0.4	μg/l μg/l μg/l
	concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004A	C_r2 = C_r3 = C_r4 = C_r4A =	1.0 0.9 0.7 0.4	μg/l μg/l μg/l
Calculation of Concentration	concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004A concentration in river at SW-005	C_r2 = C_r3 = C_r4 = C_r4A =	1.0 0.9 0.7 0.4 0.3	µg/l µg/l µg/l µg/l
Calculation of Concentration	concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004A concentration in river at SW-005 Observed concentration in river at SW-002	C_r2 = C_r3 = C_r4 = C_r4A =	1.0 0.9 0.7 0.4 0.3	μg/l μg/l μg/l μg/l
line Calculation of Concentration	concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004A concentration in river at SW-005 Observed concentration in river at SW-002 Observed concentration in river at SW-003	C_r2 = C_r3 = C_r4 = C_r4A =	1.0 0.9 0.7 0.4 0.3 ND (2) ND (2)	µg/l µg/l µg/l µg/l µg/l
	concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004A concentration in river at SW-005 Observed concentration in river at SW-002	C_r2 = C_r3 = C_r4 = C_r4A =	1.0 0.9 0.7 0.4 0.3	µg/l µg/l µg/l µg/l

	Boron			
		To :		
	surface water flow into SW-001	Q_s1 =		(cfs
	surface water flow into SW-002	Q_s2 =		(cfs
	surface water flow into SW-003	Q_s3 =	1.66 (
	surface water flow into SW-004	Q_s4 =	6.86 (
	surface water flow into SW-004A	Q_s4A =	25.25 (
	surface water flow into SW-005	Q_s5 =	37.58 (
	surface water inflow from Woot Bit Overflow	Q_sns =	1.50 (
	surface water flow from West Pit Overflow	Q_sms =	0.00 (
	ground water flow into SW-001	Q_g1 =	0.18 (
œ	ground water flow into SW-002	Q_g2 =	0.38 (
Data	ground water flow into SW-003	Q_g3 =	0.11 (
۵	ground water flow into SW-004	Q_g4 =	0.32 (
>	ground water flow into SW-004A	Q_g4A =		(cfs
Flow	ground water flow into SW-005	Q_g5 =	2.27 (
ш	ground water seepage from East Pit	Q_gep =	0.00 (
Ę	ground water seepage from West Pit	Q_gwp =	0.00 (
Input	combined ground water liner leakage from stockpiles	Q_gl4 =	0.00 (
=	combined ground water liner leakage/seepage from other mine features	Q_gl4a =	0.00 ((Cfs
	concentration of surface water into SW-001	C s1 =	45 μ	ua/
	concentration of surface water into SW-001	C_s1 =	45	
	concentration of surface water into SW-002	C_s2 =	45	
	concentration of surface water into SW-003	C_s3 =	45	
	concentration of surface water into SW-0044	C_s4 =	45	
	concentration of surface water into SW-004A	C_s4A = C_s5 =		μg/ μg/
ta	concentration of surface water into SW-005 concentration of surface water inflow from upstream of PM-1	C_ss = C_sns =	96	
Concentration Dat	concentration of surface water inflow from upstream of PM-1	C_sns =		μg/I μg/I
o	concentration of ground water into SW-001	C_g1 =	87 J	
Œ.	concentration of ground water into SW-002	C_g2 =	87 L	
=======================================	concentration of ground water into SW-003	C_g3 =	87 L	
- D	concentration of ground water into SW-004	C_g4 =	87 L	
ဋ	concentration of ground water into SW-004A	C_g4A =	87 µ	
ō	concentration of ground water into SW-005	C_g5 =	87 J	
O	concentration of ground water seepage from East Pit	C_gep =		μg/l
Ħ	concentration of ground water seepage from West Pit	C_gwp =		μg/l
Input	concentration of combined ground water liner leakage from stockpiles	C_gl4 =		μg/l
=	concentration of combined ground water liner leakage/seepage from other mine features	C_gl4a =	1 0	μg/l
	flow in river at SW-001	Q_r1 =	6.39 ((cfs
	flow in river at SW-002	Q_r2 =	12.55 (
	flow in river at SW-003	Q_r3 =	14.33 (
. 8	flow in river at SW-004	Q r4 =	21.51 (
e e	flow in river at SW-004A	Q_r4A =	48.15 (
Water Balance	flow in river at SW-005	Q_r5 =	88.00 (
<u>≥ 8</u>	flow check	Q_ck =		(cfs
		T		,
	mass flux of surface water into SW-001	M_s1 =	5995 (
	mass flux of surface water into SW-002	M_s2 =		(μg
	mass flux of surface water into SW-003		7370 (
		M_s3 =	2118 ((μg
	mass flux of surface water into SW-004	M_s4 =	2118 (8736 ((μg. (μg.
	mass flux of surface water into SW-004A	M_s4 = M_s4A =	2118 (8736 (32158 ((μg. (μg. (μg.
Ų.		M_s4 = M_s4A = M_s5 =	2118 (8736 (32158 (47859 ((μg. (μg. (μg. (μg.
š	mass flux of surface water into SW-004A	M_s4 = M_s4A =	2118 (8736 (32158 ((μg. (μg. (μg. (μg.
Flux	mass flux of surface water into SW-004A mass flux of surface water into SW-005	M_s4 = M_s4A = M_s5 =	2118 (8736 (32158 (47859 ((µд. (µд. (µд. (µд. (µд.
s Flux	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1	M_s4 = M_s4A = M_s5 = M_sns =	2118 (8736 (32158 (47859 (4075 ((µд (µд (µд (µд (µд (µд
ass Flux	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001	M_s4 = M_s4A = M_s5 = M_sns = M_sms = M_g1 =	2118 (8736 (32158 (47859 (4075 (0 (4443 ((µд (µд (µд (µд (µд (µд
Mass Flux	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow	M_s4 = M_s4A = M_s5 = M_sns = M_sms =	2118 (8736 (32158 (47859 (4075 (0 (443 (936 ((µд (µд (µд (µд (µд (µд
Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003	M_s4 = M_s4A = M_s5 = M_sns = M_sms = M_g1 = M_g2 =	2118 (8736 (32158 (47859 (4075 (0 (443 (936 (271 ((µд (µд (µд (µд (µд (µд (µд
of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-003 mass flux of ground water into SW-004	M s4 = M s4A = M s5 = M sns = M sms = M g1 = M g2 = M g3 = M g4 =	2118 (8736 (32158 (47859 (4075 (0 (443 (936 (271 (788 ((µд (µд (µд (µд (µд (µд (µд
of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004	M_s4 = M_s4A = M_s5 = M_sns = M_g1 = M_g2 = M_g3 = M_g4 = M_g4A =	2118 (8736 (32158 (47859 (4075 (0 (443 (936 (271 (788 (3422 ((ha (ha (ha (ha (ha (ha (ha (ha
of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005	M s4 = M s4A = M s5 = M sns = M sms = M g1 = M g2 = M g3 = M g4 = M g4 = M g5 =	2118 8736 32158 47859 4075 0 443 936 271 788 3422 5589	(ha (ha (ha (ha (ha (ha (ha (ha
of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit	M s4 = M s4A = M s5 = M sns = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g4 = M g4 = M g5 = M g4 = M g4 = M g5 = M g4 = M g5 = M g4 =	2118 8736 32158 47859 4075 0 0 443 336 271 788 3422 5589	(ha (ha (ha (ha (ha (ha (ha (ha (ha
of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of sepange from East Pit mass flux of sepange from East Pit mass flux of sepange from West Pit	M s4 = M s4A = M s4A = M s5 = M sms = M g1 = M g2 = M g3 = M g4 = M g4A = M g4A = M g9 = M g9 = M g9 = M g9 =	2118 8736 (32158 (47859 (4075 (0 (443 (936 (271 (788 (3422 (5589 (0	(ha (ha (ha (ha (ha (ha (ha
Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit	M s4 = M s4A = M s5 = M sns = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g4 = M g4 = M g5 = M g4 = M g4 = M g5 = M g4 = M g5 = M g4 =	2118 8736(32158) 47859(4075) 0 0 443(936) 271 (788) 3422(5589) 0 0	(ha (ha (ha (ha (ha (ha (ha (ha (ha (ha
of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of sepage from East Pit mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles	M s4 = M s4A = M s5 = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g4 = M g5 = M g9 = M g4 = M g4 = M g4 = M g6 = M g9 =	2118 8736(32158) 47859(4075) 0 443(936) 2711 788(3422) 5589(0 0 0 0	(ha (ha (ha (ha (ha (ha (ha
of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of sepage from East Pit mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux of rombined ground water liner leakage/seepage from other mine features	M s4 = M s4A = M s4A = M s5 = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g4A = M g5 = M g9 = M g4A =	2118 8736(32158) 47859(4075) 0 443(936) 271(788) 3422(5589) 0 0 0 0	(ha (ha (ha (ha (ha (ha (ha (ha (ha (ha
Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features	M s4 = M s4A = M s4A = M s5 = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g4A = M g5 = M g9	2118 8736(32158) 47859(4075) 0 443(936) 2711 788(3422) 5589(0 0 0 0	(ha (ha (ha (ha (ha (ha (ha (ha (ha (ha
Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of sepage from East Pit mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux of rombined ground water liner leakage/seepage from other mine features	M s4 = M s4A = M s4A = M s5 = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g4A = M g5 = M g9 = M g4A =	2118 8736(32158) 47859(4075) 0 443(936) 271, 788(3422) 5589(0) 0 0 10 10513(18819) 21208((Ha (Ha (Ha (Ha (Ha (Ha (Ha (Ha (Ha (Ha
Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux of combined ground water liner leakage/seepage from other mine features	M s4 = M s4A = M s5A = M sns = M sns = M g1 = M g2 = M g3 = M g4 =	2118 8736(32158) 47859 4075(0 443) 936(271) 788(3422(5589) 0 0 0 0 1 10513(18819)	(ha (ha (ha (ha (ha (ha (ha (ha (ha
Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-002 mass flux in river at SW-003	M s4 = M s4A = M s5 = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g4A = M g5 = M g9p = M g9p = M g94a = M g1 =	2118 8736(32158) 47859(4075) 0 443(936) 271, 788(3422) 5589(0) 0 0 10 10513(18819) 21208((ha (ha (ha (ha (ha (ha (ha (ha (ha (ha
of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of sepage from East Pit mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003	M s4 = M s4A = M s4A = M s5 = M sns = M sns = M sns = M g1 = M g2 = M g3 = M g4A = M g5 = M g4A = M g4	2118 8736(32158) 47859(4075) 0 443(936) 2711(788) 3422(5589) 0 0 0 0 0 10513(18819) 21208(30731)	(Ha (Ha (Ha (Ha (Ha (Ha (Ha (Ha (Ha (Ha
Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004	M s4 = M s4A = M s5 = M sns = M sns = M g1 = M g2 = M g3 = M g4 =	2118 8736(32158) 47859(4075(0) 443(936(271) 788(3422(5589(0) 0 (0) 10513(18819) 21208(30731(66312(119760)	(ha (ha (ha (ha (ha (ha (ha (ha (ha (ha
Mass Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004	M s4 = M s4A = M s5 = M sns = M sns = M g1 = M g2 = M g3 = M g4 =	2118 8736 32158 47859 4075 0 0 443 936 (271 788 3422 5589 0 0 0 0 10513 18819 21208 30731 66312	(ha (ha (ha (ha (ha (ha (ha (ha (ha (ha
Mass Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005	M s4 = M s4A = M s5 = M sns = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g7 = M g4 = M g7 = M g4 = M g7 =	2118 8736(32158) 47859(4075(0) 443(936(271) 788(3422(5589(0) 0 (0) 10513(18819) 21208(30731(66312(119760)	ha\ (ha (ha (ha (ha (ha (ha (ha (ha (ha (ha
Mass Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002	M s4 = M s4A = M s4A = M s5 = M sns = M sns = M g1 = M g2 = M g3 = M g4A = M g5 = M g4A =	2118 8736(32158) 47859(4075(0 0 443(936(271) 788(3422) 5589(0 0 0 0 10513(18819(21208(30731(66312(119760)	Halpha H
Mass Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from west Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of sepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-003	M s4 = M s4A = M s4A = M s5 = M sns =	2118 8736(32158) 47859(4075(0 443(936(271) 788(3422) 5589(0 0 0 0 10513(18819) 21208(30731(66312(119760(58.2) 53.0, 52.3,	(Ha (Ha (Ha (Ha (Ha (Ha (Ha (Ha (Ha (Ha
Mass Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002	M s4 = M s4A = M s4A = M s5 = M sns = M sns = M g1 = M g2 = M g3 = M g4A = M g5 = M g4A =	2118 8736(32158) 47859(4075(0 0 443(936(271) 788(3422) 5589(0 0 0 0 10513(18819(21208(30731(66312(119760)	(Ha (Ha (Ha (Ha (Ha (Ha (Ha (Ha (Ha (Ha
Mass Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from west Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of sepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-003	M s4 = M s4A = M s4A = M s5 = M sns =	2118 8736(32158) 47859(4075(0 443(936(271) 788(3422) 5589(0 0 0 0 10513(18819) 21208(30731(66312(119760(58.2) 53.0, 52.3,	(Ha (Ha (Ha (Ha (Ha (Ha (Ha (Ha (Ha (Ha
Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface experients SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of sepage from East Pit mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005 mass flux in river at SW-005 mass flux in river at SW-005 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-003	M s4 = M s4A = M s4A = M s5 = M sns = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g4A = M g7 = M g4A = M r2 = M r3 = M r4 = M r5 = C r1 = C r2 = C r3 = C r4 =	2118 8736(32158) 47859(4075(0 443(936) 2711(788) 3422(5589(0 0 0 0 10513(18819(21208(30731(66312(119760(58.2) 53.0) 53.0, 53.	(Ha (Ha (Ha (Ha (Ha (Ha (Ha (Ha (Ha (Ha
Mass Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of sepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 concentration in river at SW-003 concentration in river at SW-003 concentration in river at SW-004	M s4 = M s4A = M s4A = M s5 = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g14 = M g14 = M r1 = M r2 = M r3 = M r4 = M r5 = C r1 = C r4 = C r4 =	2118 8736 32158 47859 4075 0 0 443 936 0 0 0 0 0 0 0 0 10513 18819 21208 30731 66312 119760 58.2 53.0 52.3 50.5 48.7	(Ha (Ha (Ha (Ha (Ha (Ha (Ha (Ha (Ha (Ha
Calculation of Mass Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-003 concentration in river at SW-004	M s4 = M s4A = M s4A = M s5 = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g14 = M g14 = M r1 = M r2 = M r3 = M r4 = M r5 = C r1 = C r4 = C r4 =	2118 8736 32158 47859 4075 0 0 443 936 0 0 0 0 0 0 10513 18819 21208 30731 66312 119760 58.2 53.0 52.3 50.5 48.7 48.1	(Ha (Ha (Ha (Ha (Ha (Ha (Ha (Ha (Ha (Ha
Calculation of Mass Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-004 CONCENTRATION IN RIVER AND CONCENTRATION IN RIVE	M s4 = M s4A = M s4A = M s5 = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g14 = M g14 = M r1 = M r2 = M r3 = M r4 = M r5 = C r1 = C r4 = C r4 =	2118 8736(32158) 47859(4075(010) 443(936(0271) 788(3422(5589) 0 (0 (0 (0 (10513) 18819(21208(30731) 66312(119760(58.2) 53.0) 52.3 48.7 48.1	ha/ ha/ ha/ ha/ ha/ ha/ ha/ ha/ ha/ ha/
Mass Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-003 concentration in river at SW-004	M s4 = M s4A = M s4A = M s5 = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g14 = M g14 = M r1 = M r2 = M r3 = M r4 = M r5 = C r1 = C r4 = C r4 =	2118 8736 32158 47859 4075 0 443 936 0 0 0 0 0 0 10513 18819 21208 6312 61312 53.0 58.2 53.0 48.7 48.1	(Ha) (Ha) (Ha) (Ha) (Ha) (Ha) (Ha) (Ha)

rameter:	River Model - Calibration to Baseline Water Quality Date	a		
	Barium			
	surface water flow into SW-001	Q s1 =	0.39	(cfs)
	surface water flow into SW-002	Q_s2 =	0.33	
	surface water flow into SW-003	Q_s3 =	0.09	(cfs)
	surface water flow into SW-004	Q_s4 =	0.51	(cfs
	surface water flow into SW-004A	Q_s4A =	1.69	
	surface water flow into SW-005	Q_s5 =	2.34	
	surface water inflow from upstream of PM-1	Q_sns =	0.00	
	surface water flow from West Pit Overflow	Q_sms =	0.00	
	ground water flow into SW-001 ground water flow into SW-002	Q_g1 = Q_g2 =	0.18 0.38	
ď	ground water flow into SW-002 ground water flow into SW-003	Q_g2 = Q_g3 =	0.36	
Data	ground water flow into SW-003	Q_g3 = Q_g4 =	0.11	
	ground water flow into SW-004A	Q_g4A =	1.39	
Flow	ground water flow into SW-004A	Q_g4A =	2.27	
유	ground water seepage from East Pit	Q_gep =	0.00	
<u> </u>	ground water seepage from West Pit	Q gwp =	0.00	
Input	combined ground water liner leakage from stockpiles	Q gl4 =	0.00	
드	combined ground water liner leakage/seepage from other mine features	Q_gl4a =	0.00	
	concentration of auritors water into CW 001	IC at	l 01	/1
	concentration of surface water into SW-001 concentration of surface water into SW-002	C_s1 = C s2 =		μg/l μg/l
	concentration of surface water into SW-002	C_s3 =		μg/L
	concentration of surface water into SW-004	C_s4 =		μg/L
	concentration of surface water into SW-004A	C_s4A =		μg/L
~	concentration of surface water into SW-005	C_s5 =		μg/L
ata	concentration of surface water inflow from upstream of PM-1	C_sns =		μg/l
Concentration Dat	concentration of surface water flow from West Pit Overflow	C_sms =		μg/l
Ę	concentration of ground water into SW-001	C_g1 =	21.92	μg/l
읉	concentration of ground water into SW-002	C_g2 =	21.92	μg/l
<u>r</u>	concentration of ground water into SW-003	C_g3 =	21.92	μg/l
ij	concentration of ground water into SW-004	C_g4 =	21.92	
90	concentration of ground water into SW-004A	C_g4A =	21.92	
o	concentration of ground water into SW-005	C_g5 =	21.92	
Ŏ	concentration of ground water seepage from East Pit	C_gep =		μg/l
Input	concentration of ground water seepage from West Pit	C_gwp =		μg/l
5	concentration of combined ground water liner leakage from stockpiles	C_gl4 =		μg/L
	concentration of combined ground water liner leakage/seepage from other mine features	C_gl4a =	0	μg/l
	flow in river at SW-001	Q_r1 =	0.57	(cfs
	flow in river at SW-002	Q_r2 =	1.28	(cfs
	flow in river at SW-003	Q_r3 =	1.48	
_ S	flow in river at SW-004	Q_r4 =	2.31	
an te	flow in river at SW-004A	Q_r4A =	5.39	
Water Balance	flow in river at SW-005	Q_r5 =	10.00	
> ш	flow check	Q_ck =	10.00	(cts
	mass flux of surface water into SW-001	M s1 =	0	(μg/
	mass flux of surface water into SW-002	M s2 =		(μg/
	mass flux of surface water into SW-003	M s3 =		(μg/
	mass flux of surface water into SW-004	M s4 =		(μg/
	mass flux of surface water into SW-004A	M s4A =		(μg/
	mass flux of surface water into SW-005	M s5 =		(μg/
š	mass flux of surface water inflow from upstream of PM-1	M sns =	0	(μg/
Flux	mass flux of surface water flow from West Pit Overflow	M_sms =	0	(μg/
	mass flux of ground water into SW-001	M_g1 =	112	(μg/
Mass	mass flux of ground water into SW-002	M_g2 =	236	
	mass flux of ground water into SW-003	M_g3 =		(μg/
of	mass flux of ground water into SW-004	M_g4 =	199	
Ę	mass flux of ground water into SW-004A	M_g4A =		(μg/
Ę	mass flux of ground water into SW-005	M_g5 =	1408	
	mass flux of seepage from East Pit	M_gep =		(μg/
필	mass flux of seepage from West Pit	$M_gwp =$	0	(μg/
lcula	and a firm of a substant annual material and the first term of the substant and the substan	NA -14	,	
Salcula	mass flux of combined ground water liner leakage from stockpiles	M_gl4 = M_gl4a =	0	
Calculation	mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features	M_gl4 = M_gl4a =		
Calcula	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001	M_gl4a = M_r1 =	112	(μg/
	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002	M_gl4a = M_r1 = M_r2 =	112 347	(μg/ (μg/
0	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003	M_gl4a = M_r1 = M_r2 = M_r3 =	112 347 416	(μg/ (μg/ (μg/
Θ.	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004	M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 =	112 347 416 614	(µg/ (µg/ (µg/ (µg/
Θ.	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-004	M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 = M_r4A =	112 347 416 614 1476	(µg/ (µg/ (µg/ (µg/ (µg/
Mass Balance Calcula	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004	M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 =	112 347 416 614	(µg/ (µg/ (µg/ (µg/ (µg/
Mass Balance	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005	M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 = M_r4A = M_r5 =	112 347 416 614 1476 2885	(µg/ (µg/ (µg/ (µg/ (µg/ (µg/
Mass Balance	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001	M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 = M_r4A = M_r5 =	112 347 416 614 1476 2885	(µg/ (µg/ (µg/ (µg/ (µg/ (µg/
Mass Balance	mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-001 concentration in river at SW-002	M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 = M_r4A = M_r5 = C_r1 = C_r2 =	112 347 416 614 1476 2885 7.0 9.6	(µg/ (µg/ (µg/ (µg/ (µg/ (µg/ (µg/ µg/L
Mass Balance	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001	M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 = M_r4A = M_r5 =	112 347 416 614 1476 2885 7.0 9.6	(µg/ (µg/ (µg/ (µg/ (µg/ (µg/ µg/l
Mass Balance	mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-003	M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 = M_r5 = C_r1 = C_r2 = C_r3 =	112 347 416 614 1476 2885 7.0 9.6 9.9	(µg/ (µg/ (µg/ (µg/ (µg/ (µg/ (µg/ (µg/l
Mass Balance	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-003 concentration in river at SW-004	M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 = M_r4A = M_r5 = C_r1 = C_r2 = C_r3 = C_r4 =	112 347 416 614 1476 2885 7.0 9.6 9.9	(µg/ (µg/ (µg/ (µg/ (µg/ (µg/l µg/l µg/l
0	mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-004	M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 = M_r4A = M_r5 = C_r1 = C_r2 = C_r3 = C_r4 = C_r4A =	112 347 416 614 1476 2885 7.0 9.6 9.9 9.4 9.7	(µg, (µg, (µg, (µg, (µg, (µg, (µg, (µg,
Mass Balance	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-003 concentration in river at SW-004	M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 = M_r4A = M_r5 = C_r1 = C_r2 = C_r3 = C_r4 =	112 347 416 614 1476 2885 7.0 9.6 9.9	(µg/ (µg/ (µg/ (µg/ (µg/ (µg/ (µg/l µg/l µg/l µg/l
Calculation of Mass Concentration Balance	mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-005	M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 = M_r4A = M_r5 = C_r1 = C_r2 = C_r3 = C_r4 = C_r4A =	112 347 416 62885 7.0 9.6 9.9 9.4 9.7	(µg/ (µg/ (µg/ (µg/ (µg/ (µg/l µg/l µg/l µg/l µg/l
Calculation of Mass Concentration Balance	mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-005	M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 = M_r4A = M_r5 = C_r1 = C_r2 = C_r3 = C_r4 = C_r4A =	112 347 416 62885 7.0 9.6 9.9 9.4 9.7	(µg/ (µg/ (µg/ (µg/ (µg/l µg/l µg/l µg/l µg/l
line Calculation of Mass Concentration Balance	mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-004 concentration in river at SW-005 Observed concentration in river at SW-002 Observed concentration in river at SW-003	M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 = M_r4A = M_r5 = C_r1 = C_r2 = C_r3 = C_r4 = C_r4A =	112 347 416 614 1476 2885 7.0 9.6 9.9 9.4 9.7 10.2	(µg/ (µg/ (µg/ (µg/ (µg/ (µg/ (µg/l µg/l µg/l µg/l µg/l
Mass Balance	mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-005	M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 = M_r4A = M_r5 = C_r1 = C_r2 = C_r3 = C_r4 = C_r4A =	112 347 416 614 1476 2885 7.0 9.6 9.9 9.4 9.7 10.2	(µg/ (µg/ (µg/ (µg/ (µg/ (µg/ (µg/ µg/L µg/L

meter:	River Model - Calibration to Baseline Water Quality Dat Berylium	<u>u</u>		
	•	10 at		/ef ·
	surface water flow into SW-001 surface water flow into SW-002	Q_s1 = Q_s2 =	0.39	
	surface water flow into SW-002 surface water flow into SW-003	Q_s2 = Q_s3 =	0.33	
	surface water flow into SW-003 surface water flow into SW-004	Q_s3 = Q_s4 =	0.09	
	surface water flow into SW-004 surface water flow into SW-004A	Q_S4 = Q_S4A =	1.69	
	surface water flow into SW-004A surface water flow into SW-005	Q_s4A = Q_s5 =	2.34	
	surface water inflow from upstream of PM-1	Q_ss = Q_sns =	0.00	
	surface water flow from West Pit Overflow	Q_sns = Q_sms =	0.00	
	ground water flow into SW-001	Q_sms = Q_g1 =	0.00	
	ground water flow into SW-001 ground water flow into SW-002	Q_g1 = Q_g2 =	0.18	
æ	ground water flow into SW-002 ground water flow into SW-003	Q_g2 = Q_g3 =	0.38	
Data	ground water flow into SW-003 ground water flow into SW-004	Q_g3 = Q_g4 =	0.11	
Ö	ground water flow into SW-004 ground water flow into SW-004A	Q_g4 = Q_g4A =	1.39	
Flow	ground water flow into SW-004A ground water flow into SW-005	Q_g4A = Q_g5 =		
0		Q_g5 = Q_gep =	0.00	(cfs)
Ш	ground water seepage from East Pit ground water seepage from West Pit			
Ę		Q_gwp =	0.00	
Input	combined ground water liner leakage from stockpiles	Q_gl4 = Q_gl4a =	0.00	
	combined ground water liner leakage/seepage from other mine features	∠_yı4a =	0.00	(CIS)
	concentration of surface water into SW-001	C_s1 =	0	μg/L
	concentration of surface water into SW-002	C_s2 =		μg/L
	concentration of surface water into SW-003	C_s3 =		μg/L
	concentration of surface water into SW-004	C_s4 =		μg/L
	concentration of surface water into SW-004A	C s4A =		μg/L
_	concentration of surface water into SW-005	C s5 =		μg/L
ata	concentration of surface water inflow from upstream of PM-1	C sns =		μg/L
Ja	concentration of surface water flow from West Pit Overflow	C_sns =		μg/L μg/L
Concentration Dat	concentration of surface water now from West Fit Overnow	C_silis = C_g1 =	0.145	
ō	concentration of ground water into SW-001 concentration of ground water into SW-002	C_gr = C g2 =	0.145	
ati	concentration of ground water into SW-002 concentration of ground water into SW-003		0.145	
₽	concentration of ground water into SW-003 concentration of ground water into SW-004	C_g3 =		
en		C_g4 =	0.145 0.145	
Š	concentration of ground water into SW-004A	C_g4A =		
ō	concentration of ground water into SW-005	C_g5 =	0.145	
Ö	concentration of ground water seepage from East Pit	C_gep =		μg/L
bnt	concentration of ground water seepage from West Pit	C_gwp =		μg/L
9	concentration of combined ground water liner leakage from stockpiles	C_gl4 =		μg/L
=	concentration of combined ground water liner leakage/seepage from other mine features	C_gl4a =	0	μg/L
	flow in river at SW-001	Q_r1 =	0.57	(cfs)
	flow in river at SW-002	Q_r2 =	1.28	
	flow in river at SW-003	Q r3 =	1.48	
9	flow in river at SW-004	Q r4 =	2.31	
er	flow in river at SW-004A	Q r4A =	5.39	
Water Balan	flow in river at SW-005	Q_r5 =	10.00	
Water Balance	flow check	Q_ck =	10.00	
		That is a		, -
	mass flux of surface water into SW-001	M_s1 =		(μg/s
	mass flux of surface water into SW-002	M_s2 =		(μg/s
	mass flux of surface water into SW-003	M_s3 =		(μg/s
	mass flux of surface water into SW-004	M_s4 =		(μg/s
	mass flux of surface water into SW-004A	M_s4A =		(μg/s
Ų.	mass flux of surface water into SW-005	M_s5 =		(μg/s
Š	mass flux of surface water inflow from upstream of PM-1	M_sns =		(μg/s
正	mass flux of surface water flow from West Pit Overflow	M_sms =	0	(μg/s
Mass	mass flux of ground water into SW-001	M_g1 =	1	(μg/s
as	mass flux of ground water into SW-002	M_g2 =		(μg/s
Σ	mass flux of ground water into SW-003	M_g3 =		(μg/s
	mass flux of ground water into SW-004	M_g4 =		(μg/s
	mass flux of ground water into SW-004A	M_g4A =		(μg/s
ō	mass flux of ground water into SW-005	M g5 =		(μg/s
ati	mass flux of seepage from East Pit	M gep =		(μg/s
Ę	mass flux of seepage from West Pit	M_gwp =		(μg/s
Calculation	mass flux of combined ground water liner leakage from stockpiles	M_gl4 =		(μg/s
ပိ	mass flux of combined ground water liner leakage/seepage from other mine features	M_gl4a =		(μg/s
	mass flux in river at SW-001	M_r1 =		(μg/s
(I)	mass flux in river at SW-002	M_r2 =		(μg/s
,, ŏ	mass flux in river at SW-003	M_r3 =		(μg/s
ar	mass flux in river at SW-004	M_r4 =		(μg/s
Mass Balance	mass flux in river at SW-004A mass flux in river at SW-005	M_r4A = M_r5 =		(μg/s (μg/s
	mass har ittival at Ow-000	N N N N N N N N N N	19	(µg/S
- □	concentration in river at SW-001	C_r1 =	0.0	μg/L
0.0				
at	concentration in river at SW-002	C_r2 =		μg/L
i ii	concentration in river at SW-003	C_r3 =	0.1	μg/L
e e	concentration in river at SW-004	C r4 =	0.1	μg/L
2 5				
Calculation of Concentration	concentration in river at SW-004A concentration in river at SW-005	C_r4A = C_r5 =		μg/L μg/L
0 0	CONSCINENCION IN HYON OL CYY-000	IO_10 =	0.1	μg/L
	Observed concentration in river at SW-002		ND (0.2)	uc/I
d)				MY/L
ine		-		
eline	Observed concentration in river at SW-003		ND (0.2)	μg/L
Baseline Data			ND (0.2)	

neter:	Calcium			
	surface water flow into SW-001	Q s1 =	2.79	(cfs
	surface water flow into SW-002	Q s2 =	3.36	
	surface water flow into SW-003	Q_s3 =	0.97	
	surface water flow into SW-004	Q s4 =	4.04 (
	surface water flow into SW-004A	Q s4A =	14.78 (
	surface water flow into SW-005	Q_s5 =	21.92 (
	surface water inflow from upstream of PM-1	Q sns =	1.50 (
	surface water flow from West Pit Overflow	Q_sms =	0.00 (
	ground water flow into SW-001	Q_g1 =	0.18 (
	ground water flow into SW-002	Q_g2 =	0.38	
g	ground water flow into SW-003	Q_g3 =	0.11 (
Dat	ground water flow into SW-004	Q_g6 =	0.32	
	ground water flow into SW-004A	Q_g4A =	1.39	
Flow	ground water flow into SW-004A	Q_g5 =	2.27	
္မ	ground water seepage from East Pit	Q_gep =	0.00	
	ground water seepage from West Pit		0.00	
but		Q_gwp =		
జ	combined ground water liner leakage from stockpiles	Q_gl4 = Q_gl4a =	0.00 (
	combined ground water liner leakage/seepage from other mine features	Q_g14a =	0.00	(CIS
	concentration of surface water into SW-001	C_s1 =	17 ((mo
	concentration of surface water into SW-001	C_s1 =	17 (
	concentration of surface water into SW-003 concentration of surface water into SW-004	C_s3 =	17 (
		C_s4 =	17 (
	concentration of surface water into SW-004A	C_s4A =	17 (
ū	concentration of surface water into SW-005	C_s5 =	17 (
	concentration of surface water inflow from upstream of PM-1	C_sns =	24.5	
Concentration Dat	concentration of surface water flow from West Pit Overflow	C_sms =		(mg
Ę	concentration of ground water into SW-001	C_g1 =	14.79 (
Ę	concentration of ground water into SW-002	C_g2 =	14.79 (
<u>a</u>	concentration of ground water into SW-003	C_g3 =	14.79 (
Ţ	concentration of ground water into SW-004	C_g4 =	14.79 (
9	concentration of ground water into SW-004A	C_g4A =	14.79 ((mg
۲	concentration of ground water into SW-005	C_g5 =	14.79 ((mg
ŏ	concentration of ground water seepage from East Pit	C_gep =	0 ((mg
=	concentration of ground water seepage from West Pit	C_gwp =	0 ((mg
nput	concentration of combined ground water liner leakage from stockpiles	C_gl4 =	0 ((mg
므	concentration of combined ground water liner leakage/seepage from other mine features	C_gl4a =	0 ((mg
				_
	flow in river at SW-001	Q_r1 =	4.47 (
	flow in river at SW-002	Q_r2 =	8.21 (
	flow in river at SW-003	Q_r3 =	9.29 ((cfs
, υ	flow in river at SW-004	Q_r4 =	13.64 ((cfs
E E	flow in river at SW-004A	Q_r4A =	29.81 (
Water Balance	flow in river at SW-005	Q_r5 =	54.00 (
≥ m̃	flow check	Q_ck =	54.00 (
	mass flux of surface water into SW-001	M_s1 =	1340 (
	mass flux of surface water into SW-002	M_s2 =	1618 (
	mass flux of surface water into SW-003	$M_s3 =$	465 (
	mass flux of surface water into SW-004	M_s4 =	1942 (
	mass flux of surface water into SW-004A	$M_s4A =$	7111 ((mg
	mass flux of surface water into SW-005	$M_s5 =$	10544 ((mg
š	mass flux of surface water inflow from upstream of PM-1	M sns =	1040 ((mg
盂	mass flux of surface water flow from West Pit Overflow	M sms =		(mg
	mass flux of ground water into SW-001	M g1 =	75 (
SS	mass flux of ground water into SW-002	M_g2 =	159 (
Mass	mass flux of ground water into SW-003	M_g3 =	46 (
of [mass flux of ground water into SW-004	M_g4 =	134 (
	mass flux of ground water into SW-004A	M_g4A =	582 (
Ö	mass flux of ground water into SW-005	M_g5 =	950 (
Ή	mass flux of seepage from East Pit			
	mass flux of seepage from West Pit	M_gep =		(mg
===		M_gwp =		(mg
long		M_gl4 = M_gl4a =		(mg
Salcula	mass flux of combined ground water liner leakage from stockpiles		J U	(mg
Calculation	mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features	IN_grica =		
Calcula	mass flux of combined ground water liner leakage/seepage from other mine features		2456	(ma
Calcula	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001	M_r1 =	2456 (
	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002	M_r1 = M_r2 =	4233 ((mg
90	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003	M_r1 = M_r2 = M_r3 =	4233 (4744 ((mg (mg
90	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004	M_r1 = M_r2 = M_r3 = M_r4 =	4233 (4744 (6820 ((mg (mg (mg
90	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004A	M_r1 = M_r2 = M_r3 = M_r4 = M_r4A =	4233 (4744 (6820 (14513 ((mg (mg (mg
Mass Balance Calcula	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004	M_r1 = M_r2 = M_r3 = M_r4 =	4233 (4744 (6820 ((mg (mg (mg (mg
90	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005	M_r1 = M_r2 = M_r3 = M_r4 = M_r4A = M_r5 =	4233 (4744 (6820 (14513 (26007 ((mg (mg (mg (mg
Mass Balance	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004A	M_r1 = M_r2 = M_r3 = M_r4 = M_r4A =	4233 (4744 (6820 (14513 ((mg (mg (mg (mg
Mass Balance	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005	M_r1 = M_r2 = M_r3 = M_r4 = M_r4A = M_r5 =	4233 (4744 (6820 (14513 (26007 ((mg (mg (mg (mg
Mass Balance	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002	M_r1 = M_r2 = M_r3 = M_r4 = M_r4A = M_r5 = C_r1 = C_r2 =	4233 (4744 (6820 (14513 (26007 (19.4 (18.2 ((mg (mg (mg (mg (mg
Mass Balance	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003	M r1 = M r2 = M r3 = M r4 = M r4A = M r5 = C r1 = C r2 = C r3 =	4233 (4744 (6820 (14513 (26007 (18.2 (18.2 (18.1 (18.2 (18.1 (18.2 (18.1 (18.2 (18.1 (18.2 (18.1 (18.2 (18.1 (18.2 (18.1 (18.1 (18.2 (18.1 (18.2 (18.1 (18.1 (18.2 (18.1 (18.1 (18.2 (18.1 (18.1 (18.2 (18.1 (18.1 (18.2 (18.1 (18.1 (18.2 (18.1 (18.1 (18.2 (18.1 (18.1 (18.2 (18.1 (18.1 (18.2 (18.1 (18.1 (18.2 (18.1 (18.1 (18.2 (18.1 (18.1 (18.2 (18.1 (18.1 (18.1 (18.2 (18.1	(mg (mg (mg (mg (mg
Mass Balance	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002	M_r1 = M_r2 = M_r3 = M_r4 = M_r4A = M_r5 = C_r1 = C_r2 =	4233 (4744 (6820 (14513 (26007 (19.4 (18.2 ((mg (mg (mg (mg (mg
Mass Balance	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003	M r1 = M r2 = M r3 = M r4 = M r4A = M r5 = C r1 = C r2 = C r3 =	4233 (4744 (6820 (14513 (26007 (18.2 (18.2 (18.1 (18.2 (18.1 (18.2 (18.1 (18.2 (18.1 (18.2 (18.1 (18.2 (18.1 (18.2 (18.1 (18.1 (18.2 (18.1 (18.2 (18.1 (18.1 (18.2 (18.1 (18.1 (18.2 (18.1 (18.1 (18.2 (18.1 (18.1 (18.2 (18.1 (18.1 (18.2 (18.1 (18.1 (18.2 (18.1 (18.1 (18.2 (18.1 (18.1 (18.2 (18.1 (18.1 (18.2 (18.1 (18.1 (18.2 (18.1 (18.1 (18.2 (18.1 (18.1 (18.1 (18.2 (18.1	(mg (mg (mg (mg (mg
90	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-004	M r1 = M r2 = M r3 = M r4 = M r4A = M_r5 = C r1 = C r2 = C r3 = C r4 = C r4A =	4233 (4744 (6820 (14513 (26007 (1500	(mg (mg (mg (mg (mg (mg
Mass Balance	mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-003 concentration in river at SW-003 concentration in river at SW-004	M r1 = M r2 = M r3 = M r4 = M r4 = M_r5 = C_r1 = C_r2 = C_r4 =	4233 (4744) (6820) (14513) (26007) (19.4) (18.2) (18.1) (17.7)	(mg (mg (mg (mg (mg (mg
Mass Balance	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-005	M r1 = M r2 = M r3 = M r4 = M r4A = M_r5 = C r1 = C r2 = C r3 = C r4 = C r4A =	4233 (4744 (6820 (742 (742 (742 (742 (742 (742 (742 (742	(mg (mg (mg (mg (mg (mg (mg
Calculation of Mass Concentration Balance	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-004	M r1 = M r2 = M r3 = M r4 = M r4A = M_r5 = C r1 = C r2 = C r3 = C r4 = C r4A =	4233 (4744 (6820 (14513 (26007 (1500	(mg (mg (mg (mg (mg (mg (mg
line Calculation of Mass Concentration Balance	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-005	M r1 = M r2 = M r3 = M r4 = M r4A = M_r5 = C r1 = C r2 = C r3 = C r4 = C r4A =	4233 (4744 (6820 (742 (742 (742 (742 (742 (742 (742 (742	(mg (mg (mg (mg (mg (mg (mg (mg
Mass Balance	mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 Concentration in river at SW-005 Observed concentration in river at SW-002	M r1 = M r2 = M r3 = M r4 = M r4A = M_r5 = C r1 = C r2 = C r3 = C r4 = C r4A =	4233 4744 6820 14513 26007 19.4 18.2 18.1 17.7 17.2 17.0	(mg (mg (mg (mg (mg (mg (mg (mg

ameter:	Cadmium			
	surface water flow into SW-001	Q_s1 =	0.20	(cfs)
	surface water flow into SW-002	Q_s1 =		(cfs)
	surface water flow into SW-002	Q_s2 = Q_s3 =	0.23	
	surface water flow into SW-003 surface water flow into SW-004	Q_s3 = Q_s4 =		(cfs)
	surface water flow into SW-004 surface water flow into SW-004A	Q_S4 = Q_S4A =	1.23	
	surface water flow into SW-004A surface water flow into SW-005	Q_s4A = Q_s5 =		(cfs)
	surface water flow from upstream of PM-1	Q_ss = Q_sns =		(cfs)
			0.00	
	surface water flow from West Pit Overflow	Q_sms =		
	ground water flow into SW-001	Q_g1 =		(cfs)
æ	ground water flow into SW-002	Q_g2 =	0.38	
Flow Data	ground water flow into SW-003	Q_g3 =	0.11	
ث	ground water flow into SW-004	Q_g4 =	0.32	
≥	ground water flow into SW-004A	Q_g4A =		(cfs)
<u>ó</u>	ground water flow into SW-005	Q_g5 =	2.27	
ш	ground water seepage from East Pit	Q_gep =		(cfs)
Ħ	ground water seepage from West Pit	Q_gwp =	0.00	
Input	combined ground water liner leakage from stockpiles	Q_gl4 =	0.00	
	combined ground water liner leakage/seepage from other mine features	$Q_gl4a =$	0.00	(cts)
	concentration of surface water into SW-001	C_s1 =	0	μg/L
	concentration of surface water into SW-002	C_s2 =		μg/L
	concentration of surface water into SW-003	C s3 =		μg/L
	concentration of surface water into SW-004	C s4 =		μg/L
	concentration of surface water into SW-004A	C_s4A =		μg/L
	concentration of surface water into SW-005	C_s5 =		μg/L
Data	concentration of surface water into SW-003 concentration of surface water inflow from upstream of PM-1	C_ss =		μg/L
Ja				
	concentration of surface water flow from West Pit Overflow	C_sms =		μg/L
Concentration	concentration of ground water into SW-001	C_g1 =		μg/L
ati	concentration of ground water into SW-002	C_g2 =		μg/L
Ę	concentration of ground water into SW-003	C_g3 =	0.1	μg/L
L.	concentration of ground water into SW-004	C_g4 =		μg/L
ဋ	concentration of ground water into SW-004A	C_g4A =		μg/L
9	concentration of ground water into SW-005	C_g5 =		μg/L
Ö	concentration of ground water seepage from East Pit	C_gep =		μg/L
Input	concentration of ground water seepage from West Pit	C_gwp =		μg/L
<u>م</u>	concentration of combined ground water liner leakage from stockpiles	C_gl4 =		μg/L
	concentration of combined ground water liner leakage/seepage from other mine features	C_gl4a =	0	μg/L
	flow in river at SW-001	Q_r1 =	1.98	(cfs)
	flow in river at SW-002	Q r2 =	2.59	
	flow in river at SW-003	Q r3 =	2.76	
ĕ	flow in river at SW-004	Q r4 =	3.47	
뉴드	flow in river at SW-004A	Q_r4A =	6.08	
멸	flow in river at SW-005	Q_r5 =	10.00	
Water Balance	flow check	Q_ck =	10.00	
			, .	
	mass flux of surface water into SW-001	M_s1 =		(μg/
	mass flux of surface water into SW-002	M_s2 =		(μg/
	mass flux of surface water into SW-003	$M_s3 =$		(μg/:
	mass flux of surface water into SW-004	M_s4 =		(μg/:
	mass flux of surface water into SW-004A	M_s4A =		(μg/:
	mass flux of surface water into SW-005	$M_s5 =$	0	(μg/:
Ä	mass flux of surface water inflow from upstream of PM-1	M_sns =	4	(μg/
正	mass flux of surface water flow from West Pit Overflow	M_sms =	0	(μg/:
Mass	mass flux of ground water into SW-001	M_g1 =		(μg/
as	mass flux of ground water into SW-002	M_g2 =		(μg/
Σ	mass flux of ground water into SW-003	M_g3 =		(μg/:
₹	mass flux of ground water into SW-004	M_g4 =		(μg/
	mass flux of ground water into SW-004A	M_g4A =		(μg/
ō	mass flux of ground water into SW-005	M_g5 =	6	(μg/
ati	mass flux of seepage from East Pit	M gep =		(μg/:
Ħ	mass flux of seepage from West Pit	M_gwp =		(μg/
Calculation	mass flux of combined ground water liner leakage from stockpiles	M_gl4 =		(μg/:
		M_gl4a =		(μg/
_ Ö	mass flux of combined ground water liner leakage/seepage from other mine features			
Ö	• • • • • • • • • • • • • • • • • • • •			_
Ö	mass flux in river at SW-001	M_r1 =		
	mass flux in river at SW-001 mass flux in river at SW-002	M_r1 = M_r2 =	6	(μg/
	mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003	M_r1 = M_r2 = M_r3 =	6	(μg/:
	mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004	M_r1 = M_r2 = M_r3 = M_r4 =	6 6 7	(μg/: (μg/: (μg/:
	mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004A	M_r1 = M_r2 = M_r3 = M_r4 = M_r4A =	6 6 7 11	(μg/ (μg/ (μg/ (μg/
Mass Balance C	mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004	M_r1 = M_r2 = M_r3 = M_r4 =	6 6 7 11	(μg/ (μg/ (μg/ (μg/
Mass Balance	mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005	M_r1 = M_r2 = M_r3 = M_r4 = M_r4A = M_r5 =	6 7 11 17	(μg/ (μg/ (μg/ (μg/ (μg/
Mass Balance	mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001	M_r1 = M_r2 = M_r3 = M_r4 = M_r4A = M_r5 =	6 6 7 11 17	(µg/s (µg/s (µg/s (µg/s (µg/s (µg/s
Mass Balance	mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-001 concentration in river at SW-002	M_r1 = M_r2 = M_r3 = M_r4 = M_r4A = M_r5 = C_r1 = C_r2 =	6 6 7 11 17 0.1	(µg/ (µg/ (µg/ (µg/ (µg/ µg/L
Mass Balance	mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001	M_r1 = M_r2 = M_r3 = M_r4 = M_r4A = M_r5 =	6 6 7 11 17 0.1	(µg/ (µg/ (µg/ (µg/ (µg/ µg/L
Mass Balance	mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003	M r1 = M r2 = M r3 = M r4 = M r4A = M r4A = C r1 = C r2 = C r3 =	6 6 7 11 17 0.1 0.1 0.1	(µg/ (µg/ (µg/ (µg/ (µg/ µg/L µg/L
Mass Balance	mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-003 concentration in river at SW-004	M r1 = M r2 = M r3 = M r4 = M r4A = M r4F = C r1 = C r2 = C r3 = C r4 =	6 6 7 7 11 17 17 0.1 0.1 0.1 0.1	(µg/: (µg/: (µg/: (µg/: (µg/L µg/L µg/L
Mass Balance	mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-004	M r1 = M r2 = M r3 = M r4 = M r4A = M r4A = C r1 = C r2 = C r3 = C r4 = C r4A =	6 6 7 11 17 17 0.1 0.1 0.1 0.1 0.1	(µg/ (µg/ (µg/ (µg/ (µg/ µg/L µg/L µg/L
	mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-003 concentration in river at SW-004	M r1 = M r2 = M r3 = M r4 = M r4A = M r4F = C r1 = C r2 = C r3 = C r4 =	6 6 7 11 17 17 0.1 0.1 0.1 0.1 0.1	(µg/ (µg/ (µg/ (µg/ (µg/ µg/L µg/L µg/L
Calculation of Mass Concentration Balance	mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-004A concentration in river at SW-005	M r1 = M r2 = M r3 = M r4 = M r4A = M r4A = C r1 = C r2 = C r3 = C r4 = C r4A =	6 6 7 111 17 17 17 10.1 0.1 0.1 0.1 0.1 0.1	(µg/ (µg/ (µg/ (µg/ (µg/ µg/ µg/ µg/ µg/ µg/ µg/
Calculation of Mass Concentration Balance	mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-004A concentration in river at SW-005 Observed concentration in river at SW-002	M r1 = M r2 = M r3 = M r4 = M r4A = M r4A = C r1 = C r2 = C r3 = C r4 = C r4A =	6 6 7 11 17 0.1 0.1 0.1 0.1 0.1 0.1	(µg/ (µg/ (µg/ (µg/ (µg/ µg/ µg/ µg/ µg/ µg/ µg/ µg/
Calculation of Mass Concentration Balance	mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-005 Observed concentration in river at SW-002 Observed concentration in river at SW-003	M r1 = M r2 = M r3 = M r4 = M r4A = M r4A = C r1 = C r2 = C r3 = C r4 = C r4A =	6 6 6 77 111 17 17 17 10.1 1 0	(нд/ (нд/ (нд/ (нд/ (нд/ (нд/ (нд/ (нд/
Calculation of Mass Concentration Balance	mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-005 Observed concentration in river at SW-002 Observed concentration in river at SW-003 Observed concentration in river at SW-004	M r1 = M r2 = M r3 = M r4 = M r4A = M r4A = C r1 = C r2 = C r3 = C r4 = C r4A =	6 6 6 77 111 177 0.1 1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0	(µg/- (µg/- (µg/- (µg/- (µg/- µg/- µg/- µg/- µg/- µg/- µg/- µg/-
Mass Balance	mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-005 Observed concentration in river at SW-002 Observed concentration in river at SW-003	M r1 = M r2 = M r3 = M r4 = M r4A = M r4A = C r1 = C r2 = C r3 = C r4 = C r4A =	6 6 6 77 111 17 17 17 10.1 1 0	(нд/ (нд/ (нд/ (нд/ (нд/ (нд/ (нд/ (нд/

	River Model - Calibration to Baseline Water Quality Dat	а	
arameter:	Chloride		
	surface water flow into SW-001	Q_s1 =	1.23 (0
	surface water flow into SW-002	Q_51 =	1.40 (0
	surface water flow into SW-003	Q_s3 =	0.40 (c
	surface water flow into SW-004	Q_s4 =	1.76 (c
	surface water flow into SW-004A	Q_s4A =	6.31 (0
	surface water flow into SW-005	Q_5774=	9.25 (0
	surface water inflow from upstream of PM-1	Q_sns =	0.00 (c
	surface water film Whom upsite and of Film -	Q_sns =	0.00 (0
	ground water flow into SW-001	_	0.18 (0
		Q_g1 =	
~	ground water flow into SW-002	Q_g2 =	0.38 (c
Data	ground water flow into SW-003	Q_g3 =	0.11 (c
õ	ground water flow into SW-004	Q_g4 =	0.32 (0
>	ground water flow into SW-004A	$Q_g4A =$	1.39 (c
Flow	ground water flow into SW-005	Q_g5 =	2.27 (c
됴	ground water seepage from East Pit	Q_gep =	0.00 (c
Input	ground water seepage from West Pit	$Q_gwp =$	0.00 (c
₫	combined ground water liner leakage from stockpiles	$Q_gl4 =$	0.00 (c
드	combined ground water liner leakage/seepage from other mine features	Q_gl4a =	0.00 (0
	concentration of surface water into SW-001	C_s1 =	8 (n
	concentration of surface water into SW-002	C s2 =	8 (n
	concentration of surface water into SW-002	C_s3 =	8 (n
	concentration of surface water into SW-003	C_s3 =	8 (n
	concentration of surface water into SW-004 concentration of surface water into SW-004A	C_s4 =	8 (n
ta	concentration of surface water into SW-005	C_s5 =	8 (n
Dat	concentration of surface water inflow from upstream of PM-1	C_sns =	1.6 (n
	concentration of surface water flow from West Pit Overflow	C_sms =	0 (n
Ľ	concentration of ground water into SW-001	C_g1 =	6.6 (n
ţi	concentration of ground water into SW-002	C_g2 =	6.6 (n
Z	concentration of ground water into SW-003	C_g3 =	6.6 (n
nt	concentration of ground water into SW-004	C_g4 =	6.6 (n
Concentration	concentration of ground water into SW-004A	C_g4A =	6.6 (n
ŭ	concentration of ground water into SW-005	C_g5 =	6.6 (n
8	concentration of ground water seepage from East Pit	C_gep =	0 (n
	concentration of ground water seepage from West Pit	C gwp =	0 (n
put	concentration of combined ground water liner leakage from stockpiles	C_gl4 =	0 (n
n	concentration of combined ground water liner leakage from stockpiles concentration of combined ground water liner leakage/seepage from other mine features	C_gl4 = C_gl4a =	0 (n
_	assissing of combined ground water liner reanage/seepage from other filling realtities	13_917a =	1 01(11
	flow in river at SW-001	Q_r1 =	1.41 (c
	flow in river at SW-002	Q_r2 =	3.20 (0
45	flow in river at SW-003	Q_r3 =	3.71 (c
9	flow in river at SW-004	Q r4 =	5.78 (c
i e	flow in river at SW-004A	Q_r4A =	13.48 (c
	flow in river at SW-005	Q r5 =	25.00 (c
ĭ ≷	flow check	 Q_ck =	25.00 (c
	mass flux of surface water into SW-001	M_s1 =	279 (n
	mass flux of surface water into SW-001	M_s2 =	318 (n
	mass flux of surface water into SW-003	M_s3 =	91 (n
	mass flux of surface water into SW-004	M_s4 =	397 (n
	mass flux of surface water into SW-004A	M_s4A =	1429 (n
	mass flux of surface water into SW-005	$M_s5 =$	2094 (n
Flux	mass flux of surface water inflow from upstream of PM-1	M_sns =	0 (n
正	mass flux of surface water flow from West Pit Overflow	M_sms =	0 (n
	mass flux of ground water into SW-001	M_g1 =	34 (n
38	mass flux of ground water into SW-002	M g2 =	71 (n
Mass	mass flux of ground water into SW-003	M_g3 =	21 (n
	mass flux of ground water into SW-003	M_g4 =	60 (n
•	mass flux of ground water into SW-004 mass flux of ground water into SW-004A	M_g4A =	260 (n
or	mass flux of ground water into SW-004A	M_g5 =	424 (n
ati,			
음	mass flux of seepage from East Pit	M_gep =	0 (n
Calculation	mass flux of seepage from West Pit	M_gwp =	0 (n
à	mass flux of combined ground water liner leakage from stockpiles	M_gl4 =	0 (n
O	mass flux of combined ground water liner leakage/seepage from other mine features	$M_gl4a =$	0 (n
	mass flux in river at SW-001	$M_r1 =$	313 (n
	mass flux in river at SW-001 mass flux in river at SW-002	M_r1 = M_r2 =	313 (n 701 (n
e			701 (n
s	mass flux in river at SW-002 mass flux in river at SW-003	M_r2 = M_r3 =	701 (n 813 (n
ass alance	mass flux in river at SW-002	M_r2 = M_r3 = M_r4 =	701 (n 813 (n 1270 (n
Mass Balance	mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004	M_r2 = M_r3 =	701 (n 813 (n
	mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005	M_r2 = M_r3 = M_r4 = M_r4A = M_r5 =	701 (n 813 (n 1270 (n 2958 (n 5476 (n
	mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001	M_r2 = M_r3 = M_r4 = M_r4A = M_r5 = C_r1 =	701 (n 813 (n 1270 (n 2958 (n 5476 (n
	mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005	M_r2 = M_r3 = M_r4 = M_r4A = M_r5 =	701 (n 813 (n 1270 (n 2958 (n 5476 (n
	mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002	M_r2 = M_r3 = M_r4 = M_r4A = M_r5 = C_r1 = C_r2 =	701 (n 813 (n 1270 (n 2958 (n 5476 (n 7.8 (n
	mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003	M_r2 = M_r3 = M_r4 = M_r4A = M_r5 = C_r1 = C_r2 = C_r3 =	701 (n 813 (n 1270 (n 2958 (n 5476 (n 7.8 (n 7.7 (n
	mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-003 concentration in river at SW-004	M_r2 = M_r3 = M_r4 = M_r4 = M_r5 = C_r1 = C_r2 = C_r3 = C_r4 =	701 (n 813 (n 1270 (r 2958 (n 5476 (n 7.8 (n 7.7 (n 7.8 (n
	mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004	M_r2 = M_r3 = M_r4 = M_r5 = C_r1 = C_r2 = C_r4 = C_	701 (n 813) (n 1270) (n 2958) (n 5476) (n 7.8 (n 7.7 (n 7.8 (n 7.8 (n
Calculation of Mass Concentration Balance	mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-003 concentration in river at SW-004	M_r2 = M_r3 = M_r4 = M_r4 = M_r5 = C_r1 = C_r2 = C_r3 = C_r4 =	701 (n 813 (n 1270 (r 2958 (n 5476 (n 7.8 (n 7.7 (n 7.8 (n
Calculation of Concentration	mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-004A concentration in river at SW-005	M_r2 = M_r3 = M_r4 = M_r5 = C_r1 = C_r2 = C_r4 = C_	701 (n 813) (n 1270 (n 2958 (n 5476 (n 7.8 (n 7.8 (n 7.7 (n 7.8 (n 7.7 (n 7.8 (n 7.7 (n
Calculation of Concentration	mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-005 Observed concentration in river at SW-005	M_r2 = M_r3 = M_r4 = M_r5 = C_r1 = C_r2 = C_r4 = C_	701 (n 813) (n 1270 (n 2958) (n 5476) (n 7.8 (n 7.8 (n 7.7 (n 7.8 (n 7.7 (n 1.8 (n 1.8 (n
line Calculation of Concentration	mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-005 Observed concentration in river at SW-002 Observed concentration in river at SW-002	M_r2 = M_r3 = M_r4 = M_r5 = C_r1 = C_r2 = C_r4 = C_	701 (n 813) (n 1270 (n 2958) (n 5476) (n 7.8 (n 7.7 (n 7.8 (n 7.7 (n 1.8 (n 10.5) (n
	mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-005 Observed concentration in river at SW-005	M_r2 = M_r3 = M_r4 = M_r5 = M_r5 = C_r1 = C_r2 = C_r4 = C_	701 (n 813) (n 1270 (n 2958) (n 5476) (n 7.8 (n 7.8 (n 7.7 (n 7.8 (n 7.7 (n 1.8 (n

Parameter:	River Model - Calibration to Baseline Water Quality Da	ıta		
	Cobalt			
		To .	T	
	surface water flow into SW-001	Q_s1 =	0.30 (
	surface water flow into SW-002	Q_s2 =	0.23	
	surface water flow into SW-003	Q s3 =	0.06	(cfs)
	surface water flow into SW-004	Q s4 =	0.39	
	surface water flow into SW-004A	Q s4A =	1.23 (
	surface water flow into SW-005	Q_s5 =	1.65 (
	surface water inflow from upstream of PM-1	$Q_sns =$	1.50 ((cfs)
	surface water flow from West Pit Overflow	Q sms =	0.00	(cfs)
	ground water flow into SW-001	Q_g1 =	0.18 (
	ground water flow into SW-002	Q_g2 =	0.38	
~				
Data	ground water flow into SW-003	Q_g3 =	0.11	
)a	ground water flow into SW-004	Q_g4 =	0.32 ((cfs)
	ground water flow into SW-004A	Q q4A =	1.39 ((cfs)
Flow	ground water flow into SW-005	Q_g5 =	2.27 (
<u>0</u>		Q gep =		
ш	ground water seepage from East Pit		0.00 (
ち	ground water seepage from West Pit	Q_gwp =	0.00	
Input	combined ground water liner leakage from stockpiles	$Q_gl4 =$	0.00	(cfs)
드	combined ground water liner leakage/seepage from other mine features	Q_gl4a =	0.00	(cfs)
	concentration of curface water into SW 001	C c1 -	T 01:	μg/L
	concentration of surface water into SW-001	C_s1 =	+ -	µg/L
	concentration of surface water into SW-002	C_s2 =		μg/L
	concentration of surface water into SW-003	C_s3 =		μg/L
	concentration of surface water into SW-004	C_s4 =	011	μg/L
	concentration of surface water into SW-004A	C_s4A =		μg/L
	concentration of surface water into SW-005	C_s5 =		μg/L
<u>ra</u>				
at	concentration of surface water inflow from upstream of PM-1	C_sns =	0.5	
	concentration of surface water flow from West Pit Overflow	C_sms =	01	μg/L
_	concentration of ground water into SW-001	C_g1 =	1.65	
ō	concentration of ground water into SW-002	C_g2 =	1.65	
ati				
Concentration Dat	concentration of ground water into SW-003	C_g3 =	1.65	
Ē	concentration of ground water into SW-004	C_g4 =	1.65	
9	concentration of ground water into SW-004A	C_g4A =	1.65	μg/L
Ē	concentration of ground water into SW-005	C_g5 =	1.65	ua/L
2	concentration of ground water seepage from East Pit	C_gep =		μg/L
U				
put	concentration of ground water seepage from West Pit	C_gwp =		μg/L
مَ	concentration of combined ground water liner leakage from stockpiles	C_gl4 =	0	μg/L
드	concentration of combined ground water liner leakage/seepage from other mine features	C_gl4a =	0	μg/L
	7	To .	1	
	flow in river at SW-001	Q_r1 =	1.98 (
	flow in river at SW-002	Q_r2 =	2.59 (
•	flow in river at SW-003	Q_r3 =	2.76 ((cts)
. 8	flow in river at SW-004	Q_r4 =	3.47 ((cfs)
i d	flow in river at SW-004A	Q r4A =	6.08 ((cfs)
을 ;	flow in river at SW-005	Q r5 =	10.00 (
Water Balance	flow check	Q_ck =	10.00 (
	mass flux of surface water into SW-001	M_s1 =	0 /	(μg/s)
	mass flux of surface water into SW-002	M s2 =		(μg/s)
	mass flux of surface water into SW-003	M_s3 =		(μg/s)
	mass flux of surface water into SW-004	M_s4 =		(μg/s)
	mass flux of surface water into SW-004A	M s4A =	0 /	(µg/s)
	mass flux of surface water into SW-005	M s5 =		(µg/s)
×	mass flux of surface water inflow from upstream of PM-1			
		M_sns =		(μg/s)
正	mass flux of surface water flow from West Pit Overflow	M_sms =		(µg/s)
S	mass flux of ground water into SW-001	$M_g1 =$		(μg/s)
	mass flux of ground water into SW-002	M_g2 =	18 /	(µg/s)
35	mass flux of ground water into SW-003	M g3 =		(μg/s)
Vas				
f Mass				
of Mas	mass flux of ground water into SW-004	M_g4 =	15 ((μg/s)
ð	mass flux of ground water into SW-004A	M_g4A =	15 (65 ((μg/s) (μg/s)
ð	9 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	M_g4A =	15 (65 ((μg/s) (μg/s)
ð	mass flux of ground water into SW-004A mass flux of ground water into SW-005	M_g4A = M_g5 =	15 (65 (106 ((μg/s) (μg/s) (μg/s)
ð	mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit	M_g4A = M_g5 = M_gep =	15 (65 (106 ((μg/s) (μg/s) (μg/s) (μg/s)
ð	mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit	M_g4A = M_g5 = M_gep = M_gwp =	15 (65 (106 (0 ((µg/s) (µg/s) (µg/s) (µg/s) (µg/s)
ð	mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles	M_g4A = M_g5 = M_gep = M_gwp = M_gl4 =	15 (65 (106 (0 (0 ((µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s)
	mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit	M_g4A = M_g5 = M_gep = M_gwp =	15 (65 (106 (0 (0 ((µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s)
ð	mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features	M g4A = M g5 = M gep = M gwp = M gl4 = M gl4a =	15 (65 (106 (106 (106 (106 (106 (106 (106 (106	(µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s)
ð	mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001	M_g4A = M_g5 = M_gep = M_gwp = M_gl4 = M_gl4a =	15 (65 (106 (106 (106 (106 (106 (106 (106 (106	(µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s)
Calculation of	mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002	M_g4A = M_g5 = M_gep = M_gwp = M_gl4 = M_gl4a = M_r1 = M_r2 =	15 (65 (106 (106 (106 (106 (106 (106 (106 (106	(µg/s (µg/s (µg/s (µg/s (µg/s (µg/s (µg/s (µg/s
ce Calculation of	mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001	M_g4A = M_g5 = M_gep = M_gwp = M_gl4 = M_gl4a =	15 (65 (106 (106 (106 (106 (106 (106 (106 (106	(µg/s (µg/s (µg/s (µg/s (µg/s (µg/s (µg/s (µg/s
ce Calculation of	mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003	M_g4A = M_g5 = M_gep = M_gwp = M_gl4 = M_gl4a = M_r1 = M_r2 =	15 (65 (65 (65 (65 (65 (65 (65 (65 (65 (6	(µg/s (µg/s (µg/s (µg/s (µg/s (µg/s (µg/s (µg/s (µg/s
ce Calculation of	mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-003 mass flux in river at SW-004	M g4A = M g5 = M gep = M gwp = M gl4 = M gl4a = M r2 = M r2 = M r4 =	15 65 106 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	(µg/s (µg/s (µg/s (µg/s (µg/s (µg/s (µg/s (µg/s (µg/s (µg/s (µg/s
ce Calculation of	mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004	M g4A = M g5 = M gep = M gwp = M gl4 = M_gl4a = M_r1 = M r2 = M_r3 = M_r4 = M_r4A =	15 65 65 65 60 106 60 60 60 60 60 60 60 60 60 60 60 60 6	(µg/s (µg/s (µg/s (µg/s (µg/s (µg/s (µg/s (µg/s (µg/s (µg/s (µg/s
ð	mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-003 mass flux in river at SW-004	M g4A = M g5 = M gep = M gwp = M gl4 = M gl4a = M r2 = M r2 = M r4 =	15 65 65 65 60 106 60 60 60 60 60 60 60 60 60 60 60 60 6	(µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s)
Mass Balance Calculation of	mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005	M. g4A = M. g5 = M. gwp = M. gwp = M. gl4 = M. gl4a = M. r1 = M. r2 = M. r3 = M. r4 = M. r4 = M. r4 = M. r4 =	15 65 65 65 65 65 65 65	(µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s)
Mass Balance Calculation of	mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-005	M. g4A = M. g5 = M. gwp = M. gwp = M. gl4 = M. gl4a = M. gl4a = M. r1 = M. r2 = M. r3 = M. r4 = M. r4A = M. r4A = M. r5 =	15 65 65 65 60 100 100 100 100 100 100 100 100 100	(µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s)
Mass Balance Calculation of	mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005	M. g4A = M. g5 = M. gwp = M. gwp = M. gl4 = M. gl4a = M. r1 = M. r2 = M. r3 = M. r4 = M. r4 = M. r4 = M. r4 =	15 65 65 65 60 100 100 100 100 100 100 100 100 100	(µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s)
Mass Balance Calculation of	mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002	M. g4A = M. g5 = M. gwp = M. gwp = M. gl4 = M. gl4a = M. r1 = M. r2 = M. r3 = M. r4 = M. r4A = M. r4A = M. r5 = C. r1 = C. r2 =	15 65 65 65 60 106 60 106 60 106 60 106 60 106 60 106 60 106 60 106 60 106 60 106 60 106 106	(µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s)
Mass Balance Calculation of	mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-005	M. g4A = M. g5 = M. gwp = M. gwp = M. gl4 = M. gl4a = M. gl4a = M. r1 = M. r2 = M. r3 = M. r4 = M. r4A = M. r4A = M. r5 =	15 65 65 65 60 106 60 106 60 106 60 106 60 106 60 106 60 106 60 106 60 106 60 106 60 106 106	(µg/s (µg/s (µg/s (µg/s (µg/s (µg/s (µg/s (µg/s (µg/s (µg/s
Mass Balance Calculation of	mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-003	M. g4A = M. g5 = M. gwp = M. gwp = M. gl4 = M. gl4a = M. r1 = M. r2 = M. r3 = M. r4 = M. r4A = M. r5 = C. r1 = C. r2 = C. r3 =	15 65 65 65 60 106 60 106 60 106 60 106 60 106 60 106 60 106 60 106 106	(µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s)
Mass Balance Calculation of	mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-003	M. g4A = M. g5 = M. gwp = M. gwp = M. gl4 = M. gl4a = M. r1 = M. r2 = M. r3 = M. r4 = M. r4A = M. r5 = C. r1 = C. r2 = C. r3 = C. r4 =	15 65 65 65 60 60 60 60 60 60 60 60 60 60 60 60 60	(µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s)
Mass Balance Calculation of	mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-003	M. g4A = M. g5 = M. gwp = M. gwp = M. gl4 = M. gl4a = M. r1 = M. r2 = M. r3 = M. r4 = M. r4A = M. r5 = C. r1 = C. r2 = C. r3 =	15 65 65 65 60 60 60 60 60 60 60 60 60 60 60 60 60	(µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s)
ce Calculation of	mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-003 concentration in river at SW-004	M. g4A = M. g5 = M. gwp = M. gwp = M. gl4 = M. gl4a = M. r1 = M. r2 = M. r4 = M. r4A = M. r5 = C. r1 = C. r2 = C. r3 = C. r4 = C. r4A =	15 65 65 65 67 67 67 67 6	(µg/s (µg/s (µg/s (µg/s (µg/s (µg/s (µg/s (µg/s (µg/s (µg/s (µg/l) (µg/l) (µg/l)
Mass Balance Calculation of	mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003	M. g4A = M. g5 = M. gwp = M. gwp = M. gl4 = M. gl4a = M. r1 = M. r2 = M. r3 = M. r4 = M. r4A = M. r5 = C. r1 = C. r2 = C. r3 = C. r4 =	15 65 65 65 67 67 67 67 6	(µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s)
Calculation of Mass Calculation of	mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-005	M. g4A = M. g5 = M. gwp = M. gwp = M. gl4 = M. gl4a = M. r1 = M. r2 = M. r4 = M. r4A = M. r5 = C. r1 = C. r2 = C. r3 = C. r4 = C. r4A =	15 65 65 67 67 67 67 67 6	(µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s)
Calculation of Mass Calculation of	mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-004 concentration in river at SW-005 Observed concentration in river at SW-005	M. g4A = M. g5 = M. gwp = M. gwp = M. gl4 = M. gl4a = M. r1 = M. r2 = M. r4 = M. r4A = M. r5 = C. r1 = C. r2 = C. r3 = C. r4 = C. r4A =	15 65 65 60 106 106 106 106 106 106 106 106 106	(µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/l) (µg/l) (µg/l) (µg/l) (µg/l)
line Calculation of Mass Calculation of	mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux of crombined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-005 Observed concentration in river at SW-002 Observed concentration in river at SW-003	M. g4A = M. g5 = M. gwp = M. gwp = M. gl4 = M. gl4a = M. r1 = M. r2 = M. r4 = M. r4A = M. r5 = C. r1 = C. r2 = C. r3 = C. r4 = C. r4A =	15 65 65 67 67 67 67 67 6	(µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s)
Mass Balance Calculation of	mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-004 concentration in river at SW-005 Observed concentration in river at SW-005	M. g4A = M. g5 = M. gwp = M. gwp = M. gl4 = M. gl4a = M. r1 = M. r2 = M. r4 = M. r4A = M. r5 = C. r1 = C. r2 = C. r3 = C. r4 = C. r4A =	15 65 65 67 67 67 67 67 6	(µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s) (µg/s)

neter:	River Model - Calibration to Baseline Water Quality Dat Copper			
	- oppo			
	surface water flow into SW-001	Q s1 =	1.52	(cf:
	surface water flow into SW-002	Q s2 =	1.76	
	surface water flow into SW-003	Q s3 =	0.51	
	surface water flow into SW-004	Q s4 =	2.17	
	surface water flow into SW-004A	Q s4A =	7.85	
	surface water flow into SW-005	Q s5 =	11.55	
	surface water inflow from upstream of PM-1	Q sns =	0.00	
	surface water flow from West Pit Overflow	Q sms =	0.00	
	ground water flow into SW-001	Q_g1 =	0.18	
	ground water flow into SW-002	Q_g2 =	0.38	
ಹ	ground water flow into SW-003	Q_g3 =	0.11	
Data	ground water flow into SW-004	Q_g4 =	0.32	
	ground water flow into SW-004A	Q_g4A =	1.39	
Flow	ground water flow into SW-004A	Q_g5 =	2.27	
<u>.e</u>			0.00	
ш.	ground water seepage from East Pit ground water seepage from West Pit	Q_gep = Q_gwp =	0.00	
Ž				
Input	combined ground water liner leakage from stockpiles	Q_gl4 =	0.00	
	combined ground water liner leakage/seepage from other mine features	Q_gl4a =	0.00	(Cf
	concentration of surface water into SW-001	C_s1 =	1.7	IJΩ
	concentration of surface water into SW-001	C s2 =	1.7	
	concentration of surface water into SW-002	C_s3 =	1.7	
	concentration of surface water into SW-003	C_s3 =	1.7	
	concentration of surface water into SW-004 concentration of surface water into SW-004A	C_S4 =	1.7	
	concentration of surface water into SW-004A	C_s4A =	1.7	
ta	concentration of surface water into SW-005 concentration of surface water inflow from upstream of PM-1	C_ss = C sns =	1.24	
)a				
	concentration of surface water flow from West Pit Overflow	C_sms =		μg
o	concentration of ground water into SW-001	C_g1 =	2.95	
ij	concentration of ground water into SW-002	C_g2 =	2.95	
tra	concentration of ground water into SW-003	C_g3 =	2.95	
Concentration Dat	concentration of ground water into SW-004	C_g4 =	2.95	
ğ	concentration of ground water into SW-004A	C_g4A =	2.95	
5	concentration of ground water into SW-005	C_g5 =	2.95	
Ŏ	concentration of ground water seepage from East Pit	C_gep =		μg
Input	concentration of ground water seepage from West Pit	C_gwp =		μg
ءِ	concentration of combined ground water liner leakage from stockpiles	C_gl4 =		μg
	concentration of combined ground water liner leakage/seepage from other mine features	C_gl4a =	0	μg
	flow in diverse to CW 004	IO =1		1
	flow in river at SW-001 flow in river at SW-002	Q_r1 = Q r2 =	1.70 3.83	
	flow in river at SW-003	Q_r3 =	4.45	
φ	flow in river at SW-003	Q r4 =	6.94	
ie or	flow in river at SW-004A	Q_r4A =	16.18	
필		Q_r4A = Q_r5 =	30.00	
Water Balance	flow in river at SW-005 flow check	Q_r5 = Q_ck =	30.00	
				(+-
	mass flux of surface water into SW-001	M_s1 =	73	(μς
	mass flux of surface water into SW-002	M_s2 =	85	(μο
	mass flux of surface water into SW-003	M_s3 =	24	(μο
	mass flux of surface water into SW-004	M s4 =	104	(μο
	mass flux of surface water into SW-004A	M s4A =	378	
	mass flux of surface water into SW-005	M s5 =	556	
×	mass flux of surface water inflow from upstream of PM-1	M sns =		(μς
Flux	mass flux of surface water flow from West Pit Overflow	M sms =		(μο
- S	mass flux of ground water into SW-001	M g1 =		(μς
Mass	mass flux of ground water into SW-002	M g2 =		(μο
≕	mass flux of ground water into SW-003	M_g3 =		(μς
	mass flux of ground water into SW-004	M_g4 =		(μς
	mass flux of ground water into SW-004	M_g4A =	116	
o	mass flux of ground water into SW-004A	M_g5 =	190	
Œ.	mass flux of seepage from East Pit	M gep =		(μς
ä	mass flux of seepage from West Pit			(μς
<u> </u>		M_gwp =		
Calculation	mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features	M_gl4 = M_gl4a =		(μ <u>ς</u>
	mass hux of combined ground water liner leakage/seepage from other mine leatures	IVI_gi+a =		(με
	mass flux in river at SW-001	M_r1 =	88	(μο
	mass flux in river at SW-002	M r2 =	204	
ø	mass flux in river at SW-003	M r3 =	238	
S	mass flux in river at SW-003	M r4 =	369	
<u>8</u>		M_r4A =	863	
Mass Balance	mass flux in river at SW-004A mass flux in river at SW-005	M_r4A = M_r5 =	1608	
			1000	146
	concentration in river at SW-001	C r1 =	1.8	ייון
o o		_		
닯	concentration in river at SW-002	C_r2 =	1.9	μg
tr tr	concentration in river at SW-003	C_r3 =	1.9	μg
<u>a</u>	concentration in river at SW-004	C r4 =		
×			1.9	
⊽ੁ	concentration in river at SW-004A	C_r4A =	1.9	
alco	concentration in river at SW-005	C_r5 =	1.9	μg
Calculation of Concentration	Concentration in five at 644 666			
Calc	concentration in two at ow ood			
	Observed concentration in river at SW-002		0.5	μα
	Observed concentration in river at SW-002		0.5	
line	Observed concentration in river at SW-002 Observed concentration in river at SW-003		0.5	μg
line	Observed concentration in river at SW-002 Observed concentration in river at SW-003 Observed concentration in river at SW-004		0.5 1.1 2.1	μg/ μg/
Baseline Calci Data Conc	Observed concentration in river at SW-002 Observed concentration in river at SW-003		0.5	μg/ μg/

arameter:	River Model - Calibration to Baseline Water Quality Data	a	
	Fluoride		
	surface water flow into SW-001	Q s1 =	2.79 (cfs
	surface water flow into SW-002	Q s2 =	3.36 (cfs
	surface water flow into SW-003	Q s3 =	0.97 (cfs
	surface water flow into SW-004	Q s4 =	4.04 (cfs
	surface water flow into SW-004A	Q s4A =	14.78 (cfs
	surface water flow into SW-005	Q s5 =	21.92 (cfs
	surface water inflow from upstream of PM-1	Q sns =	1.50 (cfs
	surface water flow from West Pit Overflow	Q sms =	0.00 (cfs
	ground water flow into SW-001	Q g1 =	0.18 (cfs
	ground water flow into SW-002	Q_g2 =	0.38 (cfs
Œ	ground water flow into SW-003	Q_g3 =	0.11 (cfs
Flow Data	ground water flow into SW-004	Q g4 =	0.32 (cfs
	ground water flow into SW-004A	Q g4A =	1.39 (cfs
<u> </u>	ground water flow into SW-005	Q g5 =	2.27 (cfs
H	ground water seepage from East Pit	Q gep =	0.00 (cfs
∓	ground water seepage from West Pit	Q gwp =	0.00 (cfs
Input	combined ground water liner leakage from stockpiles	Q gl4 =	0.00 (cfs
⊑	combined ground water liner leakage/seepage from other mine features	Q gl4a =	0.00 (cfs
	combined ground mater into realitage scopage from early filling realitates	α_gα =	0.00 (0.0
	concentration of curface water into SW 001	C c1 -	0.07 (mc
	concentration of surface water into SW-001	C_s1 = C s2 =	0.07 (mg
	concentration of surface water into SW-002		0.07 (mg
	concentration of surface water into SW-003	C_s3 =	0.07 (mg
	concentration of surface water into SW-004	C_s4 =	0.07 (mg
	concentration of surface water into SW-004A	C_s4A =	0.07 (mg
g	concentration of surface water into SW-005	C_s5 =	0.07 (mg
Data	concentration of surface water inflow from upstream of PM-1	C_sns =	0.14 (mg
	concentration of surface water flow from West Pit Overflow	C_sms =	0 (mg
'n	concentration of ground water into SW-001	C_g1 =	0.28 (mg
ij	concentration of ground water into SW-002	C_g2 =	0.28 (mg
<u> </u>	concentration of ground water into SW-003	C_g3 =	0.28 (mg
Concentration	concentration of ground water into SW-004	C_g4 =	0.28 (mg
S	concentration of ground water into SW-004A	C_g4A =	0.28 (mg
Ë	concentration of ground water into SW-005	C_g5 =	0.28 (mg
ŏ	concentration of ground water seepage from East Pit	C_gep =	0 (mg
=	concentration of ground water seepage from West Pit	C_gwp =	0 (mg
put	concentration of combined ground water liner leakage from stockpiles	C gl4 =	0 (mg
<u>_</u>	concentration of combined ground water liner leakage/seepage from other mine features	C_gl4a =	0 (mg
	5 1 0		
	flow in river at SW-001	Q_r1 =	4.47 (cfs
	flow in river at SW-002	Q r2 =	8.21 (cfs
	flow in river at SW-003	Q_r3 =	9.29 (cfs
ė,	flow in river at SW-004	Q r4 =	13.64 (cfs
Water Balance	flow in river at SW-004A	Q_r4A =	29.81 (cfs
멸	flow in river at SW-005	Q r5 =	54.00 (cfs
Water Balan	flow check	Q ck =	54.00 (cfs
		_	
	mass flux of surface water into SW-001	M s1 =	6 (mg
	mass flux of surface water into SW-002	M s2 =	7 (mg
	mass flux of surface water into SW-003	M s3 =	2 (mg
	mass flux of surface water into SW-004	M s4 =	8 (mg
	mass flux of surface water into SW-004A	M_s4A =	29 (mg
	mass flux of surface water into SW-005	M s5 =	43 (mg
×	mass flux of surface water inflow from upstream of PM-1	M_sns =	6 (mg
Ä	mass flux of surface water flow from West Pit Overflow	M_sms =	
	mass flux of ground water into SW-001		0 (mg 1 (mg
SSI		M_g1 =	
Mag	mass flux of ground water into SW-002	M_g2 =	3 (mg
	mass flux of ground water into SW-003	M_g3 =	1 (mg
of	mass flux of ground water into SW-004 mass flux of ground water into SW-004A	M_g4 =	3 (mg
	mass may or profind water into SW-DDAA	$M_g4A =$	
드	the of ground water into OW 00-7		11 (mg
tion	mass flux of ground water into SW-005	M_g5 =	18 (mg
ılation	mass flux of ground water into SW-005 mass flux of seepage from East Pit	M_gep =	18 (mg 0 (mg
culation	mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit	M_gep = M_gwp =	18 (mg 0 (mg 0 (mg
alculation	mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles	M_gep = M_gwp = M_gl4 =	18 (mg 0 (mg 0 (mg
Calculation	mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit	M_gep = M_gwp =	18 (mg 0 (mg 0 (mg
Calculation	mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features	M_gep = M_gwp = M_gl4 = M_gl4a =	18 (mg 0 (mg 0 (mg 0 (mg 0 (mg
Calculation	mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001	M_gep = M_gwp = M_gl4 = M_gl4a = M_r1 =	18 (mg 0 (mg 0 (mg 0 (mg 0 (mg
	mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from other mine features mass flux in river at SW-001 mass flux in river at SW-002	M_gep = M_gwp = M_gl4 = M_gl4a = M_r1 = M_r2 =	18 (mg 0 (mg 0 (mg 0 (mg 0 (mg 13 (mg 23 (mg
9	mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003	M_gep = M_gwp = M_gl4 = M_gl4a = M_r1 = M_r2 = M_r3 =	18 (mg 0 (mg 0 (mg 0 (mg 0 (mg 13 (mg 23 (mg 25 (mg
9	mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004	M_gep = M_gwp = M_gl4 = M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 =	18 (mg 0 (mg 0 (mg 0 (mg 0 (mg 13 (mg 23 (mg 25 (mg 36 (mg
9	mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004	M_gep = M_gwp = M_gl4 = M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 = M_r4A =	18 (mg 0 (mg 0 (mg 0 (mg 0 (mg 23 (mg 25 (mg 36 (mg 76 (mg
Mass Balance Calculation	mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004	M_gep = M_gwp = M_gl4 = M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 =	18 (mg 0 (mg 0 (mg 0 (mg 0 (mg 13 (mg 23 (mg 25 (mg 36 (mg
9	mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004	M_gep = M_gwp = M_gl4 = M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 = M_r4A =	18 (mg 0 (mg 0 (mg 0 (mg 0 (mg 23 (mg 25 (mg 36 (mg 76 (mg
Mass Balance	mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004	M_gep = M_gwp = M_gl4 = M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 = M_r4A =	18 (mg 0 (mg 0 (mg 0 (mg 0 (mg 23 (mg 25 (mg 36 (mg 76 (mg
Mass Balance	mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005	M_gep = M_gwp = M_gl4 = M_gl4 = M_gl4 = M_r2 = M_r3 = M_r4 = M_r4 = M_r5	18 (mg 0 (mg 0 (mg 0 (mg 25 (mg 25 (mg 36 (mg 138 (mg 138 (mg 0.10 (mg
Mass Balance	mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-001 concentration in river at SW-001 concentration in river at SW-002	M_gep = M_gwp = M_gl4 = M_gl4 = M_gl4 = M_r1 = M_r2 = M_r3 = M_r4 = M_r5 = M_r5 = M_r5 = C_r1 = C_r2 =	18 (mg 0 (mg 0 (mg 0 (mg 0 (mg 23 (mg 25 (mg 36 (mg 76 (mg 138 (mg 0.10 (mg 0.10 (mg
Mass Balance	mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005	M_gep = M_gwp = M_gl4 = M_gl4 = M_gl4 = M_r1 = M_r2 = M_r3 = M_r4 = M_r5	18 (mg 0 (mg 0 (mg 0 (mg 25 (mg 25 (mg 36 (mg 138 (mg 138 (mg 0.10 (mg
Mass Balance	mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-003	M_gep = M_gwp = M_gwp = M_gl4 = M_gl4 = M_gl4 = M_r3 = M_r4 = M_r5 = M_r5 = M_r5 = C_r1 = C_r2 = C_r3 = M_gwp	18 (mg 0 (mg 13 (mg 23 (mg 25 (mg 36 (mg 76 (mg 138 (mg 0.10 (mg 0.10 (mg 0.10 (mg
Mass Balance	mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004	M gep = M gwp = M gyb = M gl4 = M_gl4a = M r1 = M r2 = M r3 = M r4 = M r4A = M r5 = C r1 = C r2 = C r3 = C r4 =	18 (mg 0 (mg 13 (mg 23 (mg 25 (mg 138 (mg 76 (mg 138 (mg 0.10 (mg 0.10 (mg 0.10 (mg 0.09 (mg
Mass Balance	mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-003 concentration in river at SW-004	M_gep = M_gwp = M_gwp = M_gl4 = M_gl4 = M_gl4a = M_r4 = M_r4 = M_r4 = M_r5 = C_r4 = C_r4 = C_r4 = C_r4A = G_r4A = G_r4	18 (mg 0 (mg 13 (mg 23 (mg 25 (mg 138 (mg 76 (mg 138 (mg 0.10 (mg 0.10 (mg 0.10 (mg 0.09 (
9	mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004	M gep = M gwp = M gyb = M gl4 = M_gl4a = M r1 = M r2 = M r3 = M r4 = M r4A = M r5 = C r1 = C r2 = C r3 = C r4 =	18 (mg 0 (mg 13 (mg 23 (mg 25 (mg 138 (mg 76 (mg 138 (mg 0.10 (mg 0.10 (mg 0.10 (mg 0.09 (mg
Mass Balance	mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-003 concentration in river at SW-004	M_gep = M_gwp = M_gwp = M_gl4 = M_gl4 = M_gl4a = M_r4 = M_r4 = M_r4 = M_r5 = C_r4 = C_r4 = C_r4 = C_r4A = G_r4A = G_r4	18 (mg 0 (mg 13 (mg 23 (mg 25 (mg 138 (mg 76 (mg 138 (mg 0.10 (mg 0.10 (mg 0.10 (mg 0.09 (
Calculation of Mass Concentration Balance	mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-005	M_gep = M_gwp = M_gwp = M_gl4 = M_gl4 = M_gl4a = M_r4 = M_r4 = M_r4 = M_r5 = C_r4 = C_r4 = C_r4 = C_r4A = G_r4A = G_r4	18 (mg 0 (mg 23 (mg 23 (mg 25 (mg 76 (mg 138 (mg 0.10 (mg 0.10 (mg 0.10 (mg 0.09 (mg 0.09 (mg 0.09 (mg
Calculation of Mass Concentration Balance	mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from other mine features mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-004 Concentration in river at SW-005 Observed concentration in river at SW-005	M_gep = M_gwp = M_gwp = M_gl4 = M_gl4 = M_gl4a = M_r4 = M_r4 = M_r4 = M_r5 = C_r4 = C_r4 = C_r4 = C_r4A = G_r4A = G_r4	18 (mg 0 (mg 23 (mg 23 (mg 25 (mg 138 (mg 76 (mg 138 (mg 0.10 (mg 0.10 (mg 0.09 (mg 0.09 (mg 0.09 (mg 0.09 (mg 0.09 (mg 0.01 (mg
ine Calculation of Mass Concentration Balance	mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-004 Concentration in river at SW-005 Observed concentration in river at SW-002 Observed concentration in river at SW-002 Observed concentration in river at SW-003	M_gep = M_gwp = M_gwp = M_gl4 = M_gl4 = M_gl4a = M_r4 = M_r4 = M_r4 = M_r5 = C_r4 = C_r4 = C_r4 = C_r4A = G_r4A = G_r4	18 (mg 0 (mg 23 (mg 23 (mg 76 (mg 138 (mg 76 (mg 0.10 (mg 0.10 (mg 0.09 (mg 0.09 (mg 0.09 (mg
ine Calculation of Mass Concentration Balance	mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-004 Concentration in river at SW-005 Observed concentration in river at SW-005	M_gep = M_gwp = M_gwp = M_gl4 = M_gl4 = M_gl4a = M_r4 = M_r4 = M_r4 = M_r5 = C_r4 = C_r4 = C_r4 = C_r4A = G_r4A = G_r4	18 (mg 0 (mg 23 (mg 23 (mg 25 (mg 138 (mg 76 (mg 138 (mg 0.10 (mg 0.10 (mg 0.09 (mg 0.09 (mg 0.09 (mg 0.09 (mg 0.09 (mg 0.01 (mg
Mass Balance	mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-004 Concentration in river at SW-005 Observed concentration in river at SW-002 Observed concentration in river at SW-002 Observed concentration in river at SW-003	M_gep = M_gwp = M_gwp = M_gl4 = M_gl4 = M_gl4a = M_r4 = M_r4 = M_r4 = M_r5 = C_r4 = C_r4 = C_r4 = C_r4A = G_r4A = G_r4	18 (mg 0 (mg 23 (mg 23 (mg 76 (mg 138 (mg 76 (mg 0.10 (mg 0.10 (mg 0.09 (mg 0.09 (mg 0.09 (mg

	Iron			
	surface water flow into SW-001	Q_s1 =	2.87	
	surface water flow into SW-002	Q_s2 =	3.47	
	surface water flow into SW-003	Q_s3 =	1.00	
	surface water flow into SW-004 surface water flow into SW-004A	Q_s4 = Q_s4A =	4.16 15.24	
	surface water flow into SW-005	Q_s4A = Q_s5 =	22.61	
	surface water inflow from upstream of PM-1	Q sns =	0.00	
	surface water flow from West Pit Overflow	Q_sms =	0.00	
	ground water flow into SW-001	Q_g1 =	0.18	(0
	ground water flow into SW-002	Q_g2 =	0.38	
Data	ground water flow into SW-003	Q_g3 =	0.11	
Ö	ground water flow into SW-004	Q_g4 =	0.32	
Flow	ground water flow into SW-004A	Q_g4A =	1.39	
۾	ground water flow into SW-005 ground water seepage from East Pit	Q_g5 = Q_gep =	2.27 0.00	
<u> </u>	ground water seepage from West Pit	Q_gwp =	0.00	
Input	combined ground water liner leakage from stockpiles	Q_gl4 =	0.00	
⊑	combined ground water liner leakage/seepage from other mine features	Q gl4a =	0.00	
	concentration of surface water into SW-001	C_s1 =	1.6	1)
	concentration of surface water into SW-002	C_s2 =	1.6	1)
	concentration of surface water into SW-003	C_s3 =	1.6	1)
	concentration of surface water into SW-004	C_s4 =	1.6	
	concentration of surface water into SW-004A	C_s4A =	1.6	
ta	concentration of surface water into SW-005 concentration of surface water inflow from upstream of PM-1	C_s5 =	1.6	
Data	concentration of surface water inflow from upstream of PM-1 concentration of surface water flow from West Pit Overflow	C_sns = C_sms =	0.03	1) (
	concentration of surface water flow from west Fit Overflow	C_silis = C_g1 =	2.844	
Concentration	concentration of ground water into SW-001	C_g1 =	2.844	
rat	concentration of ground water into SW-003	C_g3 =	2.844	
ŧ	concentration of ground water into SW-004	C_g4 =	2.844	
9	concentration of ground water into SW-004A	C_g4A =	2.844	
o	concentration of ground water into SW-005	C_g5 =	2.844	
	concentration of ground water seepage from East Pit	C_gep =) (ı
but	concentration of ground water seepage from West Pit	C_gwp =		(1
은	concentration of combined ground water liner leakage from stockpiles	C_gl4 =	0	
_	concentration of combined ground water liner leakage/seepage from other mine features	C_gl4a =	0	(1
	flow in river at SW-001	Q r1 =	3.05	16
	flow in river at SW-002	Q_r2 =	6.90	
	flow in river at SW-003	Q r3 =	8.01	
. 8	flow in river at SW-004	Q_r4 =	12.49	(
ig E	flow in river at SW-004A	Q_r4A =	29.12	(
Water Balance	flow in river at SW-005	Q_r5 =	54.00	
<u>> m</u>	flow check	Q_ck =	54.00) (
		IM at	100	17.
	mass flux of surface water into SW-001 mass flux of surface water into SW-002	M_s1 = M_s2 =	130 157	
	mass flux of surface water into SW-002	M s3 =	45	
	mass flux of surface water into SW-004	M s4 =	188	
	mass flux of surface water into SW-004A	M s4A =	690	
	mass flux of surface water into SW-005	M_s5 =	1024	
FILX	mass flux of surface water inflow from upstream of PM-1	M_sns =	0) (ı
正	mass flux of surface water flow from West Pit Overflow	M_sms =	0) (ı
Mass	mass flux of ground water into SW-001	M_g1 =	14	
ğ	mass flux of ground water into SW-002	M_g2 =	31	
	mass flux of ground water into SW-003	M_g3 =	9	
o	mass flux of ground water into SW-004	M_g4 =	26 112	
o	mass flux of ground water into SW-004A mass flux of ground water into SW-005	M_g4A = M_g5 =	183	
ati	mass flux of seepage from East Pit	M_gep =) (ı
Ä	mass flux of seepage from West Pit	M gwp =) (i
Calculation	mass flux of combined ground water liner leakage from stockpiles	M_gl4 =	0	(1
O	mass flux of combined ground water liner leakage/seepage from other mine features	M_gl4a =) (ı
				_
	mass flux in river at SW-001	M_r1 =	144	
(I)	mass flux in river at SW-002	M_r2 =	332	
္က ဦ	mass flux in river at SW-003	M_r3 =	386	
lar	mass flux in river at SW-004	M_r4 =	600	
Mass Balance	mass flux in river at SW-004A mass flux in river at SW-005	M_r4A = M_r5 =	1402 2609	
<u> </u>	III III III III III III III III III II	INTIO =	2009	(
	La di La La Compania	la .		ī
of 15	concentration in river at SW-001	C_r1 =	1.7	-
E E	concentration in river at SW-002	C_r2 =	1.7	(1
tra	concentration in river at SW-003	C_r3 =	1.7	1)
Z C	concentration in river at SW-004	C r4 =	1.7	
⊕ ⊡				
Cult	concentration in river at SW-004A	C_r4A =	1.7	
Salcula		C_r5 =	1.7	(1
Calculation of Concentration	concentration in river at SW-005	0_13 =		
Conce	concentration in river at SW-005	0_13 =		
	concentration in river at SW-005 Observed concentration in river at SW-002	0_13 =	1.21	(1
	Observed concentration in river at SW-002	0_15=	1.21	Т
Baseline Calcula Data Conce		0_10 =		1)

	River Model - Calibration to Baseline Water Quality Dat	a		
rameter:	Hardness			
	surface water flow into SW-001	Q_s1 =	0.87 ((ofo)
	surface water flow into SW-001	Q_s1 = Q_s2 =	0.87 (
	surface water flow into SW-003	Q_s3 =	0.27 (1.22 (
	surface water flow into SW-004	Q_s4 =		
	surface water flow into SW-004A	Q_s4A =	4.31 (
	surface water flow into SW-005	Q_s5 =	6.25 (
	surface water inflow from upstream of PM-1	Q_sns =	1.50 (
	surface water flow from West Pit Overflow	Q_sms =	0.00 (
	ground water flow into SW-001	$Q_g1 =$	0.18 (
	ground water flow into SW-002	Q_g2 =	0.38 (
ta	ground water flow into SW-003	$Q_g3 =$	0.11 ((cfs)
Dat	ground water flow into SW-004	Q_g4 =	0.32 ((cfs)
	ground water flow into SW-004A	$Q_g4A =$	1.39 (cfs)
Flow	ground water flow into SW-005	Q g5 =	2.27 (cfs)
芷	ground water seepage from East Pit	Q_gep =	0.00 (cfs)
=	ground water seepage from West Pit	Q gwp =	0.00 (cfs)
Input	combined ground water liner leakage from stockpiles	Q gl4 =	0.00 (cfs)
드	combined ground water liner leakage/seepage from other mine features	Q gl4a =	0.00 (
		1 2		,
	concentration of surface water into SW-001	C_s1 =	110 (ma/l
	concentration of surface water into SW-001	C_s2 =	110 (
	concentration of surface water into SW-002	C_s2 =	110 (
		C_S3 = C_S4 =		
	concentration of surface water into SW-004		110 (
	concentration of surface water into SW-004A	C_s4A =	110 (
<u>ra</u>	concentration of surface water into SW-005	C_s5 =	110 (
Dat	concentration of surface water inflow from upstream of PM-1	C_sns =	110 (
	concentration of surface water flow from West Pit Overflow	C_sms =		mg/
Ë	concentration of ground water into SW-001	C_g1 =	66.42 (
Ė	concentration of ground water into SW-002	C_g2 =	66.42 (
G	concentration of ground water into SW-003	C_g3 =	66.42 (
Concentration	concentration of ground water into SW-004	C_g4 =	66.42 (
9	concentration of ground water into SW-004A	C_g4A =	66.42 (mg/
Ĕ	concentration of ground water into SW-005	C g5 =	66.42 (mg/
റ്റ	concentration of ground water seepage from East Pit	C_gep =		mg/l
÷.	concentration of ground water seepage from West Pit	C gwp =		mg/l
put	concentration of combined ground water liner leakage from stockpiles	C gl4 =		mg/l
	concentration of combined ground water liner leakage/seepage from other mine features	C_gl4a =		mg/l
	flow in river at SW-001	Q_r1 =	2.55 (
	flow in river at SW-002	Q_r2 =	3.86 (
a -	flow in river at SW-003	Q_r3 =	4.24 (
Water Balance	flow in river at SW-004	Q_r4 =	5.78 (cfs)
ĕ ⊑	flow in river at SW-004A	Q r4A =	11.48 (cfs)
Water Balan	flow in river at SW-005	Q_r5 =	20.00 ((cfs)
≥ m	flow check	Q_ck =	20.00 ((cfs)
	The state of the state of the OM Code	Dr	0004	
	mass flux of surface water into SW-001	M_s1 =	2694 (
	mass flux of surface water into SW-002	M_s2 =	2923 (
	mass flux of surface water into SW-003	M_s3 =	838 (
	mass flux of surface water into SW-004	M_s4 =	3784 (
	mass flux of surface water into SW-004A	M_s4A =	13411 (mg/s
	mass flux of surface water into SW-005	$M_s5 =$	19465 (mg/s
ŝ	mass flux of surface water inflow from upstream of PM-1	M_sns =	4670 (mg/s
正	mass flux of surface water flow from West Pit Overflow	M_sms =	0 (mg/s
Ó	mass flux of ground water into SW-001	M_g1 =	338 (
as	mass flux of ground water into SW-002	M_g2 =	714 (
Mass	mass flux of ground water into SW-003	M_g3 =	207 (
of T	mass flux of ground water into SW-004	M_g4 =	601 (
_	mass flux of ground water into SW-004A	M_g4A =	2613 (
	mass flux of ground water into SW-005	M_g5 =		mg/s
ō				
atio	mass flux of seepage from East Pit	M gen -		ma/
ulatio	mass flux of seepage from East Pit	M_gep =		
Iculation	mass flux of seepage from West Pit	$M_gwp =$	0 (mg/s
Salculation	mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles	M_gwp = M_gl4 =	0 (mg/s
Calculation	mass flux of seepage from West Pit	$M_gwp =$	0 (mg/s mg/s
Calculation	mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features	M_gwp = M_gl4 = M_gl4a =	0 ((mg/: (mg/: (mg/:
	mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001	M_gwp = M_gl4 = M_gl4a = M_r1 =	0 (0 (0 ((mg/: (mg/: (mg/:
	mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002	M_gwp = M_gl4 = M_gl4a = M_r1 = M_r2 =	7701 (11339 ((mg/s (mg/s (mg/s (mg/s
Φ Ω	mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003	M_gwp = M_gl4 = M_gl4a = M_r1 = M_r2 = M_r3 =	7701 (11339 (12384 ((mg/s (mg/s (mg/s (mg/s (mg/s
Θ.	mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-003	M_gwp = M_gl4 = M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 =	7701 (11339 (12384 (16769 ((mg/s (mg/s (mg/s (mg/s (mg/s (mg/s
Θ.	mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004	M_gwp = M_gl4 = M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 = M_r4A =	7701 (11339 (12384 (16769 (32793 ((mg/s (mg/s (mg/s (mg/s (mg/s (mg/s
Mass Balance Calculation	mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-003	M_gwp = M_gl4 = M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 =	7701 (11339 (12384 (16769 ((mg/s (mg/s (mg/s (mg/s (mg/s (mg/s
Mass Balance	mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005	M gwp = M_gl4 = M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 = M_r4 = M_r5 =	7701 (11339 (16769 (32793 (56525 (mg/s (mg/s (mg/s (mg/s (mg/s (mg/s
Mass Balance	mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-001	M gwp = M gl4 = M gl4a = M r1 = M r2 = M r3 = M r4 = M r4 = M r4 = M r4 = M r5 = M r4 = M r5 = M r4 = M r5	7701 (11339 (16769 (32793 (56525 (mg/s (mg/s (mg/s (mg/s (mg/s (mg/s (mg/s
Mass Balance	mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005	M gwp = M_gl4 = M_gl4a = M_r1 = M_r2 = M_r3 = M_r4 = M_r4 = M_r5 =	7701 (11339 (16769 (32793 (56525 (mg/s (mg/s (mg/s (mg/s (mg/s (mg/s (mg/s
Mass Balance	mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-001 concentration in river at SW-002	M gwp = M gl4 = M gl4a = M r1 = M r2 = M r3 = M r4 = M r4 = M r4 = C r1 = C r2 =	7701 (11339 (12384 (16769 (32793 (56525 (106.9 (103.7 ((mg/s) (mg/s) (mg/s) (mg/s) (mg/s) (mg/s) (mg/s) (mg/s) (mg/s)
Mass Balance	mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003	M gwp = M gl4 = M gl4 = M gl4 = M r1 = M r2 = M r3 = M r4 = M r4A = M r5 = C r1 = C r2 = C r3 =	7701 (1339 (14384 (1438	(mg/s) (mg/s) (mg/s) (mg/s) (mg/s) (mg/s) (mg/s) (mg/s) (mg/s) (mg/s)
Mass Balance	mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-001 concentration in river at SW-002	M gwp = M gl4 = M gl4a = M r1 = M r2 = M r3 = M r4 = M r4 = M r4 = C r1 = C r2 =	7701 (11339 (12384 (16769 (32793 (56525 (106.9 (103.7 ((mg/s) (mg/s) (mg/s) (mg/s) (mg/s) (mg/s) (mg/s) (mg/s)
Mass Balance	mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003	M gwp = M gl4 = M gl4 = M gl4 = M r1 = M r2 = M r3 = M r4 = M r4A = M r5 = C r1 = C r2 = C r3 =	7701 (1339 (14384 (1438	(mg/s) (mg/s) (mg/s) (mg/s) (mg/s) (mg/s) (mg/s) (mg/s)
Φ Ω	mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-003 concentration in river at SW-004	M gwp = M gl4 = M gl4a = M gl4a = M r1 = M r2 = M r4 = M r4A = M r4A = M r5 = C r1 = C r2 = C r4 = C r4A = M gl4a = M gr4a = C r4A = M gr4a = M gr4	7701 (11339 (12384 (16769 (32793 (56525 (106.9 (103.7 (103.1 (102.5 (101.0 ((mg/s)
Mass Balance	mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004	M gwp = M gl4 = M gl4 = M gl4 = M r1 = M r2 = M r3 = M r4 = M r4A = M r4A = C r1 = C r2 = C r3 = C r4 =	7701 (11339 (16769 (32793 (56525 (106.9 (103.7 (103.1 (102.5 ((mg/s (mg/s (mg/s (mg/s (mg/s (mg/s (mg/s (mg/s (mg/s (mg/s
Calculation of Mass Concentration Balance	mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-005	M gwp = M gl4 = M gl4a = M gl4a = M r1 = M r2 = M r4 = M r4A = M r4A = M r5 = C r1 = C r2 = C r4 = C r4A = M gl4a = M gr4a = C r4A = M gr4a = M gr4	0 (0 (0 () 0 ((mg/s (mg/s (mg/s (mg/s (mg/s (mg/s (mg/s (mg/s (mg/s (mg/s (mg/s
Calculation of Mass Concentration Balance	mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-005 Observed concentration in river at SW-005	M gwp = M gl4 = M gl4a = M gl4a = M r1 = M r2 = M r4 = M r4A = M r4A = M r5 = C r1 = C r2 = C r4 = C r4A = M gl4a = M gr4a = C r4A = M gr4a = M gr4	0 (0 (0 (1 (1 (1 (1 (1 (1 (1 ((mg/s (mg/s (mg/s (mg/s (mg/s (mg/l (mg/l (mg/l (mg/l
line Calculation of Mass Concentration Balance	mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-004 Concentration in river at SW-005 Observed concentration in river at SW-002	M gwp = M gl4 = M gl4a = M gl4a = M r1 = M r2 = M r4 = M r4A = M r4A = M r5 = C r1 = C r2 = C r4 = C r4A = M gl4a = M gr4a = C r4A = M gr4a = M gr4	0 (0 (0 () 0 ([mg/s]
line Calculation of Mass Concentration Balance	mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-004 Concentration in river at SW-005 Observed concentration in river at SW-002 Observed concentration in river at SW-003	M gwp = M gl4 = M gl4a = M gl4a = M r1 = M r2 = M r4 = M r4A = M r4A = M r5 = C r1 = C r2 = C r4 = C r4A = M gl4a = M gr4a = C r4A = M gr4a = M gr4	0 (0 (0 () 0 ([mg/s] [m
Mass Balance	mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-004 Concentration in river at SW-005 Observed concentration in river at SW-002	M gwp = M gl4 = M gl4a = M gl4a = M r1 = M r2 = M r4 = M r4A = M r4A = M r5 = C r1 = C r2 = C r4 = C r4A = M gl4a = M gr4a = C r4A = M gr4a = M gr4	0 (0 (0 () 0 ((mg/s)

	River Model - Calibration to Baseline Water Quality Dat Potassium			
	surface water flow into SW-001	Q_s1 =	4.71	
	surface water flow into SW-002	Q_s2 =	5.79	
	surface water flow into SW-003	Q_s3 =	1.66	
	surface water flow into SW-004	Q_s4 =	6.86	
	surface water flow into SW-004A surface water flow into SW-005	Q_s4A = Q_s5 =	25.25 37.58	
	surface water inflow from upstream of PM-1	Q_sns =	1.50	
	surface water flow from West Pit Overflow	Q_sns =	0.00	
	ground water flow into SW-001	Q_silis = Q_g1 =	0.00	
	ground water flow into SW-002	Q_g1 = Q_g2 =	0.18	
æ	ground water flow into SW-002	Q_g3 =	0.11	
Dat	ground water flow into SW-004	Q_g6 =	0.32	
	ground water flow into SW-004A	Q_g4A =	1.39	
Flow	ground water flow into SW-005	Q_g5 =	2.27	
유	ground water seepage from East Pit	Q_gep =	0.00	
<u> </u>	ground water seepage from West Pit	Q_gwp =	0.00	
Input	combined ground water liner leakage from stockpiles	Q gl4 =	0.00	
⊑	combined ground water liner leakage/seepage from other mine features	Q gl4a =	0.00	
	concentration of surface water into SW-001	C_s1 =	1.3	(mg
	concentration of surface water into SW-002	C s2 =		(mg
	concentration of surface water into SW-003	C_s3 =		(mg
	concentration of surface water into SW-004	C_s4 =		(mg
	concentration of surface water into SW-004A	C_s4A =		(mg
œ	concentration of surface water into SW-005	C_s5 =		(mg
Data	concentration of surface water inflow from upstream of PM-1	C_sns =		(mg
ث	concentration of surface water flow from West Pit Overflow	C sms =		(mg
_	concentration of ground water into SW-001	C_g1 =	1.75	
Concentration	concentration of ground water into SW-002	C_g2 =	1.75	
ğ	concentration of ground water into SW-003	C_g3 =	1.75	
Ţ	concentration of ground water into SW-004	C_g4 =	1.75	
ဗ	concentration of ground water into SW-004A	C_g4A =	1.75	
Ë	concentration of ground water into SW-005	C_g5 =	1.75	(mg
ŏ	concentration of ground water seepage from East Pit	C_gep =	0	(mg
put	concentration of ground water seepage from West Pit	C_gwp =	0	(mg
₫	concentration of combined ground water liner leakage from stockpiles	C_gl4 =		(mg
	concentration of combined ground water liner leakage/seepage from other mine features	C_gl4a =	0	(mg
	Harris alice at CW 004	IO =1		/
	flow in river at SW-001	Q_r1 =	6.39	
	flow in river at SW-002	Q_r2 =	12.55	
Φ	flow in river at SW-003	Q_r3 =	14.33	
ے ک	flow in river at SW-004	Q_r4 =	21.51	
ate lar	flow in river at SW-004A	Q_r4A =	48.15	
Water Balance	flow in river at SW-005 flow check	Q_r5 = Q_ck =	88.00 88.00	
	····	12_0	30.00	(515
	mass flux of surface water into SW-001	M s1 =	173	(mc
	mass flux of surface water into SW-002	M s2 =	213	
	mass flux of surface water into SW-003	M s3 =		(mg
	mass flux of surface water into SW-004	M s4 =	252	
	mass flux of surface water into SW-004A	M s4A =	929	
	mass flux of surface water into SW-005	M s5 =	1383	
×	mass flux of surface water inflow from upstream of PM-1	M sns =	115	
른	mass flux of surface water flow from West Pit Overflow	M sms =		(mg
	mass flux of ground water into SW-001	M_g1 =		(mg
Mass	mass flux of ground water into SW-002	M_g2 =		(mg
ž	mass flux of ground water into SW-003	M_g3 =		(mg
7	mass flux of ground water into SW-004	M q4 =		(mc
5	mass flux of ground water into SW-004A	M_g4A =		(mg
ō	mass flux of ground water into SW-005	M_g5 =	112	
ati	mass flux of seepage from East Pit	M_gep =		(mg
=	mass flux of seepage from Vest Pit	M_gwp =		(mg
Calculation	mass flux of combined ground water liner leakage from stockpiles	M gl4 =		(mg
C	mass flux of combined ground water liner leakage/seepage from other mine features	M_gl4a =		(mg
0				,ε
				/
	mass flux in river at SW-001	M r1 =	297	(IIIc
	mass flux in river at SW-001 mass flux in river at SW-002	M_r1 = M r2 =		
9	mass flux in river at SW-002	M_r2 =	528	(mg
9		M_r2 = M_r3 =	528 595	(mg
9	mass flux in river at SW-002 mass flux in river at SW-003	M_r2 =	528 595	(mg (mg (mg
Mass Balance (mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004	M_r2 = M_r3 = M_r4 =	528 595 863	(mg (mg (mg
9	mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004A	M_r2 = M_r3 = M_r4 = M_r4A =	528 595 863 1861	(mg (mg (mg
Mass Balance	mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005	M_r2 = M_r3 = M_r4 = M_r4A = M_r5 =	528 595 863 1861 3356	(mg (mg (mg (mg (mg
Mass Balance	mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001	M_r2 = M_r3 = M_r4 = M_r4A = M_r5 = C_r1 =	528 595 863 1861 3356	(mg (mg (mg (mg (mg
Mass Balance	mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002	M_r2 = M_r3 = M_r4 = M_r4A = M_r5 = C_r1 = C_r2 =	528 595 863 1861 3356	(mg (mg (mg (mg (mg (mg
Mass Balance	mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001	M_r2 = M_r3 = M_r4 = M_r4A = M_r5 = C_r1 =	528 595 863 1861 3356	(mg (mg (mg (mg (mg (mg
Mass Balance	mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003	M_r2 = M_r3 = M_r4 = M_r4A = M_r5 = C_r1 = C_r2 = C_r3 =	528 595 863 1861 3356 1.6 1.5	(mg (mg (mg (mg (mg (mg (mg
Mass Balance	mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-003	M_r2 = M_r3 = M_r4 = M_r5 = C_r1 = C_r2 = C_r3 = C_r4 =	528 595 863 1861 3356 1.6 1.5 1.4	(mg (mg (mg (mg (mg (mg (mg
Mass Balance	mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004	M r2 = M r3 = M r4 = M_r4 = M_r5 = C_r1 = C_r2 = C_r3 = C_r4 = C_r4A =	528 595 863 1861 3356 1.6 1.5 1.4 1.4	(mg (mg (mg (mg (mg (mg (mg (mg
9	mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-003	M_r2 = M_r3 = M_r4 = M_r5 = M_r5 = C_r1 = C_r2 = C_r3 = C_r4 =	528 595 863 1861 3356 1.6 1.5 1.4 1.4	(mg (mg (mg (mg (mg (mg (mg (mg
Mass Balance	mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004	M r2 = M r3 = M r4 = M_r4 = M_r5 = C_r1 = C_r2 = C_r3 = C_r4 = C_r4A =	528 595 863 1861 3356 1.6 1.5 1.4 1.4	(mg (mg (mg (mg (mg (mg (mg (mg
Calculation of Mass Concentration Balance	mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004	M r2 = M r3 = M r4 = M_r4 = M_r5 = C_r1 = C_r2 = C_r3 = C_r4 = C_r4A =	528 595 863 1861 3356 1.6 1.5 1.5 1.4 1.4	(mg (mg (mg (mg (mg (mg (mg (mg (mg
line Calculation of Mass Concentration Balance	mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-005 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-005 Observed concentration in river at SW-002	M r2 = M r3 = M r4 = M_r4 = M_r5 = C_r1 = C_r2 = C_r3 = C_r4 = C_r4A =	528 595 863 1861 3356 1.6 1.5 1.4 1.4 1.3	(mg (mg (mg (mg (mg (mg (mg (mg
line Calculation of Mass Concentration Balance	mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-005 Observed concentration in river at SW-002 Observed concentration in river at SW-002	M r2 = M r3 = M r4 = M_r4 = M_r5 = C_r1 = C_r2 = C_r3 = C_r4 = C_r4A =	528 595 595 861 3356 1.6 1.5 1.5 1.4 1.4 2.0	(mg (mg (mg (mg (mg (mg (mg (mg (mg (mg
line Calculation of Mass Concentration Balance	mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-005 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-004 Concentration in river at SW-005 Observed concentration in river at SW-002 Observed concentration in river at SW-003	M r2 = M r3 = M r4 = M_r4 = M_r5 = C_r1 = C_r2 = C_r3 = C_r4 = C_r4A =	528 595 595 863 1861 3356 1.6 1.5 1.5 1.4 1.4 1.3	
Mass Balance	mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-005 Observed concentration in river at SW-002 Observed concentration in river at SW-002	M r2 = M r3 = M r4 = M_r4 = M_r5 = C_r1 = C_r2 = C_r3 = C_r4 = C_r4A =	528 595 595 861 3356 1.6 1.5 1.5 1.4 1.4 2.0	

rameter:	River Model - Calibration to Baseline Water Quality Dat	a		
nameter:	Magnesium			
	surface water flow into SW-001	Q s1 =	2.73	(ofc)
	surface water flow into SW-001	Q_s1 = Q_s2 =	3.29	
	surface water flow into SW-002	Q_s2 = Q_s3 =	0.95	
	surface water flow into SW-003	Q_s3 = Q_s4 =	3.95	
	surface water flow into SW-004	Q_54 = Q_s4A =	14.47	
	surface water flow into SW-004A	Q_s4A = Q_s5 =	21.46	
	surface water inflow from upstream of PM-1		1.50	(ofc)
		Q_sns =		
	surface water flow from West Pit Overflow	Q_sms =	0.00	
	ground water flow into SW-001	Q_g1 =	0.18	
_	ground water flow into SW-002	Q_g2 =	0.38	
Data	ground water flow into SW-003	Q_g3 =	0.11	
)a	ground water flow into SW-004	Q_g4 =	0.32	(cfs
]/	ground water flow into SW-004A	Q_g4A =	1.39	(cfs
No	ground water flow into SW-005	Q g5 =	2.27	(cfs
Ĕ	ground water seepage from East Pit	Q_gep =	0.00	(cfs
=	ground water seepage from West Pit	Q gwp =	0.00	(cfs
put	combined ground water liner leakage from stockpiles	Q_gl4 =	0.00	
<u>u</u>	combined ground water liner leakage/seepage from other mine features	Q_gl4a =	0.00	
	concentration of ourface water into CM 001	IC at	ol	/ma
	concentration of surface water into SW-001	C_s1 =		(mg
	concentration of surface water into SW-002	C_s2 =		(mg
	concentration of surface water into SW-003	C_s3 =		(mg
	concentration of surface water into SW-004	C_s4 =		(mg
	concentration of surface water into SW-004A	C_s4A =		(mg
æ	concentration of surface water into SW-005	C_s5 =		(mg
ate	concentration of surface water inflow from upstream of PM-1	C_sns =	10.5	
ñ	concentration of surface water flow from West Pit Overflow	C_sms =		(mg
_	concentration of ground water into SW-001	C_g1 =	8.02	
<u>.</u>	concentration of ground water into SW-002	C_g2 =	8.02	
at	concentration of ground water into SW-002	C_g3 =	8.02	
ıtr	concentration of ground water into SW-003	C_g3 = C_g4 =	8.02	
Concentration Data	concentration of ground water into SW-004A	C_g4 =	8.02	
20			8.02	
ō	concentration of ground water into SW-005	C_g5 =		
O	concentration of ground water seepage from East Pit	C_gep =		(mg
nt	concentration of ground water seepage from West Pit	C_gwp =		(mg
Input	concentration of combined ground water liner leakage from stockpiles	C_gl4 =		(mg/
=	concentration of combined ground water liner leakage/seepage from other mine features	C_gl4a =	0	(mg
	flow in river at SW-001	Q r1 =	4.41	(cfs)
	flow in river at SW-002	Q r2 =	8.08	
	flow in river at SW-003	Q_r3 =	9.14	
œ.	flow in river at SW-003	Q_r4 =	13.41	
ر ا				
ate Iai	flow in river at SW-004A	Q_r4A =	29.27	
Water Balance	flow in river at SW-005 flow check	Q_r5 = Q_ck =	53.00 53.00	(cfs)
		_		
	mass flux of surface water into SW-001	M_s1 =	618	
	mass flux of surface water into SW-002	M_s2 =	745	
	mass flux of surface water into SW-003	M_s3 =	214	
	mass flux of surface water into SW-004	$M_s4 =$	895	(mg
	mass flux of surface water into SW-004A	M_s4A =	3276	(mg
	mass flux of surface water into SW-005	M s5 =	4858	(ma
×	mass flux of surface water inflow from upstream of PM-1	M sns =	116	
	mass flux of surface water flow from West Pit Overflow	M sms =		
				(mg
			0	(mg (mg
	mass flux of ground water into SW-001	M_g1 =	0 41	(mg (mg (mg
	mass flux of ground water into SW-001 mass flux of ground water into SW-002	M_g1 = M_g2 =	0 41 86	(mg (mg (mg (mg
Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003	M_g1 = M_g2 = M_g3 =	0 41 86 25	(mg (mg (mg (mg (mg
of Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004	M_g1 = M_g2 = M_g3 = M_g4 =	0 41 86 25 73	(mg (mg (mg (mg (mg (mg
of Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004	M_g1 = M_g2 = M_g3 = M_g4 = M_g4A =	0 41 86 25 73 315	(mg (mg (mg (mg (mg (mg (mg
of Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005	M_g1 = M_g2 = M_g3 = M_g4 = M_g4A = M_g5 =	0 41 86 25 73 315 515	(mg (mg (mg (mg (mg (mg (mg
of Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit	M_g1 = M_g2 = M_g3 = M_g4 = M_g4A = M_g5 = M_gep =	0 41 86 25 73 315 515	(mg (mg (mg (mg (mg (mg (mg (mg
of Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit	M g1 = M g2 = M g3 = M g4 = M g4A = M g5 = M gep = M gwp =	0 41 86 25 73 315 515 0	(mg (mg (mg (mg (mg (mg (mg (mg
of Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles	M_g1 = M_g2 = M_g3 = M_g4 = M_g4A = M_g5 = M_gep = M_gwp = M_gl4 =	0 41 86 25 73 315 515 0 0	(mg (mg (mg (mg (mg (mg (mg (mg (mg
Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit	M g1 = M g2 = M g3 = M g4 = M g4A = M g5 = M gep = M gwp =	0 41 86 25 73 315 515 0 0	(mg (mg (mg (mg (mg (mg (mg (mg (mg
of Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features	M_g1 = M_g2 = M_g3 = M_g4 = M_g4A = M_g5 = M_gep = M_gwp = M_gl4 = M_gl4a =	0 41 86 25 73 315 515 0 0	(mg (mg (mg (mg (mg (mg (mg (mg (mg
of Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001	M_g1 = M, g2 = M g3 = M g4 = M g4 = M g4A = M_g5 = M_gep = M gwp = M gl4 = M_gl4a = M_r1 = M_r1 = M_r1 = M_r1 = M_r1 = M_r1 = M_r2 = M_r1 = M_r2 = M_r3 = M_	0 411 86 25 73 315 515 0 0	(mg (mg (mg (mg (mg (mg (mg (mg (mg
Calculation of Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-001 mass flux in river at SW-002	M g1 = M g2 = M g2 = M g3 = M g4 = M g4A = M g4A = M g9 =	0 411 86 225 73 315 515 0 0 0 1105	(mg (mg (mg (mg (mg (mg (mg (mg (mg
ce Calculation of Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003	M g1 = M g2 = M g2 = M g3 = M g4 = M g4 = M g4A = M g4A = M g4B = M g4	0 411 86 25 73 315 515 0 0 0 1105 1936 2175	(mg (mg) (mg) (mg) (mg) (mg) (mg) (mg) (
ce Calculation of Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004	M g1 = M g2 = M g2 = M g3 = M g4 = M g4A = M g4A = M g4B = M g	0 41 86 25 73 315 515 0 0 0 1 1105 1105 1936 2175 3143	(mg (mg (mg (mg (mg (mg (mg (mg (mg (mg
ce Calculation of Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004	M g1 = M g2 = M g2 = M g3 = M g4 = M g4A = M g4A = M g4B = M g1B = M g	0 411 866 25 73 315 515 0 0 0 0 1105 1936 2175 3143 6735	(mg (mg (mg (mg (mg (mg (mg (mg (mg (mg
ss ance Calculation of Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004	M g1 = M g2 = M g2 = M g3 = M g4 = M g4A = M g4A = M g4B = M g	0 41 86 25 73 315 515 0 0 0 1 1105 1105 1936 2175 3143	(mg (mg (mg (mg (mg (mg (mg (mg (mg (mg
Mass Balance Calculation of Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005	M g1 = M g2 = M g2 = M g3 = M g4 = M g44 = M g45 = M g95 = M g96 = M gwp = M gwp = M gl4 = M gl4 = M gl4 = M gr1 = M r2 = M r3 = M r4 = M r4 = M r4 = M r5 =	0 411 866 255 73 315 0 0 0 0 0 1105 1936 2175 3143 6735 12108	(mg (mg (mg (mg (mg (mg (mg (mg (mg (mg
Mass Balance Calculation of Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-005	M g1 = M g2 = M g2 = M g3 = M g4 = M g4 = M g4A = M g5 = M g9p = M gwp = M g14 = M g14 = M g14 = M g14 = M g15 = M g15 = M g15 = M g16	0 41 41 86 6 25 73 315 515 0 0 0 0 0 1 1105 1936 2175 3143 6735 12108	(mg (mg (mg (mg (mg (mg (mg (mg (mg (mg
Mass Balance Calculation of Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005	M g1 = M g2 = M g2 = M g3 = M g4 = M g44 = M g45 = M g95 = M g96 = M gwp = M gwp = M gl4 = M gl4 = M gl4 = M gr1 = M r2 = M r3 = M r4 = M r4 = M r4 = M r5 =	0 41 41 86 6 25 73 315 515 0 0 0 0 0 1 1105 1936 2175 3143 6735 12108	(mg (mg (mg (mg (mg (mg (mg (mg (mg (mg
Mass Balance Calculation of Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-001 concentration in river at SW-001 concentration in river at SW-002	M g1 = M g2 = M g2 = M g3 = M g4 = M g4A = M g	0 41 86 25 73 315 515 0 0 0 0 0 0 1105 1936 2175 3143 6735 12108 8.9 8.5	(mg (mg (mg (mg (mg (mg (mg (mg (mg (mg
Mass Balance Calculation of Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-003	M g1 = M g2 = M g2 = M g3 = M g4 = M g4A = M g	0 41 41 86 6 25 73 315 5 515 0 0 0 0 0 0 1105 1936 2175 3143 6735 12108 8.9 8.5 8.4	(mg (mg (mg (mg (mg (mg (mg (mg (mg (mg
Mass Balance Calculation of Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004	M g1 = M g2 = M g2 = M g3 = M g4 = M g4 = M g4A = M g4A = M g4B = M g4B = M g4B = M g1B = M g1	0 41 41 86 25 73 315 515 0 0 0 0 1105 1936 2175 3143 6735 12108 8.9 8.5 8.4 8.3	(mg (mg (mg (mg (mg (mg (mg (mg (mg (mg
Mass Balance Calculation of Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-003	M g1 = M g2 = M g2 = M g3 = M g4 = M g4A = M g	0 41 41 86 25 73 315 515 0 0 0 0 1105 1936 2175 3143 6735 12108 8.9 8.5 8.4 8.3	(mg (mg (mg (mg (mg (mg (mg (mg (mg (mg
ce Calculation of Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004	M g1 = M g2 = M g2 = M g3 = M g4 = M g4 = M g4A = M g4A = M g4B = M g4B = M g4B = M g1B = M g1	0 41 41 86 62 5 73 315 5 5 5 5 5 5 5 5 6 7 7 6 7 7 7 7 7 7	(mg, (mg, (mg, (mg, (mg, (mg, (mg, (mg,
Mass Balance Calculation of Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-003 concentration in river at SW-004	M g1 = M g2 = M g2 = M g4 = M g4 = M g4 = M g4A = M g1A = M g1	0 41 41 86 62 5 73 315 5 5 5 5 5 5 5 5 6 7 7 6 7 7 7 7 7 7	(mg (mg (mg (mg (mg (mg (mg (mg (mg (mg
Calculation of Mass Calculation of Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-003 concentration in river at SW-004	M g1 = M g2 = M g2 = M g4 = M g4 = M g4 = M g4A = M g1A = M g1	0 41 41 86 6 25 73 315 515 515 515 6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	(mg, (mg, (mg, (mg, (mg, (mg, (mg, (mg,
line Calculation of Mass Calculation of Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004	M g1 = M g2 = M g2 = M g4 = M g4 = M g4 = M g4A = M g1A = M g1	0 41 41 86 6 25 73 315 515 515 515 515 515 515 515 515 51	(mg, (mg, (mg, (mg, (mg, (mg, (mg, (mg,
line Calculation of Mass Calculation of Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-001 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-004 concentration in river at SW-005 Observed concentration in river at SW-002 Observed concentration in river at SW-003 Concentration in river at SW-005	M g1 = M g2 = M g2 = M g4 = M g4 = M g4 = M g4A = M g1A = M g1	0 41 41 86 6 25 73 315 515 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	(mg, (mg, (mg, (mg, (mg, (mg, (mg, (mg,
Mass Calculation of Mass	mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux of rombined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-005 Observed concentration in river at SW-005	M g1 = M g2 = M g2 = M g4 = M g4 = M g4 = M g4A = M g1A = M g1	0 41 41 86 62 57 73 315 515 0 0 0 0 1105 1936 2175 3143 6735 12108 8.9 8.5 8.4 8.3 8.1 8.1 8.1	(mg, (mg, (mg, (mg, (mg, (mg, (mg, (mg,

rameter:	River Model - Calibration to Baseline Water Quality Data	a	
rameter:	Manganese		
	surface water flow into SW-001	Q s1 =	2.87 (cfs)
	surface water flow into SW-002	Q s2 =	3.47 (cfs)
	surface water flow into SW-003	Q_s3 =	1.00 (cfs)
	surface water flow into SW-004	Q s4 =	4.16 (cfs)
	surface water flow into SW-004A	Q s4A =	15.24 (cfs)
	surface water flow into SW-005	Q s5 =	22.61 (cfs)
	surface water inflow from upstream of PM-1	Q sns =	0.00 (cfs)
	surface water flow from West Pit Overflow	Q sms =	0.00 (cfs)
	ground water flow into SW-001	Q g1 =	0.18 (cfs)
	ground water flow into SW-002	Q_g2 =	0.38 (cfs)
๙	ground water flow into SW-003	Q_g3 =	0.11 (cfs)
Data	ground water flow into SW-003	Q_g4 =	0.32 (cfs)
Õ			
Flow	ground water flow into SW-004A	Q_g4A =	1.39 (cfs)
<u>ó</u>	ground water flow into SW-005	Q_g5 =	2.27 (cfs)
ш	ground water seepage from East Pit	Q_gep =	0.00 (cfs)
put	ground water seepage from West Pit	Q_gwp =	0.00 (cfs)
ဍ	combined ground water liner leakage from stockpiles	Q_gl4 =	0.00 (cfs)
<u> </u>	combined ground water liner leakage/seepage from other mine features	$Q_gl4a =$	0.00 (cfs)
	concentration of surface water into SW-001	C_s1 =	0.15 (mg/
	concentration of surface water into SW-002	C s2 =	0.15 (mg
	concentration of surface water into SW-003	C_s3 =	0.15 (mg/
	concentration of surface water into SW-004	C_s4 =	0.15 (mg/
Data	concentration of surface water into SW-004 concentration of surface water into SW-004A	C_s4 =	0.15 (mg
ú	concentration of surface water into SW-005	C_s5 =	0.15 (mg
at	concentration of surface water inflow from upstream of PM-1	C_sns =	0.0086 (mg
	concentration of surface water flow from West Pit Overflow	C_sms =	0 (mg
Ë	concentration of ground water into SW-001	C_g1 =	0.124 (mg
읃	concentration of ground water into SW-002	C_g2 =	0.124 (mg
g	concentration of ground water into SW-003	C_g3 =	0.124 (mg
r <u>t</u>	concentration of ground water into SW-004	C_g4 =	0.124 (mg
Concentration	concentration of ground water into SW-004A	C_g4A =	0.124 (mg/
ے	concentration of ground water into SW-005	C g5 =	0.124 (mg
8	concentration of ground water seepage from East Pit	C_gep =	0 (mg/
7	concentration of ground water seepage from West Pit	C_gwp =	0 (mg
Ž			
nput	concentration of combined ground water liner leakage from stockpiles concentration of combined ground water liner leakage/seepage from other mine features	C_gl4 = C_gl4a =	0 (mg/ 0 (mg/
	pondonitation of combined ground water liner leanage/seepage from other filline realtities	∪_y:+a =	U U(IIIg/
	flow in river at SW-001	Q_r1 =	3.05 (cfs)
	flow in river at SW-002	Q_r2 =	6.90 (cfs)
	flow in river at SW-003	Q_r3 =	8.01 (cfs)
9	flow in river at SW-004	Q r4 =	12.49 (cfs)
Ξĕ	flow in river at SW-004A	Q r4A =	29.12 (cfs)
Water Balance	flow in river at SW-005	Q r5 =	54.00 (cfs)
_ ≥ ∞	flow check	Q ck =	54.00 (cfs)
		_	34.00 (CIS)
	mace flux of curface water into SW 001		
	mass flux of surface water into SW-001	M_s1 =	12 (mg
	mass flux of surface water into SW-002	M_s1 = M_s2 =	12 (mg. 15 (mg.
	mass flux of surface water into SW-002 mass flux of surface water into SW-003	M_s1 = M_s2 = M_s3 =	12 (mg. 15 (mg. 4 (mg.
	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004	M_s1 = M_s2 = M_s3 = M_s4 =	12 (mg 15 (mg 4 (mg 18 (mg
	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A	M_s1 = M_s2 = M_s3 = M_s4 = M_s4A =	12 (mg 15 (mg 4 (mg 18 (mg 65 (mg
	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004	M_s1 = M_s2 = M_s3 = M_s4 =	12 (mg. 15 (mg. 4 (mg. 18 (mg. 65 (mg.
	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-005	M_s1 = M_s2 = M_s3 = M_s4 = M_s4A =	12 (mg. 15 (mg. 4 (mg. 18 (mg. 65 (mg.
	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A	M s1 = M s2 = M s3 = M s4 = M s4A = M s5 = M sns =	12 (mg 15 (mg 4 (mg 18 (mg 65 (mg 96 (mg
Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow	M_s1 = M_s2 = M_s3 = M_s4 = M_s4A = M_s5 =	12 (mg 15 (mg 4 (mg 18 (mg 65 (mg 96 (mg 0 (mg
Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001	M_s1 = M_s2 = M_s3 = M_s4 = M_s4A = M_s5 = M_sms = M_sms = M_g1 =	12 (mg 15 (mg 4 (mg 18 (mg 65 (mg 96 (mg 0 (mg 0 (mg
Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water info SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of ground water info SW-001 mass flux of ground water into SW-001 mass flux of ground water into SW-001	M s1 = M s2 = M s3 = M s4 = M s4A = M s5 = M sns =	12 (mg 15 (mg 4 (mg 18 (mg 65 (mg 96 (mg 0 (mg 0 (mg 1 (mg
Mass Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002	M_s1 = M_s2 = M_s3 = M_s4 = M_s4A = M_s5 = M_sns = M_sms = M_g1 = M_g2 = M_g3 =	12 (mg 15 (mg 4 (mg 18 (mg 65 (mg 96 (mg 0 (mg 1 (mg 1 (mg 0 (mg
of Mass Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-003 mass flux of ground water into SW-003 mass flux of ground water into SW-004	M s1 = M s2 = M s3 = M s4 = M s4A = M s5 = M s1 = M	12 (mg 4 (mg 4 (mg 18 (mg 65 (mg 96 (mg 0 (mg 0 (mg 1 (mg 0 (mg
of Mass Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004	M_S1 = M_S2 = M_S3 = M_S4 = M_S4A = M_S5 = M_S5 = M_S5 = M_S5 = M_S75 = M_S75 = M_S75 = M_S74	12 (mg 15 (mg 4 (mg 18 (mg 96 (mg 0 (mg 1 (mg 1 (mg 1 (mg 1 (mg 5 (mg 5 (mg 5 (mg 5 (mg 5 (mg) 1 (mg 5 (mg) 5 (mg) 1 (mg) 1 (mg) 5 (mg)
of Mass Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-005	M s1 = M s2 = M s3 = M s4 = M s4A = M s4A = M sms = M sms = M sms = M g2 = M g3 = M g4 = M g4 = M g4 = M g5 = M g4 = M g5 = M g4 = M g4 = M g5 = M g4 = M g5	12 (mg 15 (mg 4 (mg 18 (mg 65 (mg 96 (mg 0 (mg 1 (mg 1 (mg 5 (mg 8 (mg
of Mass Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit	M_s1 = M_s2 = M_s3 = M_s4 = M_s4 = M_s5 = M_s18 = M_s1	12 (mg 15 (mg 4 (mg 18 (mg 65 (mg 96 (mg 0 (mg 1 (mg 1 (mg 1 (mg 1 (mg 5 (mg 1 (mg 0 (mg 0 (mg 0 (mg 1 (mg 1 (mg 0 (mg 0 (mg 0 (mg 1 (mg 0 (mg 0 (mg 0 (mg 1 (mg 0 (mg) (mg 0 (mg) (mg) (mg) (mg) (mg) (mg) (mg) (mg)
of Mass Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water info SW-005 mass flux of surface water infow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of sepage from East Pit mass flux of sepage from West Pit mass flux of sepage from West Pit	M_s1 = M_s2 = M_s3 = M_s4 = M_s4 = M_s5 = M_s5 = M_s5 = M_s5 = M_s5 = M_s5 = M_s1 = M_s1 = M_s2 = M_s1 = M_s1 = M_s2 = M_s1 = M_	12 (mg 15 (mg 4 (mg 18 (mg 65 (mg 96 (mg 0 (mg 0 (mg 1 (mg 1 (mg 1 (mg 5 (mg 0 (mg
of Mass Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of sepage from East Pit mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles	M s1 = M s2 = M s3 = M s4 = M s4A = M s5 = M sns = M s	12 (mg 15 (mg 4 (mg 4 (mg 18 (mg 65 (mg 96 (mg 0 (mg 1 (mg 0 (mg 1 (mg 5 (mg 5 (mg 0 (mg
Mass Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water info SW-005 mass flux of surface water infow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of sepage from East Pit mass flux of sepage from West Pit mass flux of sepage from West Pit	M_s1 = M_s2 = M_s3 = M_s4 = M_s4 = M_s5 = M_s5 = M_s5 = M_s5 = M_s5 = M_s5 = M_s1 = M_s1 = M_s2 = M_s1 = M_s1 = M_s2 = M_s1 = M_	12 (mg 15 (mg 4 (mg 4 (mg 18 (mg 65 (mg 96 (mg 0 (mg 1 (mg 0 (mg 1 (mg 5 (mg 5 (mg 0 (mg
of Mass Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features	M_S1 = M_S2 = M_S3 = M_S4 = M_S4A = M_S5 = M_S1S = M_S	12 (mg 15 (mg 4 (mg 18 (mg 65 (mg 96 (mg 96 (mg 0 (mg 1 (mg 1 (mg 5 (mg 0 (mg 0 (mg 0 (mg 0 (mg 0 (mg
of Mass Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water info fow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001	M s1 = M s2 = M s3 = M s4 = M s5 = M s6 = M	12 (mg 15 (mg 4 (mg 18 (mg 65 (mg 96 (mg 0 (mg 1 (mg 1 (mg 5 (mg 0 (mg 0 (mg 0 (mg 0 (mg 1 (mg 0 (mg 1 (mg 0 (mg
Calculation of Mass Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of sepage from East Pit mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-001 mass flux in river at SW-001	M s1 = M s2 = M s3 = M s4 = M s4A = M	12 (mg 15 (mg 4 (mg 18 (mg 65 (mg 96 (mg 0 (mg 1 (mg 0 (mg 1 (mg 0 (mg 0 (mg 0 (mg 1 (mg 0 (mg 0 (mg 1 (mg 0 (mg 1 (mg 0 (mg 1 (mg 0 (mg 1 (mg 1 (mg 0 (mg 1 (m
ce Calculation of Mass Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-002 mass flux in river at SW-002	M_s1 = M_s2 = M_s3 = M_s4 = M_s4 = M_s5 = M_s4A = M_s5 = M_s1 = M	12 (mg 15 (mg 4 (mg 18 (mg 65 (mg 96 (mg 96 (mg 0 (mg 1 (mg 1 (mg 1 (mg 0 (mg 0 (mg 0 (mg 0 (mg 0 (mg 0 (mg 0 (mg 0 (mg 1 (mg) 1 (mg 1 (mg) 1 (mg 1 (mg) 1 (mg) 1 (mg) 1 (mg) 1 (mg) 1 (mg) 1 (mg) 2 (mg) 2 (mg) 3 (mg) 3 (mg) 3 (mg) 4 (mg) 4 (mg) 6 (mg) 6 (mg) 6 (mg) 6 (mg) 7 (mg) 8 (mg) 9 (
ce Calculation of Mass Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003	M_S1 = M_S2 = M_S3 = M_S4 = M_S4 = M_S5 = M_S1 = M_	12 (mg 15 (mg 4 (mg 18 (mg 96 (mg 96 (mg 0 (mg 1 (mg 1 (mg 5 (mg 0 (mg 0 (mg 0 (mg 0 (mg 1 (mg 1 (mg 1 (mg 0 (mg 0 (mg 0 (mg 1 (mg 1 (mg 1 (mg 1 (mg 0 (mg 0 (mg 1 (mg 1 (mg 1 (mg 1 (mg 0 (mg) (mg 0 (mg) (mg 0 (mg) (mg) (mg) (mg) (mg) (mg) (mg) (mg)
ce Calculation of Mass Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of sepage from East Pit mass flux of sepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-003 mass flux in river at SW-004	M s1 = M s2 = M s3 = M s4 = M s4 = M s5 = M s5 = M s6 = M	12 (mg, 15 (mg, 4 (mg, 18 (mg, 65 (mg, 0 (mg, 0 (mg, 1 (mg, 1 (mg, 0 (mg, 0 (mg
of Mass Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003	M_S1 = M_S2 = M_S3 = M_S4 = M_S4 = M_S5 = M_S1 = M_	12 (mg, 15 (mg, 4 (mg, 18 (mg, 65 (mg, 0 (mg, 0 (mg, 1 (mg, 1 (mg, 0 (mg, 0 (mg
Mass Balance Calculation of Mass Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of sepage from East Pit mass flux of sepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-003 mass flux in river at SW-004	M s1 = M s2 = M s3 = M s4 = M s4 = M s5 = M s5 = M s6 = M	12 (mg, 15) (mg, 16)
Mass Balance Calculation of Mass Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water flow from Uest Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001	M_s1 = M_s2 = M_s3 = M_s4 = M_s4 = M_s5 = M_s4A = M_s5 = M_s1 = M	12 (mg, 15) (mg, 16) (mg, 12) (mg, 226 (mg, 15) (mg, 15) (mg, 226 (mg, 15) (mg, 226
Mass Balance Calculation of Mass Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-001 concentration in river at SW-001 concentration in river at SW-002	M_S1 = M_S2 = M_S3 = M_S4 = M_S4 = M_S5 = M_	12 (mg, 15 (mg, 16 (mg
Mass Balance Calculation of Mass Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water flow from Uest Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001	M_s1 = M_s2 = M_s3 = M_s4 = M_s4 = M_s5 = M_s4A = M_s5 = M_s1 = M	12 (mg 15 (mg 4 (mg 18 (mg 65 (mg 96 (mg 0 (mg 1 (mg 0 (mg 0 (mg 0 (mg 1 (mg 0 (mg 29 (mg 24 (mg 122 (mg 122 (mg 0
Mass Balance Calculation of Mass Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of sepage from East Pit mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-005 concentration in river at SW-002	M_S1 = M_S2 = M_S3 = M_S4 = M_S4 = M_S5 = M_S1 = M_	12 (mg 15 (mg 4 (mg 18 (mg 65 (mg 96 (mg 0 (mg 1 (mg 0 (mg 13 (mg 29 (mg 34 (mg 34 (mg 122 (mg 226 (mg 0.15 (mg 0.15 (mg 0.15 (mg 0.15 (mg
Mass Balance Calculation of Mass Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of sepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-005 concentration in river at SW-002 concentration in river at SW-003	M_ s1 = M_ s2 = M_ s3 = M_ s4 = M_ s4A = M_ s5 = M_ sms = M_ sms = M_ sms = M_ g1 = M_ g2 = M_ g3 = M_ g4A = M_ g5 = M_ g9 = M_ g4A = M_ g4A = M_ g14a = M_ g14a = M_ r1 = M_ r2 = M_ r3 = M_ r4A = M_ r5 = C_ r1 = C_ r2 = C_ r3 = C_ r4 =	12 (mg 15 (mg 4 (mg 4 (mg 18 (mg 65 (mg 96 (mg 0 (mg 1 (mg 2 (mg 2 (mg 2 (mg 2 (mg 2 (mg 2 (mg 1
Mass Balance Calculation of Mass Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water into SW-001 mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of sepage from East Pit mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-005 concentration in river at SW-001 concentration in river at SW-003 concentration in river at SW-004	M_s1 = M_s2 = M_s3 = M_s4 = M_s4 = M_s5 = M_s1 = M_	12 [mg 15 [mg 15] [mg 18] [mg 4 [mg 18] [mg 65] [mg 96] [mg 96] [mg 1 [mg 1 [mg 1 [mg 1 [mg 1 [mg 1 [mg 2 [m
ce Calculation of Mass Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of sepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-005 concentration in river at SW-002 concentration in river at SW-003	M_ s1 = M_ s2 = M_ s3 = M_ s4 = M_ s4A = M_ s5 = M_ sms = M_ sms = M_ sms = M_ g1 = M_ g2 = M_ g3 = M_ g4A = M_ g5 = M_ g9 = M_ g4A = M_ g4A = M_ g14a = M_ g14a = M_ r1 = M_ r2 = M_ r3 = M_ r4A = M_ r5 = C_ r1 = C_ r2 = C_ r3 = C_ r4 =	12 (mg. 15 (mg. 226 (mg. 275 (
Calculation of Mass Calculation of Mass Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of ground water into SW-001 mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of seepage from East Pit mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 concentration in river at SW-004	M_s1 = M_s2 = M_s3 = M_s4 = M_s4 = M_s5 = M_s1 = M_	12 (mg 15 (mg 4 (mg 18 (mg 65 (mg 96 (mg 96 (mg 0 (mg 1 (mg 2 (mg 3 (mg
Calculation of Mass Calculation of Mass Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-005 Observed concentration in river at SW-005	M_s1 = M_s2 = M_s3 = M_s4 = M_s4 = M_s5 = M_s1 = M_	12 (mg, 15 (mg, 16 (mg
line Calculation of Mass Calculation of Mass Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-004A mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of sepage from East Pit mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 concentration in river at SW-005 Observed concentration in river at SW-002 Observed concentration in river at SW-003	M_s1 = M_s2 = M_s3 = M_s4 = M_s4 = M_s5 = M_s1 = M_	12 (mg, 15 (mg, 16 (mg, 17 (mg
Mass Balance Calculation of Mass Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-005 Observed concentration in river at SW-005	M_s1 = M_s2 = M_s3 = M_s4 = M_s4 = M_s5 = M_s1 = M_	12 (mg, 15 (mg, 16 (mg

a a.g.	River Model - Calibration to Baseline Water Quality Data	<u></u>		
rameter:	Sodium	<u> </u>		
	surface water flow into SW-001	Q_s1 =	4.71	
	surface water flow into SW-002 surface water flow into SW-003	Q_s2 = Q_s3 =	5.79 1.66	
	surface water flow into SW-003	Q_s3 = Q_s4 =	6.86	
	surface water flow into SW-004A	Q_s4A =	25.25	
	surface water flow into SW-005	Q s5 =	37.58	
	surface water inflow from upstream of PM-1	Q sns =	1.50	
	surface water flow from West Pit Overflow	Q sms =	0.00	
	ground water flow into SW-001	Q_g1 =	0.18	(cfs)
	ground water flow into SW-002	Q_g2 =	0.38	(cfs)
Data	ground water flow into SW-003	Q_g3 =	0.11	
Da	ground water flow into SW-004	Q_g4 =	0.32	(cfs)
_	ground water flow into SW-004A	Q_g4A =	1.39	
Flow	ground water flow into SW-005	Q_g5 =	2.27	
正	ground water seepage from East Pit	Q_gep =	0.00	
put	ground water seepage from West Pit	Q_gwp =	0.00	
5	combined ground water liner leakage from stockpiles	Q_gl4 =	0.00	
	combined ground water liner leakage/seepage from other mine features	Q_gl4a =	0.00	(CIS)
	concentration of surface water into SW-001	C_s1 =	2.5	(mg
	concentration of surface water into SW-002	C_s2 =		(mg
	concentration of surface water into SW-003	C_s3 =		(mg
	concentration of surface water into SW-004	C_s4 =		(mg
	concentration of surface water into SW-004A	C_s4A =		(mg
酉	concentration of surface water into SW-005	C_s5 =		(mg
ate	concentration of surface water inflow from upstream of PM-1	C_sns =		(mg
Concentration Dat	concentration of surface water flow from West Pit Overflow	C_sms =		(mg
L	concentration of ground water into SW-001	C_g1 =	13.33	
ij	concentration of ground water into SW-002	C_g2 =	13.33	
tra	concentration of ground water into SW-003	C_g3 =	13.33	
en	concentration of ground water into SW-004	C_g4 =	13.33	
ဝို	concentration of ground water into SW-004A	C_g4A =	13.33	
ō	concentration of ground water into SW-005	C_g5 =	13.33	(mg
Ō	concentration of ground water seepage from East Pit concentration of ground water seepage from West Pit	C_gep = C_gwp =		(mg
put	concentration of ground water seepage from west Fit concentration of combined ground water liner leakage from stockpiles	C_gwp = C_gl4 =		(mg/
Ξ	concentration of combined ground water liner leakage/seepage from other mine features	C_gl4a =		(mg/
	flow in river at SW-001	Q_r1 =	6.39	
	flow in river at SW-002 flow in river at SW-003	Q_r2 = Q_r3 =	12.55	
Φ	flow in river at SW-003	Q_r4 =	14.33 21.51	
Water Balance	flow in river at SW-004	Q_r4 = Q_r4A =	48.15	
Water Balan	flow in river at SW-004A	Q_r5 =		
≥ ‰	flow check	Q_ck =	88.00	
		F		
	mass flux of surface water into SW-001	M_s1 =	333	
	mass flux of surface water into SW-002	M_s2 =	409	
	mass flux of surface water into SW-003 mass flux of surface water into SW-004	M_s3 =	118	(mg
		M_s4 = M_s4A =	405	/
	mass flux of surface water into SW-004A			
	mass flux of surface water into SW-005		1787	(mg
×	mass flux of surface water into SW-005 mass flux of surface water inflow from unstream of PM-1	M_s5 =	1787 2659	(mg/
×n	mass flux of surface water inflow from upstream of PM-1		1787 2659 204	(mg/ (mg/ (mg/
s Flux		M_s5 = M_sns = M_sms =	1787 2659 204 0	(mg (mg (mg (mg
ass Flux	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow	M_s5 = M_sns =	1787 2659 204 0 68	(mg, (mg, (mg, (mg,
Mass Flux	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001	M_s5 = M_sns = M_sms = M_g1 = M_g2 =	1787 2659 204 0 68 143	(mg, (mg, (mg, (mg, (mg,
of Mass Flux	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002	M_s5 = M_sns = M_sms = M_g1 =	1787 2659 204 0 68 143 41	(mg, (mg, (mg, (mg, (mg, (mg,
of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003	M_s5 = M_sns = M_sms = M_g1 = M_g2 = M_g3 =	1787 2659 204 0 68 143 41 121 524	(mg, (mg, (mg, (mg, (mg, (mg, (mg,
of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005	M_s5 = M_sns = M_sms = M_g1 = M_g2 = M_g3 = M_g4 = M_g4A = M_g5 =	1787 2659 204 0 68 143 41 121 524 856	(mg, (mg, (mg, (mg, (mg, (mg, (mg, (mg,
of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of seepage from East Pit	M_s5 = M_sns = M_sms = M_g1 = M_g2 = M_g3 = M_g4 = M_g4A = M_g5 = M_gep =	1787 2659 204 0 68 143 41 121 524 856	(mg, (mg, (mg, (mg, (mg, (mg, (mg, (mg,
of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit	M_s5 = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g5 = M g9 =	1787 2659 204 0 68 143 41 121 524 856 0	(mg, (mg, (mg, (mg, (mg, (mg, (mg, (mg,
of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of sepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles	M_s5 = M_sns = M_sns = M_g1 = M_g2 = M_g3 = M_g4 = M_g4A = M_g5 = M_gep = M_gup =	1787 2659 204 0 688 143 41 121 524 856 0	(mg (mg (mg (mg (mg (mg (mg (mg (mg (mg
Calculation of Mass Flux	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit	M_s5 = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g5 = M g9 =	1787 2659 204 0 688 143 41 121 524 856 0	(mg (mg (mg (mg (mg (mg (mg (mg (mg (mg
of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features	M_s5 = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g4 = M g4 = M g9 =	1787 2659 204 0 68 143 41 121 524 856 0 0	(mg (mg (mg (mg (mg (mg (mg (mg (mg (mg
of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001	M_s5 = M sns = M sns = M sns = M sns = M g1 = M g2 = M g4 = M g4 = M g4A = M g5 = M g4A = M g5 = M gwp	1787 2659 204 0 688 143 411 121 524 856 0 0 0	(mg (mg (mg (mg (mg (mg (mg (mg (mg (mg
Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-001 mass flux in river at SW-002	M_S5 = M sns = M sns = M sns = M sns = M sn	1787 2659 204 0 68 143 41 121 524 856 0 0 0	(mg (mg (mg (mg (mg (mg (mg (mg (mg (mg
ce Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-002 mass flux in river at SW-003	M_s5 = M sns = M sns = M g1 = M g2 = M g4 = M g4A = M g9 =	1787 2659 2044 0 68 143 41 121 524 856 0 0 0 0	(mg, (mg, (mg, (mg, (mg, (mg, (mg, (mg,
ce Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004	M_s5 = M sns =	1787 2659 204 0 0 68 1433 41 121 524 856 0 0 0 0 15 605 1158 1317	(mg, (mg, (mg, (mg, (mg, (mg, (mg, (mg,
of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-002 mass flux in river at SW-003	M_s5 = M sns = M sns = M g1 = M g2 = M g4 = M g4A = M g9 =	1787 2659 2044 0 68 143 41 121 524 856 0 0 0 0	(mg (mg (mg (mg (mg (mg (mg (mg (mg (mg
ce Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004	M_s5 = M sns =	1787 2659 204 0 68 1433 41 121 524 856 0 0 0 605 1158 1317 1923 4234	(mg, (mg, (mg, (mg, (mg, (mg, (mg, (mg,
Mass Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004	M_s5 = M sns =	1787 2659 204 0 68 143 41 121 524 856 0 0 0 0 1158 1317 1923 4234 7749	(mg, (mg, (mg, (mg, (mg, (mg, (mg, (mg,
Mass Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001	M_s5 = M_sns = M_sns = M_sns = M_g1 = M_g2 = M_g4 = M_g4A = M_g5 = M_g44 = M_g4A = M_r5 = M	1787 2659 204 0 68 143 41 121 524 856 0 0 0 0 151158 1317 1923 4234 7749	(mg, (mg, (mg, (mg, (mg, (mg, (mg, (mg,
Mass Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-001 concentration in river at SW-001	M_S5 = M_SnS = M_SnS = M_SnS = M_SnS = M_S1 = M_S2 = M_S2 = M_S3 = M_S4 = M_S5 = M_S4 = M_S5 = M_S4 = M_S5	1787 2659 204 0 68 143 41 121 524 856 0 0 0 0 0 605 1158 1317 1923 4234 7749	(mg, (mg, (mg, (mg, (mg, (mg, (mg, (mg,
Mass Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003	M_S5 = M_SnS = M_SnS = M_SnS = M_SnS = M_SnS = M_S1 = M_S2 = M_S2 = M_S4 = M_S5 = M_S4 = M_S5 = M_S4 = M_S5 = M_S4 = M_S5	1787 2659 204 0 68 143 41 121 524 856 0 0 0 0 605 1158 1317 1923 4234 7749	(mg, (mg, (mg, (mg, (mg, (mg, (mg, (mg,
Mass Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-001 concentration in river at SW-001	M_S5 = M_SnS = M_SnS = M_SnS = M_SnS = M_S1 = M_S2 = M_S2 = M_S3 = M_S4 = M_S5 = M_S4 = M_S5 = M_S4 = M_S5	1787 2659 204 0 68 143 41 121 524 856 0 0 0 0 605 1158 1317 1923 4234 7749	(mg, (mg, (mg, (mg, (mg, (mg, (mg, (mg,
Mass Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003	M_S5 = M_SnS = M_SnS = M_SnS = M_SnS = M_SnS = M_S1 = M_S2 = M_S2 = M_S4 = M_S5 = M_S4 = M_S5 = M_S4 = M_S5 = M_S4 = M_S5	1787 2659 204 0 68 1433 41 121 524 856 0 0 0 0 155 1158 1317 1923 4234 7749	(mg, (mg) (mg) (mg) (mg) (mg) (mg) (mg) (mg)
ce Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004	M_S5 = M_SnS = M_SnS = M_SnS = M_SnS = M_SnS = M_S1 = M_S2 = M_S4 = M_S5 = M_S4 = M_S5 = M_S4 = M_S5	1787 2659 204 0 68 1433 41 121 524 856 0 0 0 0 0 155 1158 1317 1923 4234 7749	(mg, (mg, (mg, (mg, (mg, (mg, (mg, (mg,
Mass Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-003 concentration in river at SW-004	M_s5 = M_sns =	1787 2659 204 0 68 1433 41 121 524 856 0 0 0 0 0 155 1158 1317 1923 4234 7749	(mg, (mg, (mg, (mg, (mg, (mg, (mg, (mg,
Calculation of Mass Concentration Balance Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-003 concentration in river at SW-004	M_s5 = M_sns =	1787 2659 204 0 68 143 41 121 524 856 0 0 0 0 15 1158 1317 1923 4234 7749 3.3 3.2 3.2 3.1	(mg) (mg) (mg) (mg) (mg) (mg) (mg) (mg)
line Calculation of Mass Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-005	M_s5 = M_sns =	1787 2659 204 0 68 143 41 121 524 856 0 0 0 0 1 158 1317 1923 4234 7749 3.3 3.2 3.2 3.1 3.1	(mg/ (mg/ (mg/ (mg/ (mg/ (mg/ (mg/ (mg/
line Calculation of Mass Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 Concentration in river at SW-005 Observed concentration in river at SW-005 Observed concentration in river at SW-002 Observed concentration in river at SW-003 CODSERVED CONSERVED CO	M_s5 = M_sns =	1787 2659 204 0 68 1433 41 121 524 856 0 0 0 0 0 0 605 1158 1317 1923 4234 7749 3.3 3.3 3.2 3.2 3.1 3.1	(mg/ (mg/ (mg/ (mg/ (mg/ (mg/ (mg/ (mg/
Mass Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-002 concentration in river at SW-004 Concentration in river at SW-005 Observed concentration in river at SW-005	M_s5 = M_sns =	1787 2659 204 0 68 1433 41 121 524 856 0 0 0 0 605 1158 1317 1923 4234 7749 3.3 3.3 3.2 3.2 3.1 3.1 3.1	(mg, (mg, (mg, (mg, (mg, (mg, (mg, (mg,

	Nickel			
	surface water flow into SW-001	Q_s1 =	2.08	(cfs
	surface water flow into SW-002	Q s2 =	2.47	(cfs
	surface water flow into SW-003	Q_s3 =	0.71	(cfs
	surface water flow into SW-004	Q_s4 =	3.00	(cfs
	surface water flow into SW-004A	Q_s4A =	10.93	(cfs
	surface water flow into SW-005	Q_s5 =	16.16	(cfs
	surface water inflow from upstream of PM-1	Q_sns =	0.00	(cfs
	surface water flow from West Pit Overflow	Q_sms =	0.00	(cfs
	ground water flow into SW-001	Q_g1 =	0.18	(cfs
	ground water flow into SW-002	Q_g2 =	0.38	(cfs
Þ	ground water flow into SW-003	Q_g3 =	0.11	(cfs
Dai	ground water flow into SW-004	Q_g4 =	0.32	(cfs
	ground water flow into SW-004A	Q_g4A =	1.39	(cfs
δ	ground water flow into SW-005	Q_g5 =	2.27	(cfs
正	ground water seepage from East Pit	Q_gep =	0.00	(cfs
but	ground water seepage from West Pit	Q_gwp =	0.00	(cfs
ಹ	combined ground water liner leakage from stockpiles	Q gl4 =	0.00	(cfs
므	combined ground water liner leakage/seepage from other mine features	Q_gl4a =	0.00	(cfs
	and the state of t	10 -1		/···
	concentration of surface water into SW-001	C_s1 =		(µg/
	concentration of surface water into SW-002	C_s2 =		(µg/
	concentration of surface water into SW-003	C_s3 =		(μg/
	concentration of surface water into SW-004	C_s4 =		(μg/
	concentration of surface water into SW-004A	C_s4A =		(μg/
ū	concentration of surface water into SW-005	C_s5 =	0	(μg/
ਸ਼	concentration of surface water inflow from upstream of PM-1	C_sns =	1.55	(μg/
	concentration of surface water flow from West Pit Overflow	C_sms =		(μg/
H	concentration of ground water into SW-001	C_g1 =	16.28	
ij	concentration of ground water into SW-002	C_g2 =	16.28	
<u> </u>	concentration of ground water into SW-003	C_g3 =	16.28	
Concentration	concentration of ground water into SW-004	C_g4 =	16.28	
8	concentration of ground water into SW-004A	C_g4A =	16.28	
등	concentration of ground water into SW-005	C_g5 =	16.28	(µg/
Ŏ	concentration of ground water seepage from East Pit	C_gep =		(μg/
put	concentration of ground water seepage from West Pit	C_gwp =	0	(μg/
₫	concentration of combined ground water liner leakage from stockpiles	C_gl4 =	0	(µg/
느	concentration of combined ground water liner leakage/seepage from other mine features	C_gl4a =	0	(μg/
	flow in river at SW 001	Q r1 =	2.26	/cf-
	flow in river at SW-001 flow in river at SW-002	Q_r1 = Q r2 =	5.11	
	flow in river at SW-003	Q_r3 =	5.93	
ø	flow in river at SW-004	Q_r4 =	9.25	
JE CL	flow in river at SW-004A	Q_14 = Q_r4A =	21.57	
필	flow in river at SW-005	Q_r5 =	40.00	
Water Balance	flow check	Q_15 = Q_ck =	40.00	
		~		(0.0
	mass flux of surface water into SW-001	M_s1 =	0	(μg
	mass flux of surface water into SW-001 mass flux of surface water into SW-002	M_s1 = M_s2 =		
			0	(μg/
	mass flux of surface water into SW-002	M_s2 =	0	(μg/ (μg/
	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004	M_s2 = M_s3 =	0 0 0	(μg/ (μg/ (μg/
	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A	M_s2 = M_s3 = M_s4 = M_s4A =	0 0 0	(μg/ (μg/ (μg/
×	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-005	M_s2 = M_s3 = M_s4 = M_s4A = M_s5 =	0 0 0 0	(μg/ (μg/ (μg/ (μg/
zlux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water into SW-005	M_s2 = M_s3 = M_s4 = M_s4A = M_s5 = M_sns =	0 0 0 0 0	(Ha) (Ha) (Ha) (Ha)
s Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow	M_s2 = M_s3 = M_s4 = M_s4A = M_s5 = M_sns = M_sms =	0 0 0 0 0 0	(µg/ (µg/ (µg/ (µg/ (µg/ (µg/
	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water infow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001	M_s2 = M_s3 = M_s4 = M_s4A = M_s5 = M_sns = M_sms = M_g1 =	0 0 0 0 0 0 0 0	(Ha) (Ha) (Ha) (Ha) (Ha) (Ha)
	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002	M_s2 = M_s3 = M_s4 = M_s4A = M_s5 = M_sms = M_g1 = M_g2 =	0 0 0 0 0 0 0 0 0 83 175	(µg/ (µg/ (µg/ (µg/ (µg/ (µg/ (µg/ (µg/
of Mass Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003	M_s2 = M_s3 = M_s4 = M_s4A = M_s5 = M_sns = M_sms = M_g1 = M_g2 = M_g3 =	0 0 0 0 0 0 0 0 0 0 83 175	(Ha) (Ha) (Ha) (Ha) (Ha) (Ha) (Ha)
of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-003 mass flux of ground water into SW-004	M s2 = M s3 = M_s4 = M s4 = M s5 = M sns = M sms = M g1 = M g2 = M g3 = M_g4 =	0 0 0 0 0 0 0 0 0 83 175 51	(Ha) (Ha) (Ha) (Ha) (Ha) (Ha) (Ha) (Ha)
of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water infow from upstream of PM-1 mass flux of surface water inflow from Upstream of PM-1 mass flux of surface water infow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004	M_s2 = M_s3 = M_s4 = M_s5 = M_s5 = M_sns = M_s	0 0 0 0 0 0 0 83 175 51 147 640	(Ha) (Ha) (Ha) (Ha) (Ha) (Ha) (Ha) (Ha)
of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-005	M s2 = M s3 = M s4 = M s4A = M s5 = M sns = M	0 0 0 0 0 0 0 0 83 175 51 147 640 1046	(Hay (Hay (Hay (Hay (Hay (Hay (Hay (Hay
of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water flow from Uest Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of sepage from East Pit	M s2 = M s3 = M s4 = M s4A = M s4A = M s5 = M sms = M	0 0 0 0 0 0 0 83 175 51 147 640 1046	(Hay (Hay (Hay (Hay (Hay (Hay (Hay (Hay
of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water flow from Upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of seepage from East Pit mass flux of seepage from West Pit	M s2 = M s3 = M s4A = M s4A = M s4A = M s5 = M sms = M	0 0 0 0 0 0 0 0 83 175 51 147 640 1046	(Hay (Hay (Hay (Hay (Hay (Hay (Hay (Hay
of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of sepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles	M s2 = M s3 = M s4 = M s4 = M s4A = M s4A = M s4A = M s5 = M sms = M s4	0 0 0 0 0 0 0 83 175 51 147 640 1046	(Hay (Hay (Hay (Hay (Hay (Hay (Hay (Hay
	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water flow from Upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of seepage from East Pit mass flux of seepage from West Pit	M s2 = M s3 = M s4A = M s4A = M s4A = M s5 = M sms = M	0 0 0 0 0 0 0 83 175 51 147 640 1046	(Hay (Hay (Hay (Hay (Hay (Hay (Hay (Hay
of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of sepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles	M s2 = M s3 = M s4 = M s4 = M s4A = M s4A = M s4A = M s5 = M sms = M s4	0 0 0 0 0 0 0 0 0 833 1755 511 147 640 1046 0 0 0	(Hay (Hay (Hay (Hay (Hay (Hay (Hay (Hay
Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-004B mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of sepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux of combined ground water liner leakage/seepage from other mine features	M s2 = M s3 = M s4A = M s4A = M s4A = M s5 = M sms = M	0 0 0 0 0 0 0 0 0 83 175 51 147 640 0 0 0 0 0	(Hay (Hay (Hay (Hay (Hay (Hay (Hay (Hay
Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from west Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of sepage from East Pit mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-001	M s2 = M s3 = M s4A = M s4A = M s4A = M s4A = M s5 = M sms = M s4A = M	0 0 0 0 0 0 0 0 0 83 1755 51 147 147 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	(Hay (Hay (Hay (Hay (Hay (Hay (Hay (Hay
ce Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-004B mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of sepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux of combined ground water liner leakage/seepage from other mine features	M s2 = M s3 = M s4 = M s4 = M s4A = M s4A = M s4A = M sms = M sms = M g1 = M g2 = M g3 = M g4 = M g4 = M g5 = M g9 = M g4 = M g9	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
ce Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water flow from Uest Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-002 mass flux in river at SW-002	M s2 = M s3 = M s4 = M s4 = M s4A = M s4A = M s5 = M sms = M sm s	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004	M	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
ce Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-004A mass flux of surface water into SW-004 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of sepage from East Pit mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004	M s2 = M s3 = M s4A = M s4A = M s4A = M s4A = M s5 = M sms = M	00 00 00 00 00 00 00 83 1755 51 147 640 00 00 00 00 00 00 00 00 00 00 00 00 0	(Hay (Hay (Hay (Hay (Hay (Hay (Hay (Hay
Mass Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-004A mass flux of surface water into SW-004 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of sepage from East Pit mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004	M s2 = M s3 = M s4A = M s4A = M s4A = M s4A = M s5 = M sms = M	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
Mass Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water into SW-001 mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-005	M s2 = M s3 = M s4 = M s4 = M s4A = M s4A = M s5 = M sms = M sm s	00 00 00 00 00 00 00 00 833 1755 511 147 640 00 00 00 00 00 258 309 456 1097 2142	
Mass Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water into SW-001 mass flux of surface water into SW-001 mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002	M s2 = M s3 = M s4 = M s5 = M sms	0 0 0 0 0 0 0 0 0 0 83 175 51 147 640 0 0 0 0 0 0 0 0 1046 1046 1046 1046	
Mass Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-003	M s2 = M s3 = M s4 = M s5 = M sms =	0 0 0 0 0 0 0 0 0 0 83 175 51 147 640 0 0 0 0 0 0 0 0 1046 1046 1046 1046	
Mass Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water into SW-001 mass flux of surface water into SW-001 mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002	M s2 = M s3 = M s4 = M s5 = M sms	0 0 0 0 0 0 0 0 0 0 83 175 51 147 640 0 0 0 0 0 0 0 0 1046 1046 1046 1046	
Mass Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-004A mass flux of surface water into SW-004 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 mass flux in river at SW-005 mass flux in river at SW-001 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003	M s2 = M s3 = M s4 = M s5 = M sms =	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
ce Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-004A mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of sepage from East Pit mass flux of sepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 concentration in river at SW-003 concentration in river at SW-004	M s2 = M s3 = M s4 = M s5 = M sms	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
Mass Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-004A mass flux of surface water into SW-004 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 mass flux in river at SW-005 mass flux in river at SW-001 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003	M s2 = M s3 = M s4 = M s5 = M sms =	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
Calculation of Mass Concentration Balance Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 concentration in river at SW-004	M s2 = M s3 = M s4 = M s5 = M sms	00 00 00 00 00 00 00 00 83 175 51 147 640 00 00 00 00 00 32 258 309 456 1097 2142 1.3 1.8 1.8 1.9	
Calculation of Mass Concentration Balance Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water flow from upstream of PM-1 mass flux of ground water into SW-001 mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-005	M s2 = M s3 = M s4 = M s5 = M sms	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
Mass Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 concentration in river at SW-004	M s2 = M s3 = M s4 = M s5 = M sms	00 00 00 00 00 00 00 00 83 175 51 147 640 00 00 00 00 00 32 258 309 456 1097 2142 1.3 1.8 1.8 1.9	

	Lead			
	surface water flow into SW-001	Q s1 =	1.23	(cfs
	surface water flow into SW-002	Q s2 =	1.40	
	surface water flow into SW-003	Q_s3 =	0.40	
	surface water flow into SW-004	Q_s4 =	1.76	
	surface water flow into SW-004A	Q_s4A =	6.31 (
	surface water flow into SW-005	Q s5 =	9.25 (
	surface water inflow from upstream of PM-1	Q sns =	0.00	
	surface water flow from West Pit Overflow	Q sms =	0.00	
	ground water flow into SW-001	Q_g1 =	0.18 ((cfs
	ground water flow into SW-002	Q_g2 =	0.38 ((cfs
豆	ground water flow into SW-003	Q_g3 =	0.11 ((cfs
a a	ground water flow into SW-004	Q_g4 =	0.32 ((cfs
Ó	ground water flow into SW-004A	Q_g4A =	1.39 ((cfs
δ	ground water flow into SW-005	Q g5 =	2.27 (
Ĕ	ground water seepage from East Pit	Q gep =	0.00 ((cfs
=	ground water seepage from West Pit	Q_gwp =	0.00	(cfs
būt	combined ground water liner leakage from stockpiles	Q gl4 =	0.00	
드	combined ground water liner leakage/seepage from other mine features	Q_gl4a =	0.00	
	concentration of curface water into CIM 004	IC 61	۸ ۲۱	~ /"
	concentration of surface water into SW-001	C_s1 =	0.5	
	concentration of surface water into SW-002	C_s2 =	0.5	
	concentration of surface water into SW-003	C_s3 =	0.5	
	concentration of surface water into SW-004	C_s4 =	0.5	
	concentration of surface water into SW-004A	C_s4A =	0.5	
Date	concentration of surface water into SW-005	C_s5 =	0.5	
	concentration of surface water inflow from upstream of PM-1	C_sns =	0.15	
	concentration of surface water flow from West Pit Overflow	C_sms =		μg/l
G	concentration of ground water into SW-001	C_g1 =	1.12	
Ħ,	concentration of ground water into SW-002	C_g2 =	1.12	
tr	concentration of ground water into SW-003	C_g3 =	1.12	
L C	concentration of ground water into SW-004	C_g4 =	1.12	
8	concentration of ground water into SW-004A	C_g4A =	1.12	
Concentration	concentration of ground water into SW-005	C_g5 =	1.12	
O	concentration of ground water seepage from East Pit	C_gep =		μg/l
but	concentration of ground water seepage from West Pit	C_gwp =		μg/l
은	concentration of combined ground water liner leakage from stockpiles concentration of combined ground water liner leakage/seepage from other mine features	C_gl4 = C_gl4a =		μg/l μg/l
_	concontitution of combined ground water liner leakage/seepage from other fillile realtities	0_y17a =	ı oji	μy/l
	flow in river at SW-001	Q_r1 =	1.41	(cfs
	flow in river at SW-002	Q_r2 =	3.20 ((cfs
	flow in river at SW-003	Q_r3 =	3.71 (
် မွ	flow in river at SW-004	Q_r4 =	5.78 ((cfs
a ie	flow in river at SW-004A	Q_r4A =	13.48 (
Water Balance	flow in river at SW-005	Q_r5 =	25.00 (
S m	flow check	Q_ck =	25.00 ((cfs
	mass flux of surface water into SW-001	IM of	1 171/	/ua
	mass flux of surface water into SW-001 mass flux of surface water into SW-002	M_s1 = M s2 =	17 (20 (
	mass flux of surface water into SW-003	M_s3 =		(μg/
		IVI_30 =		
		M c4 -		
	mass flux of surface water into SW-004	M_s4 =	25 (
	mass flux of surface water into SW-004A	M_s4A =	25 (89 ((μg/
×	mass flux of surface water into SW-004A mass flux of surface water into SW-005	M_s4A = M_s5 =	25 (89 (131 ((μg/ (μg/
<u> </u>	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1	M_s4A = M_s5 = M_sns =	25 (89 (131 ((µg/ (µg/ (µg/
. Flux	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow	M_s4A = M_s5 = M_sns = M_sms =	25 (89 (131 (0 ((µg/ (µg/ (µg/
	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001	M_s4A = M_s5 = M_sns = M_sms = M_g1 =	25 (89 (131 (0 (6 ((µg/ (µg/ (µg/ (µg/ (µg/
	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002	M_s4A = M_s5 = M_sns = M_sms = M_g1 = M_g2 =	25 (89 (131 (0 (6 (12 ((µg/ (µg/ (µg/ (µg/ (µg/
f Mass Flux	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003	M_s4A = M_s5 = M_sns = M_sms = M_g1 = M_g2 = M_g3 =	25 (89 (131 (0 (0 (6 (12 (3 ((µg/ (µg/ (µg/ (µg/ (µg/ (µg/
of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-003	M_s4A = M_s5 = M_sns = M_sms = M_g1 = M_g2 = M_g3 = M_g4 =	25 (89 (131 (100 (100 (100 (100 (100 (100 (100	(µд, (µд, (µд, (µд, (µд, (µд,
of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004	M_s4A = M_s5 = M_sns = M_sms = M_g1 = M_g2 = M_g3 = M_g4 = M_g4A =	25 (89 (131 (100 (100 (100 (100 (100 (100 (100	(µд, (µд, (µд, (µд, (µд, (µд,
of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-005	M_s4A = M_s5 = M_sns = M_sns = M_g1 = M_g2 = M_g4 = M_g4A = M_g5 =	25 (89) (131) (0 (6) (6) (12) (13) (14) (14) (14) (17) (14) (14) (17) (14) (14) (17) (14) (14) (17) (14) (14) (17) (14) (14) (17) (14) (14) (14) (14) (14) (14) (14) (14	(µд) (µд) (µд) (µд) (µд) (µд) (µд)
of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit	M s4A = M s5 = M sns = M sms = M g1 = M g2 = M g3 = M g4 = M g5 = M g6 = M g9 =	25 (89) (89) (131) (10) (10) (10) (10) (10) (10) (10) (1	(µд) (µд) (µд) (µд) (µд) (µд) (µд)
of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit	M s4A = M s5 = M sns = M sq = M g4 = M g4 = M g4A = M g5 = M g6 = M g9 = M g9 = M g9 =	25 89 131 0 0 6 6 12 3 10 44 44 72 0	(ha (ha (ha (ha (ha (ha (ha
of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of sepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles	M s4A = M s5 = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g9 =	25 89 131 0 0 6 12 3 10 44 72 0 0	(ha (ha (ha (ha (ha (ha (ha (ha
	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit	M s4A = M s5 = M sns = M sq = M g4 = M g4 = M g4A = M g5 = M g6 = M g9 = M g9 = M g9 =	25 89 131 0 0 6 12 3 10 44 72 0 0	(ha (ha (ha (ha (ha (ha (ha (ha
of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features	M s4A = M s5 = M sns = M sms = M sms = M g1 = M g2 = M g4 = M g4A = M g4A = M g4B = M	25, 890 1311 0, 0, 0, 6 112, 3, 10, 10, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0	(ha) (ha) (ha) (ha) (ha) (ha) (ha)
of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of sepange from East Pit mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from other mine features mass flux of rombined ground water liner leakage/seepage from other mine features	M s4A = M s5 = M sns = M sns = M sns = M g1 = M g2 = M g4 = M g4A = M g5 = M g9	25 (88) (131) (100	(ha) (ha) (ha) (ha) (ha) (ha) (ha)
Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux of rombined ground water liner leakage/seepage from other mine features	M s4A = M s5 = M sms = M sms = M g1 = M g2 = M g3 = M g4 = M g4A = M g9A = M g1A = M g	25 89 0 131 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	(Ha) (Ha) (Ha) (Ha) (Ha) (Ha) (Ha) (Ha)
ce Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of sepage from East Pit mass flux of sepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-002 mass flux in river at SW-003	M s4A = M s5 = M sns = M sns = M sns = M g1 = M g2 = M g4 = M g4A = M g9A = M	25 (89 (131 (141 (141 (141 (141 (141 (141 (141	(ha) (ha) (ha) (ha) (ha) (ha) (ha)
ce Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003	M s4A = M s5 = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g4A = M g4A = M g9	25 889 131 1	(ha) (ha) (ha) (ha) (ha) (ha) (ha) (ha)
ce Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004	M s4A = M s5 = M sms = M sms = M g1 = M g3 = M g4 = M g5 = M g9 =	25 (89 (131) (141)	(ha) (ha) (ha) (ha) (ha) (ha) (ha) (ha)
Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003	M s4A = M s5 = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g4A = M g4A = M g9	25 889 131 1	(ha) (ha) (ha) (ha) (ha) (ha) (ha) (ha)
Mass Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005	M s4A = M s5 = M sms = M sms = M sms = M g1 = M g2 = M g4 = M g4A = M g9A = M	25 89 131 1	(Ha) (Ha) (Ha) (Ha) (Ha) (Ha) (Ha) (Ha)
Mass Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-005	M s4A = M s5 = M sns =	25 89 9 9 9 233 435 0.6 8	ha\((ha) (ha) (ha) (ha) (ha) (ha) (ha) (ha
Mass Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002	M s4A = M s5 = M s7 = M	25 89 9 131 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Ha\/ Ha\/ Ha\/ Ha\/ Ha\/ Ha\/ Ha\/ Ha\/
Mass Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-005	M s4A = M s5 = M sns =	25 89 9 9 9 233 435 0.6 8	Ha\/ Ha\/ Ha\/ Ha\/ Ha\/ Ha\/ Ha\/ Ha\/
Mass Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002	M s4A = M s5 = M s7 = M	25 89 9 131 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	ha\/ ha\/ ha\/ ha\/ ha\/ ha\/ ha\/ ha\/
Mass Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface experients SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of sepage from East Pit mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005 mass flux in river at SW-005 mass flux in river at SW-005 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-003	M s4A = M s5 = M sms = M sms = M sms = M sms = M sm	25 (89) (131) (100	ha\/ ha\/ ha\/ ha\/ ha\/ ha\/ ha\/ ha\/
ce Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface evater into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of sepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 concentration in river at SW-003 concentration in river at SW-003 concentration in river at SW-004	M s4A = M s5 = M sms = M sm s = M	25 (89 (131) (141)	(Ha) (Ha) (Ha) (Ha) (Ha) (Ha) (Ha) (Ha)
Mass Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface experients SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of sepage from East Pit mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005 mass flux in river at SW-005 mass flux in river at SW-005 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-003	M s4A = M s5 = M sms = M sms = M sms = M sms = M sm	25 (89) (131) (100	ha\r ha\r ha\r ha\r ha\r ha\r ha\r ha\r
Calculation of Mass Concentration Balance Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004	M s4A = M s5 = M sms = M sm s = M	25 89 131 1	ha\l ha\l ha\l ha\l ha\l ha\l ha\l ha\l
Calculation of Mass Concentration Balance Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-005 Observed concentration in river at SW-005	M s4A = M s5 = M sms = M sm s = M	25 (89 (10 (10 (10 (10 (10 (10 (10 (10 (10 (10	Ha\/ Ha\/
Mass Calculation of Mass	mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004A mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004	M s4A = M s5 = M sms = M sm s = M	25 89 131 1	ha\/ ha\/ ha\/ ha\/ ha\/ ha\/ ha\/ (

	Antimony			
	surface water flow into SW-001	Q s1 =	1.23	(cfs
	surface water flow into SW-002	Q_s2 =		(cfs
	surface water flow into SW-002	Q_32 =	0.40	
	surface water flow into SW-003	Q_s3 = Q_s4 =	1.76	
	surface water flow into SW-004A	Q_s4A =	6.31	
	surface water flow into SW-005	Q_s5 =	9.25	
	surface water inflow from upstream of PM-1	Q sns =	0.00	
	surface water flow from West Pit Overflow	Q_sms =	0.00	
	ground water flow into SW-001	Q_g1 =	0.18	
	ground water flow into SW-001	Q_g1 =	0.38	
ന	ground water flow into SW-003	Q_g2 =	0.11	
Data	ground water flow into SW-004	Q_g6 =	0.32	
	ground water flow into SW-004A	Q_g4A =	1.39	
Flow	ground water flow into SW-004A	Q_g5 =	2.27	
	ground water new into 500-665	Q_gep =	0.00	
Ψ.	ground water seepage from West Pit	Q_gwp =	0.00	
Ħ	combined ground water liner leakage from stockpiles	Q_gWp = Q_gl4 =	0.00	
Input	combined ground water liner leakage/seepage from other mine features	Q_gl4a = Q_gl4a =	0.00	
	combined ground water liner leakage/seepage from other mine leatures	Q_gi+a -	0.00	(613
	concentration of surface water into SW-001	C_s1 =	1.5	ua/l
	concentration of surface water into SW-001	C_s1 =	1.5	
	concentration of surface water into SW-003 concentration of surface water into SW-004	C_s3 =	1.5	
		C_s4 =	1.5	
	concentration of surface water into SW-004A	C_s4A =	1.5	
ū	concentration of surface water into SW-005	C_s5 =	1.5	
Data	concentration of surface water inflow from upstream of PM-1	C_sns =	1.5	
	concentration of surface water flow from West Pit Overflow	C_sms =		μg/l
S	concentration of ground water into SW-001	C_g1 =	1.5	
ΞĘ	concentration of ground water into SW-002	C_g2 =	1.5	
ţ	concentration of ground water into SW-003	C_g3 =	1.5	
Concentration	concentration of ground water into SW-004	C_g4 =	1.5	
8	concentration of ground water into SW-004A	C_g4A =	1.5	
5	concentration of ground water into SW-005	C_g5 =	1.5	
	concentration of ground water seepage from East Pit	C_gep =		μg/l
Ħ	concentration of ground water seepage from West Pit	C_gwp =		μg/l
Input	concentration of combined ground water liner leakage from stockpiles	C_gl4 =		μg/l
=	concentration of combined ground water liner leakage/seepage from other mine features	C_gl4a =	0	μg/l
	7	I .		, ,
	flow in river at SW-001	Q_r1 =	1.41	
	flow in river at SW-002	Q_r2 =		(cfs
Φ	flow in river at SW-003	Q_r3 =		(cfs
Water Balance	flow in river at SW-004	Q_r4 =	5.78	
ੜ ਵ	flow in river at SW-004A	Q_r4A =	13.48	
Water Balan	flow in river at SW-005	Q_r5 =	25.00	
> ш	flow check	Q_ck =	25.00	(cts
	mans flow of ourfood water into CW 001	IM of	[50	/ua
	mass flux of surface water into SW-001	M_s1 =	52	
	mass flux of surface water into SW-002	M_s2 =	60	
	mass flux of surface water into SW-003	M_s3 =		(μg/
	mass flux of surface water into SW-004	M_s4 = M_s4A =		(μg
	mass flux of surface water into SW-004A			
			268	
×	mass flux of surface water into SW-005	M_s5 =	393	(µg/
š	mass flux of surface water inflow from upstream of PM-1	M_s5 = M_sns =	393 0	(μg/ (μg/
ΞĬ	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow	M_s5 = M_sns = M_sms =	393 0	(μg/ (μg/ (μg/
ss Flux	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001	M_s5 = M_sns = M_sms = M_g1 =	393 0 0	(μg/ (μg/ (μg/ (μg/
ass Flux	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002	M_s5 = M_sns = M_sms = M_g1 = M_g2 =	393 0 0 8 16	(μg/ (μg/ (μg/ (μg/
Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003	M_s5 = M_sns = M_sms = M_g1 = M_g2 = M_g3 =	393 0 0 8 16 5	(µд/ (µд/ (µд/ (µд/ (µд/
of Mass Flux	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004	M_s5 = M_sns = M_sms = M_g1 = M_g2 = M_g3 = M_g4 =	393 0 0 8 16 5	(µд/ (µд/ (µд/ (µд/ (µд/ (µд/
of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004	M_s5 = M_sns = M_sms = M_g1 = M_g2 = M_g3 = M_g4 = M_g4A =	393 0 0 8 16 5 14 59	(µg/ (µg/ (µg/ (µg/ (µg/ (µg/
of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004	M_s5 = M_sns = M_sms = M_g1 = M_g2 = M_g3 = M_g4 =	393 0 0 8 16 5 14 59	(µg/ (µg/ (µg/ (µg/ (µg/ (µg/
of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004	M_s5 = M_sns = M_sms = M_g1 = M_g2 = M_g3 = M_g4 = M_g4A =	393 0 0 8 16 5 14 59	(µд/ (µд/ (µд/ (µд/ (µд/ (µд/ (µд/ (µд/
of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of seepage from East Pit	M_s5 = M_sns = M_sns = M_g1 = M_g2 = M_g3 = M_g4 = M_g4A = M_g5 = M_g6 =	393 0 0 8 16 5 14 59 96	(µg/ (µg/ (µg/ (µg/ (µg/ (µg/ (µg/ (µg/
of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of seepage from East Pit mass flux of seepage from West Pit	M_s5 = M_sns = M_sms = M_g1 = M_g2 = M_g3 = M_g4 = M_g4A = M_g5 = M_gep = M_gwp =	393 0 0 8 16 5 14 59 96 0	(µg/ (µg/ (µg/ (µg/ (µg/ (µg/ (µg/ (µg/
Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of seepage from East Pit	M_s5 = M_sns = M_sns = M_g1 = M_g2 = M_g3 = M_g4 = M_g4A = M_g5 = M_g6 =	393 0 0 8 16 5 14 59 96 0 0	(µg) (µg) (µg) (µg) (µg) (µg) (µg)
of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles	M s5 = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g4A = M g5 = M g9p = M gy4 =	393 0 0 8 16 5 14 59 96 0 0	(µg) (µg) (µg) (µg) (µg) (µg) (µg)
of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles	M s5 = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g4A = M g5 = M g9p = M gy4 =	393 0 0 8 8 16 5 5 14 5 9 9 6 0 0	(ha) (ha) (ha) (ha) (ha) (ha) (ha) (ha)
Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features	M s5 = M sns = M sms = M g1 = M g2 = M g3 = M g4 = M g4 = M g4A =	393 0 0 8 8 16 5 14 5 96 0 0 0	(Ha) (Ha) (Ha) (Ha) (Ha) (Ha) (Ha) (Ha)
Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001	M s5 = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g4 = M g4 = M g4A = M g5 = M g9 = M g4 = M g4A =	393 0 0 8 8 16 5 14 59 96 0 0 0 0 0	(Ha) (Ha) (Ha) (Ha) (Ha) (Ha) (Ha) (Ha)
ce Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-002 mass flux in river at SW-003	M s5 = M sns = M sms = M g1 = M g2 = M g3 = M g4 = M g4 = M g4A = M g4A = M g9 = M g14 = M g14 = M g1 =	393 0 0 8 8 16 5 5 14 59 96 0 0 0 0 136 136	(Ha) (Ha) (Ha) (Ha) (Ha) (Ha) (Ha) (Ha)
ce Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-003 mass flux in river at SW-004	M s5 = M sns = M sns = M gns = M g1 = M g2 = M g3 = M g4 = M g4A =	393 0 0 8 16 5 14 59 96 0 0 0 0 0 136 60 137 137 137 137 137 137 137 137	(ha) (ha) (ha) (ha) (ha) (ha) (ha) (ha)
of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-002 mass flux in river at SW-003	M s5 = M sns = M sms = M g1 = M g2 = M g3 = M g4 = M g4 = M g4A = M g4A = M g9 = M g14 = M g14 = M g1 =	393 0 0 8 8 16 5 5 14 59 96 0 0 0 0 136 136	(Ha) (Ha) (Ha) (Ha) (Ha) (Ha) (Ha) (Ha)
ce Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004	M s5 = M sns = M sns = M gn = M g1 = M g2 = M g3 = M g4 = M g4A = M g5 = M g9P = M g94 = M g14 = M g14a = M r1 = M r2 = M r2 = M r4 = M r4 = M r4A =	393 0 0 8 8 16 5 96 0 0 0 0 136 157 245 572	(ha) (ha) (ha) (ha) (ha) (ha) (ha) (ha)
Mass Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of grande water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005	M s5 = M sns = M sns = M sms = M g1 = M g2 = M g3 = M g4 = M g4A = M r5 = M r5 =	393 0 0 8 8 16 5 14 59 96 0 0 0 0 136 157 245 572 1061	(Hay (Hay (Hay (Hay (Hay (Hay (Hay (Hay
Mass Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-005	M s5 = M sns = M sns = M sms = M g1 = M g2 = M g4 = M g4 = M g4A = M r1 = M r2 = M r3 = M r4 = M r4A = M r5 =	393 0 0 8 8 16 5 14 59 96 0 0 0 0 136 157 245 572 1061	(Hay (Hay (Hay (Hay (Hay (Hay (Hay (Hay
Mass Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002	M s5 = M sns = M sns = M sms = M g1 = M g2 = M g3 = M g4 = M g4A = M g7 = M g4A = M g4A = C g1A = M r1 = M r2 = M r4 = M r4A = M r4A = M r5 = C r1 = C r2 =	393 0 0 8 16 5 14 59 96 0 0 0 0 136 157 245 572 1061	ha\/ (
Mass Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-005	M s5 = M sns = M sns = M sms = M g1 = M g2 = M g4 = M g4 = M g4A = M r1 = M r2 = M r3 = M r4 = M r4A = M r5 =	393 0 0 8 8 16 5 14 59 96 0 0 0 0 136 157 245 572 1061	ha\/ (
Mass Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003	M s5 = M sns = M sns = M sms = M g1 = M g2 = M g3 = M g4 = M g4A = M g1A = M g1A = M g1A = C r1 = C r2 = C r3 =	393 0 0 8 16 5 14 59 96 0 0 0 0 0 136 157 245 572 1061	(Hay (Hay (Hay (Hay (Hay (Hay (Hay (Hay
Mass Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004	M s5 = M sns = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g4A = M g5 = M g4A = C g1A = M g4A = M g1A = M g1A = M g1A = C g1 = C g2 = C g3 = C g4 =	393 0 0 8 8 16 5 96 0 0 0 0 136 157 245 572 1061 1.5 1.5 1.5	(µg, (µg, (µg, (µg, (µg, (µg, (µg, (µg,
Mass Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-003 concentration in river at SW-004	M s5 = M sns = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g4A = M g5 = M g9A = M g4A = M g5 = M g9P = M g9P = M g9P = M g1A = M r1 = M r2 = M r3 = M r4 = M r4 = M r4 = C r1 = C r2 = C r4 = C r4A =	393 0 0 8 8 16 5 5 96 0 0 0 0 136 157 245 572 1061 1.5 1.5 1.5	(Ha (Ha (Ha (Ha (Ha (Ha (Ha (Ha (Ha (Ha
ce Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004	M s5 = M sns = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g4A = M g5 = M g4A = C g1A = M g4A = M g1A = M g1A = M g1A = C g1 = C g2 = C g3 = C g4 =	393 0 0 8 8 16 5 96 0 0 0 0 136 157 245 572 1061 1.5 1.5 1.5	(Hay (Hay (Hay (Hay (Hay (Hay (Hay (Hay
Mass Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-003 concentration in river at SW-004	M s5 = M sns = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g4A = M g5 = M g9A = M g4A = M g5 = M g9P = M g9P = M g9P = M g1A = M r1 = M r2 = M r3 = M r4 = M r4 = M r4 = C r1 = C r2 = C r4 = C r4A =	393 0 0 8 8 16 5 5 96 0 0 0 0 136 157 245 572 1061 1.5 1.5 1.5	(Hay (Hay (Hay (Hay (Hay (Hay (Hay (Hay
Calculation of Mass Concentration Balance Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-003 concentration in river at SW-004	M s5 = M sns = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g4A = M g5 = M g9A = M g4A = M g5 = M g9P = M g9P = M g9P = M g1A = M r1 = M r2 = M r3 = M r4 = M r4 = M r4 = C r1 = C r2 = C r4 = C r4A =	393 0 0 8 8 16 5 5 96 0 0 0 0 136 157 245 572 1061 1.5 1.5 1.5	(µg. (µg. (µg. (µg. (µg. (µg. (µg. (µg.
line Calculation of Mass Concentration Balance Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004A mass flux in river at SW-004A mass flux in river at SW-005 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-005	M s5 = M sns = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g4A = M g5 = M g9A = M g4A = M g5 = M g9P = M g9P = M g9P = M g1A = M r1 = M r2 = M r3 = M r4 = M r4 = M r4 = C r1 = C r2 = C r4 = C r4A =	393 0 0 0 8 8 16 5 14 59 96 0 0 0 0 136 157 245 572 1061 1.5 1.5 1.5 1.5 ND (3)	(Hay (Hay (Hay (Hay (Hay (Hay (Hay (Hay
Mass Calculation of Mass	mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 Concentration in river at SW-005 Observed concentration in river at SW-005	M s5 = M sns = M sns = M sns = M g1 = M g2 = M g3 = M g4 = M g4A = M g5 = M g9A = M g4A = M g5 = M g9P = M g9P = M g9P = M g1A = M r1 = M r2 = M r3 = M r4 = M r4 = M r4 = C r1 = C r2 = C r4 = C r4A =	393 0 0 0 8 8 16 5 14 59 96 0 0 0 0 136 157 245 572 1061 1.5 1.5 1.5 1.5 1.5 ND (3) ND (3)	(Hay (Hay (Hay (Hay (Hay (Hay (Hay (Hay

ameter:	Solonium	a		
	Selenium			
	surface water flow into SW-001	Q_s1 =	0.39	(cfs)
	surface water flow into SW-002	Q_s2 =	0.33	(cfs)
	surface water flow into SW-003	Q_s3 =	0.09	
	surface water flow into SW-004	Q s4 =	0.51	
	surface water flow into SW-004A	Q s4A =	1.69	
	surface water flow into SW-005	Q s5 =	2.34	
	surface water inflow from upstream of PM-1	Q sns =	0.00	
	surface water flow from West Pit Overflow	Q sms =	0.00	
	ground water flow into SW-001	Q_g1 =	0.18	
	ground water flow into SW-002	Q_g2 =	0.38	
Ø	ground water flow into SW-003	Q g3 =	0.11	
Data	ground water flow into SW-004	Q g4 =	0.32	
	ground water flow into SW-004A	Q_g4A =	1.39	
Flow	ground water flow into SW-005	Q_g5 =	2.27	
은	ground water new into 500-665	Q_gep =	0.00	
ш.	ground water seepage from West Pit	Q_gep = Q_gwp =	0.00	
Ž				
Input	combined ground water liner leakage from stockpiles	Q_gl4 =	0.00	
	combined ground water liner leakage/seepage from other mine features	Q_gl4a =	0.00	(CIS
	concentration of surface water into SW-001	C_s1 =		μg/l
	concentration of surface water into SW-002	C_s2 =		μg/l
	concentration of surface water into SW-003	C_s3 =		μg/l
	concentration of surface water into SW-004	C_s4 =		μg/l
	concentration of surface water into SW-004A	C_s4A =		μg/l
	concentration of surface water into SW-005	C_s5 =		μg/l
ata	concentration of surface water inflow from upstream of PM-1	C sns =		μg/l
Õ	concentration of surface water flow from West Pit Overflow	C sms =		μg/l
_	concentration of ground water into SW-001	C_g1 =	1.91	
ō	concentration of ground water into SW-001	C_g2 =	1.91	
ati	concentration of ground water into SW-002	C_g2 = C_g3 =	1.91	
ŧ	concentration of ground water into SW-003	C_g3 =	1.91	HG/I
ë	concentration of ground water into SW-004 concentration of ground water into SW-004A	C_g4 =	1.91	
Concentration Dat	concentration of ground water into SW-004A	C_g5 =	1.91	
Q	concentration of ground water into SW-005	C_gs = C_gep =		μg/l μg/l
Ü				
Input	concentration of ground water seepage from West Pit	C_gwp = C gl4 =		μg/l
d-	concentration of combined ground water liner leakage from stockpiles			μg/L
	concentration of combined ground water liner leakage/seepage from other mine features	C_gl4a =	0	μg/l
	flow in river at SW-001	Q_r1 =	0.57	(cfs
	flow in river at SW-002	Q_r2 =	1.28	
	flow in river at SW-003	Q_r3 =	1.48	
e	flow in river at SW-004	Q r4 =	2.31	
er n	flow in river at SW-004A	Q_r4A =	5.39	
Water Balance	flow in river at SW-005	Q_r5 =	10.00	
≥ 8	flow check	Q_ck =	10.00	
		1		,
	mass flux of surface water into SW-001	M_s1 =		(μg/
	mass flux of surface water into SW-002	M_s2 =		(μg/
	mass flux of surface water into SW-003	M_s3 =		(μg/
	mass flux of surface water into SW-004	M_s4 =		(µg/
	mass flux of surface water into SW-004A	$M_s4A =$		(μg
	mass flux of surface water into SW-005	M_s5 =		(μg
Š	mass flux of surface water inflow from upstream of PM-1	M_sns =	0	(μg
Ξ	mass flux of surface water flow from West Pit Overflow	M_sms =		(μg/
Ø	mass flux of ground water into SW-001	M g1 =		(μg/
Mass	mass flux of ground water into SW-002	M_g2 =		(μg/
Š	mass flux of ground water into SW-003	M_g3 =		(μg/
of I	mass flux of ground water into SW-004	M_g4 =		(μg/
	mass flux of ground water into SW-004A	M_g4A =		(μg/
ō	mass flux of ground water into SW-004A	M_g5 =	123	
ati	mass flux of seepage from East Pit	M gep =		(μg/
ij	mass flux of seepage from West Pit	M_gwp =		(μg/
2	mass flux of seepage from west Fit mass flux of combined ground water liner leakage from stockpiles	M_gl4 =		(μg.
Calculation	mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features	м_gi4 = М_gi4a =		(μg/
		141_917a =	. 0	(µg
	mass flux in river at SW-001	M_r1 =		(μg
	mass flux in river at SW-002	M_r2 =		(μg
Ce	mass flux in river at SW-003	M_r3 =	36	(μg/
SS	mass flux in river at SW-004	M_r4 =		(μg/
C) (U	mass flux in river at SW-004A	M r4A =	129	
7 79	mass flux in river at SW-005	M_r5 =	251	
Mass Balance				
Ma Bal		1		
	concentration in river at SW-001	C_r1 =	0.6	μg/l
		C_r1 = C_r2 =		
	concentration in river at SW-001 concentration in river at SW-002	C_r2 =	0.8	μg/l
	concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003	C_r2 = C_r3 =	0.8	μg/l μg/l
	concentration in river at SW-001 concentration in river at SW-002	C_r2 =	0.8	μg/l μg/l
	concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003	C_r2 = C_r3 =	0.8 0.9 0.8	μg/l μg/l μg/l
Calculation of Ma	concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004	C_r2 = C_r3 = C_r4 =	0.8 0.9 0.8 0.8	μg/l μg/l μg/l μg/l
	concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004A	C_r2 = C_r3 = C_r4 = C_r4A =	0.8 0.9 0.8 0.8	μg/l μg/l μg/l μg/l
Calculation of Concentration	concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004A concentration in river at SW-005	C_r2 = C_r3 = C_r4 = C_r4A =	0.8 0.9 0.8 0.8 0.9	µg/l µg/l µg/l µg/l
Calculation of Concentration	concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004A concentration in river at SW-005 Observed concentration in river at SW-002	C_r2 = C_r3 = C_r4 = C_r4A =	0.8 0.9 0.8 0.8 0.9	μg/l μg/l μg/l μg/l μg/l
line Calculation of Concentration	concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004A concentration in river at SW-005 Observed concentration in river at SW-002 Observed concentration in river at SW-003	C_r2 = C_r3 = C_r4 = C_r4A =	0.8 0.9 0.8 0.8 0.9 ND (1) ND (1)	μg/l μg/l μg/l μg/l μg/l
line Calculation of Concentration	concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004A concentration in river at SW-005 Observed concentration in river at SW-002 Observed concentration in river at SW-003 Observed concentration in river at SW-003 Observed concentration in river at SW-004	C_r2 = C_r3 = C_r4 = C_r4A =	0.8 0.9 0.8 0.8 0.9 ND (1) ND (1) ND (1)	µg/l µg/l µg/l µg/l µg/l µg/l
	concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004A concentration in river at SW-005 Observed concentration in river at SW-002 Observed concentration in river at SW-003	C_r2 = C_r3 = C_r4 = C_r4A =	0.8 0.9 0.8 0.8 0.9 ND (1) ND (1) ND (1)	μg/L μg/L μg/L μg/L μg/L μg/L μg/L μg/L

meter:	Sulfate			
	Juliate			
	surface water flow into SW-001	Q_s1 =	2.87	(cfs)
	surface water flow into SW-002	Q_s2 =	3.47	(cfs)
	surface water flow into SW-003	Q s3 =	1.00	
	surface water flow into SW-004	Q_s4 =	4.16	
	surface water flow into SW-004A	Q_s4A =	15.24	
	surface water flow into SW-005	Q_s5 =	22.61	
	surface water inflow from upstream of PM-1	Q_sns =	0.00	
	surface water flow from West Pit Overflow	Q_sms =	0.00	
	ground water flow into SW-001	Q_g1 =	0.18	
	ground water flow into SW-002	Q_g2 =	0.38	(cfs)
ŭ	ground water flow into SW-003	Q_g3 =	0.11	(cfs)
	ground water flow into SW-004	Q g4 =	0.32	
	ground water flow into SW-004A	Q_g4A =	1.39	
<u>ó</u>	ground water flow into SW-005	Q_g5 =	2.27	
正	ground water seepage from East Pit	Q_gep =	0.00	(cfs)
put	ground water seepage from West Pit	$Q_gwp =$	0.00	(cfs)
집	combined ground water liner leakage from stockpiles	Q gl4 =	0.00	(cfs)
	combined ground water liner leakage/seepage from other mine features	Q gl4a =	0.00	
	oonibiliou ground mater illior loantage occipage from other tillior loatarios	u_gu =	0.00	(0.0)
	concentration of surface water into SW-001	C_s1 =	9	(mg/l)
	concentration of surface water into SW-002	C_s2 =		(mg/l)
	concentration of surface water into SW-003	C s3 =		(mg/l)
	concentration of surface water into SW-004	C_s4 =		(mg/l)
	concentration of surface water into SW-004A	C_s4A =		(mg/l)
	concentration of surface water into SW-005	C_s5 =		(mg/l)
atí	concentration of surface water inflow from upstream of PM-1	C_sns =	22	(mg/l)
õ	concentration of surface water flow from West Pit Overflow	C_sms =		(mg/l)
_	concentration of ground water into SW-001	C_g1 =	16.13	
ō				
Ξ	concentration of ground water into SW-002	C_g2 =	16.13	
Ţ	concentration of ground water into SW-003	C_g3 =	16.13	
Concentration Dat	concentration of ground water into SW-004	C_g4 =	16.13	
9	concentration of ground water into SW-004A	C_g4A =	16.13	
Ĕ	concentration of ground water into SW-005	C_g5 =	16.13	
2	concentration of ground water seepage from East Pit	C_gep =		(mg/l)
U				(mg/l)
	concentration of ground water seepage from West Pit	C_gwp =		
9	concentration of combined ground water liner leakage from stockpiles	C_gl4 =		(mg/l)
=	concentration of combined ground water liner leakage/seepage from other mine features	C_gl4a =	0	(mg/l)
	Harris and the CM And	IO ::1	0.00	/-t·\
	flow in river at SW-001	Q_r1 =	3.05	
	flow in river at SW-002	Q_r2 =	6.90	
d)	flow in river at SW-003	Q_r3 =	8.01	
, 8	flow in river at SW-004	Q_r4 =	12.49	
E €	flow in river at SW-004A	Q r4A =	29.12	(cfs)
at at	flow in river at SW-005	Q r5 =	54.00	
	flow check	Q_ck =	54.00	
	mass flux of surface water into SW-001	M_s1 =	731	(mg/s
	mass flux of surface water into SW-002	M s2 =		(mg/s
	mass flux of surface water into SW-003	M s3 =		(mg/s
	mass flux of surface water into SW-004	M_s4 =	1060	
	mass flux of surface water into SW-004A	M_s4A =	3882	
	mass flux of surface water into SW-005	$M_s5 =$	5758	(mg/s
×	mass flux of surface water inflow from upstream of PM-1	M sns =		(mg/s
	mass flux of surface water flow from West Pit Overflow	M sms =		(mg/s
	mass flux of ground water into SW-001			
SS		M_g1 =		(mg/s
	mass flux of ground water into SW-002	M_g2 =		(mg/s
	mass flux of ground water into SW-003	M_g3 =		(mg/s
of	mass flux of ground water into SW-004	M_g4 =	146	(mg/s
	mass flux of ground water into SW-004A	M_g4A =		(mg/s
ō	mass flux of ground water into SW-005	M g5 =		(mg/s
ΞĘ		M gep =		(mg/s
=	mass flux of seepage from East Pit			
ರ	mass flux of seepage from West Pit	M_gwp =		(mg/s
	mass flux of combined ground water liner leakage from stockpiles	M_gl4 =		(mg/s
O	mass flux of combined ground water liner leakage/seepage from other mine features	M_gl4a =	0	(mg/s
	7	Ta		,
	mass flux in river at SW-001	M_r1 =		(mg/s
	mass flux in river at SW-002	M_r2 =	1871	
	mass flux in river at SW-003	$M_r3 =$	2175	(mg/s
99	mass flux in river at SW-004	M r4 =	3381	
99	mass flux in river at SW-004A	M r4A =	7898	
99		M_r5 =	14692	
lass alance	mass flux in river at SW-005			. 5
lass alance	mass flux in river at SW-005			
Mass Balance		C r1 -		(ma/l
Mass Balance	concentration in river at SW-001	C_r1 =	9.4	
Mass Balance		C_r1 = C_r2 =	9.4	
Mass Balance	concentration in river at SW-001 concentration in river at SW-002	C_r2 =	9.4 9.6	(mg/l)
Mass Balance	concentration in river at SW-001		9.4 9.6 9.6	(mg/l) (mg/l)
Mass Balance	concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003	C_r2 =	9.4 9.6 9.6	(mg/l (mg/l
Mass Balance	concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004	C_r2 = C_r3 = C_r4 =	9.4 9.6 9.6 9.6	(mg/l (mg/l (mg/l
Mass Balance	concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-004A	C_r2 = C_r3 = C_r4 = C_r4A =	9.4 9.6 9.6 9.6 9.6	(mg/l (mg/l (mg/l (mg/l
Sulation of Mass Balance	concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004	C_r2 = C_r3 = C_r4 =	9.4 9.6 9.6 9.6 9.6	(mg/l) (mg/l) (mg/l) (mg/l)
Mass Balance	concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-004A	C_r2 = C_r3 = C_r4 = C_r4A =	9.4 9.6 9.6 9.6 9.6	(mg/l) (mg/l) (mg/l) (mg/l)
Calculation of Mass Concentration Balance	concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004 concentration in river at SW-004A	C_r2 = C_r3 = C_r4 = C_r4A =	9.4 9.6 9.6 9.6 9.6 9.6	(mg/l) (mg/l) (mg/l) (mg/l) (mg/l)
line Calculation of Mass	concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004A concentration in river at SW-005 Observed concentration in river at SW-002	C_r2 = C_r3 = C_r4 = C_r4A =	9.4 9.6 9.6 9.6 9.6 9.6	(mg/l) (mg/l) (mg/l) (mg/l) (mg/l)
Mass Balance	concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-004A concentration in river at SW-005	C_r2 = C_r3 = C_r4 = C_r4A =	9.4 9.6 9.6 9.6 9.6 9.6 10.9	(mg/l) (mg/l) (mg/l) (mg/l) (mg/l) (mg/l) (mg/l)

meter:	Thallium	a		
	surface water flow into SW-001	Q_s1 =	0.39	
	surface water flow into SW-002	Q_s2 =	0.33	
	surface water flow into SW-003	Q_s3 =	0.09	
	surface water flow into SW-004 surface water flow into SW-004A	Q_s4 = Q_s4A =	0.51 1.69	
	surface water flow into SW-004A surface water flow into SW-005	Q_s4A = Q_s5 =	2.34	
	surface water inflow from upstream of PM-1	Q_sns =	0.00	
	surface water flow from West Pit Overflow	Q_sms =	0.00	
	ground water flow into SW-001	Q_g1 =	0.18	
	ground water flow into SW-002	Q_g2 =	0.38	
ಹ	ground water flow into SW-003	Q_g3 =	0.11	
Data	ground water flow into SW-004	Q_g4 =	0.32	
	ground water flow into SW-004A	Q g4A =	1.39	
Flow	ground water flow into SW-005	Q g5 =	2.27	
Ĕ	ground water seepage from East Pit	Q gep =	0.00	
=	ground water seepage from West Pit	Q gwp =	0.00	(cfs
put	combined ground water liner leakage from stockpiles	Q_gl4 =	0.00	(cfs
므	combined ground water liner leakage/seepage from other mine features	Q_gl4a =	0.00	(cfs
	Language of the CM 004	IO -4	0.4	I /I
	concentration of surface water into SW-001 concentration of surface water into SW-002	C_s1 = C s2 =		μg/L μg/L
	concentration of surface water into SW-002 concentration of surface water into SW-003	C_s2 = C_s3 =		μg/L μg/L
	concentration of surface water into SW-003	C_s3 =		μg/L μg/L
	concentration of surface water into SW-0044 concentration of surface water into SW-004A	C_S4 = C s4A =		μg/L μg/L
	concentration of surface water into SW-004A	C_s4A =		μg/L μg/L
Data	concentration of surface water into SW-005 concentration of surface water inflow from upstream of PM-1	C_sns =	0.286	
Da	concentration of surface water flow from West Pit Overflow	C_sns =		μg/L μg/L
	concentration of ground water into SW-001	C_g1 =	0.004	
Concentration	concentration of ground water into SW-001	C_g2 =	0.004	
ä	concentration of ground water into SW-003	C_g3 =	0.004	
ŧ	concentration of ground water into SW-004	C_g4 =	0.004	
ë	concentration of ground water into SW-004A	C g4A =	0.004	
Ĕ	concentration of ground water into SW-005	C_g5 =	0.004	μq/L
ŏ	concentration of ground water seepage from East Pit	C_gep =		μg/l
=	concentration of ground water seepage from West Pit	C_gwp =	0	μg/l
Input	concentration of combined ground water liner leakage from stockpiles	C_gl4 =	0	μg/L
	concentration of combined ground water liner leakage/seepage from other mine features	C_gl4a =	0	μg/l
	flow in river at SW 001	O r1 -	0.57	(cfc
	flow in river at SW-001 flow in river at SW-002	Q_r1 = Q_r2 =	0.57 1.28	
	flow in river at SW-002	Q_12 =	1.48	
ø	flow in river at SW-003	Q r4 =	2.31	
Water Balance	flow in river at SW-004A	Q_r4A =	5.39	
멸	flow in river at SW-005	Q_r5 =	10.00	
Water Balan	flow check	Q ck =	10.00	
		_		
	mass flux of surface water into SW-001	M_s1 =		(μg/
	mass flux of surface water into SW-002	M_s2 =	4	(μg/
	mass flux of surface water into SW-002 mass flux of surface water into SW-003	M_s2 = M_s3 =	4 1	(μg/ (μg/
	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004	M_s2 = M_s3 = M_s4 =	4 1 6	(μg/ (μg/ (μg/
	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A	M_s2 = M_s3 = M_s4 = M_s4A =	4 1 6 19	(μg/ (μg/ (μg/
×	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-005	M_s2 = M_s3 = M_s4 = M_s4A = M_s5 =	4 1 6 19 26	(µg/ (µg/ (µg/ (µg/
<u>x</u> n	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water into SW-005	M_s2 = M_s3 = M_s4 = M_s4A = M_s5 = M_sns =	4 1 6 19 26 0	(µg/ (µg/ (µg/ (µg/ (µg/
. Flux	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow	M_s2 = M_s3 = M_s4 = M_s4A = M_s5 = M_sns = M_sms =	4 1 6 19 26 0	(µg/ (µg/ (µg/ (µg/ (µg/ (µg/
	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001	M s2 = M s3 = M s4 = M s4A = M s5 = M sns = M sms = M g1 =	4 1 6 19 26 0 0	(µg/ (µg/ (µg/ (µg/ (µg/ (µg/ (µg/
	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002	M s2 = M s3 = M s4 = M s4A = M s5 = M sms = M sms = M g1 = M g2 =	4 1 6 19 26 0 0	(µg/ (µg/ (µg/ (µg/ (µg/ (µg/ (µg/
Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003	M s2 = M s3 = M s4 = M s4A = M s5 = M sms = M sms = M g1 = M g2 = M g3 =	4 1 6 19 26 0 0 0 0	(µg/ (µg/ (µg/ (µg/ (µg/ (µg/ (µg/ (µg/
of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-003 mass flux of ground water into SW-004	M s2 = M s3 = M s4 = M s4A = M s5 = M sns = M sns = M sns = M g1 = M g2 = M g3 = M g4 =	4 1 6 19 26 0 0 0 0 0	(µg/ (µg/ (µg/ (µg/ (µg/ (µg/ (µg/ (µg/
of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water infow from upstream of PM-1 mass flux of surface water inflow from Upstream of PM-1 mass flux of surface water infow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004	M_s2 = M_s3 = M_s4 = M_s4 = M_s5 = M_sns = M_sns = M_g1 = M_g2 = M_g3 = M_g4 = M_g4 = M_g4A =	4 1 6 19 26 0 0 0 0 0 0	(µg/ (µg/ (µg/ (µg/ (µg/ (µg/ (µg/ (µg/
of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water inflo SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-005	M s2 = M s3 = M s4 = M s4A = M s4A = M s5 = M sns = M sns = M sns = M sns = M sn = M s1 = M s2 = M s2 = M s2 = M s3 = M s4 = M s4 = M s5 = M s5 = M s5 = M s6 = M s	4 1 6 19 26 0 0 0 0 0 0 0	(µg/ (µg/ (µg/ (µg/ (µg/ (µg/ (µg/ (µg/
of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit	M s2 = M s3 = M s4A = M s4A = M s5 = M sms = M	4 1 19 26 0 0 0 0 0 0 0 0 0 0 0	(µg/ (µg/ (µg/ (µg/ (µg/ (µg/ (µg/ (µg/
of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of sepage from East Pit mass flux of seepage from West Pit	M s2 = M s3 = M s4 = M s4A = M s4A = M s5 = M sms = M	4 1 19 26 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	(ha) (ha) (ha) (ha) (ha) (ha) (ha) (ha)
Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit	M s2 = M s3 = M s4 = M s4 = M s4A = M s4A = M s5 = M sms = M sms = M sms = M sms = M sm = M s4 = M s	4 1 6 19 26 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	(ha) (ha) (ha) (ha) (ha) (ha) (ha) (ha)
of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of sepage from East Pit mass flux of seepage from West Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles	M s2 = M s3 = M s4 = M s4A = M s4A = M s5 = M sms = M	4 1 6 19 26 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	(ha) (ha) (ha) (ha) (ha) (ha) (ha) (ha)
of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of sepage from East Pit mass flux of seepage from West Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles	M s2 = M s3 = M s4 = M s4 = M s4A = M s4A = M s5 = M sms = M sms = M sms = M sms = M sm = M s4 = M s	4 1 6 6 9 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	(ha) (ha) (ha) (ha) (ha) (ha) (ha) (ha)
Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water flow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features	M s2 = M s3 = M s4A = M s4A = M s4A = M s5 = M sms = M	4 4 1 1 6 6 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	(ha) (ha) (ha) (ha) (ha) (ha) (ha) (ha)
ce Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of seponder from East Pit mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux of combined ground water liner leakage/seepage from other mine features	M s2 = M s3 = M s4 = M s4 = M s4A = M s5 = M sms = M sms = M sm = M sms = M sm	4 4 1 1 6 6 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1	(ha) (ha) (ha) (ha) (ha) (ha) (ha) (ha)
ce Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of seponder from East Pit mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003	M s2 = M s3 = M s4A = M s4A = M s4A = M s5 = M sms = M sm s = M sm	4 4 1 1 6 6 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	(ha) (ha) (ha) (ha) (ha) (ha) (ha) (ha)
ce Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of sepage from East Pit mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-003 mass flux in river at SW-004	M s2 = M s3 = M s4 = M s4A = M s4A = M s4A = M s5 = M sms = M sms = M s9	4 4 1 1 6 6 9 1 9 2 6 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	(ha) (ha) (ha) (ha) (ha) (ha) (ha) (ha)
of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of seponder from East Pit mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003	M s2 = M s3 = M s4A = M s4A = M s4A = M s5 = M sms = M sm s = M sm	4 4 1 1 6 6 9 1 9 2 6 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	(ha) (ha) (ha) (ha) (ha) (ha) (ha) (ha)
ce Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water flow from Upstream of PM-1 mass flux of ground water into SW-001 mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005	M s2 = M s3 = M s4A = M s4A = M s4A = M s4A = M s5 = M sms = M s4A = M	4 1 1 6 6 1 9 9 1 5 5 3 4 4 6 1 1 5 6 6 1	(ha) (ha) (ha) (ha) (ha) (ha) (ha) (ha)
Mass Balance Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of sepage from East Pit mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-003 mass flux in river at SW-004	M s2 = M s3 = M s4 = M s4A = M s4A = M s4A = M s5 = M sms = M sms = M s9	4 1 1 6 6 1 9 9 1 5 5 3 4 4 6 1 1 5 6 6 1	(ha) (ha) (ha) (ha) (ha) (ha) (ha) (ha)
Mass Balance Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water flow from Upstream of PM-1 mass flux of ground water into SW-001 mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005	M s2 = M s3 = M s4A = M s4A = M s4A = M s4A = M s5 = M sms = M s4A = M	4 1 1 6 6 9 19 26 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Halphage
Mass Balance Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water flow from Uest Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002	M s2 = M s3 = M s4 = M s4 = M s4 = M s5 = M sm = M	4 1 1 6 6 9 19 26 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	halphalphalphalphalphalphalphalphalphalp
Mass Balance Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water flow from Uest Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-002 concentration in river at SW-003	M s2 = M s3 = M s4 = M s4 = M s4 = M s5 = M sm = M	4 4 1 1 6 6 1 9 2 6 6 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9	halphalanananananananananananananananananana
Mass Balance Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water flow from Uest Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002	M s2 = M s3 = M s4 = M s4 = M s4 = M s5 = M sm = M	4 4 1 1 6 6 1 9 2 6 6 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9	halphalanananananananananananananananananana
Mass Balance Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-003 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water flow from Uest Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-002 concentration in river at SW-003	M s2 = M s3 = M s4 = M s4 = M s4 = M s5 = M sm = M	4 4 1 1 6 6 9 9 15 5 3 4 4 6 1 0 .3 0 .2 0 .2 0 .2	ha/l ha/l ha/l ha/l ha/l ha/l ha/l ha/l
ce Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water into SW-001 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of sepage from East Pit mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 concentration in river at SW-002 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004	M S2 = M S3 = M S4 = M S5 = M SM S = M SM S	4 4 1 1 6 6 9 1 9 2 6 6 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	hal, hal, hal, hal, hal, hal, hal, hal,
Mass Balance Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-004 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004	M s2 = M s3 = M s4A = M s4A = M s4A = M s4A = M s5 = M sms = M	4 4 1 1 6 6 9 1 9 2 6 6 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Hayl
Calculation of Mass Concentration Balance Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-004 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from West Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-005 concentration in river at SW-001 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004	M s2 = M s3 = M s4A = M s4A = M s4A = M s4A = M s5 = M sms = M	4 4 1 1 6 1 9 1 9 1 5 1 5 3 4 4 6 1 1 9 1 5 1 5 3 4 4 6 1 1 9 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1 5 1	(ha)/ (ha)/
line Calculation of Mass Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-004 mass flux of surface water into SW-004 mass flux of surface water into SW-004A mass flux of surface water into SW-004A mass flux of surface water into SW-005 mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of ground water into SW-001 mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-005 mass flux of seepage from East Pit mass flux of seepage from East Pit mass flux of combined ground water liner leakage from stockpiles mass flux of combined ground water liner leakage/seepage from other mine features mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-003 mass flux in river at SW-004 concentration in river at SW-002 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-005	M s2 = M s3 = M s4A = M s4A = M s4A = M s4A = M s5 = M sms = M	4 1 1 6 6 9 1 9 9 1 1 5 3 4 4 6 1 9 9 1 2 0 2 2	Halphage Halphage
Mass Balance Calculation of Mass	mass flux of surface water into SW-002 mass flux of surface water into SW-004 mass flux of surface water into SW-005 mass flux of surface water inflow from upstream of PM-1 mass flux of surface water inflow from west Pit Overflow mass flux of ground water into SW-001 mass flux of ground water into SW-002 mass flux of ground water into SW-003 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of ground water into SW-004 mass flux of sepage from East Pit mass flux of seepage from East Pit mass flux of seepage from West Pit mass flux of combined ground water liner leakage from stockpiles mass flux in river at SW-001 mass flux in river at SW-001 mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-005 mass flux in river at SW-005 mass flux in river at SW-001 mass flux in river at SW-002 mass flux in river at SW-004 mass flux in river at SW-004 mass flux in river at SW-004 concentration in river at SW-003 concentration in river at SW-004 concentration in river at SW-005	M s2 = M s3 = M s4A = M s4A = M s4A = M s4A = M s5 = M sms = M	4 1 1 6 6 9 1 9 2 6 6 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9 1 9	(ha)/ (ha)/

neter:	River Model - Calibration to Baseline Water Quality Data Zinc			
		To :		
	surface water flow into SW-001	Q_s1 =	4.71	
	surface water flow into SW-002	Q_s2 =	5.79	
	surface water flow into SW-003	Q_s3 =	1.66	
	surface water flow into SW-004	Q_s4 =	6.86	
	surface water flow into SW-004A	Q_s4A =	25.25	
	surface water flow into SW-005	Q_s5 =	37.58	
	surface water inflow from upstream of PM-1	Q_sns =	1.50	
	surface water flow from West Pit Overflow	Q_sms =	0.00	
	ground water flow into SW-001	Q_g1 =	0.18	
~	ground water flow into SW-002	Q_g2 =	0.38	
윮	ground water flow into SW-003	Q_g3 =	0.11	
Dat	ground water flow into SW-004	Q_g4 =	0.32	
>	ground water flow into SW-004A	Q_g4A =	1.39	
Flow	ground water flow into SW-005	Q_g5 =	2.27	
正	ground water seepage from East Pit	Q_gep =	0.00	
brt	ground water seepage from West Pit	Q_gwp =	0.00	
은	combined ground water liner leakage from stockpiles combined ground water liner leakage/seepage from other mine features	Q_gl4 = Q_gl4a =	0.00	
	combined ground water liner leakage/seepage from other milite leatures	Q_gi4a =	0.00	(CIS
	concentration of surface water into SW-001	C_s1 =		μg/
	concentration of surface water into SW-002	C_s2 =		μg/
	concentration of surface water into SW-003	C_s3 =		μg/
	concentration of surface water into SW-004	C_s4 =	16	μg/
	concentration of surface water into SW-004A	C_s4A =	16	μg/
æ	concentration of surface water into SW-005	C_s5 =		μg/
Data	concentration of surface water inflow from upstream of PM-1	C_sns =	7.33	
ũ	concentration of surface water flow from West Pit Overflow	C_sms =	0	μg/
	concentration of ground water into SW-001	C_g1 =	27.5	
.0	concentration of ground water into SW-002	C_g2 =	27.5	
ਸ਼ੁ	concentration of ground water into SW-003	C_g3 =	27.5	
ŧ	concentration of ground water into SW-004	C_g4 =	27.5	
Concentration	concentration of ground water into SW-004A	C_g4A =	27.5	
Ĕ	concentration of ground water into SW-005	C_g5 =	27.5	
8	concentration of ground water seepage from East Pit	C_gep =		μg/
	concentration of ground water seepage from West Pit	C_gwp =		μg/
2	concentration of combined ground water liner leakage from stockpiles	C gl4 =		μg/
Input	concentration of combined ground water liner leakage/seepage from other mine features	C_gl4a =		μg/
	flow in vivor at CW 001	0 4	0.00	/es.
	flow in river at SW-001 flow in river at SW-002	Q_r1 = Q_r2 =	6.39 12.55	
	flow in river at SW-002	Q_r3 =	14.33	
e e	flow in river at SW-004	Q_r4 =	21.51	
Water Balance	flow in river at SW-004A	Q_r4A =	48.15	
Water Balan	flow in river at SW-005	Q_r5 =	88.00	
≥ mg	flow check	Q_ck =	88.00	
	mans flow of auritors water into CIM 001	IM at	0101	/1:~
	mass flux of surface water into SW-001	M_s1 =	2131	
	mass flux of surface water into SW-002	M_s2 =	2621	
	mass flux of surface water into SW-003	M_s3 =	753	
	mass flux of surface water into SW-004	M_s4 =	3106	(μg/
	mass flux of surface water into SW-004A	M_s4A =	11434	
V	mass flux of surface water into SW-005	M_s5 =	17016	
Ě	mass flux of surface water inflow from upstream of PM-1	M_sns =	311	
正	mass flux of surface water flow from West Pit Overflow	M_sms =		(μg/
Mass	mass flux of ground water into SW-001	M_g1 =		(μg/
98	mass flux of ground water into SW-002	M_g2 =	296	
	mass flux of ground water into SW-003	M_g3 =	86	(μg/
	mass flux of ground water into SW-004	M_g4 =	249	(ua/
	mass flux of ground water into SW-004A	M_g4A =	1082	(μg/
.0	mass flux of ground water into SW-005	M_g5 =	1767	(μg/
<u>a</u>	mass flux of seepage from East Pit	M_gep =		(μg/
Ä	mass flux of seepage from West Pit	M_gwp =		(μg/
Calculation	mass flux of combined ground water liner leakage from stockpiles	M_gl4 =		(μg/
Ö	mass flux of combined ground water liner leakage/seepage from other mine features	M_gl4a =		(μg/
	mass flux in river at SW-001	M_r1 =	2583	(na)
	mass flux in river at SW-002	M r2 =	5499	
e e	mass flux in river at SW-003	M_r3 =	6338	
S	mass flux in river at SW-004	M r4 =	9693	
Mass Balance	mass flux in river at SW-004A	M_r4A =	22209	
Σä	mass flux in river at SW-005	M_r5 =	40992	
	OW eed	0 4		
ou	concentration in river at SW-001	C_r1 =	14.3	
듔	concentration in river at SW-002	C_r2 =	15.5	μg/
tr tr	concentration in river at SW-003	C_r3 =	15.6	μα/
<u>a</u> =	concentration in river at SW-004	C_r4 =	15.9	
공 호	concentration in river at SW-004A	C_r4A =	16.3	
alculation of oncentration		10 -	16.5	μg/
Calculation of Concentration	concentration in river at SW-005	C_r5 =	10.5	
00		C_r5 =		
00	Observed concentration in river at SW-002	C_r5 =	10.1	
line	Observed concentration in river at SW-002 Observed concentration in river at SW-003	C_r5 =	10.1	μg/
line	Observed concentration in river at SW-002	C_r5 =	10.1	μg/l
Baseline Calcu Data Conc	Observed concentration in river at SW-002 Observed concentration in river at SW-003	C_rb =	10.1	μg/l μg/l