

AWMP Ver 2 Model QA/QC					
Item	Date	Model / AWMP Version	Problem / Issue	Change (changes affecting input tables in BOLD)	Updated Model Version
13	8/8/2012	MS AWMPV2.1	Barr found during internal QA/QC that the West Pit outflow mass balance model combines the controlled outflow and any pit overtopping.	Barr changed the mass balance of the West Pit so that overtopping flows (unlikely) bypass the passive treatment and contribute directly to SW-004a.	MS AWMPV2.2
14	8/8/2012	MS AWMPV2.1	Barr identified in response to agency questions that not all WWTF interactions between the Mine Site and Plant Site were accounted for in the WWTF water and mass balance.	Barr added an inflow of Plant Site brine to the West EQ Pond (flow and chemistry). Barr added an outflow of sludge water (flow and chemistry) to the CPS pond. <b>These portions of the model are inactive while coordination between the WWTF design team and modelers is ongoing.</b> <b>New Mine Site Tables 1-38, 1-39, and 1-40 will be included in tabs in this spreadsheet. New input variable Sludge_Water_Out will be defined as a percent of the total WWTF flow.</b>	MS AWMPV2.2
15	8/8/2012	MS AWMPV2.1	Barr found during internal QA/QC that the West Pit surficial aquifer flow calculations contained an error in the flows for Section 2 (between Dunka Road and the Property Boundary).	Barr edited the cell flows vector calculation in the West Pit surficial aquifer (\Flowpath_Models\WP_Surf\Cell_Flows\Flows)	MS AWMPV2.2
16	8/9/2012	MS AWMPV2.1	Based on comments from reviewers and Barr staff, PRB modeling was determined to be overly complicated.	Barr edited the modeling of the Category 1 stockpile PRB to be a constant removal efficiency (ex. 50% removal for SO4) irrespective of flow rates or retention time.	MS AWMPV2.2
17	8/10/2012	MS AWMPV2.1	During detailed West Pit treatment wetland design it was determined that the West Pit water elevation needs to be increased slightly.	Barr added a new variable representing the elevation that the West Pit water returns to after annual discharge. <b>WP_Outlet_Elev_New value set to 1575'</b> Barr also edited the equation for WP_Seasonal_Discharge to account for the current timestep inflows in calculating the desired outflow	MS AWMPV2.2





**Table 1-25 Percentage of Seepage from Each Dam that Flows to Each Toe of the Tailings Basin**

Time (yrs)	North Dam				East Dam				South Dam			
	North	North-West	West	South	North	North-West	West	South	North	North-West	West	South
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.001	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7.001	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
8	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
9	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
10	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
11	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
12	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
13	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
14	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
15	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
16	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
17	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
18	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
18.001	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
19	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
20	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
20.001	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
21	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
22	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
23	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
24	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
25	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
30	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
35	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
40	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
45	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
50	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
500	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0

**Notes**

Year 0 represents existing conditions, Year 7 is the year before Cell 1E and Cell 2E merge, Year 18 represents the beginning of closure activities, Year 20 represents final closure.

Gray cells indicate that the feature does not exist at that time.

Table 1-27 Percentage of Seepage from Each NorthMet Tailings Beach that Flows to Each Toe of the Tailings Basin

Time (yrs)	North Beach				East Beach				South Beach				Closure Beach			
	North	North-West	West	South	North	North-West	West	South	North	North-West	West	South	North	North-West	West	South
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.001	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7.001	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	1.2	4.9	93.9	0.0	0.0	0.0	0.0
8	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	1.2	4.9	93.9	0.0	0.0	0.0	0.0
9	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	1.2	4.9	93.9	0.0	0.0	0.0	0.0
10	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	1.2	4.9	93.9	0.0	0.0	0.0	0.0
11	99.9	0.1	0.0	0.0	100.0	0.0	0.0	0.0	0.0	1.1	4.3	94.7	0.0	0.0	0.0	0.0
12	99.7	0.3	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.9	3.7	95.4	0.0	0.0	0.0	0.0
13	99.6	0.4	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.8	3.1	96.2	0.0	0.0	0.0	0.0
14	99.4	0.6	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.6	2.5	96.9	0.0	0.0	0.0	0.0
15	99.3	0.7	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.5	1.8	97.7	0.0	0.0	0.0	0.0
16	99.1	0.9	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.3	1.2	98.5	0.0	0.0	0.0	0.0
17	99.0	1.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.2	0.6	99.2	0.0	0.0	0.0	0.0
18	98.8	1.2	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
18.001	98.8	1.2	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	29.3	40.8	24.5	5.4
19	98.8	1.2	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	29.0	41.4	23.9	5.7
20	98.8	1.2	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	28.7	42.0	23.3	6.0
20.001	98.8	1.2	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	28.7	42.0	23.3	6.0
21	98.8	1.2	0.0	0.0	100.0	0.0	0.0	0.0	0.1	0.0	0.0	99.9	30.6	40.6	22.5	6.3
22	98.9	1.1	0.0	0.0	100.0	0.0	0.0	0.0	0.3	0.0	0.0	99.7	32.4	39.2	21.7	6.6
23	98.9	1.1	0.0	0.0	100.0	0.0	0.0	0.0	0.4	0.0	0.0	99.6	34.3	37.8	21.0	6.9
24	99.0	1.0	0.0	0.0	100.0	0.0	0.0	0.0	0.5	0.0	0.0	99.5	36.2	36.4	20.2	7.2
25	99.0	1.0	0.0	0.0	100.0	0.0	0.0	0.0	0.6	0.0	0.0	99.4	38.1	35.0	19.4	7.5
30	99.2	0.8	0.0	0.0	100.0	0.0	0.0	0.0	1.3	0.0	0.0	98.7	47.4	28.0	15.5	9.1
35	99.4	0.6	0.0	0.0	100.0	0.0	0.0	0.0	1.9	0.0	0.0	98.1	56.8	21.0	11.7	10.6
40	99.6	0.4	0.0	0.0	100.0	0.0	0.0	0.0	2.5	0.0	0.0	97.5	66.1	14.0	7.8	12.1
45	99.8	0.2	0.0	0.0	100.0	0.0	0.0	0.0	3.2	0.0	0.0	96.8	75.5	7.0	3.9	13.7
50	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	3.8	0.0	0.0	96.2	84.8	0.0	0.0	15.2
500	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	3.8	0.0	0.0	96.2	84.8	0.0	0.0	15.2

Notes

Year 0 represents existing conditions, Year 7 is the year before Cell 1E and Cell 2E merge, Year 18 represents the beginning of closure activities, Year 20 represents final closure.

Gray cells indicate that the feature (unsaturated fine tailings, dams, and the existing pond in Cell 1E) does not exist at that time.

**Table 1-29 Average Depth to the Phreatic Surface Within Unsaturated Areas**

Time (yrs)	North Dam		East Dam		South Dam		Closure Beach (feet)
	Dam (feet)	Beach (feet)	Dam (feet)	Beach (feet)	Dam (feet)	Beach (feet)	
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.001	44.8	4.0	0.0	0.0	0.0	0.0	0.0
1	44.8	4.0	0.0	0.0	0.0	0.0	0.0
2	44.8	4.0	0.0	0.0	0.0	0.0	0.0
3	52.4	6.7	0.0	0.0	0.0	0.0	0.0
4	60.1	9.5	0.0	0.0	0.0	0.0	0.0
5	67.7	12.2	0.0	0.0	0.0	0.0	0.0
6	75.4	15.0	0.0	0.0	0.0	0.0	0.0
7	83.0	17.7	0.0	0.0	0.0	0.0	0.0
7.001	83.0	17.7	6.0	3.0	77.7	16.3	0.0
8	89.4	19.4	6.0	3.0	77.7	16.3	0.0
9	95.9	21.2	6.0	3.0	77.7	16.3	0.0
10	102.3	22.9	6.0	3.0	77.7	16.3	0.0
11	103.5	23.0	6.0	3.0	76.2	16.8	0.0
12	104.7	23.0	6.0	3.0	74.8	17.2	0.0
13	105.9	23.1	6.0	3.0	73.3	17.7	0.0
14	107.1	23.2	6.0	3.0	71.9	18.1	0.0
15	108.3	23.3	6.0	3.0	70.4	18.6	0.0
16	109.5	23.3	6.0	3.0	68.9	19.1	0.0
17	110.7	23.4	6.0	3.0	67.5	19.5	0.0
18	111.9	23.5	6.0	3.0	66.0	20.0	0.0
18.001	111.9	23.5	6.0	3.0	66.0	20.0	11.1
19	112.5	26.1	6.0	3.0	67.7	21.6	12.8
20	113.2	28.7	6.0	3.0	69.4	23.3	14.5
20.001	113.2	28.7	6.0	3.0	69.4	23.3	14.5
21	114.5	32.3	6.0	3.0	70.6	24.7	16.3
22	115.8	35.9	6.0	3.0	71.8	26.1	18.1
23	117.1	39.6	6.0	3.0	73.0	27.6	19.9
24	118.4	43.2	6.0	3.0	74.2	29.0	21.7
25	119.7	46.8	6.0	3.0	75.5	30.4	23.5
30	126.1	64.9	6.0	3.0	81.5	37.5	32.6
35	132.6	83.0	6.0	3.0	87.6	44.6	41.6
40	139.1	101.1	6.0	3.0	93.6	51.6	50.6
45	145.5	119.2	6.0	3.0	99.7	58.7	59.7
50	152.0	137.3	6.0	3.0	105.7	65.8	68.7
500	152.0	137.3	6.0	3.0	105.7	65.8	68.7

Notes

Year 0 represents existing conditions, Year 7 is the year before Cell 1E and Cell 2E merge, Year 18 represents the beginning of closure activities, Year 20 represents fir  
 Gray cells indicate that the feature (unsaturated fine tailings, dams, and the existing pond in Cell 1E) does not exist at that time.

A minimum value of 3 feet in the beaches and 6 feet in the dams was used

**Table 1-31 Seepage Quantity and Direction from the NorthMet Flotation Tailings Pond**

<i>Time (yrs)</i>	<i>Pond_Seepage_Rate (in/yr)</i>	<i>Pond_Seepage_Direction[N] (%)</i>	<i>Pond_Seepage_Direction[NW] (%)</i>	<i>Pond_Seepage_Direction[W] (%)</i>	<i>Pond_Seepage_Direction[S] (%)</i>	<i>Pond_Saturated_Volume (acre-ft)</i>
0	46.0	100.0	0.0	0.0	0.0	12796
0.001	14.6	100.0	0.0	0.0	0.0	23460
1	14.6	93.1	7.0	0.0	0.0	29772
2	14.6	86.1	13.9	0.0	0.0	35065
3	19.3	82.4	17.6	0.0	0.0	40429
4	24.0	78.8	21.2	0.0	0.0	46293
5	28.7	75.1	24.9	0.0	0.0	51295
6	33.4	71.5	28.5	0.0	0.0	57216
7	38.1	67.8	32.2	0.0	0.0	63615
7.001	38.1	67.8	32.2	0.0	0.0	153589
8	33.7	62.7	29.2	3.0	5.1	162136
9	29.3	57.7	26.2	6.0	10.1	174637
10	24.9	52.6	23.2	9.0	15.2	183622
11	25.4	53.2	21.9	9.0	16.0	190235
12	25.9	53.7	20.5	8.9	16.8	196909
13	26.4	54.3	19.2	8.9	17.7	203076
14	26.9	54.8	17.8	8.9	18.5	209297
15	27.4	55.4	16.5	8.8	19.3	213773
16	27.9	56.0	15.1	8.8	20.1	217619
17	28.4	56.5	13.8	8.7	21.0	221968
18	28.9	57.1	12.4	8.7	21.8	225692
18.001	28.9	57.1	12.4	8.7	21.8	183101
19	27.1	58.5	11.8	8.4	21.3	186270
20	25.2	60.0	11.2	8.0	20.8	189891
20.001	6.5	60.0	11.2	8.0	20.8	189891
50	6.5	81.0	0.0	0.0	19.0	189891
500	6.5	81.0	0.0	0.0	19.0	189891

Notes

Values at year 0 represent the existing conditions of the pond in Cell 2E

**Table 1-34 Depth to the Water Table in the Existing LTVSMC tailings**

Time (yrs)	Cell 2W			Cell 1E			Cell 2E		
	Coarse Tailings (ft)	Fine Tailings (ft)	Other (ft)	Coarse Tailings (ft)	Fine Tailings (ft)	Other (ft)	Coarse Tailings (ft)	Fine Tailings (ft)	Other (ft)
0	125.4	114.9	96.4	42.6	39.0	0.0	28.3	36.8	42.4
0.001	125.4	114.9	96.4	42.6	39.0	0.0	28.3	36.8	42.4
1	121.9	106.1	92.7	39.0	37.6	0.0	27.8	18.4	35.1
2	118.3	97.4	89.0	35.5	36.2	0.0	27.4	0.0	27.8
3	119.0	92.1	89.5	34.9	35.9	0.0	21.9	0.0	28.0
4	119.8	86.8	90.0	34.3	35.5	0.0	16.4	0.0	28.3
5	120.5	81.5	90.4	33.8	35.2	0.0	11.0	0.0	28.5
6	121.3	76.2	90.9	33.2	34.8	0.0	5.5	0.0	28.8
7	122.0	70.9	91.4	32.6	34.5	0.0	0.0	0.0	29.0
7.001	122.0	70.9	91.4	32.6	34.5	0.0	0.0	0.0	29.0
8	120.8	70.8	91.1	25.0	23.0	0.0	0.0	0.0	32.2
9	119.6	70.7	90.9	17.5	11.5	0.0	0.0	0.0	35.5
10	118.4	70.6	90.6	9.9	0.0	0.0	0.0	0.0	38.7
11	118.0	69.3	90.9	9.4	0.0	0.0	0.0	0.0	39.0
12	117.5	67.9	91.2	9.0	0.0	0.0	0.0	0.0	39.2
13	117.1	66.6	91.5	8.5	0.0	0.0	0.0	0.0	39.5
14	116.6	65.2	91.7	8.1	0.0	0.0	0.0	0.0	39.8
15	116.2	63.9	92.0	7.6	0.0	0.0	0.0	0.0	40.1
16	115.7	62.5	92.3	7.1	0.0	0.0	0.0	0.0	40.3
17	115.3	61.2	92.6	6.7	0.0	0.0	0.0	0.0	40.6
18	114.8	59.8	92.9	6.2	0.0	0.0	0.0	0.0	40.9
18.001	114.8	59.8	92.9	6.2	0.0	0.0	0.0	0.0	40.9
19	116.3	60.7	93.4	4.9	0.0	0.0	0.0	0.0	41.1
20	117.8	61.7	93.9	3.6	0.0	0.0	0.0	0.0	41.4
20.001	117.8	61.7	93.9	3.6	0.0	0.0	0.0	0.0	41.4
21	119.1	62.6	94.4	7.4	0.0	0.0	0.0	0.0	41.8
22	120.3	63.5	94.9	11.2	0.0	0.0	0.0	0.0	42.1
23	121.6	64.5	95.3	15.0	0.0	0.0	0.0	0.0	42.5
24	122.8	65.4	95.8	18.8	0.0	0.0	0.0	0.0	42.9
25	124.1	66.3	96.3	22.6	0.0	0.0	0.0	0.0	43.2
30	130.3	70.9	98.7	41.7	0.0	0.0	0.0	0.0	45.0
35	136.6	75.6	101.1	60.7	0.0	0.0	0.0	0.0	46.9
40	142.9	80.2	103.5	79.7	0.0	0.0	0.0	0.0	48.7
45	149.1	84.8	105.9	98.8	0.0	0.0	0.0	0.0	50.5
50	155.4	89.4	108.3	117.8	0.0	0.0	0.0	0.0	52.3
500	155.4	89.4	108.3	117.8	0.0	0.0	0.0	0.0	52.3

**Notes**

Year 0 represents existing conditions, Year 7 is the year before Cell 1E and Cell 2E merge, Year 18 represents the beginning of closure activities, Year 20 represents final closure.

Gray cells indicate that the feature does not exist at that time.



**Table 1-35 Seepage Direction from each zone in Cell 2W**

Time (yrs)	Coarse Tailings (%)				Fine Tailings (%)				Other (%)			
	North	North-West	West	South	North	North-West	West	South	North	North-West	West	South
0	0.7	37.4	44.6	17.3	1.4	50.2	47.2	1.2	11.3	39.9	44.2	4.6
0.001	0.7	37.4	44.6	17.3	1.4	50.2	47.2	1.2	11.3	39.9	44.2	4.6
1	0.4	36.1	45.9	17.7	0.7	49.5	48.8	1.1	6.5	45.4	42.6	5.6
2	0.0	34.8	47.2	18.0	0.0	48.7	50.4	0.9	1.7	50.8	41.0	6.5
3	0.0	32.7	49.8	17.5	0.0	47.6	51.5	0.8	1.5	49.7	42.1	6.6
4	0.0	30.6	52.4	17.0	0.0	46.5	52.7	0.8	1.4	48.6	43.2	6.7
5	0.0	28.5	55.0	16.5	0.0	45.5	53.8	0.7	1.2	47.6	44.4	6.9
6	0.0	26.4	57.6	16.0	0.0	44.4	55.0	0.7	1.1	46.5	45.5	7.0
7	0.0	24.3	60.2	15.5	0.0	43.3	56.1	0.6	0.9	45.4	46.6	7.1
7.001	0.0	24.3	60.2	15.5	0.0	43.3	56.1	0.6	0.9	45.4	46.6	7.1
8	0.0	25.2	59.5	15.3	0.0	43.7	55.8	0.5	1.2	45.2	46.8	6.8
9	0.0	26.2	58.8	15.0	0.0	44.2	55.4	0.4	1.5	45.1	47.0	6.4
10	0.0	27.1	58.1	14.8	0.0	44.6	55.1	0.3	1.8	44.9	47.2	6.1
11	0.0	26.8	58.4	14.8	0.0	44.4	55.3	0.3	1.9	44.5	47.4	6.2
12	0.1	26.6	58.6	14.7	0.0	44.2	55.5	0.2	2.0	44.0	47.6	6.3
13	0.1	26.3	58.9	14.7	0.0	44.0	55.8	0.2	2.1	43.6	47.8	6.5
14	0.2	26.1	59.2	14.6	0.0	43.8	56.0	0.2	2.2	43.2	48.0	6.6
15	0.2	25.8	59.5	14.6	0.1	43.6	56.2	0.1	2.4	42.7	48.2	6.7
16	0.3	25.5	59.7	14.5	0.1	43.4	56.4	0.1	2.5	42.3	48.4	6.8
17	0.3	25.3	60.0	14.5	0.1	43.2	56.7	0.0	2.6	41.8	48.6	7.0
18	0.4	25.0	60.3	14.4	0.1	43.0	56.9	0.0	2.7	41.4	48.8	7.1
18.001	0.4	25.0	60.3	14.4	0.1	43.0	56.9	0.0	2.7	41.4	48.8	7.1
19	0.4	25.0	59.9	14.7	0.1	43.2	56.7	0.0	2.7	41.4	48.6	7.3
20	0.4	25.0	59.5	15.1	0.1	43.5	56.4	0.0	2.7	41.4	48.4	7.5
20.001	0.4	25.0	59.5	15.1	0.1	43.5	56.4	0.0	2.7	41.4	48.4	7.5
21	0.9	25.2	58.7	15.2	0.4	43.9	55.7	0.0	3.0	41.2	48.2	7.6
22	1.3	25.4	57.9	15.4	0.7	44.3	55.0	0.0	3.3	41.0	47.9	7.7
23	1.8	25.6	57.1	15.5	1.0	44.7	54.3	0.0	3.5	40.9	47.7	7.9
24	2.3	25.8	56.3	15.6	1.3	45.1	53.6	0.0	3.8	40.7	47.5	8.0
25	2.8	26.0	55.5	15.8	1.6	45.5	52.9	0.0	4.1	40.5	47.3	8.1
30	5.1	27.0	51.4	16.4	3.0	47.5	49.4	0.1	5.5	39.6	46.1	8.7
35	7.5	28.1	47.4	17.1	4.5	49.5	45.9	0.1	6.9	38.8	45.0	9.4
40	9.9	29.1	43.3	17.8	6.0	51.5	42.4	0.1	8.3	37.9	43.9	10.0
45	12.2	30.1	39.3	18.4	7.4	53.5	38.9	0.2	9.7	37.0	42.7	10.6
50	14.6	31.1	35.2	19.1	8.9	55.5	35.4	0.2	11.1	36.1	41.6	11.2
500	14.6	31.1	35.2	19.1	8.9	55.5	35.4	0.2	11.1	36.1	41.6	11.2

**Notes**

Year 0 represents existing conditions, Year 7 is the year before Cell 1E and Cell 2E merge, Year 18 represents the beginning of closure activities, Year 20 represents final closure.

**Table 1-37 Seepage Direction from each zone in Cell 2E**

Time (yrs)	Coarse Tailings (%)				Fine Tailings (%)				Dams (%)				Pond (%)			
	North	North-West	West	South	North	North-West	West	South	North	North-West	West	South	North	North-West	West	South
0	94.6	5.4	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
0.001	94.6	5.4	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
1	48.1	52.0	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
2	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
3	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
4	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
5	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
6	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
7	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
7.001	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
8	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
9	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
10	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
11	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
12	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
13	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
14	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
15	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
16	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
17	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
18	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
18.001	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
19	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
20	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
20.001	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
21	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
22	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
23	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
24	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
25	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
30	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
35	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
40	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
45	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
50	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0
500	1.5	98.5	0.0	0.0	100.0	0.0	0.0	0.0	98.6	1.4	0.0	0.0	100.0	0.0	0.0	0.0

Notes

Year 0 represents existing conditions, Year 7 is the year before Cell 1E and Cell 2E merge, Year 18 represents the beginning of closure activities, Year 20 represents final closure.

Gray cells indicate that the feature (unsaturated fine tailings, dams, and the existing pond in Cell 1E) does not exist at that time.

**Table 1-39 Seepage Direction from each zone in Cell 1E**

Time (yrs)	Coarse Tailings (%)				Fine Tailings (%)				Dams (%)				Pond (%)			
	North	North-West	West	South	North	North-West	West	South	North	North-West	West	South	North	North-West	West	South
0	62.7	4.5	0.0	32.8	41.1	16.3	0.0	42.6	0.0	0.0	0.0	0.0	27.4	16.6	10.4	45.6
0.001	62.7	4.5	0.0	32.8	41.1	16.3	0.0	42.6	0.0	0.0	0.0	0.0	27.4	16.6	10.4	45.6
1	33.1	18.6	0.0	48.3	28.1	24.3	0.0	47.7	0.0	0.0	0.0	0.0	21.0	20.3	10.4	48.5
2	3.5	32.7	0.0	63.8	15.1	32.2	0.0	52.7	0.0	0.0	0.0	0.0	14.5	23.9	10.3	51.3
3	2.8	37.0	0.7	59.5	12.4	32.1	1.4	54.1	0.0	0.0	0.0	0.0	12.0	22.1	12.5	53.4
4	2.1	41.3	1.3	55.2	9.7	32.0	2.8	55.5	0.0	0.0	0.0	0.0	9.5	20.2	14.8	55.5
5	1.5	45.7	2.0	50.9	6.9	31.9	4.2	57.0	0.0	0.0	0.0	0.0	7.0	18.4	17.0	57.6
6	0.8	50.0	2.6	46.6	4.2	31.8	5.6	58.4	0.0	0.0	0.0	0.0	4.5	16.5	19.3	59.7
7	0.1	54.3	3.3	42.3	1.5	31.7	7.0	59.8	0.0	0.0	0.0	0.0	2.0	14.7	21.5	61.8
7.001	0.1	54.3	3.3	42.3	1.5	31.7	7.0	59.8	0.0	0.0	0.0	0.0	2.0	14.7	21.5	61.8
8	0.1	45.9	5.4	48.7	1.5	31.7	7.0	59.8	0.0	0.0	0.0	0.0	2.0	14.7	21.5	61.8
9	0.0	37.4	7.4	55.1	1.5	31.7	7.0	59.8	0.0	0.0	0.0	0.0	2.0	14.7	21.5	61.8
10	0.0	29.0	9.5	61.5	1.5	31.7	7.0	59.8	0.0	0.0	0.0	0.0	2.0	14.7	21.5	61.8
11	0.0	25.4	8.3	66.3	1.5	31.7	7.0	59.8	0.0	0.0	0.0	0.0	2.0	14.7	21.5	61.8
12	0.0	21.8	7.1	71.1	1.5	31.7	7.0	59.8	0.0	0.0	0.0	0.0	2.0	14.7	21.5	61.8
13	0.0	18.1	5.9	75.9	1.5	31.7	7.0	59.8	0.0	0.0	0.0	0.0	2.0	14.7	21.5	61.8
14	0.0	14.5	4.8	80.7	1.5	31.7	7.0	59.8	0.0	0.0	0.0	0.0	2.0	14.7	21.5	61.8
15	0.0	10.9	3.6	85.6	1.5	31.7	7.0	59.8	0.0	0.0	0.0	0.0	2.0	14.7	21.5	61.8
16	0.0	7.3	2.4	90.4	1.5	31.7	7.0	59.8	0.0	0.0	0.0	0.0	2.0	14.7	21.5	61.8
17	0.0	3.6	1.2	95.2	1.5	31.7	7.0	59.8	0.0	0.0	0.0	0.0	2.0	14.7	21.5	61.8
18	0.0	0.0	0.0	100.0	1.5	31.7	7.0	59.8	0.0	0.0	0.0	0.0	2.0	14.7	21.5	61.8
18.001	0.0	0.0	0.0	100.0	1.5	31.7	7.0	59.8	0.0	0.0	0.0	0.0	2.0	14.7	21.5	61.8
19	0.0	0.0	0.0	100.0	1.5	31.7	7.0	59.8	0.0	0.0	0.0	0.0	2.0	14.7	21.5	61.8
20	0.0	0.0	0.0	100.0	1.5	31.7	7.0	59.8	0.0	0.0	0.0	0.0	2.0	14.7	21.5	61.8
20.001	0.0	0.0	0.0	100.0	1.5	31.7	7.0	59.8	0.0	0.0	0.0	0.0	2.0	14.7	21.5	61.8
21	0.0	0.0	0.0	100.0	1.5	31.7	7.0	59.8	0.0	0.0	0.0	0.0	2.0	14.7	21.5	61.8
22	0.0	0.0	0.0	100.0	1.5	31.7	7.0	59.8	0.0	0.0	0.0	0.0	2.0	14.7	21.5	61.8
23	0.0	0.0	0.0	100.0	1.5	31.7	7.0	59.8	0.0	0.0	0.0	0.0	2.0	14.7	21.5	61.8
24	0.0	0.0	0.0	100.0	1.5	31.7	7.0	59.8	0.0	0.0	0.0	0.0	2.0	14.7	21.5	61.8
25	0.0	0.0	0.0	100.0	1.5	31.7	7.0	59.8	0.0	0.0	0.0	0.0	2.0	14.7	21.5	61.8
30	0.0	0.0	0.0	100.0	1.5	31.7	7.0	59.8	0.0	0.0	0.0	0.0	2.0	14.7	21.5	61.8
35	0.0	0.0	0.0	100.0	1.5	31.7	7.0	59.8	0.0	0.0	0.0	0.0	2.0	14.7	21.5	61.8
40	0.0	0.0	0.0	100.0	1.5	31.7	7.0	59.8	0.0	0.0	0.0	0.0	2.0	14.7	21.5	61.8
45	0.0	0.0	0.0	100.0	1.5	31.7	7.0	59.8	0.0	0.0	0.0	0.0	2.0	14.7	21.5	61.8
50	0.0	0.0	0.0	100.0	1.5	31.7	7.0	59.8	0.0	0.0	0.0	0.0	2.0	14.7	21.5	61.8
500	0.0	0.0	0.0	100.0	1.5	31.7	7.0	59.8	0.0	0.0	0.0	0.0	2.0	14.7	21.5	61.8

Notes

Year 0 represents existing conditions, Year 7 is the year before Cell 1E and Cell 2E merge, Year 18 represents the beginning of closure activities, Year 20 represents final closure.

Gray cells indicate that the feature (unsaturated fine tailings, dams, and the existing pond in Cell 1E) does not exist at that time.