Chemical and Radiological Characteristics of Tailings Solutions- White Mesa Mill

	Cell 1 Solutions						Cell 3 Solutions					
Constituent	**1987**	**2003 (Ave)**	**2007 (Ave)**	**2008**	**2009**		**1987**	**2003 (Ave)**	**2007 (Ave)**	**2008**	**2009**	
Major Ions (mg/l)						**Cell 1 Ave**						**Cell 3 Ave**
Carbonate	<5	<1	ND	ND	ND	ND	NA	<1	ND	ND	ND	ND
Bicarbonate	<5	NA	ND	ND	ND	ND	<5	NA	ND	ND	ND	ND
Calcium	630	307	483.8	604	635	532	300	418	887	478	628	542
Chloride	8000	6728	37340	9830	20700	16520	NA	2460	15965	15400	17200	12756
Fluoride	0.022	3008	31.72	0.3	0.4	608	<100	667	42.8	1.4	0.6	177.95
Magnesium	7900	5988	21220	6550	16200	11572	5400	3386	15767	13100	17100	10951
Nitrogen-Ammonia	7800	3308	10628	5250	15200	8437	13900	1302	13867	9010	21600	11935.8
Nitrogen-Nitrate	<100	41.8	269.4	64.9	142	130	<100	20	102	44	142	77
Potassium	NA	647	5698	1880	4140	3091	NA	254	6657	4760	3820	3873
Sodium	10000	8638	62600	13200	39000	26688	5900	3198	25583	22900	28600	17236.2
Sulfate	190000	63667	287600	118000	23200	136493	180000	33400	173667	167000	214000	153613
pH (s.u.)	0.70	1.88	0.80	1.53	1.15	1.2	0.82	2.28	1.60	1.79	1.4	1.58
TDS	120000	62000	357400	131000	NA	167600	189000	51633	228500	193000	NA	165533
Metals (ug/l))						**Cell 1 Ave**						**Cell 3 Ave**
Arsenic	440000	121267	849000	271000	436000	423453	163000	32867	256500	489000	ND	235342
Beryllium	<2000	475	2262	500	410	912	540	430	913	840	905	726
Cadmium	6600	3997	29320	8790	9120	11565	2600	2125	9260	15400	ND	7346
Chromium	13000	6365	29940	6760	18700	14953	12000	3742	14883	12800	ND	10856
Cobalt	120000	NA	88240	23500	97500	82310	48000	NA	82783	57000	ND	62594
Copper	740000	196667	881000	360000	168000	469133	360000	87333	505000	345000	ND	324333
Iron	3400000	2820000	13480000	3280000	239000	4643800	2100000	1278333	4874500	4400000	5970000	3724567
Lead	<20000	3289	27420	11200	10600	13127	NA	2507	9647	16900	ND	9685
Manganese	140000	162167	990200	206000	723000	444273	82000	144000	496833	313000	ND	258958
Mercury	NA	NA	ND	ND	7.61	ND	ND	NA	ND	16	ND	ND
Molybdenum	240000	5055	415600	106000	142000	181731	52000	12250	122167	209000	14	79086
Nickel	370000	3695	40860	32000	156000	120511	170000	20917	131833	241000	ND	140938
Selenium	<20000	2028	15420	13000	14800	11312	<2000	910	5856	10200	ND	5655
Silver	<5000	NA	1559.2	449	558	855	<2500	NA	305	1010	ND	658
Thallium	45000	NA	407.8	165	387	11490	NA	NA	446	1200	ND	823
Tin	<5000	NA	6512	1240	2290	3347	NA	NA	1090	1070	ND	1080
Uranium	105000	134517	788600	416000	578000	404423	118000	67833	332333	636000	3690	231571
Vanadium	280000	348000	2208200	1200000	773000	961840	210000	158333	935000	1130000	ND	608333
Zinc	1300000	NA	642940	476000	229000	661985	590000	NA	748833	515000	ND	617944
Gross Alpha* (pCi/l)	NA	365667	29380	21900	16500	108362	NA	101417	16533	21700	17000	39163
VOC'S)						**Cell 1 Ave**						**Cell 3 Ave**
Acetone	35	NA	66.5	110	710	230	28	NA	80	100	67	69
Benzene	<5	NA	ND	ND	ND	ND	<5	NA	ND	ND	ND	ND
Carbon tetrachloride	<5	NA	ND	ND	ND	ND	<5	NA	ND	ND	ND	ND
Chloroform	8	NA	6.7	6.6	16	9.3	6	NA	ND	11	4.2	7.1
Chloromethane	NA	NA	ND	9.4	11	10.2	NA	NA	ND	ND	1.4	1.4
MEK	NA	NA	ND	ND	120	ND	NA	NA	ND	ND	ND	ND
Methylene Chloride	11	NA	ND	ND	2.0	ND	10	NA	ND	ND	ND	ND
Naphthalene	<10000	NA	<10	ND	1.1	ND	<10000	NA	ND	<10	ND	ND
Tetrahydrofuran	NA	NA	150	<20	NA	ND	NA	NA	150	<20	NA	NA
Toluene	<5	NA	ND	ND	ND	ND	<5	NA	ND	ND	ND	ND
Xylenes	<5	NA	ND	ND	ND	ND	<5	NA	ND	ND	ND	ND

Note: Cell Solutions were tested for Semi-Volatile Organic Compounds (SVOC) in 2009. All results were non-detect

	Cell 2 Slimes Drain Solutions			
	1987	2007	2008	2009
Carbonate	NA	ND	ND	ND
Bicarbonate	NA	ND	ND	ND
Calcium	NA	572	528	508
Chloride	3191	3700	3860	2750
Fluoride	NA	3.3	ND	ND
Magnesium	2450	4100	4030	3750
Nitrogen-Ammonia	1761	4020	3620	3240
Nitrogen-Nitrate	NA	30.9	20.3	38
Potassium	251	636	560	689
Sodium	NA	4050	4600	4410
Sulfate	38404	60600	74000	72200
pH	NA	3.18	3.24	3.11
TDS	67710	84300	74600	NA
Arsenic	280	26900	19300	142000
Beryllium	NA	298	245	271
Cadmium	4200	5500	5840	5510
Chromium	1000	2750	2450	2230
Cobalt	14000	46500	43800	38700
Copper	177000	106000	154000	170000
Iron	NA	2770000	3310000	3230000
Lead	210	566	528	403
Manganese	128000	117000	130000	1600000
Mercury	NA	ND	ND	ND
Molybdenum	440	4080	3190	2240
Nickel	7200	123000	122000	108000
Selenium	640	422	647	726
Silver	5	ND	ND	ND
Thallium	1100	361	703	368
Tin	NA	ND	ND	ND
Uranium	NA	23000	29200	29900
Vanadium	165000	409000	463000	536000
Zinc	50000	767000	750000	582000
Gross Alpha	14000	1290	1570	1580
Acetone	NA	550	410	570
Benzene	NA	ND	ND	ND
Carbon tetrachloride	NA	ND	ND	ND
Chloroform	NA	20	17	16
Chloromethane	NA	1.8	ND	2.2
MEK	NA	65	ND	100
Methylene Chloride	NA	ND	ND	ND
Naphthalene	NA	14	7.5	16
Tetrahydrofuran	NA	15	<20	2.6
Toluene	NA	1.7	ND	ND
Xylenes	NA	1.5	ND	ND

Note: Cell 2 Slimes Drain Solutions were tested for Semi-Volatile Organic Compounds (SVOC) in 2009. All results were non-detect

Cell 2 Leak Detection System	2009
Carbonate	ND
Bicarbonate	168
Calcium	711
Chloride	1750
Fluoride	0.4
Magnesium	596
Nitrogen-Ammonia	32.6
Nitrogen-Nitrate	2.8
Potassium	22
Sodium	412
Sulfate	2700
pH	6.60
TDS	NA
Arsenic	ND
Beryllium	ND
Cadmium	33.4
Chromium	ND
Cobalt	314
Copper	59
Iron	208
Lead	ND
Manganese	1810
Mercury	ND
Molybdenum	21
Nickel	948
Selenium	7.9
Silver	ND
Thallium	0.92
Tin	ND
Uranium	83.8
Vanadium	22
Zinc	4220
Gross Alpha	13.5
Acetone	ND
Benzene	ND
Carbon tetrachloride	ND
Chloroform	ND
Chloromethane	ND
MEK	ND
Methylene Chloride	ND
Naphthalene	ND
Tetrahydrofuran	ND
Toluene	ND
Xylenes	ND

Cell 4A Solutions	2009
Carbonate	ND
Bicarbonate	ND
Calcium	627
Chloride	4650
Fluoride	0.3
Magnesium	3250
Nitrogen-Ammonia	3140
Nitrogen-Nitrate	28
Potassium	980
Sodium	5980
Sulfate	67600
pH	1.4
TDS	NA
Arsenic	62600
Beryllium	296
Cadmium	1920
Chromium	3220
Cobalt	9440
Copper	99200
Iron	2360000
Lead	5630
Manganese	178000
Mercury	1.19
Molybdenum	24300
Nickel	17100
Selenium	4620
Silver	78
Thallium	162
Tin	257
Uranium	118000
Vanadium	918000
Zinc	142000
Gross Alpha	8910
Acetone	60
Benzene	ND
Carbon tetrachloride	ND
Chloroform	4.0
Chloromethane	3.4
MEK	ND
Methylene Chloride	ND
Naphthalene	1.8
Tetrahydrofuran	ND
Toluene	ND
Xylenes	ND

Note: Cell 4A Solutions were tested for Semi-Volatile Organic Compounds (SVOC) in 2009. All results were non-detect.