

Permit No. UGW370004

STATE OF UTAH  
DIVISION OF WATER QUALITY  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
UTAH WATER QUALITY BOARD  
SALT LAKE CITY, UTAH 84114-4870

**GROUND WATER DISCHARGE PERMIT**

In compliance with the provisions of the Utah Water Quality Act, Title 19, Chapter 5, Utah Code Annotated 1953, as amended, the Act,

**Denison Mines (USA) Corp.  
Independence Plaza, Suite 950  
1050 17<sup>th</sup> Street  
Denver, Colorado 80265**

is granted a ground water discharge permit for the operation of a uranium milling and tailings disposal facility located approximately 6 miles south of Blanding, Utah. The facility is located on a tract of land in Sections 28, 29, 32, and 33, Township 37 South, Range 22 East, Salt Lake Base and Meridian, San Juan County, Utah.

The permit is based on representations made by the Permittee and other information contained in the administrative record. It is the responsibility of the Permittee to read and understand all provisions of this permit.

The milling and tailings disposal facility shall be operated and revised in accordance with conditions set forth in the permit and the Utah Ground Water Quality Protection Regulations.

This modified Ground Water Quality Discharge Permit amends and supersedes all other Ground Water Discharge permits for this facility issued previously.

This permit shall become effective on \_\_\_\_\_.

This permit shall expire March 8, 2010.

Signed this 17<sup>th</sup> day of MARCH, 2008

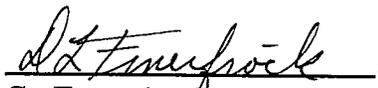
  
\_\_\_\_\_  
Co-Executive Secretary  
Utah Water Quality Board

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PART I. SPECIFIC PERMIT CONDITIONS

A. GROUND WATER CLASSIFICATION - the ground water classification of the shallow aquifer under the tailings facility has been determined on a well-by-well basis, as defined in Table 1, below:

Table 1. Ground Water Classification

Class II Groundwater					Class III Groundwater				
Well ID	Average TDS (mg/l)				Well ID	Average TDS (mg/l)			
	Permittee Data		DRC Data			Permittee Data		DRC Data <sup>(2)</sup>	
	Avg. Conc. <sup>(1)</sup>	No. of Data <sup>(3)</sup>	Avg. Conc. <sup>(2)</sup>	No. of Data <sup>(3)</sup>		Avg. Conc. <sup>(1)</sup>	No. of Data <sup>(3)</sup>	Avg. Conc. <sup>(2)</sup>	No. of Data <sup>(3)</sup>
<b>Historic Monitoring Wells</b>									
MW-1	1,276	68	1,268	4	MW-2	3,031	67	3,103	4
MW-5	2,081	69	2,068	4	MW-3	5,200	67	5,289	4
MW-11	1,834	50	2,039	4	MW-12	3,939	50	3,756	4
MW-18	2,545	9	2,611	4	MW-14	3,582	30	3,589	4
MW-19 <sup>(4)</sup>	2,697	9	3,120	4	MW-15	3,855	30	3,847	4
MW-20 <sup>(5)</sup>	2,977	1	n/a	0	MW-17	4,538	11	4,542	4
					MW-22 <sup>(5)</sup>	5,105	1	n/a	0
<b>Recent Monitoring Wells</b>									
					MW-26 <sup>(6)</sup>	3,120	1	3,206	1
					TW4-16 <sup>(7)</sup>	2,930	1	3,430	1
					MW-32 <sup>(8)</sup>	3,190	1	3,650	1

Footnotes:

- 1) Based on historic total dissolved solids (TDS) data provided by Permittee for period between October, 1979 and May, 1999. Average concentrations calculated by Utah Division of Radiation Control (DRC) staff in a November 29, 1999 memorandum.
- 2) Based on average of DRC split samples collected from the White Mesa facility between May, 1999 and September, 2002.
- 3) Number of IUC or DRC samples used in the evaluation of average TDS concentrations.
- 4) Classification of well MW-19 based on the conservatively lower IUC data.
- 5) Wells MW-20 and MW-22 are not point of compliance monitoring wells, but instead are groundwater head monitoring wells as per Part I.E.2.
- 6) Well MW-26 was originally named TW4-15 and was installed as a part of a recent chloroform contaminant investigation at the facility. Under this Permit, MW-26 is defined as a Point of Compliance (POC) well for the tailings cells (see Part I.E.1).
- 7) Well TW4-16 was installed as a part of a recent chloroform investigation at the facility, and has been included in the Permit as groundwater head monitoring well (Part I.E.2). Groundwater classification provided here based on average of both the IUC and DRC data (2 samples).
- 8) Well MW-32 was originally named TW4-17 and was installed as a part of a recent chloroform contaminant investigation at the facility. Under this Permit it is included as a POC well for the tailings cells in Part I.E.1.

B. BACKGROUND WATER QUALITY - background groundwater quality will be determined on a well-by-well basis, as defined by the mean plus second standard deviation concentration. After Executive Secretary approval of the Background Groundwater Quality Reports required by Part I.H.3 and 4, this permit will be re-opened and Table 2 revised to define background concentrations and groundwater compliance limits for all required contaminants.

C. PERMIT LIMITS - the Permittee shall comply with the following permit limits:

1. Ground Water Compliance Limits – contaminant concentrations measured in each monitoring well shall not exceed the Ground Water Compliance Limits (GWCL) defined in Table 2, below. Ground water quality at the site must at all times meet all the applicable GWQS and ad hoc GWQS defined in R317-6 even though this permit does not require monitoring for each specific contaminant.
2. Tailings Cell Operations - only 11.e.(2) by-product material authorized by Utah Radioactive Materials License No. UT-2300478 (hereafter License) shall be discharged to or disposed of in the tailings ponds.
3. Prohibited Discharges – discharge of other compounds such as paints, used oil, antifreeze, pesticides, or any other contaminant not defined as 11e.(2) material is prohibited.

Table 2. Groundwater Compliance Limits (GWCL)

Contaminant	GWQS <sup>(1)</sup>	Upgradient Wells						Down or Lateral Gradient Wells						
		MW-1 (Class II)		MW-18 (Class II)		MW-19 (Class II)		MW-2 (Class II)		MW-3 (Class III)		MW-5 (Class II)		
		Mean <sup>(6)</sup>	SD <sup>(6)</sup>	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
<b>Nutrients (mg/l)</b>														
Ammonia (as N)	25 <sup>(3)</sup>						6.25							
Nitrate + Nitrite (as N)	10						2.5							
<b>Heavy Metals (ug/l)</b>														
Arsenic	50						12.5							
Beryllium	4						1.0							
Cadmium	5						1.25							
Chromium	100						25							
Cobalt	730 <sup>(5)</sup>						182.5							
Copper	1,300						325							
Iron	11,000 <sup>(5)</sup>						2,750							
Lead	15						3.75							
Manganese	800 <sup>(4)</sup>						200							
Mercury	2						0.5							
Molybdenum	40 <sup>(2)</sup>						10							
Nickel	100 <sup>(3)</sup>						25							
Selenium	50						12.5							
Silver	100						25							
Thallium	2						0.5							
Tin	17,000 <sup>(6)</sup>						4,250							
Uranium	30 <sup>(5)</sup>						7.5							
Vanadium	60 <sup>(4)</sup>						15							
Zinc	5,000						1,250							
<b>Radiologics (pCi/l)</b>														
Gross Alpha	15						3.75							
<b>Volatile Organic Compounds (ug/l)</b>														
Acetone	700 <sup>(4)</sup>						175							
Benzene	5						1.25							
2-Butanone (MEK)	4,000 <sup>(2)</sup>						1000							
Carbon Tetrachloride	5						1.25							
Chloroform	70 <sup>(4)</sup>						17.5							
Chloromethane	30 <sup>(2)</sup>						7.5							
Dichloromethane	5 <sup>(3)</sup>						1.25							
Naphthalene	100 <sup>(2)</sup>						25							
Tetrahydrofuran	46 <sup>(4)</sup>						11.5							
Toluene	1,000						250							
Xylenes (total)	10,000						2,500							
<b>Others</b>														
Field pH (S.U.)	6.5 - 8.5						TBD <sup>(9)</sup>							
Fluoride (mg/l)	4.0						1.0							
Chloride (mg/l)							TBD							
Sulfate (mg/l)							TBD							
TDS (mg/l)							TBD							

Table 2 Continued. Groundwater Quality Compliance Limits (GWCL)

Contaminant	MW-11 (Class I)		MW-12 (Class III)		MW-14 (Class III)		MW-15 (Class III)		MW-17 Class III		MW-26(Class III)				
	Mean <sup>(1)</sup>	SD <sup>(1)</sup>	GWCL <sup>(1)</sup>	Mean	SD	GWCL	Mean	SD	GWCL	Mean	SD	GWCL	Mean	SD	GWCL
<b>Nutrients (mg/l)</b>															
Ammonia (as N)			6.25			12.5						12.5			
Nitrate + Nitrite (as N)	10		2.5			5						5			12.5
<b>Heavy Metals (ug/l)</b>															
Arsenic	50		12.5			25						25			25
Beryllium	4.0		1.0			2.0						2.0			2.0
Cadmium	5		1.25			2.5						2.5			2.5
Chromium	100		25			50						50			50
Cobalt	730 <sup>(5)</sup>		182.5			365						365			365
Copper	1,300		325			650						650			650
Iron	11,000 <sup>(5)</sup>		2,750			5,500						5,500			5,500
Lead	15		3.75			7.5						7.5			7.5
Manganese	800 <sup>(4)</sup>		200			400						400			400
Mercury	2		0.5			1						1			1
Molybdenum	40 <sup>(2)</sup>		10			20						20			20
Nickel	100 <sup>(3)</sup>		25			50						50			50
Selenium	50		12.5			25						25			25
Silver	100		25			50						50			50
Thallium	2		0.5			1.0						1.0			1.0
Tin	17,000 <sup>(6)</sup>		4,250			8,500						8,500			8,500
Uranium	30 <sup>(3)</sup>		7.5			15						15			15
Vanadium	60 <sup>(4)</sup>		15			30						30			30
Zinc	5,000		1,250			2,500						2,500			2,500
<b>Radiologics (pCi/l)</b>															
Gross Alpha	15		3.75			7.5						7.5			7.5
<b>Volatile Organic Compounds (ug/l)</b>															
Acetone	700 <sup>(3)</sup>		175			350						350			350
Benzene	5		1.25			2.5						2.5			2.5
2-Butanone (MEK)	4,000 <sup>(2)</sup>		1000			2000						2000			2000
Carbon Tetrachloride	5		1.25			2.5						2.5			2.5
Chloroform	70 <sup>(4)</sup>		17.5			35						35			35
Chloromethane	30 <sup>(2)</sup>		7.5			15						15			15
Dichloromethane	5 <sup>(3)</sup>		1.25			2.5						2.5			2.5
Naphthalene	100 <sup>(2)</sup>		25			50						50			50
Tetrahydrofuran	46 <sup>(4)</sup>		11.5			23						23			23
Toluene	1,000		250			500						500			500
Xylenes (total)	10,000		2,500			5,000						5,000			5,000
<b>Others</b>															
Field pH (S.U.)	6.5-8.5		TBD			TBD						TBD			TBD
Fluoride (mg/l)	4.0		1.0			2.0						2.0			2.0
Chloride (mg/l)			TBD			TBD						TBD			TBD
Sulfate (mg/l)			TBD			TBD						TBD			TBD
TDS (mg/l)			TBD			TBD						TBD			TBD

Table 2 Continued. Groundwater Quality Compliance Limits (GWCL)

Contaminant	GWQS (1)	Down or Lateral Gradient Wells			Future Wells To Be Installed (8)			MW-28 (Class TBD)	Mean	SD	GWCL	MW-27 (Class TBD)	Mean	SD	GWCL	MW-25 (Class TBD)	Mean	SD	GWCL
		Mean (6)	SD (6)	GWCL (7)	Mean	SD	GWCL												
<b>Nutrients (mg/l)</b>																			
Ammonia (as N)	25 (2)																		
Nitrate + Nitrite (as N)	10			12.5															
<b>Heavy Metals (ug/l)</b>																			
Arsenic	50			25															
Beryllium	4.0			2.0															
Cadmium	5			2.5															
Chromium	100			50															
Cobalt	730 (5)			365															
Copper	1,300			650															
Iron	11,000 (5)			5,500															
Lead	15			7.5															
Manganese	800 (4)			400															
Mercury	2			1															
Molybdenum	40 (2)			20															
Nickel	100 (3)			50															
Selenium	50			25															
Silver	100			50															
Thallium	2			1.0															
Tin	17,000 (6)			8,500															
Uranium	30 (3)			15															
Vanadium	60 (4)			30															
Zinc	5,000			2,500															
<b>Radiologics (pCi/l)</b>																			
Gross Alpha	15			7.5															
<b>Volatile Organic Compounds (ug/l)</b>																			
Acetone	700			350															
Benzene	5			2.5															
2-Butanone (MEK)	4,000 (2)			2000															
Carbon Tetrachloride	5			2.5															
Chloroform	70 (4)			35															
Chloromethane	30 (2)			15															
Dichloromethane	5 (3)			2.5															
Naphthalene	100 (2)			50															
Tetrahydrofuran	46 (4)			23															
Toluene	1,000			500															
Xylenes (total)	10,000			5,000															
<b>Others</b>																			
Field pH (S.U.)	6.5 -8.5			TBD															
Fluoride (mg/l)	4.0			2.0															
Chloride (mg/l)				TBD															
Sulfate (mg/l)				TBD															
TDS (mg/l)				TBD															

Table 2 Continued. Groundwater Quality Compliance Limits (CL)

Contaminant	GWQS <sup>(1)</sup>	MW-29 (Class TBD)				MW-30 (Class TBD)				MW-31 (Class TBD)			
		Mean	SD	GWCL		Mean	SD	GWCL		Mean	SD	GWCL	
<b>Nutrients (mg/l)</b>													
Ammonia (as N)	25 <sup>(2)</sup>			TBD				TBD					TBD
Nitrate + Nitrite (as N)	10			TBD				TBD					TBD
<b>Heavy Metals (ug/l)</b>													
Arsenic	50			TBD				TBD					TBD
Beryllium	4.0			TBD				TBD					TBD
Cadmium	5			TBD				TBD					TBD
Chromium	100			TBD				TBD					TBD
Cobalt	730 <sup>(3)</sup>			TBD				TBD					TBD
Copper	1,300			TBD				TBD					TBD
Iron	11,000 <sup>(5)</sup>			TBD				TBD					TBD
Lead	15			TBD				TBD					TBD
Manganese	800 <sup>(4)</sup>			TBD				TBD					TBD
Mercury	2			TBD				TBD					TBD
Molybdenum	40 <sup>(4)</sup>			TBD				TBD					TBD
Nickel	100 <sup>(3)</sup>			TBD				TBD					TBD
Selenium	50			TBD				TBD					TBD
Silver	100			TBD				TBD					TBD
Thallium	2.0			TBD				TBD					TBD
Tin	17,000 <sup>(6)</sup>			TBD				TBD					TBD
Uranium	30 <sup>(3)</sup>			TBD				TBD					TBD
Vanadium	60 <sup>(4)</sup>			TBD				TBD					TBD
Zinc	5,000			TBD				TBD					TBD
<b>Radiologics (pCi/l)</b>													
Gross Alpha	15			TBD				TBD					TBD
<b>Volatile Organic Compounds (ug/l)</b>													
Acetone	700 <sup>(4)</sup>			TBD				TBD					TBD
Benzene	5			TBD				TBD					TBD
2-Butanone (MEK)	4,000 <sup>(2)</sup>			TBD				TBD					TBD
Carbon Tetrachloride	5			TBD				TBD					TBD
Chloroform	70 <sup>(4)</sup>			TBD				TBD					TBD
Chloromethane	30 <sup>(2)</sup>			TBD				TBD					TBD
Dichloromethane	5 <sup>(3)</sup>			TBD				TBD					TBD
Naphthalene	100 <sup>(2)</sup>			TBD				TBD					TBD
Tetrahydrofuran	46 <sup>(4)</sup>			TBD				TBD					TBD
Toluene	1,000			TBD				TBD					TBD
Xylenes (total)	10,000			TBD				TBD					TBD
<b>Others</b>													
Field pH (S.U.)	6.5-8.5			TBD				TBD					TBD
Fluoride (mg/l)	4.0			TBD				TBD					TBD
Chloride (mg/l)				TBD				TBD					TBD
Sulfate (mg/l)				TBD				TBD					TBD
TDS (mg/l)				TBD				TBD					TBD

Part I  
Permit No. UGW370004

Footnotes:

- 1) Utah Ground Water Quality Standards (GWQS) as defined in UAC R317-6, Table 2. Ad hoc GWQS also provided herein, as noted, and as allowed by UAC R317-6-2.2.
- 2) Ad hoc GWQS for ammonia (as N), molybdenum, 2-Butanone (MEK), chloromethane, and naphthalene based on EPA drinking water lifetime health advisories.
- 3) Ad hoc GWQS for nickel, uranium, and dichloromethane (methylene chloride, CAS No. 75-09-2) based on final EPA drinking water maximum concentration limits (MCL).
- 4) Ad hoc GWQS for manganese, vanadium, acetone, chloroform (CAS No. 67-66-3), and tetrahydrofuran based on drinking water ad hoc lifetime health advisories prepared by or in collaboration with EPA Region 8 staff.
- 5) Ad hoc GWQS for cobalt and iron based on EPA Region 3 Risk Based Concentration limits for tap water.
- 6) Mean concentration and standard deviation (S.D.) to be determined on a well-by-well and individual parameter basis at some future date.
- 7) Ground Water Compliance Limits (GWCL) based on one of the following formulas: for Class II Groundwater,  $GWCL = 0.25 * GWQS$ , for Class III Groundwater,  $GWCL = 0.5 * GWQS$ . After submittal and approval of the Background Groundwater Quality Reports, required by Part I.H. 3 and 4 of this Permit, the Executive Secretary will re-open and modify the Ground Water Compliance Limit (GWCL) to be equal to the mean concentration plus two standard deviations ( $X+2\sigma$ ) for each well and contaminant.
- 8) Future monitoring wells to be installed in accordance with Part I.H. 1 of this Permit.
- 9) TBD = to be determined after Executive Secretary approval of the Background Groundwater Quality Reports for existing and new monitoring wells required by Part I.H.3 and I.H.4, respectively
- 10) Ad hoc GWQS for tin of 17,000 ug/l based on an ad-hoc drinking water lifetime health advisory prepared by EPA Region 8 staff (see 10/27/05 EPA Region 8 memorandum by Robert Benson to Dean Henderson).

D. DISCHARGE MINIMIZATION AND BEST AVAILABLE TECHNOLOGY STANDARDS - the tailings disposal facility must be built, operated, and maintained according to the following Discharge Minimization Technology (DMT) and Best Available Technology (BAT) standards:

1. DMT Design Standards for Existing Tailings Cells 1, 2, and 3 - shall be based on existing construction as described by design and construction information provided by the Permittee, as summarized in Table 3 below for Tailings Cells 1, 2, and 3:

Table 3. DMT Engineering Design and Specifications

Tailings Cell	Report Type	Engineering Report	Design Figures	Construction Specifications
Cell 1	Design	June, 1979 D'Appolonia Consulting Engineers, Inc <sup>(1)</sup>	Appendix A, Sheets 2, 4, 8, 9, 12-15	Appendix B
Cell 2	Design	June, 1979 D'Appolonia Consulting Engineers, Inc <sup>(1)</sup>	Appendix A, Sheets 2, 4, 7-10, 12-15	Appendix B
	As-Built	February, 1982 D'Appolonia Consulting Engineers, Inc <sup>(2)</sup>	Figures 1, 2, and 11	N/A
Cell 3	Design	May, 1981 D'Appolonia Consulting Engineers, Inc <sup>(3)</sup>	Sheets 2-5	Appendix B
	As-Built	March, 1983 Energy Fuels Nuclear, Inc. <sup>(4)</sup>	Figures 1-4	N/A

Footnotes:

- 1) D'Appolonia Consulting Engineers, Inc., June, 1979, "Engineers Report Tailings Management System White Mesa Uranium Project Blanding, Utah Energy Fuels Nuclear, Inc. Denver, Colorado", unpublished consultants report, approximately 50 pp., 2 figures, 16 sheets, 2 appendices.
- 2) D'Appolonia Consulting Engineers, Inc., February, 1982, "Construction Report Initial Phase - Tailings Management System White Mesa Uranium Project Blanding, Utah Energy Fuels Nuclear, Inc. Denver, Colorado", unpublished consultants report, approximately 7 pp., 6 tables, 13 figures, 4 appendices.
- 3) D'Appolonia Consulting Engineers, Inc., May, 1981, "Engineer's Report Second Phase Design - Cell 3 Tailings Management System White Mesa Uranium Project Blanding, Utah Energy Fuels Nuclear, Inc. Denver, Colorado", unpublished consultants report, approximately 20 pp., 1 figure, 5 sheets, and 3 appendices.
- 4) Energy Fuels Nuclear, Inc., March, 1983, "Construction Report Second Phase Tailings Management System White Mesa Uranium Project Energy Fuels Nuclear, Inc.", unpublished company report, 18 pp., 3 tables, 4 figures, 5 appendices.

a) Tailings Cell 1 – consisting of the following major design elements:

- 1) Cross-valley Dike and East Dike – constructed on the south side of the pond of native granular materials with a 3:1 slope, a 20-foot crest width, and a crest elevation of about 5,620 ft above mean sea level (amsl). A dike of similar design was constructed on the east margin of the pond, which forms a continuous earthen structure with the south dike. The remaining interior slopes are cut-slopes at 3:1 grade.
- 2) Liner System - including a single 30 mil PVC flexible membrane liner (FML) constructed of solvent welded seams on a prepared sub-base. Top elevation of the FML liner was 5,618.5 ft amsl on both the south dike and the north cut-slope. A protective soil cover layer was constructed immediately over the FML with a thickness of 12-inches on the cell floor and 18-inches on the interior sideslope.
- 3) Crushed Sandstone Underlay – immediately below the FML a nominal 6-inch thick layer of crushed sandstone was prepared and rolled smooth as a FML sub-base layer. Beneath this underlay, native sandstone and other foundation materials were graded to drain to a single low point near the upstream toe of the south cross-valley dike. Inside this layer, an east-west oriented pipe was installed

to gather fluids at the upstream toe of the cross-valley dike.

- b) Tailings Cell 2 – which consists of the following major design elements:
- 1) Cross-valley Dike – constructed at the south margin of Cell 2 of native granular materials with a 3:1 slope, a 20-foot crest width, and crest elevation of about 5,615 ft amsl. The east and west interior slopes consist of cut-slopes with a 3:1 grade. The Cell 1 south dike forms the north margin of Cell 2, with a crest elevation of 5,620 ft amsl.
  - 2) Liner System – includes a single 30 mil PVC FML liner constructed of solvent welded seams on a prepared sub-base, and overlain by a slimes drain collection system. Top elevation of the FML liner in Cell 2 is 5,615.0 ft and 5,613.5 ft amsl on the north and south dikes, respectively. Said Cell 2 FML liner is independent of all other disposal cell FML liners. Immediately above the FML, a nominal 12-inch (cell floor) to 18-inch (inside sideslope) soil protective blanket was constructed of native sands from on-site excavated soils.
  - 3) Crushed Sandstone Underlay – immediately below the FML a nominal 6-inch thick layer of crushed sandstone was prepared and rolled smooth as a FML sub-base layer. Beneath this underlay, native sandstone and other foundation materials were graded to drain to a single low point near the upstream toe of the south cross-valley dike. Inside this layer, an east-west oriented pipe was installed to gather fluids at the upstream toe of the cross-valley dike.
  - 4) Slimes Drain Collection System immediately above the FML a nominal 12-inch thick protective blanket layer was constructed of native silty-sandy soil. On top of this protective blanket, a network of 1.5-inch PVC perforated pipe laterals was installed on a grid spacing interval of about 50-feet. These pipe laterals gravity drain to a 3-inch diameter perforated PVC collector pipe which also drains toward the south dike and is accessed from the ground surface via a 24-inch diameter, vertical non-perforated HDPE access pipe. Each run of lateral drainpipe and collector piping was covered with a 12 to 18-inch thick berm of native granular filter material. At cell closure, leachate head inside the pipe network will be removed via a submersible pump installed inside the 24-inch diameter HDPE access pipe.
- c) Tailings Cell 3 – consisting of the following major design elements:
- 1) Cross-valley Dike – constructed at the south margin of Cell 3 of native granular materials with a 3:1 slope, a 20-foot crest width, and a crest elevation of 5,610 ft amsl. The east and west interior slopes consist of cut-slopes with a 3:1 grade. The Cell 2 south dike forms the north margin of Cell 3, with a crest elevation of 5,615 ft amsl.
  - 2) Liner System – includes a single 30 mil PVC FML liner constructed of solvent welded seams on a prepared sub-base, and overlain by a slimes drain collection system. Top elevation of the FML liner in Cell 3 is 5,613.5 ft and 5,608.5 ft amsl on the north and south dikes, respectively. Said Cell 3 FML liner is independent of all other disposal cell FML liners.
  - 3) Crushed Sandstone Underlay – immediately below the FML a nominal 6-inch

thick layer of crushed sandstone was prepared and rolled smooth as a FML sub-base layer. Beneath this underlay, native sandstone and other foundation materials were graded to drain to a single low point near the upstream toe of the south cross-valley dike. Inside this layer, an east-west oriented pipe was installed to gather fluids at the upstream toe of the cross-valley dike.

- 4) Slimes Drain Collection Layer and System – immediately above the FML, a nominal 12-inch (cell floor) to 18-inch (inside sideslope) soil protective blanket was constructed of native sands from on-site excavated soils (70%) and dewatered and cyclone separated tailings sands from the mill (30%). On top of this protective blanket, a network of 3-inch PVC perforated pipe laterals was installed on approximately 50-foot centers. This pipe network gravity drains to a 3-inch perforated PVC collector pipe which also drains toward the south dike, where it is accessed from the ground surface by a 12-inch diameter, inclined HDPE access pipe. Each run of the 3-inch lateral drainpipe and collector pipe was covered with a 12 to 18-inch thick berm of native granular filter media. At cell closure, leachate head inside the pipe network will be removed via a submersible pump installed inside the 12-inch diameter inclined access pipe.
2. Existing Tailings Cell Construction Authorized – tailings disposal in existing Tailings Cells 1, 2, and 3 is authorized by this permit as defined in Table 3 and Part I.D.1, above. Authorized operation and maximum disposal capacity in each of the existing tailings cells shall not exceed the levels authorized by the License. Under no circumstances shall the freeboard be less than three (3) feet, as measured from the top of the FML. Any modification by the Permittee to any approved engineering design parameter at these existing tailings cells shall require prior Executive Secretary approval, modification of this Permit, and issuance of a construction permit.
  3. Existing Facility DMT Performance Standards - the Permittee shall operate and maintain certain mill site facilities and the existing tailings disposal cells to minimize the potential for wastewater release to groundwater and the environment, including, but not limited to the following additional DMT compliance measures:
    - a) DMT Monitoring Wells at Tailings Cell 1 –at all times the Permittee shall operate and maintain Tailings Cell 1 to prevent groundwater quality conditions in any nearby monitoring well from exceeding any Ground Water Compliance Limit established in Table 2 of this Permit.
    - b) Tailings Cells 2 and 3 – including the following performance criteria:
      - 1) Slimes Drain Maximum Allowable Head – the Permittee shall at all times maintain the average wastewater head in the slimes drain access pipe to be as low as reasonably achievable (ALARA) in each tailings disposal cell, in accordance with the currently approved DMT Monitoring Plan. Compliance shall be achieved when the average annual wastewater recovery elevation in the slimes drain access pipe, determined pursuant to the currently approved DMT Monitoring Plan, meets the conditions in Equation 1, below:

Equation 1:

$$[\sum E_y + \sum E_{y-1} + \sum E_{y-2}] / [N_y + N_{y-1} + N_{y-2}] < [\sum E_{y-1} + \sum E_{y-2} + \sum E_{y-3}] / [N_{y-1} + N_{y-2} + N_{y-3}]$$

Where:

$\sum E_y$  = Sum of all slimes drain tailings fluid elevation measurements made at the end of each 90-hour recovery test collected during the calendar year of interest. Hereafter, these water level measurements are referred to as slimes drain recovery elevations (SDRE). Pursuant to the approved DMT Monitoring Plan, these recovery tests are to be conducted monthly and the SDRE values reported in units of feet above mean sea level (amsl).

$\sum E_{y-1}$  = Sum of all SDRE measurements made in the year previous to the calendar year of interest.

$\sum E_{y-2}$  = Sum of all SDRE measurements made in the second year previous to the calendar year of interest.

$\sum E_{y-3}$  = Sum of all SDRE measurements made in the third year previous to the calendar year of interest.

$N_y$  = Total number of slimes drain 90-hour recovery tests conducted during the calendar year of interest.

$N_{y-1}$  = Total number of slimes drain 90-hour recovery tests conducted in the year previous to the calendar year of interest.

$N_{y-2}$  = Total number of slimes drain 90-hour recovery tests conducted in the second year previous to the calendar year of interest.

$N_{y-3}$  = Total number of slimes drain 90-hour recovery tests conducted in the third year previous to the calendar year of interest.

Prior to January 1, 2011, the following values for E and N values in Equation 1 shall be based on SDRE data from the following calendar years.

Report for Calendar Year	Source of Data By Calendar Year for Equation 1 Variables (right side)					
	$E_{y-1}$	$E_{y-2}$	$E_{y-3}$	$N_{y-1}$	$N_{y-2}$	$N_{y-3}$
2008	2007	2007	2007	2007	2007	2007
2009	2008	2007	2007	2008	2007	2007
2010	2009	2008	2007	2009	2008	2007

Failure to satisfy conditions in Equation 1 shall constitute DMT failure and non-compliance with this Permit. For Cell 3, this requirement shall apply after initiation of de-watering operations.

- c) Maximum Tailings Waste Solids Elevation – upon closure of any tailings cell, the Permittee shall ensure that the maximum elevation of the tailings waste solids does not exceed the top of the FML liner.
- d) DMT Monitoring Wells – at all times the Permittee shall operate and maintain Tailings Cells 2 and 3 to prevent groundwater quality conditions in any nearby monitoring well from exceeding any Ground Water Compliance Limit established in Table 2 of this Permit.

- e) Roberts Pond –the Permittee shall operate this wastewater pond so as to provide a minimum 2-foot freeboard at all times. Under no circumstances shall the water level in the pond exceed an elevation of 5,624 feet amsl. In the event that the wastewater elevation exceeds this maximum level, the Permittee shall remove the excess wastewater and place it into containment in Tailings Cell 1 within 72 hours of discovery. At the time of mill site closure, the Permittee shall reclaim and decommission the Roberts Pond in compliance the final Reclamation Plan approved under the License (hereafter Reclamation Plan).
- f) Feedstock Storage Area –open-air or bulk storage of all feedstock materials at the facility awaiting mill processing shall be limited to the eastern portion of the mill site area described in Table 4, below. Storage of feedstock materials at the facility outside this area, shall meet the requirements in Part I.D.11. At the time of mill site closure, the Permittee shall reclaim and decommission the Feedstock Storage Area in compliance with an approved Reclamation Plan.

Table 4. Feedstock Storage Area Coordinates <sup>(1)</sup>

Corner	Northing (ft)	Easting (ft)
Northeast	323,595	2,580,925
Southeast	322,140	2,580,920
Southwest	322,140	2,580,420
West 1	322,815	2,580,410
West 2	323,040	2,580,085
West 3	323,120	2,580,085
West 4	323,315	2,580,285
West 5	323,415	2,579,990
Northwest	323,600	2,579,990

Footnote: 1) Approximate State Plane Coordinates beginning from the extreme northeast corner and progressing clockwise around the feedstock area (from 6/22/01 IUC Response, Attachment K, Site Topographic Map, Revised June, 2001.)

- g) Mill Site Chemical Reagent Storage – for all chemical reagents stored at existing storage facilities and held for use in the milling process, the Permittee shall provide secondary containment to capture and contain all volumes of reagent(s) that might be released at any individual storage area. Response to spills, cleanup thereof, and required reporting shall comply with the provisions of an approved Emergency Response Plan as found in an approved Stormwater Best Management Practices Plan, stipulated by Parts I.D.10 and I.H.16 of this Permit. For any new construction of reagent storage facilities, said secondary containment and control shall prevent any contact of the spilled or otherwise released reagent or product with the ground surface.
4. Best Available Technology Requirements for New Construction – any construction, modification, or operation of new waste or wastewater disposal, treatment, or storage facilities shall require submittal of engineering design plans and specifications, and prior Executive Secretary review and approval. All engineering plans or specifications submitted shall demonstrate compliance with all Best Available Technology (BAT) requirements stipulated by the Utah Ground Water Quality Protection Regulations (UAC R317-6). Upon Executive Secretary approval this Permit may be re-opened and modified to include any necessary requirements.

5. BAT Design Standards for Tailings Cell 4A - the BAT design standard for Tailings Cell 4A shall be defined by and construction conform to the requirements of the June 25, 2007 Executive Secretary design approval letter for the relining of former existing Tailings Cell No. 4A, and as summarized by the engineering drawings, specifications, and description in Table 5, below:

Table 5. Approved Tailings Cell 4A Engineering Design and Specifications

<b>Engineering Drawings</b>			
Name	Date	Revision No.	Title
Sheet 1 of 7	June, 2007		Title Sheet
Sheet 2 of 7	June 15, 2007	Rev. 1	Site Plan
Sheet 3 of 7	June 15, 2007	Rev. 1	Base Grading Plan
Sheet 4 of 7	June 15, 2007	Rev. 1	Pipe Layout Plan
Sheet 5 of 7	June 15, 2007	Rev. 1	Lining System Details I
Sheet 6 of 7	June 15, 2007	Rev. 1	Lining System Details II
Sheet 7 of 7	June 15, 2007	Rev. 1	Lining System Details III
<b>Engineering Specifications</b>			
Date	Document Title	Prepared by	
June, 2007	Revised Technical Specifications for the Construction of Cell 4A Lining System	Geosyntec Consultants	
June, 2007	Revised Construction Quality Assurance Plan for the Construction of Cell 4A Lining System	Geosyntec Consultants	
March 27, 2007	Revised Geosynthetic Clay Liner Hydration Demonstration Work Plan <sup>(1)</sup>	Geosyntec Consultants	
November 27, 2006	Cell Seismic Study <sup>(2)</sup>	MFG Consulting Scientists and Engineers	
October 6, 2006	Calculation of Action Leakage Rate Through the Leakage Detection System Underlying a Geomembrane Liner	Geosyntec Consultants	
June 22, 2006	Slope Stability Analysis Cell 4A – Interim Conditions	Geosyntec Consultants	
June 23, 2006	Settlement Evaluation of Berms <sup>(2)</sup>	Geosyntec Consultants	
August 22, 2006	Pipe Strength Calculations	Geosyntec Consultants	
September 27, 2007	DMC Cell 4A – GCL Hydration	Geosyntec Consultants	

Footnotes:

- 1) As qualified by conditions found in May 2, 2007 Division of Radiation Control letter.  
2) As clarified by February 8, 2007 Division of Radiation Control Round 6 Interrogatory.

Tailings Cell 4A Design and Construction – approved by the Executive Secretary will consist of the following major elements:

- a) Dikes – consisting of existing earthen embankments of compacted soil, constructed by the Permittee between 1989-1990, and composed of four dikes, each including a 15-foot wide road at the top (minimum). On the north, east, and south margins these dikes have slopes of 3H to 1V. The west dike has an interior slope of 2H to 1V. Width of these dikes varies, Each has a minimum crest width of at least 15 feet to support an access

road. Base width also varies from 89-feet on the east dike (with no exterior embankment), to 211-feet at the west dike.

- b) Foundation – including existing subgrade soils over bedrock materials. Foundation preparation included excavation and removal of contaminated soils, compaction of imported soils to a maximum dry density of 90%. Floor of Cell 4A has an average slope of 1% that grades from the northeast to the southwest corners.
- c) Tailings Capacity – the floor and inside slopes of Cell 4A encompass about 40 acres and have a maximum capacity of about 1.6 million cubic yards of tailings material storage (as measured below the required 3-foot freeboard).
- d) Liner and Leak Detection Systems – including the following layers, in descending order:
  - 1) Primary Flexible Membrane Liner (FML) – consisting of impermeable 60 mil high density polyethylene (HDPE) membrane that extends across both the entire cell floor and the inside side-slopes, and is anchored in a trench at the top of the dikes on all four sides. The primary FML will be in direct physical contact with the tailings material over most of the Cell 4A floor area. In other locations, the primary FML will be in contact with the slimes drain collection system (discussed below).
  - 2) Leak Detection System – includes a permeable HDPE geonet fabric that extends across the entire area under the primary FML in Cell 4A, and drains to a leak detection sump in the southwest corner. Access to the leak detection sump is via an 18-inch inside diameter (ID) PVC pipe placed down the inside slope, located between the primary and secondary FML liners. At its base this pipe will be surrounded with a gravel filter set in the leak detection sump, having dimensions of 10 feet by 10 feet by 2 feet deep. In turn, the gravel filter layer will be enclosed in an envelope of geotextile fabric. The purpose of both the gravel and geotextile fabric is to serve as a filter.
  - 3) Secondary FML – consisting of an impermeable 60-mil HDPE membrane found immediately below the leak detection geonet. Said FML also extends across the entire Cell 4A floor, up the inside side-slopes and is also anchored in a trench at the top of all four dikes.
  - 4) Geosynthetic Clay Liner – consisting of a manufactured geosynthetic clay liner (GCL) composed of 0.2-inch of low permeability bentonite clay centered and stitched between two layers of geotextile. Prior to disposal of any wastewater in Cell 4A, the Permittee shall demonstrate that the GCL has achieved a moisture content of at least 50% by weight. This item is a revised requirement per DRC letter to DUSA dated September 28, 2007
- e) Slimes Drain Collection System – including a two-part system of strip drains and perforated collection pipes both installed immediately above the primary FML, as follows:
  - 1) Horizontal Strip Drain System – is installed in a herringbone pattern across the floor of Cell 4A that drain to a “backbone” of perforated collection pipes. These strip drains are made of a prefabricated two-part geo-composite drain material (solid polymer drainage strip) core surrounded by an envelope of non-woven geotextile filter fabric. The strip drains are placed immediately over the primary FML on 50-

foot centers, where they conduct fluids downgradient in a southwesterly direction to a physical and hydraulic connection to the perforated slimes drain collection pipe. A series of continuous sand bags, filled with filter sand cover the strip drains. The sand bags are composed of a woven polyester fabric filled with well graded filter sand to protect the drainage system from plugging.

- 2) Horizontal Slimes Drain Collection Pipe System – includes a “backbone” piping system of 4-inch ID Schedule 40 perforated PVC slimes drain collection (SDC) pipe found at the downgradient end of the strip drain lines. This pipe is in turn overlain by a berm of gravel that runs the entire diagonal length of the cell, surrounded by a geotextile fabric cushion in immediate contact with the primary FML. In turn, the gravel is overlain by a layer of non-woven geotextile to serve as an additional filter material. This perforated collection pipe serves as the “backbone” to the slimes drain system and runs from the far northeast corner downhill to the far southwest corner of Cell 4A where it joins the slimes drain access pipe.
  - 3) Slimes Drain Access Pipe – consisting of an 18-inch ID Schedule 40 PVC pipe placed down the inside slope of Cell 4A at the southwest corner, above the primary FML. Said pipe then merges with another horizontal pipe of equivalent diameter and material, where it is enveloped by gravel and woven geotextile that serves as a cushion to protect the primary FML. A reducer connects the horizontal 18-inch pipe with the 4-inch SDC pipe. At some future time, a pump will be set in this 18-inch pipe and used to remove tailings wastewaters for purposes of de-watering the tailings cell.
  - f) North Dike Splash Pads – three 20-foot wide splash pads will be constructed on the north dike to protect the primary FML from abrasion and scouring by tailings slurry. These pads will consist of an extra layer of 60 mil HDPE membrane that will be installed in the anchor trench and placed down the inside slope of Cell 4A, from the top of the dike, under the inlet pipe, and down the inside slope to a point 5-feet beyond the toe of the slope.
  - g) Emergency Spillway – a concrete lined spillway will be constructed near the western corner of the north dike to allow emergency runoff from Cell 3 into Cell 4A. This spillway will be limited to a 6-inch reinforced concrete slab set directly over the primary FML in a 4-foot deep trapezoidal channel. No other spillway or overflow structure will be constructed at Cell 4A. All stormwater runoff and tailings wastewaters not retained in Cells 2 and 3, will be managed and contained in Cell 4A, including the Probable Maximum Precipitation and flood event.
6. BAT Performance Standards for Tailings Cell 4A – the Permittee shall operate and maintain Tailings Cell 4A so as to prevent release of wastewater to groundwater and the environment in accordance with BAT Monitoring Operations and Maintenance Plan, as currently approved by the Executive Secretary, pursuant to Part I.H.19. At a minimum these performance standards shall include:
- a) Leak Detection System (LDS) Maximum Allowable Daily Head – the fluid head in the LDS shall not exceed 1 foot above the lowest point in the lower membrane liner.
  - b) LDS Maximum Allowable Daily Leak Rate - shall not exceed 24,160 gallons/day.

- c) Slimes Drain Monthly and Annual Average Recovery Head Criteria – after the Permittee initiates pumping conditions in the slimes drain layer in Cell 4A, the Permittee will provide continuous declining fluid heads in the slimes drain layer, in a manner equivalent to the requirements found in Part I.D.3(b).
  - d) Maximum Weekly Wastewater Level - under no circumstance shall the freeboard be less than 3-feet in Cell 4A, as measured from the top of the upper FML.
7. Definition of 11a (2) Waste – for purposes of this Permit, 11e.(2) waste is defined as: "... tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content", as defined in Section 11e.(2) of the U.S. Atomic Energy Act of 1954, as amended; which includes other process related wastes and waste streams described by a March 7, 2003 NRC letter from Paul H. Lohaus to William J. Sinclair.
8. Closed Cell Performance Requirements – before reclamation and closure of any tailings disposal cell, the Permittee shall ensure that the final design, construction, and operation of the cover system at each tailings cell will comply with all requirements of an approved Reclamation Plan, and will for a period of not less than 200 years meet the following minimum performance requirements:
- a) Minimize infiltration of precipitation or other surface water into the tailings, including, but not limited to the radon barrier, and
  - b) Prevent the accumulation of leachate head within the tailings waste layer that could rise above or over-top the maximum FML liner elevation internal to any disposal cell, i.e. create a "bathtub" effect.
  - c) Ensure that groundwater quality at the compliance monitoring wells does not exceed the Ground Water Quality Standards or Ground Water Compliance Limits specified in Part I.C.1 and Table 2 of this Permit.
9. Facility Reclamation Requirements – upon commencement of decommissioning, the Permittee shall reclaim the mill site and all related facilities, stabilize the tailings cells, and construct a cover system over the tailings cells in compliance with all engineering design and specifications in an approved Reclamation Plan. The Executive Secretary reserves the right to require modifications of the Reclamation Plan for purposes of compliance with the Utah Ground Water Quality Protection Regulations, including but not limited to containment and control of contaminants, or discharges, or potential discharges to Waters of the State.
10. Stormwater Management and Spill Control Requirements - the Permittee will manage all contact and non-contact stormwater and control contaminant spills at the facility in accordance with the currently approved Stormwater Best Management Practices Plan. Said plan includes the following minimum provisions:
- a) Protect groundwater quality or other waters of the state by design, construction, and/or active operational measures that meet the requirements of the Ground Water Quality Protection Regulations found in UAC R317-6-6.3(G) and R317-6-6.4(C),
  - b) Prevent, control and contain spills of stored reagents or other chemicals at the mill site,

- c) Cleanup spills of stored reagents or other chemicals at the mill site immediately upon discovery,
- d) Report reagent spills or other releases at the mill site to the Executive Secretary in accordance with UAC 19-5-114.

Reconstruction of stormwater management and/or chemical reagent storage facilities, existing at the time of original Permit issuance, may be required by the Executive Secretary after occurrence of a major spill or catastrophic failure, pursuant to Part IV.N.3 of this Permit.

- 11. DMT Requirements for Feedstock Material Stored Outside the Feedstock Storage Area – the Permittee shall store and manage feedstock materials outside the ore storage pad in accordance with an approved Feedstock Management Plan pursuant to Part I.H.21 of the permit.

E. GROUND WATER COMPLIANCE AND TECHNOLOGY PERFORMANCE MONITORING - beginning with the effective date and lasting through the term of this permit or as stated in an approved closure plan, the Permittee shall sample groundwater monitoring wells, monitor groundwater levels, monitor water levels of process solutions, and monitor and keep records of the operation of the facility, as follows:

- 1. Routine Groundwater Compliance Monitoring – the Permittee shall monitor upgradient, lateral gradient, and downgradient ground water monitoring wells completed in the shallow aquifer in the vicinity of all potential discharge sources that could affect local groundwater conditions at the facility, as follows:
  - a) Ground Water Monitoring Quality Assurance Plan – all groundwater monitoring and analysis performed under this Permit shall be conducted in accordance with a Quality Assurance Plan (QAP) currently approved by the Executive Secretary. Any non-conformance with QAP requirements in a given quarterly ground water monitoring period will be corrected and reported to the Executive Secretary on or before submittal of the next quarterly ground water monitoring report pursuant to Part I.F.1
  - b) Quarterly Monitoring – the Permittee shall monitor on a quarterly basis all monitoring wells listed in Table 2 of this Permit where local groundwater average linear velocity has been found by the Executive Secretary to be equal to or greater than 10 feet/year. For purposes of this Permit, quarterly monitoring is required at the following wells:
    - 1) Upgradient Wells: none
    - 2) Lateral or Downgradient Wells: MW-11, MW-14, MW-26 (formerly TW4-15), and MW-32 (formerly TW4-17).
  - c) Semi-annual Monitoring – the Permittee shall monitor on a semi-annual basis all monitoring wells listed in Table 2 of this Permit where local groundwater average linear velocity has been found by the Executive Secretary to be less than 10 feet/year. For purposes of this Permit, semi-annual monitoring is required at the following wells:

- 1) Upgradient Wells: MW-1, MW-18, and MW-19,
- 2) Lateral or Downgradient Wells: MW-2, MW-3, MW-5, MW-12, MW-15, and MW-17,
- d) Compliance Monitoring Parameters - all groundwater samples collected shall be analyzed for the following parameters:
  - 1) Field Parameters –depth to groundwater, pH, temperature, and specific conductance.
  - 2) Laboratory Parameters
    - i. GWCL Parameters - all contaminants specified in Table 2.
    - ii. General Inorganics –chloride, sulfate, carbonate, bicarbonate, sodium, potassium, magnesium, calcium, and total anions and cations.
- e) Special Provisions for Groundwater Monitoring – the Permittee shall ensure that all groundwater monitoring conducted and reported complies with the following requirements:
  - 1) Depth to Groundwater Measurements – shall always be made to the nearest 0.01 foot.
  - 2) Minimum Detection Limits – all groundwater quality analyses reported shall have a minimum detection limit or reporting limit that is less than its respective Ground Water Compliance Limit concentration defined in Table 2.
  - 3) Gross Alpha Counting Variance – All gross alpha analysis shall be reported with an error term. All gross alpha analysis reported with an activity equal to or greater than the GWCL, shall have a counting variance that is equal to or less than 20% of the reported activity concentration. An error term may be greater than 20% of the reported activity concentration when the sum of the activity concentration and error term is less than or equal to the GWCL.
  - 4) All equipment used for purging and sampling of ground water shall be made of inert materials.
2. Groundwater Monitoring: Monitoring Wells MW-20 and MW-22 – Starting with the 1<sup>st</sup> Quarter 2008 groundwater event the Permittee shall implement a quarterly groundwater sampling program. Said sampling shall comply with the following Permit requirements:
  - a) Routine groundwater compliance monitoring requirements of Part I.E.1
  - b) Well monitoring procedure requirements of Part I.E.5.

After completion of eight (8) consecutive quarters of groundwater sampling and analysis of MW-20 and MW-22, the Permittee shall submit a report that will include: 1) the groundwater quality data, and 2) calculated groundwater velocities in the vicinity of MW-20 and MW-22. The said report shall be submitted by March 1, 2010. After review of this report the Executive Secretary will re-open the Permit, and adjust the sampling frequency in accordance with criteria found in Part I.E.1(b) or (c).
3. Groundwater Head Monitoring – on a quarterly basis and at the same frequency as groundwater monitoring required by Part I.E.1, the Permittee shall measure depth to

groundwater in the following wells and/or piezometers:

- a) Point of Compliance Wells – identified in Table 2 and Part I.E.1 of this Permit,
  - b) Piezometers – P-1, P-2, P-3, P-4, P-5.
  - c) Existing Monitoring Wells – MW-20 and MW-22.
  - d) Contaminant Investigation Wells: any well required by the Executive Secretary as a part of a contaminant investigation or groundwater corrective action, and
  - e) Any other wells or piezometers required by the Executive Secretary.
4. Groundwater Monitoring Well Design and Construction Criteria – all new groundwater monitoring wells installed at the facility shall comply with the following design and construction criteria:
- a) Located as close as practical to the contamination source, tailings cell, or other potential origin of groundwater pollution,
  - b) Screened and completed in the shallow aquifer,
  - c) Designed and constructed in compliance with UAC R317-6-6.3(I)(6), including the EPA RCRA Ground Water Monitoring Technical Enforcement Guidance Document, 1986, OSWER-9950.1.
  - d) Aquifer tested to determine local hydraulic properties, including but not limited to hydraulic conductivity.
5. Monitoring Procedures for Wells – beginning with the date of Permit issuance, all monitoring shall be conducted by the Permittee in conformance with the following procedures:
- a) Sampling - grab samples shall be taken of the ground water, only after adequate removal or purging of standing water within the well casing has been performed.
  - b) Sampling Plan – all sampling shall be conducted to ensure collection of representative samples, and reliability and validity of groundwater monitoring data.
  - c) Laboratory Approval - all analyses shall be performed by a laboratory certified by the State of Utah to perform the tests required.
  - d) Damage to Monitoring Wells - if any monitor well is damaged or is otherwise rendered inadequate for its intended purpose, the Permittee shall notify the Executive Secretary in writing within five days of discovery.
  - e) Field Monitoring Equipment Calibration and Records – immediately prior to each monitoring event, the Permittee shall calibrate all field monitoring equipment in accordance with the respective manufacturer's procedures and guidelines. The Permittee shall make and preserve on-site written records of such equipment calibration in accordance with Part II.G and H of this Permit. Said records shall identify the manufacturer's and model number of each piece of field equipment used and calibration.
6. White Mesa Seep and Spring Monitoring – after approval of the plan required by Part I.H.8, this Permit will be modified to require annual monitoring of selected seeps or

springs on White Mesa.

7. DMT Performance Standard Monitoring - the Permittee shall perform technology performance monitoring in accordance with the currently approved DMT Monitoring Plan to determine if DMT is effective in minimizing and controlling the release of contaminants pursuant to the provisions of Parts I.D.1 and I.D.3 of this Permit, including, but not limited to the following activities:
  - a) Weekly Tailings Wastewater Pool Elevation Monitoring: Cells 1 and 3 – the Permittee shall monitor and record weekly the elevation of wastewater in Tailings Cells 1 and 3 to ensure compliance with the maximum wastewater elevation criteria mandated by Condition 10.3 of the License. Said measurements shall be made from a wastewater level gauge or elevation survey to the nearest 0.01 foot.
  - b) Monthly Slimes Drain Water Level Monitoring: Cells 2 and 3 – the Permittee shall monitor and record monthly the depth to wastewater in the slimes drain access pipes as described in the currently approved DMT Monitoring Plan at Tailings Cells 2 and 3 to determine the 90-hour fluid recovery head. For purposes of said monitoring, the Permittee shall at each tailings cell:
    - a. Designate, operate, maintain, and preserve one water level measuring point at the centerline of the slimes drain access pipe that has been surveyed and certified by a Utah licensed engineer or land surveyor.
    - b. Make all slimes drain recovery head (depth to fluid) measurements from the same designated water level measuring point, and
    - c. Record and report all fluid depth measurements to the nearest 0.01 foot.For Cell 3 these requirements shall apply upon initiation of tailings de-watering operations.
  - c) Weekly Wastewater Level Monitoring: Roberts Pond – the Permittee shall monitor and record weekly wastewater levels at the Roberts Pond to determine compliance with the DMT operations standards in Part I.D.3. Said measurements shall be made in accordance to the currently approved DMT Monitoring Plan.
  - d) Weekly Feedstock Storage Area Inspection – the Permittee shall develop a Standard Operating Procedure for the License and inspect the Feedstock Storage Areas to:
    - i. Confirm the bulk feedstock materials are maintained within the approved Feedstock Storage Area defined by Table 4, and
    - ii. Verify that all alternate feedstock materials located outside the Feedstock Area defined in Table 4, are maintained within water-tight containers.
  - e) Feedstock Material Stored Outside the Feedstock Storage Area Maintenance Plan- after Executive Secretary approval of the Feedstock Storage Area Maintenance Plan, required by Part I.H.21 of this Permit, the Permittee shall immediately implement said Plan.
8. Cell4A BAT Performance Standard Monitoring – after Executive Secretary approval of the Tailings Cell 4A Operations and Maintenance Plan, required by Part I.H.19 of this

Permit, the Permittee shall immediately implement all monitoring and recordkeeping requirements therein. At a minimum, said BAT monitoring shall include:

- a) Weekly Leak Detection System (LDS) Monitoring – including:
    - 1) Leak Detection System Pumping and Monitoring Equipment – the Permittee shall provide continuous operation of the leak detection system pumping and monitoring equipment, including, but not limited to, the submersible pump, pump controller, head monitoring, and flow meter equipment approved by the Executive Secretary. Failure of any pumping or monitoring equipment not repaired and made fully operational within 24-hours of discovery shall constitute failure of BAT and a violation of this Permit.
    - 2) Maximum Allowable Head – the Permittee shall measure the fluid head above the lowest point on the secondary flexible membrane by the use of procedures and equipment approved by the Executive Secretary. Under no circumstance shall fluid head in the leak detection system sump exceed a 1-foot level above the lowest point in the lower flexible membrane liner. The occurrence of leak detection system fluids above this 1-foot limit shall constitute failure of BAT Technology and a violation of this Permit.
    - 3) Maximum Allowable Daily LDS Flow Rates - the Permittee shall measure the volume of all fluids pumped from the LDS. Under no circumstances shall the average daily LDS flow volume exceed 24,160 gallons/day.
    - 4) 3-foot Minimum Vertical Freeboard Criteria – the Permittee shall operate and maintain wastewater levels to provide a 3-foot Minimum of vertical freeboard in Tailings Cell 4A. Said measurements shall be made to the nearest 0.1 foot.
  - b) Slimes Drain Recovery Head Monitoring – immediately after the Permittee initiates pumping conditions in the Tailings Cell 4A slimes drain system, monthly recovery head tests and fluid level measurements will be made in accordance with a plan approved by the Executive Secretary.
9. On-site Chemicals Inventory – the Permittee shall monitor and maintain a current inventory of all chemicals used at the facility at rates equal to or greater than 100 kg/yr. Said inventory shall be maintained on-site, and shall include, but is not limited to:
    - a. Identification of chemicals used in the milling process and the on-site laboratory,
    - b. Determination of volume and mass of each raw chemical currently held in storage at the facility.
  10. Tailings Cell Wastewater Quality Monitoring – on an annual basis, the Permittee shall collect wastewater quality samples from each wastewater source at each tailings cell at the facility, including, but not limited to: surface impounded wastewaters, and slimes drain wastewaters. All such sampling shall be conducted in August of each calendar year in compliance with the approved Tailings Cell Wastewater Quality Sampling Plan required by Part I.H.5 of this Permit. The Permittee shall also provide at least a 30-day notice in advance of the annual sampling event, so as to allow the Executive Secretary to collect split samples of the various tailings cells wastewater sources.

11. Groundwater Monitoring Modifications – before any modification of groundwater monitoring or analysis procedures, methods, or equipment, the Permittee must obtain prior written approval from the Executive Secretary.

F. REPORTING REQUIREMENTS - The following reporting procedures for routine and compliance reports must be met.

1. Routine Groundwater Monitoring Reports - the Permittee shall submit quarterly monitoring reports of field and laboratory analyses of all well monitoring and samples described in Parts I.E.1, I.E.2, I.E.3, I.E.5, and I.E.7 of this Permit for Executive Secretary review and approval. Reports shall be submitted according to the following schedule:

Table 6. Groundwater Monitoring Reporting Schedule

Quarter	Period	Due Date
First	January – March	June 1
Second	April – June	September 1
Third	July – September	December 1
Fourth	October – December	March 1

Failure to submit the reports by the due date shall be deemed as noncompliance with this permit. Said monitoring reports shall include, but are not limited to, the following minimum information:

- a) Field Data Sheets – or copies thereof that provide the following: well name, date and time of well purging, date and time of well sampling, type and condition of well pump, depth to groundwater before purging and sampling, calculated well casing volume, volume of water purged before sampling, volume of water collected for analysis, types of sample containers and preservatives.
- b) Laboratory Results – or copies thereof that provide the following: date and time sampled, date received by laboratory, and for each parameter analyzed, the following information: laboratory result or concentration, units of measurement, minimum detection limit or reporting limit, analytical method, date of analysis, counting error for radiologic analyses, total cations and anions for inorganic analysis.
- c) Water Table Contour Map – which provides the location and identity of all wells sampled that quarter, the measured groundwater elevation at each well measured in feet above mean sea level, and isocontour lines to delineate groundwater flow directions observed during the quarterly sampling event.
- d) Quality Assurance Evaluation and Data Validation – including a written description and findings of all quality assurance and data validation efforts conducted by the Permittee in compliance with the Groundwater Monitoring Quality Assurance Plan. Said report shall verify the accuracy and reliability of the groundwater quality compliance data, after evaluation of sample collection techniques and equipment, sample handling and preservation, analytical methods used, etc.
- e) Non-conformance disclosure - with each quarterly ground water monitoring report the Permittee shall fully and completely disclose all non-conformance with requirements of the currently approved QAP, mandated by Part I.E.1(a)

- f) Electronic Data Files and Format – in addition to written results required for every sampling report, the Permittee shall provide an electronic copy of all laboratory results for groundwater quality monitoring conducted. Said electronic files shall consist of Comma Separated Values (CSV) format, or as otherwise approved by the Executive Secretary.
2. Routine DMT Performance Standard Monitoring Report - the Permittee shall provide quarterly monitoring reports of all DMT performance standard monitoring required by Part I.E.7 of this Permit. DMT monitoring shall be conducted in compliance with the currently approved DMT Monitoring Plan. Said monitoring reports and results shall be submitted for Executive Secretary approval on the schedule provided in Table 6, above.
3. Routine Cell 4A BAT Performance Standard Monitoring Reports - the Permittee shall provide quarterly monitoring reports of all BAT performance standard monitoring required by Part I.E.8 of this Permit. BAT Monitoring Cell 4A shall be conducted in compliance with a plan approved by the Executive Secretary pursuant to Part I.H.19. Said monitoring report and results shall be submitted for Executive Secretary approval on the schedule provided in Table 6 above. At a minimum, reporting of BAT monitoring for Cell 4A will include:
  - a) LDS Monitoring – including:
    - 1) Report on the operational status of the LDS pumping and monitoring equipment during the quarter, including identification of any intervals of non-operational status and repairs.
    - 2) Measurement of the weekly fluid head at the lowest point of the secondary membrane
    - 3) Measurement of the volume of all fluids pumped from the LDS.
  - b) Measurement of the weekly wastewater fluids elevation in the Cell 4A to determine freeboard
  - c) Slimes Drain Recovery Head Monitoring as per the requirements of Parts I.D.6) and I.E.8(b).
4. DMT and BAT Performance Upset Reports – the Permittee shall report any non-compliance with the DMT or BAT performance criteria of Part I.D in accordance with the requirements of Part I.G.3 of this Permit.
5. Other Information - when the Permittee becomes aware of a failure to submit any relevant facts in the permit application or submittal of incorrect information in a permit application or in any report to the Executive Secretary, the Permittee shall submit such facts or information within 10 days of discovery.
6. Groundwater Monitoring Well As-Built Reports – as-built reports for new groundwater monitoring wells shall be submitted for Executive Secretary approval within 60 days of

well completion, and at a minimum will include the following information:

- a) Geologic Logs – that detail all soil and rock lithologies and physical properties of all subsurface materials encountered during drilling. Said logs shall be prepared by a Professional Geologist licensed by the State of Utah, or otherwise approved beforehand by the Executive Secretary.
  - b) Well Completion Diagram – that detail all physical attributes of the well construction, including:
    - 1) Total depth and diameters of boring,
    - 2) Depth, type, diameter, and physical properties of well casing and screen, including well screen slot size,
    - 3) Depth intervals, type and physical properties of annular filterpack and seal materials used,
    - 4) Design, type, diameter, and construction of protective surface casing,
    - 5) Survey coordinates prepared by a State of Utah licensed engineer or land surveyor, including horizontal coordinates and elevation of water level measuring point, as measured to the nearest 0.01 foot.
  - c) Aquifer Permeability Data – including slug test, aquifer pump test or other hydraulic analysis to determine local aquifer hydraulic conductivity in each well.
7. White Mesa Seep and Spring Monitoring Reports - after approval of the work plan and report required by Part I.H.8, this Permit may be modified to require annual monitoring and reporting of selected seeps or springs on White Mesa.
8. Chemicals Inventory Report – at the time of Permit renewal the Permittee shall submit a report to update the facilities chemical inventory report required by Part I.H.9. Said report shall provide all inventory information gathered pursuant to Part I.E.9.
9. Tailings Cell Wastewater Quality Reports – all annual wastewater quality sampling and analysis required by Part I.E.10 shall be reported to the Executive Secretary with the 3<sup>rd</sup> Quarter groundwater quality report due on December 1 of each calendar year. Said report shall include all information required by Part I.F.1(a), (b), (d), and (e) of this Permit.
10. Revised Hydrogeologic Report - pursuant to Part IV.D of this Permit, and at least 180 days prior to Permit expiration, the Permittee shall submit for Executive Secretary approval a revised hydrogeologic report for the facility and surrounding area. Said report shall provide a comprehensive update and evaluation of:
- a) Local hydrogeologic conditions in the shallow aquifer, including, but not limited to: local geologic conditions; time relationships and distribution of shallow aquifer head measurements from facility wells and piezometers; local groundwater flow directions; and distribution of aquifer permeability and average linear groundwater velocity across the site, and
  - b) Well specific groundwater quality conditions measured at facility monitoring wells for all groundwater monitoring parameters required by this Permit, including, but not

limited to: temporal contaminant concentrations and trends from each monitoring well; statistical tests for normality of each contaminant and well, including univariate or equivalent tests; calculation of the mean concentration and standard deviation for each well and contaminant.

11. Annual Slimes Drain Recovery Head Report – on or before March 1 of each year the Permittee shall submit for Executive Secretary approval an annual slimes drain recovery head report for Tailings Cells 2 and 3. Said report shall conform to the requirements of Part I.D.3(b), I.E.7(b), and II.G of this Permit, and:
  - a) Provide the individual monthly slimes drain recovery head monitoring data for the previous calendar year, including , but not limited to: date and time for the start and end of recovery test, initial water level, final depth to water and recovery water level elevation.
  - b) Calculate the average slimes drain recovery head for the previous calendar year.
  - c) Demonstrate compliance status with the requirements of Part I.D.3(b) and I.E.7(b) of this Permit.

G. OUT OF COMPLIANCE STATUS

1. Accelerated Monitoring Status - is required if the concentration of a pollutant in any compliance monitoring sample exceeds a GWCL in Table 2 of the Permit; the facility shall then:
  - a) Notify the Executive Secretary in writing within 30 days of receipt of data; and
  - b) Immediately initiate accelerated sampling of the pollutant as follows:
    - 1) Quarterly Baseline Monitoring Wells – for wells defined by Part I.E.1(b) the Permittee shall initiate monthly monitoring,
    - 2) Semi-annual Baseline Monitoring Wells – for wells defined by Part I.E.1(c) the Permittee shall initiate quarterly monitoring.

Said accelerated monitoring shall continue at the frequencies defined above until the compliance status of the facility can be determined by the Executive Secretary.

2. Violation of Permit Limits - out-of-compliance status exists when:
  - a) The concentration of a pollutant in two consecutive samples from a compliance monitoring point exceed:
    - 1) A GWCL in Table 2 of this Permit, and;
    - 2) The reported ground water concentration for that pollutant exceeds the mean by two standard deviations. For purposes of this Permit, the standard deviation and mean will be calculated using values for the ground water pollutant at each individual compliance monitoring point or well; or
  - b) The concentration value of any pollutant in two or more consecutive samples is statistically significantly higher than the applicable permit limit. The statistical significance shall be determined using the statistical methods described in Statistical

Methods for Evaluating Ground Water Monitoring Data from Hazardous Waste Facilities, Vol. 53, No. 196 of the Federal Register, Oct. 11, 1988.

3. Failure to Maintain DMT or BAT Required by Permit
  - a) Permittee to Provide Information - in the event that the Permittee fails to maintain DMT or BAT or otherwise fails to meet DMT or BAT standards as required by the permit, the Permittee shall submit to the Executive Secretary a notification and description of the failure according to R317-6-6.16(C)(1). Notification shall be given orally within 24 hours of the Permittee's discovery of the failure of DMT or BAT, and shall be followed up by written notification, including the information necessary to make a determination under R317-6-6.16(C)(2), within five days of the Permittee's discovery of the failure of best available technology.
  - b) The Executive Secretary shall use the information provided under R317-6-6.16.C(1) and any additional information provided by the Permittee to determine whether to initiate a compliance action against the Permittee for violation of permit conditions. A compliance action shall not be initiated, if the Executive Secretary determines that the Permittee has met the standards for an affirmative defense, as specified in R317-6-6.16(C)(3).
  - c) Affirmative Defense - in the event a compliance action is initiated against the Permittee for violation of permit conditions relating to best available technology or DMT, the Permittee may affirmatively defend against that action by demonstrating the following:
    - 1) The Permittee submitted notification according to R317-6-6.13;
    - 2) The failure was not intentional or caused by the Permittee's negligence, either in action or in failure to act
    - 3) The Permittee has taken adequate measures to meet permit conditions in a timely manner or has submitted to the Executive Secretary, for the Executive Secretary's approval, an adequate plan and schedule for meeting permit conditions; and
    - 4) The provisions of UCA 19-5-107 have not been violated.
4. Facility Out of Compliance Status – if the facility is out of compliance, the following is required:
  - a) The Permittee shall notify the Executive Secretary of the out of compliance status within 24 hours after detection of that status, followed by a written notice within 5 days of the detection.
  - b) The Permittee shall continue accelerated sampling pursuant to Part I.G.1, unless the Executive Secretary determines that other periodic sampling is appropriate, until the facility is brought into compliance.
  - c) The Permittee shall prepare and submit within 30 days to the Executive Secretary a plan and a time schedule for assessment of the sources, extent and potential dispersion of the contamination, and an evaluation of potential remedial action to restore and maintain ground water quality to insure that permit limits will not be exceeded at the compliance monitoring point and that DMT or BAT will be

reestablished.

- d) The Executive Secretary may require immediate implementation of the contingency plan to be submitted pursuant to Part I.H.15, in order to regain and maintain compliance with the permit limit standards at the compliance monitoring point or to reestablish DMT or BAT as defined in the permit.
  - e) Where it is infeasible to reestablish DMT or BAT as defined in the permit, the Permittee may propose an alternative DMT or BAT for approval by the Executive Secretary.
5. Accelerated Monitoring Status for New Wells – any new compliance monitoring well installed by the Permittee after issuance of this Permit, will be designated a compliance monitoring point, and subject to the requirements of Part I.G of this Permit, after submittal and Executive Secretary approval of the Background Groundwater Quality Report required by Part I.H.4 of this Permit.

H. COMPLIANCE SCHEDULE REQUIREMENTS. The Permittee will comply with the schedules as described and summarized below:

1. Installation of New Groundwater Monitoring Wells – within 30 days of issuance of this Permit, the Permittee shall submit a plan for the installation of new monitoring wells for Executive Secretary approval. Said plan shall include the following information:
  - a) Tailings Cell 1 DMT Wells –one (1) hydraulically upgradient well and two (2) hydraulically downgradient wells that comply with the provisions of Part I.E.3 of this Permit, and the well location map submitted by the Permittee on April 16, 2004.
  - b) New Compliance Monitoring Wells for Tailings Cells 2 and 3 –an adequate number and location of monitoring wells to ensure:
    - 1) Early detection of tailings cell contamination of shallow groundwater from Tailings Cells 2 and 3. The number and location of these wells shall conform to the provisions of Part I.E.4, and the well location map submitted by the Permittee on April 16, 2004, and
    - 2) Discrete monitoring of each individual disposal cell. For Cell 2 this shall mean installation of three (3) monitoring wells on the shared dike between Cells 2 and 3, as per the well location map submitted by the Permittee on April 16, 2004.
  - c) New well design and construction details that comply with Part I.E.4 of this Permit.
2. Revised Hydrogeologic Report - the revised hydrogeologic report submitted for Executive Secretary approval shall include:
  - a) Monitoring well as built report for each well that complies with the information requirements of Part I.F.6.
  - b) Hydrogeologic data from each new well, including but not limited to: depth and elevation of groundwater level, and aquifer test results to determine local permeability.

- c) Comprehensive hydrogeologic evaluation of the facility that includes both new data collected during or as a result of the new monitoring well installation required by Part I.H.1, and all existing hydrogeologic information available for the site.
- d) Aquifer test results to determine local hydraulic conductivity and other aquifer properties at existing well MW-32 (formerly TW4-17).
- e) Average linear groundwater velocity calculated for each well, based on well specific hydraulic conductivity, hydraulic gradient, and effective aquifer porosity.

If after review of the revised hydrogeologic report, the Executive Secretary determines that additional information is required, the Permittee shall provide all requested information, resolve all issues identified, and re-submit the report for Executive Secretary review and approval within a timeframe approved by the Executive Secretary.

If after review of this report, the Executive Secretary determines that additional monitoring wells are required to adequately monitor the facility, the Permit will be re-opened and modified to require all necessary improvements pursuant to Part IV.N.3.

- 3. Background Ground Water Quality Report: Existing Wells –the content of the Background Ground Water Quality Report for all existing monitoring wells at the facility shall include:
  - a) All available groundwater quality data for all existing monitoring wells at the facility.
  - b) A quality assurance evaluation and data validation of the existing and historic on-site groundwater quality data that on a well-by-well and contaminant specific basis:
    - 1) Identifies, justifies, and/or culls any zero concentration values reported,
    - 2) Determines the adequacy of minimum detection limits used, particularly with respect to the corresponding GWQS for each contaminant,
    - 3) Adequately addresses any special statistical needs for management of data sets with a large proportion of non-detectable values,
    - 4) Determines the adequacy of laboratory and analytical methods used,
    - 5) Determines the consistency of laboratory units of reporting,
    - 6) Evaluates and justifies internal consistency between specific and composite types of groundwater quality analysis (e.g. major ions and TDS),
    - 7) Identifies and justifies any groundwater concentration outliers,
    - 8) Tests the selected groundwater quality data for each individual well and contaminant for normality, and justifies the use of parametric or non-parametric statistical methods for each.
  - c) An examination and justification of any temporal and/or spatial groundwater quality concentration phenomena, that shall include, but are not limited to:
    - 1) Any long term or apparently increasing contaminant concentration trends found in any existing monitoring wells,
    - 2) Any long term or apparently increasing contaminant concentration ratios observed in existing monitoring wells.

- 3) Any contaminant concentrations that appear to exceed their corresponding GWQS.
- d) Determination of descriptive statistics for each individual well and contaminant found in Table 2 of this Permit.

If after review of the report, the Executive Secretary determines that additional information is required, the Permittee shall provide all requested information, resolve all issues identified, and re-submit the report for Executive Secretary review and approval within a timeframe approved by the Executive Secretary. Upon approval of this report, the Executive Secretary will re-open this Permit and modify the Ground Water Compliance Limits in Table 2, above to account for natural variations in groundwater quality, not caused by current or historic operations at the facility.

4. Background Groundwater Quality Report: New Monitoring Wells – the content of the Background Groundwater Quality Report for the new monitoring wells shall comply with the information requirements of Part I.H.3 of this Permit.

If after review of the report, the Executive Secretary determines that additional information is required, the Permittee shall provide all requested information, resolve all issues identified, and re-submit the report for Executive Secretary review and approval within a timeframe approved by the Executive Secretary. After approval of this report, the Executive Secretary will re-open this Permit and establish Groundwater Compliance Limits in Table 2 for the new monitoring wells.

5. Tailings Cells Wastewater Quality Sampling Plan –the purpose of this plan and associated report shall be to characterize the source term quality of all tailings cell wastewaters, including, but not limited to: impounded wastewaters or process waters in the tailings cells, and wastewater or leachates collected by internal slimes drains. Said plan shall include, but is not limited to:
  - a) Collection of samples from each wastewater source at each tailings cell, including wastewater impoundments, slimes drains, etc.
  - b) Complete analysis for both field and laboratory parameters required by Part I.E.1(d), and all detectable volatile organic contaminants by EPA Method 8260B.
  - c) Detailed description of all sampling methods and sample preservation techniques to be employed.
  - d) Use of standardized analytical methods.
  - e) Analysis by a State of Utah certified environmental laboratory.
  - f) 30 day advance notice of each annual sampling event to allow the Executive Secretary to collect split samples of all tailings cell wastewater sources.

If after review of the plan, the Executive Secretary determines that additional information is required, the Permittee shall provide all requested information, resolve all issues identified, and re-submit the plan for Executive Secretary review and approval within a timeframe approved by the Executive Secretary. After approval of the plan, the Permittee shall implement the plan pursuant to the requirements of Parts I.E.10 and I.F.9. After approval of this plan, the Executive Secretary may re-open and modify this Permit to

incorporate the provisions of the approved plan.

6. Monitoring Well Remedial Action and Report – on or before , May 1, 2008 the Permittee shall complete the following remedial activities for selected monitoring wells at the facility:
  - a) Well Development – the Permittee shall develop the following wells at the facility so that they produce clear groundwater, including wells: MW-5, MW-11, MW-18, MW-19, MW-20, MW-22, and TW4-16. Said well development will ensure that groundwater clarity conforms to the EPA RCRA TEGD requirements found in Part I.E.4(c) of this Permit to the extent reasonably achievable.
  - b) Protective Surface Casing: MW-3A – the Permittee shall install a steel surface casing to protect the currently exposed PVC well casing at well MW-3A in order to:
    - 1) Allow ready water level measurement at the well,
    - 2) Not interfere or disturb the existing water level measuring point, and
    - 3) Provide security and control access to the well.
  - c) Report – the Permittee shall submit a report for Executive Secretary approval that documents well development and completion activities required by Part I.H.6(a) and (b) of this Permit.
7. Monitoring Well MW-3 Verification, Retrofit, or Reconstruction Report – The Permittee must:
  - 1) Complete well MW-3A with a permanent surface well completion according to EPA RCRA TEGD, and Part I.H.6(b) of this Permit, and
  - 2) Complete a survey of MW-3A by a State of Utah licensed engineer or land surveyor to meet requirements of Part I.F.6(b)(5) of the Permit, including horizontal coordinates (state plan) and the elevation of both the ground surface and the water level measuring point, and report the results there of in accordance with Part I.H.6(c).

In the event that the Executive Secretary determines the MW-3 well screen has been inadequately constructed, the Permittee shall replace monitoring well MW-3 with well MW-3A within 30 days of written notice.

8. White Mesa Seeps and Springs Sampling Work Plan and Report – the Permittee shall implement a plan of groundwater sampling and analysis of all seeps and springs found downgradient or lateral gradient from the tailings cells on White Mesa. Said plan shall include, but is not limited to:
  - a) Location of all seeps and springs to be sampled, including maps and surveyed coordinates (physical location, and elevation),
  - b) Detailed description of sampling methods and equipment,
  - c) Determination of field parameters or measurements that will be made,

- d) Description of sample preservation methods,
- e) Determination of the laboratory analytical methods and the environmental laboratory that will perform the analysis.
- f) Sampling and analysis of all ground water compliance parameters found on Table 2 of this Permit, including analysis of volatile and semi-volatile organic compounds by EPA SW-846 methods 8260 and 8270.

If after review of the plan, the Executive Secretary determines that additional information is required, the Permittee shall provide all requested information, resolve all issues identified, and re-submit the plan for Executive Secretary review and approval within a timeframe approved by the Executive Secretary. Immediately after approval of the plan, the Permittee shall complete said sampling and analysis, and submit a report for Executive Secretary approval. Said report shall: 1) document the sampling project, 2) transmit copies of all field measurements and laboratory results, 3) provide a water table contour map that includes water table elevations of all the wells at the facility and the elevations of the phreatic surfaces observed at each of the seeps and springs sampled, and 4) provide an evaluation and interpretation of the groundwater quality data collected. The Permittee shall also provide at least 15 days notice to allow the Executive Secretary to collect split groundwater quality samples of the seeps and springs.

- 9. On-site Chemicals Inventory Report – the Permittee shall complete a historical review, and conduct an inventory of all chemical compounds or reagents stored, used, or currently in use at the facility. Said report shall include:
  - a) Identification of all chemicals used in the milling and milling related processes at White Mesa.
  - b) Determination of the total volumes currently in use and historically used, as data is available

At the time of Permit renewal, the Permittee shall submit an updated inventory report pursuant to Part I.F.8.

- 10. Infiltration and Contaminant Transport Modeling Work Plan and Report – the Permittee shall submit for Executive Secretary approval an infiltration and contaminant transport modeling report that demonstrates the long-term ability of the tailings cells cover system to adequately contain and control tailings contaminants and protect nearby groundwater quality of the uppermost aquifer. Said report shall demonstrate how the tailings cell engineering design and specifications will comply with the minimum performance requirements of Part I.D.6 of this Permit. The Permittee shall submit an infiltration and contaminant modeling for Executive Secretary approval, that:
  - a) Identifies all applicable and pertinent historic studies and modeling reports relevant to tailings cell cover design and tailings cell system performance.
  - b) Determines and justifies all information necessary for infiltration and contaminant transport modeling, including but not limited to representative input values for vadose zone and aquifer soil-water partitioning ( $K_d$ ) coefficients, tailings source term concentrations, tailings waste leach rates, vadose zone and aquifer groundwater velocities, vadose zone and aquifer dispersivity, contaminant half-life or other rates of

decay, etc. In the event that any required information is not currently available, the Permittee may select conservative assumptions for use in the required infiltration and contaminant transport models.

- c) Identifies and adequately describes all computer models used to simulate long-term performance of the tailings cells cover system. All predictive models used shall be publicly available computer codes that adequately represent field characteristics and physical processes at the tailings disposal site. Said description will also include specific information on model design, including, but not limited to: governing equations and their applicability to site conditions, grid design, duration of simulation, and selection of time steps.
- d) Determines the conceptual model used and justifies why it is representative or conservative of actual field conditions at the site. Said conceptual model will identify the physical domain(s) and geometries simulated including the tailings cell design and construction, all boundary and initial conditions assigned in the model(s), and the shallow aquifer locations where future potential contaminant concentrations have been predicted.
- e) Justifies how the infiltration and contaminant transport problem has been adequately conceptualized, planned, and executed to demonstrate compliance with the requirements of Part I.D.6 of this Permit.
- f) Provides, describes and justifies the following:
  - 1) Model Results – including electronic input and output files from all infiltration, groundwater flow and contaminant transport models used the report.
  - 2) Model Calibration – including description of results and efforts used to demonstrate how the model adequately reproduced field measured heads, flows, and contaminant concentrations.
  - 3) Steady State Conditions – including a demonstration that the models achieved a steady state condition during the simulation. This includes, but is not limited to disclosure, evaluation and justification of water and mass balance error values reported by the models.
  - 4) Sensitivity Analyses –including description of various model simulations run and evaluated to define the range of model uncertainty. Such uncertainty includes, but is not limited to: boundary and initial conditions, model input values, and spatial and temporal distribution of model parameters used in the problem domain.
  - 5) Post-model Audit Plan – including plans to revisit the modeling effort at some future time to re-assess its ability to represent site characteristics and predict long-term performance of tailings cell design and construction, and groundwater protection.

The Permittee shall complete all modeling in accordance with the requirements of Part I.H.10 and submit a final report for Executive Secretary approval. In the final report, the Permittee may include supplemental information to justify modification of certain Permit requirements, including, but not limited to: the number and types of groundwater compliance monitoring parameters, tailings cell cover system engineering design and construction specifications, tailings cell operational requirements, etc. In the event the

Executive Secretary requires additional information, the Permittee will provide all requested information within a time frame approved by the Executive Secretary. Upon Executive Secretary approval of the final infiltration and contaminant transport report, the Reclamation Plan may be modified to accommodate necessary changes to protect public health and the environment.

11. Plan for Evaluation of Deep Supply Well WW-2 –the purpose of this plan is to evaluate the annular casing seal in water supply well WW-2, and to ensure adequate well casing and annular seals, in compliance with the regulations of the Utah State Engineer (UAC R655-4-9), with special emphasis on creating both a physical barrier and hydraulic isolation between the shallow unconfined and the deep confined aquifers. Prior to Executive Secretary approval of this plan the Permittee shall resolve all issues within a timeframe approved by the Executive Secretary. After Executive Secretary approval of the plan, the Permittee shall completely execute all provisions of the plan on or before decommissioning of the White Mesa mill.
12. Liner Maintenance Provisions – within 90-days of issuance of this Permit, the Permittee shall submit Liner Maintenance Provisions to be incorporated into the existing DMT Monitoring Plan for Executive Secretary approval. The purpose of said provisions shall be for the equipment, material, training and procedures to be used for the timely detection of any openings in the polymer liners, and the reliable repair and quality assurance testing of any such repairs to the polymer liners for Cells 1, 2 and 3 and the Roberts Pond.
- 13 <Reserved>
14. < Reserved >
15. Contingency Plan – within 180 days of issuance of this Permit, the Permittee shall implement a Contingency Plan that provides a detailed list of actions the Permittee will take to regain compliance with Permit limits and DMT or BAT requirements defined in Parts I.C and I.D of this Permit. At a minimum, the Contingency Plan will include, but is not limited to measures to resolve the following general categories of non-compliance:
  - a) Groundwater Contamination – as shown by any contaminant concentrations in compliance monitoring wells that exceed their respective groundwater compliance limit found in Part I.C.1 and Table 2 of this Permit.
  - b) Mill Discharge Violations – including unauthorized discharge or release of prohibited contaminants to the tailings cells, pursuant to Part I.C.2 and I.C.3; and
  - c) DMT and BAT Violations – which include several types of non-compliance, including but not limited to:
    - 1) Excess tailings cell wastewater pool elevation above the maximum elevations mandated by Part I.D.3;
    - 2) Excess head in the Tailings Cells 2 and 3 slimes drain system, pursuant to Part I.D.3 and as defined by the DMT Monitoring Plan in Part I.H.13; and
    - 3) Excess elevation for tailings solids as required by Part I.D.3.

If after review of the plan, the Executive Secretary determines that additional information

is required, the Permittee shall provide all requested information, resolve all issues identified, and re-submit the plan for Executive Secretary review and approval within a timeframe approved by the Executive Secretary.

16. Revised Stormwater Best Management Practices Plan - on or before May 15, 2008, the Permittee shall submit for Executive Secretary review and approval, a revised Stormwater Best Management Practices Plan to address the effects of Tailings Cell 4A construction and operation. Said plan shall comply with the requirements of Part I.D.10 of this permit. Upon Executive Secretary approval, the Permittee is to immediately implement all provisions of such plans.
17. <Reserved>
18. Repair of Monitor Well MW-5 – on or before May 1, 2008, the Permittee shall submit an As-Built report to document said repairs for Executive Secretary review and approval.
19. Cell 4A BAT Monitoring, Operations and Maintenance Plan. – the Permittee will submit an Operations and Maintenance Plan for Cell 4A for Executive Secretary review and approval. Commencement of wastewater or tailings discharge to Cell 4A is prohibited without prior written approval from the Executive Secretary. Said Plan shall include requirements in Part F.3 of the Permit and include, but is not limited to the following:
  - a. Operation and Maintenance Procedures - including operational sequences, transporting methods, equipment operation / maintenance, safety and emergency procedures,
  - b. Operation, Maintenance, Monitoring, and Recordkeeping – for evaluation of the following in accordance with the requirements of Parts I.D.6, I.E.8, and I.F.8:
    - i. Leak detection system – including operational status of equipment, daily wastewater head, daily flow rates, etc.
    - ii. Slimes drainage system – including operational status of equipment, daily flow rates, monthly wastewater recovery head monitoring, etc,
  - c. Freeboard limits on dikes – including monitoring and proper management and volume inventory controls to prevent release of wastewater to the environment.
20. <Reserved > – QAP
21. Feedstock Material Stored Outside the Feedstock Storage Area Management Plan – within 30 days of issuance of this Permit the Permittee shall submit for Executive Secretary review and approval a management plan for the feedstock material stored outside the feedstock ore storage area.
22. QAP Revision - on or before April 30, 2008 the Permittee shall modify the QAP and submit a revised revision for Executive Secretary review and approval. Said changes shall require that all non – conformance with QAP requirements discovered in a given quarterly ground water monitoring period will be corrected and reported to the Executive Secretary on or before submittal of the next quarterly ground water monitoring report as required in Part I.E.1(a).

## PART II. REPORTING REQUIREMENTS

- A. REPRESENTATIVE SAMPLING. Samples taken in compliance with the monitoring requirements established under Part I shall be representative of the monitored activity.
- B. ANALYTICAL PROCEDURES. Water sample analysis must be conducted according to test procedures specified under UAC R317-6-6.3.12 unless other test procedures have been specified in this permit.
- C. PENALTIES FOR TAMPERING. The Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than six months per violation, or by both.
- D. REPORTING OF MONITORING RESULTS. Monitoring results obtained during reporting periods specified in the permit, shall be submitted to the Executive Secretary, Utah Division of Water Quality at the following address no later than the date specified following the completed reporting period:

Attention: Compliance and Monitoring Program  
State of Utah  
Division of Water Quality  
Department of Environmental Quality  
Salt Lake City, Utah 84114-4870

The quarterly due dates for reporting are: June 1, September 1, December 1, and March 1.

- E. COMPLIANCE SCHEDULES. Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any Compliance Schedule of this permit shall be submitted no later than 14 days following each schedule date.
- F. ADDITIONAL MONITORING BY THE PERMITTEE. If the permittee monitors any pollutant more frequently than required by this permit, using approved test procedures as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted. Such increased frequency shall also be indicated.
- G. RECORDS CONTENTS.
1. Records of monitoring information shall include:
    - a) The date, exact place, and time of sampling, observations, or measurements;
    - b) The individual(s) who performed the sampling, observations, or measurements;
    - c) The date(s) and time(s) analyses were performed;
    - d) The name of the certified laboratory which performed the analyses;
    - e) The analytical techniques or methods used; and,
    - f) The results of such analyses.
- H. RETENTION OF RECORDS. The permittee shall retain records of all monitoring information,

including all calibration and maintenance records and copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least five years from the date of the sample, measurement, report or application. This period may be extended by request of the Executive Secretary at any time.

I. NOTICE OF NONCOMPLIANCE REPORTING.

1. The permittee shall verbally report any noncompliance which may endanger public health or the environment as soon as possible, but no later than 24 hours from the time the permittee first became aware of the circumstances. The report shall be made to the Utah Department of Environmental Quality 24 hour number, (801) 538-6333, or to the Division of Water Quality, Ground Water Protection Section at (801) 538-6146, during normal business hours (8:00 am - 5:00 pm Mountain Time).
2. A written submission shall also be provided to the Executive Secretary within five days of the time that the permittee becomes aware of the circumstances. The written submission shall contain:
  - a) A description of the noncompliance and its cause;
  - b) The period of noncompliance, including exact dates and times;
  - c) The estimated time noncompliance is expected to continue if it has not been corrected; and,
  - d) Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
3. Reports shall be submitted to the addresses in Part II.D, Reporting of Monitoring Results.

J. OTHER NONCOMPLIANCE REPORTING. Instances of noncompliance not required to be reported within 5 days, shall be reported at the time that monitoring reports for Part II.D are submitted.

K. INSPECTION AND ENTRY. The permittee shall allow the Executive Secretary, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and,
4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the Act, any substances or parameters at any location.

PART III. COMPLIANCE RESPONSIBILITIES

- A. **DUTY TO COMPLY.** The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and re-issuance, or modification; or for denial of a permit renewal application. The permittee shall give advance notice to the Executive Secretary of the Division of Water Quality of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.
- B. **PENALTIES FOR VIOLATIONS OF PERMIT CONDITIONS.** The Act provides that any person who violates a permit condition implementing provisions of the Act is subject to a civil penalty not to exceed \$10,000 per day of such violation. Any person who willfully or negligently violates permit conditions is subject to a fine not exceeding \$25,000 per day of violation. Any person convicted under Section 19-5-115 of the Act a second time shall be punished by a fine not exceeding \$50,000 per day. Nothing in this permit shall be construed to relieve the permittee of the civil or criminal penalties for noncompliance.
- C. **NEED TO HALT OR REDUCE ACTIVITY NOT A DEFENSE.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
- D. **DUTY TO MITIGATE.** The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.
- E. **PROPER OPERATION AND MAINTENANCE.** The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

PART IV. GENERAL REQUIREMENTS

- A. **PLANNED CHANGES.** The permittee shall give notice to the Executive Secretary as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required when the alteration or addition could significantly change the nature of the facility or increase the quantity of pollutants discharged.
- B. **ANTICIPATED NONCOMPLIANCE.** The permittee shall give advance notice of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.
- C. **PERMIT ACTIONS.** This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and re-issuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.
- D. **DUTY TO REAPPLY.** If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The application should be submitted at least 180 days before the expiration date of this permit.
- E. **DUTY TO PROVIDE INFORMATION.** The permittee shall furnish to the Executive Secretary, within a reasonable time, any information which the Executive Secretary may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Executive Secretary, upon request, copies of records required to be kept by this permit.
- F. **OTHER INFORMATION.** When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Executive Secretary, it shall promptly submit such facts or information.
- G. **SIGNATORY REQUIREMENTS.** All applications, reports or information submitted to the Executive Secretary shall be signed and certified.
  - 1. All permit applications shall be signed as follows:
    - a) For a corporation: by a responsible corporate officer;
    - b) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively.
    - c) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official.
  - 2. All reports required by the permit and other information requested by the Executive Secretary shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:
    - a) The authorization is made in writing by a person described above and submitted to the Executive Secretary, and,
    - b) The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant

manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)

3. Changes to Authorization. If an authorization under Part IV.G.2. is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Part IV.G.2 must be submitted to the Executive Secretary prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

H. PENALTIES FOR FALSIFICATION OF REPORTS. The Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than six months per violation, or by both.

I. AVAILABILITY OF REPORTS. Except for data determined to be confidential by the permittee, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Executive Secretary. As required by the Act, permit applications, permits, effluent data, and ground water quality data shall not be considered confidential.

J. PROPERTY RIGHTS. The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

K. SEVERABILITY. The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

L. TRANSFERS. This permit may be automatically transferred to a new permittee if:

1. The current permittee notifies the Executive Secretary at least 30 days in advance of the proposed transfer date;
2. The notice includes a written agreement between the existing and new permittee containing a

specific date for transfer of permit responsibility, coverage, and liability between them; and,

3. The Executive Secretary does not notify the existing permittee and the proposed new permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph 2 above.

M. STATE LAWS. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, penalties established pursuant to any applicable state law or regulation under authority preserved by Section 19-5-115 of the Act.

N. REOPENER PROVISIONS. This permit may be reopened and modified (following proper administrative procedures) to include the appropriate limitations and compliance schedule, if necessary, if one or more of the following events occurs:

1. If new ground water standards are adopted by the Board, the permit may be reopened and modified to extend the terms of the permit or to include pollutants covered by new standards. The permittee may apply for a variance under the conditions outlined in R317-6-6.4(D).
2. Changes have been determined in background ground water quality.
3. The Executive Secretary determines permit modification is necessary to protect human health or the environment.