Cell 4A and 4B BAT Monitoring, Operations and Maintenance Plan.

TABLE OF CONTENTS

1.0 Introduction

Construction of Cell 4A was authorized by the Utah Department of Environmental Quality, Division of Radiation Control ("DRC) on June 25, 2007. The construction authorization provided that Cell 4A shall not be in operation until after a BAT Monitoring, Operations and Maintenance Plan is submitted for Executive Secretary review and approval. The Plan shall include requirements in Part I.F.3 of the Groundwater Discharge Permit No. UGW370004 ("GWDP") and fulfill the requirements of Parts I.D.6, I.E.8, and I.F.9 of the GWDP.

Construction of Cell 4B was authorized by DRC on June 21, 2010. The construction authorization provided that Cell 4B shall not be in operation until after a BAT Monitoring, Operations and Maintenance Plan is submitted for Executive Secretary review and approval. The Plan shall include requirements in Part I.F.3 of the GWDP and fulfill the requirements of Parts I.D.12, I.E.12, and I.F.9 of the GWDP

2.0 Cell Design

2.1 Cell 4A Design

Tailings Cell 4A consists of the following major elements:

a) Dikes – consisting of earthen embankments of compacted soil, constructed 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 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. The non-woven geotextile material is overlain at the surface by a woven geotextile fabric, which is ballasted laterally by sandbags on each side of the backbone of the berm.

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 nonwoven geotextile that serves as a cushion to protect the primary FML. The non-woven geotextile material is overlain at the surface by a woven geotextile fabric, which is ballasted by sandbags.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) Dike Splash Pads – A minimum of eight (8) 20-foot wide splash pads are installed on the interior dike slopes to protect the primary FML from abrasion and scouring by tailings slurry. These pads consist of an extra layer of 60 mil HDPE membrane that is placed down the inside slope of Cell 4A, from the top of the dike and down the inside slope. The pads extend to a point 5-feet beyond the toe of the slope to protect the liner bottom during initial startup of the Cell. The exact location of the splash pads is detailed on the As-Built Plans and Specifications.

g) Rub Protection Sheets – In addition to the splash pads described in f) above, rub sheets are installed beneath all piping entering or exiting Cell 4A that is not located directly on the splash pads.

h) Emergency Spillway – a concrete lined spillway 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. A second spillway has been constructed in the southwest corner of Cell 4A to allow emergency runoff from Cell 4A into Cell 4B. All stormwater runoff and tailings wastewaters not retained in Cells 3 and 4A, will be managed and contained in Cell 4B, including the Probable Maximum Precipitation and flood event.

2.2 Cell 4B Design

Tailings Cell 4B consists of the following major elements:

a) Dike – consisting of a newly-constructed dike on the south side of the cell with a 15-foot wide road at the top (minimum) to support an access road. The grading plan for the Cell 4B excavation includes interior slopes of 2H to 1V. The exterior slope of the southern dike will have the typical slopes of 3H to 1V. Limited portions of the Cell 4B interior sideslopes in the northwest corner and southeast corner of the cell (where the slimes drain and leak detection sump will be located) will also have a slope of 3H to 1V. The base width of the southern dike varies from approximately 100 feet at the western end to approximately 190 feet at the eastern end of the dike, with no exterior embankment present on any other side of the cell.

b) Foundation – including subgrade soils over bedrock materials. Foundation preparation included 6-inch over excavation of rock and placement and compaction of imported soils to a maximum dry density of 90% at a moisture content between +3% and -3% of optimum moisture content, as determined by ASTM D-1557. The floor of Cell 4B has an average slope of 1% that grades from the northwest corner to the southeast corner.

c) Tailings Capacity – the floor and inside slopes of Cell 4B encompass about 45 acres and the cell will have a water surface area of 40 acres and a maximum capacity of about 1.9 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 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 4B 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 4B, and drains to a leak detection sump in the southeast 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 a 60-mil HDPE membrane found immediately below the leak detection geonet. Said FML also extends across the entire Cell 4B 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 4B, the Permittee shall demonstrate that the GCL has achieved a moisture content of at least 50% by weight.

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 4B 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 southeasterly 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. The non-woven geotextile material is overlain at the surface by a woven geotextile fabric, which is ballasted by sandbags. This perforated collection pipe serves as the "backbone" to the slimes drain system and runs from the far northwest corner downhill to the far southeast corner of Cell 4B 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 4B at the southeast 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 non-woven geotextile that serves as a cushion to protect the primary FML. The non-woven geotextile material is overlain at the surface by a woven geotextile fabric, which is ballasted laterally by sandbags on each side of the backbone of the berm. 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) Cell 4B North and East Dike Splash Pads - Nine 20-foot-wide splash pads will be constructed on the north and east dikes to protect the primary FML from abrasion and scouring by tailings slurry. These pads will consist of an extra layer of textured, 60 mil HDPE membrane that will be installed in the anchor trench and placed down the inside slope of Cell 4B, from the top of the dike, under the inlet pipe, and down the inside slope to a point at least 5 feet onto the Cell 4B floor beyond the toe of the slope.

g) Rub Protection Sheets – In addition to the splash pads described in f) above, rub sheets are installed beneath all piping entering or exiting Cell 4B that is not located directly on the splash pads.

h) Emergency Spillway – a concrete lined spillway constructed near the southern corner of the east dike to allow emergency runoff from Cell 4A into Cell 4B. This spillway will be limited to a 6-inch reinforced concrete slab, with a welded-wire fabric installed within its midsection, set atop a cushion geotextile placed directly over the primary FML in a 4-foot deep trapezoidal channel. A 100 foot wide, 60 mil HDPE geomembrane splash pad will be installed beneath the emergency spillway. No other spillway or overflow structure will be constructed at Cell 4B. All stormwater runoff and tailings wastewaters not retained in Cells 2, 3 and 4A, will be managed and contained in Cell 4B, including the Probable Maximum Precipitation and flood event.

3.0 Cell Operation

3.1 Solution Discharge to Cell 4A

Cell 4A will initially be used for storage and evaporation of process solutions from the Mill operations. These process solutions will be from the uranium/vanadium solvent extraction circuit, or transferred from Cell 1 evaporation pond or the free water surface from Cell 3, or transferred from Cell 2 tailings dewatering operations. The solution will be pumped to Cell 4A through appropriately sized pipelines. The initial solution discharge will be in the southwest corner of the Cell. The solution will be discharged in the bottom of the Cell, away from any sand bags or other installation on the top of the FML. Building the solution pool from the low end of the Cell will allow the solution pool to gradually rise around the slimes drain strips, eliminating any damage to the strip drains or the sand bag cover due to solution flowing past the drainage strips. The solution will eventually be discharged along the dike between Cell 3 and Cell 4A, utilizing the Splash Pads described above. The subsequent discharge of process solutions will be near the floor of the pond, through a discharge header designed to discharge through multiple points, thereby reducing the potential to damage the Splash Pads or the Slimes Drain system. At no time, subsequent to initial filling, will the solution be discharged into less than 2 feet of solution. As the cell begins to fill with solution the discharge point will be pulled back up the Splash Pad and allowed to continue discharging at or near the solution level.

3.2 Solution Discharge to Cell 4B

Cell 4B will initially be used for storage and evaporation of process solutions from the Mill operations. These process solutions will be from the uranium/vanadium solvent extraction circuit, or transferred from Cell 1 evaporation pond or the free water surface from Cell 3 or Cell 4A, or transferred from Cell 2 dewatering operations. The solution will be pumped to Cell 4B through appropriate sized pipelines pipelines. The initial solution discharge will be in the southeast corner of the Cell. The discharge pipe will be routed down the Splash Pad provided in the southeast corner of the Cell at the spillway to protect the primary FML. The solution will be discharged in the bottom of the Cell, away from any sand bags or other installation on the top of the FML. Building the solution pool from the low end of the Cell will allow the solution pool to gradually rise around the slimes drain strips, eliminating any damage to the strip drains or the sand bag cover due to solution flowing past the drainage strips. The solution will eventually be discharged along the dike between Cell 3 and Cell 4B, utilizing the Splash Pads described above. The subsequent discharge of process solutions will be near the floor of the pond, through a discharge header designed to discharge through multiple points, thereby reducing the potential to damage the Splash Pads or the Slimes Drain system. At no time, subsequent to initial filling, will the solution be discharged into less than 2 feet of solution. As the cell begins to fill with solution the discharge point will be pulled back up the Splash Pad and allowed to continue discharging at or near the solution level.

3.3 Initial Solids Discharge into Cell 4A

Once Cell 4A is needed for storage for tailings solids the slurry discharge from No. 8 CCD thickener will be pumped to the cell through appropriately sized pipelines. The pipelines will be routed along the dike between Cell 3 and Cell 4A, with discharge valves and drop pipes extending down the Splash Pads to the solution level. One or all of the discharge points can be used depending on operational considerations. Solids will settle into a cone, or mound, of material under the solution level, with the courser fraction settling out closer to the discharge point. The initial discharge locations are shown on Figure 1A. Figure 2A illustrates the general location of the solution and slurry discharge pipelines and control valve locations. The valves are 6” or 8” stainless steel knife-gate valves. The initial discharge of slurry will be at or near the toe of the Cell slope and then gradually moved up the slope, continuing to discharge at or near the water surface. This is illustrated in Section A-A on Figure 2A. Because of the depth of Cell 4A, each of the discharge points will be utilized for an extended period of time before the cone of material is above the maximum level of the solution. The discharge location will then be moved further to the interior of the cell allowing for additional volume of solids to be placed under the solution level. The solution level in the cell will vary depending on the operating schedule of the Mill and the seasonal evaporation rates. The tailings slurry will not be allowed to discharge directly on to the Splash Pads, in order to further protect the FML. The tailings slurry will discharge directly in to the solution contained in the Cell, onto an additional protective sheet, or on to previously deposited tailings sand.

3.4 Initial Solids Discharge into Cell 4B

Once Cell 4B is needed for storage for tailings solids the slurry discharge from No. 8 CCD thickener will be pumped to the cell through appropriately sized pipelines. The pipelines will be routed along the dike between Cell 3 and Cell 4B, with discharge valves and drop pipes extending down the Splash Pads to the solution level. One or all of the discharge points can be used depending on operational considerations. Solids will settle into a cone, or mound, of material under the solution level, with the courser fraction settling out closer to the discharge point. The initial discharge locations are shown on Figure 1B. Figure 2B illustrates the general location of the solution and slurry discharge pipelines and control valve locations. The valves are 6” or 8” stainless steel knife-gate valves. The initial discharge of slurry will be at or near the toe of the Cell slope and then gradually moved up the slope, continuing to discharge at or near the water surface. This is illustrated in Section A-A on Figure 2B. Because of the depth of Cell 4B, each of the discharge points will be utilized for an extended period of time before the cone of material is above the maximum level of the solution. The discharge location will then be moved further to the interior of the cell allowing for additional volume of solids to be placed under the solution level. The solution level in the cell will vary depending on the operating schedule of the Mill and the seasonal evaporation rates. The tailings slurry will not be allowed to discharge directly on to the Splash Pads, in order to further protect the FML. The tailings slurry will discharge directly in to the solution contained in the Cell, onto an additional protective sheet, or on to previously deposited tailings sand.

3.5 Equipment Access to Cell 4A and Cell 4B

Access will be restricted to the interior portion of the cells due to the potential to damage the flexible membrane liners. Only low pressure rubber tired all terrain vehicles or foot traffic will be allowed on the flexible membrane liners. Personnel are also cautioned on the potential damage to the flexible membrane liners through the use and handling of hand tools and maintenance materials.

3.6 Reclaim Water System at Cell 4A

A pump barge and solution recovery system is operating in the southwest corner of the cell to pump solution from the cell for water balance purposes or for re-use in the Mill process. Figure 3A illustrates the routing of the solution return pipeline and the location of the pump barge. The pump barge will be constructed and maintained to ensure that the flexible membrane liner is not damaged during the initial filling of the cell or subsequent operation and maintenance activities. The condition of the pump barge and access walkway will be noted during the weekly Cell inspections.

3.7 Reclaim Water System at Cell 4B

A pump barge and solution recovery system will be installed in the southeast corner of the cell to pump solution from the cell for water balance purposes or for re-use in the Mill process. Figure 3B illustrates the routing of the solution return pipeline and the location of the pump barge. The pump barge will be constructed and maintained to ensure that the flexible membrane liner is not damaged during the initial filling of the cell or subsequent operation and maintenance activities. The condition of the pump barge and access walkway will be noted during the weekly Cell inspections.

3.8 Interim Solids Discharge to Cell 4A

Figure 4A illustrates the progression of the slurry discharge points around the north and east sides of Cell 4A. Once the tailings solids have been deposited along the north and east sides of the Cell, the discharges points will subsequently be moved to the sand beaches, which will eliminate any potential for damage to the liner system.

3.9 Interim Solids Discharge to Cell 4B

Figure 4B illustrates the progression of the slurry discharge points around the north and east sides of Cell 4B. Once the tailings solids have been deposited along the north and east sides of the Cell, the discharges points will subsequently be moved to the sand beaches, which will eliminate any potential for damage to the liner system.

3.10 Liner Maintenance and QA/QC for Cell 4A

Any construction defects or operational damage discovered during observation of the flexible membrane liner will be repaired, tested and documented according to the procedures detailed in the approved **Revised Construction Quality Assurance Plan for the Construction of the Cell 4A Lining System, May 2007, by GeoSyntec Consultants.**

3.11 Liner Maintenance and QA/QC for Cell 4B

Any construction defects or operational damage discovered during observation of the flexible membrane liner will be repaired, tested and documented according to the procedures detailed in the approved **Construction Quality Assurance Plan for the Construction of the Cell 4B Lining System, October 2009, by Geosyntec Consultants.**

4.0 BAT Performance Standards for Tailings Cell 4A and 4B

DUSA will operate and maintain Tailings Cell 4A and 4B so as to prevent release of wastewater to groundwater and the environment in accordance with this BAT Monitoring Operations and Maintenance Plan, pursuant to Part I.H.8 of the GWDP. These performance standards shall include:

1) Leak Detection System Pumping and Monitoring Equipment – the leak detection system pumping and monitoring equipment in each cell

includes a submersible pump, pump controller, water level indicator (head monitoring), and flow meter with volume totalizer. The pump controller is set to maintain the maximum level in the leak detection system in each cell at no more than 1 foot above the lowest level of the secondary flexible membrane, not including the sump. A second leak detection pump with pressure transducer, flow meter, and manufacturer recommended spare parts for the pump controller and water level data collector is maintained in the Mill warehouse to ensure that the pump and controller can be replaced and operational within 24 hours of detection of a failure of the pumping system. The root cause of the equipment failure will be documented in a report to Mill management with recommendations for prevention of a re-occurrence.

2) Maximum Allowable Head – the Permittee shall measure the fluid head above the lowest point on the secondary flexible membrane in each cell by the use of procedures and equipment specified in the **White Mesa Mill Tailings Management System and Discharge Minimization Technology (DMT) Monitoring Plan, 10/10 Revision: Denison-10.2,** or the currently approved DMT Plan. 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, not including the sump.

3) Maximum Allowable Daily LDS Flow Rates - the Permittee shall measure the volume of all fluids pumped from each LDS on a weekly basis, and use that information to calculate an average volume pumped per day. Under no circumstances shall the daily LDS flow volume exceed 24,160 gallons/day for Cell 4A or 26,145 gallons/day for Cell 4B. The maximum daily LDS flow volume will be compared against the measured cell solution levels detailed on the attached Table 1A or 1B for Cells 4A or 4B, respectively, to determine the maximum daily allowable LDS flow volume for varying head conditions in the cell.

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 and Cell 4B. Said measurements shall be made to the nearest 0.1 foot.

5) Slimes Drain Recovery Head Monitoring – immediately after the Permittee initiates pumping conditions in the Tailings Cell 4A or Cell 4B slimes drain system, quarterly recovery head tests and fluid level measurements will be made in accordance with a plan approved by the DRC Executive Secretary. The slimes drain system pumping and monitoring equipment, includes a submersible pump, pump controller, water level indicator (head monitoring), and flow meter with volume totalizer.

5.0 Routine Maintenance and Monitoring

Trained personnel inspect the White Mesa tailings system on a once per day basis. Any abnormal occurrences or changes in the system will be immediately reported to Mill management and maintenance personnel. The inspectors are trained to look for events involving the routine placement of tailings material as well as events that could affect the integrity of the tailings cell dikes or lining systems. The daily inspection reports are summarized on a monthly basis and reviewed and signed by the Mill Manager and RSO.

5.1 Solution Elevation

Measurements of solution elevation in Cell 4A and Cell 4B are to be taken by survey on a weekly basis, and measurements of the beach area in Cell 4A and Cell 4B with the highest elevation are to be taken by survey on a monthly basis, by the use of the procedures and equipment specified in the latest approved edition of the DMT Plan.

5.2 Leak Detection System

The Leak Detection System in Cell 4A and Cell 4B is monitored on a continuous basis by use of a pressure transducer that feeds water level information to an electronic data collector. The water levels are measured every hour and the information is stored for later retrieval. The water levels are measured to the nearest 0.10 inch. The data collector is currently programmed to store 7 days of water level information. The number of days of stored data can be increased beyond 7 days if needed. The water level data is downloaded to a laptop computer on a weekly basis and incorporated into the Mill's environmental monitoring data base, and into the files for weekly inspection reports of the tailings cell leak detection systems. Within 24 hours after collection of the weekly water level data, the information will be evaluated to ensure that: 1) the water level in the Cell 4A and Cell 4B leak detection sumps did not exceed the allowable level (5556.14 feet amsl in the Cell 4A LDS sump and 5558.5 feet amsl in the Cell 4B sump), and 2) the average daily flow rate from the LDS did not exceed the maximum daily allowable flow rate at any time during the reporting period. For Cell 4A and Cell 4B, 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, not including the sump. To determine the Maximum Allowable Daily LDS Flow Rates in the Cell 4A and Cell 4B leak detection system, the total volume of all fluids pumped from the LDS of each cell on a weekly basis shall be recovered from the data collector, and that information will be used to calculate an average volume pumped per day for each cell. Under no circumstances shall the daily LDS flow volume exceed 24,160 gallons/day from Cell 4A or 26,145 gallons/day from Cell 4B. The maximum daily LDS flow volume will be compared against the measured cell solution levels detailed on the attached Tables 1A and 1B, to determine the maximum daily allowable LDS flow volume for varying head conditions in Cell 4A and Cell 4B. Any abnormal or out of compliance water levels must be immediately reported to Mill management. The data collector on each cell is also equipped with an visual strobe light that flashes on the control panel if the water level in the leak detection sump exceeds the allowable level (5556.14 feet amsl in the Cell 4A LDS sump and 5558.5 feet amsl in the Cell 4B sump). The current water level is displayed at all times on each data collector and available for recording on the daily inspection form. Each leak detection system is also equipped with a leak detection pump, EPS Model # 25S05-3 stainless steel, or equal. Each pump is capable of pumping in excess of 25 gallons per minute at a total dynamic head of 50 feet. Each pump has a 1.5 inch diameter discharge, and operates on 460 volt 3 phase power. Each pump is equipped with a pressure sensing transducer to start the pump once the level of solution in the leak detection sump is approximately 2.25 feet (elevation 5555.89 in the Cell 4A LDS sump and 5557.69 feet amsl in the Cell 4B sump) above the lowest level of the leak detection sump (9 inches [0.75 feet] above the lowest point on the lower flexible membrane liner for Cell 4A and 2 1/4 inches [0.19 feet] for Cell 4B), to ensure the allowable 1.0 foot (5556.14 feet amsl in the Cell 4A LDS sump and 5558.5 feet amsl in the Cell 4B sump) above the lowest point on the lower flexible membrane liner is not exceeded). The attached Figures 6A and 6B (Cell 4A and 4B, respectively), Leak Detection Sump Operating Elevations, illustrates the relationship between the sump elevation, the lowest point on the lower flexible membrane liner and the pump-on solution elevation for the leak detection pump. The pump also has manual start and stop controls. The pump will operate until the solution is drawn down to the lowest level possible, expected to be approximately 4 inches above the lowest level of the sump (approximate elevation 5554.0 and 5555.77 ft amsl for Cells 4A and 4B, respectively). The pump discharge is equipped with a 1.5 inch flow meter, EPS Paddle Wheel Flowsensor, or equal, that reads the pump discharge in gallons per minute, and records total gallons pumped. The flow rate and total gallons are recorded by the Inspector on the weekly inspection form. The leak detection pump is installed in the horizontal section of the 18 inch, perforated section of the PVC collection pipe. The distance from the top flange face, at the collection pipe invert, to the centerline of the 22.5 degree elbow is 133.4 feet in Cell 4A and 135.6 feet in Cell 4B, and the vertical height is approximately 45 feet in Cell 4A and approximately 42.5 feet in Cell 4B. The pump is installed at least 2 feet beyond the centerline of the elbow. The bottom of the pump will be installed in the leak detection sump at least 135.4 feet in Cell 4A and 137.6 feet in Cell 4B or more from the top of the flange invert. A pressure transducer installed within the pump continuously measures the solution head and is programmed to start and stop the pump within the ranges specified above. The attached Figure 5, illustrates the general configuration of the pump installation.

A spare leak detection pump with pressure transducer, flow meter, and manufacturer recommended spare parts for the pump controller and water level data collector will be maintained in the Mill warehouse to ensure that the pump and controller on either cell can be replaced and operational within 24 hours of detection of a failure of the pumping system. The root cause of the equipment failure will be documented in a report to Mill management with recommendations for prevention of a re-occurrence.

5.3 Slimes Drain System

(i) A pump, Tsurumi Model # KTZ23.7-62 stainless steel, or equal, will be placed inside of the slimes drain access riser pipe of each cell and a near as possible to the bottom of the slimes drain sump. The bottom of the slimes drain sump in Cell 4A and Cell 4B are 38 and 35.9 feet below a water level measuring point, respectively, at the centerline of the slimes drain access pipe, near the ground surface level. Each pump discharge will be equipped with a 2 inch flow meter, E/H Model #33, or equal, that reads the pump discharge in gallons per minute, and records total gallons pumped. The flow rate and total gallons will be recorded by the Inspector on the weekly inspection form.

(ii) The slimes drain pumps will be on adjustable probes that allow the pumps to be set to start and stop on intervals determined by Mill management.

(iii) The Cell 4A and Cell 4B slimes drain pumps will be checked weekly to observe that they are operating and that the level probes are set properly, which is noted on the Weekly Tailings Inspection Form. If at any time either pump is observed to be not working properly, it will be repaired or replaced within 15 days;

(iv) Depth to wastewater in the Cell 4A and Cell 4B slimes drain access riser pipes shall be monitored and recorded weekly to determine maximum and minimum fluid head before and after a pumping cycle, respectively. All head measurements must be made from the same measuring point, to the nearest 0.01 foot. The results will be recorded as depth-in-pipe measurements on the Weekly Tailings Inspection Form;

(v) After initiation of pumping conditions in Tailings Cell 4A or 4B, n a quarterly basis, each slimes drain pump will be turned off and the wastewater in the slimes drain access pipe will be allowed to stabilize for at least 90 hours. Once the water level has stabilized (based on no change in water level for three (3) successive readings taken no less than one (1) hour apart) the water level of the wastewater will be measured and recorded as a depth-in-pipe measurement on a Quarterly Data form, by measuring the depth to water below the water level measuring point on the slimes drain access pipe;

The slimes drain pumps for each cell will not be operated until Mill management has determined that no additional process solutions will be discharged to that cell, and the cell has been partially covered with the first phase of the reclamation cap. The long term effectiveness and performance of the slimes drain dewatering will be evaluated on the same basis as the currently operating slimes drain system for Cell 2.

6.0 Tailings Emergencies

Inspectors will notify the Radiation Safety Officer and/or Mill management immediately if, during their inspection, they discover that an abnormal condition exists or an event has occurred that could cause a tailings emergency. Until relieved by the Environmental or Radiation Technician or Radiation Safety Officer, inspectors will have the authority to direct resources during tailings emergencies.

Any major catastrophic events or conditions pertaining to the tailings area should be reported immediately to the Mill Manager or the Radiation Safety Officer, one of whom will notify Corporate Management. If dam failure occurs, notify your supervisor and the Mill Manager immediately. The Mill Manager will then notify Corporate Management, MSHA (303-231-5465), and the State of Utah, Division of Dam Safety (801-538-7200).

7.0 Solution Freeboard Calculations

The maximum tailings cell pond wastewater levels in Cell 1, Cell 2, Cell 3, Cell 4A, and Cell 4B are regulated by condition 10.3 of the White Mesa Mill 11e.(2) Materials License. However, freeboard limits are no longer applicable to Cell 2, Cell 3, and Cell 4A, as discussed below.

Condition 10.3 states that “Freeboard limits, stormwater and wastewater management for the tailings cells shall be determined as follows:

A. The freeboard limit for Cell 1 shall be set annually in accordance with the procedures set out in Section 3.0 to Appendix E of the previously approved NRC license application, including the January 10, 1990 Drainage Report. Discharge of any surface water or wastewater from Cell 1 is expressly prohibited.

B. The freeboard limit for Cell 4B shall be recalculated annually in accordance with the procedures established by the Executive Secretary. Said calculations for freeboard limits shall be submitted as part of the Annual Technical Evaluation Report (ATER), as described in Condition 12.3 below [of the license and not included herein]. Based on approved revisions to the DMT Plan dated January 2011, the freeboard limit is no longer applicable to Cells 2, 3 and 4A.

C. The discharge of any surface water, stormwater, or wastewater from Cells 3, 4A, and 4B shall only be through an Executive Secretary authorized spillway structure. [Applicable NRC Amendment:16] [Applicable UDRC Amendment: 3] [Applicable UDRC Amendment:4]"

The freeboard limits set out in Section 6.3 of the DMT Plan are intended to capture the Local 6-hour Probable Maximum Precipitation (PMP) event, which was determined in the January 10, 1990 Drainage Report for the White Mesa site to be 10 inches.

Based on the PMP storm event, the freeboard requirement for Cell 1 is a maximum operating water level of 5615.4 feet above mean sea level (amsl). The Cell 1 freeboard limit is not affected by operations or conditions in Cells 2, 3, 4A, or 4B.

Cells 2 and 3 have no freeboard limit because those Cells are full or near full of tailings solids. Cell 4A has no freeboard limit because it is assumed that all precipitation falling on Cell 4A will overflow to Cell 4B. All precipitation falling on Cell 2, 3, and 4A and the adjacent drainage areas must be contained in Cell 4B. The flood volume from the PMP event over the Cell 2, 3, and Cell 4A pond areas, plus the adjacent drainage areas, which must be contained in Cell 4B, is 159.4 acre-feet of water.

The flood volume from the PMP event over the Cell 4A area is 36 acre-feet of water (40 acres, plus the adjacent drainage area of 3.25 acres, times the PMP of 10 inches). For the purposes of establishing the freeboard in Cell 4B, it is assumed Cell 4A has no freeboard limit and all of the flood volume from the PMP event will be contained in Cell 4B. The flood volume from the PMP event over the Cell 4B area is 38.1 acre-feet of water (40 acres, plus the adjacent drainage area of 5.7 acres, times the PMP of 10 inches). This would result in a total flood volume of 197.5 acre-feet, including the 123.4 acre-feet of solution from Cells 2 and 3 and 36 acre-feet of solution from Cells 2, 3, and 4A that must be contained in Cell 4B. The procedure for calculating the freeboard limit for Cell 4B is set out in the DMT Plan.

The Groundwater Quality Discharge Permit, No. UGW370004, for the White Mesa Mill requires that the minimum freeboard be no less than 3.0 feet for Cells 1, 4A, and 4B but based on License condition 10.3 and the procedure set out in the DMT Plan, the freeboard limits for Cells 1, 4A, and 4B will be at least three feet.

Figure 7, Hydraulic Profile Schematic, shows the relationship between the Cells, and the relative elevations of the solution pools and the spillway elevations.

The required freeboard for Cell 4B will be recalculated annually.

8.0 List of Attachments

1) Figures 1A and 1B, Initial Filling Plan, Geosyntec Consultants

2) Figure 2A and 2B, Initial Filling Plan, Details and Sections, Geosyntec Consultants

3) Figure 3A and 3B, Initial Filling Plan, Solution and Slurry Pipeline Routes, Geosyntec Consultants

4) Figure 4A and 4B, Interim Filling Plan, Geosyntec Consultants

5) Figure 5, Leak Detection System Sumps for Cell 4A and 4B, Geosyntec Consultants

6) Figure 6A and 6B, Leak Detection Sump Operating Elevations, Geosyntec Consultants

7) Figure 7, Hydraulic Profile Schematic

8) Cell 4A and Cell 4B Freeboard Calculations

9) Table 1A, Calculated Action leakage Rates for Various Head Conditions, Cell 4A, White Mesa Mill, Blanding, Utah, Geosyntec Consultants

10) Table 1B, Calculated Action leakage Rates for Various Head Conditions, Cell 4B, White Mesa Mill, Blanding, Utah, Geosyntec Consultants

11) White Mesa Mill Tailings Management System and Discharge Minimization Technology (DMT) Monitoring Plan.