

Statement of Basis

For a
Uranium Milling Facility
South of Blanding, Utah

Owned and Operated by
Denison Mines (USA) Corp.
Independence Plaza, Suite 950
1050 17th Street
Denver, Colorado 80265

September 2009

PURPOSE

The purpose of this Statement of Basis (hereafter SOB) is to describe the technical and regulatory basis to proposed modifications to requirements found in a Ground Water Quality Discharge Permit No. UGW370004, (hereafter Permit) for the Denison Mines (USA) Corp. (hereafter DUSA) uranium mill facility located about six miles south of Blanding, Utah in Sections 28, 29, 32, and 33, Township 37 South, Range 22 East, Salt Lake Baseline and Meridian, San Juan County, Utah.

Major changes associated with this Permit modification include but are not limited to:

- Approval of DUSA Background Ground Water Quality Reports dated October 2007 and April 30, 2008.
- Calculation of a mean and standard deviation for each Point of Compliance (hereafter POC) groundwater monitoring well, and the establishment of sampling frequency for all POC wells.
- Establishment and revision of Ground Water Compliance Limits (hereafter GWCL).
- Update the status of certain POC wells with parameters in Out-of-Compliance Status.
- Addition of Best Available Technology (hereafter BAT) Standards and Performance Monitoring for Feedstock Material Stored Outside the Feedstock Storage Area.
- Addition of Performance Monitoring for inspections of Tailing Cell and Pond Liner Systems.
- Addition of Seeps and Springs and tailings cell water monitoring.
- Resolution of certain previous compliance schedule requirements.

Other minor Permit changes include but are not limited to: the correction of formatting, numbering, and other errors, resetting of some compliance schedule items, and the completion of several compliance schedule items.

BACKGROUND

The White Mesa uranium mill was constructed in 1979 - 1980 and licensed under federal regulations by the Nuclear Regulatory Commission (hereafter NRC), Source Material License SUA-1358.

On August 16, 2004, the NRC delegated its uranium mill regulatory program to the State of Utah, by extending Agreement State status. As a result, the Utah Division of Radiation Control (hereafter DRC) became the primary regulatory authority for the DUSA White Mesa mill for both radioactive materials and groundwater protection. Later, DUSA was issued a State Ground Water Quality Discharge Permit No. UGW370004 on March 8, 2005. Previous to the modification proposed herein today, the Permit was last modified on March 17, 2008.

Excess Total Uranium Concentrations with Long-Term Increasing Trends in Downgradient Wells

In the original DRC December 1, 2004 Statement of Basis, three wells (MW-14, MW-15, and MW-17) located downgradient of the tailings cells were found to have long-term increasing concentration trends for total uranium. These three wells and downgradient well MW-3, had total uranium concentrations above the Utah Ground Water Quality Standard (hereafter GWQS), found in UAC R317-6-2 (see December 1, 2004 DRC SOB, pp. 6-7). These findings were of concern to the DRC because they appeared to indicate that the tailings cells had possibly discharged wastewater into the underlying shallow aquifer.

To resolve this concern, the Executive Secretary required DUSA to evaluate groundwater quality data from the existing wells on site, and submit a Background Ground Water Quality Report for Executive Secretary approval, in accordance with Part I.H.3 of the Permit. One of the purposes of this report was to provide a critical evaluation of historic groundwater quality data from the facility, and determine representative background quality conditions and reliable groundwater protection levels or compliance limits for the Permit.

The Permit also required several new monitoring wells be installed around Tailings Cells 1 and 2, followed by groundwater sampling and analysis, and later submittal of another Background Ground Water Quality Report to determine reliable background conditions and groundwater compliance limits for the new wells.

During the course of discussions with DUSA staff, and further DRC review, the DRC decided to supplement the analysis provided in the background report for the existing wells. On April 3, 2007 the DRC notified DUSA in a letter that the State would commission the University of Utah to perform a geochemical and isotopic groundwater study at White Mesa. DUSA did not contribute financially to the study, but provided the DRC and the University access to perform the study (see May 19, 2008 DRC Memo, p. 7).

University of Utah Study

The University of Utah conducted a study entitled "*Evaluation of Solute Sources at Uranium Processing Site*" (hereafter Study) at the DUSA White Mesa Uranium Mill. The purpose of this Study was to verify if the increasing and elevated trace metal concentrations (such as uranium) found in the monitoring wells at the mill were due to leakage from the on-site tailings cells. To investigate this potential problem, the study examined groundwater flow, chemical composition, noble gas and isotopic composition, and age of the on-site groundwater. Similar evaluation was also made on samples of the tailings wastewater and nearby surface water stored in the northern wildlife ponds at the facility. Fieldwork for the Study was conducted July 17 - 26 of 2007. A final report was provided to the DRC via email on May 18, 2008. The May, 2008 University of

Utah Study Final Report (hereafter University Report) has been included as **Attachment 1**, below.

With respect to the four downgradient wells in question described above, the University of Utah Study collected groundwater isotopic and other geochemical samples from three wells, MW-3, MW-14, and MW-15. No sampling was performed in well MW-17 due in part to its more cross-gradient hydraulic position, in that the other three wells were more directly downgradient of the tailings cells. Also, the 10-foot long well screen in well MW-17 prevented depth profile sampling there. Since the same problem was also found in well MW-3, and funding was limited, the DRC chose to sample MW-3 and MW-3A instead. Consequently, it was assumed that the isotopic and geochemical conditions in well MW-17 are similar as those found in the other downgradient wells.

After review of the May, 2008 University Report, DRC staff agreed with DUSA that downgradient wells MW-3, MW-14, MW-15, and MW-17 (with excess total uranium concentrations) are likely the product of artificial recharge from the wildlife ponds mobilizing natural uranium in the vadose zone, and not from tailings cell leakage. This conclusion is based on at least 3 lines of isotopic evidence (see University Report, and May 19, 2008 DRC memorandum):

1. Tritium Signature - wells MW-3, MW-3A, MW-14, and MW-15 had tritium signatures in groundwater at or below the limit of detection (0.3 Tritium Units). These values are more than an order of magnitude below the corresponding surface water results found in either the tailings cells or the wildlife ponds. Consequently, the groundwater in these 4 downgradient wells is much older than water in the tailings cells, and is of a different origin than the tailings wastewater.
2. Stable Isotopes of Deuterium and Oxygen-18 in Water - the Deuterium and Oxygen-18 content of the groundwater matrix and tailings wastewater matrix was tested in all of the water sources studied. University results showed that wells MW-3, MW-3A, MW-14, and MW-15 (all downgradient with the elevated uranium concentrations) had Deuterium / Oxygen-18 signatures that were almost twice as negative as any of the surface water results. Consequently, groundwater in these downgradient wells had a different geochemical origin than the tailings cell wastewater.
3. Stable Isotopes on Dissolved Sulfate - the University Study evaluated 2 stable isotopes found on sulfate minerals dissolved in the water samples (Oxygen-18, and Sulfur-34). These samples showed that the sulfate solutes in groundwater from downgradient wells MW-3, MW-3A, MW-14, and MW-15 had a different isotopic signature than the sulfate minerals dissolved in the tailings wastewater. In the case of Oxygen-18 on sulfate, the downgradient wells showed more negative values than the tailings cells wastewater. For Sulfur-34, the results were inversed, with groundwater showing more positive values than the negative values seen in the tailings wastewater. As a result, the sulfate dissolved in the downgradient wells, with elevated uranium concentrations, has a different origin than the tailings wastewater.

As a result of these findings, together with the conclusions reached in the DUSA Background Ground Water Quality Reports, the Executive Secretary has determined that the elevated and rising total uranium concentrations seen in wells MW-3, MW-14, MW-15, and MW-17 are not the product of tailings cell leakage. Instead, they are likely the result of changing geochemical conditions brought on by artificial recharge to the shallow aquifer by mounding from the nearby

south wildlife ponds. These changes are possibly caused when rising water caused by the recharge mounds, flows along subterranean paths that were previously un-traveled and unsaturated, thereby dissolving solutes that were once fixated to the geologic formation. Changes in redox conditions would no doubt also be related to these rising water levels, and could contribute to the additional solutes in question. Consequently, the Executive Secretary is confident that background groundwater concentrations, and GWCLs developed thereon, from available historic data from these and other DUSA wells located downgradient of the tailings cells have not been adversely influenced by tailings cell leakage.

Wildlife Ponds

The University Study documented that artificial recharge water from the wildlife ponds has altered the shallow aquifer geochemistry at the Mill site. The recharge water is from the local reservoir (Recapture Reservoir). To this day, no lining system has been constructed under any of the wildlife ponds; therefore, the wildlife ponds provide a nearly constant source of recharge to the shallow aquifer at the site (see December 1, 2004 DRC SOB, p. 4). The University Study showed that significant and measurable quantities of tritium are present in wells MW-27 and MW-19, indicating that recharge to the aquifer from the wildlife ponds is occurring (see University Report, pp. 26 - 27).

Under the Utah Ground Water Quality Protection Rules (UAC R317-6-1.2), background concentration is defined as a pollutant concentration that "... has not been affected by that facility, practice, or activity." Under a strict interpretation, the proposed changes to GWCLs in wells MW-19 and MW-27 may not appear consistent with the Ground Water Quality Protection Rules, in that the wildlife ponds are on the Mill property, and as a result, could possibly be considered to be an extension of the uranium milling activity and have altered the tritium and stable deuterium / oxygen-18 signatures there. However, this impact is one of a secondary nature, and not the direct result of any tailings cell discharge; therefore, the Executive Secretary has determined that the hydraulic influence of the wildlife ponds will not be considered, for purposes of monitoring the tailings cells and the setting of GWCLs for downgradient wells.

While the wildlife ponds are related to facility operations, they are not central to tailings disposal. These ponds provide a habitat for migratory birds, and encourage them to avoid contact with the acid laden tailings cells. However, if the constant source of artificial recharge continues at the wildlife ponds, the isotopic signatures seen in the wells near the wildlife ponds will eventually be propagated to locations that are downgradient of the tailings cells. When this happens, it is likely that the isotopic tools we have today will be lost or impaired, and therefore it could be much more difficult in the future for DUSA to prove that a future exceedance of a GWCL in a downgradient well is not the product of a tailings cell release. In the event that the DUSA is unable to distinguish natural uranium concentrations from concentrations attributed to tailings cell leakage, the Executive Secretary would have no other choice, but to require DUSA to cleanup the aquifer.

However, the loss of these isotopic tools could be prevented if the wildlife ponds were appropriately lined to minimize seepage losses to groundwater. By denying the artificial recharge from the wildlife ponds; the underlying groundwater mounds would be reduced in size, groundwater flow would return to its normal pathways, and the aquifer would eventually return to equilibrium.

Therefore, DUSA is proceeding at its own risk. If the GWCLs (set herein this Permit modification) are exceeded in the future, and DUSA is not successful at showing how the groundwater in the affected wells have a different geochemical signature than the tailings wastewater, i.e., groundwater is old vs. young tailings wastewater, or different isotopic fingerprint (S-34, O-18, etc.) - then it will be DUSA's burden to implement GW corrective action, as per UAC R317-6-6.15.

BACKGROUND REPORTS

Existing Wells

On December 29, 2006, DUSA submitted a Background Ground Water Quality Report for the on-site Existing Wells (Background Report). An Addendum to the Background Report was submitted to the DRC on April 19, 2007. DUSA claimed the *"purpose of the Addendum is to supplement the Background Report by focusing exclusively on pre-operational site data and all available regional data to develop the best available set of background data for the site that could not conceivably have been influenced by mill operations."*

Review of both reports were conducted by the URS Corporation (URS) on behalf of the DRC. After review of the Background Report, URS concluded that modifications to the Report were required in order for the analysis in the Report to more specifically comply with certain Environmental Protection Agency Guidance (hereafter EPA Guidance) for data preparation and statistical analysis of groundwater quality data, including treatment of non-detectable values, statistical methods, etc. In an August 9, 2008 DRC e-mail, the DRC provided DUSA with the following EPA Guidance to be followed:

1. February, 1989, "Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities Interim Final Guidance", U.S. Environmental Protection Agency, Office of Solid Waste, 530-SW-89-026, and
2. July, 1992, "Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities Addendum to Interim Final Guidance", U.S. Environmental Protection Agency, Office of Solid Waste.

In an August 10, 2007 Completeness Review, DRC Findings, and Confirmatory Action Letter (CAL), the DRC documented ways in which the Background Report needed to be revised in order to conform to the EPA Guidance before the review process could be completed. The CAL also outlined the DUSA commitment to revise the Background Report in accordance with the EPA Guidance and submit a Decision Tree/Flowchart for the groundwater data preparation and statistical analysis process on or before August 16, 2007 (see August 10, 2007 DRC CAL).

On August 16, 2007 DUSA submitted a Decision Tree/Flowchart diagram. The Decision Tree/Flowchart was conditionally approved by the DRC on August 24, 2007. On October 26, 2007 DUSA submitted a Revised Background Ground Water Quality Report for on-site Existing Wells (Revised Background Report). A Revised DUSA Addendum was submitted on November 16, 2007.

Review of the October 26 and November 16, 2007 DUSA reports was conducted by URS on behalf of the DRC, and is documented in a June 16, 2008 URS Completeness Review for the Revised Background Groundwater Quality Report: Existing Wells (hereafter URS

Memorandum). The Revised Background Report included new proposed GWCLs for the 38 constituents in each of the 13 existing wells, for a total of 494 individual data sets. As documented in the URS Memorandum, there were some GWCLs (24 out of a total of 494) where an unapproved approach (e.g., highest historic value instead of the Poisson Limit) was used by DUSA to determine the GWCL. DUSA took this unapproved approach as a means to set GWCLs for contaminants with increasing concentration trends.

While it is true that the Flowchart did allow a modified approach to setting GWCLs for upward trending constituents, the August 24, 2007 Conditional Approval for the Flowchart plainly states that *“Please be advised that before the DRC considers such a proposal, DUSA will be required to provide sufficient technical explanation and justification for why the most recent data is both representative and protective of local groundwater resources.”*

Therefore, because there was no discussion with or approval by the DRC about this modified approach before the Revised Background Report was received by the DRC on October 26, 2007; DUSA failed to correctly follow the approved Flowchart. Consequently, GWCLs proposed for upward trending constituents were not approved by the Division.

In addition, there were also some GWCLs (31 out of a total of 494) where there was a typographical error in the value of the GWCL. These DUSA proposed GWCLs that varied from the Decision Tree/Flow Chart and the GWCLs that contained typographical errors are listed in Table 1 of the URS Memorandum, along with the final GWCLs set by the Executive Secretary. The June 16, 2008 URS Memorandum has been included as **Attachment 2**. In the end, the URS Memorandum recommended acceptance of 439 of the 494 DUSA GWCLs proposed.

The June 16, 2008 URS Memorandum, was shared with DUSA by e-mail on June 18, 2008. On July 2, 2008, INTERA, Inc. on behalf of DUSA submitted a Response to the URS Memorandum (Response Memo). In the Response Memo, DUSA presented additional information and asked the Executive Secretary to take this new information into consideration when determining GWCLs.

After review of the Revised Background Report, Revised Addendum, URS Memorandum, DUSA Response Memo, and consideration of the University of Utah Study Final Report; the Executive Secretary has determined the following: 1) The DRC accepts 439 of the 494 GWCLs values proposed by DUSA in the October 26, 2007 Revised Background Report, and 2) For the remaining 55 GWCLs, the DRC will adopt the values calculated by URS in Table 1 of the June 16, 2008 URS Memorandum.

New Wells

Compliance schedule item Part I.H.1 required DUSA to install several new monitoring wells, primarily around the tailings Cells 1 and 2. After at least eight quarters of groundwater quality data in these new wells, Part I.H.4 required DUSA to also submit a Background Ground Water Quality Report for the new wells that complied with the information requirements of Part I.H.3.

On December 4, 2007, DUSA submitted a Background Ground Water Quality Report for the New Wells (New Wells Background Report). Review of the New Wells Background Report, was conducted by DRC Staff. After review of the New Wells Background Report, it was apparent that the report was not written in conformity with the EPA Guidance.

In a February 14, 2008 Completeness Review, DRC Findings, Request for Information, and Confirmatory Action Letter (CAL), the DRC outlined a number of these issues with the New Wells Background Report that needed to be resolved before the review process could be completed. The CAL also summarized the DUSA commitment to revise the New Wells Background Report to conform to the EPA Guidance provided to them in the August 9, 2008 DRC e-mail, and resubmit the report by April 30, 2008.

On April 30, 2008, DUSA submitted the Revised New Wells Background Report. DRC review is found in a June 24, 2008 DRC Findings and Recommended Action Memorandum (DRC New Wells Memorandum). The Revised New Wells Background Report concluded that the sampling results for the new wells confirm that the groundwater at the Mill site and in the region is highly variable naturally and has not been impacted by tailings cell operations and that varying concentrations of constituents at the site are consistent with natural background variation in the area.

The Revised New Wells Background Report included new proposed GWCLs for the 38 constituents in each of the nine new wells, for a total of 342 individual data sets. As documented in the DRC New Wells Memorandum, there were several GWCLs (146 out of a total of 342) where DUSA used the wrong approach to determine the GWCL or where there was a typographical error in the value of the GWCL. These proposed GWCLs are listed in Table 1 along with the corrected GWCL values set by the Executive Secretary in the DRC New Wells Memorandum, which is included below as **Attachment 3**.

In 43 of those instances, DUSA recommended an approach that varied from the Decision Tree/Flow Chart diagram (e.g., mean plus 20% instead of the mean plus two standard deviations for data sets with very low variability). In the Revised New Wells Background Report, DUSA claimed that during the calculation of GWCLs that were determined by the mean plus two standard deviations, a condition arose that didn't occur during the same calculation of the existing wells. Because data from the new wells is limited to around two years and was analyzed by the same laboratory, the standard deviation could be typically lower than similar values for the existing wells, in some cases resulting in a GWCL that is very close to the average value of the data set. Therefore, for the cases where following the flowchart resulted in a GWCL that is very close to the average value of the data set, DUSA proposed GWCLs that were based on the mean plus 20 percent ($\bar{x} + 20\%$) rather than following the flowchart.

The GWCLs proposed by the $\bar{x} + 20\%$ method were rejected by the DRC during review of the New Wells Background Report and during review of the July 2, 2008 Response Memo because DUSA didn't follow the Decision Tree/Flow Chart diagram, which was created by DUSA, and was conditionally approved by the DRC on August 24, 2007. Additionally, this proposed method was not based on the EPA Guidance given to DUSA in an August 9, 2008 DRC e-mail. Further, it is not unexpected to see data sets with low variability when using the same analytical laboratory over a short period of time. However, this problem can be addressed in the future, if it occurs, in that DUSA has the ability to provide new descriptive statistics for a given well and contaminant as more data becomes available, and request the Executive Secretary approval thereof.

Also, DUSA argues that, assuming a normal distribution, setting a value of two standard deviations above the mean, virtually guarantees that each well will be out of compliance (falsely) in about two and a half percent of all concentration values measured in groundwater samples

from that well. While it is true that a GWCL that is set at the mean plus the second standard deviation, which corresponds to the 95% upper confidence limit, has a 2.5% (0.025) probability of any parameter in any well falsely exceeding its GWCL during any given sampling event. DUSA would not be considered in out of compliance until two consecutive groundwater quality samples exceed the respective GWCL ($\bar{x} + 2\sigma$ concentration) for each well and contaminant in question. On a statistical basis this equates to a 0.062% (0.025²) probability that any given well and parameter will twice, consecutively, falsely exceed its respective GWCL.

After review of the Revised New Wells Background Report and consideration of the University of Utah Study Final Report; the Executive Secretary has determined the following: 1) The DRC accepts 196 of the 342 GWCLs values proposed by DUSA in the April 30, 2008 Revised New Wells Background Report, and 2) For the remaining 146 GWCLs, the DRC will adopt the values calculated by DRC staff in Table 1 of the June 24, 2008 DRC New Wells Memorandum. For details on the wells and parameters affected, see Table 1 in **Attachment 3**, below.

DRAFT PERMIT AND STATEMENT OF BASIS

The Draft Permit and SOB were shared with DUSA on April 1, 2009. After DUSA review of the documents, a meeting was held on May 11, 2009 to discuss the Draft Permit and/or SOB. During the meeting, DUSA voiced a concern about the new compliance schedule item at Part I.H.4 of the Permit. This new compliance schedule item, required DUSA to conduct an groundwater study, similar July 2007 University of Utah Study, in the monitoring wells and surface water sites that were not part of the July 2007 University of Utah Study. DUSA argued that the study was not repeatable as the July 2007 University of Utah Study was based on new “cutting edge” or research groundwater analysis technology. DUSA claimed there were other methods that DUSA could use to determine if the groundwater had been impacted by tailings cell wastewater. The DRC invited DUSA to submit (in writing) what other methods they might use in the future. To this date, no other method to determine if groundwater has been impacted by tailings cell wastewater has been proposed by DUSA; therefore the Supplemental Isotopic Groundwater and Surface Water Investigation and Report compliance schedule item found at Part I.H.4 of the Permit stands.

DUSA was also concerned with setting GWCLs for constituents with rising concentration trends. As discussed above, the Decision Tree/Flowchart does allow a modified approach to setting GWCLs for upward trending constituents, after consultation and DRC approval. During the May 11, 2009 meeting, DUSA discussed different options on how to deal with these upward trending constituents. The DRC asked DUSA to put these options in writing. On June 5, 2009, DUSA submitted a technical memorandum, written by its consultant INTERA, that included a proposal dealing with upward trending constituents. The proposal was as follows (see July 5, 2009 INTERA Memo, p.16):

- *During each GWDP renewal review, each data set will be evaluated for increasing or decreasing trends.*
- *Each statistically significant increasing trend (decreasing pH) will be evaluated to determine if it is attributable to causes related to Mill operations. In performing such an evaluation, consideration will be given to the behavior in the well of the indicator constituents: chloride, sulfate, fluoride and uranium, among other things. If there have been no statistically significant rising trends in any of the indicator constituents, then that would be considered to be prima facie evidence that the trend is due to natural influences. If one or more indicator constituents demonstrates a significant upward trend,*

then a further analysis would be performed to determine if the trend or trends are due to natural influences.

- *If the trend is determined to be unrelated to Mill operations, evidence for that determination will be documented in a report attached to the renewal application.*
- *The report will include a graph of statistically significant trending data and an extrapolation of that trend to the next renewal date.*
- *The extrapolated value on the date of the next GWDP renewal will be set as the GWCL for the period between the two renewals.*

The June 5, 2009 DUSA proposal was rejected by the DRC because this “extrapolation method” was not based on any EPA Guidance. Therefore for the time being, the proposed GWCLs for the constituents with upward trends will be set as shown in Table 2 of the Permit.

MAJOR PERMIT CHANGES

GROUND WATER CLASSIFICATION

The original Ground Water Quality Discharge Permit was issued by the DRC on March 8, 2005. As described in the related DRC December 1, 2004 Statement of Basis, groundwater classification was determined on a well-by-well approach in order to acknowledge the spatial variability of groundwater quality at the DUSA facility, and afford the most protection to those portions of the shallow aquifer that exhibited the highest quality groundwater. On an interim basis, the Executive Secretary decided to base the well-by-well groundwater classification on the mean total dissolved solids (hereafter TDS) concentration available at the time, and omit any consideration of concentration variance. Part IV.N.2 allows the Permit, to be re-opened and modified when a change in background groundwater quality has been determined.

Groundwater quality data documented in DUSA’s background groundwater quality reports dated October 2007 (existing wells) and April 30, 2008 (new wells), show an updated mean TDS concentration and standard deviation for each individual POC well. These reports show the shallow aquifer at White Mesa has highly variable TDS concentrations, ranging from about 1,019 (MW-27) to over 7,365 mg/L (MW-22). Table 1 of the Permit has been updated with these new mean TDS and standard deviation calculations.

Using the TDS data from the DUSA background reports, and after calculation of average TDS concentration for all 24 POC wells, the Executive Secretary determined that four wells (MW-1, MW-5, MW-11, and MW-30) at the facility appear to exhibit Class II or drinking water quality groundwater. Of these four wells, only MW-1 is located hydraulically upgradient of the tailings cells. The 20 other wells appear to exhibit Class III or limited use groundwater at the site. For details, see Table 1 of the modified Permit.

A key element in determination of groundwater classification is the presence of naturally occurring contaminants in concentrations that exceed their respective GWQS. In such cases, the Executive Secretary has cause to downgrade aquifer classification from Class II to Class III (see UAC R317-6-3.6). During the review of the DUSA Background Ground Water Quality Reports, the wells where this was necessary are show below:

Well	Location	Parameter	GWQS	New GWCL	Rationale
MW-18	Upgradient of Cell 1	Uranium	30 µg/L	55.1 µg/L	Well-18 is upgradient of the tailing cells. In addition, the U of U Study showed that well MW-18 had different geochemical signature than the tailing cells.
MW-19	Upgradient of Cell 1	Thallium	2 µg/L	2.1 µg/L	Well-19 is upgradient of the tailing cells, therefore it is unlikely groundwater in this well has been affected by tailing cell wastewater.
MW-25	SE corner of Tailing Cell 3A	Manganese	800 µg/L	1,806 µg/L	Manganese concentrations in MW-25 have been consistent since GW sampling began in 2005. Nearby well MW-11 analyzed by the U of U Study had a different geochemical signature than the tailing cells.
MW-27	Upgradient of Cell 1	Uranium	30 µg/L	34 µg/L	Well-27 is upgradient of the tailing cells, therefore it is unlikely groundwater in this well has been affected by tailing cell wastewater.
MW-31	Downgradient of Tailing Cell 2	Selenium	50 µg/L	71 µg/L	U of U Study showed that well MW-31 had different geochemical signature than the tailing cells. In addition, the Background Ground Water Quality Reports concluded that there had been no impacts from tailings cell disposal.

Revision of Groundwater Compliance Limits, Part I.C and Table 2

During this Permit modification, a new GWCL was calculated for each constituent in each POC well. For details, see Table 2 of the modified Permit. After review of the October 26, 2007 DUSA Revised Background Report, November 16, 2007 Revised Addendum, June 16, 2008 URS Memorandum, July 2, 2008 DUSA Response Memo, April 30, 2008 Revised New Wells Background Report, and consideration of the May, 2008 University of Utah Study Final Report; the Executive Secretary has set GWCLs for each of the 38 constituents in each POC well, as follows:

Nutrients

Ammonia (as N) - GWCLs for Ammonia (as N) were calculated by either: 1) the fraction of the GWQS, be it a Class II (6.25 µg/L), or Class III (12.5 µg/L) aquifer, 2) mean plus two standard deviations ($\bar{x} + 2\sigma$), 3) Aitchison's Mean + two standard deviations (Aitchison $\bar{x} + 2\sigma$), or 4) Cohen's Mean + two standard deviations (Cohen's $\bar{x} + 2\sigma$). The revised GWCLs for Ammonia (as N) ranged from 0.21 mg/L (MW-15) to 7.0 mg/L (MW-24). None of the GWCLs for Ammonia (as N) accepted by the Executive Secretary in this proposed action are above the Utah GWQS.

Nitrate + Nitrite (as N) - GWCLs for Nitrate + Nitrite (as N) in 15 of the 22 POC wells were calculated by the fraction of the GWQS, be it a Class II (2.5 µg/L), or Class III (5.0 µg/L) aquifer. The other 7 wells were calculated by other methods, as shown in the table below:

Nitrate (as N) Exceptions		
Well	New GWCL	Calculated By
MW-2	0.12 µg/L	Highest Historical Value
MW-3	0.73 µg/L	$\bar{x} + 2\sigma$
MW-3A	1.3 µg/L	$\bar{x} + 2\sigma$
MW-15	0.27 µg/L	$\bar{x} + 2\sigma$
MW-19	2.83 µg/L	$\bar{x} + 2\sigma$
MW-26	0.62 µg/L	Cohen's $\bar{x} + 2\sigma$
MW-27	5.6 µg/L	$\bar{x} + 2\sigma$

During review of the New Wells Background Report and other reports, a Nitrate contaminant plume was identified by DRC staff in five monitoring wells in the mill site area, including wells: MW-30, MW-31, TW4-22, TW4-24, and TW4-25. Therefore, the GWCL for Nitrate in wells MW-30 and MW-31 in this Permit modification were set at the fraction of the GWQS, i.e., 2.5 and 5.0 µg/L for the Class II and III aquifers, respectively; rather than the GWCLs proposed by DUSA in these wells. None of the GWCLs for Nitrate + Nitrite (as N) accepted by the Executive Secretary in this proposed action are above the Utah GWQS.

The presence of this Nitrate contamination plume was brought to the attention of DUSA in a September 30, 2008 DRC letter. Shortly thereafter, DUSA agreed to investigate the source and extent of the contamination and submit a report to the DRC on or before January 4, 2010, for Executive Secretary review and approval. This agreement was formalized on January 28, 2009 in a Stipulated Consent Agreement signed by both parties. DUSA has identified a number of potential sources for the contamination, including potential offsite and historic sources. DUSA has noted that TW4-25 is located nearly one quarter of a mile upgradient of the Mill's tailings cells, suggesting that the plume has originated upgradient of the Mill's tailings cells.

Heavy Metals

Arsenic - the GWCLs for arsenic were calculated in the same way as the original March 8, 2005 Permit in each POC well, with some exceptions (see table below). Therefore, the GWCL for arsenic in the majority of the wells will remain at the fraction of the GWQS (50 µg/L), be it a Class II (12.5 µg/L), or Class III (25 µg/L) aquifer.

Arsenic Exceptions		
Well	New GWCL	Calculated By
MW-5	17 µg/L	Highest Historical Value
MW-11	15 µg/L	Highest Historical Value
MW-24	17 µg/L	Aitchison's $\bar{x} + 2\sigma$
MW-28	21 µg/L	$\bar{x} + 2\sigma$

None of the GWCLs for arsenic accepted by the Executive Secretary in this proposed action are above the Utah GWQS.

Beryllium - the GWCLs for beryllium were calculated in the same way as the original March 8, 2005 Permit in each POC well. Therefore, the GWCL for beryllium in all wells will remain at the fraction of the GWQS (4 µg/L), be it a Class II (1.0 µg/L), or Class III (2.0 µg/L) aquifer.

Cadmium - the GWCLs for cadmium were calculated in the same way as the original March 8, 2005 Permit in each POC well, with some exceptions (see table below). Therefore, the GWCL for cadmium in the majority of the wells will remain at the fraction of the GWQS (5 µg/L), be it a Class II (1.25 µg/L), or Class III (2.5 µg/L) aquifer.

Cadmium Exceptions		
Well	New GWCL	Calculated By
MW-1	4.2 µg/L	Highest Historical Value
MW-3	4.67 µg/L	Cohen's $\bar{x} + 2\sigma$
MW-3A	8.3 µg/L	Cohen's $\bar{x} + 2\sigma$
MW-5	2 µg/L	Poisson Limit
MW-12	7 µg/L	Highest Historical Value
MW-25	1.5 µg/L	$\bar{x} + 2\sigma$
MW-28	5.2 µg/L	$\bar{x} + 2\sigma$
MW-32	4.72 µg/L	Cohen's $\bar{x} + 2\sigma$

Footnote: **bold text** = GWCL that is greater than the State GWQS.

The cadmium GWCLs proposed in wells MW-3A, MW-12, and MW-28 are above the Utah GWQS of 5 µg/L. For the cadmium GWCL in well MW-3A (8.3 µg/L), the Executive Secretary believes this is acceptable after review of the University of Utah study, which showed that well MW-3A had a different geochemical signature than the tailing cells (see University Report, pp. 26 - 27). Additionally, well MW-3A is far downgradient of the tailing cells; therefore, it is highly unlikely that the cadmium concentrations seen in well MW-3A could be attributed to the tailing cells.

The cadmium GWCL proposed in well MW-12 is likely due to suspect data collected in the past sampling events, as cadmium concentrations have been non-detect in all sampling events, but one since 2nd Quarter 2005. However, the statistical methodology agreed to previously, leads the Executive Secretary to set this GWCL above the GWQS in this well. In the future, if additional data shows the situation has changed, the GWCL can be adjusted at that time.

Since groundwater sampling began in well MW-28 (2nd Quarter 2005), cadmium concentrations have been around 4.5 µg/L. Unfortunately, well MW-28 was not part of the University of Utah Study. However, the Background Ground Water Reports concluded that, the sample results for Cadmium in MW-28 are within the range established for the site, and the Executive Secretary

believes that the cadmium levels in well MW-28 are not likely caused by tailings cell wastewater, and is therefore proposing a GWCL that is slightly greater than the GWQS (5.0 µg/L). A new compliance schedule item was added at Part I.H.4 of the Permit that requires DUSA to perform a geochemical isotopic investigation in the monitoring wells and surface water sites that were not part of the July 2007 University of Utah Study. If the new groundwater isotopic study required by Part I.H.4 shows that groundwater quality in this well has been adversely affected by the mill operations, Division review and appropriate action will be taken.

Chromium - the GWCLs for chromium were calculated in the same way as the original March 8, 2005 Permit in each POC well. Therefore, the GWCL for chromium will remain at the fraction of the GWQS (100 µg/L), be it a Class II (25 µg/L), or Class III (50 µg/L) aquifer.

Cobalt - the GWCLs for cobalt were calculated in the same way as the original March 8, 2005 Permit in each POC well, with two exceptions (MW-28 and MW-32). Therefore, the GWCL for cobalt will remain at the fraction of the GWQS (730 µg/L), be it a Class II (182.5 µg/L), or Class III (365 µg/L) aquifer. The GWCLs proposed for cobalt in wells MW-28 (47 µg/L) and MW-32 (75.21 µg/L) were calculated by the mean plus two standard deviations ($\bar{x} + 2\sigma$). None of the GWCLs for cobalt proposed herein by the Executive Secretary are above the Utah GWQS.

Copper - the GWCLs for copper were calculated in the same way as the original March 8, 2005 Permit in each POC well. Therefore, the GWCL for copper will remain at the fraction of the GWQS (1,300 µg/L), be it a Class II (325 µg/L), or Class III (650 µg/L) aquifer.

Iron - the GWCLs for iron were calculated in the same way as the original March 8, 2005 Permit in each POC well, with some exceptions (see table below). Therefore, the GWCL for iron in the majority of the wells will remain at the fraction of the GWQS (11,000 µg/L), be it a Class II (2,750 µg/L), or Class III (5,500 µg/L) aquifer. The revised GWCLs for iron ranged from 81.7 µg/L (MW-27) to 14,060 µg/L (MW-32).

Iron Exceptions		
Well	New GWCL	Calculated By
MW-2	151.6 µg/L	Cohen's $\bar{x} + 2\sigma$
MW-3	427.13 µg/L	Cohen's $\bar{x} + 2\sigma$
MW-15	81.7 µg/L	Cohen's $\bar{x} + 2\sigma$
MW-18	414.68 µg/L	$\bar{x} + 2\sigma$
MW-24	4,162 µg/L	$\bar{x} + 2\sigma$
MW-26	2,675.83 µg/L	$\bar{x} + 2\sigma$
MW-28	299 µg/L	Cohen's $\bar{x} + 2\sigma$
MW-29	1,869 µg/L	$\bar{x} + 2\sigma$
MW-32	14,060 µg/L	$\bar{x} + 2\sigma$

The iron GWCL of 14,060 µg/L in well MW-32 is above the Utah GWQS of 11,000 µg/L. Well MW-32 has shown high iron concentrations since groundwater sampling began there in the 1st Quarter of 2005. These iron concentrations are not believed to be related to tailing cell wastewater, as uranium concentrations found in well MW-32 are among the lowest at the facility (5.26 µg/L). Additionally, there is a significant downward trend in iron in well MW-32. Therefore, the Executive Secretary believes that the iron levels in well MW-32 are not likely caused by tailings cell wastewater, and is therefore proposing a GWCL that is greater than the

GWQS (11,000 µg/L). The Background Ground Water Reports also noted that there is a statistically significant downward trend in iron in MW-32, and iron is relatively immobile except at very low pH and would be unlikely to indicate potential tailings cell seepage before other constituents, such as chloride and uranium. If the new groundwater isotopic study required by Part I.H.4 shows that groundwater quality in this well has been adversely affected by the mill operations, Division review and appropriate action will be taken.

Lead - the GWCLs for lead were calculated in the same way as the original March 8, 2005 Permit in each POC well, with two exceptions (MW-1 and MW-5). Therefore, the GWCL for lead will remain at the fraction of the GWQS (15 µg/L), be it a Class II (3.75 µg/L), or Class III (7.5 µg/L) aquifer. The GWCL for lead in wells MW-1 (5.59 µg/L) and MW-5 (4.1 µg/L) were calculated by the Poisson Limit. None of the GWCLs for lead accepted by the Executive Secretary are above the Utah GWQS.

Manganese - the proposed GWCLs for manganese exceed the Utah GWQS (800 µg/L) in 11 of 22 wells (see table below). For the remaining 11 wells, GWCLs were set at 400 µg/L and below using the fractions approach. The Background Reports showed the shallow aquifer at White Mesa has highly variable manganese concentrations, ranging from 61 µg/L (MW-30) to 7,507 µg/L (MW-24).

Manganese Exceptions		
Well	New GWCL	Calculated By
MW-3	4,233 µg/L	$\bar{x} + 2\sigma$
MW-3A	6,287 µg/L	$\bar{x} + 2\sigma$
MW-12	2,088.80 µg/L	$\bar{x} + 2\sigma$
MW-14	2,230.30 µg/L	$\bar{x} + 2\sigma$
MW-17	915.4 µg/L	$\bar{x} + 2\sigma$
MW-24	7,507 µg/L	$\bar{x} + 2\sigma$
MW-25	1,806 µg/L	$\bar{x} + 2\sigma$
MW-26	1,610 µg/L	Highest Historical Value
MW-28	1,837 µg/L	$\bar{x} + 2\sigma$
MW-29	5,624 µg/L	$\bar{x} + 2\sigma$
MW-32	5,594.9 µg/L	$\bar{x} + 2\sigma$

For the excess manganese GWCLs proposed in wells MW-3, MW-3A, MW-14, and MW-29 that are above the Utah GWQS of 800 µg/L, the Executive Secretary believes this is appropriate based on the University of Utah study, which showed that these wells had a different geochemical signature than the tailing cells wastewater (see University Report, pp. 26 - 27). Therefore, it is unlikely that the manganese concentrations seen in these wells could be attributed to the tailing cells.

Unfortunately, wells MW-12, MW-17, MW-24, MW-25, MW-26, MW-28, and MW-32 were not part of the University of Utah Study. A new compliance schedule item was added at Part I.H.4 of the Permit that requires DUSA to perform a geochemical isotopic investigation in the monitoring wells and surface water sites that were not part of the July 2007 University of Utah Study. In the meantime, the Executive Secretary believes it is unlikely that the concentrations found in these wells can be linked to tailing cell wastewater. If the new groundwater isotopic

study required by Part I.H.4 shows that groundwater quality at these wells have been adversely affected by the mill operations, Division review and appropriate action will be taken.

Mercury - the GWCLs for mercury were calculated in the same way as the original March 8, 2005 Permit in each POC well. Therefore, the GWCL for mercury will remain at the fraction of the GWQS (2.0 µg/L), be it a Class II (0.5 µg/L), or Class III (1.0 µg/L) aquifer.

Molybdenum - the GWCLs for molybdenum were calculated in the same way as the original March 8, 2005 Permit in each POC well, with two exceptions (MW-14 and MW-15). Therefore, the GWCL for molybdenum will remain at the fraction of the GWQS (40 µg/L), be it a Class II (10 µg/L), or Class III (20 µg/L) aquifer. The GWCL for molybdenum in wells MW-14 (25 µg/L) and MW-15 (30 µg/L) were calculated by the Highest Historical Value. None of the GWCLs for molybdenum proposed herein by the Executive Secretary are above the Utah GWQS.

Nickel - the GWCLs for nickel were calculated in the same way as the original March 8, 2005 Permit in each POC well, with some exceptions (see table below). Therefore, the GWCL for nickel in the majority of the wells will remain at the fraction of the GWQS (100 µg/L), be it a Class II (25 µg/L), or Class III (50 µg/L) aquifer.

Nickel Exceptions		
Well	New GWCL	Calculated By
MW-2	60 µg/L	Highest Historical Value
MW-3	100 µg/L	Highest Historical Value
MW-3A	105 µg/L	Aitchison's $\bar{x} + 2\sigma$
MW-5	44.1 µg/L	Poisson Limit
MW-11	46.2 µg/L	Highest Historical Value
MW-12	60 µg/L	Highest Historical Value
MW-15	97 µg/L	Highest Historical Value
MW-32	94 µg/L	Highest Historical Value

The nickel GWCL of 105 µg/L in well MW-3A is above the Utah GWQS of 100 µg/L. However, the Executive Secretary believes this is appropriate because the University Study showed that well MW-3A had a different isotopic geochemical signature than the tailing cells wastewater (see University Report, pp. 26 - 27). Additionally, well MW-3A is far downgradient of the tailing cells; therefore it is highly unlikely that the nickel concentrations seen in well MW-3A could be attributed to the tailing cells.

Selenium - the GWCLs for selenium were calculated in the same way as the original March 8, 2005 Permit in each POC well, with some exceptions (see table below). Therefore, the GWCL for selenium in the majority of the wells will remain at the fraction of the GWQS (50 µg/L), be it a Class II (12.5 µg/L), or Class III (25 µg/L) aquifer).

Selenium Exceptions		
Well	New GWCL	Calculated By
MW-2	26.6 µg/L	Cohen's $\bar{x} + 2\sigma$
MW-3	37 µg/L	Highest Historical Value
MW-3A	89 µg/L	$\bar{x} + 2\sigma$

MW-15	128.7 µg/L	Cohen's $\bar{x} + 2\sigma$
MW-19	28.96 µg/L	Cohen's $\bar{x} + 2\sigma$
MW-28	11.1 µg/L	Aitchison's $\bar{x} + 2\sigma$
MW-30	34 µg/L	$\bar{x} + 2\sigma$
MW-31	71 µg/L	$\bar{x} + 2\sigma$

The selenium GWCLs in wells MW-3A, MW-15, and MW-31 are above the Utah GWQS of 50 µg/L. However, the Executive Secretary believes this is appropriate because the University Study showed that wells MW-3A, MW-15, and MW-31 had different isotopic geochemical signatures than the tailing cells wastewater (see University Report, pp. 26 - 27). Therefore, it is unlikely that the selenium concentrations seen in these wells could be attributed to the tailing cells.

Silver - the GWCLs for silver were calculated in the same way as the original March 8, 2005 Permit in each POC well. Therefore, the GWCL for silver will remain at the fraction of the GWQS (100 µg/L), be it a Class II (25 µg/L), or Class III (50 µg/L) aquifer.

Thallium - the GWCLs for thallium were calculated in the same way as the original March 8, 2005 Permit in each POC well, with some exceptions (see table below). Therefore, the GWCL for thallium in the majority of the wells will remain at the fraction of the GWQS (2 µg/L), be it a Class II (0.5 µg/L), or Class III (1.0 µg/L) aquifer.

Thallium Exceptions		
Well	New GWCL	Calculated By
MW-3	1.6 µg/L	Highest Historical Value
MW-3A	1.4 µg/L	Aitchison's $\bar{x} + 2\sigma$
MW-18	1.95 µg/L	Cohen's $\bar{x} + 2\sigma$
MW-19	2.1 µg/L	Cohen's $\bar{x} + 2\sigma$
MW-25	1.1 µg/L	$\bar{x} + 2\sigma$
MW-29	1.2 µg/L	Highest Historical Value

The thallium GWCL of 2.1 µg/L in well MW-19 is slightly above the Utah GWQS of 2.0 µg/L. The Executive Secretary believes this is appropriate because the University Study showed that there was no isotopic evidence that well MW-19, which is upgradient of the Mill site, had been exposed to tailing cell wastewater.

Tin - the GWCLs for tin were calculated in the same way as the last Permit modification (March 17, 2008) in each POC well. Therefore, the GWCL for tin will remain at the fraction of the GWQS (17,000 u/l), be it a Class II (4,250 µg/L), or Class III (8,500 µg/L) aquifer.

Uranium - the proposed GWCLs for uranium exceed the Utah GWQS (30 µg/L) in 9 of 22 wells (see table below). The remaining 13 wells GWCL are set at 22 µg/L and below. The Background Reports showed the shallow aquifer at White Mesa has highly variable uranium concentrations, ranging from 4.9 µg/L (MW-28) to 98 µg/L (MW-14).

Uranium Exceptions		
Well	New GWCL	Calculated By
MW-3	47.32 µg/L	$\bar{x} + 2\sigma$
MW-3A	35 µg/L	$\bar{x} + 2\sigma$
MW-14	98 µg/L	Highest Historical Value
MW-15	65.7 µg/L	Highest Historical Value
MW-17	46.66 µg/L	$\bar{x} + 2\sigma$
MW-18	55.1 µg/L	$\bar{x} + 2\sigma$
MW-23	32 µg/L	$\bar{x} + 2\sigma$
MW-26	41.8 µg/L	$\bar{x} + 2\sigma$
MW-27	34 µg/L	$\bar{x} + 2\sigma$

The uranium GWCLs in wells MW-3, MW-3A, MW-14, MW-15, and MW-18 are above the Utah GWQS of 30 µg/L. However, the Executive Secretary believes this is appropriate because the University Study showed that these wells had different isotopic geochemical signatures than the tailing cells wastewater (see University Report, pp. 26 - 27). Therefore, it is unlikely that the uranium concentrations seen in these wells could be attributed to the tailing cells.

The uranium GWCL of 34 µg/L in well MW-27 is above the Utah GWQS of 30 µg/L. Although the University Study showed that significant and measurable quantities of tritium is present in well MW-27, indicating that recharge to the aquifer from the wildlife ponds is occurring, there was no isotopic evidence that well MW-27 had been exposed to tailing cell wastewater.

Unfortunately, wells MW-17, MW-23, and MW-26 were not part of the University of Utah Study. A new compliance schedule item was added at Part I.H.4 of the Permit that requires DUSA to perform a geochemical isotopic investigation in the monitoring wells and surface water sites that were not part of the July 2007 University of Utah Study. In the meantime, the Executive Secretary believes it is unlikely that the concentrations of uranium found in MW-17, MW-23, and MW-26 can be linked to tailing cell wastewater. If the new groundwater isotopic study required by Part I.H.4 shows that groundwater quality at these wells have been adversely affected by the mill operations, Division review and appropriate action will be taken.

Vanadium - the GWCLs for vanadium were calculated in the same way as the original March 8, 2005 Permit in each POC well, with one exception (MW-15). Therefore, the GWCL for Vanadium will remain at the fraction of the GWQS (60 µg/L), be it a Class II (15 µg/L), or Class III (30 µg/L) aquifer. The GWCL for vanadium in well MW-15 was calculated by the Highest Historical Value, or 40 µg/L. None of the GWCLs for vanadium proposed by the Executive Secretary in this action are above the Utah GWQS.

Zinc - the GWCLs for zinc were calculated by the mean plus two standard deviations ($\bar{x} + 2\sigma$), Cohen's $\bar{x} + 2\sigma$, or by the fraction of the GWQS (5,000 µg/L), be it a Class II (1,250 µg/L), or Class III (2,500 µg/L) aquifer. None of the GWCLs for zinc proposed by the Executive Secretary in this action are above the Utah GWQS.

Radiologics

Gross Alpha - GWCLs for gross alpha in 12 of the 22 POC wells were calculated by the fraction of the GWQS (15 pCi/L), be it a Class II (3.75 pCi/L), or Class III (7.5 pCi/L) aquifer. The other

10 wells were calculated by other methods, as shown in the table below:

Gross Alpha Exceptions		
Well	New GWCL	Calculated By
MW-2	3.2 pCi/L	Cohen's $\bar{x} + 2\sigma$
MW-3	1.0 pCi/L	Highest Historical Value
MW-17	2.8 pCi/L	Highest Historical Value
MW-19	2.36 pCi/L	Cohen's $\bar{x} + 2\sigma$
MW-23	2.86 pCi/L	Aitchison's $\bar{x} + 2\sigma$
MW-26	4.69 pCi/L	$\bar{x} + 2\sigma$
MW-27	2.0 pCi/L	Aitchison's $\bar{x} + 2\sigma$
MW-28	2.42 pCi/L	Aitchison's $\bar{x} + 2\sigma$
MW-29	2.0 pCi/L	Aitchison's $\bar{x} + 2\sigma$
MW-32	3.33 pCi/L	$\bar{x} + 2\sigma$

None of the GWCLs for gross alpha proposed by the Executive Secretary in this action are above the Utah GWQS.

Volatile Organic Compounds (VOCs)

Acetone - the GWCLs for acetone were calculated in the same way as the original March 8, 2005 Permit in each POC well. Therefore, the GWCL for acetone will remain at the fraction of the GWQS (700 µg/L), be it a Class II (175 µg/L), or Class III (350 µg/L) aquifer.

Benzene - the GWCLs for benzene were calculated in the same way as the original March 8, 2005 Permit in each POC well. Therefore, the GWCL for benzene will remain at the fraction of the GWQS (5 µg/L), be it a Class II (1.25 µg/L), or Class III (2.5 µg/L) aquifer.

2-Butanone (MEK) - the GWCLs for 2-Butanone (MEK) were calculated in the same way as the original March 8, 2005 Permit in each POC well. Therefore, the GWCL for 2-Butanone (MEK) will remain at the fraction of the GWQS (4,000 µg/L), be it a Class II (1,000 µg/L), or Class III (2,000 µg/L) aquifer.

Carbon Tetrachloride - the GWCLs for carbon tetrachloride were calculated in the same way as the original March 8, 2005 Permit in each POC well. Therefore, the GWCL for carbon tetrachloride will remain at the fraction of the GWQS (5 µg/L), be it a Class II (1.25 µg/L), or Class III (2.5 µg/L) aquifer.

Chloroform - the GWCLs for chloroform were calculated in the same way as the original March 8, 2005 Permit in each POC well, with one exception (MW-26). Therefore, the GWCL for chloroform will remain at the fraction of the GWQS (70 µg/L), be it a Class II (17.5 µg/L), or Class III (35 µg/L) aquifer.

Well MW-26 is part of the chloroform investigation and cleanup, and is currently operated as a pumping well for chloroform removal. The Executive Secretary proposes that the well MW-26 chloroform GWCL be set at the State GWQS or 70 µg/L. This is consistent with the on-going investigation and cleanup process at the facility.

Chloromethane - the GWCLs for chloromethane were calculated in the same way as the original March 8, 2005 Permit in each POC well, with some exceptions (see table below). Therefore, the GWCL for chloromethane in the majority of the wells will remain at the fraction of the GWQS (30 µg/L), be it a Class II (15 µg/L), or Class III (30 µg/L) aquifer.

Chloromethane Exceptions		
Well	New GWCL	Calculated By
MW-23	5.7 µg/L	$\bar{x} + 2\sigma$
MW-28	4.6 µg/L	$\bar{x} + 2\sigma$
MW-31	6.1 µg/L	$\bar{x} + 2\sigma$
MW-3A	9.4 µg/L	$\bar{x} + 2\sigma$

None of the GWCLs for chloromethane accepted by the Executive Secretary are above the Utah GWQS.

Dichloromethane - the GWCL for dichloromethane was calculated in the same way as the original March 8, 2005 Permit in each POC well, with one exception (MW-26). Therefore, the GWCL for dichloromethane will remain at the fraction of the GWQS (5 µg/L), be it a Class II (1.25 µg/L), or Class III (2.5 µg/L) aquifer.

Well MW-26 is part of the chloroform investigation and cleanup, and is currently operated as a pumping well for chloroform removal. Dichloromethane is a degradation product of chloroform. In this Permit modification, the Executive Secretary recommends that the well MW-26 dichloromethane GWCL be set at the State GWQS or 5 µg/L. This is consistent with the on-going aquifer cleanup project.

Naphthalene - the GWCLs for naphthalene were calculated in the same way as the original March 8, 2005 Permit in each POC well. Therefore, the GWCL for naphthalene will remain at the fraction of the GWQS (100 µg/L), be it a Class II (25 µg/L), or Class III (50 µg/L) aquifer.

Tetrahydrofuran (THF) - has been seen in five historic monitoring wells, including: MW-1, MW-2, MW-3, MW-5, and MW-12. In the October 2007 Revised Background Ground Water Quality Report, DUSA proposed GWCLs for THF in these wells at concentrations above the Permit GWCL and/or the Utah GWQS. In the Background Ground Water Reports and in previous submittals by DUSA, DUSA has taken the position that the THF in these wells is due to glues that were used in the completion of the casings for those wells. The Executive Secretary has denied this proposal in this action because THF is not a naturally occurring constituent in groundwater, and DUSA has not, to date, provided corroborating evidence to the Executive Secretary that the THF is caused by glues used in the completion of the wells. Therefore, the GWCL in each POC well was set at the fraction of the GWQS (46 µg/L), be it a Class II (11.5 µg/L), or Class III (23µg/L) aquifer.

Toluene - the GWCLs for toluene were calculated in the same way as the original March 8, 2005 Permit in each POC well. Therefore, the GWCL for toluene will remain at the fraction of the GWQS (1,000 µg/L), be it a Class II (250 µg/L), or Class III (500 µg/L) aquifer.

Xylenes (total) - the GWCLs for xylenes (total) were calculated in the same way as the original March 8, 2005 Permit in each POC well. Therefore, the GWCL for xylenes (total) will remain at

the fraction of the GWQS (10,000 µg/L), be it a Class II (2,500 µg/L), or Class III (5,000 µg/L) aquifer.

Others

Field pH - the GWCLs for field pH were calculated using the Permit GWCL (6.5 - 8.5 s.u.) or the mean minus two standard deviations ($\bar{x} - 2\sigma$). The field pH GWCL in wells MW-28 (6.1 - 8.5 s.u.) and MW-29 (6.46 - 8.5 s.u.) exceed the Utah GWQS at the lower end of the range.

For well MW-29, the Executive Secretary believes this action is appropriate because the University Study showed that well MW-29 had a different isotopic geochemical signature than the tailing cells wastewater (see University Report, pp. 26 - 27). Therefore, it is unlikely that the low pH concentrations seen in well MW-29 could be attributed to the tailing cells.

Unfortunately, well MW-28 was not part of the University of Utah Study. A new compliance schedule item was added at Part I.H.4 of the Permit that requires DUSA to perform a geochemical isotopic investigation in the monitoring wells and surface water sites that were not part of the July 2007 University of Utah Study. The Executive Secretary believes it is unlikely that the low pH concentrations found in well MW-28 can be linked to tailing cell wastewater. If the new groundwater isotopic study required by Part I.H.4 shows that groundwater quality in this well has been adversely affected by the mill operations, Division review and appropriate action will be taken.

Fluoride - the GWCLs for fluoride were calculated by the mean plus two standard deviations ($\bar{x} + 2\sigma$) or fraction of the GWQS (4 mg/L), be it a Class II (1.0 mg/L), or Class III (2.0 mg/L) aquifer. None of the GWCLs for fluoride accepted by the Executive Secretary are above the Utah GWQS.

Chloride - there was no GWQS set for chloride in the original March 8, 2005 Permit, primarily because the U.S EPA has not determined an appropriate drinking water health standard for this contaminant. However, as a part of the DUSA's background groundwater quality reports dated October 2007 (existing wells) and April 30, 2008 (new wells), DUSA proposed a GWCL be set at each POC well for chloride. The Executive Secretary believes this is appropriate given the presence of chloride in the tailings wastewater and its extremely high groundwater mobility. In the DUSA reports referenced above, the chloride GWCLs were calculated by the Highest Historical Value or mean plus two standard deviations ($\bar{x} + 2\sigma$); ranging from 10 mg/L (MW-23) to 143 mg/L (MW-31).

During review of the 3rd Quarter, 2008 Chloroform and Tailings Cell Groundwater Reports, it was identified by DRC Staff that certain wells associated with the nitrate plume also showed high concentrations of chloride ranging from 113 mg/L (TW4-19) to 1,180 mg/L (TW4-24) in the southwest part of the mill site. Further, some of the new tailings cell monitoring wells also shows elevated chloride concentrations, e.g., MW-28 (99 mg/L), MW-30 (121 mg/L), and MW-31 (124 mg/L). Therefore, it appears there may be a chloride plume that co-exists with the nitrate plume. However, because there is not a corresponding human health or Ground Water Quality Standard for chloride, the Executive Secretary is unable to determine if the chloride concentrations in these tailings cell wells pose any potential for health risk to the public. Without such a health limit, a determination was made to set the corresponding chloride GWCLs in these wells based on the mean plus two standard deviation approach proposed in the DUSA

New Well Background Groundwater Quality Report. This resulted in chloride GWCLs of 105 mg/L (MW-28), 128 mg/L (MW-30), and 143 mg/L (MW-31), see Draft Permit, Table 2.

There is a possibility that the co-existence of the chloride and nitrate plumes could cause the DUSA statistics (upon which the chloride GWCLs in these three wells are based) to be biased slightly higher than what otherwise may have been calculated. However, it was noted that in the event that the apparent chloride and nitrate plumes are shown to have a common source, that it is likely that the chloride concentrations in wells MW-28, MW-30 and MW-31, will increase above the proposed GWCLs; due to the fact that a much higher concentration exists in upgradient well TW4-24 (1,180 mg/L). Under such circumstances two things would happen: 1) non-compliance would be triggered and the Executive Secretary would call for a contaminant investigation report under UAC R317-6-6.15(D), and 2) because nitrate and chloride are both mobile groundwater contaminants, it is likely that any corrective action for the nitrate plume can be adjusted to adequately address the chloride problem. For these reasons, the Executive Secretary decided to accept the chloride GWCLs proposed for these wells by DUSA.

Sulfate - there was no GWQS set for sulfate in the original March 8, 2005 Permit, for the same reason as stated above, the lack of an EPA drinking water standard. However, as part of the DUSA's background groundwater quality reports dated October 2007 (existing wells) and April 30, 2008 (new wells), DUSA proposed a GWCL be set at each POC well for sulfate. Again, the Executive Secretary believes this is appropriate given the extremely high sulfate concentrations in the tailings wastewater and its extremely high groundwater mobility. In the DUSA reports referenced above, the sulfate GWCLs were calculated by the Highest Historical Value or mean plus two standard deviations ($\bar{x} + 2\sigma$); ranging from 532 mg/L (MW-31) to 3,663 mg/L (MW-3).

TDS - there was no GWQS set for TDS in the original March 8, 2005 Permit. After review of the DUSA's background groundwater quality reports dated October 2007 (existing wells) and April 30, 2008 (new wells) a GWCL was set at each POC well for TDS. The TDS GWCLs were calculated by the Highest Historical Value or mean plus two standard deviations ($\bar{x} + 2\sigma$); ranging from 1,075 mg/L (MW-27) to 6,186 mg/L (MW-3).

Routine Groundwater Compliance Monitoring Frequency - Quarterly Monitoring, Part I.E.1(b); Routine Groundwater Compliance Monitoring - Semi-annual Monitoring, Part I.E.1(c)

Routine groundwater quality monitoring is commonly done on a quarterly basis (4-times/year). However, the Executive Secretary may allow a reduced frequency of routine groundwater sampling if site specific groundwater conditions warrant [see UAC R317-6-6.16(A)(2)]. For certain sites where groundwater velocities have been found to be low (e.g., one to two feet per year), the Executive Secretary has approved a semi-annual sampling frequency (2-times/year) in order to avoid statistical problems such as auto-correlation, and allow a better measure of natural groundwater quality variations.

As described in the DUSA Ground Water Quality Discharge Permit - December 1, 2004 Statement of Basis, there are two different frequencies of routine groundwater monitoring at the White Mesa Mill, as follows:

- Semi-annual (2-times/year) where groundwater velocity is less than 10 feet/year, and
- Quarterly (4-times/year) where groundwater velocity is equal to or greater than 10 feet/year.

Part I.H.2 of the Permit required DUSA to submit a Revised Hydrogeologic Report after the installation of the eight new compliance monitoring wells (MW-23, MW-24, MW-25, MW-27, MW-28, MW-29, MW-30, and MW-31), as required by Part I.H.1. The new wells were installed during May 2005 and DUSA submitted the Revised Hydrogeologic Report on August 23, 2005. The Revised Hydrogeologic Report was to include: 1) hydrogeologic data from each of the eight new wells installed, 2) aquifer test results to determine local hydraulic conductivity at these eight wells, and existing well MW-32 (formerly TW4-17), and 3) the calculation of linear groundwater velocity for all nine wells.

After review of the Revised Hydrogeologic Report, DRC staff found that DUSA provided aquifer permeability data and average linear velocity calculations for six of the eight new wells. Of these six, three were shown to have average linear velocities of greater than 10 feet/year, including: MW-25 (14.5 feet/year), MW-30 (12.9 feet/year), and MW-31 (10.6 feet/year). As a result, the Executive Secretary has decided that these three wells should be sampled on a quarterly basis (see November 16, 2007 DRC Memorandum, Table 1), as set forth in Part I.E.1(b).

The Revised Hydrogeologic Report did not include any DUSA calculation of average linear groundwater velocities for wells MW-24 and MW-3A. In the report, DUSA explained that: 1) limited water in well MW-24 prevented the determination of aquifer permeability data needed, and 2) no average linear groundwater velocity for well MW-3A was calculated due to its close proximity to well MW-3 (within 10 feet); which DUSA determined previously to be 3.6 feet/year.

In the case of well MW-24, where DUSA failed to provide aquifer permeability and velocity information, the Executive Secretary has decided to assign a quarterly sampling frequency in Part I.E.1(a). This approach is conservative, in that it provides more protection of groundwater thru added sample frequency. In the event that DUSA provides the necessary information, the Executive Secretary may reconsider this decision and modify the Permit as needed.

For well MW-3A, the Executive Secretary agrees that its close proximity to well MW-3 can be used as a guide, and semi-annual monitoring frequency has been assigned at Part I.E.1(c).

All other existing new DUSA tailings cell monitoring wells were found with local groundwater velocities of less than 10 feet/year and will be sampled on a semi-annual basis, see Part I.E.1(c). Average linear groundwater velocity for well MW-32 had previously been estimated by DRC staff at 19 feet/year (see November 23, 2004 DRC Memorandum, Table 1); based on aquifer testing in two nearby wells. Therefore, well MW-32 was required to be sampled on a quarterly basis in the original Permit. The August 23, 2005 DUSA Revised Hydrogeologic Report tested aquifer permeability in well MW-32 and calculated a liner velocity of 3.3 feet/year (see November 16, 2007 DRC Memorandum, Table 1). Therefore, the Executive Secretary has re-assigned a semi-annual sampling frequency to well MW-32 in Parts I.E.1(b) and I.E.1(c) of the Permit.

Wells with Parameters in Out-of-Compliance Status

Accelerated groundwater monitoring begins when any contaminant in any monitoring well exceeds its respective GWCL (see Part I.G.1). As defined in Part I.G.2 of the Permit, out-of-compliance status exists when two consecutive samples from a well exceeds the GWCL in Table 2 of the Permit.

After review of the October 26, 2007 and April 30, 2008 DUSA background groundwater quality reports and Executive Secretary approval of background concentrations, discussed above, there appear to be a few wells with parameters that will continue to exceed the new GWCLs; therefore, these wells will remain in accelerated sampling and out-of-compliance status and are explained below:

Tetrahydrofuran in MW-1

The original Permit provided DUSA the opportunity to develop a plan and complete a study to explain the occurrence of THF, a man-made chemical, in five historic monitoring wells, including: MW-1, MW-2, MW-3, MW-5, and MW-12. To this end, DUSA submitted plans dated April 7 and December 15, 2005 for Executive Secretary review. Said study set out to demonstrate that the THF contamination was caused by PVC solvents and glues used in the original well construction. After completion of the study, which included a series of THF sampling and analysis at well MW-2 during a well purging event, the June 26, 2007 DUSA report concluded that the sample results were inconclusive, because no THF was found in MW-2 and the basis for the study in that well was not satisfied. Hence, the DUSA report provided no cause for the THF contamination. In a letter dated December 12, 2007, the Executive Secretary agreed with DUSA and advised the company that, in the absence of meaningful study results, that routine compliance monitoring for THF would be required for the foreseeable future at all POC wells at the facility. Later, the Executive Secretary removed the Part I.H.18 study requirement from the Permit.

Because THF is a man-made chemical, the GWCL in all the POC wells in Table 2 of the Permit was set at the fraction of the GWQS, be it a Class II (11.5 µg/L), or Class III (23 µg/L) aquifer. At well MW-1, the THF GWCL has been exceeded in every groundwater sampling event from 2nd Qtr 2005 to 4th Qtr 2007. Therefore, well MW-1 will remain in out-of-compliance status for THF and is required to be sampled on a quarterly basis until the Executive Secretary determines otherwise.

Chloroform in MW-26

Well MW-26 is part of the chloroform investigation and cleanup, and is currently operated as a pumping well for chloroform removal. The Executive Secretary proposes that the well MW-26 chloroform GWCL be set at the State GWQS or 70 µg/L. This is consistent with the on-going investigation and cleanup process at the facility. Because of the existing contamination, this GWCL has been exceeded in every DUSA groundwater sampling event since sampling began in the 2nd Qtr 2005. Therefore, well MW-26 will remain in out-of-compliance status for chloroform and is required to be sampled on a monthly basis until the groundwater concentrations fall below the GWQS. It should be noted that, because MW-26 is a pumping well for chloroform removal, concentrations of all constituents in that well are subject to potential variation over time as a result of the pumping activity. This will be taken into account by the Executive Secretary in determining compliance for this well.

Dichloromethane in MW-26

Well MW-26 is part of the chloroform investigation and cleanup, see discussion above. Dichloromethane is a degradation product of chloroform. In this Permit modification, the Executive Secretary recommends that the well MW-26 dichloromethane GWCL be set at the State GWQS or 5 µg/L. Again, this is consistent with the on-going aquifer cleanup project. This GWCL has been exceeded in every ground water sampling event since sampling began in the 2nd Qtr 2005. Therefore, well MW-26 will remain in out-of-compliance status for dichloromethane

and is required to be sampled on a monthly basis until the groundwater concentrations fall below the GWQS.

Nitrate + Nitrite (as N) in Wells MW-30 and MW-31

As part of the April 30, 2008 Revised Background Ground Water Quality Report, DUSA proposed a GWCL for Nitrate + Nitrite (as Nitrogen) [hereafter Nitrate] in wells MW-30 and MW-31 that was above the State GWQS (10 mg/L) [ibid., Table 10]. During review of the New Wells Background Report and other reports, a Nitrate contaminant plume was identified by DRC staff in five monitoring wells in the mill site area, including wells: MW-30, MW-31, TW4-22, TW4-24, and TW4-25. Chloroform well TW4-25 is located upgradient of the Mill's tailings cells.

On September 30, 2008, the Executive Secretary issued a request for a voluntary plan and schedule for DUSA to investigate and remediate this Nitrate contamination. On November 19, 2008 DUSA submitted a plan and schedule prepared by INTERA, Inc., which identified a number of potential sources for the contamination, including several potential historic and offsite sources. On January 27, 2009, the Executive Secretary and DUSA signed a Stipulated Consent Agreement by which DUSA agreed to conduct an investigation of the Nitrate contamination, determine the sources of pollution, and submit a report by January 4, 2010. After review and approval of this report, the Executive Secretary will determine if a groundwater corrective action plan is required. Until completion of this report and Executive Secretary approval, it would be premature to set any Nitrate GWCL in excess of the GWQS.

Therefore, the GWCL for Nitrate in wells MW-30 and MW-31 in this Permit modification were set at the fraction of the GWQS, i.e., 2.5 and 5.0 µg/L for the Class II and III aquifers, respectively. Historically, the Nitrate concentrations in both of these wells have exceeded the GWCL in every groundwater sampling event since sampling began in the 2nd Qtr 2005. Therefore, the Executive Secretary expects that wells MW-30 and MW-31 will remain in accelerated sampling and out-of-compliance status for Nitrate for the foreseeable future.

Uranium in MW-26

In the October 26, 2007 Background Report, DUSA calculated the uranium background concentration in well MW-26 on the mean plus two standard deviations ($\bar{x} + 2\sigma$), as 41.8 µg/L, which is above the State GWQS (30 µg/L). This DUSA proposal was based on groundwater quality data collected through August 2007. However, there have been recent groundwater sampling events where consecutive uranium exceedances have been seen in well MW-26; 59.2 µg/L in February 2008 and 46.3 µg/L in March 2008. Therefore, it is possible that MW-26 will be in accelerated monitoring and out-of compliance status shortly after execution of the Permit. Because well MW-26 was not included in the recent University of Utah study, it is unclear if the uranium concentrations seen in well MW-26 are the product of the same processes responsible for the long-term increasing trends seen existing wells MW-3, MW-14, and MW-15, as discussed above. A new Compliance Schedule Item has been added at Part I.H.4 of the Permit and requires DUSA to conduct a groundwater study similar to the July 2007 University of Utah Study for the monitoring wells and surface water sites that were not part of the University of Utah Study. After DRC review of the associated report, the Executive Secretary will determine the source/origin of the uranium concentrations in well MW-26. For more information on the groundwater investigation, see discussion on Part I.H.4, below.

Manganese in MW-14

In the October 26, 2007 DUSA Background Report, the manganese background concentration in well MW-14 was calculated by the mean plus two standard deviations ($\bar{x} + 2\sigma$), as 2,230.30 $\mu\text{g/L}$, which is in excess of the GWQS (800 $\mu\text{g/L}$). This proposed GWCL was based on groundwater data collected through August 2007. However, in every groundwater sampling event after August 2007, well MW-14 has had manganese concentrations that exceed the proposed GWCL. Therefore, the Executive Secretary anticipates that future sampling could place well MW-14 in accelerated sampling and out-of compliance status, as per Part I.G.2.

However, the recent University of Utah Study indicates that groundwater in well MW-14 is older in age (lower tritium signature) and more indicative of upgradient groundwater found in well MW-18 rather than the younger water from the wildlife ponds (higher tritium signature). This is substantiated by tritium and stable deuterium / oxygen-18 geochemical evidence from the recent University of Utah Study, as presented below:

Summary of Selected University of Utah Groundwater Isotopic Results ⁽¹⁾

		Water Source	Tritium [TU ⁽³⁾]	δ Deuterium (‰) ⁽⁴⁾	δ Oxygen-18 (‰) ⁽⁵⁾
Surface Water	North Wildlife Ponds	WP2 ⁽²⁾	5.98	-45	-1.3
	South Wildlife Ponds	WP3	5.94	-60	-5.3
	Tailings Cell 3	TC3	6.01 (7.24) ⁽⁶⁾	-12	4.9
Ground Water	Upgradient of Tailings Cells	MW-18 (shallow)	<0.3	-103	-13.7
		MW-18 (deep)	0.05	-107	-13.9
	Downgradient of Tailings Cells	MW-14 (shallow)	0.36	-110	-13.8
		MW-14 (deep)	<0.3	-112	-13.9

Footnotes:

- 1) From May, 2008 University of Utah isotopic groundwater geochemistry study received via email from Dr. Kip Solomon on May 18, 2008, Tables 4 (tritium) and 10.
- 2) WP2 = the DUSA northern wildlife pond located near the northeast corner of the White Mesa mill site area, see University of Utah report, Figure 1. WP3 = south wildlife ponds.
- 3) TU = a standard tritium unit, or 1 tritiated molecule of water (³H¹HO) in 1E+18 molecules of H₂O.
- 4) Deuterium is a stable heavy isotope of hydrogen, ²H. The delta or δ value represents the amount of deviation in the ratio of ²H/¹H in the sample, as compared to a global reference sample of water.
- 5) Oxygen-18 is a stable heavy isotope of oxygen, ¹⁸O. The δ value represents the amount of deviation in the ratio of ¹⁸O/¹⁶O in the sample, as compared to a global reference sample of water.
- 6) A second or repeat analysis of tailings cell sample TC3 had a tritium concentration of 7.24 +/- 0.55 TU.

As a result of this isotopic evidence, the Executive Secretary has determined that the manganese concentrations in well MW-14 are most likely natural, and not caused by tailings cell leakage. It is therefore appropriate to set a GWCL at a concentration that is in excess of the 800 $\mu\text{g/L}$ GWQS.

However, as per Part I.G.2 of the Permit, accelerated sampling for manganese in well MW-14 could be required after two consecutive samples are discovered in excess of the GWCL. If this were the case, the Executive Secretary would expect DUSA to provide definitive evidence to confirm and verify how the current geochemical conditions are equivalent to those found in 2007 by the University of Utah.

MINOR PERMIT CHANGES

Groundwater Monitoring: Monitoring Well MW-3A, Part I.C, Table 2

After reviewing the DUSA Monitor Well MW-3 Verification, Retrofit or Re-construction Report that DUSA submitted on August 8, 2005, the DRC concluded in an April 25, 2007 DRC Findings and Request for Information Letter (RFI), that concentration comparison between wells MW-3 and MW-3A appeared inconsistent and made it difficult to come to any conclusions concerning the data that would help determine which well has the best screen placement for groundwater monitoring purposes. Therefore, quarterly sampling must continue in both wells until sufficient data is available and the DRC can make a conclusion regarding the effects of partial well penetration and screen length.

DUSA failed to sample well MW-3A for all constituents during the 1st and 3rd quarters of 2008. Therefore, well MW-3A has been added as a POC well and will be sampled on a semi-annual sampling frequency (2-times/year).

Tailings Cells 2 and 3 Slimes Drain Requirements: Performance Standards [Part I.D.3(b)], Monitoring Requirements [Part I.E.7(b)], and Reporting [Part I.F.11]

- in May 2007, the DRC approved a DUSA DMT Monitoring Plan that outlined monthly slimes drain recovery head testing that would be conducted for at least 90-hours and achieve a stable water level condition. This monitoring program formed the basis for the annual average head calculations (Equation 1) that were added to the Permit in March, 2008. The first DUSA report related to this matter was submitted by email on March 2, 2009 (4th Quarter 2008 DMT Performance Standard Monitoring Report).

DRC review of this and other previous DUSA quarterly DMT reports have found significant problems in the monthly slimes drain recovery tests, including many tests failed to run for at least 90-hours, and achieve steady or stable water level conditions at the end of the tests. From this review, the DRC concluded that none of the monthly recovery data collected in 2007, and only two monthly tests collected in 2008 met the 90-hour duration and the stable water level criteria. As a result, it is clear that any averaging of annual recovery head would be significantly biased by the large amount of unreliable data from both these years. Calculation errors were also found in the 4th Quarter, 2008 DUSA DMT Monitoring Report suggesting that inattention was apparent in its preparation. Details on these agency findings are found in a March 30, 2009 DRC Memorandum.

As a result of these findings, the Executive Secretary has decided to clarify the Permit and add new requirements in order to improve the monthly recovery test data collection process and reporting. These changes include:

- Specific wording to mandate that each monthly test be run for at least 90-hours, and achieve a stable water level condition [Part I.D.3(b)],
- Minor reference changes in the monitoring requirements in Part I.E.7(b) to mandate that at least 12 monthly tests be conducted each year that meet the test performance standards in Part I.D.3, and
- Additional reporting requirements, including a quality assurance evaluation and data validation for both the data collected, and the related calculations (Part I.F.11).

Mill Site Chemical Reagent Storage, Part I.D.3(g); Completion of Compliance Item 16, Revised Stormwater Best Management Practices (SBMP) Plan, Part I.H.16

The SBMP Plan (dated May 15, 2008) required under the compliance schedule at Part I.H.16 was approved by the Executive Secretary on July 1, 2008. Therefore, DUSA has satisfied the requirements of compliance schedule item 16 and the Executive Secretary has struck this compliance schedule item from the Permit. Reference to compliance schedule item I.H.16 in the Permit at Part I.D.3(g) has been modified to reference the currently approved plan.

Cell 4A Design Modification - Approval of the Overflow Spillway from Tailings Cell 3, Part I.D.5, Table 5

This table has been updated to include a revised engineering drawing for the modified overflow spillway from Tailings Cell 3 to Tailings Cell 4A, which was approved by the DRC on August 19, 2008.

BAT Performance Standards for Tailings Cell 4A, Part I.D.6; Cell 4A BAT Performance Standards Monitoring, Part I.E.8; Routine Cell 4A BAT Performance Standards Monitoring Reports, Part I.F.3; Completion of Compliance Item 19, Cell 4A BAT Monitoring, Operations and Maintenance Plan, Part I.H.19

Part I.H.19 of the Permit, required DUSA to submit a Cell 4A BAT Operations and Maintenance Plan (hereafter O&M Plan) for Executive Secretary review and approval, before use of Cell 4A for tailings disposal. The BAT Monitoring Operations and Maintenance Plan (dated September 16, 2008) was approved by the Executive Secretary on September 17, 2008. To ensure that the approved plan was enforceable under the Permit, Parts I.D.6, I.E.8, and I.F.3 were modified to reference the currently approved plan. Therefore, DUSA has satisfied the requirements of compliance schedule item 19 and the Executive Secretary has struck this compliance schedule item from the Permit.

Leak Detection System (LDS) Maximum Allowable Daily Head, Part I.D.6(a); Cell 4A BAT Performance Standards Monitoring - Weekly LDS Monitoring for Maximum Allowable Head, Part I.E.8(a)(2)

Part I.H.19 of the Permit, required DUSA to submit a Cell 4A BAT Operations and Maintenance Plan (hereafter O&M Plan) for Cell 4A for Executive Secretary review and approval. On September 16, 2008, DUSA submitted a Revised O&M Plan (Revision 1.3). In the O&M Plan, DUSA asked that the datum for the LDS maximum allowable daily head measurement be moved from the lowest point of the LDS sump to the lowest point on the Cell 4A floor, i.e., to a point where the LDS sump meets the Cell 4A floor, as measured on the lower FML. DUSA consultant Geosyntec argued that this approach is allowed under the RCRA rules and guidance. After consultation with URS, the DRC agreed with this change and approved the O&M Plan on September 17, 2008. DRC staff looked at the LDS sump pump, transducer, and related geometries and determined that transducer reading of 2.28 feet would be deemed a failure of BAT. For more information, on how the 2.28 feet value was calculated, see DRC memorandum of January 6, 2009. This new compliance requirement was also added at Part I.E.8(a)(2).

Slimes Drain Monthly and Annual Average Recovery Head Criteria, Part I.D.6(c)

Before Cell 4A could be placed into service, a monthly and annual average recovery head criteria needed to be established. As a part of Cell 4A design approval, DUSA demonstrated that the Cell 4A tailings could be de-watered in a period of 6.4 years, leaving a final head of 1.0 foot above the upper Flexible Membrane Liner. To ensure that the cell performs as per these predictions, these criteria have been added to Part I.D.6(c) of the Permit.

BAT Requirements for Feedstock Material Stored Outside the Feedstock Storage Area, Part I.D.11; Completion of Compliance Item 21, Feedstock Material Stored Outside the Feedstock Storage Area Management Plan, Part I.H.21

On May 9, 2007, DRC and NRC staff performed an inspection at the Mill site. During the inspection DRC staff found several hundred 55-gallon drums containing alternate feedstock material; many of which were bent, dented, and rusting at the perimeter of the drum pile. While none were found to be leaking, the DRC staff observed that the drums were triple stacked at least ten deep, with less than a 3-inch spacing between rows of drums, which made it impossible to physically enter and visually inspect the condition of each of the drums.

Therefore, in the previous DUSA Permit modification (dated March 17, 2008) the Executive Secretary added a new DMT requirement for feedstock materials stored outside the ore feedstock storage area in Part I.D.11 of the Permit. This new DMT requirement required DUSA to submit a management plan for Executive Secretary approval to manage feedstock materials stored outside the ore feedstock storage area.

On June 20, 2008, DUSA submitted a White Mesa Mill-Containerized Alternate Feedstock Material Storage Procedure. After reviewing the submittal, the DRC found that the procedure again failed to address all of the DRC concerns listed in the April 29, 2008 DRC Request for Additional Information Letter. In order to expedite resolution of these concerns, the DRC has modified Part I.D.11 with new performance requirements for storing feedstock material outside of the ore storage area, with an eye to the following goals: 1) containers are maintained in a water tight condition to prevent soil and groundwater pollution, and 2) aiseways are provided between containers to allow physical entry and visual inspection, early detection, and timely remediation of leakage. In the event that DUSA cannot meet goals 1 and 2, options are provided in Part I.D.11 for DUSA to seek out DRC approval and perform said storage over an engineered surface of concrete or asphalt with certain other performance criteria. Related BAT monitoring requirements were also added at Part.I.E.7(d) and (e).

As a result of the Executive Secretary's actions described above, the original purpose of Part I.H.21 has been satisfied. Therefore, the Executive Secretary has struck this compliance schedule item from the Permit. Reference to compliance schedule item I.H.21 in the Permit at Part I.D.11 has also been removed.

GROUND WATER COMPLIANCE AND TECHNOLOGY PERFORMANCE MONITORING, Part I.E
Part I.E was modified to include the sampling of tailing cell waste waters, seeps and springs in addition to the sampling of groundwater monitoring wells.

Compliance Monitoring Parameters - Field Parameters, Part I.E.1(d)(1)

As part of its routine groundwater monitoring program, the Permittee is required to collect field parameters. To be consistent with the currently approved DUSA Quality Assurance Plan (hereafter QAP), redox potential (Eh) has been added as a required field parameter. This will provide useful information to document the potential for reductive de-chlorination of the chloroform groundwater contamination plume.

Groundwater Monitoring: Monitoring Wells MW-20 and MW-22, Part I.E.2

Monitoring wells MW-20 and MW-22 were installed in 1994 and are located at a distance of more than 3,000 feet south of the tailings cells. Because DUSA had not provided any monitoring data for these wells, the DRC added a new requirement at Part I.E.2 of the Permit during the last

Permit modification (March 17, 2008). This new requirement required DUSA to begin quarterly monitoring in both wells. After eight consecutive quarters of sampling, DUSA will submit a report determining background groundwater quality and a calculation of groundwater velocities in the vicinity of wells MW-20 and MW-22.

During this Permit modification additional requirements have been added at Part I.E.2. The report that DUSA is required to submit after eight quarters of sampling will be a Background Report that will include: data preparation and statistical analysis of groundwater data following the same Decision Tree/Flowchart used for the previous background reports; aquifer test results to determine local hydraulic conductivity and other aquifer properties; and a calculation of average liner groundwater velocity based on well specific hydraulic conductivity, hydraulic gradient, and effective aquifer porosity.

The Background Report is required to be submitted by March 1, 2010. After review of Background Report the Executive Secretary will evaluate if wells MW-20 and MW-22 should be added as POC wells, and adjust the sampling frequency in accordance with criteria found in Part I.E.1(b) or (c). If it is determined that wells MW-20 and MW-22 should be added as POC wells, the Executive Secretary will re-open this Permit and establish Groundwater Compliance Limits in Table 2 for wells MW-20 and MW-22.

White Mesa Seeps and Springs Monitoring, Part I.E.6; White Mesa Seeps and Springs Monitoring Reports, Part I.F.7; Completion of Compliance Item 8, White Mesa Seeps and Springs Sampling Work Plan and Report, (WPR) Part I.H.8

Part I.H.8 of the Permit, required DUSA to submit a plan of groundwater sampling and analysis of all seeps and springs found downgradient or lateral gradient from the tailings cells for Executive Secretary review and approval. The original compliance date to submit the WPR was 180 days of the issuance of the original Permit, or September 8, 2005. The WPR (dated November 20, 2008) was conditionally approved by the Executive Secretary on March 3, 2009. Therefore, DUSA has satisfied the requirements of Part I.H.8, and the Executive Secretary has struck this item from the Permit. To ensure that the approved plan was enforceable under the Permit, Parts I.E.6 and I.F.7 were modified to reference the currently approved plan and outline critical items and requirements. Reference to former compliance schedule item I.H.8 at Parts I.E.6 and I.F.7 has also been removed.

Weekly Feedstock Storage Area Inspection, Part I.E.7(d)

Part I.E.7(d) was modified to require weekly inspections of all feedstock storage, as to demonstrate compliance with the performance standards found in Part I.D.11.

Feedstock Material Stored Outside the Feedstock Storage Area Inspections, Part I.E.7(e)

Certain monitoring requirements have been added to Part I.E.7(e) for Feedstock Material Stored Outside the Feedstock Storage Area. These changes include weekly inspections and prior Executive Secretary approval should DUSA construct a storage area with a hardened surface.

Inspections of Tailing Cell and Pond Liner Systems, Part I.E.7(f)

In the DUSA 2006 Annual Technical Evaluation Report, the entry for March 24, 2006 refers to tears found in the Tailing Cell 1 liner that were repaired and covered. After review of this DUSA report, a Request for Information was made by the DRC dated May 4, 2007. DUSA provided a response dated July 13, 2007, wherein the method of discovery and repair were

described. In their response, DUSA advised that these "tears" were several dime-sized defects on a small section of the liner that were above the solution level in the cell.

However, since there was no DRC approved liner maintenance provision plan in use by DUSA, a new compliance schedule was added at Part I.H.12 in the previous DUSA Permit modification (dated March 17, 2008). The purpose of the provision was 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, 3, and the Roberts Pond.

On September 29, 2008, DUSA submitted a Revised Liner Maintenance Provisions for Tailings Cells 1, 2, 3, and Roberts Pond. The DRC approved this plan on October 9, 2008. The new requirements at Part I.E.7(f) were taken from said plan.

Tailings Cell Wastewater Quality Monitoring, Part I.E.10; Tailings Cell Wastewater Quality Reports, Part I.F.9; Completion of Compliance Item 5, Tailings Cells Wastewater Quality Sampling Plan, Part I.H.5

Part I.H.5 of the Permit required DUSA to submit a Tailings Cells Wastewater Quality Sampling Plan (WQSP) for Executive Secretary review and approval within 150 days of the issuance of the original Permit, or August 8, 2005. The WQSP (dated November 21, 2008) was approved by the Executive Secretary on March 3, 2009. Therefore, DUSA has satisfied the requirements of compliance schedule item 8 and the Executive Secretary has struck this compliance schedule item from the Permit.

To ensure that the approved plan was enforceable under the Permit, Part I.E.10 was modified to reference the currently approved plan and outline certain key requirements, including:

- Identification of seven specific sampling locations required to be sampled. However, provisions were provided to allow DUSA to forgo sampling of the slimes drains until such time as de-watering operations begin at Tailing Cells 3 and 4A.
- Listing of specific field and laboratory parameters required to be measured, sampled, and analyzed,
- Provisions for collection and analysis of quality control samples,
- Prior notification, to allow the Executive Secretary to observe and collect split samples, and
- Prohibition on omission of any sampling location required, without prior written permission from the Executive Secretary.

Part I.F.9 was also modified to clarify when and where a depth to wastewater measurement should be taken during slimes drain sampling. Reference to the former compliance schedule item I.H.8 in the Permit at Part I.E.10 has been removed.

REPORTING REQUIREMENTS - Routine Groundwater Monitoring Reports, Part I.F.1

Part I.F.1 requires that the Permittee 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; however the reference to Part I.E.7 is incorrect. Part I.E.7 refers to DMT Performance Standards Monitoring, not Groundwater Monitoring. Therefore, the reference to Part I.E.7 has been removed from Part I.F.1.

Routine Groundwater Monitoring Reports - Time Concentration Plots, Part I.F.1(g)

Part I.F.1(g) was added to the Permit, which requires DUSA to submit time concentrations plots for four constituents (chloride, fluoride, sulfate, and uranium) with each quarterly groundwater monitoring report. These constituents are the best indicators of potential seepage impacts from the tailings impoundments. Increasing trends could provide early indication of seepage even before GWCLs are exceeded.

Aquifer Permeability Data, Part I.F.6(c)

Part I.F.6(c) was modified to ensure that aquifer permeability data submitted for the Groundwater Monitoring Well As-Built Reports will include field data, data analysis, and interpretation of slug tests, aquifer pump tests, or other hydraulic analyses to determine local aquifer hydraulic conductivity in each well.

OUT OF COMPLIANCE STATUS - Violation of Permit Limits, Part I.G.2(a)(2)

This section has been simplified because many of the revised GWCLs in Table 2 already reflect the mean plus two standard deviation concentrations. Therefore, Part I.G.2(a)(2) is no longer needed to determine Out of Compliance Status and has been removed from the Permit.

Compliance Schedule Items Reset for: On-site Chemicals Inventory Report, former Part I.H.9 - new Part I.H.1; Infiltration and Contaminant Transport Modeling Work Plan and Report, former Part I.H.10 - new Part I.H.2; Plan for Evaluation of Deep Supply Well WW-2 [PDW], former Part I.H.11 - new Part I.H.3

Changes in these sections were limited to re-numbering and minor typographical corrections. Reference to Part I.H.9 of the Permit elsewhere in the Permit (Part I.F.8) has been updated.

New Compliance Schedule Item for Supplemental Isotopic Groundwater and Surface Water Investigation and Report (new Part I.H.4)

In July 2007, the University of Utah performed a groundwater study to characterize groundwater flow, chemical composition, noble gas composition, and age at White Mesa. This study established groundwater age and an isotopic benchmark for each monitoring well, wildlife pond, and tailings cell sampled during the study. Due to limited funding, the study did not include sampling and analysis of every POC well or surface water site at White Mesa. Therefore, the Executive Secretary has determined that the Permittee shall perform an investigation in the monitoring wells and surface water sites that were not part of the July 2007 University of Utah Study. The purpose of this supplemental investigation and associated report shall be to establish isotopic benchmarks and a ground/surface water age at these locations. The Permittee must conclusively demonstrate that the supplemental investigation conducted is similar to the one performed by the University of Utah in July 2007.

New Compliance Schedule Item for the New Decontamination Pad (new Part I.H.5)

During a DRC inspection on November 17, 2008, it was discovered that DUSA had constructed a New Decontamination Pad (hereafter NDP), without prior Executive Secretary approval, as required by Part I.D.4 of the Permit. In a December 2, 2009 DRC e-mail, the DRC explained that prior authorization for design, construction, or operation of the NDP is not required, so long as wash water in the sediment basin of either facility does NOT exceed the State GWQS, as outlined in Table 2 of the Groundwater Permit. DUSA did not consider this to be a practical solution, and agreed that it would not use the NDP until the Executive Secretary had approved the design and construction of the NDP. The NDP has not yet been placed into service;

therefore, Part I.H.5 of the Permit was added requiring DUSA to provide information and secure Executive Secretary approval before the NDP can be placed into service.

New Compliance Schedule Item for the Existing Decontamination Pad (new Part I.H.6)

The Existing Decontamination Pad (hereafter EDP), was constructed prior to the DRC becoming the primary regulator for the White Mesa Mill in August, 2004. Shortly thereafter, when DUSA was issued the first State Ground Water Quality Discharge Permit on March 8, 2005, the EDP was inadvertently omitted. To rectify this situation, Part I.H.6 of the Permit was added requiring DUSA to submit As-Built drawings, update the DMT Monitoring Plan for the EDP, and perform an annual inspection of the facility.

RESOLVED COMPLIANCE SCHEDULE ITEMS

Completion of Compliance Item 1, Installation of New Groundwater Monitoring Wells, Part I.H.1

Part I.H.1 of the Permit required DUSA to install eight new groundwater monitoring wells within 30 days of Permit issuance, and is a requirement that dates back to the original March 8, 2005 Permit. DUSA compliance is summarized below:

- During May 2005, DUSA installed the new wells required, including: MW-23, MW-24, MW-25, MW-27, MW-28, MW-29, MW-30, and MW-31. Later, on August 23, 2005, DUSA submitted a report (see Revised Hydrogeological Report discussed below), that documented how the new wells had been installed in accordance with requirements of Part I.H.1 of the Permit.

As described above, DUSA has satisfied the requirements of Permit compliance schedule item I.H.1 of the Permit. Therefore, the Executive Secretary has struck this compliance schedule item from the Permit.

Completion of Compliance Item 2, Revised Hydrogeologic Report, Part I.H.2

Part I.H.2 of the Permit required DUSA to submit a Revised Hydrogeologic Report 60 days after the installation of the new compliance monitoring wells, or before July 1, 2005. DUSA compliance is summarized below:

- On August 23, 2005, DUSA submitted a Perched Monitoring Well Installation and Testing at the White Mesa Uranium Mill April through June 2005 Report (hereafter Revised Hydrogeologic Report).
- After review of the Revised Hydrogeologic Report, the DRC concluded in a November 19, 2007 Closeout and Notice of Enforcement Discretion Letter that the report did not include a permeability contour or saturated thickness maps, as specified in the December 1, 2004 Statement of Basis. Additionally, the report was not certified by a Utah Licensed Professional Geologist, as required by Utah Administrative Code R317-6-6.7; however, the Executive Secretary decided to use enforcement discretion and accept the August 23, 2005 report on the basis that the report will be revised and resubmitted again as a part of the Permit renewal application due on September 9, 2009 and will include the missing items described above.

As described above, DUSA has satisfied the requirements of Permit compliance schedule item I.H.2 of the Permit. Therefore, the Executive Secretary has struck this compliance schedule item from the Permit.

Completion of Compliance Item 3, Background Ground Water Quality Report: Existing Wells, Part I.H.3

Part I.H.3 of the Permit required DUSA to submit a Background Ground Water Quality Report of the existing POC wells listed in Part I.E.1, within 90 days after the issuance of the Permit, or June 8, 2005. DUSA compliance with Part I.H.3 is summarized below:

- On June 23, 2005, DUSA asked the DRC to extend the deadline for filing the Background Ground Water Quality Report for Existing Wells to August 31, 2005. The DRC did not respond to the DUSA request.
- DUSA was unable to meet the August 31, 2005 date. In an October 27, 2006 Final Consent Agreement DUSA agreed to stipulated penalties in the event they did not submit the Background Ground Water Quality Report for Existing Wells for Executive Secretary review and approval, on or before January 2, 2007.
- DUSA submitted the Background Ground Water Quality Report: Existing Wells on December 29, 2006.
- On April 19, 2007 DUSA submitted an addendum to the December 29, 2006 submittal.
- Review of both of these reports was conducted by URS Corporation on behalf of the DRC. URS completed the review and presented their findings in an August 9, 2007 Completeness Review for the Background Groundwater Quality Report: Existing Wells Memo.
- After the report and addendum were reviewed, the DRC sent DUSA an August 10, 2007 Completeness Review, Findings, and Confirmatory Action Letter. This letter required that DUSA: 1) Submit a Decision Tree/Flowchart that describes groundwater data preparation and the statistical analysis process on or before August 16, 2007, and 2) Submit a Revised Background Ground Water Quality Report For Existing Wells that conforms with the EPA Guidance, within 60 days after Executive Secretary approval of the Decision Tree/Flowchart.
- On August 16, 2007 DUSA submitted a Decision Tree/Flowchart diagram which was submitted in compliance with the August 10, 2007 DRC Confirmatory Action Letter.
- The DRC responded in an August 24, 2007 Conditional Approval Letter that approved the Decision Tree/Flowchart based on several conditions. As a result the revised background report was then due by October 23, 2007.
- On October 26, 2007 DUSA submitted a Revised Background Ground Water Quality Report for Existing Wells.
- On November 16, 2007 DUSA submitted a revised addendum to said report.
- Review of both of the October 26 and November 16, 2007 DUSA reports was conducted by URS Corporation on behalf of the DRC. URS completed the review and presented their final findings to the DRC in a June 16, 2008 memorandum where several questions were identified with respect to the DUSA proposed GWCLs. The majority of these questions were determined to have been caused by DUSA's application of the Decision Tree / Flowchart.

Based on the June 16, 2008 URS work, the DRC accepted 439 of the 494 GWCLs values proposed by DUSA in the October 26, 2007 Revised Background Ground Water Quality Report for Existing Wells. These revised GWCLs were made in Table 2 of the Permit. For the remaining 55 GWCLs, the DRC has determined to use the revised values calculated by URS. For additional details, see the June 16, 2008 URS memorandum, in **Attachment 1**, below. As described above, DUSA has satisfied the requirements of Permit compliance schedule item I.H.3 of the Permit, and appropriate GWCLs have been established in Table 2 of the Permit.

Therefore, the Executive Secretary has struck this compliance schedule item from the Permit. Reference to compliance schedule item I.H.3 in the Permit at Part I.B has also been removed.

Completion of Compliance Item 4, Background Ground Water Quality Report: New Monitoring Wells, Part I.H.4

Part I.H.4 of the Permit required DUSA to submit a Background Ground Water Quality Report for the new wells required to be installed under Part I.H.1. Installations of the new wells were completed between April and June, 2005. Within 60 days after completion of eight consecutive quarters of groundwater sampling and analysis of the new wells, the original Part I.H.1 required DUSA to submit a report for Executive Secretary approval to establish background groundwater quality for these new wells. Said report deadline would therefore have been June 1, 2007. DUSA compliance is summarized below:

- DUSA submitted the Background Ground Water Quality Report for New Wells on June 4, 2007.
- After reviewing the report, the DRC responded in a February 14, 2008 Completeness Review, DRC Findings, Request for Information, and Confirmatory Action Letter. The letter required DUSA to: 1) submit a Revised Background Ground Water Quality Report for New Wells that conforms with the EPA Guidance provided to DUSA on August 9, 2007 and 2) resubmit the revised report by April 30, 2008.
- DUSA submitted the Revised Background Ground Water Quality Report for New Wells on April 30, 2008. DRC review of the April 30, 2008 report is documented in the June 24, 2008 DRC Findings and Recommended Action Memorandum, see **Attachment 3**, below.

The DRC accepts 196 of the 342 GWCLs values proposed by DUSA in the April 30, 2008 Revised Background Ground Water Quality Report for Existing Wells. For the remaining 146 GWCLs proposed, the DRC will adopt the other values calculated by DRC staff. For details, see **Attachment 3**, below.

As described above, DUSA has satisfied the requirements of Permit compliance schedule item I.H.4 of the Permit. Therefore, the Executive Secretary has struck this compliance schedule item from the Permit. Reference to compliance schedule item I.H.4 in the Permit at Part I.B has also been removed.

Completion of Compliance Item 6, Monitoring Well Remedial Action and Report, Part I.H.6

Part I.H.6(a) of the Permit required DUSA to develop seven wells at the facility so that they produce clear groundwater and comply with the requirements of Part I.E.4(c), including wells: MW-5, MW-11, MW-18, MW-19, MW-20, MW-22, and TW4-16. Part I.H.6(b) required DUSA to complete monitoring well MW-3A with a permanent surface well completion according to EPA RCRA TEGD. Said work was to be documented in a report required to be submitted to the DRC by June 5, 2005. DUSA compliance with these requirements is outlined below:

- DUSA submitted a report dated August 1, 2005. Later DRC determined the August 1, 2005 DUSA submittal to be inadequate, and issued an April 26, 2007 Notice of Non-Compliance.
- DUSA submitted, a May 1, 2008 Monitor Well Remedial Action Report that documented proper development of wells: MW-11, MW-18, MW-19, MW-20, MW-22, and TW4-16; and completion of the protective steel casing at well MW-3A.

- On June 17, 2008, the DRC sent DUSA a Confirmatory Action Letter documenting the DUSA commitment to provide written plan and deadlines by June 20, 2008 for other outstanding information, including turbidity issues for wells MW-5, MW-20, and MW-22.
- On June 20, 2008, DUSA submitted additional data that showed turbidity values below the 5 NTU standard for wells MW-5, MW-20, and MW-22. After reviewing the June 20, 2008 letter, it was apparent that DUSA had fulfilled the requirement of Part I.H.6(a), therefore on August 5, 2008 the DRC sent DUSA a Closeout Letter.

As described above, DUSA has satisfied the requirements of Permit compliance schedule item I.H.6 of the Permit. Therefore, the Executive Secretary has struck this compliance schedule item from the Permit.

Completion of Compliance Item 7, Monitoring Well MW-3 Verification, Retrofit, or Reconstruction Report, Parts I.H.7(1) and I.H.7(2)

Part I.H.7(1) of the Permit required DUSA to complete monitoring well MW-3A, as follows: 1) with a permanent surface well completion according to EPA RCRA TEGD, and Part I.H.6(b) of this Permit, and 2) provide an elevation survey certified by a state of Utah licensed engineer or land surveyor by August 4, 2005. DUSA compliance with these requirements is outlined below:

- DUSA submitted a report dated August 8, 2005.
- On April 25, 2007, the DRC issued a Request for Information which summarized a DUSA commitment to provide the required information by September 11, 2007.
- On May 1, 2008, DUSA submitted, by e-mail, a Monitor Well Remedial Action Report that documented that monitoring well MW-3A had been retrofitted with a protective steel casing during the 2nd Quarter of 2007. However, no elevation survey data was included as required.
- On June 17, 2008, the DRC sent DUSA a Confirmatory Action Letter documenting a DUSA commitment to provide a written plan and deadline by June 20, 2008 for several activities, including submittal of the missing elevation survey for well MW-3A.
- On June 20, 2008, DUSA submitted written commitment to supply the well MW-3A certified elevation survey data by July 7, 2008.
- On July 10, 2008, DUSA submitted, by e-mail, the well MW-3A elevation survey data performed by Fisher & Sons Surveying, a Utah Licensed Professional Land Surveyor. After reviewing the elevation survey data, it was apparent that DUSA had fulfilled the requirement of Part I.H.7(2), therefore on August 5, 2008 the DRC sent DUSA a Closeout Letter.

As described above, DUSA has satisfied the requirements of Permit compliance schedule item I.H.7 of the Permit. Therefore, the Executive Secretary has struck this compliance schedule item from the Permit.

Completion of Compliance Item 12, Liner Maintenance Provisions, Part I.H.12

Part I.H.12 of the Permit required DUSA to submit Liner Maintenance Provisions to be incorporated into the existing DMT Monitoring Plan for Executive Secretary review and approval within 90 days of Permit issuance, i.e., by June 15, 2008. DUSA compliance with this requirement is summarized below:

- On June 12, 2008, DUSA submitted by email Liner Maintenance Provisions for Tailings Cells 1, 2, 3, and Roberts Pond as Appendix D of the White Mesa Mill Tailings

Management System and Discharge Minimization Technology (hereafter DMT) Monitoring Plan.

- After review of the June 12, 2008 submittal, the DRC sent DUSA a Request for Information, Plan Revision, and Confirmatory Action Letter dated August 1, 2008, which summarized the DUSA commitment to provide a revised plan on or before September 1, 2008.
- On September 29, 2008, DUSA submitted, by e-mail, a Revised Liner Maintenance Provisions for Tailings Cells 1, 2, 3, and Roberts Pond - Appendix D of the White Mesa Mill DMT Plan.
- After review of the revised plan, the DRC sent DUSA a Conditional Approval Letter on the condition that DUSA submit a final version of the Liner Maintenance Provisions for DRC records by November 1, 2008.
- DUSA submitted a final copy of the Liner Maintenance Provisions by a letter dated October 22, 2008. The DRC accepted the submittal and issued a Closeout Letter dated October 30, 2008.

The performance monitoring standards for liner inspections and repair were added to Part I.E.7(f) of the Permit. As described above, DUSA has satisfied the requirements of Permit compliance schedule item I.H.12 of the Permit. Therefore, the Executive Secretary has struck this compliance schedule item from the Permit.

Completion of Compliance Item 15, Contingency Plan, Part I.H.15

Part I.H.15 of the Permit required DUSA to submit a Contingency Plan for Executive Secretary approval that provides a detailed list of actions DUSA will take to regain compliance with Permit limits and DMT or BAT requirements, as defined in Parts I.C and I.D of the Permit within 180 days of issuance or by September 8, 2005. DUSA compliance is summarized below:

- DUSA submitted a Draft Contingency Plan, dated April 14, 2006 for Executive Secretary review.
- After review of the plan, the DRC sent DUSA a Request for Additional Information Letter on September 5, 2007.
- On October 12, 2007, DUSA sent the DRC a Revised Draft Contingency Plan.
- After review of the revised plan, the DRC sent DUSA a May 2, 2008 Conditional Approval Letter that required DUSA to provide an update Plan prior to placing Cell 4A into operation.
- DUSA submitted a revised Contingency Plan dated August 8, 2008, which is currently under DRC review.

As described above, DUSA has satisfied the requirements of Permit compliance schedule item I.H.15 of the Permit. Therefore, the Executive Secretary has struck this compliance schedule item from the Permit. Reference to compliance schedule item I.H.15 in the Permit at Part I.G.4(d) has also been removed.

Completion of Compliance Item 18, Repair of Monitor Well MW-5, Part I.H.18

Part I.H.18 of the Permit required DUSA to submit an As-Built report for the repairs of monitoring well MW-5 on or before May 1, 2008. DUSA compliance is summarized below:

- DUSA submitted an April 29, 2008 Repair of Monitor Well MW-5 report. DRC review found there was no evidence that the elevation survey was performed by a Utah licensed

Professional Engineer or Land Surveyor. Additionally, the elevation given in the report was unclear whether it was the ground surface or the groundwater monitoring point.

- On June 17, 2008, the DRC sent DUSA a Confirmatory Action Letter documenting DUSA's commitment to provide by June 20, 2008 a written deadline for completing the elevation survey.
- In a June 20, 2008 letter, DUSA committed that the well MW-5 elevation survey data would be completed and transmitted to the DRC by July 7, 2008.
- On July 10, 2008, DUSA submitted, by e-mail, the MW-5 survey data performed by Fisher & Sons Surveying (Utah Licensed Professional Land Surveyor). After reviewing the survey data and the June 20, 2008 letter, it was apparent that DUSA had fulfilled the requirement of Part I.H.18, therefore on August 5, 2008 the DRC sent DUSA a Closeout Letter.

As described above, DUSA has satisfied the requirements of Permit compliance schedule item I.H.18 of the Permit. Therefore, the Executive Secretary has struck this compliance schedule item from the Permit.

Completion of Compliance Item 22, Quality Assurance Plan (QAP) Revision, Part I.H.22

DUSA was required to submit a revised version of the DUSA groundwater Quality Assurance Plan (QAP) on or before April 30, 2008 for Executive Secretary review and approval, that would mandate DUSA to resolve all non-conformance with QAP requirements on or before submittal of the next quarterly groundwater monitoring report. DUSA compliance is summarized below:

- On March 14, 2008 DUSA submitted, by e-mail, Revision 1 of the QAP.
- After review of the document, DRC staff determined that additional modifications to the QAP were needed. A conference call was held with DRC and DUSA representatives on May 5, 2008 where potential QAP modifications were discussed and agreed on. This resulted in a May 8, 2008 DRC Request for Additional Information and Confirmatory Action Letter that documented the DUSA commitment to make certain changes and re-submit the revised QAP on or before June 6, 2008.
- On June 5, 2008 DUSA submitted, by e-mail, Revision 2 of the QAP.
- During the review of Revision 2 of the QAP, the DRC identified additional changes that needed to be made. These additional changes were outlined in an e-mail sent to DUSA on June 13, 2008.
- On June 18, 2008 DUSA submitted, by e-mail, Revision 3 of the QAP.
- After reviewing Revision 3 of the QAP, the DRC sent DUSA a QAP Revision 3 Approval Letter on June 20, 2008.

As described above, DUSA has satisfied the requirements of Permit compliance schedule item I.H.22 of the Permit. Therefore, the Executive Secretary has struck this compliance schedule item from the Permit.

Compliance Items Removed From the Permit

The Compliance items from Parts I.H.13, I.H.14, I.H.17, and I.H.20 of the Permit have been removed. All of these items in Part I.H of the Permit are listed as <Reserved>. These "<Reserved>" items are former placeholders of compliance items whose requirements have been satisfied and were removed during the March 17, 2008 Permit modification.

Correction of Formatting and Other Changes

During this Permit modification, a number of formatting inconsistencies were identified; therefore, the following items were corrected and/or changed:

- Various Font types and sizes were used as the Normal text in paragraphs in the Permit; therefore, to be consistent throughout the Permit, paragraphs were changed to one Font type and size (Times 12 pt).
- To be consistent, all paragraph alignment throughout the Permit has been changed to Justified.
- Incorrect numbering was found at Parts I.E.7(b) and I.E.7(d), the numbering at these locations were corrected. Additionally, numbering at several locations in the Permit were out of alignment with the correct indentation; therefore, they were moved into the correct position.
- Different hyphens (– or -) were used throughout the Permit. To be consistent, the (-) hyphen was chosen as one to be used, the other hyphen was changed, accordingly.
- Inadvertent Extra spaces, periods, commas, etc... have been removed, accordingly.
- Missing spaces, periods, commas, etc... have been added, accordingly.
- At several locations in the Permit, the first letter of a word was either incorrectly capitalized or was not capitalized as needed; therefore, these instances have been corrected appropriately.
- In the previous DUSA Permit modification (dated March 17, 2008), as result of a merger IUC changed its name to Denison Mines (USA) Corp. (DUSA). This name change was made throughout the Permit. However, a few IUC references were identified in this Permit modification and have been changed to DUSA, accordingly.
- References to deadlines - throughout the Permit the Permittee is required to report/submit/complete something by XX days, wherever this is mentioned, the qualifier “calendar” has been inserted. This protocol has been used throughout the document.
- Reference to an approved plan - throughout the Permit, where an approved plan is mentioned, the qualifier “currently approved” has been inserted. This protocol was already in use at some locations in the Permit, now it is throughout.

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