



State of Utah

Department of
Environmental Quality

Richard W. Sprott
Executive Director

DIVISION OF RADIATION
CONTROL
Dane L. Finerfrock
Director

JON M. HULLMAN, JR.
Governor

GARY HERBERT
Lieutenant Governor

MEMORANDUM

THRU: Loren Morton *LB*

FROM: Phil Goble *PG*

DATE: June 24, 2008

SUBJECT: Denison Mines Corporation (USA) and Proposed Background Ground Water Quality for New Wells (April 30, 2008 Intera Report); **DRC Findings and Recommended Action.**

The purpose of this memorandum is to summarize DRC findings regarding the April 30, 2008 Background Ground Water Quality Report for the New Wells (hereafter New Wells Background Report), to propose a DRC course of action for setting Ground Water Compliance Levels (GWCLs) for the Denison Mines Corporation (USA) [hereafter DUSA] uranium milling facility near Blanding, Utah.

The DRC has performed a completeness review of the Background Ground Water Quality for New Wells (MW-23, MW-24, MW-25, MW-27, MW-28, MW-29, MW30, MW-31, and MW-3A). Finding and observations from the review are as follows:

1. DUSA performed the data evaluation and statistical analysis in accordance with the statistical process flowchart (attached Figure 17) conditionally approved by the DRC on August 24, 2007. The statistical analysis was performed in accordance with the U.S. Environmental Protection Agency (EPA) guidance and adequately addressed the presence and variable percentage of non-detect values in the background water quality data sets.
2. There are 9 wells with 38 constituents for each well, resulting in 342 individual data sets, each of which has a corresponding GWCL proposed by DUSA in Table 10 of Revised Background Report for New Wells. Each data set represents a single constituent at a single well (e.g., arsenic at MW-23). Most of the proposed GWCLs appear to have been calculated correctly following the flowchart process. However, there are several GWCLs (146 out of a total of 342) where the wrong approach was used to determine the GWCL or where there was a typographical error in the value of the GWCL.

Of the 146 GWCLs needing correction, 87 represented an increase over those proposed by DUSA. 82 of the 87 GWCLs increased were caused by the change in classification from Class II to Class III for three wells (MW-25, MW-27, and MW-31) which changed the fraction value used in setting GWCLs under the approved flowchart approach (see Section 5 below). 50 of the 146 GWCLs needing correction resulted in a decrease; while in 9 other cases, DUSA failed to propose a GWCL for Tin in each of the new wells (see Section 6 below). These incorrect GWCLs are listed in attached Table 1 along with the corrected GWCL. For the remaining 196 cases, the DRC agrees with the GWCLs proposed by DUSA.

In 43 of these instances, DUSA recommended an approach that varied from the Flow Chart diagram 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.

This $\bar{x} + 20\%$ method used by DUSA is not based on the EPA Guidance given to DUSA in an August 9, 2008 DRC e-mail. Additionally, DUSA has failed to follow the Decision Tree/Flow Chart diagram, which was created by DUSA, and was conditionally approved by the DRC on August 24, 2007. 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. Therefore, the DRC rejects the proposed $\bar{x} + 20\%$ method. These incorrect GWCLs are listed in attached Table 1 along with the corrected GWCL.

DUSA also argues in the Revised New Wells Background Report: *"that assuming a normal distribution, setting the GWCL at 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 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 status 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.

3. Attached Table 2 categorizes the GWCLs based on the percentage of non-detects and statistical approach. Table 2 assumes the 146 flowchart errors have been corrected and the issues listed in items 5 and 6 below have been addressed (see attached Table 1). The following observations are made from Table 2:
 - Most of the data sets consist of a majority of non-detects. 59.9% of the 342 data sets consist of greater than 90% non-detects.
 - Largely because most data sets consist of a majority of non-detects, only 23% of the 342 proposed GWCLs were established as a mean plus two standard deviations. These GWCLs were calculated following the first two paths shown on the attached flowchart.
 - 16.6% of the 342 proposed GWCLs were established following the "Non-Parametric Statistics" approach (third path on the attached flowchart): 2.6% were the highest historical result in the data set (based on the non-parametric statistical method), and 14.0% were established as a fraction of the Groundwater Quality Standard (GWQS) as allowed by the process shown on the flowchart. Note that the conditionally approved process gives DUSA the option of using the greater of the highest historical result or the fraction of the GWQS to represent the GWCL.
 - 59.9% of the 342 proposed GWCLs were established following the fourth path of the attached flowchart: 0% of the GWCLs were calculated as the Poisson prediction limit, and 59.9% were established as a fraction of the GWQS as allowed by the process shown on the flowchart (DUSA has the option of using the greater of the Poisson limit or the fraction of the standard). The fact that over half of the GWCLs were established as a fraction of the GWQS following the fourth path on the flow chart illustrates that for many constituents, the data sets consist of primarily non-detected results.
4. Attached Table 3 shows that 15 of the proposed GWCLs (about 4.4% of the total) are higher than the respective GWQS. Refer to Table 2 for the breakdown of these GWCLs exceeding the GWQS.
5. Groundwater Classification Utah Administrative Code R317-6-3.6 states: "Class III ground water has one or both of the following characteristics: A. Total dissolved solids greater than 3,000 mg/L and less than 10,000 mg/L, or; B. One or more contaminants that exceed the ground water quality standards." So it is not unreasonable to have GWCLs, based on background groundwater quality data, for Class III groundwater that are higher than the GWQS, since by definition Class III groundwater can have contaminant concentrations that exceed the corresponding standard. Most of the monitoring wells (seven of eight) are classified as having Class III groundwater; while the other well (MW-30) is classified as having Class II groundwater. Change in classification for three wells (MW-25, MW-27, and MW-31) will change the fraction value used in setting GWCLs under the approved flowchart approach. As a result, under the fractions approach; the GWCL values will now be set at 50% of the GWQS instead of 25%. This calculation was not incorporated into the New Wells Background Report for these wells; therefore they have been updated on the attached Table 1. See below for the groundwater classification rationale for each new well:

Monitor Well	Groundwater Classification	Comment
MW-23	Class III	TDS GWCL - 3,670 $\mu\text{g/L}$
MW-24	Class III	TDS GWCL - 4,450 $\mu\text{g/L}$
MW-25	Class III*	TDS GWCL - 2,976 $\mu\text{g/L}$: The proposed GWCL for manganese (1,806 $\mu\text{g/L}$) is above the GWQS in MW-25 and changes the Groundwater Protection Level to Class III in this well.
MW-27	Class III*	TDS GWCL - 1,075 $\mu\text{g/L}$: The proposed GWCL for uranium (34 $\mu\text{g/L}$) is above the GWQS in MW-27 and changes the Groundwater Protection Level to Class III in this well.
MW-28	Class III	TDS GWCL - 4,852 $\mu\text{g/L}$
MW-29	Class III	TDS GWCL - 4,400 $\mu\text{g/L}$
MW-30	Class II	TDS GWCL - 1,918 $\mu\text{g/L}$
MW-31	Class III*	TDS GWCL - 1,320 $\mu\text{g/L}$: The proposed GWCL from selenium (71 $\mu\text{g/L}$) is above the GWQS in MW-31 and changes the Groundwater Protection Level to Class III in this well.
MW-3A	Class III	TDS GWCL - 5,805 $\mu\text{g/L}$

6. In the April 30, 2008 New Wells Background Report, DUSA failed to propose a GWCL for Tin in all new wells. However, according to the Flowchart, if there is not at least eight data points remaining, DUSA should defer analysis until eight data points available. DUSA was required to start analysis for Tin in on-site wells when the White Mesa Uranium Mill began to receive and process alternate feed material from Fansteel Inc. Analysis for Tin began in June, 2006 and there have been seven monitoring events where Tin has been analyzed. With the help of EPA Region 8 toxicology staff the DRC adopted an ad hoc groundwater quality standard for tin of 17,000 $\mu\text{g/L}$ (See 10/27/05 EPA memorandum). Since the Tin concentrations in all new wells have been 100% non-detect, the GWCL will be set at the fraction GWQS for Class III water - 8,500 $\mu\text{g/L}$ and 4,250 $\mu\text{g/L}$ for Class II water.
7. In the Intera Report, DUSA proposes a GWCL of 36 $\mu\text{g/L}$ for uranium in well MW-24. Before calculating this GWCL, DUSA correctly removed the uranium outliers (223 and 78.9 $\mu\text{g/L}$). However, DUSA should have also removed the uranium outlier, 46 $\mu\text{g/L}$. After removing the uranium 46 $\mu\text{g/L}$ outlier, the GWCL($x+2\sigma$) calculates at 11.90 $\mu\text{g/L}$. The corrected GWCL is shown in the attached Table 1.
8. In the Intera Report, DUSA proposes GWCLs for pH in all news wells based on the mean minus 20 percent ($\bar{x} - 20\%$). This $\bar{x} - 20\%$ method used by DUSA is not based on the EPA Guidance given to DUSA in an August 9, 2008 DRC e-mail. Additionally, DUSA has failed to follow the Decision Tree/Flow Chart diagram. Therefore, the DRC rejects the proposed $\bar{x} - 20\%$ method for pH GWCLs. These incorrect GWCLs are listed in attached Table 1 along with the corrected GWCL.

In summary, with the exception of some errors that will require correction, DUSA established GWCLs in accordance with methodology given in the conditionally approved flowchart. This methodology was developed in accordance with EPA guidance, and it takes into account that much, if not the majority, of background data consists of non-detected results. In 15 instances, the established GWCLs exceed corresponding GWQS's. Of these 15, it appears that only 1 may be an issue in future monitoring (may cause noncompliance) if the GWCL is established as the GWQS. The DRC agrees with all 15 instances where the proposed GWCL exceeds the GWQS, determined by DUSA (after correcting all errors), because there is no physical or chemical basis for a background concentration to be limited to the GWQS. Even in approving these proposed GWCLs, several upward-trending data sets may require additional attention during future monitoring events.

After review of the Revised New Wells Background Report and consideration of the University of Utah Study Final Report; DRC staff recommends the following: 1) The DRC should accept 196 of the 342 GWCLs values proposed by DUSA in the April 30, 2008 Revised New Wells Background Report, 2) For the remaining 146 GWCLs, the DRC will adopt the values calculated by DRC staff which can be found in the attached Table 1, and 3) It is recommend this be done with a major Permit modification, in conjunction with a public comment period and Statement of Basis.

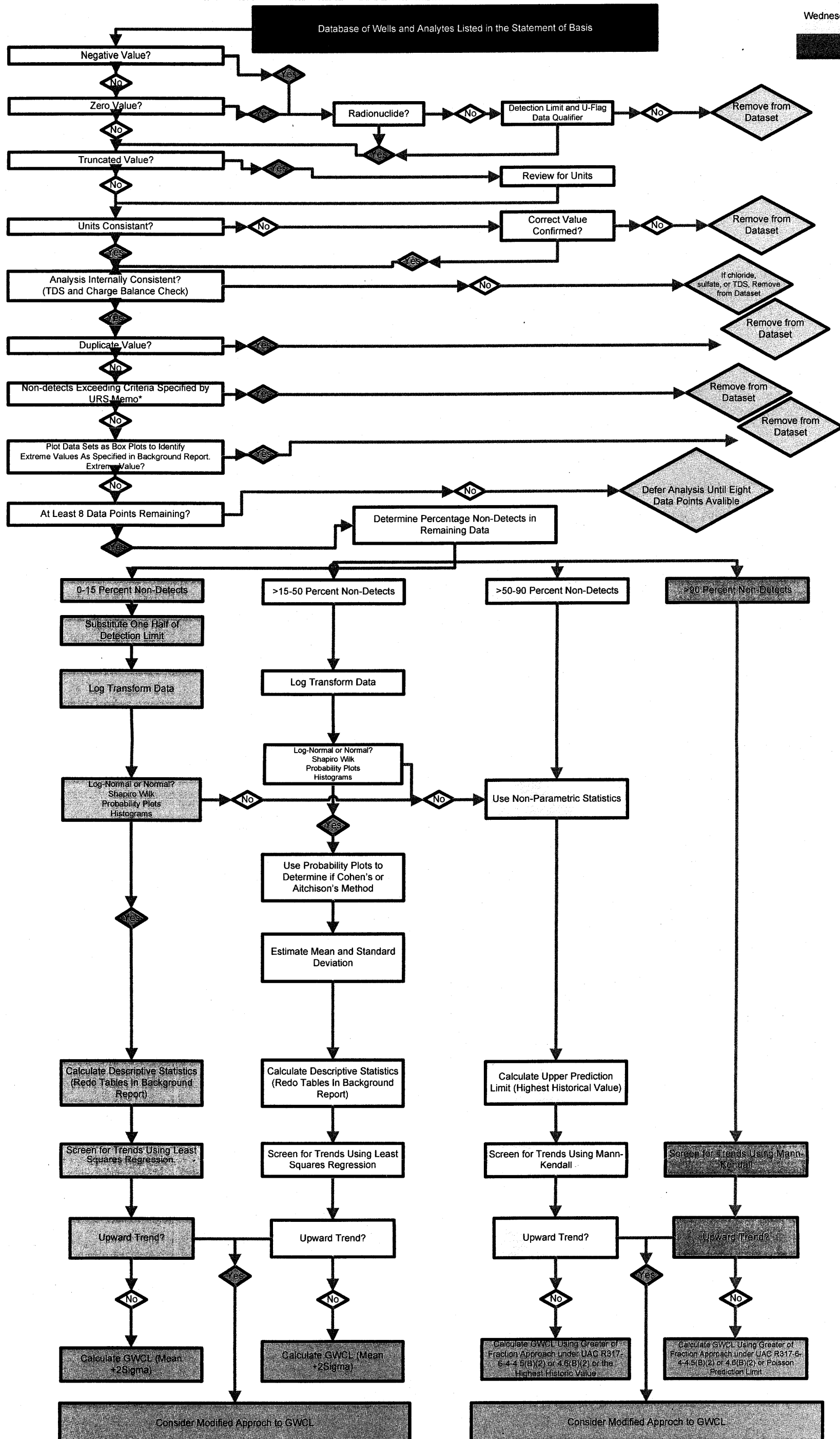
References

- Hurst, T.G. and D.K. Solomon, May, 2008, "Summary of Work Completed, Data Results, Interpretations and Recommendations for the July, 2007 Sampling Event at the Denison Mines, USA, White Mesa Uranium Mill Near Blanding Utah" unpublished report by the University of Utah Department of Geology and Geophysics, 62 pp. [transmitted via 5/18/08 email from Kip Solomon to Loren Morton (DRC)].
- INTERA, Inc., Prepared for Denison Mines (USA) Corp., April 30, 2008. "Revised Background Groundwater Quality Report: New Wells. For Denison Mines (USA) Corp.'s White Mesa Mill Site, San Juan County, Utah."
- Utah Division of Radiation Control, December 1, 2004, "Statement of Basis for a Uranium Milling Facility at White Mesa, South of Blanding, Utah," unpublished regulatory document, 57 pp., and 12 attachments.
- Utah Division of Radiation Control, May 19, 2008, "Denison Mines Corporation (USA) and Proposed Background Groundwater Quality for Existing Wells (October, 2007 Intera Report); April 28, 2008 URS Finding and DRC Recommended Action," unpublished regulatory document from Loren Morton to Dane Finerfrock, 9 pp.
- URS Corporation, June 16, 2008, "Completeness Review for the Revised Background Groundwater Quality Report: Existing Wells for Denison Mines (USA) Corporation's White Mesa Mill Site, San Juan County, Utah," unpublished consultants memorandum, 4 pp., 1 figure, 3 tables [transmitted via 6/16/08 email from Bob Sobocinski (URS) to Loren Morton (DRC)].

PRG:prg

Groundwater Data Preparation and Statistical Process Flow for Calculating Groundwater Protection Standards, White Mesa Mill Site, San Juan County, Utah

Wednesday, April 09, 2008



*A non-detect considered "insensitive" will be the maximum reporting limit in a dataset and will exceed other non-detects by, for example, an order of magnitude (e.g., <10 versus <1.0 µg/L). In some cases, insensitive non-detects may also exceed detectable values in a dataset (e.g., <10 versus 3.5 µg/L).

Figure 17

Table 1 - Revisions to Proposed GWCLs

Well	Protection Level	Parameter	GWQS	Percentage Detects	DUSA Proposed GWCL	DRC Revised GWCL	Comment
MW-23	Class III	Tin	17,000 µg/L	100%	None	8,500 µg/L	DUSA failed to provide a GWCL for Tin in MW-23. Since the Tin concentrations in MW-23 has been 100% non-detect, the GWCL will be set at the fraction GWQS for Class III water - 8,500 µg/L.
MW-23	Class III	Chloromethane	30 µg/L	50%	15 µg/L	5.7 µg/L	The GWCL proposed is based on the Permit GWCL for Class III water. According to the flowchart, it should be the mean plus two standard deviations - 5.7 µg/L.
MW-23	Class III	Fluoride	4 mg/L	90.9%	0.7 mg/L	2 mg/L	The GWCL proposed is based on the mean plus two standard deviations. According to the flowchart, it should be the greater of the fraction of the standard or the highest historic value. The GWCL should be 2 mg/L (fraction of the GWQS).
MW-23	Class III	pH (s.u.)	6.5 - 8.5	100%	5.8 - 8.5	6.5 - 8.5	The GWCL proposed is based on the mean minus 20%. With the lowest observed value (6.9) being within the range of the GWQS, the GWCL should be set at as the GWQS - 6.5 - 8.5.
MW-23	Class III	Sulfate	TBD	100%	2,669 mg/L	2,524 mg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, DUSA should consider a modified approach to set a GWCL. However, setting the GWCL at the mean plus 20% is not protective of human health and the environmental. It would be more appropriate to set the GWCL as the mean plus two standard deviations - 2,524 mg/L.
MW-24	Class III	Tin	17,000 µg/L	100%	None	8,500 µg/L	DUSA failed to provide a GWCL for Tin in MW-24. Since the Tin concentrations in MW-24 has been 100% non-detect, the GWCL will be set at the fraction GWQS for Class III water - 8,500 µg/L.
MW-24	Class III	Uranium	30 µg/L	100%	36 µg/L	11.9 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the mean plus two standard deviations. However, DUSA failed to remove an outlier (46 µg/L) before calculating the GWCL. After removing the outlier, the GWCL is 11.9 µg/L.
MW-24	Class III	Fluoride	4 mg/L	100%	0.3 mg/L	0.36 mg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 0.36 mg/L.
MW-24	Class III	pH (s.u.)	6.5 - 8.5	100%	5.7 - 8.5	6.5 - 8.5	The GWCL proposed is based on the mean minus 20%. With the lowest observed value (6.9) being within the range of the GWQS, the GWCL should be set at as the GWQS - 6.5 - 8.5.
MW-24	Class III	Sulfate	TBD	100%	3,113 mg/L	2,903 mg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 2,903 mg/L.
MW-24	Class III	TDS	TBD	100%	4,932 mg/L	4,450 mg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 4,450 mg/L.
MW-25	Class III*	Ammonia	25 mg/L	100%	0.8 mg/L	0.77 mg/L	DUSA correctly based the proposed GWCL on the mean plus two standard deviations. However, the GWCL was calculated incorrectly, the GWCL should be 0.77 mg/L.
MW-25	Class III*	Nitrate + Nitrite (as N)	10 mg/L	0%	2.5 mg/L	5 mg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since manganese is above the GWQS in MW-25, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 5 mg/L.
MW-25	Class III*	Arsenic	50 µg/L	0%	12.5 µg/L	25 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since manganese is above the GWQS in MW-25, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 25 µg/L.
MW-25	Class III*	Beryllium	4 µg/L	0%	1 µg/L	2 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since manganese is above the GWQS in MW-25, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 2 µg/L.
MW-25	Class III*	Cadmium	5 µg/L	100%	1.7 µg/L	1.5 µg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 1.5 µg/L.
MW-25	Class III*	Chromium	100 µg/L	0%	25 µg/L	50 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since manganese is above the GWQS in MW-25, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 50 µg/L.
MW-25	Class III*	Cobalt	730 µg/L	72.7%	182.5 µg/L	365 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since manganese is above the GWQS in MW-25, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 365 µg/L.

Table 1 - Revisions to Proposed GWCLs

Well	Protection Level	Parameter	GWQS	Percentage Detects	DUSA Proposed GWCL	DRC Revised GWCL	Comment
MW-25	Class III*	Copper	1,300 µg/L	0%	325 µg/L	650 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since manganese is above the GWQS in MW-25, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 650 µg/L.
MW-25	Class III*	Iron	11,000 µg/L	0%	2,750 µg/L	5,500 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since manganese is above the GWQS in MW-25, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 5,500 µg/L.
MW-25	Class III*	Lead	15 µg/L	0%	3.75 µg/L	7.5 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since manganese is above the GWQS in MW-25, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 7.5 µg/L.
MW-25	Class III*	Manganese	800 µg/L	100%	2,037 µg/L	1,806 µg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 1,806 µg/L. With manganese being above the GWQS in MW-25, it changes the Groundwater Protection Level to Class III in this well.
MW-25	Class III*	Mercury	2 µg/L	0%	0.5 µg/L	1 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since manganese is above the GWQS in MW-25, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 1 µg/L.
MW-25	Class III*	Molybdenum	40 µg/L	100%	12 µg/L	20 µg/L	The GWCL proposed is based on the highest historical value. According to the flowchart, it should be the greater of the fraction of the standard or the highest historic value. The GWCL should be 20 µg/L (fraction of the GWQS).
MW-25	Class III*	Nickel	100 µg/L	0%	25 µg/L	50 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since manganese is above the GWQS in MW-25, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 50 µg/L.
MW-25	Class III*	Selenium	50 µg/L	0%	12.5 µg/L	25 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since manganese is above the GWQS in MW-25, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 25 µg/L.
MW-25	Class III*	Silver	100 µg/L	0%	25 µg/L	50 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since manganese is above the GWQS in MW-25, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 50 µg/L.
MW-25	Class III*	Thallium	2 µg/L	100%	1.2 µg/L	1.1 µg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 1.1 µg/L.
MW-25	Class III*	Tin	17,000 µg/L	100%	None	8,500 µg/L	DUSA failed to provide a GWCL for Tin in MW-25. Since the Tin concentrations in MW-25 has been 100% non-detect, the GWCL will be set at the fraction GWQS for Class III water - 8,500 µg/L.
MW-25	Class III*	Uranium	30 µg/L	100%	7.1 µg/L	6.5 µg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 6.5 µg/L.
MW-25	Class III*	Vanadium	60 µg/L	0%	15 µg/L	30 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since manganese is above the GWQS in MW-25, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 30 µg/L.
MW-25	Class III*	Zinc	5,000 µg/L	10%	1,250 µg/L	2,500 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since manganese is above the GWQS in MW-25, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 2,500 µg/L.
MW-25	Class III*	Gross Alpha	15 pCi/L	20%	3.75 pCi/L	7.5 pCi/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since manganese is above the GWQS in MW-25, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 7.5 pCi/L.

Table 1 - Revisions to Proposed GWCLs

Well	Protection Level	Parameter	GWQS	Percentage Detects	DUSA Proposed GWCL	DRC Revised GWCL	Comment
MW-25	Class III*	Acetone	700 µg/L	0%	175 µg/L	350 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since manganese is above the GWQS in MW-25, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 350 µg/L.
MW-25	Class III*	Benzene	5 µg/L	0%	1.25 µg/L	2.5 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since manganese is above the GWQS in MW-25, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 2.5 µg/L.
MW-25	Class III*	2-Butanone (MEK)	4,000 µg/L	0%	1,000 µg/L	2,000 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since manganese is above the GWQS in MW-25, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 2,000 µg/L.
MW-25	Class III*	Carbon Tetrachloride	5 µg/L	0%	1.25 µg/L	2.5 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since manganese is above the GWQS in MW-25, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 2.5 µg/L.
MW-25	Class III*	Chloroform	70 µg/L	0%	17.5 µg/L	35 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since manganese is above the GWQS in MW-25, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 35 µg/L.
MW-25	Class III*	Chloromethane	30 µg/L	40%	7.5 µg/L	15 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since manganese is above the GWQS in MW-25, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 15 µg/L.
MW-25	Class III*	Dichloromethane	5 µg/L	0%	1.25 µg/L	2.5 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since manganese is above the GWQS in MW-25, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 2.5 µg/L.
MW-25	Class III*	Naphthalene	100 µg/L	0%	25 µg/L	50 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since manganese is above the GWQS in MW-25, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 50 µg/L.
MW-25	Class III*	Tetrahydrofuran (THF)	46 µg/L	0%	11.5 µg/L	23 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since manganese is above the GWQS in MW-25, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 23 µg/L.
MW-25	Class III*	Toluene	1,000 µg/L	0%	250 µg/L	500 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since manganese is above the GWQS in MW-25, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 500 µg/L.
MW-25	Class III*	Xylenes (Total)	10,000 µg/L	0%	2,500 µg/L	5,000 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since manganese is above the GWQS in MW-25, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 5,000 µg/L.
MW-25	Class III*	Chloride	TBD	100%	38.8 mg/L	35 mg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 35 mg/L.
MW-25	Class III*	Fluoride	4 mg/L	100%	1 mg/L	0.42 mg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 0.42 mg/L.
MW-25	Class III*	pH (s.u.)	6.5 - 8.5	100%	5.8 - 8.5	6.5 - 8.5	The GWCL proposed is based on the mean minus 20%. With the lowest observed value (6.9) being within the range of the GWQS, the GWCL should be set at as the GWQS - 6.5 - 8.5.
MW-25	Class III*	Sulfate	TBD	100%	2,075 mg/L	1,933 mg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 1,933 mg/L.

Table 1 - Revisions to Proposed GWCLs

Well	Protection Level	Parameter	GWQS	Percentage Detects	DUSA Proposed GWCL	DRC Revised GWCL	Comment
MW-25	Class III*	TDS	TBD	100%	3,411 mg/L	2,976 mg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 2,976 mg/L.
MW-27	Class III*	Ammonia	25 mg/L	14%	6.25 mg/L	12.5 mg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since uranium is above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 12.5 mg/L.
MW-27	Class III*	Nitrate + Nitrite (as N)	10 mg/L	100%	6.1 mg/L	5.6 mg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 5.6 mg/L.
MW-27	Class III*	Arsenic	50 µg/L	0%	12.5 µg/L	25 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since uranium is above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 25 µg/L.
MW-27	Class III*	Beryllium	4 µg/L	0%	1 µg/L	2 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since uranium is above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 2 µg/L.
MW-27	Class III*	Cadmium	5 µg/L	0%	1.25 µg/L	2.5 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since uranium is above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 2.5 µg/L.
MW-27	Class III*	Chromium	100 µg/L	0%	25 µg/L	50 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since uranium is above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 50 µg/L.
MW-27	Class III*	Cobalt	730 µg/L	0.0%	182.5 µg/L	365 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since uranium is above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 365 µg/L.
MW-27	Class III*	Copper	1,300 µg/L	0%	325 µg/L	650 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since uranium is above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 650 µg/L.
MW-27	Class III*	Iron	11,000 µg/L	0%	2,750 µg/L	5,500 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since uranium is above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 5,500 µg/L.
MW-27	Class III*	Lead	15 µg/L	0%	3.75 µg/L	7.5 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since uranium is above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 7.5 µg/L.
MW-27	Class III*	Manganese	800 µg/L	0%	200 µg/L	400 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since uranium is above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 400 µg/L.
MW-27	Class III*	Mercury	2 µg/L	0%	0.5 µg/L	1 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since uranium is above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 1 µg/L.
MW-27	Class III*	Molybdenum	40 µg/L	0%	10 µg/L	20 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since uranium is above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 20 µg/L.

Table 1 - Revisions to Proposed GWCLs

Well	Protection Level	Parameter	GWQS	Percentage Detects	DUSA Proposed GWCL	DRC Revised GWCL	Comment
MW-27	Class III*	Nickel	100 µg/L	0%	25 µg/L	50 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since uranium is above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 50 µg/L.
MW-27	Class III*	Selenium	50 µg/L	100%	12.5 µg/L	25 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since uranium is above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 25 µg/L.
MW-27	Class III*	Silver	100 µg/L	0%	25 µg/L	50 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since uranium is above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 50 µg/L.
MW-27	Class III*	Thallium	2 µg/L	0%	0.5 µg/L	1 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since uranium is above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 1 µg/L.
MW-27	Class III*	Tin	17,000 µg/L	100%	None	8,500 µg/L	DUSA failed to provide a GWCL for Tin in MW-27. Since the Tin concentrations in MW-27 has been 100% non-detect, the GWCL will be set at the fraction GWQS for Class III water - 8,500 µg/L.
MW-27	Class III*	Uranium	30 µg/L	100%	37.7 µg/L	34 µg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 34 µg/L. With uranium being above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well.
MW-27	Class III*	Vanadium	60 µg/L	0%	15 µg/L	30 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since uranium is above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 30 µg/L.
MW-27	Class III*	Zinc	5,000 µg/L	0%	1,250 µg/L	2,500 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since uranium is above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 2,500 µg/L.
MW-27	Class III*	Acetone	700 µg/L	0%	175 µg/L	350 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since uranium is above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 350 µg/L.
MW-27	Class III*	Benzene	5 µg/L	0%	1.25 µg/L	2.5 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since uranium is above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 2.5 µg/L.
MW-27	Class III*	2-Butanone (MEK)	4,000 µg/L	0%	1,000 µg/L	2,000 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since uranium is above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 2,000 µg/L.
MW-27	Class III*	Carbon Tetrachloride	5 µg/L	0%	1.25 µg/L	2.5 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since uranium is above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 2.5 µg/L.
MW-27	Class III*	Chloroform	70 µg/L	0%	17.5 µg/L	35 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since uranium is above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 35 µg/L.

Table 1 - Revisions to Proposed GWCLs

Well	Protection Level	Parameter	GWQS	Percentage Detects	DUSA Proposed GWCL	DRC Revised GWCL	Comment
MW-27	Class III*	Chloromethane	30 µg/L	44.4%	7.5 µg/L	15 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since uranium is above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 15 µg/L.
MW-27	Class III*	Dichloromethane	5 µg/L	0%	1.25 µg/L	2.5 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since uranium is above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 2.5 µg/L.
MW-27	Class III*	Naphthalene	100 µg/L	0%	25 µg/L	50 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since manganese is above the GWQS in MW-25, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 50 µg/L.
MW-27	Class III*	Tetrahydrofuran (THF)	46 µg/L	0%	11.5 µg/L	23 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since uranium is above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 23 µg/L.
MW-27	Class III*	Toluene	1,000 µg/L	0%	250 µg/L	500 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since uranium is above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 500 µg/L.
MW-27	Class III*	Xylenes (Total)	10,000 µg/L	0%	2,500 µg/L	5,000 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since uranium is above the GWQS in MW-27, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 5,000 µg/L.
MW-27	Class III*	Chloride	TBD	100%	41.6 mg/L	38 mg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 38 mg/L.
MW-27	Class III*	Fluoride	4 mg/L	100%	1 mg/L	0.85 mg/L	The GWCL proposed is based on the Permit GWCL for Class III water. According to the flowchart, it should be the mean plus two standard deviations - 0.85 mg/L.
MW-27	Class III*	pH (s.u.)	6.5 - 8.5	100%	6.1 - 8.5	6.5 - 8.5	The GWCL proposed is based on the mean minus 20%. With the lowest observed value (7.4) being within the range of the GWQS, the GWCL should be set at as the GWQS - 6.5 - 8.5.
MW-27	Class III*	Sulfate	TBD	100%	486 mg/L	462 mg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 462 mg/L.
MW-27	Class III*	TDS	TBD	100%	1,223 mg/L	1,075 mg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 1,075 mg/L.
MW-28	Class III	Tin	17,000 µg/L	100%	None	8,500 µg/L	DUSA failed to provide a GWCL for Tin in MW-28. Since the Tin concentrations in MW-28 has been 100% non-detect, the GWCL will be set at the fraction GWQS for Class III water - 8,500 µg/L.
MW-28	Class III	Chloromethane	30 µg/L	54.5%	15 µg/L	4.6 µg/L	The GWCL proposed is based on the Permit GWCL for Class III water. According to the flowchart, it should be the mean plus two standard deviations - 4.6 µg/L.
MW-28	Class III	Chloride	TBD	100%	107 mg/L	105 mg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 105 mg/L.
MW-28	Class III	Fluoride	4 mg/L	100%	2 mg/L	0.73 mg/L	The GWCL proposed is based on the Permit GWCL for Class III water. According to the flowchart, it should be the mean plus two standard deviations - 0.73 mg/L.
MW-28	Class III	pH (s.u.)	6.5 - 8.5	100%	5.4 - 8.5	6.1 - 8.5	The GWCL proposed is based on the mean minus 20%. With the lowest observed value (6.3) being below the range of the GWQS, the GWCL should be set on the basis of the mean minus two standard deviations - 6.1 - 8.5.
MW-28	Class III	Sulfate	TBD	100%	2,833 mg/L	2,533 mg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 2,533 mg/L.
MW-28	Class III	TDS	TBD	100%	4,413 mg/L	3,852 mg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 3,852 mg/L.
MW-29	Class III	Tin	17,000 µg/L	100%	None	8,500 µg/L	DUSA failed to provide a GWCL for Tin in MW-29. Since the Tin concentrations in MW-29 has been 100% non-detect, the GWCL will be set at the fraction GWQS for Class III water - 8,500 µg/L.

Table 1 - Revisions to Proposed GWCLs

Well	Protection Level	Parameter	GWQS	Percentage Detects	DUSA Proposed GWCL	DRC Revised GWCL	Comment
MW-29	Class III	Manganese	800 µg/L	100%	6,033 µg/L	5,624 µg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 5,624 µg/L.
MW-29	Class III	Chloride	TBD	100%	46 mg/L	41 mg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 41mg/L.
MW-29	Class III	pH (s.u.)	6.5 - 8.5	100%	5.6 - 8.5	6.46 - 8.5	The GWCL proposed is based on the mean minus 20%. With the lowest observed value (6.5) being at the lower range of the GWQS, the GWCL should be set on the basis of the mean minus two standard deviations - 6.46 - 8.5.
MW-29	Class III	Sulfate	TBD	100%	3,342 mg/L	2,946 mg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 2,946 mg/L.
MW-30	Class II	Nitrate + Nitrite (as N)	10 mg/L	100%	16.7 mg/L	2.5 mg/L	The GWCL proposed is based on the mean plus 20%. However, Intera concludes in Section 2.54 of the Background Report that the Nitrate + Nitrite (as N) found in MW-30 is associated with the on-site chloroform contamination. Since this Nitrate + Nitrite (as N) contamination is associated with the on-site chloroform contamination, it is a man-made contaminant; therefore, background should not be set above the fraction of the GWQS - 2.5 mg/L.
MW-30	Class II	Tin	17,000 µg/L	100%	None	4,250 µg/L	DUSA failed to provide a GWCL for Tin in MW-30. Since the Tin concentrations in MW-30 has been 100% non-detect, the GWCL will be set at the fraction GWQS for Class III water - 4,250 µg/L.
MW-30	Class II	Uranium	30 µg/L	100%	8.5 µg/L	8.32 µg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 8.32 µg/L.
MW-30	Class II	Chloride	TBD	100%	150 mg/L	128 mg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 128 µg/L.
MW-30	Class II	Fluoride	4 mg/L	100%	1 mg/L	0.51 mg/L	The GWCL proposed is based on the Permit GWCL for Class III water. According to the flowchart, it should be the mean plus two standard deviations - 0.51 mg/L.
MW-30	Class II	pH (s.u.)	6.5 - 8.5	100%	5.9 - 8.5	6.5 - 8.5	The GWCL proposed is based on the mean minus 20%. With the lowest observed value (6.9) being within the range of the GWQS, the GWCL should be set at as the GWQS - 6.5 - 8.5.
MW-30	Class II	Sulfate	TBD	100%	1,060 mg/L	972 mg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 972 mg/L.
MW-30	Class II	TDS	TBD	100%	2,094 mg/L	1,918 mg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 1,918 mg/L.
MW-31	Class III*	Ammonia	25 mg/L	14.3%	6.25 mg/L	12.5 mg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since selenium is above the GWQS in MW-31, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 12.5 µg/L.
MW-31	Class III*	Nitrate + Nitrite (as N)	10 mg/L	100%	28.7 mg/L	5 mg/L	The GWCL proposed is based on the mean plus 20%. However, Intera concludes in Section 2.54 of the Background Report that the Nitrate + Nitrite (as N) found in MW-31 is associated with the on-site chloroform contamination. Since this Nitrate + Nitrite (as N) contamination is associated with the on-site chloroform contamination, it is a man-made contaminant; therefore, background should not be set above the fraction of the GWQS - 5 mg/L.
MW-31	Class III*	Arsenic	50 µg/L	0%	12.5 µg/L	25 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since selenium is above the GWQS in MW-31, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 25 µg/L.
MW-31	Class III*	Beryllium	4 µg/L	0%	1 µg/L	2 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since selenium is above the GWQS in MW-31, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 2 µg/L.
MW-31	Class III*	Cadmium	5 µg/L	0%	1.25 µg/L	2.5 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since selenium is above the GWQS in MW-31, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 2.5 µg/L.

Table 1 - Revisions to Proposed GWCLs

Well	Protection Level	Parameter	GWQS	Percentage Detects	DUSA Proposed GWCL	DRC Revised GWCL	Comment
MW-31	Class III*	Chromium	100 µg/L	0%	25 µg/L	50 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since selenium is above the GWQS in MW-31, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 50 µg/L.
MW-31	Class III*	Cobalt	730 µg/L	0%	182.5 µg/L	365 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since selenium is above the GWQS in MW-31, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 365 µg/L.
MW-31	Class III*	Copper	1,300 µg/L	0%	325 µg/L	650 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since selenium is above the GWQS in MW-31, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 650 µg/L.
MW-31	Class III*	Iron	11,000 µg/L	0%	2,750 µg/L	5,500 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since selenium is above the GWQS in MW-31, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 5,500 µg/L.
MW-31	Class III*	Lead	15 µg/L	0%	3.75 µg/L	7.5 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since selenium is above the GWQS in MW-31, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 7.5 µg/L.
MW-31	Class III*	Manganese	800 µg/L	0%	200 µg/L	400 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since selenium is above the GWQS in MW-31, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 400 µg/L.
MW-31	Class III*	Mercury	2 µg/L	0%	0.5 µg/L	1 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since selenium is above the GWQS in MW-31, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 1 µg/L.
MW-31	Class III*	Molybdenum	40 µg/L	0%	10 µg/L	20 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since selenium is above the GWQS in MW-31, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 20 µg/L.
MW-31	Class III*	Nickel	100 µg/L	0%	25 µg/L	50 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since selenium is above the GWQS in MW-31, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 50 µg/L.
MW-31	Class III*	Silver	100 µg/L	0%	25 µg/L	50 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since selenium is above the GWQS in MW-31, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 50 µg/L.
MW-31	Class III*	Thallium	2 µg/L	0%	0.5 µg/L	1 µg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 1 µg/L.
MW-31	Class III*	Tin	17,000 µg/L	100%	None	8,500 µg/L	DUSA failed to provide a GWCL for Tin in MW-31. Since the Tin concentrations in MW-31 has been 100% non-detect, the GWCL will be set at the fraction GWQS for Class III water - 8,500 µg/L.
MW-31	Class III*	Vanadium	60 µg/L	0%	15 µg/L	30 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since selenium is above the GWQS in MW-31, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 30 µg/L.
MW-31	Class III*	Zinc	5,000 µg/L	0%	1,250 µg/L	2,500 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since selenium is above the GWQS in MW-31, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 2,500 µg/L.

Table 1 - Revisions to Proposed GWCLs

Well	Protection Level	Parameter	GWQS	Percentage Detects	DUSA Proposed GWCL	DRC Revised GWCL	Comment
MW-31	Class III*	Gross Alpha	15 pCi/L	0%	3.75 pCi/L	7.5 pCi/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since selenium is above the GWQS in MW-31, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 7.5 pCi/L.
MW-31	Class III*	Acetone	700 µg/L	0%	175 µg/L	350 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since selenium is above the GWQS in MW-31, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 350 µg/L.
MW-31	Class III*	Benzene	5 µg/L	0%	1.25 µg/L	2.5 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since selenium is above the GWQS in MW-31, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 2.5 µg/L.
MW-31	Class III*	2-Butanone (MEK)	4,000 µg/L	0%	1,000 µg/L	2,000 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since selenium is above the GWQS in MW-31, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 2,000 µg/L.
MW-31	Class III*	Carbon Tetrachloride	5 µg/L	0%	1.25 µg/L	2.5 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since selenium is above the GWQS in MW-31, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 2.5 µg/L.
MW-31	Class III*	Chloroform	70 µg/L	0%	17.5 µg/L	35 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since selenium is above the GWQS in MW-31, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 35 µg/L.
MW-31	Class III*	Chloromethane	30 µg/L	55.6%	7.5 µg/L	6.1 µg/L	The GWCL proposed is based on the Permit GWCL for Class III water. According to the flowchart, it should be the mean plus two standard deviations - 6.1 µg/L.
MW-31	Class III*	Dichloromethane	5 µg/L	0%	1.25 µg/L	2.5 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since selenium is above the GWQS in MW-31, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 2.5 µg/L.
MW-31	Class III*	Naphthalene	100 µg/L	0%	25 µg/L	50 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since selenium is above the GWQS in MW-31, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 50 µg/L.
MW-31	Class III*	Tetrahydrofuran (THF)	46 µg/L	0%	11.5 µg/L	23 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since selenium is above the GWQS in MW-31, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 23 µg/L.
MW-31	Class III*	Toluene	1,000 µg/L	0%	250 µg/L	500 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since selenium is above the GWQS in MW-31, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 500 µg/L.
MW-31	Class III*	Xylenes (Total)	10,000 µg/L	0%	2,500 µg/L	5,000 µg/L	DUSA followed the flowchart correctly by setting the GWCL at the fraction of the GWQS (25%) for Class II water. However, since selenium is above the GWQS in MW-31, it changes the Groundwater Protection Level to Class III in this well. Therefore, the GWCL will be set at 50% of the GWQS for Class III water - 5,000 µg/L.
MW-31	Class III*	Chloride	TBD	100%	159 mg/L	143 mg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 143 mg/L.
MW-31	Class III*	Fluoride	4 mg/L	100%	1.2 mg/L	2 mg/L	The GWCL proposed is based on the highest historical value. According to the flowchart, it should be the greater of the fraction of the standard or the highest historic value. The GWCL should be 2 mg/L (fraction of the GWQS).
MW-31	Class III*	pH (s.u.)	6.5 - 8.5	100%	6.0 - 8.5	6.5 - 8.5	The GWCL proposed is based on the mean minus 20%. With the lowest observed value (6.8) being within the range of the GWQS, the GWCL should be set at as the GWQS - 6.5 - 8.5.

Table 1 - Revisions to Proposed GWCLs

Well	Protection Level	Parameter	GWQS	Percentage Detects	DUSA Proposed GWCL	DRC Revised GWCL	Comment
MW-3A	Class III	Tin	17,000 µg/L	100%	None	8,500 µg/L	DUSA failed to provide a GWCL for Tin in MW-3A. Since the Tin concentrations in MW-3A has been 100% non-detect, the GWCL will be set at the fraction GWQS for Class III water - 8,500 µg/L.
MW-3A	Class III	Chloromethane	30 µg/L	75%	15 µg/L	9.4 µg/L	The GWCL proposed is based on the Permit GWCL for Class III water. According to the flowchart, it should be the mean plus two standard deviations - 9.4 µg/L.
MW-3A	Class III	Chloride	TBD	100%	73.7 mg/L	70 mg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 70 mg/L.
MW-3A	Class III	pH (s.u.)	6.5 - 8.5	100%	5.8 - 8.5	6.5 - 8.5	The GWCL proposed is based on the mean minus 20%. With the lowest observed value (6.9) being within the range of the GWQS, the GWCL should be set at as the GWQS - 6.5 - 8.5.
MW-3A	Class III	Sulfate	TBD	100%	4,143 mg/L	3,640 mg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 3,640 mg/L.
MW-3A	Class III	TDS	TBD	100%	6,657 mg/L	5,805 mg/L	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 5,805 mg/L.

Table 2 - Groundwater Compliance Limits Categorized According to Statistical Flow Process

Parameter Categorized*	Less Than 50% Non-Detects or Non Parametric Data Sets			>50% to 90% Non-Detects or Non-Parametric Data Sets		>90% Non-Detects		Total
	Mean + 2 Sigma**	Highest Historic Value	Fraction of GWQS	Highest Historic Value	Fraction of GWQS	Poisson Limit	Fraction of GWQS ***	
Number of GWCLs Established by Approach	80	7	22	2	26	0	205	342
Percentage of GWCLs Established by Approach	23%	2.0%	6.4%	0.6%	7.6%	0.0%	59.9%	100%
Number of GWCLs Exceeding GWQS by Approach	15	0	NA	0	NA	0	NA	15
Percentage of GWCLs Exceeding GWQS by Approach	4.4%	0.0%	NA	0.0%	NA	0.0%	NA	4.4%

* Breakdown of GWCLs by approach assumes that the proposed GWCLs that deviate from the approved flowchart have been corrected.

** Mean + 2 Sigma includes the arithmetic mean for data sets with 15% or less non-detects and the Cohen's mean and Aitchison's mean for data sets with >15% to 50% non-detects

*** Includes nine proposed GWCLs for Tin

NA = not applicable

Table 3 - Proposed GWCLs That Exceed the GWQS

Well	Parameter	Proposed GWCL (µg/L)	Proposed GWCL Based on	No. of Detects/ No. of Samples used in statistical analysis	Percent Detects	GWQS (µg/L)	Trend	Will you have problems if you make the GWCL equal to the GWQS?	Why?	Error in Selected GWCL? (from Table 1)	DRC Proposed GWCL (µg/L)
MW-23	Uranium	32	Normal Mean + 2σ	10/11	100%	30	None	Probably not	Highs occurred at beginning of sampling, recent sampling results have been below GWQS	No	32
MW-24	Manganese	7,507	Normal Mean + 2σ	12/12	100%	800	None	Yes	Results clearly exceed GWQS	No	7,507
MW-25	Manganese	2,037	Normal Mean + 20%	11/11	100%	800	None	Yes	Results clearly exceed GWQS	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 1,806 µg/L.	1,806
MW-27	Uranium	37.7	Normal Mean + 20%	10/10	100%	30	None	Yes	Results clearly exceed GWQS	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 34 µg/L.	34
MW-28	Cadmium	5.2	Normal Mean + 2σ	11/11	100%	5	None	Probably not	Even though proposed GWCL exceeds GWQS, the actual results do not	No	5.2
MW-28	Manganese	1837	Normal Mean + 2σ	11/11	100%	800	None	Yes	Results clearly exceed GWQS	No	1,837
MW-28	pH (s.u.)	5.4 - 8.5	Normal Mean - 20%	11/11	100%	6.5 - 8.5	Down	Yes	Two results already exceed GWQS	The GWCL proposed is based on the mean minus 20%. With the lowest observed value (6.3) being below the range of the GWQS, the GWCL should be set on the basis of the mean minus two standard deviations - 6.1 - 8.5.	6.1 - 8.5
MW-29	Manganese	6033	Normal Mean + 20%	9/10	100%	800	None	Yes	Results clearly exceed GWQS	The GWCL proposed is based on the mean plus 20%. According to the flowchart, it should be the mean plus two standard deviations - 5,624 µg/L.	5,624
MW-29	pH (s.u.)	5.6 - 8.5	Normal Mean - 20%	9/10	100%	6.5 - 8.5	None	Maybe	Although none of the results have exceed the GWQS, there was one result near the lower range of the GWQS	The GWCL proposed is based on the mean minus 20%. With the lowest observed value (6.5) being at the lower range of the GWQS, the GWCL should be set on the basis of the mean minus two standard deviations - 6.46 - 8.5.	6.46 - 8.5
MW-31	Selenium	71	Normal Mean + 2σ	10/10	100%	50	None	Yes	Results clearly exceed GWQS	No	71
MW-3A	Cadmium	8.3	Normal Cohen's Mean + 2σ	9/9	66.7%	5	None	Probably not	Highs occurred at beginning of sampling and are the reason for high proposed GWCL. After more monitoring events the GWCL should be re-evaluated	No	8.3
MW-3A	Manganese	6,287	Normal Mean + 2σ	9/9	100%	800	Down	Probably not	Highs occurred at beginning of sampling and are the reason for high proposed GWCL. After more monitoring events the GWCL should be re-evaluated	No	6,287
MW-3A	Nickel	105	Normal Aitchison's Mean + 2σ	9/9	55.6%	100	Down	Probably not	Highs occurred at beginning of sampling and are the reason for high proposed GWCL. After more monitoring events the GWCL should be re-evaluated	No	105
MW-3A	Selenium	89	Normal Mean + 2σ	8/9	100%	50	None	Yes	Results clearly exceed GWQS	No	89
MW-3A	Uranium	35	Normal Mean + 2σ	8/9	100.0%	30	None	Probably not	The first monitoring event results exceeded the GWQS, the following monitoring event results do not	No	35