



September 12, 2018

Explanation of the Handout Provided by Montana DEQ at the August 29, 2018 Stakeholder Meeting in Miles City Regarding the Tongue River Salinity Total Maximum Daily Load (TMDL) Project

An updated version of the handout is available on the Tongue River Salinity TMDL project website at: <http://mtwaterqualityprojects.pbworks.com>. Column numbers have been added to the top of the handout to assist with following the information provided in this document. A correction was also made to Column 1, changing the scenario name "City of Ashland Wastewater Reduction" to "Ashland County Water & Sewer District WWTP Reduction" to provide the correct name of this entity (WWTP = wastewater treatment plant).

A copy of the presentation given at the meeting is also available on the project website. Slides 41 through 62 provide the background and explanatory information for the handout, and specific presentation slides are referenced below.

Handout Explanation

The handout shows potential TMDL allocations that may satisfy the salinity water quality standard for electrical conductivity (EC) in the Tongue River at Brandenburg, MT. An EC TMDL for the Tongue River is calculated as the flow of the Tongue River multiplied by the EC water quality standard. This calculation provides the total allowable load of EC for that specific flow in the Tongue River that is then allocated among the identified sources of EC. Sources are included in **Column 1** of the table. See slides 41 through 50 of the presentation for additional explanation.

The information in the table is based on data from early May 2016, since EC values measured in the Tongue River during the Spring of 2016 were very high and could represent a worst-case scenario (see slide 54 of the presentation). For the example shown in the table, DEQ used actual flow data from the USGS gage at the Tongue River Reservoir Dam (station number 06307500) and from the USGS gage at Brandenburg (station number 06307830) (see slide 55 of the presentation and the footnotes on the handout). The EC values provided in the table are only applicable to early May 2016, and are an example showing how the EC water quality standard could be met during a worst-case scenario.

Column 2 of the table provides the potential TMDL allocation for each source, shown as a percent reduction in salt load. **Column 2** also contains salt additions from potential future sources. **Column 3** then shows how much that reduction or increase changes the salt load in the receiving waterbody (the orange rows show how much salt reduction may be achieved in the Tongue River Reservoir; the yellow rows show how much salt reduction or increase may be achieved in the Tongue River below the reservoir). **Column 4** shows the resulting percent reduction (or increase) that may be achieved at

Brandenberg from that change in salt load, and **Column 5** shows the corresponding EC value at Brandenberg (note that column five is not additive; values are independent). These percent reductions/increases apply equally to EC load and EC concentration (see slide 53).

Additionally, slide 56 of the presentation shows that a 21.5% reduction in salt was needed to meet the EC water quality standard in the Tongue River at Brandenberg on May 6, 2016. This can be compared to the percent reductions shown in **Column 4** of the handout. The table on the handout shows that the combination of the source load reductions alone would not have resulted in meeting the EC water quality standard for the Tongue River at Brandenberg on May 6, 2016. However, the EC value at Brandenberg would have decreased even further with additional flow released from the reservoir. This is demonstrated in the table with the shown addition of 80 cubic feet per second (cfs).

As further detailed on slide 62 of the presentation, Montana DEQ is pursuing a lease of the Northern Cheyenne Tribe's compact water stored in the Tongue River Reservoir, with the intent to release the water over a three-month period each Spring for 10 years.

Short Definitions of Table Columns

| Column Number | Information Explanation | Information Determination |
|---------------|--|--|
| 1 | Existing or potential future source of salt, and scenario for changing salt load | None |
| 2 | Percent reduction or percent increase of salt from the source (the potential TMDL allocation). | This potential was determined from the model. Unlike the EC values in the table that are only applicable to the Spring of 2016, the potential allocation applies every year. |
| 3 | <p>The receiving waterbody's percent change in salt load that results from the reduction (or increase) in the amount of salt contributed by the source.</p> <p>The Tongue River Reservoir is the receiving waterbody for salt coming from: the portion of the watershed in the state of Wyoming, Decker Coal Company, and CBM contributions (orange rows).</p> <p>The Tongue River below the reservoir is the receiving waterbody for: agricultural operations taking place downstream of the reservoir, potential discharges from the Ashland County Water & Sewer District WWTP, and potential future agricultural practices on Northern Cheyenne tribal land (yellow rows).</p> | Except for the baseline data from the USGS gage in row 1, the number in this column is calculated. |
| 4 | The percent reduction of salt in the Tongue River at Brandenberg, MT resulting from the change in salt contribution from the source contained in Column 2. | Except for the baseline data from the USGS gage in row 1, the number in this column is calculated. |

| Column Number | Information Explanation | Information Determination |
|---------------|--|---|
| 5 | The EC value of the Tongue River at Brandenburg that corresponds to the percent reduction shown in Column 4. | The EC value only corresponds to the source and percent reductions in that row. This column is not additive. Except for the baseline data from the USGS gage in row 1, the number in this column is calculated. |