



STATE OF
COLORADO

Simmons - DNR, Leigh <leigh.simmons@state.co.us>

M2022013, Two Rivers groundwater review

Simmons - DNR, Leigh <leigh.simmons@state.co.us>
To: "Zuber - DNR, Rob" <rob.zuber@state.co.us>

Tue, Feb 28, 2023 at 9:05 PM

Rob,

Attached is my final review memo for the Two Rivers application. All of the issues I identified have been addressed. I feel satisfied that the response is sufficient for all but one of them. I'll leave it to you to determine whether the response to item 4 is sufficient.

Leigh Simmons
Environmental Protection Specialist



COLORADO
Division of Reclamation,
Mining and Safety
Department of Natural Resources

P 303.866.3567 x 8121 | C 720.220.1180 | F 303.832.8106
1313 Sherman Street, Room 215, Denver, CO 80203
leigh.simmons@state.co.us | <https://drms.colorado.gov>

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2 attachments



M2022013_LDSMemo_4.docx
80K



M2022013_LDSMemo_4.pdf
296K



Interoffice Memorandum

February 28, 2023

From: Leigh Simmons
To: Rob Zuber

**Subject: Two Rivers Sand, Gravel and Reservoir Project (Permit No. M-2022-013)
Application**

I have reviewed the material submitted in response to the Division's third adequacy review letter, which included my third memo. My comments on the applicant's response are given below, together with the original comment for reference.

Comments:

1. *The response is sufficient*
2. *The response is sufficient*
3. *The response is sufficient*
4. *Water wells have been shown on the map and a table has been added to the edge of Exhibit G: Water Information Map with the requested information. The same table is proposed to be added to the file as Exhibit G, Addendum 11.
Eight wells are listed, including two that are owned by Varra Companies and three more that are on the south side of the South Platte River which can be considered a groundwater divide. The three remaining wells (Shable, Dos Rios and Lafarge) are each within the modeled cone of depression, which suggests that there is the potential for their yield to be impacted by the proposed operation. The data presented suggests that the water level in the Shable well could be reduced by around 10', and a bit less in the Dos Rios and Lafarge wells.*

Since impacts to three existing wells are predicted, please address in Exhibit G how such impacts will be mitigated. It is likely that this will take the form of a signed agreement with the well-owner that can be included in the Exhibit.

In response to item 4 the applicant stated that the three wells are all more than 200' from affected land, which is not relevant since it doesn't alter the fact that the wells are within the modeled cone of depression caused by the proposed operation. The applicant also stated that the Dos Rios well is north of the Big Thompson River; this may indeed be true, however the coordinates provided plot south of the river, and the well is shown as being south of the river on Map G. Finally the applicant committed to obtaining a well permit from DWR prior to commencing operations. No commitment has been made to making a formal agreement with neighbors or well-owners.

5. *Exhibit G: Water Information Map shows several symbols that are not included in the map key, and the text in many of the labels on the map is illegible (including what are presumably stream stage elevations).*

Please revise Exhibit G: Water Information Map to improve its legibility and to provide a complete key for map symbols (it may be helpful to remove the aerial imagery base-map). The revised map should be prepared and signed by a registered land surveyor, professional engineer, or other qualified person, as is required by Rule 6.2.1(2)(b).

(With reference to the updated version of Exhibit G: Water Information Map): When the pdf of the map is viewed at 300% zoom most of the labels are legible (except where they are obscured by other map elements), however this level of zoom makes the map very difficult to use.

Several symbols are used on the map but are not identified in the key or labelled on the map, these include:

- *Inverted red triangles (as shown in figure 1) – symbols for point of access, smaller scale than key*
- *Bold red lines and squares (as shown in figure 2) - removed*
- *Yellow highlighting on contour lines (as shown in figure 2) - removed*
- ***Dashed brown line (as shown in figure 2)***
- *Yellow polygons (as shown in figure 3) - removed*
- ***Blue marks (as shown in figure 3) – partially removed***
- *Fine dashed red lines (as shown in figure 3) - removed*
- *Light red dots (as shown in figure 3) - removed*
- *Black triangles (as shown in figure 3) - removed*

The map has not been signed, stamped, or otherwise certified by a registered land surveyor, professional engineer, or other qualified person.

The revised map addresses some of the points from the previous adequacy review, but not all. In particular, the scale at which some of the labels are drawn renders them illegible, even at 300% zoom. The map has been digitally signed by Peter Christensen, but his qualifying credentials are not given.

Map G was revised. The response is sufficient.

6. *The response is sufficient*
7. *The response is sufficient*
8. *The response is sufficient*
9. *The response is sufficient*
10. *The response is sufficient*
11. *The response is sufficient*
12. *The response is sufficient*
13. *The response is sufficient*

14. The response is sufficient.

15. The response is sufficient

A groundwater monitoring plan, prepared by AWES, was submitted with the January 4, 2023 packet. The plan proposes to use 12 existing holes, which were completed as 1" monitoring wells in 2015. Boring logs are given as an appendix to the plan, but no well completion data is available. The elevation of each hole is given in a table in Exhibit G, Addendum 10, together with monthly water level data from September 2015 through June 2022. Adequacy comments on the proposed plan are given below, organized by the section of the plan itself.

Section 1 of the proposed plan states the objectives and gives the background information.

Section 2.2 states that water levels will continue to be monitored on a monthly basis during dewatering operations, then quarterly for one year following reclamation, then annually until the permit is terminated.

16. Please amend section 2.2 of the plan to continue quarterly monitoring until the permit is terminated

The applicant has committed to quarterly monitoring until permit termination. The response is sufficient.

Section 2.3 describes the monitoring of groundwater quality. It states that "two baseline samples will be obtained from one upgradient and two downgradient wells no less than two months apart. The wells will be sampled for the laboratory parameters if there is an exceedance in the stormwater laboratory parameters. On an annual basis field parameters of pH, specific conductance and temperature will be measured in waters obtained from the selected wells after three well bore volumes have been evacuated." The only laboratory parameters proposed to be measured are Arsenic (total) and Selenium (dissolved).

17. The proposed water quality monitoring program described in section 2.3 needs further consideration. In addition to enforcing the requirements of the Mineral Rules and Regulations of the Colorado Mined Land Reclamation Board for the Extraction of Construction Materials ("Minerals Rules"), the Division is an implementing agency for Regulation No. 41 – The Basic Standards for Groundwater ("Reg. 41"), available from the Colorado Department of Public Health and the Environment website:

<https://cdphe.colorado.gov/water-quality-control-commission-regulations>

In order to better explain how the Division interprets its responsibilities under Reg. 41, a Groundwater Monitoring and Protection Technical Bulletin was produced in 2019 and is available on the DRMS website, or from the following link:

https://drive.google.com/file/d/121Uc_KmuAx7xhc8heQcROPnK_u-kcG-J/view?pli=1

Since the proposed operation clearly has the potential to impact groundwater, and groundwater at the site has not yet been classified, the Division will apply the Interim Narrative Standard from Reg. 41. At least one downgradient groundwater point of compliance will need to be established, where the standard will be applied. Typically the Division requires 5 quarters of water quality data prior to disturbance in order to establish baseline conditions, (without reliable baseline data the most restrictive parameter values from Tables 1-4 of Reg.

41 would apply). When evaluating a groundwater monitoring plan the Division typically looks for an analytical suite that includes the parameters from Tables 1-4, however the parameter list may be reduced if justification is provided.

The applicant has committed to establishing a down-gradient groundwater point of compliance (but has not yet identified it). The applicant has also committed to 5 quarters of sampling in order to establish baseline conditions. An expanded analytical suite has been proposed, with justification. The response is sufficient.

Section 2.4 describes how water level data will be used for drawdown and mounding analyses. It states that "Variations in pre-mining water levels will be presented on a two dimensional contour map and will be compared to numerical predictions and will be provided to the Division upon request."

18. Please amend section 2.4 to specify that water monitoring data will be compiled into a report and submitted to the Division annually. Please also specify the date. The report should include the operator's analysis of the data, as well as the data itself.

The applicant has committed to submitting an annual report to the Division with all monitoring data during the first quarter following the sampling year. The response is sufficient.

Section 2.5 describes a contingency plan and abatement

Section 3 specifies responsible personnel and subcontractors

Section 4 describes a Quality Assurance and Quality Control plan.

Sampling methods are given in Appendix B.