

Memorandum

Date: August 29, 2023

From: Blake Burkard

To: Water Right File 37-23099

Subject: Licensing Review of Certified Water Right Examiner Report

Water right permit 37-23099 authorizes the diversion of ground water at 0.17 cfs for the uses of heating and cooling of one home in Blaine County. The field exam for this right was performed by Certified Water Right Examiner #151, G. Erick Powell, P.E., on March 8, 2023. The purpose of this memo is to review the recommendations made in the field exam report submitted March 31, 2023.

Ownership:

Application for permit 37-23099 was submitted by Brockway Engineering, PLLC, on behalf of Hartley Rogers, the owner of the permit. The POU for this right is still owned by Rogers, so there are no ownership concerns at the time of this review.

Overlap:

The submitted beneficial use field report determined that there were no other water rights with the same place of use or with the same source and point of diversion. However, in the attached narrative, Powell states that the heating and cooling uses are diverted from the house's domestic well. The domestic system is authorized by water right 37-20798, licensed in 2013. The application for 37-23099 stated: "Existing domestic well will be used for heating and cooling supply for residence." This is also contrary to the evidence submitted with the field report, which shows that a new well was drilled to replace the domestic well. While Powell made no effort to provide an overlap review, the supply well was designed to provide water for heating, cooling, and domestic uses without limitations. The production well pump is 7.5 horsepower, and assuming 60 ft of lift based on the well drillers report, the well should be able to provide 0.26 cfs for both uses. Since 0.26 cfs exceeds the combined flow rates for 37-20798 and 37-23099, I am not recommending a combined use limit for the right.

Point of Diversion and Place of Use:

The point of diversion, injection location, and place of use were confirmed in the field report to be SW¼ NW¼ NE¼, Sec. 23, Twp 05N, Rge 17E in Blaine County. The submitted narrative stated that the production well was tagged as D0066499, which conflicts with the attached well log.

The injection well was also described incorrectly in the narrative. The correct tag numbers for the production and the injection well are D0075047 and D0078042, respectively.

Diversion Rate and Volume:

The examiner used the installed totalizer flow meter to recommend a rate of 0.16 cfs, which represented the heating system being used at its full capacity. I agree with the rate recommendation. The totalizer showed that approximately 24.4 acre-ft had been diverted per year, but the recommended volume for the water right was 43.5 acre-ft, which is 1.78 times greater than the actual diverted amount. In addition to being a large overestimate, the heating and cooling volumes were almost identical, and a home in Ketchum would require a much larger volume for heating than for cooling due to its climate. I used totalizer data to recommend a volume below:

Using the weather station identified in Powell's analysis, heating and cooling degree days for the year 2022 were used to determine a general breakdown of the volume used:

Days requiring heating: 313 (86.5% of volume) Est. volume = 21.1 AF

Days requiring cooling: 49 (13.5% of volume) Est. volume = 3.3 AF

The variation of heating and cooling requirements from year to year within the period of record. In order to recommend a volume that would be adequate for extreme years, I calculated percent difference between the maximum and minimum degree day values and added that to the estimated volumes:

$$\%diff \text{ Heating} = \frac{9215 - 7873}{\left(\frac{9215 + 7873}{2}\right)} = 15.7\%$$

$$\text{Heating recommendation} = 21.1 + (21.1 * 0.157) = 24.4 \text{ AF}$$

$$\%diff \text{ Cooling} = \frac{203 - 8}{\left(\frac{203 + 8}{2}\right)} = 185\%$$

$$\text{Cooling recommendation} = 3.3 + (3.3 * 1.85) = 6.1 \text{ AF}$$

Total Volume Recommendation: 30.5 AF

Source for degree days: https://pnwpest.org/dd/model_app

Conditions:

The reviewer recommended removing conditions 26A and 933 and altering condition 01J. 26A is routinely removed, but 933's usage description states that it should remain on licenses even if they are non-consumptive uses. 01J shouldn't have been placed on the permit, according to the measuring device flowchart, and I recommend replacing it with 01R. The reviewer recommended keeping the rest of the conditions, to which I agree.