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DEPARTMENT OF
WATER RESOURCES

August 7, 2017

Shelley Keen
Idaho Department of Water Resources
State Office
PO Box 83720
Boise, Idaho 83720-0098

Subject: Preliminary Water Right License 37-22815 – Petition for Reconsideration
File: 322.0080

Dear Shelley,

Water Right License 37-22815, signed on July 25, 2017, authorizes a diversion rate of 0.82 cfs for heating and cooling purposes at the Hemingway Elementary School (Blaine County School District #61). The license also grants an annual diversion volume of 210 AF for heating and 9.2 AF for cooling. The purpose of this Petition for Reconsideration is to request (1) a greater annual volume and (2) to combine the heating and cooling volumes for this right.

The annual volume for License 37-22815 was based on a gallon per heating-degree-day (HDD) value and multiplied by the number of HDDs in a cooler year. Specifically, the gallon/HDD value was calculated based on reported production on 12/31/2014 and the number of HDDs on the same day (as described in supporting documentation for the field exam). The gallon/HDD value was then applied to the coldest year within the last 10 years (2008, with 8591 HDDs – see Table 1). This yielded the 210 AF heating volume limit in License 37-22815.

This approach based on a single day of production yielded a volume that is, in my opinion, unreasonably low. By example, in 2016 the District diverted 197 AF (Table 2), which is 94% of the suggested 210-AF maximum heating volume. However, 2016 had a less-than-average number of HDDs (Table 2). The number of HDDs in 2008 were 12% greater than in 2016. On a proportional basis, Hemingway School likely would have exceeded the proposed 210-AF heating-volume limit in 2008.

Continuing to pump water for heating and cooling purposes despite exceeding a volume limit would mean that the District would be out of compliance on this right. Under a more restrictive future administrative approach, this could mean turning off the heat toward the end of the calendar year (e.g., November or December) to remain in compliance.

The goal of Application 37-22815 was to authorize diversions for heating and cooling purposes for at least the next several decades. The volume of water needed for heating or cooling purposes in some future year may be substantially greater than that which would have been required within the development period, the last 10 years, or the period of record.

To cover more extreme heating or cooling seasons, I suggest increasing the annual volume limit with a margin-of-safety premium, such as 50% of the proposed 210-AF heating volume and 9.2-AF cooling volume.

Annual Heating and Cooling Degree Days Hailey, Idaho		
Year	Heating Degree Days	Cooling Degree Days
2006	8,051	256
2007	7,324	565
2008	8,591	159
2009	8,171	183
2010	7,932	150
2011	8,272	180
2012	7,319	322
2013	7,803	475
2014	7,241	253
2015	6,957	226
2016	7,582	205
Source: Weather Underground		

Table 1. Annual heating and cooling degree days, Hailey, Idaho, 2006-2016.

Hemingway Elementary School Heating and Cooling System Production	
Year	Annual Production (AF)
2013	Incomplete data
2014	146.44
2015	122.10
2016	197.03
2017	Incomplete data

Table 2. Annual heating and cooling degree days, Hailey, Idaho, 2006-2016.

Next, the license proposes separate volume limits for heating and cooling uses. The field exam notes that "it would be unlikely that the maximum CDD and a maximum HDD would occur in the same year," and therefore recommends that volumes for heating and cooling

use "are not additive." However, there is no physical reason that a particularly cold winter could not precede a particularly hot summer. In fact, climate models generally suggest greater temperature swings and in greater extremes in the future. Furthermore, the license requires no separate reporting for heating and cooling uses.

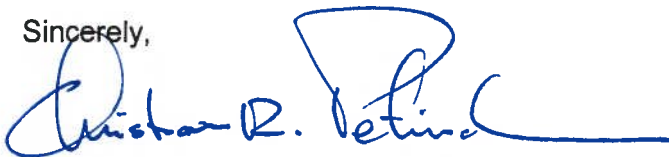
The risk in setting too low of an annual volume limit is that, to remain in compliance, the District would need to cease heating and cooling system operation in a year in which the volume limit is exceeded. This could mean turning off the heat in November or December, which is completely inconsistent with the District's goal in authorizing an adequate amount of water for heating cooling purposes, and is not in the public interest. In contrast, there is virtually no risk in setting too high of an annual volume limit. All of the water diverted for heating and cooling purposes is returned to the aquifer – the use is completely non-consumptive.

Thus, I propose that the Department make one or more of the following changes to License 37-22815:

1. Establish one volume limit for heating *and* cooling uses, and adding to the volume limit a 50% margin-of-safety premium. This would result in an annual volume limit of 329 AF ($210 \text{ AF} + 9.2 \text{ AF} = 219.2 \text{ AF}$; $219.2 \text{ AF} + 50\% = 329 \text{ AF}$).
2. Add a condition stating that the annual volume limit may be exceeded in a particularly cold or hot year.
3. Remove the volume limit entirely, recognizing that use is entirely non-consumptive.

In summary, I respectfully request on behalf of the District that the Department establishes an annual volume of approximately 329 AF under License 37-22815. In advance, thank you for your consideration.

Sincerely,

A handwritten signature in blue ink, appearing to read "Christian R. Petrich". The signature is fluid and cursive, with a large, stylized initial "C".

Christian R. Petrich, Ph.D., P.E., P.G.
Principal Engineer/Hydrologist (Emeritus)

cc: Howie Royal, Blaine County School District