

MEMORANDUM

TO: Water Right File 63-32911, 63-32912, and 63-32467

FROM: Daniel Nelson – Analyst 3

DATE: January 5, 2018

SUBJECT: Licensing Review of Water Rights 63-32911, 63-32912, and 63-32467

This field exams for these rights were performed by Certified Field Examiner Scott King of SPF Water Engineering. These three water rights were originally permitted for the same set of ponds in Section 22 in Township 5 North, Range 5 West. The 3 permits allow diversion of water from Sand Hollow Creek and the Boise River at 2 locations for wildlife and wildlife storage.

Permit 63-32911 allowed for the diversion of 20.00 cfs from a single point of diversion from the Boise River in the SESE quarter of Section 22 in Township 5 North, Range 5 West. Permit 63-32912 allowed for the diversion of 20.00 cfs from a single point of diversion from Sand Hollow Creek in the SWSE quarter of Section 15 in Township 5 North, Range 5 West. When combined, water rights 63-32911 and 63-32912 were limited to a total volume of 181.5 af of wildlife storage. Both permits 63-32911 and 63-32912 were to be diverted using pumps in the individual water sources. Permit 63-32467 allowed for the diversion of 20.00 cfs from a single point of diversion from the Boise River in the SWSE quarter of Section 25 in Township 5 North, Range 5 West. Permit 63-32467 was to be diverted through the Andrews Ditch to the place of use. Permit 63-32467 was also limited to 181.5 af of wildlife storage.

Overlapping Water Rights:

The only overlapping water rights associated with this place of use are irrigation rights. These permits are for use during the non-irrigation season, so there shouldn't be any issues concerning the overlapping water rights at this time.

During the review it was discovered that there appears to be a number of ponds on this property that do not have water rights authorizing their use. These permits were not filed to authorize any of the additional ponds found. A letter was sent to the permit holder to inform them that water rights would need to be attained to allow the use of these additional ponds.

Diversion Rate vs Wildlife Volume:

Mr. King provided excellent measurements of all of the diversions, and I have no issues with the diversion rates Mr. King measured. When determining the diversion rates, Mr. King took the measurements of two portable pumps at both the Sand Hollow site and the Boise River pump site for permits 63-32911 and 63-32912. When Mr. King calculated the volume for the wildlife uses, he only used the diversion rates from one of the pumps on each site instead of the two pumps he used in his flow rate calculations.

On December 29, 2017, I spoke with Mr. King concerning the diversion rates that he recommended when compared to the calculation he used to determine the flow through volume for water rights 63-32911 and 63-32912. Mr. King informed me that the under normal situations they run one pump at the Boise River diversion (63-32912) and one pump at the Sand Hollow diversion (63-32911). However, they need to increase the flow rate to the ponds when it gets cold to keep the ponds from icing up, so they move the both pumps back and forth between the diversions to make sure they keep a high flow rate going to all of the ponds.

This makes sense, since they have different return flows for the upper ponds, middle ponds, and lower ponds. They could push water to the upper ponds and the middle ponds faster from the Sand Hollow diversion, and the can push water to the lower ponds faster from the Boise river diversion. The diversion for water right 63-32467 through the Anderson Ditch should remain constant through the middle and lower ponds, which would allow them to move the two pumps between the sites as needed to give them a boost of water to wash out the ice in all of the ponds throughout a very cold day. The two pumps could also be used to provide the initial filling of the ponds at the first of the season.

Volume:

Mr. King calculated the volume of all of the ponds at approximately 171.5 af. However, Mr. King did not account for seepage and evaporation. It appears from the applications for permit that the seepage and evaporation were not taken into account during the permitting process. Department staff calculated the amount storage water needed to address the additional storage volumes required to account for the seepage and evaporation, and it was determined that the Department could allow the full storage including the pond capacities, seepage, and evaporation for each right and stay under the 181.5 af authorized by each permit as long as the total volume when all three rights are combined remain limited to the 181.5 af. This would allow the permit holder to reduce the number of ponds they fill during the year to cover the evaporation and seepage losses from the ponds that they do use that year. This practice may require measurement of the return flows in the future to ensure that they do not exceed their annual volume limitations. Please see the attached spreadsheet for the seepage and evaporation loss calculations.

As mentioned above the flow through (wildlife) calculations for water rights 63-32911 and 63-32912 were calculated by only using one pump at each site. Per Mr. King's December 29, 2017 explanation, appears to be acceptable.

Amendments:

Amendments will be needed on permits 63-32911 and 63-32912 to add the two points of diversion found by Mr. King for each of these rights. The government lots were not included in the SWSE quarter of Section 22, so an amendment is also needed to include the government lots for the place of use on 63-32911 and 63-32467

Conditions:

The condition will be changed as is standard. There are three conditions on each right that will be carried forward to licensing, since they are the result of the protested permits. Condition 219 will be added as shown below:

Rights 63-329467, 63-32911, and 63-32912 authorize total annual storage volume of 182 acre-feet, 171 acre-feet to be used for the initial filling or carryover storage of the ponds and 11 acre-feet for the replacement of losses caused by seepage and evaporation.

Condition 220 will also be used to describe the storage and will be changed as shown below for all of the rights:

The four (4) ponds and eight (8) natural swales and/or irrigated fields established by the storage of water authorized by water rights 63-32467, 63-32911, and 63-32912 shall not exceed a total capacity of 171 acre-feet or a total surface area of 63 acres.

PONDS DEVELOPED UNDER WATER RIGHT PERMIT 63-32912

Pond Name	Soil Type	Surface Area (Acres)	Average Depth (ft)	Volume (AF)
Rest Pond	CL	6.3	4.5	28.4
Rest Pond North Flooding	CL	5.8	1.5	8.7
Rest Pond East Flooding	SC	1.9	1.0	2.7
Russian Olive Flooding	CL	9.3	2.0	18.6
TOTALS				58.4

Seepage (AFA)	Evaporation (AFA)
2.0	0.1
1.8	0.1
1.4	0.0
3.0	0.1
8.2	0.3

Total Volume
30.5
10.6
4.1
21.7
66.9

PONDS DEVELOPED UNDER WATER RIGHT PERMITS 63-32911 AND 63-32467

Pond Name	Soil Type	Surface Area (Acres)	Average Depth (ft)	Volume (AF)
Deep Pond	SC	6.5	5.5	35.8
Asparagus Flooding	SC	5.3	2.0	10.6
Shop Pond	SC	3.7	4.5	16.7
NE Shop Flooding	SC	2.8	1.0	2.8
West Shop Flooding	SC	2.2	1.5	3.3
Sweet Corn Pond	SC	2.7	4.5	12.2
Sweet Corn Flooding	SC	3.4	1.5	5.1
South Field Flooding	SC	13.1	2.0	26.2
TOTALS				112.7

Seepage (AFA)	Evaporation (AFA)
4.8	0.1
3.9	0.0
2.7	0.0
2.1	0.0
1.6	0.0
2.0	0.0
2.5	0.0
9.7	0.1
45.7	0.8

Total Volume
40.7
14.5
19.4
4.9
4.9
14.2
7.6
36.0
142.2

Permit Number	Authorized Volume in AF	Pond Capacity in AF	Capacity Plus Seepage and Evaporation in AF	Allowable Volume in AF
63-32912	181.5	58.4	66.9	66.9
63-32911	181.5	112.7	142.2	142.2
Combined Limitation for permits 63-32911 and 63-32912	181.5	171.1	209.06	181.5
63-32467	181.5	112.7	142.2	142.2
TOTAL STORAGE DEVELOPED	181.5	171.1	209.1	181.5

Originally these three permits were filed for a total of 181.5 af. The permits were originally filed with no accounting for the seepage and evaporation. The total capacity of the ponds developed was 171 af, but this amount did not include seepage and evaporation. A flow through component was added that was intended to maintain the pond levels during the season of use. I believe the total storage volume when these three rights are combined should be limited to 209 af. However, the wildlife component for these rights must be returned to the Boise River or Sand Hollow Creek, so no water can be taken from the flow through component to cover the seepage and evaporation losses. However, I do recommend that we allow the full volume up to the limit of 181.5 af to cover what seepage and evaporation losses that we can.

WHEN RIGHTS 63-32911, 63-32912, AND 63-32467 ARE COMBINED THEY SHOULD BE LIMITED TO 181.5 AF OF STORAGE

PLEASE NOTE: All volumes will be rounded to 1/10th of an acre foot and to 3 significant figures as is standard.