

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 65-22456
Exam Date: 8/10/2017

1. Current Owner:
DEBORAH A KNIGHTEN And/Or
GREG D KNIGHTEN
8931 SOLTERBECK LN
PAYETTE ID 83661
(208) 642-3180
2. Accompanied by: Current Owner – Info Above

3. **SOURCE:**
GROUND WATER

B. OVERLAP REVIEW

1. Other water rights with the same place of use: Lower Payette Ditch Co., and Lake Reservoir Co
2. Other water rights with the same point-of-diversion: None

C. DIVERSION AND DELIVERY SYSTEM1. **LOCATION OF POINT(S) OF DIVERSION:**

GROUND WATER NE¼NE¼NE¼ Sec. 10, Twp 08N, Rge 05W, B.M. PAYETTE County

Method of Determination: Garmin GPS data points collected during visit. Digital PLSS maps used with ArcMap tools.

2.

PLACE OF USE: AESTHETIC STORAGE

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
08N	05W	10	X																

PLACE OF USE: IRRIGATION

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
08N	05W	3																0.3	.3
08N	05W	10	1.3																1.3

Total Acres: 1.6

Method of Determination: Irrigated area found by field observation, using satellite imagery, and ArcMAP GIS tools.

3.

Delivery System Diagram Attached (required). Indicate all major components and distances between components.

x Indicate weir size/pipe as applicable.

Map Attached Showing Location(s) of point(s) of diversion and place(s) of use (required). Scale must be

x 1:24,000 or greater.

x Aerial Photo Attached (required for irrigation of 10+ acres).

x Photo of Diversion and System Attached

4.

Well or Diversion ID No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
N/A	AO Smith	1.5	04512FM	Franklin Electric	1.5"

*Code to correspond with No. on map and aerial photo

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
N/A	N/A	N/A	N/A	N/A	N/A	N/A

2. Measurements:

E. FLOW CALCULATIONS

Measured Method: System rated to provide 0.15 cfs to irrigated area, but as per **IDAPA 37.03.02 03(b)** "For irrigated acreage of five (5) acres or less, a diversion rate up to three one-hundredths (0.03) cfs per acre may be allowed on the license" so only 0.05 cfs is being recommended.

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = (1.6 \text{ acres irrigated}) \times (4.5 \text{ af/ac}) = 7.2 \text{ af}$$

$$V_{DR} = [0.2 \text{ (cfs)}] \times (260 \text{ Days in Irrigation season}) \times 1.9835 = 103.1 \text{ AF} \quad 0.05 \text{ cfs} \times 260 \text{ days} \times 1.9835 = 25.8 \text{ AF}$$

$$V = \text{Smaller of } V_{IR} \text{ and } V_{DR} = 7.2 \text{ AF}$$

2. Volume Calculations for Other Uses: AESTHETIC

Surface area of the pond was determined to be 0.95 acres, with an average depth of 4 ft. giving a total pond capacity of 3.8 AF. With an estimated loss of 2.0 AF due to evaporative losses a total annual volume necessary to maintain would be 5.8 AF. See attached Ponds Spreadsheet.

G. NARRATIVE/REMARKS/COMMENTS

Field exam was completed by agent Justin Shearer on August 10, 2017 and was accompanied by land owner Greg Knighten. Mr. and Mrs. Knighten are the active permit owners and original applicants. The application for permit was submitted on May 15, 2001 and proof of beneficial use was made July 10, 2006.

The applicant has a 0.95 acre pond which is an old gravel pit that is fed naturally by shallow groundwater. The permit was issued with the source listed as "Pond" tributary to "Forty-Nine Slough," however there was no clear inlet from or outlet to Forty-Nine Slough apparent at the time of the field exam. In reviewing the original application it appears the original intent of the applicant was to make use of shallow groundwater that naturally filled the gravel pit to create a pond for Irrigation Storage. Therefore, the source should be clarified as Groundwater and tributary removed. POD overlap did not find any other water rights associated with the groundwater that fills the pond.

Aerial imagery was used to determine irrigated acres. ArcMap tools were used to calculate a total area of 1.6 acres. Mr. Knighten has constructed a deck platform on the south side of the pond which he has mounted a 1.5 hp pump to irrigate sections of lawn South of the pond. During the exam it was observed through a bucket test, that the pump is capable of providing 0.15 cfs to the Irrigation POU, but as per **IDAPA 37.03.02 03(b)** "For irrigated acreage of five (5) acres or less, a diversion rate up to three one-hundredths (0.03) cfs per acre may be allowed on the license" so only 0.05 cfs is being recommended. POU overlap review finds Lower Payette Ditch Co. and Lake Reservoir Co. own surface water rights to the grounds. Mr. Knighten indicated surface water shares are not delivered to this particular property. No other overlap exists.

Pond capacity was determined using satellite imagery, ArcMap tools, and information found during the field exam. Surface area of the pond was determined to be 0.95 acres, with an average depth of 4 ft. giving a total pond capacity of 3.8 AF. With an estimated evaporative loss of 2.0 AF a total volume required to maintain would be 5.8 AF.

Because the irrigation in practice is technically direct flow from the source with the pond naturally refilling itself with groundwater, I am recommending an amendment to reflect the beneficial uses as Irrigation and Aesthetic Storage and removing Irrigation Storage and Irrigation from Storage components to more accurately reflect the use of the resource. In addition, the amendment clarifies source and tributary as well. Diversion of water from pond for irrigation purposes does not result in pond water level drop. Thus, no water is being stored or used from storage for irrigation and is better described as natural flow irrigation use. Also, pond remains full year round whether irrigation is occurring or not, so Aesthetic Storage use best describes the beneficial use of the pond.

Condition R69 was added to account for the rate and volume per acre applicable. Because the source is being clarified to groundwater, conditions R04, 01H, and X23 can be removed. Condition 219 was added to define the aesthetic storage parameters. Condition 220 was added to detail the physical limitations such as capacity and surface area of the pond. Condition 123 was added to account for an excavated pond being subject to fluctuations of the water table and the maintenance of any particular ground water level is not guaranteed by this right. Condition 1221 updated to 103 as per department standards.

Have conditions of permit approval been met? ☒ Yes ☐ No

H. RECOMMENDATIONS

1. Recommended Amounts

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
AESTHETIC STORAGE	01/01 to 12/31		5.8 AF
IRRIGATION	03/01 to 11/15	0.05 CFS	7.2 AF
	<u>Totals:</u>	0.050 CFS	13.00 AF

2. Recommended Amendments

☐ Change P.D. as reflected above ☐ Add P.D. as reflected above ☒ Nature of Use
☐ Change P.U. as reflected above ☐ Add P.U. as reflected above ☐ None

I. AUTHENTICATION

Field Examiner's Name  Date 8/20/18

Reviewer  Date 8/20/18

SESE

3

SWSW

2

08N05W

NENE

10

NWNW

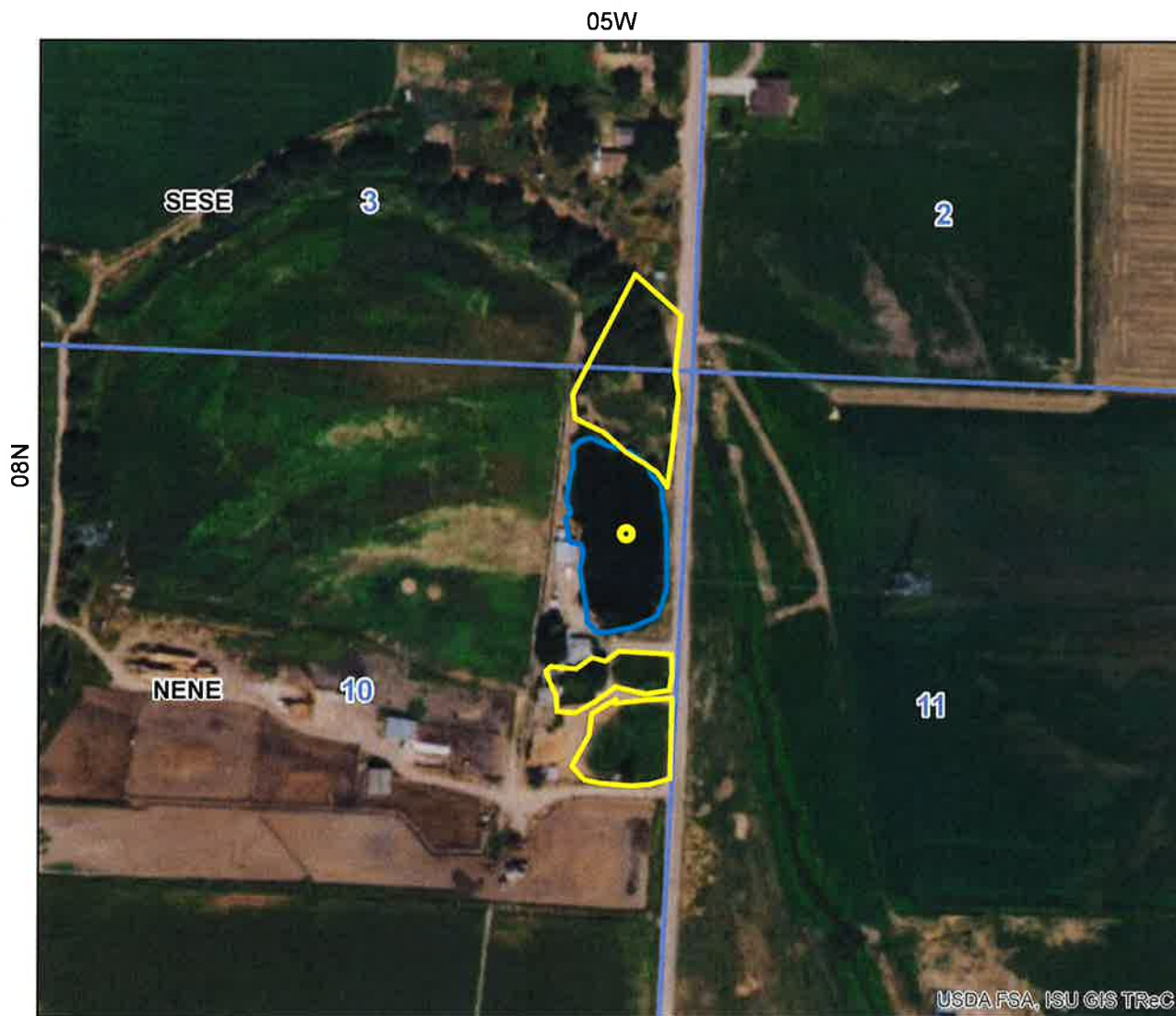
11

SENE

SWNW

State of Idaho
Department of Water Resources
Attachment to Beneficial Use Field Report
65-22456

This map depicts the IRRIGATION & AESTHETIC STORAGE place of use boundary for this water right.



- Point of Diversion
- Irrigation POU
- Aesthetic Storage POU
- Townships
- PLS Sections

0 0.035 0.07 0.14 Miles



Evaporation Loss Calculations

This spreadsheet has been designed by Idaho Department of Water Resources to estimate the annual evaporation losses from a pond.

FILE NUMBER	65-22456
REVIEWER	Justin Shearer
DATE	6/14/2018

User Input
Calculated value
Formula Explanations

The acronyms used on the Kimberly Research Center website are defined below:

P = Precipitation
ET= Evapotranspiration
P _d = Precipitation deficit
P _d =ET-P

USING THIS SPREADSHEET

Use the link below to access the Kimberly Research Center website. This website provides the Precipitation Deficit for a station most representative of the pond under examination. The Precipitation Deficit is the total amount of free water surface evaporation minus the precipitation for a given area, which gives the total amount of evaporative losses incurred by the pond. There are several weather sites that are used throughout the state. IDWR staff can find the nearest site using Arc Map. The shape file containing the sites can be found at X:/Spatial/Climate/ETIdahostations.shp.

Instructions:

1. Use the link below to navigate to ET Idaho 2012.
2. Select the station which is most representative to your pond location.
3. Click Submit Query.
4. Under "Land Covers with Evapotranspiration Estimates," select "Open Water - Shallow Systems (ponds, streams)" or "Open Water - small stock ponds" depending on the pond size.
5. Click the link to "Precipitation Deficit."
6. Reference and copy (ctrl + C) the first subheading "Mean" values.
7. Click the "Paste Values from ET Idaho" button. The table will automatically enter a zero (0) for any negative precipitation deficit values.

Found at: <http://data.kimberly.uidaho.edu/ETIdaho/>

Precipitation Deficit

Station: Payette (NWS -- 106891)

Month	mm/day ¹	Days per month	mm/Month
Jan	-0.93	31	0.00
Feb	-0.04	28	0.00
March	1.02	31	31.62
April	2.38	30	71.40
May	2.98	31	92.38
June	3.44	30	103.20
July	4.17	31	129.27
August	3.56	31	110.36
September	2.53	30	75.90
October	1.32	31	40.92
November	-0.36	30	0.00
December	-1.02	31	0.00

PLEASE NOTE: The seasonal average for precipitation deficit should not be used for calculations because precipitation often exceeds evaporation during wetter months of the year. If the pond is kept full, excess precipitation during wetter months does not serve to refill the pond during drier months.

For example, see Sandpoint KSPT (NWS -- 108137), the annual precipitation deficit is -106 mm. However, April through September have positive precipitation deficit values. To properly estimate the annual volume of water necessary to refill a pond due to evaporation losses, the table will automatically enter a zero (0) for each month that the precipitation value is reported as a negative value.

As described above, precipitation offsets evaporation in winter months, so the net effect is that wintertime precipitation deficit is usually zero.

Total mm/year = 655.05

$$((655.05) \div (304.8)) \times (0.95) = 2.0 \text{ AFA}$$

[(mm/yr) ÷ (convert to feet)] X (Surface area of pond, in acres) = Evaporation Loss in Acre Feet

Total Storage Calculations

FILE NUMBER	65-22456
REVIEWER	Justin Shearer
DATE	6/14/2018

This spreadsheet has been designed by Idaho Department of Water Resources to estimate the total seepage, evaporation and fill capacity required for a pond.

User Input
Calculated value
Formula Explanations

Surface Area (AC.)	0.95	"Surface Area" is automatically carried over from the "Seepage Loss" sheet.
Average Pond Depth (FT.)	4	"Average Pond Depth" depicts the actual depth of the pond either measured or estimated. Note: If you know the maximum depth and not the average depth, the Field Examiner's Handbook suggests multiplying the maximum depth by 0.4 to get the average depth, or you can use any method that seems reasonable to attain average depth.
Pond Capacity (AF)	3.8	Pond Capacity is calculated by multiplying the Pond Surface Area by the Average Pond Depth. If you know the capacity, divide the capacity by surface area and enter the average pond depth in the space above. Note: If pond capacity is determined using a method shown on the "Pond Capacity" sheet, the user may need to modify the value of "Pond Capacity" (cell B9) manually. Note that if the value is modified manually, the formula will be altered for future use.
Multiple Fill Volume Above Initial Fill to Fulfill From Storage Needs- "Multiple Fills" (AF)	0	The "Multiple Fill Volume Above Initial Fill" is the acre-feet of water required to meet a <i>from storage</i> component if the <i>from storage</i> component exceeds a one time fill. This section should not include the amount of water needed to fill the pond initially or the amount of water needed to maintain the pond level due to evaporation or seepage. For example: if a pond has a capacity of 5 acre feet and 2.5 acre feet of seepage and evaporation, but the pond is used for irrigation that requires 10 acre feet of from storage for the irrigation use, then you would insert 5 acre feet into this location (10 acre feet needed - 5 acre feet from the initial fill = 5 acre feet of additional storage needed). Note: You must have a "From Storage" component exceeding the initial fill on the permit to include a volume in this space.
Estimated Seepage Loss (AF)	0.0	The "Estimated Seepage Loss" is automatically carried over from the "Seepage Loss" sheet.
Estimated Evaporation Loss (AF)	2.0	The "Estimated Evaporation Loss" is automatically carried over from the "Evaporation Loss" sheet.
Total Volume Required (AF)	5.8	The "Total Volume Required" is calculated by adding the Pond Capacity, Multiple Fills, Seepage Loss, and Evaporation Loss amounts to determine the total amount of storage required.



Aesthetic Storage
Pond



Platform for Pump



Motor Specs



Pump Specs



Irrigation POU



Rain Bird Sprinkler
Head



State of Idaho

DEPARTMENT OF WATER RESOURCES

Western Region • 2735 Airport Way • Boise, Idaho 83705-5082

Phone: (208) 334-2190 • Fax: (208) 334-2348 • Website: www.idwr.idaho.gov

C.L. "BUTCH" OTTER
Governor

GARY SPACKMAN
Director

June 30, 2017

COPY

DEBORAH A KNIGHTEN
8931 SOLTERBECK LN
PAYETTE, ID 83661

RE: Scheduling Field Exam for Water Right Permit No. 65-22456

Dear Permit Holder:

We are planning to conduct water right examinations in the vicinity of the above-referenced permit **this season**. An examination is needed to verify the water use in order to issue a water right license.

The above-referenced permit authorizes **0.090 CFS** from a **POND** tributary to **FORTY-NINE SLOUGH** for **IRRIGATION, IRRIGATION STORAGE, & IRRIGATION FROM STORAGE** uses. **If you have developed a beneficial use and still own the place of use property, please contact me at your earliest convenience to schedule an examination.**

If you did not develop a beneficial use of water under the permit during the beneficial use period, a license cannot be issued and the permit should be relinquished. If that use was developed, but have ceased using the water and you currently carry no interest in it, please relinquish the permit by submitting the enclosed Relinquishment of Permit form (no fee required).

If you did develop a beneficial use of water under the permit, but you no longer own the place of use property identified in the permit, please submit the enclosed Assignment of Permit form with the applicable \$25 processing fee.

Please contact me within the next thirty (30) days at (208) 334-2190 to either schedule an examination or submit a relinquishment or assignment form. If you no longer own the place of use property and/or do not respond to this letter, the department will work with the current property owner to issue a license or void the permit.

Sincerely,

Justin Shearer
Water Resource Agent

Enclosures: Relinquishment of Permit form
Assignment of Permit form
Water Permit Report and Map