

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 47-8429

Exam Date: 10/23/2015

1. Current Owner: LEO E RAY
4647D RIVER RD
BUHL ID 83316
(208)837-6114

And/Or

JUDITH K RAY
4647D RIVER RD
BUHL ID 83316
(208)837-6114

2. Accompanied by: Leo Ray
Phone No: 208-358-3721, cell
Address: same as above
Relationship to Permit Holder: permit holder

3. SOURCE TRIBUTARY
DEEP CREEK SNAKE RIVER

B. OVERLAP REVIEW

1. Other water rights with the same place of use: none
2. Other water rights with the same point of diversion: none

C. DIVERSION AND DELIVERY SYSTEM**1. LOCATION OF POINT(S) OF DIVERSION:**

DEEP CREEK NW1/4SE1/4 Sec. 8, Twp 10S, Rge 14E, B.M.
TWIN FALLS County

Method of Determination: ArcMap aerial imagery and site visit

2.

PLACE OF USE: WATER QUALITY IMPROVEMENT

Twp	Rge	Sec	NE				NW				SW				SE				
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	Totals
10S	14E	8															X		

Method of Determination: ArcMap aerial imagery and site visit

3. ☒ Delivery System Diagram Attached (required). Indicate all major components and distances between components. 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 1:24,000 or greater.
- ☒ Aerial Photo Attached (required for irrigation of 10+ acres).
- ☒ Photo of Diversion and System Attached

4.

<u>Well or Diversion</u> <u>ID No.*</u>	<u>Motor Make</u>	<u>Hp</u>	<u>Motor Serial No.</u>	<u>Pump Make</u>	<u>Pump Serial No. or Discharge</u> <u>Size</u>
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NA

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

D. FLOW MEASUREMENTS

1.

<u>Measurement</u> <u>Equipment</u>	<u>Type</u>	<u>Make</u>	<u>Model No.</u>	<u>Serial No.</u>	<u>Size</u>	<u>Calib. Date</u>
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Used the on-site partially suppressed submerged orifice.

2. Measurements: On the day of the field exam, the head measured on the upstream face of the orifice was 1.18 feet and the downstream head was 0.6 feet for a head difference of 0.58 feet. The weir is 5 feet wide with an opening that day of 1.73 feet.

E. FLOW CALCULATIONS

____ Additional Computation Sheets Attached

Measured Method:

The formula for a partially suppressed submerged orifice is:

$Q = 0.7A(2g\Delta h)^{0.5}$ where: Q = discharge in cfs, A = area of the orifice, g = acceleration caused by gravity, Δh = differential head, 0.7 is the effective discharge coefficient.

$$Q = 0.7 \times 8.65 \text{ ft}^2 (2 \times 32.2 \text{ ft/sec}^2 \times 0.58)^{0.5}$$

$$Q = 6.06 \times 37.35^{0.5}$$

$$Q = 37.0 \text{ cfs}$$

Permit allows 10.0 cfs; flow is sufficient for permitted amount

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation: NA

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) =$$

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 =$$

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} =$$

2. Volume Calculations for Other Uses:

Mr. Ray estimates the flow to be consistently about 10 cfs year-round.

$$10.0 \text{ cfs} \times 1.9835 \text{ AF/cfs/day} \times 365 \text{ days} = 7239.8 \text{ AF}$$

G. NARRATIVE/REMARKS/COMMENTS

The field exam for permit 47-8429 was completed on October 23, 2015 with Leo Ray, the permit holder, present. This permit is for two water quality improvement ponds which were excavated on Mr. Ray's property to mitigate for water quality issues that would possibly be caused by a fish propagation facility (permit 47-8076) Mr. Ray wanted to construct on the property. The fish facility was constructed and the water quality improvement ponds were then also completed.

Water is diverted from Deep Creek in a ditch and travels about 100 feet to an adjustable slide gate which also acts as a measuring device (partially suppressed submerged orifice). From this point, the ditch runs 75 feet where a branch flows into the south pond and from there another 65 feet to the north pond. The ponds are quite full of sediment and plant growth at this point, which is proof that they are functioning according to their purpose.

The dimensions of the south pond are 30' x 132' x 2' while the north pond dimensions are 35' x 106' x 2'; both ponds being just under 0.2 acre-feet in size. Concrete check structures exist at the lower end of each pond to allow for water level adjustment to slow the water down as it flows through the ponds, if necessary. A ditch collects the water as it exits the ponds and returns it to Deep Creek. On the day of the field exam, Deep Creek was running quite high and fast and somewhat murky; the return water was much more clear.

Measured flow was 37.0 cfs and the permit allowed only 10.0 cfs, so the recommendation is to license 10.0 cfs. Volume calculation was 7239.8 AF and that amount is recommended for licensing.

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

H. RECOMMENDATIONS**1. Recommended Amounts**

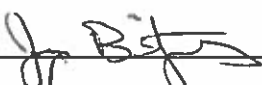
<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
WATER QUALITY IMPROVEMENT	01/01 to 12/31	10.000 CFS	7,239.80 AF
<u>Totals:</u>		10.000 CFS	7,239.80 AF

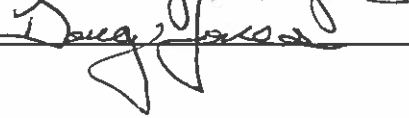
2. Recommended Amendments

☐ Change P.D. as reflected above ☐ Add P.D. as reflected above ☒ None

☐ Change P.U. as reflected above ☐ Add P.U. as reflected above ☐ Other

I. AUTHENTICATION

Field Examiner's Name  Date 11/17/2015

Reviewer  Date 1/20/2016

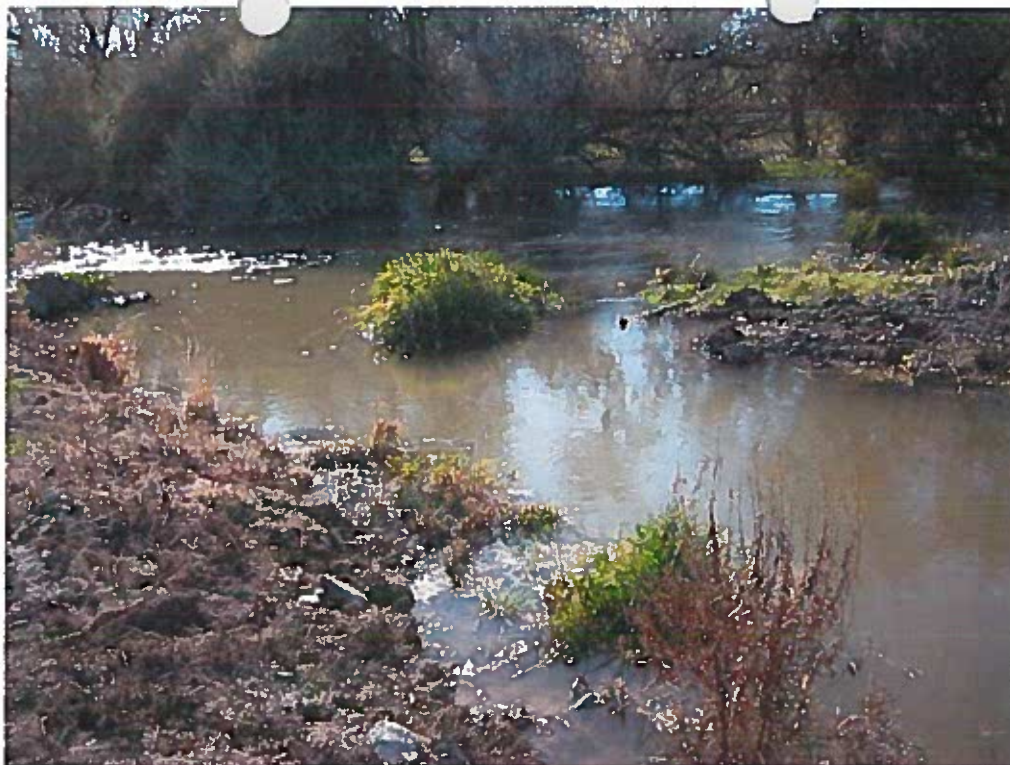
Idaho Department of Water Resources



**System Diagram
47-8429 Leo Ray**

0 0.00750.015 0.03 Miles





Point of Diversion – open channel off Deep Creek

Slide gate used to control flow and as a partially suppressed orifice for measurement purposes



Field Exam 47-8429



View looking upstream showing slide gate, fish screen, and POD

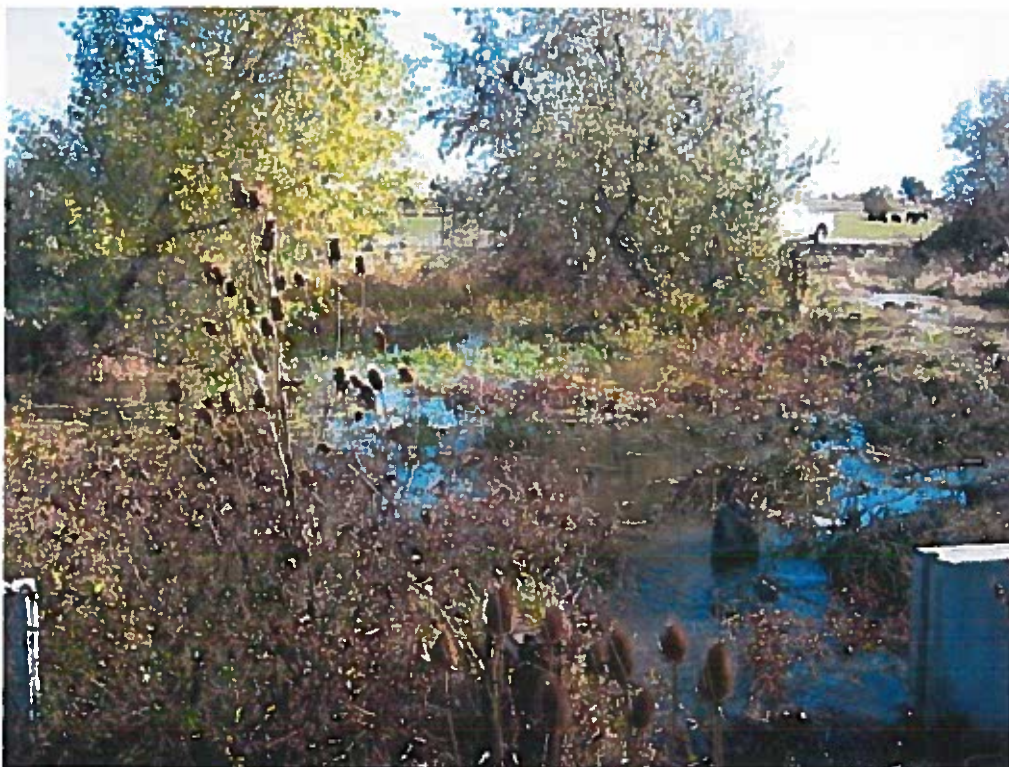
Return flow to Deep Creek – water is visibly clearer





View of south pond looking downstream

View of south pond looking upstream



Field Exam 47-8429



View of north pond looking downstream

View of north pond looking upstream

