

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 74-16224
Exam Date: 06/11/2024

1. Current Owner:
STATE OF IDAHO FISH & GAME COMMISSION
PO BOX 25 BOISE ID 83707-0025
2. Accompanied by: Mike Demick
Phone No: (208) 866-2593
Address: Baker Country Store, Baker, ID (meeting place)
Relationship to permit Holder: IDFG Representative

3. **SOURCE:**
CANYON CREEK

Tributary
LEMHI RIVER

Method of Determination: GARMIN Trex GPS, GIS, and BLM Spatial Data point.

B. OVERLAP REVIEW

1. Other water rights with the same place of use: YES Overlap

Water Right No.	Source	Purpose of Use	Basis
74-14364	CANYON CREEK	INSTREAM STOCKWATER	DECREED(2004)

Comments: The only water right overlapping the permitted place of use is an instream stockwater right which is also a nonconsumptive use. As the permitted use is returning flow to the creek there are no concerns regarding any negative impact to existing rights.

2. Other water rights with the same point-of-diversion: YES Overlap

Water Right No.	Source	Purpose of Use	Basis
74-161 to 74-164	CANYON CREEK	IRRIGATION/STOCKWATER	DECREED (2012)
74-16051	CANYON CREEK	IRRIGATION	DECREED (2012)
74-16052	CANYON CREEK	IRRIGATION	DECREED (2012)

Comments: The fish bypass enclosure is located approximately 50ft downstream of the headgate for the irrigation pipe diverting water to rights 74-161 to 164, 74-16051, and 74-16052. The shared point of diversion (POD) headgate controls the diversion for the irrigation rights and the fish bypass. As the permitted use non-consumptive (returning the flow to the creek) and the rate can be administered at the headgate so that the permitted volume is diverted in addition to the existing rights supplied by the irrigation ditch there are no concerns regarding negative impact to existing rights.

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

CANYON CREEK NW¼ SW¼, Sec. 24, Twp 16N, Rge 26E, B.M. LEMHI County

Method of Determination: GARMIN Trex GPS-Headgate N44°42.024 W113°18.742, Fish Bypass N44°42.021 W113°18.757 and GIS

PLACE OF USE: FISH PROPAGATION

Twp	Rng	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
16N	26E	24										X							

Method of Determination: GARMIN Trex GPS and GIS.

3.

X Delivery System Description and photos Attached. Indicate all major components and distances between components. Indicate weir size/pipe as applicable.

X 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).

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
LCC-03	NA	NA	NA	NA	NA

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
Staff Gauge	Feet to 10 ^{ths}	Unknown	Unknown	Unknown	3.3'	NA

2. Measurements: Total head measured from the center of the orifice, 2 1/2" above the bottom of the fish bypass enclosure.**E. FLOW CALCULATIONS**

Additional Computation Sheets Attached

Measured Method: A staff gauge was used to measure the total head above the center of the 4" orifice in the bypass enclosure.

Formula for Discharge from a Tank:

$$C_d A_o (2gh)^{1/2} = Q \text{ (discharge in cfs)}$$

Where- C_d = coefficient of discharge = 0.67 (based on 2011 Fish Bypass memo) A_o = Area of orifice opening in ft² = $(A = \pi r^2)$ g = 32.2 ft/sec (constant)

Orifice diameter = 4" = 0.33ft

Orifice r = 0.165ft h = Head above the center of the orifice = 2.5ft - (2.5in to center of hole/12in/ft) = 2.292ft

est. highwater mark (2' 10") = approx. 2.83ft - 0.208ft (center of 4" hole) = 2.63ft

$$A_o = \pi * 0.165^2 = 0.0855 \text{ ft}^2$$

$$\text{(water level)} \quad 0.67 * 0.0855 \text{ ft}^2 * (2 * 32.2 * 2.292)^{1/2} = 0.70 \text{ cfs}$$

$$\text{(highwater mark)} \quad 0.67 * 0.0855 \text{ ft}^2 * (2 * 32.2 * 2.63)^{1/2} = 0.75 \text{ cfs (within 10\% of full permitted rate)}$$

Coeff x 1.113 = (see table below)

COEFF of DIS.	RATE
0.61	0.68cfs
0.70	0.78cfs
0.80	0.89cfs
0.90	1.00cfs
1.00	1.11cfs

Recommended Rate = 0.80cfs

Comments: In the 2011 memo titled "Basin 71 and 72 IDFG Fish Bypass Permit Files" upstream and downstream measurements recorded at fish bypass sites in basins 71 and 71 were reverse calculated using the formula for discharge from a tank to find a reasonable coefficient of discharge for use in calculating rates at fish bypass installation. The variance in streamflow effecting environment factors (such as gaining or losing reaches) from upstream to downstream measurement sites lend to using a more liberal representation of the coefficient within the standard range (USBR Watermasters Handbook lists the Coeff. of Discharge ranging from 0.61-1.0). Although the coefficient value of 0.67 used in Basin 71 and 72 field examinations results in a calculated discharge rate of 0.75cfs (within 10% of the permitted rate) a standard coefficient of 0.70 is also cited in the 2011 memo, and the median coefficient of 0.81 for the standard range would exceed the permitted rate. I recommend the license is issued for the full permitted rate of 0.80cfs.

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation: NA

2. Volume Calculations for Other Uses: Fish Bypass

$$V = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 =$$

$$0.80 \text{ cfs} \times 246 \text{ days (3/15 to 11/15)} \times 1.9835 = 390.4 \text{ AF} \approx 390 \text{ AF}$$

Comments: The fish bypass is designed for use whenever the ditch is in use for the irrigation season. I recommend the license be issued for 390 AF annually, based on usage calculation above.

G. NARRATIVE/REMARKS/COMMENTS

The bypass and fish screen are to prevent juvenile fish from being trapped in the irrigation ditch. The head within the fish screen enclosure can be adjusted at the second headgate valve downstream of the water wheel (photo 2). Most of the water passes through the drum screen then through a water wheel which rotates the drum before continuing through the irrigation line and pump to the southwest. A maximum of 0.80cfs bypasses the screen through a 4" round orifice slip panel in the north side of the enclosure (photo 3) where it is returned to Canyon Creek approximately 25ft to the north through a 10" diameter PVC pipe (photo 6). The bypass and fish screen are to prevent juvenile fish from being trapped in the irrigation ditch. A second orifice downstream of the screen is set higher in the enclosure to act as an overflow (photo 5) which returns water to Canyon Creek through a second 10" diameter PVC pipe running parallel to the fish bypass pipe. At the time of the field examination high flows in the creek were still being returned to the creek through the overflow.

Based on the field measurement and Department processing guidance for fish bypass diversions I recommend the license is issued for the full permitted rate of 0.80cfs and an annual volume of 390 AF. Condition 01H should be replaced with condition R02 at licensing as per current guidance.

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

H. RECOMMENDATIONS**1. Recommended Amounts**

<u>Beneficial Use</u>	<u>Period of Use</u>	<u>Rate of Diversion</u>	<u>Annual Volume</u>
FISH PROPAGATION	03/15 to 11/15	0.80 CFS	390 AF

Totals: 0.80 CFS 390 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 ☒ None

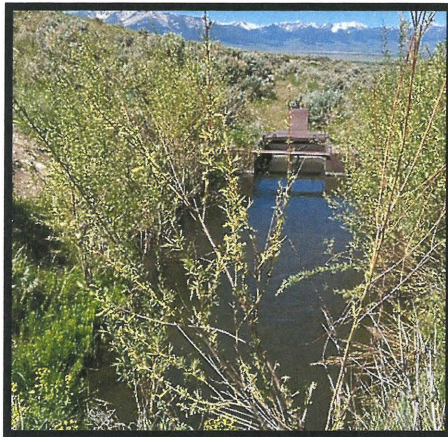
I. AUTHENTICATION Bob Howe - Water Resource Agent

Field Examiner's Name Bob Howe Date 9/17/2024

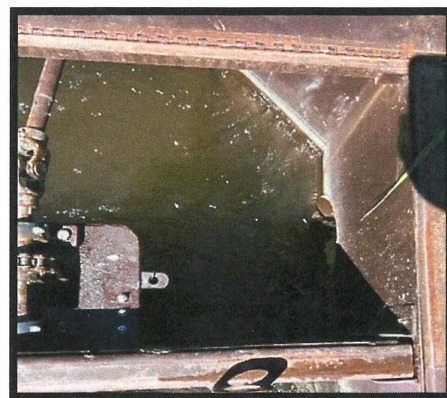
Reviewer Cody Date 9-17-24



Photo 1 -Taken from headgate at Canyon creek.



Photos 2 & 3 (left to right respectively)- 2. Flow control valve and water wheel enclosure. 3.Orifice slip panel is installed in the right side of the enclosure.



Photos 4 & 5 (left to right respectively)- 4. Orifice slip panel removed. 5. Overflow orifice is enclosed downstream of the fish screen. Rotary screen drum drive line between the water wheel and drive chain in the right of the image.

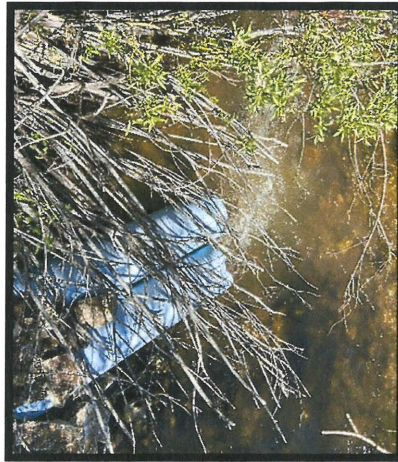


Photo 6- 10" PVC fish bypass on the left with overflow on the right, returning flow to Canyon Creek.

LCC-03

STREAM NAME: Canyon Creek

SCREEN NAME: LCC-03

DATUM: WGS 84

LAT: 44.7002359852194

LONG: -113.313129013404

INSTALLATION TO NMFS: 2017

DESIGN FLOW (CFS): 2.5

FLOW AGREEMENT (CFS): -

TOTAL WATER RIGHTS (CFS): 6.78

DRUMS / DIAMETER x LENGTH: Modular, 1-closed drum, 16" x 4'

DRIVE SIDE: RH

ADDITIONAL NOTES:

- Stockwater Rights, 5/1 - 9/1, .04 cfs, 74-164

VEHICLE ACCESS: Heading from Salmon on Hwy 28, drive to Leadore. Take a left on Hwy 29 (heading up towards Railroad Canyon/Canyon Creek), and drive about 2.5 miles, passing mile marker #2. Take the next road on the left, signed LCC-2. Stay left at the first "Y", right at the second "Y", and hang a left following the steep hill down to get to the screen.

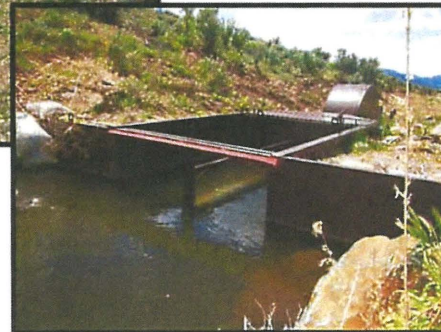


Figure 1- Canyon Creek Fish Screen Enclosure Specifications (IDFG-Exhibits for protest).