

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 78-12361

Exam Date: 8/31/2012

1. Current Owner: TONY CESARIO
PO BOX 159
RIGGINS ID 83549-0159
(208)628-0005
- And/Or
- BILLIE CESARIO
PO BOX 159
RIGGINS ID 83549-0159
(208)628-0005
2. Accompanied by: Tony Cesario
Phone No: Same
Address: Same
Relationship to Permit Holder:

- | 3. <u>SOURCE</u> | <u>TRIBUTARY</u> |
|------------------|---------------------|
| HAT CREEK | LITTLE SALMON RIVER |

B. OVERLAP REVIEW

1. Other water rights with the same place of use: 78-12190
2. Other water rights with the same point of diversion: None

C. DIVERSION AND DELIVERY SYSTEM

1. LOCATION OF POINT(S) OF DIVERSION:

HAT CREEK SW1/4SW1/4 Sec. 22, Twp 23N, Rge 01E, B.M.
IDAHO County

Method of Determination: Arc Map (Aerial Photo)

2.

PLACE OF USE: POWER

[illegible]

Method of Determination: Arc Map (Aerial Photo)

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 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 Size</u>
N/A	N/A			N/A	(6")

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

D. FLOW MEASUREMENTS

1.

<u>Measurement Equipment</u>	<u>Type</u>	<u>Make</u>	<u>Model No.</u>	<u>Serial No.</u>	<u>Size</u>	<u>Calib. Date</u>
Rectangular Weir						

2. Measurements: Rectangular Weir (Raceway) – 18" wide x 15" high.

$$Q = C_d (2/3) 2g^{1/2} L H^{3/2} = (0.62)(0.67)(64.4)^{1/2}(1.5')(0.25')^{3/2}$$

$$Q = (0.62)(0.67)(8.02)(1.5)(0.13) = 0.65 \text{ cfs}$$

$$H = 3'' = 0.25'$$

$$L = 1.5'$$

$$C_d = 0.62$$

E. FLOW CALCULATIONS

Measured Method:

 Additional Computation Sheets Attached

Rectangular Weir – 18" wide x 15" high:

$$Q = C_d (2/3) 2g^{1/2} L H^{3/2} = (0.62)(0.67)(64.4)^{1/2}(1.5')(0.25')^{3/2}$$

$$Q = (0.62)(0.67)(8.02)(1.5)(0.13) = 0.65 \text{ cfs}$$

$$H = 3'' = 0.25'$$

$$L = 1.5'$$

$$C_d = 0.62$$

Pipe Flow Capacity (Assumed Full):

$$V = 1.49/n R^{2/3} S^{1/2} = (1.49/0.013)(0.125)^{2/3}(0.19)^{1/2}$$

$$V = (114.62)(0.2483)(0.436) = 12.4 \text{ ft/sec}$$

$$Q = VA = 12.4 \text{ ft/sec} \times 0.20 \text{ ft}^2 = 2.48 \text{ cfs}$$

$$n = 0.013$$

$$A(6'' \text{ pipe}) = 0.20 \text{ ft}^2$$

$$\Delta \text{ Elev.} = 680' \text{ (Estimated)}$$

$$L = 3600' \text{ (Estimated)}$$

$$S(\text{Pipe Slope}) = 19\%$$

$$R = D/4 = 0.5/4 = 0.125'$$

$$Q(\text{weir}) = 0.65 \text{ cfs} < 0.80 \text{ cfs } Q(\text{permit})$$

$$Q(\text{pipe capacity}) = 2.48 \text{ cfs} > 0.80 \text{ cfs } Q(\text{permit})$$

It is assumed that the lower flow over the weir is a result of the right holder throttling down the flow control valve located at the surge tank discharge. However, the pipe capacity, excluding head losses, has more than adequate capacity to attain the permit diversion rate of 0.80 cfs. Recommend the permit diversion rate of 0.80 cfs.

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation: N/A

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

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

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

2. Volume Calculations for Other Uses: N/A

G. NARRATIVE/REMARKS/COMMENTS**WATER SUPPLY SYSTEM:**

Three (3) 5" flexible intake pipes divert water from Hat Creek for power generation for one home and an out building. The three 5" flexible pipes are connected to a steel manifold for discharge to the 6" PVC penstock. A steel mesh screen is attached to the end of each of the 5" flexible intake pipes. The hydropower system is generally down from April to August due to the high runoff flows in Hat Creek.

A portable generator and pump is used to charge the three (3) 5" flexible intake pipes. Approximately 350 feet northwest of the point of diversion and adjacent to the access road, the right holder installed a 3000 gallon fiberglass surge tank. The 6" PVC penstock discharges through the top of the surge tank. The surge tank has a 6" PVC overflow pipe located near the top of the tank. The overflow pipe extends down the slope to discharge to Hat Creek. A 6" PVC penstock discharge pipe is located at the bottom of the surge tank. A 6" gate valve is installed on the 6" PVC penstock discharge pipe to control the flows to the power plant. The power plant is approximately 3,250 lineal feet from the surge tank.

POWER PLANT:

The power plant contains the turbine and generator to provide power to one home and an out building. A concrete tail race located below the turbine and south of the power plant, discharges to a 12" PVC pipe for discharge back to Hat Creek. A rectangular weir has been installed in the tail race to measure flows to the power plant.

OVERLAP ANALYSIS:

There are no point of diversion or place of use overlaps for Water Right Permit No. 78-12361.

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

RATE &/OR STORAGE RECOMMENDED FOR LICENSING

Description	Rate of Flow (cfs)		Storage (af)
Permit Amount	0.80	&/or	N/A
Beneficial Use Limit	0.80	&/or	N/A
System Measurement	0.65 (raceway weir)	&/or	N/A
Proof Fee Amount	1.0	&/or	N/A
Recommended Amount	0.80	&/or	N/A

H. RECOMMENDATIONS

1. Recommended Amounts

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
POWER	01/01 to 12/31	0.800 CFS	N/A
<u>Totals:</u>		0.800 CFS	N/A

2. Recommended Amendments

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

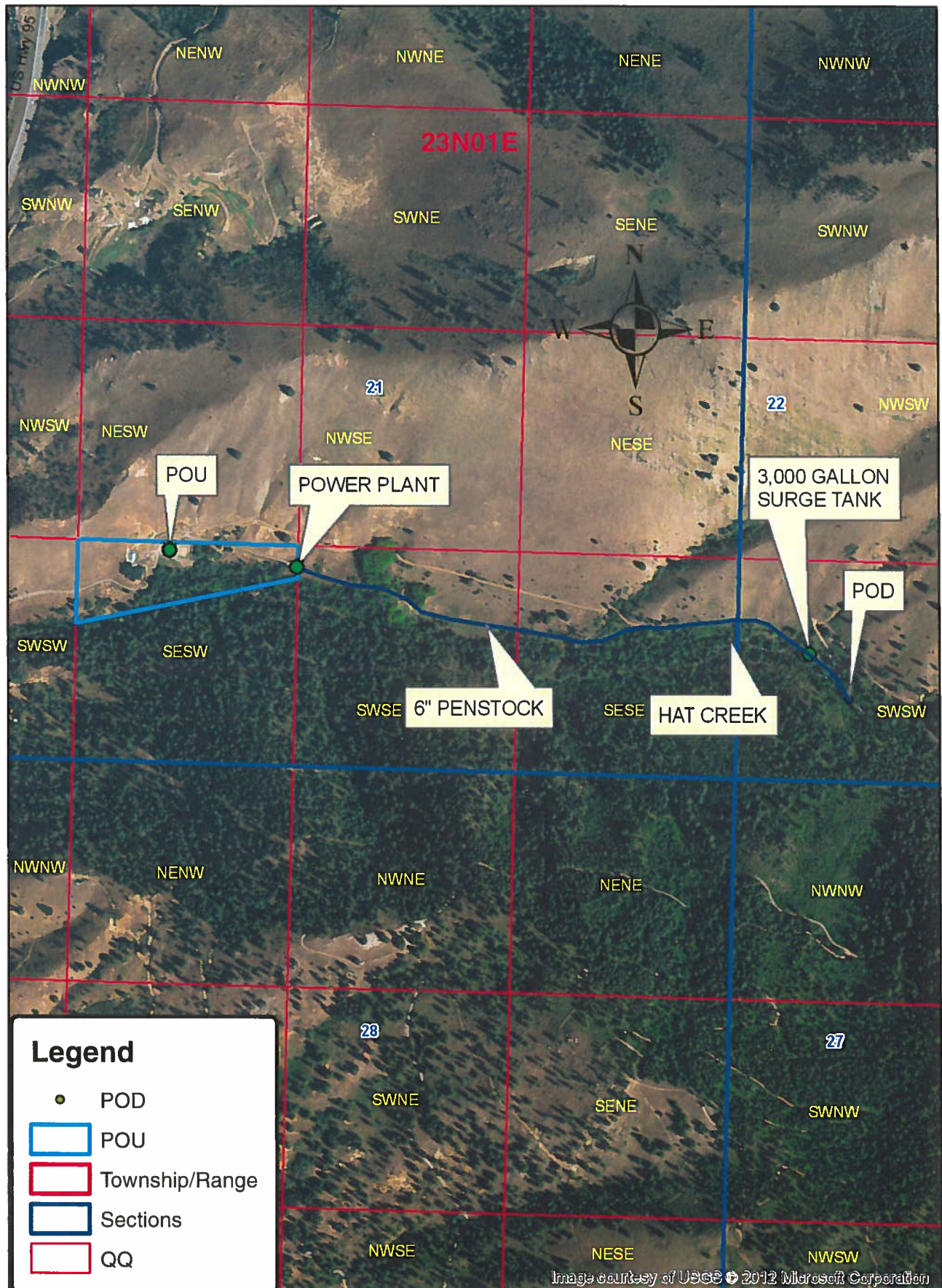
☐ Change P.U. as reflected above ☐ Add P.U. as reflected above ☐ Other

I. AUTHENTICATION

Field Examiner's Name Rick Collingwood Date 11/15/12

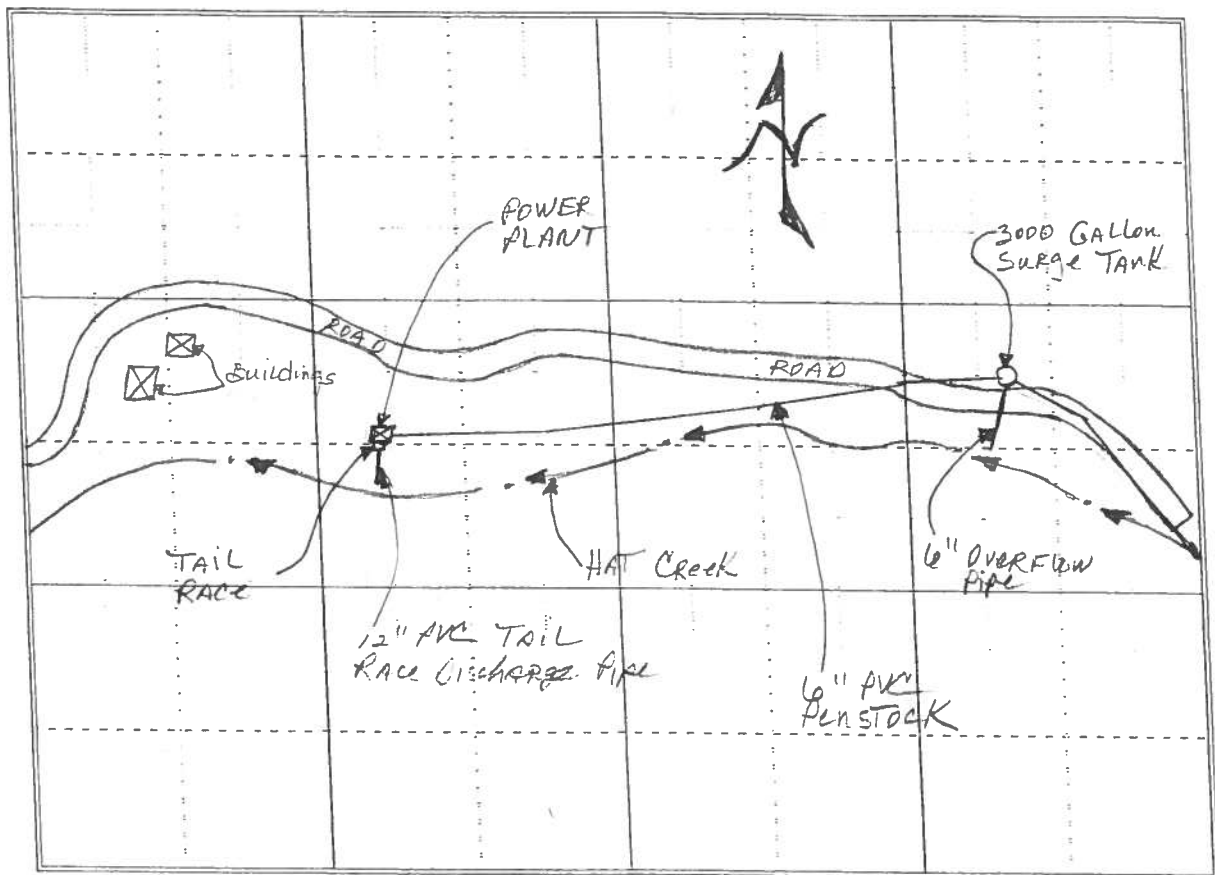
Reviewer _____ Date _____

78-12361



0 270 540 1,080 1,620 2,160
Feet

- 3 **Delivery System Diagram:** Indicate all major components and distances between components. Indicate weir size/ditch size/pipe diameter (inside), as applicable. Use the space provided or ☐ see attached



Scale: 1" = N.T.S.

- ☐ Copy of USGS Quadrangle attached showing location(s) of point(s) of diversion and place(s) of use (required)
- ☒ Aerial photo attached (required for irrigation of 10+ acres)
- ☒ Photo of diversion and system attached

FIELD EXAM PHOTOS

Water Right Permit: 78-12361

Field Exam Date: 8-31-12

PLS: SW1/4, SW1/4 Section 21, T.23N, R.01E.

Field Examiner: RC



Point of Diversion: View southeasterly of three (3) 5" diameter flexible suction pipe in Hat Creek. A metal intake screen is attached to the end of each 5" diameter flexible pipe.



Point of Diversion: View northeasterly of the intake screens attached to the three (3) 5" diameter flexible suction pipes in Hat Creek.



Point of Diversion: View southeasterly of a 5" steel manifold discharging to the 6" PVC penstock. A portable pump and generator with a 2" flexible suction and discharge pipe in foreground is used for charging the three (3) 5" diameter flexible pipes.



View northwesterly of the 3000 gallon surge tank located approximately 350 feet northwest of the point of diversion. The 6" PVC penstock inlet pipe discharges into the top of the surge tank. The 6" PVC overflow pipe discharges near the top of the surge tank discharges back to Hat Creek.



View northwesterly of 3000 gallon surge tank, 6" PVC overflow, and 6" gate valve on 6" PVC penstock discharge pipe.



View easterly of power plant. The tail race with discharge back to Hat Creek is located on the south side of the power plant.



View inside of power plant of 6" steel penstock discharging to turbine. A concrete tail race is located below the turbine for discharge to 12" PVC for discharge back to Hat Creek.



View northerly of tail race located on the south side of the power station. The tail race diverts water to a 12" PVC pipe for discharge back to Hat Creek. An 18" wide by 15" high rectangular weir has been installed in the tail race for measurement of the discharge back to Hat Creek.



State of Idaho

DEPARTMENT OF WATER RESOURCES

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

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C. L. "BUTCH" OTTER
Governor

GARY SPACKMAN
Interim Director

August 6, 2012

Tony & Billie Cesario
P.O. Box 159
Riggins, ID 83549-0159

RE: Scheduling Field Exam for Water Right Permit No. 78-12361

Dear Mr. & Mrs. Cesario:

We are planning to **conduct water right field examinations** in the vicinity of the above-referenced permit **on August 29, 30, & 31, 2012**. An examination is needed to verify your water use in order to issue a water right license.

Please be advised that you will need to operate your system under normal operating conditions during the examination. The permit authorizes the diversion of 0.80 cfs from Hat Creek for power production.

In order to conduct your exam as efficiently as possible, we ask that you call this office to schedule a day and time convenient for you. **Please call me at 208-334-2190 by August 14, 2012, to conduct the exam on August 29, 30, or 31, 2012.** If there is a problem with scheduling or conducting the examination at this time, please let me know so we can reschedule or make other arrangements.

I appreciate your attention to this matter and I look forward to hearing from you.

Sincerely,

A handwritten signature in black ink that reads "Rick Collingwood". The signature is written in a cursive, flowing style.

Rick Collingwood, P.E.
Water Resource Agent, Sr.