

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 79-7237

Exam Date: 9/28/2012

1. Current Owner: LARRY L SIMONSON
PO BOX 1199
RIGGINS ID 83549-1199
(208)628-3295
2. Accompanied by: Grant Simonson
Phone No: (208) 628-3298
Address:
Relationship to Permit Holder: Son

3. SOURCE

WEST FORK RACE CREEK

TRIBUTARY

SALMON 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:**

WEST FORK RACE CREEK

NW1/4SE1/4

Sec. 30, Twp 25N, Rge 01E, B.M.

IDAHO County

Method of Determination: Arc Map (Aerial Photo); GPS Latitude N.45°28.526', Longitude W.116°22.951'; Datum-NAD83.

2.

PLACE OF USE: POWER

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
25N	01E	32					X						X				X		
													RC				RC		
													6/6/13				6/6/13		

Method of Determination: Arc Map (Aerial Photo); Tax Lots.

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	(10")

*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						
(Raceway)						

2. Measurements: Rectangular Weir ($Q = CwLh^{3/2}$)

$$Q = (3.33)(1.0')(0.5')^{3/2} = (3.33)(1.0)(0.35) = 1.2 \text{ cfs}$$

$$\begin{aligned} Cw &= 3.33 \\ L &= 1' \\ h &= 0.5' \text{ (Average)} \end{aligned}$$

Note: Weir did not exist during field examination. The right holder constructed the weir at the raceway and forwarded photos with dimensions and water depth measurements.

E. FLOW CALCULATIONS

____ Additional Computation Sheets Attached

Measured Method: Continuity Equation – Pipes ($Q = VA$)

$$V = 1.49/nR^{2/3}S^{1/2} = 1.49/0.013(0.21)^{2/3}(0.085)^{1/2} = (114.62)(0.35)(0.29) = 11.6 \text{ ft/sec}$$

$$Q = VA = 11.6 \text{ ft/sec} \times 0.55 \text{ ft}^2 = 6.38 \text{ cfs}$$

$$Q(\text{weir measurement}) = CwLh^{3/2} = (3.33)(1.0')(0.5')^{3/2} = 1.2 \text{ cfs}$$

$$Q(\text{theoretical}) = 6.38 \text{ cfs} > 1.2 \text{ cfs } Q(\text{measured}) < 2.2 \text{ cfs } Q(\text{permit})$$

$$\begin{aligned} \Delta E &= 450' \text{ (Engineer Specs.)} \\ L &= 5,300' \text{ (Estimated)} \\ S &= 0.085 \text{ ft/ft} \\ \text{Pipe Dia.} &= 10'' \text{ (0.833')} \\ R &= D/4 = 0.833'/4 = 0.21' \\ n &= 0.013 \\ A(10'' \text{ Pipe}) &= 0.55 \text{ ft}^2 \end{aligned}$$

The theoretical calculation is assuming that the 10" penstock piping is full. However, based on the much lower raceway weir flow measurement, it appears that the 10" penstock piping is not flowing full. Although the flow measurement at the raceway weir is less than the permit diversion rate of 2.2 cfs, the flow capacity of the 10" penstock piping is greater than the permit diversion rate. Recommend the permit diversion rate of 2.2 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**HYDROPOWER SYSTEM:**

The right holder has constructed a hydropower system to provide power for generation of electricity to serve two homes.

DIVERSION STRUCTURE & SETTLING BASIN:

Water from the West Fork of Race Creek is diverted through a 48" diameter CMP culvert to a concrete diversion structure. The concrete diversion structure includes a rectangular weir/spillway to maintain a bypass flow back to the West Fork of Race Creek. The height of the rectangular weir/spillway is mechanically controlled to assure adequate water levels in the diversion structure. In addition, an 8" diameter PVC pipe was installed at the bottom of the diversion structure to provide a constant bypass flow back to the West Fork of Race Creek. Based on an estimated pipe slope of 11.6%, which is the same as the 10" penstock, the flow capacity of the 8" PVC bypass pipe is approximately 4.0 cfs.

A 4' x 4' concrete channel conveys water from the concrete diversion structure to a 4' x 4' concrete settling basin. A metal filter structure was installed around the channel opening in the diversion structure to prevent floating debris from discharging to the settling basin. The main function of the settling basin is to remove sand and sediments prior to discharging water to the 10" PVC penstock pipe.

PENSTOCK CONVEYANCE SYSTEM:

Approximately 5,300 lineal feet of 10" PVC penstock pipe was installed from the settling basin to the power house. The majority of the 10" PVC penstock pipe is located beneath the access road. Based on the USGS topographic mapping of the site and the engineered specifications, the elevation drop from the settling basin to the powerhouse is approximately 450'.

POWERHOUSE:

The powerhouse, which is located north of the West Fork of Race Creek, is constructed entirely of concrete. A backup propane generator is located atop the power house to provide power to the two homes if the hydropower system is shut down. The 10" penstock reduces to 6" at the powerhouse. Water is discharged through a 1" diameter orifice to the pelton wheel turbine for power generation. The water is discharged to a concrete raceway for discharge back to the West Fork of Race Creek.

OVERLAP ANALYSIS:

Place of Use: Although Water Rights No. 79-13606, 79-13607, and 79-4384A are within the same place of use, the beneficial uses are different – irrigation and stock water.

Have conditions of permit approval been met? X Yes No

CONDITION NO.2 – Water shall not be diverted under this right when bypass flows in the West Fork of Race Creek are below the following rates: 0.73 cfs from 12/1 to 12/29; 2.20 cfs from 3/1 to 4/30; 4.40 cfs from 5/1 to 6/30; 2.20 cfs from 7/1 to 11/30. Right holder has installed an 8" diameter bypass pipe which continually discharges water from the bottom of the diversion structure back to the West Fork of Race Creek. The flow capacity of the 8" diameter bypass pipe is approximately 4.0 cfs. Additional bypass flow is discharged back to the West Fork of Race Creek by a rectangular weir/spillway at the diversion structure. Since the elevation of the rectangular weir/spillway is mechanically adjusted based on the flows of the creek, the bypass flow varies throughout the year. Based on the estimated 2 – 3 inches of depth over the spillway during the field exam, the combined flows of the 8" bypass pipe and the rectangular weir/spillway should meet or exceed the maximum flow requirement of 4.4 cfs from 5/1 to 6/30. A metal screen was mounted on the wall of the diversion structure over the opening to the 4' x 4' concrete channel for fish screening and to keep floating debris out of the settling basin. Right holder has complied with Condition No.2.

CONDITION NO.3 (028) – After notification by the Department, the right holder shall annually report the amount of water diverted to the hydropower system. Informed the right holder that the Department may in the future request an annual report of the water diverted to the hydropower system, and recommended the creation of a measuring log to document the flow diverted through the hydropower system. The right holder has informed me that he has created a log and is proceeding with obtaining periodic flow measurements.

CONDITION NO. 5 (01F) – The right holder shall install a measuring device to measure diverted flows for the hydropower system. Although a measuring device was not installed at the time of the field examination, the right holder has installed a rectangular weir at the power house raceway. Photos were submitted to the Department, along with dimensions and flow measurement data. Right holder has complied with Condition No.5.

RATE &/OR STORAGE RECOMMENDED FOR LICENSING

Description	Rate of Flow (cfs)		Storage (af)
Permit Amount	2.2	&/or	N/A
Beneficial Use Limit	2.2	&/or	N/A
System Measurement	1.2	&/or	N/A
Proof Fee Amount	3.0	&/or	N/A
Recommended Amount	2.2	&/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	1/01 to 12/31	2.200 CFS	N/A
	<u>Totals:</u>	2.200 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

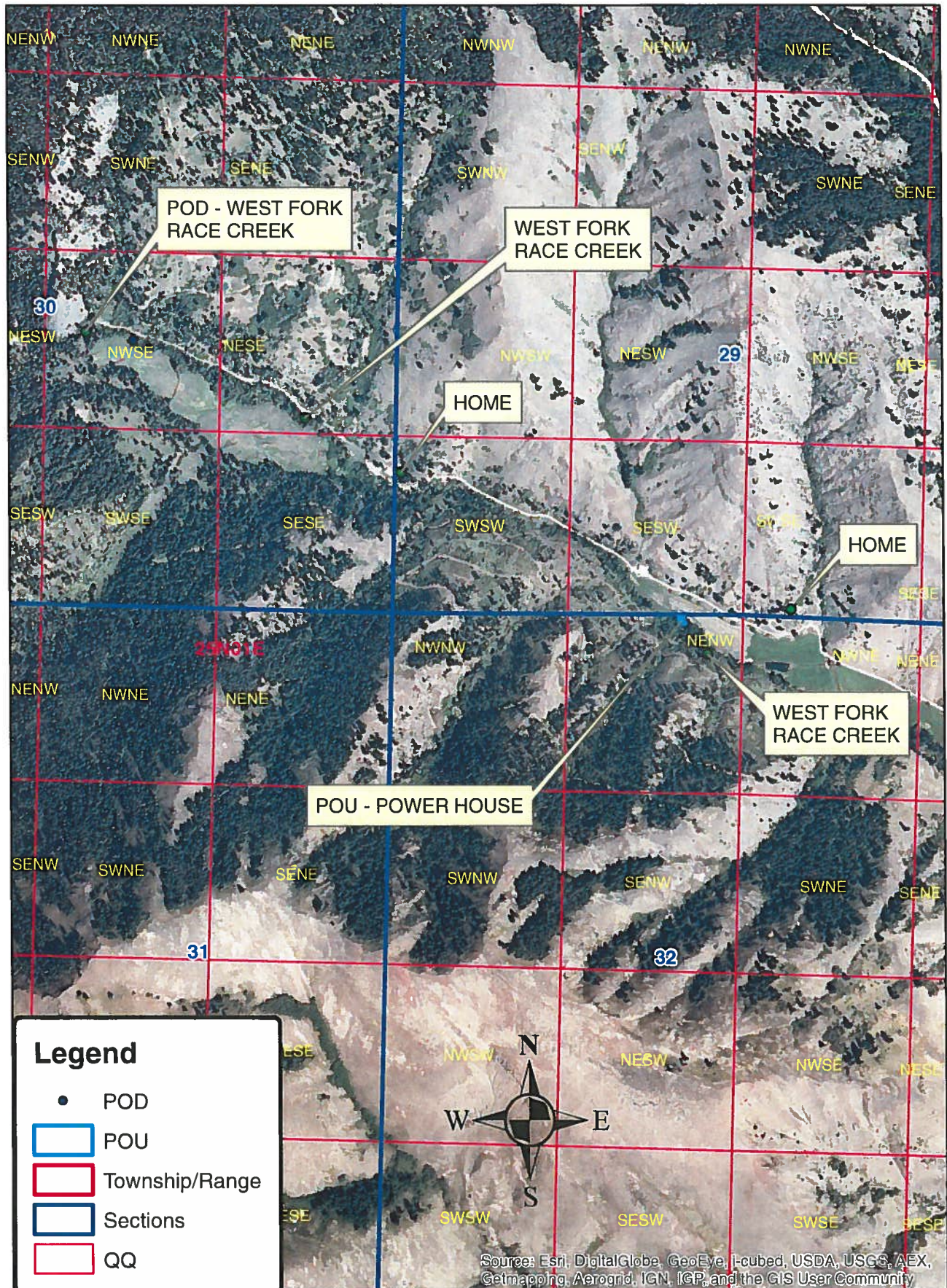
I. AUTHENTICATION

Field Examiner's Name Rick Collingwood Date 4/8/13

Reviewer _____ Date _____

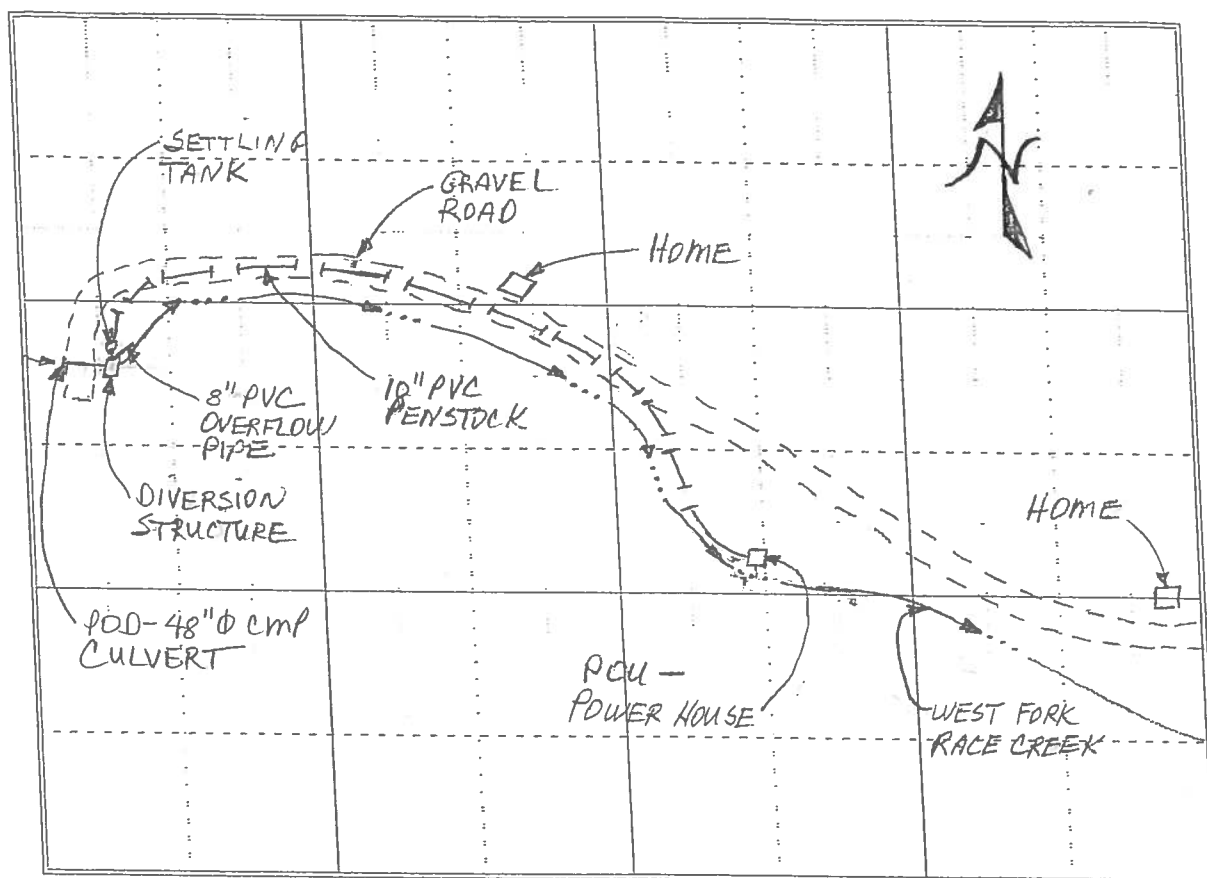
79-7237

AERIAL PHOTO - 2009



0 355 710 1,420 2,130 2,840 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" = NTS

- ☐ 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: 79-7237

Field Exam Date: 9-28-12

PLS: NW1/4, SE1/4 Section 30, T.25N, R.01E.

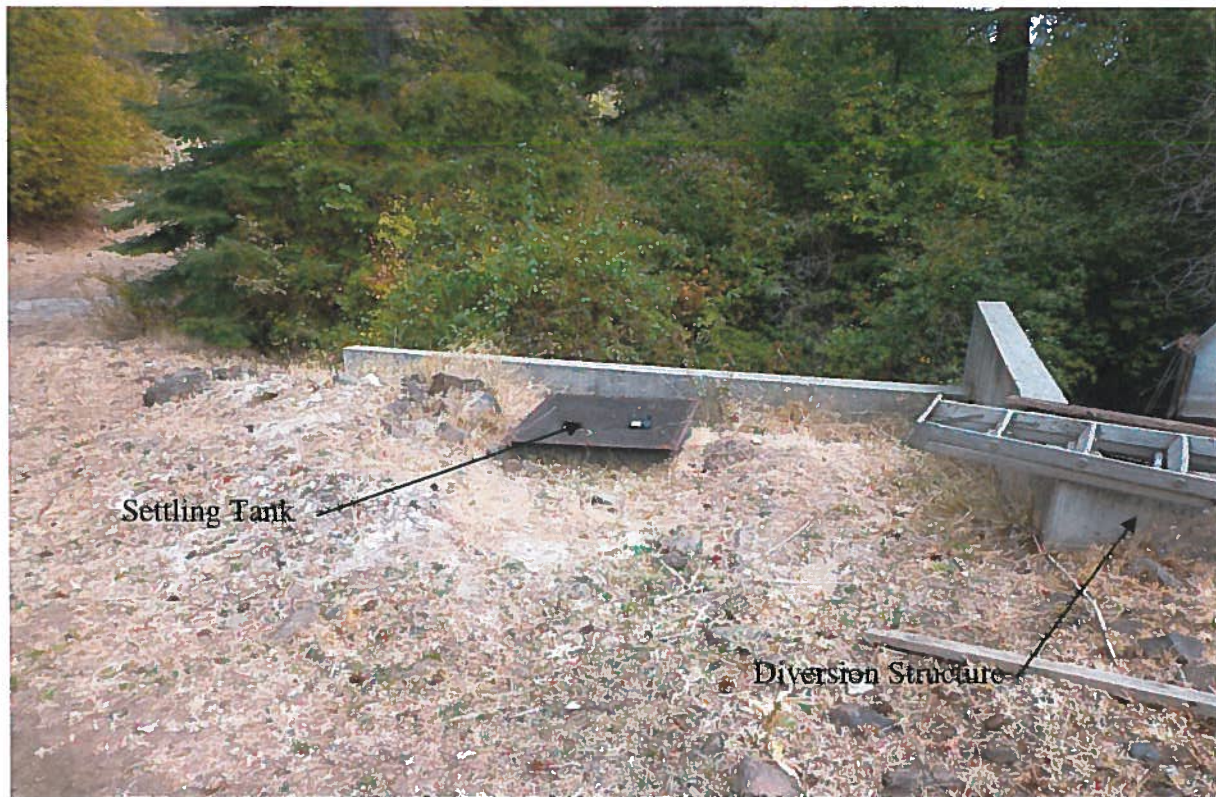
Field Examiner: RC



Point of Diversion: View westerly of the 48" diameter CMP culvert which diverts water from the West Fork of Race Creek to a concrete diversion structure.



View easterly of the 48" diameter CMP culvert discharging to the concrete diversion structure. The overflow weir channel discharges water back to the West Fork of Race Creek. The submerged structure is a filter for a 4'x4' concrete channel which discharges water to a settling tank.



Settling Tank

Diversion Structure

View easterly of the steel lid to a 4' x 4' concrete settling tank. The settling tank is used to remove sand and sediments prior to discharging water to the 10" PVC penstock.



8" PVC Diversion
Structure Overflow
Pipe

West Fork Race Creek

View of the 8" PVC overflow pipe from the diversion structure. The overflow pipe is located at the bottom of the diversion structure and discharges continually downstream to the West Fork of Race Creek.



View westerly of the power house located north of the West Fork of Race Creek.



View inside the powerhouse of the 10" penstock reducing to 6" prior to discharging through a 1" diameter orifice to the pelton wheel turbine.



View of raceway channel discharging back to the West Fork of Race Creek. Since the date of this photo, the right holder has installed a rectangular weir for flow measurements in the raceway.

6 3/4" flow with 10 1/2" opening



Opening 12" wide



Waterflow 4 1/4" thru 12" opening



Waterflow 5 3/4" thru 12" opening



Generator
Building



Measuring device
on the wier is
12" wide and
18" deep



State of Idaho

DEPARTMENT OF WATER RESOURCES

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

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

September 13, 2013

C. L. "BUTCH" OTTER
Governor

GARY SPACKMAN
Director

LARRY L SIMONSON
PO BOX 1199
RIGGINS ID 83549-1199

RE: Water Right Permit No. 79-07237

Dear Permit Holder:

The Department of Water Resources is reviewing the permit referenced above prior to issuing a water right license. By issuing a license, the Department confirms the extent of development that has been established in compliance with the terms of the permit. The examiner who verified your water use reported that certain elements of the permit have been developed differently than described on your permit. Changes that do not increase the authorized use of water under the permit can be requested and approved in accordance with Section 42-211, Idaho Code. Before a license can be issued, your permit must be amended to depict your water use as it was actually developed.

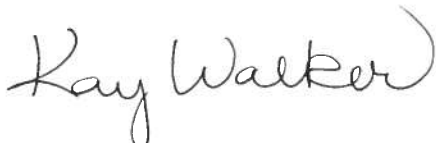
Based on the examiner's report, the following elements were developed differently than described on your permit:

 Place of Use

The enclosed Application for Amendment form depicts the elements of the water right as they will appear on the license when it is issued. Please review the amendment form carefully. If you concur with the information presented, please sign the form and return it with the \$100.00 filing fee within 14 days.

If you have any questions, please call me at (208)334-2190.

Sincerely,



KAY WALKER
Sr. Water Resource Agent

Enclosures : Application for Amendment & Layout

*9/26
Discussed
amendment w/ Mrs.
Simonson - will
sign & submit.
KW*



State of Idaho

DEPARTMENT OF WATER RESOURCES

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

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

C. L. "BUTCH" OTTER
Governor

GARY SPACKMAN
Interim Director

August 6, 2012

Larry L. Simonson
P.O. Box 1199
Riggins, ID 83549-1199

RE: Scheduling Field Exam for Water Right Permit No. 79-7237

Dear Mr. Simonson:

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 2.20 cfs of surface water from West Fork Race 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.