

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
FOLLOW-UP SITE VISIT REPORT

A. GENERAL INFORMATION

Permit No: 63-31981
Date: 5/13/2016

1. Current Owner: GERALD A WHITE
15 STRONGHOLD
BOISE, ID 83716
2. Accompanied by: Michele Edl (IDWR) and Gerald White (Permit Holder)
Phone No: (208)343-1845
Address: 15 Stronghold; Boise, ID 83716
(Robie Creek Area, Upper Boise River)
Relationship to Permit Holder: Mr. White is the Permit Holder

3. **SOURCE:** ROBIE CREEK**TRIBUTARY:** MORES CREEK**B. OVERLAP REVIEW**

1. Other water rights with the same place of use: 63-10706 (Mr. White has a fire protection pond along Robie Creek.)
2. Other water rights with the same point-of-diversion: None

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

ROBIE CREEK L4 (SW¼SW¼) Sec. 19, Twp 04N, Rge 04E, B.M. BOISE County

ROBIE CREEK L4 (SW¼SW¼) Sec. 19, Twp 04N, Rge 04E, B.M. BOISE County

Method of Determination: ArcGIS

2. **PLACES OF USE:****PLACE OF USE: FIRE PROTECTION**

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
04N	04E	30						X L 1											

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	
04N	04E	30						X L 1											

Method of Determination: ArcGIS

3. **MAPS:** Please See Vicky Music field exam for precise map and system diagram.

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 1:24,000 or greater.

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

4. **POWER GENERATION INFORMATION:**

Turbine Make	Discharge (cfs)	Generator	Size (W or kW)	Nozzle Size
Stream Engine	0.68 cfs @ 60 ft	Stream Engine	1.6 kW @ 60 ft	Two 1"
Stream Engine	0.68 cfs @ 60 ft	Stream Engine	1.6 kW @ 60 ft	Two 1"

Note: Three Stream Engines were operational at Vicky Music's exam in 2012, but only two were running at the time of our site visit in 2016.

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

D. **FLOW MEASUREMENTS**

1.

Measurement Equipment	Make	Model No.	Serial No.	Size	Calib. Date
Turbine	Energy Systems & Design	Stream Engine	Delta Series	1" nozzle max	Unknown
Turbine	Energy Systems & Design	Stream Engine	Delta Series	1" nozzle max	Unknown
Cipoletti Weir	Unknown			18" crest	Unknown

2. Measurements:

Stream Engine Nozzle Flow Chart

Head Feet	Pressure PSI	Nozzle Diameter, inches											Turbine RPM
		1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1.0	
5	2.2					6.18	8.40	11.0	17.1	24.7	33.6	43.9	460
10	4.3			3.88	6.05	8.75	11.6	15.6	24.2	35.0	47.6	62.1	650
15	6.5		2.68	4.76	7.40	10.7	14.6	19.0	29.7	42.8	58.2	76.0	800
20	8.7	1.37	3.09	5.49	8.56	12.4	16.8	22.0	34.3	49.4	67.3	87.8	925
30	13.0	1.68	3.78	6.72	10.5	15.1	20.6	26.9	42.0	60.5	82.4	107	1140
40	17.3	1.94	4.37	7.76	12.1	17.5	23.8	31.1	48.5	69.9	95.1	124	1310
50	21.7	2.17	4.88	8.68	13.6	19.5	26.6	34.7	54.3	78.1	106	139	1470
60	26.0	2.38	5.35	9.51	14.8	21.4	29.1	38.0	59.4	85.6	117	152	1600
80	34.6	2.75	6.18	11.0	17.1	24.7	33.6	43.9	68.6	98.8	135	176	1850
100	43.3	3.07	6.91	12.3	19.2	27.6	37.6	49.1	76.7	111	150	196	2070
120	52.0	3.36	7.56	13.4	21.0	30.3	41.2	53.8	84.1	121	165	215	2270
150	65.0	3.76	8.95	15.0	23.5	33.8	46.0	60.1	93.9	135	184	241	2540
200	86.6	4.34	9.77	17.4	27.1	39.1	53.2	69.4	109	156	213	278	2930
250	108	4.86	10.9	19.9	30.3	43.6	59.4	77.6	121	175	238	311	3270
300	130	5.32	12.0	21.3	33.2	47.8	65.1	85.1	133	191	261	340	3591
400	173	6.14	13.8	24.5	38.3	55.2	75.2	98.2	154	221	301	393	4140

Note: Figures are in US gallons per minute and refer to one nozzle. The standard *Stream Engine* can generate about 500 watts per 1000 rpm. ~~The X-Stream Engine can generate about 1000 watts per 1000 rpm.~~ These figures are theoretical maximums. Actual flow rates will always be somewhat less—usually by five or ten percent.

Field Exam Measurements 2012:Measurement based on design head of 60ft: 631.8 gpm or **1.41 cfs**Measurement based on 13 psi pressure observed during site visit: 445.0 gpm or **0.99 cfs****Site Visit Measurements 2016:**Measurement based on design head of 60ft: 547.2 gpm or **1.22 cfs**Measurement based on 13 psi pressure observed during site visit: 385.2 gpm or **0.86 cfs**Flow over Cipoletti Weir: 5/8-inch of head over weir crest**E. FLOW CALCULATIONS**

_____ Additional Computation Sheets Attached

Measured Method: The hydropower unit (turbine) can be used as a measurement device itself.

Field Exam Measurements 2012:Measurement based on design head of 60ft: $Q = [6 - 7/8\text{-inch nozzles flowing with 60 ft head}] \times [117 \text{ gpm}] \times [\text{approx } 90\% \text{ efficiency}] = 631.8 \text{ gpm or } 1.41 \text{ cfs}$ $P = [3 \text{ turbines}] \times [1600 \text{ rpm}] \times [500 \text{ watts}/1000 \text{ rpm}] = 2400 \text{ watts or } 2.4 \text{ kW}$ Measurement based on 13 psi pressure observed during site visit: $Q = [6 - 7/8\text{-inch nozzles flowing}] \times [82.4 \text{ gpm}] \times [\text{approx } 90\% \text{ efficiency}] = 445.0 \text{ gpm or } 0.99 \text{ cfs}$ $P = [3 \text{ turbines}] \times [1140 \text{ rpm}] \times [500 \text{ watts}/1000 \text{ rpm}] = 1710 \text{ watts or } 1.71 \text{ kW}$ **Site Visit Measurements 2016:**Measurement based on design head of 60ft: $Q = [4 - 1\text{-inch nozzles flowing with 60 ft head}] \times [152 \text{ gpm}] \times [\text{approx } 90\% \text{ efficiency}] = 547.2 \text{ gpm or } 1.22 \text{ cfs}$ $P = [2 \text{ turbines}] \times [1600 \text{ rpm}] \times [500 \text{ watts}/1000 \text{ rpm}] = 1600 \text{ watts or } 1.6 \text{ kW}$ Measurement based on 13 psi pressure observed during site visit: $Q = [4 - 1\text{-inch nozzles flowing}] \times [107 \text{ gpm}] \times [\text{approx } 90\% \text{ efficiency}] = 385.2 \text{ gpm or } 0.86 \text{ cfs}$ $P = [2 \text{ turbines}] \times [1140 \text{ rpm}] \times [500 \text{ watts}/1000 \text{ rpm}] = 1140 \text{ watts or } 1.14 \text{ kW}$ Flow over Cipoletti Weir:The Cipoletti Weir Equation: $Q = 3.367 * L * h^{1.5}$ $Q = 3.367 * [18 \text{ inches} / 12 \text{ inches per foot}] * [5/8 \text{ inches} / 12 \text{ inches per foot}]^{1.5} = 0.06 \text{ cfs}$

I recommend 1.0 cfs because it is the maximum diversion rate allowed by the permit. Therefore it is the maximum flow rate allowed to be licensed. Vicky Music (original examiner) and I estimate that approximately 1.0 cfs was diverted at the time of the original field exam in 2012.

Measured Method: Theoretical for Fire Protection

Mr. White is a retired fire chief for the Robie Creek area. He recognizes the importance of fire protection on a personal level. Despite this, his fire protection storage tanks do not appear to be regularly utilized. We were able to see two 600 gallon plastic storage tanks during the visit. Mr. White uses a 1/2 Hp pump to divert water from Robie Creek to the tanks.

Horsepower Pump Equation: $Q = [8.8 * \text{Efficiency} * \text{Hp}] / [\text{elevation head} + 2.31 * \text{pressure (psi)} + \text{friction}]$ $Q = [8.8 * 0.7 * \text{Hp}] / [80 \text{ ft} + 2.31 * 10 \text{ psi}] = 0.03 \text{ cfs}$ ****Recommend the permit maximum diversion rate of 1.0 cfs.*****F. VOLUME CALCULATIONS**

1. Volume Calculations for Irrigation: [Not Applicable]
2. Volume Calculations for Other Uses: *Power*

Because this location is the White's primary residence year-round, I recommend the 1 cfs diversion rate on a year-round basis. $V_{\text{power}} = [1.0 \text{ cfs}] \times (365 \text{ days}) \times 1.9835 = \mathbf{724.0 \text{ AF}}$

G. NARRATIVE/REMARKS/COMMENTS**Narrative:**

On Friday, May 13, 2016, Michele Edl and I traveled to the private residence of Gerald White for a follow-up site visit on permit 63-31981. The original field exam was performed by Vicky Music in 2012. She was not previously able to issue a license due to the measuring device conditions #9 and #15 on the permit. Michele and I performed this visit to re-confirm beneficial use and the presence of sufficient measuring devices.

Mr. and Mrs. White were both at home and kindly invited us into the house for coffee and/or water. We entered the home and discussed our role, mentioning that Vicky was unable to issue a license before she retired. We have every intention of issuing a license before the end of 2016. Inside the home, we noticed that the whites have all modern appliances. They explained that their hydroelectric unit supplies only about ½ of their power needs, but it is more reliable than the supply they receive from Idaho Power, which is subject to frequent outages.

After this, Mr. White escorted us to the point of diversion, upstream of their primary home, on Robie Creek. At the point of diversion, we observed Mr. White's diversion structure which provides three routes for water to flow. The route lowest in elevation is the main channel of Robie Creek itself. The other two routes, the bypass and the intake were of comparable elevation and could easily be modified based on the placement of sandy sediment in the streambed. When flows in Robie Creek are sufficiently high, a portion of the flow is effortlessly routed through the hydropower intake and weir. When flow in Robie Creek nears 1.0 cfs, Mr. White explained that he can open the bypass and water is redirected to the Creek before it reaches the hydropower intake.

Next, we walked the length of the penstock (6" pipe below grade, approx 1000 feet) along the Creek to the powerhouse, where the turbines are housed. At approximately half way, we were able to view the fire suppression storage pond associated with water right license 63-10706. When we reached the powerhouse, we could view two turbines running, each with two 1" nozzles. We were also able to view the discharge directly back to Robie Creek.

Then, we walked up to another shed near the house. We noticed their domestic well, which is used for in-house use and light irrigation around the home. When we arrived at the shed, Mr. White showed us his battery bank and inverters to change the power from DC to AC. All of the hydropower is created and consumed on the White's property (no PUC or FERC jurisdiction).

Finally, we returned to the point of diversion and took a measurement of 5/8" of head travelling over the Cipoletti weir at the point of diversion. On our way out the driveway, we photographed the fire storage tanks; we weren't able to determine if they were in use, but appeared to be quite deteriorated. This ended our follow up site visit.

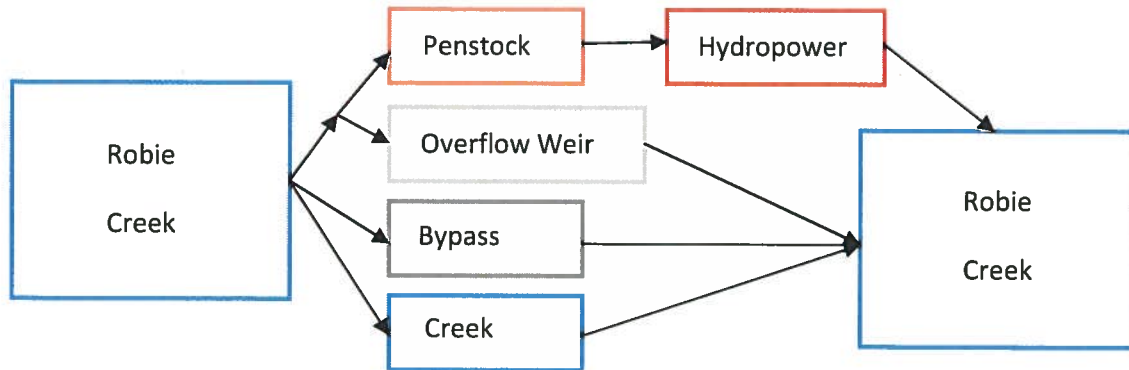
Permit Conditions:

9 – The right holder shall install a measuring device that can be used to determine the instantaneous rate of flow of water through the system, or the right holder shall provide to the department a flow rate measurement or computation made by a certified water right examiner in accordance with actual system design and operation.

Complete. Some field examiners do not understand that a hydropower unit/turbine can be considered a measuring device itself. Both the original field examiner and the Department employees who performed the site visit used the hydropower unit to determine the diversion flow rate.

15 – Prior to the diversion of water, the right holder shall install measuring devices and controlling works necessary to determine flow in Robie Creek directly upstream and downstream of the point of diversion.

Complete. The diversion operates like this:



Upstream measurement: Overflow weir + Hydropower Unit OR Flow through Bypass culvert

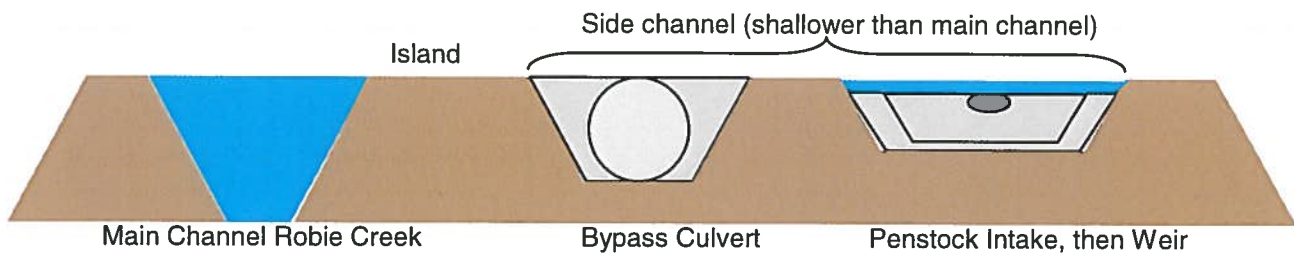
Downstream measurement: Hydropower Unit

Controlling Works: The watermaster could utilize three methods to prevent flow from entering the hydropower system:

1. Use a rubber stopper to plug the entrance to the penstock.
2. Turn off the valve between the penstock and hydropower unit/turbine. This would cause the penstock to back up and overflow into the creek. Creek water would no longer be able to enter the system.
3. Open up the bypass, such that Creek water can no longer reach the elevation of the entrance to the penstock.

Additional Controlling Works Description:

The point of diversion is situated at the far east edge of a "braided" section of Robie Creek. A downstream cross-section of the creek might look like this:



Notice that the main channel of Robie Creek is at the lowest elevation. At the time of the field exam, this channel of the Creek had the greatest volume of flow. The bypass culvert was set higher in the stream, but not as high as the intake to the penstock. A few options exist to control flow.

At the lowest of flows, only the main channel of Robie Creek would receive water. With a bit more water, flows might reach the elevation of the entrance to the bypass culvert and penstock intake. To prevent this, the bypass gate can be lifted and flow would return to the main channel of the Creek. By closing the bypass, some of the extra flow will reach the penstock intake. This was the operating condition at the time of the site visit. Extra water that does not enter the penstock can be measured at the overflow weir before it returns to the main channel of Robie Creek.

A measure of "Overflow weir + Hydropower Unit" represents the amount of water that is leaving the main channel of Robie Creek. A measurement through the hydropower unit represents the amount of water which entirely leaves the Creek for a short distance. The measurement of water over the weir represents the flow which leaves the main channel of the Creek, but is not diverted to the hydropower units.

16 – Diversion of water under this right shall not diminish flows in Robie Creek to less than 1.0 cfs. Diversion of water under this right shall cease when flows of Robie Creek directly above the point of diversion are less than 1.0 cfs.

Complete. The bypass can be opened to allow flow to immediately return to Robie Creek channel.

#17 – A fish screen of 1/4 inch or smaller mesh shall be installed and maintained at the point of diversion. Complete. A screen is installed at the entrance to the penstock.

License Term: 10 years, in conjunction with standard Department practice; Add condition 916

Have conditions of permit approval been met? X Yes No

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	1.00 CFS	724.0 AF
FIRE PROTECTION	01/01 to 12/31	0.03 CFS	
<u>Totals:</u>		1.000 CFS	

2. Recommended Amendments

 Change P.D. as reflected above Add P.D. as reflected above x None

 Change P.U. as reflected above Add P.U. as reflected above x None

I. AUTHENTICATION

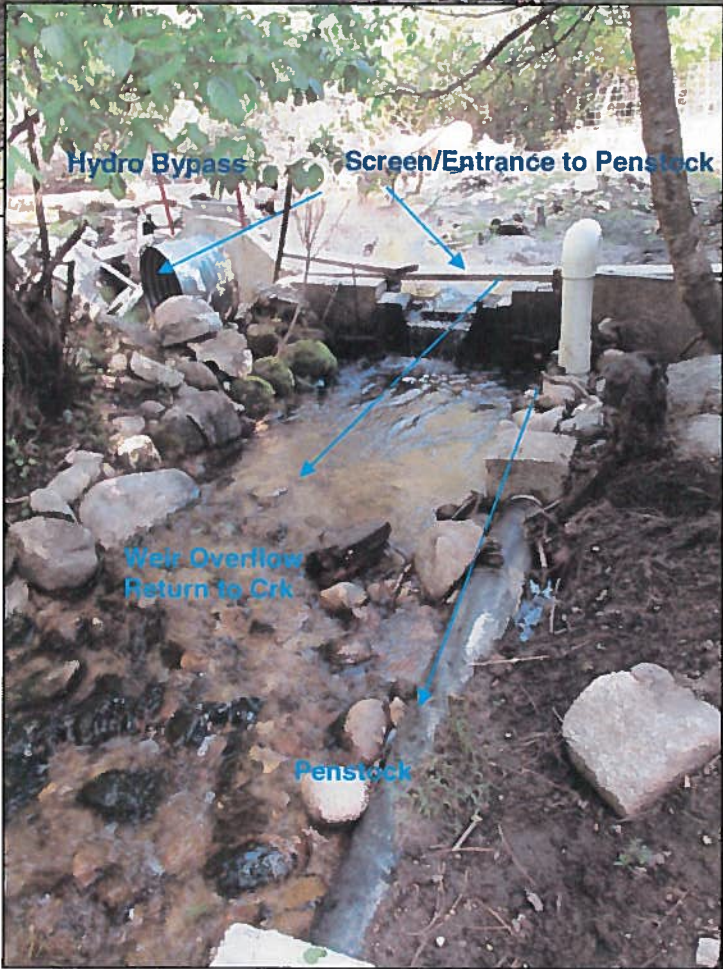
Ashley Newbry, PE; Staff Engineer

Field Examiner's Name Ashley Newbry Date 7/5/2016

Reviewer _____ Date _____



Robie Creek, at the point of diversion, looking downstream

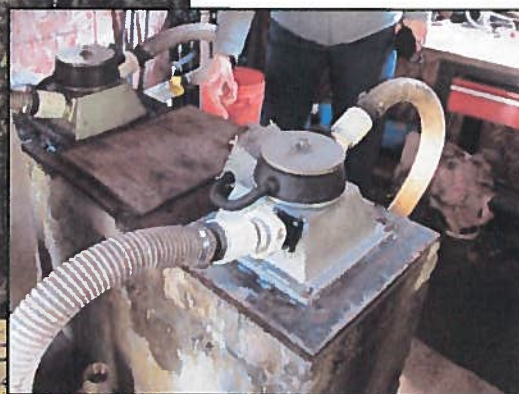
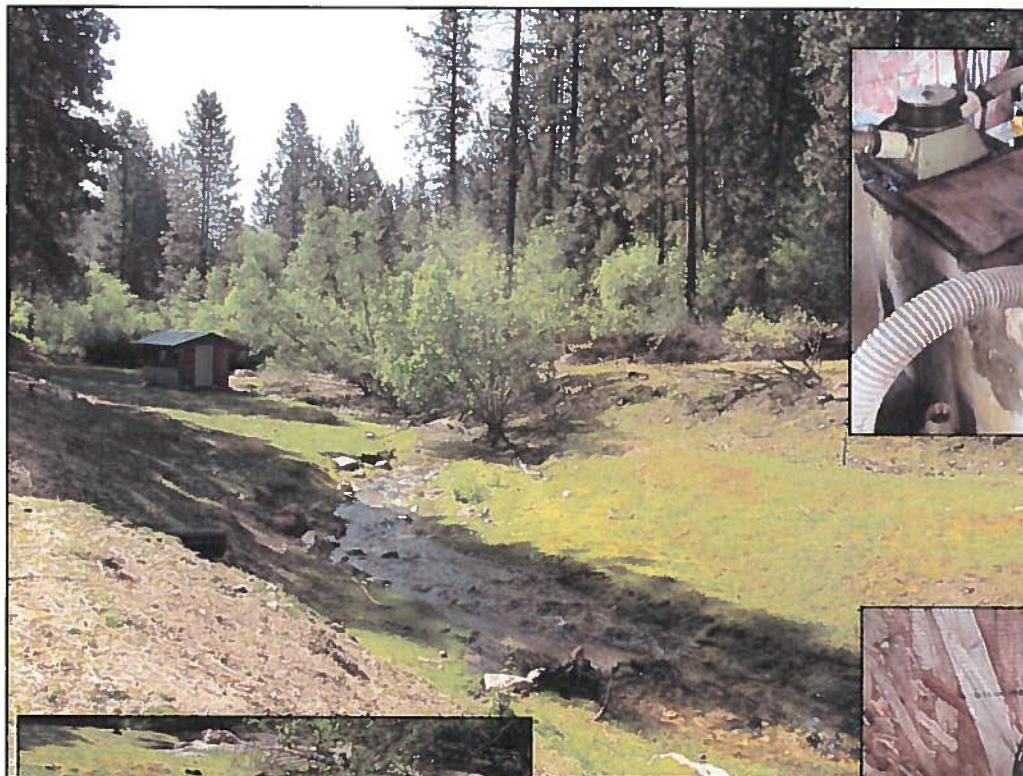


Robie Creek, at the point of diversion, looking upstream

Fire Protection Storage pond associated with 63-10706 located alongside Robie Creek



Hydroelectric powerhouse alongside Robie Creek

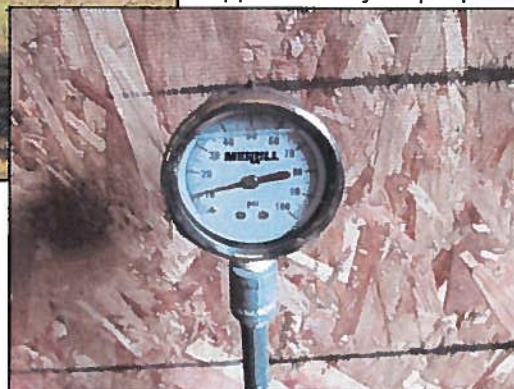


Two functional hydropower units with two nozzles each

Approximately 13 psi pressure



Hydropower discharge to Robie Creek





Current Inverters



Generator



Battery Bank



Fire Protection Tanks

MEMORANDUM

Date: May 13, 2016
To: Water Right File 63-31981
From: Michele Edl
Re: WM comment

I phoned the Basin 63 Watermaster, Rex Barrie, yesterday afternoon requesting an update on the measuring device requirements associated with this right. Mr. Barrie returned my call this morning 5/13/2016. He stated that he had visited the site and seen the diversion works but not recently so he has not yet confirmed that the reconstructed weir at the diversion meets the requirements of the permit. He stated that he considers the hydropower use non-consumptive and that a measuring device at the discharge was not necessary.

Music, Vicky

From: Music, Vicky
Sent: Monday, November 24, 2014 8:53 AM
To: 'Rex Barrie'
Cc: Grimm, Angie
Subject: RE: Gerald White 63-31918 - hydropower permit on Robie Creek

Rex – I am sure you have been crazy business, so I have tried not to bug you about it.

Jerry White's contact information :

email is gwhite7000@q.com

phone number is 343-1845

address is:

15 stronghold

Boise, ID 83716

Will you please forward your findings, not to me, but to Angie Grimm, Angie.Grimm@idwr.idaho.gov ?

Thank you, Rex.

Vicky Music
Sr. Water Resource Agent
IDWR Western Region
208.334.2190

Please reply that you received this message.

From: Rex Barrie [<mailto:waterdistrict63@qwestoffice.net>]
Sent: Monday, November 24, 2014 7:16 AM
To: Music, Vicky
Subject: RE: Gerald White 63-31918 - hydropower permit on Robie Creek

Vicky,

I must apologize I did not get back up there yet. Been very bust here with refill issue and other stuff.
Please send me his contact info and I will arrange to meet him as soon as possible.

Rex R. Barrie
Boise River Watermaster

From: Music, Vicky [<mailto:Vicky.Music@idwr.idaho.gov>]
Sent: Tuesday, November 18, 2014 1:51 PM
To: Rex Barrie
Subject: Gerald White 63-31918 - hydropower permit on Robie Creek

Hi Rex –

Mr. White had an 8/1/2014 deadline by which to re-construct his Robie Creek diversion to meet the permit condition that required he install a measuring device. Did you re-visit the diversion and verify that it was compliant? You were also going to leave a ratings table for the weir.

Music, Vicky

From: Music, Vicky
Sent: Tuesday, November 18, 2014 1:51 PM
To: 'Rex Barrie'
Subject: Gerald White 63-31918 - hydropower permit on Robie Creek

Hi Rex –

Mr. White had an 8/1/2014 deadline by which to re-construct his Robie Creek diversion to meet the permit condition that required he install a measuring device. Did you re-visit the diversion and verify that it was compliant? You were also going to leave a ratings table for the weir.

When I receive verification from you, IDWR will continue to work on issuing the license.

Thank you.

Vicky Music
Sr. Water Resource Agent
IDWR Western Region
208.334.2190

Please reply that you received this message.

Music, Vicky

From: CenturyLink Customer [gwhite7000@q.com]
Sent: Thursday, July 31, 2014 6:45 PM
To: Rex Barrie
Cc: Music, Vicky
Subject: weir / permit # 63-31981

Dear Rex The required weir has now been installed and is awaiting your inspection. I believe we met your August 1 deadline. Please advise your timing... Thanks a lot for your attention to this, I really appreciate your expertise in this area.

--

All is well
Be at peace
It is finished

Jerry

Music, Vicky

From: Music, Vicky
Sent: Thursday, January 16, 2014 2:55 PM
To: 'gwhite7000@q.com'
Subject: RE: G. White, Rex Barrie recommendation

Mr White –

After the weir is installed and Mr. Barrie meets with you, I'll ask him to send me something that indicates the system is in and operational, and then we will license it. I'll send a letter to both of you to that effect.
Sincerely,

Vicky M

From: gwhite7000@q.com [<mailto:gwhite7000@q.com>]
Sent: Tuesday, November 12, 2013 3:10 PM
To: Music, Vicky
Subject: Re: G. White, Rex Barrie recommendation

Vicki Thanks for your response. The weir will be in place sometime after low flow, by August 1 of next year.

From: "Vicky Music" <Vicky.Music@idwr.idaho.gov>
To: gwhite7000@q.com
Sent: Tuesday, November 12, 2013 3:06:29 PM
Subject: RE: G. White, Rex Barrie recommendation

Hi Mr White –

Thank you for your email. Regarding timing of issuing the license, when do you think the modifications of your system will be in place?

Vicky M

From: gwhite7000@q.com [<mailto:gwhite7000@q.com>]
Sent: Tuesday, November 05, 2013 9:55 AM
To: Music, Vicky
Subject: G. White, Rex Barrie recommendation

Dear Vicki Please find attached Rex Barrie's findings and recommendation for my permit # 63-31981. Please confirm receipt of this communication and advise me of any further steps/timing of the issuance of the actual license. I will be mailing you a revised drawing of the turbine/penstock schematic with some corrections on actual dimensions. I don't know if any of these corrections are actually necessary but I thought they should be added to the record, so as to mediate any possible surprises/changes in the future. Thanks for your assistance in all this. I really appreciate it. Have a great day!

From: "Rex Barrie" <waterdistrict63@qwestoffice.net>
To: gwhite7000@q.com
Cc: "Vicky" 'Music' <Vicky.Music@idwr.idaho.gov>, "John" 'Westra' <John.Westra@idwr.idaho.gov>, "Tim Luke"

<tim.luke@idwr.idaho.gov>

Sent: Tuesday, November 5, 2013 7:30:36 AM

Subject: LetterHead

Dear Mr. (Jerry) White,

Attached is a copy of my letter related to our meeting yesterday at the diversion.

If you would like a hard copy sent, please let me know and I will mail one.

Be certain the Ms. Music receives a copy of this letter.

Please contact me if there are any questions.

Rex R. Barrie
Boise River Watermaster

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All is well
Be at peace
It is finished

Jerry

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All is well
Be at peace
It is finished

Jerry

STATE OF IDAHO
WATER DISTRICT No. 63
(BOISE RIVER)

REX R. BARRIE, WATERMASTER
P.O. BOX 767
STAR, IDAHO 83669-0767
(208) 908-5480

November 5, 2013

Via: E-Mail

Gerald A. White
15 Stronghold
Boise, Idaho 83716

Re: Permit No. 63-31981

Dear Mr. White:

Thank you for meeting with me at your Point of Diversion (POD) related to Permit No. 63-31981.

The letter from Ms. Vicky Music with IDWR dated October 28, 2013 required you to meet certain conditions for the final approval of your permit. After looking at the site I will recommend the following items be addressed.

Permit Condition No. 9: Requiring a measuring device at your POD. You will need to install a Cipolletti (or similar) Weir at your POD in order to measure flow past the intake pipe. As current conditions at the site are not suitable for this work to be done in the near future I will require the weir to be installed no later than August 1, 2014. If it is possible to install the weir after ice out and before the spring freshet that would be acceptable.

Permit Condition No. 16: Requires you to cease diversion when the flow in Robie Creek falls below 1 Cubic Foot per Second (cfs). In order to monitor the flow past your POD I will require you to submit weekly data to my office. Electronic transmission via e-mail is the preferred method of submitting data. This data shall show the flow rate across the weir as measured with an approved staff gage. As soon as the weir is installed I will meet with you to explain how to measure the flow and provide you with a rating table for the weir. When the flow in Robie Creek falls below 1 cfs you must cease diversion until the flow raises enough to provide the 1cfs past your POD.

Information on the dimensions of weirs and related flow tables can be obtained from the U.S. Bureau of Reclamation's Water Measurement Manual at,
<http://www.usbr.gov/wrrl/fmt/wmm>

As a part of the administration of Water District No. 63 you will be sent an annual assessment from the Watermaster's office each year in February. Currently the minimum assessment charged is \$50.00 per year.

Please contact me if you need any further assistance with this project or if you have any question.

Sincerely,

Rex R. Barrie
Boise River Watermaster

Sent via e-mail:

Cc: Vicky Music, IDWR Western Region Office
John Westra, IDWR Western Region Office
Tim Luke, IDWR State Office



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

October 28, 2013

Gerald A White
15 Stronghold
Boise, ID 83716

Re: Permit No. 63-31981

Dear Mr. White:

This letter is to follow up with you on the status of your permit since the field exam I conducted of July 23, 2012. As I mentioned that day, the licensing of all power permits was suspended due to an Idaho Supreme Court decision about the way the Department imposed power term limits on hydropower water rights. The matter was before the Idaho Legislature, has been resolved, and the Department is now able to license this permit.

The only matter that must be reconciled before your power permit is licensed are Permit Condition No 9 on your power permit requiring a measuring device on your diversion on Robie Creek, and Condition 16, requiring diversions under this right to cease when the flow in Robie Creek falls below 1 cfs. I have enclosed is a copy of your permit with the conditions for your reference. You explained during the field exam that you built a weir, but the creek overflowed the weir in the spring and rerouted itself around it, rendering it useless.

Please contact the Boise River Watermaster, Rex Barrie, to come up with a solution or an alternative. Discuss the system with him and let's see what he suggests, because the Department will defer to his suggestions. Mr. Barrie can be reached via email at waterdistrict63@qwestoffice.net, or phone at 208-908-5480.

I am copying Mr. Barrie on this letter, and in addition to a copy of the Permit, have enclosed field photographs, an aerial of the system, and other documentation, that will assist you and Mr. Barrie in your discussion, and in his assessment.

Please obtain and forward to me a letter from Mr. Barrie regarding his recommendations for conditions. **The letter is due December 6, 2013**, which should provide ample time to consult with Mr. Barrie. Either of you may call me with questions at 208.334.2190, or email me at vicky.music@idwr.idaho.gov.

Sincerely,


Vicky Music
Sr. Water Resource Agent

cc (with enclosures): Basin 63 Watermaster Rex Barrie

Enclosures: copy of Permit 63-31981, field photos, aerial, drawing of powerhouse, nozzle specs

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 63-31981

Exam Date:

7/23/12

1. Current Owner: GERALD A WHITE
15 STRONGHOLD
BOISE ID 83716
(208)343-1845

2. Accompanied by:

Phone No:

Address:

Relationship to Permit Holder:

3. SOURCE

ROBIE CREEK

TRIBUTARY

MORES CREEK

B. OVERLAP REVIEW

1. Other water rights with the same place of use:
2. Other water rights with the same point of diversion:

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

ROBIE CREEK

L4 SW1/4SW1/4

Sec. 19, Twp 04N, Rge 04E, B.M.

BOISE County

Method of Determination:

2.

PLACE OF USE:

Twp	Rge	Sec	POWER				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
04N	04E	30						X											
								L 1											

PLACE OF USE:

Twp	Rge	Sec	FIRE PROTECTION				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
04N	04E	30						X											
								L 1											

* Where water returns to stream
may not be able to measure so alt pipe diameter, distance
from ROB to generator, slope?
type of pipe
T's, valves,

Method of Determination:

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.

Well or Diversion ID No.*	Pump Serial No. or Discharge			Pump Make	Size
	Motor Make	Hp	Motor Serial No.		
FP 2	unk n/a - turndowns	1/2	unk		1" pipe

*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

2. Measurements:

2 - power each nozzle (.183 cfs) (6) = 1.09
 B - 12" = 3.93 cfs
 6" pipe = 0.98 cfs.

E. FLOW CALCULATIONS

_____ Additional Computation Sheets Attached

Measured Method:

A. 1-FP

$$\frac{(8.8)(1.5)(.7)}{100 + (2.31)(10)} = \frac{3.08}{103.1} = .029 = .03$$

 B. 1" pipe flow = .03*

MEMORANDUM

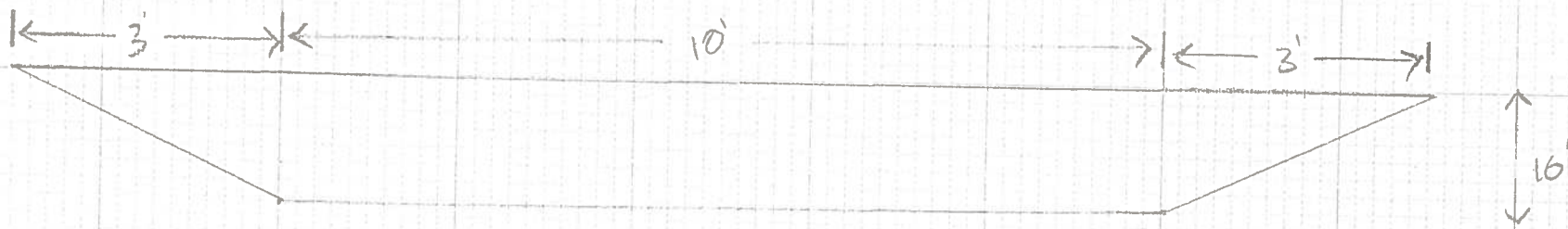
Date: August 21, 2012
To: Water Right File 63-31981
From: Vicky Music
Re: Field Report Narrative

The permit was issued for fire protection and power uses from Robie Creek. The correct fee was timely paid. Applicant Gerald White accompanied me on the field exam on 7/23/12. Mr. White provided Robie Creek flow measurements from April and May 2006. The flows were 101.95 and 35 cfs, respectively.

FIRE PROTECTION - a ½ hp electric pump in Robie Creek pumps water about 300 feet through a 1 inch diameter rubber pipe to two 600 gallon plastic storage tanks. When needed for fire protection, water can be pumped to a hydrant about 100 feet from the tanks. A theoretical flow was calculated using a Z value of the 80 feet change in grade from the pump elevation to the tank elevation. The result was 0.03 cfs. A system diverting water through a 1 inch diameter pipe can deliver a maximum of 0.03 cfs so this is the rate that will be recommended for licensing.

HYDROPOWER - a 4 foot high by about 10 feet long concrete wall comprises the diversion dam on Robie Creek. Water ponds behind the dam and there is a 3 foot diameter gate that allows excess water to flow around the dam. A ¼ inch fish screen was installed. Water flows via gravity through about 750 feet of 12 inch pipe that is above grade at the dam [installed at the top of the low water mark] for about 15 feet, then buried to the power house. Water flows to the powerhouse where it enters a concrete vault that houses the turbines. There are three turbines. Each turbine has two 6-inch PVC pipes delivering water to a 7/8 inch nozzle for a total of six nozzles. Each nozzle is rated for 13 psi and 0.183 cfs. If all of the nozzles are open, the maximum flow is 1.09 cfs so the system is capable of producing the permitted rate of 1 cfs. A well designed diversion system can deliver 0.98 cfs through a 6 inch diameter pipe. These results are very close so the permitted rate of 1 cfs, which is the rate recommended for licensing. Mr. White provided specs for the turbine nozzles.

The applicant installed a weir to comply with the permit conditions. However, the creek would overflow the weir every spring and the weir was useless. In fact, the stream created a new channel around the weir. So, there is not a measuring device at the diversion. One could be constructed for use during low flow, but the turbine nozzles control water use and the power use is non-consumptive so it is really not needed-the measuring device condition.



17.33 SQ. FT CROSS SECTION
 X 5.882 FT. / SEC. FLOW RATE

 101.95 CUBIC FEET / SEC

DATE MEASURED
 APRIL 5, 2006

13 SQ. FT CROSS SECTION
 X 2.7 FT. SEC. FLOW RATE

 35 CFS

MAY 4, 2006

Robbie Creek?



63-31981--2011 BING AERIAL. The Whites own 3 lots. POD in Sec 19 and the POU is in the southernmost lot in Sec 30. - outlined in darker blue on aerial.



63- 31981 - 2011 Bing photography. Blue outline is the place of use.

12/11/20

invertebrates outside house.



D.C. power lines from turbines $\rightarrow$ inverters $\rightarrow$ house. $\rightarrow$ tax lot offset - properties
 $\rightarrow$ A.C. 220 volt. produces about $\frac{1}{2}$ netted power house. link on west side of creek

63-31981

U.S. DEPARTMENT OF THE INTERIOR

BUREAU OF LAND MANAGEMENT

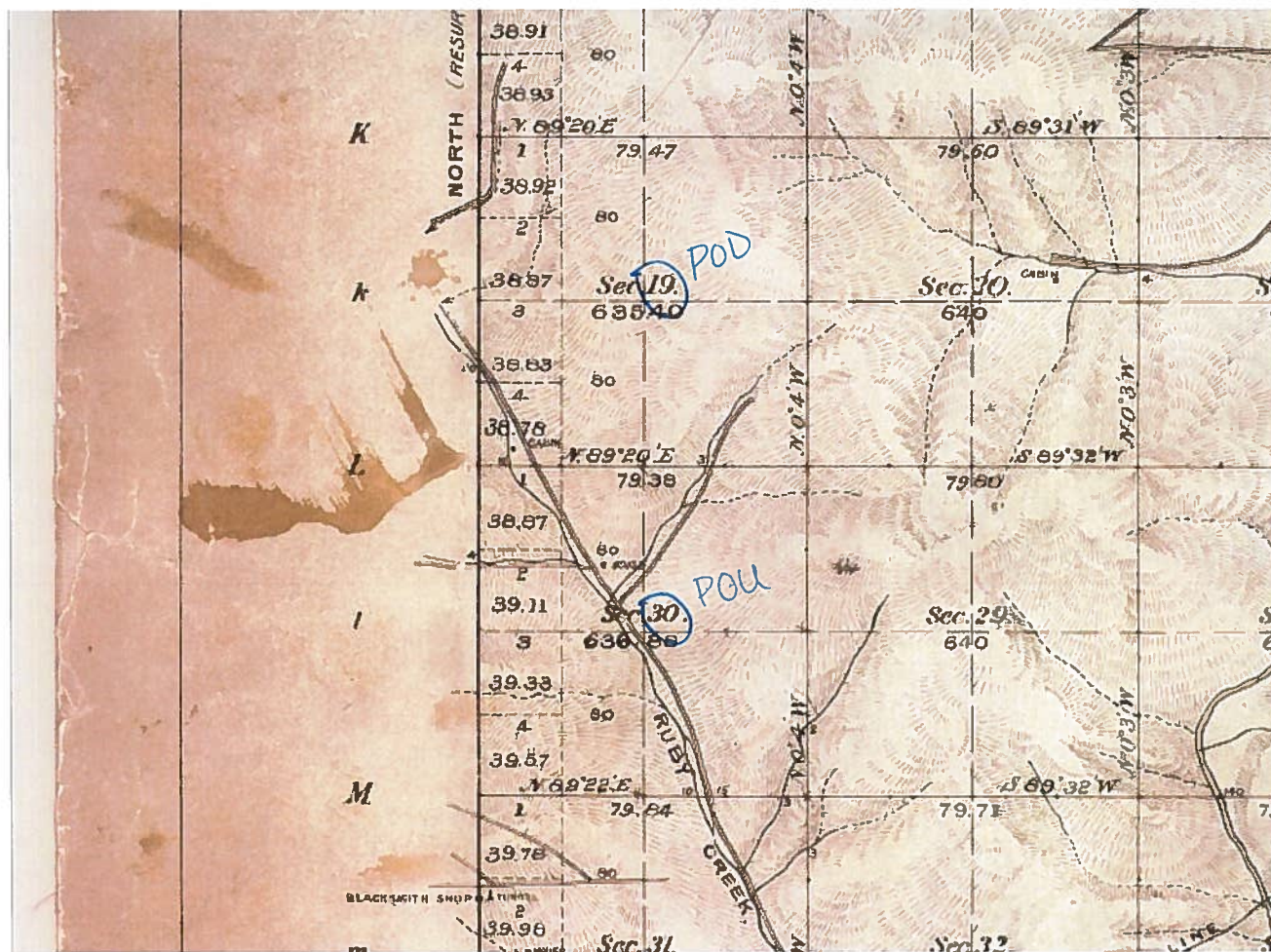
General Land

[Search Documents](#)[Reference Center](#)[Support](#)[Search Documents](#) [Results List](#) [Survey Details](#)

DM ID: 42871 Survey Type: Original Survey State: Idaho

[Survey Plat Details](#)[Plat Image](#)[Related Documents](#)

Sheet: 1 Description: ---

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63-31981

Each turbine has 2 nozzles @ 13 psi.
Each nozzle can be open or shut
as needed. 1.06 cfs when all
3 turbines are running
With all nozzles
open.

Powerhouse -- view is from the
northwest

structure is 12' x 8' x 8'.

circular opening

3 turbines

concrete
vault

6" pvc hoses from
vault that feed
water to
turbines
1 floor

10' from powerhouse
to Robie Creek

return flow to creek

buried 12" pipe
from Robie Creek

Robie
Creek

63-31981

STREAM ENGINE NOZZLE FLOW RATE @ 7/8 INCH NOZZLE DIAMETER

82.4 GPM @13 PSI = .183 CFS PER NOZZLE X 6 NOZZLES = 1.09 CFS

Data from Energy Systems and Design Owner's Manual

63-31981



½ hp electric pump in Robie Creek for fire protection.



Fire protection - Water is pumped from Robie Creek to these two 600-gallon storage tanks.



Fire protection system – water is pumped from the storage tanks to the hydrant as needed.



Power system – the point of diversion from Robie Creek



Power system – POD on Robie Creek. 12" pipe seen center and forefront. Remainder of 12" pipe is buried to the powerhouse.

Metal culvert seen upper left was for overflow from the holding pond but the stream cut course around it.



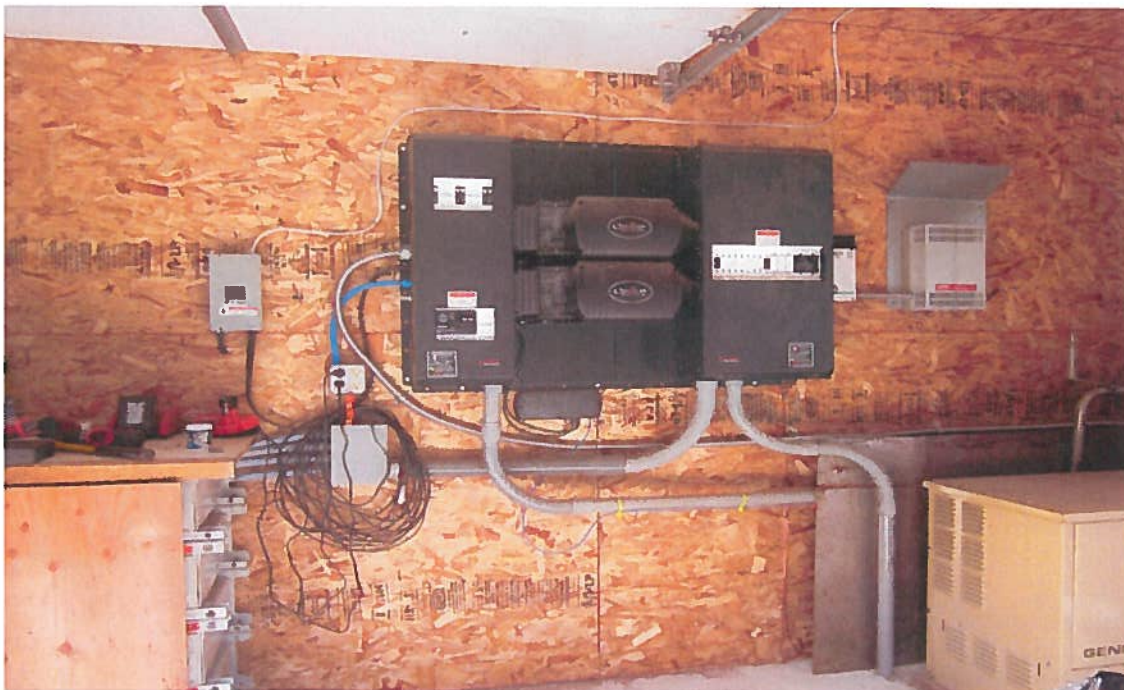
Power system – powerhouse. Discharge pipe to Robie Creek seen Right of powerhouse.



The 3 water turbines in the powerhouse. The 6" hoses that feed water to the turbines.



Discharge of water from powerhouse to Robie Creek.



Power inverter and battery packs [lower left] in building adjacent to house on the west.

Music, Vicky

From: Lester, Steve
Sent: Tuesday, July 17, 2012 12:27 PM
To: Western Region
Subject: POWER HOLD -- Applications & Licenses

Per recent State Office memo, cannot approve power Applications for Permit and cannot issue power Licenses until further notice. This is due to legal problems over power term limits (when we can reconsider any approvals/licenses).

We can process applications thru the legal notice process but cannot do anything beyond that. We can conduct beneficial use field exams of already approved permits but cannot do anything beyond that.

Power Applications for Permit and completed Beneficial Use Field Exams will be held -- "Power Hold" bottom drawer of applications file cabinet.

Power Applications for Permit will be labeled in Apps.lis -- "Power Hold Drawer."

Welcome to the "hold 'em" world (again).

- SL

MEMORANDUM

DATE: June 26, 2012

TO: Water Allocation Bureau and Regional Offices

FROM: Jeff Peppersack

RE: Guidance to staff regarding term limits on water right licenses for power generation

Idaho Code § 42-203B(6) authorizes the Director to limit hydropower water right to a specific term. It has been the policy and practice of IDWR to put term limit conditions on water right permits and licenses for power generation since at least 1984, which is the same year that the Water Resource Board adopted a resolution calling for term limits on all hydropower water rights. IDWR's standard term limit conditions have not set a firm expiration date for the water right. Instead, they set a date after which the Director may review the water right to determine if it is still in the public interest. (For background information on this policy, see the 10/1/2008 *Statement of Position and Attachments* in the scanned images for Right 3-7018.)

In 2011 IDWR's method of establishing a term limit was impugned by the Idaho Supreme Court when it reviewed the license for Water Right 3-7018. Essentially, the Supreme Court said that the statute seems to allow only setting a firm expiration date for the water right, similar to the firm expiration date set in a Federal Energy Regulatory Commission (FERC) license for power generation. Since the Supreme Court's ruling on Right 3-7018, IDWR has been discussing different term limit language with hydropower water right holders and applicants, such as Idaho Power Company and the Boise Project Board of Control, and with other interested parties.

The purpose of this memo is to direct all Water Allocation Bureau and Regional Office staff to refrain from issuing permits and licenses for power generation until a consistent term review approach is established, possibly through legislation. For applications to appropriate water for power generation, all processing may occur except final issuance of the permit. For permits needing licensed, field examinations should be conducted and licenses drafted, except for the final term limit condition. That way, when the matter is settled, IDWR will be poised to act quickly to issue permits and licenses.

Some staff members have asked whether there are some hydropower water rights that IDWR would be willing to permit and license without a term limit. For example, it has been suggested that there may be little resource management value in setting a term of years on a subordinated hydropower water right for private use on a small, headwaters stream. At this point, IDWR's position must remain consistent with the Water Resource Board's 1984 resolution calling for all water rights for hydropower uses to have term limits. Therefore, the wait-and-see approach should be applied to even "small" power generation facilities.



State of Idaho

DEPARTMENT OF WATER RESOURCES

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

Phone: (208) 334-2190 FAX: (208) 334-2348 www.idwr.idaho.gov

C.L. "BUTCH" OTTER
Governor

GARY SPACKMAN
Interim Director

June 28, 2012

Mr. Gerald White
15 Stronghold
Boise, ID 83716

Re Permit No. 63-31981

Dear Mr. White:

The permit referenced above was issued to you for hydropower and fire protection uses from Robie Creek. This letter is to request that you call me to schedule the field exam for this permit as required by Idaho law.

Please call me at 208.334.2190, by July 13, 2012, to set an appointment for the exam. I'll gather some information about the diversion and delivery system at that time in preparation for the exam. Thank you.

Sincerely,

Vicky Music
Sr. Water Resource Agent