

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 29-14042

Exam Date: 5/7/2015

1. Current Owner: BAR NONE RANCH LLC
1200 BAY LAUREL
MENLO PARK CA 94025
650-326-0777

2. Accompanied by: Roland Evans

Phone No:

Address:

Relationship to Permit Holder: Brother in Law

- ### 3. SOURCE

UNNAMED STREAM

TRIBUTARY

DEMPSEY CREEK

B. OVERLAP REVIEW

1. Other water rights with the same place of use: 29-14104
2. Other water rights with the same point of diversion: None

C. DIVERSION AND DELIVERY SYSTEM

1. LOCATION OF POINT(S) OF DIVERSION:

UNNAMED STREAM NE1/4NW1/4 Sec. 28, Twp 10S, Rge 38E, B.M.

BANNOCK County

Method of Determination: GPS (-112.024389, 42.529078), Site Visit

2.

<u>PLACE OF USE:</u>			POWER																
Twp	Rge	Sec	NE				NW				SW				SE				
			<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>Totals</u>
10S	38E	28		X															

Method of Determination: GPS & 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>Pump Serial No. or Discharge</u>
<u>ID No.*</u>	<u>Motor Make</u>	<u>Hp</u>	<u>Motor Serial No.</u>	<u>Pump Make</u>	<u>Size</u>

D. FLOW MEASUREMENTS

1.

Measurement

<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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2. Measurements:

E. FLOW CALCULATIONS

____ Additional Computation Sheets Attached

Measured Method: The pipeline from the spring is a 3" pipe which carries approximately 0.39 cfs of water to the powerhouse. The pipe travels downstream where the pipe is necked down to three, 1" pipes running to the generator. These three pipes have valves and only 1 pipe at a time can be turned on. The maximum water flow into the generator to produce power is 58.8 gpm or 0.13 cfs. This is the total amount requested in the application.

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

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

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

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

2. Volume Calculations for Other Uses:

G. NARRATIVE/REMARKS/COMMENTSHave 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>
POWER	01/01 to 12/31	0.130 CFS	
<u>Totals:</u>		0.130 CFS	

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 Kevin Matthews Date 7-28-15
 Reviewer James Cefalo Date 8/6/15

FIELD EXAM 29-14042

May 13, 2015



Pipeline to power house



FIELD EXAM 29-14042

May 13, 2015



Powerhouse



Pipe inflow to powerhouse



Generator with 3-way switch change flow based on need. Return flow is on the back of blue box
Harley Generator



DC Amp Box

Max Amp is 30

*48 Volt System
 excess power sent to burner that heats
 the Downhouse.*



Inverter boxes



Serial number top box



Serial number bottom box



Return flow to creek



Running at 5.13.15

PSI	96		Volts		48	Eff. 89%					
~58.8 GPM moves thru a 1" pipe *											
Hydro Generator Nozzel Size, i.e. % factor of 1"									Delta	Delta	Amps
Qty	Nozzle 1	Nozzle 2	~ GPM	~ PSI	Amps	Watts	Net Watts	KWH/Day	~GPM	Amps	per GPM
1	0.230	N/A	13.5	96	4.5	216	192	5	1.8		
1	0.260	N/A	15.3	96	6.0	288	256	7	1.8	1.5	0.85
1	0.295	N/A	17.3	96	9.5	456	406	11	2.1	3.5	1.70
1	0.325	N/A	19.1	96	13.0	624	555	15	1.8	3.5	1.98
1	0.360	N/A	21.2	96	17.0	816	726	20	2.1	4.0	1.98
2	0.360	0.230	23.0	96	23.8	1142	1017	27	1.8	6.8	1.98
2	0.360	0.260	25.1	96	27.0	1296	1153	31	2.1	3.2	1.98

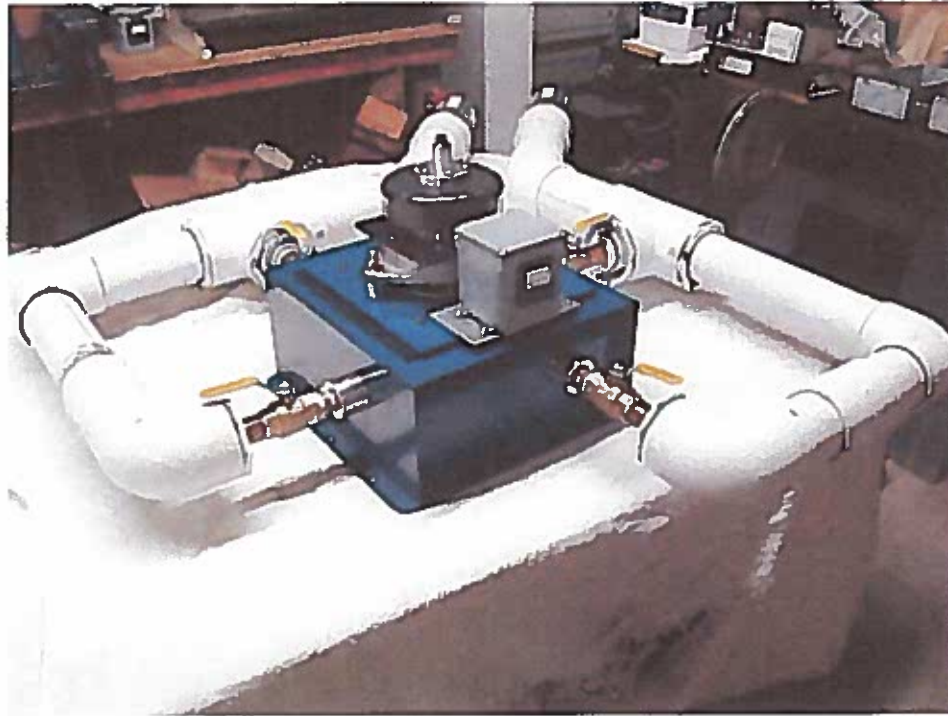
Estimate:

PSI	55		Volts 48 Eff. 92%								
~110 GPM moves thru a 4" pipe											
Hydro Generator Nozzel Size, i.e. % factor of 1"											
Qty	Nozzle 1	Nozzle 2	~ GPM	~ PSI	Amps	Watts	Net Watts	KWH/Day	Delta ~GPM	Delta Amps	Amps per GPM
1	0.230	N/A	55.2	55	13.3	638	568	15	7.2		
1	0.260	N/A	62.4	55	15.1	725	645	17	7.2	1.8	0.25
1	0.295	N/A	70.8	55	17.2	826	735	20	8.4	2.1	0.25
1	0.325	N/A	78.0	55	18.9	907	807	22	7.2	1.7	0.24
1	0.360	N/A	86.4	55	20.8	998	889	24	8.4	1.9	0.24
2	0.230	0.230	110.4	55	26.6	1277	1136	31	24.0	5.8	0.24

DC Power generated assumes 6% line loss and 6% Transformer loss.

need to record correct nozzle size for RTE system

Alternative Power and Machine ("APM") Generator Model 1800



- Generates ~.8 to 1.4 KWH DC at 30 gpm w/ ~180 PSI.
- Requires 14" X 14" catch basin connected to 3" PVC pipe below the blue water box

Application
for permit
file

Regional Precipitation

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Yrly Avg
2008	1.5	1.7	2.2	5.6	5.4	3.2	3.5	3.1	3.3	0.7	0.5	1	31.7
2009	0.9	3	2.8	5.6	2.7	3.4	5.1	3.5	4.5	2.1	0.8	0.8	35.2
2010	1.5	1.7	1.4	3.1	4.4	1.8	3.9	4.3	5.6	1.3	1	1.7	31.7
2011	1	5.5	7	5	2.6	5	6	5	4.4	1.3	1.2	0.8	44.8
2012	2.6	2.6	2.2	2.5	3.7	3.6	3.4	2.5	2.6	0.7	1.4	1.5	29.3
5 Yr Average													34.5
% below 5 year a'													15%

Weather Condition	Drought	Normal	
Spring	GPM	GPM	Measured
1	5	8	10/3/2012 w/ pipe & 2 Gal Bucket
2	10	15	10/3/2012 w/ pipe & 2 Gal Bucket
3	5	8	Assumed equal to Spring 1
Total	20	31	
10% Error Factor	2	3	not all water gathered
15% Dev. Improvement	3	5	Estimated improvement w/ development
Est. Total Available	25	39	

2012 precipitation is 29.3" or ~ 15% below the 5 Year Average

A return to normal precipitation is expected, resulting in more normal flow from springs of up to 40+ GPM.

Power Calculations

Pipeline Length	1830
Transmission Loss	0%
Total Stream Flow - GPM	60-100
% of Stream Diverted	40%
Pipeline size	3"
Altitude - Diversion	6400
Altitude - Return	6040
Gross Head	360
Head LOSS	-4.7
Net Head	355
PSI Loss	-10.8
Net GPM	40.0
Efficiency	80%
PSI	143
Watts	1137
KWH/Day	27

Power Use

Max Power Use in KWH/Day	Occupied	UnOccupied
Home Usage	23	4
Fan Circulation (Heating)	4	4
Electric Heat	0	19
Total	27	27

PSI calculation:

PSI X 2.31 = No. of head feet.

KWH Power calculation:

Head = Altitude at Diversion minus Altitude at Powerhouse
Head less pipe friction loss times GPM divided by 10.

Application for
Permit file

29-14042