

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 85-15383

Exam Date: 5/16/2012

1. Current Owner: CLARENCE TUREK
33738 MISSION CREEK RD
CULDESAC ID 83524

2. **Accompanied by:** At the time of the field examination, I was not accompanied by anyone. This was due to the tax lot information showing Clarence Turek as the current owner, although he was deceased, and no further contact information was available. So, when I was conducting other field examinations in the area, I stopped right there next to the road where the Turek POU was located and conducted the field examination.

Seven months after conducting the field examination, the tax lot information had been updated on 12/9/2012, and confirmed the new owner as Phillip Hasenoehrl 32731 Slickpoo Rd., Culdesac, ID 83524 (208)843-5897. On 7/17/2013, I spoke with Mrs. Hasenoehrl at (208)843-5897, who confirmed that Mr. Turek was deceased, and they had purchased the property from his estate. She confirmed her mailing address, for an ownership change form to be mailed to. I told her that I had conducted a field examination on 5/16/2012, and she stated that was fine. She confirmed that the physical address for the POU was 33738 Mission Ck Rd., Culdesac, ID 83524 (consisting of a small mobile home, a washed out bridge, and a disconnected power plant due to high water washing it out). This water right will be licensed under Turek, with a copy mailed to the Mission Creek Rd address, and a copy of the license, along with an ownership change form will be mailed to Phillip Hasenoehrl (the existing owner, per Tax Lot information).

Additional Information:

Since the system was installed, and proof was submitted prior to the due date, this water right will be licensed as the system had been installed, even though the power system was washed out due to high water, and no one is living in the mobile home, nor is water being used there currently. Once the license is issued, then the time clock will begin to prevent forfeiture. Since Mr. Turek is deceased, the power system will have to be calculated using the existing system parts that were found during the 5/16/2012 field examination, and information obtained online in reference to Harris Hydroelectric Systems, and 1/28/2003 notes in the file written by Mr. Turek, describing the system he was installing. Since the notes did not state whether or not domestic use was just for internal use, it will be licensed for both internal/external use due to the fact that there are some trees and grass around the mobile home.

Per the 6/22/2012 memo written by Jeff Peppersack, the guidance is to conduct the field examinations and draft licenses even for "small" power generation facilities, and to wait-and-see what the Supreme Court's ruling will be in reference to term limit language with hydropower water right holders. For this reason, the draft license will be completed, and then will be held in the vault until further notice.

3. SOURCE

MISSION CREEK

TRIBUTARY

LAPWAI CREEK

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:**

MISSION CREEK L13 SW1/4NE1/4 Sec. 9, Twp 34N, Rge 03W, B.M. NEZ PERCE County

Method of Determination: Garmin GPS Map, and ArcMap Esri and 2011 Imagery.

2.

PLACE OF USE:

<u>PLACE OF USE:</u>			POWER and DOMESTIC																<u>Totals</u>
<u>Twp</u>	<u>Rge</u>	<u>Sec</u>	<u>NE</u>		<u>NW</u>		<u>SE</u>		<u>SW</u>		<u>NE</u>		<u>NW</u>		<u>SE</u>		<u>SW</u>		
34N	03W	9	<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>	
					X														
					L 13														

Method of Determination: Garmin GPS Map, and ArcMap Esri and 2011 Imagery.

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>
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8 inch perforated pipe that converts to 4 inch PVC, 25 ft lift to a 4-nozzle Harris Hydroelectric System: 3/6 inch (3.4 gpm), 1/4 inch (5.9 gpm), 3/8 inch (12.7 gpm), and a 1/2 inch nozzle (22.8 gpm). Total 44.8 gpm (0.099 = 0.10 cfs), to an unknown number of battery storage in the storage housing, with wiring running to the mobile home. The Harris Hydroelectric System website shows at 25 ft lift with 4-nozzles to be at 40.0 gpm (0.09 cfs) producing 137.5 W, at 11 psi.

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

D. FLOW MEASUREMENTS

- Measurements:**
- No physical measurement was taken, due to the existing system being washed out from high-spring run off. The following measurements were calculated using Harris Hydroelectric System calculations for the 4-nozzle system, information written by Mr. Turek in the file, and what parts of the system that were found at the time of the field examination.

POWER:

Mr. Turek's notes describing the 4-nozzle hydroelectric system:

3/6 inch nozzle producing 3.4 gpm

1/4 inch nozzle producing 5.9 gpm.

3/8 inch nozzle producing 12.7 gpm

1/2 inch nozzle producing 22.8 gpm)

Total: 44.8 gpm X 0.00223 = 0.10 cfs (notes state that there would be some friction loss, but did not calculate it into the calculation).

Using the Harris Hydroelectric System calculations for a 25 ft lift, with 4-nozzles = 40.0 gpm (0.09 cfs)

DOMESTIC:

Due to the notes not stating whether or not domestic was to be for internal only or both internal/external use, and small trees and grass existing around the mobile home, it will be recommended for domestic internal/external use at 0.02 cfs as permitted.

RECOMMEND:

Power 0.09 cfs

Domestic 0.02 cfs (internal/external use, as permitted)

Total: 0.11 cfs

E. FLOW CALCULATIONS

Measured Method: No other measurements were conducted.

F. VOLUME CALCULATIONS**1. Volume Calculations for:**

Power: With Non-consumptive power uses, no volume is shown on the license.

2. Volume Calculations for Other Uses:**Domestic:**

IDWR standard for Domestic internal/external use = 1.2 af

RECOMMEND:

Power (no volume listed)

Domestic: 1.2 af

Total Annual Volume: (no total showing on the license)

G. NARRATIVE/REMARKS/COMMENTS

At the time of the field examination, it appeared that there had been a flood (direct evidence of very high water coming down the creek, and washing out the point of diversion, and destroying the home). There was no one living in the residence, and power was no longer being generated. The calculations will be determined utilizing the evidence of historical power generation, from online information on the Harris Hydroelectric System website, and notes written on the application for permit.

There was evidence of an 8-inch perforated PVC intake pipe in the stream for collection, reducing to 800 – 100 ft of 4 inch PVC to the Harris Hydroelectric generation building, which was locked. Inside the housing is the 4-nozzle Harris unit, and an unknown number of battery storage. In the file, there was a drawing of where the return to the creek was located. Broken wires indicated that power was supplied to the mobile home, located on the other side of Mission Creek. There had been such a high volume of water come down that creek, that the bridge had been partially washed away making it so you could not access the mobile home without going through the creek itself.

Domestic use was evident by the small mobile home that was still present, with some trees around the home and some grass (indicating domestic internal use, and probably minimal external use).

Power use was evident by remains of the hydroelectric system, intake pipe, piping going into the hydro-generation housing, wiring, detailed notes in the file, and the Harris Hydroelectric System online notes that confirmed information submitted by Mr. Turek and evidence found during the field examination.

Have 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	0.090 CFS	
DOMESTIC	01/01 to 12/31	0.020 CFS	1.2 AF
<u>Totals:</u>		0.110 CFS	

2. Recommended Amendments

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

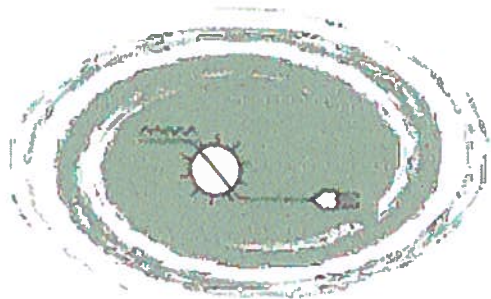
☐ Change P.U. as reflected above ☐ Add P.U. as reflected above ☐ Other

I. AUTHENTICATION

Field Examiner's Name *Jandy Hemminger* Date: 7/24/2013

THE HARRIS HYDROELECTRIC SYSTEM

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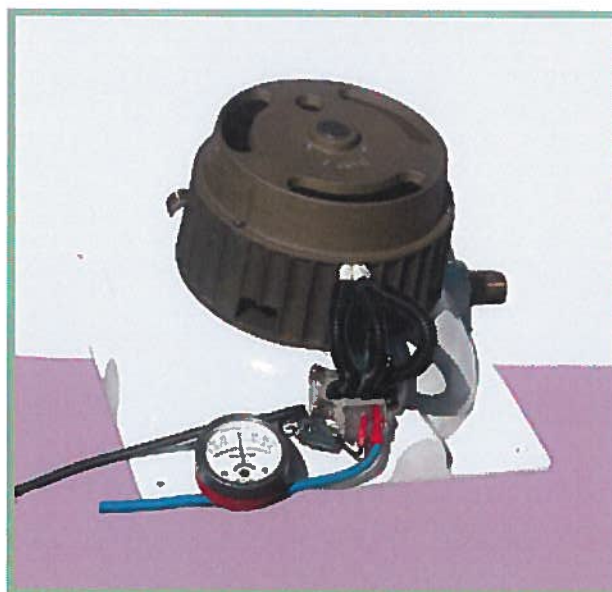
A HYDROELECTRIC SYSTEM FOR HOME USE

- ADJUSTABLE PERMANENT MAGNETIC ALTERNATOR
- OPERATES EFFICIENTLY ON 25 TO 300 FEET OF HEAD
- OPERATES EFFICIENTLY ON 2 TO 250 GALLONS/MINUTE OF FLOW

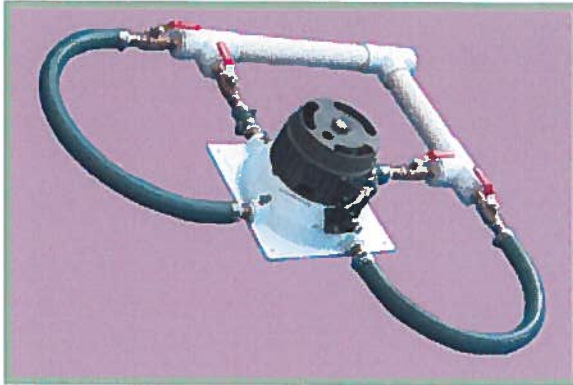
HOW IT WORKS

The Harris system is an efficient, durable battery-charging pelton turbine. It is designed to produce usable household power from springs and creeks that are too small to sustain the same level of useful power from a conventional A.C. generating system. Because D.C. power can be stored, the system is collecting power 24 hours a day, a little at a time, to be used as needed.

The average American household (not using electricity to produce heat) requires about 12,000 watt-hours a day, or about 500 watts on a continuous basis. This can be reduced to about 300 watts by



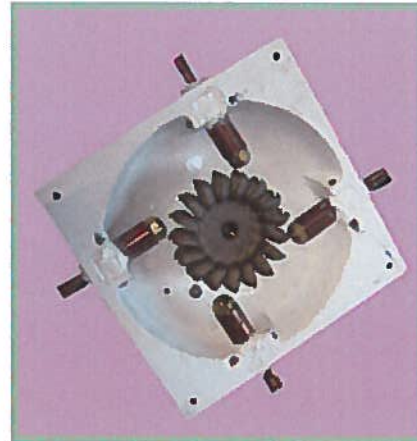
just turning lights off when not needed. There are times, however, when as much as 10,000 watts are needed, such as when a refrigerator or vacuum cleaner is started. Because A.C. systems cannot store energy, they must be sized to meet this peak load (requiring up to 40 times as much water as a similarly useful D.C. system). Smaller sized systems save money. D.C. systems are matched to extract power the way that nature delivers it, slowly and steadily.



A 4-nozzle P.M. Generator-equipped turbine

Multiple nozzle arrangement allows much more water to impact the runner, resulting in greater output at any head, and usable power at a much lower head. All turbines include an output-optimizing circuit allowing maximum efficiency at

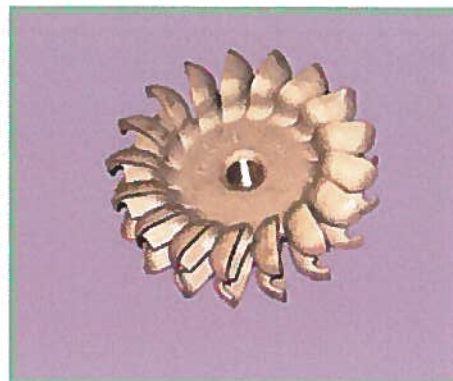
any flow rate. Multi-nozzle systems include a manifold kit and ball valves for each nozzle.



The 4-nozzle arrangement allows for maximum flow conditions and provides for seasonal flow adjustments.

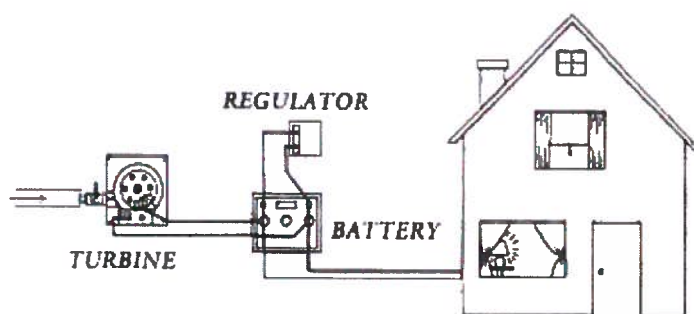
Pelton Type Runner

The pelton type runner is a lost wax cast of silicon bronze. The wheel is 70 to 90% efficient, depending on nozzle size and head. The bucket shape allows high efficiency for nozzles and provides a flow range of over 100 to 1. The wheel has a hydraulic diameter of just over 4.0 inches and each wheel is individually balanced.



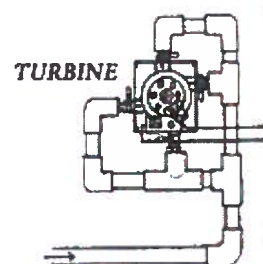
There are two basic system configurations:

Mountain Cabin-DC Direct



The basic system is suitable where battery power can be used directly. Cabins using 12-volt lights, portable radios, televisions, and recreational vehicle type D.C. appliances are easily adapted to the basic system.

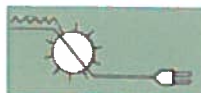
Conventional Home



This configuration is needed where AC output is required for standard home appliances. Both AC and DC power can be generated with other D.C. appliances, including power tools.

charging systems
battery chargers.

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LoPower Engineering-The Harris Hydro
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P.M. Alternator Output in Watts

Feet of Net Head

G/M	25	50	75	100	200	300
3					45	80
6		20	30	45	130	180
10	20	50	80	105	225	350
15	35	85	115	170	350	520
20	63	120	170	240	480	700
30	100	175	270	360	675	1000
50	150	310	450	620	1100	1500
100	300	560	850	1100	1500	
200		725	1050	1300		

Maximum Wattage at Various Voltages

12 volt	24 volt	48 volt
750	1500	1500

HOW TO DETERMINE OUTPUT

Turbine output is determined by 4 factors:

1. Head, or vertical drop from source to turbine nozzle:

Head can be measured with a transit or level and a measuring stick of known length in successive steps. A quick pipe can be assembled from numerous garden hoses and the pressure can be measured with the hoses full of water. This, too, can be done in successive steps.

0.43 P.S.I. = 1 foot of head:
2.3 feet = 1 psi

2. Flow in gallons per minute passing through nozzle:

A temporary dam can be built to measure flow. By timing the filling of a container of known volume, the flow can be determined. Care should be taken to not dry up creeks, but to leave enough water to maintain natural environmental balances.

Maximum Efficient Flow at Various Heads

Figures in gallons/min
Feet of Net Head

# of Nozzles	25	50	75	100	200	300
1	17	25	30	35	50	60
2	35	50	60	70	100	120
3	52	75	90	105	150	
4	70	100	120	140	200	

3. Diameter, length, and condition of feeder pipe:

Generally, single nozzle systems with under 2000 feet of feeder pipe require a 2" pipe. A two nozzle system needs a 3" pipe, and a 4 nozzle system requires a 4" pipe. This will keep pipe losses under 25%. Please inquire about specific pipe losses for your site.

4. Turbine efficiency:

Alternator systems are between 30% and 70% efficient.

Site Evaluation

The following information will assist in selecting the best system for your site:

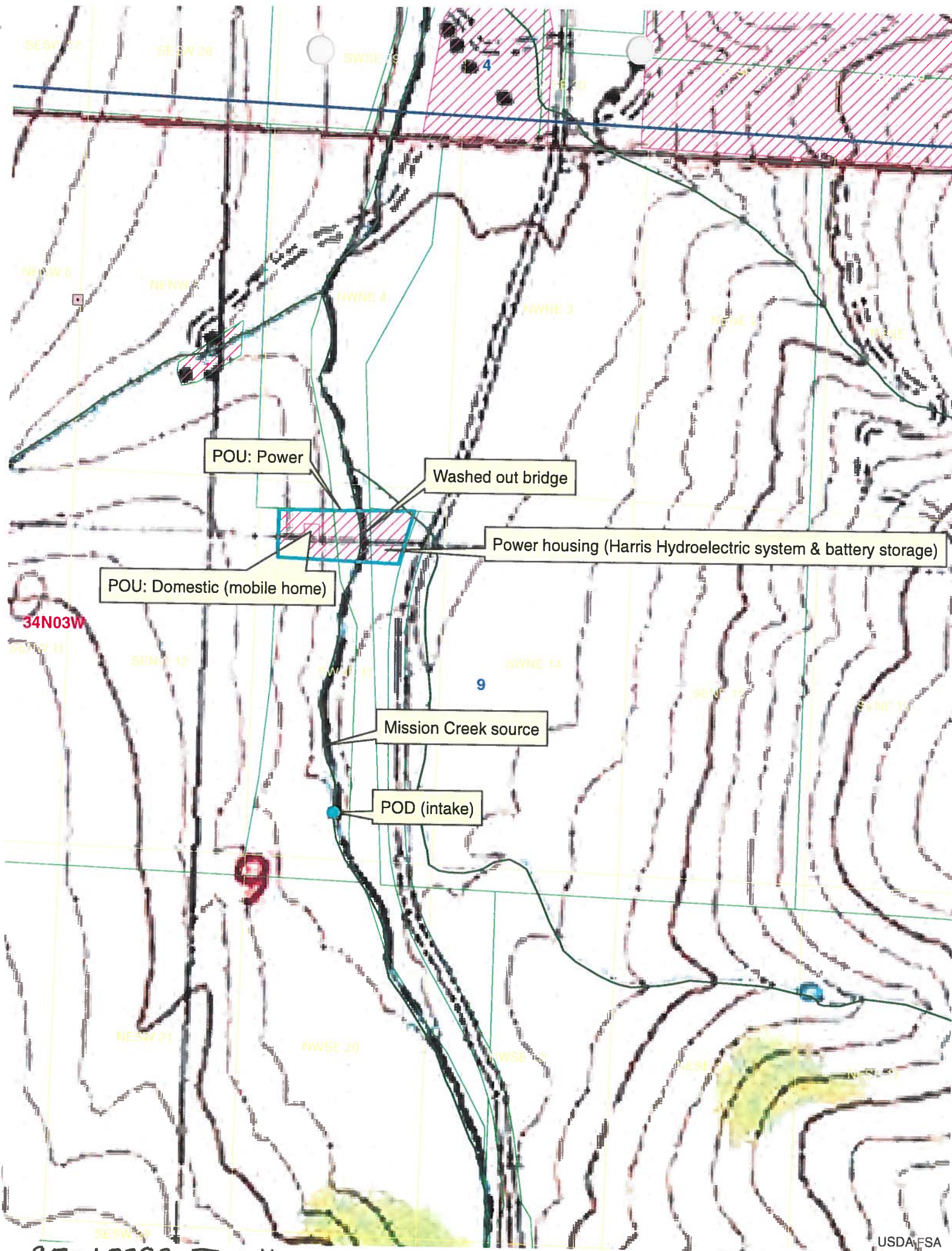
1. Head, or drop in elevation from source to turbine site
2. Flow in gallons per minute to be used
3. Length, size, and condition of pipe to be used
4. Distance from turbine to point of power use
5. Desired system voltage (12v, 24v, or 48v)

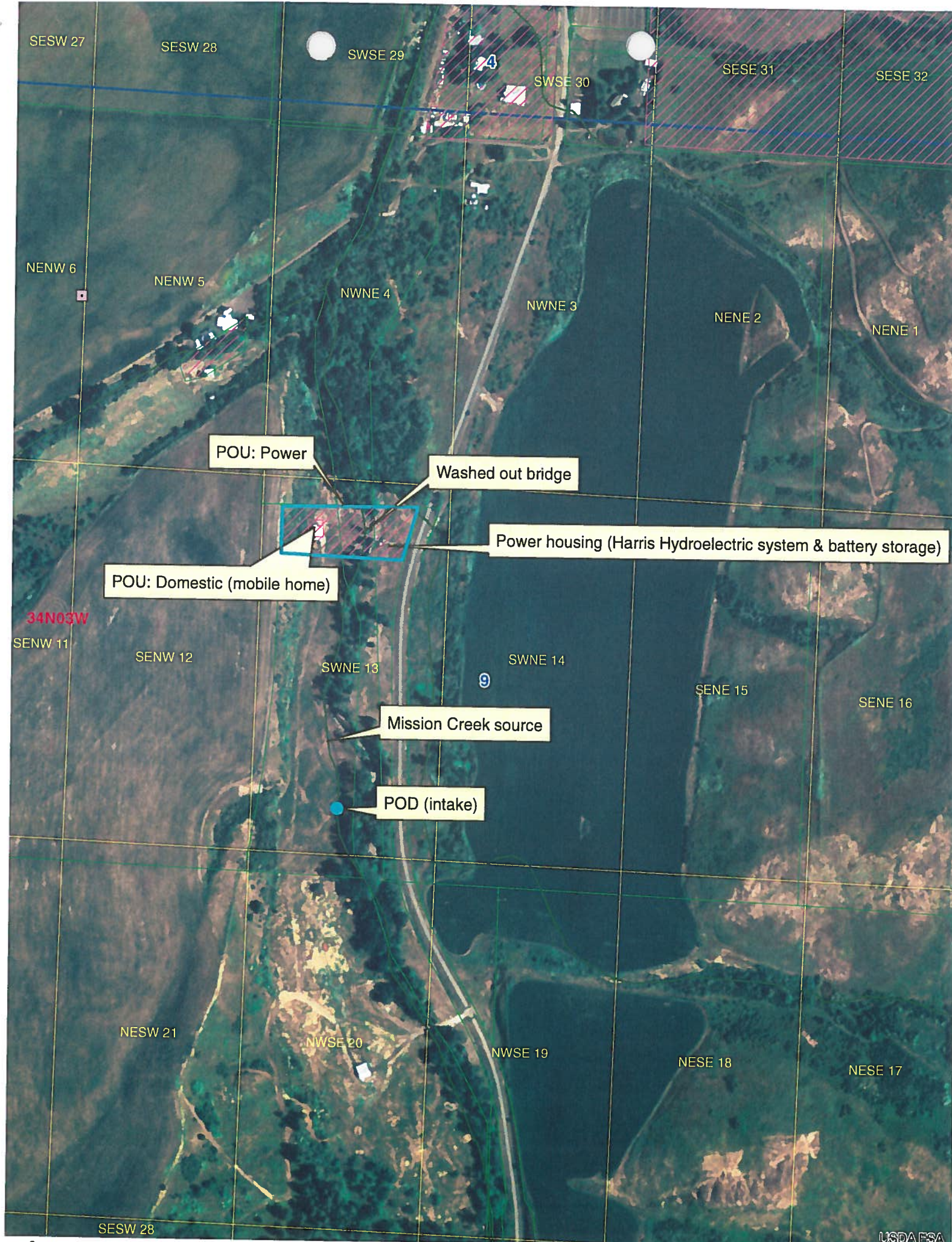
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POU

Hydro
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POU

05/16/2012

POU:
Domestic
+
Power

Power
generation
housing
+
battery
storage

05/16/2012

85-15383 Turek

S. Hemerway



Locke
house
w/ir
8" perf
pipe,
4" PVC



85-15383 Turek

S. Hemerick



Mobile
home
+
washer
out
bridge



Hydro
housing
pipe,
wiring