

STATE OF IDAHO  
DEPARTMENT OF WATER RESOURCES  
BENEFICIAL USE FIELD REPORT

**A. GENERAL INFORMATION**

Permit No: 94-9639

Exam Date: 09/02/2025

1. Current Owner:  
MICHAEL SUITTER 812 E HASTINGS AVE COEUR D ALENE ID 83814-4447

2. Accompanied by: Michael Suitter  
Phone No: 208-620-0106  
Address: Same as above  
Relationship to permit Holder: Permit Holder

3. **SOURCE:**  
UNNAMED STREAM

**Tributary**  
LITTLE NORTH FORK SOUTH FORK COEUR D ALENE  
RIVER

**Method of Determination:** ArcMap and DRG Layer.

**B. OVERLAP REVIEW**

1. Other water rights with the same place of use: NO Overlap
2. Other water rights with the same point-of-diversion: NO Overlap

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

UNNAMED STREAM NW¼ SE¼, Sec. 17, Twp 48N, Rge 06E, B.M. SHOSHONE County

Method of Determination: GPS; POD is located at -115°42.8383, 47°30.3915; Screened 1-inch intake pipe in natural collection pooling in creek; gravity flow water system.

**PLACE OF USE:** DOMESTIC and POWER

| Twp | Rng | Sec | NE |    |    |    | NW |    |    |    | SW |    |    |    | SE |    |    |    | Totals |
|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--------|
|     |     |     | NE | NW | SW | SE | NE | NW | SW | SE | NE | NW | SW | SE | NE | NW | SW | SE |        |
| 48N | 06E | 17  |    |    |    |    |    |    |    |    |    |    |    |    |    |    | X  |    |        |

Method of Determination: Beneficial use field exam and ArcMap aerial imagery.

- 3.
- X Delivery System Diagram Attached (required). Indicate all major components and distances between components. Indicate weir size/pipe as applicable.
- X 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 Aerial Photo Attached (required for irrigation of 10+ acres).
- X Photo of Diversion and System Attached

4.

| Well or Diversion ID No.*     | Motor Make | Hp  | Motor Serial No.          | Pump Make | Pump Serial No. or Discharge Size |
|-------------------------------|------------|-----|---------------------------|-----------|-----------------------------------|
| Unnamed Stream Pipe Diversion | N/A        | N/A | Gravity flow water system | N/A       | 1-inch Polypipe                   |

#### D. FLOW MEASUREMENTS

1.

| Measurement Equipment        | Type                                 | Make    | Model No. | Serial No. | Size   | Calib. Date                           |
|------------------------------|--------------------------------------|---------|-----------|------------|--------|---------------------------------------|
| Fuel style flow meter<br>Zea | In-line turbine rotor velocity style | GRYVOZE | N/A       | Unknown    | 1-inch | Installed new with system development |

2. Measurements: I collected flow measurements using system installed flow meters at two separate system drain valves; one flowmeter is installed at the western domestic yurt and is set up to drain the system as required for maintenance and one flowmeter is installed on the eastern branch of the system where hydro power discharge water is returned to the unnamed stream source. The largest diversion rate equaled 32.4 gpm from the Power unit discharge pipe.

#### E. FLOW CALCULATIONS

Measured Method: system installed flow meters:

- Permit authorized diversion rate(s) of 0.06 cfs for 2 yurts & 1 cabin domestic use and 0.06 cfs for Power water use.
- Field exam flow measurements:
  - western pipeline branch 1-inch discharge pipe = 14.3 gpm or 0.03 cfs
  - eastern pipeline branch 1-inch Power discharge pipe = 32.4 gpm or 0.07 cfs
  - When the eastern pipeline or western pipeline is turned on for domestic use, the hydro system flow is reduced by the same amount needed to supply domestic use. As a result, the two rates above are not additive, and 32.4 gpm is the amount evaluated as system maximum capacity.
- License recommended diversion rate(s):
  - Domestic rate = **0.06 cfs** based on Department standard 2 home domestic use rate for 2 yurts and 1 cabin.
  - Power rate = **0.06 cfs**, which is reduced from the 0.07 cfs observed based on Permit allowance rate limiting the authorized licensing rate. The water system is capable of providing 0.06 cfs for Power purposes.
  - Maximum diversion rate = **0.06 cfs**, which is limited by the Permit authorized rate for licensing purposes.

#### F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation: N/A

2. Volume Calculations for Other Uses:

- Domestic annual volume for 2 Yurts and 1 Cabin = in-home use for 2 off grid yurt (cabin is primarily a shower room and power station room) =  $0.6 \text{ af} \times 2 = 1.2 \text{ af}$ .
- Power annual volume (non-consumptive) = year-round season of use with volume limited to  $\frac{1}{2}$  year which varies year to year =  $0.06 \text{ cfs} \times 180 \text{ days} \times 1.9835 = 21.4 \text{ af}$ .

**G. NARRATIVE/REMARKS/COMMENTS**

I conducted the beneficial use field exam on 9/2/2025 with the Right Holder, Michael Sutter, which showed a domestic and hydropower system that used water from an Unnamed Stream tributary to the Little North Fork South Fork Coeur D'Alene River. At the POD, a screened intake is positioned in a natural collection pool in the stream channel which is connected to a 1-inch poly-pipe conveyance system. The 1-inch pipeline gravity flows in a 200-ft shallow buried pipeline to a tee fitting where diverted water is then conveyed down slope in a SW direction path 700 ft to a large yurt for domestic use and down slope in a SE path 400 ft to a small yurt for domestic use and wooden cabin for domestic use & Power station use.

The western conveyance pipe has a riser to frost-free hydrant that is used for domestic use at the large yurt which includes filtered drinking, cooking, and wood fired hot tub uses. Beneath the yurt the Right Holder has dead headed the conveyance pipe with a maintenance blow out valve which includes an inline turbine style fuel flowmeter. I took flow measurements from the blow out valve that demonstrated 14.3 gpm is diverted from the western branch of the water system.

The eastern conveyance pipe from tee fitting has two riser connections: one to a frost-free hydrant for domestic use at a small yurt and one to a wooden cabin for domestic use which includes the shower facilities for all domestic uses. The main conveyance pipe at this point daylight beneath the wooden cabin in small Power station. The 1-inch poly-pipe connects to a single nozzle micro-hydro power unit and discharges via 1-inch pipeline routed buried directly down slope returning to the same Unnamed Stream source. A flowmeter is installed at the discharge to stream pipeline, and I observed a maximum flow rate of 32.4 gpm on the flow meter during the exam with power unit operating at 50 PSI. This pressure is the highest adjusted rate on the hydro unit adjustable sphere valve nozzle and equates to the highest flow rate for the water system.

In discussion with Mr. Sutter, flows downstream in water system from the tee valve are influenced between the two legs of conveyance pipeline. If domestic use is cycled on for either yurt's frost-free hydrant or for wood cabin use water is reduced that would make it to the hydro power unit which is connected lower in the conveyance pipe from the small yurt or wooden cabin. As a result, while there are two branches to the water system pipeline the hydro-power discharge measurement is the maximum output for the entire system. 32.4 gpm equals 0.07 cfs considering Department rounding standards, which demonstrates the gravity flow diverting system achieves adequate diversion of water for domestic and power needs. I'm only authorized to recommend diversion rates toward licensing the permit based on permit approved rates: 0.06 cfs for Domestic use, 0.06 cfs for Power use, and **0.06 cfs** as the maximum diversion rate.

The Domestic water use for 2 yurts and 1 cabin is for in-home use only, as the off-grid location retains a natural sloped topography and exterior water use wasn't developed under the permit. The Right Holder asserts that water is used heavily in the winter months for back country skiing and snowshoeing. This is reinforced by the structures being constructed on raised platforms and the frost-free hydrants being set at high of approximately 12 ft above the ground to accommodate 10 ft of snowpack levels in winter. The cooking and drinking water used in yurts and cabin reasonably don't surpass two homes water usage annually and the shower/washroom use is central in the cabin for all users. Based on this information I'm recommending domestic use for two homes (in-home use only) = **1.2 af** annually.

The Power water use incorporates a 1-2 KW continuous micro hydro unit which was purchased from Motenergy and includes a single adjustable sphere valve which generates between 30 – 50 Wh dependent on setting. The power unit exits the nozzle spraying into a Turgo Wheel (cups) resulting in rotational spin that generates power. During the exam Mr. Sutter blue toothed to the system and I captured a photograph, screen image, illustrating the power system generated 45.8 Watts continuous generation. Power generation fills batteries and supports lights, and small power uses between domestic dwellings.

During the exam Mr. Suitter and I discussed season of use for Power it was determined that while the system is used throughout the year, historically it gets part time usage, and we agreed that ½ a year is reasonable to evaluate volume for power generation. I have assigned **21.4 af** for Power annual volume based on 0.06 cfs x 180 days x 1.9835 (24 hrs diverting). The annual volume is non-consumptive as it is returned directly to the water source in reach before the Unnamed Stream's confluence with the Little North Fork South Fork Coeur D'Alene River. The maximum diversion volume recommended for licensing is the sum of both beneficial uses or **22.6 af** with the lion's share being non-consumptive use. I've recommend maintaining year-round season of use for beneficial uses for licensing purposes.

During licensing review, I used GPS locations and ArcMap aerial imagery to designate the POD and Domestic/Power POU(s). I removed condition(s) 26A, 029, 01N, and 236 from the Permit during licensing review based on compliance by the Permit Holder. I revised condition 916 to reflect Water Right License verbiage vice Permit verbiage. I removed condition 08A based on internal condition description stating it isn't for use on licenses. All other conditions on the Permit shall be carried forward to the license. There isn't any overlapping water right concerns toward licensing 94-9639.

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

#### H. RECOMMENDATIONS

##### 1. Recommended Amounts

| <u>Beneficial Use</u> | <u>Period of Use</u> | <u>Rate of Diversion</u> | <u>Annual Volume</u> |
|-----------------------|----------------------|--------------------------|----------------------|
| DOMESTIC              | 01/01 to 12/31       | 0.06 CFS                 | 1.2 AF               |
| POWER                 | 01/01 to 12/31       | 0.06 CFS                 | 21.4 AF              |
| <u>Totals:</u>        |                      | 0.06 CFS                 | 22.6 AF              |

##### 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    ☒ None

#### I. AUTHENTICATION Luke Bates – Sr Water Resource Agent

Field Examiner's Name  Date 1/5/2026  
 Reviewer \_\_\_\_\_ Date \_\_\_\_\_

State of Idaho  
Department of Water Resources  
**Attachment to Field Exam**  
94-9639

This map depicts the POWER system diagram.



0 0.025 0.05 0.1 Miles

- Place Of Use Boundary
- Point of Diversion
- Townships
- PLS Sections
- Quarter Quarters

Micro Hydro Power Unit - single sphere valve and turgo wheel unit



State of Idaho  
Department of Water Resources  
**Attachment to Field Exam**  
94-9639

This map depicts the DOMESTIC system diagram.

06E



0 0.035 0.07 0.14 Miles

- Place Of Use Boundary
- Point of Diversion
- Townships
- PLS Sections
- Quarter Quarters



## POWER UNIT INFORMATION

Retrieved from [WWW.MOTENERGY.COM](http://WWW.MOTENERGY.COM) on 9/17/2025

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# Motenergy

Motenergy Hydro Pov

- Motenergy Brush-Type 56-Frame DC Motors 1/4 to 3 HP
- Motenergy Brush-Type PMDC Motors 3-20 HP
- Motenergy Axial Air GAP PMSM Motors
- Radial Air Gap PMSM Motors - Surface Magnets
- Radial Gap PMSM Motors - IPM Rotor
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- Surplus and Special Purchase

[Home](#) > [Motenergy Hydro Power Products](#) > Micro Hydro Generator Kit 12 to 24 VAC 1-2 KW Continuous

### Micro Hydro Generator Kit 12 to 24 VAC 1-2 KW Continuous

A blue rectangular base with a black cylindrical top and a red adjustment knob on the side.

Item# newitem504057360  
\$399.00  
[Add to cart](#)

#### Product Description

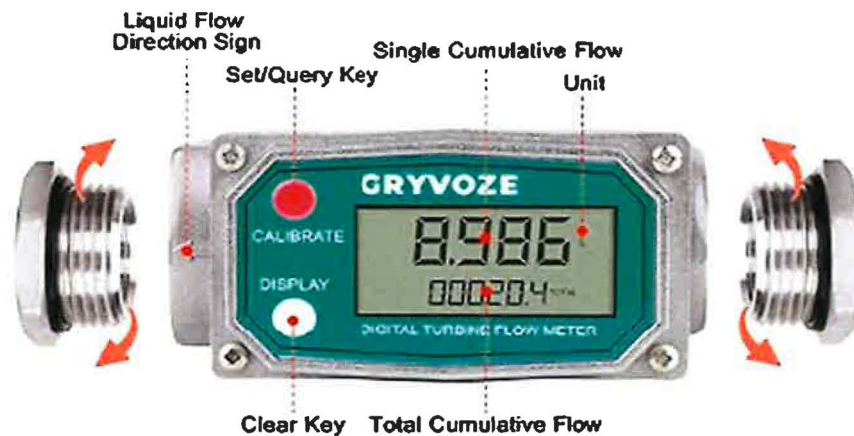
Micro Hydro PM Generator for off-grid power systems. Permanent Magnet Rotor is 88% efficient. Some assembly required. Designed for 50 Ft of head or more. Adjustable nozzle assembles to box with pre-drilled holes and hardware included. Output is 3-phase AC voltage that can be converted to DC with a 3-phase full wave bridge rectifier for connection to an Inverter or battery bank.

88% EFFICIENCY RATING MICRO HYDRO SYSTEM

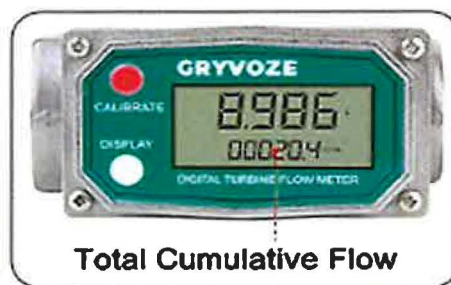
## GRYVOZE FUEL FLOW METER(S) INSTALLED ON DOMESTIC & POWER SYSTEMS



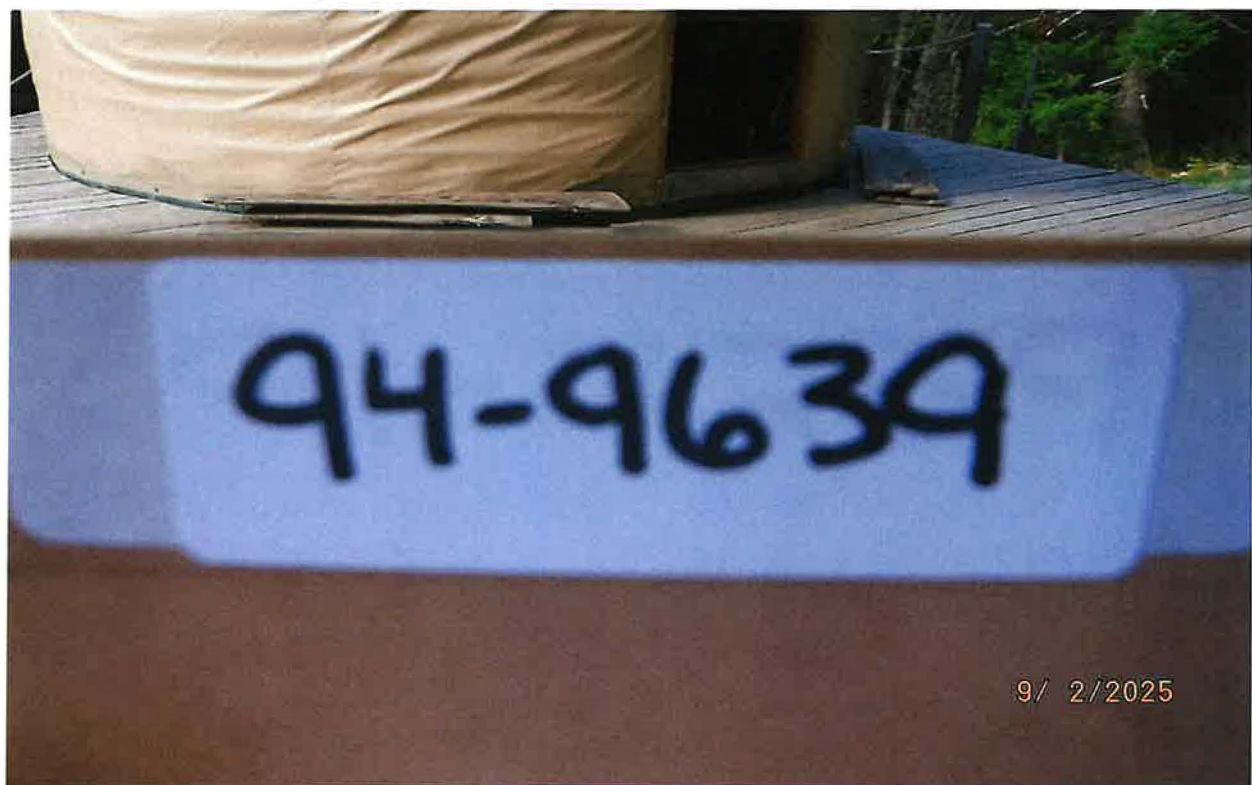
Industrial & Scientific > Test, Measure & Inspect > Substance Analysis Instrumentation > FI



### TWO FORMS OF USE



EXAMPLE OF TWO DIFFERENT FLOW METERS INSTALLED ON BACK COUNTRY WATER SYSTEM



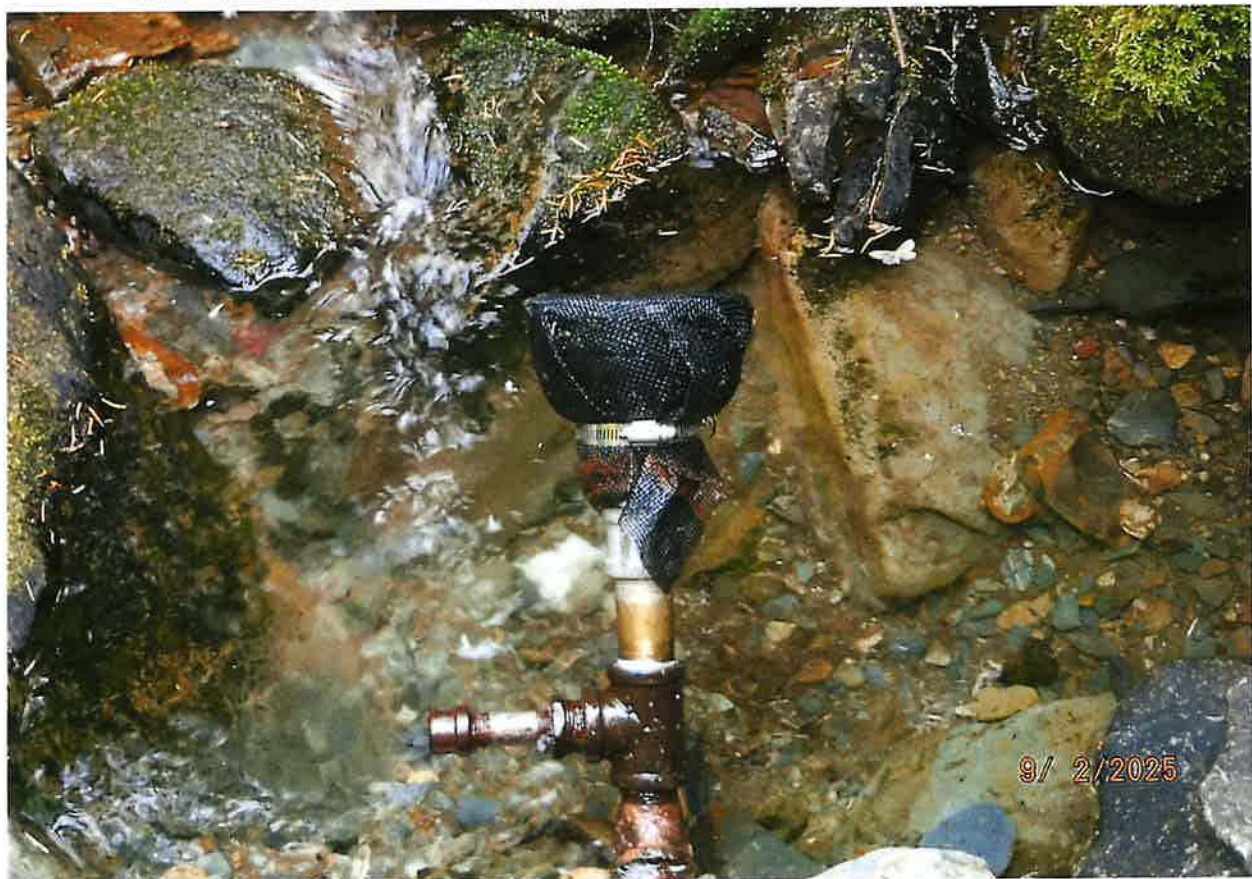
BENEFICIAL USE FIELD EXAM DATE 9/2/2025



POD – 1-INCH SCREENED PENSTOCK PIPE IN UNNAMED STREAM



POD – PENSTOCK INTAKE PIPE ROTATES TO ALLOW PERIODIC CLEANING OF SCREEN





WATER CONVEYANCE SYSTEM USES 200-FT 1-INCH POLYPIPE ROUTED ALONGSIDE STREAM TO 1<sup>ST</sup> TEE, FOLLOWED BY 700-FT OF 1-INCH POLY PIPE TO LARGE YURT & 400-FT OF 1-INCH POLY PIPE TO SMALL YURT/CABIN W/POWER STATION.



TRENCHED PIPE RUN

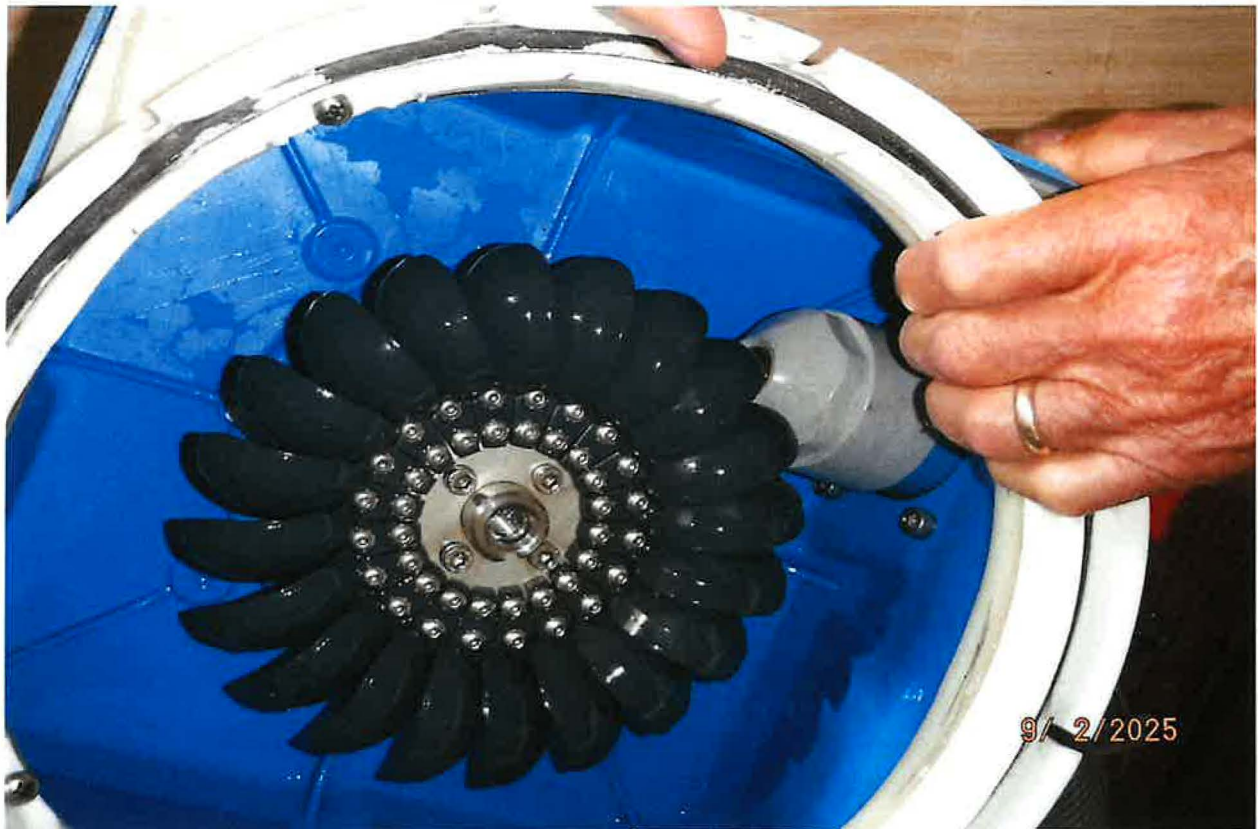


POWER POU – POWER STATION LOCATED BENEATH WOOD CABIN HAND DUG VAULTED CUBE





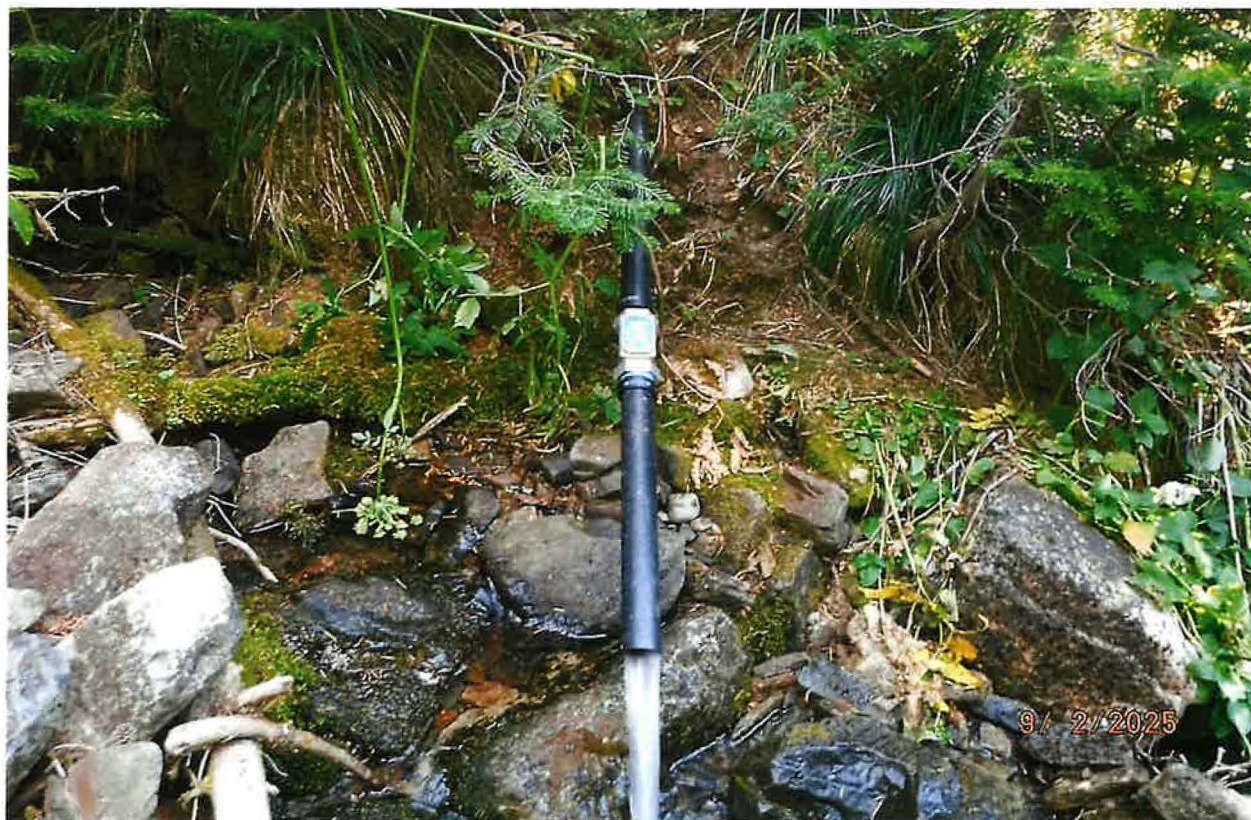
POWER POU – TURGO WHEEL MICRO-HYDRO UNIT; 1 SPHERE VALVE ADJUSTABLE NOZZLE CREATES 30-50 Wh DEPENDENT ON SETTING



POWER UNIT – GRAY SPHERE VALVE NOZZLE AND TURGO WHEEL (CUPS)



55 PSI OPERATING PRESSURE ON HYDRO POWER SYSTEM IN OPERATION



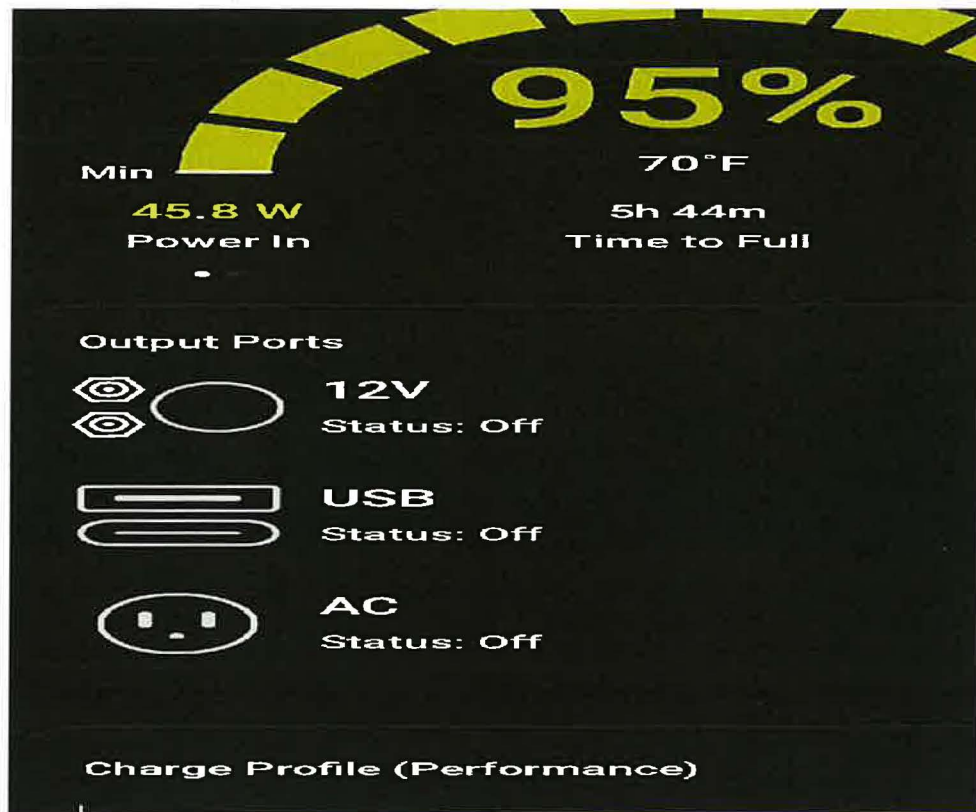
POWER SYSTEM DISCHARGES FROM POWER UNIT BACK TO LITTLE N.F. SOUTH FORK COEUR D'ALENE RIVER VIA 1-INCH POLY PIPE (FLOWMETER INSTALLED ON OUTFLOW DISCHARGE TO TRIBUTARY



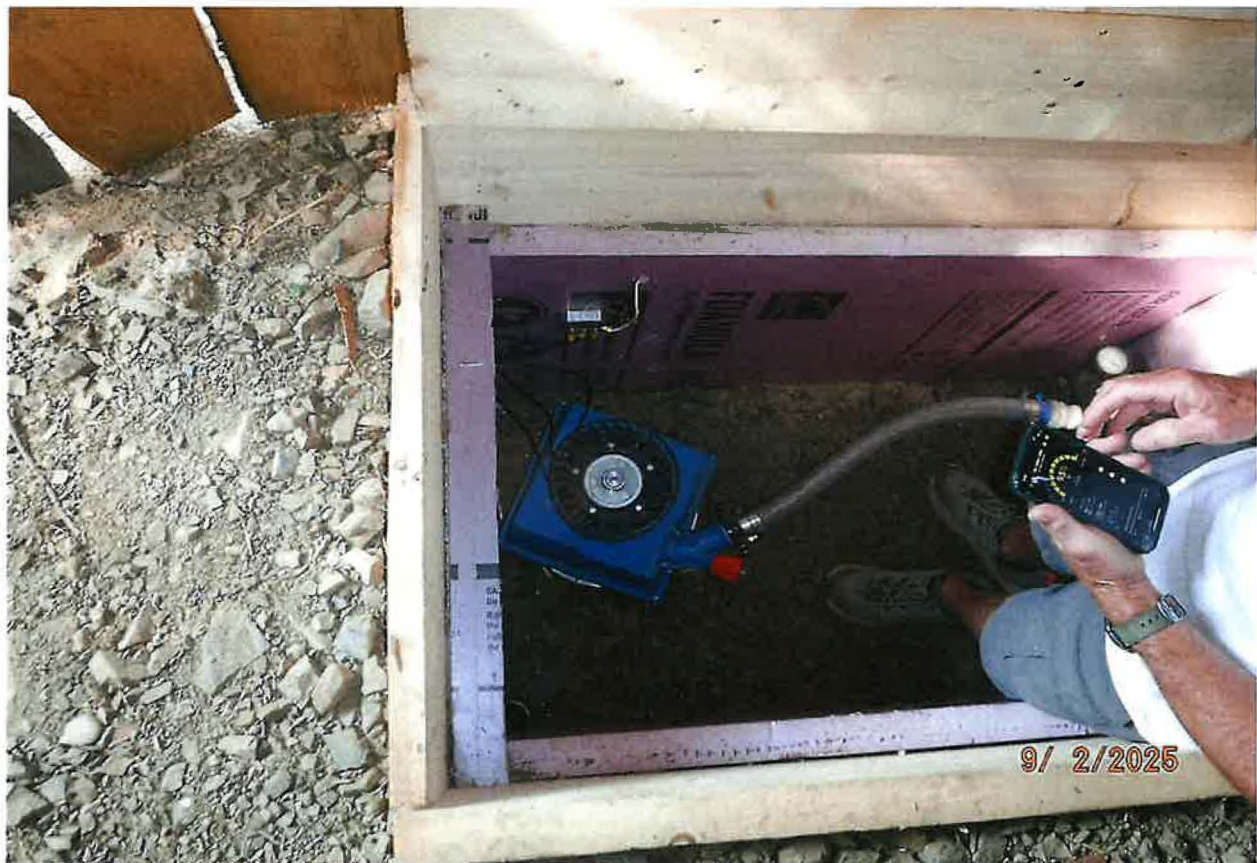
POWER SYSTEM – ELECTRONIC FUEL METER INSTALLED INLINE AT OVERFLOW DISCHARGE FROM POWER UNIT – 32.4 GPM OBSERVED AT TIME OF EXAM WITH TOTAL GALLONS REGISTERING FOR TOTAL RUNTIME GALLONS ON DAY OF EXAM



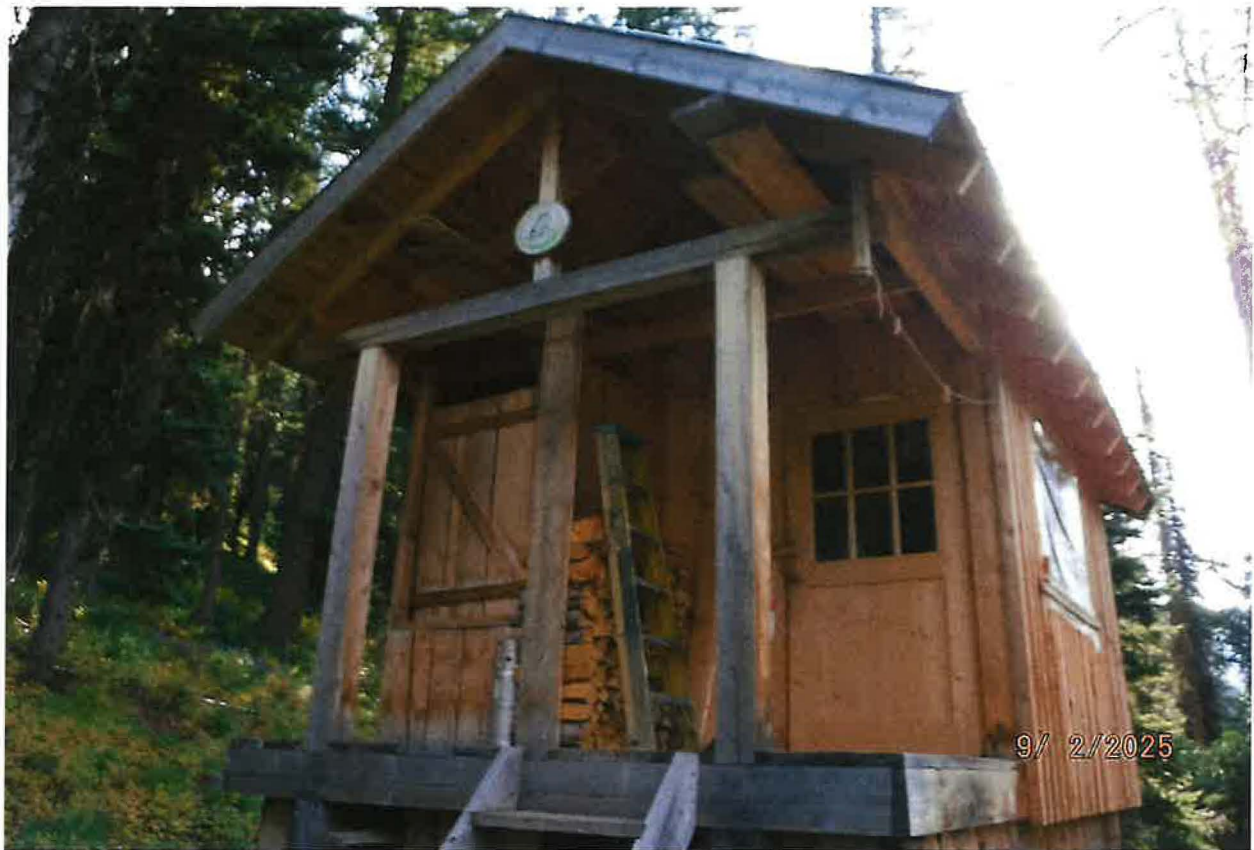
POWER SYSTEM OVERFLOW DISCHARGE – NON-CONSUMPTIVE FLOW AT 32.4 GPM BACK TO TRIBUTARY



POWER SYSTEM – BLUE TOOTH CAPABLE WITH PHONE READOUT DEMONSTRATING 45.8 WATTS OF POWER GENERATION AT TIME OF EXAM



POWER POU – 1-INCH INFLOW PIPE FROM PENSTOCK TO POWER UNIT; 5-GAL BUCKET WITH 1-INCH BURIED POLY PIPE ROUTED BACK TO TRIBUTARY AS BURIED PIPELINE



DOMESTIC POU – SMALL CABIN PLUMBED FOR BATH HOUSE (POWER UNIT LOCATED BENEATH RAISED CABIN)





DOMESTIC POU – SMALL YURT RAISED ON PLATFORM; DEDICATED FROST-FREE HYDRANT PLUMBED TO CABIN FOR WATER USE BY HOSE



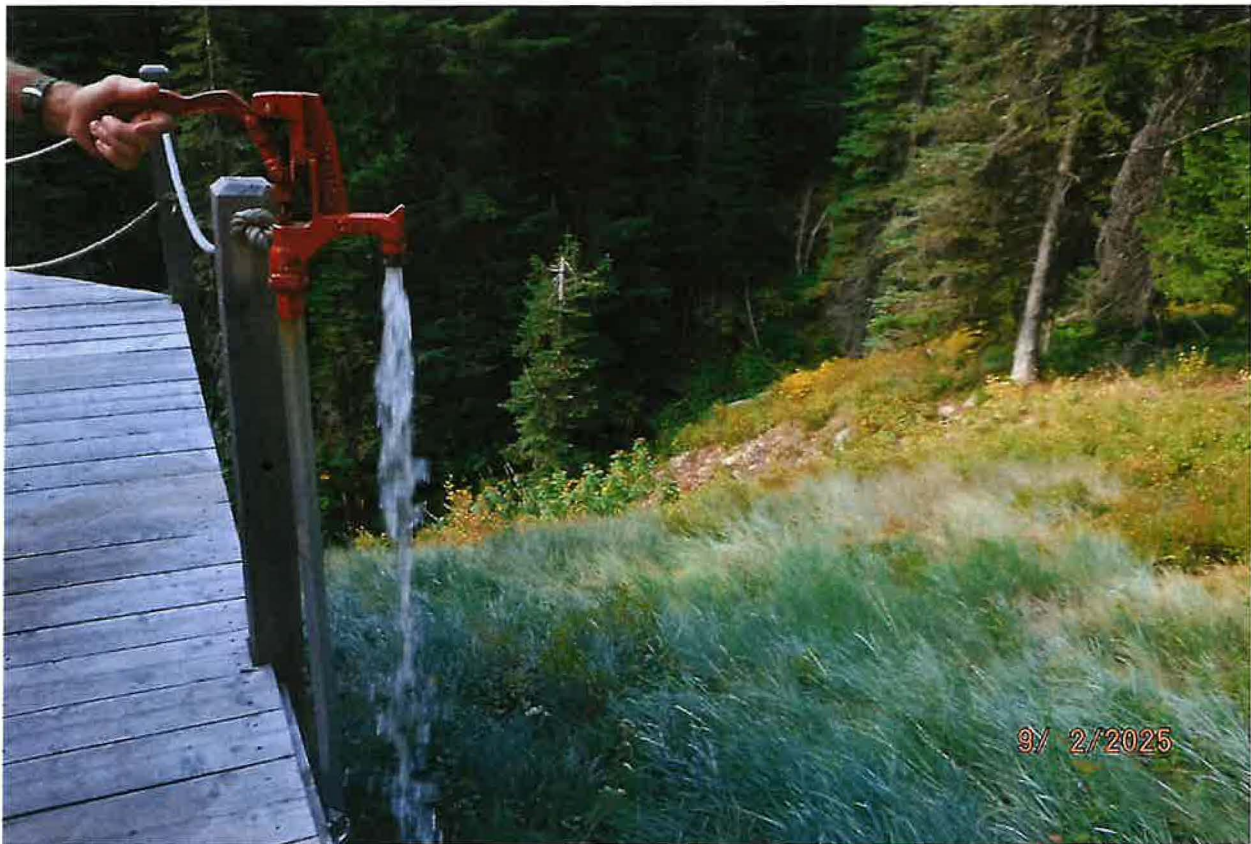
DOMESTIC POU – HYDRANT SET AT 8 FT ELEVATION FROM GROUND – WINTERTIME USE WITH SNOW LEVEL RESULTS IN HYDRANT AT 2 FT ABOVE SNOWPACK



DOMESTIC – SMALL YURT; ALL THREE DOMESTIC STRUCTURES ARE ON RAISED STRUCTURES TO ACCOUNT FOR WINTERTIME SNOWPACK CONDITIONS



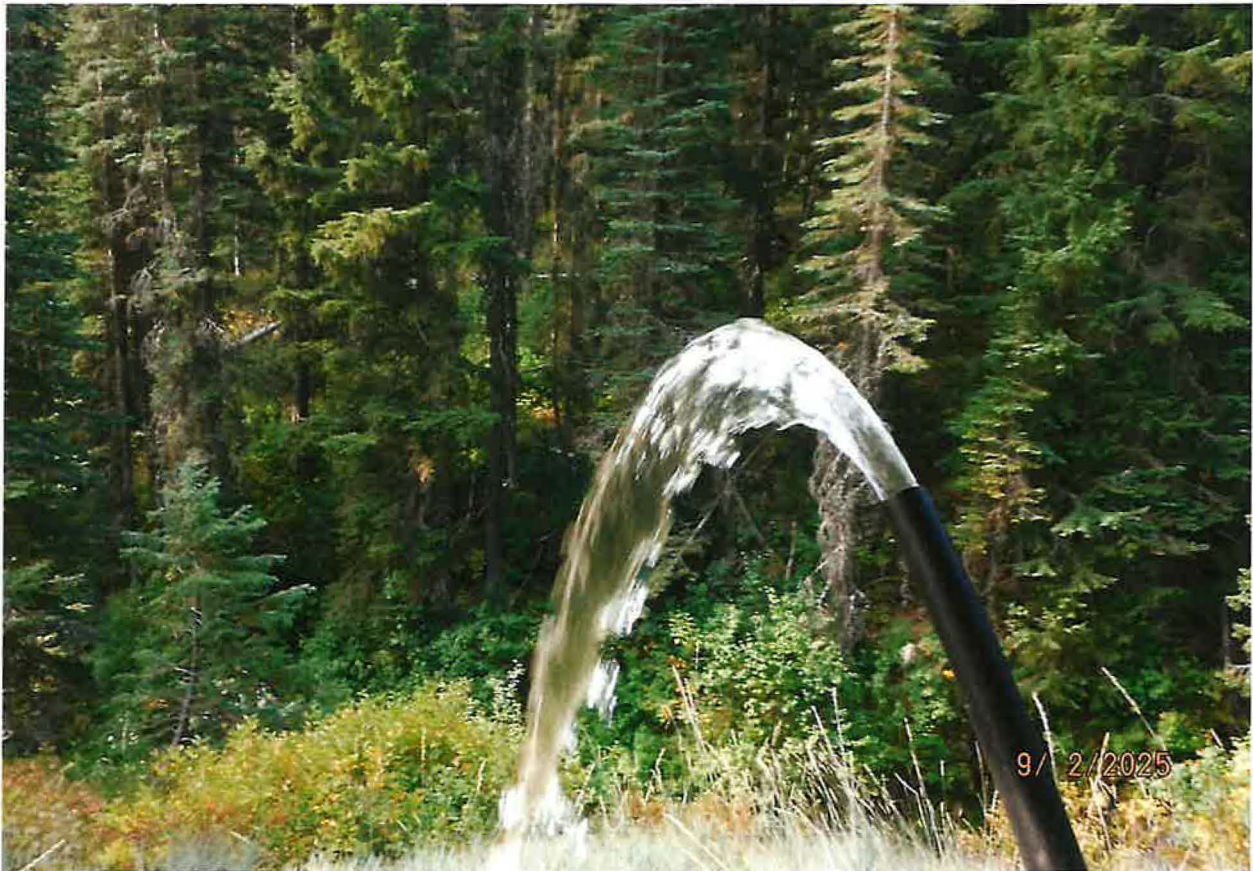
DOMESTIC POU – LARGE YURT & HOT TUB



DOMESTIC POU – LARGE YURT DEDICATED FROST-FREE HYDRANT



DOMESTIC POU – LARGE YURT (END OF 200-FT + 700-FT 1-INCH POLY) OVERFLOW DISCHARGE PIPE WITH ELECTRONIC FUEL METER FLOWMETER INSTALLED. OBSERVED 14.3 GPM FROM LARGE YURT FLOW RESULTING FROM GRAVITY FLOW SYSTEM THAT ROUTES VIA SIDE-HILL FROM STREAM TO LARGE YURT



DOMESTIC POU – OVERFLOW DISCHARGE PIPE FROM LARGE YURT – OUTFLOW PIPE IS LOCATED APPROX 80-FT UP ELEVATION FROM STREAM (BOTTOM OF PHOTO)



WOOD FIRED HOT TUB FILLED VIA GRAVITY FLOW AT LARGE YURT'S FROST-FREE HYDRANT



DOMESTIC POU – SMALL YURT'S FROST-FREE FLOW RATE AND WOOD CABIN BATH HOUSE FLOW RATE EQUATE TO GRAVITY FLOW RATE FROM COMMON 1-INCH POLY PIPELINE TO POWER SYSTEM = 32.4 GPM. WHEN WATER IS USED FOR DOMESTIC USE, POWER SYSTEM OUTPUT IS REDUCED.

