

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 95-17241
Exam Date: 06/22/2023

1. Current Owner:
STEPHEN C BARNHART 485 KRIPPLE CREEK RD ATHOL ID 83801
2. Accompanied by: Stephen C Barnhart
Phone No: 208-597-5199
Address: Same as above
Relationship to permit Holder: Permit holder.

3. **SOURCE:**
SPRING

Tributary
CAREYWOOD CREEK

Method of Determination: ArcMap and DRG.

B. OVERLAP REVIEW

1. Other water rights with the same place of use: YES Overlap

Water Right No.	Source	Purpose of Use	Basis
95-9455	Careywood Creek, Spring	Domestic, Stockwater	Decreed

Comments: Decreed WR 95-9455 has the same ownership as this Permit and authorizes Careywood Creek & Spring (separate source than this filing) water diversion for domestic use 1 home and stockwater which directly overlaps this WRs domestic and stockwater POU. Department staff approved Permit 95-17241 with condition X35 describing combined use limitations between WRs 95-9455 & 95-17241. Licensing recommendation(s) maintain X35 which accounts for all overlap concerns toward licensing this Permit.

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

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

SPRING SW¼ NW¼ SE¼, Sec. 15, Twp 54N, Rge 02W, B.M. BONNER County

Method of Determination: GPS; POD is located at -116°33.4327, 48°1.5074, buried concrete ring(s) with concrete cap serve as the spring box with 2-inch PVC pipe gravity flowing from spring to beneficial uses.

PLACE OF USE: STOCKWATER, POWER FROM STORAGE, & DOMESTIC

Twp	Rng	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
54N	02W	15										X L3							

PLACE OF USE: WILDLIFE STORAGE, POWER STORAGE, & FIRE PROTECTION STORAGE

Twp	Rng	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
54N	02W	15									X								

Method of Determination: Beneficial use field examination, ArcMap aerial imagery, & Bonner County GIS tax parcel maps.

- 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.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
SPRING			GRAVITY FLOW		

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
5-GAL BUCKET MEASUREMENT						

2. Measurements: I took a 5-gal bucket measurement from inside the first of two 2,000-gal rotomolded storage tanks at the initial inflow pipe from spring box. Due to the low flow, I only took one measurement which demonstrates a flow rate of 0.02 cfs considering department rounding standards. I took the measurement in early summer, but the permit holder asserts spring flow is greater during early spring to summer months benefiting from peak water runoff periods of the year.

E. FLOW CALCULATIONS

Measured Method: 5-gal bucket measurement derived 5-gal / 39.14 sec x 60 sec/min = 7.66 gpm or 0.02 cfs considering department rounding standards.

- Domestic diversion rate limited to **0.02 cfs** as permit approved.
- Stockwater diversion rate for 20 head mixed stock = **0.02 cfs** based on department standard rates.
- Diversion to Storage diversion rate recommended for licensing = **0.03 cfs** based on a spring runoff benefiting spring resulting in slightly higher flow rates achieved in early spring months.

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation: N/A
2. Volume Calculations for Other Uses: See attached pond analysis worksheet.
- Stockwater annual volume = 20 head cattle x 12 gpd x 365 days = 87,600 gal annually / 325,850 gal per af = **0.3 af** considering department rounding standards.
 - Domestic annual volume = **1.2 af** for 1 home with ½ ac irrigation included.
 - Maximum diversion volume = 0.3 af (stockwater) + 1.2 af (domestic) + **1.3 af** (wildlife & fire protection storage) + **10.4 af** (Power storage/from storage) = **13.2 af**.

G. NARRATIVE/REMARKS/COMMENTS

The permit authorized development of a spring source with POD legal description of Twp 54N, Rge 02W, Sec 15, **SE¼NW¼SE¼**. During the beneficial use field exam performed on 6/22/2023 I used a Garmin GPS to validate the spring location and during licensing review ArcMap aerial imagery demonstrated the POD is located in the **SW¼NW¼SE¼**. I mailed an Amendment to Permit to change the POD at time of licensing to the applicant on 2/15/2024; the amendment with

fees was received by mail on 3/18/2024 at the Northern Regional Office. Upon review I found I'd errored the 10-acre POD designation on the amendment document, which necessitated a 2nd round Amendment to Permit. The 2nd Application for Amendment was signed in office by the applicant on 3/21/2024; I have superseded the 1st amendment.

I observed the spring POD as a concrete cistern with multiple 3-foot rings with cap buried to collect spring water. A 2-inch PVC pipeline gravity flows a short distance west from the spring to two 1,500-gal rotomolded storage tanks before delivery downslope for domestic & stockwater uses. Once the storage tanks are full overflow water routes as diversion to storage water, as the 2" inch PVC pipe delivers water to a 6-inch buried pipeline that inflows to a small, excavated pond. I captured GPS data points during my exam of the spring POD, storage tanks, pond, and pipeline components as they route to the POU(s).

I completed a 5-gal bucket flow measurement at the first storage tank by taking the lid off and inserting a bucket to fill the inflow water from the spring box. Photographs were taken to illustrate the measurement process, which derived a flow rate of 7.7-gpm or 0.02 cfs considering department rounding standards. The 0.02 cfs diversion rate is adequate to supply the domestic and stockwater beneficial uses and each BU is recommended for the **0.02 cfs** respectively toward licensing. In discussion with Mr. Barnhart, the spring does achieve higher flow rates earlier in the year dependent on peak seasonal runoff periods. While I observed a 0.02 cfs it is reasonable to see the spring production capacity increases during peak runoff periods; I'm recommending a diversion to storage rate of **0.03 cfs** based on peak spring flow capacity during the Power related B.U.s season of use. There are manual shutoff valves built into the conveyance pipeline(s) that enable the applicant to direct flow to either the storage pond or domestic/stockwater direct flow pipelines throughout the year.

Domestic & Stockwater POU – a buried PVC pipeline routes from the two storage tanks downslope westward to the applicant's home and stockwater POU. Mid-route there is a "Y" fitting that joins a pre-existing pipeline associated with 95-9455 which conveys water from Careywood Creek & a separate spring to the applicant's primary residence. I walked the pipeline for 95-9455 back toward the POD from Careywood creek approximately 30 yards where a shutoff valve with metal T-valve tool is located which enables the application to fully close the Careywood Creek pipeline from delivering water into the common use pipeline downgrade from the Y-fitting. The shutoff valve satisfies part of condition X35 for licensing purposes. I took photographs of both the Y-fitting riser located at -116°33.6070, 48°1.5830 +/- 15-ft and T-valve shutoff pipe located at -116°33.6081, 48°1.5826 +/- 11-ft.

Spring water supports domestic use for 1 home & ½ acre irrigation for lawn and garden situated near the residence. I sketched the domestic POU during the exam and used ArcMap aerial imagery during licensing review to assign the POU; the annual volume recommending for domestic use equals **1.2 af**. The applicant uses spring water for stockwater use of 20 head of mixed stock. I observed cattle/horse corrals, barns, and feed/water troughs sketching the stockwater POU on field maps and have assigned the stockwater POU mirroring existing right 95-9455's POU for licensing purposes. The stockwater annual volume as calculated above equals **0.3 af**.

Wildlife Storage, Fire Protection Storage, Power Storage POU – overflow from the spring to storage tank(s) routes in a buried conveyance system which daylighting inflowing to a small, excavated pond located at -116°33.5082, 48°1.5693 +/- 16-ft. The applicant excavated the pond to a maximum depth of 12 ft, has an average depth of 4.8 feet, and a surface area that rounds to 0.1-acre considering department rounding standards. The pond has an earthen dam and no overflow device with the exception of Power from Storage penstock. Photographs illustrate the inflow pipe, storage pond, and outflow penstock pipe observed during the exam; I used ArcMap aerial imagery to assign the storage pond POU for licensing purposes. I developed a pond analysis worksheet during licensing review that demonstrates storage volumes for licensing purposes.

The wildlife and fire protection storage annual volume values equal the pond's seepage rate + evaporation loss rate + capacity = 0.7 af + 0.1 af + 0.5 af = **1.3 af** respectively.

The season of use for the storage components are designated as 11/01 to 05/01 cyclically based on the Preliminary Order Granting Permit (*Order*) document signed by department staff on 10/20/2017. Based on this *Order*, conditions 259 and 220 weren't added to the permit approval and I don't recommend adding 259 for licensing as the storage/from storage B.U.s don't encompass a full year as designated by condition 259. A manual shutoff valve is situated with the two storage tanks that allow for diversion to storage to closed off during non-season of use periods of the year. The pond is situated in a small basin that does benefit from surface runoff water flow early in the year and rain events throughout the year. This may result in impoundment of water in the pond that is not associated with the spring water source and doesn't count against the applicant for water use toward storage or hydropower use when the spring source is cycled off from 05/02 to 10/31 each year.

Power from Storage POU – Power Storage water located in the small pond described above serves as the hydro-power penstock. A screened 40 ft run of 6-inch PVC pipe necks down to approximately 100 ft of 3-inch PVC pipe, which necks down to approximately 800 ft of 2-inch pipeline over the course of 200 ft of elevation drop before arriving at the Power station. The power station is located at -116°33.8762, 48°1.5185 +/- 17-ft, and consists of a freezer repurposed to house a Harris Pelton LV1500 24-volt micro-hydro unit. I took photographs that illustrate 3 nozzles of differing sizes (1/8 in, 3/16 in, & 1/4 in) are installed with manual cycle-on valves from the penstock pipeline to individual unit intake poly-pipes. The applicant asserts that during normal operations one or two nozzles are used dependent on storage pond levels, but that during peak runoff and when the spring is at max production all three nozzles have been used in concert producing power for the residence. I used ArcMap software to designate the Power from Storage POU recommended for licensing purposes.

Evaluation of Harris GPM flow through nozzle chart (attached to B.U. report) illustrates that with all three nozzles in operation 432 Watts hourly maximum production can be produced from the power unit. Amp hours produced add to the solar-hydro hybrid energy system developed for use at Mr. Barnhart's property. Mr. Barnhart acknowledges that aside from peak runoff periods the pond doesn't maintain adequate volume to use all three nozzles on the system, but that at minimum 1 nozzle is in operation 24/7 throughout the season of use 11/01 to 05/01 each year. The power system has a 2-inch PVC discharge pipeline from the unit that routes west and north where it discharges to Careywood Creek. As developed, the applicant's power system adds discharged spring water directly to Careywood Creek from the small storage pond during the Power season of use.

I've calculated the power storage & power from storage volume using the 0.03 cfs diversion to storage rate factoring 24/7 power system operations during the season of use. Using these metrics:

- $0.03 \text{ cfs} \times 181 \text{ days} \times 1.9835 = 10.8 \text{ af}$ considering department rounding standards.
- With 3ea nozzles producing power discharge of water = 4.0 gpm (1/8 in nozzle) + 9.3 gpm (3/16 in nozzle) + 16.7 gpm (1/4 in nozzle) = 30 gpm or 0.07 cfs; there is a small period of time where three nozzles are used for production, but 0.07 cfs is not being evaluated toward determining volume metrics as the diversion to storage rate is the limiting "rate" for license consideration.
- The applicant asserts that normal operations include one or two of the smaller nozzles in production due to limited inflow of water to the pond from the spring source during the entire season of use.
- Hydro unit with 2ea nozzles (1/8 in & 3/16 in) producing power = 13.3 gpm or 0.03 cfs; this is consistent with the diversion to storage rate recommended for licensing purposes.

Although the applicant's power system as developed illustrates it's capable of diverting 10.8 af, limiting factors toward licensing are as follows:

- Spring source only produces up to 0.03 cfs during a portion of the season of use but normal operations the spring achieves a flow rate of 0.02 cfs as proven over time; reference *Order* document in WR backfile.
- Permit approval authorized a total diversion volume of 10.4 af for the Power related B.U.s.

I'm recommending **10.4 af** for each Power related B.U. toward licensing this permit based on the information detailed above. The maximum diversion volume for licensing purposes equals the sum of all B.U. components or **13.2 af** as calculated above on PG 2 of this report.

Licensing conditions of approval – the Permit approved with conditions specified in the *Order* which concluding this protested application for permit. I've made several changes to the conditions toward my recommendation for licensing purposes described below:

- I removed X02; a description of the stockwater type/number isn't a requirement for licensing purposes.
- I revised 916 to state *license* in place of *permit* & remove portion of the text describing the permit phase of the WR.
- I replaced 17H with R22 according to the condition of approval description guidance for licensing processes.
- I removed 08A during licensing review; it's required for permits but not used on licenses.
- I removed 26A due to the applicant complying with condition requirements.
- I've carried forward all other conditions on to licensing.

Overlap concerns – the applicant owns decreed WR 95-9455 that directly overlaps this permit's POU for domestic & stockwater uses. Condition X35 accurately describes combined use limits which remain the same as the *Order* designated upon permit approval as discussed on PG 1 of this report. The applicant's water system's have been developed with adequate shut off valves that provide for management required to satisfy the conditions of approval and discharge rates/volumes during the designated season(s) of use between 95-9455 & 95-17241. There are no additional overlap concerns toward licensing this right.

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>Rate of Diversion</u>	<u>Annual Volume</u>
STOCKWATER	01/01 to 12/31	0.02 CFS	0.3 AF
WILDLIFE STORAGE	11/01 to 05/01		1.3 AF
POWER STORAGE	11/01 to 05/01		10.4 AF
POWER FROM STORAGE	11/01 to 05/01		10.4 AF
DOMESTIC	01/01 to 12/31	0.02 CFS	1.2 AF
FIRE PROTECTION STORAGE	11/01 to 05/01		1.3 AF
DIVERSION TO STORAGE	11/01 to 05/01	0.03 CFS	

Totals:

0.03 CFS

13.2 AF

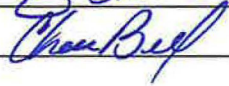
2. Recommended Amendments

☒ 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

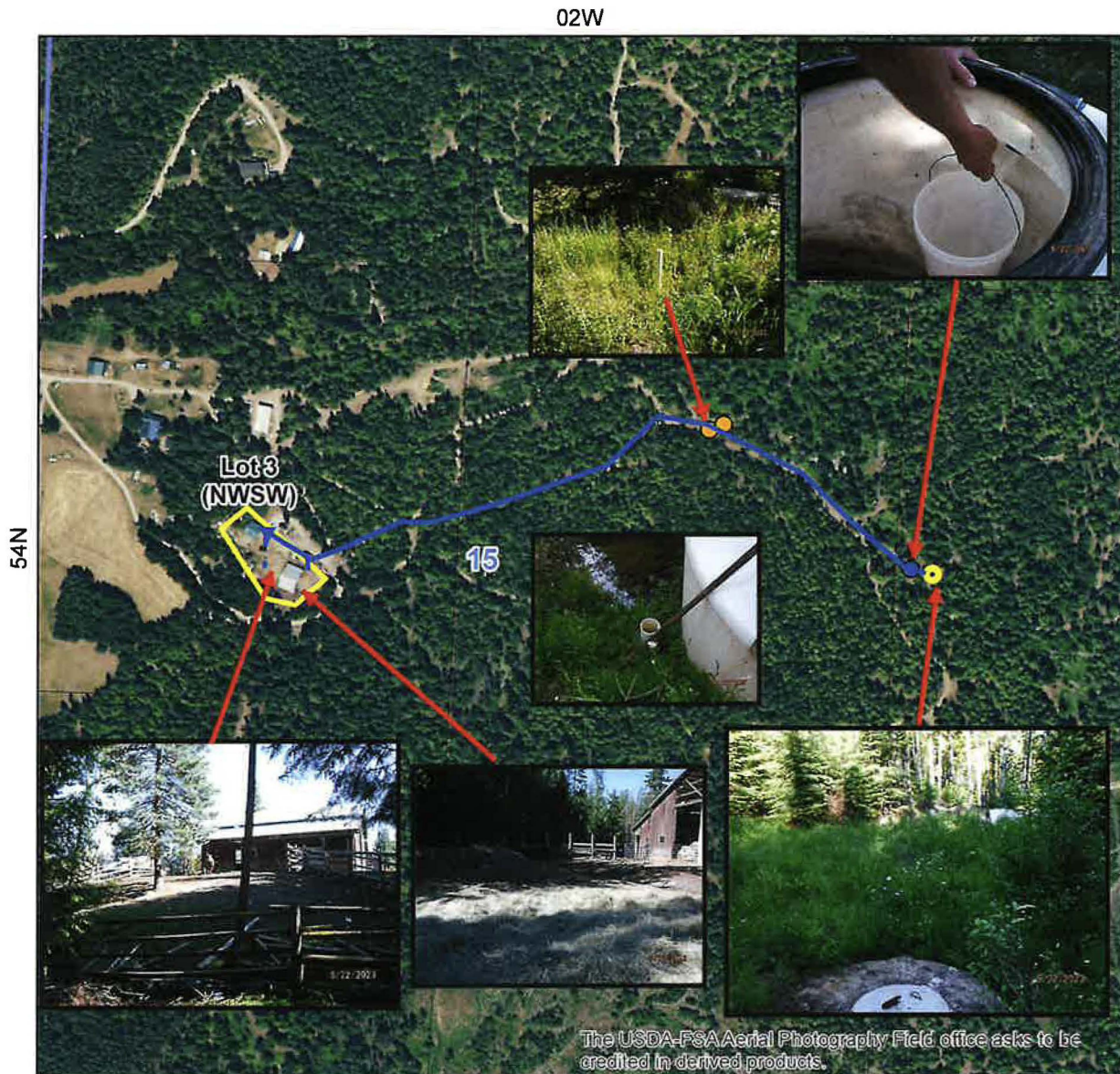
I. AUTHENTICATION Luke Bates -

Field Examiner's Name  Date 3/21/2024

Reviewer  Date 5/7/2025

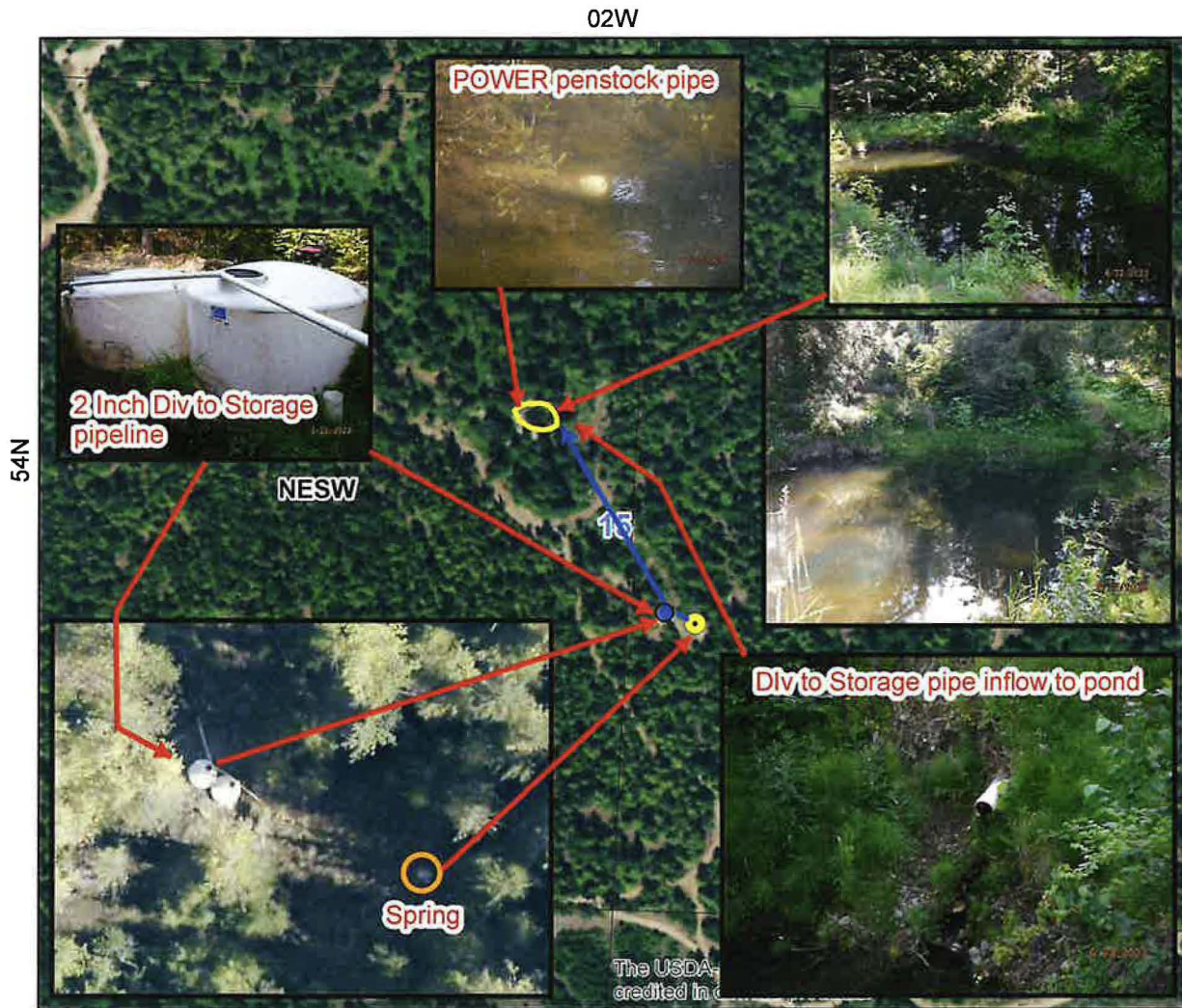
State of Idaho
Department of Water Resources
Attachment to Field Exam
95-17241

This map depicts the STOCKWATER system diagram.



State of Idaho
Department of Water Resources
Attachment to Field Exam
95-17241

This map depicts the WILDLIFE STORAGE, POWER STORAGE,
and FIRE PROTECTION STORAGE system diagram.



0 0.035 0.07 0.14 Miles

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



POWER FROM STORAGE system diagram.

54N

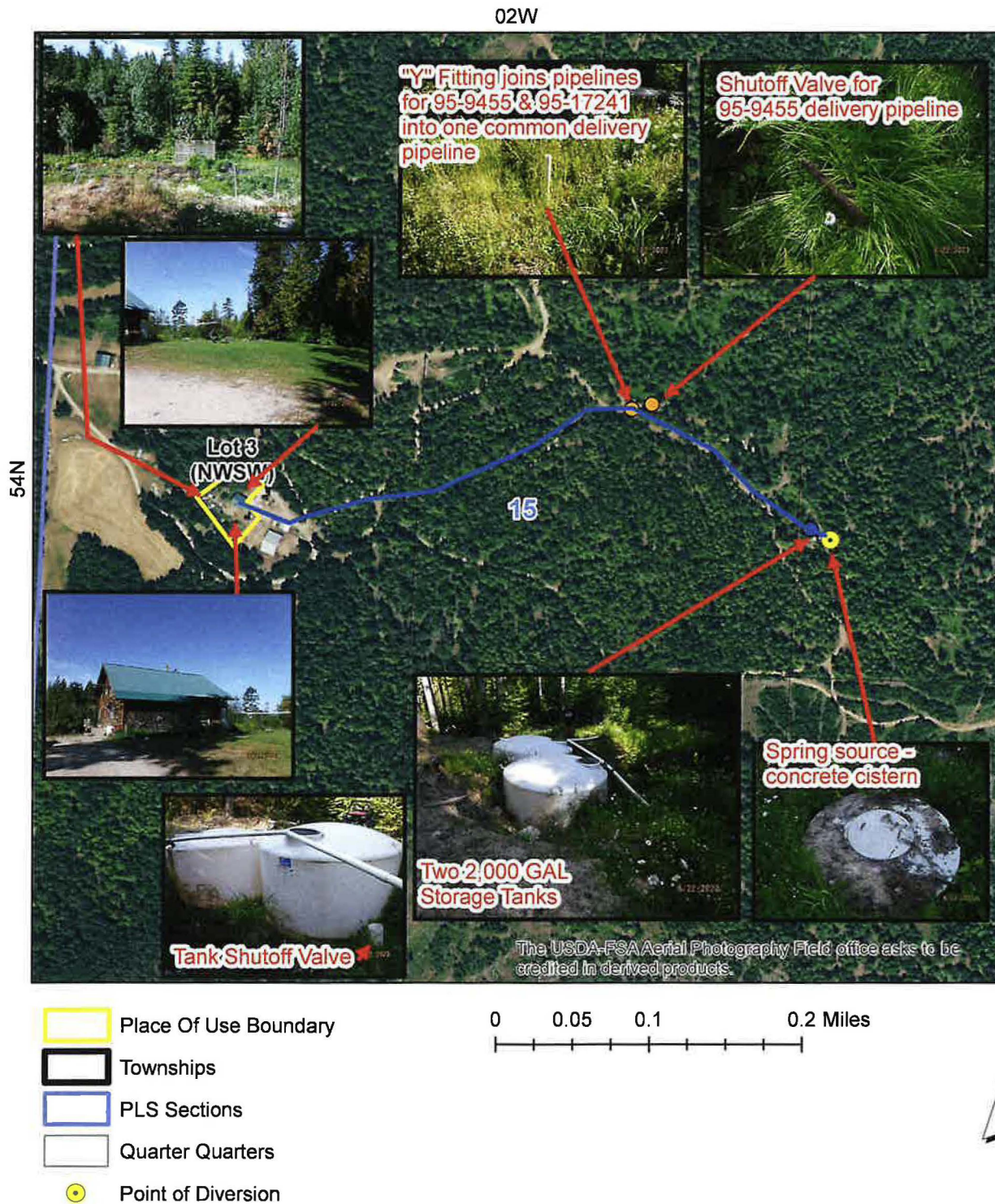


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State of Idaho
Department of Water Resources
Attachment to Field exam
95-17241

This map depicts the DOMESTIC system diagram.



Total Storage Calculations

FILE NUMBER	95-17241
REVIEWER	Luke Bates
DATE	2/14/2024

This spreadsheet has been designed by Idaho Department of Water Resources to estimate the total seepage, evaporation and fill capacity required for a pond.

User Input
Calculated value
Formula Explanations

Surface Area (AC.)	0.1	"Surface Area" is automatically carried over from the "Seepage Loss" sheet.
Average Pond Depth (FT.)	4.8	"Average Pond Depth" depicts the actual depth of the pond either measured or estimated. Note: If you know the maximum depth and not the average depth, the Field Examiner's Handbook suggests multiplying the maximum depth by 0.4 to get the average depth, or you can use any method that seems reasonable to attain average depth.
Pond Capacity (AF)	0.5	Pond Capacity is calculated by multiplying the Pond Surface Area by the Average Pond Depth. If you know the capacity, divide the capacity by surface area and enter the average pond depth in the space above. Note: If pond capacity is determined using a method shown on the "Pond Capacity" sheet, the user may need to modify the value of "Pond Capacity" (cell B9) manually. Note that if the value is modified manually, the formula will be altered for future use.
Multiple Fill Volume Above Initial Fill to Fulfill From Storage Needs- "Multiple Fills" (AF)	10.4	The "Multiple Fill Volume Above Initial Fill" is the acre-feet of water required to meet a <i>from storage</i> component if the <i>from storage</i> component exceeds a one time fill. This section should not include the amount of water needed to fill the pond initially or the amount of water needed to maintain the pond level due to evaporation or seepage. For example: if a pond has a capacity of 5 acre feet and 2.5 acre feet of seepage and evaporation, but the pond is used for irrigation that requires 10 acre feet of from storage for the irrigation use, then you would insert 5 acre feet into this location (10 acre feet needed - 5 acre feet from the initial fill = 5 acre feet of additional storage needed). Note: You must have a "From Storage" component exceeding the initial fill on the permit to include a volume in this space.
Estimated Seepage Loss (AF)	0.7	The "Estimated Seepage Loss" is automatically carried over from the "Seepage Loss" sheet.
Estimated Evaporation Loss (AF)	0.1	The "Estimated Evaporation Loss" is automatically carried over from the "Evaporation Loss" sheet.
Total Volume Required (AF)	11.7	The "Total Volume Required" is calculated by adding the Pond Capacity, Multiple Fills, Seepage Loss, and Evaporation Loss amounts to determine the total amount of storage required.

95-17241 - Licensing Review

FLOW THROUGH NOZZLES IN GPM AT VARIOUS HEADS													
Feet	Psi	1/8" <i>lea</i>	3/16" <i>lea</i>	1/4" <i>lea</i>	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	7/8"	1.0"	RPM for 4" Turbine
5	2.2	-	-	-	-	6.18	8.4	11	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	47.6	62.1	650
15	6.5	-	2.68	4.76	7.4	10.7	14.6	19	29.7	42.8	58.2	76	800
20	8.7	1.37	3.09	5.49	8.56	12.4	16.8	22	34.3	49.4	67.3	87.8	925
30	13	1.68	3.78	6.72	10.5	15.1	20.6	26.9	42	60.5	82.4	107	1140
40	17	1.94	4.37	7.76	12.1	17.5	23.8	31.1	48.5	69.9	95.1	124	1310
50	22	2.17	4.88	8.86	13.6	19.5	26.6	34.7	54.3	78.1	106	139	1470
60	26	2.38	5.35	9.51	14.8	21.4	29.1	38	59.4	85.6	117	152	1600
80	35	2.75	6.18	11	17.1	24.7	33.6	43.9	68.6	98.8	135	176	1850
100	43	3.07	6.91	12.3	19.2	27.6	36.6	49.1	76.7	111	150	196	2070
120	52	3.36	7.56	13.4	21	30.3	41.2	53.8	84.1	121	165	215	2270
150	65	3.76	8.95	15	23.5	33.8	46	60.1	93.9	135	184	241	2540
200	87	~4.0 4.34	~9.3 9.77	~16.7 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	21.3	33.2	47.8	65.1	85.1	133	191	261	340	3590
400	173	6.14	13.8	24.5	38.3	55.2	75.2	98.2	154	221	301	393	4140
HARRIS OR TURGO									TURGO ONLY				

Estimated Power Output Formula = $2 \times \text{head (ft)} \times 3 \times (\text{gpm}) \times 0.18 \times \text{turbine efficiency (use 0.4)} = 432 \text{ output Watts (hourly)}$

approx Flow From LV1500 24 v DC Harris Pelton unit, with 200 Ft Dynamic head,

and 75-80 psi = • *lea* 1/8" nozzle = 4.0 gpm.

• *lea* 3/16" nozzle = 9.3 gpm

• *lea* 1/4" nozzle = 16.7 gpm

• Total "If" all 3 nozzles are operating in concert = 30 gpm

★ • normal operation flow is limited to one 1/4" nozzle OR 2 (1/8 + 3/16) nozzles in Power production.

MICRO-HYDRO GENERATOR

LV1500

12/24/48/120 VOLT

1500 WATT

HYDRO INDUCTION POWER

P.O. Box 1936 Redway, CA 95560 (707) 923-3507

www.homehydro.com email: hipower@asis.com

HI-Power

Low-Voltage LV Hydroelectric Generators

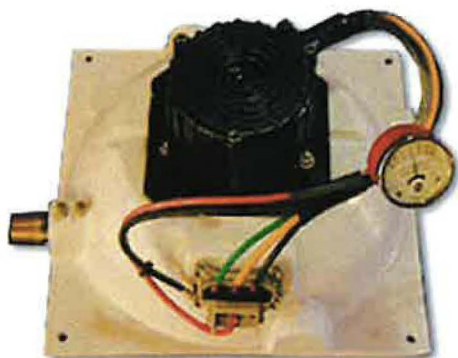
HI-Power is now offering a low-voltage brushless PM generator. This user-friendly unit requires no adjustments and is more efficient than car alternator types over a wider range of head and flow.

- Head range: 40 to 400 feet
- Flow range: 5 to 400 gpm
- Maximum power: 1200 watts
- Efficiency: 30% to 70%
- Battery voltage options: 12V, 24V, 48V, 96V

Available in the four voltages above for direct battery charging. The 48- and 96-volt units allow the use of smaller gauge wire between the generator and the battery. An MPPT charge control, like the OutBack MX-60, can be used to efficiently step the voltage down for charging and regulating 12-, 24- or 48-volt batteries.

The sealed permanent magnet alternator is mounted on a Harris housing with the bronze Harris Pelton wheel. The external rectifier is water-cooled and all fasteners are stainless steel. It comes with an induction meter and 3 feet of 1" flexible hose per nozzle.

Order multiple nozzles for convenient adjustment to varying flows. Alternator has 2 sealed 6203 bearings which should be changed every 5-10 years, depending on use. When ordering, specify battery voltage, transmission line length and size, flow, pressure, pipe size and length.



Description	Item code	Price
LV Hydro with 1 nozzle	017-02005	\$1,350
LV Hydro with 2 nozzles	017-02007	\$1,400
LV Hydro with 3 nozzles	017-02009	\$1,450
LV Hydro with 4 nozzles	017-02011	\$1,500
Car alternator upgrade kit for older Harris Hydro-electric units with brush type alternators	017-02039	\$500

Higher Voltage HV Hydroelectric Generators

HI Power Hydroelectric generators are ideal for sites where water is far from power needs (up to 10,000 feet) or when greater power is required. High transmission voltage can be sent over a mile before being 'stepped down' to battery voltage. It comes complete with step-down transformer, rectifier, fuses and amp meter. Use a diversion-type regulator with these units.

- Head range: 60 to 500 feet
- Flow range: 10 to 400 gpm
- Maximum power: 3600 watts
- Efficiency: 30% to 60%
- Transmission voltage: 110V to 440V
- Battery voltage: 12V, 24V, 48V

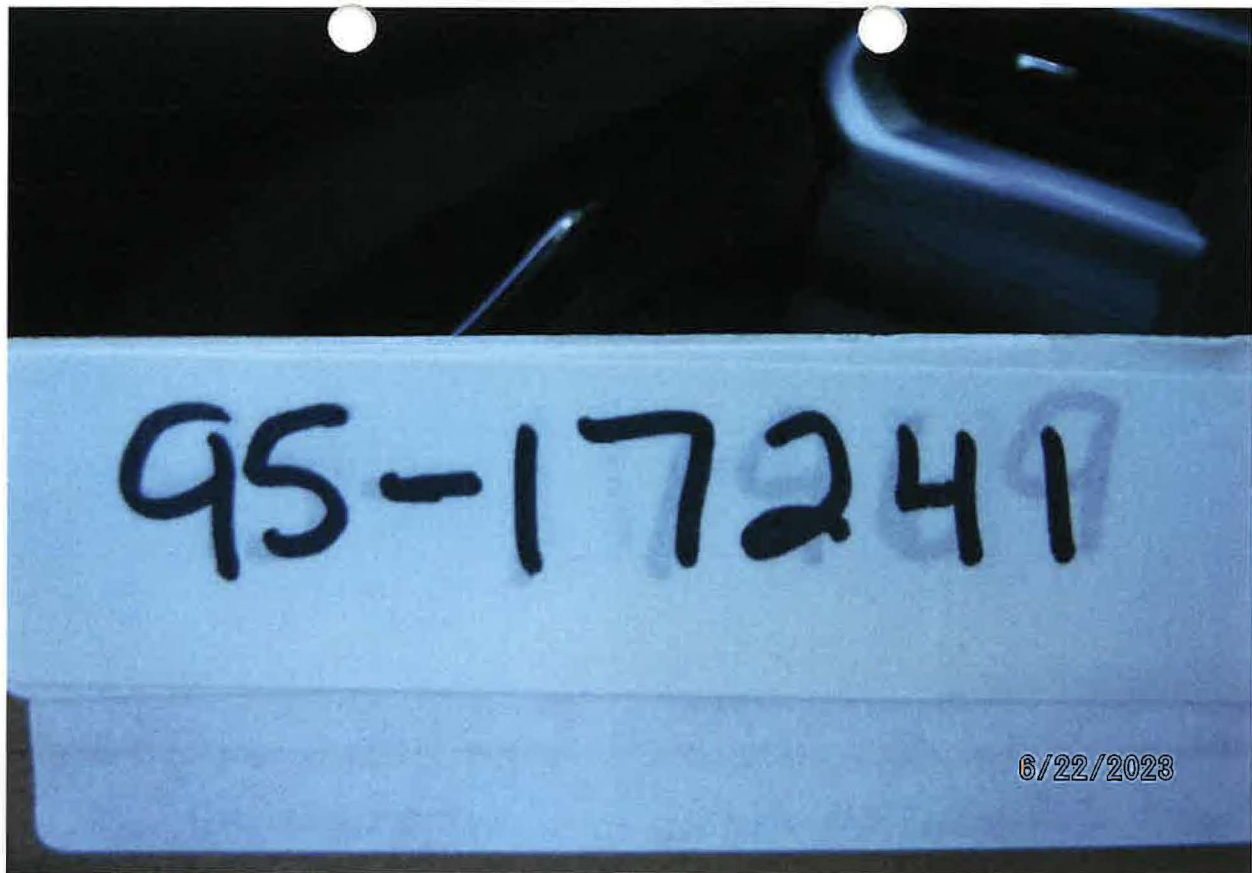
These hydroelectric generators use brushless alternators for reliability and versatility. They produce 110V, 220V, or 440V "wild" (unregulated) AC, which is then stepped down with the supplied transformer and rectifier.

The heavy-duty brushless alternator is housed on the Harris housing and uses the Harris Bronze Pelton Wheel for flows up to 200 gpm and the ESD Turgo Wheel and housing for flows of 200 to 400 gpm. Available in 4 sizes ranging from 600 to 3600 watts. The HV600 is available with 2 or 4 nozzles. The larger units come with 4 nozzles.

2-year warranty. Specify battery voltage when ordering.



Description	Item code	Price
HV 1200 – 1200 watt 4 nozzle	017-02030	\$3,600
HV 1800 – 1800 watt 4 nozzle	017-02031	\$4,200
HV 3600 – 3600 watt 4 nozzle	017-02034	\$6,000
Hi-Power turgo nozzle	017-02037	\$600



BENEFICIAL USE FIELD EXAM DATE 6/22/2023



POD – SPRING CAPTURED IN CONCRETE RING(S) CISTERN – PIPE FROM CISTERN TO STORAGE TANK(S)
AND POND



2EA 1,500-GAL ROTOMOLD STORAGE TANKS FILL FROM SPRING PRIOR TO CONVEYING WATER TO STOCKWATER & DOMESTIC USES.



5 GAL BUCKET FLOW MEASUREMENT TAKEN AT INFLOW FROM SPRING CISTERN TO STORAGE TANK; 5 GAL BUCKET FILLED IN 39.14 SECONDS.



OVERFLOW PIPE FROM STORAGE TANKS CONVEYS EXCESS SPRING WATER DIRECTLY TO STORAGE POND





DIVERSION TO STORAGE PVC PIPE FROM STORAGE TANK OVERFLOW TO STORAGE POND; PIPING ROUTES 2-INCH AT STORAGE TANK(S) TO 6-INCH AT INFLOW TO POND



POU – POWER STORAGE, WILDLIFE STORAGE, & FIRE PROTECTION STORAGE POND



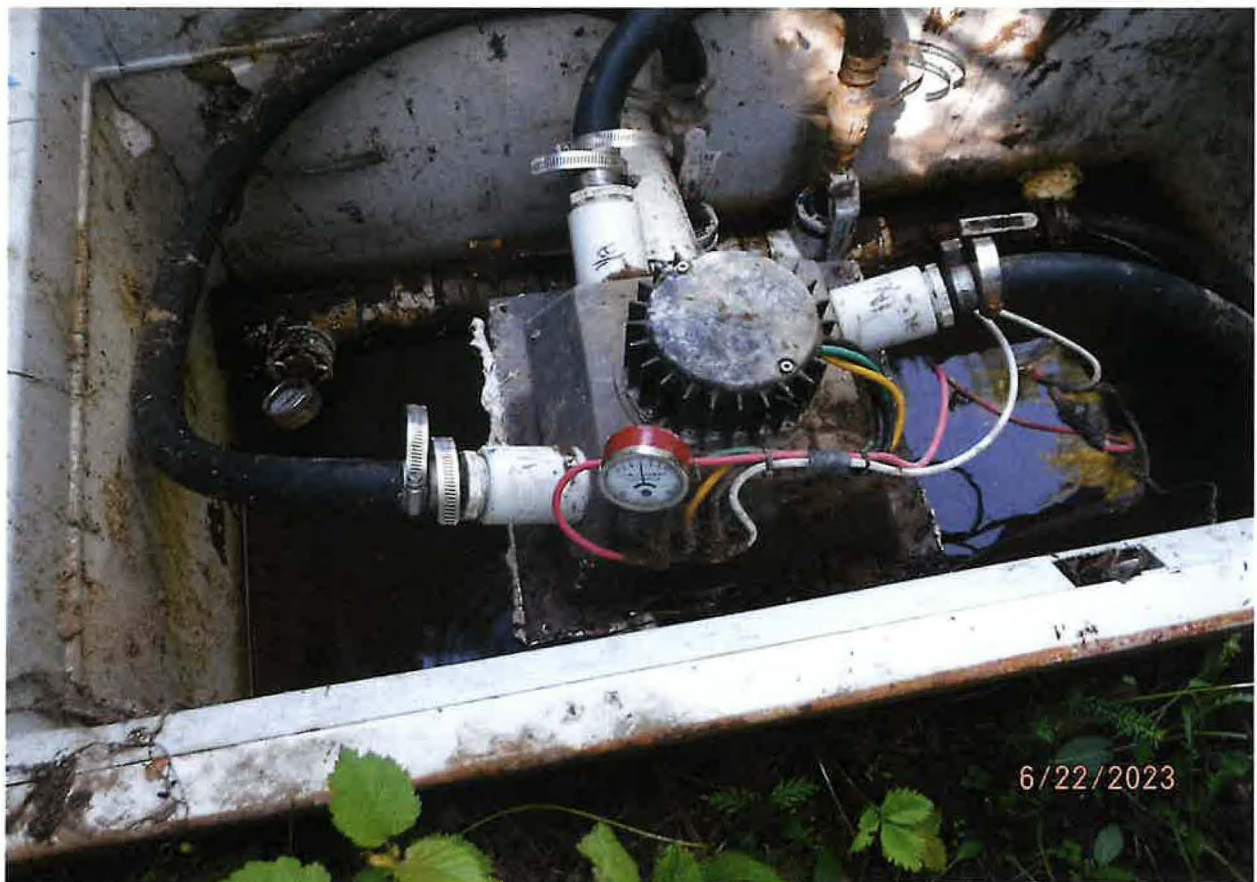
POWER FROM STORAGE PIPE – 6-INCH, 40 FT PIPE RUN TO 3-INCH, 100FT PIPE RUN TO 2-INCH 800 FT PIPE RUN TO POWER STATION. APPROXIMATELY 200-FT ELEVATION CHANGE BETWEEN STORAGE POND & POWER STATION



MANUAL BUTTERFLY VALVE AT “Y” FITTING LOCATED AT -116 33.6081, 48 0.5862 +/- 11 FEET; ALLOWS SEPARATE CREEK WATER FLOW TO BE TURNED ON OR OFF FOR DOMESTIC & STOCKWATER USE ASSOCIATED WITH WR 95-9455

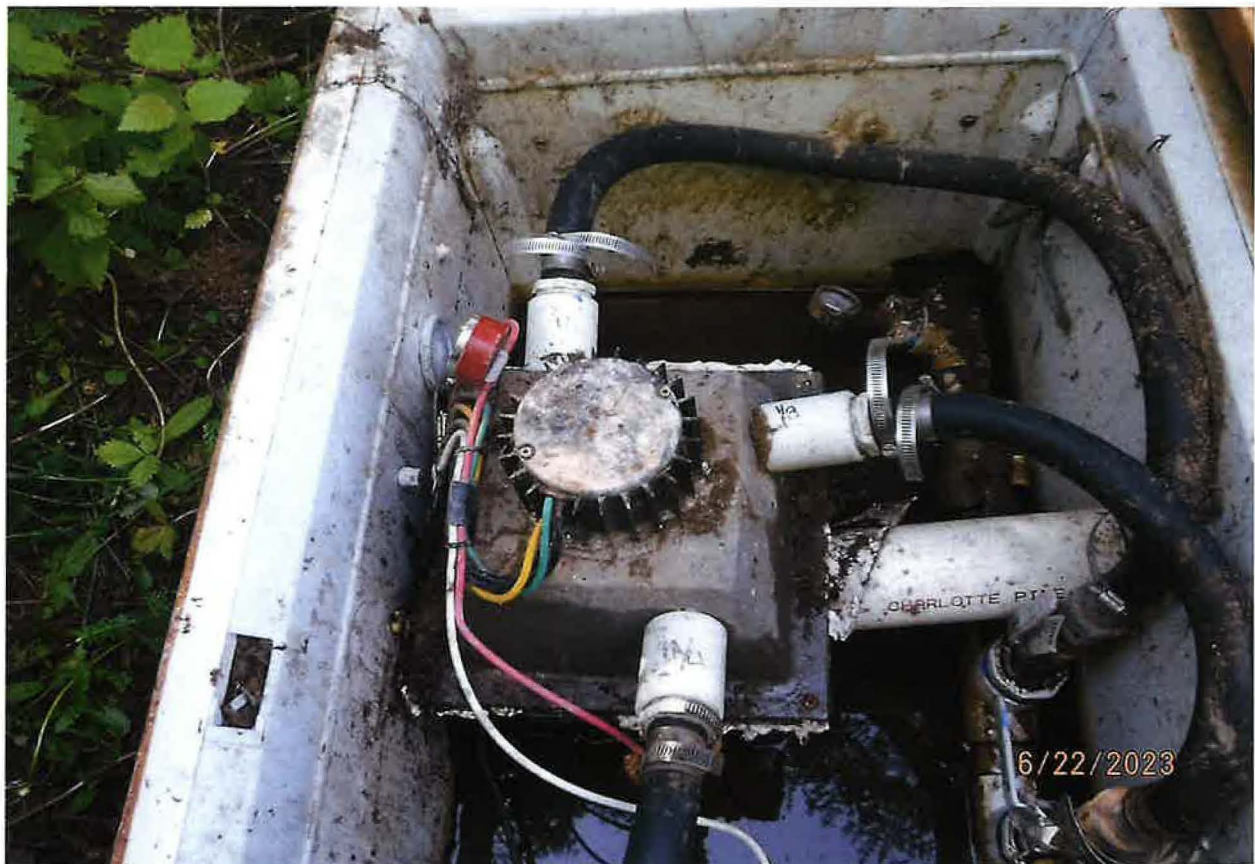


POU – POWER FROM STORAGE– POWER STATION INCORPORATES A REPURPOSED FREEZER HOUSING A MICRO-HYDRO SUPPRTORTING 3 NOZZLES (1/8", 3/16", & 1/4" NOZZLE SIZES)

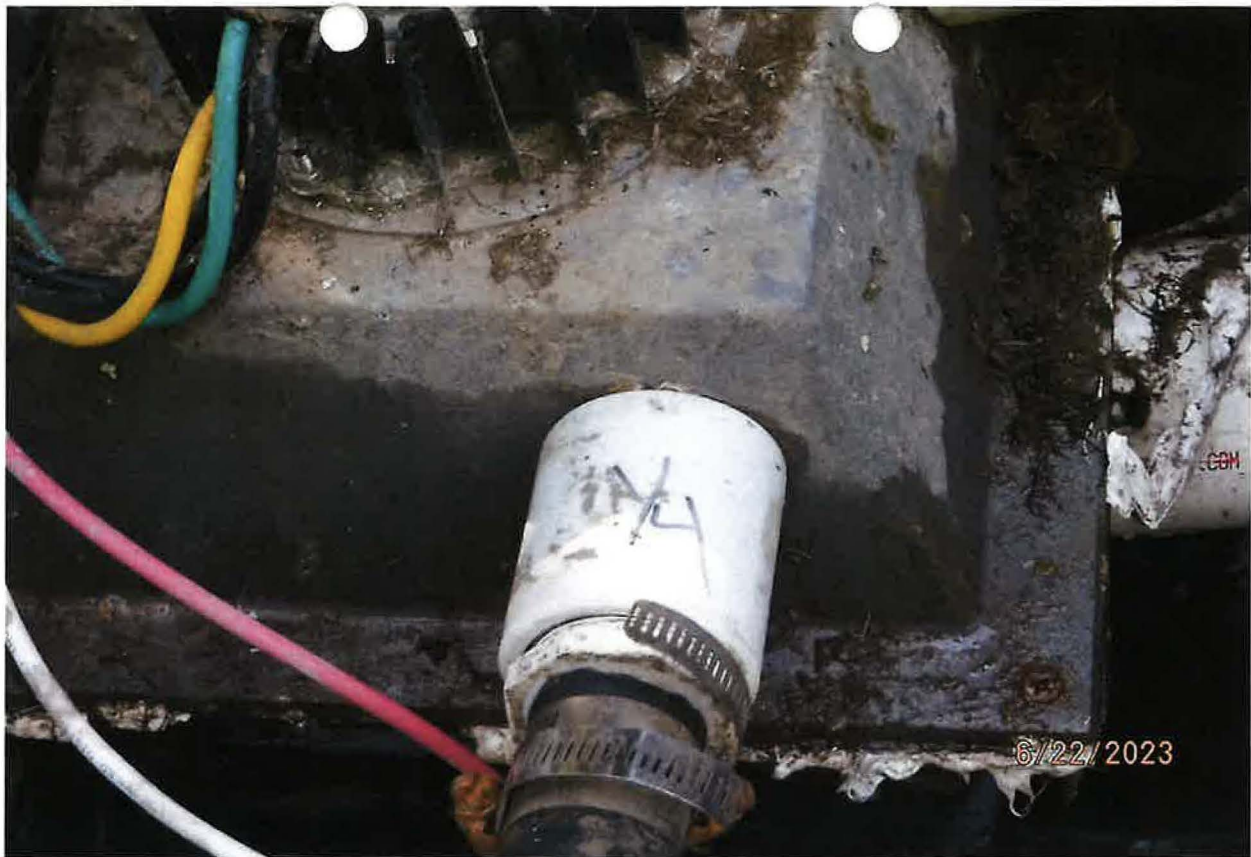




75-80 PSI OPERATING PRESSURE FOR HYDRO POWER SYSTEM



2-INCH OUTFLOW PVC PIPE FROM HYDRO UNIT CONVEYS WATER DOWN SLOPE AND BACK TO CREEK



MICRO-HYDRO UNIT NOZZLES MARKED WITH SHARPIE AT INLET TO UNIT



APPLICANT'S MICRO-HYDRO WORKS IN CONCERT WITH A SOLAR POWER SYSTEM – DUAL SYSTEM CONTROL PANEL LOCATED IN THE BARN CO-LOCATED WITH POWER STATION



POU – DOMESTIC USE 1 HOME WITH ½ ACRE LAWN & GARDEN SPACE





STOCKWATER POU

