

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 97-7575

Exam Date: 06/14/2022

1. Current Owner:
MICHAEL R SANDAU 237 S SHORES CIR COOLIN ID 83821-4901 AND
EMMA J SANDAU 237 S SHORES CIR COOLIN ID 83821-4901
2. Accompanied by: Michael Sandau
Phone No: 208-443-3324
Address: Same as above
Relationship to permit Holder: Permit holder.

3. **SOURCE:**
PRIEST LAKE

Tributary
PRIEST RIVER

Method of Determination: DRG & ArcMap.

B. OVERLAP REVIEW

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

Water Right No.	Source	Purpose of Use	Basis
97-7293 & 97-9370	Groundwater	Municipal	License(s) with Claims based on License(s) filed in CFPRBA

Comments: Licensed WRs 97-7293 & 97-9370 are owned by Huckleberry at Priest Lake Assn, a municipal service provider that uses groundwater source(s) which have service connections to both the applicant's parcels (1 home connected & 1 lot stub-in). Both licenses have been claimed in the Clark Fork Pend Oreille River Basin Adjudication (CFPRBA) process and overlap this permit's domestic POU for in-home water use. Condition X35 has been recommended for inclusion during licensing review describing combined use limitations between the two licensed WRs and this permit for in-home domestic use only. The applicant asserts they do not use the municipal system for irrigation. X35 mitigates overlapping concerns between these WRs.

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

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

PRIEST LAKE SW¼ SW¼, Sec. 3, Twp 61N, Rge 04W, B.M. BONNER County

Method of Determination: GPS. POD is located at -116°50.8987, 48°39.6633 (+/- 10 ft accuracy).

PLACE OF USE: IRRIGATION

Twp	Rng	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
61N	04W	3											1.1 L5						1.1

Total Acres: 1.1

PLACE OF USE: DOMESTIC & FIRE PROTECTION

Twp	Rng	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
61N	04W	3											X L5						

Method of Determination: Beneficial use field examination and ArcMap aerial 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.

Well or Diversion ID No.*	Motor Make	Hp	Motor & Pump data	Pump Make	Pump Serial No. or Discharge Size
Submersible Pump	Centripro	1.5	3 phase VFD	Goulds	N/A

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
5-Gal Bucket Measurement						

2. Measurements: Three 5-gallon bucket tests were completed from the first frost-free hydrant from the main service line from intake pipe, with average of three resulting in a diversion rate of 43.56 gpm = **0.10 cfs**, considering department rounding standards.

E. FLOW CALCULATIONS

☒ Additional Computation Sheets Attached

Measured Method: 5-GAL Bucket Test = (5 gal / 6.87 sec) x 60 sec/min = 43.67 gpm
 = (5 gal / 7.69 sec) x 60 sec/min = 39.01 gpm
 = (5 gal / 6.25 sec) x 60 sec/min = 48.0 gpm

Average of 3ea 5-GAL Bucket Tests = (43.67 gpm + 39.01 gpm + 48.0 gpm) / 3 = 43.56 gpm = 0.10 cfs considering department rounding standards

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation:

$V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 1.1 \text{ ac} \times 3.0 \text{ afa} = 3.3 \text{ af}$

$V_{DR} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.03 \text{ cfs} \times 214\text{-day} \times 1.9835 = 12.7$

$V = \text{Smaller of } V_{IR} \text{ and } V_{DR} = \mathbf{3.3 \text{ af}}$

2. Volume Calculations for Other Uses: Domestic use annual volume for 2 homes (1 constructed & 1 stub-in) = 0.6 af x 2 = **1.2 af**. Due to the fire protection beneficial use, there is no annual volume for fire protection and no maximum diversion volume on the face of the license.

G. NARRATIVE/REMARKS/COMMENTS

Field exam performed on 6/14/2022 with the permit holder, Michael Sandau, showed water being diverted from Priest Lake for domestic, fire protection, & irrigation uses. At the POD, a Goulds pump with Centripro 1.5 Hp (VFD) 3AS20 controller & screened intake pipe operating at 68 PSI serve as the diverting works for the system. The intake pipe routes to a small, vaulted pump station that houses the ¾" main service line and small blue pressure pot part No. V45, which then delivers water throughout the POU by lateral pipelines. Three 5-gallon bucket measurements were completed from the first hydrant in-line from the intake pipe, resulting in an average diversion rate of 43.56 gpm = **0.10 cfs**, considering department rounding standards which is recommended as the maximum diversion rate for licensing purposes.

Each beneficial use diversion rate is recommended as follows: **0.03 cfs** for irrigation based on the 1.1 acres irrigation observed at time of exam; the diversion rate was reduced from 0.04 cfs based on department standard irrigation rates of diversion for small acreage. The domestic beneficial use retains the permit approved **0.04 cfs** despite the system being service connected to two homes which normally is authorized 0.06 cfs by department standards. The Fire protection beneficial use has been reduced from 0.15 cfs to **0.10 cfs**, being limited by pump performance found at time of exam. If the VFD pump is used to fight an active fire and achieves a larger diversion rate this would qualify as an exempt water use by State Statute to fight an active fire & not constitute enlargement by diversion rate for this water right.

The domestic POU consists of 1 residence in Lot 1 and a floored wall tent with dedicated stub-in line & frost-free hydrant using water in Lot 2. Photographs were taken of the home and the guest quarters (high-end) wall tent that use water for drinking/restroom use in the tent. The stub-in authorizes the applicant to replace the temporary wall tent with the proposed future home but not serve the tent & additional home on Lot 2. The domestic in-home annual volume equals 0.6 af per lot = **1.2 af** for licensing purposes. ArcMap aerial imagery was used to designate the POU shapes during licensing review. The lake water system use is normally a back-up to water served by the municipal provider. I observed the lake water line entering the home illustrating connection, and Mr. Sandau asserts he cycles the lake water system periodically to ensure it's functional and cycles the filtration system.

The Fire protection POU is served by dedicated flexible fire hose connections (rolled up fire hoses co-located with connections) and two frost-free hydrants connected to hundreds of feet of hose found throughout the POU. ArcMap aerial imagery was used to trace out the POU. The fire protection beneficial use has a diversion rate but doesn't get assigned a diversion volume for licensing purposes & there isn't a maximum diversion volume recommended for licensing on the face of the license.

The irrigation POU was walked with the applicant during licensing review and sketched out on field maps. Irrigation occurs from hose & hose splitters to tripod sprinklers. The applicant waters the two sloped lots throughout the summer for landscape watering, numerous trees planted, natural grass & shrub growing, and to keep the vegetation lush & green toward mitigating fire hazards. Active irrigation was observed during the exam. During licensing review ArcMap aerial imagery was used to trace out the irrigation POU, which excludes the domestic POU shape areas, with acreage equaling 1.1 acres. The annual volume recommended for licensing equals 1.1 ac x 3.0 afa = **3.3 af**.

I have removed condition 029 from the permit during licensing review based on the statement of completion form asserting a fish screen has been installed on the intake line in the lake. Condition X60 was revised to reflect the accurate subdivision description. All other conditions on the permit shall be carried forward to licensing. Overlap review: As discussed above, both applicant's parcels are served water by a municipal water system and maintain the lake water system for back-up

domestic purposes. I have recommended addition of condition X35 for licensing that describes combined use limitations between 97-7293, 97-7370, and this Permit 97-7575 for domestic in-home use for two homes associated with parcels RP054040000010A (constructed home) & RP054040000020A (stub-in & wall tent use). Although both municipal WRs have Notice of Claim(s) filed during the CFPRBA, I'm not recommending inclusion of condition 928; 928 describes claims filed and if decreed as filed would reduce portions of 97-7575 to negate any redundancy. In this case if decreed as claimed, the overlap described in condition X35 will still be applicable negating the need to add 928. There are no other overlapping concerns for licensing this WR.

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>
IRRIGATION	04/01 to 10/31	0.03 CFS	3.3 AF
DOMESTIC	01/01 to 12/31	0.04 CFS	1.2 AF
FIRE PROTECTION	01/01 to 12/31	0.10 CFS	

Totals: 0.10 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 ☒ None

I. AUTHENTICATION

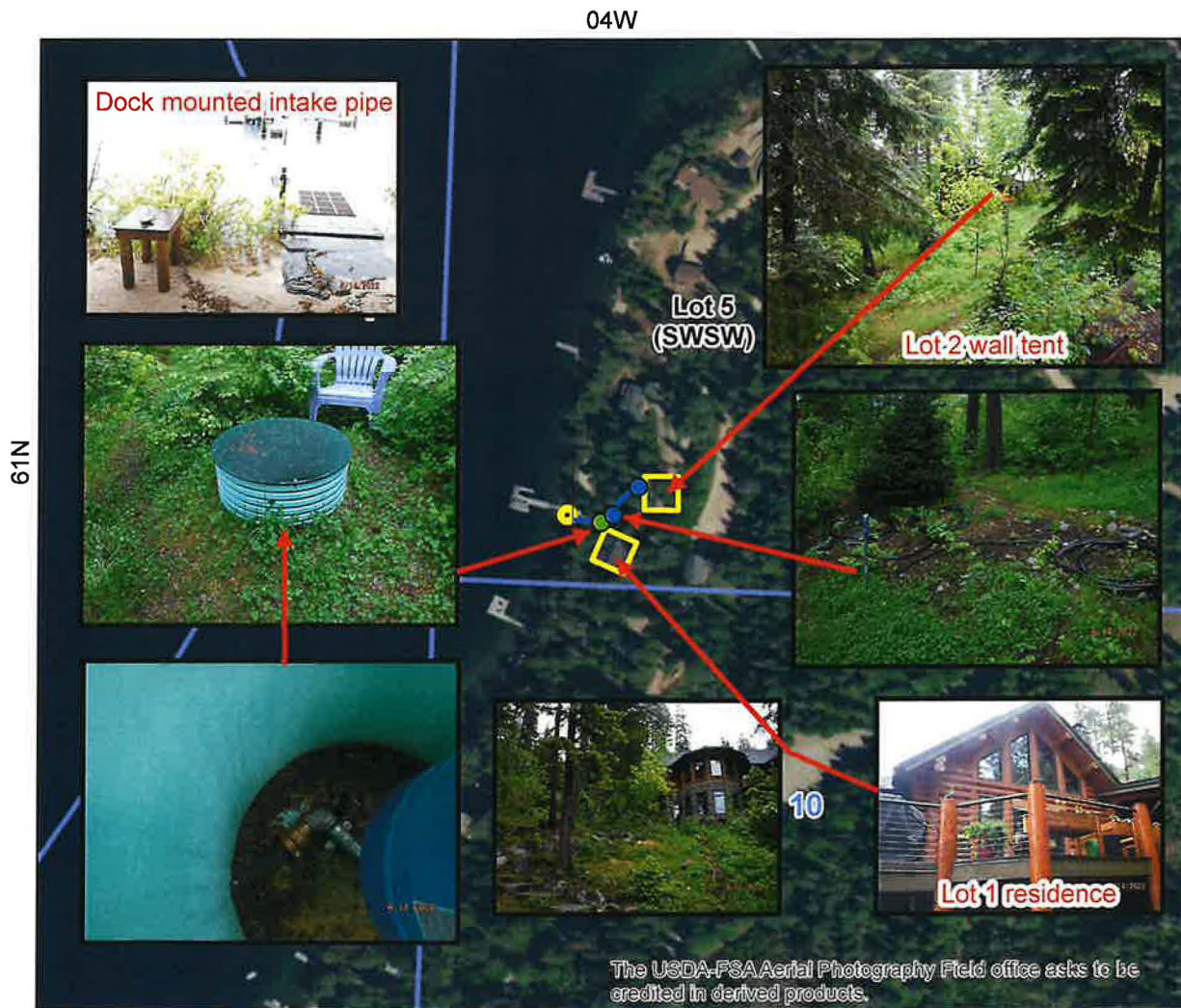
Luke Bates -

Field Examiner's Name  Date 11/30/23

Reviewer  Date 4/25/2024

State of Idaho
Department of Water Resources
Attachment to Field Exam
97-7575

This map depicts the DOMESTIC system diagram.



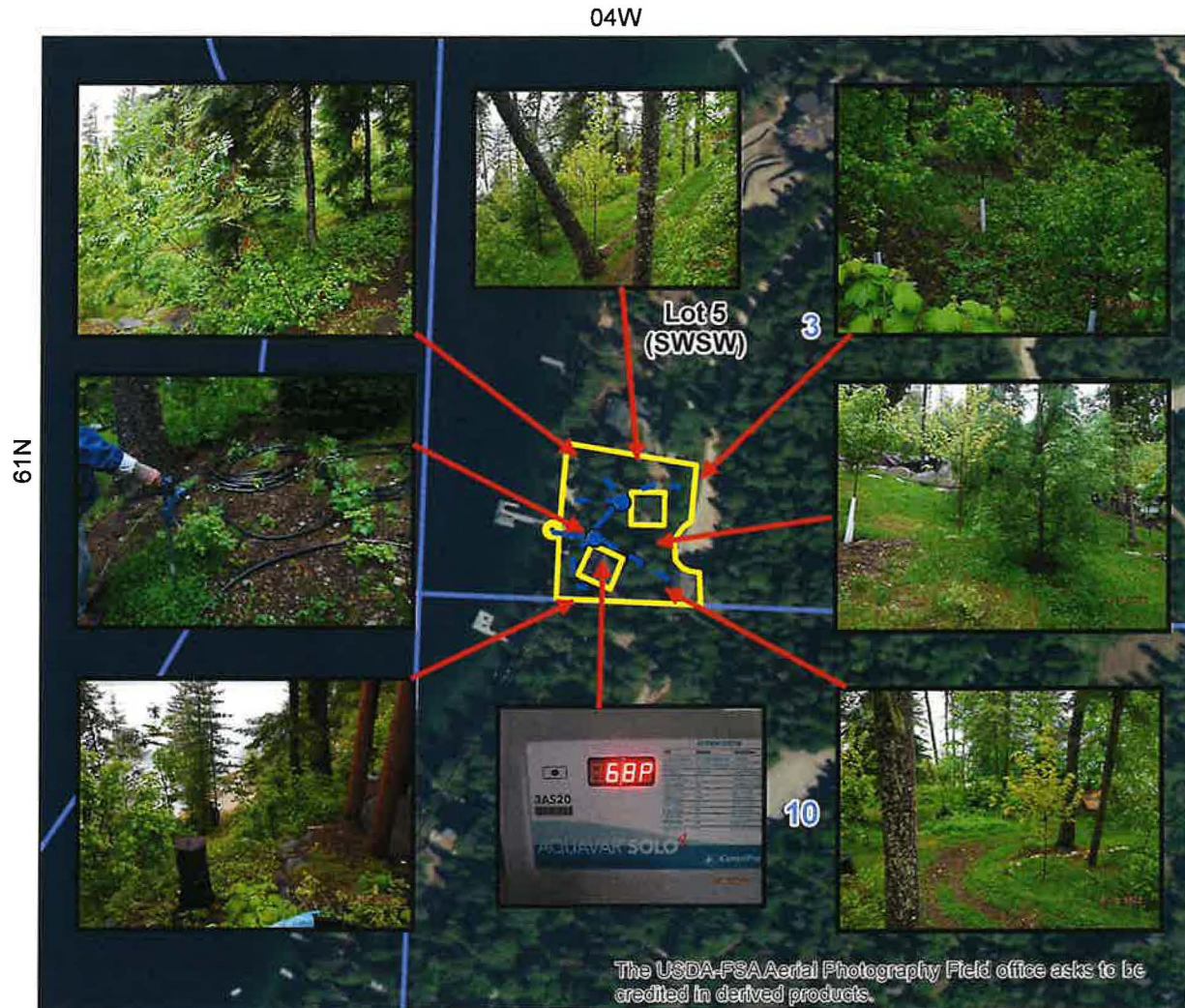
0 0.035 0.07 0.14 Miles

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



State of Idaho
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Attachment to Field Exam
97-7575

This map depicts the IRRIGATION system diagram.

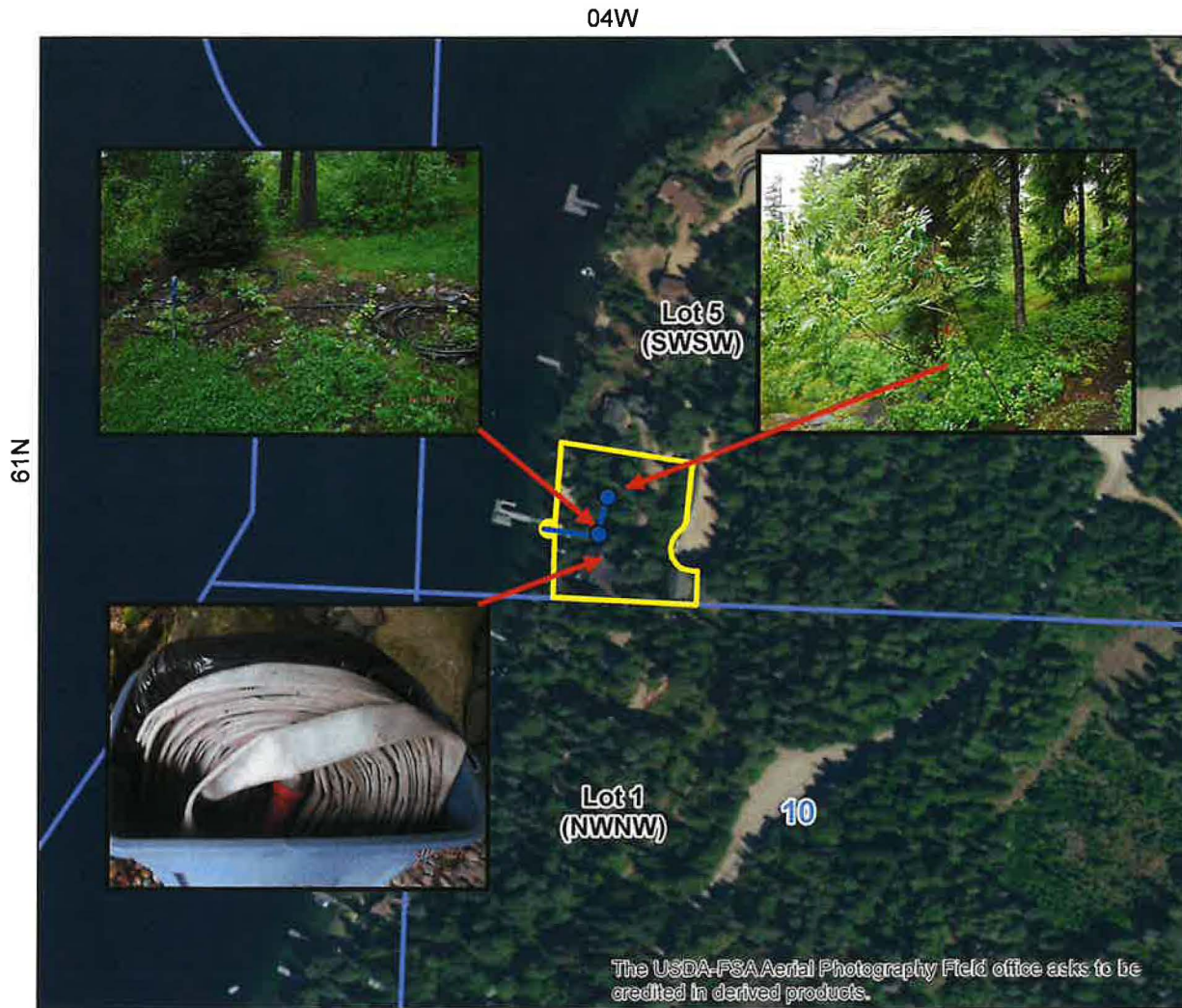


-  Place Of Use Boundary
-  Townships
-  PLS Sections
-  Quarter Quarters
-  Point of Diversion



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97-7575

This map depicts the FIRE PROTECTION system diagram.



0 0.035 0.07 0.14 Miles

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



GOULDS 2AS20 SUBMERSIBLE PUMP MANUFACTURER SPECIFICATIONS

Goulds 3AS20 Aquavar Solo 2
Submersible Pump Controller,
Three Phase



Product Description

The Aquavar Solo 2 is a variable speed, constant pressure controller designed for submersible well pumps. The controller monitors pressure and adjusts pump speed to maintain a constant pressure. Single phase input: 230V Three phase output: **3/4 - 2 HP motors** Works with 3-phase 3-wire pumps Reduces motor cable wire size NEMA 3R Enclosure: rainproof outdoor/indoor rated Lightning and power surge protection Easy to adjust pressure control push-buttons Provides motor protection on long motor leads Flashing LED for troubleshooting and status Includes pressure sensor and shielded cable Pressure set point adjustable from 20-85 using the standard 100 psi transducer Lower electricity usage by 50% due to the controller converting single phase to 3 phase

TANK SIZING

Diaphragm Tank Sizing and Pre-Set Pressure Recommendations:

Diaphragm type (captive air) tanks are required on these systems.

Table 1: Tank Sizing Selection

Maximum Pump GPM	Recommended Tanks	
	Total Volume	Order Number
10	1.9	V6P
24	4.9	V15P
36	7.3	V25P
70	13.9	V45
100	19.9	V60

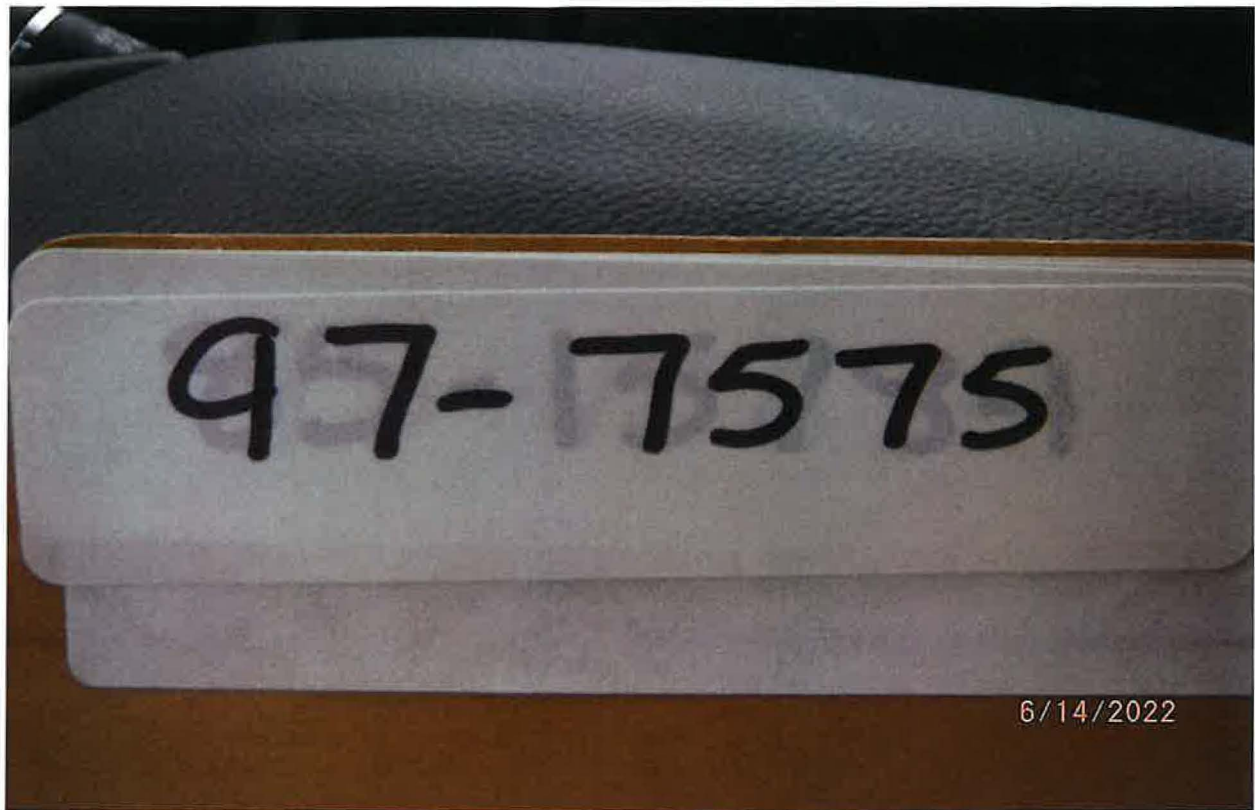
Use Total Tank Volume, not drawdown volume, to select the proper tank size. The total tank volume should be approximately 20% of the pump's maximum flow. For example, when using a 10 gpm pump the system requires a minimum 2 gallon (total volume) tank.

The tank sizing recommendations are field proven to prevent objectionable pressure drops on start-up and provide smooth operation for the majority of variable speed pump systems.

When using the default, 5 PSI pressure drop, setting: Set the tank pressure, while tank is empty of water, to 20 psi below the desired system pressure setting. Ex. for a 50 psi system pressure, charge the tank to 30 psi.

See IOM for other settings or if using a large tank.

½ HP = 10 GPM; ¾ HP = 24 GPM; 1 HP = 36 GPM; **1 ½ HP = 70 GPM**; 2 HP = 100 GPM



BENEFICIAL USE FIELD EXAMINATION DATE 6/14/2022



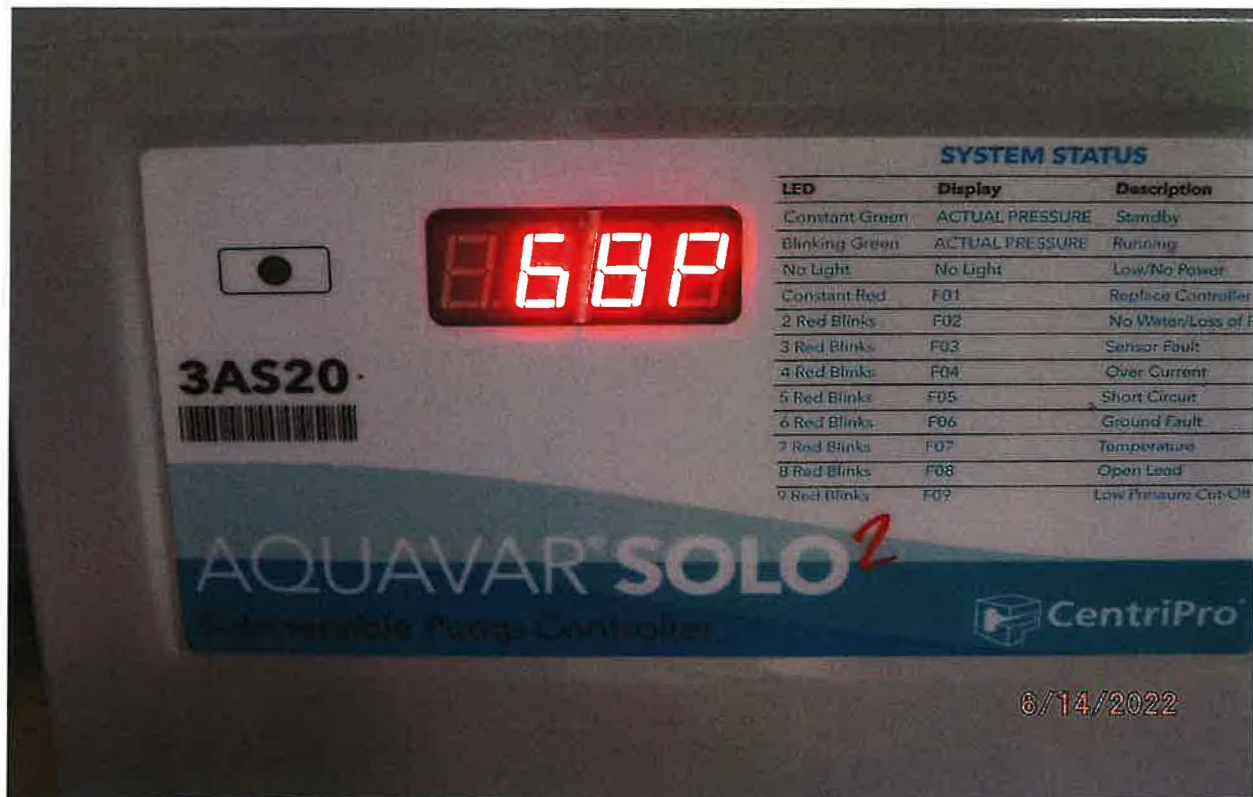
POD – BURIED POLY INTAKE PIPE WITH PUMP AND SCREEN IN LAKE



PUMP STATION



WATER CONVEYANCE SYSTEM



CENTRIPRO 3AS20 SUBMERSIBLE 1.5 HP PUMP IN LAKE – CONTROLLER MOUNTED UNDER DECK OF HOME

68 PSI OPERATING PRESSURE



FIRE PROTECTION POU – HYDRANTS TO FIRE HOSE USED ALONG WITH GARDEN HOSE AND FROST FREE HYDRANTS



IRRIGATION POU – INCLUDES SLOPED LANDSCAPE WITH TREES AND SHRUBS WATERED REGULARLY





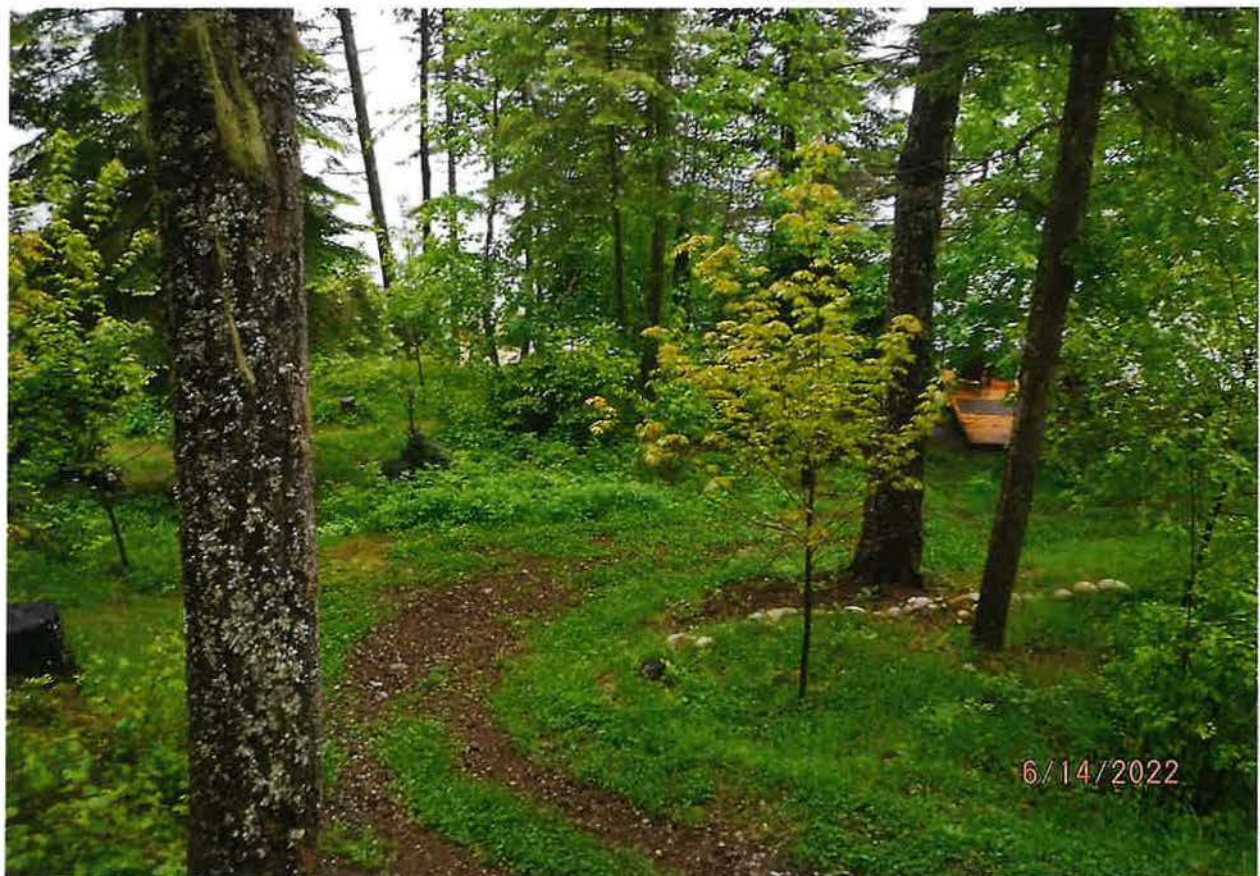
IRRIGATION POU



IRRIGATION POU



IRRIGATION POU



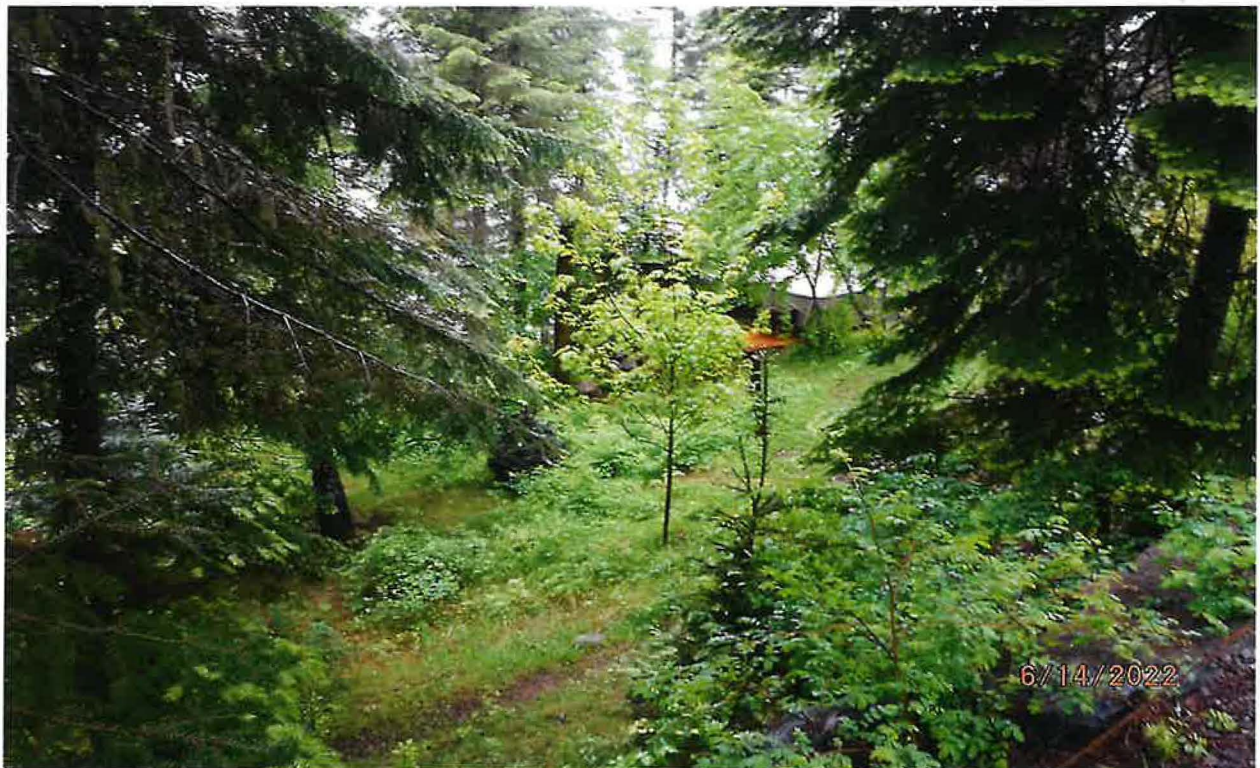


IRRIGATION POU





DOMESTIC POU – ADDITION LOT 1, SOUTH SHORES SUB. RP054040000010A



DOMESTIC POU – STUB IN WITH FROST FREE HYDRANT FOR FUTURE HOME – CURRENTLY USED FOR WALL TENT SERVING AS GUEST ROOM IN SUMMER MONTHS.

ADDITION LOT 2, SOUTH SHORES SUB. RP054040000020A