

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 57-12002
Exam Date: 12/11/2024

1. Current Owner:
BOB L ELLIS 9474 FISH POND LN MELBA ID 83641-4201 AND
MARTHA E ELLIS 9474 FISH POND LN MELBA ID 83641-4201
2. Accompanied by: Bob Ellis
Phone No: (559) 719-0127
Address: 9474 Fish Pond Ln, Melba, ID, 83641
Relationship to permit Holder: Permit holder

3. SOURCE:
SPRING

Tributary
SNAKE RIVER

Method of Determination: Garmin GPS map 76, GIS, and Owyhee Tax Parcel Data.

B. OVERLAP REVIEW

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

Water Right No.	Source	Purpose of Use	Basis
57-7289	GROUNDWATER	FISH PROP & HEATING	LICENSE
2-2072	SNAKE RIVER	IRRIGATION	DECREED 2009

Comments: The permitted place of use (POU) is overlapped by the service area for Opaline Irrigation District and a fish propagation and heating use right held by Opaline Aqua Farm LLC. However, the owner does not have access to water delivered by the Irrigation District and there are no evident concerns regarding surface water use for irrigation impacting the geothermal water use.

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

Water Right No.	Source	Purpose of Use	Basis
NONE	NA	NA	NA

Comments: There are no other rights sharing the permit point of diversion (POD).

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

GPS COORDS: West side of Pond W116.69511 , N43.40861, East side of Pond W116.69525, N 43.40862

SPRING L1 (SE¼ NE¼), Sec. 21, Twp 01N, Rge 03W, B.M. OWYHEE County

Method of Determination: Garmin GPS map 76, GIS, and Owyhee Tax Parcel Data.

PLACE OF USE: IRRIGATION/IRRIGATION FROM 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	
01N	03W	21				1.3 L1													1.3

Total Acres: 1.3

Method of Determination: Garmin GPS map 76, GIS, and Tax Parcel Data.

PLACE OF USE: IRRIGATION & WILDLIFE 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	
01N	03W	21				X L1													

GPS COORDS: West side of Pond W116.69511 , N43.40861, East side of Pond W116.69525, N 43.40862

- ☒ 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/POND	BERKLEY	5	JML1409T	BERKLEY LTM	114 to 260 GPM @ 10ft head

Comments: See attached pump specifications sheet with pump curve (Figures 4A – 4C)

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
NONE	NA	NA	NA	NA	NA	NA

2. Measurements: IDAPA Beneficial Use Examination Rules 37.03.02.35.01.r.i states that a direct measurement of the diversion rate is not required for up to five acres of irrigation. There is no permitted associated with the storage uses.

E. FLOW CALCULATIONS

Additional Computation Sheets Attached

Measured Method: A theoretical calculation and Administrative Memo #17 were used to determine a reasonable rate of diversion. The total lift was extrapolated by combining the depth of the pond (4 ft min), height of the pump riser (approx. 2 ft) and the highest point on the DRG topo map. The pressure is the maximum operating pressure for the smaller sprinkler heads used in the system (Figure).

$$Q = (5 \text{ Hp})(8.8)(0.80 \text{ efficiency})/(10 \text{ ft lift}) + (2.31)^*(70 \text{ psi}) = 0.20\text{cfs}$$

Theoretical Calculation= 0.20cfs

Permit allowed = 0.05cfs

BU Limited Rate= 0.04cfs

Recommendation= 0.04cfs

Comments:

At the time of the field examination the permit holder stated that the area in the southeast of the POU, nearest the pond benefits from subirrigation so no irrigation is done there. Approximately 1.3 acres of irrigation was measured via GIS aerial imagery. Administrative Memo #17 allows up to 0.03cfs per acre for the irrigation of up to 5 acres. I recommend the license is issued for a maximum rate of 0.04cfs.

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation:

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 1.3 \text{ acres} \times 4.5\text{AF/A} = 5.9\text{AF}$$

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.04\text{cfs} \times 260 \text{ days} \times 1.9835 = 20.6 \text{ AF}$$

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = 5.9\text{AF}$$

Comments:

This permit was issued for irrigation and irrigation/wildlife storage uses from a natural spring source. According to the IDAPA Beneficial Use Examination Rules 37.03.02.35.01j.viii a diversion volume is not required for irrigation if water is diverted from a natural flowing stream/river or spring.

2. Volume Calculations for Other Uses: Storage

$$5.0 \text{ AF/acre} \times 1.3 \text{ acres} = 6.5 \text{ AF annually}$$

Comment: IC 42-202 provides a maximum of 5 AF of storage per acre of land to be irrigated. I recommend the license is issued for an annual volume of 6.5 AF for irrigation storage.

G. NARRATIVE/REMARKS/COMMENTS

The Proof of Beneficial Use for permit 63-34752 was received by the Department on May 22, 2024. On section #3 the permit holder stated that the use was developed for the irrigation of 0.77 acres. The permit was issued for the irrigation of 1.8 acres. At the time of the field examination the permit holder identified areas south of the driveway which benefit from the permitted source, however, the west end to the south of the driveway (nearest the pond) is not actively irrigated as it benefits from subirrigation. The areas being irrigated were identified and the GIS measurement of those areas is approximately 1.3 acres of irrigation.

The point of diversion is within Administrative Basin 57; however, it is a spring source tributary to the Snake River making it not under the administration of any water district within the basin. The spring source fills an excavated pond (photo 1) that intermittently overflows along a small ditch running to the northwest emptying into the Snake River. The permit holder stated during the field examination that within the last few years the pond was cleaned out to a depth of about 4ft at the perimeter. The GIS measured surface area of the pond is only about 0.04 sq acres and the pond capacity calculated with the Pond Calculation Spreadsheet is 0.16 AF. However, the permit holder stated that most years the spring flow is adequate to irrigate the developed areas. As stated on the application for permit, if the rate of flow from the spring is inadequate the domestic well can be used to supplement the irrigation of the areas surrounding the home (less than ½ acre).

A 5 Hp pump is used to divert water from the pond via a 2 ½" PVC pipe to 4 control valves (photos 1, 3 & 4) for the irrigation of 4 zones around the property (Figure 1, Photos 2 & 9-16). The PVC waterline is also reduced to a 1" poly line to deliver water to a manifold in the southwest of the property. It is not clear whether the line is reduced after the control valves, or if a "T" coupler is used and since it was installed by the previous owner the permit holder could only guess where it is located between the points. The 1" line supplies garden bed driplines, tree and shrub driplines, and 3 spigots for watering the area south of the driveway (photos 5-8).

A theoretical calculation and the pump spec sheet (attached) indicate that the system is capable of the full permitted rate. However, the irrigation of 1.3 acres at 0.03 cfs/acre (Administrative Memo #17) is a maximum rate of 0.04cfs. I recommend a maximum rate of 0.04 cfs, based on current guidance and the beneficial use developed.

Although the pond only has a calculated capacity of 0.16AF it is evident through the use developed that the spring refills the pond many times during the irrigation season. I recommend an annual volume of 6.5 AF for irrigation storage use, per the calculation in section F.2. of this report based on 1.3 acres of irrigation and the statutory maximum acceptable irrigation storage volume.

The pond observed to be full at the time of the field examination (outside of the irrigation season). Based on the calculated capacity of the pond, waterfowl scat I observed around the pond, and the level of the pond during the field exam I recommend the full permitted volume of 0.1 AF for Wildlife Storage on the license.

Finally, I recommend that the license is issued with conditions R69, R70, X59, and 103. Condition26A should be removed and condition 121 should be replaced with 103, per current guidance.

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	03/01 to 11/15	0.04 CFS	
IRRIGATION STORAGE	01/01 to 12/31		6.5 AF
IRRIGATION FROM STORAGE	03/01 to 11/15		6.5 AF
WILDLIFE STORAGE	01/01 to 12/31		0.1 AF

Totals: 0.04 CFS 5.8AF

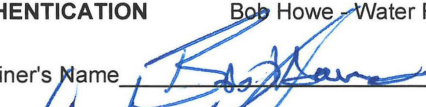
2. Recommended Amendments

☐ 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

Bob Howe, Water Resource Agent

Field Examiner's Name  Date 1/10/25

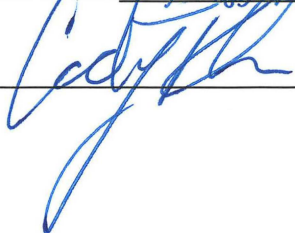
Reviewer  Date 1/16/25



Figure 1 System Diagram (North is left in image)-4 control valves control the numbered zones outlined in the image. The manual controls operate the driplines for the garden beds. Spigots can have hoses attached for sprinklers in the southern extent when needed. The areas nearer to the pond benefit from subirrigation. Actual location of buried lines are unknown and were inferred for this diagram.



Photo 1- Near the northeast corner of the property facing north with pond and pump station in background.



Photo 2- At the northeast end of the driveway facing northwest. Zones 3 & 4 as well as the east side of zones 2 & 1 are visible in frame.



Photo 3 (above) – The four blue ovals in the image outline the overgrown control valves. Photo 4 (below)- Two blue ovals outline control valves 3 &4.





Photo 5 (above)- South of the driveway facing west. The garden beds with drip system. Photo 6 (below)- The manifold for the drip system on the south side of the property and hose bibs for hoses and sprinklers.





Photo 7 (above)- At the south fenceline facing east trees and shrubbery with driplines are interspersed through the area south of the driveway.



Photo 8a & 8b (above)- Dripline at trees and shrubs south of the driveway.



Photo 9- Taken at the west corner of the lawn facing northeast along the side of the house.



Photo 10- Taken at the northwest fence line facing southeast across zone 4 (foreground) and zone 3 (background).



Photos 11- (above) -Hunter PGP Ultra sprinkler heads poured into concrete bases. Sprinkler heads are positioned along the fence lines of zones 3 & 4.

Operating Specifications

- Nozzle choices: 34
- Radius: 17' to 46'
- Flow: 0.36 to 14.8 GPM
- Recommended pressure range: 25 to 70 PSI
- Operating pressure range: 20 to 100 PSI
- Precipitation rate: 0.4 in/hr approximately
- Nozzle trajectory: standard = 25°, low-angle = 13°
- Nozzle racks: 1.5 to 8.0 blue, 2.0 to 4.5 low-angle gray, 0.50 to 3.0 black, 6.0 to 13.0 green, MPR-25, MPR-30, MPR-35
- Warranty period: 5 years

Figure 2- Operating Specifications for Hunter PGP Ultra sprinkler heads
(www.hunterindustries.com)



Photos 12 & 13 (above)– Rain Bird 1800 SAM Series rotary sprinkler heads as found in zones 1 & 2. Smaller Umbrella Rain Bird 1800 Sprinkler heads are also found in both zones.

1800® SAM Series

Ideal for use in areas with changing elevations, the 1800 SAM Series offers all 1800 Series features plus:

- Built-in Seal-A-Matic™ (SAM) check valve. Eliminates the need for under-the-head check valves. No parts to be installed at the site.
- Stronger retract spring to accommodate elevation changes up to 14' (4.2 m). One of the strongest springs in the industry.
- Prevents drainage from spray heads at lower elevations. Stops water waste. Ends landscape damage due to flooding and/or erosion.
- Helps retain water in lateral pipes which reduces wear on system components by minimizing water hammer during start-up.
- Designed for use with all Rain Bird plastic spray head nozzles.
- "SAM" stamped on cap for easy identification and maintenance.
- Five-year trade warranty.

Operating Range

- Spacing: 2.5 to 24 feet (0.8 to 7.3 m)
- Pressure: 25 to 70 psi (1.7 to 4.8 bar)

Figure 3- Specifications for Rain Bird 1800 SAM (www.rainbird.com)



Photo 14- Driplines for watering the landscaped beds around the home (zone 2).



Photo 15- Island in driveway with driplines and misting heads.



Photo 16- Misting head in the driveway island.



Photo 17- Drain valve and drain pipe north of the northeast corner of the home.



self-priming centrifugal pumps



Some of the fastest priming pumps on the market. Available in high head or medium head series. Feature leak-proof mechanical seals, easy service design, heavy-duty motors, rugged construction. Available in 3 and 5 HP.

Optional 6" and 8" Trap Packages are available.

APPLICATIONS

- **Lawn Sprinkling...** operate from 1 to 30 or more heads. Can be safely operated by timer or other automatic device.
- **Contractors...** for dewatering excavation, jetting, water transfer and supply operations.
- **Agriculture...** seed bed and plot irrigation, stock watering, fire protection.
- **Industrial...** sump drainage, fire protection, marine pumping, liquid transfer and supply operations.

LTM/LTH SERIES

SPECIFICATIONS

Body and Base - Close grained cast iron

Impeller - Silicon bronze

Diffuser - Cast iron

Shaft - Carbon steel inside removable shaft sleeve of stainless steel.

FEATURES

Heavy-duty Motors - Both high head and medium head models offer heavy duty motors, easy service design, and air volume control tapping.

Drain Port - Provided for easy winterizing.

Medium Head Models - Deliver up to 115' of head with capacities to 159 GPM.

High Head Models - Deliver up to 138' of head with capacities to 162 GPM.

Easy Serviceability - Normal wear ing parts are easily accessible for service and replacement, without disturbing piping or mounting.

Heavy-duty Motors - Designed for continuous operation. Capacitor start, will not cause electrical interference with TV or other appliances. Nationally known motors have ball bearing, stainless steel shaft. For single and three phase operation, 3450 RPM.

BERKELEY® is a registered trademark of Pentair Water.
In order to provide the best products possible, specifications are subject to change.

Figure 4A- Specification sheet for pump.



self-priming centrifugal pumps

ORDERING INFORMATION

LTH HIGH HEAD

Catalog Number	HP	Pipe Tapping Sizes		Motor Voltage	Phase	Max. Load Amps	Approx. Wt. Lbs.
		Suction Flange	Discharge				
S40094	3	2"	1-1/2"	230	1	13.4	144
S40093	3	2"	1-1/2"	208-230/460	3	8.6/4.3	144
S40097	5	2-1/2"	2"	230	1	22	184
S40096	5	2-1/2"	2"	208-230/460	3	13.2/6.6	184

LTM MEDIUM HEAD

S40100	3	2-1/2"	2"	230	1	13.4	137
S40099	3	2-1/2"	2"	208-230/460	3	8.6/4.3	137
S40102	5	3"	2-1/2"	230	1	22	184
S40103	5	3"	2-1/2"	230/460	3	13.2/6.6	184

Figure 4B- Specification sheet for pump, Cont.

self-priming centrifugal pumps

PUMP PERFORMANCE (Capacity in Gallons Per Minute)

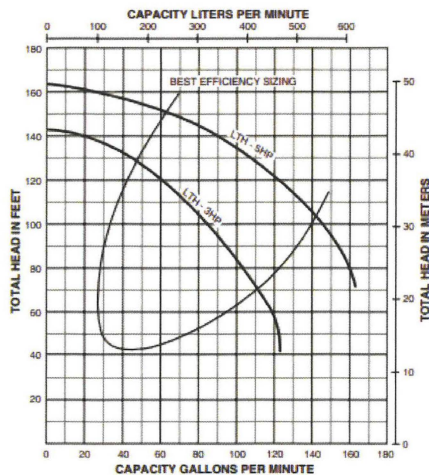
LTH HIGH HEAD

Catalog Number	HP	Discharge		Suction Lift in Feet				
		PSI	Feet Head	5'	10'	15'	20'	25'
S40094/ S40093	3	20	46.2	121	119	105	96	68
		30	69.3	106	103	98	92	66
		40	92.4	85	80	74	69	60
		50	115.5	58	51	42	32	13
S40097/ S40096	5	20	46.2	162	161	152	138	98
		30	69.3	160	158	150	136	98
		40	92.4	146	141	136	130	96
		50	115.5	119	114	105	95	85
		60	138.6	81	70	55	30	-

LTM MEDIUM HEAD

S40099/ S40100	3	20	46.2	159	154	146	138	99
		30	69.3	126	118	110	101	86
		40	92.4	85	75	51	26	-
S40102/ S40103	5	20	46.2	214	209	202	194	162
		30	69.3	185	179	172	165	158
		40	92.4	153	146	139	130	120
		50	115.5	114	101	85	65	28

PUMP PERFORMANCE - LTH HIGH HEAD



PUMP PERFORMANCE - LTM MEDIUM HEAD

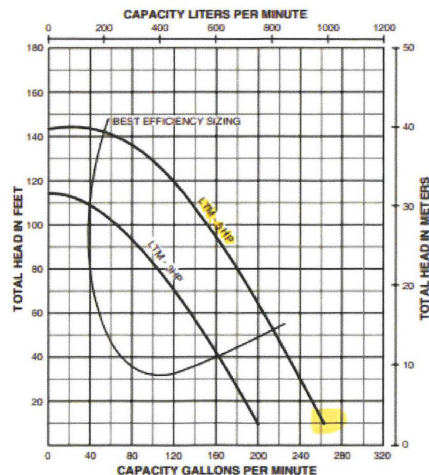


Figure 4C- Specification sheet for pump curve.