

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 97-9786
Exam Date: 05/06/2025

1. Current Owner:
MIRROR LAKE LLC PO BOX 55 PRIEST RIVER ID 83856-0055
2. Accompanied by: Jake Weimer
Phone No: 208-610-442
Address: Same as above
Relationship to permit Holder: President, Mirror Lake LLC – Permit Holder

3. **SOURCE:**
SPRING

Tributary
SINKS

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 SYSTEM1. **LOCATION OF POINT(S) OF DIVERSION:**

SPRING SW¼ SW¼ SE¼, Sec. 8, Twp 56N, Rge 04W, B.M. BONNER County

Method of Determination: GPS. The spring POD inflows to a vaulted concrete cistern located at -116° 51.6263, 48° 12.5828

PLACE OF USE: 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	
56N	04W	8											X						

PLACE OF USE: RECREATION STORAGE and 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	
56N	04W	8											X						

Method of Determination: Beneficial use field exam, ArcMap aerial imagery, and Google Earth 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 Serial No.	Pump Make	Pump Serial No. or Discharge Size
SPRING			Drain Tiles Piped into 1000-Gal Concrete Cistern		

D. FLOW MEASUREMENTS

1.

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

2. Measurements: I was unable to perform flow measurements due to inadequate pipe requirements. Both domestic and diversion to storage pipelines were under water within the spring cistern, which was at full capacity. I was unable to evaluate what the drain tiles captured for inflow to the cistern and have developed licensing recommendations using Department standards for Domestic use diversion rate and Manning Equation for circular pipe to evaluate the Diversion to Storage diversion rate.

E. FLOW CALCULATIONS X Additional Computation Sheets Attached

Measured Method: Manning Equation: Conveyance system was developed with a 3-inch PVC pipeline exiting top elevation of concrete cistern routing down grade where it daylighted within the pond's high-water line. The elevation drop is 40 ft over the 420 ft run resulting in a diversion rate with pipe full equal to 0.39 cfs.

- Permit authorized diversion rate(s): 0.03 cfs for domestic use 1 home; 0.20 cfs for diversion to storage.
- License recommendation: Domestic use - 0.04 cfs based on Department standard for 1 home; Diversion to Storage rate - 0.20 cfs based on system capacity limited by permit authorized rate capped at 0.20 cfs.

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation: N/A

2. Volume Calculations for Other Uses: See attached Pond Analysis Worksheet

- Domestic annual volume = 1.2 af for 1 home with up to ½ acre irrigation & shop with water services.

G. NARRATIVE/REMARKS/COMMENTS

A beneficial use field exam was performed on 5/6/2025 with the Permit Holder's representative, Mr. Jake Weimer, which showed a Spring source being captured in a concrete cistern and diverted for Domestic use and Diversion to Storage for Recreation Storage & Fire Protection Storage uses. The POD was GPS located as a 1,000-gal concrete cistern buried to the roof/portal capturing spring water from below the surface. With the portal open I was able to observe two pipes exiting the cistern routing westward: 1) lower 2-inch PVC pipeline routes buried west to serve 1 home with shop and up to ½ acres irrigation and 2) upper 3-inch PVC pipeline routes buried west serving diversion to storage filling an excavated storage pond.

I couldn't determine the fill rate at which the spring source recharges the cistern water levels but the upper diversion to storage pipe was outflowing at capacity that fractionally filled the 3-inch pipeline; it daylighted within the high-water line of the storage pond negating any flow measurements. I'm recommending the Domestic diversion rate as **0.04 cfs** based on Department standards; it's reasonable that the lower 2-inch pipe with pressure backing from the 1,000-gal cistern is sufficient to produce a rate of 18 gpm achieving the 0.04 cfs as recommended for licensing.

I have evaluated Manning's Equation(s) toward deriving closed pipe (pipe full condition) flow rates for the Diversion to Storage component filling the storage pond. The Manning's Equation derived a flow rate of 0.39 cfs, which is nearly double the Permit authorized 0.20 cfs, however water-stained marks on the outflow pipe illustrate that aside from spring peak runoff the overflow pipe is outflowing at less than ¼ of full pipe volume. This indicates that either spring doesn't have the capacity to replenish the cistern to increase flow, or the spring is flashy and loses productivity in summer months. Regardless, as I'm unable to derive a fact-based diversion to storage rate, I'm maintaining my recommendation for **0.20 cfs** based on how the conveyance system capacity was developed.

The Permit authorized development of Recreation Storage and Fire Protection Storage use at an excavated pond POU. I used field maps to validate the pond location during the exam, and during licensing review ArcMap aerial imagery was used to trace out the POU shape for the pond's surface area, with size & volume factors detailed below:

- Storage Pond – has a maximum depth of 15 feet, an average depth of 6 ft, a pond capacity of 6.0 af, and an estimated seepage & evaporation loss of 8.1 af. The total volume requirement to maintain the pond full year-round equals **14.1 af**.

Based on pond development and current pond analysis worksheet calculations, Recreation Storage & Fire Protection Storage all have an annual volume equal to 14.1 af, which is non-additive toward the maximum diversion volume. The permit authorized a diversion volume of 19.4 af per beneficial use, but the volume is reduced based on field exam finding which contemplates a 4-to-1 ft slope for the storage pond with the dam portion on the western extent. Standing along the northwestern extent of the pond dam, an 18-inch corrugated drainpipe allows overflow discharge to empty into a field where it sinks prior to reaching another surface water source. The pond seemed shallow along the dam edge, indicating the pond is excavated to create a sub-historic topographic elevation line within the existing topography as the minor draw fans out into a pastured field.

Mr. Weimer and I walked the Domestic POU during the exam and I used field maps to sketch the 1 home, shop with services, and up to ½ acre lawn and garden space being served by the gravity flow pipeline from the spring source and cistern. I've used ArcMap aerial imagery to designate the POU during licensing review to assign the POU shape, and photographs were collected demonstrating all the beneficial uses as developed. I'm recommending a Domestic diversion volume of **1.2 af** which aligns with the Department standard for 1 home with ½ acre irrigation. The shop with bathroom facility and water services are part of the 1 household water usage. The maximum diversion volume recommended for licensing equals the sum of direct flow and storage uses equaling **15.3 af**.

During the Licensing review I revised condition 219 to reflect post field exam pond surface area and volumetric factors. Additionally, I have added condition 218 which emphasizes that Fire Protection Storage water use may only be diverted from the pond to suppress an active fire. I removed condition 220 based on verbal guidance from Shelley Keen – Deputy Director. All other conditions on the permit shall be carried forward to the license. There are no overlapping water right concerns toward licensing Permit 97-9786.

Have conditions of permit approval been met? X Yes No

H. RECOMMENDATIONS**1. Recommended Amounts**

Beneficial Use	Period of Use	Rate of Diversion	Annual Volume
DOMESTIC	01/01 to 12/31	0.04 CFS	1.2 AF
RECREATION STORAGE	01/01 to 12/31		14.1 AF
FIRE PROTECTION STORAGE	01/01 to 12/31		14.1 AF
DIVERSION TO STORAGE	01/01 to 12/31	0.20 CFS	

Totals: 0.20 CFS 15.3 AF

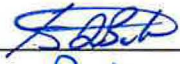
2. Recommended Amendments

____ Change P.D. as reflected above ____ Add P.D. as reflected above X None

____ Change P.U. as reflected above ____ Add P.U. as reflected above X None

I. AUTHENTICATION

Luke Bates – Sr Water Resource Agent

Field Examiner's Name  Date 7/16/2025Reviewer Michelle Richman Date 8/7/2026

State of Idaho
Department of Water Resources
Attachment to Field Exam
97-9786

This map depicts the DIVERSION TO STORAGE, RECREATION STORAGE, and FIRE PROTECTION STORAGE system diagram.



0 0.035 0.07 0.14 Miles

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



State of Idaho
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This map depicts the DOMESTIC system diagram.

04W



0 0.05 0.1 0.2 Miles

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



97-9786

DIVERSION TO STORAGE BENEFICIAL USE FIELD EXAM FLOW RATE CALCULATION

Manning's Equation Calculator for Flow Rate in a Circular Conduit Flowing Full

$S = 0.0952$ ft/ft
 $n = 0.009$ manning's coefficient
 $d = 3.0$ pipe diameter (inches)
 $D = 0.25$ pipe diameter (feet)
 $r = 0.13$ pipe radius (feet)
 $A = 0.05$ area (ft²)
 $WP = 0.79$ wetted perimeter (ft)
 $R = 0.06$ hydraulic radius (ft)

Q = 0.39 flow rate (CFS)

Channel Slope Slope Options
☐ Manual Entry ☒ Slope Calculator

Slope Calculator

Rise = feet
 Run = feet
 Slope, S = ft/ft

Pipe Material, (n):

Pipe Diameter (inches)

The distance between the Spring source, concrete cistern, with 3-inch pipeline routing into storage pond has a 420-foot run. I added 10-ft of depth within the pond where the conveyance pipeline daylights within the pond to the total RISE = 40-ft.

- Permit authorized 0.20 cfs Diversion to Storage
- Licensing review Manning Equation evaluated pipe-full flow rate equal to 0.39 cfs
- At time of Field Exam, the overflow diverting rate was a fraction of the 3-inch pipe, which identifies the diversion to storage may not actively convey spring water in a pipe-full condition to the storage pond. A similar Manning Equation assuming 1.5-inch pipe diameter with full pipe conditions results in a diversion rate of 0.06 cfs.



Overflow pipe with stained flow line interior of pipe

- Licensing Recommendation for Diversion to Storage diversion rate: based on the time of year I performed the field exam, peak runoff season may be tapering off for this year and the spring may be more productive earlier in the season or late season during recharge periods. The water conveyance system as developed is capable of diverting **0.20 cfs** as Permitted, which I'm recommending for licensing purposes.

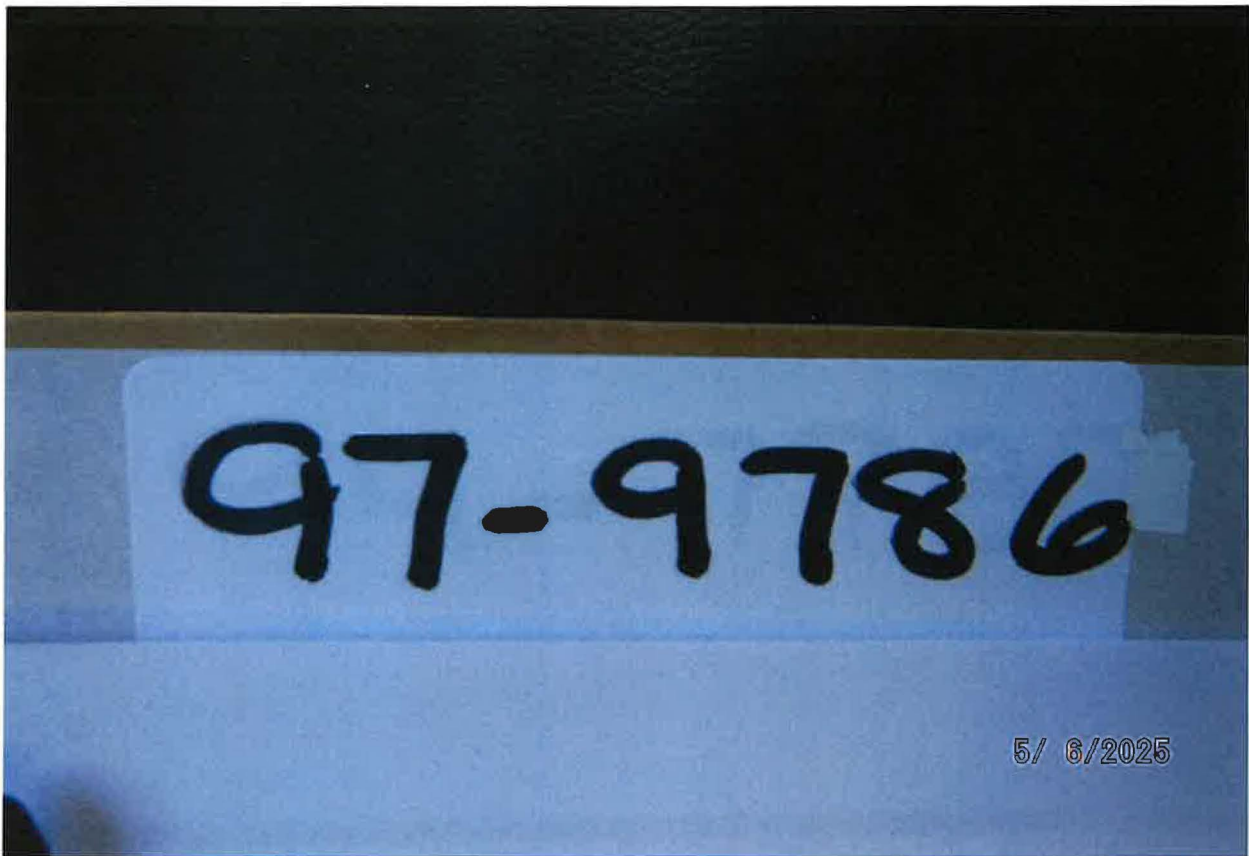
Total Storage Calculations

FILE NUMBER	97-9786
REVIEWER	Luke Bates
DATE	5/7/2025

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.)	1	"Surface Area" is automatically carried over from the "Seepage Loss" sheet.
Average Pond Depth (FT.)	6	"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)	6.0	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)	0	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)	7.3	The "Estimated Seepage Loss" is automatically carried over from the "Seepage Loss" sheet.
Estimated Evaporation Loss (AF)	0.8	The "Estimated Evaporation Loss" is automatically carried over from the "Evaporation Loss" sheet.
Total Volume Required (AF)	14.1	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.



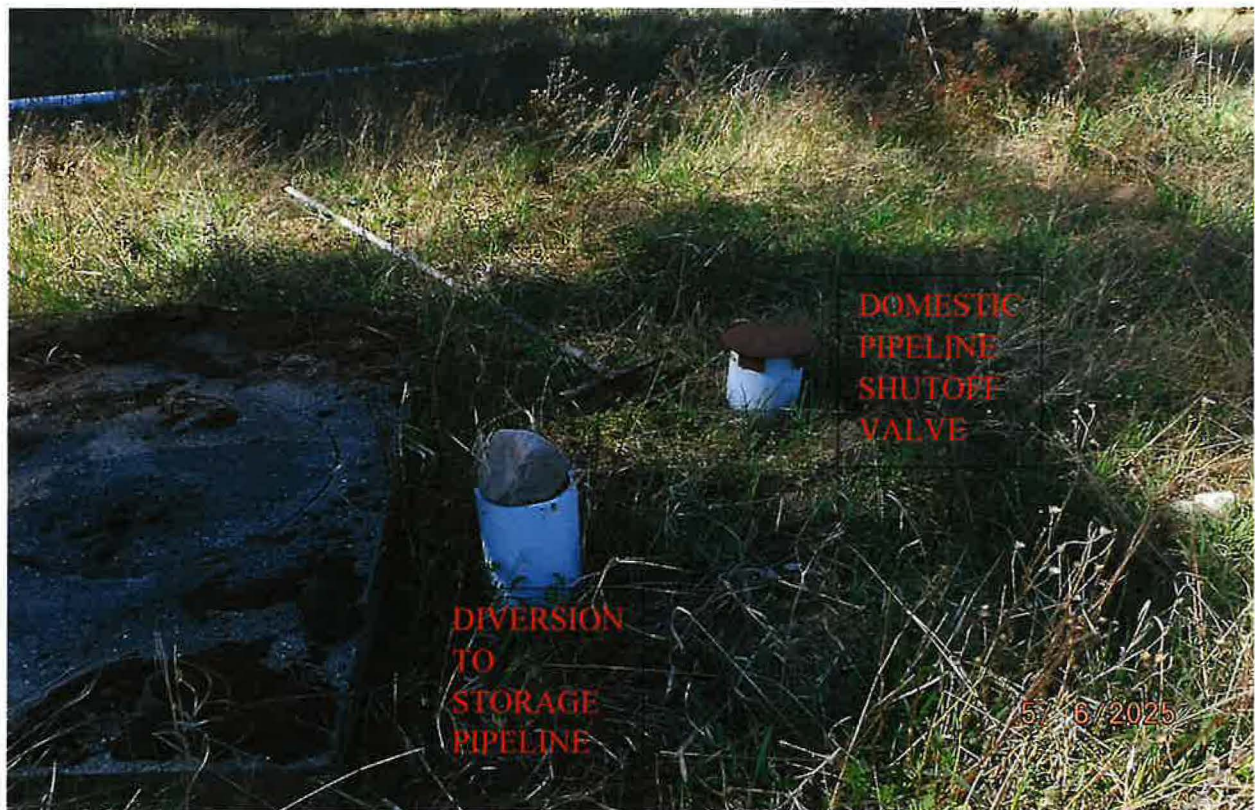
BENEFICIAL USE FIELD EXAM DATE 5/6/2025



POD – SPRING WITH DRAIN TILES FILLING CONCRETE CISTERN



CONVEYANCE SYSTEM – 3-INCH OVERFLOW PIPE FROM TOP OF CISTERN ROUTES
APPROXIMATELY 420-FT OPEN DISCHARGING TO FILL STORAGE POND



WATER CONVEYANCE SYSTEM – 2EA MANUAL SHUTOFF VALVES: L/H FOR
DIVERSION TO STORAGE POND; R/H (BACK) FOR DIVERSION TO DOMESTIC USES



POU – RECREATION STORAGE, FIRE PROTECTION STORAGE POND



STORAGE POU – RIFFLE IN POND IS THE LOCATION OVERFLOW DIVERSION TO
STORAGE PIPELINE INFILLS TO POND



8-INCH OVERFLOW DISCHAGE CULVERT ALONG WESTERN EARTHEN DAM/DIKE FOR POND



OVERFLOW WATER FROM POND DISCHARGES INTO LARGE PASTURE VIA CULVERT PIPE WHERE IT SINKS TO GROUND



DOMESTIC POU – 1 HOME WITH SHOP AND UP TO ½ ACRE LAWN/GARDEN USE
FROM SPRING

