

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 96-13242
Exam Date: 04/18/2024

1. Current Owner:
STEPHEN LARUE & SHIRLEY N BROWN TRUST C/O STEPHEN LARUE & SHIRLEY N BROWN
476 EAGLE VIEW LN SANDPOINT ID 83864-5384

2. Accompanied by: Shirley N Brown
Phone No: 208-610-4103
Address: Same as above
Relationship to permit Holder: Permit Holder.

3. **SOURCE:**
UNNAMED STREAM

Tributary
SMITH 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
96-2237A	UNNAMED STREAM	DOMESTIC	Notice of Claim filed in CFRBA based on license
96-13237	GROUNDWATER	DOMESTIC	Notice of Claim filed in CFRBA

Comments: Licensed Right 96-2237 has a claim filed by the applicant which results in a split with children Notice of Claim 96-2237A; this license authorized Unnamed stream water use for domestic purposes for the home and parcel which overlaps this Permit's irrigation from Storage POU. Although the same water source is used, the beneficial uses between the previous license & split Claim are different and do not constitute direct overlap. I don't recommend inclusion of condition X35 related to POU overlap between WRs.

The applicants have submitted a Notice of Claim based on beneficial use in the Clark Fork Pend Oreille River Basin Adjudication (CFRBA) process. Claim 96-13237 associated a groundwater well used for domestic purposes on the same parcel as this Permit's irrigation from storage POU. The two rights have separate Beneficial Uses (BUs) which do not constitute direct overlap. I haven't designated overlap concern between Claim 96-13237 and this Permit for licensing purposes.

2. Other water rights with the same point-of-diversion: YES Overlap

Water Right No.	Source	Purpose of Use	Basis
96-2237	UNNAMED STREAM	DOMESTIC	License with Notice of Claim filed under 96-2237A in the CFRBA.

Comments: Prior License (Parent) 96-2237 and this Permit share the same POD and common gravity flow pipeline that runs from the Unnamed Stream source and through a pump station building. The gravity flow pipeline fills a concrete reservoir built into the floor of the pump station which is used in a domestic water system with submersible pump used to draft from the reservoir to serve the residence on the property (back-up to groundwater well system). Once the reservoir is full the common gravity flow pipeline continued to divert inflowing to a small storage pond co-located with the pump station. As constructed, a brass float valve is installed on the inflow pipe to pond which restricts flow to 0.04 cfs (5-gal bucket measurements). Once full, the valve closes, and the entirety of the gravity diversion system is held closed until demand for water from either the domestic use system or storage pond system is needed.

While the systems share the same POD and initial infrastructure, it is unlikely that the 0.04 cfs limited by float valve restricts the gravity flow ability to satisfy the 0.02 cfs authorized by License 96-2237 as illustrated in claim 96-2237A. I don't recommend the inclusion of condition X35 limiting the diverting system to 0.04 cfs the way the diverting system is designed. Both WRs can fulfill their diversion rates separately from the same POD. I have recommended licensing 96-13242 with addition of condition F06 describing the shared POD between WRs.

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

UNNAMED STREAM SW¼ NE¼, Sec. 27, Twp 57N, Rge 03W, B.M. BONNER County

Method of Determination: GPS; POD is a wood collection box with pipeline located at -116°40.9183, 48°15.7043.

PLACE OF USE: IRRIGATION 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	
57N	03W	27			X														

PLACE OF USE: 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	
57N	03W	27			1.0														1.0

Total Acres: 1.0

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 Serial No.	Pump Make	Pump Serial No. or Discharge Size
UNNAMED STREAM DIVERSION	N/A	N/A	2" PVC PIPE GRAVITY FLOW	N/A	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 gravity flow pipeline where it inflows to storage pond with the average of three measurements equaling 16.92 gpm or 0.04 cfs considering department rounding standards. I'm recommending **0.04 cfs** as the Diversion to Storage rate and Maximum Diversion Rate for licensing purposes.

E. FLOW CALCULATIONS

Measured Method: 5-GAL Bucket Test = (5 gal / 18.28 sec) x 60 sec/min = 16.41 gpm
 = (5 gal / 17.52 sec) x 60 sec/min = 17.12 gpm
 = (5 gal / 17.39 sec) x 60 sec/min = 17.25 gpm

Average of 3ea 5-GAL Bucket Tests = (16.41 gpm + 17.12 gpm + 17.25 gpm) / 3 = 16.92 gpm = 0.04 cfs considering department rounding standards.

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation:

$V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 1.0 \text{ ac} \times 3.0 \text{ afa} = 3.0 \text{ af}$

$V_{D,R} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = \text{Irrigation from storage, no diversion rate associated with Irrigation beneficial uses.}$

$V = \text{Smaller of } V_{IR} \text{ and } V_{D,R} = 3.0$

2. Volume Calculations for Other Uses: See attached pond analysis worksheet.

G. NARRATIVE/REMARKS/COMMENTS

Field exam performed on 4/18/2024 with the applicant, Shirley N Brown, showed water from an unnamed stream being impounded via a diversion to storage pipeline for Irrigation Storage, Fire Protection Storage, & Irrigation from Storage purposes. At the POD, the applicants have constructed a wooden collection box along the bank of the stream that fills with water and serves as a minor penstock prior to gravity flowing downgrade in the pipeline to a pump station & storage pond on the applicant's property. The applicants have an existing easement for POD access on the neighbor's property. With help from the Permit Holder's brother-in-law, I performed three 5-gal bucket measurements from the inflow pipe at the pond; inflow is restricted by a brass float valve installed on the pipe, but this is the normal system operating design and I'm recommending the derived flow rate of **0.04 cfs** for licensing the Diversion to Storage Beneficial Use (BU). This value is reduced from the Permit approved value of 0.08 cfs but the applicant is limited by the flow rate observed at the time of examination. I've recommended the Maximum Diversion rate of **0.04 cfs** toward licensing this Permit.

During the exam photographs and field maps were used to sketch out the multiple beneficial use storage pond. During licensing review Arcmap aerial imagery was used to accurately trace out the pond's surface area which equals 0.1 acres. The pond's is steep walled and has a maximum depth = 4 ft, average depth = 4 ft, pond volume capacity = 0.4 af, evaporation rate loss = 0.1 af, irrigation storage/from storage multiple fill volume = 3.0 af, and total volume required annually = **3.5 af**, which is recommended as the maximum diversion volume for licensing purposes. The fire protection storage BU's annual diversion volume equals 0.4 af (pond capacity) + 0.1 af (seepage/evaporation loss rate) = **0.5 af**. The irrigation storage BU annual volume equals **3.0 af**, which is the standard volume authorized for 1.0 ac irrigation in this region of the state. The pond is confirmed to be constructed with an impermeable liner and seepage factors do not apply to this water system.

A submerged intake pipe routes from the bottom of the pond to the small pump station, which houses a 2 hp Little Giant pump matched with Century motor on a horizontal frame that is used for the irrigation from storage system (IRR system). The IRR system distributes water via a pressurized irrigation system and multiple frost-free hydrants used with hose & portable sprinklers to irrigation on the property. We tested several frost-free hydrants to distinguish between the domestic

system (96-2237A) and the Permit's IRR system. As each frost-free hydrant was turned on, either the submersible pump in reservoir OR centrifugal pump would cycle on. In this manner I was able to designate the extent of irrigation acreage covered by the from storage irrigation vice connected to the domestic system using surface water.

I walked the Irrigation from Storage POU taking photographs and sketching the POU on field maps during the exam. I used ArcMap aerial imagery to accurately trace the POU during licensing review, which consists of 1.0 acres of tree plot, garden, lawn, and landscape watering served by several different zones built into the system. The water system has a dedicated band of Hunter or Rainbird style rotary sprinklers on irrigation risers used to water bushes along the road frontage for a portion of the property. The lawn had failed the year prior and was being re-seeded for this year's growing season, but irrigation infrastructure is in place indicating active irrigation occurred within the development period. Aerial imagery and Bonner County tax parcel maps confirm lawn space irrigation has occurred during past years. The annual volume(s) recommended for licensing the Irrigation Storage & from Storage Bus equals $1.0 \text{ ac} \times 3.0 \text{ afa} = 3.0 \text{ af}$. The maximum diversion volume equals the sum of the Fire Protection BU and Irrigation Bus = **3.5 af**.

I removed condition 029 from the Permit during licensing review. I revised condition 259 to describe the post-exam volumetric data determined during licensing review. I removed condition 220 based on guidance from Deputy Director Shelley Keen. I've added condition F06 describing shared POD between 96-2237A and 96-13242. All other conditions on the permit are being carried forward to the license. There are no overlapping water right concerns toward licensing this Permit.

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 STORAGE	01/01 to 12/31		3.0 AF
IRRIGATION FROM STORAGE	04/01 to 10/31		3.0 AF
FIRE PROTECTION STORAGE	01/01 to 12/31		0.5 AF
DIVERSION TO STORAGE	01/01 to 12/31	0.04 CFS	
Totals:		0.04 CFS	3.5 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

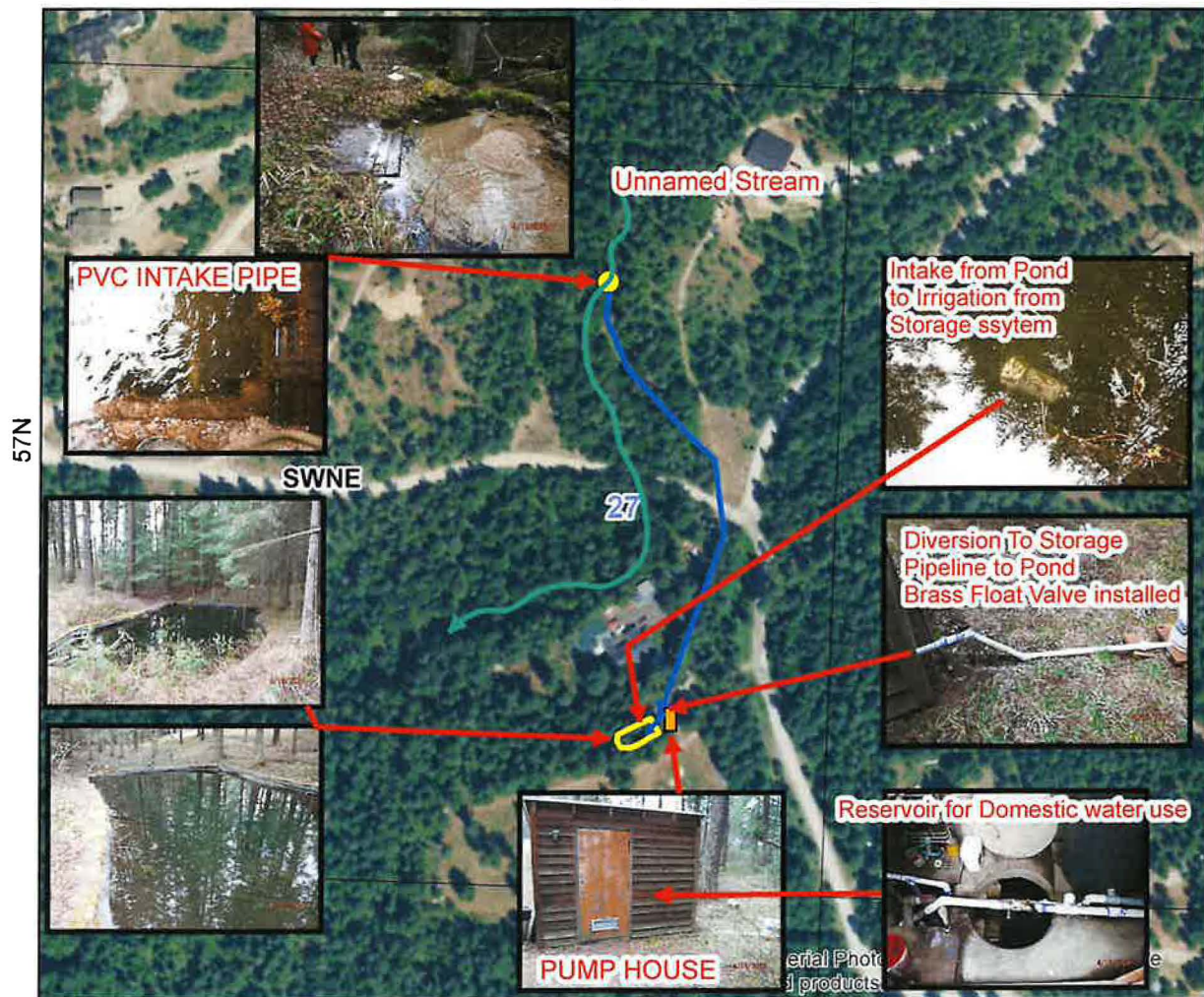
Field Examiner's Name LS 2B.F Date 5/17/2024

Reviewer Chase Beel Date 2/18/2025

State of Idaho
Department of Water Resources
Attachment to Field Exam
96-13242

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

03W



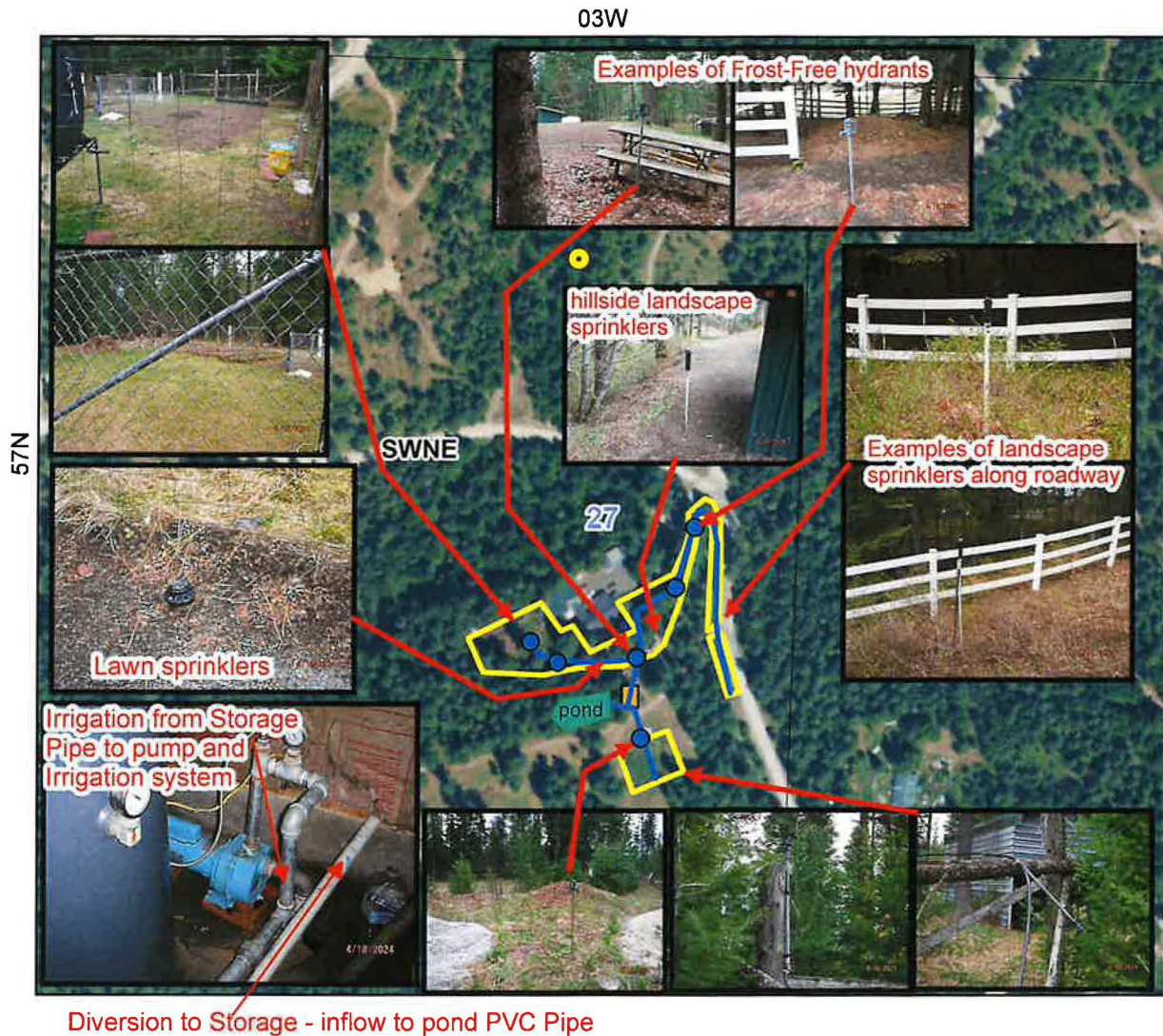
0 0.035 0.07 0.14 Miles

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



State of Idaho
Department of Water Resources
Attachment to Field Exam
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This map depicts the IRRIGATION FROM STORAGE system diagram.



0 0.035 0.07 0.14 Miles

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



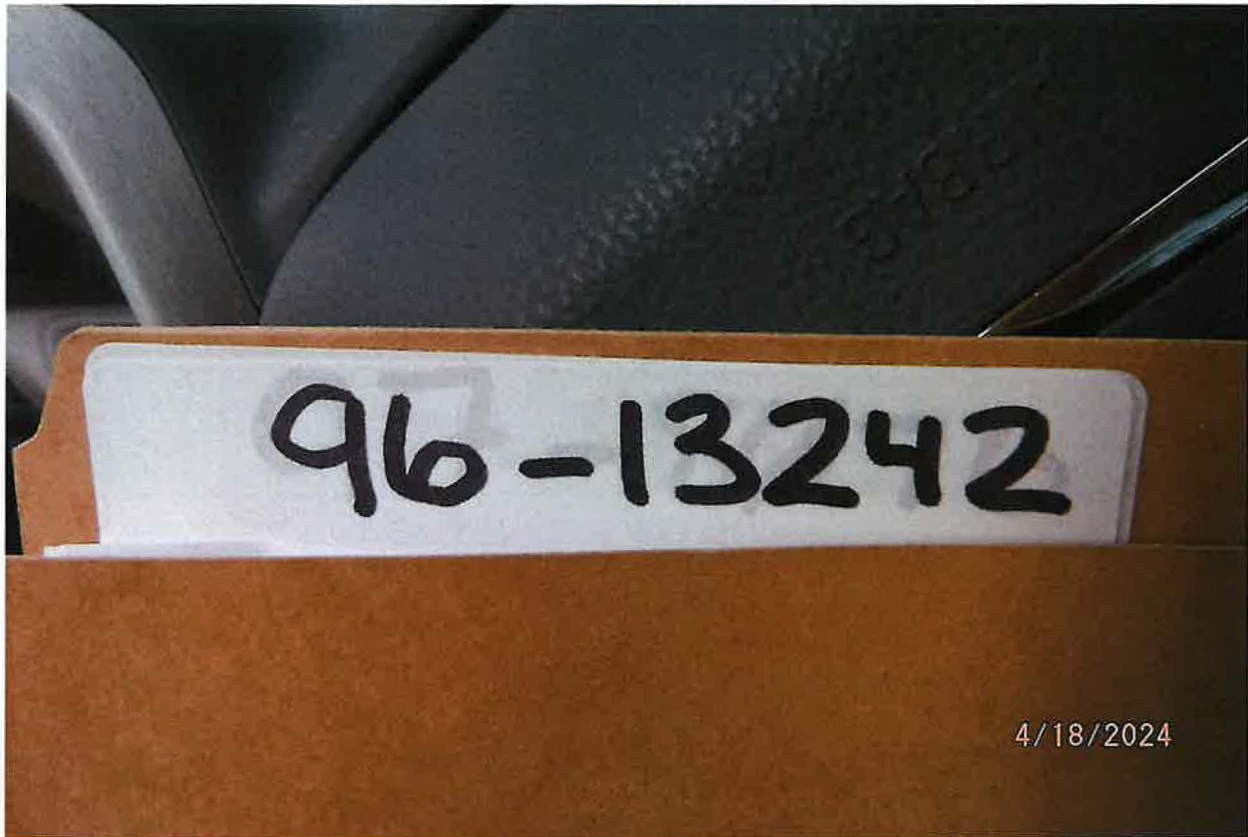
Total Storage Calculations

FILE NUMBER	96-13242
REVIEWER	Luke Bates
DATE	5/15/2024

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	"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)	0.4	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)	3	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)	0.0	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)	3.5	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.



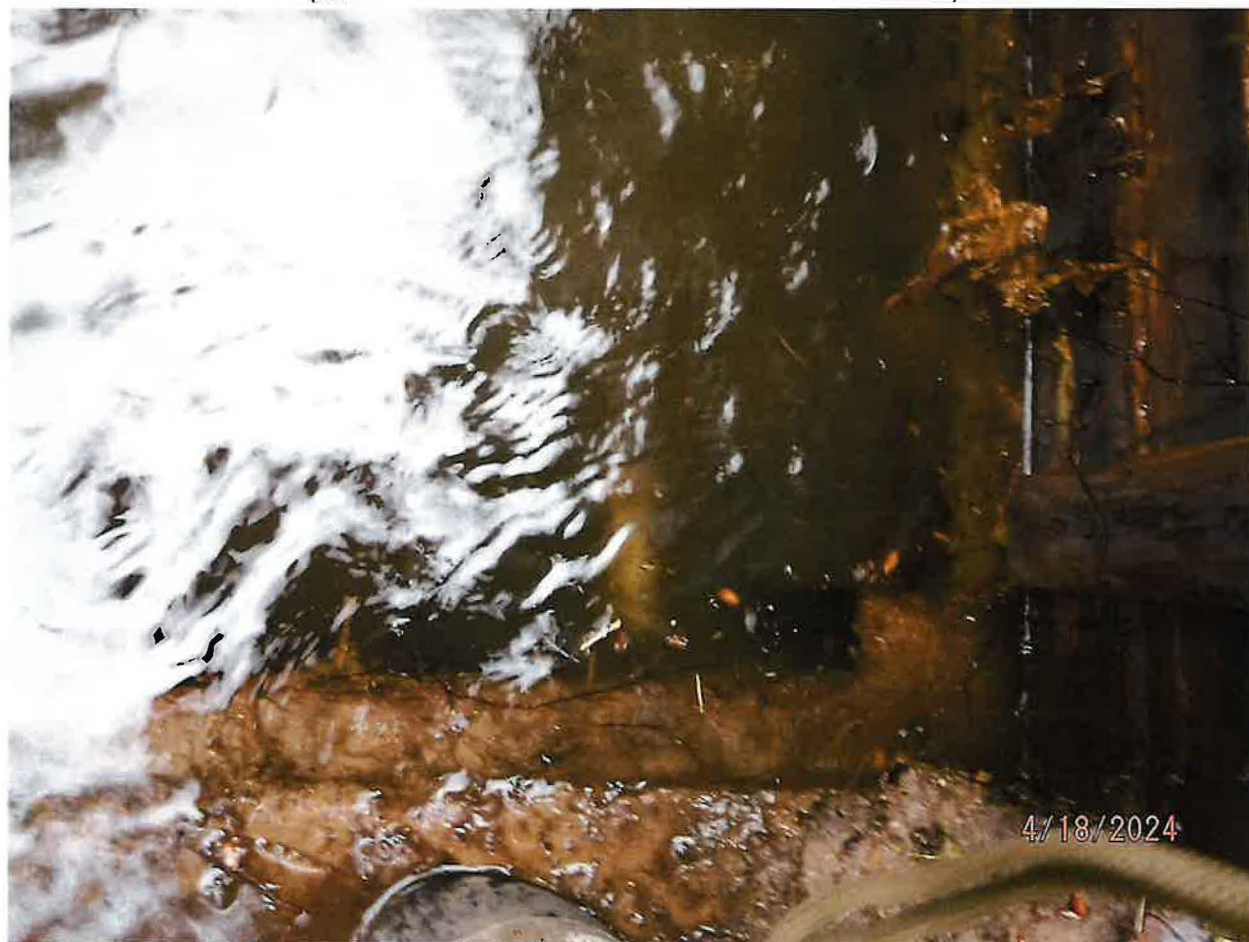
BENEFICIAL USE FIELD EXAM DATE 4/18/2024



POD – UNNAMED STREAM DIVERSION USING SCREENED WOODEN COLLECTION BOX WITH 2" POLY PIPE GRAVITY FLOWING TO STORAGE POND (DIVERSION TO STORAGE BENEFICIAL USE).



LID RAISED ON WOODEN COLLECTION BOX, WHITE POLY PIPE CENTER BOTTOM OF PHOTOGRAPH
(SLIGHTLY WASHED OUT IN IMAGE FROM REFLECTION)





DIVERSION TO STORAGE – BURIED 2-INCH POLY PIPE ROUTED ALONG TRAIL DOWNGRADE TO STORAGE POND



DIVERSION TO STORAGE – PIPELINE IN-FLOWS TO POND WITH FLOAT VALVE ATTACHMENT WHICH CLOSSES WHEN POND REACH FULL POOL LEVELS.



IRRIGATION STORAGE & FIRE PROTECTION STORAGE POU – LINED POND IN HEAVILY TREE CANOPY
LOCATION ON PROPERTY





IRRIGATION FROM STORAGE 2-INCH POLY PIPE TO PUMP STATION



FROM STORAGE PIPELINE



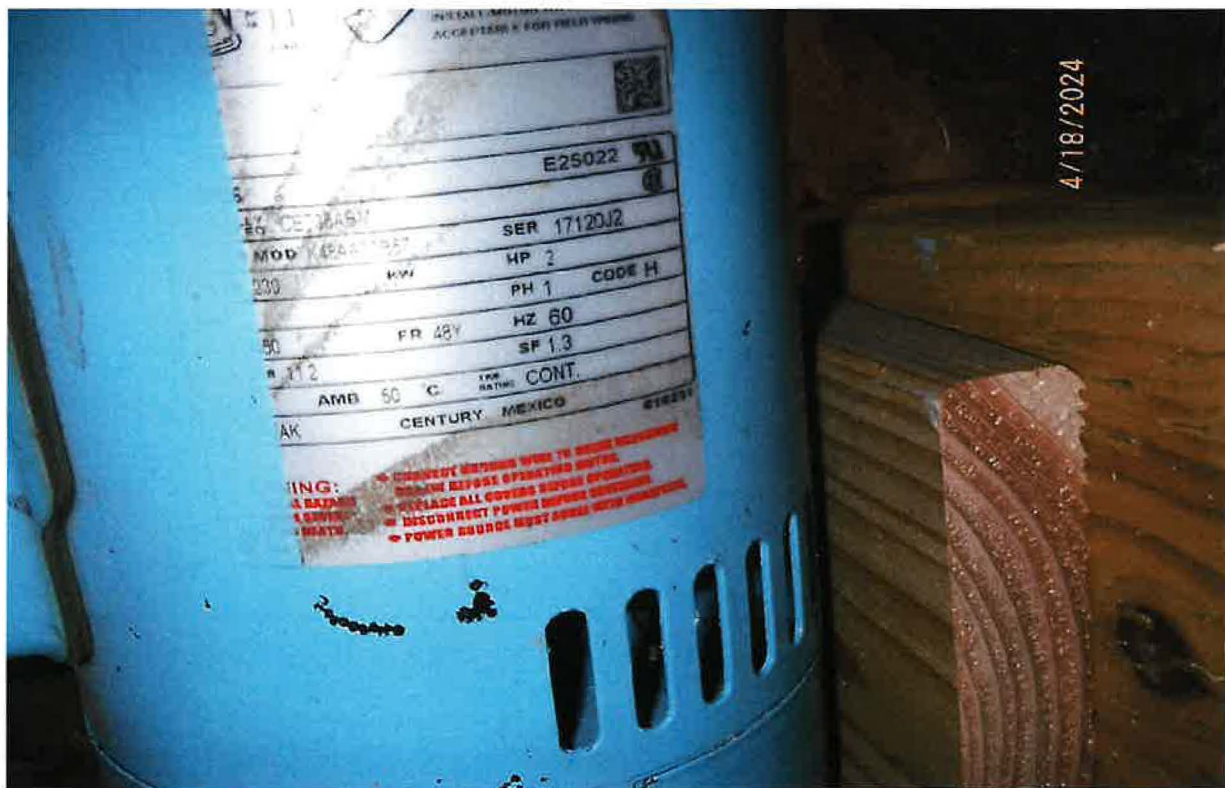
SMALL PUMP STATION WITH WET WELL INSTALLED, FILLED FROM POND PRIOR TO TRANSFER PUMP
DISTRIBUTING TO MULTIPLE FROST-FREE HYDRANTS AND IRRIGATION FROM STORAGE BY ZONE
PRESSURIZED WATERING



WET WELL IN PUMP STATION WITH PRESSURE TANK USED FOR DISTRIBUTION TO IRRIGATION SYSTEM



DIVERTING WORKS



2 HP TRANSER PUMP USED FOR IRRIGATION FROM STORAGE PURPOSES



IRRIGATION FROM STORAGE – LITTLE GIANT NON-SUBMERSIBLE PUMP



IRRIGATION FROM STORAGE – MUTIPLE FOST FREE HYDRANTS USED BY HOSE AND SPRINKLERS TO WATER TREES AND GARDEN AREA



IRRIGATION FROM STORAGE – SPRINKLER RISER ON GARDEN POST USED TO WATER TREE PLOT





IRRIGATION FROM STORAGE – FENCED LAWN AND GARDEN CO-LOCATED WITH RESIDENCE





EXAMPLE – PRESSURIZED SPRINKLER ZONES SERVED BY IRRIGATION FROM STORAGE SYSTEM



IRRIGATION RISER – USED TO WATER HILL SLOPE



EXAMPLE FROST FREE HYDRANT CONNECTED TO IRRIGATION FROM STORAGE SYSTEM



IRRIGATION FROM STORAGE POU – DRIVEWAY & ROAD FRONTAGE PRESSURIZED SPRINKLER ZONE WATERING



PRESSURIZED SPRINKLER – HUNTER MODEL (CENTER OF FRAME)





IRRIGATION FROM STORAGE – RISER PIPE WITH HUNTER 360 DEGREE PRESSURIZED SPRINKLER HEAD

