

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 95-17313
Exam Date: 07/07/2022

1. Current Owner:
NORTH HAYDEN STORAGE LLC 52424 N OLD HWY 95 RATHDRUM ID 83858
2. Accompanied by: Michelle Thibert
Phone No: 208-518-8845
Address: Same as above
Relationship to permit Holder: Permit holder's representative.

3. **SOURCE:**
GROUND WATER

Method of Determination: ArcMap and DRG.

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 SYSTEM

1. **LOCATION OF POINT(S) OF DIVERSION:**
GROUND WATER NE¼ NE¼, Sec. 24, Twp 52N, Rge 04W, B.M. KOOTENAI County

Method of Determination: GPS. POD located at -116°46.1837, 47°50.7190; well D-TAG D0076078.

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	
52N	04W	24	0.1																0.1

Total Acres: 0.1

PLACE OF USE: COMMERCIAL, DOMESTIC, FIRE PROTECTION STORAGE, & FIRE PROTECTION 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	
52N	04W	24	X																

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
D0076078	Franklin	5	VFD pump motor	Franklin	2 inch galvanized pipe

D. FLOW MEASUREMENTS

1.

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

2. Measurements: Unable to perform flow measurements due to inadequate pipe requirements. A theoretical pump equation was used to determine pump capacity of the 5 hp Franklin well pump/motor, which derived the flow rate of 44.9 gpm or 0.10 cfs based on department rounding standards.

E. FLOW CALCULATIONS X Additional Computation Sheets Attached

Measured Method: Theoretic pump equation estimates flow as follows:

- D0076078 – 5 hp pump at 225 ft with 55 PSI operating pressure equals 44.9 gpm or **0.10 cfs** considering department rounding standards.

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation:

$$V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 0.1 \text{ ac} \times 3.0 \text{ afa} = 0.3 \text{ af}$$

$$V_{DR} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.01 \text{ cfs} \times 246 \times 1.9835 = 4.9$$

$$V = \text{Smaller of } V_{IR} \text{ and } V_{DR} = \mathbf{0.3 \text{ af}}$$

2. Volume Calculations for Other Uses:

- Domestic annual volume = in-office (full time caretaker) domestic use = **0.6 af**.
- Commercial annual volume = No volume designated on the face of the license; a text condition was added during licensing review that limits commercial water use to 2,500 gallons per day.
- Fire protection storage/from storage annual volume = see attached pond analysis worksheet. Values for capacity and evaporation have automatically rounded up to the specified values of 0.2 af & 0.1 af respectively, but accurate data evaluated pond capacity at 0.15 af and evaporation loss at 0.05 af for a sum of **0.2 af** annually.

G. NARRATIVE/REMARKS/COMMENTS

The field exam performed on 7/7/2022 with the applicant's representative, Michelle Thibert – Manager (on-site residence), showed a groundwater well being used for domestic, irrigation, commercial, fire protection storage & fire protection from storage uses. At the POD, GW well D0076078 routes a buried main service line to the opposite end of the storage unit facility (facility) to a pump station before distribution to water uses. The well head resides inside a single manhole ring with metal cover, which was developed post well construction by the property owners as they built up the western edge of the facility.

I was unable to perform flow measurements due to inadequate pipe requirements and a theoretic pump equation was used to derive the diversion rate of **0.10 cfs** which is recommended as the maximum diversion rate for licensing purposes. Consistent with the approved permit, the Diversion to Storage diversion rate of **0.10 cfs** is being carried forward to licensing. The pump station houses both the Franklin 5 hp pump/motor relay control panel & a 50 hp U.S. Motors fire pump. Due to

the commercial beneficial use (BU) not receiving an annual volume, as detailed later in this report, there is no maximum diversion volume recommended for the face of the license.

Fire protection storage / Fire protection from storage POU: The main well pump is authorized diversion to storage at a rate of 0.10 cfs to fill a small storage pond co-located with the pump station. The pond was constructed with an impermeable liner, has a maximum depth of 10 feet, average depth of 4 feet, pond capacity of 0.15 af (rounded to 0.2 af analysis sheet), evaporative loss rate of 0.05 af (rounded to 0.1 af analysis sheet), and total annual storage volume of 0.2 af (as rounded on the pond analysis worksheet). Based on the permit approved values for two fire protection related BUs, I'm recommending licensing each BU with an annual diversion volume of **0.2 af**. ArcMap aerial imagery was used to assign the fire protection storage POU and fire protection from storage POU during licensing review.

The fire protection from storage system uses a 50 hp U.S. Motors brand vertical shaft centrifugal pump and concrete ringed wet well located within the pump station to pump from the small pond for fire suppression within the POU. Photographs were taken to catalog the fire protection system which routes to three fire hydrants set at intervals in the POU. The main 5 hp well pump serves as a jockey pump maintaining pressure in the system and preventing the fire pump from activating. Once a hydrant is opened and water flow results in the lowering of system pressure to approximately 30 psi the fire pump activates to meet higher flow demands. Based on this premise, the fire hydrants are not used during normal daily operations at the facility.

Domestic POU: the main office structure for the facility has dual purpose, also serving as the primary residence for the manager who lives on site. The pump house located across the entrance from the office houses the pressure tank that regulates water flow to the domestic, commercial, & irrigation uses. The domestic diversion rate of **0.04 cfs** is recommended for licensing based on department standards. The office consists of a daily business room at the main entrance and a full kitchen, bath, laundry, and living quarters for the manager located within the structure. I used ArcMap aerial imagery to assign the domestic POU during licensing review, and I'm recommending **0.6 af** annual volume for in-home (office) use only. The office doesn't provide for public restrooms, rather a porta-john is located within the storage facility for patrons use.

Irrigation POU: from the pump station, dedicated water main lines route directly to the office building & tee off to provide irrigation water along the road frontage of the facility. The applicant uses hose bib(s) from the office to water landscape plants by spray hose and soaker hoses located around the office frontage. Two pressurized sprinkler zone control boxes are located on each side of the entryway from the main road to irrigate small lawn/tree space between the facility and road. I used field maps to sketch the irrigation POU during the exam & ArcMap aerial imagery to accurately trace out the irrigation POU during licensing review. The permit approved 0.01 cfs and 0.1 acres irrigation; licensing review identified acreage that rounds down to 0.1 acres. If the applicant expands irrigation beyond the current layout a new water right shall be required to add additional acreage. The annual volume for 0.1 acres irrigation equals **0.3 af** as recommended for licensing. I'm only able to recommend **0.01 cfs** for licensing based on permit approved values despite the department standard rate for small acreage irrigation equaling 0.03 cfs per acre.

Commercial POU: the applicant applied for a diversion rate of 0.10 cfs for commercial use related to RV and boat rinsing associated with the facility. During the exam I noted a single hose bib coming from the back of the office building with hose reel and spray attachment. Based on the hose bib being served by the same infrastructure as domestic use for the office building, which is authorized 0.04 cfs, I'm recommending the commercial B.U. diversion rate be reduced to **0.04 cfs** based on common water system infrastructure between the two BU components.

During the exam Michelle Thibert asserted commercial water use was for washing off RVs, boats, and equipment. Michelle asserted the use was "occasional" indicating it is in-frequent. I was unable to pin an annual volume to commercial use based on this information and due to multiple BUs using the same water system I'm unable to extrapolate volume linked specifically to the commercial use from annual volume records. I'm recommending credit for commercial use, as the wash water is used in relation to a business operation during the development period of the permit. I have recommended licensing with the addition of a text condition similar to X03, which describes that "the daily diversion volume for the commercial use authorized under this right shall not exceed 2,500 gallons per day". Based on the 0.04 cfs diversion rate, this results in approximately 2.5 hours of wash related activities allowed daily which is reasonable for a use that is characterized as "occasional".

I removed conditions 26A, 046, & 220 from the permit during licensing review. 220 was removed based on licensing guidance from Shelley Keen – IDWR Deputy Director. The following conditions have been revised or added during licensing review:

- 219 was revised to reflect accurate pond volume data derived during licensing review.
- R66 was replaced with X31 to accurately describe small acreage irrigation of less than 1 acre.
- X01 was replaced with 132 to describe domestic use with irrigation falling under a separate B.U. component.
- Revised a text condition describing commercial water use.
- Added X59 & X60 describing the POD & POU are located in a named subdivision.
- Added a text condition describing commercial water use daily volume limits set at 2,500 gpd.

All other conditions on the permit shall be carried forward to licensing. There are no overlapping water right concerns toward licensing this water right.

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	03/15 to 11/15	0.01 CFS	0.3 AF
COMMERCIAL	01/01 to 12/31	0.04 CFS	
DOMESTIC	01/01 to 12/31	0.04 CFS	0.6 AF
FIRE PROTECTION STORAGE	01/01 to 12/31		0.2 AF
FIRE PROTECTION FROM STORAGE	01/01 to 12/31		0.2 AF
DIVERSION TO STORAGE	01/01 to 12/31	0.10 CFS	

Totals: 0.10 CFS

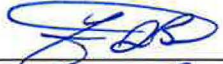
2. Recommended Amendments

☐ 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

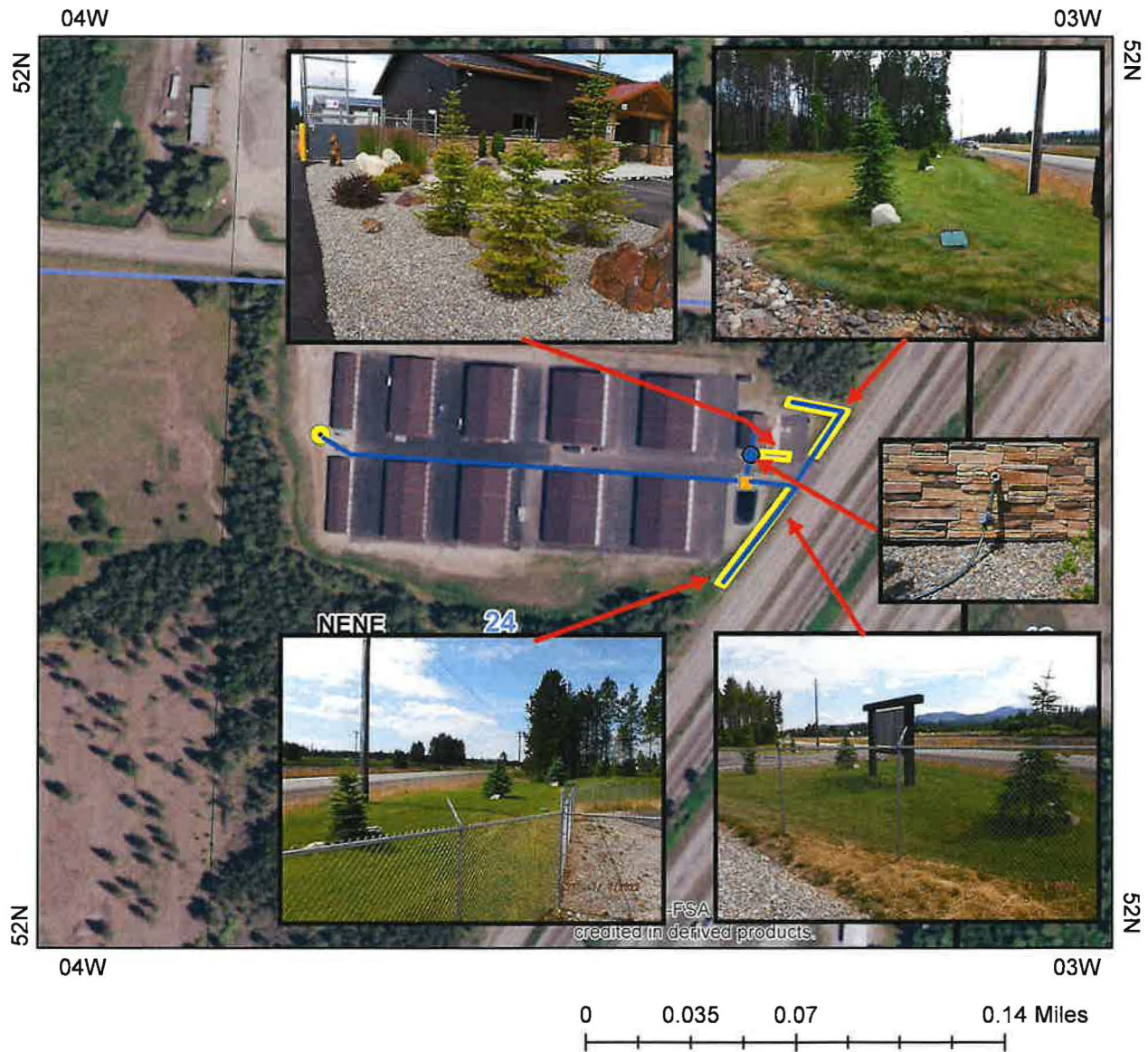
Luke Bates -

Field Examiner's Name  Date 12/13/2023

Reviewer  Date 5/28/24

State of Idaho
Department of Water Resources
Attachment to Field Exam
95-17313

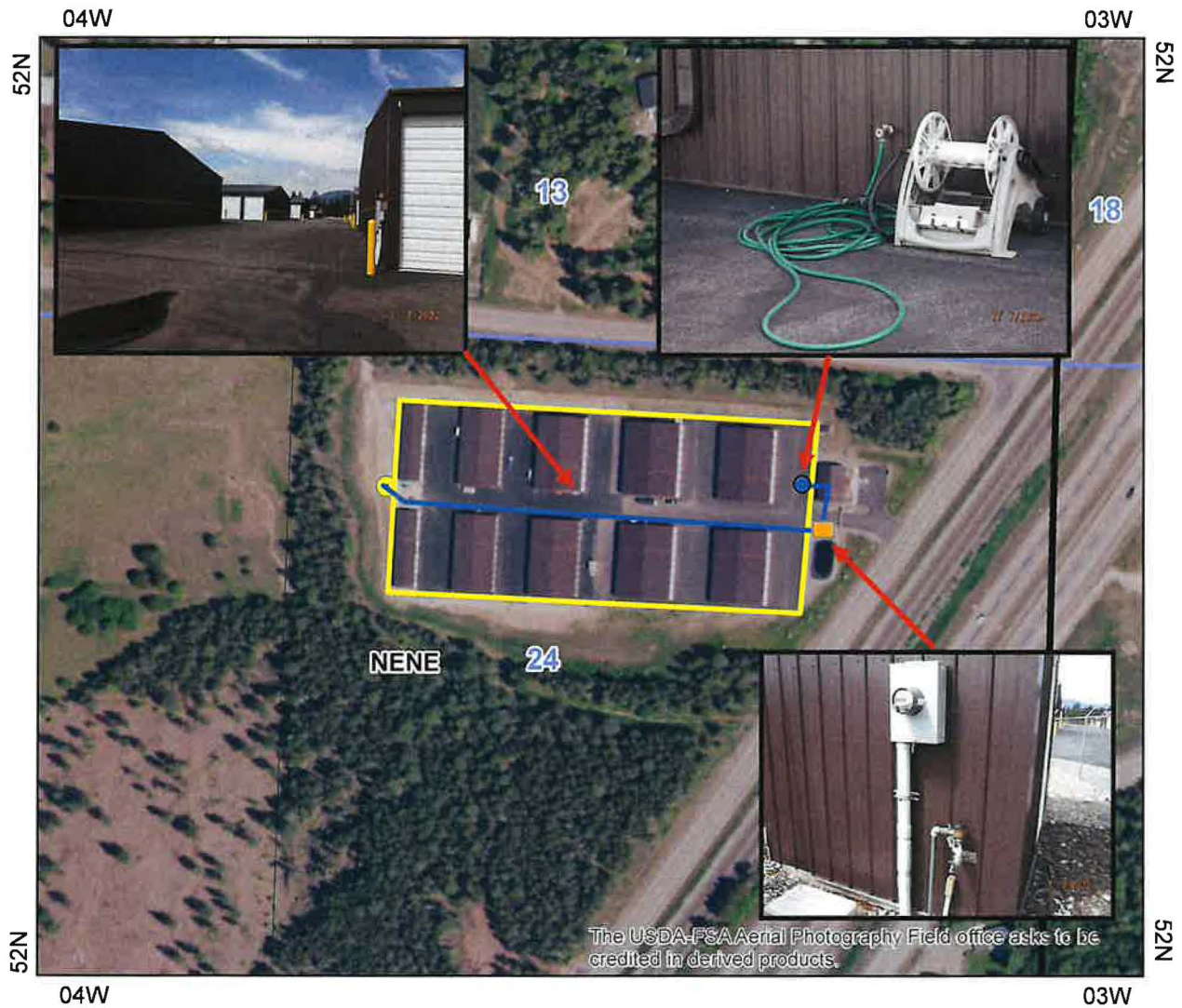
This map depicts the IRRIGATION system diagram.



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

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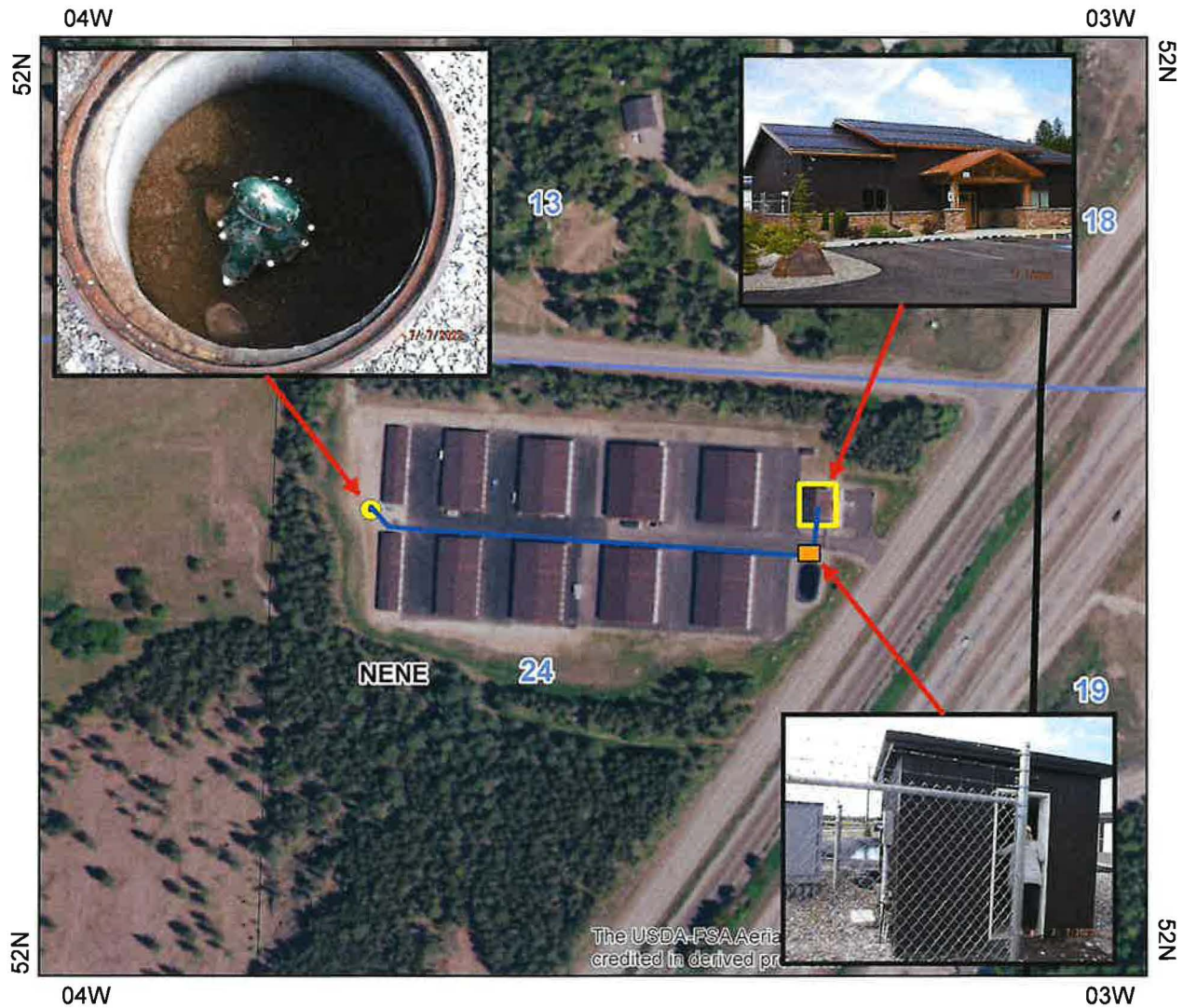
This map depicts the COMMERCIAL system diagram.



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

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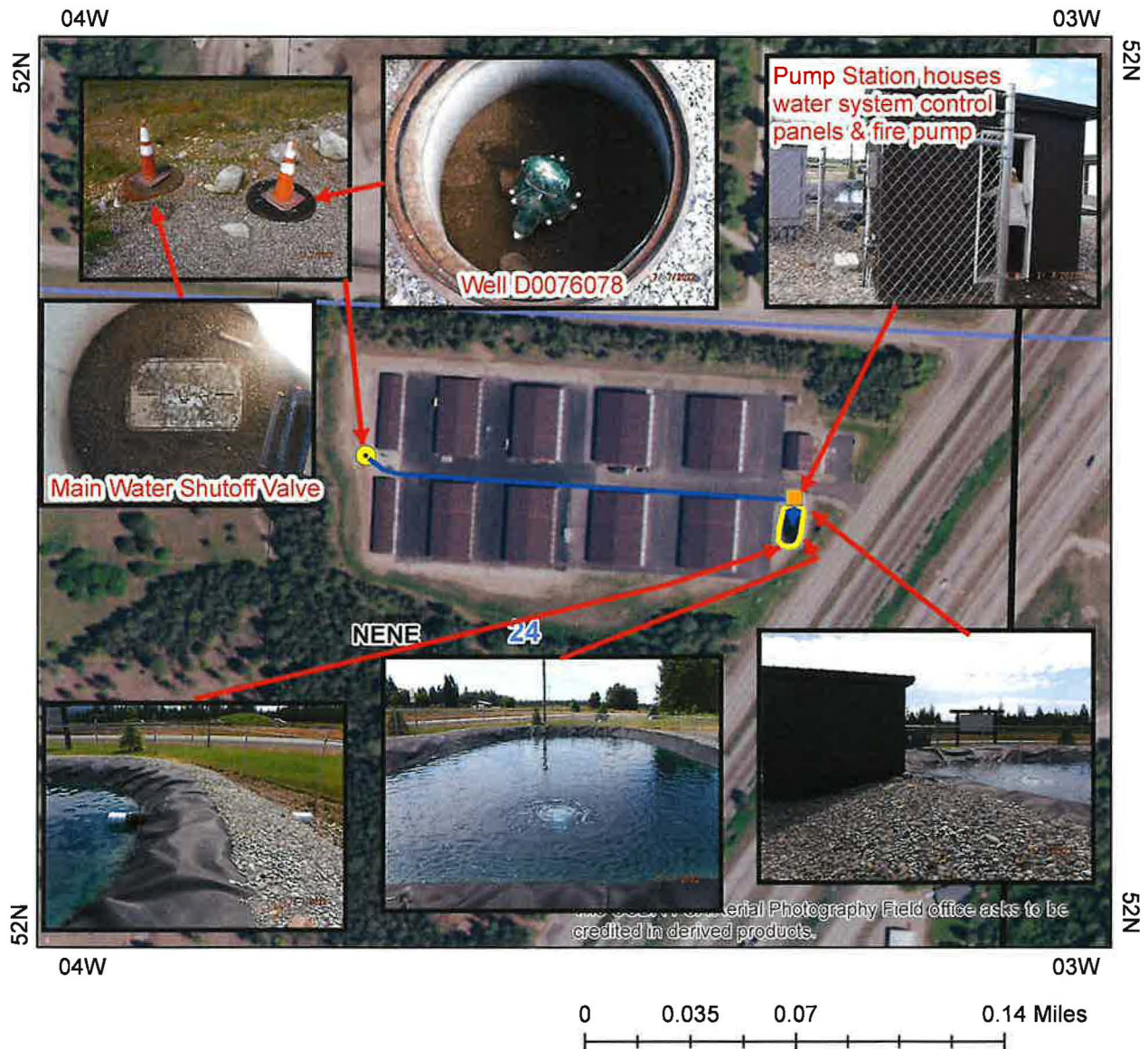
This map depicts the DOMESTIC system diagram.



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

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This map depicts the FIRE PROTECTION STORAGE system diagram.

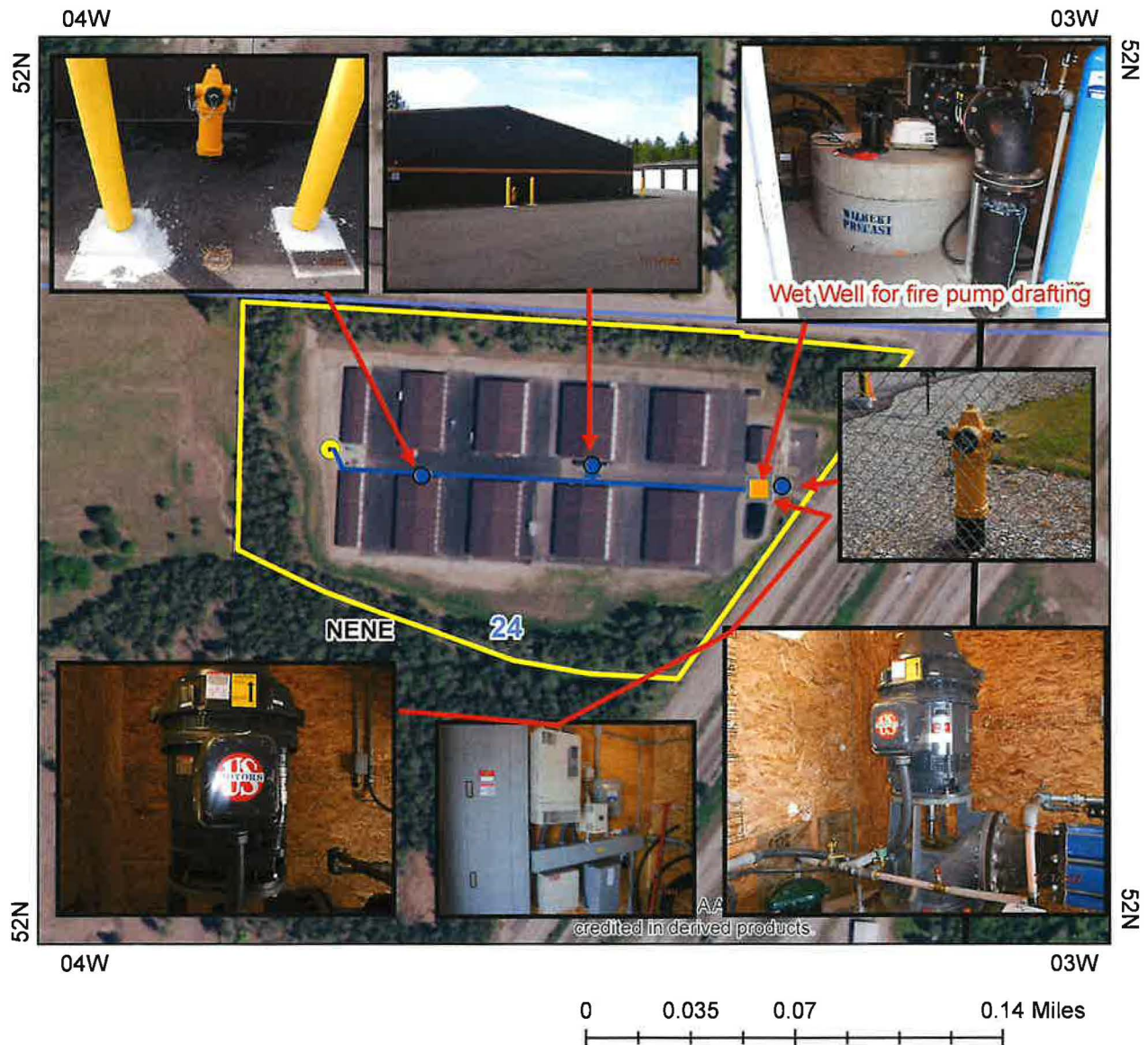


- Place Of Use Boundary
- Townships
- PLS Sections
- Quarter Quarters
- Point of Diversion



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This map depicts the FIRE PROTECTION FROM STORAGE system diagram.



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

THEORETICAL PUMPING EQUATION(S) FOR WR# 95-17313

Theoretical Pumping Equation is required because system did not allow for a proper measurement. Pump is estimated to lift 225 ft, and running at 55 psi.

PUMP EQUATION

WATER RIGHT No. 95-17313

D0076078	HP	H in feet	Efficiency as a decimal	Pumping lift in feet	System pressure in PSI
Q = $HP * 8.8 * Eff / H$	5	352.2109	0.8	225	55
Q = 0.100 cfs 44.9 gpm					

95-17313 – LICENSING REVIEW

FIRE PROTECTION FROM STORAGE – FIRE PUMP



US MOTORS, 50 HP vertical shaft fire pump, Model No. DT94



Roll over image to zoom in

Description

- Vertical Motors
- Three Phase Weather Protected Type I (WPI)
- HOLLOSHAFT® High Thrust
- Inverter Duty
- BALLOMATIC®

Specifications

Model_Number	DT94
PRODUCT NAME	MODEL NUMBER
PHASETYPE	3

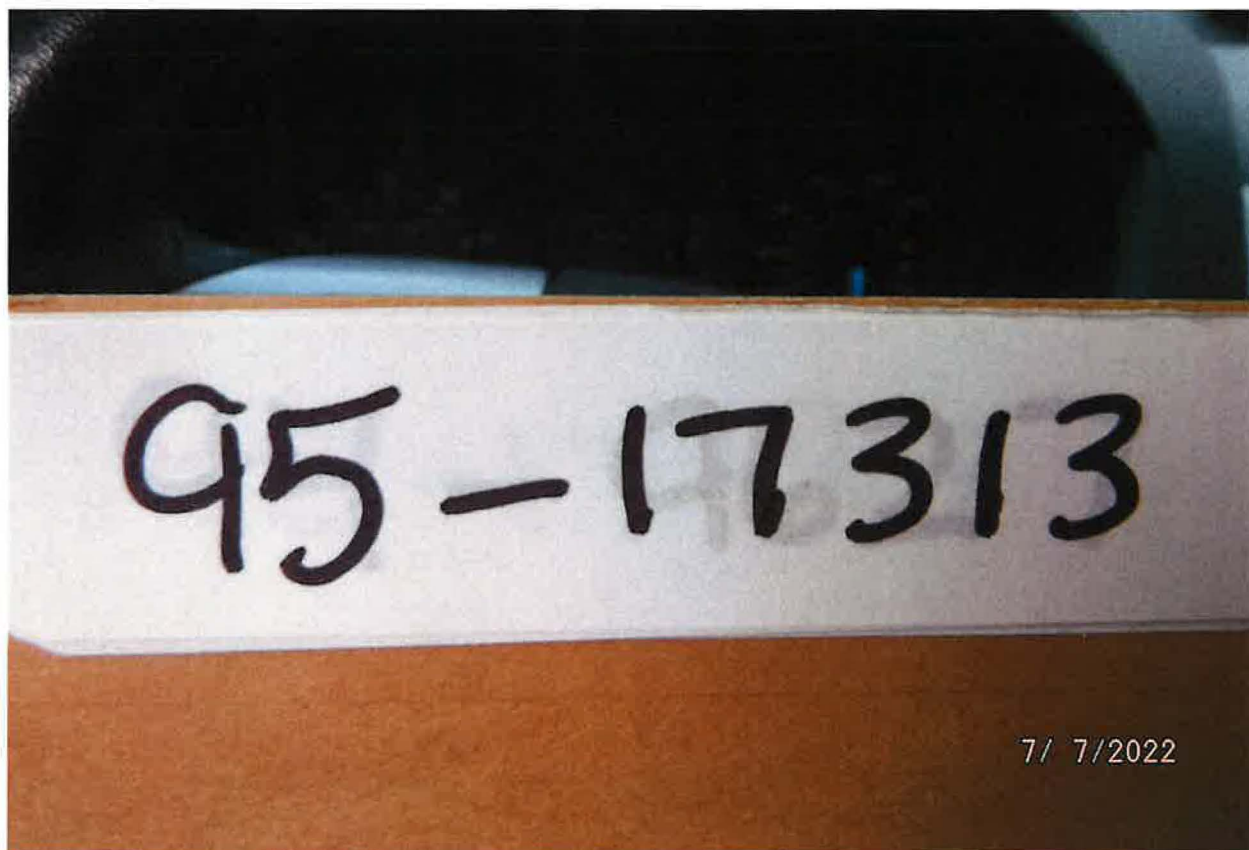
Total Storage Calculations

FILE NUMBER	95-17313
REVIEWER	Luke Bates
DATE	12/12/2023

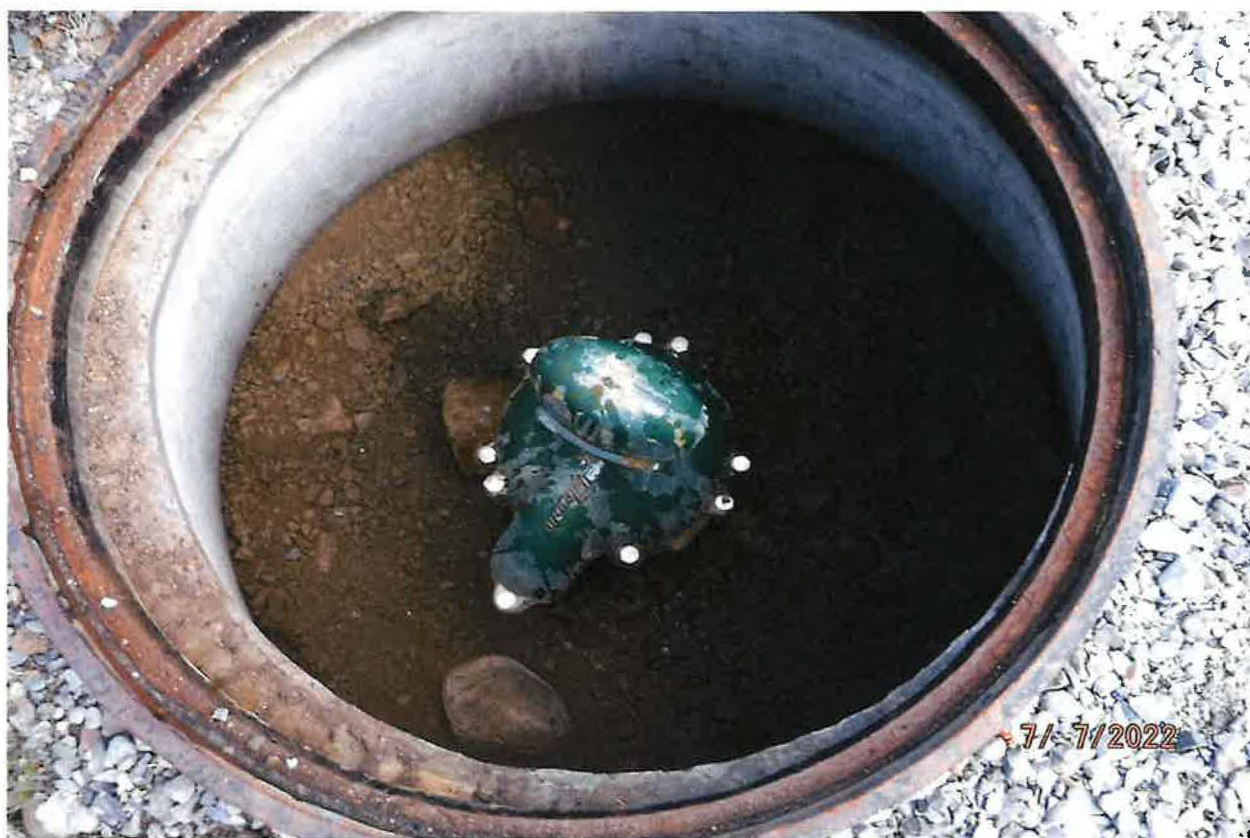
This spreadsheet has been designed by Idaho Department of Water Resources to estimate the total seepage, evaporation and fill capacity required for a pond.

User Input
Calculated value
Formula Explanations

Surface Area (AC.)	0.04	"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)	0.2	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)	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)	0.2	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 EXAMINATION DATE 7/7/2022



POD – GROUNDWATER WELL D0076078



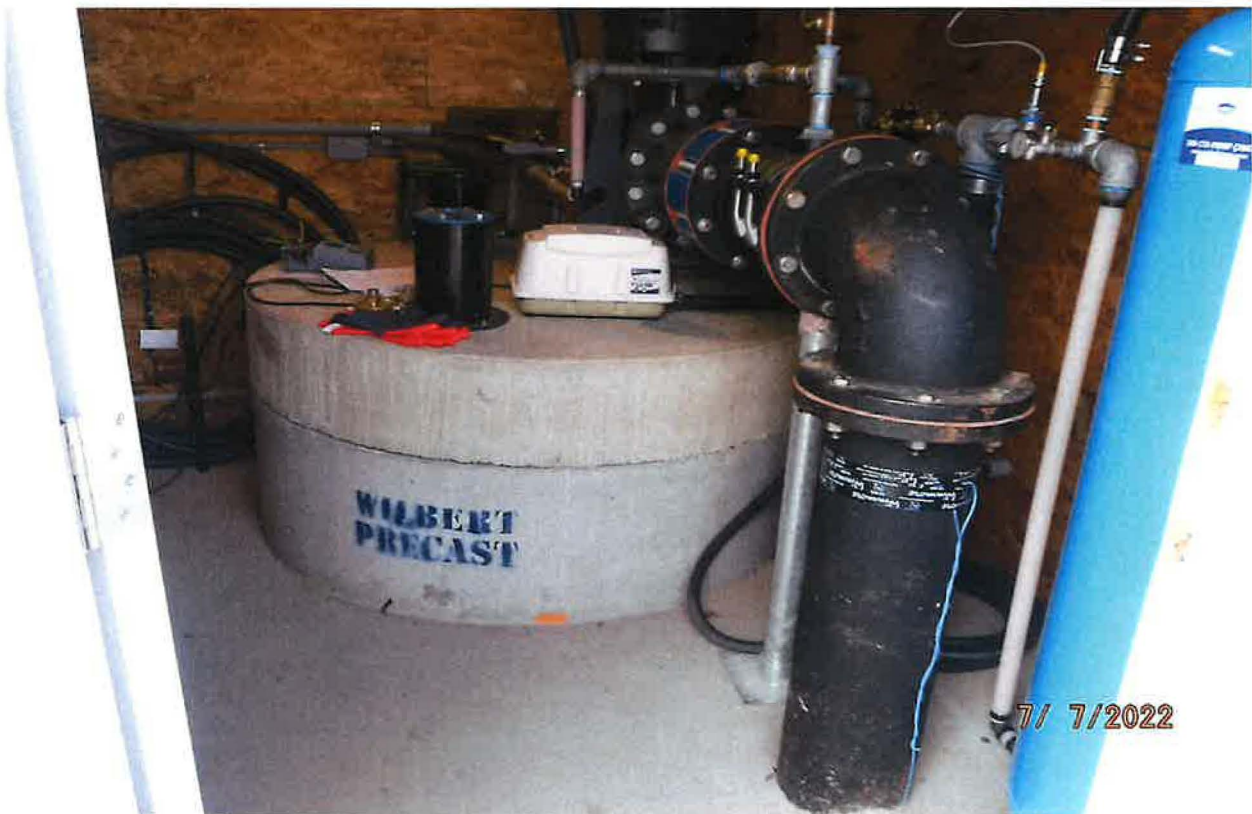
PUMP CONTROL STATION



5 HP VARIABLE FREQUENCY DRIVE PUMP MOTOR INSTALLED IN WELL



55 PSI OPERATING PRESSURE



DIVERSION WORKS – INCLUDES OVERSIZED PUMP FROM STORAGE FOR FIRE PROTECTION USE



FIRE PROTECTION FROM STORAGE PUMP





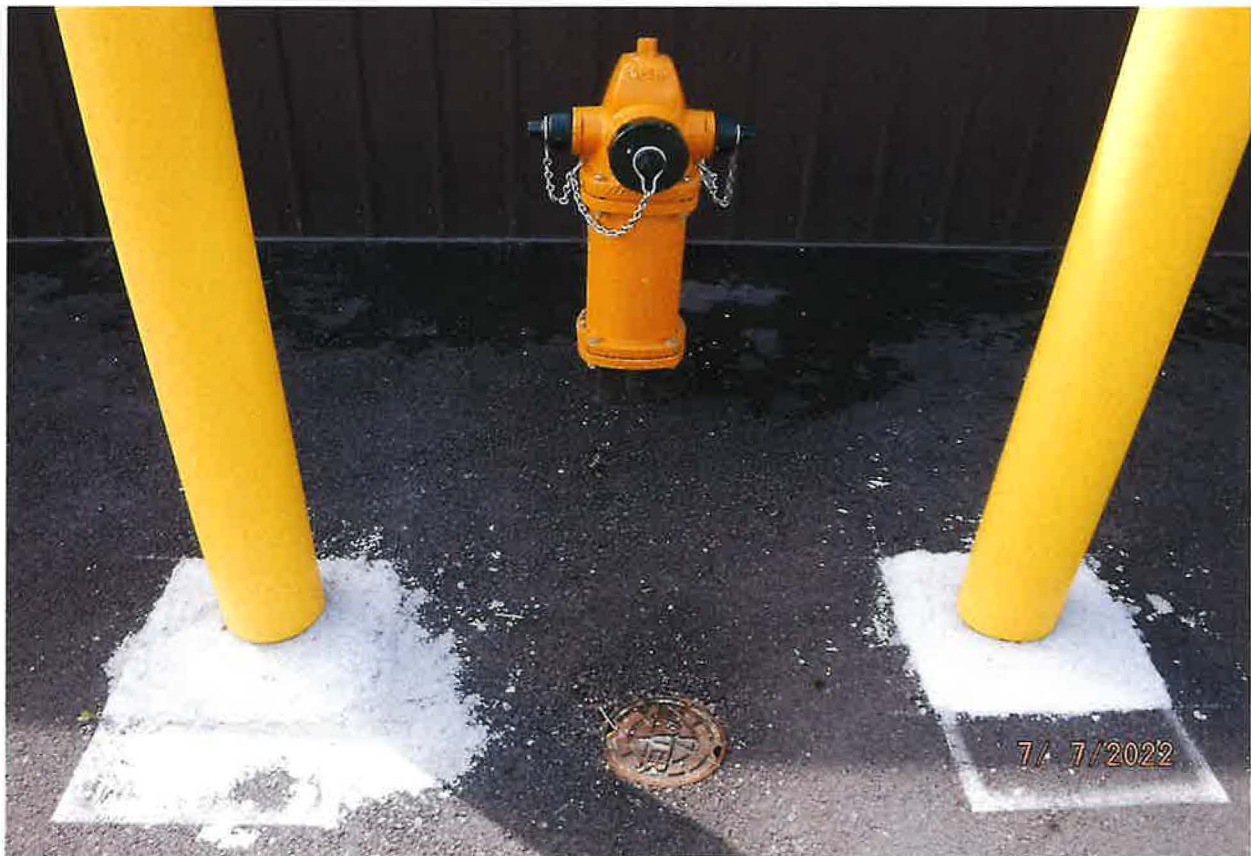
FIRE PROTECTION STORAGE POU – LINED POND



OVERFLOW DEVICE FOR STORAGE POND



FIRE PROTECTION FROM STORAGE POU – 3EA HYDRANTS INSTALLED IN SYSTEM



1 OF 2 HYDRANTS LOCATED BETWEEN STORAGE UNITS



DOMESTIC POU – MAIN OFFICE/RESIDENCE LOCATED ON PROPERTY



COMMERCIAL POU – STORAGE UNIT FACILITY; WATER USED FOR CLEANING OF UNITS & EQUIPMENT



COMMERCIAL POU – HOSE BIB CONNECTIONS



IRRIGATION POU – PRESSURIZED SPRINKLER SYSTEM FOR LAWN SPACE AND LANDSCAPING



IRRIGATION POU – LAWN SPACE WITH ZONE CONTROL BOX



IRRIGATION POU – LANDSCAPING AROUND MAIN RESIDENCE/OFFICE



MICRO EMITTERS USED FOR LANSCAPING PLANTS





WELL HEAD VAULTED UNDER MANHOLE COVER ON R/H SIDE OF PHOTO



ONLY RESTROOM FOR PAYING CUSTOMERS ON PREMISE