STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 95-14515
Exam Date: 04/30/2024

1. Current Owner:
RIVERBEND PROPERTY MANAGEMENT LLC 17406 W LAURA LN POST FALLS ID 83854-6768

2. Accompanied by: Ryan Giarusso
Phone No: 208-818-8459
Address: Same as above
Relationship to permit Holder: Permit Holder's representative

3. **SOURCE:** SPOKANE RIVER

Tributary COLUMBIA RIVER

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
95-15391	SPOKANE RIVER	IRRIGATION	DECREED

Comments: Decreed Right 95-15391 authorizes diversion from the same source as this Permit for direct flow irrigation which directly overlaps most of the acreage and implements the same diverting works and system infrastructure as this Permit uses for Diversion to Storage water use to fill an irrigation storage pond. I've recommended licensing Permit 95-14515 with condition X35 which designates that when combined the two Rights shall not exceed a total diversion rate of 0.51 cfs and the irrigation of 36.1 acres. X35 mitigates overlap concerns for stacking water rights based on direct flow irrigation & irrigation from storage use between the two Rights.

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

Water Right No.	Source	Purpose of Use	Basis
95-13097	SPOKANE RIVER	IRRIGATION	DECREED
95-15391	SPOKANE RIVER	IRRIGATION	DECREED

Comments: Licensed Right 95-2092 was superseded by Decree in the Coeur D'Alene Spokane River Basin Adjudication (CSRBA) process being split into the two Rights listed above: 95-13097 & 95-15391. Historically, both Decreed Rights incorporate the same diverting works as this Permit's pumping infrastructure. I've recommended adding condition F06 to describe the shared POD between the three Rights. I've recommended adding condition X35 as described above to mitigate any enlargement by diversion rate between 95-15391 and this Permit 95-14515.

C. DIVERSION AND DELIVERY SYSTEM

1. **LOCATION OF POINT(S) OF DIVERSION:**
SPOKANE RIVER L8 (SW¼ NW¼), Sec. 7, Twp 50N, Rge 05W, B.M. KOOTENAI County

Method of Determination: GPS; POD is located at -117°1.1904, 47°41.8288.

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	
50N	05W	7									1.7	0.2 L9							1.9

Total Acres: 1.9

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	
50N	05W	7							11.0 L8	4.7 L7	3.2	14.0 L9							32.9

Total Acres: 32.9

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	
50N	05W	7									X								

PLACE OF USE: 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	
50N	05W	7							X L8	X L7	X	X L9							

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.
X 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
X 1:24,000 or greater.

X Aerial Photo Attached (required for irrigation of 10+ acres).

X 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
River intake w/pump	Baldor	20	M0000405	Berkeley	S/N: M8108 1.5" Discharge

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
Flowmeter	Transit Time	GE Panametric	PT900	M06210037	Clamp-on	4/2/2024

2. Measurements: I used a PT900 Panametric clamp-on style flowmeter which calculates transit time to obtain a flow rate. The mount fixture was attached to the 3-inch PVC main irrigation trunk about 10 feet from the diverting pump and resulting 10-minute flow measurement derived a diversion rate of 115.758 gpm or 0.26 cfs considering Department rounding standards.

E. FLOW CALCULATIONS

X Additional Computation Sheets Attached

Measured Method: PT-900 Panametric flowmeter derived the average flow rate of 115.8 gpm or 0.26 cfs considering Department rounding standards.

- Prior Decreed Right 95-15391 authorizes a diversion rate of 0.51 cfs.
- This Permit authorized development of water uses up to 0.69 cfs.
- The diverting works observed during the beneficial use field exam limit the Permit Holder and I'm only capable of recommending 0.26 cfs; a larger 25 HP diverting pump was historically used but has been replaced with a smaller 20 HP pump. I'm authorized to recommend 0.26 maximum diversion volume based on flow measurements but condition X35 designates combined use limits of 0.51 cfs between 95-15391 and 95-14515.

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation:

$V_{I.R}$ = (Acres Irrigated) x (Irrigation Requirement) = 32.9 ac x 3.0 afa = 98.7 af (in part, direct flow irrigation of 1.9 acres is included in the sum total of 32.9 acres).

$V_{D.R}$ = [Diversion Rate (cfs)] x (Days in Irrigation season) x 1.9835 = 0.26 cfs x 246-day x 1.9835 = 127 af

V = Smaller of $V_{I.R}$ and $V_{D.R}$ = **98.7 af associated with irrigation storage & irrigation from storage BU(s).**

2. Volume Calculations for Other Uses: the irrigation direct flow Beneficial Use (BU) from the Spokane River source is exempt from the volume reporting requirements in accordance with IDAPA 37.03.02, Section 035.

- See attached pond analysis worksheet for irrigation storage & irrigation from storage annual volume values.
- Fire Protection Storage annual volume = pond capacity + evaporative loss rate = **3.3 af**.

G. NARRATIVE/REMARKS/COMMENTS

I performed a beneficial use field exam on 4/30/2024 accompanied by Tammy Allemen – Water Resource Agent and the current Permit Holder, Mr. Ryan Giarusso, which showed water being diverted from the Spokane River for multiple beneficial uses (BUs). At the POD, the diverting works incorporates a ¼-inch Sure-Flo SPVC4 screen and flexible intake hose to a 20 HP Berkeley pump/Baldor motor centrifugal pump. The flexible intake couples to a short run of 3-inch PVC which further reduces to a 2-inch suction & 1.5-inch discharge single stage pump model B1-1/2ZPH, which couples at the discharge to a 3-inch PVC section of pipe. I conducted flow measurements using a PT900 panametric flowmeter, which captured a 116 gpm or 0.26 cfs diversion rate with one irrigation big gun in operation and additional diversion to storage water flowing into the storage pond.

The diverting pump conveys water south along a dirt drive transitioning from 3-inch PVC to 4-inch aluminum hand line with irrigation risers at interval, coupled back to 3-inch PVC which reduces to 2-inch PVC that serves Diversion to Storage and direct flow Irrigation & Fire Protection BUs. I've recommended **0.26 cfs** as the maximum diversion rate & as the diversion rate for both irrigation and fire protection BU uses. The irrigation direct flow BU diversion rate is limited by total acres assigned = 1.9 ac x 0.02 cfs per acre = **0.04 cfs** for licensing purposes. I used ArcMap aerial imagery and GPS to locate and designate the POD for licensing purposes. The Permit Holders current pump configuration is capable of meeting the total irrigation & storage pond BU requirements for both 95-15391 & 95-14515.

During the exam IDWR staff walked the property with Mr. Giarusso sketching the water system on field maps & cataloging irrigation/irrigation from storage water uses while taking photographs. Mr. Giarusso asserts that some time in the past the historically installed pump became inoperable, and it was decided to replace it with a new pump versus repairing the old pump. Manual shutoff valves enable the water system to operate under direct flow from the river for both filing the storage pond and for irrigation; valving can be directed to enable irrigation from storage all the way back to the diverting pump for periods when pumping from the source in the event source water from the river is not available for pumping.

The Fire Protection (FP) POU consists of the entirety of two parcels owned by the Permit Holder. I used ArcMap to designate the POU during licensing review. In the event of an active fire, water may be drafted from the river or as a 24-hr impoundment from the storage pond as it is replenished while suppressing the fire. Toward that end, there is a FP Storage BU component but not a FP from Storage BU component associated with the Permit. I don't find it necessary to require the from storage component to license this Permit based on exemption status outlined in Idaho Statute to suppress an active fire. A fire tender fill port is co-located with the transfer pump drafting from the storage pond and individual irrigation riser to flexible fire hoses allows sufficient length to reach the entirety of the two parcels consisting of the POU.

The Fire Protection Storage POU is an excavated pond with earthen dam, which was developed in the early 2000s (based on historic aerial imagery). The pond was constructed with an impermeable barrier, has a corrugated storm drainpipe overflow device installed in the dam on the NE segment of the pond's dam and is filled from the Western edge of the pond via a 2-inch PVC diversion to storage pipe. I collected photographs of the pond during the exam and used ArcMap aerial imagery during licensing review to accurately trace the surface area of the pond using 2023-year imagery. The Permit authorized 8.3 af for development of FP Storage use, but a current pond analysis worksheet establishes **3.3 af** recommended for licensing purposes based on pond capacity and evaporative rate loss, with the pond factors detailed below:

- The pond is 0.6 ac is surface area, has a maximum depth of 11 ft, an average depth of 4.4 ft, is lined negating seepage loss, loses 0.7 af annually to evaporative processes, and has a total volume requirement of 3.3 af once 98.7 af associated with irrigation multiple fill use is subtracted.

The pond is aerated and incorporates a small waterfall along the Southern edge to recirculate water. The waterfall is a minor feature set right on the edge of the bank, and I'm not recommending any additional seepage or evaporate volume loss due to the additional feature, as water flows directly back into the pond from the spillway.

The primary function of the storage pond is to enable Irrigation Storage and Irrigation from Storage beneficial water usage. In the following discussion each use's volume is synonymous with the other and not additive toward a total annual volume. During the exam I observed a Berkeley model B5WPS flanged pump with 5-inch discharge size in use for irrigation from storage drafting from the pond. An 8-inch intake pipeline from the pond to the pump is reduced at the pump, and after discharge routes to a 6-inch PVC pipeline that later reduces to 2-inch PVC piping where it joins the main water conveyance pipeline from the river forming a semi-looped water system adding the storage pond as a link in the loop. Flow measurements aren't required for irrigation from storage use, which also functions as a fire protection system in stand-by ready to fight an active fire.

The irrigation from storage pumping is achieved through the use of manual tee valves that allow directional control to either irrigate with direct flow from the Spokane River or transitioned to irrigate entirely from the storage pond. Based on development, irrigation acreage covered under prior WR 95-15391 is able to be irrigated from storage under this Right. During licensing review, I used ArcMap aerial imagery and field exam sketched maps to accurately designate the Irrigation from Storage POU, which equals 32.9 acres. This acreage amount is less than the Permit Holder's prior WR (34.2 ac), but

I've carved out multiple residence areas, roadways, and the storage pond. The diversion rate authorized for 32.9 acres = 0.02 cfs x 32.9 ac = 0.66 cfs but the applicant is limited by pump performance at the POD. Because this Right contemplates from storage irrigation there is no diversion rate associated with the irrigation from storage BU. I've recommended 32.9 ac x 3.0 afa = **98.7 af** for licensing purposes, which is illustrated on the face of the license as annual volume. I've detailed the irrigation by QQ/Q with shifting of acreage to recommend the 32.9 acres for licensing purposes as shown below:

Water Right	Beneficial Use	SWNW L8 (ac)	SENW L7 (ac)	NESW (ac)	NWSW L9 (ac)	WR Total (ac)
95-14515 **PERMT** Allowance	Irrigation from Storage	13.6	4.2	3	13.7	34.5
95-14515 **LICENSE** recommendation	Irrigation from Storage	11	4.7	3.2	14	32.9
Difference in acreage between Permit & License Recommendation		2.6	-0.5	-0.2	-0.3	1.6*
*a positive 1.6-acre value illustrates sufficient acreage to shift between QQ/Qs without enlarging the Permit's total acreage allowance. Acreage shifted from the SWNW to account for other QQ/Qs negative values.						

I found minor irrigation differences between the Permit Holder's current irrigation practices versus the historic irrigation use covered by 95-15391. The permit was developed using the prior WR acreage by QQ/Q breakdown, but current uses required minor shifting of acreage to accurately recommend for licensing, which doesn't require an amendment at time of licensing. Differences in acreage may be influenced by how POU shapes are traced by staff using ArcMap, but the differences are significant enough to necessitate qualification toward licensing this Permit. Irrigation acreage between WRs is illustrated below:

Water Right	Beneficial Use	Source	Source QQ POD	SWNW L8 (ac)	SENW L7 (ac)	NESW (ac)	NWSW L9 (ac)	WR Total
95-14515	Irrigation from Storage	Spokane River	SWNW	11	4.7	3.2	14	32.9
95-15391	Irrigation	Spokane River	SWNW	13	5.7	1.5	14	34.2
Difference = acreage not covered by prior Right 95-15391 = irrigation direct flow under 95-14515				-2	-1	1.7	0.2*	-1.3
95-14515	Irrigation	Spokane River	SWNW	0	0	1.7	0.2	1.9
Note: 0.2* indicates acreage currently irrigation which was unaccounted for in prior Right in the same QQ/Q.								

During licensing review, I contemplated evaluating the variance between prior WR 95-15391 & this Permit's irrigation acreage up to aerial shift in imagery or staff entered shape declaration in ArcMap; in the end I found the added irrigation around the storage pond hadn't been contemplated or decreed under 95-15391 which necessitated adding as irrigation from storage & irrigation (direct flow) under this Permit. The Irrigation POU equates to the 1.9 acres of irrigated area not accounted for by prior WRs. Irrigation shape carve out worksheets have been added to the backfile that illustrate the differences between the two WRs and how I surmised the 1.9 acres direct flow toward licensing Permit 95-14515. Department standard diversion rates normally equal 0.03 cfs per acre but based on the diverting system infrastructure currently irrigation a total of 36.1 acres when combined between 95-15391 & 95-14515 I have assigned 0.02 cfs per acre with an Irrigation diversion rate of **0.04 cfs** considering Department rounding standards. The Irrigation direct flow doesn't incur volume reporting requirements and there is no annual volume assigned to this BU.

I made several recommendations toward conditions of approval during licensing review as follows:

- I removed condition 26A and 082 based on compliance by the Permit Holder.
- I removed condition 220 based on directive from the Deputy Director Shelley Keen.
- I combined conditions 077 & 218 to reduce redundancy between description of the fire protection requirements.
- I replaced condition 219 with 259, to accurately describe the storage pond size & volume factors including irrigation from storage multi-fill volume.
- I added condition F06 which describes that: The following rights are diverted through point of diversion described above: 95-13097, 95-15391, and 95-14515.
- I've added condition X35 to mitigate enlargement concerns related to stacking of WRs between 95-1391 & 95-12415. As read: Rights 95-15391 and 95-14515 when combined shall not exceed a total diversion rate of 0.51 cfs and the irrigation of 36.1 acres. (I added the combined use limits in AdHoc between the two WRs as well).
- All other conditions on the Permit are being carried forward to the license.

Two conditions regularly used for beneficial use of water related to this Source and BU are 01M & 227. Neither were on the Permit approval and I'm unable to add them as it would make the license more restrictive than the Permit; however, it's important for the Permit Holder to understand that there are senior WRs associated with the Spokane River which includes Minimum Stream Flow Right 95-8780. Upon formation of a Water District the Right Holder may be required to turn off the diverting system when senior Right Holders don't have sufficient in-river flow to satisfy their allocation of water.

Overlap considerations have been discussed in detail on PG 1 of this report and there are no additional overlapping water right concerns toward licensing 95-14515.

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
IRRIGATION	03/15 to 11/15	0.04 CFS	
IRRIGATION STORAGE	01/01 to 12/31		98.7 AF
IRRIGATION FROM STORAGE	03/15 to 11/15		98.7 AF
FIRE PROTECTION	01/01 to 12/31	0.26 CFS	
FIRE PROTECTION STORAGE	01/01 to 12/31		3.3 AF
DIVERSION TO STORAGE	01/01 to 12/31	0.26 CFS	

Totals: 0.26 CFS

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 L Bates Date 01/06/2025

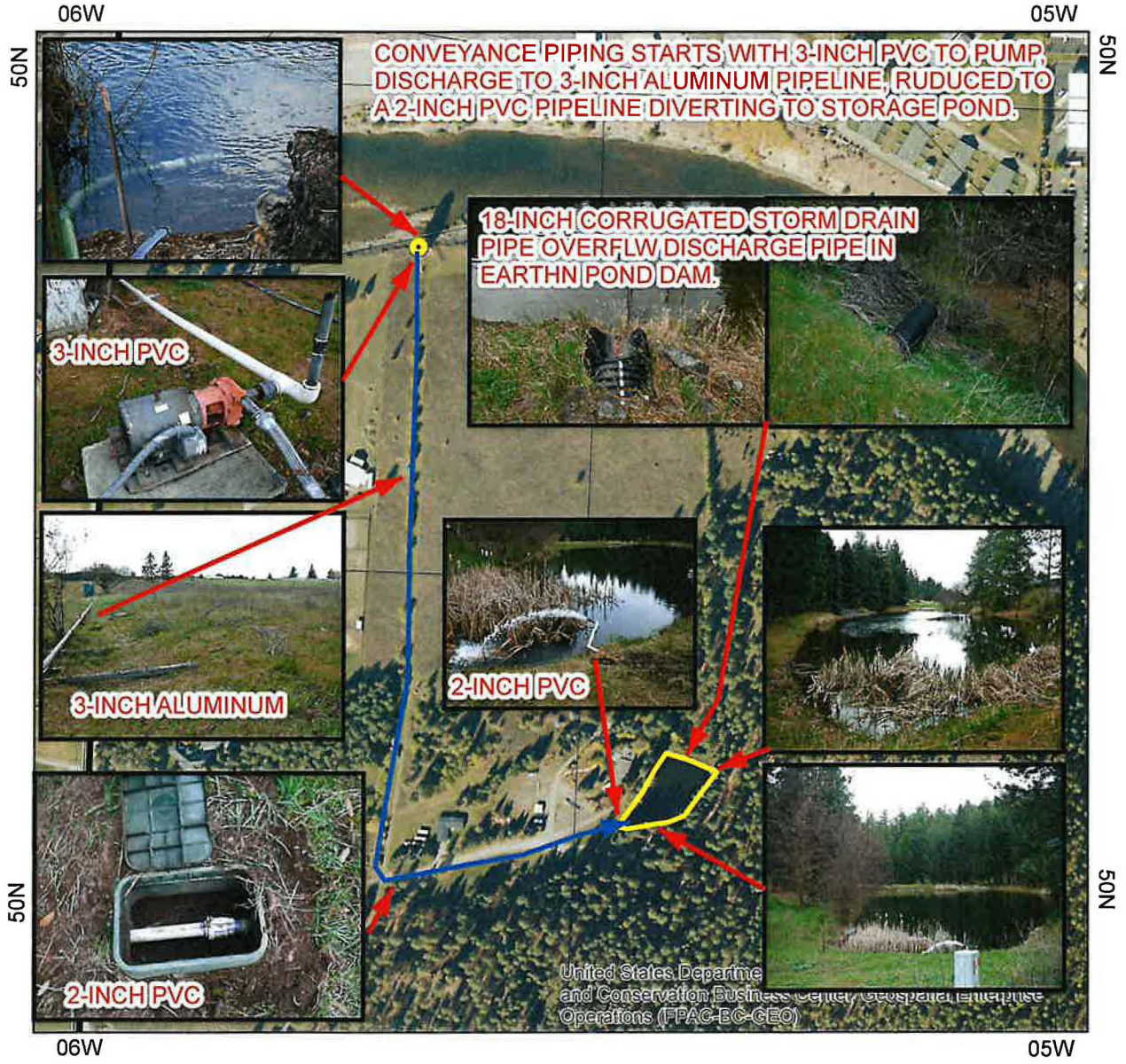
Reviewer Chris Bell Date 2/18/2025

State of Idaho
Department of Water Resources

Attachment to Field Exam

95-14515

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



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

0 0.05 0.1 0.2 Miles

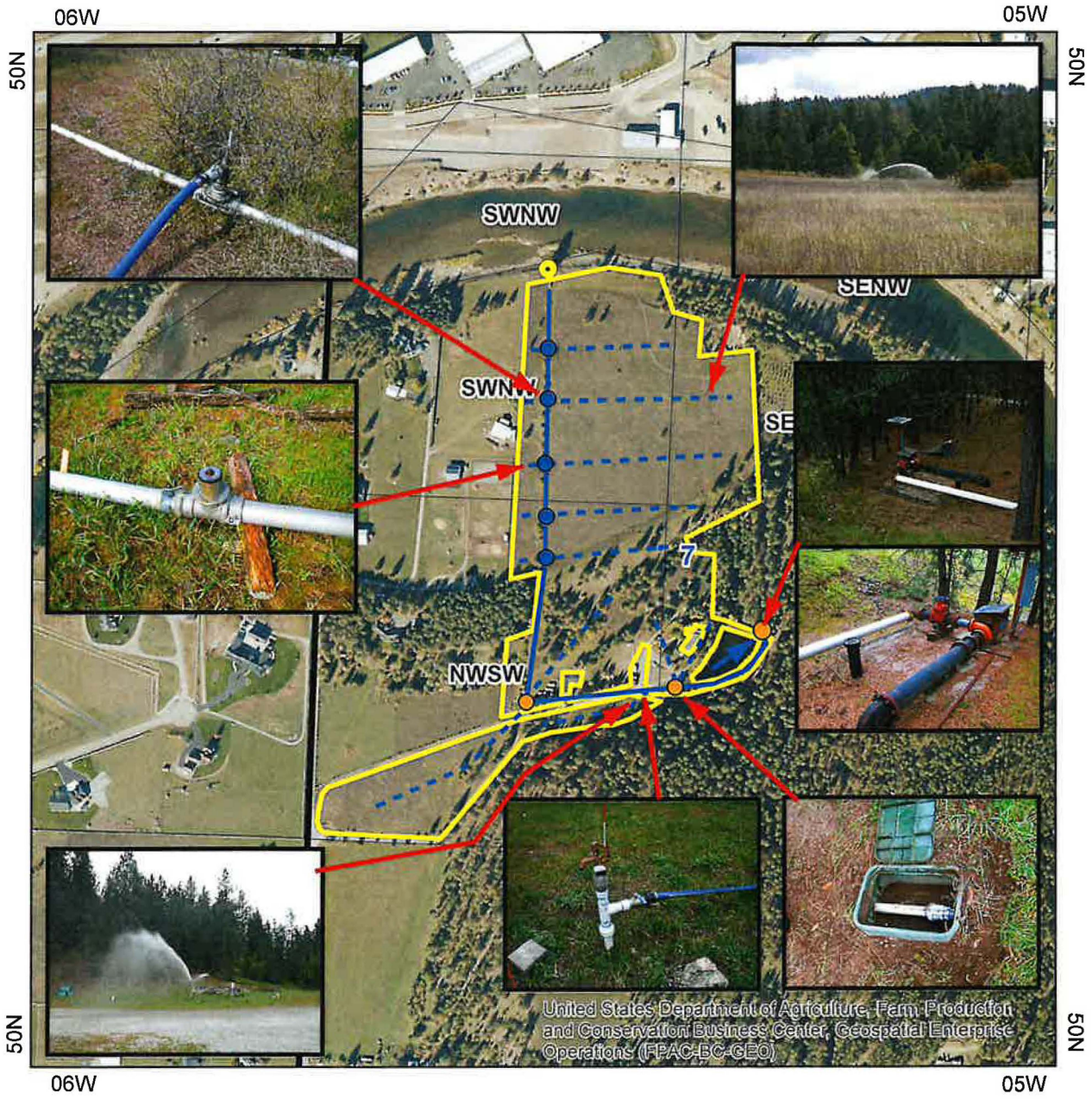
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State of Idaho
Department of Water Resources

Attachment to Field Exam

95-14515

This map depicts the IRRIGATION FROM STORAGE system diagram.



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

0 0.075 0.15 0.3 Miles

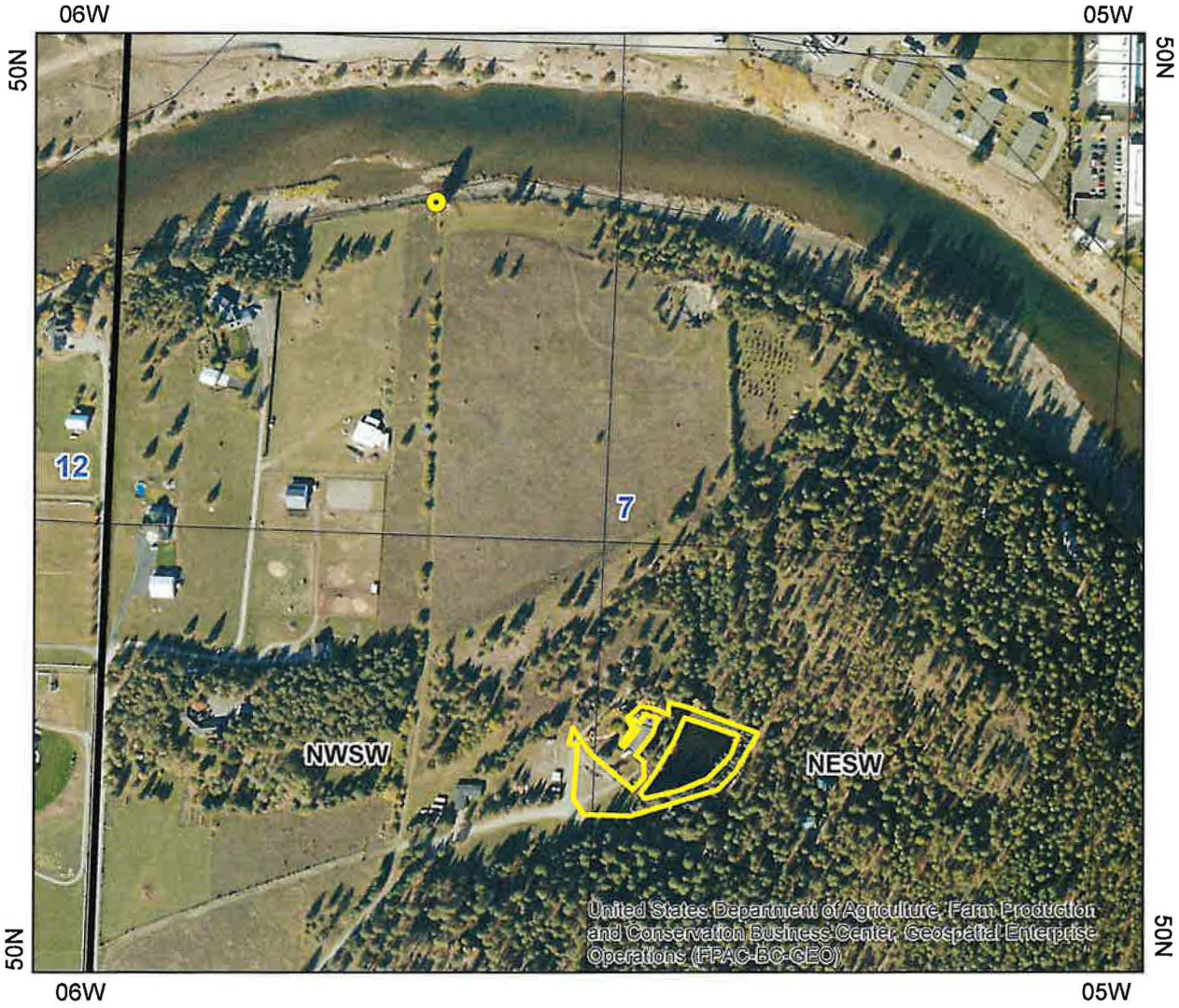
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Attachment to Field Exam

95-14515

This map depicts the IRRIGATION place of use boundary.
Reference the Irrigation from Storage Field Exam Map product which
illustrates the common infrastructure & captures same POU as the Irrigation beneficial use.



0 0.05 0.1 0.2 Miles

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

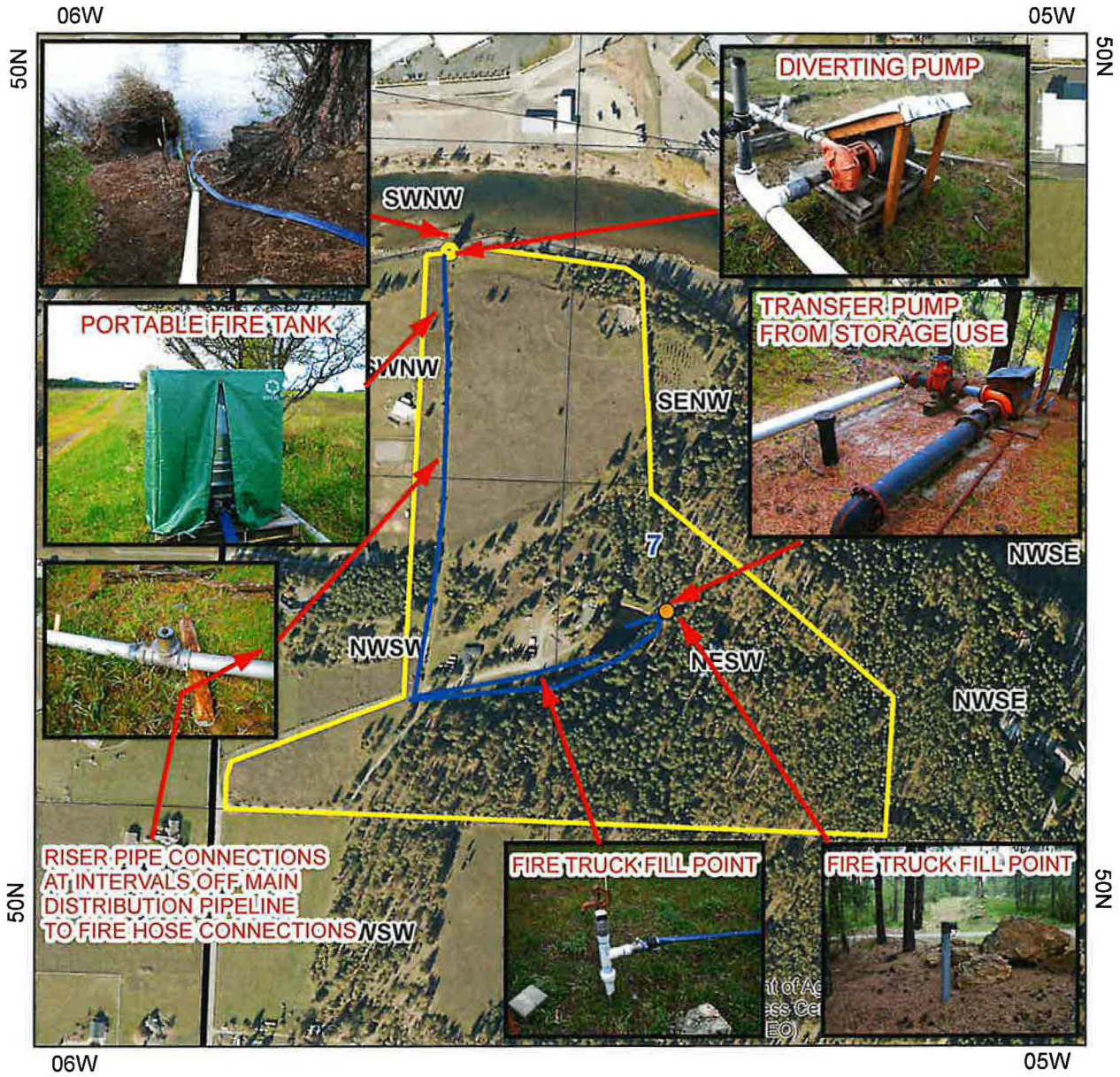
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State of Idaho
Department of Water Resources

Attachment to Field Exam

95-14515

This map depicts the FIRE PROTECTION system diagram.



Flow Measurement for permit 95-14515

Date/Time 4/30/2024	Velocity ft/s	Volume Gallons/min	Fwd Totalizer Fwd Gallons	Error
9:33:00	5.6532	117.262	117.262	Error:0
9:34:00	5.3942	116.2946	233.5566	Error:0
9:35:00	5.0721	116.8715	351.5566	Error:0
9:36:00	5.0582	116.5514	468.6882	Error:0
9:37:00	5.0373	116.0703	585.0544	Error:0
9:38:00	4.967	114.4496	700.303	Error:0
9:39:00	5.0085	115.4052	815.2863	Error:0
9:40:00	4.9499	114.057	930.4024	Error:0
9:41:00	4.997	115.1407	1045.1634	Error:0
9:42:00	5.0248	115.7816	1160.3333	Error:0
9:43:00	4.927	113.5281	1274.738	Error:0

Congrats! Channel 1 Linear END!

Average Velocity	5.10
Max Velocity	5.6532
Min Velocity	4.927

Berkeley Pump S/N: M8108
Baldor Motor S/N: M0000405

Average GPM	115.6
Max GPM	117.3
Min GPM	113.5

Beginning Reading	117.262	
Ending Reading	1274.738	
Difference in Readings	1157.476	
Difference / 10 readings	115.748	GPM
Conversion from GPM to CFS (/448.83)	0.258	CFS

PENTAIR
BERKELEY

TYPE "B" PUMP MODEL NOMENCLATURE

Pump Model B 1.5ZPH

NAME PLATE EXAMPLE:

B 4 G P B H S

B – Type Of Construction B
B="Back Pull-Out" Design

4 – Discharge Size (Inches) 1.5"

G – Nominal Impeller Diameter (Inches)

3" = A	7" = W	11" = F	15" = EX	18" = EY
4" = M	8" = Y	12" = G	15.5" = XT	19" = EZ
5" = X	9" = Z	13" = J	16" = ET	20" = EE
6" = T	10" = E	14" = N	17" = EW	

P – Type of Drive
P = Electric Motor - Pump Attached Directly to Motor Frame
Q = Engine Drive - Pump Attached Directly to Engine Frame
R = Frame Mounted Belt or Flexible Coupling Drive
RM = Special Duty Mounting Frame

B – Special Features (Optional)
B = Hydraulically Balanced Impeller Design
K = Self-Priming

H – Relative Capacity of Impeller
LL = Very Low
L = Low
M = Medium (Often Omitted)
H = High
HH = Very High

2 – Number Of Stages (Optional)
(Single stages not indicated)

S – Shaft Seal (Optional)
S = Mechanical Seal (Packed Stuffing Box is not indicated)

10 – Horsepower of Motor or Engine 20HP
(Normally indicated on Engine Driven Pumps only)

PUMP SIZE EXAMPLE:

4" x 6" x 13" B H

4" – Discharge Size (Inches)

6" – Suction Size (Inches)

13" – Nominal Impeller Diameter (Inches)

3" = A	7" = W	11" = F	15" = EX	18" = EY
4" = M	8" = Y	12" = G	15.5" = XT	19" = EZ
5" = X	9" = Z	13" = J	16" = ET	20" = EE
6" = T	10" = E	14" = N	17" = EW	

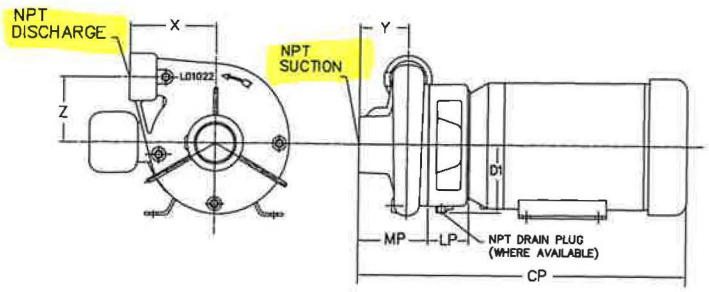
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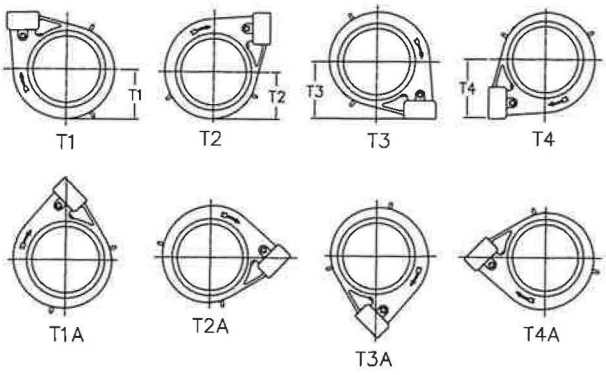
The model configurations above illustrate the complete range of closed coupled product identification numbers.

Motor Drive Dimensions

NPT (Threaded)



Volute Attachment Options



Note: Options T1A - T4A are rotated 45° from T1 - T4. Consult Factory for dimensions.

NPT (Threaded) – Single Stage

PUMP MODEL	SHAFT SEAL	RPM/ PHASE	FRAME GROUP*	SUCTION	DISCHARGE	X	Y	MP	LP	Z	T1	T2	T3	T4	D1†	CP (MAX)
B1WP	Packing	3600/1	C-1	1 1/2"	1"	5.00	2.50	4.19	5.44	4.12	4.94	4.94	5.00	5.06	5.25	23.80
						5.00	2.50	4.19	6.69	4.12	4.94	4.94	5.00	5.06		25.05
		3600/3	C-1	1 1/2"	1"	5.00	2.50	4.19	5.44	4.12	4.94	4.94	5.00	5.06	5.25	22.29
B1WPS	Mechanical	3600/1	C-1	1 1/2"	1"	5.00	2.50	4.19	2.38	4.12	4.94	4.94	5.00	5.06		20.74
		3600/3	C-1	1 1/2"	1"	5.00	2.50	4.19	2.38	4.12	4.94	4.94	5.00	5.06		19.23
B1-1/2TPL	Packing	3600/1	C-1	2"	1-1/2"	5.38	2.69	4.25	5.56	3.81	4.25	4.06	5.38	5.25		22.65
		3600/3	C-1	2"	1-1/2"	5.38	2.69	4.25	5.56	3.81	4.25	4.06	5.38	5.25		21.47
B1-1/2TPLS	Mechanical	3600/1	C-1	2"	1-1/2"	5.38	2.69	4.25	2.50	3.81	4.25	4.06	5.38	5.25		19.59
		3600/3	C-1	2"	1-1/2"	5.38	2.69	4.25	2.50	3.81	4.25	4.06	5.38	5.25		17.98
B1-1/2TPM	Packing	3600/1	C-1	2"	1-1/2"	5.38	2.69	4.25	6.56	3.81	4.25	4.06	5.38	5.25		26.48
						5.38	2.69	4.25	5.56	3.81	4.25	4.06	5.38	5.25		25.48
		3600/3	C-1	2"	1-1/2"	5.38	2.69	4.25	5.56	3.81	4.25	4.06	5.38	5.25		23.87
						5.38	2.69	4.25	6.56	3.81	4.25	4.06	5.38	5.25		24.87
B1-1/2TPMS	Mechanical	3600/1	C-1	2"	1-1/2"	5.38	2.69	4.25	2.50	3.81	4.25	4.06	5.38	5.25		22.42
		3600/3	C-1	2"	1-1/2"	5.38	2.69	4.25	2.50	3.81	4.25	4.06	5.38	5.25		20.81
B1-1/2ZPL	Packing	3600/1	C-1	2"	1-1/2"	5.38	2.88	4.50	6.69	5.06	5.06	5.94	5.38	6.25	5.25	26.86
		3600/3	C-1	2"	1-1/2"	5.38	2.88	4.50	5.44	5.06	5.06	5.94	5.38	6.25	5.25	25.50
B1-1/2ZPLS	Mechanical	3600/1	C-1	2"	1-1/2"	5.38	2.88	4.50	2.38	5.06	5.06	5.94	5.38	6.25		22.55
		3600/3	C-1	2"	1-1/2"	5.38	2.88	4.50	2.38	5.06	5.06	5.94	5.38	6.25		22.44
			C-2	2"	2-1/2"	5.38	2.88	4.50	3.75	5.06	5.06	5.94	5.38	6.25		25.42
B1-1/2ZPH	Packing	3600/3	C-1	2"	1-1/2"	5.38	2.88	4.50	6.69	5.06	5.06	5.94	5.38	6.25		26.75
			C-2	2"	1-1/2"	5.38	2.88	4.50	6.69	5.06	5.06	5.94	5.38	6.25		30.11
B1-1/2ZPHS	Mechanical	3600/3	C-1	2"	1-1/2"	5.38	2.88	4.50	2.38	5.06	5.06	5.94	5.38	6.25		22.44
			C-2	2"	1-1/2"	5.38	2.88	4.50	3.75	5.06	5.06	5.94	5.38	6.25		27.17
		1800/1	C-1	2"	1-1/2"	5.38	2.88	4.50	2.38	5.06	5.06	5.94	5.38	6.25		20.22
		1801/3	C-1	2"	1-1/2"	5.38	2.88	4.50	2.38	5.06	5.06	5.94	5.38	6.25		18.11
B1-1/2EPL	Packing	3600/3	C-2	2"	1-1/2"	6.50	2.63	4.19	6.25	5.69	6.19	6.63	6.50	6.94		29.36
B1-1/2EPLS	Mechanical	3600/3	C-2	2"	1-1/2"	6.50	2.63	4.19	3.38	5.69	6.19	6.63	6.50	6.94		26.49

*See Motor Frame Size Chart.

† If Dimension "D1" is not referenced, no drain connection is available.

Total Storage Calculations

FILE NUMBER	95-14515
REVIEWER	Luke Bates
DATE	7/2/2024

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

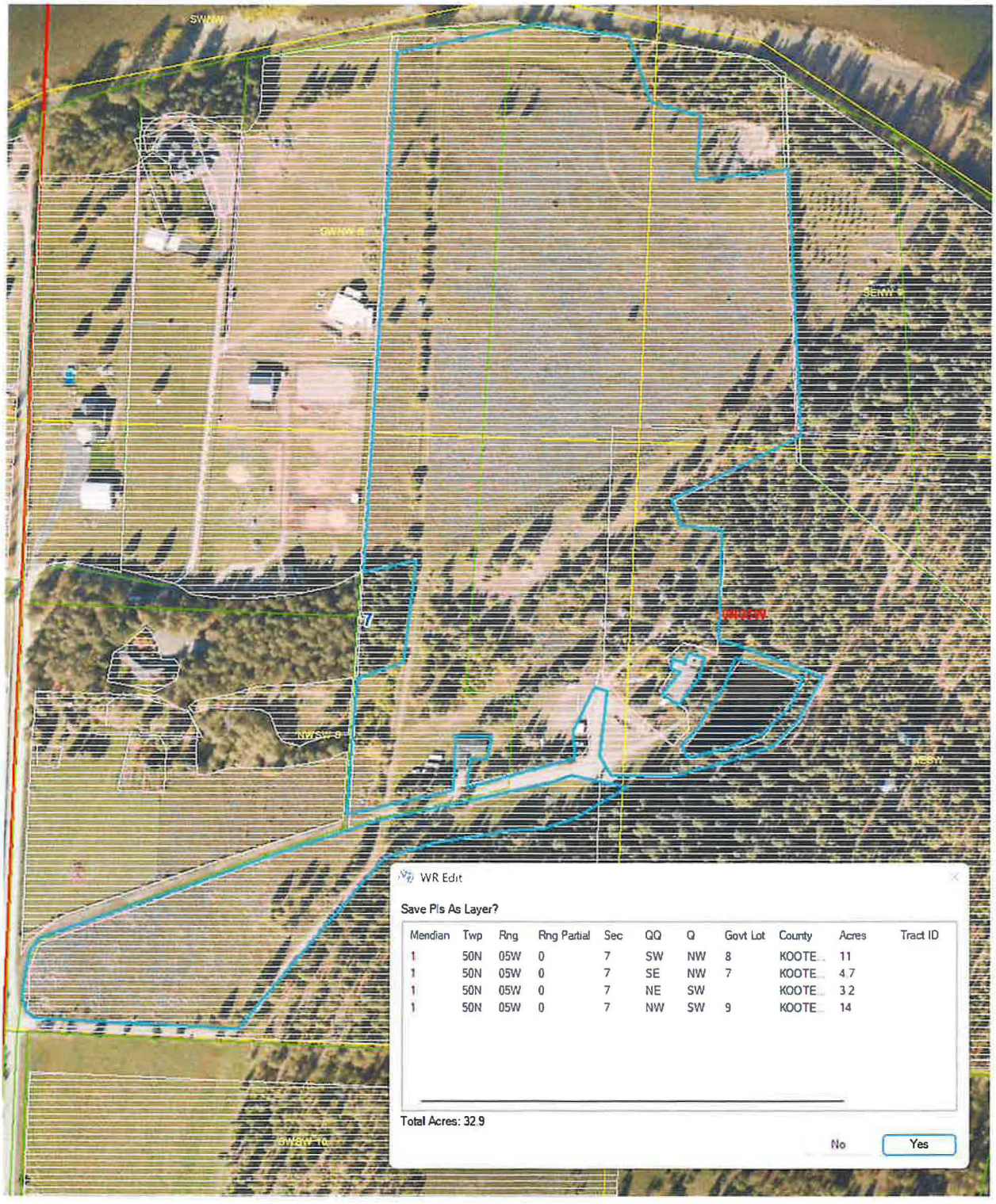
User Input
Calculated value
Formula Explanations

Surface Area (AC.)	0.6	"Surface Area" is automatically carried over from the "Seepage Loss" sheet.
Average Pond Depth (FT.)	4.4	"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)	2.6	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.

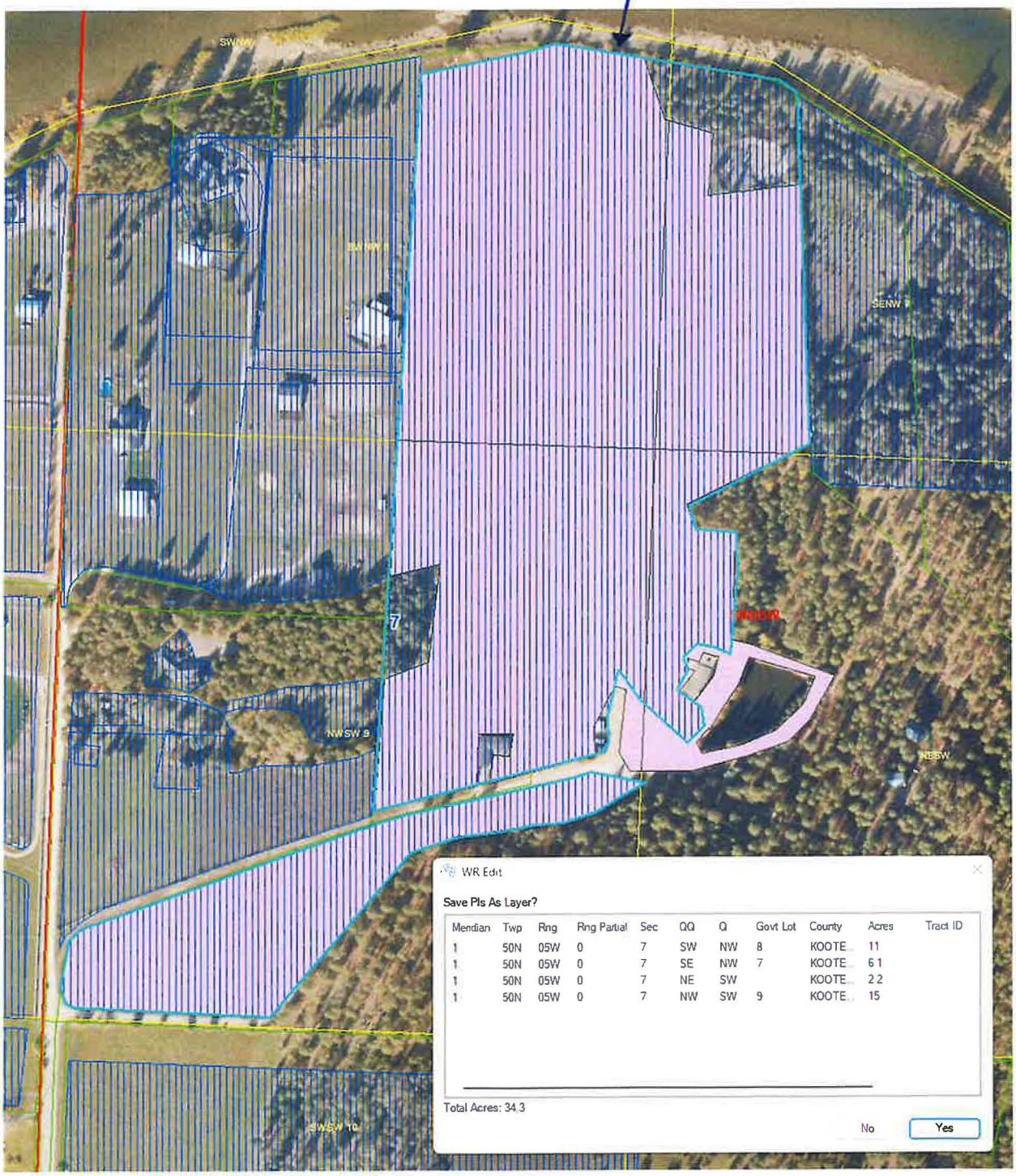
Multiple Fill Volume Above Initial Fill to Fulfill From Storage Needs- "Multiple Fills" (AF)	98.7	The "Multiple Fill Volume Above Initial Fill" is the acre-feet of water required to meet a *from storage* component if the *from storage* component exceeds a one time fill. This section should not include 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)	0.7	The "Estimated Evaporation Loss" is automatically carried over from the "Evaporation Loss" sheet.
Total Volume Required (AF)	102.0	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.

* The pond is Lined with an impermeable black plastic Liner; no seepage rate is factored for pond volume purposes. yBates - Sr. Water Resource Agent.

95-14515 – IRRIGATION FROM STORAGE POU – ACREAGE BREAKOUT BY QQ/Q LEGAL DESCRIPTION

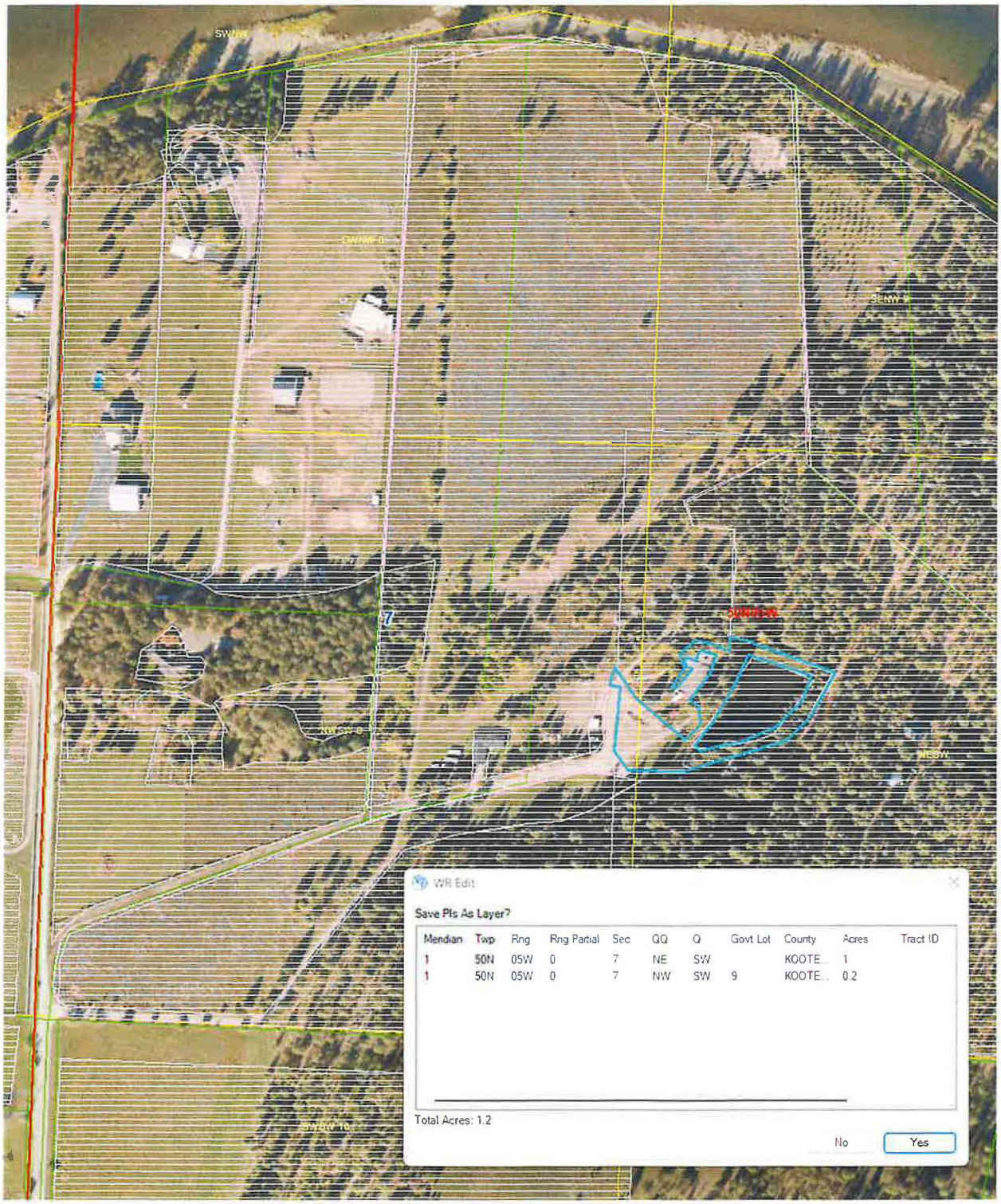


95-15391 – IRRIGATION POU WITH ACREAGE BREAKEOUT BY QQ/Q LEGAL DESCRIPTION [BLUE HIGHLIGHTED]



- Purple graphic layer = Permit 95-14515 Irrigation from Storage POU = 32.9 acres.
- NOTE: a small amount of Permit 95-14515 developed irrigation from storage acreage is not covered by prior Decreed WR 95-15391 but qualifies for direct flow irrigation use in addition to irrigation from storage use. This unaccounted-for acreage = 1.2 acres Irrigation direct flow beneficial use covered by Permit 95-14515.

95-14515 – IRRIGATION POU – ACREAGE BREAKOUT BY QQ/Q LEGAL DESCRIPTION







BENEFICIAL USE FIELD EXAMINATION DATE 4/30/2024



POD – FLEXIBLE INTAKE PIPE WITH SCREEN FROM SPOKANE RIVER



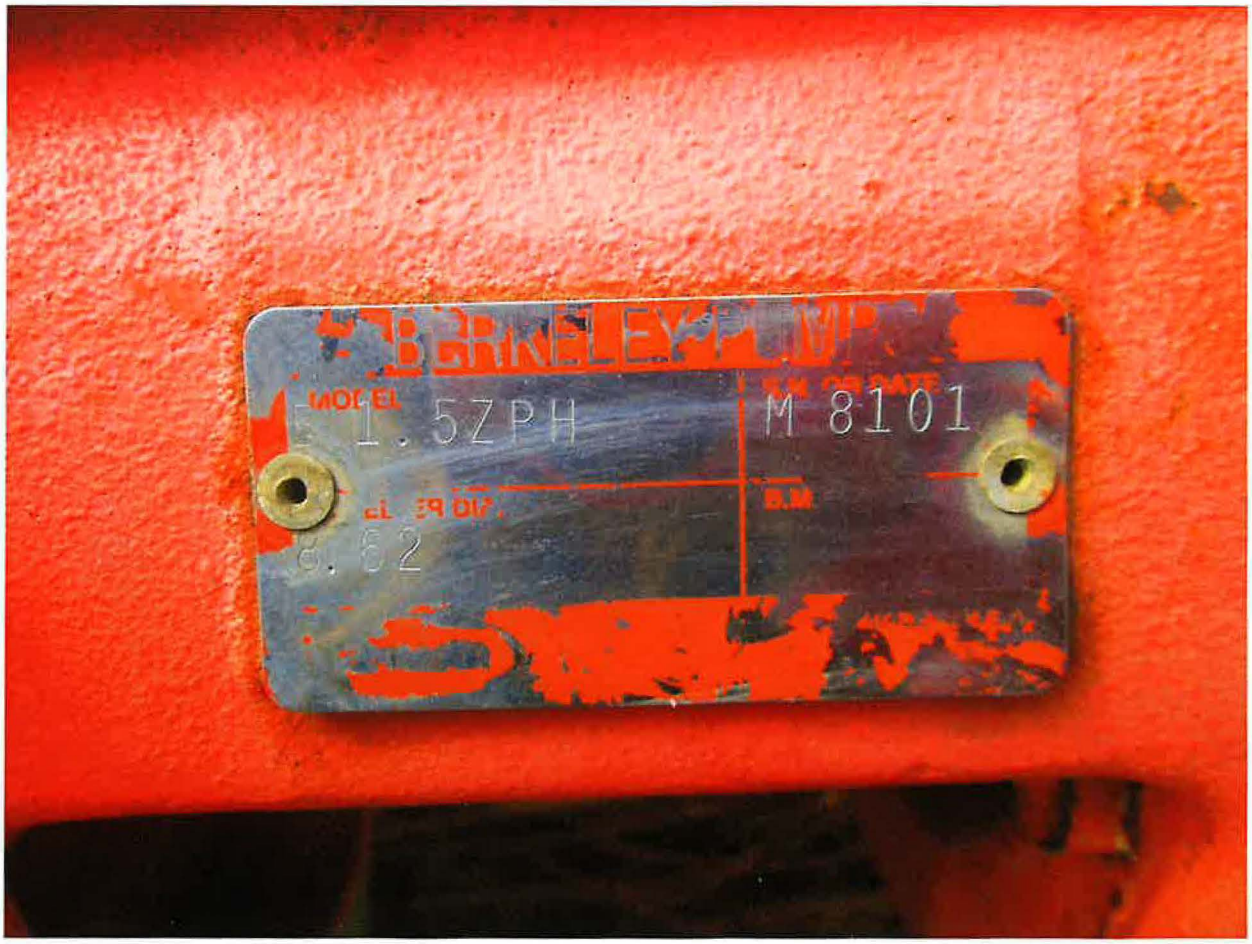
¼ INCH FISH SCREEN INSTALLED ON FEXIBLE INTAKE PIPE TO 3 INCH PVC PIPELINE

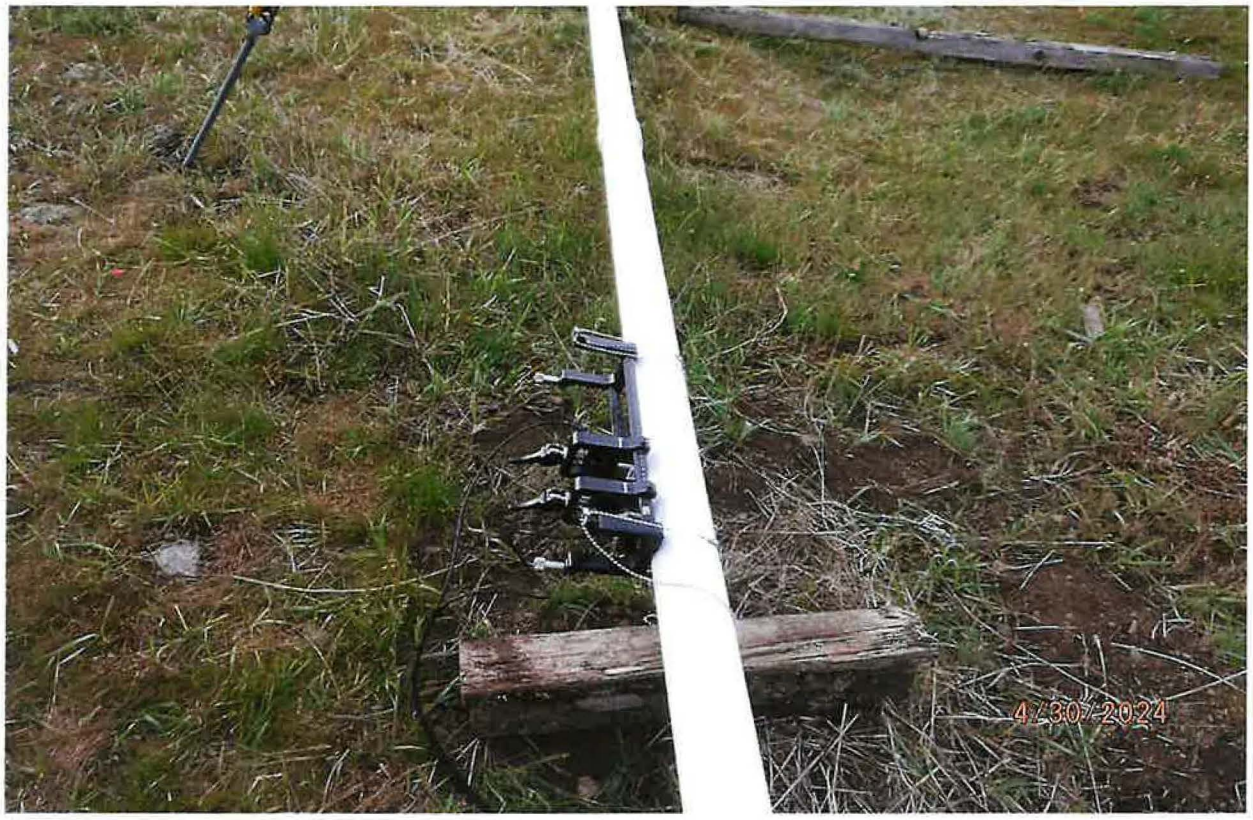


DIVERTING WORKS – 20 HP CENTRIFUGAL PUMP TO IRRIGATION AND DIVERSION TO STORAGE
BENEFICIAL WATER USES



DIVERTING WORKS – 20 HP BERKELEY PUMP S/N M8108 & BALDOR MOTOR S/N M0000405





GE PANAMETRIC PT900 FLOWMETER USED TO TAKE FLOW MEASUREMENT FROM 3-INCH PVC PIPELINE



CONVEYANCE WORKS – 3-INCH PVC PIPELINE WITH IRRIGATION RISERS AT INTERVALS ROUTES FROM POD TO STORAGE POND



IRRIGATION POU – RISER CONNECTION TO FLEXIBLE FIRE HOSE TO 2-INCH RAINGUN WITH 14-22mm NOZZLES USED TO IRRIGATION FIELDS





IRRIGATION POU – 22mm RAIN GUN IRRIGATION FROM IRRIGATION MAIN TRUCK CONVEYANCE PIPELINE





FIRE PROTECTION POU – MAIN WATER SYSTEM & PORTABLE WATER TANKS ON STANDBY TO SUPPRESS AN ACTIVE FIRE



DIVERSION TO STORAGE POU – 3-INCH PIPELINE WITH 20 HP PUMP FROM POD-TO-STORAGE POND



IRRIGATION STORAGE & FIRE PROTECTION STORAGE POU – LINED WITH IMPERMEABLE BARRIER





OVERFLOW DEVICE ON EARTHEN DAM OF STORAGE POND – OVERFLOW DISCHARGE DRAINS DOWN SLOPE IN A RAVINE





IRRIGATION FROM STORAGE & FIRE PROTECTION FROM STORAGE INFRASTRUCTURE – 8-INCH FROM POND TO BERKELEY PUMP AND 6-INCH IRRIGATION FROM STORAGE PVC PIPELINE DISCHARGE FROM STORAGE PUMPING.



BERKELEY PUMP MODEL B5WPS, S/N G030797



DIVERSION TO STORAGE MANUAL SHUTOFF VALVE: PIPLINE FROM POD STARTS 3-INCH, CHANGES TO 4-INCH PVC, THEN REDUCES TO 2-INCH PVC INFLOWING TO STORAGE POND



IRRIGATION & IRRIGATION FROM STORAGE POU – WATER SYSTEM CAN BE SELECTED TO IRRIGATE AS DIRECT FLOW AND/OR FROM STORAGE IRRIGATION FLOW DEPENDING ON ZONE AND STORAGE POND WATER LEVEL



EXAMPLE – IRRIGATION FROM STORAGE & IRRIGATION POU – 2-INCH RAIN GUN WITH VARIABLE NOZZLE SIZES RANGING FROM 14mm to 22mm IN SIZE



EXAMPLE 14mm NOZZLE



EXAMPLE – RAIN GUN WITH FIRE HOSE CONNECTED TO IRRIGATION TRUNK LINE AT RISER





FIRE PROTECTION FROM STORAGE POU – TENDER TRUCK FILL PORT LOCATED NEAR STORAGE POND



FROM STORAGE MANUAL SHUTOFF VALVE CONTROLS