

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No. 95-8858

Exam Date: 8/6/2007

1. Current Owner: SYLTE RANCH
8626 W SYLTE RANCH RD
RATHDRUM ID 83858-6820
(208)687-1213
2. Accompanied by: Gordon Sylte
Phone No: (208) 687.1213
Address: 8626 W Sylte Ranch RD, Rathdrum, ID 83858
Relationship to Permit Holder: Owner
3. SOURCE TRIBUTARY
RATHDRUM CREEK SINKS
UNNAMED STREAM RATHDRUM CREEK

B. OVERLAP REVIEW (See attached Memorandum)

1. Other water rights with the same place of use: 95-733, 95-944, 95-7604
2. Other water rights with the same point of diversion: 95-944 (Possible Overlap Unnamed Stream)

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

RATHDRUM CREEK L3 NW1/4SW1/4, Sec. 30, Twp 52N, Rge 04W, B.M., KOOTENAI County 47°49.316N, 116°53.417W

UNNAMED STREAM L3 NW1/4SW1/4, Sec. 30, Twp 52N, Rge 04W, B.M., KOOTENAI County 47°49.450N, 116°53.503W

Method of Determination: Garmin GPS Receiver, USGS 'Rathdrum' 7.5' Quadrangle**2. PLACE OF USE: DIVERSION TO STORAGE, IRRIGATION STORAGE, RECREATION, RECREATION STORAGE, STOCKWATER STORAGE**

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
52N	04W	30										X							
												L3							
PLACE OF USE: IRRIGATION, IRRIGATION FROM STORAGE, STOCKWATER, STOCKWATER FROM STORAGE																			
Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
52N	04W	30									4.0	9.0	12.0	8.0					33.0
											L3	L4							

Method of Determination:

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
728595	GE Motor + End Systems	2	NA	AL Motor	Model SKCR34UN 2824X
728595	NA	10	NA	NA	NA

*Code to correspond with No. on map and aerial photo

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D. FLOW MEASUREMENTS

1. Measurement

Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
Pressure Gauge	Hand	Unknown	NA	NA	Palm Size	NA
Depth Gauge	Hand	Vexilar	Deptherm	NA	NA	NA

2. Measurements: (See Narrative)

E. FLOW CALCULATIONS

Measured Method: (See Theoretical)

✓ Additional Computation Sheets Attached
For Orifice Equation &
CFS calculation

PUMP	EQUATIONS	WATER RIGHT	95-8858				
		HP	H in feet	Efficiency as a decimal	Pumping lift in feet	System pressure in PSI	
Q =	HP*8.8*Eff/H	10	67.82313	0.7	10	25	
Q =	0.910	CFS = 408 GPM					

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = (33) \times (3.0) = 99 \text{ AF}$$

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = (.43) \times (246) \times (1.9835) = 209.81 \text{ AF}$$

$$V = \text{Smaller of } V_{IR} \text{ and } V_{D.R.} = 99 \text{ AF}$$

2. Volume Calculations for Other Uses: STORAGE COMPONENTS (IRRIGATION STORAGE, STOCKWATER STORAGE, RECREATION STORAGE) DEPEND ON POND CAPACITY + EVAPORATION & SEEPAGE.

Pond 1

$$(50') \times (100') \times (5' \times .8) = \frac{20,000}{43,560} = .459 = 50 \text{ AF} + 1.14 \text{ EVAP/SEEP} = 1.64 \text{ AF}$$

Pond 2 (Irregular Dimensions - 2004 Air Photo calc. (.42 acres)

$$(.42) \times (43,560) = 18,295.20 \text{ sq. Ft.}$$

$$(18,295.20) \times (11' \text{ average depth}) = \frac{201247.2}{43,560} = 4.62 \text{ AF} + 4.14 \text{ EVAP/SEEP} = 8.81 \text{ AF}$$

$$(8.81 \text{ AF}) + (1.64 \text{ AF}) = 10.45 \text{ AF} \quad (10.45 \text{ Exceeds Permit Amount of 5 AF})$$

Stockwater (Range cattle observed on property)
(Application Proc. Memo #3 for 200 head)

CFS	AF
.05	2.7

Recreation

$$(\text{Pond 1 } .388 = .39 \text{ CFS}) + (\text{Pond 2 } .04 \text{ CFS}) = .43 \times 365 \times 1.9835$$

CFS	AF
.43	311.3

All CFS Capacity can divert to Storage.

Diversion To Storage	.43 CFS	
Stockwater Storage		5 AF
Irrigation Storage		5 AF
Recreation	.43 CFS	311.3 AF
Irrigation from Storage	~~.43 CFS~~	5 AF
Recreation Storage		5 AF
Stockwater	.05 CFS	2.7 AF
Stockwater from Storage		2.7 AF
Irrigation	.43 CFS	99.0 AF

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G. NARRATIVE/REMARKS/COMMENTS 95-8858 uses two Points of Diversion (POD). Two ponds allow storage for three irrigation zones. POD 1 is at a 50 feet x 100 feet x 4 feet deep pond on an unnamed stream at the North end of the property. POD 2 is an in stream diversion dam that diverts water from Rathdrum Creek via a eight inch diameter pipe to a pond on the North side of the Creek measuring 300 feet x 50 feet (average depth 11 feet). 18 foot depths were seen at the west end of Pond 2.

Pond 1 drains via gravity through a four inch line into the larger pond near POD 2. Pond 2, filled from Pond 1 and POD 2, maintains the same level as the Creek. Creek water flows through an eight inch diameter pipe into Pond 2 when water levels are high enough to enter the pond and back through the pipe to above the diversion dam when the Creek water level is falling or irrigation is underway. A pond outlet pipe to Rathdrum Creek is three feet above the eight inch pipe.

The system uses two pumps at the pump house on the South side of Rathdrum Creek and water lines leading to the irrigation zones. The pumps draw water from behind the diversion dam through a filter to the lines supplying the irrigation zones. Zone 1 (North) and either Zone 2 (Pivot) or Zone 3 (South) can be irrigated at the same time. Zone 2 and Zone 3 are not irrigated together because of insufficient water pressure for simultaneous operation and refill time for Pond 2.

The pumps and Center Pivot use three phase power. The pump house has a two horsepower (HP) pump for Zone 1 irrigation north of Rathdrum Creek and a 10 HP pump that provides water south of the Creek for the Pivot in Zone 2 and wheel and hand lines in Zone 3. A valve located next to the Pivot is opened when the Pivot is not in use to allow water into a line for Zone 3. The system can, under low stream flow conditions, withdraw water from Pond 2 faster than refill occurs from the Creek and Pond 1.

Sprinkler nozzles are .25 inch diameter. The three sprinkler heads nearest to the Pivot center have two nozzles 180 degrees apart. All other sprinkler heads on hand lines, wheel lines, and the pivot have one nozzle each. Pressure measured 12 Pounds Per Square Inch (PSI) on the Zone 1 wheel line and 18 PSI on the Zone 1 hand line while these lines were operating simultaneously. 25 PSI was measured on the Zone 3 wheel line with no hand lines operating.

H. RECOMMENDATIONS Have conditions of permit approval been met? ☒ Yes ☐ No

1. Recommended Amounts

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
DIVERSION TO STORAGE	03/15 to 11/15	0.430 CFS	
STOCKWATER STORAGE	01/01 to 12/31		5.00 AF
IRRIGATION STORAGE	03/15 to 11/15		5.00 AF
RECREATION	01/01 to 12/31	0.430 CFS	311.30 AF
IRRIGATION FROM STORAGE	03/15 to 11/15		5.00 AF
RECREATION STORAGE	01/01 to 12/31		5.00 AF
STOCKWATER	01/01 to 12/31	0.050 CFS	2.70 AF
STOCKWATER FROM STORAGE	01/01 to 12/31		2.70 AF
IRRIGATION	03/15 to 11/15	0.430 CFS	99.00 AF
	<u>Totals:</u>	0.430 CFS	415.30 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 ☐ Other

I. AUTHENTICATION

Field Examiner's Name

Date

11/6/08

Reviewer

Date

11/7/08

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Pond 2

Surface Area of Orifice

Orifice Equations Formulas Design Calculator

Fluid Mechanics Hydraulics

8" Diameter Pipe

$$\text{Area of Circle} = \pi \cdot r^2$$

$$\begin{aligned} \text{Area of Circle} &= \text{Solving for flow rate.} \\ &= (3.14) \times (4) \times (4) \\ &= 50.24 \text{ sq. in. } Q = C_d A_o \sqrt{2gH} \end{aligned}$$

Inputs:

discharge coefficient (C_d)

orifice area (A_o)

meter²

gravitational constant (g)

meter/second²

center line head (H)

meter

Calculate

Conversions:

discharge coefficient (C_d)	= .62	= 0.62
orifice area (A_o)	= 50.24 in ²	= 0.0324128384 meter ²
gravitational constant (g)	= 32.2 foot/second ²	= 9.81456 meter/second ²
center line head (H)	= .05 foot	= 0.01524 meter

Solution:

$$\text{flow rate (Q)} = 0.0109913655536 \text{ meter}^3/\text{second} = 3881564 \text{ CFS} / 174.2167 \text{ GPM}$$

Other Units:

flow rate (Q)	= 0.0109913655536 meter ³ /second
flow rate (Q)	= 39568915.993 cc/hour
flow rate (Q)	= 10991.3655536 centimeter ³ /second

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MEMORANDUM

Date: November 05, 2008
To: Water Right File 95-8858
From: smaxey
Re: Overlaps

95-733, 95-944, 95-4730, 95-7604, 95-7630, and Permit 95-9275 were reviewed for possible overlap on 95-8858. These licenses involve diversions from Rathdrum Creek, a unnamed stream tributary to Rathdrum Creek, and groundwater. Each of the Points of Diversion (POD) for Permit 95-9275 are springs.

The POD and Point of Use (POU) for Water Right 95-944 (05-01-1883) overlap 95-8858. Both 95-944 and 95-8858 use a unnamed stream, tributary to Rathdrum Creek, with a POD located in GOVT LOT 3 (NWSW S30 T52N R04W). It is not clear from available Twin Lakes Adjudication (TLA) records if both 95-944 and 95-8858 use the same unnamed stream. The seven acre Irrigation POU for 95-944 overlaps part of the 95-8858 POU located in GOVT LOT 3.

Irrigation diversions from Rathdrum Creek involve water rights 95-733, 95-7604, and 95-7630. The 95-733 POD and POU are located in the same QQ as 95-8858. The 95-7604 POD is in the same QQ as 95-8858 because it is located in GOVT Lot 3 (NWSE S30 T52N R04W) and 15 acres of the irrigation POU overlap the 95-8858 POU in the NESE S30 T52 N R04W. The 95-7630 POD and POU lie downstream and west of 95-8858.

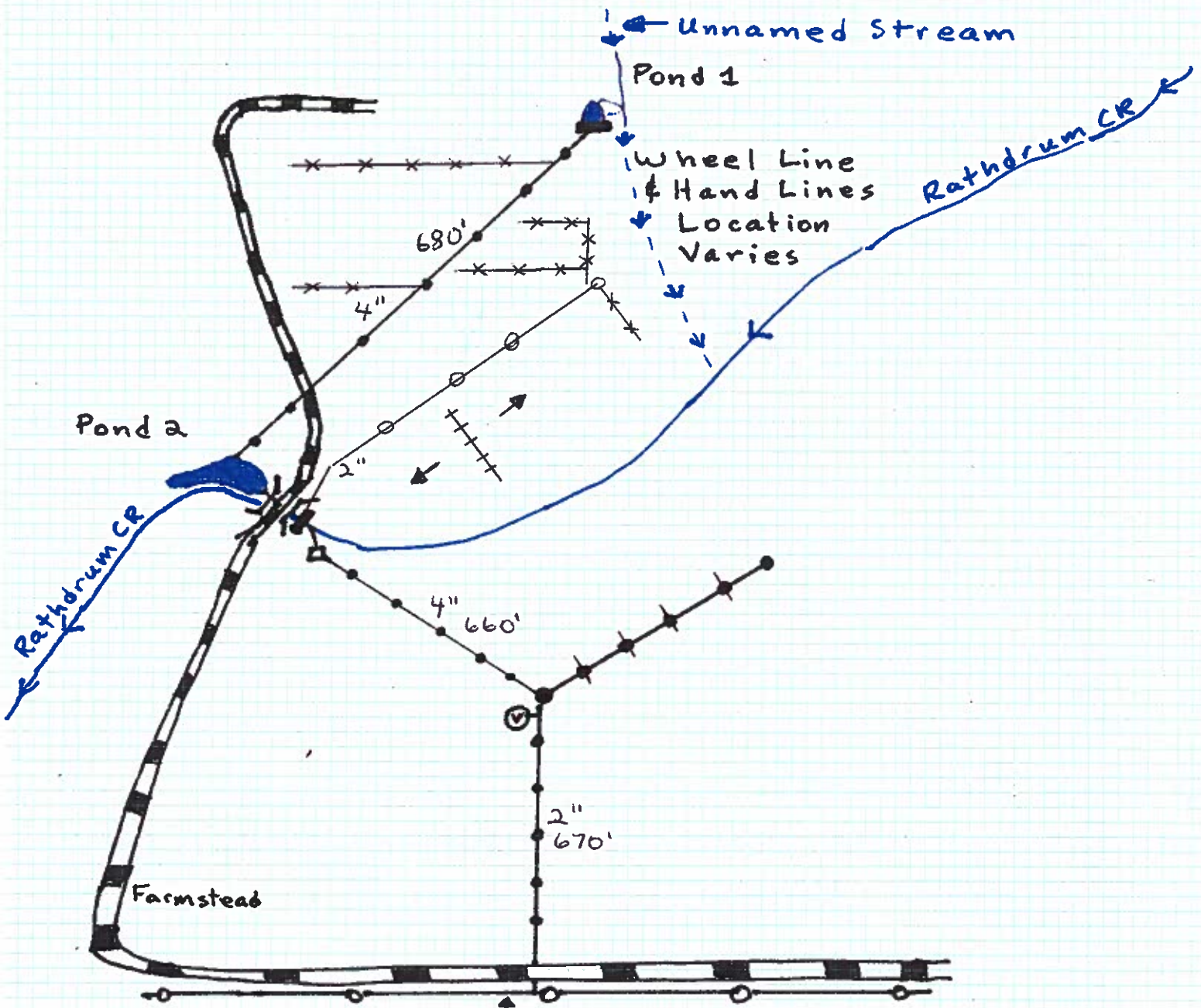
Development of the springs and irrigation for Permit 92-9275 is incomplete at this time. Irrigation from Permit 95-9275, when development is complete, may include some of the irrigated area in Zone 1.

Two features located on the property may be added to the irrigation system in the future. An abandoned underground gas line runs East-West along the North side of the driveway leading from State Highway 53 to the farmstead. The owner indicated he is considering adapting the line for irrigation use. A clay-lined storage pond is upstream from the Rathdrum Creek diversion dam and irrigated area in 95-8858. The pond was built by the East Green Acres Irrigation District. The District abandoned the pond after wells were built to replace District use of water from Rathdrum Creek.

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Delivery System Diagram

NOT TO SCALE



Farmstead

LEGEND

- Rathdrum CR
- Pond
- Bridge (covered)
- Dam
- Pump House
- Pipeline (underground)
- Pipeline (Surface)
- Wheel Line
- Hand Line
- Valve
- Center Pivot

Wheel Line & Hand Lines Length Varies

95-8858

Rathdrum Mtn
VABMΔ5003

VABMΔ Rathdrum M

COEUR D'ALENE
NATIONAL FOREST

COEUR
D'ALENE
NAT FOR

POD Unnamed
Stream

POD Rathdrum
CR

POU

POU

POU

POU

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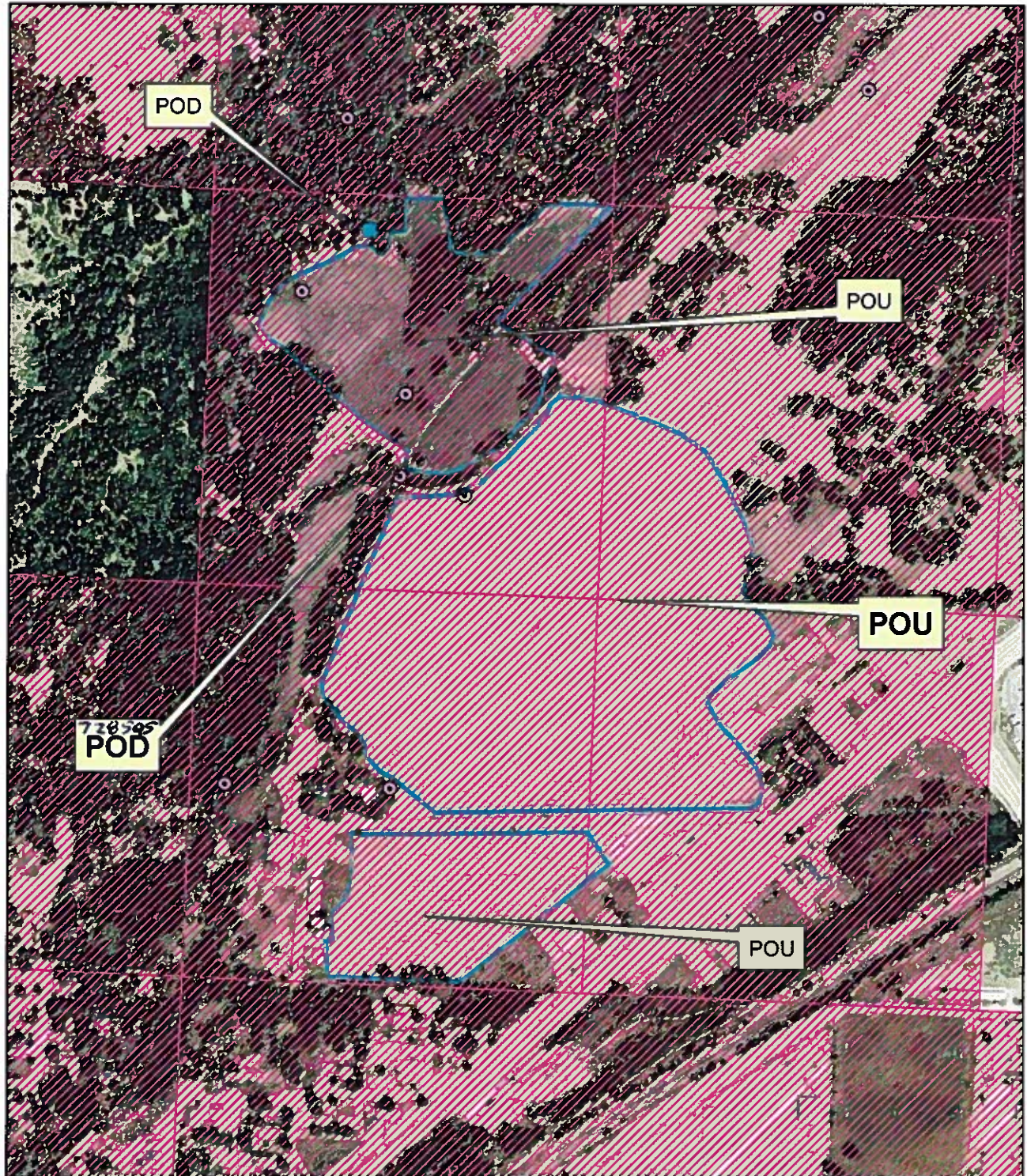
POU

POU

95-8858

5293
47'30"

95-8858



95-8858



95-8858 Stream to Pond 1



95-8858 Pond 1 and Dam

95-8858



95-8858 North POU Hand Line



95-8858 North POU Handline R & Pipeline L

95-8858



95-8858 North POU Wheel Line



95-8858 North POU Handline Pipe

95-8858



95-8858 Pump House Rathdrum CR Dam



95-8858 Pond 2 View W to E

95-8858



95-8858 Hose Irrigation N of Pond 2



95-8858 Pipe from Pond 1 into Pond 2

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95-8858 Pivot Operating Zone 2



95-8858 Pivot Operating View E

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95-8858 Valve For S Zone Near Pivot



95-8858 South POU View SW

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