

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 95-9324
Exam Date: 07/23/2020

1. Current Owner:
SYRINGA WATER & SEWER CO INC PO BOX 168 COEUR D ALENE ID 83816-0168
2. Accompanied by: John Shields
Phone No: 208-659-3425
Address: 3401 Lodgepole Rd Coeur D Alene, ID 83815
Relationship to permit Holder: Water system operator

3. **SOURCE:**
COEUR D ALENE LAKE

Tributary
SPOKANE 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
95-8627	GROUNDWATER	MUNICIPAL	DECREED

Comments: Decreed Right 95-8627 uses two groundwater wells that are used for the same municipal water system as this permits use, with the same service area POU. Both water rights pump from their respective sources to a water treatment plant prior to distribution using the same infrastructure. Condition X35 was included during permit approval for this water right and has been revised and carried to the licensing mitigating any overlap concerns between 95-8627 & 95-9324.

2. Other water rights with the same point-of-diversion: NO Overlap

C. DIVERSION AND DELIVERY SYSTEM1. **LOCATION OF POINT(S) OF DIVERSION:**

COEUR D ALENE LAKE L2 (SE¼ NW¼), Sec. 29, Twp 50N, Rge 03W, B.M. KOOTENAI County
COEUR D ALENE LAKE L2 (SE¼ NW¼), Sec. 29, Twp 50N, Rge 03W, B.M. KOOTENAI County

Method of Determination: GPS; 2ea screened intake pipes with submersible pumps in Lake Coeur D Alene are located at -116°44.275, 47°39.089

Method of Determination: Large area POU designated; determined by field exam, existing municipal right 95-8627 POU shape, 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
No.1 Intake Pipe		20			
No.2 Intake Pipe		20			

D. FLOW MEASUREMENTS

1

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
GE PANEMETRIC TRANSPORT	ULTRASONIC		PT900	M06210067		4/6/2022

2. Measurements: Two sets of flow measurements were taken using GE Panemetric PT900 Ultrasonic flowmeter during the field exam. The flow measurement resulting in 173.953 gpm or 0.388 cfs (Pump No.1) & 172.690 gpm or 0.385 cfs (Pump No. 2).

E. FLOW CALCULATIONS X Additional Computation Sheets Attached

Measured Method: GE Panemetric PT900 Ultrasonic flowmeter = 0.0388 cfs + 0.0385 cfs (see attached)

- System designed to allow both pumps to operate simultaneously, resulting in a combined maximum diversion rate of **0.77 cfs** considering department rounding standards.

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation: N/A
2. Volume Calculations for Other Uses: Municipal Annual Volume broken down by service connections & annual volume:
 - 61 active service connections (homes with ½ acre irrigation) annual volume = Year 2018 reported data / gal per acre-foot = 23,438,000 gallons / 325,850 gal per af = 71.9 af
 - 40 inactive/in construction service connections annual volume = 40 stub-ins x 1.2 af = 48.0 af
 - Total annual volume = 71.9 af (61 service connections) + 48.0 af (40 stub-ins) = 119.9 af or **120.0 af** considering department rounding standards. Annual volume = Maximum diversion volume.

G. NARRATIVE/REMARKS/COMMENTS

Administrative note: when applied for engineering documents in backfile illustrate the intent for two intake pipes with pumps from the lake; reference backfile Letter from Engineer requesting a lower cfs rate (PDF pg-4 system schematic) identifies "LAKE PUMPS). When submitted there was an error in understanding which occurred resulting in a single POD being assigned, as both intake pipes are in the same location, whereas the department requires a separate POD for each pipe in the lake. During licensing review, I have clarified the Permit to reflect two separate PODs with same legal description.

Initial field exam performed on 7/23/2020 with the applicant's water system operator, John Shields, showed two intake pipes with 20 hp pumps drafting water from Lake Coeur D'Alene for municipal uses. At the PODs, there are two 4-inch pipes in lake leading to a vaulted pump access along the lakeshore. From this point the pipes route uphill to a pump station situated approximately 300 feet up from lake level. Elevation at lake level = 2,100 feet & Elevation at pump station = 2,400 ft.

Within the pump station the applicant's water system consists of the two 20 hp lake pumps diverting into two 1,000-gal storage tanks. Separate 5 hp booster pumps then route water to a slow sand water filtration system for treatment prior to being pumped to a 100,000-gal storage reservoir. There are two flowmeters installed on the applicant's system, but both monitor volume and are installed inline as water is moved from the intermediate storage tanks by booster pumps. As a result, I was unable to use the applicant's flow meters to take accurate instantaneous flow measurements. A follow-up site visit was completed on 8/25/2022 with the applicant present & John Shields to perform flow measurements.

Two sets of flow measurements were taken using GE Panametric PT900 Ultrasonic flowmeter during the site visit. The flow measurement resulted in 173.953 gpm or 0.388 cfs (Pump No. 1) & 172.690 gpm or 0.385 cfs (Pump No. 2). While the system was designed to operate in a lead/lag fashion, the applicant asserts that both pumps have been operated simultaneously during emergency situations. I am recommending the maximum diversion rate of **0.77 cfs** for licensing purposes, as both pumps were operated at the same time in the development period of the Permit, and potentially will be used that again. 0.77 cfs is much lower than the permit approved 2.0 cfs, but the applicant is limited to pumping performance obtained during field examinations/site visits for licensing purposes.

During the exam I was able to drive all the roads withing the municipal POU, which conforms to the applicant's prior water right 95-8627's POU. During licensing review Arcmap aerial imagery was used to assign the POU shape. Based on applicant's service area maps and evaluation of the assigned Permit POU shape, I made the following revisions toward licensing POU shape during licensing review:

- Removed portion of POU in the SW¼NW¼ Government Lot 2, Section 29.
- Added service area lots in the NW¼SE¼ Government Lot 3, Section 29.
- Added service area lots in the SW¼SE¼ Government Lot 3, Section 29.
- Added service area lots in the NW¼NW¼, Section 28.

Determining annual volume for licensing was challenging as a large portion of the applicant's service area being undeveloped at time of exam. I observed physical stub-ins at numerous lots in various portions of the POU which enables me to conclude that all parcels are either built out or stubbed-in with dedicated service connections. Following the exam, I worked with the applicant to evaluate annual volume(s) within the development period of the Permit. Mr. Shields provided annual volume data for 2017-2018 which represents the most current years I can evaluate from the 10-year development period.

In letters dated November 14, 2020 & November 16, 2020, from the applicant provide census information designating 101 total service connections for the water system. Out of these there were 61 active connections identified by the applicant at time of field examination. The remaining 40 parcels have dedicated stub-ins. Listed below is my annual volume & maximum volume analysis for licensing recommendations:

- YR 2018 recorded volume = 23,438,000 gal used by 61 active service connections
 - $23,438,000 \text{ gal} / 325,850 \text{ af} = 71.9 \text{ af}$
 - If we consider 61 homes x 1.2 af per home with ½ ac irrigation equals 73.2 af, the 71.9 af annual volume is relatively close in comparison to department standards for same number of connections.
- 40 stub-in lots x 1.2 af per lot = 48.0 af
- Annual volume & maximum diversion volume = 71.9 af (active connections) + 48.0 af (stub-in credit) = 119.9 af or **120.0 af** considering department rounding standards.

Conditions 26A & 134 were removed from the permit during licensing review. Condition X35 was revised to describe only combined diversion volume, as the diversion rates for the applicant's water rights are from separate water sources and pumping systems. All other conditions on the Permit shall be carried to licensing. Overlap concerns: Decreed Right 95-8627 uses two groundwater wells that are used for the same municipal water system as this permits use, with the same service area POU. Both water rights pump from their respective sources to a water treatment plant prior to distribution using the same infrastructure. Condition X35 was included during permit approval for this water right and has been revised and carried to the licensing mitigating any overlap concerns between 95-8627 & 95-9324. There are no additional overlap concerns for this water right.

Have conditions of permit approval been met? X 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>
MUNICIPAL	01/01 to 12/31	0.77 CFS	120.0 AF

Totals: 0.77 CFS 120.0 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 -

Field Examiner's Name 25210 Date 8/26/2022

Reviewer _____ Date _____

SYRINGA HEIGHTS WATER SYSTEM SERVICE AREA

11X17 SCALE: 1" = 400'
24X36 SCALE: 1" = 200'

★ PLURAL
Pump"s
INDICATING 2ea
Pipes with Pumps.

EXISTING CROSSING
LAKE PUMPS
WATERLINE CROSSING

LAKE COEUR D'ALENE
ORDINARY HIGH WATER EL 2125
ORDINARY LOW WATER EL 2120

CLIFF HOUSE BOOSTER STATION
(3) PUMPS, 7.5 HP, IS OPEN AT 220' OF HEAD

BLOW SAND FILTER BEDS
CL2 CONTACT CHAMBER
CL2 CONTACT CHAMBER
BOOSTER PUMPS
BOOSTER STATION
(2) 3 HP, (1) 2 HP

WELL
ABANDONED

WELCH COMER
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NO.	DATE	REVISION DESCRIPTION	BY

HAMILTON	WATER SYSTEM SERVICE AREA	DWG NAME:
SYRINGA HEIGHTS		11:85PL09 DWG
		DATE:
		09-06-06
		SHEET NO:

Flow Measurement for permit 95-9324

Date/Time 8/25/2022	Velocity ft/s	Volume Gallons/min	Fwd Totalizer Fwd Gallons	Error
15:23:00	4.9411	174.6625	802.735	Error:0
15:24:00	4.8993	173.1842	975.919	Error:0
15:25:00	4.9951	175.685	1151.604	Error:0
15:26:00	4.9053	173.3981	1325.002	Error:0
15:27:00	4.993	175.9621	1500.964	Error:0
15:28:00	4.9023	173.2925	1674.257	Error:0
15:29:00	4.883	172.6086	1846.866	Error:0
15:30:00	4.9458	174.295	2021.161	Error:0
15:31:00	4.8552	172.6272	2193.788	Error:0
15:32:00	4.8253	173.5715	2367.359	Error:0
15:33:00	4.943	174.9034	2542.263	Error:0

Average Velocity	4.92
Max Velocity	4.9951
Min Velocity	4.8253

PUMP No. 1

Average GPM	174.0
Max GPM	176.0
Min GPM	172.6

Beginning Reading	802.735	
Ending Reading	2542.263	
Difference in Readings	1739.528	
Difference / 10 readings	173.953	GPM
Conversion from GPM to CFS (/448.83)	0.388	CFS

Flow Measurement for permit 95-9324

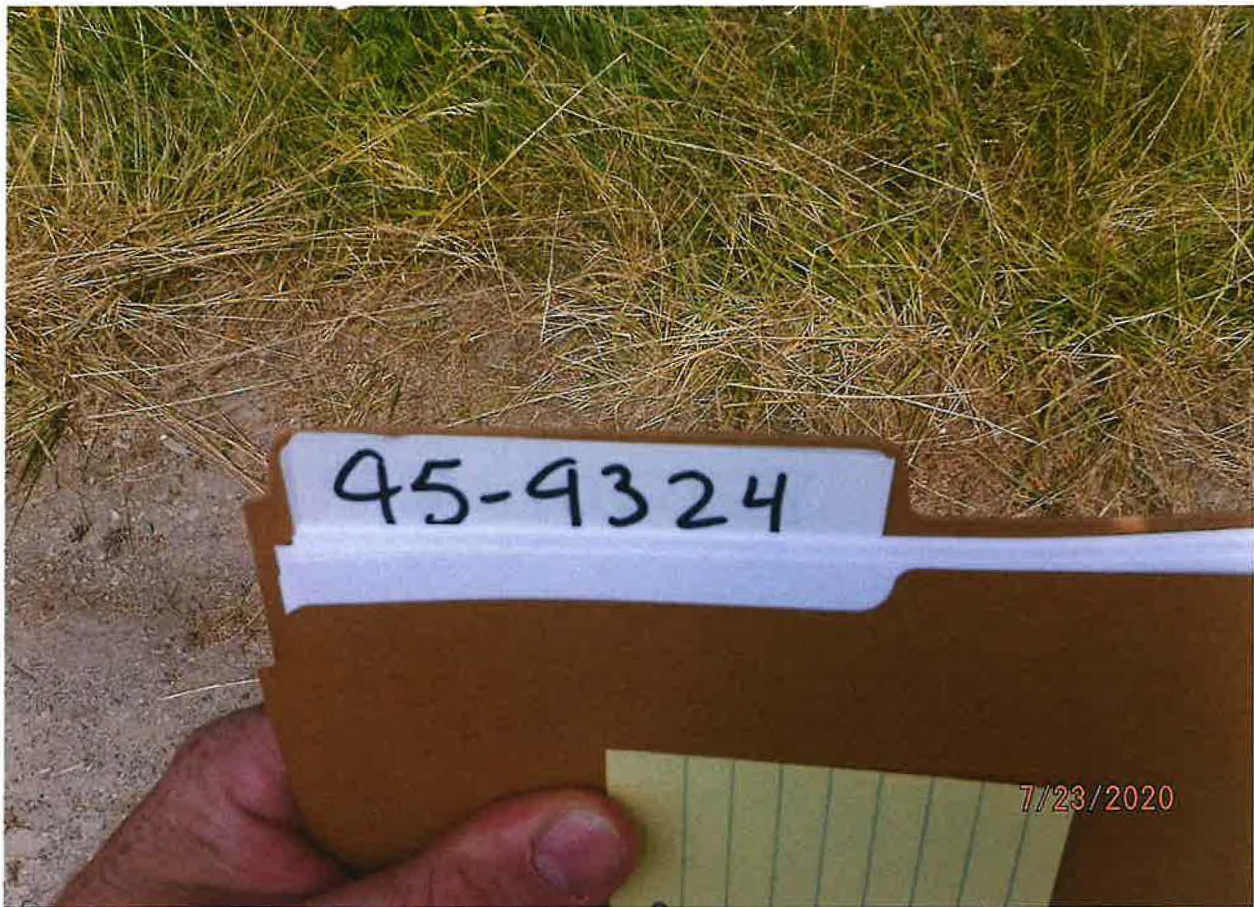
Date/Time 8/25/2022	Velocity ft/s	Volume Gallons/min	Fwd Totalizer Fwd Gallons	Error
15:23:00	4.8458	171.295	531.689	Error:0
15:24:00	4.9023	173.2925	704.982	Error:0
15:25:00	4.8673	171.9034	876.885	Error:0
15:26:00	4.9411	174.6625	1051.547	Error:0
15:27:00	4.9053	173.3981	1224.946	Error:0
15:28:00	4.8253	170.5715	1395.517	Error:0
15:29:00	4.8552	171.6272	1567.144	Error:0
15:30:00	4.8993	173.1842	1740.328	Error:0
15:31:00	4.8883	172.6086	1912.937	Error:0
15:32:00	4.8851	172.685	2085.622	Error:0
15:33:00	4.8913	172.9621	2258.584	Error:0

Average Velocity	4.88
Max Velocity	4.9411
Min Velocity	4.8253

PUMP No. 2

Average GPM	172.6
Max GPM	174.7
Min GPM	170.6

Beginning Reading	531.689	
Ending Reading	2258.584	
Difference in Readings	1726.895	
Difference / 10 readings	172.690	GPM
Conversion from GPM to CFS (/448.83)	0.385	CFS



POD – VAULT FOR 2 4" PIPES IN LAKE



PUMP HOUSE ELEVATED ON BENCH ABOVE POD



2EA 20 HP PUMPS



2EA 1,000 GAL STORAGE TANKS





PUMP HOUSE – WATER SYSTEM





WATER METER



35 PSI



MUNICIPAL POU – EXAMPLES STUB-IN LOT NOT BUILT OUT





100,000-GAL STORAGE RESERVOIR



SLOW SAND FILTRATION SYSTEM BUILDING.



FLOW METER MEASUREMENT



EXAMPLE INSTANTANEOUS FLOW OBSERVED AT TIME OF EXAM



MUNICIPAL POU – SYRINGA HEIGHTS





MUNICIPAL POU





MUNICIPAL POU





MUNICIPAL POU

