

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 95-9412
Exam Date: 09/02/2015

1. Current Owner:
REUBEN ARTS 5853 E POLELINE AVE POST FALLS ID 83854-5945 AND
JOSIE ARTS 5853 E POLELINE AVE POST FALLS ID 83854-5945
2. Accompanied by: Reuben Arts
Phone No: 509-990-9364
Address: Same as above
Relationship to permit Holder: Current Permit holder

3. **SOURCE:**
GROUND WATER

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
Multiple – see comment	Groundwater(s)	Municipal	Decreed

Comments: this permit's POU is located within the Ross Point Water District's service area, and Decreed WR(s) 95-4088, 95-7698, 95-7258, 95-8477, 95-9009, & 95-15533 all overlap but are not a concern as the permit holder is not served by the water district.

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

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

GROUND WATER SW¼ SW¼, Sec. 29, Twp 51N, Rge 04W, B.M. KOOTENAI County

Method of Determination: GPS. POD is a groundwater well D0054379 located at -116°52.1993, 47°43.8301.

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	
51N	04W	29											14.0						14.0

Total Acres: 14.0

PLACE OF USE: STOCKWATER & DOMESTIC

Twp	Rng	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
51N	04W	29											X						

Method of Determination: beneficial use field examination & 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
D0054379	FRANKLIN	20			

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
FLOWMETER		MASTER METER				

2. Measurements: During field examination on 7/7/2022, the applicant operated the system at maximum capacity with the largest hayfield irrigation zone running. Applicant's water system incorporates an inline Master Meter flowmeter that was timed for 1 minute with resulting flow rate of 145 gallons in 1 minute. 145 gpm is equivalent to 0.32 cfs.

E. FLOW CALCULATIONS

Measured Method: Flowmeter installed on system, 1 minute interval timed resulting in 145 gpm or 0.32 cfs

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation:

$$V_{I.R} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 14 \text{ ac} \times 3.0 \text{ afa} = 42.0 \text{ af}$$

$$V_{D.R} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.27 \text{ cfs} \times 246\text{-day} \times 1.9835 = 131.7 \text{ af}$$

$$V = \text{Smaller of } V_{I.R} \text{ and } V_{D.R} = \mathbf{42.0 \text{ af}}$$

2. Volume Calculations for Other Uses:

- Domestic annual volume for 1 home (in-home use only) = **0.6 af**
- Stockwater annual volume = 25 head mixed stock (proof report value) $\times$ 12 gpd $\times$ 365 day = 109,500 gal per year / 325,850 gal per af = **0.3 af** considering department rounding standards.

G. NARRATIVE/REMARKS/COMMENTS

Department staff performed an initial field examination on 9/2/2015 with the original permit holder, Timothy M Plass, but sufficient data was not captured to accurately finalize the permit for licensing purposes. A follow-up exam was conducted on 7/7/2022 with the current permit holder, Reuben Arts, showing a groundwater well (D0054379) being used for irrigation, domestic, and stockwater uses. The diverting works are in a vault near the well head where main service lines are routed to the home & a main trunk line for irrigation purposes. At time of re-exam the applicant operated the system at maximum capacity with the largest hayfield irrigation zone(s) running. The water system incorporates an inline Master Meter flowmeter that was timed for 1 minute deriving a flow rate of 145 gallons in 1 minute. 145 gpm is equivalent to 0.32 cfs.

The permit holder is limited by the permit approved 0.30 cfs maximum diversion rate for licensing considerations. The irrigation acreage diversion rate authorized equals **0.27 cfs** for demonstrated irrigation at the POU, domestic diversion rate limited to **0.02 cfs** & stockwater diversion rate limited to **0.01 cfs**. It is unclear why the initial application for permit was applied for less diversion rate than the department standard for each beneficial use, but it likely was by design for the 20 hp well pump installed in the system and resulting pump capacity of approx. 0.30 cfs (reference theoretic pumping equation). Regardless, the diversion rate(s) recommended for licensing are the permit approved values with a maximum diversion rate of **0.30 cfs** recommended. The flow measurement taken at time of exam demonstrates the 20 hp pump has a higher pump capacity than the 0.30 cfs, but Mr. Arts has applied for additional use(s) from the well under application for permit 95-18333 which accounts for the overage in maximum diversion rate found during the field exam.

The domestic POU was traced out on field maps and consists of one home with a shop that is service connected. Arcmap aerial imagery was used to accurately trace out the domestic POU during licensing review. The annual volume recommended for domestic use equals **0.6 af** for in-home use only, as irrigation is covered under a separate beneficial use component.

The stockwater POU consists of the entire parcel, which is currently used for goats & chickens. Due to this permit being older and the statement of completion date being submitted in November of 2008, I am recommending the stockwater annual volume be designated using the 25 head of mixed stock shown on the statement of completion form. Stockwater and all other uses are being licensed with consideration of the permit's development window from 11/26/2007 – 11/13/2008. Review of Google maps and Arcmap aerial imagery show stock usage during leading up to current years with cattle present on the property in YR 2013 imagery. The stockwater annual volume equals 25 head mixed stock x 12 gpd x 365 days = 109,500 gal per year / 325,850 gal per acre-foot = **0.3 af** considering department rounding standards.

The irrigation POU was walked with Mr. Arts and incorporates an 8-inch main trunk line to the northern hay fields and 3- or 4-inch hand line runs from irrigation risers at interval running north/south. Irrigation also occurs from frost free hydrants located throughout the parcel for the irrigation of garden, lawn & orchard trees. Following review of aerial imagery using ESRI 2009-2021 imagery and Google Earth 2009 to present illustrates active irrigation has been occurring at the parcel. Arcmap aerial imagery year 2013 was used to accurately trace out the irrigation POU consisting of 14 acres. The annual volume recommended for licensing equals 14 ac x 3.0 afa = **42.0 af**. The maximum diversion volume designated during licensing review equals 0.6 af (domestic) + 0.3 af (stockwater) + 42.0 af (irrigation) = **42.9 af**. The irrigation system has several leaks and broken sprinkler nozzles which need repairs. Completing repairs and fixing leaks will likely reduce the diversion rates observed at time of field exam and reduce the cost to operate the system in future years.

Conditions 046 & X02 were removed from the permit during licensing review. All other conditions on the permit shall be carried to licensing. Ross Point Water District has multiple decreed water rights with a municipal service area which overlaps this right's POU(s), but there is no concern for overlap as the permit holder is not service connected to the municipal provider. There are no overlap concerns for 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	0.27 CFS	42.0 AF
STOCKWATER	01/01 to 12/31	0.01 CFS	0.3 AF
DOMESTIC	01/01 to 12/31	0.02 CFS	0.6 AF

Totals: 0.30 CFS 42.9 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 -

Field Examiner's Name



Date

7/29/2022

Reviewer



Date

7/21/2022

State of Idaho
Department of Water Resources
Attachment to Field Exam
95-9412

DOMESTIC system diagram.

04W



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

0 0.035 0.07 0.14 Miles



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IRRIGATION system diagram.



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

0 0.0425 0.085 0.17 Miles



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STOCKWATER system diagram.

04W



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

0 0.0425 0.085 0.17 Miles



THEORETICAL PUMPING EQUATION(S) FOR WR# 95-9412

Theoretical Pumping Equation is required because system did not allow for a proper measurement. Pump is estimated to lift 285 ft, and running at 65 psi.

PUMP EQUATION

WATER RIGHT No. 95-9412

D0076078	HP	H in feet	Efficiency as a decimal	Pumping lift in feet	System pressure in PSI
Q = $HP * 8.8 * Eff / H$	20	435.3401	0.8	285	65
Q = 0.324 cfs 145.4 gpm					



Google Earth Image Capture from 7/2013 illustrates Domestic 1 home, Stockwater use (cattle in field), and Irrigation practices in comparison to nearby property fields (deeper shade of green indicates irrigation was active in 2013).



STOCKWATER USE POU – CATTLE PRESENT (UPPER L/H CORNER OF POU) & SHED/FEED LOT AREA

95-9412



GOOGLE EARTH IMAGE CAPTURE DATE 8/2011 – CLEARLY IDENTIFIES ACTIVE IRRIGATION USE WITH THE
POU

95-9412



GOOGLE EARTH IMAGE CAPTURE DATE 8/2009 – FALL SEASON ACTIVE IRRIGATION IDENTIFIED BY DEEPER SHADING OF GREEN COMPARATIVE TO SURROUNDING PARCEL FIELDS.

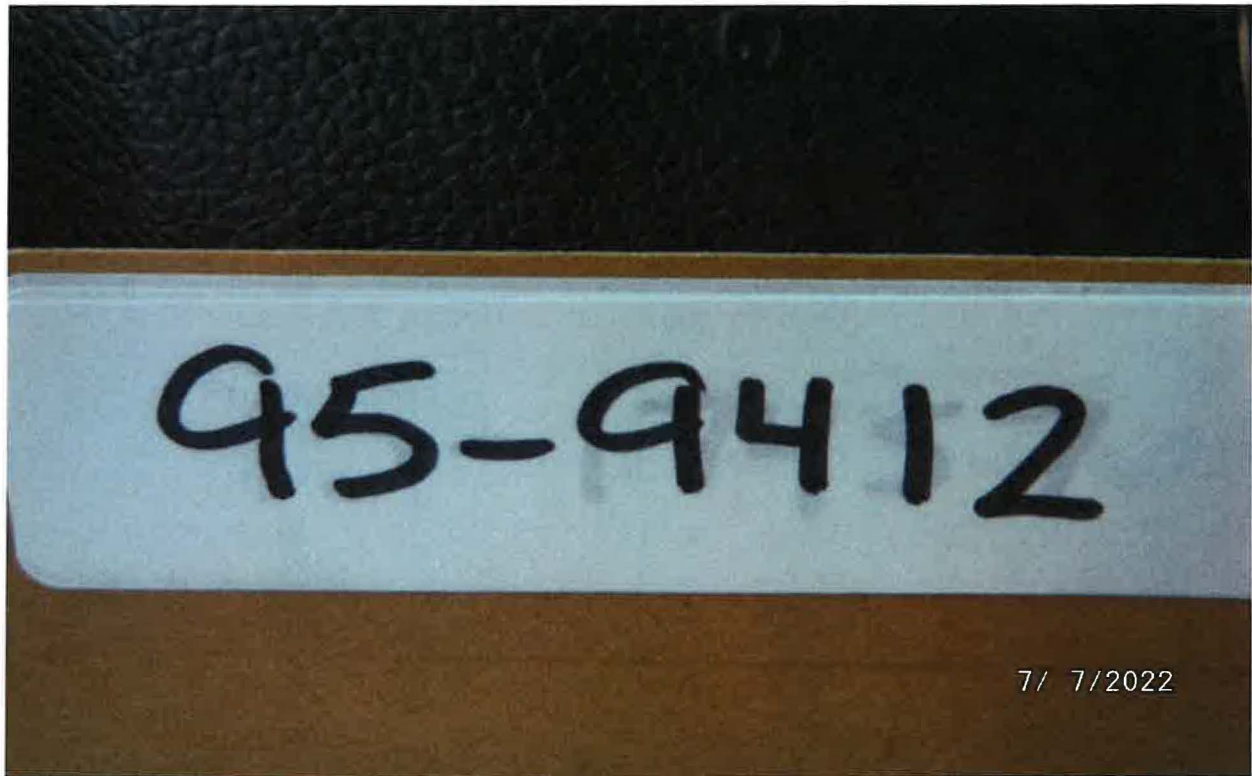


GOOGLE EARTH IMAGE CAPTURE DATE 5/2009 – EARLIEST IMAGE DATE FROM END OF PERMIT DEVELOPMENT PERIOD (13 NOVEMBER 2008). IMAGE CLEARLY DENOTES TILLED SOILS TYPICAL FOR PLANTING/GROWING CROPS OR HAY FIELD CULTIVATION.

95-9412



GOOGLE EARTH IMAGE CAPTURE DATE 9/2006 – PARCEL VIEW PRIOR TO DEVELOPMENT PERIOD FOR PERMIT STARTING (26 NOVEMBER 2007).



INITIAL BENEFICIAL USE FIELD EXAM DATE 9/2/2015; FOLLOW-UP EXAM DATE 7/7/2022



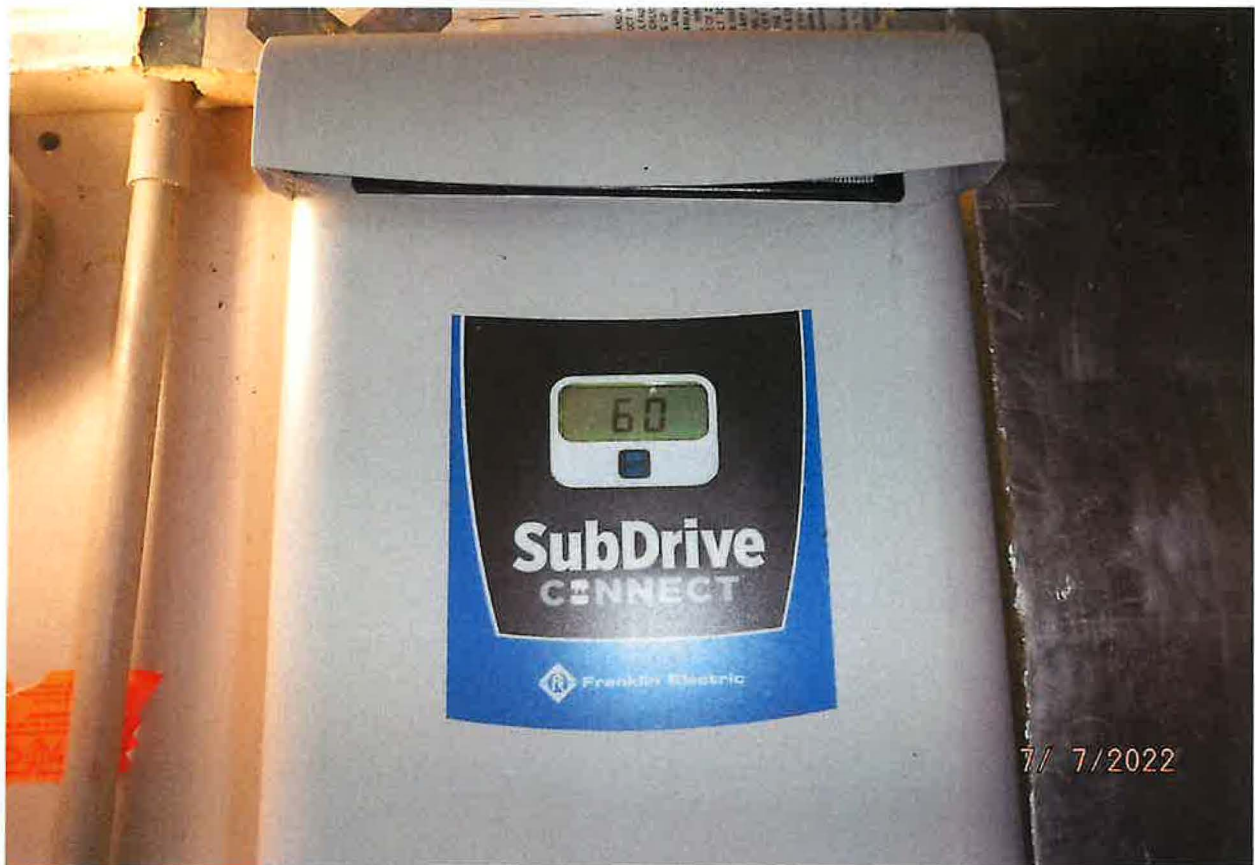
POD – GROUNDWATER WELL



POD – WELL D-TAG D0054379



VAULTED DIVERTING WORKS CO-LOCATED WITH WELL



20 HP FRANKLIN ELECTRIC VARIABLE FREQ DRIVE PUMP MOTOR INSTALLED IN WELL



65 PSI SYSTEM OPERATING PRESSURE



MASTER METER FLOWMETER INSTALLED ON SYSTEM



MAIN IRRIGATION SYSTEM TRUNK LINE ROUTES FROM VAULT TO HAY FIELDS ON WESTERN EXTENT OF PARCEL



IRRIGATION POU – LARGE GARDEN AREA





IRRIGATION POU – LARGE LAWN SPACE AROUND RESIDENCE – HOSE TO SPRINKLER USE





IRRIGATION POU – FROST FREE HYDRANT ALONG ROAD FRONTAGE





IRRIGATION POU – 8 INCH MAIN TRUNK LINE DOWN TO 4 INCH & 3 INCH HAND LINE





IRRIGATION POU





DOMESTIC POU



STOCKWATER POU



STOCKWATER POU





STOCKWATER POU

