

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

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OCT 20 2017

DEPARTMENT OF
WATER RESOURCES

A Beneficial Use Field Report is prepared by a water right examiner as the result of an examination to clearly confirm and establish the extent of the beneficial use of water established in connection with a permit during the development period authorized by the permit and any extensions of time previously approved.

A. GENERAL INFORMATIONPermit No. 37-227831. Owner Bradley S. and Mary C. WirthPhone No. 208-788-0965Current address 50 Lower Broadford Rd. Bellevue, ID 833132. Examiner's name G. Erick Powell and Zach LathamEXAM DATE 9/20/173. Accompanied by Bradley Wirth

Email _____

Address 50 Lower Broadford Rd. Bellevue, ID 83313Relationship to permit holder Permit HolderPhone No. 208-788-09654. Source Ground Watertributary to N/A**B. OVERLAP REVIEW**1. Other water rights with the same place of use Irrigation WRs 37-22212 and 37-222442. Other water rights with the same source and point of diversion None.**C. DIVERSION AND DELIVERY SYSTEM**

1. Point(s) of Diversion:

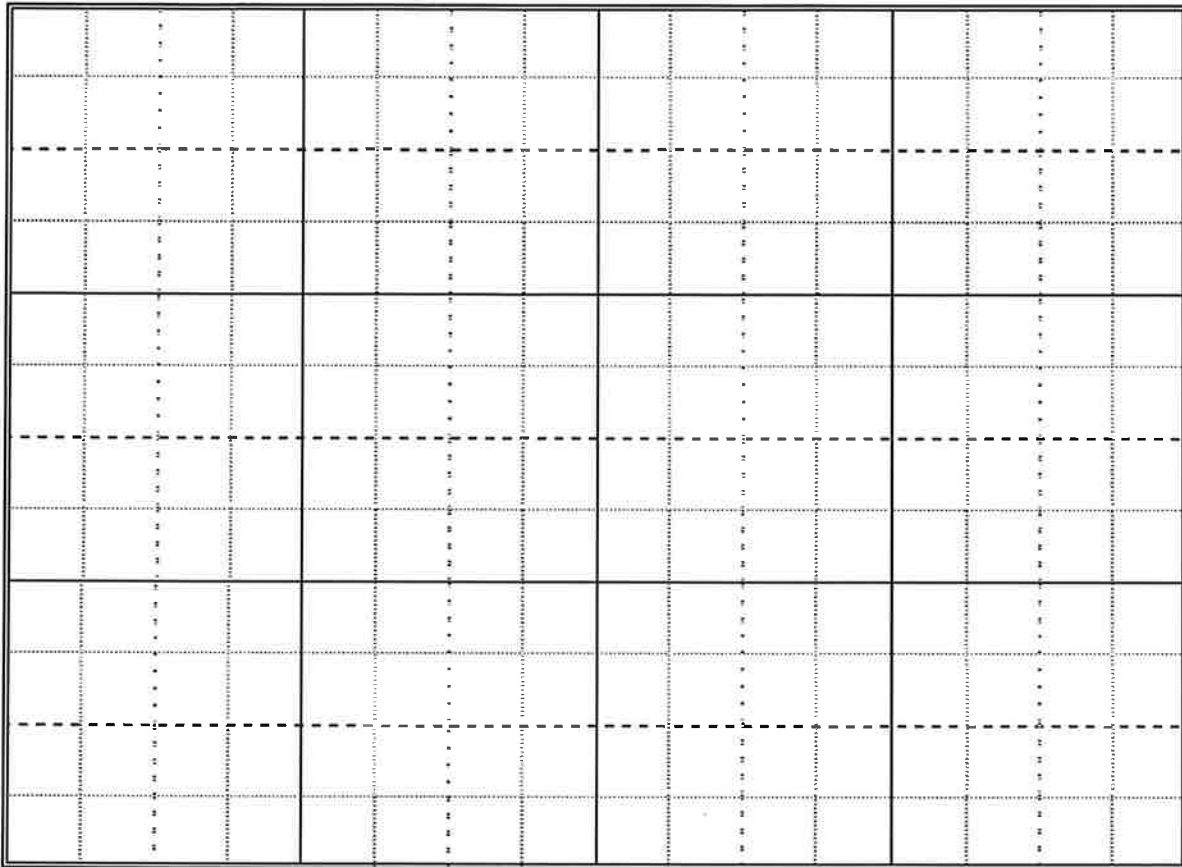
Ident. No.	Gov't Lot	¼	¼	¼	Sec	Twp	Rge	County	Method of Determination/Remarks
			NE	SE	35	2N	18E	Blaine	Existing Domestic/G, L Production Well

2. Place(s) of Use:

Method of determination _____

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
2N	18E	35													G,L,				
2N	18E	35													D				

3. **Delivery System Diagram:** Indicate all major components and distances between components. Indicate weir size/ditch size/pipe diameter (inside), as applicable. Use the space provided or ☒ see attached.



Scale: 1" = _____

- ☒ Copy of USGS Quadrangle attached showing location(s) of point(s) of diversion and place(s) of use (required)
☒ Aerial photo attached (required for irrigation of 10+ acres)
☒ Photo of diversion and system attached

4.

Well or Diversion Identification No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
D,G,L Production Well	Goulds	5	G1247540	Goulds	2" discharge

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

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
Portable Ultrasonic Meter	Ultrasonic	Fuji	FLCS2011	N5L3138		3/29/2017

2. **Measurements:** _____

Two measurements were performed in association with the delivery system, one on the heating and cooling delivery line and the other on the domestic delivery line. Both measurements made downstream of the pressure tank in the crawl space of the residence garage.

E. NARRATIVE/REMARKS/COMMENTS

Water diverted for domestic, heating and cooling uses at the 50 Lower Broadford residence originates from a 6" well on the north side of the residence. Water used for heating and cooling uses is piped into the crawl space, through a Amtrol WX103 7.6 gallon pressure tank, past the domestic supply line and through a plate exchanger, allowing fluid on the opposite side of the plate to take advantage of the ambient ground water temperature. After flowing through the plate exchanger, water then flows out of the house and is injected (un-pressurized) into an 8" injection well on the south side of the residence. 16 tons of total heating and cooling use equipment have been installed in the residence. The 6 ton unit associated with floor heating in the residence is made by Bosch (Model: TW061-1CSC, SN: 350-212-TW0002-T111M40950) and is used for heating in the residence. The 10 ton unit associated with forced air heating and cooling provides heating (15%) and cooling (85%) uses and is also made by Bosch (Model: TW122-1CSC, SN: 3540-212-TW0001-T111M53636). Two measurements were made on the heating and cooling mainline upstream of the plate exchanger, downstream of the pressure tank (all domestic use off). The pressure tank did not influence flow rates through the system as observed flow rates associated with all uses were run for longer than 10 minutes which exceeds the volume stored in the tank. The first measurement was made with the 10 ton unit solenoid fully open, resulting in a flow rate of 26 gallons per minute (gpm) or 0.06 cubic feet per second (cfs). This flow rate represents either 100% of the cooling capacity, or 15% of this flow rate is allocated to additional heating capacity not provided by the 6 ton unit. Additional heating from the 10 ton unit was calculated at $26 \text{ gpm} \times 0.15$ or 4 gpm. The second measurement made on the heating and cooling mainline upstream of the plate exchanger involved both the 6 ton and 10 ton units. During this measurement, both the 6 ton and 10 ton solenoid valves were fully open, resulting in a max heating and cooling system flow rate of 48 gpm or 0.11 cfs. Therefore, the 6 ton flow rate is calculated as the difference between the measured 16 ton unit flow rate (48 gpm) and the measured 10 ton unit flow rate (26 gpm), which equals 22 gpm or 0.05 cfs. Total heating flow rate measured was calculated by summing the 6 ton flow rate (22 gpm or 0.05 cfs) + 15% of the 10 ton flow rate ($0.15 \times 26 \text{ gpm}$) = 26 gpm or 0.06 cfs. Total cooling flow equals the 10 ton measured flow rate of 26 gpm or 0.06 cfs. A single measurement was performed on the main line supplying domestic water to the residence downstream of the pressure tank, upstream of any domestic use. The maximum flow rate observed was 20 gpm for domestic use. All measurements were performed with a clamp on Fuji Ultrasonic Meter, recently calibrated by IDWR on 3/29/17. See attached picture addendum.

Has the permit holder met all conditions of permit approval, including any mitigation requirements and/or measuring device installation requirements? ☒ Yes ☐ No If no, what must be done to meet the permit requirements?

All conditions associated with water right permit 37-22783 appear to have been met.

F. FLOW CALCULATIONS☐ Additional computation sheets attached

Measured Method:

Heating: 6 ton measured flow rate (22 gpm or 0.05 cfs) + 15% of the 10 ton measured flow rate (0.15×26 gpm) = 26 gpm or 0.06 cfs.

Cooling: 10 ton measured flow rate of 26 gpm or 0.06 cfs.

Domestic: Measured 20 gpm, limited to 18 gpm or 0.04 per 42-111A).

G. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = \underline{N/A.}$$

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation Season}) \times 1.9835 = \underline{N/A.}$$

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = \underline{N/A.}$$

2. Volume Calculations for Other Uses:

Diversion volume was not required to be measured during permit development time for uses associated w/ 37-22783.

If system is assumed to be running either on heating or cooling at 100% every day, all year (365.25 days), 26 gpm or 0.06 cfs would be diverted constantly. This flow rate run for an entire year would yield 0.12 acre-feet per day or 43.4 acre feet per year. This right is non-consumptive, so volume limitation should not influence ability to divert under worst circumstances (heating or cooling), so if a volume is required for approval, recommend 43.4 AFA.

H. RECOMMENDATIONS

1. Recommended Amounts

Beneficial Use	Period of Use		Rate of Diversion Q (cfs)	Annual Volume V (afa)
	From	To		
Heating	01/01	12/31	0.06 cfs	43.4 afa
Cooling	01/01	12/31	0.06 cfs	43.4 afa
Domestic	01/01	12/31	0.04 cfs	13000 gallons per day
Totals:			0.10 cfs	G,L=43.4 afa, D= 13,000 gpd

2. Recommended Amendments

- ☐ Change P.D. as reflected on page 1 ☐ Add P.D. as reflected on page 1 ☒ None
☐ Change P.U. as reflected on page 1 ☐ Add P.U. as reflected on page 1 ☐ Other

I. AUTHENTICATION

Field Examiner's Signature *G. Erick Powell* Date 10/18/17

Reviewer _____ Date _____



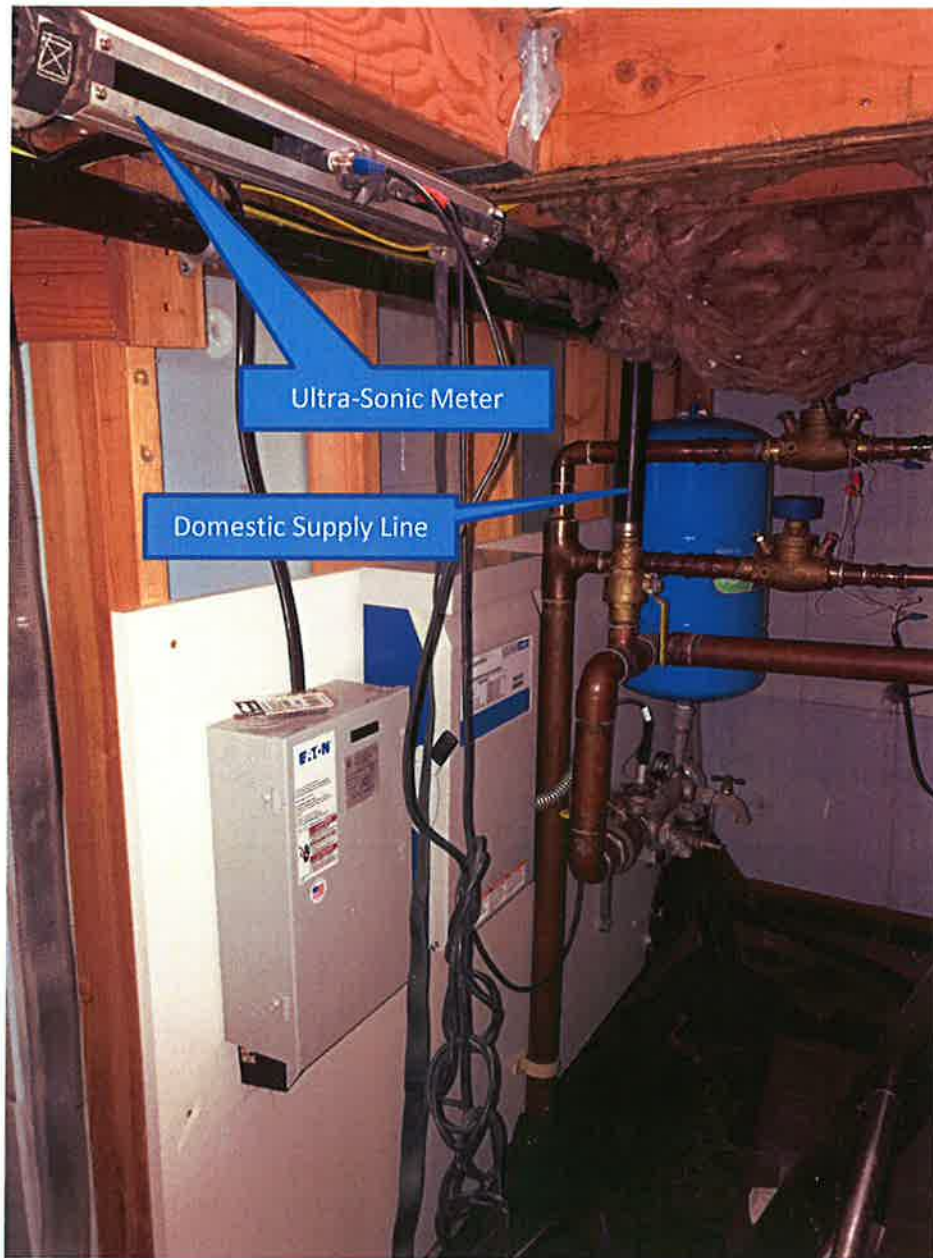


Figure 6: Portable ultra-sonic meter measurement location for domestic use on the domestic supply mainline.

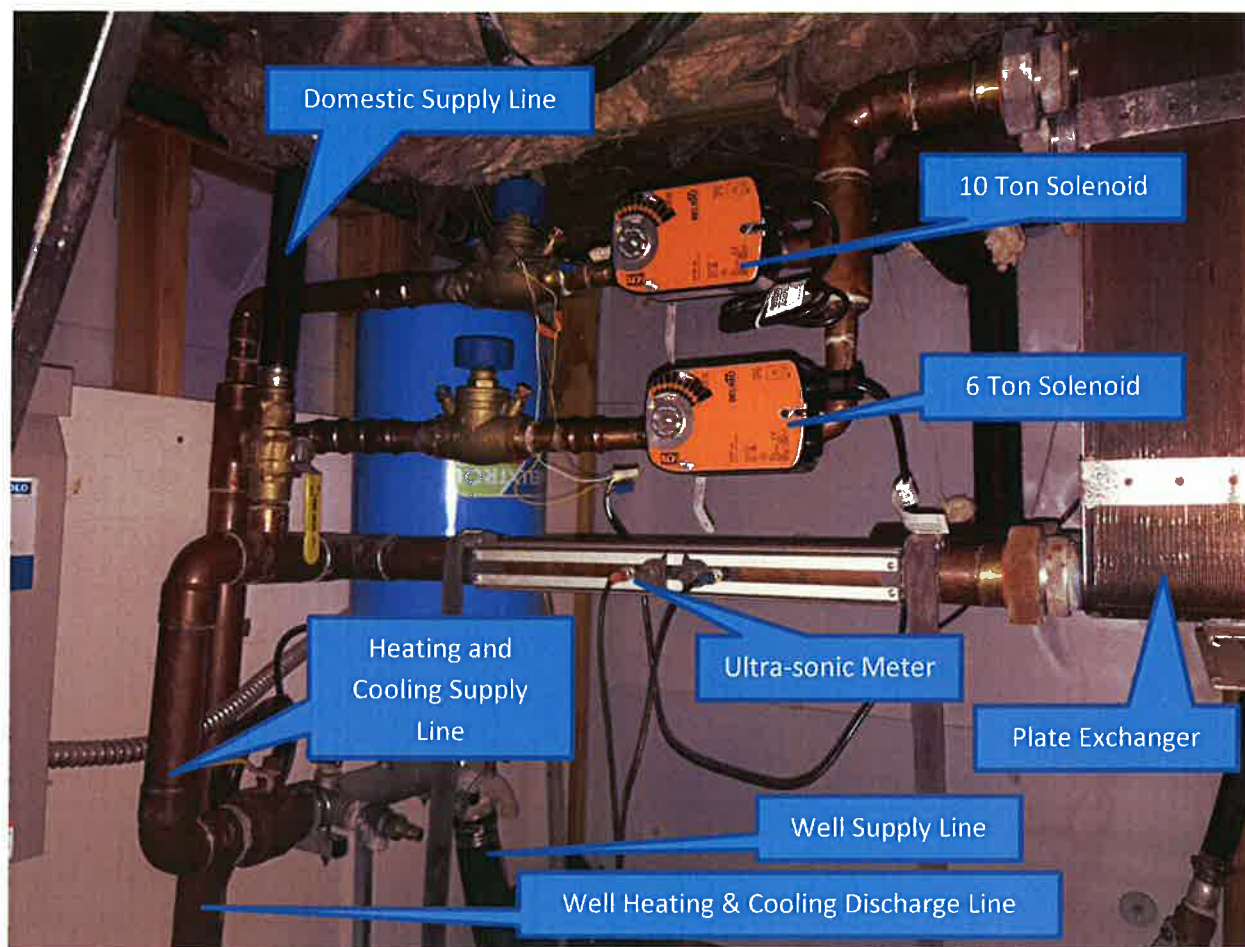


Figure 3: Portable ultra-sonic meter measurement location for heating and cooling uses, upstream of plate exchanger on heating and cooling mainline.

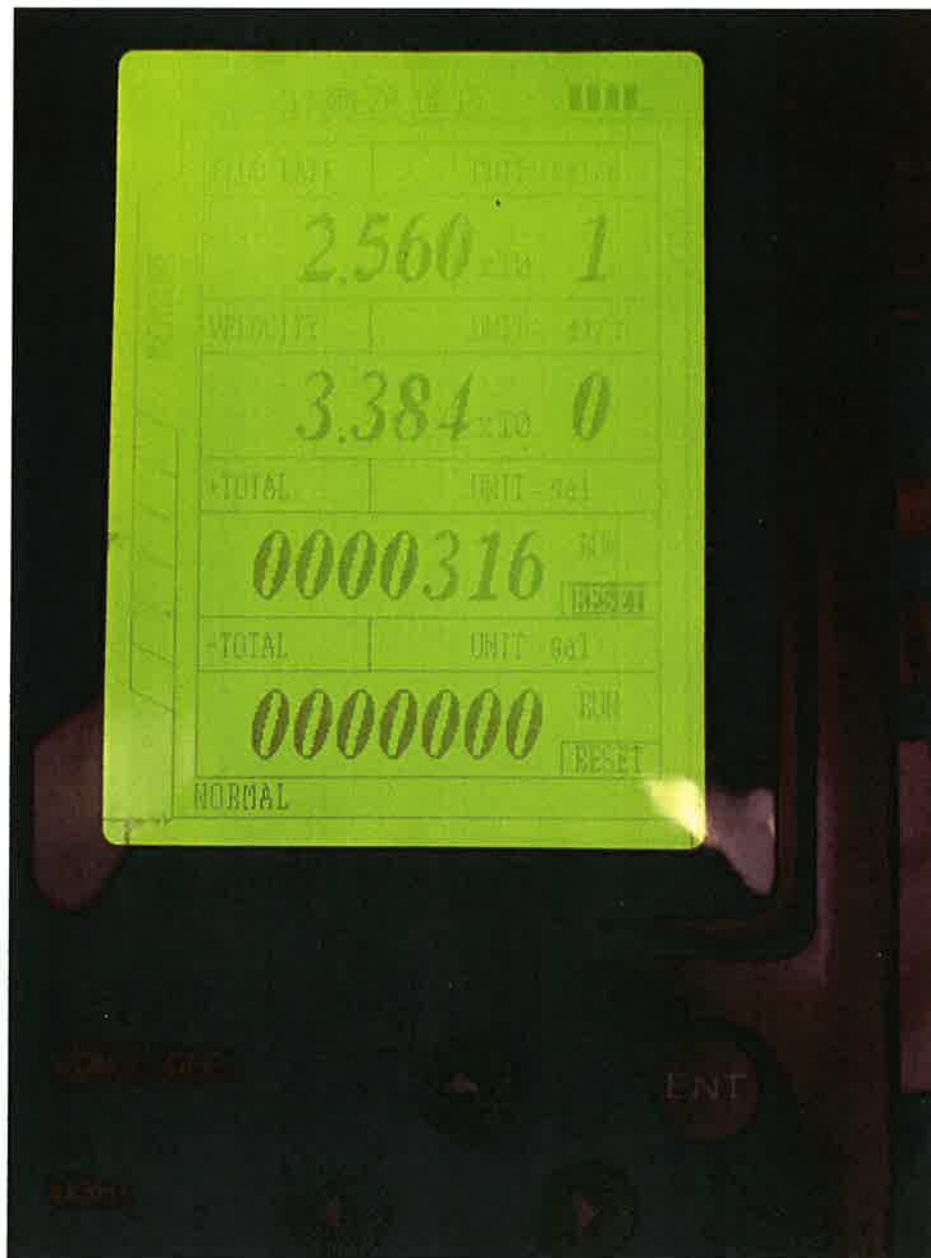


Figure 4: Portable ultra-sonic meter readout; maximum discharge associated with 6 ton heating unit.

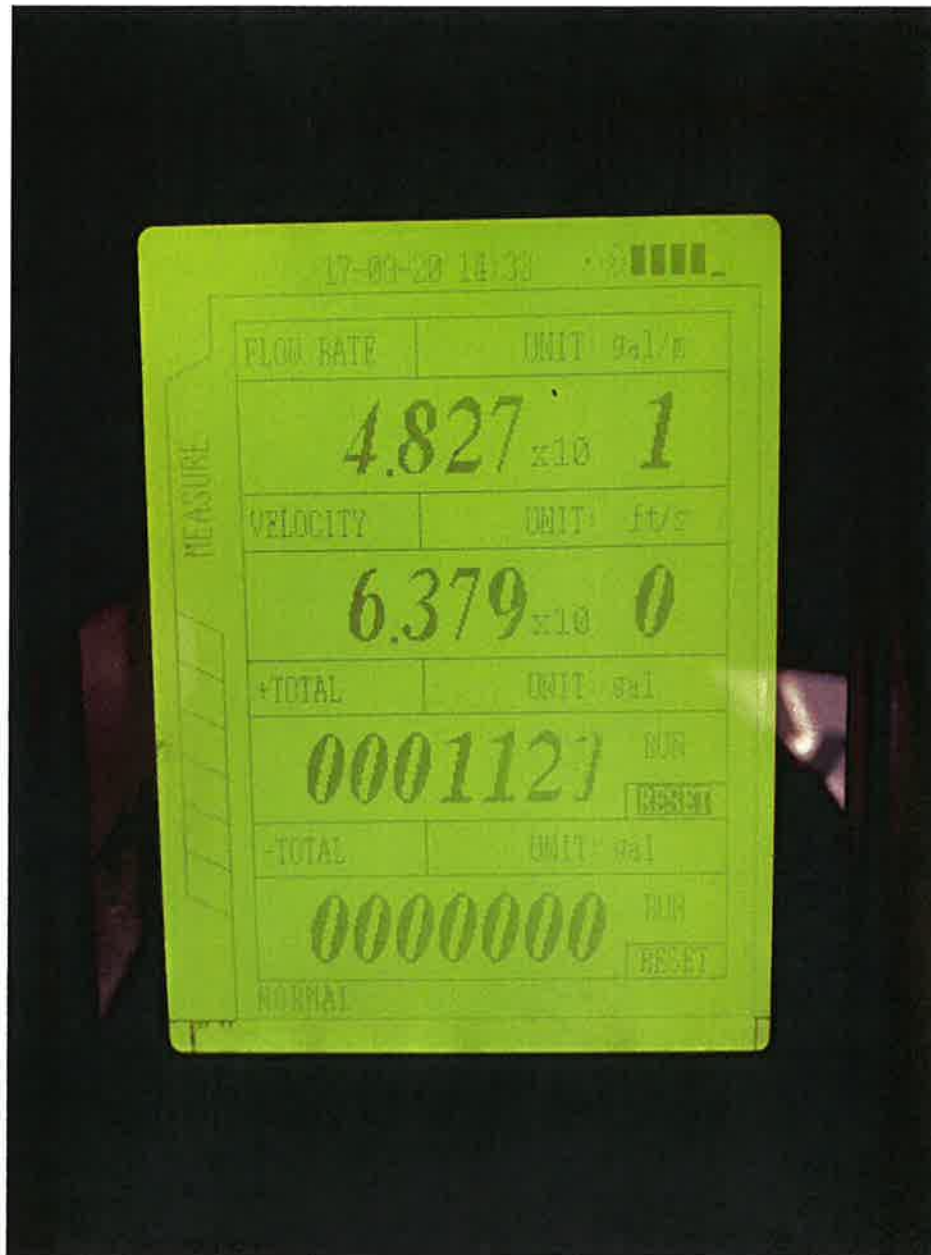


Figure 5: Portable ultra-sonic meter readout; maximum discharge associated with both the 6 ton heating unit and 10 ton combined heating and cooling unit.



0 100 200 400 Feet

**BRADLEY AND MARY WIRTH
BENEFICIAL USE FIELD MAP
PERMIT NO. 37-22783
DOMESTIC, HEATING & COOLING
NAIP 2015 AERIAL**

- Legend**
-  Well Locations
 -  Parcel
 -  Sections
 -  QQ





Figure 1: Wirth production well for domestic, heating and cooling uses.

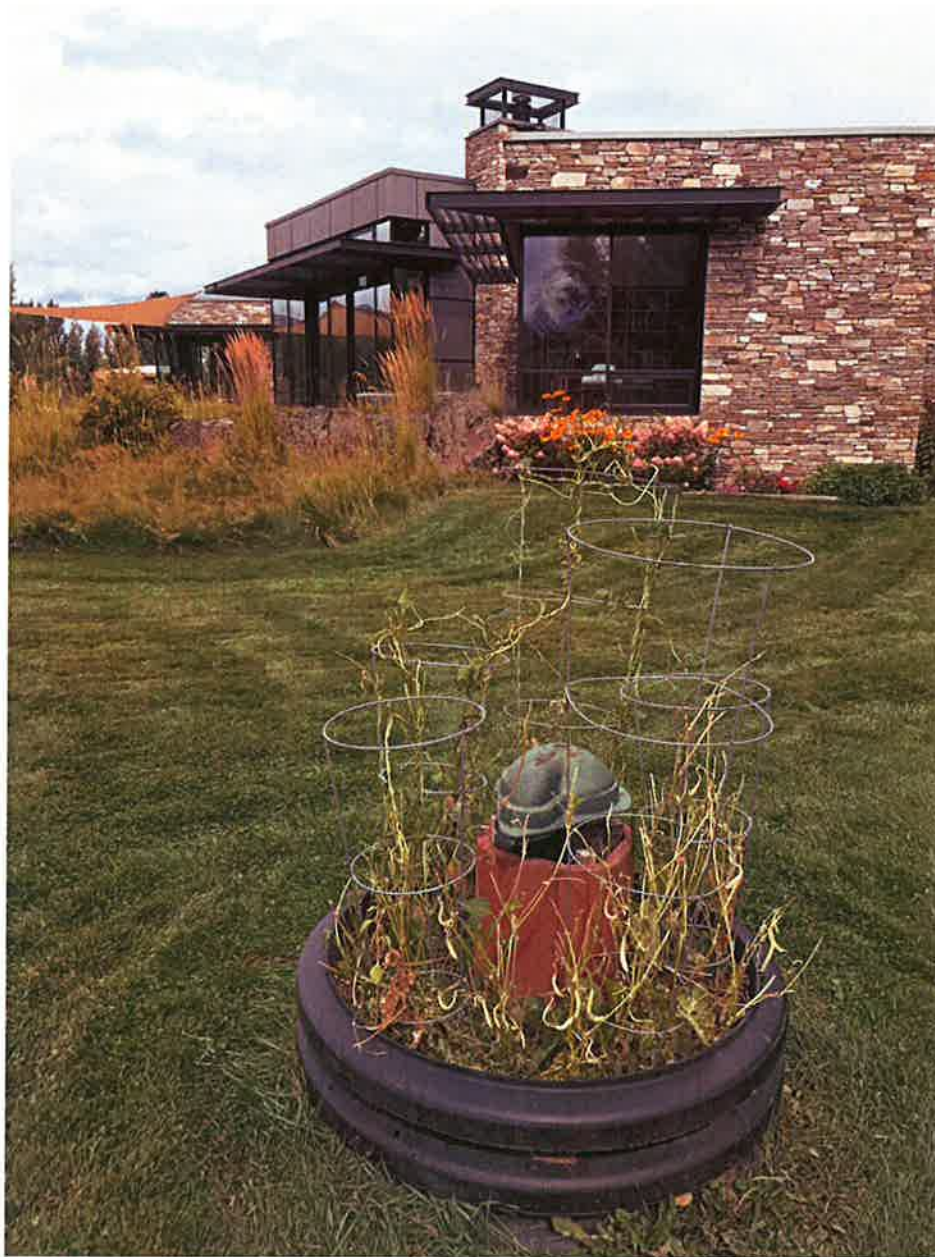


Figure 2: Wirth injection well.



Figure 7: Portable ultra-sonic meter readout; maximum discharge associated with domestic use in the residence.



Figure 8: Bosch 6 ton heating unit (top) and 10 ton heating and cooling unit (bottom) associated with heating and cooling uses for residence.

IDAHO DEPARTMENT OF WATER RESOURCES WELL DRILLER'S REPORT

AD

1. WELL TAG NO. D 0062249
Drilling Permit No. 867659

Water right or Injection well # 37-W-093-001

2. OWNER: Bradley & Mary Wirth

Name _____

Address P.O. Box 718

City Ketchum State ID Zip 83340

3. WELL LOCATION:

Twp. 2 North ☒ or South ☐ Rge. 18 East ☒ or West ☐

Sec. 35 NE 1/4 NE 1/4 SE 1/4

Gov't Lot _____ County Blaine

Lat. N43° 27.655' (Deg. and Decimal minutes)

Long. W114° 16.075' (Deg. and Decimal minutes)

Address of Well Site 50 Lower Broadford Road

City Bellevue

Lot _____ Bldg. _____ Sub. Name TL 7242

4. USE:

☐ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation ☐ Thermal ☒ Injection
☐ Other _____

5. TYPE OF WORK:

☒ New well ☐ Replacement well ☐ Modify existing well
☐ Abandonment ☐ Other _____

6. DRILL METHOD:

☒ Air Rotary ☐ Mud Rotary ☐ Cable ☐ Other _____

7. SEALING PROCEDURES:

Seal material	From (ft)	To (ft)	Quantity (lbs or ft ³)	Placement method/procedure
Bentonite	0	38	6,700 lbs	Overbore temp casin

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/Schedule	Material	Casing	Liner	Threaded	Welded
8 5/8	+2	50	250	Steel	☒	☐	☐	☒

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) _____

9. PERFORATIONS/SCREENS:

Perforations ☒ Y ☐ N Method Torch

Manufactured screen ☐ Y ☐ N Type _____

Method of installation _____

From (ft)	To (ft)	Slot size	Number/ft	Diameter (nominal)	Material	Gauge or Schedule
42	45	1/8 x				
		3				

Length of Headpipe _____ Length of Tailpipe _____

Packer ☐ Y ☐ N Type _____

10. FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft ³)	Placement method
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11. FLOWING ARTESIAN:

Flowing Artesian? ☐ Y ☐ N Artesian Pressure (PSIG) _____

Describe control device _____

12. STATIC WATER LEVEL and WELL TESTS:

Depth first water encountered (ft) 13' Static water level (ft) 13'

Water temp. (°F) 48° Bottom hole temp. (°F) _____

Describe access port well cap

Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)	Pump	Ballor	Air	Flowing artesian
			☐	☐	☐	☐
			☐	☐	☐	☐

Test method:

Water quality test or comments: _____

13. LITHOLOGIC LOG and/or repairs or abandonment:

Bore Dia. (in)	From (ft)	To (ft)	Remarks, lithology or description of repairs or abandonment, water temp.	Water	
				Y	N
12 3/4	0	2	Surface		
	2	16	Boulders & Gravel	T	
	16	19	Clay & Gravel		
	19	24	Gravel, Sand & Clay		
8	24	38	Coarse Gravel	X	
	38	50	Gravel & Sand	X	

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MAR 04 2013

IDAHO DEPARTMENT OF WATER RESOURCES
SOUTHERN REGION

Completed Depth (Measurable): 50

Date Started: 2-19-13

Date Completed: 2-26-13

14. DRILLER'S CERTIFICATION:

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name WALKER WATER SYSTEMS Co. No. 15
624 PIERCE ST. TWIN FALLS, ID 83301

*Principal Driller _____ Date 2-28-13

*Driller _____ Date 2-28-13

*Operator II _____ Date _____

Operator I _____ Date _____

* Signature of Principal Driller and rig operator are required.

867659

