Jared Branch

December 9, 2021

Well Drilling Potential at Happy Meadows, 2nd Addition

Warren Geo presents this Well Drilling Potential Memo for property (Site) adjacent to highway 95 and north of Athol in Bonner County, Idaho. The address is 2147 Mineral Ridge Road, Sagle, Idaho. The Site is within the NW Quarter of Section 26, Township 54 North and Range 3 West of the Boise Meridian. This 50-acre parcel is anticipated to be subdivided into 10 lots of 5 acres each. Ten wells are proposed to be drilled and all lots will have individual septic systems. This Memo evaluates if the Sites groundwater can provide sufficient production capability for domestic purposes. Public data was used for this evaluation and is listed under the References section. Based on the Well Drillers Reports, published geologic and hydrogeologic literature, it is Warren Geo's professional opinion that the Site is capable of transmitting enough groundwater to supply up to 10 wells and not likely impact nearby existing domestic wells.

Site Description & Geology

The Site is located in Idaho Administrative Basin 95 of the Coeur d'Alene and Spokane River drainages. The nearest weather station is in Bayview (#100667) with an annual mean precipitation of 24 inches; most of it falling as snow (Western Regional Climate Center, WRCC). The weather station is located 5 miles East of the Site at 2,070 feet above mean sea level (amsl). The southwest corner of the property is about 2,310 feet amsl, while the northern and eastern edges are about 2,360 feet amsl. Site topography slopes gently to the SSW at a 5% grade.

Attachment A shows a surficial geologic map of the Coeur d'Alene Quadrangle (Hunts, 2000). At the Site alluvium is present at the surface and biotite granite is encountered at shallow to moderate depths. Granitic outcrops of granitic bedrock are present in the surrounding area. The abandoned Hoodoo channel of the Lake Missoula flood runs to the southwest of the Site (Lewis et. al., 2002).

Hydrogeology

Well Drillers Reports are accessible from Idaho Department of Water Resources (IDWR), and are provided in **Attachment B.** Nine domestic wells are located within a 0.25 mile radius of the property (**Figure 1**). Well Drillers Reports typically provide information including lithology, well construction, and static water levels. Available hydrogeologic data relevant to this Memo are compiled in **Tables 1 and 2**. Nearby existing wells are located in Sections 26 and 27 of Township 54 North and Range 3 West.

According to Well Drillers Reports, static water levels range from 40 to 380 feet below ground surface (bgs). Water bearing units are first encountered from 15 to 600 feet bgs (**Table 1**). Alluvium thickness ranges from about 10 feet to almost 400 feet before encountering granitic bedrock. Alluvium is comprised of sand and gravel, with isolated clay lenses about 300 feet (bgs). All wells are screened in granodiorite. Granitic bedrock transmits some water through fractures, and generally yields less water than alluvial aquifers in the region (Walker, 1964).

Groundwater flows south towards Rathdrum Prairie. Precise elevations were not available for the domestic wells, so an accurate potentiometric surface (elevation of static water levels) could not be plotted at this time.

Domestic Well Flow Rates

Well Drillers Reports usually provide basic well test data containing flow rate, drawdown, and final pumping levels. Flow rates are not considered sustainable if pumping level drops to the bottom of the well within a several hour period (Walker, 1964). Where this occurs, then Warren Geo estimates a realistic aquifer yield is half the flow rate recorded on the Well Drillers Reports. Due to large water level drawdown, flow rates for

four of the wells are cut in half to calculate more realistic aquifer parameters (**Table 2**). Hence the estimated average flow rate of the 9 wells within a 0.25 mile radius is 7 gallons per minute (gpm), with a median rate of 3 gpm.

Aquifer Properties

In absence of long aquifer tests in the area, data from Well Drillers Reports are used to estimate aquifer properties. Within a 0.25 mile radius of the site there are four wells with sufficient data to make these calculations. Specific Capacity is a function of flow rate and drawdown, and describes how much water a well can produce (**Equation 1**).

Equation 1 : Specific Capacity = (Qx192.5)/s

Where Q = flow rate (gpm)

S = drawdown (feet)

Transmissivity (T) and Hydraulic Conductivity (K) represent rates that groundwater flows through an aquifer. These values are usually estimated using data from long term pumping tests. Unfortunately, long-term tests are not traditionally done for small domestic wells, therefore Specific Capacity is a parameter that can be used to estimate Transmissivity. Huntley et al. (1992) developed an empirical equation used to calculate T from Specific Capacity in fractured bedrock aquifers (**Equation 2**). The domestic wells used for empirical reference are completed and screened in fractured granodiorite.

Equation 2 : Transmissivity (T) = $0.078(Qx192.5/s)^{1.18}$

Where Q = flow rate (gpm)

S = drawdown (feet)

Aquifer thickness and T are used to calculate Hydraulic Conductivity (**Equation 3**). For calculations using **Equation 3**, aquifer thickness was determined based on water bearing units recorded in the Well Drillers Reports.

Equation 3 : Hydraulic Conductivity (K) = T/b

Where T = Transmissivity ($feet^2$/day)

B = aquifer thickness (feet)

The Site's proposed wells are expected to be drilled and screened in fractured granodiorite, as is observed in the surrounding wells and identified in geologic publications. The range of hydraulic conductivity typically observed in a fractured bedrock is 0.0002 feet/day to 8 feet/day (Dominico & Schwartz, 1990). Based on **Equation 2** and data from four wells, the Site's estimated aquifer T ranges from 0.008 to 0.14 $feet^2$/day. Estimated Hydraulic Conductivity ranges from 0.00003 to 0.00086 feet/day (**Table 2**), which is within range of values seen in other fractured bedrock aquifers. The aquifer on this Site is likely to transmit a similar amount of groundwater.

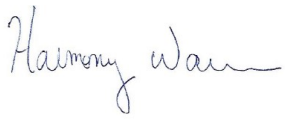
Setbacks from Wells

According to requirements set by the Idaho Department of Environmental Quality Rules, IDAPA 58.01.03.007 states that an individual well shall be at least 50 feet from a septic tank (preferably upgradient of the septic system) and 50 feet from an effluent line. IDAPA 58.01.03.08 states that wells shall be at least 100 feet from a drainfield (also preferably upgradient). The proposed lots will have individual septic systems installed. Each lot is 5 acres, so there is plenty of space for appropriate setbacks.

Conclusion

The realistic average rate for nine nearby wells screened in fractured granodiorite is 7 gpm (**Table 1**), and the median rate 3 gpm. Ten homes are expected to be built and 2 gpm per household is generally sufficient for domestic purposes while irrigating less than 0.5 acres. Based on the Well Drillers Reports, published geologic and hydrogeologic literature, and calculated aquifer parameters, it is Warren Geo's professional opinion that the Site is capable of transmitting enough groundwater to supply up to ten wells and not likely impact nearby existing domestic wells. Warren Geo recommends that this information be confirmed after a well is installed on Site with a proper pumping test of at least 4 hours while recording flow rate and drawdown.

Kind Regards,



Harmony Warren, MS, PG

References

Domenico, P.A. and F. W. Schwartz, 1990. Physical and Chemical Hydrogeology. John Wiley & Sons, New York. Page 824.

Huntley, et al., 1992. The Use of Specific Capacity to Assess Transmissivity in Fractured-Rock Aquifers. Groundwater, Volume 30, Number 3.

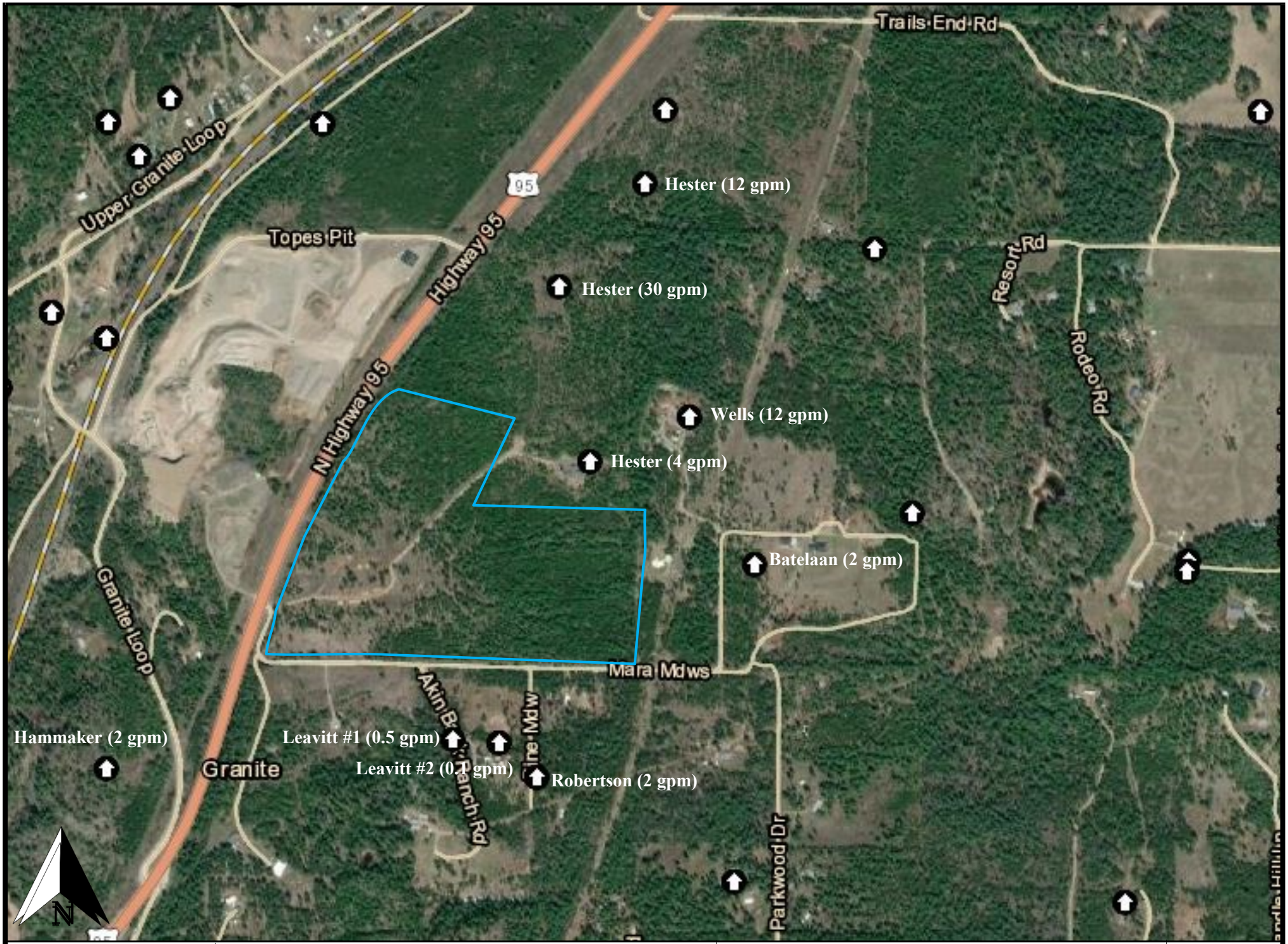
Hunts, Steven, 2000. Digital Geologic Map of the Coeur d'Alene 1:100,000 Quadrangle, Idaho and Montana. U.S. Geological Survey and Idaho Geological Survey.

Lewis, R.S., Burmester, R.F., Breckenridge, R.M., McFaddan, M.D., and Kauffman, J.D., 2002. Geologic Map of the Coeur d'Alene 30x60 Quadrangle. Idaho Geologic Survey.

Well Drillers Reports. Idaho Department of Water Resources. www.idwr.idaho.gov/wells/find-a-well-map

Walker, Eugene H. (1964). Groundwater in the Sandpoint Region of Bonner County, Idaho. Idaho Bureau of Mines and Geology, Moscow, Idaho.

Western Regional Climate Center, WRCC. www.wrcc.dri.edu



Warren Geo

Figure : Domestic Well Locations & Estimated Yields
Happy Meadows 2nd Addition Well Drilling Potential

Parcel

Well

Scale : 1,000 feet

Date
12/8/2021

Table 1
Well Descriptions

Well ID	Owner	Static Water Level (feet bgs)	Rate (gpm)	Realistic Rate (gpm)	First Water Encountered (feet)	Total Well Depth (feet)	Screened Lithology	Depth to Bedrock (feet bgs)	Date Completed
3506	Batelaan	40	2	2	?	502	Granodiorite	8	12/6/1974
97274	Hammaker	165	2	2	180	200	Granodiorite	33	12/10/1997
883094	Hester	300	8	**4**	600	765	Granodiorite	235	8/4/2017
896926	Hester	250	30	30	250	390	Granodiorite	375	12/4/2020
896977	Hester	280	12	12	450	840	Granodiorite	130	12/11/2020
872180	Leavitt #1	380	1	**0.5**	16	665	Granodiorite	9	6/4/2014
873550	Leavitt #2	40	0.25	**0.125**	70	200	Granodiorite	52	10/1/2014
812344	Robertson	76	4	**2**	76	600	Granodiorite	23	4/5/2004
893052	Wells	196	12	12	196	740	Granodiorite	196	2/28/2020

Table 2
Aquifer Properties

Well ID	Owner	Pumping Level (feet)	Drawdown (feet)	Test Duration (hours)	Realistic Rate (gpm)	Aquifer Thickness (feet)	Specific Capacity (ft^2/day)	Transmissivity (ft^2/day)	Hydraulic Conductivity (feet/day)
3506	Batelaan	?	?	?	2	460			
97274	Hammaker	?	?	?	2	20			
883094	Hester	765	465	2	**4**	165	1.66	0.141	0.00086
896926	Hester	?	?	4	30	150			
896977	Hester	?	?	4	12	390			
872180	Leavitt #1	660	280	1	**0.5**	650	0.34	0.022	3.40367E-05
873550	Leavitt #2	200	160	0.17	**0.125**	230	0.15	0.008	3.62650E-05
812344	Robertson	600	524	1	**2**	524	0.73	0.054	1.03466E-04
893052	Wells	?	?	4	12	544			

Average	7.2
Median	3

Attachment A

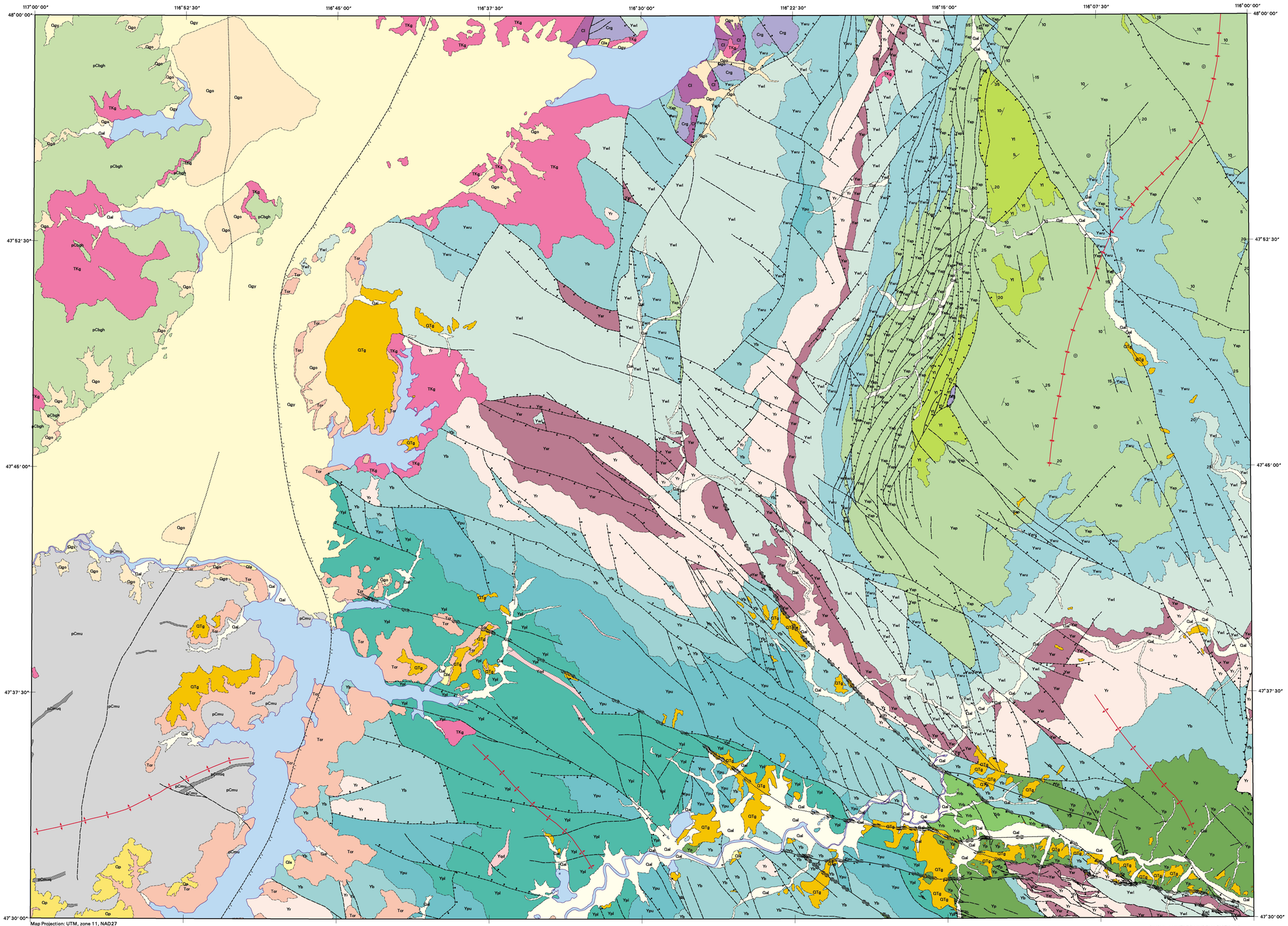
Geologic Map of the Couer d'Alene Quadrangle

Warren Geo

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

Prepared in cooperation with the Idaho Geological Survey

Open-File Report 00-135
Version 1.0, (Sheet 1)



Map Projection: UTM, zone 11, NAD27

Scale 1:100000

Kilometers

Miles

Explanation

- Qal - Alluvium
- Qgy - Younger glacial deposits
- Qls - Landslide deposits
- Qgo - Older glacial deposits
- Qp - Palouse Formation
- QTg - Older gravel deposits
- Tcr - Columbia River Group and Latah Formation
- TKg - Granitic rocks
- Cl - Lakeview Limestone
- Crg - Rennie Shale and Gold Creek Quartzite

Belt Supergroup

- Yl - Libby Formation
- Ysp - Striped Peak Formation
- Yws - Wallace and Striped Peak Formations, undivided
- Ywu - Upper part of the Wallace Formation
- Ywl - Lower part of the Wallace Formation
- Ysr - St. Regis Formation
- Yr - Revett Formation
- Yrb - Revett and Burke Formations, undivided
- Yb - Burke Formation
- Yp - Prichard Formation, undivided
- Ypu - Upper part of the Prichard Formation
- Ypl - Lower part of the Prichard Formation

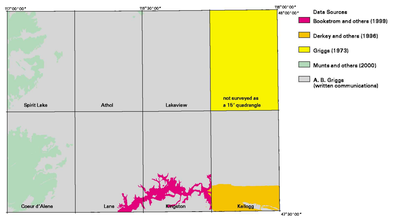
Other Precambrian Units

- Yqd - Quartz diorite
- pCbgh - Hauser Lake Gneiss
- pCmu - metamorphic rocks, undivided
- pCmuq - Quartzite in undivided metamorphic rocks

- Contacts; dashed where approximate; dotted where concealed.
- Fault, unknown offset; dashed where approximate; dotted where concealed.
- Normal fault; dashed where approximate; dotted where concealed. Bar and ball on downthrown side.
- Reverse fault, approximate; open teeth on downthrown side.
- Strike-slip fault with indeterminate lateral motion; dotted where concealed.
- Strike-slip fault with indeterminate lateral motion and normal offset, approximate; dotted where concealed. Bar and ball on downthrown side.
- Right-lateral strike-slip fault, approximate; dotted where concealed.
- Right-lateral strike-slip fault with normal offset; dashed where approximate; dotted where concealed. Bar and ball on downthrown side.
- Thrust fault, approximate. Teeth on upper plate.
- Detachment fault, concealed. Teeth on upper plate.
- Horizontal synclineː dotted where concealed.
- Horizontal anticline.

Strike and dip of beds:

- 10 — inclined, showing dip
- vertical
- horizontal



Index map showing geology data sources and 15-minute quadrangle names within the Coeur d'Alene 1:100,000 quadrangle.

Index map showing Coeur d'Alene 1:100,000 quadrangle

References

Bookstrom, A.A., Box, S.E., Jackson, B.L., Brandt, T.R., Derkey, P.D., and Munts, S.R., 1999, Digital map of surficial geology, wetlands, and deepwater habitats, Coeur d'Alene River valley, Idaho: U.S. Geological Survey Open-File Report 99-548, 186 p. and 11 digital plates. URL = http://geopubs.wr.usgs.gov/open-file/ofr99-548/

Derkey, P.D., Johnson, B.R., and Carver, Michael, 1996, Digital geologic map of the Coeur d'Alene District, Idaho and Montana: U.S. Geological Survey Open-File Report OF 96-299. 6 p. and 1 digital plate (scale 1:62,500). URL = http://geopubs.wr.usgs.gov/open-file/of96-299/

Griggs, A.B., 1973, Geologic map of the Spokane quadrangle, Washington, Idaho, and Montana: U.S. Geological Survey Map I-768, scale 1:250,000.

Geology compiled from Griggs (1973 and unpublished field maps (1961-1969) for the Athol, Coeur d'Alene, Lakeview, Lane, Kellogg, Kingston and Spirit Lake 15-minute quadrangles), Derkey and others (1996), and Bookstrom and others (1999). Digital compilation and database by Steven R. Munts (ISS), Jane S. Freed (IGS), and Loudon R. Stanford (IGS) (1998-2000).

Database approved for publication Oct. 05, 2000

Digital Geologic Map of the Coeur d'Alene 1:100,000 Quadrangle, Idaho and Montana

Digital compilation by Steven R. Munts

2000

Attachment B

Well Drillers Reports

USE TYPEWRITER OR BALL POINT PEN

State of Idaho
Department of Water Administration

WELL DRILLER'S REPORT

RECEIVED
APR 1 1975
Department of Water Resources
Northern District Office

State law requires that this report be filed with the Director, Department of Water Administration within 30 days after the completion or abandonment of the well.

1. WELL OWNER

Name Gordon Batelson

Address Rt 1 Box 7 CDA. Ida.

Owner's Permit No. —

2. NATURE OF WORK 96-74-N-78

☒ New well ☐ Deepened ☐ Replacement

☐ Abandoned (describe method of abandoning)

3. PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Test ☐ Other (specify type)

☐ Municipal ☐ Industrial ☐ Stock ☐ Waste Disposal or Injection

4. METHOD DRILLED

☐ Cable ☒ Rotory ☐ Dug ☐ Other

5. WELL CONSTRUCTION

Diameter of hole 6 inches Total depth 502 feet

Casing schedule: ☒ Steel ☐ Concrete

Thickness	Diameter	From	To
.0250 inches	6 inches	+ 1 feet	20 feet
____ inches	____ inches	____ feet	____ feet
____ inches	____ inches	____ feet	____ feet
____ inches	____ inches	____ feet	____ feet
____ inches	____ inches	____ feet	____ feet

Was a packer or seal used? ☐ Yes ☒ No

Perforated? ☐ Yes ☒ No

How perforated? ☐ Factory ☐ Knife ☐ Torch

Size of perforation ____ inches by ____ inches

Number	From	To
____ perforations	____ feet	____ feet
____ perforations	____ feet	____ feet
____ perforations	____ feet	____ feet

Well screen installed? ☐ Yes ☒ No

Manufacturer's name ____

Type ____ Model No. ____

Diameter ___ Slot size ___ Set from ____ feet to ____ feet

Diameter ___ Slot size ___ Set from ____ feet to ____ feet

Gravel packed? ☐ Yes ☒ No Size of gravel ____

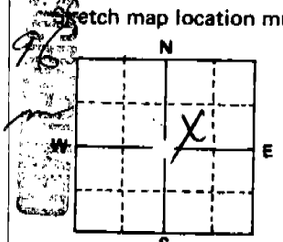
Placed from ____ feet to ____ feet

Surface seal depth 20 Material used in seal ☐ Cement grout ☒ Puddling clay ☐ Well cuttings

Sealing procedure used ☐ Slurry pit ☐ Temporary surface casing ☒ Overbore to seal depth

6. LOCATION OF WELL

Sketch map location must agree with written location.



Subdivision Name ____

Lot No. ____ Block No. ____

County Bonner

SW ¼ NE ¼ Sec. 26, T. 54 N, R. 3 W

7. WATER LEVEL

Static water level 40 feet below land surface

Flowing? ☐ Yes ☒ No G.P.M. flow ____

Temperature cold ° F. Quality Good.

Artesian closed-in pressure ____ p.s.i.

Controlled by ☐ Valve ☐ Cap ☐ Plug

8. WELL TEST DATA

☐ Pump ☐ Bailer ☒ Other Air

Discharge G.P.M.	Draw Down	Hours Pumped
2	—	—

9. LITHOLOGIC LOG

Hole Diam.	Depth From	Depth To	Material	Water Yes	Water No
8	0	5	topsoil		✓
8	5	9	Gravel		✓
8	9	20	md. Granite		✓
			Cased 6" - 20'		
6	20	502	H. Granite w/ soft streaks	✓	
			2gpl @ 45'		
			Closed		

10.

Work started 12-3-74 finished 12-6-74

11. DRILLERS CERTIFICATION

Firm Name Aqua Drilling & Dev. Inc. Firm No. 163

Address Box 1002 CDA Ida. Date 1-20-75

Signed by (Firm Official) Richard Brodt Pres.

and

(Operator) [redacted]

USE ADDITIONAL SHEETS IF NECESSARY FORWARD THE WHITE COPY TO THE DEPARTMENT

RECEIVED
DEC 17 1997
POSTED
IDWR

Form 238-7
3/95
Starships Consulting and Management Services
NORTHERN REGION

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Use Typewriter or Ballpoint Pen

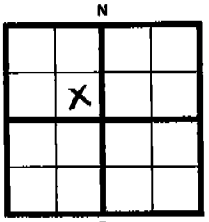
097274

Office Use Only
Inspected by TDK
Twp ____ Rge ____ Sec ____
____ 1/4 NE 1/4 SE 1/4
Lat: : : Long: : :

1. DRILLING PERMIT NO. TAG#D0003464
Other IDWR No. 96-97-N-236

2. OWNER **Well Number:** 640
Name HAMMAKER, VERN
Address 1806 GRANITE LOOP RD
City ATHOL State ID Zip 83801

3. LOCATION OF WELL by legal description
sketch map location must agree with written location



Twp. 54 ☑ North or ☐ South
Rge. 03 ☐ East or ☑ West
Sec. 27 ____ 1/4 ~~SE~~ NE 1/4 ~~NW~~ SE 1/4
Gov't Lot ____ County BONNER
Lat: : : Long: : :
Address of Well Site SAME AS ABOVE
City ATHOL
(Give at least name of road + Distance to Road or Landmark)
____ Blk. ____ Sub. Name ____

4. USE:
☑ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other ____

5. TYPE OF WORK check all that apply (Replacement, etc.)
☑ New Well ☐ Modify ☐ Abandonment ☐ Other ____

6. DRILL METHOD
☑ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other ____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
BENTONITE	0	33	10 SACKS	SLURRY & DRY

Was drive shoe used? ☑ Y ☐ N Shoe Depth(s) 33
Was drive shoe seal tested? ☐ Y ☐ N How? ____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6	+2	33	.250	STEEL	☑	☐	☑	☐

Length of Headpipe ____ Length of Tailpipe ____

9. PERFORATIONS/SCREENS
☐ Perforations Method ____
☐ Screens Screen Type ____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
165 ft. below ground Artesian pressure ____ lb.
Depth flow encountered ____ ft. Describe access port or control devices: ____

NE SE
SENW 27 54N 3W

11. WELL TESTS:
☐ Pump ☐ Bailer ☑ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
2			

Water Temp. ____ Bottom Hole Temp ____
Water Quality test or comments: ____
____ Depth first Water encountered ____

12. LITHOLOGIC LOG:(Describe repairs or abandonment)

Bore Diam	From	To	Remarks: Lithology, Water Quality, Temperature	Water Y	Water N
8	0	3	TOPSOIL	☐	☑
8	3	33	Sand Gravel Brown Clay	☐	☑
6	33	130	Granite Gray Medium	☐	☑
6	130	140	Granite Gray W/Green	☐	☑
6	140	180	Granite Gray Medium	☐	☑
6	180	200	Granite Gray Small Fractures	☑	☐
	0	0	6" well Cap	☐	☐

Completed Depth 200' (Measurable)
Date: Started 12/10/97 Completed 12/10/97

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

Firm Name H2O WellService, Inc. Firm No. 448
Firm Official ____ Date 12/10/97
and
Supervisor or Operator ____ Date 12/10/97
(Sign Once if Firm Official and Operator)
(Jim McLeslie)

Form 238-7
6/07

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 73264
Drilling Permit No. 883094
Water right or injection well # _____

2. OWNER:
Name Joe Hester
Address 11611 W. Praire
City Post Falls State ID Zip 83854

3. WELL LOCATION:
Twp. 54N North ☒ or South ☐ Rge. 3W East ☐ or West ☒
Sec. 26 10 acres 1/4 SE 40 acres 1/4 NW 160 acres 1/4
Gov't Lot _____ County Bonner
Lat. N 48 ° 00.136 (Deg. and Decimal minutes)
Long W 116 ° 40.009 (Deg. and Decimal minutes)
Address of Well Site 13 Mara Rd off Hwy 95
(Give at least name of road + Distance to Road or Landmark) City Careywood
Lot. _____ Blk. _____ Sub. Name _____

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 ft³)	Placement method/procedure
Bentonite Chip	0	18	8 bgs	Temp Casing

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/ Schedule	Material	Casing	Liner	Threaded	Welded
6"	+1	235	.250	Steel	☒	☐	☐	☒
4"	+20	765	Sch 40	PVC	☒	☐	☐	☒
					☐	☐	☐	☐
					☐	☐	☐	☐

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 235'

9. PERFORATIONS/SCREENS:
Perforations ☒ Y ☐ N Method Saw cut
Manufactured screen ☐ Y ☒ N Type _____
Method of installation Lowered in

From (ft)	To (ft)	Slot size	Number/ft	Diameter (nominal)	Material	Gauge or Schedule
-21	764	1/8"	60	4"	PVC	Sch 40

Length of Headpipe _____ Length of Tailpipe _____
Packer ☐ Y ☒ N Type _____

10. FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method

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) 599-605 Static water level (ft) Approx 300'
Water temp. (°F) 44 Bottom hole temp. (°F) 44
Describe access port Well Cap.

Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)
465'	Approx 8 GPM	2 Hrs

Test method: Pump ☐ Bailer ☐ Air ☒ Flowing artesian ☐

Water quality test or comments: Clear

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	Water N
8"	0	18	Soil Depth.		
8"	0	4	Topsoil Clay mix		
	4	55	Sand & Gravel Dirty		
	55	235	Cemented Gravel, Boulders		
	235	539	Soft Granite w/ Pink Zones		
	539	599	Hard Black & White Granite		
	599	605	Soft S&P Granite w/ Red Quartz 1-2 GPM	X	
	605	630	Hard S&P Granite		
	630	650	Soft S&P Granite Red Quartz	X	
	650	765	Hard S&P Granite		X
			Approx 8 GPM total		

RECEIVED
SEP 20 2017

Completed Depth (Measurable): 765
Date Started: 7-31-17 Date Completed: 8-4-17

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 AAA Sweetwater Drlg Inc Co. No. 509
*Principal Driller Mark Pitts Date 8-20-17
*Driller _____ Date 8-20-17
*Operator II _____ Date _____
Operator I _____ Date _____
* Signature of Principal Driller and rig operator are required.

Form 238-7
6/07

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 0086647
Drilling Permit No. 8969926
Water right or injection well #

2. OWNER:
Name Joe Hester
Address 11611 W. Prairie Ave
City Post Falls State ID Zip 83854

3.WELL LOCATION:
Twp. 54 North ☒ or South ☐ Rge. 03 East ☐ or West ☒
Sec. 26 ____ 1/4 (10 acres) NE 1/4 (40 acres) NW 1/4 (160 acres)
Gov't Lot ____ County Bonner
Lat. 48 °00.3121N (Deg. and Decimal minutes)
Long. 116 °40.0540W (Deg. and Decimal minutes)
Address of Well Site NKA Mara Meadows (RP 54N03W262402A)
(Give at least name of road + Distance to Road or Landmark) City Athol
Lot. ____ Blk. ____ Sub. Name

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 ft³)	Placement method/procedure
Bentonite Chips	0	18	550 lbs.	Dry Pour

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/ Schedule	Material	Casing	Liner	Threaded	Welded
6"	+2	400	.250	Steel	☒	☐	☐	☒
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) Ring Bit @ 400'

9. PERFORATIONS/SCREENS:
Perforations ☒ Y ☐ N Method Air Perforator
Manufactured screen ☐ Y ☒ N Type
Method of installation

From (ft)	To (ft)	Slot size	Number/ft	Diameter (nominal)	Material	Gauge or Schedule
373	390	1/4x1	8	6"	Steel	.250

Length of Headpipe NA Length of Tailpipe NA
Packer ☐ Y ☒ N Type

10.FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method
NA				

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) 250' Static water level (ft) 250'
Water temp. (°F) Cold Bottom hole temp. (°F) Cold
Describe access port Welded Steel Cap

Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)
NA	30+ gpm	240

Test method:

Pump	Bailer	Air	Flowing artesian
☐	☐	☒	☐
☐	☐	☐	☐

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	Water N
12"	0	18	Soil, Sand and Gravel		X
8"	18	250	Sand and Gravel		X
8"	250	270	Sand and Gravel	X	
8"	270	290	Clay		X
8"	290	310	Sand	X	
8"	310	315	Sand and Gravel	X	
8"	315	320	Fine Sand	X	
8"	320	335	Sand, Gravel and Clay	X	
8"	335	338	Clay		X
8"	338	370	Sand and Gravel	X	
8"	370	375	Gravel	X	
8"	375	380	Weathered Granite		X
8"	380	400	Granite		X

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DEC 0 8 2020
IDWR/NORTH

Completed Depth (Measurable): 400'
Date Started: 12/2/2020 Date Completed: 12/4/2020

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 Horsley Drilling, Inc. Co. No. 632
*Principal Driller C. Mark Horsley Date 12/4/2020
*Driller Dusty Miles Date 12/4/2020
*Operator II Date
Operator I Levi Bender Date 12/4/2020

*** Signature of Principal Driller and rig operator are required.**

Form 238-7
6/07

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 0086651
Drilling Permit No. 896977
Water right or injection well #

2. OWNER:
Name Joe Hester
Address 11611 W. Prairie Ave
City Post Falls State ID Zip 83854

3.WELL LOCATION:
Twp. 54 North ☒ or South ☐ Rge. 03 East ☐ or West ☒
Sec. 23 ____ 10 acres 1/4 SE 40 acres 1/4 SW 160 acres 1/4
Gov't Lot ____ County Bonner
Lat. 48 °00.4152N (Deg. and Decimal minutes)
Long. 116 °39.9258W (Deg. and Decimal minutes)
Address of Well Site RP013870000040A
(Give at least name of road + Distance to Road or Landmark) City Athol
Lot 4 Blk. ____ Sub. Name Happy Trails

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 ft³)	Placement method/procedure
Bentonite Chips	0	18	600 lbs.	Dry Pour

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/ Schedule	Material	Casing	Liner	Threaded	Welded
6"	+2	150	.250	Steel	☒	☐	☐	☒
4"	20	840	40	PVC	☐	☒	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) Ring Bit @ 150'

9. PERFORATIONS/SCREENS:
Perforations ☒ Y ☐ N Method Saw Cut
Manufactured screen ☐ Y ☒ N Type
Method of installation

From (ft)	To (ft)	Slot size	Number/ft	Diameter (nominal)	Material	Gauge or Schedule
740'	840'	1/8x6	2	4"	PVC	40

Length of Headpipe NA Length of Tailpipe NA
Packer ☐ Y ☒ N Type

10.FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method
NA				

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) 450' Static water level (ft) 280'
Water temp. (°F) Cold Bottom hole temp. (°F) Cold
Describe access port Welded Steel Cap

Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)
NA	12 gpm	240

Test method:

Pump	Bailer	Air	Flowing artesian
☐	☐	☒	☐
☐	☐	☐	☐

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	Water N
12"	0	18	Soil, Sand and Gravel		X
8"	18	130	Sand and Gravel		X
8"	130	135	Granite		X
8"	135	150	Granite		X
5.5	150	450	Granite		X
5.5	450	451	Fractured Granite 2 gpm	X	
5.5	451	810	Granite		X
5.5	810	811	Fractured Granite 10 gpm	X	
5.5	811	840	Granite		X

RECEIVED
DEC 17 2020
DWR/NORTH

Completed Depth (Measurable): 840'
Date Started: 12/7/2020 Date Completed: 12/11/2020

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 Horsley Drilling, Inc. Co. No. 632
*Principal Driller C. Mark Horsley Date 12/14/2020
*Driller Dustin Miles Date 12/14/2020
*Operator II Date
Operator I Date

*** Signature of Principal Driller and rig operator are required.**

Form 238-7
6/07

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D D0061976
Drilling Permit No. 372180
Water right or injection well #

2. OWNER: Larry & Kathryn Leavitt
Name
Address P.O. Box 694
City Athol State ID Zip 83801

3.WELL LOCATION:
Twp. 54 North ☒ or South ☐ Rge. 03 East ☐ or West ☒
Sec. 26 NW 1/4 (10 acres) NE 1/4 (40 acres) SW 1/4 (160 acres)
Gov't Lot County Bonner
Lat. 47 ° 59 : 856 (Deg. and Decimal minutes)
Long. 116 ° 40 : 215 (Deg. and Decimal minutes)
Address of Well Site 129 Akin Back Ranch Rd.
(Give at least name of road + Distance to Road or Landmark) City Athol
Lot. Blk. Sub. Name

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 ft³)	Placement method/procedure
Casing Seal	0	6	200 lbs	Dry Pour
Hole Plug	6	38	650 lbs	Dry Pour

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/ Schedule	Material	Casing	Liner	Threaded	Welded
6"	+2	38	.250	Steel	☒	☐	☐	☒
4"	-8	665	.200	PVC	☐	☒	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 38'

9. PERFORATIONS/SCREENS:
Perforations ☒ Y ☐ N Method Skilsaw
Manufactured screen ☐ Y ☒ N Type
Method of installation

From (ft)	To (ft)	Slot size	Number/ft	Diameter (nominal)	Material	Gauge or Schedule
645	665	1/8x6	48	4"	PVC	.200

Length of Headpipe Length of Tailpipe
Packer ☐ Y ☒ N Type

10.FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method

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) 16' Static water level (ft) 380'
Water temp. (°F) Cold Bottom hole temp. (°F) Cold
Describe access port Welded Steel Cap

Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)
660	1	1 hr.

Test method:

Pump	Bailer	Air	Flowing artesian
☐	☐	☒	☐
☐	☐	☐	☐

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	Water N
10	0	9	Sand & Clay		X
10	9	38	Salt & Pepper Granite	X	
6	38	53	Salt & Pepper Granite		X
6	53	127	Gray Granite w/red & peach	X	
			Soft w/ a wet spot		
6	127	200	Salt & Pepper Granite		X
6	200	233	Gray Granite - Med.		X
6	233	342	Soft Granite w/ Gray & Grn	X	
			1 gpm 288'		
6	342	369	Pink Granite - Med.		X
6	369	383	S&P Granite w/ Pink		X
6	383	435	Gray Granite		X
6	435	635	S&P Granite w/ Pink & Green		X
6	635	636	Fractured Granite		X
6	636	665	S&P Granite w/ Pink		X

RECEIVED
JUL 07 2014
IDWR / NORTH

Completed Depth (Measurable): 665
Date Started: May 30, 2014 Date Completed: Jun 4, 2014

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 H2O Well Service Inc. Co. No. 448
*Principal Driller Date Jun 5, 2014
*Driller Date Jun 5, 2014
*Operator II Date
Operator I Date

* Signature of Principal Driller and rig operator are required.

Form 238-7
6/07

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D D0067798
Drilling Permit No. 873550
Water right or injection well #

2. OWNER: Larry & Kathryn Leavitt #2
Name
Address P.O. Box 694
City Athol State ID Zip 83801

3. WELL LOCATION:
Twp. 54 North ☒ or South ☐ Rge. 03 East ☐ or West ☒
Sec. 26 NW (10 acres) 1/4 NE (40 acres) 1/4 SW (160 acres) 1/4
Gov't Lot County Bonner
Lat. 47 ° 59 : 853 (Deg. and Decimal minutes)
Long. 116 ° 40 : 145 (Deg. and Decimal minutes)
Address of Well Site 129 Akin Back Ranch Rd.
(Give at least name of road + Distance to Road or Landmark) City
Lot. Blk. Sub. Name

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 ft³)	Placement method/procedure
Casing Seal	0	40	1400 lbs.	Dry Pour

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/ Schedule	Material	Casing	Liner	Threaded	Welded
6"	+2	56	.250	Steel	☒	☐	☐	☒
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 56'

9. PERFORATIONS/SCREENS:
Perforations ☐ Y ☒ N Method
Manufactured screen ☐ Y ☒ N Type
Method of installation

From (ft)	To (ft)	Slot size	Number/ft	Diameter (nominal)	Material	Gauge or Schedule

Length of Headpipe Length of Tailpipe
Packer ☐ Y ☒ N Type

10. FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method

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) 70' Static water level (ft) 40'
Water temp. (°F) Cold Bottom hole temp. (°F) Cold
Describe access port Welded Steel Cap

Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)	Test method: Pump	Bailer	Air	Flowing artesian
200	1/4	10 min.	☐	☐	☒	☐
			☐	☐	☐	☐

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	Water N
10	0	3	Top Soil		x
10	3	38	Gravel, Cobbles & Boulders		x
8	38	52	Gravel & Cobbles		x
8	52	56	Decomposed Granite		x
6	56	61	Soft Gray Granite		x
6	61	116	Gry,Peach & Grn Granite 1/4gpm	x	
6	116	124	Gray Granite		x
6	124	125	Gray & Peach Granite		x
6	125	181	Gray Granite		x
6	181	183	Fractures w/ Clay		x
6	183	204	Gray & Peach Granite		x

RECEIVED
NOV 26 2014
IDWR / NORTH

Completed Depth (Measurable): 204'
Date Started: Sep 26, 2014 Date Completed: Oct 1, 2014

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 H2O Well Service Inc. Co. No. 448
*Principal Driller Tom Kuebler Date 10/7/14
*Driller Date 10-7-14
*Operator II Date
Operator I Date

*** Signature of Principal Driller and rig operator are required.**

Form 238-7
11/97

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Inspected by_____
Twp____ Rge____ Sec____
____1/4 ____1/4 ____1/4
Lat: : : Long: : :

RECEIVED
APR 26 2004
IDWR/North

1. WELL TAG NO. D0033544
DRILLING PERMIT NO 812344
Other IDWR No. ID# 383046

2. OWNER: Hydrofracture - #814007
Name Janet Robertson
Address 8449 Stonehaven Drive
City Hayden State ID Zip 83835

3. LOCATION OF WELL by legal description:

N / W / E / S (X)

Twp 54N North ☑ or South ☐
Rge 03W East ☐ or West ☑
Sec 26 1/4 10 Ac 1/4 NE 40 Ac 1/4 SW 160 Ac
Gov't Lot ____ County Bonner
Lat ____ Long ____
Address of Well Site: (see next line)
100 Mara Meadows Road City Athol
Lot ____ Blk ____ Sub. Name (see next line)

4. USE:
☑ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other ____

5. TYPE OF WORK check all that apply (Replacement etc.)
☑ New Well ☐ Modify ☐ Abandonment ☑ Other w/Hydrofracture

6. DRILL METHOD
☑ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other ____

7. SEALING PROCEDURES

SEAL/FILTER PACK			Amount	Method
Material	From	To	Sacks/Lbs	
Bentonite Grans	0	34	15 sacks	dry pour

Drive Shoe Used? ☑ Y ☐ N Shoe Depth(s) 34
Drive Shoe Seal Tested? ☐ Y ☑ N How? ____

8. CASING/LINER

Diam	From	To	Gauge	Material	Casng	Liner	Weld	Thrded
6	+1	34	0.250	Steel	☑	☐	☑	☐
4	20	600	0.165	PVC	☐	☑	☑	☐
					☐	☐	☐	☐

Length Headpipe 35 Length Tailpipe 580

9. PERFORATIONS/SCREENS
☐ Perforations? Method ____
☑ Screens? Screen Type PVC

From	To	Slot	Nmbr	Diam	Material	Casng	Liner
560	600	.040		4"	PVC	☐	☑
						☐	☐
						☐	☐

10. STATIC WATER LEVEL or ARTESIAN PRESSURE
76 ft. below ground. Artesian pressure ____ lb.
Depth flow encountered 76 ft. Describe access port or control devices: Steel Cap Welded

54N 3W 26

11. WELL TESTS:
☐ Pump ☐ Bailer ☑ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pump Level	Time
4	100%	500	1 hours

Water Temp. Cold Bottom hole temp. Cold
Water Quality test or comments: (below) Depth first Water Encountered 76
Cold, Clear, and No Smell

12. LITHOLOGIC LOG (Describe repairs or abandonment)

Bore Diam	From	To	Remarks: Lithology, Water Quality and Temperature	Water Y	Water N
8	0	6	Clay: Brown with gravel	☐	☑
8	6	23	Gravel: 3/4" to 1"	☐	☑
8	23	34	Granite: Gray Soft	☐	☑
6	34	76	Granite: Gray Soft	☐	☑
6	76	77	Granite: Broken (2 gpm)	☑	☐
6	77	133	Granite: Salt and Pepper Medium	☐	☑
6	133	135	Granite: Broken	☐	☑
6	135	141	Granite: Pink Soft	☐	☑
6	141	195	Granite: Salt and Pepper Medium	☐	☑
6	195	206	Granite: Pink Soft	☐	☑
6	206	365	Granite: Salt and Pepper	☐	☑
6	365	385	Granite: Pink Soft	☐	☑
6	385	420	Granite: Salt and Pepper Hard	☐	☑
6	420	433	Granite: Pink and Green Hard	☐	☑
6	433	459	Granite: Salt and Pepper Hard	☐	☑
6	459	461	Granite: Broken (1 gpm)	☑	☐
6	461	466	Granite: Pink Soft	☐	☑
6	466	483	Granite: Salt and Pepper Hard	☐	☑
6	483	500	Granite: Pink Soft (1 gpm)	☑	☐
6	500	600	Granite: Salt and Pepper Hard	☐	☑
6				☐	☑
			The well was hydrofracured and a four	☐	☐
			hour test was made but the results are	☐	☐
			not reflected on this well log.	☐	☐

Completed Depth 600 (Measurable)
Date: Started 3/30/04 Completed 4/5/04

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

Firm Name United Drilling Inc. Firm No 414
Firm Official and Supervisor or Operator Curtis S. Hammond Date 4/6/04
Firm Official Date 4/6/04

Form 238-7
6/07

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 0084815
Drilling Permit No. 893052
Water right or injection well #

2. OWNER:
Name Brian Wells
Address PO Box 1098
City Athol State ID Zip 83801

3.WELL LOCATION:
Twp. 54 North ☒ or South ☐ Rge. 3 East ☐ or West ☒
Sec. 26 ____ 1/4 NW 1/4 NE 1/4
(10 acres, 40 acres, 160 acres)
Gov't Lot ____ County Kootenai
Lat. 48 ° 00.180 (Deg. and Decimal minutes)
Long. 116 ° 39.858 (Deg. and Decimal minutes)
Address of Well Site 601 Mara Meadows
(Give at least name of road + Distance to Road or Landmark) City Athol
Lot. ____ Blk. ____ Sub. Name

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 ft³)	Placement method/procedure
Bentonite Chips	0	18	600 lbs.	Dry Pour

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/ Schedule	Material	Casing	Liner	Threaded	Welded
6"	+2	300	.250	Steel	☒	☐	☐	☒
4"	20	740	40	PVC	☐	☒	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) Ring @ 300'

9. PERFORATIONS/SCREENS:
Perforations ☒ Y ☐ N Method Saw Cut
Manufactured screen ☐ Y ☒ N Type
Method of installation

From (ft)	To (ft)	Slot size	Number/ft	Diameter (nominal)	Material	Gauge or Schedule
640'	740'	1/4x6	4	4"	PVC	40

Length of Headpipe ____ Length of Tailpipe ____
Packer ☐ Y ☒ N Type

10.FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft³)	Placement method
NA				

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) 196' Static water level (ft) 196'
Water temp. (°F) Cold Bottom hole temp. (°F) Cold
Describe access port Welded Steel Cap

Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)
NA	12 gpm	240

Test method:

Pump	Bailer	Air	Flowing artesian
☐	☐	☒	☐
☐	☐	☐	☐

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	Water N
10"	0	3	Topsoil		x
10"	3	18	Sand and Gravel		x
8"	18	140	Sand, Gravel and Cobbles		x
8"	140	144	Boulder		x
8"	144	196	Sand and Gravel		x
8"	196	235	Decomposed Granite		x
8"	235	292	Soft Granite		x
8"	292	300	Granite		x
6"	300	655	Granite		x
6"	655	657	Fractured Granite 3 gpm	x	
6"	657	682	Granite		x
6"	682	685	Fractured Granite 9 gpm	x	
6"	685	740	Granite		x

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MAR 0 2 2020
IDWR/NORTH

Completed Depth (Measurable): 740'
Date Started: 02/25/2020 Date Completed: 02/28/2020

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 Horsley Drilling, Inc. Co. No. 632
*Principal Driller C. Mark Horsley Date 03/02/2020
*Driller Nick Metcalf Date 03/02/2020
*Operator II ____ Date ____
Operator I ____ Date ____

*** Signature of Principal Driller and rig operator are required.**

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Form 238-7
3/95 JUL 0 6 1998

NORTHERN REGION
IDWR

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Use Typewriter or Ballpoint Pen

78002

Office Use Only
Inspected by _____
Twp____ Rge____ Sec____
____1/4 ____1/4 ____1/4
Lat: : : Long: : :

1. DRILLING PERMIT NO. 96-98-N 95
Other IDWR No. Tag# 3936

POST

2. OWNER:
Name Gary White
Address 80 Rodeo Rd.
City Athol Id State Id Zip 83801

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

Twp. 54 North ☒ or South ☐
Rge. 3 East ☐ or West ☒
Sec. 26, NW 1/4 (10 acres) SE 1/4 (40 acres) SE 1/4 (160 acres)
Gov't Lot ____ County Bonner
Lat: : : Long: : :
Address of Well Site Rodeo Rd
City Carywood
(Give at least name of road + Distance to Road or Landmark)

Lt.____ Blk.____ Sub. Name____

4. USE:
☒ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other____

5. TYPE OF WORK check all that apply (Replacement etc.)
☒ New Well ☐ Modify ☐ Abandonment ☐ Other____

6. DRILL METHOD
☒ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other____

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	20	5	overbored

Was drive shoe used? ☑ Y ☒ N Shoe Depth(s) 20
Was drive shoe seal tested? ☐ Y ☒ N How?____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6	+1½	20	.250	Steel	☒	☐	☐	☐
4	-6	300	Class 160	PVC	☐	☒	☐	☐
					☐	☐	☐	☐

Length of Headpipe____ Length of Tailpipe____

9. PERFORATIONS/SCREENS
☒ Perforations Method Saw Cut
☐ Screens Screen Type____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
300	180	40x6	50	4	PVC	☐	☒
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
20 ft. below ground Artesian pressure ____ lb.
Depth flow encountered ____ ft. Describe access port or control devices:____

11. WELL TESTS:
☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
12			4 Hours

Water Temp. ____ Bottom hole temp. ____
Water Quality test or comments: ____
Depth first Water Encountered 48'

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
8	0	13	Soil and Gravel		X
8	13	18	Decomposed Granite		X
8	18	20	GRANITE		X
6	20	23	GRANITE		X
23	23	46	Weathered Granite		X
6	46	48	Fractured Granite	1	
6	48	75	GRANITE		X
6	75	76	Fractured Granite		X
6	76	90	GRANITE		X
6	90	92	Fractured GRANITE	5	
6	92	105	GRANITE		X
6	105	175	GRANITE		X
6	175	176	Fractured Granite	4	
6	176	225	GRANITE		X
6	225	256	Weathered GRANITE	3	
6	256	257	GRANITE with Quartz		X
6	257	300	GRANITE		X

Completed Depth 300' (Measurable)
Date: Started 6-9-98 Completed 6-10-98

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

Firm Name Hester Well Drilling Inc. Firm No. 528
Firm Official and Supervisor or Operator J. Mark Hester Date 6-10-98
Supervisor or Operator C. Mark Hopley Date 6-10-98
(Sign once if Firm Official & Operator)

54 N 3 W 26

FORWARD WHITE COPY TO WATER RESOURCES