

SPECIFICATION

SKYLINE RANCH

**WATER SUPPLY WELL FOR FIRE
SUPPRESSION**

TETON COUNTY, IDAHO

**Prepared by
Clearwater Geosciences, LLP**

for

Skyline Ranch

November 2023





CONTENTS

General 3
Specifications 7

EXHIBITS

Exhibit A 4
Exhibit B 5
Exhibit C 6



GENERAL

Background

The Skyline Ranch Project Site is in the Teton Valley, 5 miles southwest of Driggs and ~ $\frac{1}{4}$ mile northwest of the intersection of W 2250 South and S 5000 West. Maps of the location for the well are shown in Exhibits A, B and C. This specification is for a new fire water supply well to supply a minimum of 500 GPM. The well will be drilled as described in the attached documents.

Please contact Tom Wood (208) 589-5555 for assistance getting the drilling permit.

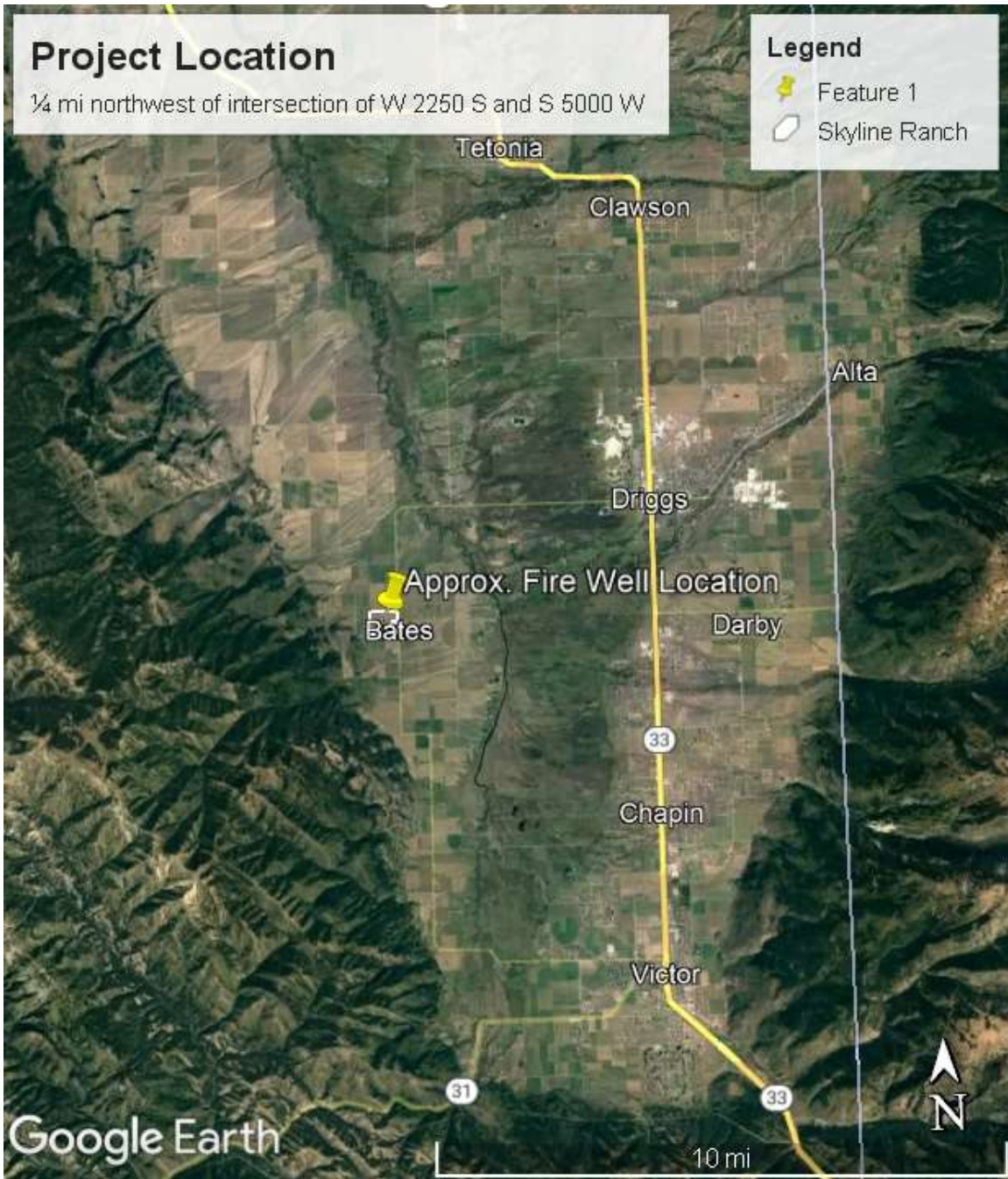


Exhibit A. General location map for Skyline Ranch Development.



Exhibit B. Driving access to Skyline Ranch Development.



Exhibit C. Approximate location for Fire Well.



Well Specification

Skyline Ranch Development Fire Water Supply Well

This specification is for drilling a fire water well for the Skyline Ranch Development. The Teton County Fire Marshal has specified that the water supply well should provide a minimum of 500 gpm with less than 5 ppm sand.

The local geology is anticipated to be a sequence of gravel and clay to the total depth of the well. Several of the deep well logs near this area are provided in Attachment 1. Two wells within ½ mile of the site are of interest. The 400 ft deep Bruxton well was drilled to 400 ft and perforated from 84 to 400 ft is listed as making 2000 gpm and the Jay Dell Bruxton well drilled to 296 ft made 1200 gpm and perforated from 124 to 250 ft. These two wells give encouragement that the design provided herein can make the necessary 500 gpm.

It is the driller's responsibility to be aware of the drilling conditions in this area and to plan drilling and construction accordingly.

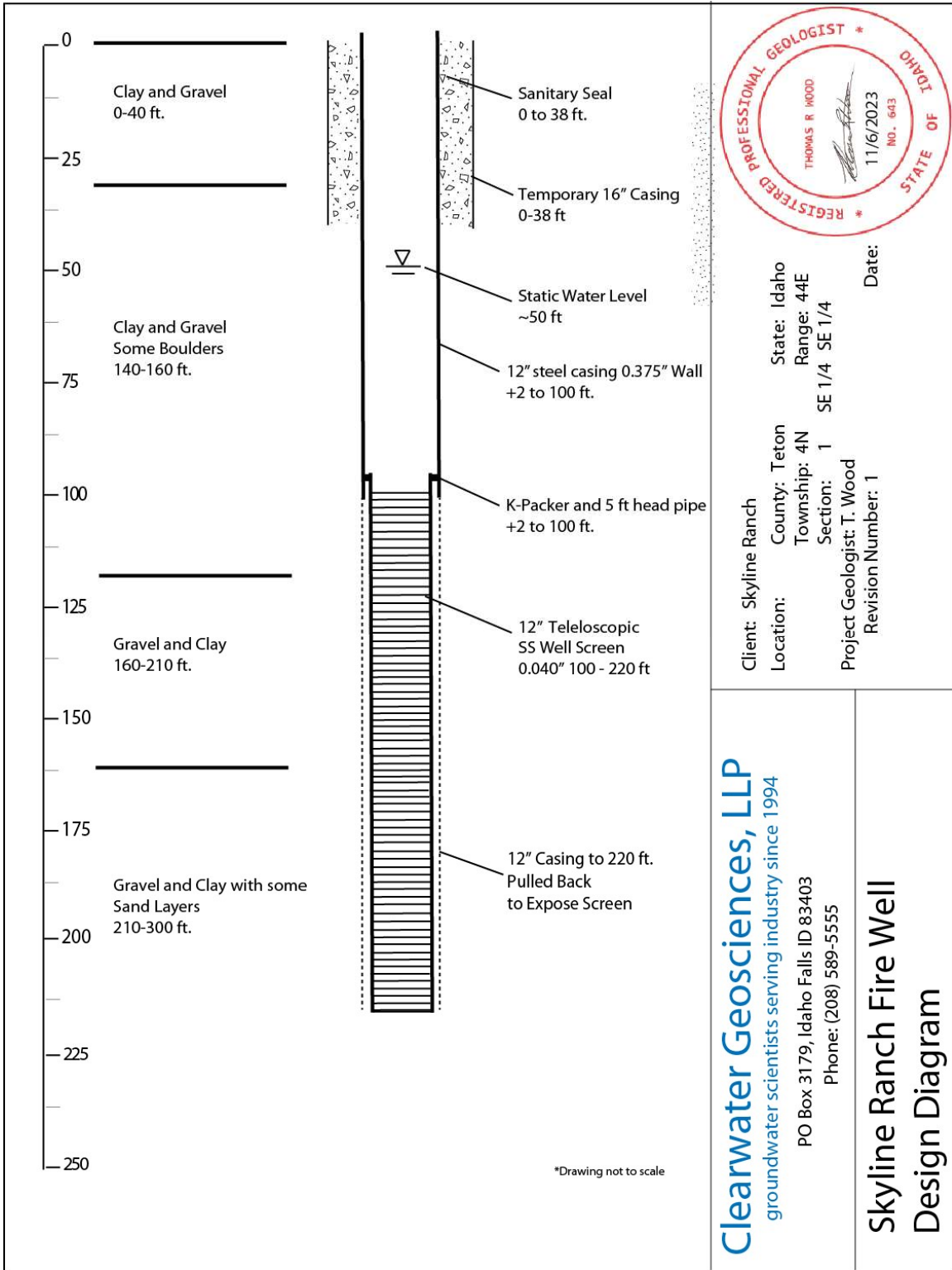
Well Drilling and Testing

Well Drilling.

1. Drill or under ream 16-inch casing to 38 ft. or until a minimum of 500 GPM flow is produced with rig air.
2. Drill or under ream 12-inch casing to 220 ft. or until a minimum of 500 GPM flow is produced with rig air.
3. Set 120 ft of 12-inch telescopic, stainless steel, wire-wrapped well screen with 40 thousand slots from 220 to 100 ft or across water bearing zones. The screen 5 ft riser pipe shall be outfitted with a K-Packer and the screen installed by pulling the 12-casing back to expose the well screen.
4. Install bentonite chip sanitary seal from top of sand pack to land surface while simultaneously pulling the 16-inch casing.
5. Using rig air develop the well.
6. Perform step test and a continuous 6-hour pumping test at a pumping rate of 500 gpm. Install a flow meter or orifice plate with manometer and measure flow at 30-minute intervals. The pumping test shall be witnessed by the Geologist. A down hole data logger will be installed by the geologist during the pumping test to monitor water levels during testing.
7. Sand content will also be measured during the testing. The sand content must be less than 5 ppm within 15 minutes after start up.
8. Assume that the water will need to be piped 200 ft west from the well to a location approved by the owner.



Item Number and Description		Quantity		Total Amount		
		Unit Price Written in Words		Dollars	Cts	Dollars
Skyline Ranch						
SP-1	- Mobilization/Demobilization	1	L.S.			
		\$		\$		
SP-2	- Furnish, Install, Remove Temporary 16-Inch Casing	38	L.F.			
		\$		\$		
SP-3	- 12-inch Under Reaming Drilling	182	L.F.			
		\$		\$		
SP-4	- Furnish, Install 12-inch Well Casing	220	L.F.			
		\$		\$		
SP-5	- Furnish, Install 12-inch Stainless Steel Wire Wrapped Well Screen, 0.040-Inch Slot	120	L.F.			
		\$		\$		
SP-6	- Sanitary Seal - Bentonite Chips	40	C.F.			
		\$		\$		
SP-7	- Well Development with Rig Air	8	HOUR			
		\$		\$		
SP-8	- Pump Test Mobilization/Demobilization	1	L.S.			
		\$		\$		
SP-9	- Test Pumping and Development	12	HOUR			
		\$		\$		
SP-10	-	0	0 0			
		\$		\$		
SP-11	-					
		\$		\$		
SP-12	-					
		\$		\$		
TOTAL BID				\$		



Client: Skyline Ranch
 Location: County: Teton
 State: Idaho
 Range: 44E
 Township: 4N
 Section: 1
 SE 1/4 SE 1/4
 Project Geologist: T. Wood
 Revision Number: 1
 Date:

Clearwater Geosciences, LLP
 groundwater scientists serving industry since 1994

PO Box 3179, Idaho Falls ID 83403
 Phone: (208) 589-5555

Skyline Ranch Fire Well
Design Diagram



Attachment A

Well Driller Logs in the Vicinity of Skyline Ranch Facility



Form 2387 *
1/78

USE TYPEWRITER OR
BALLPOINT PEN

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

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

1. WELL OWNER
Name J.D. Buxton
Address Driggs, Idaho 83422
Owner's Permit No. 22-7309

7. WATER LEVEL
Static water level 60 feet below land surface.
Flowing? Yes No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: Valve Cap Plug
Temperature _____ °F. Quality _____

2. NATURE OF WORK
 New well Deepened Replacement
 Abandoned (describe method of abandoning) _____

8. WELL TEST DATA
 Pump Bailor Air Other _____
Discharge G.P.M. 2000 Pumping Level 180 Hours Pumped 10 hrs.

3. PROPOSED USE
 Domestic Irrigation Test Municipal
 Industrial Stock Waste Disposal or Injection
 Other _____ (specify type)

4. METHOD DRILLED
 Rotary Air Hydraulic Reverse rotary
 Cable Dug Other _____

5. WELL CONSTRUCTION
Casing schedule: Steel Concrete Other _____
Thickness _____ inches Diameter _____ inches From _____ feet To _____ feet
250 inches 20 inches + 1 feet 401 feet
_____ inches _____ inches _____ feet _____ feet
_____ inches _____ inches _____ feet _____ feet
Was casing drive shoe used? Yes No
Was a packer or seal used? Yes No
Perforated? Yes No
How perforated? Factory Knife Torch
Size of perforation 3/8 inches by 2 inches
Number _____ From _____ feet To _____ feet
1600 perforations 84 feet 400 feet
_____ perforations _____ feet _____ feet
_____ perforations _____ feet _____ feet
Well screen installed? Yes No
Manufacturer's name _____ 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 _____ feet
Placed from _____ feet to _____ feet
Surface seal depth 20 Material used in seal: Cement grout Well cuttings
 Pudding clay Temp. surface casing
Sealing procedure used: Slurry pit Overbore to seal depth
Method of joining casing: Threaded Welded Solvent Weld
 Cemented between strata
Describe access port 2" pipe

9. LITHOLOGIC LOG

Hole Diam.	Depth		Material	Water	
	From	To		Yes	No
20	0	4	Top Soil		X
"	4	24	Gravel and Clay		X
"	24	68	Red Clay		X
"	68	75	Gravel and Clay		X
"	75	84	Clay		X
"	84	88	Gravel and Clay	X	
"	88	104	Gravel and Clay	X	
"	104	109	Clay		X
"	109	120	Gravel and Clay	X	
"	120	174	Clay Red		X
"	174	183	Cemented Gravel	X	
"	183	192	Clay		X
"	192	200	Cemented Gravel	X	
"	200	221	Clay (Sticky Red)		X
"	221	231	Gravel (Some Clay Streaks)	X	
"	231	236	Clay		X
"	236	241	Gravel (Bigger, Cleaner)	X	
"	241	244	Clay		X
"	244	250	Gravel	X	
"	250	274	Clay (Some Gravel)		X
"	274	278	Gravel	X	
"	278	303	Clay		X
"	303	307	Gravel	X	
"	307	338	Clay (Some Gravel)		X
"	338	361	Gravel	X	
"	361	365	Clay		X
"	365	374	Gravel (little sand & Clay)	X	
"	374	385	Clay		X
"	385	399	Gravel (Cemented)	X	
"	399	400	Clay		X

6. LOCATION OF WELL
Sketch map location must agree with written location.
Subdivision Name _____
Lot No. _____ Block No. _____
County Teton
SE 1/4 Sec. 1 T. 4 N. R. 44 E. N.W.

10. Work started Sept. 18, 1979 finished Oct. 31, 1979

11. DRILLERS CERTIFICATION cb dl
I/we certify that all minimum well construction standards were
complied with at the time the rig was removed.
Firm Name Paul Vollmer & Son Firm No. 67
Address Aberdeen, Idaho 83210 Date Nov. 2, 1979
Signed by (Firm Official) Paul Vollmer Jr
" and _____
(Operator) Paul Vollmer Sr

Department of Water Resources
Foothold District Office
FEB 22 1980

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



Form 238-7 6/07
IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT
1. WELL TAG NO. D 0075686
2. OWNER: Foster, Kerstyn and Tyler
3. WELL LOCATION: Twp 4 North, Rge. 44 East, Sec. 12 NE
4. USE: Domestic
5. TYPE OF WORK: New well
6. DRILL METHOD: Air Rotary
7. SEALING PROCEDURES: bentonite 0' to 40', 1400 lbs temp casing
8. CASING/LINER: 6" diameter, .250 gauge, steel
9. PERFORATIONS/SCREENS: Method
10. FILTER PACK:
11. FLOWING ARTESIAN:
12. STATIC WATER LEVEL and WELL TESTS: Depth first water encountered (ft) 90', Static water level (ft) 90', Water temp. (°F) 58°, Bottom hole temp. (°F) 58°
13. LITHOLOGIC LOG and/or repairs or abandonment:
14. DRILLER'S CERTIFICATION: Completed Depth (Measurable) 158', Date Started Feb 13, 2019, Date Completed Feb 15, 2019



REPORT OF WELL DRILLER
State of Idaho

RECEIVED
APR 17 1968

State law requires that this report shall be filed with the State Reclamation Engineer within 30 days after completion or abandonment of the well.

WELL OWNER: JAY DELL BUXTON
Name
Address: DRIGGS, IDAHO

Size of drilled hole: 16" Total
depth of well: 296 Standing water
level below ground: 110 Temp.
Fahr. 56 Test delivery: 1200 gpm
or cfs Pump? [X] Bail []

Owner's Permit No. G33334
NATURE OF WORK (check): Replacement well []
New well [X] Deepened [] Abandoned []

Water is to be used for: irrigation

METHOD OF CONSTRUCTION: Rotary [] Cable [X]
Dug [] Other []

CASING SCHEDULE: Threaded [] Welded [X]
16" diam. from 0 ft. to 254 ft.
"Diam. from ft. to ft.
"Diam. from ft. to ft.
"Diam. from ft. to ft.
Thickness of casing: .250 Material:
Steel [X] concrete [] wood [] other []

PERFORATED? Yes [X] No [] Type of perforator used:

Size of perforations: 1/2" by 3"
100 perforations from 124 ft. to 250 ft.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

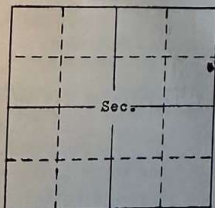
WAS SCREEN INSTALLED? Yes [] No [X]
Manufacturer's name:
Type Model No.
Diam. Slot size Set from ft. to ft.
Diam. Slot size Set from ft. to ft.

CONSTRUCTION: Well gravel packed? Yes []
No. [X] size of gravel Gravel
placed from ft. to ft. Surface seal
provided? Yes [] No [] To what depth?
ft. Material used in seal:

Did any strata contain unusable water? Yes []
No. [X] Type of water:
Depth of strata 110 ft. Method of sealing
strata off:

Surface casing used? Yes [X] No []
Cemented in place? Yes [] No [X]

Locate well in section



LOCATION OF WELL: County TETON
S. N. E. 1/4 Sec. 12 T. 4 N. R. 44 E. 1/4

Use other side for additional remarks

Length of time of test: Hrs. Min.
Drawdown: 185 ft. Artesian pressure: ft.
above land surface Give flow cfs
or gpm. Shutoff pressure:
Controlled by: Valve [] Cap [] Plug []
No control [] Does well leak around casing?
Yes [] No [X]

Table with columns: DEPTH, MATERIAL, WATER YES OR NO. Rows include: 0-2 Top soil, 2-11 brown sandy clay, 11-34 clay and gravel, 34-42 brown clay, 42-49 cobble rocks, 49-54 clay and gravel, 54-62 cobble rocks, 62-124 clay and gravel (water), 124-127 pea gravel and sand, 127-153 brown clay and gravel, 153-174 gravel conglomerate, 174-182 clay and gravel, 182-185 gravel conglomerate, 185-197 clay and gravel, 197-202 brown clay, 202-214 gravel conglomerate, 214-220 cobbles, 220-224 gravel conglomerate, 224-252 brown clay and gravel, 252-263 gravel conglomerate, clay, 263-283 brown sticky clay, 283-288 clay and gravel, 288-291 sticky clay, 291-296 clay and gravel.

CO 613

Work started: FEB 21, 1968
Work finished: APRIL 8, 1968
Well Driller's Statement: This well was drilled under my supervision and this report is true to the best of my knowledge.
Name: G.L. HOPKINS
Address: THORNTON, IDAHO
Signed by: [Signature]
License No. 32 Date: April 17, 1968

4469

USGS



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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: _____
 Pump Bailor Air Flowing Artesian

WELL TAG NO. D0065558
DRILLING PERMIT NO. _____
Other IDWR No. _____

2. OWNER:
Name San Ram Research
Address 3270 E 17th St # 229
City Armore State Id Zip 83301

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

Twp. 4 North or South
Rge. 44 East or West
Sec. 12 1/4 _____ NE 1/4 _____ SE 1/4 _____
Gov't Lot _____ County Teton 40 acres _____ 160 acres _____
Lat: _____ Long: _____
Address of Well Site So. Bakes Rd City _____
(Give at least name of road - Distance to Road or Landmark)

Li. _____ 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		AMOUNT		METHOD
Material	From To	Sacks or Pounds		
<u>Bentonite</u>	<u>0</u> <u>40'</u>	<u>26 Sacks</u>	<u>over Pipe</u>	

Was drive shoe used? Y N Shoe Depth(s) _____
Was drive shoe seal tested? Y N How? _____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
<u>6"</u>	<u>12'</u>	<u>193'</u>	<u>250"</u>	<u>Steel</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>5"</u>	<u>185'</u>	<u>245'</u>	<u>24"</u>	<u>Steel</u>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS
Method TOUCH
Screens _____ Screen Type _____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
<u>196'</u>	<u>244'</u>	<u>1/4" x 1/4"</u>	<u>3 perfs</u>	<u>EVERY 2'</u>		<input type="checkbox"/>	<input type="checkbox"/>

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

11. WELL TESTS:

Yield gal/min	Drawdown	Pumping Level	Time

Water Temp. _____ Bottom hole temp. _____
Water Quality test or comments: _____
Depth first Water Encounter _____

12. LITHOLOGIC LOG: (Describe repairs or abandonment) Water

Bore Dia	From	To	Remarks: Lithology, Water Quality & Temperature	Y	N
<u>10"</u>	<u>0</u>	<u>18'</u>	<u>Clay</u>		<input checked="" type="checkbox"/>
<u>10"</u>	<u>18'</u>	<u>40'</u>	<u>Clay Gravel</u>		<input checked="" type="checkbox"/>
<u>6"</u>	<u>40'</u>	<u>55'</u>	<u>Clay Gravel</u>		<input checked="" type="checkbox"/>
<u>6"</u>	<u>55'</u>	<u>90'</u>	<u>Clay Sand</u>		<input checked="" type="checkbox"/>
<u>6"</u>	<u>90'</u>	<u>120'</u>	<u>Clay Gravel</u>		<input checked="" type="checkbox"/>
<u>6"</u>	<u>120'</u>	<u>190'</u>	<u>Clay Sand</u>		<input checked="" type="checkbox"/>
<u>6"</u>	<u>190'</u>	<u>235'</u>	<u>Clay Sand Gravel</u>		<input checked="" type="checkbox"/>
<u>6"</u>	<u>235'</u>	<u>260'</u>	<u>Clay Gravel</u>		<input checked="" type="checkbox"/>

RECEIVED
APR 15 2015
Department of Water Resources
Eastern Region

Completed _____ Depth 260' (Measurable)
Date: Started 8-20-14 Completed 8-28-14

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.
Company Name Denning Drilling Inc Firm No. 518
Firm Official David Denning Date 8-28-14
and _____
Driller or Operator _____ Date _____
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES



Form 238-7
3/95
V.O.M.D.

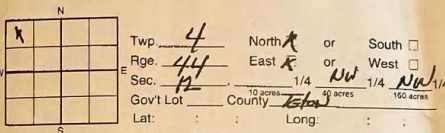
IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT
Use Typewriter or Ballpoint Pen 68084

Office Use Only
Inspected by
Twp 1/4 Rge 1/4 Sec 1/4
Lat: Long:

1. DRILLING PERMIT NO. 22-97-E-0034-000
Other IDWR No.

2. OWNER:
Name: George Bates
Address: 544 W 225 St.
City: Driggs State: ID Zip: 83422

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



Address of Well Site
City
Lt. Blk. Sub. Name

4. USE:
[X] Domestic [] Municipal [] Monitor [] Irrigation
[] Thermal [] Injection [] Other

5. TYPE OF WORK check all that apply (Replacement etc.)
[X] New Well [] Modify [] Abandonment [] Other

6. DRILL METHOD
[X] Air Rotary [] Cable [] Mud Rotary [] Other

7. SEALING PROCEDURES
Table with columns: Material, From, To, AMOUNT (Sacks or Pounds), METHOD. Entry: Bentonite, 0, 18', 40 LBS, see core.

Was drive shoe used? [X] Y [] N Shoe Depth(s)
Was drive shoe seal tested? [X] Y [] N How?

8. CASING/LINER:
Table with columns: Diameter, From, To, Gauge, Material, Casing, Liner, Welded, Threaded. Entry: 6", 0, 139', 1250, Steel, [X], [], [], [].

9. PERFORATIONS/SCREENS
[] Perforations Method
[] Screens Screen Type

Table with columns: From, To, Slot Size, Number, Diameter, Material, Casing, Liner.

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

11. WELL TESTS:
Table with columns: Yield gal/min, Drawdown, Pumping Level, Time.

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

12. LITHOLOGIC LOG: (Describe repairs or abandonment)
Table with columns: Bore Dia., From, To, Remarks: Lithology, Water Quality & Temperature, Y, N. Entries include Clay Gravel, Cobble Rocks, and Gravel.

RECEIVED
JUL 16 1997
Department of Water Resources
Eastern Region

RECEIVED
JUL 21 1997
Department of Water Resources

Completed Depth (Measurable)
Date Started: 5-20-97 Completed: 5-21-97

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: Denning Drilling Inc Firm No.: 518
Firm Official: [Signature] Date: 5-21-97
Supervisor or Operator: [Signature] Date:

FORWARD WHITE COPY TO WATER RESOURCES