

TABLE 1
Well Driller Reports Summary

Well Log Owner at Time of Drilling	Legal Description				Approximate Ground Surface Elevation ¹ (ft amsl)	SWL Depth ² (ft)	Groundwater Elevation (ft amsl)	Total Depth (ft)	Production ³ (gpm)	Water-Bearing Formation ⁴
	Tract	Section	Township	Range						
IDPR	NR	1	46N	4W	2200	82	2118	305	220	Basalt
IDPR	NR	1	46N	4W	2200	45	2155	108	300	Basalt
IDPR (abandoned)	NR	6	46N	3W	2315	NR	NA	540	40	Basalt
IDPR (abandoned)	NW1/4, NW1/4	8	46N	3W	2150	0	2150	200	75	Basalt
IDPR (abandoned)	NE1/4, NW1/4	8	46N	3W	2140	7.5	2132.5	24	NR	Sand & Gravel

Notes

¹Ground surface elevations estimated from USGS 7.5-Minute topographic maps: Harrison, Black Lake, Chacolet & Benewah Lake, Idaho Quadrangles
Most wells are located to the nearest quarter of the quarter section, actual locations and elevations may vary.

²Based on static water level at the time of drilling

³Based on air lift at time of drilling and may not be indicative of long term production

⁴Formations as indicated on well drillers reports; water-bearing portion of the bedrock formation typically occurs in fractures, faults, and/or shear zones

SWL = static water level

ft amsl = feet above mean sea level

ft = feet

gpm = gallons per minute

NR = Not recorded on well driller reports

NA = Not available

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**FIGURE 3:
HEYBURN STATE PARK WATER IMPROVEMENTS**

Estimate of O&M Costs for Water Treatment Options										
	OPTION 1 NEW AND BACKUP WELL		OPTION 2 CARTRIDGE FILTERS		OPTION 3 DIATOMACEOUS EARTH FILTER			OPTION 4 SLOW SAND FILTER		
Estimated Annual O & M Costs										
Labor (\$25/hour)	\$1,000	\$1,000	\$2,900		\$2,900	\$1,950		\$1,950	\$1,300	\$1,300
Filter Replacement			\$1,800	\$3,000	\$4,800					
DE Replacement						\$156	\$300	\$468		
Sand Replacement									\$200	\$400
Energy Consumption										\$600
Present Value of Total O&M from LCCA	\$6,031	\$3,462	\$38,510	\$19,548	\$14,216	\$8,507		\$24,133		\$12,401
EUAC for O&M (cost/100)	\$90	\$35	\$385.10	\$195	\$142.16	\$85		\$241.33		\$124

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APPENDIX A
Well Driller Reports

T46H R3W Sec 6



WELL LOG AND REPORT TO THE STATE RECLAMATION ENGINEER OF IDAHO

Log No. _____

Rec. _____ 19 _____

Well No. 95-56-N-2

Permit No. _____

(DO NOT FILL IN)

Owner Heyburn State Park Address Chatcolet
 Driller Harvey Stone Address Star, Idaho Lic. No. 45
 Location of Well 1/4 Sec 6 T. 46 N. R. 3 W. B. 1 E. County
 and feet N/S, and feet E/W from Corner of 1/4 Sec.
 Size of Drilled Hole 10" to 4" Total depth of Well 540
 Give depth of standing water from surface little flow Water Temp. _____ Fahrenheit
 On pumping test delivery was 40 g.p.m. or _____ c.f.s. Drawdown was 290 feet.
 Size of pump and motor used to make the test Section Deep well pump
 Length of time pumped during check was 8 hr., _____ minutes.
 If flowing well, give flow in c.f.s. _____ at g.p.m. 1 and shut in pressure _____
 If flowing well, describe control works none (TYPE AND SIZE OF VALVE, ETC.)
 Water will be used for domestic Weight of casing per linear foot _____
 Thickness of casing standard weight Casing material pipe
E.G., PIPE, CONCRETE, WOOD.
 Diameter, length and location of casing 31' of 10", 156' of 8", 297' of 6", 242' of 4"
(CASING 12" IN DIAMETER AND UNDER GIVE INSIDE DIAMETER;
CASING OVER 12" IN DIAMETER GIVE OUTSIDE DIAMETER.)
 Number and size of perforations 1" on 4 sides located 520 feet to 320 feet
 from surface of ground.
 Other perforations _____
 Date of commencement of well Oct 1955 Date of completion of well March 3, 1956
 Type of well rig Star 71

CASING RECORD

DIAM. CASING	FROM FEET	TO FEET	LENGTH	REMARKS - SEALS, GROUTING, ETC.
				600.00

GENERAL INFORMATION—Pumping Test, Quality of Water, Etc.

A 4" Submersible Pump is not big enough. I would recommend a 6" Submersible
Pump, 5 H.P.M. with a 290 ft. setting, with at least a 1000 gallon tank.
Pump will pump 55 G.P.M. up to 100 ft., 40 G.P.M. at 200 and 30 G.P.M.
at 290.

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Well #1 Log.



Heyburn State Park,

SHEET NO. 2

95-56-N-2

Well Driller

Harvey Stone

Well Location

WELL LOG

From Feet	To Feet	Type of Material	Drilling Time		Water Flow	Mud Flow
			min.	sec.		
0	15	Clay, In Pink, Fill, gray.			no	no
15	18	Large Rock.			"	"
18	31	Rock & Clay Fill yellow.			"	"
31	39	Rock.			"	"
39	72	Rock, and clay fill little water.			yes	yes
72	76	Rock, Hard.			no	no
76	97	Rock, and clay fill little water.			yes	yes
97	98	Blue Rock, and clay fill.			no	no
98	115	Blue Basalt, Hard, crumbly.			no	no
115	134	Blue Basalt clay fill little water.			yes	"
134	226	Blue Basalt Hard, crumbly.			no	no
226	233	Blue Basalt, clay fill, crumbly.			no	no
233	235	Blue Basalt Hard & crumbly.			no	no
235	272	Blue Basalt crumbly Hard & crumbly.			no	no
272	300	Blue Basalt Hard & crumbly.			no	no
300	327	Blue Basalt clay Hard & crumbly.			no	no
Quit Well at 327					over	
1 1/2" 8" pipe in well						
Pumped 30 G.P.M. at 180 ft. Setting.						
Mord. Wms. Oct 26/1959						
Jack Dis.						
To new location.						

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95-56-N-2



WELL LOG

From Foot	To Foot	Type of Material	Drilling Time		Mud-Logging Formulas Asst. Yes or No	Casing Perforated Asst. Yes or No
			Min.	Sec.		
0	3	Top Soil				
3	31	Yellow clay and boulders				
31	50	Rock and clay				
50	125	Yellow and red clay				
125	127	Sticky clay				
127	140	Yellow clay				
140	156	Rock and brown clay				
156	160	Rock some water			Yes	
160	180	Brown clay				
180	195	Yellow clay and rock				
195	205	Mostly rock some clay				
205	225	Rock with clay streaks				
225	229	Rock with some water			Yes	
229	230	Very hard granite rock				
230	251	Granite rock with clay mixed				
251	255	Dark clay				
255	265	Granite rock with clay mixed				
265	275	Granite rock with clay mixed				
If more space is required use Sheet No. 2 cont. on sheet #3						

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WELL DRILLERS STATEMENT

95-56-N-2

This well was drilled under my jurisdiction and the above information is true and correct to the best of my knowledge and belief.

Signed Jack DirBy Jack DirDated March 10, 19 56License No. 31

Well Location

WILL LOOK

[illegible]

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Peterson

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.

USE TYPEWRITER OR
BALLPOINT PEN

1. WELL OWNER Name <u>Idaho Dept. of Parks & Recreation</u> Address <u>North Region Hq. 1850 N. Lincoln Blvd.</u> Owner's Permit No. <u>Pease's Avenue, No. 85814</u>	7. WATER LEVEL Static Water level <u>0</u> feet below land surface. Flowing? ☒ Yes ☐ No G.P.M. flow _____ Artesian closed-in pressure _____ p.s.i. Controlled by: ☐ Valve ☒ Cap ☐ Plug Temperature <u>60</u> °F. Quality <u>Good</u>																																														
2. NATURE OF WORK <u>95-81-N-40</u> ☒ New well ☐ Deepened ☐ Replacement ☐ Abandoned (describe method of abandoning) _____	8. WELL TEST DATA ☐ Pump ☐ Bailor ☒ Air ☐ Other _____ <table border="1"> <tr> <th>Discharge G.P.M.</th> <th>Pumping Level</th> <th>Hours Pumped</th> </tr> <tr> <td><u>75+</u></td> <td><u>—</u></td> <td><u>1 hr.</u></td> </tr> </table>	Discharge G.P.M.	Pumping Level	Hours Pumped	<u>75+</u>	<u>—</u>	<u>1 hr.</u>																																								
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3. PROPOSED USE ☒ Domestic ☐ Irrigation ☐ Test ☐ Municipal ☐ Industrial ☐ Stock ☐ Waste Disposal or Injection ☐ Other _____ (specify type)	9. LITHOLOGIC LOG <table border="1"> <thead> <tr> <th rowspan="2">Hole Diam.</th> <th colspan="2">Depth</th> <th rowspan="2">Material</th> <th colspan="2">Water</th> </tr> <tr> <th>From</th> <th>To</th> <th>Yes</th> <th>No</th> </tr> </thead> <tbody> <tr> <td><u>8</u></td> <td><u>0</u></td> <td><u>3</u></td> <td><u>Fill</u></td> <td></td> <td><u>X</u></td> </tr> <tr> <td></td> <td><u>3</u></td> <td><u>5</u></td> <td><u>Gravel</u></td> <td></td> <td><u>X</u></td> </tr> <tr> <td></td> <td><u>5</u></td> <td><u>14</u></td> <td><u>Cobble & Gravel</u></td> <td></td> <td><u>X</u></td> </tr> <tr> <td></td> <td><u>14</u></td> <td><u>78</u></td> <td><u>Broken Basalt</u></td> <td></td> <td><u>X</u></td> </tr> <tr> <td></td> <td><u>78</u></td> <td><u>93</u></td> <td><u>Basalt</u></td> <td></td> <td><u>X</u></td> </tr> <tr> <td></td> <td><u>6</u></td> <td><u>93</u></td> <td><u>Gray Silt</u></td> <td></td> <td><u>X</u></td> </tr> </tbody> </table>	Hole Diam.	Depth		Material	Water		From	To	Yes	No	<u>8</u>	<u>0</u>	<u>3</u>	<u>Fill</u>		<u>X</u>		<u>3</u>	<u>5</u>	<u>Gravel</u>		<u>X</u>		<u>5</u>	<u>14</u>	<u>Cobble & Gravel</u>		<u>X</u>		<u>14</u>	<u>78</u>	<u>Broken Basalt</u>		<u>X</u>		<u>78</u>	<u>93</u>	<u>Basalt</u>		<u>X</u>		<u>6</u>	<u>93</u>	<u>Gray Silt</u>		<u>X</u>
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4. METHOD DRILLED ☒ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary ☐ Cable ☐ Dug ☐ Other _____																																															
5. WELL CONSTRUCTION Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____ <table border="1"> <thead> <tr> <th>Thickness</th> <th>Diameter</th> <th>From</th> <th>To</th> </tr> </thead> <tbody> <tr> <td><u>.250</u> inches</td> <td><u>6</u> inches</td> <td><u>2</u> feet</td> <td><u>78</u> feet</td> </tr> <tr> <td>_____ inches</td> <td>_____ inches</td> <td>_____ feet</td> <td>_____ feet</td> </tr> <tr> <td>_____ inches</td> <td>_____ inches</td> <td>_____ feet</td> <td>_____ feet</td> </tr> <tr> <td>_____ inches</td> <td>_____ inches</td> <td>_____ feet</td> <td>_____ feet</td> </tr> </tbody> </table> 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 _____ inches by _____ inches <table border="1"> <thead> <tr> <th>Number</th> <th>From</th> <th>To</th> </tr> </thead> <tbody> <tr> <td>_____ perforations</td> <td>_____ feet</td> <td>_____ feet</td> </tr> <tr> <td>_____ perforations</td> <td>_____ feet</td> <td>_____ feet</td> </tr> <tr> <td>_____ perforations</td> <td>_____ feet</td> <td>_____ feet</td> </tr> </tbody> </table> 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 <u>22</u> Material used in seal: ☐ Cement grout ☒ Pudding clay ☒ Well cuttings Sealing procedure used: ☐ Slurry pit ☐ Tamp, surface casing ☒ Overbore to seal depth Method of joining casings: ☐ Threaded ☒ Welded ☐ Solvent Weld ☐ Cemented between struts Describe access port _____	Thickness	Diameter	From	To	<u>.250</u> inches	<u>6</u> inches	<u>2</u> feet	<u>78</u> feet	_____ inches	_____ inches	_____ feet	_____ feet	_____ inches	_____ inches	_____ feet	_____ feet	_____ inches	_____ inches	_____ feet	_____ feet	Number	From	To	_____ perforations	_____ feet	_____ feet	_____ perforations	_____ feet	_____ feet	_____ perforations	_____ feet	_____ feet	RECEIVED MAY 23 1981 NOV 30 1981 Department of Water Resources Department of Water Resources														
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6. LOCATION OF WELL Sketch map location _____ agree with written location. <table border="1"> <tr> <td>N</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>E</td> <td>X</td> <td></td> <td></td> <td></td> </tr> <tr> <td>S</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>W</td> <td></td> <td></td> <td></td> <td></td> </tr> </table> Section Name <u>Hermon State Park</u> Lot No. _____ Block No. _____ County <u>BENEFIT</u> <u>NW 1/4 NW 1/4 Sec 8 T. 46 N. R. 3 W.</u>	N					E	X				S					W					10. DRILLERS CERTIFICATION I/We certify that all minimum well construction standards were complied with at the time the rig was removed. Firm Name <u>Associated Well</u> Firm No. <u>245</u> Address <u>Box 723 C.D.A.</u> Date <u>10/15/81</u> Signed by (Firm Official) <u>[Signature]</u> and (Operator) <u>Rahil F. [Signature]</u>																										
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USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

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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.

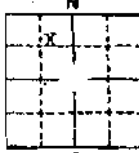
1. WELL OWNER Chen-Northern (Boise) for:
 Name Idaho Division of Public Works
 Address 50 N. 3th St. Boise, ID 83720
 Drilling Permit No. 95-90-Z-002-001
 Water Right Permit No. _____

2. NATURE OF WORK
☒ New well ☐ Deepened ☐ Replacement
☐ Well diameter increase
☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)

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

4. METHOD DRILLED
☐ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary
☐ Cable ☐ Dug ☒ Other Auger

5. WELL CONSTRUCTION
 Casing schedule: ☐ Steel ☐ Concrete ☒ Other PVC
 Thickness _____ Diameter _____ From _____ To _____
 _____ inches _____ inches + _____ feet _____ feet
 _____ inches 2" inches 0.4 feet 23.0 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 ☐ Gun
 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 Tri-Lock
 Type PVC Model No. _____
 Diameter 2" Slot size .01 Set from 3.0 feet to 17.5 feet
 Diameter _____ Slot size _____ Set from _____ feet to _____ feet
 Gravel packed? ☒ Yes ☐ No ☒ Size of gravel 10/20 Sand
 Placed from 3.0 feet to 24.0 feet
 Surface seal depth 3.0 Material used in seal: ☒ Cement grout
☒ Bentonite ☐ Pudding clay ☐
 Sealing procedure used: ☐ Slurry pit ☐ Temp. surface casing
☐ Overbore to seal depth
 Method of joining casing: ☒ Threaded ☐ Welded ☐ Solvent
☐ Weld
☐ Cemented between strings
 Describe screen part 8" manhole, locking PVC cap

6. LOCATION OF WELL
 Sketch map location must agree with written location.

 Subdivision Name _____
 Lot No. _____ Block No. _____
 County Bernewah
 NE NW SE SW T. 46 N. 30 S. R. 3 E. 10

7. WATER LEVEL
 Static water level 7.5 feet below land surface.
 Flowing? ☐ Yes ☒ No G.P.M. flow _____
 Artesian closed-in pressure _____ p.s.i.
 Controlled by: ☐ Valve ☐ Cap ☐ Plug
 Temperature 60.0 F. Quality _____
 Describe artesian or temperature zones below.

8. WELL TEST DATA
☐ Pump ☐ Bailor ☐ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped
	<u>N/A</u>	

9. LITHOLOGIC LOG 081755

Bore Diam.	Depth		Material	Water Yes/No
	From	To		
7"	0	5.0	Sandy SILT	
7"	5.0	12.7	Clayey SAND	x
7"	12.7	15.0	Silty SAND	x
7"	15.0	24.0	Clayey GRAVEL	x

(CNI Well No. BLW-1)

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ASSEMBLED
 DEC 04 1992

Work started 12-13-90 finished 12-14-90

11. DRILLERS CERTIFICATION
 I/We certify that all minimum well construction standards were complied with at the time the rig was removed.
 Firm Name Chen-Northern Firm No. 459
 Address PO Box 7777, Boise Date 1-30-91
 Signed by (Firm Official) S. Yach
 and Edgar Kelly
 (Operator)

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