

Big Sky Partnership Beneficial Use Exam

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SEP 26 2005

WATER RESOURCES
WESTERN REGION

**BENEFICIAL USE FIELD REPORT NARRATIVE
PERMIT NOS. 63-8067, 9672, 10272, 11513, 11514
– BIG SKY PARTNERSHIP**

C. E. Brockway, P.E, Certified Water Rights Examiner
Brockway Engineering, PLLC
September 23, 2005

Permit Nos. 63-8067, 9672, 10272, 11513 and 11514 were granted to Robert Rhead for irrigation beginning in 1975. The permits are appurtenant to the Little Camas Ranch in Elmore County, above Anderson Ranch Reservoir located in T. 1 S., R. 9 E., Sections 3, 4, 5, 8 & 9 and T. 1 N., R. 9E., Sections 27, 28, 32, 33 & 34 (see the attached vicinity map).

An initial exam was performed by Steve Lester of IDWR, accompanied by Daryl Rhead. Mr. Rhead was the agent for the property at the time. The farm has been cultivated to the extent that water was available via 4 wells during the 1991 exam, and during a flurry of activity during 1996 5 additional wells were constructed. Throughout the development of the ground water supply system, stable dependable water supply has been a continuing challenge due to the low hydraulic conductivity apparent on much of the property.

System description

Irrigation water is supplied primarily through the ground water supply, however some surface water is diverted into the storage reservoir and subsequently pumped into the irrigation distribution system which can also be fed by each of the 9 wells. At the time of this review, well #'s 2, 8 & 9 are unused due to decreasing aquifer water levels, however they were utilized at the time proof was filed. Crops are irrigated through handline and wheelline sprinklers, and more recently, center pivot systems.

Rhead Ranch Reservoir is currently estimated to contain 380 acre-ft of water at maximum water level.

Capacity of the ground water irrigation system

Proof of beneficial use was submitted for permits 63-11513 and 63-11514 during the fall of 1996, and since that time some wells have become unproductive. This examination will seek to determine system capacity at the time proof was filed primarily based on well pump and motor specifications. In general, total system diversion capacity appears undersized for the project irrigated acreage, however rotation of irrigated acreage appears to have been and will likely continue to be characteristic for the farm.

Exact well development is uncertain due to difficulty in proper identification of drilling logs and the apparent unavailability of the drilling log for Well #4. Exhaustive analysis of the available logs with field examination has hopefully provided a reasonably accurate correlation between the actual wells and their associated drilling logs. It is helpful that several of the recorded logs show permit #63-11514 specifically.

Permit conditions

These permits require that a suitable measuring device be installed (or that the power-consumption method be pursued with IDWR).

Other rights

Permits 63-8067, 9672, 10272, 11513 and 11514 are all appurtenant to the property and are used in combination to provide irrigation water throughout the farm.

Recommended licensing amendments

1. The entire distribution system (wells, reservoir & surface water) is interconnected and serves the entire property. All applicable water rights should be appurtenant to the entire property.
2. Irrigation season for all water rights should be adjusted to reflect the standard season for this area (April 1st – October 31st)

Total ground water diversion recommendation

1. Total ground water diversion capacity has been estimated from system characteristics and is not a determination of historical beneficial use.

Total annual volume recommendation

1. Total authorized diversion volume was calculated based on continuous diversion at system capacity throughout the irrigation season of 213 days with the addition of the 380 acre-ft of storage water impounded in Rhead Ranch Reservoir.

Total acreage recommendation

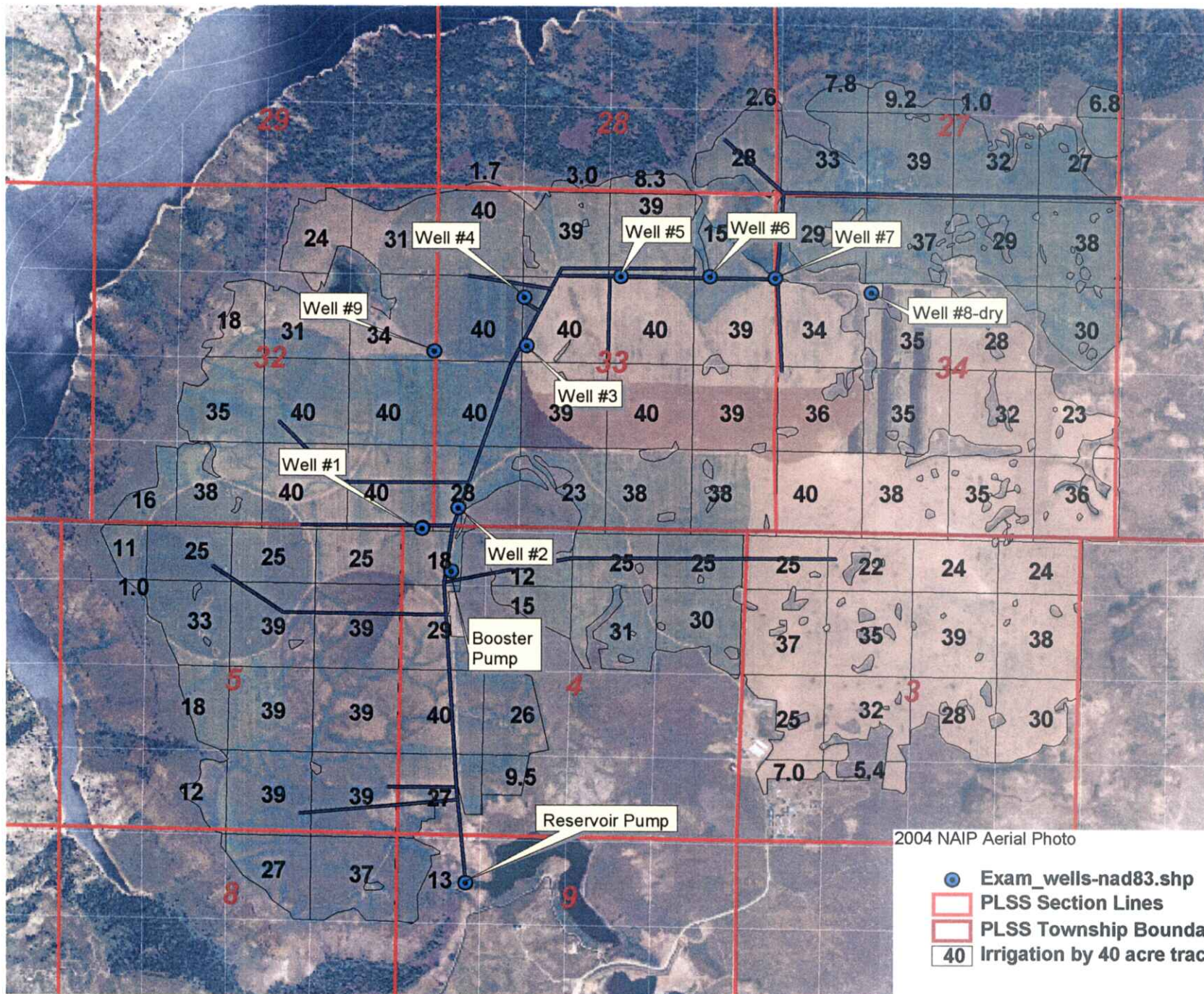
1. Total cultivated acreage has been determined from site visits and review of aerial photo information.

Well # ID	Well	Motor Mfr.	Motor Serial No.	Motor HP	Bowl Mfr.	Bowl Serial No.	Bowl Model	Bowl # Setting	Stages	Total lift from bowl/s into 50 psi system [ft]	hd/stage	Bowl design flow from pump curve	Efficiency	Diversion to 50psi system based on motor HP, Pump Eff. and lift from bowls (8.8 * eff * Motor HP / Total Lift)	Open Discharge (assume 0 psi)
1	GE	EMJS12416	75	Layne	#45817	10RKHC	300	12	415	34.6	545 gpm	= 1.21 cfs	81%	1.29 cfs	2.01 cfs
2	U.S. Electric	C2688-01-498	150	Layne			440	10	555	55.5	790 gpm	= 1.76 cfs	75%	1.78 cfs	2.44 cfs
3	U.S. Electric	R9983-04-122	100	Layne	#T81103	11BH	360	8	475	59.4	700 gpm	= 1.56 cfs	83%	1.54 cfs	2.24 cfs
4	U.S. Electric	R6375-04-882	150	Layne	#T81102	11BEH	340	8	455	56.9	1060 gpm	= 2.36 cfs	82%	2.38 cfs	3.54 cfs
5	U.S. Electric		100	Aurora	#97-74200	10RM-L	400	12	515	42.9	585 gpm	= 1.30 cfs	82%	1.40 cfs	1.97 cfs
6	U.S. Electric		200	Verti-Line	#97-74192	12RH-M	400	9	515	57.3	1330 gpm	= 2.96 cfs	84%	2.87 cfs	4.05 cfs
7	GE		200	Layne		12RM	410	9	525	58.4	900 gpm	= 2.01 cfs	82%	2.75 cfs	3.84 cfs
8			0				410	9	525	58.4	150 gpm	= 0.00 cfs	82%	0.00 cfs	0.00 cfs
9			100	Layne		12RM	410	9	525	58.4	900 gpm	= 2.01 cfs	82%	1.37 cfs	1.92 cfs
										WELLS 1-4	3095 gpm	6.90 cfs		6.98 cfs	10.25 cfs
										TOTAL:	6960 gpm	15.51 cfs		15.37 cfs	22.03 cfs
RE1				150	Layne		12RM	120	1	270	270.0	2000 gpm	= 4.46 cfs	82%	4.01 cfs

		Little Camas Water Rights															
			Permitted Diversion IRRIGATION	Permitted Diversion TO STORAGE	Permitted Diversion FROM STORAGE	Irrigation Diversion Limit	Diversion Limits	Permitted Acres	Acres Limits	POU Acres	Volume Limit	Volume Limit					
RIGHT	Source	PRIORITY	6.00 cfs			6.00 cfs	15.37 cfs	320 Ac.	320 Ac.		1280.0 afa	2363.0 afa					
63-8067	GW	1/6/1975		5.70 cfs				570 Ac.	570 Ac.	2816.6 Ac.	2280.0 afa						
63-9672	GW	10/4/1985		4.48 cfs		4.48 cfs		1178 Ac.	1178 Ac.		4712.0 afa	1892.7 afa					
63-11513	GW	3/14/1991	4.48 cfs					1111 Ac.	1111 Ac.		4444.0 afa	2066.0 afa					
63-11514	GW	5/10/1991	4.89 cfs			4.89 cfs											
63-10272	Little Camas Crk	10/28/1984							570	570							

Township	Range	Sec	QQ	LOT #	IRR Acres	
01N	09E	27	NESW	0	9.2	
01N	09E	27	NWSW	0	7.8	
01N	09E	27	SWSW	0	33	
01N	09E	27	SESW	0	39	
01N	09E	27	NESE	0	6.8	
01N	09E	27	NWSE	0	0.8	
01N	09E	27	SWSE	0	32	
01N	09E	27	SESE	0	27	
						155.6
01N	09E	28	SWSW	0	1.7	
01N	09E	28	SESW	0	3	
01N	09E	28	NESE	0	2.6	
01N	09E	28	SWSE	0	8.3	
01N	09E	28	SESE	0	28	
						43.6
01N	09E	32	NENE	0	31	
01N	09E	32	NWNE	0	24	
01N	09E	32	SWNE	0	31	
01N	09E	32	SENE	0	34	
01N	09E	32	SESW	0	18	
01N	09E	32	NESW	0	35	
01N	09E	32	SWSW	0	16	
01N	09E	32	SESW	0	38	
01N	09E	32	NESE	0	40	
01N	09E	32	NWSE	0	40	
01N	09E	32	SWSE	0	40	
01N	09E	32	SESE	0	40	
						387
01N	09E	33	NENE	0	15	
01N	09E	33	NWNE	0	39	
01N	09E	33	SWNE	0	40	
01N	09E	33	SENE	0	39	
01N	09E	33	NENW	0	37	
01N	09E	33	NWNW	0	40	
01N	09E	33	SWNW	0	40	
01N	09E	33	SESW	0	40	
01N	09E	33	NESW	0	39	
01N	09E	33	NWSW	0	40	
01N	09E	33	SWSW	0	28	
01N	09E	33	SESW	0	23	
01N	09E	33	NESE	0	39	
01N	09E	33	NWSE	0	40	
01N	09E	33	SWSE	0	38	
01N	09E	33	SESE	0	38	
						575
01N	09E	34	NENE	0	38	
01N	09E	34	NWNE	0	29	
01N	09E	34	SWNE	0	28	
01N	09E	34	SENE	0	30	
01N	09E	34	NENW	0	37	
01N	09E	34	NWNW	0	29	
01N	09E	34	SWNW	0	34	
01N	09E	34	SESW	0	35	
01N	09E	34	NESW	0	35	
01N	09E	34	NWSW	0	36	
01N	09E	34	SWSW	0	40	
01N	09E	34	SESW	0	38	

01N	09E	34	NESE	0	23	
01N	09E	34	NWSE	0	32	
01N	09E	34	SWSE	0	35	
01N	09E	34	SESE	0	36	
						535
01S	09E	3	NENE	1	24	
01S	09E	3	NWNE	2	24	
01S	09E	3	SWNE	0	39	
01S	09E	3	SENE	0	38	
01S	09E	3	NENW	3	22	
01S	09E	3	NWNW	4	25	
01S	09E	3	SWNW	0	37	
01S	09E	3	SENW	0	35	
01S	09E	3	NESW	0	32	
01S	09E	3	NWSW	0	25	
01S	09E	3	SWSW	0	7	
01S	09E	3	SESW	0	5.4	
01S	09E	3	NESE	0	30	
01S	09E	3	NWSE	0	28	
						371.4
01S	09E	4	NENE	1	25	
01S	09E	4	NWNE	2	25	
01S	09E	4	SWNE	0	31	
01S	09E	4	SENE	0	30	
01S	09E	4	NENW	3	12	
01S	09E	4	NWNW	4	18	
01S	09E	4	SWNW	0	29	
01S	09E	4	SENW	0	15	
01S	09E	4	NESW	0	26	
01S	09E	4	NWSW	0	40	
01S	09E	4	SWSW	0	27	
01S	09E	4	SESW	0	9.5	
01S	09E	4	NESE	0	0.1	
						287.6
01S	09E	5	NENE	1	25	
01S	09E	5	NWNE	2	25	
01S	09E	5	SWNE	0	39	
01S	09E	5	SENE	0	39	
01S	09E	5	NENW	3	25	
01S	09E	5	NWNW	4	11	
01S	09E	5	SWNW	0	1	
01S	09E	5	SENW	0	33	
01S	09E	5	NESW	0	18	
01S	09E	5	SESW	0	12	
01S	09E	5	NESE	0	39	
01S	09E	5	NWSE	0	39	
01S	09E	5	SWSE	0	39	
01S	09E	5	SESE	0	39	
						384
01S	09E	8	NENE	0	37	
01S	09E	8	NWNE	0	27	
01S	09E	8	NENW	0	0.4	
						64.4
01S	09E	9	NWNW	0	13	
01S	09E	9	SWNW	0	0	
						13
						2816.6



0.25 0 0.25 0.5 0.75 1 Miles

Big Sky Partnership
 Little Camas Ranch
 (T. 1N, R. 9E & T. 1S, R. 9E)

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

1. Owner: BIG SKY PARTNERSHIP C/O D MC FARLAND & T BULLERS Permit No.: 63-11514
Current Address: PO BOX 268 EDEN, ID 83325-0268 Phone No.: (208)825-5258
2. Accompanied by: _____ Exam Date: 6/23/2005
Address: _____ Phone No.: _____
Relationship to Permit Holder: _____
3. Source: GROUND WATER tributary to _____

B. OVERLAP REVIEW

1. Other water rights with the same place of use: 63-8067, 63-9672, 63-10272, 63-11513
2. Other water rights with the same point of diversion: 63-8067, 63-9672, 63-10272, 63-11513

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
1		SE	SE	SE	32	1N	9E	Elmore	Well #1
2		SW	SW	SW	33	1N	9E	Elmore	Well #2
3		SW	SE	NW	33	1N	9E	Elmore	Well #3
4		NW	SE	NW	33	1N	9E	Elmore	Well #4
5		SW	NW	NE	33	1N	9E	Elmore	Well #5
6		SW	NE	NE	33	1N	9E	Elmore	Well #6
7		SE	NE	NE	33	1N	9E	Elmore	Well #7
9		SE	SE	NE	34	1N	9E	Elmore	Well #9

2. **Place(s) of Use:**

Indicate Method of Determination: NAIP Aerial Photo

TWP	RNG	SEC	NE				NW				SW				SE				TOTALS
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
1N	9E	27									9.2	7.8	33	39	6.8	0.8	32	27	155.6
		28											1.7	3	2.6		8.3	28	43.6
		32	31	24	31	34				18	35		16	38	40	40	40	40	387
		33	15	39	40	39	37	40	40	40	39	40	28	23	39	40	38	38	575
		34	38	29	28	30	37	29	34	35	35	36	40	38	23	32	35	36	535
1S	9E	3	Lot 1 24	Lot 2 24	39	38	Lot 3 22	Lot 4 25	37	35	32	25	7	5.4	30	28			371.4
		4	Lot 1 25	Lot 2 25	31	30	Lot 3 12	Lot 4 18	29	15	26	40	27	9.5	0.1				287.6
		5	Lot 1 25	Lot 2 25	39	39	Lot 3 25	Lot 4 11	1	33	18			12	39	39	39	39	384
		8	37	27			0.4												64.4
		9							13										13

Total number of acres irrigated: 2,816.6

3. **Delivery System Diagram:** Indicate all major components and distances between components. Indicate weir size/ ditch size/ pipe i.d. as applicable.

See Attached Map sheet

- ☒ 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
Well #1	GE	75	EMJS12416	Layne-10RKHC	8" - 12 stages Serial # 45817
Well #2	U.S. Electric	150	C2688-01-498	Unk. sim. To Well #1	14" - 10 stages
Well #3	U.S. Electric	100	R9983-04-122	Layne - 11BH	8" - 8 stages Serial # T81103
Well #4	U.S. Electric	150	R6375-04-882	Layne - 11BEH	8" - 8 stages Serial # T81102
Well #5	U.S. Electric	100	1334581	Aurora - 10RKHC	8" - 12 stages Serial # 97-74200
Well #6	U.S. Electric	200	6342/3L 324070	Verti-Line - 12RH-M	8" - 9 stages Serial # 97-74192
Well #7	GE	200	VTJ 823003	Layne - 12RM	8" - 9 stages
Well #9	Unk.	100	Unk.	Layne - 12RM	8" - 9 stages

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calibration
Ultrasonic flowmeter	Portaflow	Fuji	FLC 52011	N5L3138		4/11/03

2. Measurements: _____

1) Measured flowrate into Rhead Reservoir on 12" buried pipe ~1/2 mile upstream of reservoir discharge

2) Measured open discharge diversion from wells 6 and 7 Sec. 34

3) Well #8 driller indicated 150gpm at full drawdown

E. NARRATIVE / REMARKS / COMMENTS

1) Maximum measured flow rate through 12" mainline into reservoir = 10.18 cfs (4,780 gpm observed at full-open reservoir valve)

2) Total diversion for irrigation system estimated for all 8 wells from pump motor HP, bowl efficiency diagrams and total lift from bowl depth into 50 psi system. Total diversion capacity ~15.37 cfs.

Have conditions of permit approval been met? ☒ Yes ☐ No**F. FLOW CALCULATIONS**☒ Additional Computation Sheets Attached

Measured Method: _____

G. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = (2816.6 \text{ ac.}) \times (4.0 \text{ af/ac}) = 11,266.4 \text{ afa}$$

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation Season}) \times 1.9835 = (4.89 \text{ cfs}) \times (213 \text{ days}) \times 1.9835 = 2,066 \text{ afa}$$

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = 2,066 \text{ afa}$$

2. Volume Calculations for Other Uses:

63-8067 provides 1280 afa. 63-9672, 63-10272 provide 380 afa. 63-11513 provides 1893.0 afa.

Total irrigation volume of $(1280 + 380 + 1892.7 + 2066) = 5618.7 \text{ afa}$.

H. **RECOMMENDATIONS**

1. Recommended Amounts

Beneficial Use	Period of Use		Rate of Diversion Q (cfs)	Annual Volume V (afa)
	From	To		
<u>Irrigation</u>	<u>4/1</u>	<u>10/31</u>	<u>4.89</u>	<u>2066.0</u>

TOTALS: 4.89 cfs 2066.0

2. Recommended Amendments

- | | | |
|--|---|--------------------------------|
| ☒ Change P.D. as reflected above | ☒ Add P.D. as reflected above | ☐ None |
| ☒ Change P.U. as reflected above | ☒ Add P.U. as reflected above | ☐ Other |

I. **AUTHENTICATION**

Field Examiner's Name: Charles E. Brockway Date: 9/23/06

Reviewer: _____ Date: _____

SEAL



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

USE TYPEWRITER OR
BALLPOINT PEN

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 <u>Bob Rhoad</u> Address <u>Little Camas</u> Owner's Permit No. _____	7. WATER LEVEL Static water level <u>344'</u> feet below land surface. Flowing? ☐ Yes ☒ No G.P. flow _____ Artesian closed-in pressure _____ p.s.i. Controlled by: ☐ Valve ☐ Cap ☐ Plug Temperature _____ OF Quality _____																																																																																																																																																																																																																																																																																																																																																																																				
2. NATURE OF WORK ☒ New well ☐ Deepened ☐ Replacement ☐ Abandoned (Describe method of abandoning) _____	8. WELL TEST DATA ☒ Pump ☐ Bailor ☐ Air ☐ Other _____ <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Discharge G.P.M.</th> <th>Pumping Level</th> <th>Hours Pumped</th> </tr> </thead> <tbody> <tr> <td><u>200</u></td> <td></td> <td><u>1</u></td> </tr> <tr> <td><u>637</u></td> <td><u>400</u></td> <td></td> </tr> </tbody> </table>	Discharge G.P.M.	Pumping Level	Hours Pumped	<u>200</u>		<u>1</u>	<u>637</u>	<u>400</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" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Hole Diam.</th> <th colspan="2">Depth</th> <th rowspan="2">Material</th> <th rowspan="2">Water Yes No</th> </tr> <tr> <th>From</th> <th>To</th> </tr> </thead> <tbody> <tr> <td>14</td> <td>0</td> <td>12</td> <td>CLAY</td> <td></td> </tr> <tr> <td>12</td> <td>12</td> <td>25</td> <td>GRAY LAVA</td> <td></td> </tr> <tr> <td>12</td> <td>25</td> <td>40</td> <td>BROWN LAVA</td> <td></td> </tr> <tr> <td>12</td> <td>40</td> <td>55</td> <td>GRAY LAVA</td> <td></td> </tr> <tr> <td>12</td> <td>55</td> <td>75</td> <td>ARKLSEA (H. 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ARKSEA)		12	75	105	GRAY LAVA		12	105	115	BROWN LAVA		12	115	125	GRAY LAVA		12	125	155	BROWN LAVA		12	155	175	BROWN LAVA		12	175	235	ARKLSEA (H. ARKSEA)		12	235	355	GRAY LAVA		12	355	405	ARKLSEA (H. ARKSEA)		12	405	415	BROWN LAVA		12	415	425	GRAY LAVA		12	425	435	ARKLSEA (H. ARKSEA)		12	435	445	BROWN LAVA		12	445	455	GRAY LAVA		12	455	465	ARKLSEA (H. ARKSEA)		12	465	475	BROWN LAVA		12	475	485	GRAY LAVA		12	485	495	ARKLSEA (H. ARKSEA)		12	495	505	BROWN LAVA		12	505	515	GRAY LAVA		12	515	525	ARKLSEA (H. ARKSEA)		12	525	535	BROWN LAVA		12	535	545	GRAY LAVA		12	545	555	ARKLSEA (H. ARKSEA)		12	555	565	BROWN LAVA		12	565	575	GRAY LAVA		12	575	585	ARKLSEA (H. ARKSEA)		12	585	595	BROWN LAVA		12	595	605	GRAY LAVA		12	605	615	ARKLSEA (H. ARKSEA)		12	615	625	BROWN LAVA		12	625	635	GRAY LAVA		12	635	645	ARKLSEA (H. ARKSEA)		12	645	655	BROWN LAVA		12	655	665	GRAY LAVA		12	665	675	ARKLSEA (H. ARKSEA)		12	675	685	BROWN LAVA		12	685	695	GRAY LAVA		12	695	705	ARKLSEA (H. 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RECEIVED
SEP 4 1980

Department of Water Resources
Water Resources Division

SEP 8 1980 SEP 2 1980

Department of Water Resources

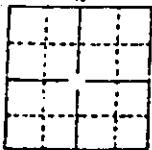
9E?

USE TYPEWRITER OR
BALL POINT 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 <u>Robert C. Head</u> Address <u>Star Rt B, Box 20, Mtn Home 83647</u> Owner's Permit No. <u>owner applying</u>		7. WATER LEVEL Static water level <u>322</u> feet below land surface Flowing? ☐ Yes ☒ No G.P.M. flow Temperature <u>54</u> ° F. Quality <u>Good</u> Artesian closed-in pressure _____ p.s.i. Controlled by ☐ Valve ☐ Cap ☐ Plug																																																																														
2. NATURE OF WORK ☒ New well ☐ Deepened ☐ Replacement ☐ Abandoned (describe method of abandoning)		8. WELL TEST DATA ☐ Pump ☐ Bailor ☐ Other Discharge G.P.M. Draw Down Hours Pumped																																																																														
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5. WELL CONSTRUCTION Diameter of hole <u>20</u> inches Total depth <u>440</u> feet Casing schedule: ☒ Steel ☐ Concrete Thickness Diameter From To <u>0.375</u> inches <u>26</u> inches <u>0</u> feet <u>33</u> feet <u>0.250</u> inches <u>16</u> inches <u>33</u> feet <u>440</u> feet _____ inches _____ inches _____ feet _____ 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 <u>3/16</u> inches by <u>3</u> inches Number From To <u>117</u> torch perforations <u>433</u> feet <u>420</u> feet <u>6,400</u> perforations <u>420</u> feet <u>320</u> 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 _____ Packed from _____ feet to _____ feet Surface seal depth <u>33</u> Material used in seal ☐ Cement grout ☒ Pudding clay ☐ Well cuttings Sealing procedure used ☐ Sherry pit ☐ Temporary surface casing ☒ Overbore to seal depth																																																																																
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		11. DRILLERS CERTIFICATION Firm Name <u>Mountain Home Well Driller Firm No. 89</u> Address <u>PO Box 112, Harzett 83626</u> Date <u>Dec 1, 1974</u> Signed by (Firm Official) <u>F. H. Buehler</u> and (Operator) <u>Richard Schultz</u> <u>Hugh Hardaway</u>																																																																														

USE ADDITIONAL SHEETS IF NECESSARY

FORWARD THE WHITE COPY TO THE DEPARTMENT

2362

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

TYPEWRITER OR
BALLPOINT PEN

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.

Department of Water Resources

WELL OWNER

Name ROBERT C. RHEAD
Address STAR RT. B, BOX 20
MOUNTAIN HOME, IDAHO 83647
Owner's Permit No. _____

7. WATER LEVEL Western Regional Office

Static water level 456 feet below surface TOP OF 16"
Flowing? ☐ Yes ☒ No G.P.M. flow _____
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature _____ °F. Quality GOOD

NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe method of abandoning) _____

8. WELL TEST DATA

☒ Pump ☐ Bailor ☐ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped

PROPOSED USE

☐ Domestic ☒ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type)

9. LITHOLOGIC LOG -- REFERENCED TO TOP OF 16"

Hole Diam.	Depth From	To	Material	Water Yes No
16"	0	1492		
14"	1492	617		
	0	3	SOIL AND SUBSOIL	x
	3	31	GREY BOULDERS, CLAY SEAMS	
	31	35	GREY BASALT, BROKEN	
	35	43	GREY BASALT, HARD	
	43	70	GREY BASALT, FRACTURED	
	70	75	GREY BASALT, HARD	
	75	87	GREY BASALT, FRACTURED	
	87	1120	GREY BASALT BOULDERS, VERY LARGE, CLAY SEAMS	
	112	114	RUBBLE, GREY, GRAVEL	
	114	138	GREY BASALT, HARD	
	138	141	BROWN CLAY	
	141	146	GREY BASALT, OPEN FISSURES	
	146	151	GREY BASALT	
	151	159	CINDERS, GRAVEL, RUBBLE	
	159	165	GREY BASALT	
	165	165	BLACK GRAVEL	
	165	182	BOULDERS, RUBBLE	
	182	190	BLACK BASALT	
	190	227	BROWN BASALT, VERY HARD	
	227	229	BLACK BASALT, FRACTURED	
	229	247	GREY BASALT	
	247	257	CINDERS, BOULDERS, BROWN CLAY, CEMENT	
	257	300	GREY BASALT, SOFT, BROKEN	
	300	312	GREY BASALT, HARD	
	312	314	RYOLITE	
	314	449	CINDERS & GRAVEL	
			BOULDERS AT 349--352	
			475--477	
			477--479	
			475--479	
	449	466	BLACK SAND, POORLY SORTED	x
	466	511	BLACK BASALT	x

METHOD DRILLED

☐ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary
☒ Cable ☐ Dug ☐ Other _____

WELL CONSTRUCTION

Casing schedule: ☒ Steel ☐ Concrete ☐ Other

Thickness	Diameter	From	To
0.250 inches	16 inches	1.4 feet	30.73 feet
0.213 inches	14 inches	2.0 feet	48.7 feet

Was casing drive shoe used? ☒ Yes ☐ NoWas a packer or seal used? ☐ Yes ☒ NoPerforated? ☒ Yes ☐ NoHow perforated? ☒ Factory ☐ Knife ☐ Torch

Size of perforation 1/8 inches by 3 inches

Number	From	To
2184	perforations	403 feet
	perforations	
	perforations	

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: 1/2 MINUS

Placed from _____ BACKFILL WASHED, UNSCREENED

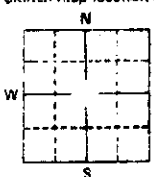
Surface seal depth _____ Material used in seal: ☐ Cement grout☒ Puddling clay ☐ Well cuttingsSealing procedure used: ☒ Slurry pit ☐ Temp. surface casing☐ Overbore to seal depthMethod of joining casing: ☐ Threaded ☒ Welded ☐ Solvent

Weld _____

☐ Cemented between strataDescribe access port 1" PIPE @ 30" INSTALLED7 1/4" PIPE IS HANGING IN TENSION OFF BOTTOM.

LOCATION OF WELL

Sketch map location must agree with written location.



Subdivision Name _____

Lot No. _____ Block No. _____

County _____

T. 16 S. R. 9 E. E. 1/4

11. DRILLERS CERTIFICATION

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

Firm Name _____ Firm No. _____

Address _____ Date _____

Signed by (Firm Official) _____

and

(Operator) _____

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

STATE OF IDAHO
A. DEPT OF WATER RESOURCES

TYPEWRITER AND
LPCINT PEN

WELL DRILLER'S REPORT

State law requires that this report be filed with the Director, Department of Social Services, within 30 days after the completion or abandonment of the visit.

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conf

WELL OWNER

Name ROBERT C. RHEAD --PAGE 2
Address _____
Owner's Permit No. _____

7. WATER LEVEL

Static water level _____
Flowing? ☐ Yes ☐ No
Artesian closed-in pressure _____ p.s.i.
Controlled by: ☐ Valve ☐ Cap ☐ Plug
Temperature _____ OF Quality _____

NATURE OF WORK

☐ New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe method of abandoning) _____

PROPOSED USE

☐ Domestic ☐ Irrigation ☐ Test ☐ Municipal
☐ Industrial ☐ Stock ☐ Waste Disposal or Injection
☐ Other _____ (specify type) _____

METHOD DRILLED

☐ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary
☐ Cable ☐ Dug ☐ Other _____

WELL CONSTRUCTION

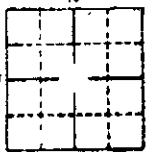
Casing schedule: ☐ Steel ☐ Concrete ☐ Other _____

Thickness	Diameter	From	To
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ 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 _____ 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 _____ Material used in seal: ☐ Cement grout ☐ Puddling clay ☐ Well cuttings
Sealing procedure used: ☐ Slurry pit ☐ Temp. surface casing ☐ Overbore to seal depth
Method of joining casing: ☐ Threaded ☐ Welded ☐ Solvent Weld.
☐ Cemented between strata
Describe access port _____

LOCATION OF WELL

Sketch map location must agree with written location.


Subdivision Name _____
Lot No. _____ Block No. _____
_____ ELMORE _____
_____ 33 _____ 1N _____ 9E _____ E/W.

8. WELL TEST DATA

☐ Pump ☐ Bailor ☐ Air ☐ Other _____

Discharge G.P.M.	Pumping Level	Hours Pumped

9. LITHOLOGIC LOG REFERENCED TO TOP OF 16"

Hole Diam.	Depth		Material	Water Yes No
	From	To		
16"	511	512	RUBBLE GRAVEL	X
	512	557	BLACK BASALT, ALTERNATING LAYERS OF HARD AND SOFT	X
	557	563	BLACK BASALT, VERY HARD	?
	563	566	GINDERS IN CRVICE	X
	566	582	BLACK BASALT	?
	582	583	GRAVEL IN CRVICE	X
	583	590	BLACK BASALT	?
	590	600	BLUE-GRAY BASALT	?
	600	605	BROWN SILT SATURATED	
	605	612	TAN CLAY, VERY STICKY SATURATED	
	612	614	YELLOW SAND, POORLY SORTED WITH MOSTLY FINES	X
	614	617	YELLOW GNEISS	?

10.

Work started JANUARY 15 finished SEPTEMBER 23, 1980

11. DRILLERS CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.
Firm Name ARTISIAN CO. Firm No. 318
7425 W. 36TH S.
Address MOUNTAIN HOME, IDAHO Date DEC. 8, 1980
Signed by (Firm Official) Hugh Harden
and
(Operator) Hugh Harden

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

FORWARD WHITE COPY TO WATER RESOURCES

Use Typewriter or Ballpoint Pen

Lat: : Long: :

FORWARD WHITE COPY TO WATER RESOURCES

**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: _____

Sketch map location must agree with written location

I.t. _____ Filk. _____ Sub. Name _____

SE: ☐ Domestic ☐ Municipal ☐ Monitor X Irrigation
☐ Thermal ☐ Injection ☐ Other _____

5. TYPE OF WORK check all that apply (Replacement etc.)

5. TYPE OF WORK ☒ New Well ☐ Modify ☐ Abandonment ☐ Other

☐ Air Rotary ☒ Cable ☐ Mud Rotary ☐ Other

7. SEALING PROCEDURES

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

2. CASING/LINER:

CASING/LINER:					Casing	Liner	Welded	Threaded
Diameter	From	To	Gross	Material	X	☐	☐	☐
16	+1	32	250	STEEL	☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS

☐ Performances Method _____

☐ Screens Screen Type _____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
						☐	☐
						☐	☐
						☐	☐

137 below ground
Depth flow encountered
n

Artemian Pressure _____ lb
Describe access port or control

11. WELL TESTS:

WELL TESTS: ☐ Pump ☐ Boiler ☐ Air ☐ Flowing Artesian

[illegible]

Water Temp. _____ Bottom hole temp. _____

Water Temp. _____
 Water Quality test or comments: _____
 Depth first Water Encountered _____

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

[illegible]

RECEIVED

~~44-15-100~~

WATER RESOURCES WESTERN REGION

Completed Depth: 465' (Measurable)
Date: Started 06-15-98 Completed 07-08-98

13. DRILLER'S CERTIFICATION

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 HIDDLESTON & SON INC

Firm No. 35

Firm Official [Signature]

Date 8/7/38

Supervisor or Operator _____
(Sign once if Firm Official & Operator)

Date _____

Use Typewriter or Ballpoint Pen

Transmitted by _____
Type _____ Rge _____ Sec _____
2 1/4 1/4 1/4
Lat: _____ Long: _____

Sketch map location must agree with written location.

Bk. _____ Sub. Name _____

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

☒ New Well ☐ Modify ☐ Abandonment ☐ Other _____

☒ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other _____

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

Length of Headpipe _____ Length of Tailpipe _____

☐ Perforations Method _____

☐ Screens Screen Type _____

252 ft. below ground Artesian pressure _____ lb.
Depth flow encountered _____ ft. Describe access port or
control devices: _____

☐ Pump ☐ Baller ☒ Air Lift ☐ Flowing Artesian

Water Temp. _____ Bottom hole temp. _____

Water Quality test or comments: _____

[illegible]

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

Firm Name **HIDDLESTON & SON, INC.** Firm No. **35**

Firm Official Ken Kock Date 9-5-90

and
Supervisor or Operator K. K. K. Date 9-5-96

(Sign) once if Firm Official & Operator

FORWARD WHITE COPY TO WATER RESOURCES

IDaho DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only

Inspected by _____

Twp _____ Rgc _____ Sec _____

Lat: _____ 1/4 _____ 1/4 _____ 1/4 _____

Long: _____

11. WELL TESTS:

☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal/min.	Drawdown	Pumping level	Time
1780			1 hr.

Water Temp.	
	Bottom hole temp.

Water Quality test or comments:

Depth first Water Encountered 252

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

N

W  E

Twp. 1 North ☒ or South ☐
 Rge. 9 East ☒ or West ☐
 Sec. 33 $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$
 10 acres 30 acres 160 acres

Lat: ; Long: ;

City Carnas

(Give at least name of road + Distance to Road or Landmark)

Li.	Blk.	Sub. Name
-----	------	-----------

☐ Domestic ☐ Municipal ☐ Monitor X Irrigation
☐ Thermal ☐ Injection ☐ Other

☐ New Well ☐ X Modify ☐ Abandonment ☐ Other☐ Air Rotary X Cable ☐ Mud Rotary ☐ Other

SEAL/FILTER PACK			AMOUNT	METHOD
Material	From	To	Sacks or Pounds	
Bentonite	0	24	2800 lbs	Overbore

Was drive shoe seal tested? ☐ Y ☐ N How?

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
16"	+2	24	250	Steel	X	☐	X	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe _____ Length of Tailpipe _____

Perforations Method

☐ Screens	Screen Type
----------------------------------	-------------

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
						☐	☐
						☐	☐
						☐	☐

252 ft below ground

Depth flow encountered

Artesian Pressure 1b

Depth flow encountered _____ Describe access port or control devices: _____

[illegible]

Completed Depth: 550' (Measurable)

Date: Started 5/11/00 Completed 6/30/00

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 Hiddleston & Son, Inc

Finn No. 35

Firm Official

Date 2/6/66

Supervisor or Operator

Date 7/6/55

(Sign once if Firm Official & Operator)

Form 238-7
3/95

IDAHO DEPARTMENT OF WATER RESOURCES

WELL DRILLER'S REPORT

Use Typewriter or Ballpoint Pen

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

1. DRILLING PERMIT NO. 63-96-W-0540-000
Other IDWR No. 63-115142. OWNER: Don M^{rs} Farland
Name BIG SKY PARTNERSHIP
Address 350 FALLS AVE
City TWIN FALLS State ID Zip 83301

3. LOCATION OF WELL by legal description:

Sketch map location must agree with written location.

N				
S				

Twp. 1 North ☒ or South ☐
Rge. 9 East ☒ or West ☐
Sec. 34 1/4 NE 1/4 SW 1/4 SE 1/4 NW
Gov't Lot 10 County ELMORE
Lat: 43° 15' N Long: 114° 15' W

Address of Well Site City CAMASLt. 1 Blk. 1 Sub. Name 1

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		
BENTONITE	0	19	8 sack		overbore

 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
12	1	19	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:

234 ft. below ground Artesian pressure _____ lb.
 Depth flow encountered _____ ft. Describe access port or control devices: _____

11. WELL TESTS:

☐ Pump ☐ Bailor ☐ Air ☐ Flowing Artesian

Yield gal/min.	Drawdown	Pumping Level	Time
150	435	440	8 hr

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

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Y	N
15	0	10	soil & brown clay		
15	10	45	gray lava		
12	45	54	red & brown lava		
12	54	157	gray lava		
12	157	228	brown & gray lava		
			some clay & binder broken	X	
12	228	326	gray lava		
12	326	355	black lava some tan clay		
12	355	410	black lava		
12	410	455	black lava & gray clay		
12	455	460	granite	X	

This well is currently not in use and has a lid welded on. The well is located on the NW 1/4 of Section 34, Range 9 North, Township 1 North, Elmore County, Idaho. The well was drilled to a depth of 460 feet. The well is to be abandoned.

RECEIVED

AUG 28 1996

WATER RESOURCES
WESTERN REGION
 Completed Depth 460' (Measurable)
 Date Started 8-20-96 Completed 8-28-96

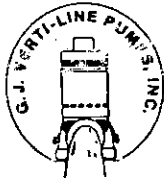
13. DRILLER'S CERTIFICATION

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

Firm Name HIDDLESTON & SON, INC. Firm No. 35
 Firm Official _____ Date _____
 and
 Supervisor or Operator Ken Koch Date 8-28-96

(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES



G.J. VERTI-LINE PUMPS, INC.

1970 Highland Ave. East - P.O. Box 892
Twin Falls, Idaho 83303
Fax (208) 733-5009
Phone (208) 733-4278

RECEIVED

SEP 26 2005

WATER RESOURCES
WESTERN REGION

09/25/2002

9/29/04

Don McFarland
731-6530

The following is the information on your pumps at Little Camas:

#7

200 HP Layne

Plate under head - no access to well

Design: 1100 GPM at 522 ft. head 10/10/03 10' Extension

Setting: 410 ft. of 8 x 2 1/2 x 1 11/16 420' setting

Bowls: 9 stage 12 RM

Static water level: 328 ft. - 1998

Well Depth: 443 ft.

200 HP Verti-line # 97-74192

Pumping Level? 382 ft. steady reading

Amp Load 150-220 surging

#6

Design: 1350 GPM at 515 ft. head 10/9/03 20' Extension

Setting: 400 ft. of 8 x 2 1/2 x 1 11/16 420' setting

Bowls: 9 stage 12 RH-M

Static water level: 247 ft. - 2000

Well Depth: 527 ft.

100 HP Aurora #97-74200

Static water level: 337 ft. - 9-2002

#5

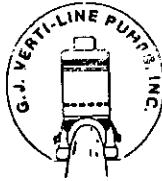
Design: 600 GPM at 500 ft. head 10/9/03 20' Extension

Setting: 400 ft. of 8 x 2 1/2 x 1 1/2 420' setting

Bowls: 12 stages 10 RM-L

Static water level: 279 ft. - 1997

Well Depth: 472 ft.



G.J. VERTI-LINE PUMPS, INC.

1970 Highland Ave. East - P.O. Box 892
Twin Falls, Idaho 83303
Fax (208) 733-5009
Phone (208) 733-4278

Little Camas Pumps Page 2

150 HP Layne #T81102

Unable to get sounder past 272 ft.

Design: 900 GPM at 488 ft. head
Setting: 340 ft. 8 x 2 1/2 x 1 1/2
Bowls: 11 BEH 8 stage
Static water level: 300 ft. in 1981
Well Depth: 460 ft. ~

100 HP Layne #T81103

Pump is surging

Design: 700 GPM at 494 ft. head
Setting: 360 ft. 8 x 2 1/2 x 1 1/2
Bowls: 11 BH 8 stage
Static water level: 210 ft. in 1981
Well Depth: 480 ft.

Abandoned well East of house and pond

Static water level: 316 ft. - 12" hole

75 HP Layne #45817

Pulling 90 amps then dropping off to 70.

Its not surging as badly as the other two pumps

Design: 400 GPM at 568 ft. head
Setting: 300 ft. of 8 x 2 1/2 x 1 1/2
Bowls: 10 BKH 12 stage
Static water level: 252 ft. - 1976
Well Depth: 440 ft.

CURVE NO.
18-071
6-1-77

No. Stages	Eff. Change	MATERIAL	Eff. Change
1	-3	IMP.—C.I.	-2
2	-2	IMP.—NI-RI	-1
3	-1	BOWL—BRZ.	-1
4	0	BOWL—NI-R.	-1

10 RKHC.

1760 R.P.M.

SINGLE STAGE LAB PERFORMANCE WITH STANDARD MATERIALS. EFFICIENCY SHOWN FOR 4 OR MORE STAGES. HORSE POWER SHOWN FOR ONE STAGE BASED ON 4 STAGE EFFICIENCY. CORRECTIONS SHOULD BE MADE FOR STAGES AND MATERIAL.

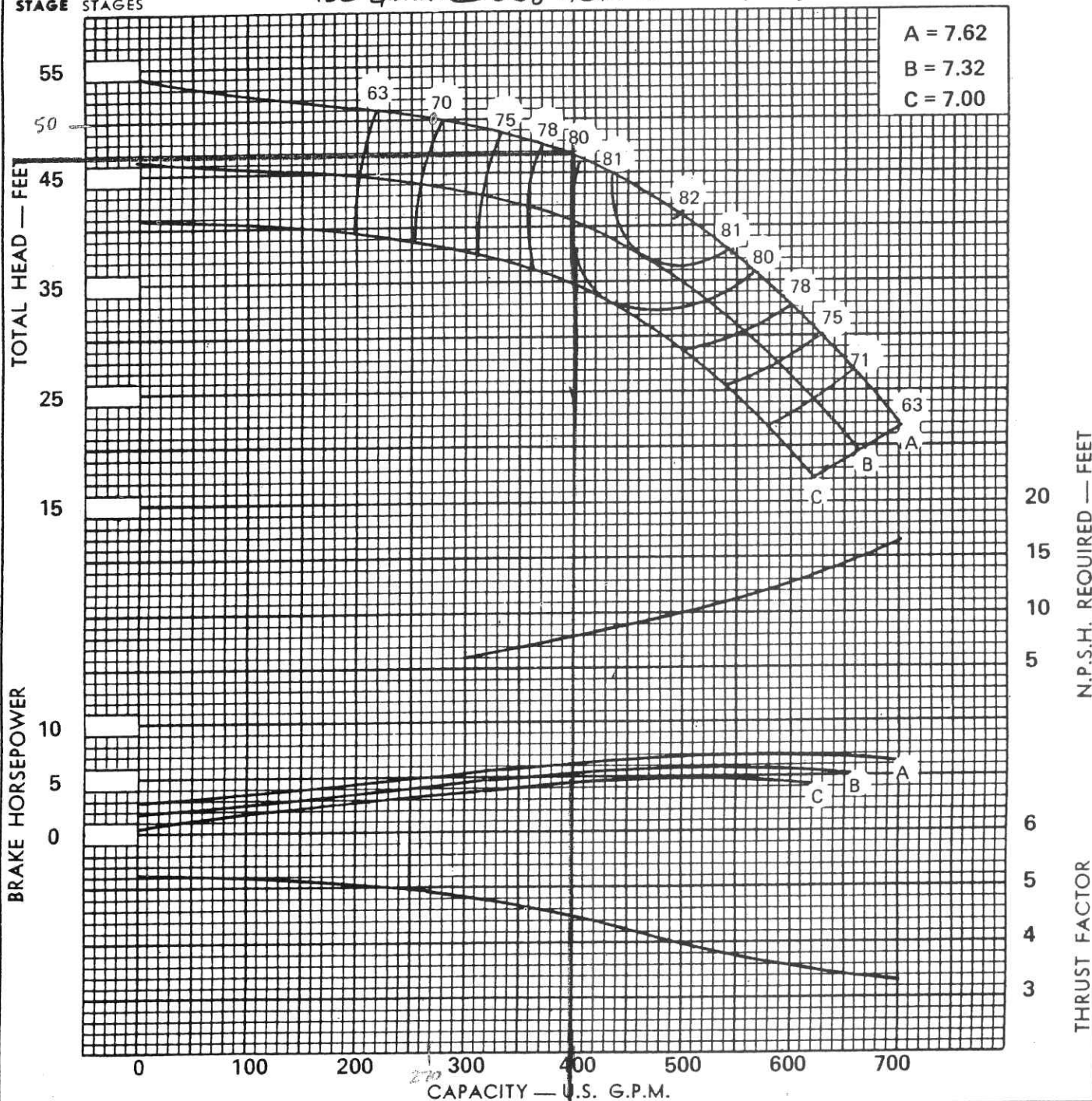
ONE (12)
STAGE STAGES

75 H.P. Layne #45817

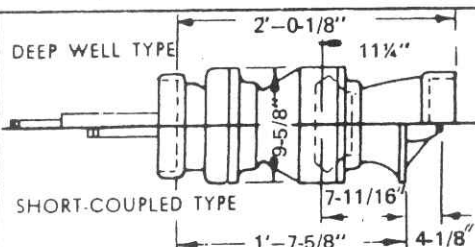
400 G.P.M. @ 568' HEAD

596/12 = 50' / stage

270 GPM @ 596' TDH



EYE AREA — SQ. IN. = 11.63	IMPELLER WT.-LBS. = 9.8
WR ² PER IMPELLER = 0.432 LB.-FT ²	ONE STAGE WT.-LBS. = 185
MAX. SPHERE SIZE = 0.625 in.	ADD'L STAGE WT.-LBS. = 67
MAX. NO. STD. STAGES = 29	IMPELLER NUMBER = 5RK171
MAX. OPERATING P.S.I. = 700	DISCH. SIZES = 6, 8
STD. LATERAL = 0.86 in.	SUCTION SIZES = 6
STD. SHAFT DIA. = 1.500 in.	MAX. LATERAL = ——— in.
MAX. SHAFT DIA. = 1.687 in.	BOWL CONN. THREADED-COLLET
MIN. SUBMERGENCE = 18 in.	ADD 7-7/16" PER ADDITIONAL STAGE.



CURVE NO.
18-083
5-1-79

No. Stages	Eff. Change	MATERIAL	Eff. Change
1	-4	IMP.—C.I.	-2
2	-2	IMP.—NI-RI	-1
3	-1	BOWL—BRZ.	-1
4	0	BOWL—NI-R.	-1

11 BHC

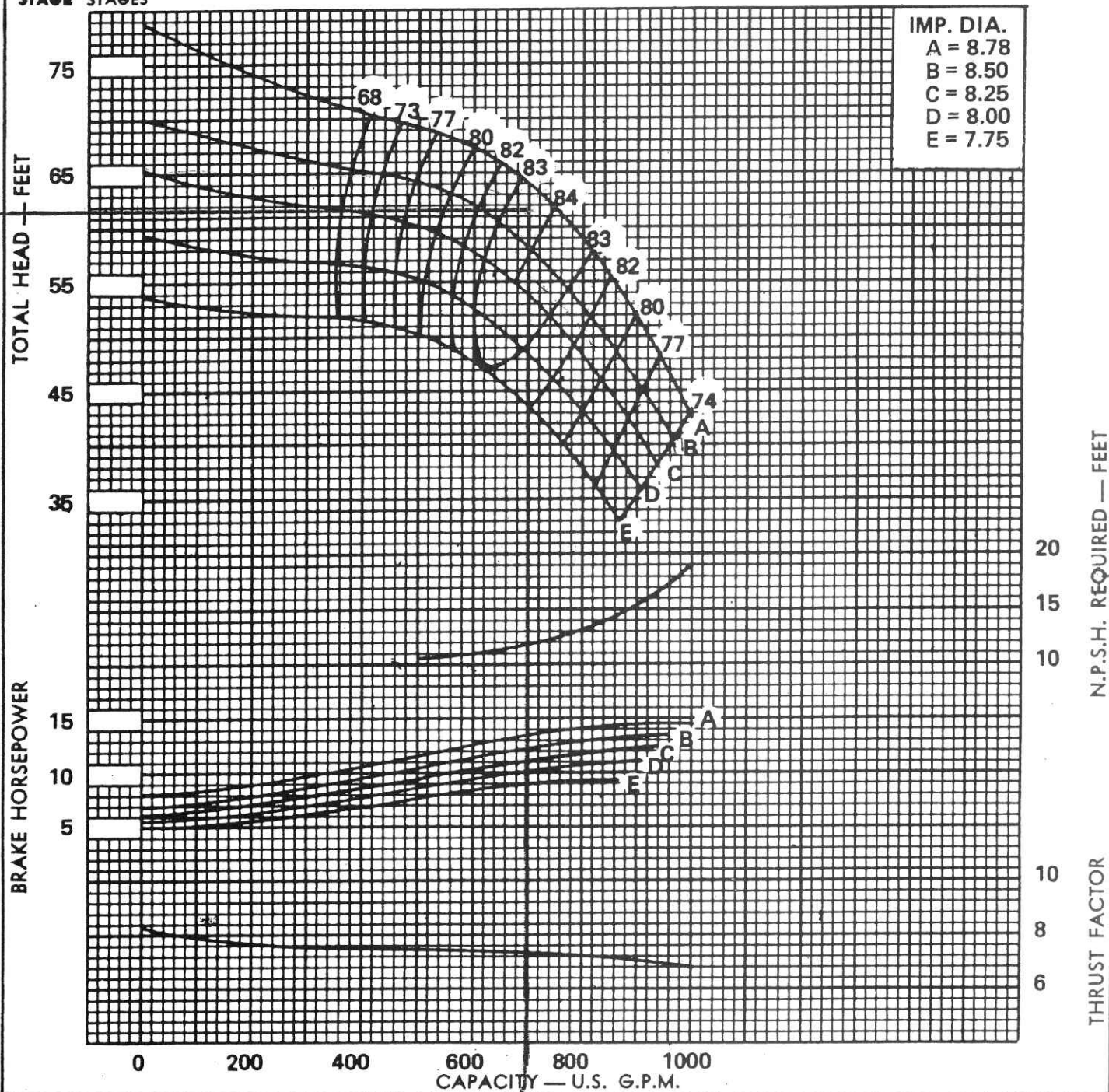
1770 R.P.M.

SINGLE STAGE LAB PERFORMANCE WITH STANDARD MATERIALS. EFFICIENCY SHOWN FOR 4 OR MORE STAGES. HORSE POWER SHOWN FOR ONE STAGE BASED ON 4 STAGE EFFICIENCY. CORRECTIONS SHOULD BE MADE FOR STAGES AND MATERIAL.

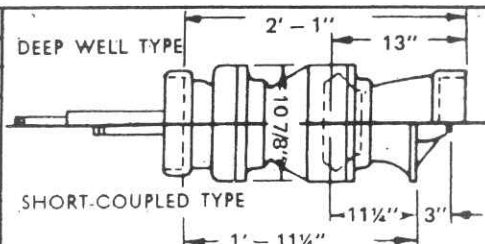
ONE (8)
STAGE STAGES

100 H.P. KAYNE TB1103
700 G.P.M. @ 494' Head / 8 = 61.8

522' / 8 = 65.3' / stage
600 GPM @ 522' TDH



EYE AREA — SQ. IN. = 14.71	IMPELLER WT.—LBS. = 12.7
WR ² PER IMPELLER = 0.74 LB.-FT. ²	ONE STAGE WT.—LBS. = 188
MAX. SPHERE SIZE = 0.82 in.	ADD'L STAGE WT.—LBS. = 74
MAX. NO. STD. STAGES = 13	IMPELLER NUMBER = 55B17
MAX. OPERATING P.S.I. = 430	DISCH. SIZES = 8, 6
STD. LATERAL = 0.62 in.	SUCTION SIZES = 8
STD. SHAFT DIA. = 1.500 in.	MAX. LATERAL. = — in.
MAX. SHAFT DIA. = 1.687 in.	BOWL CONN. FLANGED—COLLET
MIN. SUBMERGENCE = 22 in.	ADD 9% " PER ADDITIONAL STAGE.



CURVE NO.
18-105
3-15-78

No. Stages	Eff. Change	MATERIAL	Eff. Change
1	-4	IMP.—C.I.	-2
2	-2	IMP.—NI-RI	-1
3	-1	BOWL—BRZ.	-1
4	0	BOWL—NI-R.	-1

11 BEH

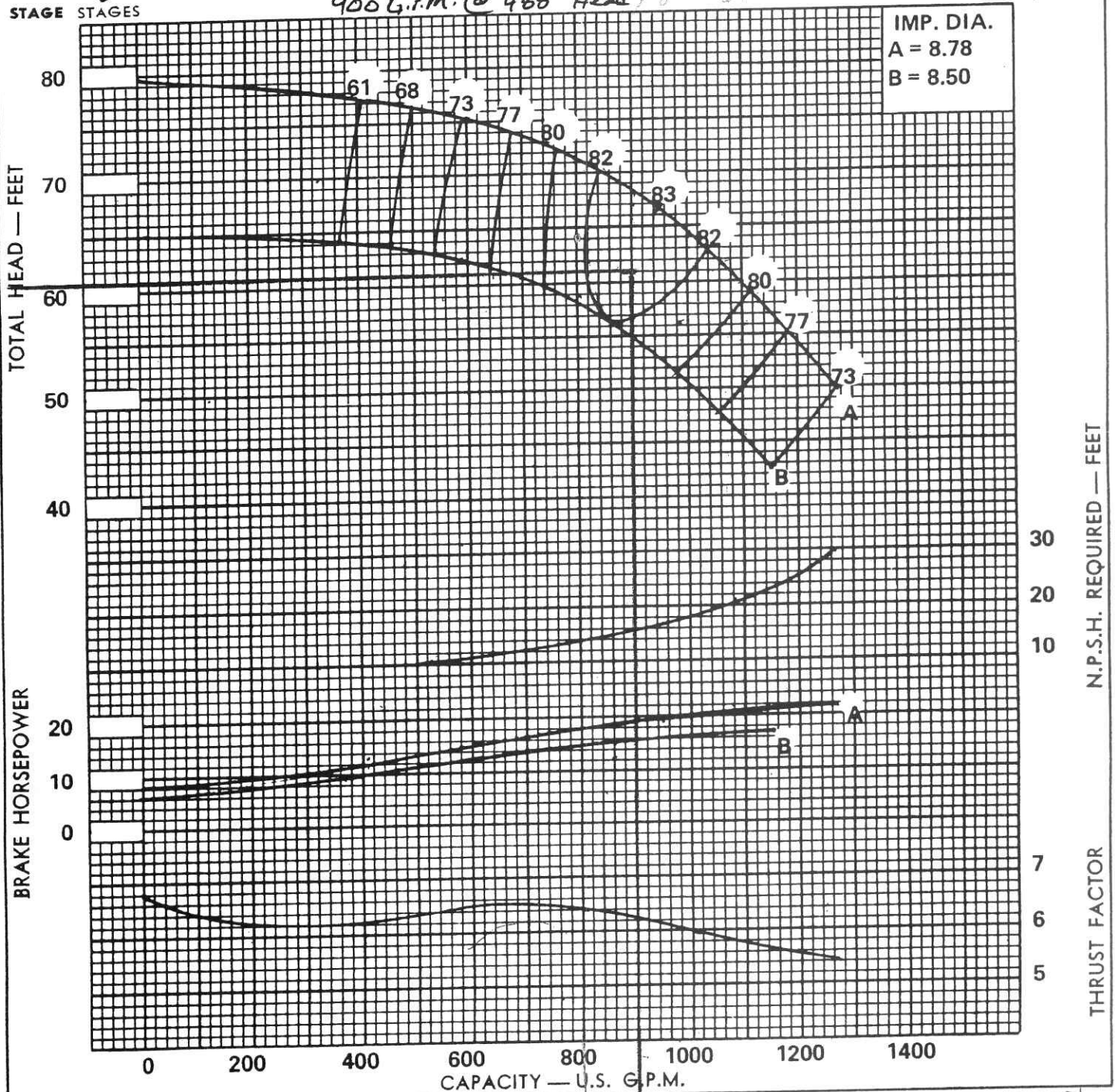
1770 R.P.M.

SINGLE STAGE LAB PERFORMANCE WITH STANDARD MATERIALS. EFFICIENCY SHOWN FOR 4 OR MORE STAGES. HORSE POWER SHOWN FOR ONE STAGE BASED ON 4 STAGE EFFICIENCY. CORRECTIONS SHOULD BE MADE FOR STAGES AND MATERIAL.

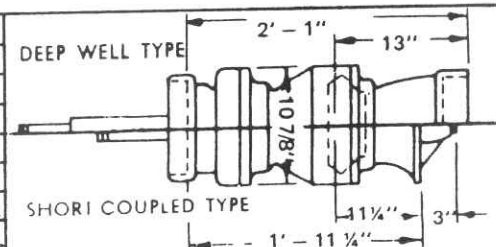
ONE (8)
STAGE STAGES

150 H.P. LAYNE # T81102
900 G.P.M. @ 488' Head / 8 = 61'

516' / 8 = 64.5'
800 G.P.M. @ 516' TDH



EYE AREA — SQ. IN. = 15.11	IMPELLER WT.—LBS. = 12.7
WR ² PER IMPELLER = 0.74 LB.-FT. ²	ONE STAGE WT.—LBS. = 186
MAX. SPHERE SIZE = 0.62 in.	ADD'L STAGE WT.—LBS. = 74
MAX. NO. STD. STAGES = 10	IMPELLER NUMBER = 55B19
MAX. OPERATING P.S.I. = 430	DISCH. SIZES = 8
STD. LATERAL = 0.56 in.	SUCTION SIZES = 8
STD. SHAFT DIA. = 1.500 in.	MAX. LATERAL = — in.
MAX. SHAFT DIA. = 1.687 in.	BOWL CONN. FLANGED—COLLET
MIN. SUBMERGENCE = 25 in.	ADD 9% " PER ADDITIONAL STAGE



10RM SERIES 1110

Verli-Line PUMP

100 H.P. ANDORA # 97-74200

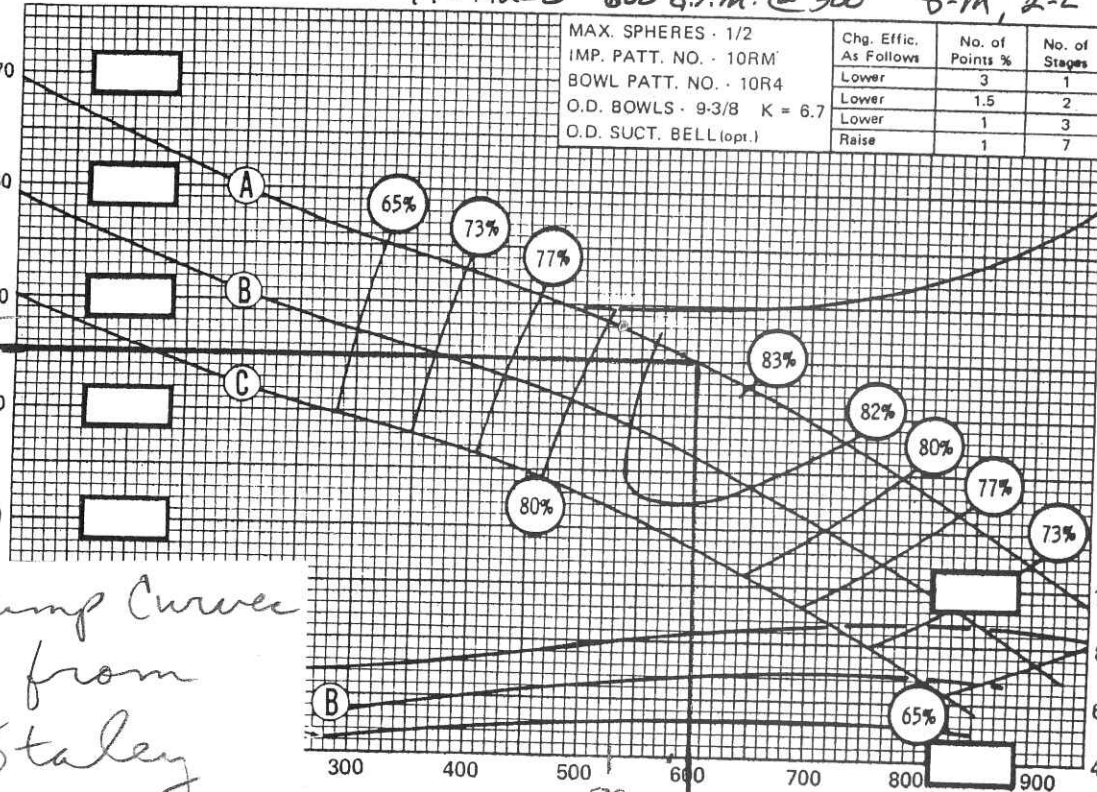
600 G.P.M. @ 500

8-M, 2-L Full Diameter

8-RM

1770 R.P.M.

AL DYNAMIC HEAD-Feet



Pump Curves from Staley

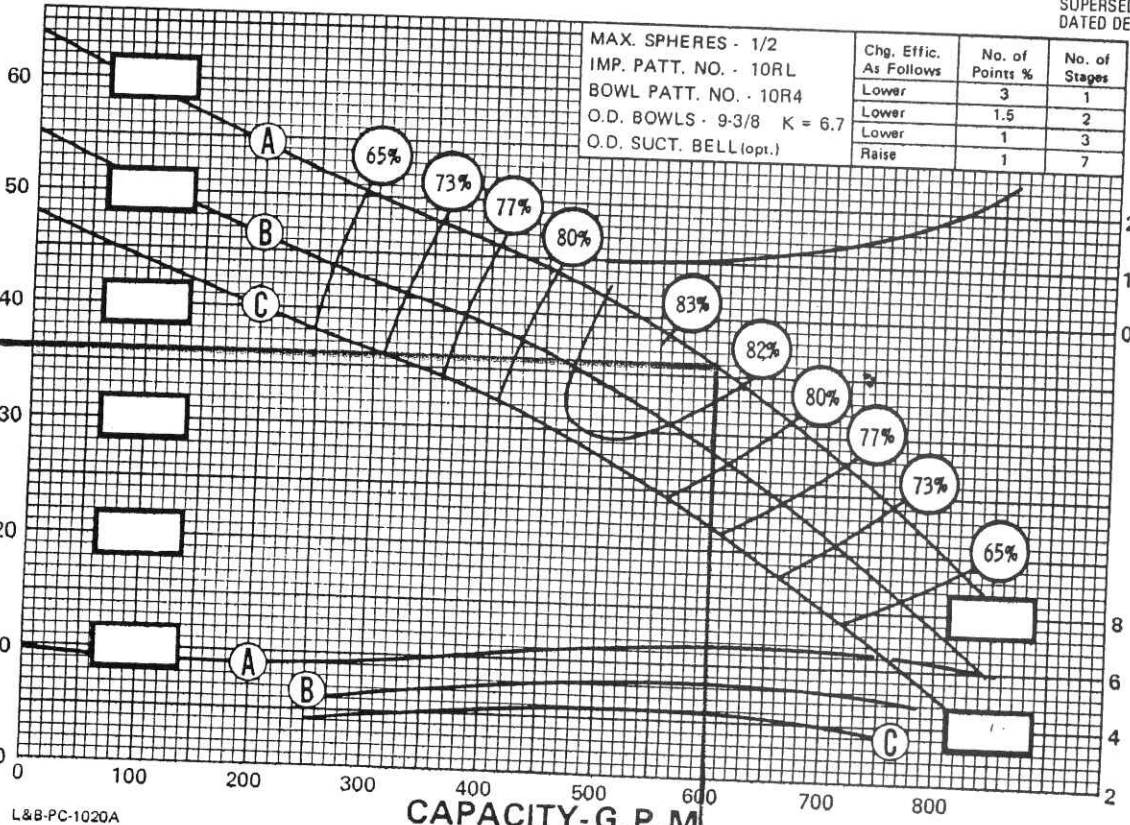
10RL SERIES 1110

Verli-Line PUMP

4 2 37 = 148
 4 2 35 = 140

4 2-RL

TOTAL DYNAMIC HEAD-Feet



L&B-PC-1020A

CAPACITY-G.P.M.

9PC-119364



380 + 148 = 528
 G. J. VERTI-LINE PUMPS, INC.

(A) = 7.750

1770 R.P.M.

12RH SERIES 1110

Verli-Line PUMP

200 H.P. L48 # 97-74192

1350 GPM @ 515'

7 @ 65' = 456

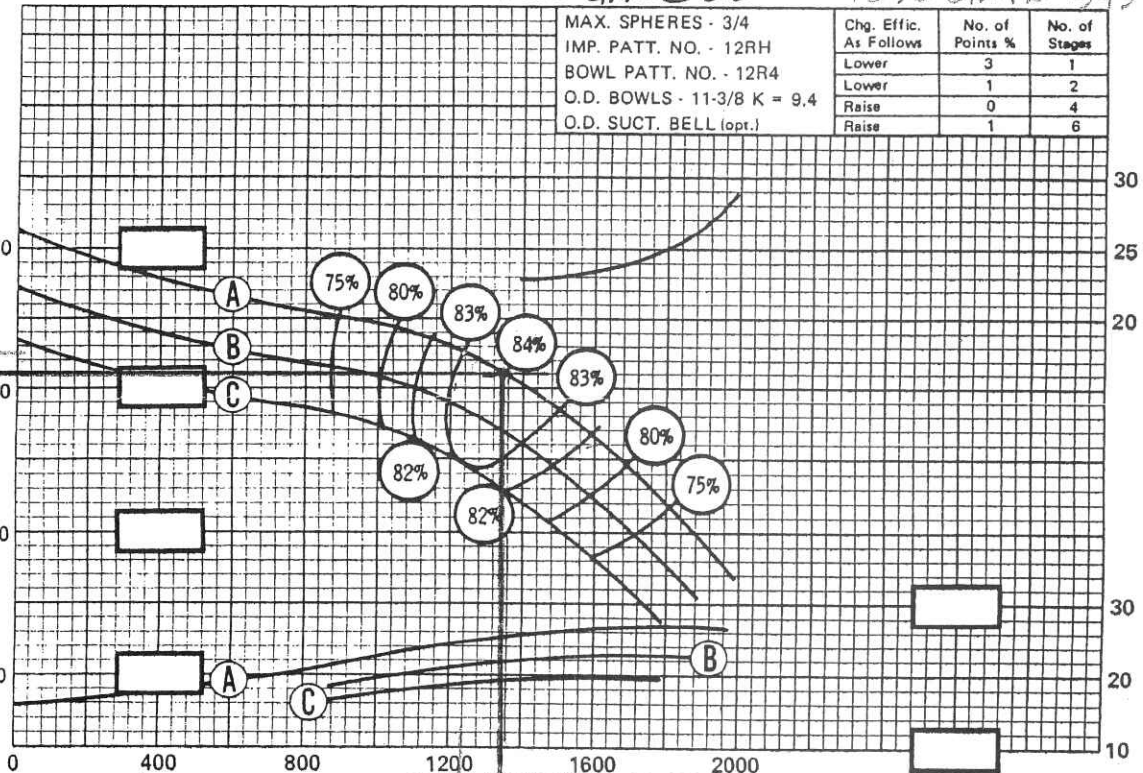
10 @ 62' = 620

1250 GPM @ 543'

7-H

1770 R.P.M.

TOTAL DYNAMIC HEAD-Feet



N.P.S.H.

H.P.

2 @ 435 = 87

2 @ 405 = 81

12RM SERIES 1110

Verli-Line PUMP

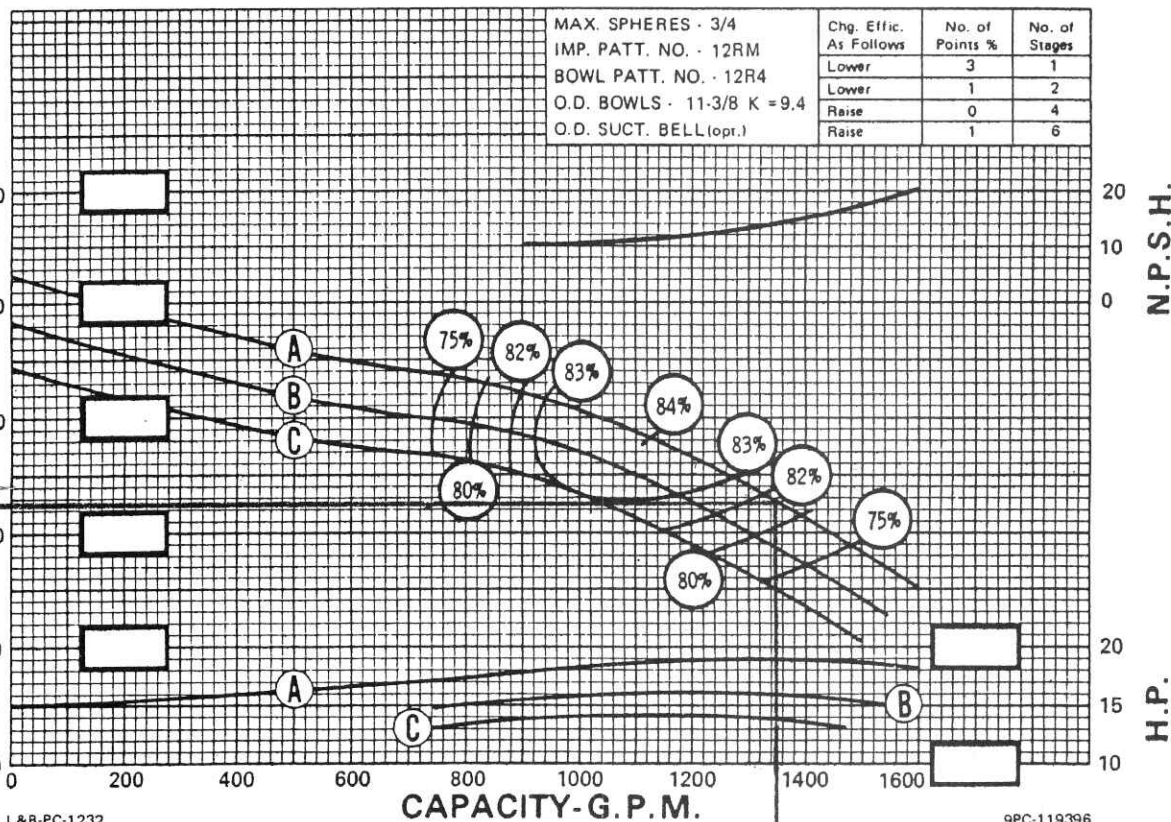
DATED MARCH 1988

SUPERSEDES PAGE 563
 DATED DECEMBER 1981

2-M

1770 R.P.M.

TOTAL DYNAMIC HEAD-Feet



N.P.S.H.

H.P.

L&B-PC-1232

CAPACITY-G.P.M.

9PC-119396

456 + 87 = 543

(A) = 1 RR

Dr McFarlane sites for wells.

PUMPS

DISCRIPTION	GPS COORDINATE	ELEVATION	
EAST SIDE PIVOT #2 BY ROAD TO LAGOON	N 43° 21.796' $\begin{cases} X = 387068.440 \\ Y = 251793.443 \end{cases}$ W 115° 23.976'	4924	DRY
BOOSTER	N 43° 22.119' 387078.4344 W 115° 23.981' 252389.1696	4971	
<i>3/1/89</i> <i>old well</i> - PUMP #1	N 43° 22.230' 386948.6716 W 115° 24.080' 252596.1214	4993	JULY 15, 1980 ON PAD
SOUTH OF PUMP #1 30' ~~POLE~~ POLE 01N 09E 32 20	N 43° 22.225' 386947.1712 W 115° 24.081' 252596.9226	4946	DRY 
HINES ~~NOW DRY~~ (I DRILLED) POLE 01N 09E 32 10 <i>#2</i> <i>1976</i>	N 43° 22.685' 387063.6646 W 115° 24.055' 253433.5768	4946	NOW DRY 
HINES DOMESTIC	N 43° 22.875' 386729.2115 W 115° 24.258' 253789.7133	4901	NOT USED PUMP PULLED 
- PUMP #3 SMALLER (SOUTH) POLE 01N 09E 33 40 <i>old</i>	N 43° 22.700' 387431.3359 W 115° 23.732' 253455.0862	4994	
- PUMP #4 LARGER (NORTH) POLE 01N 09E 33 41 <i>old</i>	N 43° 22.825' 387417.7555 W 115° 23.745' 253685.9147	4992	
- PUMP #5 ~~POOR PRODUCER~~ POLE 01N 09E 33 12 <i>1976</i>	N 43° 22.885' 387871.5929 W 115° 23.409' 253789.0230	4991	POOR PRODUCER
- PUMP #6 POLE 01N 09E 33 11 <i>1976</i>	N 43° 22.883' 388293.9229 W 115° 23.095' 253778.3712	4970	
- PUMP #7 <i>1976</i> POLE 01N 09E 33 10	N 43° 22.884' 388599.3129 W 115° 22.868' 253775.0877	4960	
NORTH HOUSE DOMESTIC	N 43° 23.039' 388550.2444 W 115° 22.908' 254061.8435	4961	

EAST OF #7 ⁸
~~EST~~---I DRILLED) 1996

N 43° 22.878' 388583.9531 4984
W 115° 22.581' 254314.0072

DRY

ON TOP OF HILL
"HOLLER" WELL

N 43° 22.182' 387410.2790
W 115° 22.388' 253043.2416 5128
23.390

DRY ?

EAST (IN HOLE)

N 43° 22.234' 388669.5968 4995
W 115° 22.503' 253119.6410

DRY ?

no log

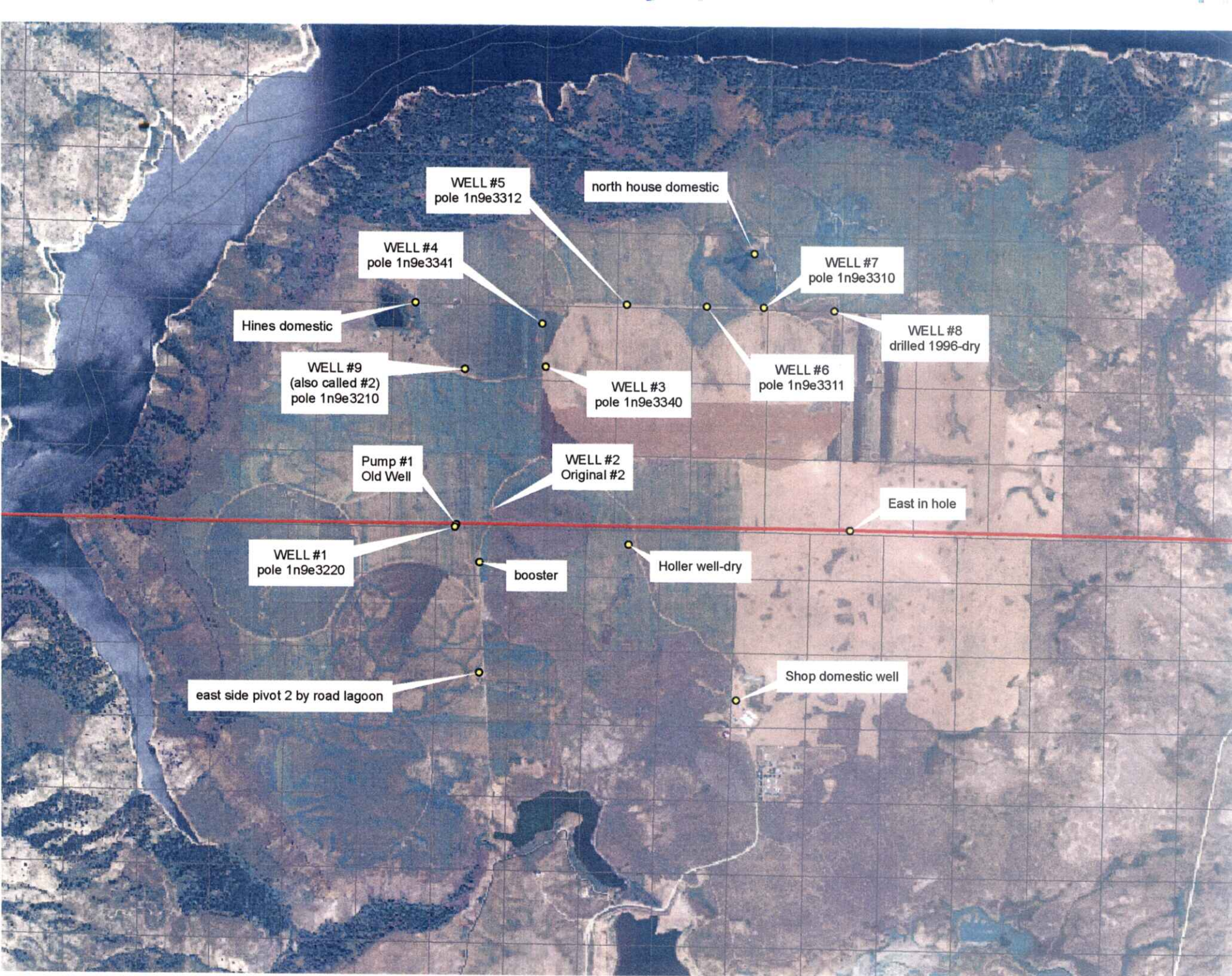
DOMESTIC
(HEADQUARTERS)

N 43° 21.733' 388217.9452 5046
W 115° 22.952' 252202.3510

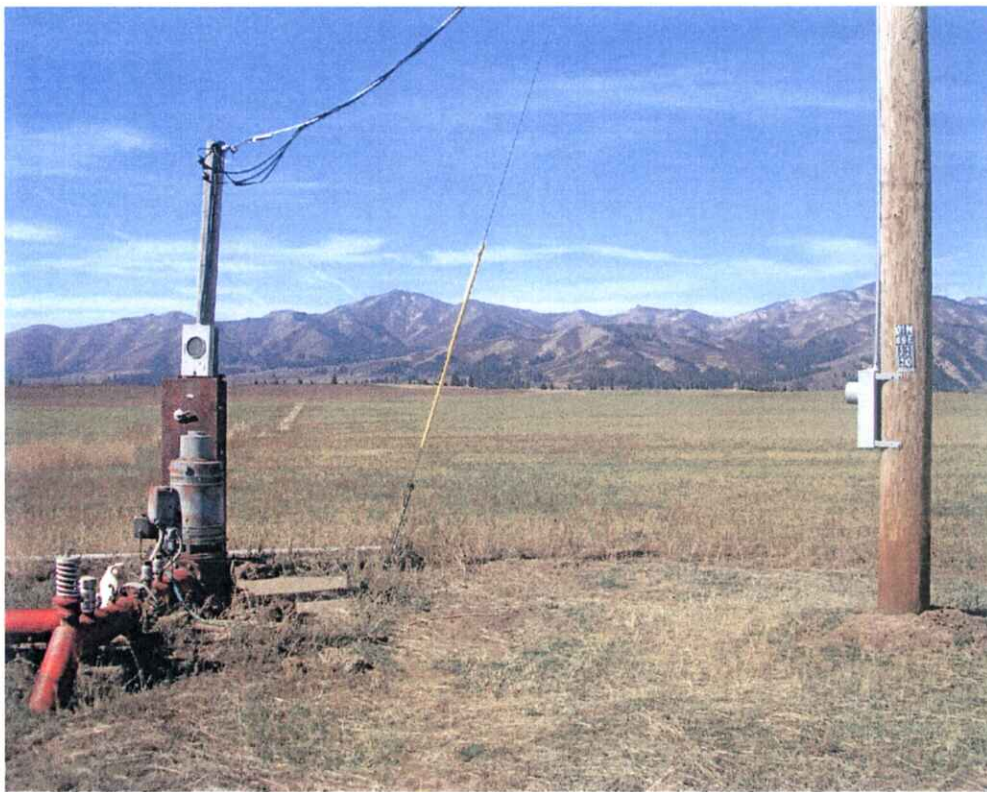
FORT RUNNING BEAR

N 43°
W 115° ?

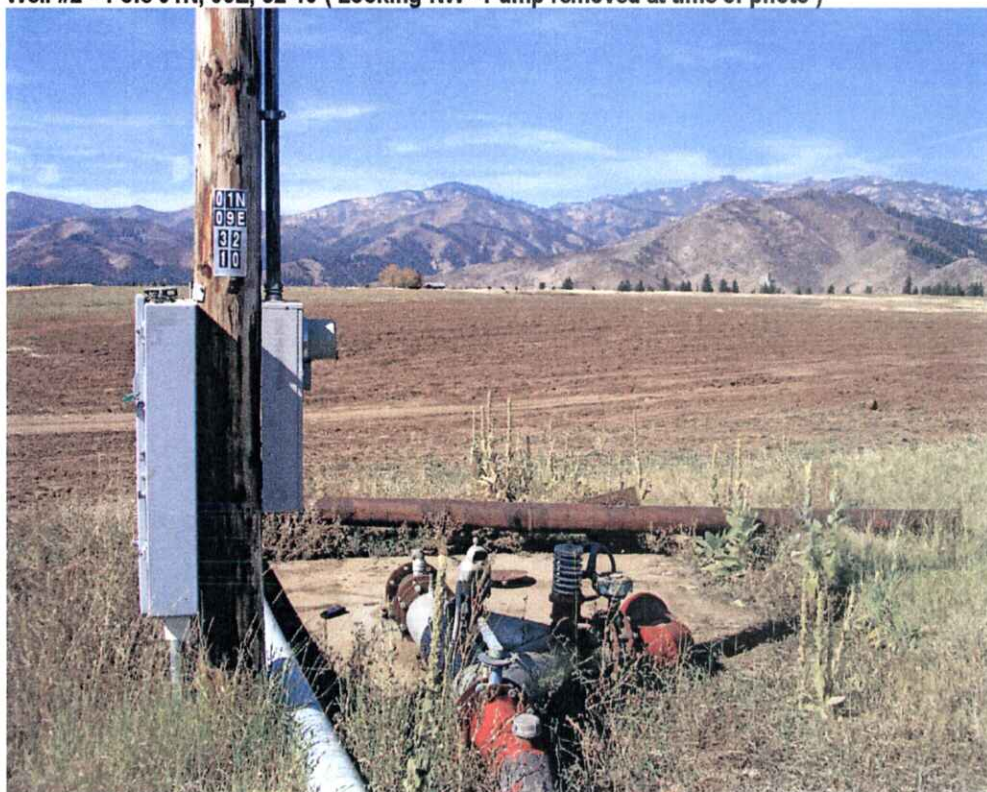
Have 2
Logs



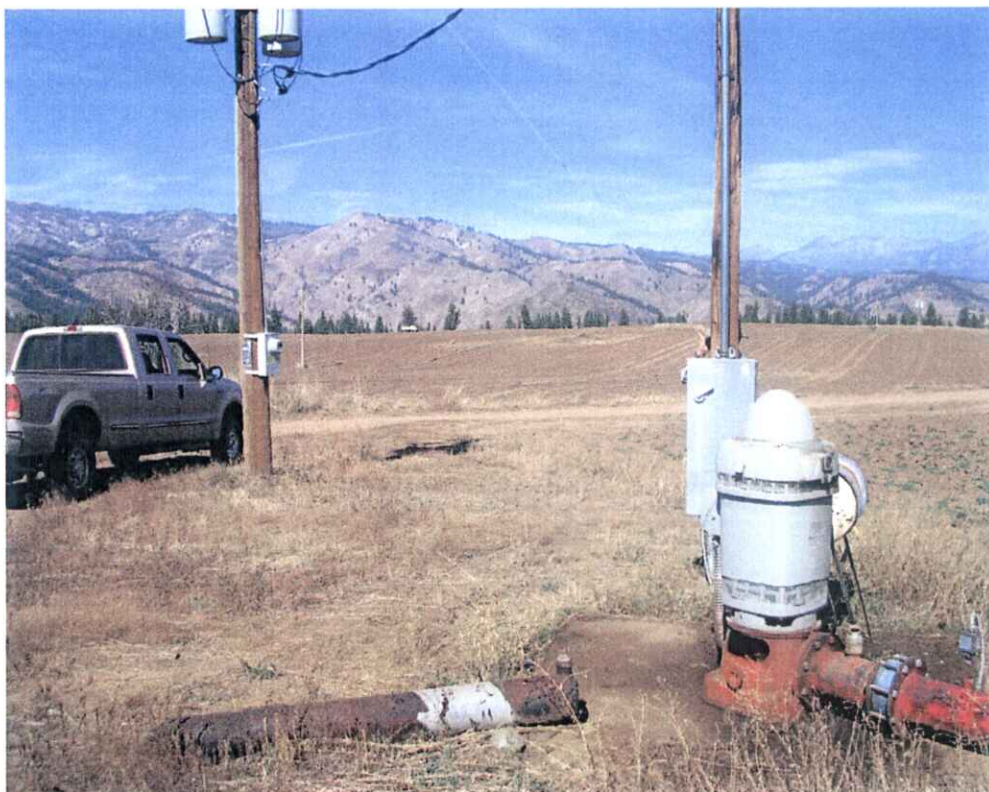
Well #1 – Pole 01N, 09E, 32-20 (Looking W / NW)



Well #2 – Pole 01N, 09E, 32-10 (Looking NW - Pump removed at time of photo)



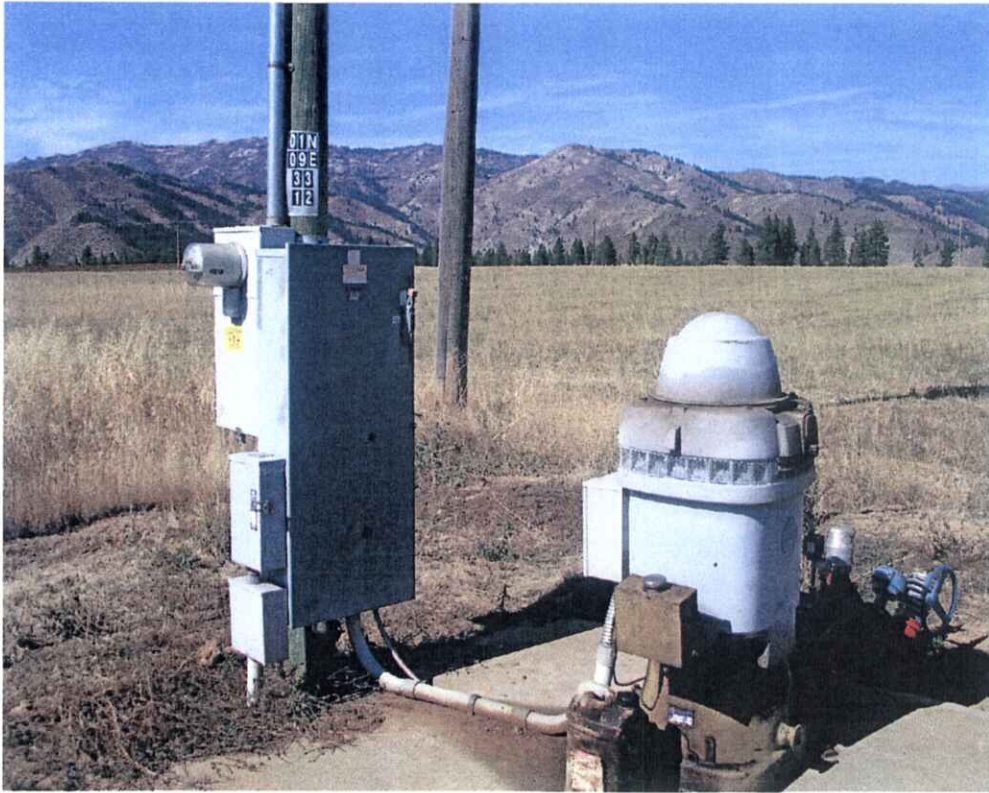
Well #3 – Pole 01N, 09E, 33-40 (Looking NW. Well #4 shown background right)



Well #4 – Pole 01N, 09E, 33-41 (Looking NW)



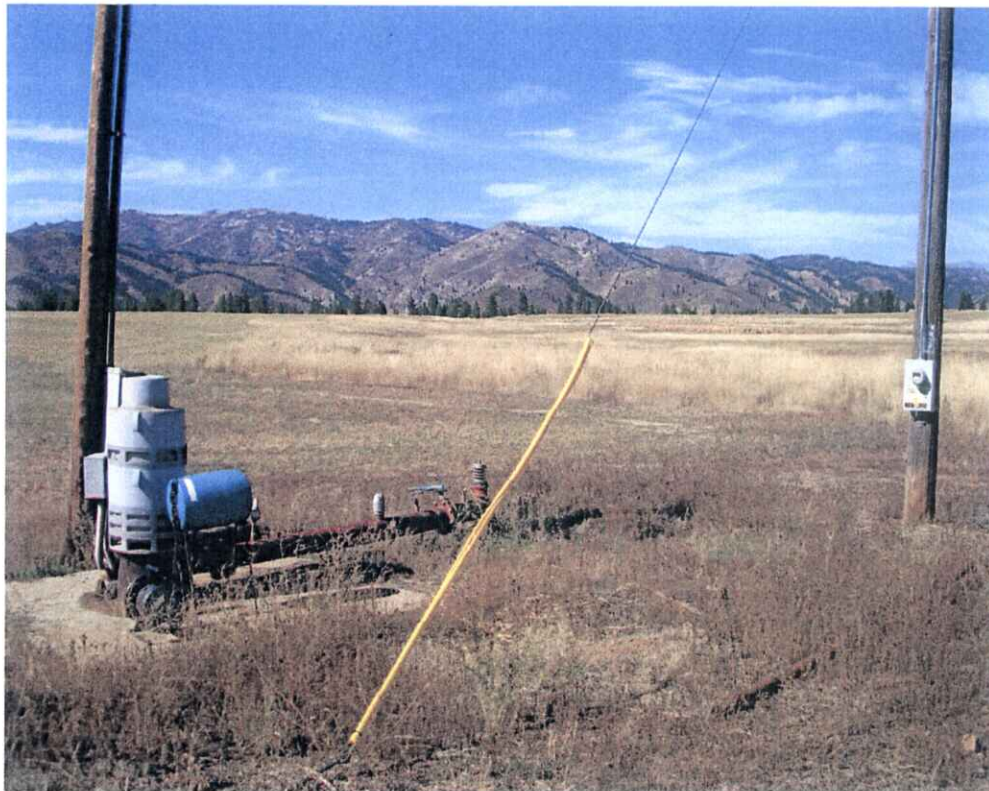
Well #5 – Pole 01N, 09E, 33-12 (Looking NW)



Well #6 – Pole 01N, 09E, 33-11 (Looking NW)



Well #7 – Pole 01N, 09E, 33-10 (Looking NW)



Rhead Reservoir Pumping Plant (Looking N / NE)



Booster Pump – Pole 01S, 09E, 04-40 (Looking East)

