



## CITY OF LA GRANDE

2nd &amp; H ST. WELL

**RECEIVED**

MAY 8 1964

WATER RESOURCES DEPT  
SALEM, OREGON**(5) CASING INSTALLED**

18" Diam.	from	+0.2 ft.	to	~37.5 ft.	Gauge	.375
14" Diam.	from	+2.0 ft.	to	1316.7 ft.	Gauge	.375
10" Diam.	from	1306.0 ft.	to	1680.0 ft.	Gauge	.250
10" Diam.	from	1680.0 ft.	to	1690.0 ft.	Gauge	.365
10" Diam.	from	1710.0 ft.	to	1720.0 ft.	Gauge	.365
10" Diam.	from	1720.0 ft.	to	1730.0 ft.	Gauge	.250
10" Diam.	from	1810.0 ft.	to	1830.0 ft.	Gauge	.365

Notes: a) The 18" diameter was previously installed by another contractor and was left undisturbed. The exact total length of this casing was not available to us; hence the approximated lower installation depth.

b) A 3/4" thick steel plate was securely welded between the 18" diameter and the 14" diameter casings at the top of the 18" casing.

**(6) PERFORATIONS**

NUMBER	FROM	TO	SIZE	TYPE
270 perfs.	1364.0 ft.	to 1370.0 ft.	1/4 x 1	Star Wheel
440 perfs.	1387.0 ft.	to 1398.0 ft.	1/4 x 1	Star Wheel
840 perfs.	1412.0 ft.	to 1433.0 ft.	1/4 x 1	Star Wheel
120 perfs.	1470.0 ft.	to 1473.0 ft.	1/4 x 1	Star Wheel
300 perfs.	1492.5 ft.	to 1500.0 ft.	1/4 x 1	Star Wheel
475 perfs.	1555.0 ft.	to 1574.0 ft.	1/4 x 1	Star Wheel
190 perfs.	1680.0 ft.	to 1690.0 ft.	1/2 x 3	Fact. Mill
190 perfs.	1710.0 ft.	to 1720.0 ft.	1/2 x 3	Fact. Mill
380 perfs.	1810.0 ft.	to 1830.0 ft.	1/2 x 3	Fact. Mill

**(8) WELL TESTS**

ARTESIAN FLOW (gpm)	TIME FLOWING (hrs)	BACKPRESSURE (psi)
2100	0.5	8
2050	1.0	8
2000	2.0	8
2000	3.5	8
1850	16.5	8

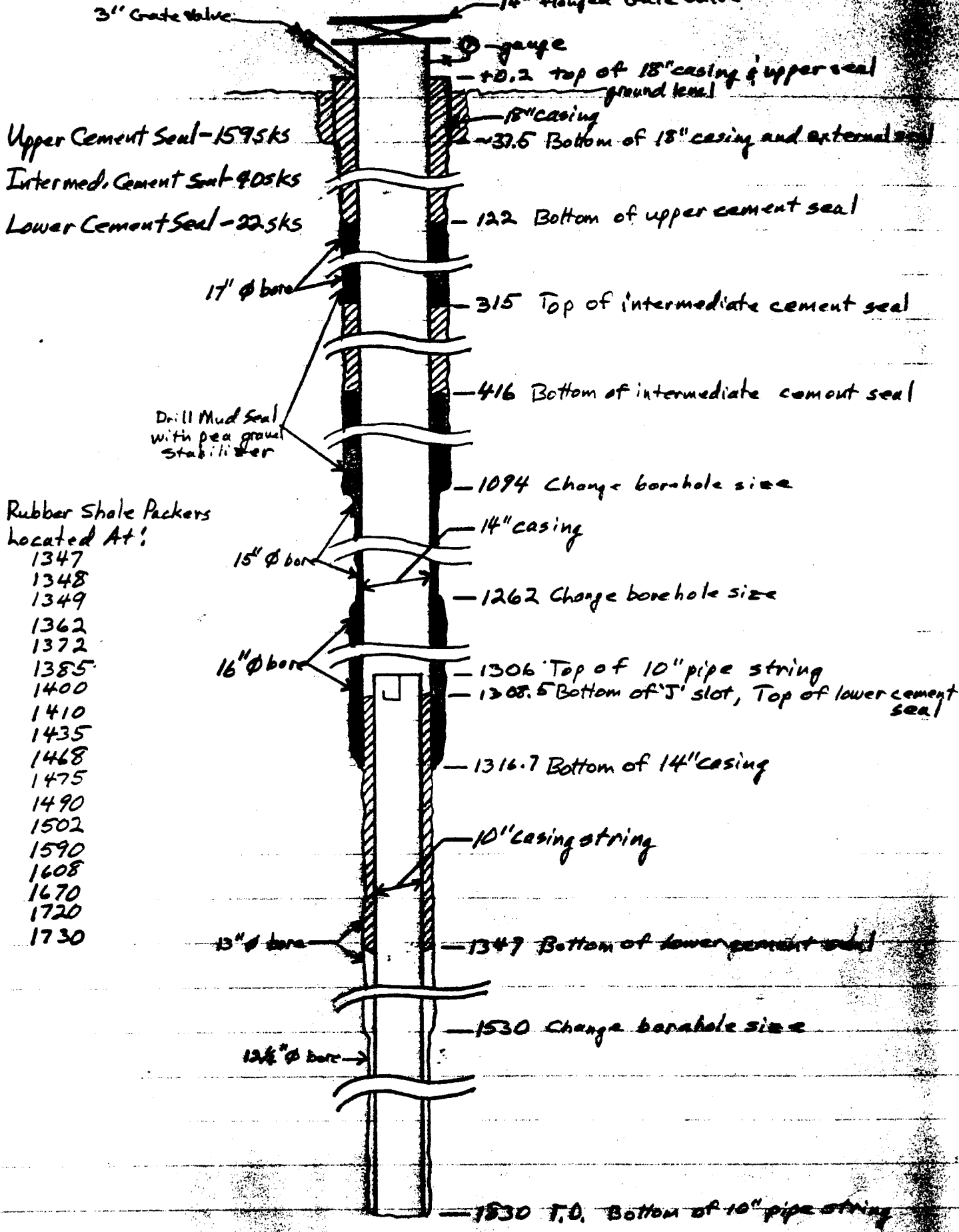
CITY OF LA GRANDE

2nd & H ST. WELL

(9) CONSTRUCTION and (12) WELL LOG

- a) See attached S.E.I. letter to W.R.D. dated 10/13/83 and reply dated 10/18/83 regarding previous driller's log, installation of a packer, removal of previous driller's 8" casing, S.E.I. reaming to 17" diameter of the hole to 940 foot, deviation survey results, and subsequent partial abandonment.
- b) See attached S.E.I. letter to W.R.D. dated 1/30/84 and reply dated 3/26/84 regarding lower seal placement.
- c) Drilling in addition to the 1814 feet depth referenced in the 1/30/84 letter has been added on to the well log that is enclosed with that letter.
- d) See attached as built sketch showing seal/casing/packer locations, etc.

City of LaGrande — 2nd  $\frac{1}{4}$ " H" Street Well 4/6/84



WELL DRILLING  
IRRIGATION  
CONTROL SYSTEMS



**SCHNEIDER  
EQUIPMENT, INC.**

ENGINEERED WATER SYSTEMS  
SALES AND SERVICE

**21881 River Road N.E. St. Paul, Oregon 97137 (503) 633-2666**  
October 13, 1983

Water Resources Department  
555 - 13th Street NE  
Salem, Oregon 97310

Ref: City of La Grande, Oregon, 2nd & "H" Street Well  
Section 7, T3S, R38E, Union County

Attention: Mr. Dan Kennedy

Dear Dan,

As previously discussed with you by phone, we have encountered complications on the referenced well and will need a special standard to complete construction on it.

The well was previously drilled as a test hole by another contractor. The formation log enclosed was supplied by Anderson - Perry & Associates, the project engineers. Additional information supplied to us was: 1) An 18" (.375 wall) casing was grouted in place to 37 feet, 2) An 8" casing extended to 1325 feet in an 9 7/8" diameter drilled hole. 3) A 7 7/8" diameter hole had been drilled below the 8" casing to 1803 feet. 4) The well had an artesian surface flow of 1600 - 2000 gpm and a shut in pressure of 72 psi.

After initial move on, we proceeded to install a retrievable oil field service type inflatable open hole packer in order to contain the flow so that the 8" casing could be removed, the hole enlarged, and seals placed in accordance with State of Oregon standards. After trying to contain the flow at several lower positions with partial successes, the packer was finally set from 1324 to 1335 feet (the overall length of the packer assembly left in the well was just over 11 feet long). This contained all but an estimated 5 gpm flow.

We subsequently proceeded to remove the 8" casing and with considerable effort were successful. We then started reaming the hole to 17" diameter with a pilot type bit to insure we followed the original hole. (Note that the pilot well sloughed to approximately 730 feet prior to the start of reaming after 8" casing removal.) We reamed the hole to 940 feet at which depth considerable sloughing was encountered. Further attempts at drilling finally revealed the hole had a dogleg and had caused us to keyhole. Sperry - Sun, an oil field deviation survey company, was contracted to survey the well to

October 13, 1983

Water Resources Department

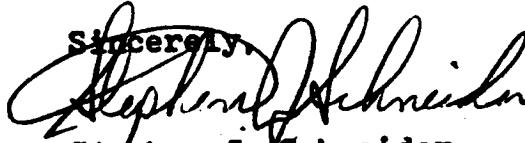
Page 2 of 2

determine the severity of the dog leg. Their survey revealed that a very severe dog leg started at approximately 540 feet. The angle of incline increased by 2.5 degrees from 540 to 570 feet and continued to increase reaching an angle of approximately 8 degrees at around 800 feet. After much analysis including consultation with yourself it was decided to abandon the hole below the dog leg and restart it in basic alignment with the hole above the dog leg. While these decisions were being made, the hole sloughed back to 552 feet. After consulting again with yourself, we drilled out the fill to 643 feet and then placed a concrete seal by tremie pipe from 643 feet up to 595 feet. Approximately 4 cubic yards of 5 sack readmix were used in this seal. We now intend to start drilling from approximately 540 feet in a direction basically aligned with the upper hole (approximately 1 degree incline) and completely miss the old hole etc..

We therefore request that a Special Standard be granted for the partial abandonment of the well (below approximately 540 feet) thereby authorizing the leaving of the inflatable packer and the hole below it and authorizing the concrete seal and slough materials as described above in the remainder of the well.

If there are any questions, please do not hesitate to call.

Sincerely,



Stephen J. Schneider  
General Manager

SJS/rs  
Encl. Log of Well

CC: Anderson Perry & Associates  
P. O. Box 1107  
La Grande, Or 97850

(City of La Grange  
2<sup>nd</sup> & H Street Well

7/12/83

P 1 of 4

FROM	TO	DESCRIPTION	
0	4	Top soil, black clay	8" casing - .250 well
4	25	Sand, gravel, clay	+3' to 1325'
25	31	Clay, sand	in a 978 hole
31	50	Light brown clay	7 1/2" hole to bottom
50	75	Light brown clay, sand	18" casing - .375 well
75	98	Clay, large gravels	to 37'
98	127	Clay, <del>med</del> , gravel	grouted in place
127	136	Large gravels	M - Medium
136	180	Sand, clay & gravel	M/H - medium/hard
180	190	Fractured black rock M/H	H - Hard
190	250	Clay, sand & gravel	
250	278	Light grey clay	
278	281	Light grey clay, sand	
281	312	Broken black rock	
312	325	Light grey clay	
325	368	Fractured black rock M/H	
368	374	Light grey clay	
374	391	Fractured black rock M/H	
391	410	Blue clay	
410	413	Clay, rock fragments	
413	445	Light brown clay	
445	458	Rock	
458	476	Blue green clay	
476	583	Sandy clay	
583	630	Reddish brown sandstone	
630	670	Soft clay	
670	710	Light brown sandstone	

all Data as  
per drawing  
of Anderson -  
Perry & Assoc.

Prof 4

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
710	778	Sandy brown clay
778	783	Clay, cobbles
783	900	Sandy blue green clay
900	910	Clay, small cobbles
910	1060	Sandy blue green clay
1060	1121	Slightly sandy clay, small gravels
1121	1160	Blue green clay
1160	1297	Sandy blue green clay
1297	1302	Sandy brown clay
1302	1318	Sandy, blue green clay
1318	1321	Rock M/H
1321	1332	Black basalt hard
1332	1334	Fractured basalt
1334	1341	Brown sandy clay
1341	1342	Broken rock M/H
1342	1353	Light green claystone
1353	1390	Broken rock M/H
1390	1396	Green claystone
1396	1407	Fractured rock mild
1407	1409	Fractured rock M/H
1409	1410	Solid rock H
1410	1420	Fractured rock H
1420	1423	Solid rock H
1423	1426	Fractured rock H
1426	1429	Solid rock H
1429	1438	Slightly fractured rock H
1438	1457	Fractured rock H



B. 84

<b>FROM</b>	<b>TO</b>	<b>DESCRIPTION</b>
1457	1466	Grey clay
1466	1470	Dark blue claystone
1470	1490	Clay conglomerate
1490	1501	Solid red rock M/H
1501	1516	Black basalt M/H
1516	1543	Black basalt fractured slightly
1543	1546	Fractured rock M/H
1546	1556	Green claystone
1556	1568	Blue green clay
1568	1575	Solid rock H
1575	1576	Fractured rock H
1576	1579	Blue green clay
1579	1582	Fractured rock M/H
1582	1589	Blue green clay
1589	1608	Blue green clay stone
1608	1617	Black rock
1617	1622	Brown conglomerate
1622	1628	Red cinders
1628	1636	Slightly fractured rock M/H
1636	1642	Red cinders
1642	1648	Fractured rock M/H
1648	1653	Red cinders
1653	1656	Green claystone
1656	1676	Fractured rock M/H
1676	1680	Fractured rock H
1680	1682	Fractured rock M/H
1682	1715	Brown clay

<b>FROM</b>	<b>TO</b>	<b>DESCRIPTION</b>
1715	1726	Grey clay with some sand
1726	1737	Green claystone
1737	1738	Grey clay
1738	1740	Clay
1740	1744	Fractured rock M/H
1744	1762	Badly fractured rock M/H
1762	1770	Fractured rock seams mild, grey clay
1770	1778	Fractured rock M/H
1778	1793	Fractured rock seams, grey clay, claystone
1793	1795	Grey claystone
1795	1803	Fractured rock M/H



**RECEIVED**

**MAY 8 1984**

**WATER RESOURCES DEPT  
SALEM, OREGON**

***Water Resources Department***

**MILL CREEK OFFICE PARK**

**555 13th STREET N.E., SALEM, OREGON 97310**

**PHONE 378-2987**

October 18, 1983

Stephen J. Schneider, General Manager  
Schneider Equipment, Incorporated  
21881 River Road, NE  
St. Paul, OR 97137

Dear Steve:

This letter will serve as written authorization for the special standards you have requested to partially abandon the City of La Grande 2nd and H Street Well.

If you have any questions, please call.

Sincerely,

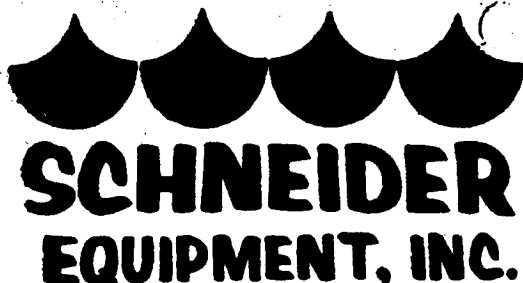
DANIEL KENNEDY  
Administrator  
Administrative Services Division

DK:wpc

cc: Howard Perry

8864B

WELL DRILLING  
IRRIGATION  
CONTROL SYSTEMS



**SCHNEIDER  
EQUIPMENT, INC.**

PUMPS  
ENGINEERED WATER SYSTEMS  
SALES AND SERVICE

**21881 River Road N.E. St. Paul, Oregon 97137 (503) 633-2666**

January 30, 1984

Water Resources Department  
555 - 13th Street N. E.  
Salem, Oregon 97310

Re: City of LaGrande, Oregon, 2nd & "H" Street Well  
Section 7, T 3S, R38E Union County

Attention: Mr. Dan Kennedy

Dear Dan,

As previously discussed with you by phone, we have encountered additional complications on the referenced well, and will need another special standard to complete construction on it.

In review, please reference our letter of October 13, 1983, and your reply of October 18, 1983 regarding partial abandonment of the original bore hole. Subsequently, we drilled 14 inch diameter to 1,320 feet and underreamed to 16 inch diameter from 1,261 feet to 1,316 feet. An attempt was then made to grout the bottom of the 14 inch casing by pumping 89 sacks neat cement grout in the bottom of the bore hole, capping off the top of the casing, and then lowering the casing to its final depth of 1,316.7 feet. During this grouting operation the hole was full of drilling mud and the casing was completely full prior to lowering it down so it would force the cement around the outside of the casing. The casing, which had moved up and down freely, settled down very slowly from its own weight after grout placement and capping the top of the casing. The grout pipe and casing cap, etc., were left in place awaiting curing of the cement (the lower section of grout pipe was PVC so it could be readily drilled out). Meanwhile, intermediate cement and stabilized mud seals and a surface cement seal were placed.

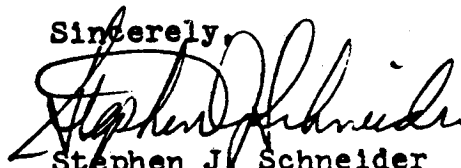
Upon retrieval of the grout pipe used for placing the lowest seal it was discovered the pipe had failed and all the cement had been placed inside the 14 inch casing from approximately 1,130 feet to 1,257 feet. A thick drill mud was present from 1,257 feet to the bottom of the hole (1,320 feet). After consultations with yourself, we conducted a pressure test on the inside of the casing subjecting it to over 300 p.s.i. for one-half hour with no significantly

measurable fluid loss. We have subsequently drilled the well down to 1,814 feet (see log attached).

Along with additional drilling, we intend to complete the well by placing a 10 inch casing/screen section in the lower hole. The casing will have a minimum .250 inch wall thickness and will overlap a minimum of eight feet with the 14 inch casing. Rubber packers will be placed on the 10 inch casing at a depth at least 30 feet below the bottom of the 14 inch casing (Note: the hole bore diameter is 13 inches in this area). Neat cement grout will then be pumped from the top of the packers between the 10 inch casing and bore hole wall/14 inch casing to the top of the 10 inch casing.

We therefore request that a Special Standard be granted for the lower casing seals as proposed above. If there are any questions, please do not hesitate to call.

Sincerely,



Stephen J. Schneider  
General Manager

SJS:jh  
Encl: Log of Well

cc: Anderson Ferry & Assoc.  
P. O. Box 1107  
LaGrande, OR. 97850

**CITY OF LA GRANDE  
2nd & "H" STREET WELL**

**Well Log by Schneider Equipment, Inc. of Ream Pass  
(Original pilot hole drilled & logged by Buckner Well Drilling)**

0	37	Cased hole, no formation logged on ream pass
37	58	Clay, brown, medium hard
58	61	Clay, brown, soft
61	66	Clay, grey, soft
66	70	Clay, brown, medium hard
70	72	Clay, brown, medium
72	75	Clay, brown, soft
75	76	Clay, brown and sand, medium
76	81	Gravel, 2" minus and sand, med., cemented
81	102	Conglomerate, mostly 3" minus gravel & clay, brown
102	126	Clay, brown, med. soft - some grey also
126	135	Gravel, 3" minus and sand, coarse; cemented
135	137	Siltstone, brown, soft
137	181	Conglomerate, mostly 3" minus gravel, coarse sand
181	189	Gravel & sand, coarse; cemented, med. hard
189	191	Sandstone, brown, soft
191	209	Gravel, 4" minus & sand; cemented & some clay binder
209	211	Clay, brown, soft
211	228	Gravel, 4" minus & sand, coarse & occ. clay; cemented
228	230	Clay, brown, soft
230	240	Gravel, 4" minus & sand coarse & occ. clay; cemented
240	242	Clay, brown, some gravel
242	250	Rock, black, broken with some dark green clay binder
250	262	Clay, grey, hard
262	269	Gravel, 2" minus & sand, coarse; cemented
269	279	Clay, grey, med. soft
279	281	Clay, grey, sandy
281	313	Gravel, 3" minus, black, cemented
313	324	Clay, grey, hard
324	369	Rock, black, broken, cemented
369	373	Clay, grey, med. hard
373	384	Rock, black, broken
384	392	Rock, black, broken & sand, coarse & clay, green, hard; cemented
392	412	Clay, grey, some gritty, soft-med.
412	418	Clay, brown, med. & gravel
418	428	Clay, grey, hard & gravel
428	437	Clay, dark grey-green, hard
437	445	Clay, brown, soft, silty
445	457	Gravel, 1½" minus, loose
457	519	Clay, grey, med., silty
519	581	Clay, multi-colored, med.
581	582	Sandstone, red
582	603	Clay, grey, med. hard
603	610	Claystone, red, med. hard
610	620	Gravel, ½" minus, loose
620	622	Claystone, rusty brown, soft
622	625	Gravel, ¾" minus, loose

625	628	Clay, brown, med., silty
628	655	Clay, brown, soft-med., some silty
655	667	Clay, grey, med.-soft
667	674	Clay, brown, silty, med.
674	681	Sandstone, brown, med.
681	690	Gravel, $\frac{1}{2}$ " minus, loose
690	728	Clay, brown, soft-med.
728	730	Clay, grey, hard
730	756	Clay, brown, med.
756	775	Clay, grey
775	782	Claystone, blue-grey, hard
782	845	Clay, blue-green, med. soft
845	854	Clay, grey
854	859	Claystone, grey, soft
859	862	Clay, grey
862	891	Clay, green, hard-med., occ. silty & occ. grey
891	892	Wood, decomposed
892	900	Clay, grey & green, hard-med., some claystone
900	904	Clay, dark brown, hard; decomposed wood
904	917	Clay, green, hard-med.
917	940	Clay, grey, hard

See Water Resources Department letter of October 18, 1983 and Schneider Equipment, Inc. letter of October 13, 1983 regarding special standards used in partial abandonment of above hole because of severe deviations encountered. Above well was abandoned up to 595 feet and a new more aligned hole was started above that. The log of the final well is the same as above except for the following:

Well Log by Schneider Equipment, Inc. (New hole, not reaming)

603	608	Clay, brown, med. hard
608	615	Gravel, 1" minus & sand, brown; loose
615	625	Gravel, 1" minus, with sand; some cemented
625	640	Clay, brown, med.
640	648	Clay, light brown, firm
648	655	Clay, brown, med.
655	667	Clay, light grey, soft
667	679	Clay, brown, silty
679	682	Clay, brown & grey, firm
682	688	Gravel, pea, rusty brown
688	728	Clay, light brown, soft
728	730	Clay, light grey, med.
730	734	Clay, light brown, firm
734	753	Clay, grey, hard
753	755	Sand, fine-coarse, with clay, grey
755	775	Clay, grey, med.
775	779	Clay and claystone, grey
779	784	Clay, blue-grey, med.
784	788	Clay, blue-grey, soft
788	791	Sandstone, blue-grey, fine
791	809	Clay and claystone, blue-grey, med.

809	815	Clay, blue-green, soft
815	828	Clay and claystone, blue-green, med.
828	833	Clay, blue-grey, soft, silty
833	834	Wood, decomposed
834	838	Clay, dark brown, med.
838	853	Clay, blue-grey, soft-med., some silty
853	854	Clay, green, med.
854	858	Sand, white, coarse, some wood
858	862	Clay, grey
862	869	Clay, green, soft
869	873	Clay, grey, soft
873	876	Clay, green, silty, soft
876	884	Clay, greenish-grey
884	886	Clay, grey, silty
886	888	Clay, dark brown, silty, soft, some wood
888	890	Clay, greenish grey, med.
890	892	Clay, grey, silty, wood
892	895	Clay, grey, med.
895	899	Clay, grey, silty
899	904	Clay, dark brown and wood
904	905	Clay, blue-grey, med., sandy and wood
905	917	Clay, blue-green, med., silty
917	956	Clay, grey, med. hard
956	962	Clay, grey, hard
962	972	Clay, grey, med. hard
972	981	Clay, grey, med.
981	985	Clay, blue-green, firm
985	991	Clay, blue, hard
991	1000	Clay, blue-grey, med.-soft
1000	1019	Clay, green-grey, soft, silty
1019	1022	Clay, green with soft sandstone
1022	1064	Clay, grey, med.
1064	1071	Clay, grey, med.-soft, silty
1071	1130	Clay, grey, med.-hard, sticky
1130	1140	Clay, grey, med., sticky, getting silty
1140	1180	Clay, grey, soft-med., sticky, silty
1180	1185	Clay, grey, med.
1185	1192	Clay, grey, hard (claystone)
1192	1196	Clay, grey, soft
1196	1205	Clay, grey, hard (claystone)
1205	1210	Clay, greenish grey, hard
1210	1222	Clay, green, hard (claystone) with streaks of soft greenish-grey clay
1222	1231	Claystone, blue-green
1231	1234	Clay, blue, med.
1234	1240	Claystone, blue-green
1240	1246	Clay, grey, med., some sticky
1246	1254	Clay, blue-grey, hard
1254	1260	Clay, grey, med.
1260	1271	Clay, grey, med.-hard, sticky
1271	1274	Claystone and clay, chalky, dry
1274	1275	Clay, blue-grey, med.
1275	1279	Clay, dark brown, sticky
1279	1281	Clay, greenish brown, sticky



1281	1285	Clay, black, sticky
1285	1287	Clay, grey, hard and some black decomposed wood
1287	1291	Clay, greenish-grey, soft-hard
1291	1295	Clay, blue-grey, soft
1295	1298	Clay, grey-brown, hard
1298	1301	Clay, blue-green, hard
1301	1309	Clay, blue-grey, hard
1309	1311	Claystone, blue-grey and some brown, very hard
1311	1320	Basalt, black, fractured, some vesicular with clay, hard, grey-green
1320	1327	Basalt, black, hard
1327	1335	Basalt, black, fractured with clay, blue-green
1335	1338	Basalt, black, fractured
1338	1341	Basalt, black, hard
1341	1354	Basalt, black, med.-hard, some frac. & claystone, blue
1354	1360	Claystone, blue-green, med.
1360	1364	Basalt, black, hard
1364	1367	Basalt, black, med.-hard, fractured with layers of clay
1367	1375	Basalt, black, med.-hard
1375	1384	Clay, grey, soft, sticky
1384	1395	Basalt, black, med., fractured with blue-green claystone
1395	1404	Basalt, black, med.-hard
1404	1408	Clay, multi-colored and basalt, black
1408	1413	Basalt, black, hard
1413	1422	Basalt, black, med.-hard
1422	1440	Basalt, black, med., some frac. and blue-green claystone
1440	1460	Clay, grey, gritty
1460	1466	Basalt, black, broken with clay, red and grey
1466	1476	Clay, red with some basalt, black
1476	1482	Clay, blue and grey and rock pieces
1482	1486	Clay, grey, hard
1486	1511	Clay, reddish brown with broken black basalt pieces
1511	1514	Basalt, black and clay, grey and red
1514	1546	Clay, grey with broken black basalt pieces
1546	1548	Clay, blue-grey, med.-hard
1548	1550	Clay, blue-grey, med.-hard with broken black basalt pieces
1550	1577	Basalt, black, broken with clay, grey-green
1577	1586	Basalt, black, fractured with clay, brown
1586	1591	Basalt, black, fractured with some hard green clay
1591	1604	Clay, red, soft and broken black basalt pieces
1604	1605	Basalt, black, fractured with some red clay & claystone
1605	1609	Basalt, black, frac., some vesicular & hard green claystone
1609	1651	Basalt, black, broken and clay, brown and grey, soft
1651	1673	Clay, grey, soft
1673	1691	Cinders, red, broken with clay, grey, med.-soft
1691	1707	Basalt, black, broken with red cinders and grey clay
1707	1717	Basalt, black, broken, hard, some grey & green clay
1717	1721	Basalt, black, broken
1721	1729	Claystone, brown with broken black basalt
1729	1742	Basalt, black, broken
1742	1747	Basalt, black, some frac. and hard grey-green clay
1747	1756	Basalt, black, fractured

1756	1768	Basalt, black, many fractures, soft
1768	1775	Basalt, dark grey, fractured, med.
1775	1785	Basalt, dark grey, some fractures, med.-hard
1785	1793	Basalt, dark grey, fractured, med.
1793	1801	Claystone, reddish brown with broken basalt pieces
1801	1807	Clay, red, soft
1807	1810	Clay, black, soft
1810	1814	Basalt, black, many fractures, soft
1814	1830	Basalt, black, vesicular & fractured and Clay, multi-colored

↳ drilled 2/9/84