GW - 95

GENERAL CORRESPONDENCE

YEAR(S):

1991

ENRON
GAS PIPELINE GROUP

P. O. Box 1188 Houston, Texas 77251-1188 (713) 853-6161

May 22, 1991

Ms. Donna Mullins
USEPA Region VI
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202

RE: PRELIMINARY DATA ON PERCHED GROUNDWATER FOR LAGUNA STATION 6

Dear Donna:

Enclosed please find the preliminary groundwater data relative to the perched water at Laguna Station 6, as requested by Jeff Robinson. Although this is not an officially required submittal under the consent decree, we are sending copies to Ed Wise at Entrix and Tom McGraw at EID for their information.

In addition, since we will ultimately have to obtain permission from New Mexico OCD for closure of the wells, we are sending a copy of these data to Dave Boyer at the OCD in New Mexico.

As further site information is gathered, or when a final report is complete, we will forward it to you at that time.

In the meantime, should you have any questions, please call me at (713) 853-3219, or Ted Ryther at (713) 853-5634.

Yours very truly,

James C. Alexander

James C. Alexander
Manager, Special Projects
Environmental Affairs

JCA:sb

Enclosure

cc: Tom McGraw, EID
Ed Wise, Entrix
Dave Boyer, OCD

LAGUNA6

May 17, 1991

Mr. Ted Ryther
Environmental Affairs E-2575
ENRON Corporation
1400 Smith Street
P.O. Box 1188
Houston, TX 77002

Dear Ted:

Per your instructions, enclosed are two copies of draft preliminary data concerning the shallow perched water system at Transwestern Pipeline Co.'s Compressor Station No. 6 in Laguna, New Mexico. We are presently working on the analysis and interprepation of this data and plan to deliver to you a preliminary draft of a report covering the hydrogeology of this shallow system during the first week in June.

If you have any questions concerning the enclosed preliminary data, please do not hesitate to call.

Sincerely,

DANIEL B. STEPHENS & ASSOCIATES, INC.

Dale Hammermeister

Dale Hammermeister
Manager, Hydrogeological Services Group

dh

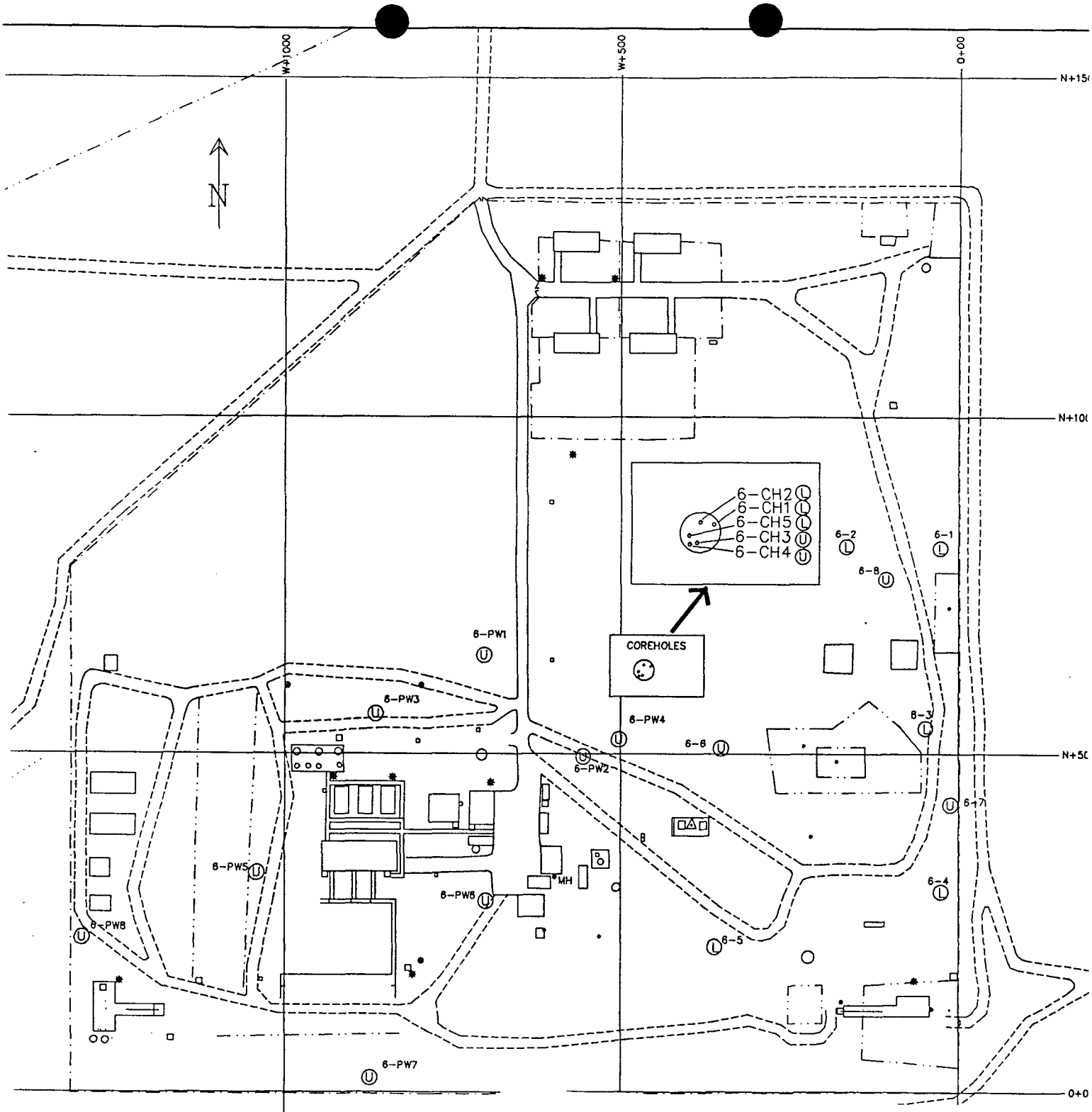
Enclosures

CONTENTS OF ENCLOSURE

Data Concerning Shallow Perched Water At
Transwestern Pipeline Co.
Compressor Station No. 6
Laguna, NM

SECTION 1.0

MAP SHOWING THE LOCATION OF SHALLOW PERCHED WATER BOREHOLES



Ⓤ Wells that monitor upper ground-water system

Ⓛ Wells that monitor lower ground-water system

DANIEL B. STEPHENS & ASSOCIATES, INC.

TRANSWESTERN PIPELINE

Compressor Station No.6
Laguna, New Mexico

Barbed Wire Fence
Chain Link Fence
Gravel Road

E Electric
Light
•MH Manhole
Monitor Well
Abandoned Monitor Well

SECTION 2.0

DRILLING AND COMPLETION LOGS (WHERE APPROPRIATE) FOR BOREHOLES

2.1
Corehole Logs (6-CH-Series)

Client:	Transwestern Pipeline Compressor Station No. 6 Laguna, NM	**Drilling Contractor:**	Stewart Brothers Grants, NM
Project No.:	89-030L	**Drilling Method:**	Rotary Coring
Boring No.:	6-CH1		
Date Started:	10/3/91		
Date Completed:	10/5/91		
Total Depth Drilled:	100 ft		

PRELIMINARY
Subject to revision

Depth Interval (ft)	Sample Type Interval (ft) Recovery (%)	Material Type	Description
0 - 8	Grab 0 - 8	Silty Sand	Very fine to fine grained, dry
8 - 15	Grab	Sandstone	Very fine to fine grained, quartz well rounded, lithified, white, no fractures
15 - 25	Rotary Cored 15 - 25 100%	Sandstone	Same as above except light bluish grey (5 B 7/1). At 22 ft, dark yellowish orange (10 YR 6/6)
25 - 35	Rotary Cored 25 - 35 100%	Sandstone	Fine grained, well cemented, damp, light blue (5 B 7/1), no fractures. At 34.4 to 35 ft, medium grained, moderately cemented, yellow orange (10 YR 6/6)
35 - 45	Rotary Cored 35 - 45 100%	Sandstone	Same as 25 to 34.4 ft
45 - 55	Rotary Cored 45 - 55 100%	Sandstone	Same as 25 to 34.4 ft
55 - 60	Rotary Cored 55 - 60 100%	Sandstone	Same as 25 to 34.4 ft
60 - 70	Rotary Cored 60 - 70 100%	Sandstone	Same as 25 to 34.4 ft
70 - 80	Rotary Cored 70 - 80 100%	Sandstone	70 to 72 ft, same as 25 to 34.4 ft; 72 to 80 ft, fine grained, moderately cemented quartz sandstone (5 YR 4/4) to (5 YR 3/4)

PRELIMINARY
Subject to revision

Boring No.: 6-CH1 (continued)

PRELIMINARY
Subject to revision

Depth Interval (ft)	Sample Type Interval (ft) Recovery (%)	Material Type	Description
80 - 90	Rotary Cored 70 - 80 100%	Sandstone	80 to 83 ft, same as above; 83 to 90 ft, color change to light blue gray (5 B 7/1)
90 - 100	Rotary Cored 90 - 100 100%	Sandstone	93.0 to 93.7 ft, medium to coarse grained, wet; rest of core same as above (5 YR 4/4) to (5 YR 3/4)

PRELIMINARY
Subject to revision

Client:	Transwestern Pipeline Compressor Station No. 6 Laguna, NM	**Drilling Contractor:**	Stewart Brothers Grants, NM
Project No.:	89-030L	**Drilling Method:**	Rotary Coring
Boring No.:	6-CH2		
Date Started:	10/8/91		
Date Completed:	10/10/91		
Total Depth Drilled:	100 ft		

Depth Interval (ft)	Sample Type Interval (ft) Recovery (%)	Material Type	Description
0 - 10	Grab	Sand	Aeolian, minor silt, damp
10 - 15	Grab	Sandstone	Very fine to fine grained, well sorted, well indurated at 12.5 ft, damp, tan white, no fractures
15 - 20	Rotary Cored 15 - 20 100%	Sandstone	Fine to medium grained, well indurated, damp, dark yellowish orange (10 YR 6/6), no fractures
20 - 30	Rotary Cored 20 - 30 100%	Sandstone	20 to 22 ft, same as above; 22 to 30 ft, very fine grained, indurated, damp, light blue grey (5 B 7/1), no fractures
30 - 40	Rotary Cored 30 - 40 100%	Sandstone	Same as 22 to 30 ft
40 - 50	Rotary Cored 40 - 50 100%	Sandstone	Same as above
50 - 60	Rotary Cored 50 - 60 100%	Sandstone	Very fine grained, well indurated, damp, (5 B 7/1)
60 - 70	Rotary Cored 60 - 70 100%	Sandstone	Same as above
70 - 80	Rotary Cored 70 - 80 100%	Sandstone	70 to 72 ft, same as above; 72 to 80 ft, pale yellowish brown (10 YR 6/2), very fine grained, not as well sorted as above, damp, pale yellowish brown (10 YR 6/2), no fractures

PRELIMINARY
Subject to revision

Boring No.: 6-CH2 (continued)

Depth Interval (ft)	Sample Type Interval (ft) Recovery (%)	Material Type	Description
90 - 100	Rotary Cored 90 - 100 100%	Sandstone	90 to 95.3 ft, same as above; 95.3 to 100 ft, very fine grained, well indurated, damp, light brown to moderate brown (5 YR 5/6) to (5 YR 4/4)

Client:	Transwestern Pipeline Compressor Station No. 6 Laguna, NM	**Drilling Contractor:**	Stewart Brothers Grants, NM
		Drilling Method:	Rotary Coring
Project No.:	89-030L		
Boring No.:	6-CH3		
Date Started:	10/10/91		
Date Completed:	10/11/91		
Total Depth Drilled:	20 ft		

Depth Interval (ft)	Sample Type Interval (ft) Recovery (%)	Material Type	Description
0 - 10	Grab	Sand	Aeolian sand
10 - 15	Grab	Sandstone	Very fine to fine grained sandstone, very pale orange (10 YR 8/2)
15 - 18	Rotary Core	Sandstone	Wet, no fractures
18 - 20	Rotary Core	Sandstone	Same as above

PRELIMINARY
Subject to revision

Client:	Transwestern Pipeline Compressor Station No. 6 Laguna, NM	**Drilling Contractor:**	Stewart Brothers Grants, NM
		Drilling Method:	Rotary Coring
Project No.:	89-030L		
Boring No.:	6-CH4		
Date Started:	10/11/91		
Date Completed:	10/15/91		
Total Depth Drilled:	23 ft		

Depth Interval (ft)	Sample Type Interval (ft) Recovery (%)	Material Type	Description
0 - 10	None	Aeolian	---
10 - 20	Rotary Core 10 - 20 90%	Sandstone	Wet, fractured
20 - 23	Rotary Core 20 - 23 84%	Sandstone	Fine grained, indurated, well cemented, quartz, slightly calcareous, fractures

PRELIMINARY
Subject to revision

Client:	Transwestern Pipeline Compressor Station No. 6 Laguna, NM	**Drilling Contractor:**	Stewart Brothers Grants, NM
		Drilling Method:	Rotary Coring
Project No.:	89-030L		
Boring No.:	6-CH5		
Date Started:	10/16/91		
Date Completed:	10/17/91		
Total Depth Drilled:	100 ft		

Depth Interval (ft)	Sample Type Interval (ft) Recovery (%)	Material Type	Description
0 - 2	Grab	Silty Sand	Red brown
2 - 4	Grab	Sand	Red brown
4 - 7	Grab	Silty Clay	Damp
7 - 8.5	Grab	Silty Sand	Red brown
8.5 - 10	Grab	Sandstone	Fractured
10 - 20	Rotary Core 10 - 20 86%	Sandstone	Wet at 14 ft, heavily fractured
20 - 28.5	Rotary Core 20 - 28.5 100%	Sandstone	Light grey with limonitic stains, fractured
28.5 - 35	Rotary Core 28.5 - 35 100%	Sandstone	Same as above
35 - 40	Rotary Core 35 - 40 73%	Sandstone	Cross bedded, clayey interbeds, moderate sorting, weak calcite reaction, dry, limonitic stains, minor fractures
40 - 50	Rotary Core 40 - 50 90%	Sandstone	Fractured
50 - 60	Rotary Core 50 - 60 100%	Sandstone	No fractures
60 - 70	Rotary Core 60 - 70 100%	Sandstone	Fine to medium grained, round to subrounded, moderate to well sorted, moderate induration, damp, light grey, fractured

PRELIMINARY
Subject to revision

Boring No.: 6-CH5 (continued)

Depth Interval (ft)	Sample Type Interval (ft) Recovery (%)	Material Type	Description
70 - 80	Rotary Core 70 - 80 100%	Sandstone	Same as above
80 - 90	Rotary Core 80 - 90 100%	Sandstone	Fine to medium grained, rounded to subangular, moderate to well sorted, clayey matrix, fractured
90 - 100	Rotary Core 90 - 100 100%	Sandstone	Same as above except wet at 93 to 95 ft

2.2
Exploratory Well Logs (6-PW-Series)

Client:	Transwestern Pipeline Compressor Station No. 6 Laguna, NM	**Drilling Contractor:**	Stewart Brothers Grants, NM
Project No.:	89-030L	**Rig Type:**	Chicago Pnumatic 650SS
Boring No.:	6-PW1	**Drilling Method:**	Rotary Coring
Date Started:	3/14/91		
Date Completed:			
Total Depth Drilled:	27.1 ft		

Depth Interval (ft)	Sample Type Interval (ft) Recovery (%)	Material Type	Description
0 - 5	Drive Core 0 - 5 100%	Silty Sand	Fine grained, no gravel, damp, brown (7.5 YR 4.5/4), no roots
5 - 6	Drive Core 5 - 6 100%	Silty Sand	Fine grained, caliche, damp, brown
6 - 6.5	Drive Core 6 - 6.5 100%	Sandstone	Fine to medium grained, heavily weathered, very damp, greyish yellow. At 6.3 ft, (5 Y 8/4).
6.5 - 7	Drive Core 6.5 - 7 100%	Sandstone	Hard, wet
7 - 14	Rotary Core 7 - 14 100%	Sandstone	At 7.1 ft, horizontal fractures*; at 9.5 ft and below, Fe stained; at 10 ft, dries out; at 14 ft, dry?
14 - 20	Rotary Core 14 - 20 100%	Sandstone	Disseminated Fe stained-bed controlled, very damp
20 - 27.1	Rotary Core 20 - 27 80%	Sandstone	Slightly damp, no fractures*

PRELIMINARY
Subject to revision

*See fracture density chart/plot

Client:	Transwestern Pipeline Compressor Station No. 6 Laguna, NM	**Drilling Contractor:**	Stewart Brothers Grants, NM
Project No.:	89-030L	**Rig Type:**	Chicago Pnumatic 650SS
Boring No.:	6-PW2	**Drilling Method:**	Rotary Coring
Date Started:	3/14/91		
Date Completed:			
Total Depth Drilled:	19.42 ft		

Depth Interval (ft)	Sample Type Interval (ft) Recovery (%)	Material Type	Description
0 - 2	Drive Core 0 - 2 100%	Silty Sand	Fine grained, damp, brown, root fragments
2 - 3.5	Drive Core 2 - 3.5 100%	Silty Sand	Fine grained, dry, brown
3.5 - 4.8	Drive Core 3.5 - 4.8 100%	Silty Sand	Trace very fine gravels, caliche, damp, brown
4.8 - 5.5	Drive Core 4.8 - 5.5 100%	Sandy Silt	Trace caliche, damp, brown
5.5 - 7	Drive Core 5.5 - 7 100%	Silty Sand	Fine grained, trace caliche, unconsolidated, slightly damp, reddish brown, trace roots
7 - 12	Rotary Core 7 - 12 50%	Sandstone	Fine grained, soft, damp, Fe stained, fractures* at 11.7 ft
12 - 13.55	Rotary Core 12 - 17 100%	At 12.2 ft, black stain; at 13.4 ft, Fe stain	13.55 - 19.42
13.55 - 19.42		Sandstone	Fine grained, well cemented, stringers of moisture along fractures* and as 1-inch zones in unfractured sandstone, medium grey

*See fracture density graph for 6-PW2

PRELIMINARY
Subject to revision

Client:	Transwestern Pipeline Compressor Station No. 6 Laguna, NM	**Drilling Contractor:**	Stewart Brothers Grants, NM
Project No.:	89-030L	**Rig Type:**	Chicago Pnumatic 650SS
Boring No.:	6-PW3	**Drilling Method:**	Rotary Coring
Date Started:	3/15/91		
Date Completed:			
Total Depth Drilled:	20 ft		

Depth Interval (ft)	Sample Type Interval (ft) Recovery (%)	Material Type	Description
0 - 1	Drive Core 0 - 1 100%	Soil	---
1 - 4.3	Drive Core 1 - 4.3 100%	Silty Sand	Fine grained, well sorted, damp, brown (7.5 YR 5/4), trace roots
4.3 - 5.3	Drive Core 4.3 - 5.3 100%	Sandy Silt	Damp, brown (7.5 YR 5/4)
5.3 - 8	Rotary Cored 5.3 - 8 100%	Sandstone	Fine grained, soft, slightly damp, greyish yellow, Fe stain, fractures* sand-filled
8 - 9	Rotary Cored 8 - 9 100%	Sandstone	Fine grained, saturated, yellowish grey (7 Y 5/2), trace disseminated Fe stained
9 - 9.7	Rotary Cored 9 - 9.7 100%	Sandstone	Trace limonite residue, Fe stained, light brown (5 YR 5/6)
9.7 - 10.75	Rotary Cored 9.7 - 10.75 100%	Sandstone	Wet
10.75 - 11.2	Rotary Cored 10.75 - 11.2 100%	Sandstone	---
11.2 - 12.15	Rotary Cored 11.2 - 12.15 100%	Sandstone	Wet
12.15 - 15	Rotary Cored 12.15 - 15 100%	Sandstone	---

*See fracture density graph for 6-PW3

PRELIMINARY
Subject to revision

Boring No.: 6-PW3 (continued)

Depth Interval (ft)	Sample Type Interval (ft) Recovery (%)	Material Type	Description
15 - 20	Rotary Cored 15 - 20 100%	Sandstone	Limonite concretions, saturated, no fractures

PRELIMINARY
Subject to revision

Client:	Transwestern Pipeline Compressor Station No. 6 Laguna, NM	**Drilling Contractor:**	Stewart Brothers Grants, NM
		Rig Type:	Chicago Pnumatic 650SS
Project No.:	89-030L	**Drilling Method:**	Rotary Coring
Boring No.:	6-PW4		
Date Started:	3/15/91		
Date Completed:			
Total Depth Drilled:	20 ft		

Depth Interval (ft)	Sample Type Interval (ft) Recovery (%)	Material Type	Description
0 - 4.6	Drive Core 0 - 4.6 100%	Silty Sand	Fine grained, slightly damp to dry, reddish brown (5 YR 4/4), roots
4.6 - 9	Drive Core 4.6 - 9 100%	Silty Sand	Gravely, caliche
9 - 11.75	Drive Core 9 - 11 100% Rotary Core 11 - 11.75 90%	Sandstone	Fine grained, soft, damp, light grey, heavily weathered
11.75 - 12.3	Rotary Core 11.75 - 12.3 90%	Sandstone	Purple stained, fractures*
12.3 - 13.2	Rotary Core 12.3 - 13.2 90%	Sandstone	Fe stained, black stained, heavily fractured*
13.2 - 15	Rotary Core 13.2 - 15 90%	Sandstone	Wet, disseminated Fe stained, bedding plane fractures
15 - 16.6	Rotary Core 15 - 15.5 90% 15.5 - 16.6 100%	Sandstone	Damp, Fe stained, fractures*
16.6 - 20	Rotary Core 16.6 - 20 100%	Sandstone	---

*See fracture density graph for 6-PW4

PRELIMINARY
Subject to revision

Client:	Transwestern Pipeline Compressor Station No. 6 Laguna, NM	**Drilling Contractor:**	Stewart Brothers Grants, NM
		Rig Type:	Chicago Pnumatic 650SS
Project No.:	89-030L	**Drilling Method:**	Rotary Coring
Boring No.:	6-PW5		
Date Started:	3/15/91		
Date Completed:			
Total Depth Drilled:	20 ft		

Depth Interval (ft)	Sample Type Interval (ft) Recovery (%)	Material Type	Description
0 - 2.5	Drive Core 0 - 2.5 100%	Sand	Fine grained, trace silt, damp, reddish brown, roots
2.5 - 3.5	Drive Core 2.5 - 3.5 100%	Silty Sand	Fine grained, unconsolidated, moist, reddish brown, roots
3.5 - 5.7	Drive Core 3.5 - 5.7 100%	Sand	Fine grained, trace silt, unconsolidated, damp, reddish brown
5.7 - 7.3	Drive Core 5.7 - 7 100% Rotary Core 7 - 7.3 100%	Sandstone	Medium to fine grained, poorly consolidated, friable, heavily weathered, damp, pale yellow orange, disseminated Fe stain (10 YR 8/6)
7.3 - 8	Rotary Core 7.3 - 8 100%	Sandstone	Fractures*
8 - 9.5	Rotary Core 8 - 9.5 100%	Sandstone	Low angle fractures*
9.5 - 9.6	Rotary Core 9.5 - 9.6 100%	Sandstone	Very heavily fractured*
9.6 - 10.95	Rotary Core 9.6 - 10.95 100%	Sandstone	---

*See fracture density graph for 6-PW5

PRELIMINARY
Subject to revision

Boring No.: 6-PW5 (continued)

Depth Interval (ft)	Sample Type Interval (ft) Recovery (%)	Material Type	Description
11.1 - 11.15	Rotary Core 11.1 - 11.15 100%	Sandstone	Fractured*
11.15 - 11.65	Rotary Core 11.15 - 11.65 100%	Sandstone	Dry
12.2 - 16.2	Rotary Core 12.2 - 16.2 100%	Sandstone	Fe stained
16.2 - 20	Rotary Core 16.2 - 20 100%	Sandstone	---

PRELIMINARY
Subject to revision

*See fracture density graph for 6-PW5

Client:	Transwestern Pipeline Compressor Station No. 6 Laguna, NM	**Drilling Contractor:**	Stewart Brothers Grants, NM
Project No.:	89-030L	**Rig Type:**	Chicago Pnumatic 650SS
Boring No.:	6-PW6	**Drilling Method:**	Rotary Coring
Date Started:	3/16/91		
Date Completed:			
Total Depth Drilled:	20 ft		

Depth Interval (ft)	Sample Type Interval (ft) Recovery (%)	Material Type	Description
0 - 2.5	Drive Core 0 - 2.5 100%	Silty Sand	Fine grained, trace fine gravels, unconsolidated, damp
2.5 - 3.7	Drive Core 2.5 - 3.7 100%	Sand	Fine grained, no gravel, unconsolidated, brownish yellow (10 YR 6/6), roots
3.7 - 6.7	Drive Core 3.7 - 6.7 100%	Silty Sand	Fine grained, Trace caliche streaks, unconsolidated
6.7 - 7	Drive Core 6.7 - 7 100%	Sandstone	Medium to fine grained, semi-consolidated, heavily weathered, damp, greyish orange (10 YR 7/4)
7 - 7.4	Rotary Core 7.0 - 14 100%	Sandstone	Fractures*
8.4 - 8.7	Rotary Core 8.4 - 8.7 100%	Sandstone	Bedding plane shale, wet, Fe stained
8.7 - 9.6	Rotary Core 8.7 - 9.6 100%	Sandstone	---
9.6 - 9.7	Rotary Core 9.6 - 9.7 100%	Sandstone	Wet
9.7 - 11.8	Rotary Core 9.7 - 11.8 100%	Sandstone	---

*See fracture density graph for 6-PW6

PRELIMINARY
Subject to revision

Boring No.: 6-PW6 (continued)

Depth Interval (ft)	Sample Type Interval (ft) Recovery (%)	Material Type	Description
11.8 - 12.2	Rotary Core 11.8 - 12.2 100%	Sandstone	Wet
12.2 - 18	Rotary Core 12.2 - 18 100%	Sandstone	---
18 - 20	Rotary Core 18 - 20 100%	Sandstone	Well indurated, grey

PRELIMINARY
Subject to revision

*See fracture density graph for 6-PW6

Client:	Transwestern Pipeline Compressor Station No. 6 Laguna, NM	**Drilling Contractor:**	Stewart Brothers Grants, NM
		Rig Type:	Chicago Pnumatic 650SS
Project No.:	89-030L	**Drilling Method:**	Rotary Coring
Boring No.:	6-PW7		
Date Started:	3/26/91		
Date Completed:			
Total Depth Drilled:	30 ft		

Depth Interval (ft)	Sample Type Interval (ft) Recovery (%)	Material Type	Description
0 - 3	Drive Core 0 - 3 100%	Silty Sand	Fine to very fine grained, trace sandstone gravel, caliche, slightly damp, reddish yellow (7.5 YR 6/6), roots
3 - 7.5	Drive Core 3 - 7.5 100%	Silty Sand	Fine to very fine grained, slightly damp, light reddish yellow
7.5 - 7.8	Drive Core 7.5 - 7.8 100%	Sand	Medium to coarse grained, slightly damp, pale brown (10 YR 6/4)
7.8 - 8	Drive Core 7.8 - 8 100%	Sandstone	Medium to fine grained, heavily fractured, friable, slightly damp, Fe stained, yellowish grey (10 YR 6/5)
8 - 11.3	Rotary Core 8 - 11.3 100%	Sandstone	Moist, yellowish grey to pale yellow orange (5 Y 7/2)
11.3 - 18	Rotary Core 11.3 - 18 100%	Sandstone	Well sorted, well indurated, limonite nodules, saturated, Fe stained, pale yellow orange, fractured*
18 - 22	Rotary Core 18 - 22 100%	Sandstone	Saturated, light grey
22 - 26	Rotary Core 22 - 26 100%	Sandstone	Well indurated, Fe stains

*See fracture density graph for 6-PW7

PRELIMINARY
Subject to revis...

Boring No.: 6-PW7 (continued)

Depth Interval (ft)	Sample Type Interval (ft) Recovery (%)	Material Type	Description
26 - 28	Rotary Core 26 - 28 100%	Sandstone	---
28 - 30	Rotary Core 28 - 30 100%	Sandstone	Trace dampness, no fractures

Client:	Transwestern Pipeline Compressor Station No. 6 Laguna, NM	**Drilling Contractor:**	Stewart Brothers Grants, NM
		Rig Type:	Chicago Pnumatic 650SS
Project No.:	89-030L	**Drilling Method:**	Rotary Coring
Boring No.:	6-PW8		
Date Started:	3/26/91		
Date Completed:			
Total Depth Drilled:	25 ft		

Depth Interval (ft)	Sample Type Interval (ft) Recovery (%)	Material Type	Description
0 - 3.8	Drive Core 0 - 3.8 100%	Silty Sand	Fine grained, no gravel, unconsolidated, damp, dark brown (7.5 YR 4/2), roots
3.8 - 4	Drive Core 3.8 - 4 100%	Sandstone	Fine grained, heavily weathered, dark yellow orange (10 YR 6/6)
4 - 5.7	Rotary Core 4 - 5.7 100%	Sandstone	As above, saturated
5.7 - 7.4	Rotary Core 5.7 - 7.4 100%	Sandstone	As above, sand-filled fractures*
7.4 - 9.9	Rotary Core 7.4 - 9.9 100%	Sandstone	As above, Fe stain
9.9 - 11.4	Rotary Core 9.9 - 11.4 100%	Sandstone	No Fe stain
11.4 - 11.5	Rotary Core 11.4 - 11.5 100%	Sandstone	Fe stain
11.5 - 11.7	Rotary Core 11.5 - 11.7 100%	Sandstone	---
11.7 - 11.8	Rotary Core 11.7 - 11.8 100%	Sandstone	Fe stain

*See fracture density graph for 6-PW8

PRELIMINARY
Subject to revision

Boring No.: 6-PW8 (continued)

Depth Interval (ft)	Sample Type Interval (ft) Recovery (%)	Material Type	Description
11.8 - 12	Rotary Core 11.8 - 12 100%	Sandstone	---
12 - 12.2	Rotary Core 12 - 12.2 100%	Sandstone	Fe stain
12.2 - 12.55	Rotary Core 12.2 - 12.55 100%	Sandstone	---
12.55 - 18.7	Rotary Core 12.55 - 13 100% 13 - 18.7 50%	Sandstone	Fe stain
18.7 - 25	Rotary Core 18.7 - 20 50% 18.7 - 25 100%	Sandstone	---

PRELIMINARY
Subject to revision

*See fracture density graph for 6-PW8

2.3
Monitor Well Logs (6-Series)

Client:	Transwestern Pipeline Compressor Station No. 6 Laguna, NM	**Drilling Contractor:**	Western Technologies, Inc. Albuquerque, NM
		Drilling Method:	
Project No.:	89-030L		
Boring No.:	Monitor Well 6-6		
Date Started:	4/8/91		
Date Completed:			
Total Depth Drilled:	25 ft		

Depth Interval (ft)	Sample Type Interval (ft) Recovery (%)	Material Type	Description
0 - 2	Shovel 100%	Soil	Moist, brown
2 - 4	Auger	Alluvium	Fine grained, well sorted, some clay, moist, brown
4 - 6	Auger	Alluvium	Fine grained, well sorted, some clay, moist, brown
6 - 8	Auger	Alluvium	Fine grained, well sorted, more clay, more moisture, brown
8 - 9	Auger	Silty Sand	Very fine grained, very well sorted, greyish brown
9 - 11	Auger	Sandstone	Weathered, wet, grey
11 - 15	Tri-Cone	Sandstone	As above
15 - 21	Tri-Cone	Sandstone	Very moist
21 - 23	Tri-Cone	Sandstone	Dry, yellowish
23 - 25	Tri-Cone	Sandstone	Slightly moist

PRELIMINARY
Subject to revision

Client:	Transwestern Pipeline Compressor Station No. 6 Laguna, NM	**Drilling Contractor:**	Western Technologies, Inc. Albuquerque, NM
		Drilling Method:	
Project No.:	89-030L		
Boring No.:	Monitor Well 6-7		
Date Started:	4/9/91		
Date Completed:			
Total Depth Drilled:	23 ft		

Depth Interval (ft)	Sample Type Interval (ft) Recovery (%)	Material Type	Description
0 - 2	Shovel	Soil	---
2 - 4	Auger	Silty Clay	Fine grained, moist, reddish brown
4 - 8.5	Auger	Silty Clay	Fine grained, moist, grey
8.5 - 9	Auger	Silty Clay	As above, weathered
9 - 10	Auger	Silty Clay	As above
10 - 11	Tri-Cone	Sandstone	As above, dry
11 - 13	Tri-Cone	Sandstone	Light buff grey
13 - 16	Tri-Cone	Sandstone	Limonite stringer, soft, yellowish
16 - 17	Tri-Cone	Sandstone	Light buff grey
17 - 23	Tri-Cone	Sandstone	Fine grained, trace moisture, light buff grey

PRELIMINARY
Subject to revision

Client:	Transwestern Pipeline Compressor Station No. 6 Laguna, NM	**Drilling Contractor:**	Western Technologies, Inc. Albuquerque, NM
		Drilling Method:	
Project No.:	89-030L		
Boring No.:	Monitor Well 6-8		
Date Started:	3/9/91		
Date Completed:			
Total Depth Drilled:	23 ft		

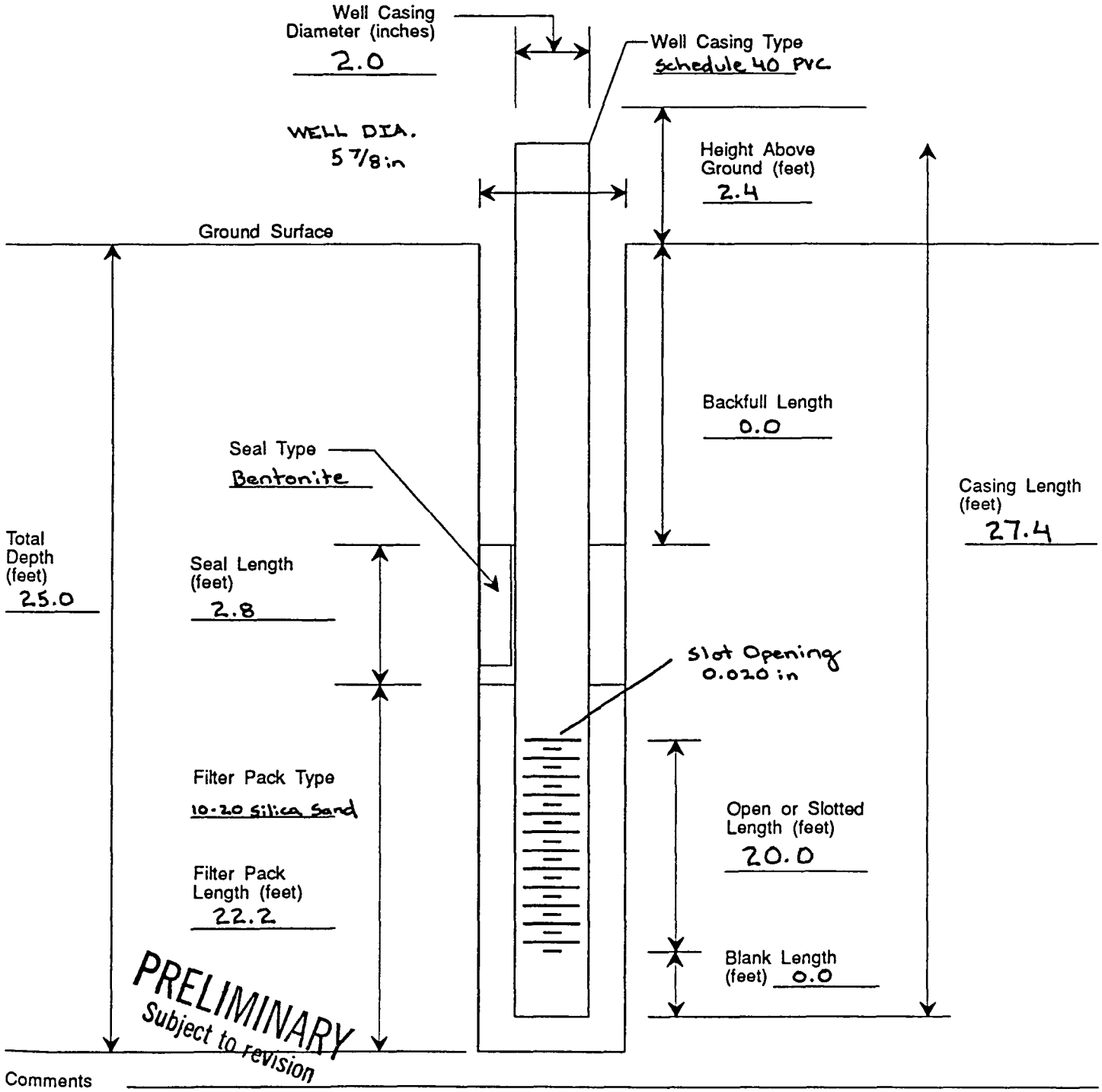
Depth Interval (ft)	Sample Type Interval (ft) Recovery (%)	Material Type	Description
0 - 2	Shovel	Soil	---
2 - 4	Auger	Clayey Silt	Moist, dark reddish brown
4 - 6	Auger	Clayey Silt	Slightly lighter
6 - 7	Auger	Clayey Silt	Weathered, yellowish
7 - 8	Auger	Sandstone	Very fine grained, 1" cobbles, well sorted, damp
8 - 10	Auger	Sandstone	Very fine grained, well sorted, damp
10 - 14	Auger	Sandstone	Grey
14 - 15	Tri-Cone	Sandstone	Sandy bluff, drier
15 - 17	Tri-Cone	Sandstone	Dry
17 - 21	Tri-Cone	Sandstone	Very dry, very fine
21 - 25	Tri-Cone	Sandstone	Very hard

PRELIMINARY
Subject to revision

DANIEL B. STEPHENS & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS AND ENGINEERS

WELL COMPLETION RECORD

Client ENRON / TRANSWESTERN Project No. 89030-L
Well No. 6-PW-1 Location Compressor Station 6 Date Installed 3-15-91
Formation of Completion Jb
DBS&A Personnel C. CULVER Driller Stewart Brothers

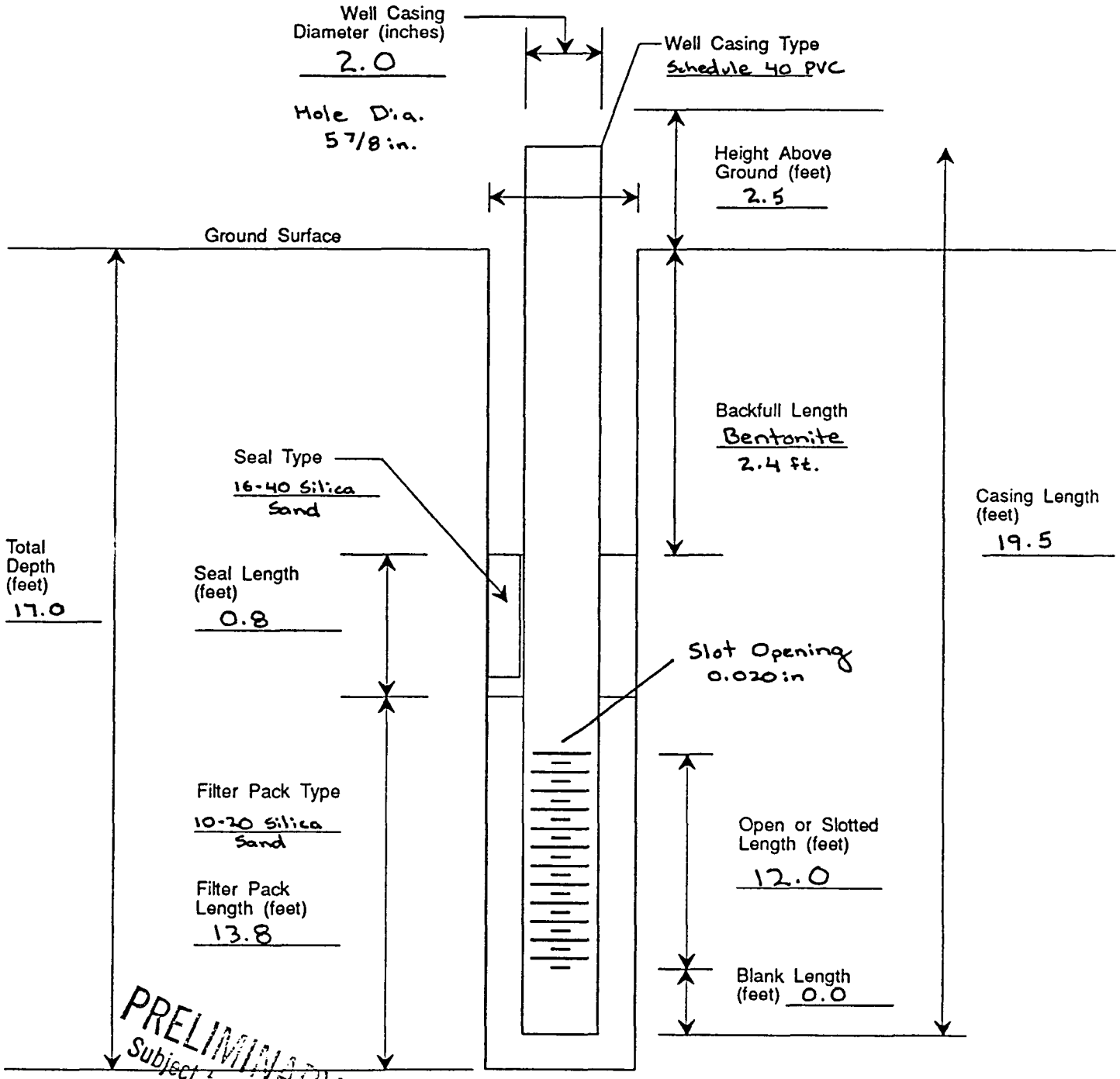


Comments

DANIEL B. STEPHENS & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS AND ENGINEERS

WELL COMPLETION RECORD

Client ENRON / TRANSWESTERN Project No. 89030-L
Well No. 6-PW-2 Location Compressor Station 6 Date Installed 3-14-91
Formation of Completion JD
DBS&A Personnel C. CULVER Driller Stewart Brothers

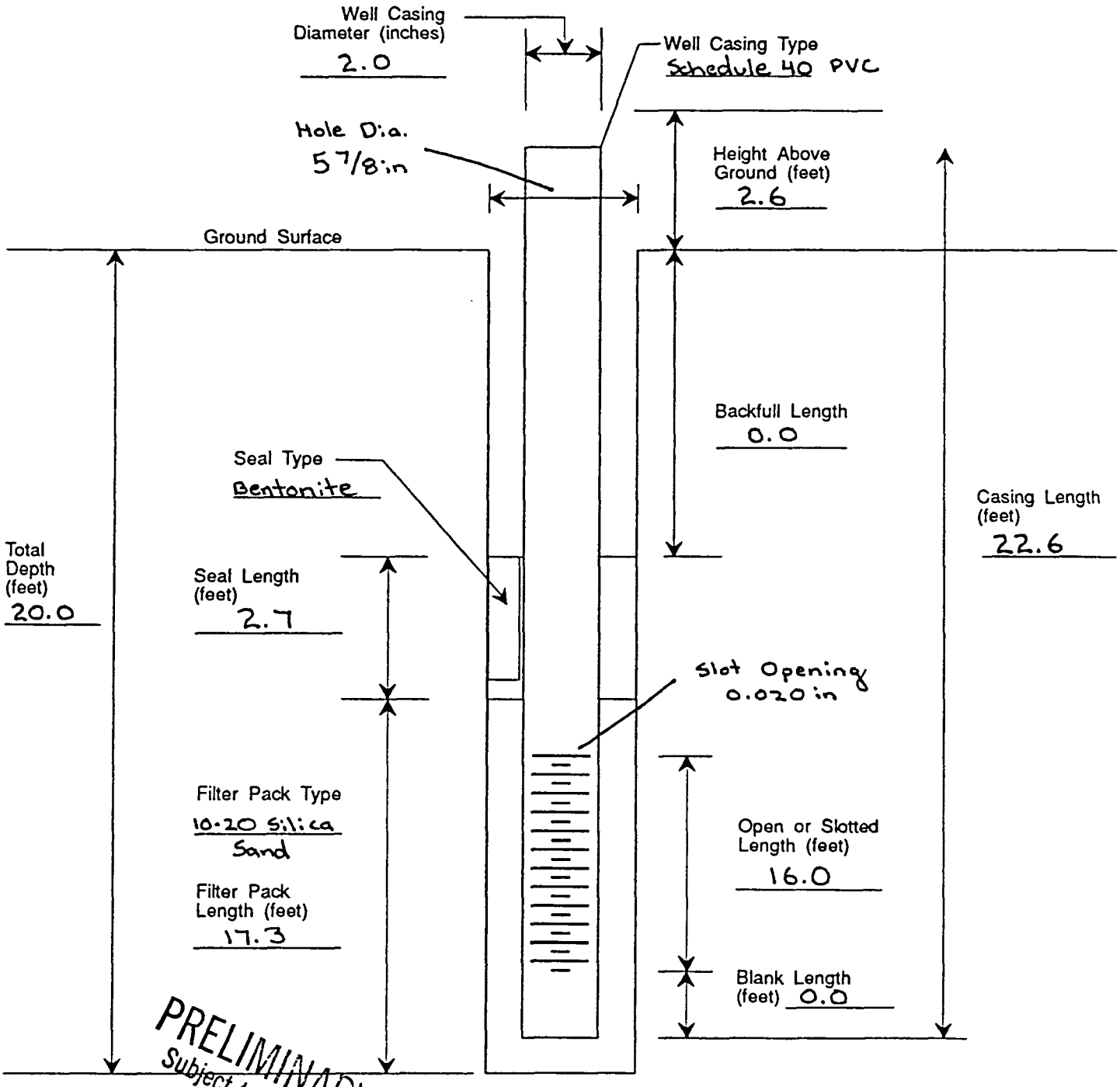


Comments

DANIEL B. STEPHENS & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS AND ENGINEERS

WELL COMPLETION RECORD

Client ENRON / TRANSWESTERN Project No. 89030-L
Well No. 6-PW-3 Location Compressor Station 6 Date Installed 3-15-91
Formation of Completion Jb
DBS&A Personnel C. CULVER Driller Stewart Brothers

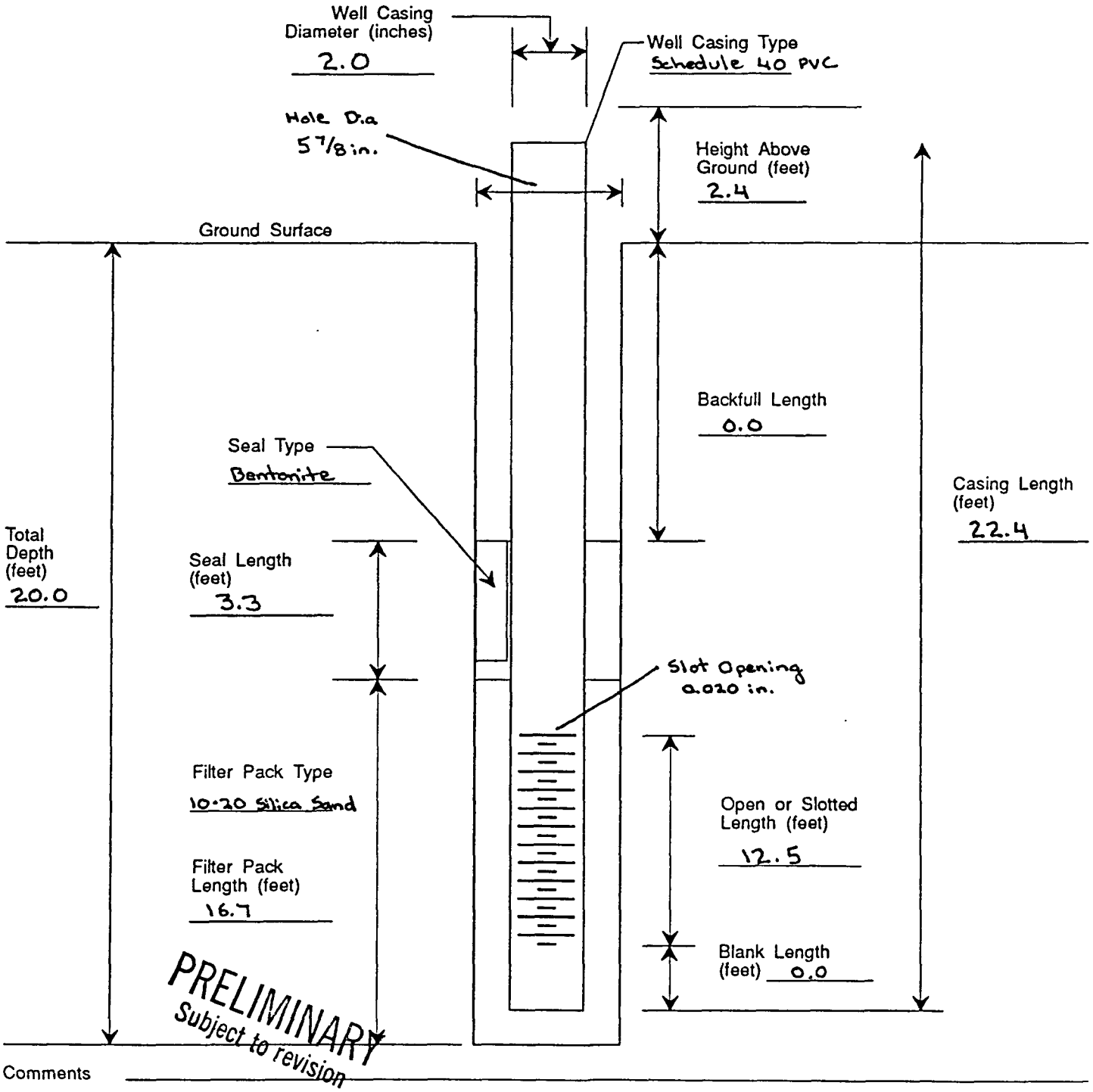


Comments

DANIEL B. STEPHENS & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS AND ENGINEERS

WELL COMPLETION RECORD

Client ENRON / TRANSWESTERN Project No. 89030-L
Well No. 6-PW-4 Location Compressor Station 6 Date Installed 3-15-91
Formation of Completion Jb
DBS&A Personnel C. CULVER Driller Stewart Brothers



Comments

DANIEL B. STEPHENS & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS AND ENGINEERS

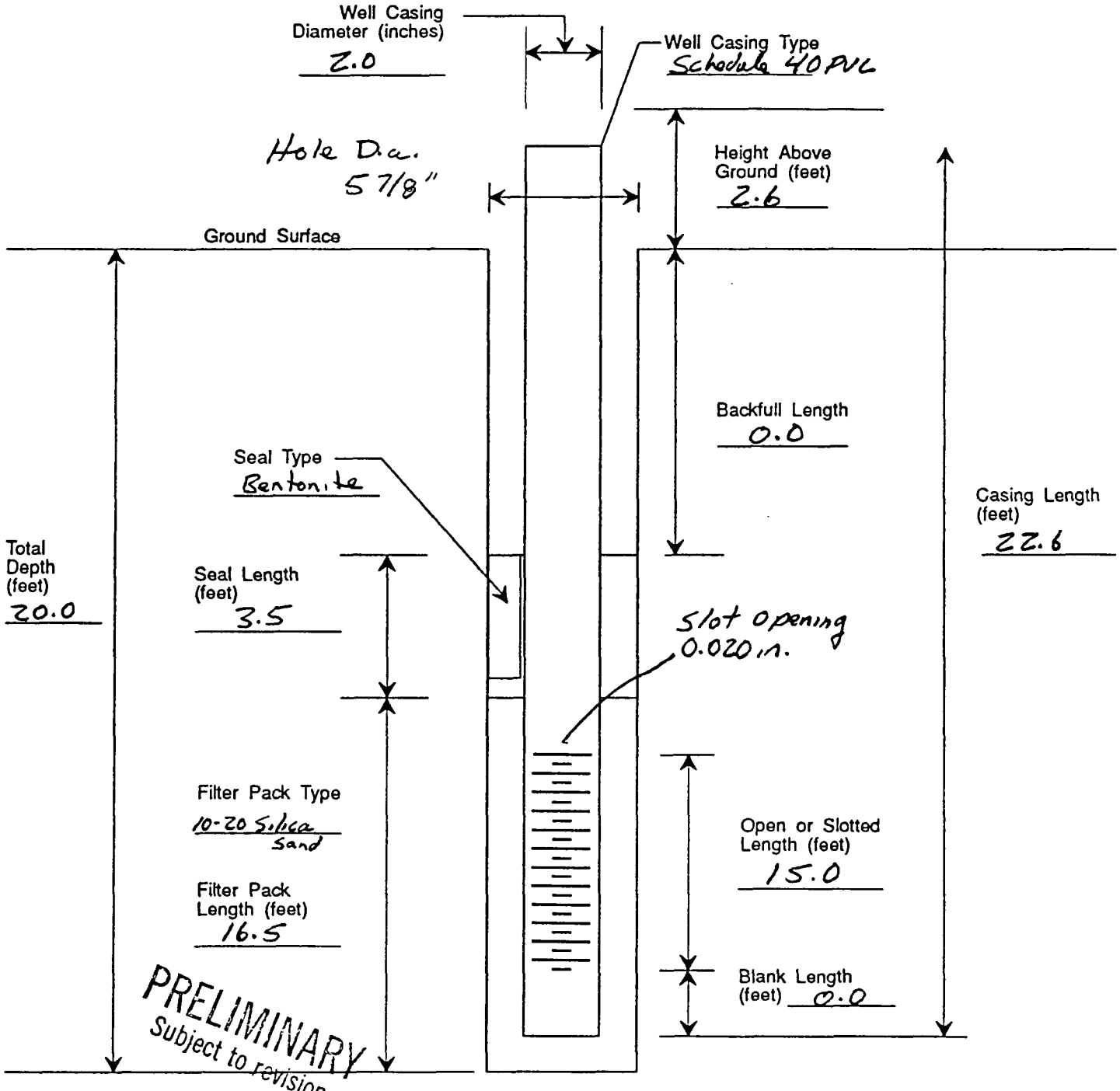
WELL COMPLETION RECORD

Client ENRON / TRANSWESTERN Project No. 89-0302

Well No. 6-PW5 Location Compressor Station 6 Date Installed 3-16-91

Formation of Completion Jb

DBS&A Personnel C. Culver Driller Stewart Brothers

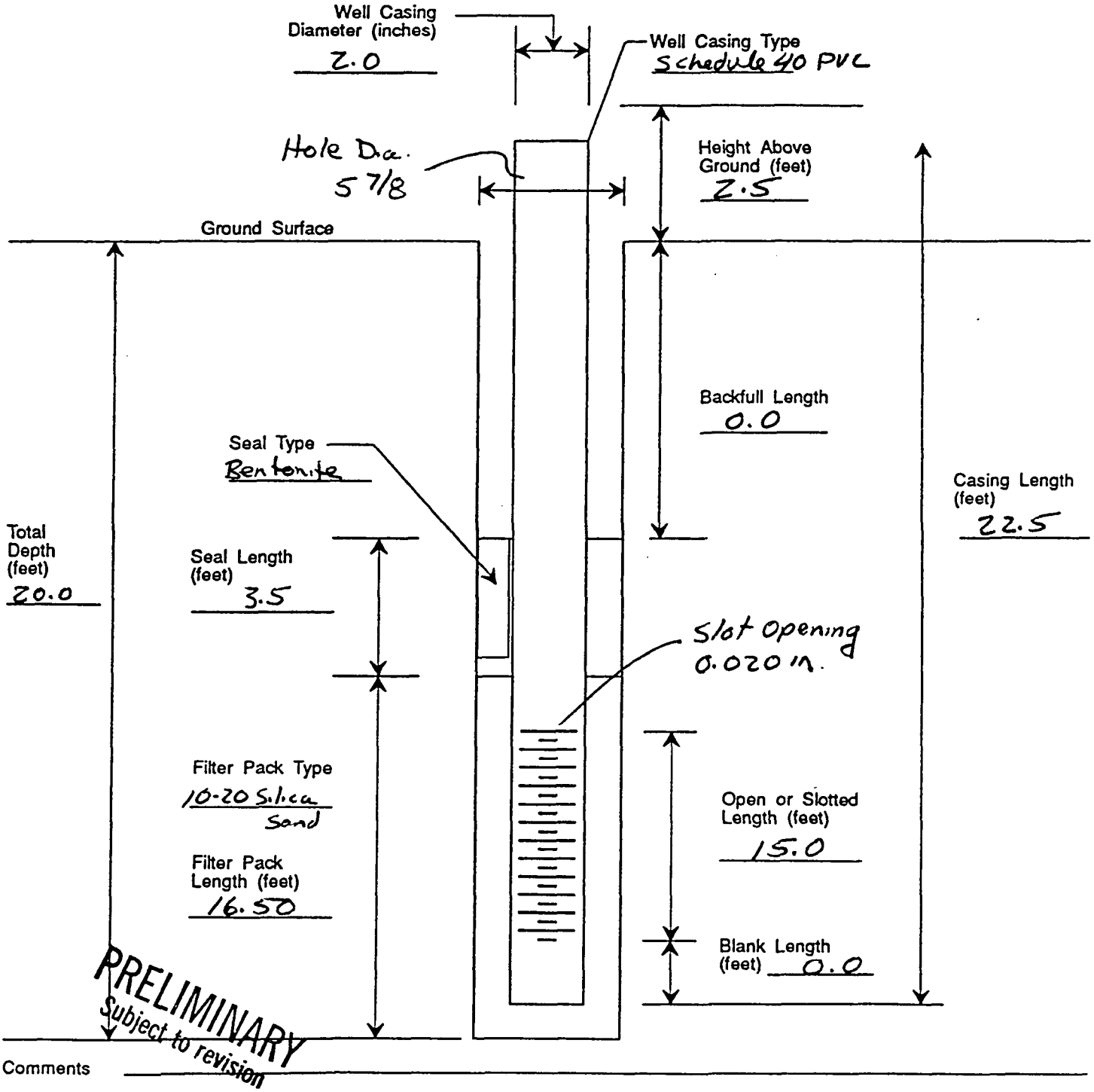


Comments

DANIEL B. STEPHENS & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS AND ENGINEERS

WELL COMPLETION RECORD

Client ENRON / TRANWESTERN Project No. 89-030L
Well No. 6-PW6 Location Compressor Station 6 Date Installed 3-16-91
Formation of Completion Jb
DBS&A Personnel C. Culver Driller Stewart Brothers

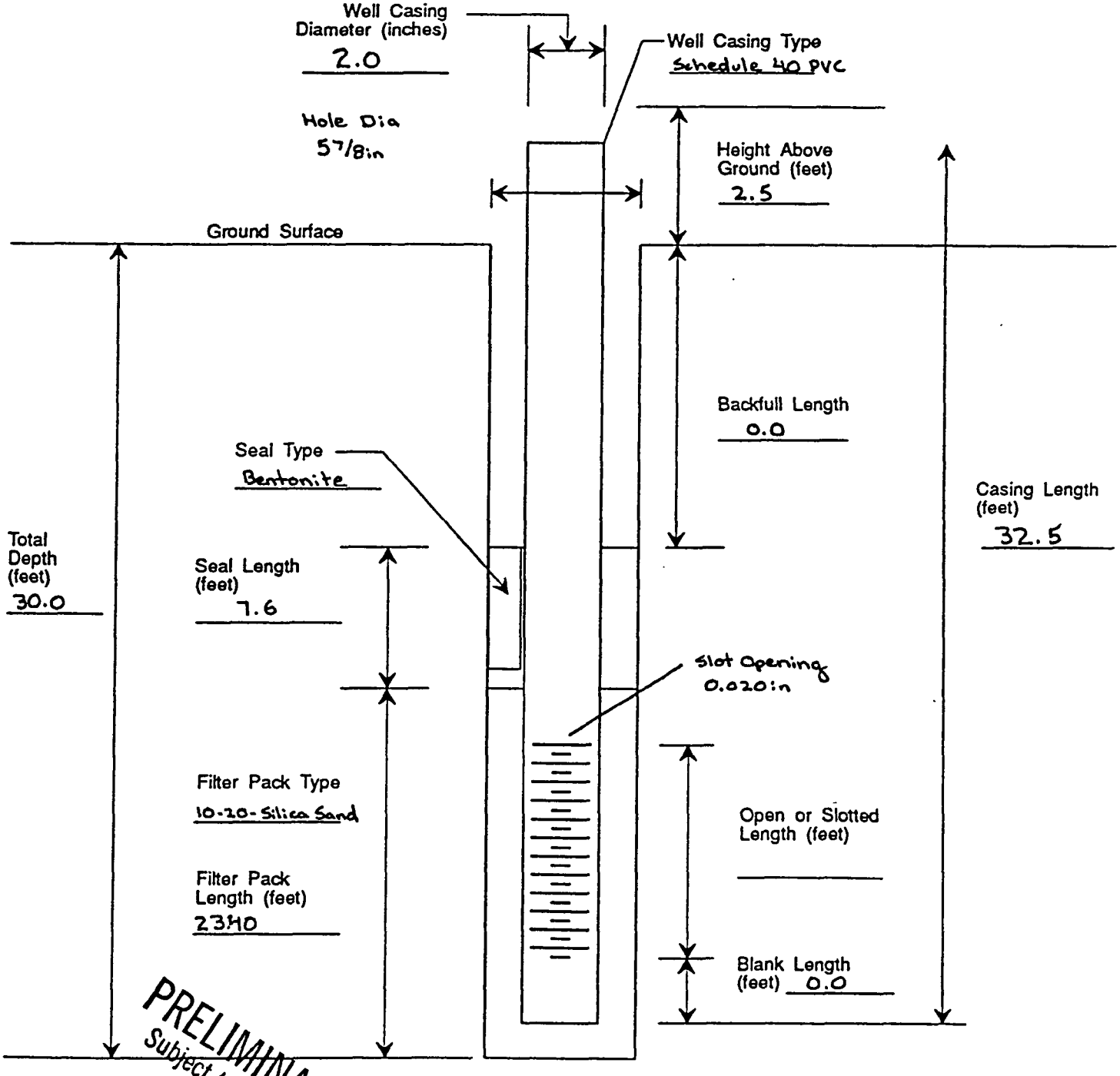


Comments

DANIEL B. STEPHENS & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS AND ENGINEERS

WELL COMPLETION RECORD

Client ENRON / TRANSWESTERN Project No. 89030-L
Well No. 6-PW-7 Location Compressor Station 6 Date Installed 3-26-91
Formation of Completion J6
DBS&A Personnel C. CULVER Driller Stewart Brothers



Comments

DANIEL B. STEPHENS & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS AND ENGINEERS

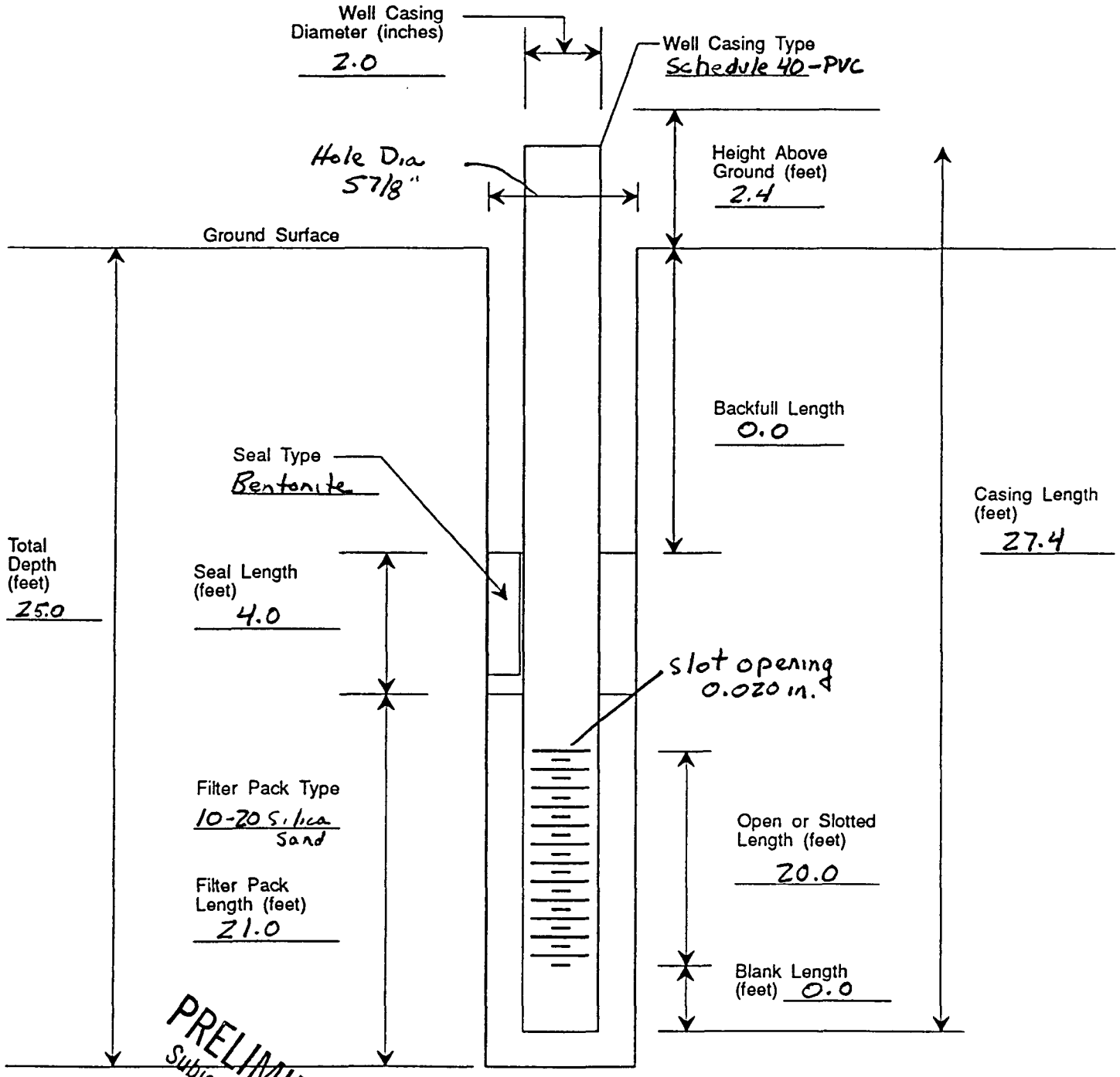
WELL COMPLETION RECORD

Client ENRON / TRANSWESTERN Project No. 89-0302

Well No. 6-PW8 Location Compressor Station 6 Date Installed 3-26-91

Formation of Completion Jb

DBS&A Personnel C. Culver Driller Stewart Brothers



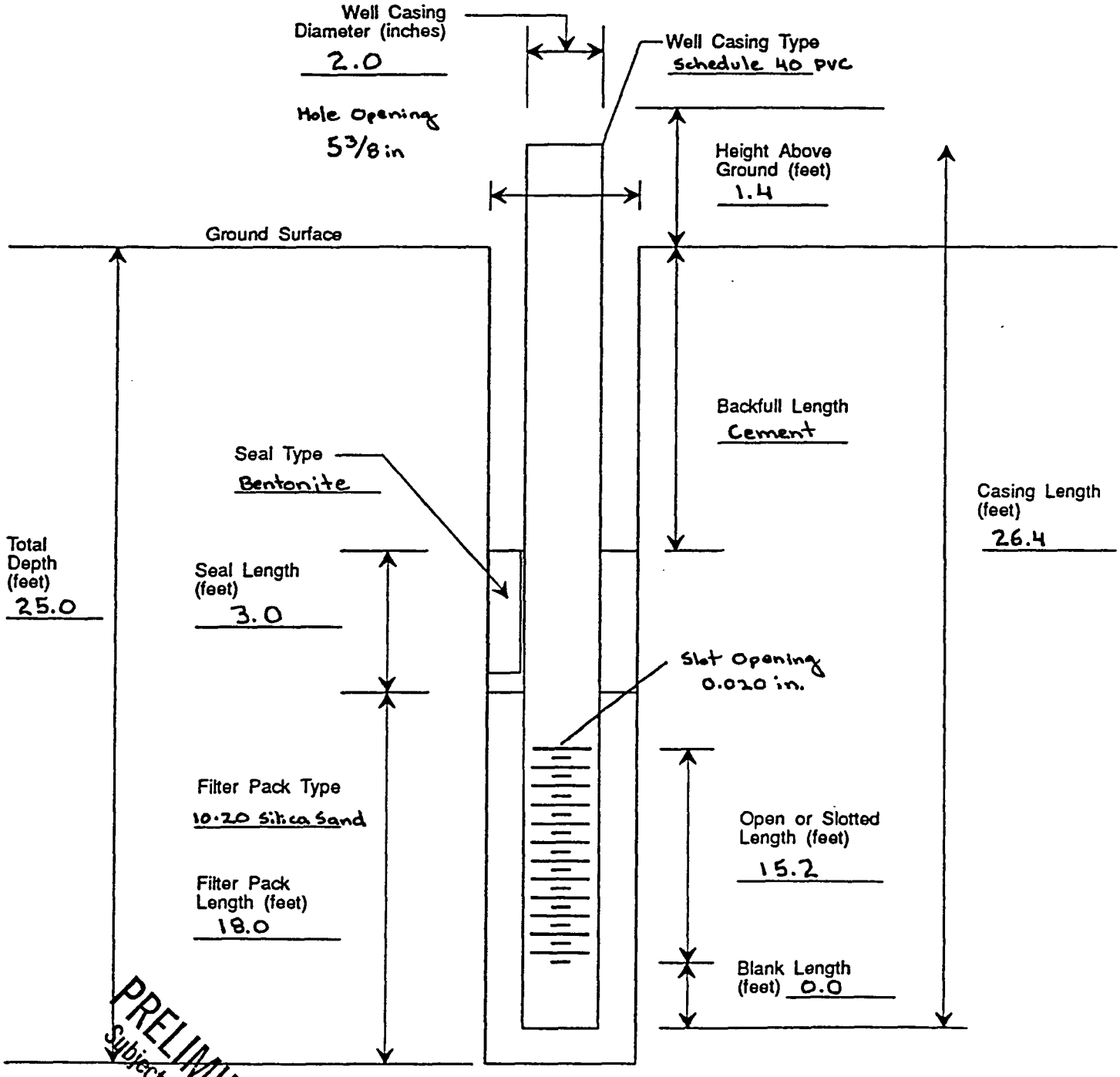
PRELIMINARY
Subject to revision

Comments

DANIEL B. STEPHENS & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS AND ENGINEERS

WELL COMPLETION RECORD

Client ENRON / TRANSWESTERN Project No. 89030-L
Well No. 6-6 Location Compressor Station 6 Date Installed 4-9-91
Formation of Completion Jb
DBS&A Personnel KCT & JD Driller WESTERN TECH INC.



PRELIMINARY
Subject to revision

Comments

DANIEL B. STEPHENS & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS AND ENGINEERS

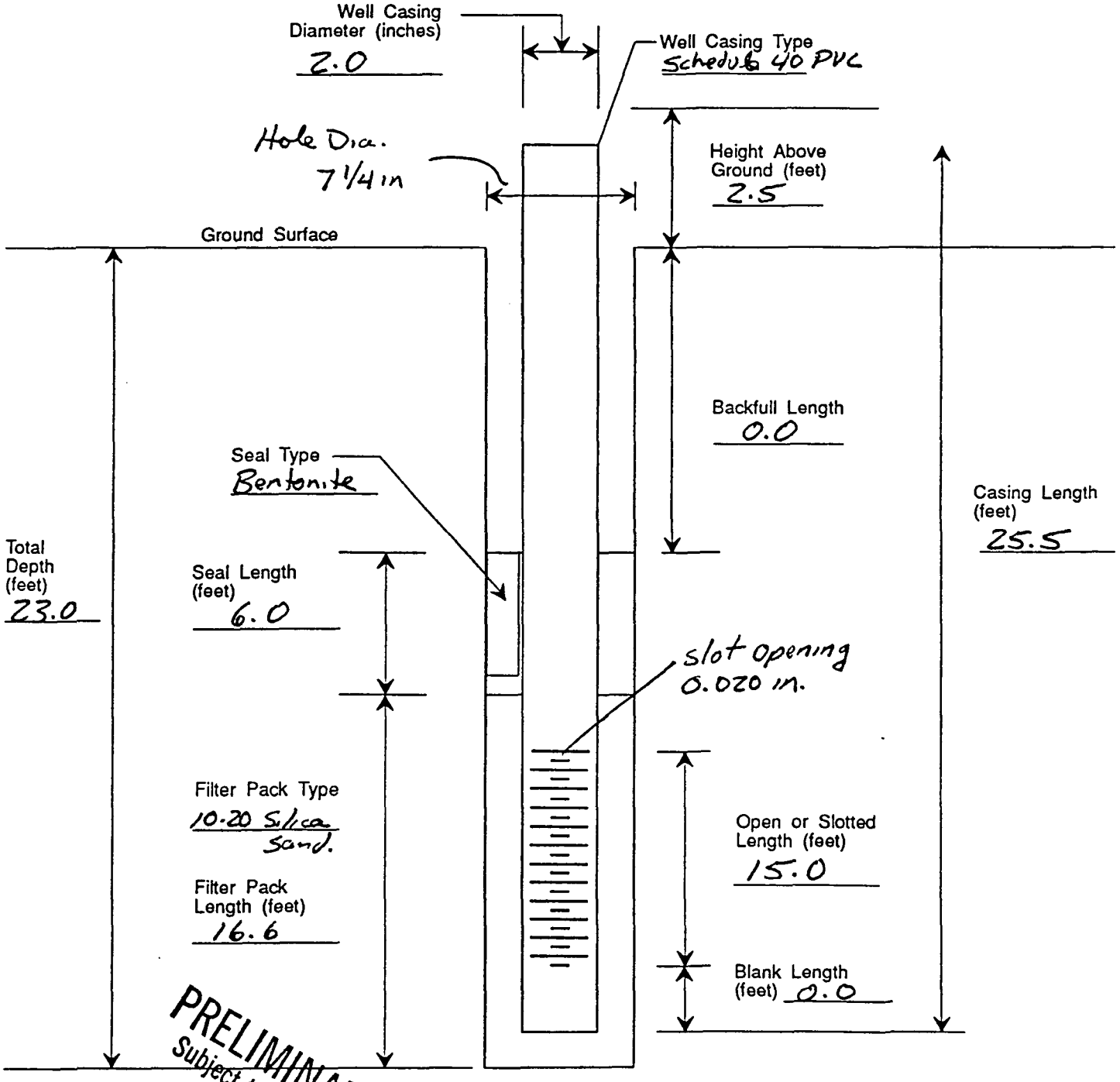
WELL COMPLETION RECORD

Client ENRON / TRANSWESTERN Project No. 89-0302

Well No. 6-7 Location Compressor Station 6 Date Installed 4/9/91

Formation of Completion Jb

DBS&A Personnel KCT / JD Driller Western Tech. Inc.



Comments

DANIEL B. STEPHENS & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS AND ENGINEERS

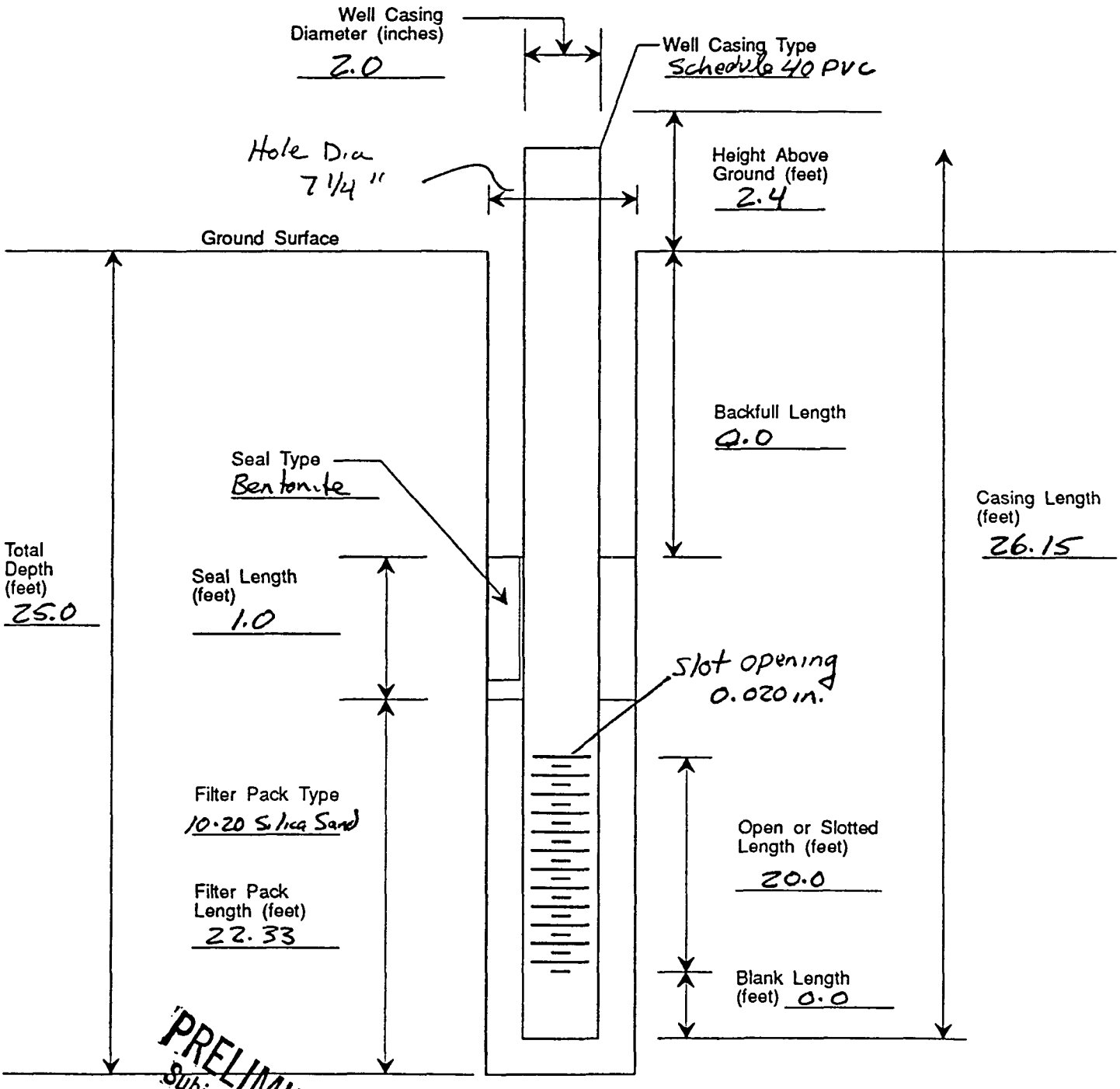
WELL COMPLETION RECORD

Client ENRON / TRANSWESTERN Project No. 89-0306

Well No. 6-8 Location Compressor Station 6 Date Installed 4/9/91

Formation of Completion J6

DBS&A Personnel KCT / JD Driller Western Tech Inc.



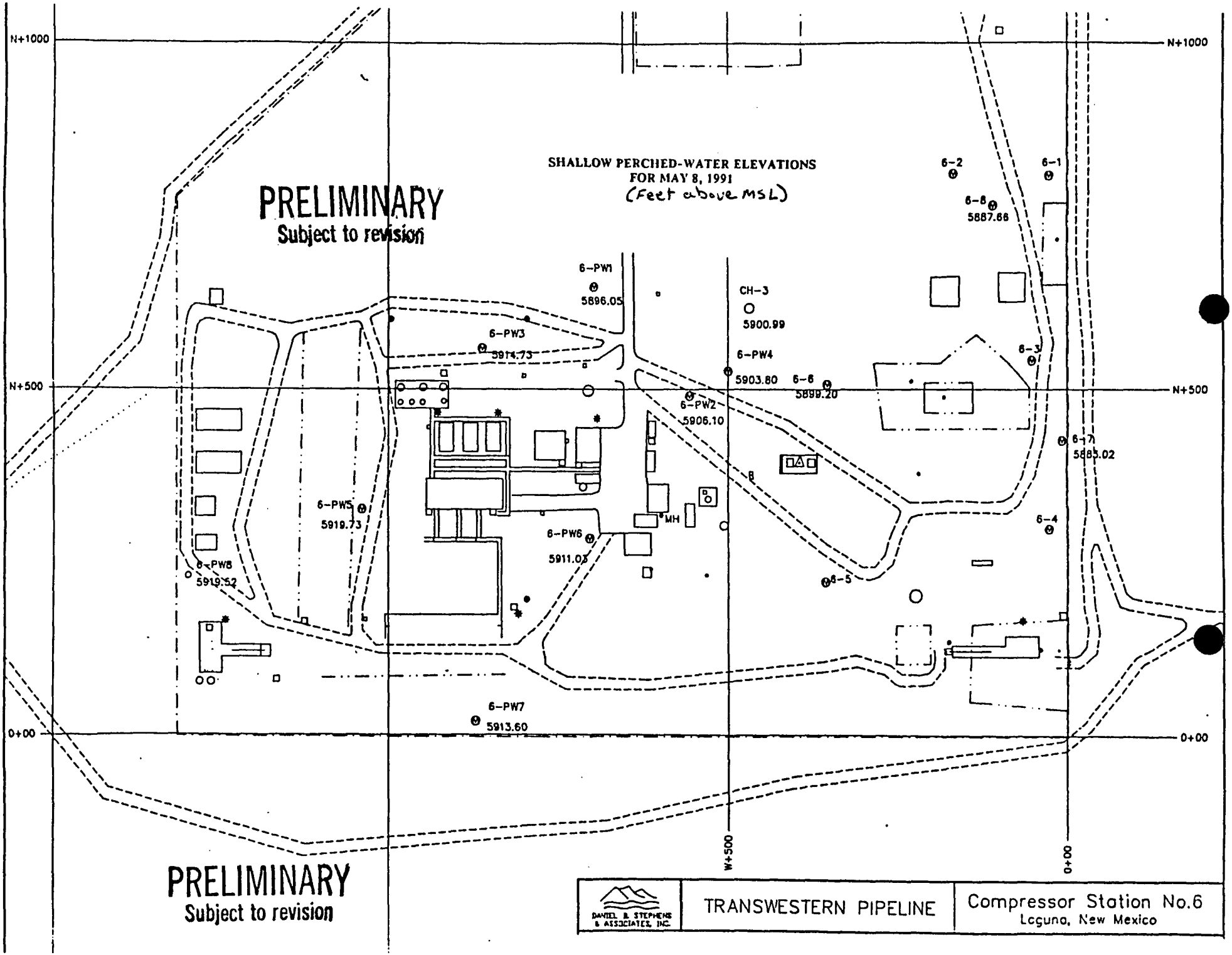
PRELIMINARY
Subject to revision

Comments

SECTION 3.0

WATER TABLE ELEVATIONS IN SHALLOW PERCHED WATER BOREHOLES

3.1
Map of Shallow Perched Water Table Elevations


SHALLOW PERCHED-WATER ELEVATIONS
FOR MAY 8, 1991
(Feet above MSL)
PRELIMINARY
Subject to revision
N+1000
N+500
0+00
W+500
0+00
6-PW1
5896.05
6-PW2
5906.10
6-PW3
5914.73
6-PW4
5903.80
6-PW5
5919.73
6-PW6
5911.03
6-PW7
5913.60
6-PW8
5919.52
CH-3
5900.99
6-1
6-2
6-3
6-4
6-5
6-6
5899.20
6-6
5887.66
6-7
5883.02
MH
PRELIMINARY
Subject to revision
DANIEL B. STEPHENS & ASSOCIATES, INC.
TRANSWESTERN PIPELINE
Compressor Station No.6
Laguna, New Mexico

3.2
Corehole Tabular Water Table Elevation Data

89-030L ENRON
LAGUNA COMPRESSOR STATION #6

COREHOLES

DATE	CH-1	CH-2	CH-3	CH-4	CH-5
DEPTH TO WATER (Feet below TOC)					
10/08/90	93.44				
10/10/90	93.10				
10/17/90	91.91	48.50	11.14	22.35	DRY
12/27/90	84.12				93.30
01/23/91	81.76	51.46	11.00	15.91	91.72
01/28/91			11.00	16.64	92.42
01/30/91				16.58	92.44
02/25/91			11.55	20.47	93.39
02/28/91	77.40	49.29	11.30	20.29	92.91
03/04/91	76.94	49.24	11.55	20.16	92.24
03/26/91	77.62	53.23	15.92	14.91	99.22
04/02/91			14.90		
04/16/91			15.03		
04/26/91	75.16	52.68	14.95	20.93	99.31
05/01/91	74.71	52.74	15.19	20.72	98.29
05/08/91	74.24	52.9	15.22	20.49	97.09
STATIC WATER LEVELS (Feet above msl)					
10/08/90	5818.58				
10/10/90	5818.92				
10/17/90	5820.11	5864.05	5902.21	5891.46	
12/27/90	5827.90				5820.15
01/23/91	5830.26	5861.09	5902.35	5897.90	5821.73
01/28/91			5902.35	5897.17	5821.03
01/30/91				5897.23	5821.01
02/25/91			5901.80	5893.34	5820.06
02/28/91	5834.62	5863.26	5902.05	5893.52	5820.54
03/04/91	5835.08	5863.31	5901.80	5893.65	5821.21
03/26/91	5837.48	5862.23	5900.29	5901.84	5816.98
04/02/91			5901.31		
04/16/91			5901.18		
04/26/91	5839.94	5862.78	5901.26	5895.82	5816.89
05/01/91	5840.39	5862.72	5901.02	5896.03	5817.91
05/08/91	5840.86	5862.56	5900.99	5896.26	5819.11

**casing extended on all coreholes by 2.5 to 3.0 feet in mid-march

PRELIMINARY
Subject to revision

3.3
Exploratory Well Tabular Water Table Elevation Data

89-030L ENRON
LAGUNA COMPRESSOR STATION #6

PERCHED WATER SERIES WELLS

DATE	6-PW1	6-PW2	6-PW3	6-PW4	6-PW5	6-PW6	6-PW7	6-PW8
DEPTH TO WATER (Feet below TOC)								
03/15/91	DRY	19.02						
03/18/91	25.89	18.68	11.07	15.17	13.86	13.63		
03/19/91	25.52	18.46	10.52	15.12	13.80	13.62		
03/20/91			11.06	15.24	13.82	13.64		
03/26/91	23.77	17.52	10.96	15.29	13.84	13.56		
03/27/91							11.80	5.30
04/02/91	22.34	16.56	11.28	15.54	14.15	13.99	24.34	12.96
04/04/91	22.72	17.30	20.80	15.27	14.11	14.21	27.96	12.92
04/10/91	24.48	17.27	10.99	14.43	13.62	13.86	26.49	12.72
04/16/91	28.75	16.19	11.23	14.62	14.06	14.04	22.10	12.85
04/17/91	22.66	16.12		14.65	13.98	14.04	20.68	12.83
05/01/91	23.70	16.14	11.31	15.20	14.07	14.22	20.19	12.86
05/08/91	21.96	16.13	11.31	15.29	14.11	14.38	17.34	12.90
STATIC WATER LEVEL (Feet above msl)								
03/15/91		5903.21						
03/18/91	5892.12	5903.55	5914.97	5903.92	5919.98	5911.78		
03/19/91	5892.49	5903.77	5915.52	5903.97	5920.04	5911.79		
03/20/91			5914.98	5903.85	5920.02	5911.77		
03/26/91	5894.24	5904.71	5915.08	5903.80	5920.00	5911.85		
03/27/91							5919.14	5927.12
04/02/91	5895.67	5905.67	5914.76	5903.55	5919.69	5911.42	5906.60	5919.46
04/04/91	5895.29	5904.93	5905.24	5903.82	5919.73	5911.20	5902.98	5919.50
04/10/91	5893.53	5904.96	5915.05	5904.66	5920.22	5911.55	5904.45	5919.70
04/16/91	5889.26	5906.04	5914.81	5904.47	5919.78	5911.37	5908.84	5919.57
04/17/91	5895.35	5906.11		5904.44	5919.86	5911.37	5910.26	5919.59
05/01/91	5894.31	5906.09	5914.73	5903.89	5919.77	5911.19	5910.75	5919.56
05/08/91	5896.05	5906.10	5914.73	5903.80	5919.73	5911.03	5913.60	5919.52

PRELIMINARY
Subject to revision

3.4
Monitor Well Tabular Water Table Elevation Data

89-030L ENRON
LAGUNA COMPRESSOR STATION #6

MONITOR WELLS SAMPLED MONTHLY

DATE	6-6	6-7	6-8
DEPTH TO WATER (Feet below TOC)			
04/11/91	11.92	dry	10.70
04/16/91	12.24	22.38	10.72
04/17/91	12.25		10.70
05/01/91	12.47	21.59	10.65
05/08/91	12.57	18.94	10.65
STATIC WATER LEVELS (Feet above msl)			
04/11/91	5899.85		5887.61
04/16/91	5899.53	5879.58	5887.59
04/17/91	5899.52		5887.61
05/01/91	5899.30	5880.37	5887.66
05/08/31	5899.20	5883.02	5887.66

PRELIMINARY
Subject to revision

SECTION 4.0

HYDRAULIC PARAMETER DATA FROM CORE SAMPLES COLLECTED FROM EXPLORATORY WELLS (6-PW-SERIES)

4.1
Water Content, Bulk Density, and Porosity Data

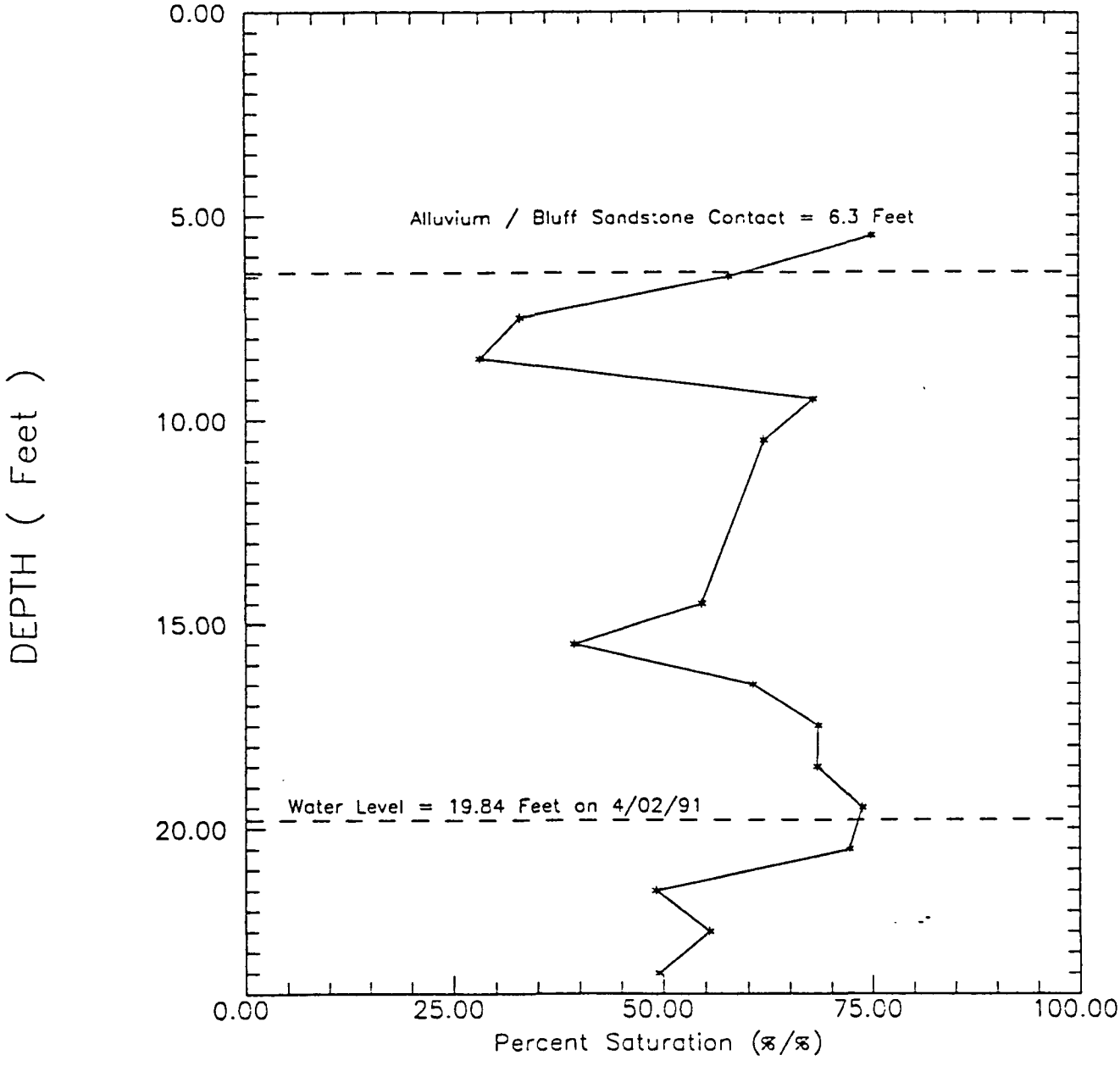
SUMMARY OF INITIAL MOISTURE CONTENT, DRY BULK DENSITY, AND POROSITY

Well #6-Pw-1

SAMPLE NUMBER	INITIAL MOISTURE CONTENT		DRY BULK DENSITY (g/cm^3)	CALCULATED POROSITY (%)	DEGREE OF SATURATION (%)
	GRAVIMETRIC (%, g/g)	VOLUMETRIC (%, cm^3/cm^3)			
5.5-6.0	14.21	25.08	1.76	33.4	75.0
6.5-7.0	10.70	19.02	1.78	32.9	57.8
7.5-8.0*	6.06	10.79	1.78	32.8	32.9
8.5-9.0*	5.19	9.23	1.78	32.8	28.1
9.5-10.0	4.63	10.38	2.24	15.3	67.9
10.5-11.0	4.84	10.64	2.20	17.2	62.0
14.5-15.0	5.02	10.69	2.13	19.6	54.6
15.5-16.0	5.86	11.14	1.90	28.3	39.3
16.5-17.0	5.37	11.52	2.14	19.0	60.6
17.5-18.0	5.90	12.73	2.16	18.6	68.4
18.5-19.0	5.21	11.48	2.0	16.8	68.3
19.5-20.0	4.84	10.93	2.26	14.8	73.7
20.5-21.0	4.96	11.11	2.24	15.4	72.2
21.5-22.0	4.75	10.02	2.11	20.4	49.2
22.5-23.0	4.59	9.98	2.17	18.0	55.5
23.5-24.0	4.04	8.80	2.18	17.8	49.5

PRELIMINARY
Subject to revision

* Bulk density from adjacent interval; unable to measure volume.



Saturation Vs Depth for 6-PW-1

PRELIMINARY
Subject to revision

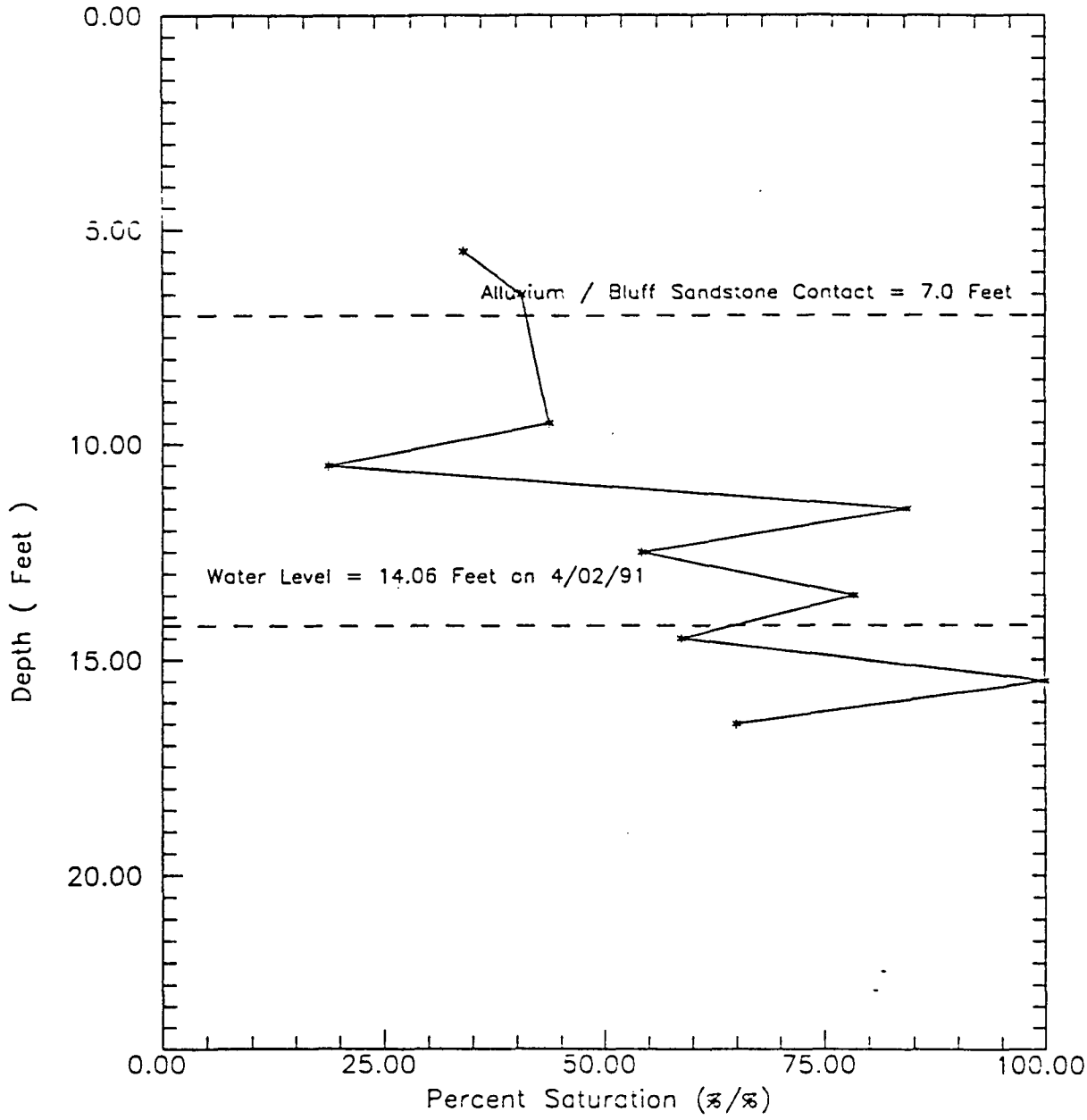
SUMMARY OF INITIAL MOISTURE CONTENT, DRY BULK DENSITY, AND POROSITY

Well #6-Pw-2

SAMPLE NUMBER	INITIAL MOISTURE CONTENT		DRY BULK DENSITY (g/cm^3)	CALCULATED POROSITY (%)	DEGREE OF SATURATION (%)
	GRAVIMETRIC (%, g/g)	VOLUMETRIC (%, cm^3/cm^3)			
5.5-6.0	10.10	14.97	1.48	44.0	34.0
6.5-7.0	8.79	14.79	1.68	36.5	40.6
9.5-10.0*	9.46	15.92	1.68	36.5	43.6
10.5-11.0*	4.06	6.84	1.68	36.5	18.7
11.5-12.0*	4.88	11.22	2.30	13.3	84.2
12.5-13.0	3.14	7.22	2.30	13.3	54.3
13.5-14.0	4.52	10.39	2.30	13.3	78.4
14.5-15.0	1.83	4.48	2.45	7.6	58.7
15.5-16.0	4.36	10.81	2.48	6.4	169.1
16.5-17.0	4.38	9.85	2.25	15.2	65.0

PRELIMINARY
Subject to revision

* Bulk density from adjacent interval; unable to measure volume.



Saturation Vs Depth for 6-PW-2

PRELIMINARY
Subject to revision

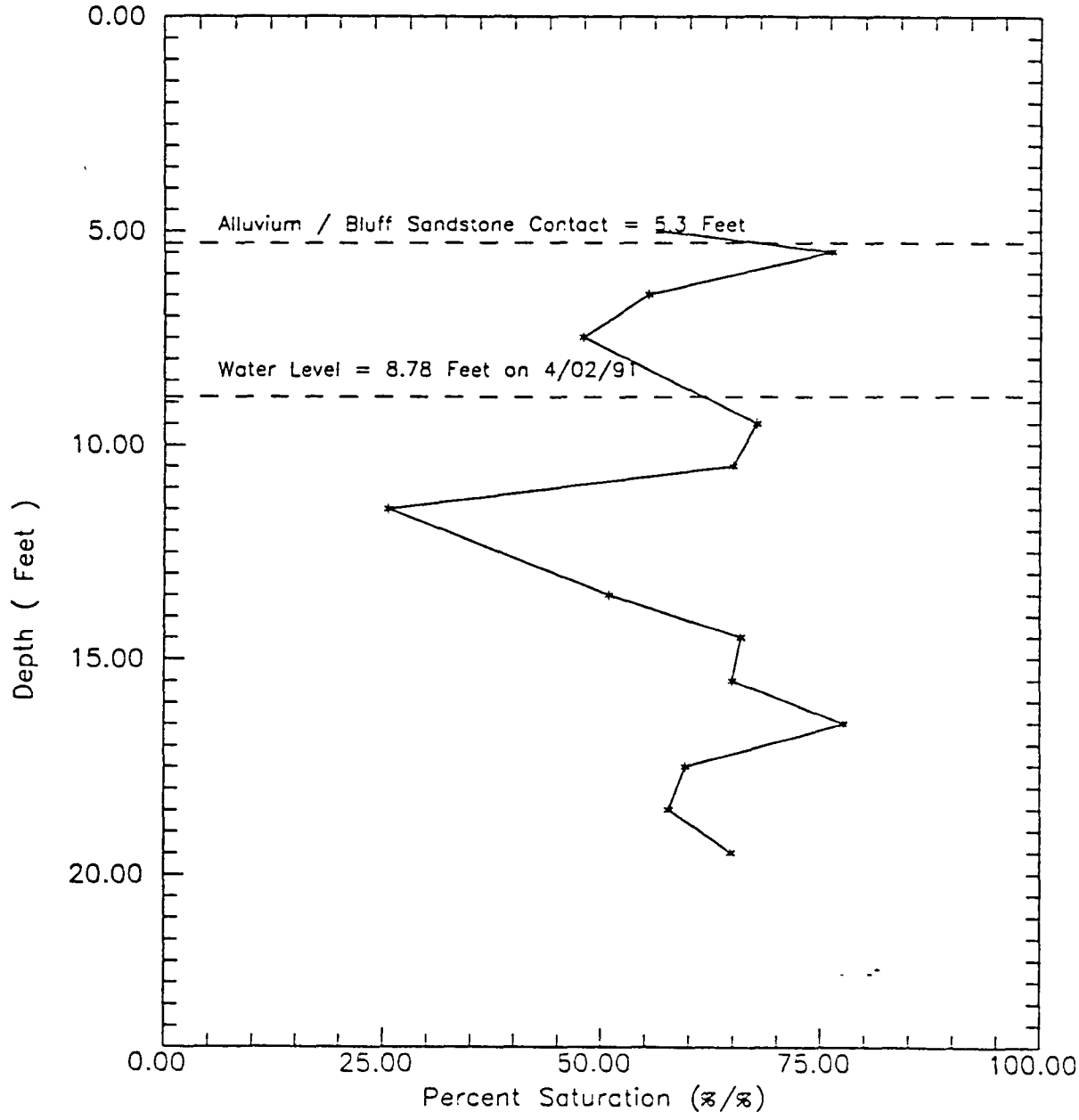
SUMMARY OF INITIAL MOISTURE CONTENT, DRY BULK DENSITY, AND POROSITY

Well #6-Pw-3

SAMPLE NUMBER	INITIAL MOISTURE CONTENT		DRY BULK DENSITY (g/cm^3)	CALCULATED POROSITY (%)	DEGREE OF SATURATION (%)
	GRAVIMETRIC (%, g/g)	VOLUMETRIC (%, cm^3/cm^3)			
5.0-5.3*	11.89	26.75	2.25	15.1	56.5
5.5-6.0*	4.87	11.04	2.27	14.5	76.2
6.5-7.0*	3.54	8.02	2.27	14.5	55.3
7.5-8.0	3.16	7.12	2.25	14.9	48.0
9.5-10.0	4.33	9.80	2.26	14.5	67.7
10.5-11.0*	4.15	9.41	2.27	14.5	64.9
11.5-12.0	1.64	3.71	2.26	14.5	25.5
13.5-14.0	5.27	10.95	2.10	21.5	50.9
14.5-15.0	4.34	9.79	2.26	14.9	65.8
15.5-16.0	4.70	10.44	2.22	16.1	64.9
16.5-17.0	5.51	12.29	2.23	15.9	77.6
17.5-18.0	5.58	11.85	2.12	19.9	59.5
18.5-19.0	5.52	11.66	2.11	20.2	57.7
19.5-20.0	5.21	11.38	2.18	17.6	64.7

PRELIMINARY
Subject to revision

* Bulk density from adjacent interval; unable to measure volume.



Saturation Vs Depth for 6-PW-3

PRELIMINARY
Subject to revision

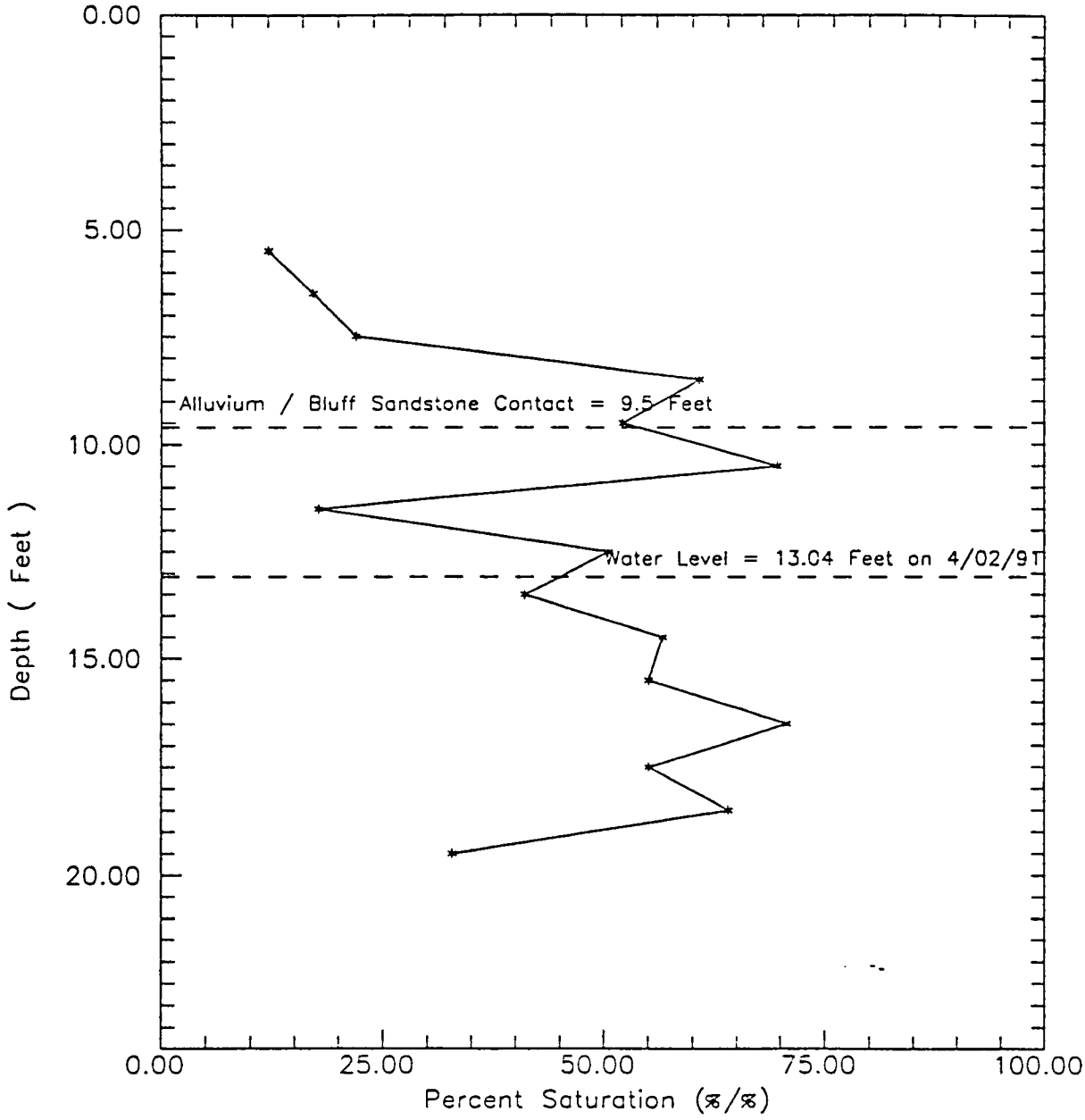
SUMMARY OF INITIAL MOISTURE CONTENT, DRY BULK DENSITY, AND POROSITY

Well #6-Pw-4

SAMPLE NUMBER	INITIAL MOISTURE CONTENT		DRY BULK DENSITY	CALCULATED POROSITY	DEGREE OF SATURATION
	GRAVIMETRIC (%, g/g)	VOLUMETRIC (%, cm^3/cm^3)	(g/cm^3)	(%)	(%)
5.5-6.0	3.38	5.11	1.51	42.9	11.9
6.5-7.0	4.18	6.72	1.61	39.4	17.0
7.5-8.0	5.75	8.99	1.56	41.0	21.9
8.5-9.0	10.83	19.49	1.80	32.1	60.7
9.5-10.0	13.51	21.23	1.57	40.7	52.1
10.5-11.0	18.64	28.90	1.55	41.5	69.6
11.5-12.0*	4.74	7.35	1.55	41.5	17.7
12.5-13.0*	5.10	10.66	2.10	21.1	50.4
13.5-14.0*	4.15	8.67	2.09	21.1	41.0
14.5-15.0	5.67	11.87	2.09	21.0	56.6
15.5-16.0*	4.60	9.97	2.17	18.1	55.0
16.5-17.0	5.85	12.71	2.17	18.0	70.7
17.5-18.0	5.07	10.80	2.13	19.6	55.0
18.5-19.0	5.45	11.78	2.16	18.4	64.0
19.5-20.0*	5.75	10.41	1.81	31.7	32.8

PRELIMINARY
Subject to revision

* Bulk density from adjacent interval; unable to measure volume.



Saturation Vs Depth for 6-PW-4

PRELIMINARY
Subject to revision

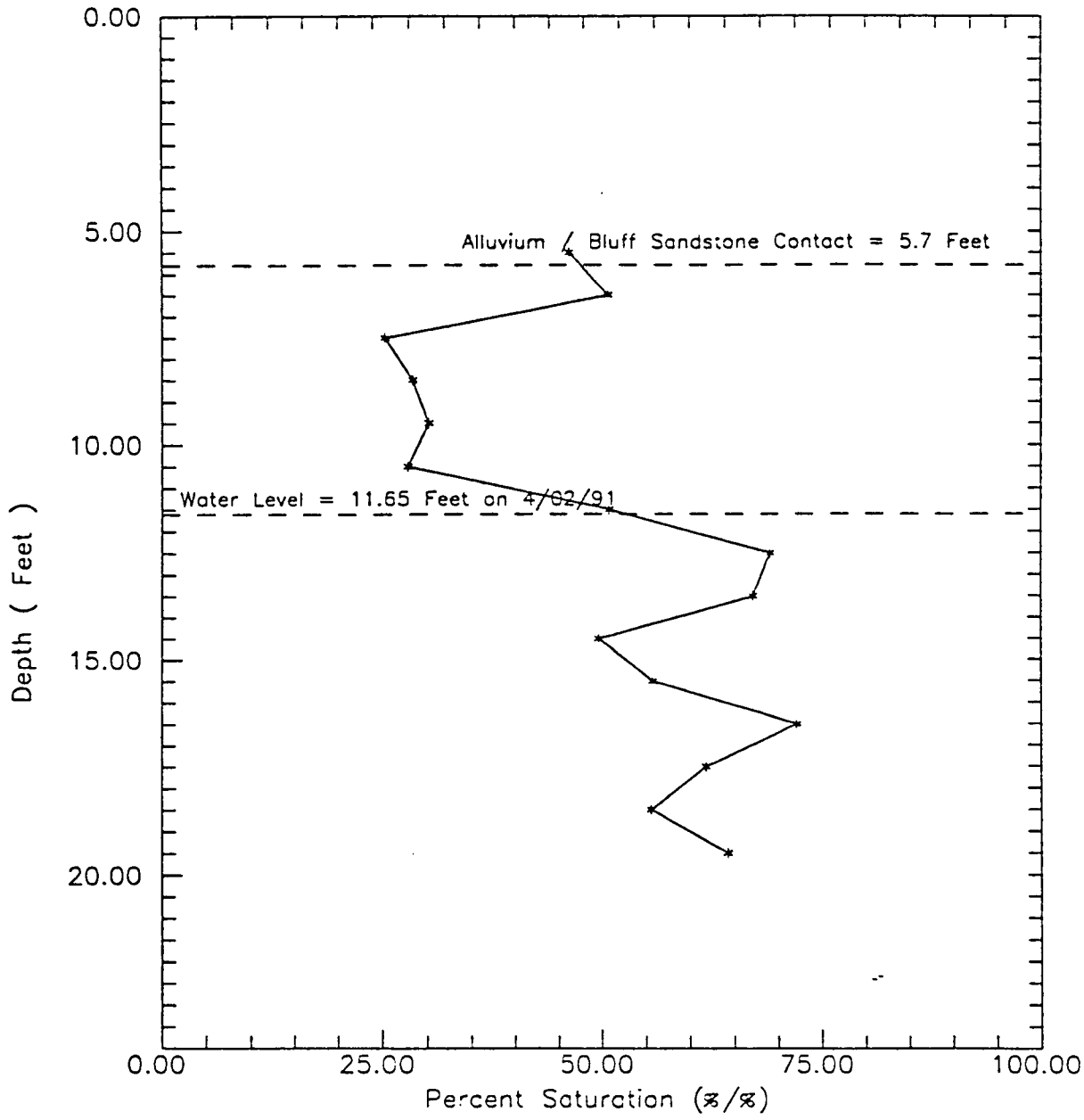
SUMMARY OF INITIAL MOISTURE CONTENT, DRY BULK DENSITY, AND POROSITY

Well #6-Pw-5

SAMPLE NUMBER	INITIAL MOISTURE CONTENT		DRY BULK DENSITY (g/cm^3)	CALCULATED POROSITY (%)	DEGREE OF SATURATION (%)
	GRAVIMETRIC (%, g/g)	VOLUMETRIC (%, cm^3/cm^3)			
5.5-6.0	10.46	17.33	1.66	37.4	146.0
6.5-7.0	8.59	15.66	1.82	31.2	50.7
7.5-8.0*	5.69	9.44	1.66	37.4	25.3
8.5-9.0*	6.38	10.59	1.66	37.4	28.3
9.5-10.0*	6.79	11.27	1.66	37.4	30.2
10.5-11.0*	6.26	10.39	1.66	37.4	27.8
11.5-12.0	3.60	8.02	2.23	15.8	50.8
12.5-13.0	5.77	12.52	2.17	18.1	69.0
13.5-14.0	5.89	12.67	2.15	18.9	67.1
14.5-15.0	4.87	10.25	2.10	20.7	49.6
15.5-16.0	5.37	11.34	2.11	20.4	55.7
16.5-17.0	5.81	12.69	2.18	17.6	72.1
17.5-18.0	5.46	11.72	2.15	19.0	61.8
18.5-19.0	5.65	11.80	2.10	21.2	55.6
19.5-20.0	5.23	11.41	2.18	17.8	64.3

PRELIMINARY
Subject to revision

* Bulk density from adjacent interval; unable to measure volume.



Saturation Vs Depth for 6-PW-5

PRELIMINARY
Subject to revision

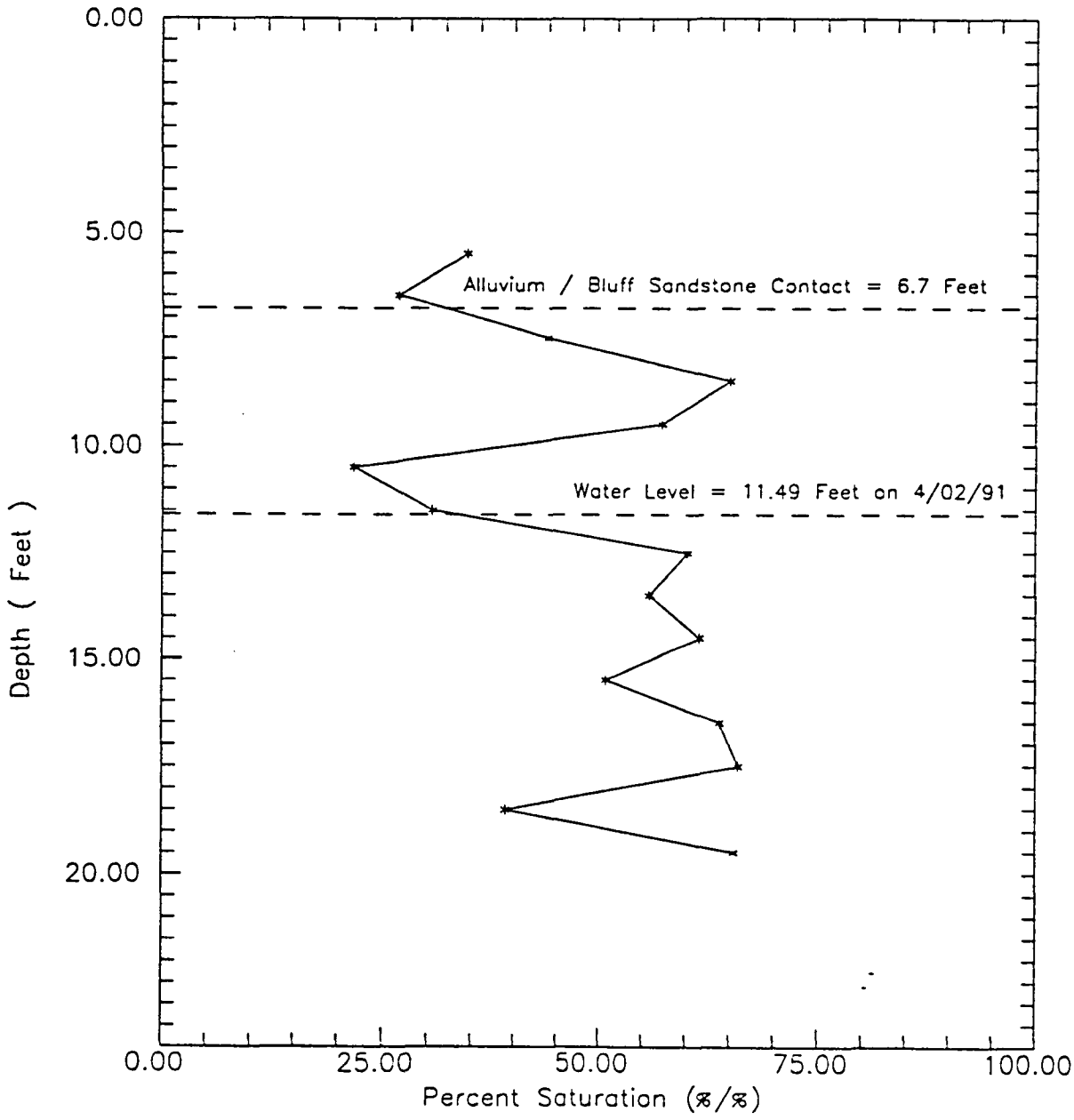
SUMMARY OF INITIAL MOISTURE CONTENT, DRY BULK DENSITY, AND POROSITY

Well #6-Pw-6

SAMPLE NUMBER	INITIAL MOISTURE CONTENT		DRY BULK DENSITY (g/cm^3)	CALCULATED POROSITY (%)	DEGREE OF SATURATION (%)
	GRAVIMETRIC (%, g/g)	VOLUMETRIC (%, cm^3/cm^3)			
5.5-6.0	9.42	1.62	1.54	42.0	34.5
6.5-7.0	5.40	1.04	1.73	34.8	26.8
7.5-8.0	1.54	3.74	2.43	8.5	43.9
8.5-9.0	3.98	9.08	2.28	14.0	65.0
9.5-10.0*	3.51	8.00	2.28	14.0	57.3
10.5-11.0	0.82	1.97	2.40	9.0	21.8
11.5-12.0*	3.29	6.79	2.06	22.3	30.5
12.5-13.0*	6.51	13.41	2.06	22.3	60.2
13.5-14.0	5.97	12.32	2.06	22.0	55.8
14.5-15.0	4.40	9.80	2.23	15.9	61.5
15.5-16.0	4.51	9.68	2.15	19.0	50.8
16.5-17.0	4.77	10.55	2.21	16.9	63.8
17.5-18.0	4.16	9.45	2.27	14.3	65.9
18.5-19.0	3.34	7.21	2.16	18.4	39.0
19.5-20.0	2.57	6.16	2.40	9.4	65.5

PRELIMINARY
Subject to revision

* Bulk density from adjacent interval; unable to measure volume.



Saturation Vs Depth for 6-PW-6

PRELIMINARY
Subject to revision

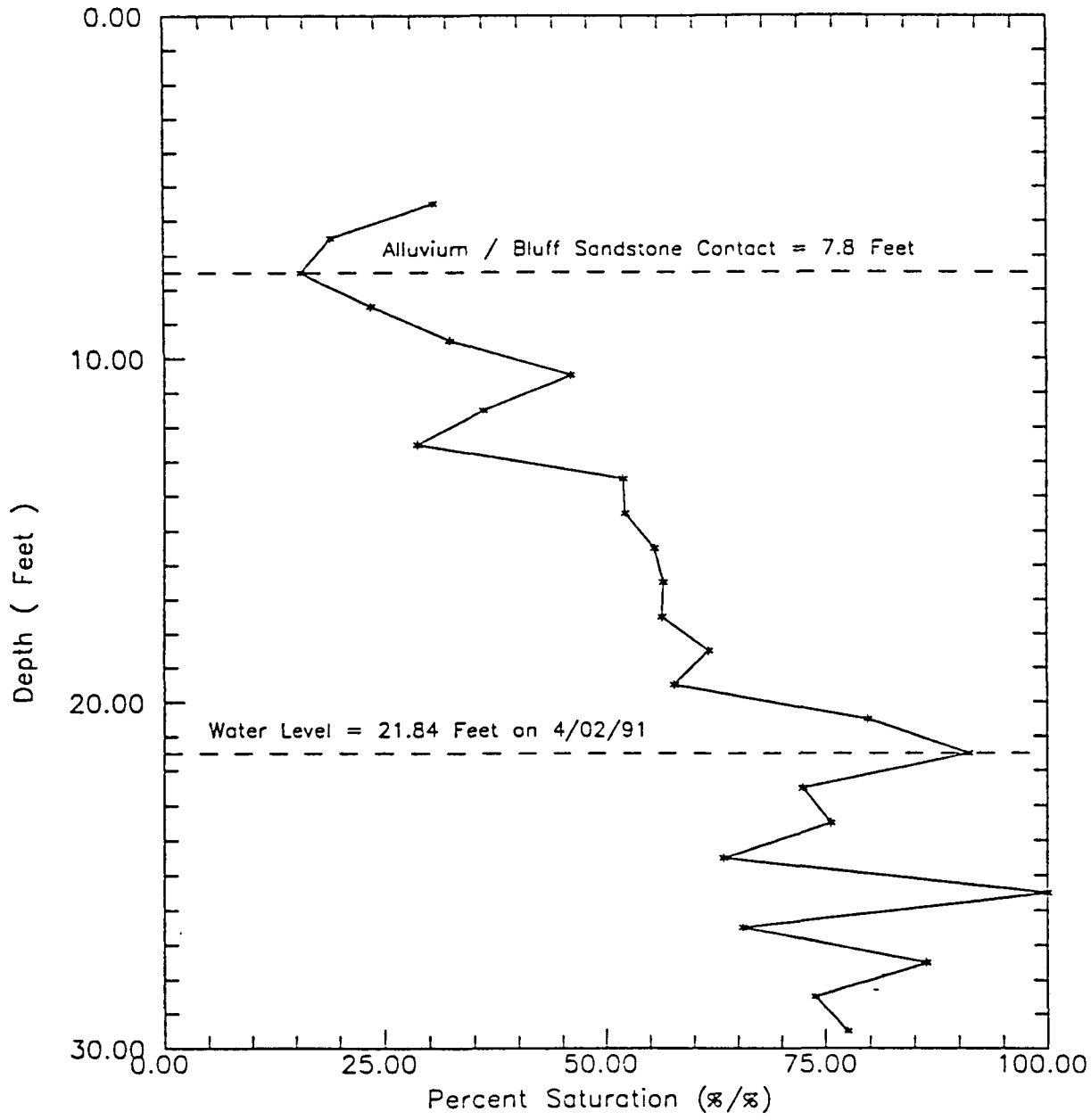
SUMMARY OF INITIAL MOISTURE CONTENT, DRY BULK DENSITY, AND POROSITY

Well #6-Pw-7

SAMPLE NUMBER	INITIAL MOISTURE CONTENT GRAVIMETRIC (%, g/g)	INITIAL MOISTURE CONTENT VOLUMETRIC (%, cm^3/cm^3)	DRY BULK DENSITY (g/cm^3)	CALCULATED POROSITY (%)	DEGREE OF SATURATION (%)
5.5-6.0	8.68	13.11	1.51	43.0	30.5
6.5-7.0	5.23	8.03	1.53	42.0	19.1
7.5-8.0	3.89	6.22	1.60	39.6	15.7
8.5-9.0	2.32	4.87	2.10	20.6	23.6
9.5-10.0	2.63	5.74	2.18	17.7	32.4
10.5-11.0	2.39	5.56	2.33	12.1	46.0
11.5-12.0	4.03	8.24	2.05	22.8	36.1
12.5-13.0	5.44	9.60	1.77	33.4	28.7
13.5-14.0	5.49	11.37	2.07	21.8	52.0
14.5-15.0	5.81	11.89	2.05	22.8	52.2
15.5-16.0	5.83	12.09	2.07	21.8	55.6
16.5-17.0	5.51	11.60	2.10	20.6	56.6
17.5-18.0	5.58	11.73	2.10	20.8	56.4
18.5-19.0	5.89	12.46	2.11	20.2	61.7
19.5-20.0	6.09	12.61	2.07	21.8	57.8
20.5-21.0	6.16	13.55	2.20	17.0	79.8
21.5-22.0*	5.31	12.21	2.30	13.4	91.1
22.5-23.0	4.24	9.74	2.30	13.4	72.5
23.5-24.0	3.97	9.24	2.33	12.2	75.7
24.5-25.0	4.43	9.91	2.24	15.6	63.4
25.5-26.0	5.62	12.92	2.32	12.5	103.7
26.5-27.0	5.12	11.25	2.20	17.1	65.6
27.5-28.0	5.11	11.71	2.29	13.6	86.4
28.5-29.0	5.40	11.98	2.22	16.2	73.9
29.5-30.0	5.95	13.11	2.20	16.9	77.5

* Bulk density from adjacent interval; unable to measure volume.

PRELIMINARY
Subject to revision



Saturation Vs Depth for 6-PW-7

PRELIMINARY
Subject to revision

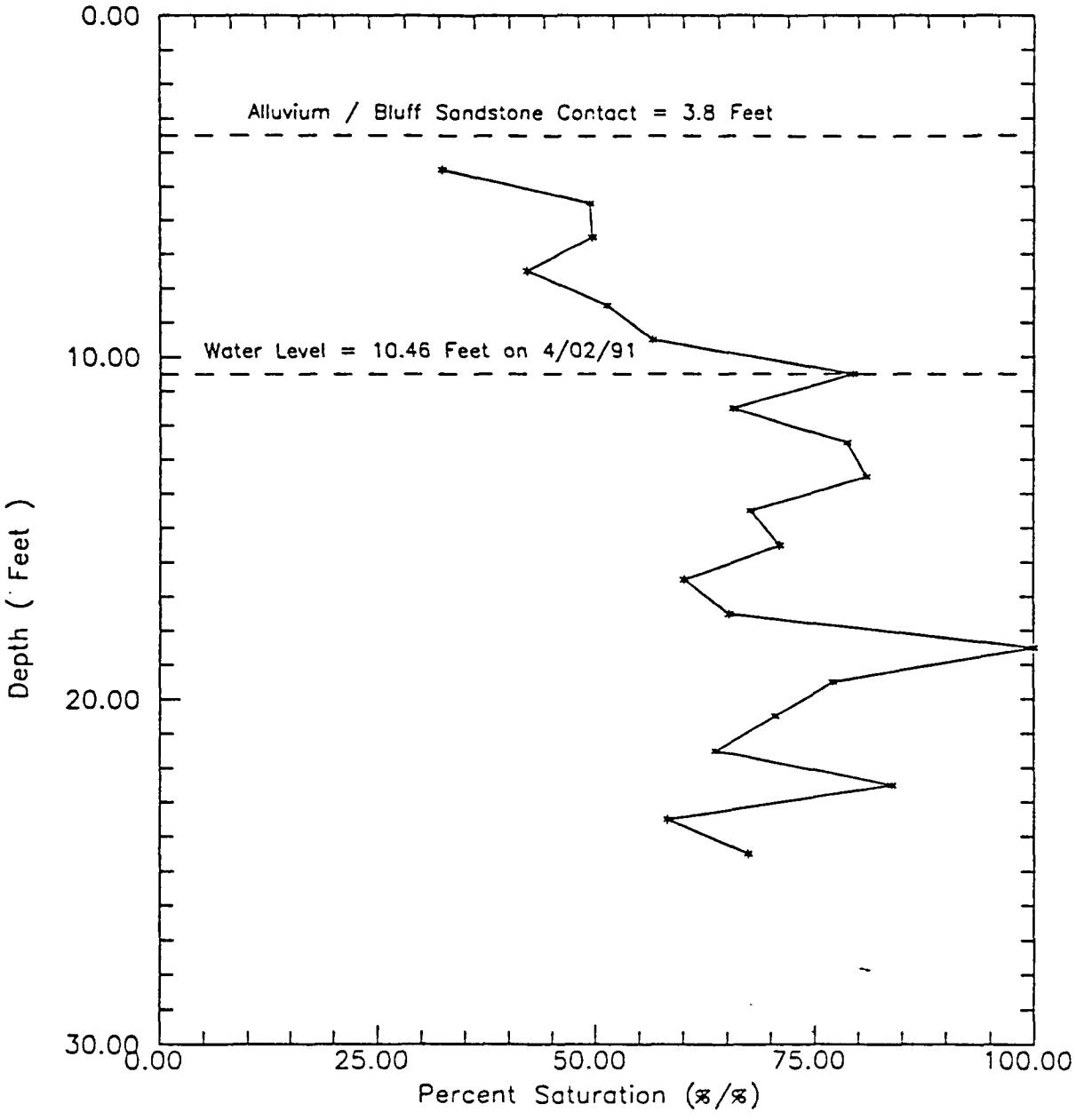
SUMMARY OF INITIAL MOISTURE CONTENT, DRY BULK DENSITY, AND POROSITY

Well #6-Pw-8

SAMPLE NUMBER	INITIAL MOISTURE CONTENT		DRY BULK DENSITY (g/cm^3)	CALCULATED POROSITY (%)	DEGREE OF SATURATION (%)
	GRAVIMETRIC (%, g/g)	VOLUMETRIC (%, cm^3/cm^3)			
4.5-5.0	4.3	8.4	1.95	25.8	32.4
5.5-6.0	5.8	11.7	2.02	23.8	49.3
6.5-7.0*	5.9	11.8	2.02	23.8	49.6
7.5-8.0	6.5	12.2	1.88	29.1	42.1
8.5-9.0	6.3	12.5	1.98	24.4	51.3
9.5-10.0	6.9	13.4	1.94	24.3	56.5
10.5-11.0	6.7	14.4	2.15	18.2	79.4
11.5-12.0	6.6	13.9	2.11	21.1	65.7
12.5-13.0	7.5	15.9	2.12	20.2	78.7
13.5-14.0	5.8	12.9	2.22	15.9	80.9
14.5-15.0	5.8	12.5	2.16	18.4	67.7
15.5-16.0	5.2	11.5	2.21	16.2	71.0
16.5-17.0	5.6	12.0	2.14	19.9	60.2
17.5-18.0	4.7	10.5	2.23	16.1	65.2
18.5-19.0	6.0	13.7	2.28	13.6	100
19.5-20.0	6.2	13.6	2.20	17.6	77.1
20.5-21.0	5.9	12.7	2.15	18.1	70.5
21.5-22.0	5.3	11.5	2.17	18.0	63.7
22.5-23.0	5.7	12.8	2.25	15.3	83.8
23.5-24.0	5.5	11.6	2.11	19.9	58.2
24.5-25.0	4.9	10.9	2.22	16.2	67.4

* Bulk density from adjacent interval; unable to measure volume.

PRELIMINARY
Subject to revision

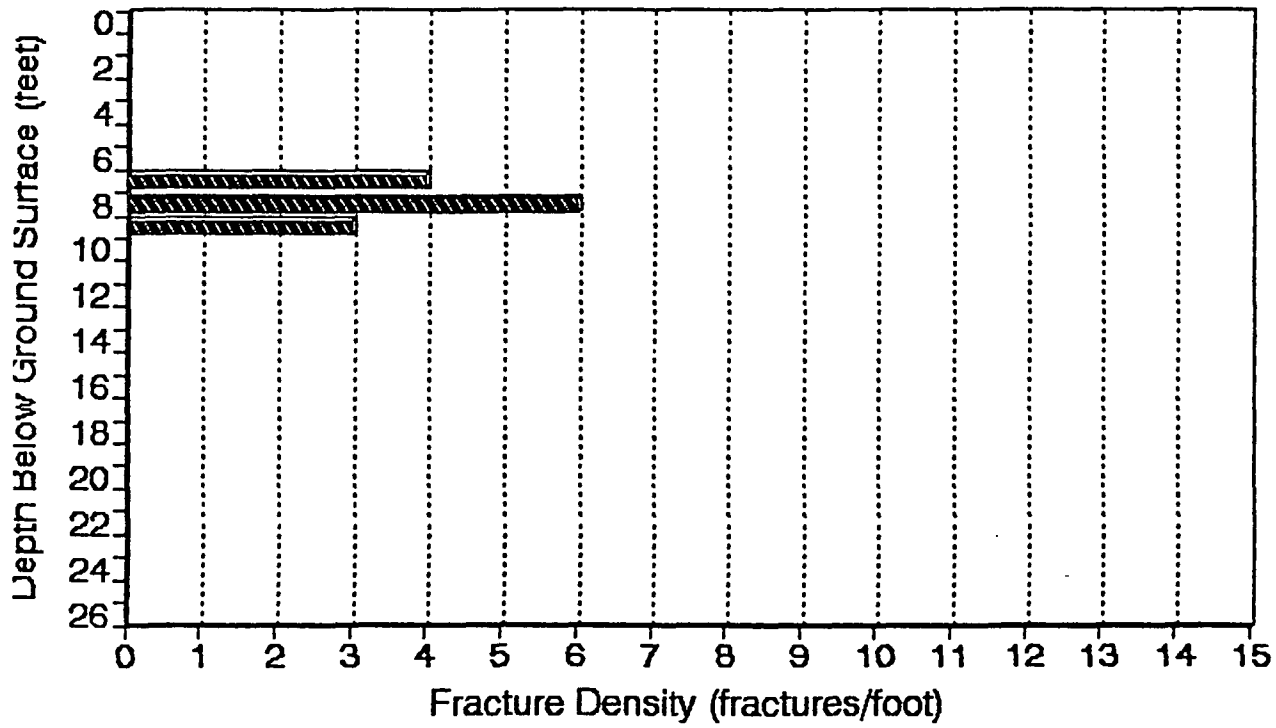


Saturation Vs Depth for 6-PW-8

PRELIMINARY
Subject to revision

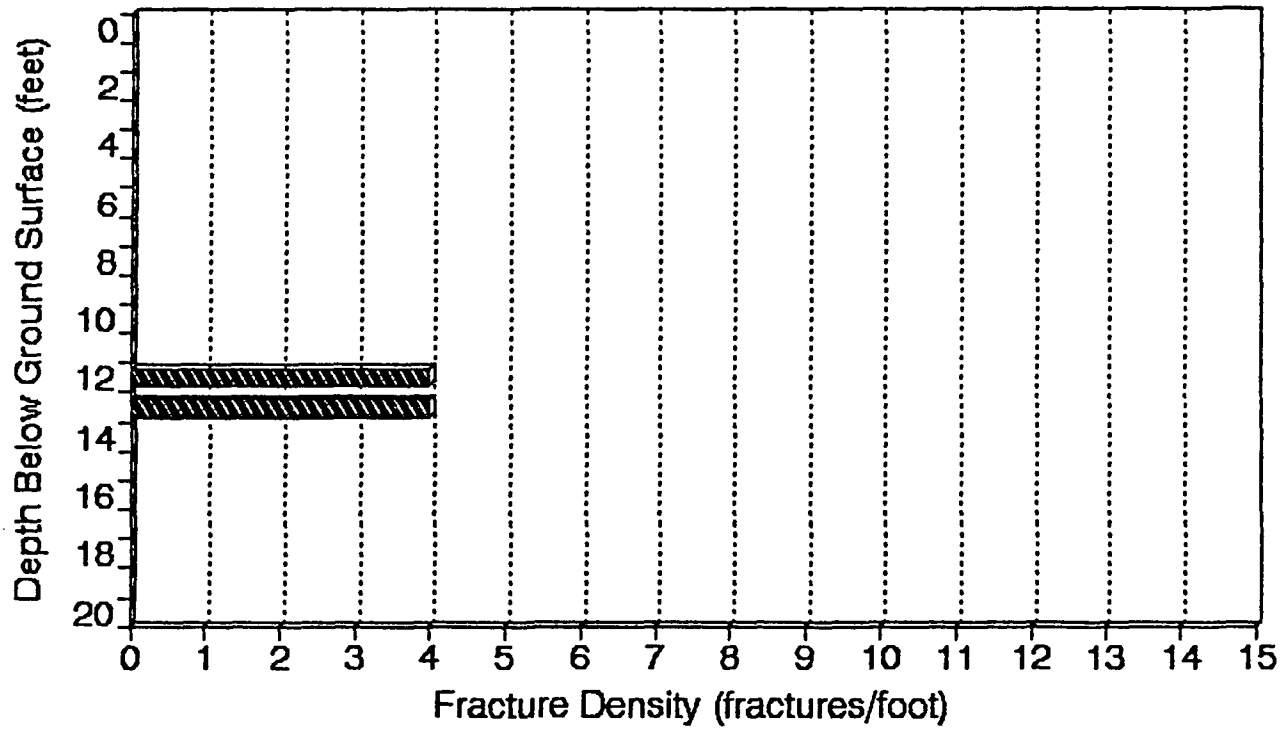
4.2
Fracture Density Data

6-PW1 Fracture Density
(fractures/foot)



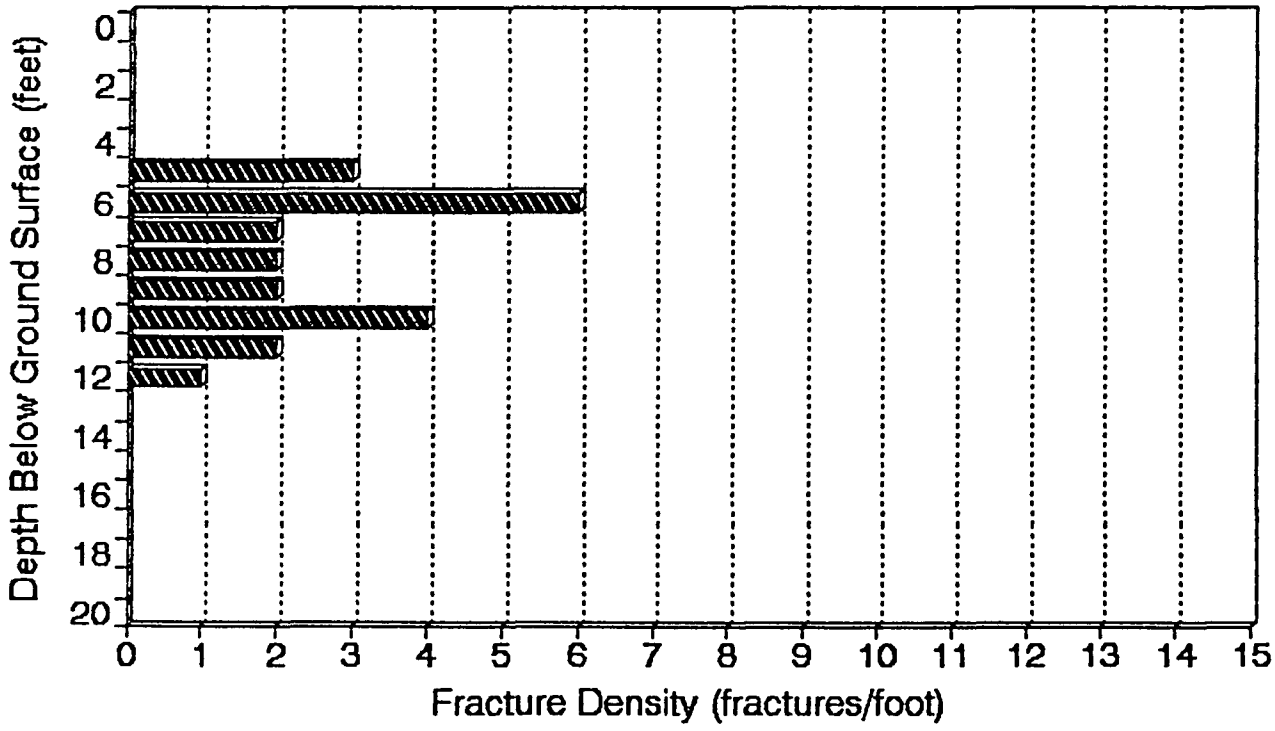
PRELIMINARY
Subject to revision

6-PW2 Fracture Density
(fractures/foot)



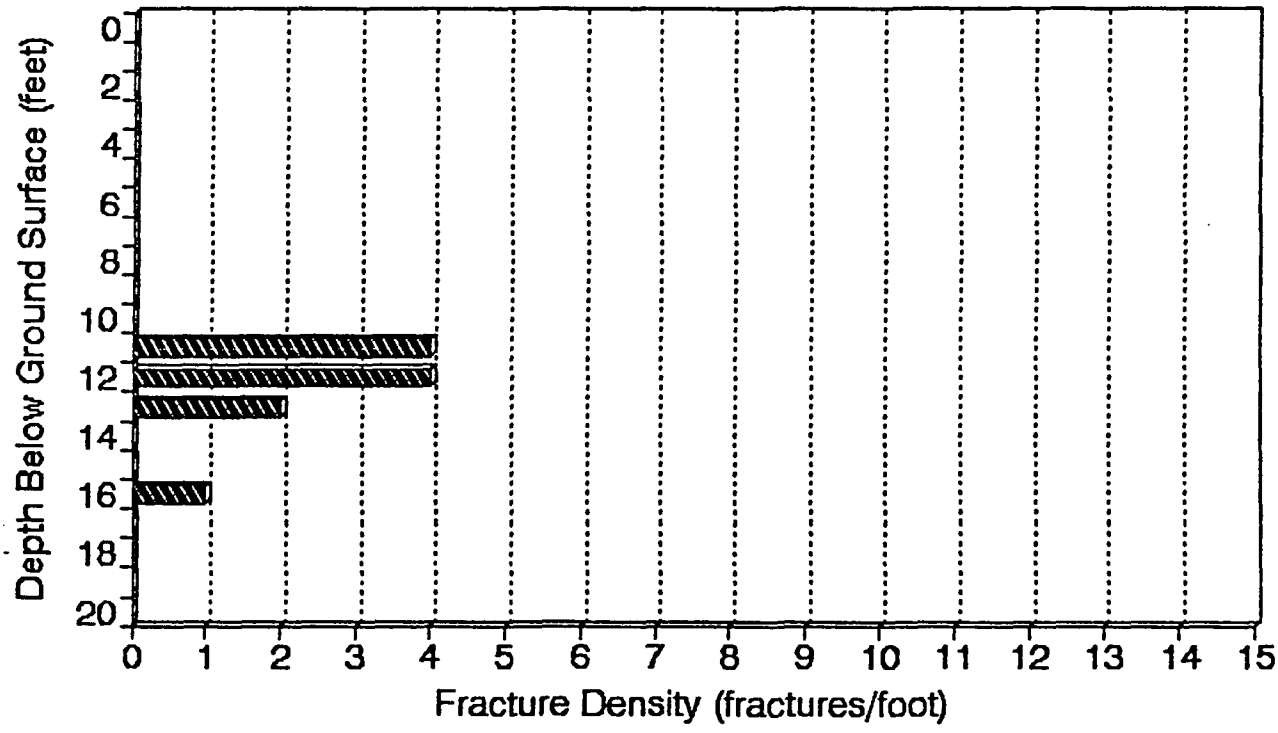
PRELIMINARY
Subject to revision

6-PW3 Fracture Density
(fractures/foot)



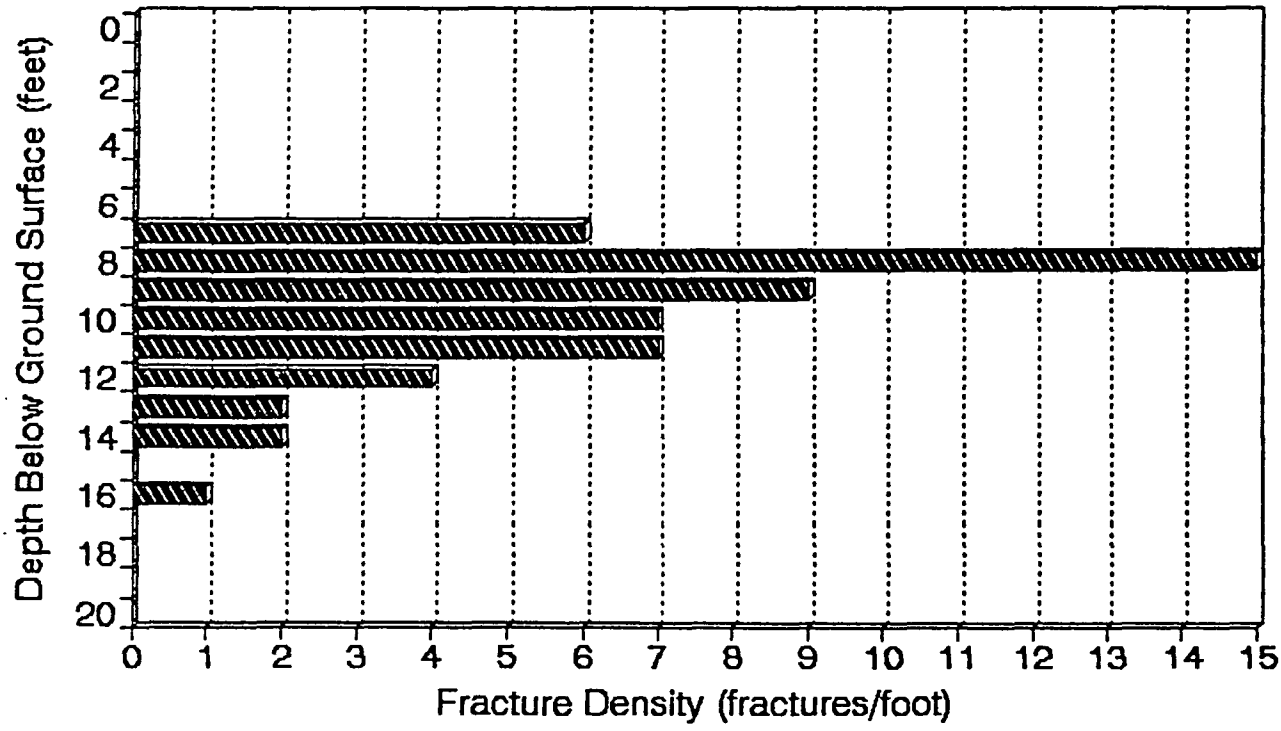
PRELIMINARY
Subject to revision

6-PW4 Fracture Density
(fractures/foot)



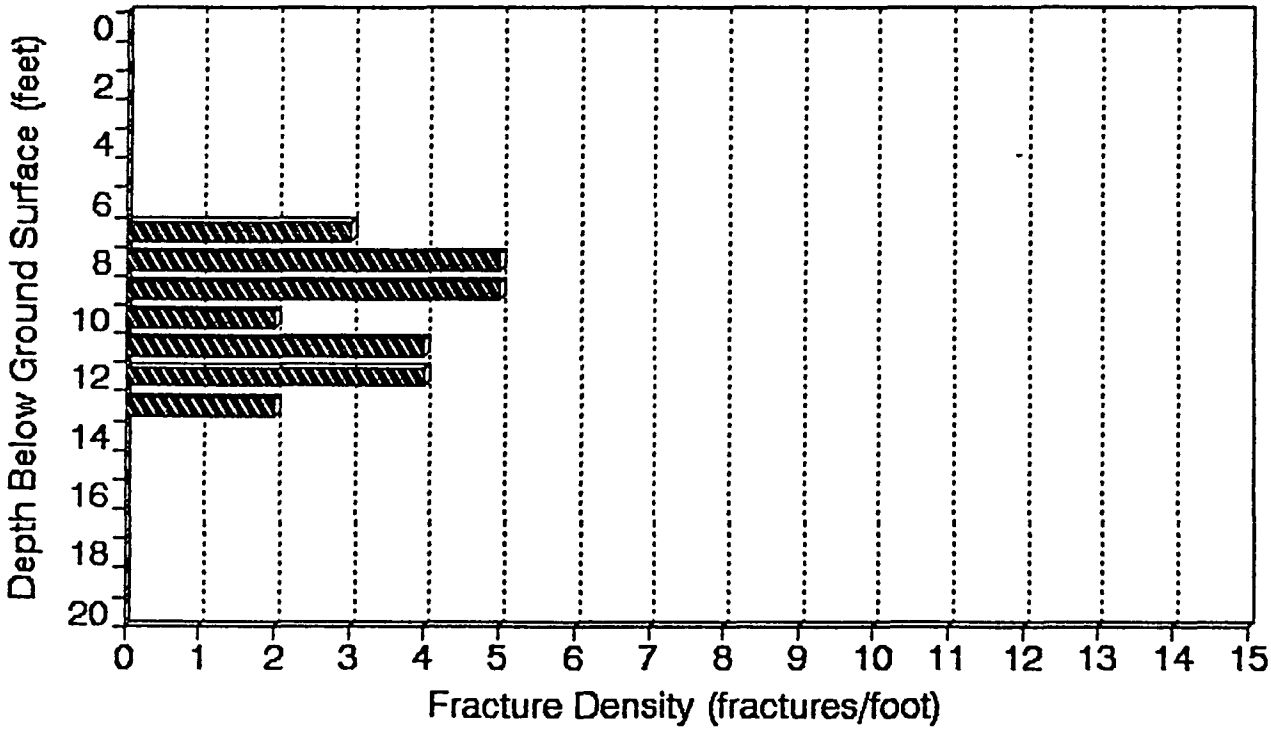
PRELIMINARY
Subject to revision

6-PW5 Fracture Density
(fractures/foot)



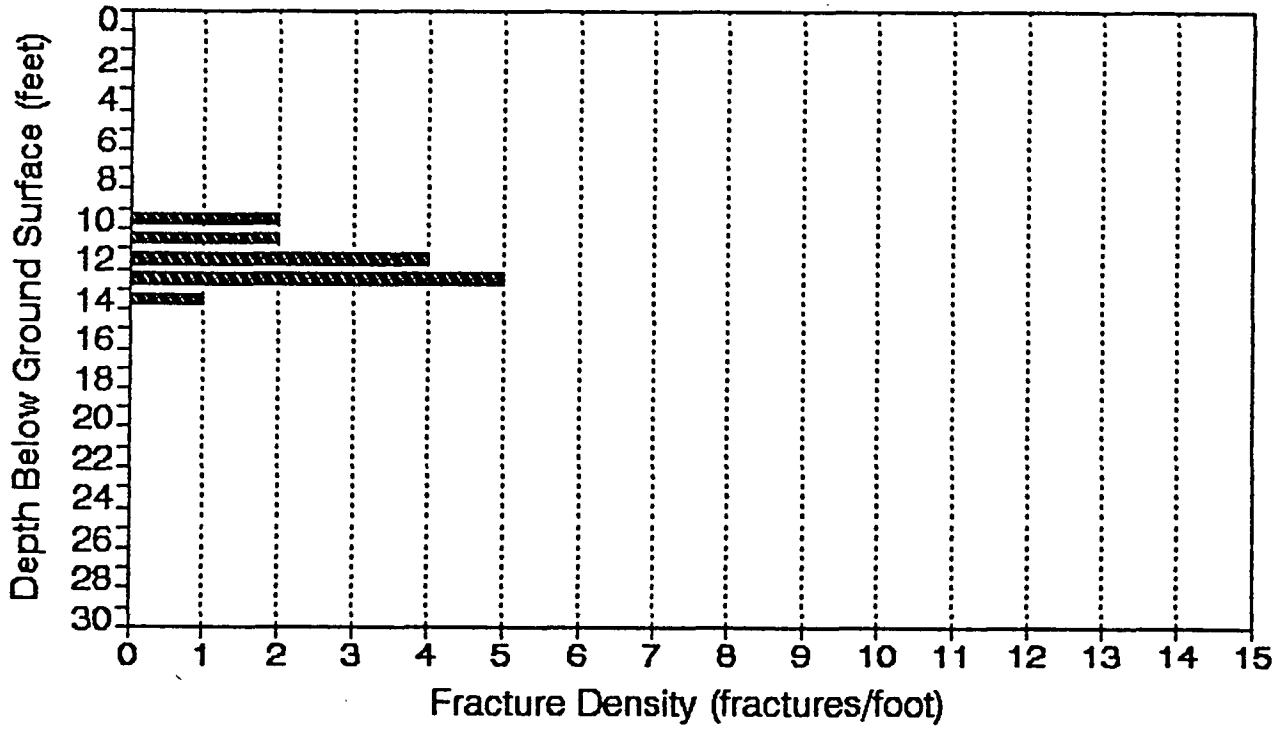
PRELIMINARY
Subject to revision

6-PW6 Fracture Density
(fractures/foot)



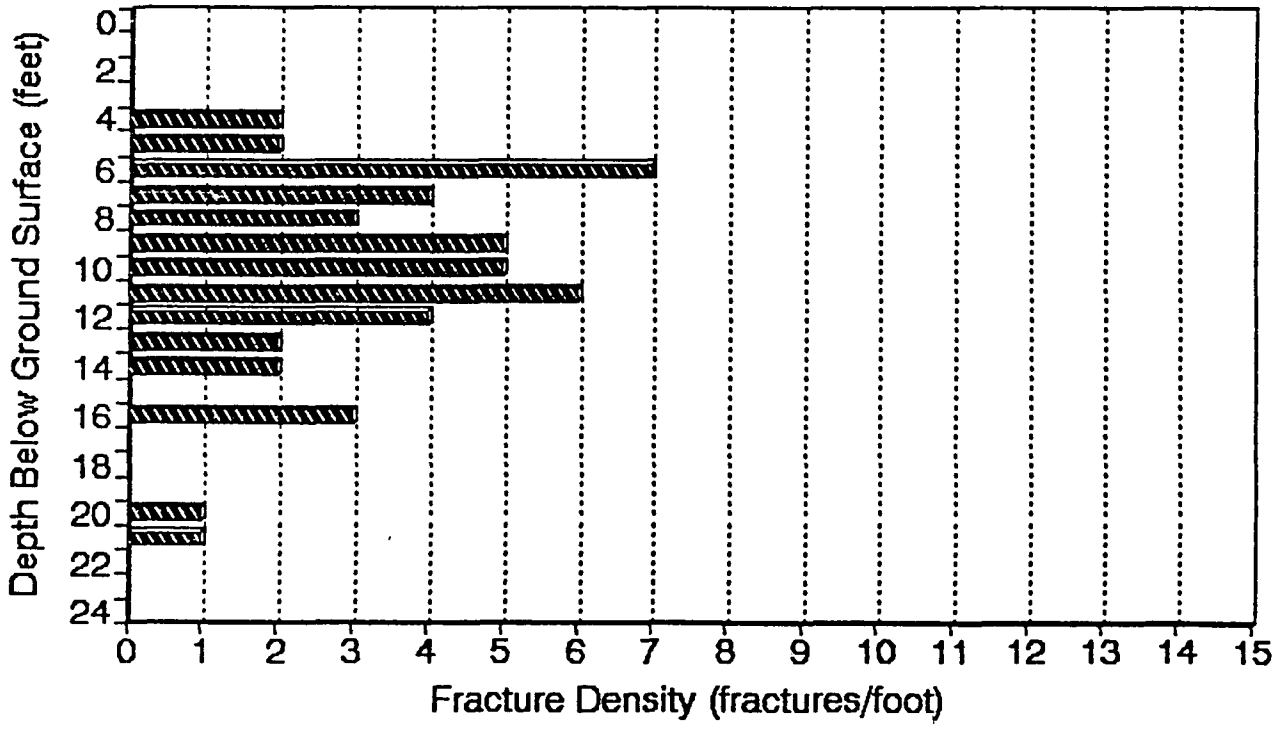
PRELIMINARY
Subject to revision

6-PW7 Fracture Density
(fractures/foot)



PRELIMINARY
Subject to revision

6-PW8 Fracture Density
(fractures/foot)



PRELIMINARY
Subject to revision

SECTION 5.0

WATER QUALITY DATA FROM SHALLOW PERCHED WATER BOREHOLES

5.1
Inorganic Geochemical Signature Data, Phase I (1/90)

Enseco
A CORNING Company

General Inorganics

Client Name: Applied Energy Company
Client ID: 6-CH-3
Lab ID: 000804-0001-SA
Matrix: AQUEOUS Sampled: 23 JAN 91 Received: 24 JAN 91
Authorized: 25 JAN 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Alkalinity, Total as CaCO3 at pH 4.5	207	mg/L	5.0	310.1	NA	31 JAN 91
Alkalinity, Bicarb. as CaCO3 at pH 4.5	207	mg/L	5.0	310.1	NA	31 JAN 91
Alkalinity, Carb. as CaCO3 at pH 8.3	ND	mg/L	5.0	310.1	NA	31 JAN 91
Alkalinity, Hydrox. as CaCO3	ND	mg/L	5.0	310.1	NA	31 JAN 91
Coliform, Fecal	ND	Col/100	2.0	909C	NA	25 JAN 91
Fluoride	2.4	mg/L	0.10	340.2	NA	29 JAN 91
Ammonia as N	3.6	mg/L	0.10	350.1	NA	04 FEB 91
Nitrate as N	0.73	mg/L	0.10	353.2	NA	02 FEB 91
pH	7.1	units		9040	NA	24 JAN 91
Sulfate	200	mg/L	100	9038	NA	29 JAN 91
Specific Conductance at 25 deg.C	1700	umhos/cm	1.0	120.1	NA	25 JAN 91
Total Dissolved Solids	993	mg/L	10.0	160.1	NA	31 JAN 91

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: Bose Lawal Approved By: David Bravo

Enseco
A CORNING Company

General Inorganics

Client Name: Applied Energy Company
Client ID: 6-CH-3
Lab ID: 000804-0001-SA
Matrix: AQUEOUS Sampled: 23 JAN 91 Received: 24 JAN 91
Authorized: 25 JAN 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Nitrite as N	0.038	mg/L	0.010	353.2	NA	25 JAN 91
Chloride	101	mg/L	3.0	9252	NA	31 JAN 91

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: Bose Lawal Approved By: David Bravo

Enseco
A CORNING Company

Metals

Total Metals

Client Name: Applied Energy Company
Client ID: 6-CH-3
Lab ID: 000806-0004-SA
Matrix: AQUEOUS Sampled: 24 JAN 91 Received: 25 JAN 91
Authorized: 25 JAN 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Calcium	49.6	mg/L	0.20	6010	05 FEB 91	07 FEB 91
Iron	6.7	mg/L	0.10	6010	05 FEB 91	07 FEB 91
Magnesium	15.9	mg/L	0.20	6010	05 FEB 91	07 FEB 91
Manganese	0.31	mg/L	0.010	6010	05 FEB 91	07 FEB 91
Potassium	ND	mg/L	5.0	6010	05 FEB 91	07 FEB 91
Sodium	257	mg/L	5.0	6010	05 FEB 91	07 FEB 91

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: David Bravo Approved By: Kurt Ill

Enseco
A CORNING Company

General Inorganics

Client Name: Applied Energy Company
Client ID: 6-CH-4
Lab ID: 000806-0001-SA
Matrix: AQUEOUS Sampled: 24 JAN 91 Received: 25 JAN 91
Authorized: 25 JAN 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Alkalinity, Total as CaCO3 at pH 4.5	1210	mg/L	5.0	310.1	NA	31 JAN 91
Alkalinity, Bicarb. as CaCO3 at pH 4.5	ND	mg/L	5.0	310.1	NA	31 JAN 91
Alkalinity, Carb. as CaCO3 at pH 8.3	140	mg/L	5.0	310.1	NA	31 JAN 91
Alkalinity, Hydrox. as CaCO3	1070	mg/L	5.0	310.1	NA	31 JAN 91
Coliform, Fecal	ND	Col/100	2.0	909C	NA	26 JAN 91
Fluoride	0.40	mg/L	0.10	340.2	NA	29 JAN 91
Ammonia as N	0.35	mg/L	0.10	350.1	NA	04 FEB 91
Nitrate as N	9.5	mg/L	0.50	353.2	NA	02 FEB 91
Orthophosphate as P	ND	mg/L	0.050	365.3	NA	25 JAN 91
pH	12.2	units		9040	NA	25 JAN 91
Sulfate	200	mg/L	50.0	9038	NA	29 JAN 91
Specific Conductance at 25 deg.C	6150	umhos/cm	1.0	120.1	NA	02 FEB 91
Total Dissolved Solids	2510	mg/L	10.0	160.1	NA	31 JAN 91

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: Bose Lawal

Approved By: David Bravo

Enseco
A CORNING Company

General Inorganics

Client Name: Applied Energy Company
Client ID: 6-CH-4
Lab ID: 000806-0001-SA
Matrix: AQUEOUS Sampled: 24 JAN 91 Received: 25 JAN 91
Authorized: 25 JAN 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Nitrite as N	0.032	mg/L	0.010	353.2	NA	25 JAN 91
Chloride	372	mg/L	30.0	9252	NA	31 JAN 91

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: Bose Lawal

Approved By: David Bravo

Enseco
A CORNING Company

Metals

Total Metals

Client Name: Applied Energy Company
Client ID: 6-CH-4
Lab ID: 000806-0001-SA
Matrix: AQUEOUS Sampled: 24 JAN 91 Received: 25 JAN 91
Authorized: 25 JAN 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Calcium	211	mg/L	0.20	6010	05 FEB 91	07 FEB 91
Iron	ND	mg/L	0.10	6010	05 FEB 91	07 FEB 91
Magnesium	ND	mg/L	0.20	6010	05 FEB 91	07 FEB 91
Manganese	ND	mg/L	0.010	6010	05 FEB 91	07 FEB 91
Potassium	208	mg/L	5.0	6010	05 FEB 91	07 FEB 91
Sodium	566	mg/L	5.0	6010	05 FEB 91	07 FEB 91

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: David Bravo Approved By: Kurt Ill

Enseco
A CORNING Company

General Inorganics

Client Name: Applied Energy Company
Client ID: 6-CH-5
Lab ID: 000806-0003-SA
Matrix: AQUEOUS Sampled: 24 JAN 91 Received: 25 JAN 91
Authorized: 25 JAN 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Alkalinity, Total as CaCO3 at pH 4.5	521	mg/L	5.0	310.1	NA	31 JAN 91
Alkalinity, Bicarb. as CaCO3 at pH 4.5	521	mg/L	5.0	310.1	NA	31 JAN 91
Alkalinity, Carb. as CaCO3 at pH 8.3	ND	mg/L	5.0	310.1	NA	31 JAN 91
Alkalinity, Hydrox. as CaCO3	ND	mg/L	5.0	310.1	NA	31 JAN 91
Coliform, Fecal	ND	Col/100	2.0	909C	NA	26 JAN 91
Fluoride	0.58	mg/L	0.10	340.2	NA	29 JAN 91
Ammonia as N	0.61	mg/L	0.10	350.1	NA	04 FEB 91
Nitrate as N	ND	mg/L	0.10	353.2	NA	02 FEB 91
Orthophosphate as P	0.22	mg/L	0.050	365.3	NA	25 JAN 91
pH	7.9	units		9040	NA	25 JAN 91
Sulfate	1350	mg/L	300	9038	NA	29 JAN 91
Specific Conductance at 25 deg.C	5240	umhos/cm	1.0	120.1	NA	25 JAN 91
Total Dissolved Solids	3520	mg/L	10.0	160.1	NA	31 JAN 91

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: Bose Lawal Approved By: David Bravo

Enseco
A CORNING Company

General Inorganics

Client Name: Applied Energy Company
Client ID: 6-CH-5
Lab ID: 000806-0003-SA
Matrix: AQUEOUS Sampled: 24 JAN 91 Received: 25 JAN 91
Authorized: 25 JAN 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Nitrite as N	ND	mg/L	0.010	353.2	NA	25 JAN 91
Chloride	397	mg/L	200	9252	NA	31 JAN 91

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: Bose Lawal

Approved By: David Bravo

Enseco
A CORNING Company

Metals

Total Metals

Client Name: Applied Energy Company
Client ID: 6-CH-5
Lab ID: 000806-0003-SA
Matrix: AQUEOUS Sampled: 24 JAN 91 Received: 25 JAN 91
Authorized: 25 JAN 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Calcium	86.4	mg/L	0.40	6010	05 FEB 91	07 FEB 91
Iron	ND	mg/L	0.20	6010	05 FEB 91	07 FEB 91
Magnesium	27.1	mg/L	0.40	6010	05 FEB 91	07 FEB 91
Manganese	0.056	mg/L	0.020	6010	05 FEB 91	07 FEB 91
Potassium	ND	mg/L	10.0	6010	05 FEB 91	07 FEB 91
Sodium	1010	mg/L	10.0	6010	05 FEB 91	07 FEB 91

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: David Bravo Approved By: Kurt Ill

Enseco
A CORNING Company

General Inorganics

Client Name: Applied Energy Company
Client ID: Water Tank
Lab ID: 000806-0002-SA
Matrix: AQUEOUS Sampled: 24 JAN 91 Received: 25 JAN 91
Authorized: 25 JAN 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Alkalinity, Total as CaCO3 at pH 4.5	121	mg/L	5.0	310.1	NA	31 JAN 91
Alkalinity, Bicarb. as CaCO3 at pH 4.5	121	mg/L	5.0	310.1	NA	31 JAN 91
Alkalinity, Carb. as CaCO3 at pH 8.3	ND	mg/L	5.0	310.1	NA	31 JAN 91
Alkalinity, Hydrox. as CaCO3	ND	mg/L	5.0	310.1	NA	31 JAN 91
Coliform, Fecal	ND	Col/100	2.0	909C	NA	26 JAN 91
Fluoride	0.34	mg/L	0.10	340.2	NA	29 JAN 91
Ammonia as N	ND	mg/L	0.10	350.1	NA	04 FEB 91
Nitrate as N	1.5	mg/L	0.10	353.2	NA	02 FEB 91
Orthophosphate as P	ND	mg/L	0.050	365.3	NA	25 JAN 91
pH	7.7	units		9040	NA	25 JAN 91
Sulfate	31.0	mg/L	5.0	9038	NA	29 JAN 91
Specific Conductance at 25 deg.C	362	umhos/cm	1.0	120.1	NA	25 JAN 91
Total Dissolved Solids	211	mg/L	10.0	160.1	NA	31 JAN 91

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: Bose Lawal Approved By: David Bravo

General Inorganics

Client Name: Applied Energy Company
Client ID: Water Tank
Lab ID: 000806-0002-SA
Matrix: AQUEOUS Sampled: 24 JAN 91 Received: 25 JAN 91
Authorized: 25 JAN 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Nitrite as N	ND	mg/L	0.010	353.2	NA	25 JAN 9
Chloride	10.9	mg/L	3.0	9252	NA	31 JAN 9

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: Bose Lawal Approved By: David Bravo

Ensec
A CORNING Co

Metals

Total Metals

Client Name: Applied Energy Company
Client ID: Water Tank
Lab ID: 000806-0002-SA
Matrix: AQUEOUS Sampled: 24 JAN 91 Received: 25 JAN 91
Authorized: 25 JAN 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Calcium	41.1	mg/L	0.20	6010	05 FEB 91	07 FEB 91
Iron	ND	mg/L	0.10	6010	05 FEB 91	07 FEB 91
Magnesium	8.9	mg/L	0.20	6010	05 FEB 91	07 FEB 91
Manganese	ND	mg/L	0.010	6010	05 FEB 91	07 FEB 91
Potassium	ND	mg/L	5.0	6010	05 FEB 91	07 FEB 91
Sodium	21.2	mg/L	5.0	6010	05 FEB 91	07 FEB 91

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: David Bravo Approved By: Kurt Ill

5.2
Inorganic Geochemical Signature Data, Phase II (3/90)

Enseco
A Corning Comp

General Inorganics

Client Name: Applied Energy Company
Client ID: PW 6-3
Lab ID: 000995-0005-SA
Matrix: AQUEOUS Sampled: 20 MAR 91 Received: 21 MAR 91
Authorized: 21 MAR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Alkalinity, Total as CaCO3 at pH 4.5	524	mg/L	5.0	310.1	NA	02 APR 91
Alkalinity, Bicarb. as CaCO3 at pH 4.5	524	mg/L	5.0	310.1	NA	02 APR 91
Alkalinity, Carb. as CaCO3 at pH 8.3	ND	mg/L	5.0	310.1	NA	02 APR 91
Alkalinity, Hydrox. as CaCO3	ND	mg/L	5.0	310.1	NA	02 APR 91
Coliform, Total	ND	Col/100	2.0	9132	NA	22 MAR 91
Fluoride	3.3	mg/L	0.10	340.2	NA	01 APR 91
Ammonia as N	ND	mg/L	0.10	350.1	NA	27 MAR 91
Nitrate as N	0.88	mg/L	0.50	353.2	NA	29 MAR 91
pH	7.1	units		9040	NA	21 MAR 91
Sulfate	115	mg/L	30.0	9038	NA	04 APR 91
Specific Conductance at 25 deg.C	1230	umhos/cm	1.0	120.1	NA	21 MAR 91
Total Dissolved Solids	838	mg/L	10.0	160.1	NA	26 MAR 91

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: Bose Lawal

Approved By: Karen Helgerson

Enseco
A Corning Company

ICP METALS

Client Name: Applied Energy Company
Client ID: PW 6-3
Lab ID: 000995-0005-SA
Matrix: AQUEOUS Sampled: 20 MAR 91 Received: 21 MAR 91
Authorized: 21 MAR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Aluminum	0.35	mg/L	0.10	6010	27 MAR 91	29 MAR 91
Antimony	ND	mg/L	0.060	6010	27 MAR 91	29 MAR 91
Barium	0.14	mg/L	0.010	6010	27 MAR 91	29 MAR 91
Beryllium	ND	mg/L	0.0020	6010	27 MAR 91	29 MAR 91
Cadmium	ND	mg/L	0.0050	6010	27 MAR 91	29 MAR 91
Calcium	89.8	mg/L	0.20	6010	27 MAR 91	29 MAR 91
Chromium	ND	mg/L	0.010	6010	27 MAR 91	29 MAR 91
Cobalt	ND	mg/L	0.010	6010	27 MAR 91	29 MAR 91
Copper	ND	mg/L	0.020	6010	27 MAR 91	29 MAR 91
Iron	0.21	mg/L	0.10	6010	27 MAR 91	29 MAR 91
Lead	ND	mg/L	0.050	6010	27 MAR 91	29 MAR 91
Magnesium	51.2	mg/L	0.20	6010	27 MAR 91	29 MAR 91
Manganese	0.26	mg/L	0.010	6010	27 MAR 91	29 MAR 91
Molybdenum	ND	mg/L	0.020	6010	27 MAR 91	29 MAR 91
Nickel	ND	mg/L	0.040	6010	27 MAR 91	29 MAR 91
Potassium	ND	mg/L	5.0	6010	27 MAR 91	29 MAR 91
Silver	ND	mg/L	0.010	6010	27 MAR 91	29 MAR 91
Sodium	122	mg/L	5.0	6010	27 MAR 91	29 MAR 91
Vanadium	ND	mg/L	0.010	6010	27 MAR 91	29 MAR 91
Zinc	0.027	mg/L	0.020	6010	27 MAR 91	29 MAR 91

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: David Bravo Approved By: Bose Lawal

Enseco
A Corning Company

General Inorganics

Client Name: Applied Energy Company
Client ID: PW 6-3
Lab ID: 000995-0005-SA
Matrix: AQUEOUS Sampled: 20 MAR 91 Received: 21 MAR 91
Authorized: 21 MAR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Nitrite as N	ND	mg/L	0.010	354.1	NA	22 MAR 91
Chloride	ND	mg/L	3.0	9252	NA	25 MAR 91

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: Bose Lawal Approved By: Karen Helgerson

Enseco
A Corning Company

ICP METALS

Client Name: Applied Energy Company
Client ID: PW 6-4
Lab ID: 000995-0004-SA
Matrix: AQUEOUS Sampled: 20 MAR 91 Received: 21 MAR 91
Authorized: 21 MAR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Aluminum	0.51	mg/L	0.10	6010	27 MAR 91	29 MAR 91
Antimony	ND	mg/L	0.060	6010	27 MAR 91	29 MAR 91
Barium	0.11	mg/L	0.010	6010	27 MAR 91	29 MAR 91
Beryllium	ND	mg/L	0.0020	6010	27 MAR 91	29 MAR 91
Cadmium	ND	mg/L	0.0050	6010	27 MAR 91	29 MAR 91
Calcium	99.7	mg/L	0.20	6010	27 MAR 91	29 MAR 91
Chromium	ND	mg/L	0.010	6010	27 MAR 91	29 MAR 91
Cobalt	ND	mg/L	0.010	6010	27 MAR 91	29 MAR 91
Copper	ND	mg/L	0.020	6010	27 MAR 91	29 MAR 91
Iron	0.30	mg/L	0.10	6010	27 MAR 91	29 MAR 91
Lead	ND	mg/L	0.050	6010	27 MAR 91	29 MAR 91
Magnesium	30.9	mg/L	0.20	6010	27 MAR 91	29 MAR 91
Manganese	0.11	mg/L	0.010	6010	27 MAR 91	29 MAR 91
Molybdenum	ND	mg/L	0.020	6010	27 MAR 91	29 MAR 91
Nickel	ND	mg/L	0.040	6010	27 MAR 91	29 MAR 91
Potassium	ND	mg/L	5.0	6010	27 MAR 91	29 MAR 91
Silver	ND	mg/L	0.010	6010	27 MAR 91	29 MAR 91
Sodium	113	mg/L	5.0	6010	27 MAR 91	29 MAR 91
Vanadium	ND	mg/L	0.010	6010	27 MAR 91	29 MAR 91
Zinc	ND	mg/L	0.020	6010	27 MAR 91	29 MAR 91

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: David Bravo Approved By: Bose Lawal

Enseco
A Corning Company

General Inorganics

Client Name: Applied Energy Company
Client ID: PW 6-4
Lab ID: 000995-0004-SA
Matrix: AQUEOUS Sampled: 20 MAR 91 Received: 21 MAR 91
Authorized: 21 MAR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Alkalinity, Total as CaCO3 at pH 4.5	424	mg/L	5.0	310.1	NA	02 APR 91
Alkalinity, Bicarb. as CaCO3 at pH 4.5	424	mg/L	5.0	310.1	NA	02 APR 91
Alkalinity, Carb. as CaCO3 at pH 8.3	ND	mg/L	5.0	310.1	NA	02 APR 91
Alkalinity, Hydrox. as CaCO3	ND	mg/L	5.0	310.1	NA	02 APR 91
Coliform, Total	ND	Col/100	2.0	9132	NA	22 MAR 91
Fluoride	1.3	mg/L	0.10	340.2	NA	01 APR 91
Ammonia as N	ND	mg/L	0.10	350.1	NA	27 MAR 91
Nitrate as N	27.0	mg/L	1.0	353.2	NA	29 MAR 91
pH	7.3	units		9040	NA	21 MAR 91
Sulfate	16.0	mg/L	5.0	9038	NA	03 APR 91
Specific Conductance at 25 deg.C	1180	umhos/cm	1.0	120.1	NA	21 MAR 91
Total Dissolved Solids	804	mg/L	10.0	160.1	NA	26 MAR 91

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: Bose Lawal Approved By: Karen Helgerson

General Inorganics

Client Name: Applied Energy Company
Client ID: PW 6-4
Lab ID: 000995-0004-SA
Matrix: AQUEOUS Sampled: 20 MAR 91 Received: 21 MAR 91
Authorized: 21 MAR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Nitrite as N	ND	mg/L	0.010	354.1	NA	22 MAR 91
Chloride	ND	mg/L	3.0	9252	NA	25 MAR 91

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: Bose Lawal

Approved By: Karen Helgerson

Enseco
A Corning Company

ICP METALS

Client Name: Applied Energy Company
Client ID: PW 6-5
Lab ID: 000995-0007-SA
Matrix: AQUEOUS Sampled: 20 MAR 91 Received: 21 MAR 91
Authorized: 21 MAR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Aluminum	0.25	mg/L	0.10	6010	27 MAR 91	29 MAR 91
Antimony	ND	mg/L	0.060	6010	27 MAR 91	29 MAR 91
Barium	0.059	mg/L	0.010	6010	27 MAR 91	29 MAR 91
Beryllium	ND	mg/L	0.0020	6010	27 MAR 91	29 MAR 91
Cadmium	ND	mg/L	0.0050	6010	27 MAR 91	29 MAR 91
Calcium	338	mg/L	0.20	6010	27 MAR 91	29 MAR 91
Chromium	ND	mg/L	0.010	6010	27 MAR 91	29 MAR 91
Cobalt	ND	mg/L	0.010	6010	27 MAR 91	29 MAR 91
Copper	ND	mg/L	0.020	6010	27 MAR 91	29 MAR 91
Iron	0.15	mg/L	0.10	6010	27 MAR 91	29 MAR 91
Lead	ND	mg/L	0.050	6010	27 MAR 91	29 MAR 91
Magnesium	78.5	mg/L	0.20	6010	27 MAR 91	29 MAR 91
Manganese	0.19	mg/L	0.010	6010	27 MAR 91	29 MAR 91
Molybdenum	ND	mg/L	0.020	6010	27 MAR 91	29 MAR 91
Nickel	ND	mg/L	0.040	6010	27 MAR 91	29 MAR 91
Potassium	5.2	mg/L	5.0	6010	27 MAR 91	29 MAR 91
Silver	ND	mg/L	0.010	6010	27 MAR 91	29 MAR 91
Sodium	588	mg/L	5.0	6010	27 MAR 91	29 MAR 91
Vanadium	ND	mg/L	0.010	6010	27 MAR 91	29 MAR 91
Zinc	ND	mg/L	0.020	6010	27 MAR 91	29 MAR 91

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: David Bravo Approved By: Bose Lawal

Enseco
A Corning Company

General Inorganics

Client Name: Applied Energy Company
Client ID: PW 6-5
Lab ID: 000995-0007-SA
Matrix: AQUEOUS Sampled: 20 MAR 91 Received: 21 MAR 91
Authorized: 21 MAR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Alkalinity, Total as CaCO3 at pH 4.5	416	mg/L	5.0	310.1	NA	02 APR 91
Alkalinity, Bicarb. as CaCO3 at pH 4.5	416	mg/L	5.0	310.1	NA	02 APR 91
Alkalinity, Carb. as CaCO3 at pH 8.3	ND	mg/L	5.0	310.1	NA	02 APR 91
Alkalinity, Hydrox. as CaCO3	ND	mg/L	5.0	310.1	NA	02 APR 91
Coliform, Total	6.0	Col/100	2.0	9132	NA	22 MAR 91
Fluoride	0.44	mg/L	0.10	340.2	NA	01 APR 91
Ammonia as N	ND	mg/L	0.10	350.1	NA	27 MAR 91
Nitrate as N	8.2	mg/L	0.50	353.2	NA	29 MAR 91
pH	7.3	units		9040	NA	21 MAR 91
Sulfate	1650	mg/L	250	9038	NA	26 MAR 91
Specific Conductance at 25 deg.C	4080	umhos/cm	1.0	120.1	NA	21 MAR 91
Total Dissolved Solids	3480	mg/L	50.0	160.1	NA	26 MAR 91

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: Bose Lawal Approved By: David Bravo

Enseco
A Corning Company

General Inorganics

Client Name: Applied Energy Company
Client ID: PW 6-5
Lab ID: 000995-0007-SA
Matrix: AQUEOUS Sampled: 20 MAR 91 Received: 21 MAR 91
Authorized: 21 MAR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Nitrite as N	ND	mg/L	0.010	354.1	NA	22 MAR 91
Chloride	238	mg/L	60.0	9252	NA	25 MAR 91

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: Bose Lawal Approved By: Karen Helgerson

Enseco
A Corning Company

ICP METALS

Client Name: Applied Energy Company
Client ID: PW 6-6
Lab ID: 000995-0006-SA
Matrix: AQUEOUS Sampled: 20 MAR 91 Received: 21 MAR 91
Authorized: 21 MAR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Aluminum	0.54	mg/L	0.10	6010	27 MAR 91	29 MAR 91
Antimony	ND	mg/L	0.060	6010	27 MAR 91	29 MAR 91
Barium	0.11	mg/L	0.010	6010	27 MAR 91	29 MAR 91
Beryllium	ND	mg/L	0.0020	6010	27 MAR 91	29 MAR 91
Cadmium	ND	mg/L	0.0050	6010	27 MAR 91	29 MAR 91
Calcium	83.8	mg/L	0.20	6010	27 MAR 91	29 MAR 91
Chromium	ND	mg/L	0.010	6010	27 MAR 91	29 MAR 91
Cobalt	ND	mg/L	0.010	6010	27 MAR 91	29 MAR 91
Copper	ND	mg/L	0.020	6010	27 MAR 91	29 MAR 91
Iron	0.31	mg/L	0.10	6010	27 MAR 91	29 MAR 91
Lead	ND	mg/L	0.050	6010	27 MAR 91	29 MAR 91
Magnesium	26.5	mg/L	0.20	6010	27 MAR 91	29 MAR 91
Manganese	0.42	mg/L	0.010	6010	27 MAR 91	29 MAR 91
Molybdenum	ND	mg/L	0.020	6010	27 MAR 91	29 MAR 91
Nickel	ND	mg/L	0.040	6010	27 MAR 91	29 MAR 91
Potassium	ND	mg/L	5.0	6010	27 MAR 91	29 MAR 91
Silver	ND	mg/L	0.010	6010	27 MAR 91	29 MAR 91
Sodium	142	mg/L	5.0	6010	27 MAR 91	29 MAR 91
Vanadium	ND	mg/L	0.010	6010	27 MAR 91	29 MAR 91
Zinc	ND	mg/L	0.020	6010	27 MAR 91	29 MAR 91

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: David Bravo Approved By: Bose Lawal

Enseco
A Corning Company

General Inorganics

Client Name: Applied Energy Company
Client ID: PW 6-6
Lab ID: 000995-0006-SA
Matrix: AQUEOUS Sampled: 20 MAR 91 Received: 21 MAR 91
Authorized: 21 MAR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Alkalinity, Total as CaCO3 at pH 4.5	443	mg/L	5.0	310.1	NA	02 APR 91
Alkalinity, Bicarb. as CaCO3 at pH 4.5	443	mg/L	5.0	310.1	NA	02 APR 91
Alkalinity, Carb. as CaCO3 at pH 8.3	ND	mg/L	5.0	310.1	NA	02 APR 91
Alkalinity, Hydrox. as CaCO3	ND	mg/L	5.0	310.1	NA	02 APR 91
Coliform, Total	ND	Col/100	2.0	9132	NA	22 MAR 91
Fluoride	1.9	mg/L	0.10	340.2	NA	01 APR 91
Ammonia as N	ND	mg/L	0.10	350.1	NA	27 MAR 91
Nitrate as N	1.3	mg/L	0.10	353.2	NA	29 MAR 91
pH	7.1	units		9040	NA	21 MAR 91
Sulfate	105	mg/L	30.0	9038	NA	04 APR 91
Specific Conductance at 25 deg.C	1110	umhos/cm	1.0	120.1	NA	21 MAR 91
Total Dissolved Solids	779	mg/L	10.0	160.1	NA	26 MAR 91

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: Bose Lawal Approved By: Karen Helgerson

Enseco
A Corning Company

General Inorganics

Client Name: Applied Energy Company
Client ID: PW 6-6
Lab ID: 000995-0006-SA
Matrix: AQUEOUS Sampled: 20 MAR 91 Received: 21 MAR 91
Authorized: 21 MAR 91 Prepared: See Below Analyzed: See Below

Parameter	Result	Units	Reporting Limit	Analytical Method	Prepared Date	Analyzed Date
Nitrite as N	0.022	mg/L	0.010	354.1	NA	22 MAR 91
Chloride	31.8	mg/L	3.0	9252	NA	25 MAR 91

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: Bose Lawal

Approved By: Karen Helgerson

5.3
Inorganic Geochemical Signature Data, Phase III (4/90)

CLIENT : D.B. STEPHENS & ASSOCIATES
PROJECT # : 89-030-L
PROJECT NAME : ENRON LAGUNA

DATE RECEIVED : 04/22/9
REPORT DATE : 05/15/9

ATI I.D. : 104784

ATI #	CLIENT DESCRIPTION	MATRIX	DATE COLLECTE
01	SUPPLY WELL	AQUEOUS	04/17/9
02	6-PW-5	AQUEOUS	04/18/9
03	6-PW-4	AQUEOUS	04/17/9
04	6-6	AQUEOUS	04/17/9
05	6-8	AQUEOUS	04/17/9
06	6-PW-8	AQUEOUS	04/18/9
07	6-PW-7	AQUEOUS	04/18/9

PRELIMINARY
Subject to revision

----- TOTALS -----

MATRIX	# SAMPLES
AQUEOUS	7

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from t
date of this report. If an extended storage period is required, please cont
our sample control department before the scheduled disposal date.

GENERAL CHEMISTRY RESULTS

ATI I.D. : 104784

CLIENT : D.B. STEPHENS & ASSOCIATES
PROJECT # : 89-030-L
PROJECT NAME : ENRON LAGUNA

DATE RECEIVED : 04/22/9
REPORT DATE : 05/15/9

PARAMETER	UNITS	01	02	03	04	05
CARBONATE (CACO3)	MG/L	<1	<1	<1	<1	<1
BICARBONATE (CACO3)	MG/L	166	475	279	343	680
HYDROXIDE (CACO3)	MG/L	<1	<1	<1	<1	<1
TOTAL ALKALINITY (AS CACO3)	MG/L	166	475	279	343	680
CHLORIDE	MG/L	13	132	68	39	111
CONDUCTIVITY, (UMHOS/CM)		386	3250	1150	1050	2030
FLUORIDE	MG/L	0.25	0.42	1.29	1.30	3.50
AMMONIA AS NITROGEN	MG/L	-	-	0.03	<0.03	0.03
NITRATE AS NITROGEN	MG/L	-	-	42	15	0.33
PH	UNITS	8.1	7.4	7.7	7.6	7.5
SULFATE	MG/L	30	1300	130	120	340
TOTAL DISSOLVED SOLIDS	MG/L	240	2600	790	660	1300

PRELIMINARY
Subject to revision

GENERAL CHEMISTRY RESULTS

ATI I.D. : 104784

CLIENT : D.B. STEPHENS & ASSOCIATES
PROJECT # : 89-030-L
PROJECT NAME : ENRON LAGUNA

DATE RECEIVED : 04/22/9
REPORT DATE : 05/15/9

PARAMETER	UNITS	06	07
CARBONATE (CACO3)	MG/L	<1	<1
BICARBONATE (CACO3)	MG/L	296	171
HYDROXIDE (CACO3)	MG/L	<1	<1
TOTAL ALKALINITY (AS CACO3)	MG/L	296	171
CHLORIDE	MG/L	29	480
CONDUCTIVITY, (UMHOS/CM)		1640	2990
FLUORIDE	MG/L	0.38	0.75
PH	UNITS	7.4	7.5
SULFATE	MG/L	460	770
TOTAL DISSOLVED SOLIDS	MG/L	1300	2000

PRELIMINARY
Subject to revision

GENERAL CHEMISTRY - QUALITY CONTROL

CLIENT : D.B. STEPHENS & ASSOCIATES
PROJECT # : 89-030-1
PROJECT NAME : ENRON LAGUNA ATI I.D. : 104784

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% RE
CARBONATE	MG/L	10478403	<1	<1	NA	NA	NA	NA
BICARBONATE	MG/L		279	284	2	NA	NA	NA
HYDROXIDE	MG/L		<1	<1	NA	NA	NA	NA
TOTAL ALKALINITY	MG/L		279	284	2	NA	NA	NA
CARBONATE	MG/L	10563801	<1	<1	NA	NA	NA	NA
BICARBONATE	MG/L		205	206	0.5	NA	NA	NA
HYDROXIDE	MG/L		<1	<1	NA	NA	NA	NA
TOTAL ALKALINITY	MG/L		205	206	0.5	NA	NA	NA
CHLORIDE	MG/L	10478407	480	490	2	1250	750	10
CONDUCTIVITY(UMHOS/CM)		10478407	2990	2960	1	NA	NA	NA
FLUORIDE	MG/L	10474104	0.31	0.32	3	0.62	0.30	10
FLUORIDE	MG/L	10478403	1.29	1.28	1	2.64	1.30	10
AMMONIA AS NITROGEN	MG/L	10474101	0.22	0.20	10	0.48	0.25	10
NITRATE AS NITROGEN	MG/L	10479003	0.19	0.18	5	2.18	2.00	10
PH	UNITS	10478403	7.7	7.7	0	NA	NA	NA
SULFATE	MG/L	10479003	3900	3900	0	7900	4000	10
TOTAL DISSOLVED SOLIDS	MG/L	10479002	1960	1920	2	NA	NA	NA

PRELIMINARY
Subject to revision

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 1$$

METALS RESULTS

ATI I.D. : 104784

CLIENT : D.B. STEPHENS & ASSOCIATES
PROJECT # : 89-030-L
PROJECT NAME : ENRON LAGUNA

DATE RECEIVED : 04/22/9
REPORT DATE : 05/15/9

PARAMETER	UNITS	01	02	03	04	05
CALCIUM	MG/L	52.1	276	113	67.3	76.6
COPPER	MG/L	<0.010	<0.010	<0.010	<0.010	<0.010
IRON	MG/L	<0.020	<0.020	<0.020	<0.020	<0.020
HARDNESS	MG/L	169	914	421	265	390
ION BALANCE		-	-	(INC)	-	-
POTASSIUM	MG/L	1.7	4.4	5.4	2.6	1.2
MAGNESIUM	MG/L	9.5	54.6	33.7	23.5	48.4
MANGANESE	MG/L	<0.010	0.011	<0.010	0.037	0.156
SODIUM	MG/L	22.6	546	104	133	368
ZINC	MG/L	0.033	<0.010	<0.010	<0.010	<0.010

PRELIMINARY
Subject to revision

METALS RESULTS

ATI I.D. : 104784

CLIENT : D.B. STEPHENS & ASSOCIATES
PROJECT # : 89-030-1
PROJECT NAME : ENRON LAGUNA

DATE RECEIVED : 04/22/9
REPORT DATE : 05/15/9

PARAMETER	UNITS	06	07
CALCIUM	MG/L	254	187
COPPER	MG/L	<0.010	<0.010
IRON	MG/L	<0.020	<0.020
HARDNESS	MG/L	823	678
POTASSIUM	MG/L	3.2	8.6
MAGNESIUM	MG/L	45.9	51.3
MANGANESE	MG/L	0.082	0.059
SODIUM	MG/L	72.2	430
ZINC	MG/L	<0.010	<0.010

PRELIMINARY
Subject to revision

METALS - QUALITY CONTROL

CLIENT : D.B. STEPHENS & ASSOCIATES
PROJECT # : 89-030-L
PROJECT NAME : ENRON LAGUNA ATI I.D. : 104784

PARAMETER	UNITS	ATI I.D.	SAMPLE RESULT	DUP. RESULT	RPD	SPIKED SAMPLE	SPIKE CONC	% RE
CALCIUM	MG/L	10478403	113	114	1	162	50.0	98
COPPER	MG/L	10479001	<0.010	<0.010	NA	0.099	0.100	99
IRON	MG/L	10479001	44.2	42.7	3	150	100	10
HARDNESS	MG/L	10478403	421	424	0.7	NA	NA	NA
POTASSIUM	MG/L	10478403	5.4	5.5	2	54.2	50.0	98
MAGNESIUM	MG/L	10478403	33.7	33.9	0.6	58.0	25.0	97
MANGANESE	MG/L	10479001	1.06	1.02	4	2.17	1.00	11
SODIUM	MG/L	10478403	104	106	2	148	50.0	88
SODIUM	MG/L	10478402	546	557	2	1094	500	11
ZINC	MG/L	10479001	0.027	0.026	4	0.124	0.100	97

PRELIMINARY
Subject to revision

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative Percent Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 10$$

5.4
PCB and BTEX Data From Monitor Wells (6-Series)

Enseco

Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX)

Method 8020

Client Name: Applied Energy Company
Client ID: 91-4-24-6-6
Lab ID: 001128-0003-SA
Matrix: AQUEOUS Sampled: 24 APR 91 Received: 26 APR 91
Authorized: 26 APR 91 Prepared: NA Analyzed: 30 APR 91

Parameter	Result	Units	Reporting Limit
Benzene	ND	ug/L	0.50
Toluene	1.5	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	1.0
Surrogate	**Recovery**		
a,a,a-Trifluorotoluene	100	%	

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: Lisa Armstrong

Approved By: Karen Helgerson

PCBs

Method 8080

Client Name: Applied Energy Company
Client ID: 91-4-24-6-6
Lab ID: 001128-0003-SA
Matrix: AQUEOUS Sampled: 24 APR 91 Received: 26 APR 91
Authorized: 26 APR 91 Prepared: 26 APR 91 Analyzed: 26 APR 91

Parameter	Result	Units	Reporting Limit
Aroclor 1016	ND	ug/L	0.50
Aroclor 1221	ND	ug/L	0.50
Aroclor 1232	ND	ug/L	0.50
Aroclor 1242	ND	ug/L	0.50
Aroclor 1248	ND	ug/L	0.50
Aroclor 1254	ND	ug/L	1.0
Aroclor 1260	ND	ug/L	1.0

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: Craig McKenna Approved By:

PRELIMINARY DATA

Enseco

Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX)

Method 8020

Client Name: Applied Energy Company
Client ID: 91-4-26-6-7
Lab ID: 001132-0004-SA
Matrix: AQUEOUS Sampled: 27 APR 91 Received: 29 APR 91
Authorized: 29 APR 91 Prepared: NA Analyzed: 01 MAY 91

Parameter	Result	Units	Reporting Limit
Benzene	ND	ug/L	0.50
Toluene	0.80	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	1.0
Surrogate	**Recovery**		
a,a,a-Trifluorotoluene	99.0	%	

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: Lisa Armstrong Approved By: Karen Helgerson

Enseco

PCBs

Method 8080

Client Name: Applied Energy Company
Client ID: 91-4-26-6-7
Lab ID: 001132-0004-SA
Matrix: AQUEOUS Sampled: 27 APR 91 Received: 29 APR 91
Authorized: 29 APR 91 Prepared: 29 APR 91 Analyzed: 29 APR 91

Parameter	Result	Units	Reporting Limit
Aroclor 1016	ND	ug/L	0.50
Aroclor 1221	ND	ug/L	0.50
Aroclor 1232	ND	ug/L	0.50
Aroclor 1242	ND	ug/L	0.50
Aroclor 1248	ND	ug/L	0.50
Aroclor 1254	ND	ug/L	1.0
Aroclor 1260	ND	ug/L	1.0

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: Janet Mathews Approved By: Karen Helgerson

Enseco
A CORNING COMPANY

Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX)

Method 8020

Client Name: Applied Energy Company
Client ID: 91-4-26-6-8
Lab ID: 001132-0002-SA
Matrix: AQUEOUS Sampled: 26 APR 91 Received: 29 APR 91
Authorized: 29 APR 91 Prepared: NA Analyzed: 01 MAY 91

Parameter	Result	Units	Reporting Limit
Benzene	ND	ug/L	0.50
Toluene	0.97	ug/L	0.50
Ethylbenzene	ND	ug/L	0.50
Xylenes (total)	ND	ug/L	1.0

Surrogate	Recovery	
a,a,a-Trifluorotoluene	126	%

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: Lisa Armstrong Approved By: Karen Helgerson

PCBs

Method 8080

Client Name: Applied Energy Company
Client ID: 91-4-26-6-8
Lab ID: 001132-0002-SA
Matrix: AQUEOUS Sampled: 26 APR 91 Received: 29 APR 91
Authorized: 29 APR 91 Prepared: 29 APR 91 Analyzed: 29 APR 91

Parameter	Result	Units	Reporting Limit
Aroclor 1016	ND	ug/L	0.50
Aroclor 1221	ND	ug/L	0.50
Aroclor 1232	ND	ug/L	0.50
Aroclor 1242	ND	ug/L	0.50
Aroclor 1248	ND	ug/L	0.50
Aroclor 1254	ND	ug/L	1.0
Aroclor 1260	ND	ug/L	1.0

PRELIMINARY
Subject to revision

ND = Not detected
NA = Not applicable

Reported By: Janet Mathews Approved By: Karen Helgerson

SECTION 6.0

RADIO ISOTOPE DATING RESULTS

6.1
Summary of Analyses

SUMMARY OF RADIO ISOTOPE DATING OF GROUND WATER AT LAGUNA

SAMPLE NO. (Well or Location ID)	DATE SAMPLED	AQUIFER	FLOW[1] RELATIONSHIP	CARBON-14 AGE (Years)	TRITIUM DATA	
					TRITIUM UNITS	TRITIUM AGE (Years)
6-PW-8 6-PW-5	4/4/91 4/4/91	Shallow Perched Shallow Perched	Up-gradient Up-gradient	5650 ± 190 8345 ± 145		
6-Tank-C Supply Well	3/19/91 4/4/91	Bluff/Entrada Bluff/Entrada	N/A N/A	2800 ± 85 2670 ± 90	2.8 ± 2.2	> 30
6-CH-3-C 6-PW-4	3/19/91 4/4/91	Shallow Perched Shallow Perched	Down-gradient Down-gradient	3545 ± 90 3385 ± 150	7.1 ± 2.3	> 30
6-CH-5-C 6-5D	3/19/91 4/4/91	Bluff Bluff	Down-gradient Cross-gradient	> 42,000 30,400 ± 3900	2.8 ± 2.2	> 30

[1]Flow relationship referenced to location of tank

PRELIMINARY
Subject to revision

6.2
Raw Laboratory Data

KRUEGER ENTERPRISES, INC.
GEOCHRON LABORATORIES DIVISION
24 BLACKSTONE STREET • CAMBRIDGE, MASSACHUSETTS 02139 • (617) 876-3691

RADIOCARBON AGE DETERMINATION — REPORT OF ANALYTICAL WORK

Our Sample No. GX-16681-Priority — Date Received: 04/08/91

Your Reference: letter of 04/05/91 — Date Reported: 04/14/91

Submitted by: Dale Hammermeister
Daniel B. Stephens & Assoc., Inc.
4415 Hawking, N.E.
Albuquerque, NM 87109

Sample Name: 6-PW-8.
Barium carbonate.

AGE = 5650 +/- 190 C-14 years BP (C-13 corrected).
(49.5 +/- 1.2) % of the modern (1950) C-14 activity.

Description: Sample of barium salts from water sample.

Pretreatment: The barium salt precipitate was rapidly vacuum filtered and immediately hydrolyzed, under vacuum, to recover carbon dioxide from the barium carbonates for the analysis. C-13 analysis was made on a small portion of the same evolved gas.

PRELIMINARY
Subject to revision

Comment:

$\delta^{13}C_{PDB}$ = -16.7 ‰

Notes: This date is based upon the Libby half life (5570 years) for ^{14}C. The error stated is $\pm 1\sigma$ as judged by the analytical data alone. Our modern standard is 95% of the activity of N.B.S. Oxalic Acid.

The age is referenced to the year A.D. 1950.

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RADIOCARBON AGE DETERMINATION — REPORT OF ANALYTICAL WORK

Our Sample No. GX-16678-Priority — Date Received: 04/08/91

Your Reference: letter of 04/05/91 — Date Reported: 04/14/91

Submitted by: Dale Hammermeister
Daniel B. S. & Assoc., Inc.
4415 Hawking, N.E.
Albuquerque, NM 87109

Sample Name: 6-PW-5.
Barium carbonate.

AGE = 8345 +/- 145 C-14 years BP (C-13 corrected).
(35.4 +/- 0.6) % of the modern (1950) C-14 activity.

Description: Sample of barium salts from water sample.

Pretreatment: The barium salt precipitate was rapidly vacuum filtered and immediately hydrolyzed, under vacuum, to recover carbon dioxide from the barium carbonates for the analysis. C-13 analysis was made on a small portion of the same evolved gas.

PRELIMINARY
Subject to revision

Comment:

$\delta^{13}C_{PDB}$ = -14.6 ‰

Notes: This date is based upon the Libby half life (5570 years) for ^{14}C. The error stated is $\pm 1\sigma$ as judged by the analytical data alone. Our modern standard is 95% of the activity of N.B.S. Oxalic Acid.

The age is referenced to the year A.D. 1950.

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RADIOCARBON AGE DETERMINATION — REPORT OF ANALYTICAL WORK

Our Sample No. GX-16650-Priority — Date Received: 03/22/91

Your Reference: letter of 03/21/91 — Date Reported: 03/28/91

Submitted by: Dale Hammermeister
Daniel B. S. & Assoc., Inc.
4415 Hawking, N.E.
Albuquerque, NM 87109

Sample Name: 6-Tank-C.
Water Sample.

AGE = 2800 +/- 85 C-14 years BP (C-13 corrected).
(70.6 +/- 0.7)% of the modern (1950) C-14 activity

Description: Sample of water.

Pretreatment: The barium salt precipitate was rapidly vacuum filtered and immediately hydrolyzed, under vacuum, to recover carbon dioxide from the barium carbonates for the analysis. C-13 analysis was made on a small portion of the same evolved gas.

PRELIMINARY
Subject to revision

Comment:

$\delta^{13}C_{PDB}$ = - 8.8 ‰

Notes: This date is based upon the Libby half life (5570 years) for ^{14}C. The error stated is $\pm 1\sigma$ as judged by the analytical data alone. Our modern standard is 95% of the activity of N.B.S. Oxalic Acid.

The age is referenced to the year A.D. 1950.

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RADIOCARBON AGE DETERMINATION — REPORT OF ANALYTICAL WORK

Our Sample No. GX-16682-Priority — Date Received: 04/08/91

Your Reference: letter of 04/05/91 — Date Reported: 04/14/91

Submitted by: Dale Hammermeister
Daniel B. Stephens & Assoc., Inc.
4415 Hawking, N.E.
Albuquerque, NM 87109

Sample Name: Supply Well.
Barium carbonate.

AGE = 2670 +/- 90 C-14 years BP (C-13 corrected).
(71.7 +/- 0.8) % of the modern (1950) C-14 activity.

Description: Sample of barium salts from water sample.

Pretreatment: The barium salt precipitate was rapidly vacuum filtered and immediately hydrolyzed, under vacuum, to recover carbon dioxide from the barium carbonates for the analysis. C-13 analysis was made on a small portion of the same evolved gas.

PRELIMINARY
Subject to revision

Comment:

$\delta^{13}C_{PDB}$ = - 8.4 ‰

Notes: This date is based upon the Libby half life (5570 years) for ^{14}C. The error stated is $\pm 1\sigma$ as judged by the analytical data alone. Our modern standard is 95% of the activity of N.B.S. Oxalic Acid.

The age is referenced to the year A.D. 1950.

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RADIOCARBON AGE DETERMINATION — REPORT OF ANALYTICAL WORK

Our Sample No. GX-16651-Priority — Date Received: 03/22/91

Your Reference: letter of 03/21/91 — Date Reported: 03/28/91

Submitted by: Dale Hammermeister
Daniel B. S. & Assoc., Inc.
4415 Hawking, N.E.
Albuquerque, NM 87109

Sample Name: 6-CH-3-C.
Water Sample.

AGE = 3545 +/- 90 C-14 years BP (C-13 corrected).
(64.3 +/- 0.7)% of the modern (1950) C-14 activity

Description: Sample of water.

Pretreatment: The barium salt precipitate was rapidly vacuum filtered and immediately hydrolyzed, under vacuum, to recover carbon dioxide from the barium carbonates for the analysis. C-13 analysis was made on a small portion of the same evolved gas.

PRELIMINARY
Subject to revision

Comment:

$\delta^{13}C_{PDB}$ = -12.1 ‰

Notes: This date is based upon the Libby half life (5570 years) for ^{14}C. The error stated is $\pm 1\sigma$ as judged by the analytical data alone. Our modern standard is 95% of the activity of N.B.S. Oxalic Acid.

The age is referenced to the year A.D. 1950.

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RADIOCARBON AGE DETERMINATION — REPORT OF ANALYTICAL WORK

Our Sample No. GX-16679-Priority — Date Received: 04/08/91

Your Reference: letter of 04/05/91 — Date Reported: 04/14/91

Submitted by: Dale Hammermeister
Daniel B. Stephens & Assoc., Inc.
4415 Hawking, N.E.
Albuquerque, NM 87109

Sample Name: 6-PW-4.
Barium carbonate.

AGE = 3385 +/- 150 C-14 years BP (C-13 corrected).
(65.6 +/- 1.2) % of the modern (1950) C-14 activity.

Description: Sample of barium salts from water sample.

Pretreatment: The barium salt precipitate was rapidly vacuum filtered and immediately hydrolyzed, under vacuum, to recover carbon dioxide from the barium carbonates for the analysis. C-13 analysis was made on a small portion of the same evolved gas.

PRELIMINARY
Subject to revision

Comment:

$\delta^{13}C_{PDB}$ = -10.8 ‰

Notes: This date is based upon the Libby half life (5570 years) for ^{14}C. The error stated is $\pm 1\sigma$ as judged by the analytical data alone. Our modern standard is 95% of the activity of N.B.S. Oxalic Acid.

The age is referenced to the year A.D. 1950.

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RADIOCARBON AGE DETERMINATION — REPORT OF ANALYTICAL WORK

Our Sample No. GX-16652-Priority — Date Received: 03/22/91

Your Reference: letter of 03/21/91 — Date Reported: 03/28/91

Submitted by: Dale Hammermeister
Daniel B. S. & Assoc., Inc.
4415 Hawking, N.E.
Albuquerque, NM 87109

Sample Name: 6-CH-5-C.
Water Sample.

AGE = Greater than 42,000 C-14 years BP (C-13 corrected).
(0.0 +/- 0.4)% of the modern (1950) C-14 activity

Description: Sample of water.

Pretreatment: The barium salt precipitate was rapidly vacuum filtered and immediately hydrolyzed, under vacuum, to recover carbon dioxide from the barium carbonates for the analysis. C-13 analysis was made on a small portion of the same evolved gas.

PRELIMINARY
Subject to revision

Comment: No C-14 activity detected.

$\delta^{13}C_{PDB}$ = - 5.8 ‰

Notes: This date is based upon the Libby half life (5570 years) for ^{14}C. The error stated is $\pm 1\sigma$ as judged by the analytical data alone. Our modern standard is 95% of the activity of N.B.S. Oxalic Acid.

The age is referenced to the year A.D. 1950.

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RADIOCARBON AGE DETERMINATION — REPORT OF ANALYTICAL WORK

Our Sample No. GX-16680-Priority — Date Received: 04/08/91

Your Reference: letter of 04/05/91 — Date Reported: 04/14/91

Submitted by: Dale Hammermeister
Daniel B. Stephens & Assoc., Inc.
4415 Hawking, N.E.
Albuquerque, NM 87109

Sample Name: 6-5D.
Barium carbonate.

AGE = 30,400 +/- 3900 C-14 years BP (C-13 corrected).
(2.3 +/- 1.0) % of the modern (1950) C-14 activity.

Description: Sample of barium salts from water sample.

Pretreatment: The barium salt precipitate was rapidly vacuum filtered and immediately hydrolyzed, under vacuum, to recover carbon dioxide from the barium carbonates for the analysis. C-13 analysis was made on a small portion of the same evolved gas.

PRELIMINARY
Subject to revision

Comment:

$\delta^{13}C_{PDB}$ = - 7.4 ‰

Notes: This date is based upon the Libby half life (5570 years) for ^{14}C. The error stated is $\pm 1\sigma$ as judged by the analytical data alone. Our modern standard is 95% of the activity of N.B.S. Oxalic Acid.

The age is referenced to the year A.D. 1950.

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24 BLACKSTONE STREET • CAMBRIDGE, MASSACHUSETTS 02139 • (617) 876-3691

Dale Hammermeister
Daniel B. Stephens & Assoc., Inc.
4415 Hawkins, N.E.
Albuquerque, NM 87109

Date Received: 3/22/91
Date Reported: 3/28/91
Reference: Project #89-030L

REPORT OF TRITIUM ANALYSES

Our Sample No.	Your Sample No.	Tritium Units
T-4356	6-TANK-T	2.8 +/- 2.2
T-4357	6-CH-3-T	7.1 +/- 2.3
T-4358	6-CH-5-T	2.8 +/- 2.2

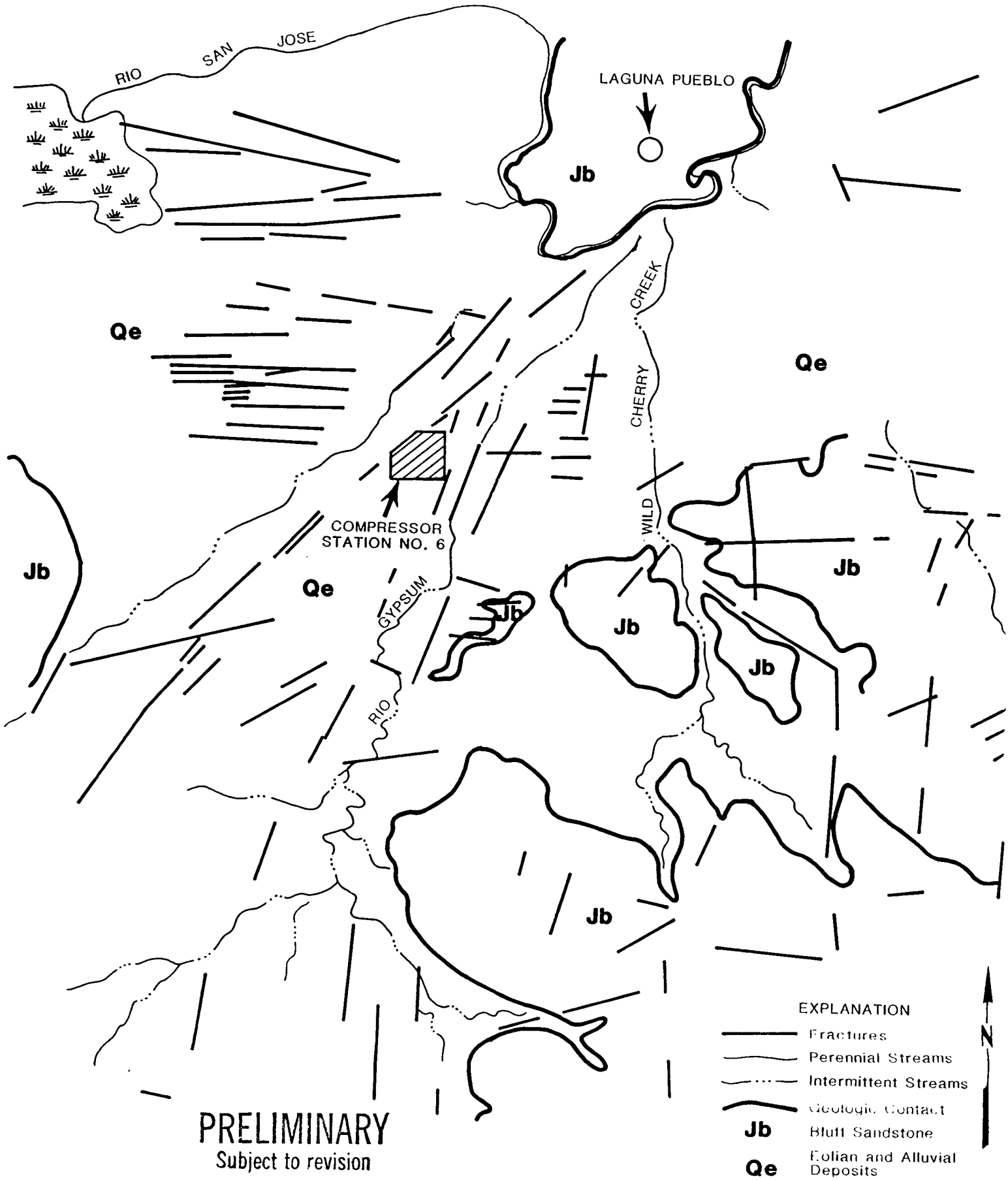
PRELIMINARY
Subject to revision

SECTION 7.0

OTHER DATA POSSIBLY RELATED TO THE SHALLOW PERCHED SYSTEM

7.1
Lineament Orientations Near Compressor Station No. 6

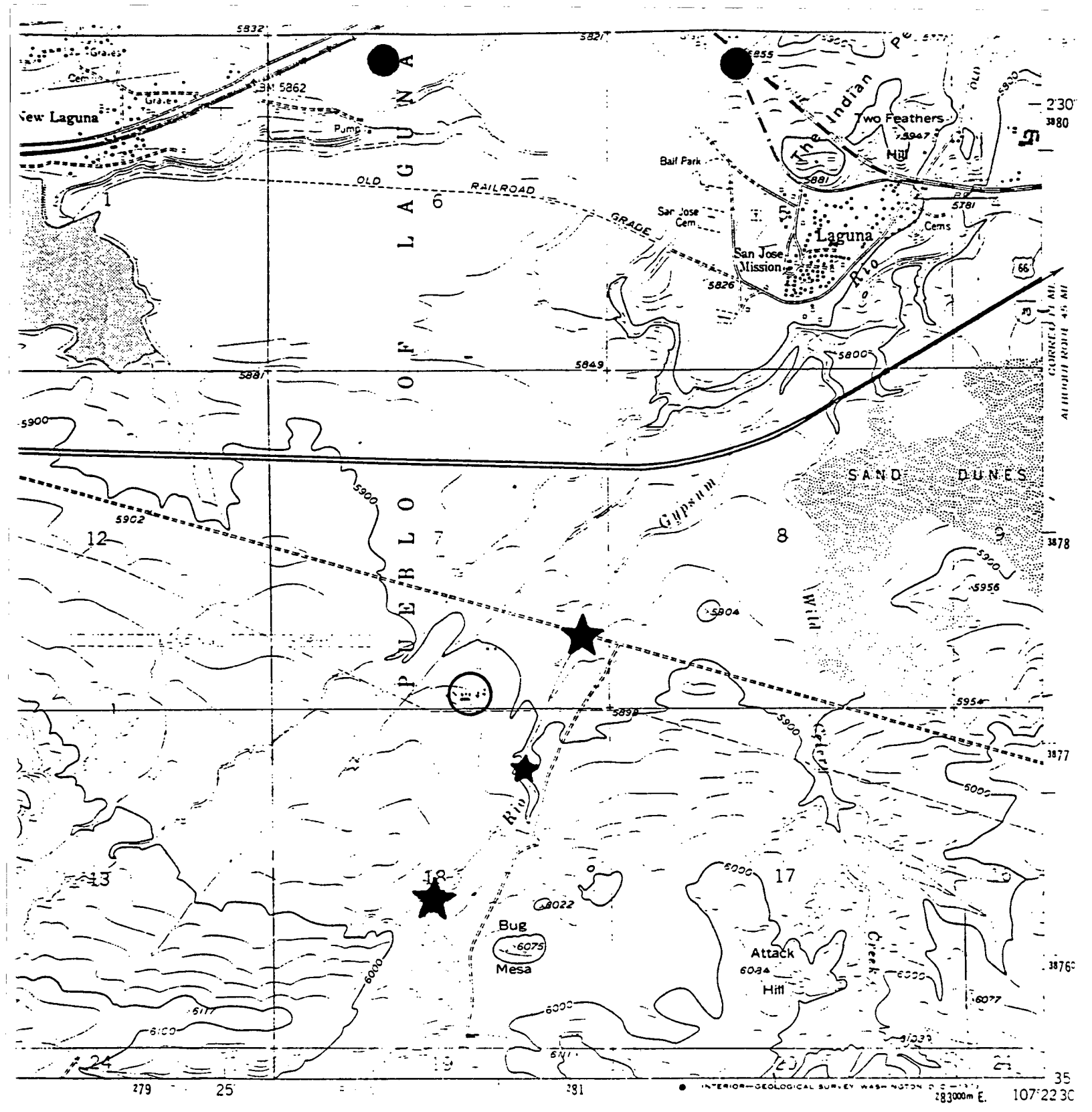
LINEAMENT ORIENTATIONS NEAR THE LAGUNA COMPRESSOR STATION FROM AERIAL PHOTO 1-127 OCTOBER 13, 1951



PRELIMINARY
Subject to revision

7.2

Location of Possible Ground Water Discharge Points Along the Rio Gypsum Based on the Presence of Phreatophytes



1 MILE

0 7000 FEET

1 KILOMETER

★ Location of Possible Ground Water Discharge Points along the Rio Gypsum based on Phreatophytes

○ Laguna Compressor Station No.6

ROAD CLASSIFICATION

Light duty

Unimproved dirt

U.S. Route

State Route

DS
'ASHINGTON, D. C. 20242
ON REQUEST

PRELIMINARY
Subject to revision

LAGUNA, N. MEX.

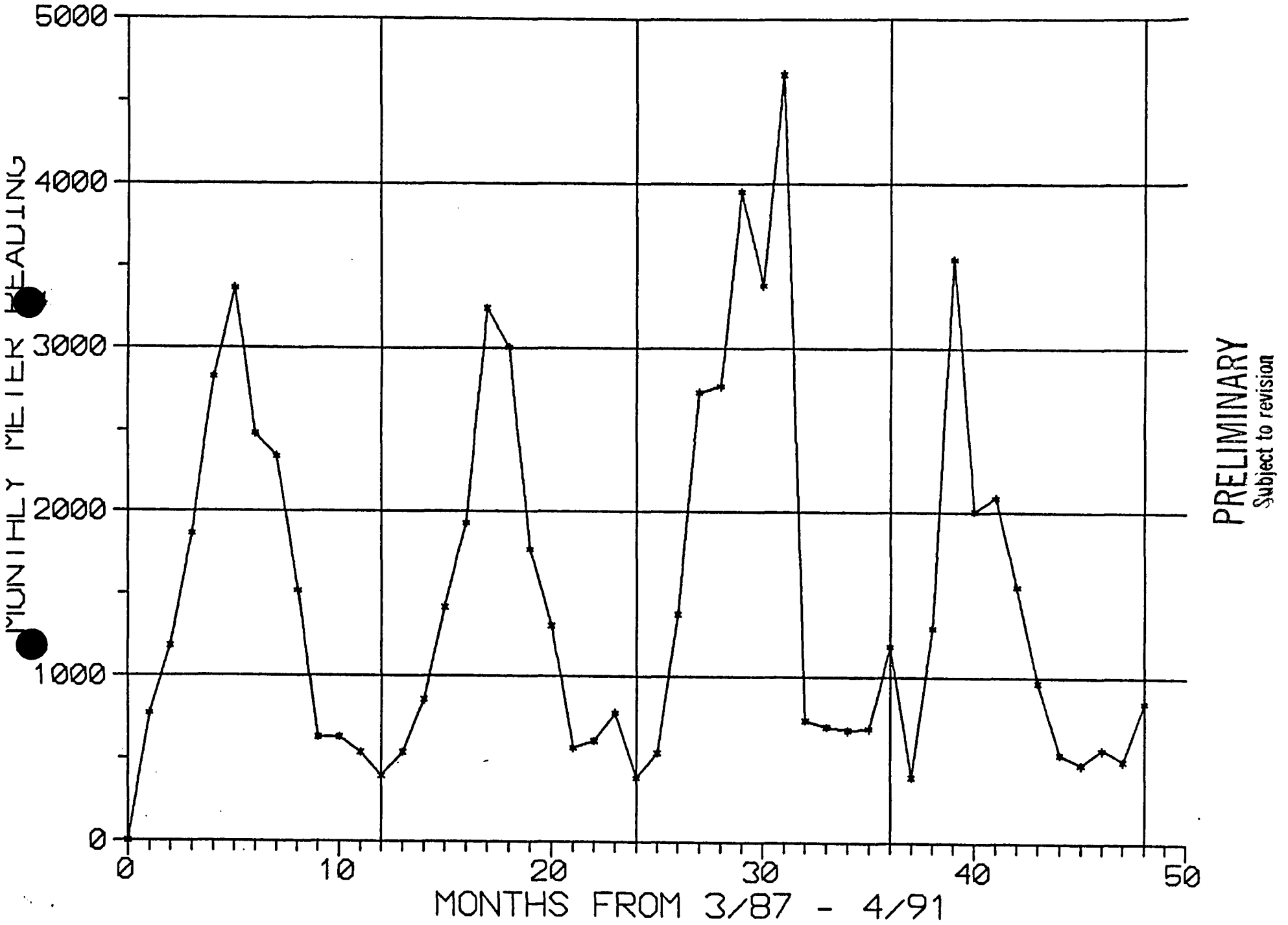
1957

7.3
Water Use Data for
Compressor Station No. 6

MONTHLY WATER USEAGE LAGUNA STOCK TANK

MO/YR	METER		GALLONS	REMARKS
		0		
3/87	0	1	77500	
4/87	77500	2	118900	
5/87	196400	3	186600	
6/87	383000	4	282000	
7/87	665000	5	336000	
8/87	1001000	6	248000	
9/87	1249000	7	234000	
10/87	1483000	8	152000	
11/87	1635000	9	63000	
12/87	1698000	10	63000	
1/88	1752000	11	54000	
2/88	1792000	12	40000	FILLED STOCK TANK
3/88	1846000	13	54000	
4/88	1932000	14	86000	
5/88	2074000	15	142000	FILLED STOCK TANK
6/88	2267000	16	193000	
7/88	2591000	17	324000	FILLED STOCK TANK
8/88	2891000	18	300000	
9/88	3068000	19	177000	
10/88	3199000	20	131000	
11/88	3256000	21	57000	
12/88	3317000	22	61000	FILLED STOCK TANK
1/89	3395000	23	78000	
2/89	3434000	24	39000	
3/89	3488000	25	54000	
4/89	3626000	26	138000	
5/89	3899000	27	273000	FILLED STOCK TANK
6/89	4176000	28	277000	
7/89	4571000	29	395000	FILLED STOCK TANK
8/89	4909000	30	338000	
11/89	5375000	31	466000	
12/89	5449000	32	74000	
1/90	5519000	33	70000	
2/90	5587000	34	68000	
3/90	5656000	35	69000	
4/90	5775000	36	119000	FILLED STOCK TANK
5/90	5815000	37	40000	METER BROKEN
6/90	130000	38	130000	NEW METER INSTALLED
7/90	484000	39	354000	
8/90	685000	40	201000	
9/90	894000	41	209000	FILLED STOCK TANK
10/90	1049000	42	155000	
11/90	1146000	43	97000	
12/90	1200000	44	54000	
1/91	1248000	45	48000	
2/91	1305000	46	57000	
3/91	1355000	47	50000	
4/91	1440000	48	85000	

PRELIMINARY
Subject to revision


5000
4000
3000
2000
1000
0
MONTHLY METER READING
0
10
20
30
40
50
MONTHS FROM 3/87 - 4/91
PRELIMINARY
Subject to revision

FAX (505) 625-8060

Phone (505) 623-2761

Transwestern Pipeline Company

TECHNICAL OPERATIONS

P. O. Box 1717 • Roswell, New Mexico 88202-1717

December 18, 1991

Mr. Roger Anderson
New Mexico Oil Conservation Division
P.O. Box 1188
Santa Fe, New Mexico

GW-95

Re: Discharge Plan Application
Transwestern Pipeline Company
Laguna Compressor Station No. 6
Valencia County, New Mexico

Dear Mr. Anderson:

The discharge plan application for the above referenced facility is being presented to your agency on behalf of Transwestern Pipeline Company. If you require any additional information or clarification, please contact me at (505) 625-8022.

I. General Information

A. Discharger/Leagally Responsible Party

Name: Transwestern Pipeline Company
Laguna Compressor Station
Attn: Roger LaLonde

Address: Belen District Office
P.O.Box 1249
Belen, New Mexico 87002
(505) 864-7461

B. Local Representative or Contact Person

Mr. Scott Stone, Compression Supervisor

c. Location of Discharge

Legal Description: Township 9 North, Range 5 West, Northeast 1/4 Section 18 and Southeast 1/4 Section 7, ~~Valencia~~ Valencia County, New Mexico.

A state of New Mexico map of the immediate site vacinity and a plot plan showing location of discharge, compressor station equipment and other site information required below are attached in APPENDIX A.

Note: All onsite routine operational discharges are to sumps or an above-ground tank with subsequent transfer offsite by an appropriate disposal company. No onsite discharges are intentionally allowed to enter surface waters or groundwater.

D. Type of Natural Gas Operation

This mainline compressor station provides compression for the transmission of natural gas in the Transwestern system. It receives natural gas through 30" transmission lines and compresses the gas west to Transwestern Pipeline Compressor Station 5, Thoreau, New Mexico.

E. Copies

Three copies of the discharge plan application are enclosed.

F. Affirmation

I hereby certify that I am familiar with the information contained in and submitted with the application and that such information is true, accurate and complete to the best of my knowledge and belief.

Sincerely,

Larry Campbell

Larry T. Campbell
Compliance Environmentalist

LTC/EEC

3 copies

cc: Scott Stone w/attach
Roger LaLonde w/o attach
Doc Alpers w/o attach

II. Plant Facilities

A. Sources and Quantities of Effluent and Plant Fluids: For each source, primary quality type (e.g., high TDS water, hydrocarbons, washwater, sewage), estimated quantities, and major additives, if any are provided.

1. Scrubbers: The incoming gas stream to this facility does contain few liquids in the form of natural gas pipeline liquids. These entrained liquids are then removed by the operation of the two (2) onsite inlet scrubbers and collected in the mist extractor and then pumped to a 500 bbl. pipeline liquids tank. Liquids which are received during pigging operations are temporarily collected in a 400 gallon sump and transferred to the 500 bbl. pipeline liquids tank.

2. Engines and cooling waters: The engine and cooling water stream is collected and reclaimed for reuse.

3. Domestic Sewage: Sewage is directed to the onsite septic tanks. The effluent from the tanks is then directed to distribution boxes and then to the leech fields. There are three leech fields located on the station property. A small leech fields services one domestic residences while a larger leech field services four domestic residences. The third leech field services the toilet and shower located in the warehouse. These septic systems are completely separate from the operational practices at this facility.

4. Engine Wash Down Water and Floor Drains: Wastewater collected from cleaning and washdown operations are directed to a series of floor drains and collected into a 400 gallon sump. The effluent is then pumped to a 210 bbl. oily waste water tank. Only approved biodegradable solvents (i.e. epa 2000) are used in this process. The liquids stored in the 210 bbl. tank are tested for H.W. characterization prior to being removed by a wastewater hauler for proper disposal. Truck washing operations are performed at this facility and the waste water is collected in a sump and also goes to the 210 bbl. oily waste water tank. The compressor packing housing drains, oil tank and glycol tank overflow lines are tied into this sump and oily waste water tank.

5. Waste engines Oils: Lubricative oil changeouts from the three Clark compressors and the two auxiliary generators are collected into a 65 bbl. used oil tank. Prior to removal from this facility samples are analyzed from the tank for proper recycling or recovered as boiler fuel makeup.

   Chemical materials stored onsite in excess of 55 gallons may include: gear and engine oil, ethylene glycol, methanol, gasoline, diesel, biodegradable soap and solvent, steam cleaner degreaser.

B: Quality Characteristics

Characteristics of the individual waste streams are as follows: All waste streams have been separated and are segregated into dedicated sumps and tanks.

1. Pipeline Liquids: The natural gas pipeline condensate annual sampling results are presented in APPENDIX B. This material is marketed for burner fuel or incinerated as a hazardous waste dependant upon results of the sampling performed.

2. Engine Cooling Water: Coolant consists of a pre-mixed solution of ambitrol and water. This stream is recovered and recondition unless contaminated to the point it can't be recycled. MSDS information is attached in APPENDIX C.

3. Used Engine Oil: Prior to removal from the facility for recycling, this material is sampled as per 40 CFR 266.

4. Floor Drains: Floor drains which collect washdown cleaning water and engine or engine parts degreasing is directed to a steel sump inside the containment area of the oily waste water storage tank. From there, the wastewater is directed to the 210 bbl. oily waste water tank where the tank liquids are sampled and appropriately disposed. (see APPENDIX D.)

C. Transfer and Storage of Fluids and Effluent

1. Water and wastewater plan schematics are not applicable because no individual water treatment units exist. Liquid wastes are not discharged onsite. All liquid wastes are temporarily stored in sumps and tanks until they are transferred offsite.

2. Potential surface and groundwater contaminants, which may be discharged within the compressor station would be associated with sumps, above ground storage tanks and connecting ground pipes. Sumps and tanks are inspected weekly and monthly. All tanks have been engineered to be visually inspected for tank leakage and contained in concrete secondary containment which complies with the OCD requirement for 130 % containment storage.

   a. Pipeline liquids tank - 210 bbl. capacity, steel walled; contains liquids received from scrubber, mist extractor and pig receiver. Liquids are removed from the tank at each 90 day interval for offsite disposal dependant upon characteristic sampling of the liquids collected.

   b. Oily wastewater tank - 65 bbl. capacity, steel walled; contains liquids received from sumps associated with engine washdown, parts cleaning. Liquids are sampled prior to removal.

   c. Used lubrication oil storage tank- 210 bbl. capacity, steel walled; contains used crankcase and gear oil. Liquids are sampled prior to removal.

   d. Oil storage tanks - Two tanks, each 210 bbl. capacity containing Mobil Pegasus 490 oil.

   e. Ambitrol tank - 65 bbl. capacity, steel walled.

   f. Underground gasoline storage tank - Capacity - 2000 gallons. Cathodically protected.

   g. Underground diesel storage tank - Capacity - 1000 gallons. Cathodically protected.

   h. Oil rundown tank - 65 bbl. capacity, steel walled. Tank is used to hold engine oil during maintenance of unit.

   i. Glycol rundown tanks - 65 bbl. capacity each, steel walled. Tank is use to hold glycol while maintenance is be done on unit.

3. Underground wastewater pipes, their age and specification (i.e., wall thickness, fabrication material), are:

   a. All underground pipes are designed and constructed according to Transwestern's specification They are made of coated steel and connected to the facility rectifier system for corrosion control. The existing underground pipes were installed in 1966.

D. Spill/Leak Prevention and Housekeeping Procedures

1. SPCC Plan; Procedures addressing spill containment and cleanup, including proposed schedule for OCD notification of spills will be described in the facility's contingency plan (SPCC). This document is in preparation and will be submitted to the OCD as it is finalized. Disposition of the liquid materials is as follows:

   a. Pipeline liquids and rainwater:

      Enron Oil Trading and Transportation (EOTT)
      P.O. Box 2297
      Midland, Texas 79702
      (915) 687-0783

      Rollins Environmental Services
      P.O. Box 609
      Deer Park, Texas 77536
      (713) 930-2300

   b. Oily wastewater:

      Mesa Oil Co.
      4701 Broadway SE
      Albuquerque, New Mexico 87105
      (505) 877-8855

   c. Used lubrication and gear oil:

      Mesa Oil Co.
      4701 Broadway SE
      Albuquerque, New Mexico 87105
      (505) 877-8855

d. Used filters:

Filters are drained of liquid at the station and the liquid transferred to the 65 bbl. used oil tank. The drained filter are hauled to the laguna Landfill.

e. Other solid waste:

Solid waste is hauled by Transwestern to the landfill at the town of Laguna.

2. Housekeeping: Precipitation runoff is directed from the station facility. Cleanup and remediation of minor oil releases is addressed in section IIb1. Information on curbs, berms, drains and secondary containment are discussed in section IIC2, IVC2 and IID1, respectively.

3. Leak Detection: All aboveground tank systems are visually inspected weekly to detect leaks and ensure tank integrity. Visual sump inspections are performed on an annual basis. Tank tightness testing for 1991 was preformed 3-11-91, for the regulated underground storage tanks (UST) present.
(The results are presented in APPENDIX E)

4. Well System: The compressor station presently leases one (1) well which is used as a potable water source. This well is located 1 mile west of the compressor station site. Drinking water depth is currently at 120 feet. Sampling is conducted to determine water quality and characteristics. There previously were 20 monitor wells onsite for remediation and cleanup activities that previously occurred at site. With the completion of the remediation activities at this facilities, the monitor wells were formally closed.

IV. SITE CHARACTERISTICS

a. Site Features

The approximate forty acre site is presently fenced and lighted for security measures. There is approximately 35 feet of relief across the extent of the property, sloping towards the northeast. Major buildings present on the site include five (5) company residential houses, office, maintenance and workshop, compressor building, product and storage tanks and containment.

The closest existing residential development is the village of Laguna, New Mexico located 1\2 mile to the north.

1. Geology: Quaternary alluvium is the surface formation at the facility site, comprised mainly of valley-fill sediments and some wind deposited sediments. Jurassic Bluff Sandstone crops out in bands adjacent to the site. This formation consists of 200 to 400 feet of very fine to medium fine sandstone.

2. Soils: The compressor station site is principally comprised of the Hagerman-Bond association, 1 to 10 percent slopes, and the Mespun-Palma association, 1 to 12 percent slopes. This unit is 55 percent Hagerman fine sandy loam, 2 to 10 percent slopes. Hagerman soil is moderately deep and formed in eolian and alluvium derived principally from sandstone. The surface is fine sandy loam with a 28 inch subsoil of sand clay loam and sandy loam. Sandstone is at a depth of 34 inches. Permeability of the Hagerman soil is moderate, with low available water capacity. The Bond soil is shallow and formed from eolian derived primarily from sandstone. The 5 inch surface layer is underlain by a sandy clay loam subsoil of about 19 inches thickness and a sandy clay loam substratum of 3 inches thickness. Hard sandstone is at a depth of 18 inches. Permeability of the Bond soil is moderate, with very low available water capacity.

   The Mespum-Polma unit is 45 percent Mespun fine sand, 3 to 12 percent slopes, and 40 percent Palma loamy fine sand, 1 to 7 percent slopes. Mespun soil is deep and found in eolian derived dominantly from sandstone. The surface layer is about 2 inches thick, with 60 inches of loamy fine sand and fine sand subsoil. Premeability of the Mespun soil is rapid with low available water capacity. Plama soil also found in eolian derived from sandstone. Typically, the surface layer is 4 inches thick, with 72 inches of fine sandy loam subsoil. Permeability is moderately rapid with moderate available water capacity.

3. Vegetation: The vegetation of the area is typical for the climate and site aspect present at the facility. The potential natural vegetation on the association is characterized by blue grama, western wheatgrass sideoats grama, fourwing saltbrush, and spike muhly.

A. Hydrologic features

1. Bodies of Water: There are no bodies of water located within the vacinity of the facility.

2. Depth to Groundwater: The principal aquifers locally are the Bluff Sandstone and the Quaternary Alluvium. Water in the alluvium is recharged by infiltration through streambed of the Rio San Jose to the north and by seepage from tributary streams. Depth to water in the alluvium near the site is about 25 to 35 feet. Most wells deriving water from the Bluff Sandstone are used for stock watering. Depth to water in the sandstone varies from about 30 feet to 125 feet locally. Within an approximate 10 mile radius of the facility site, 58 wells exist which are completed in either the alluvial or Bluff Sandstone aquifers.

3. Water Chemistry: APPENDIX F.

C. Flood Protection

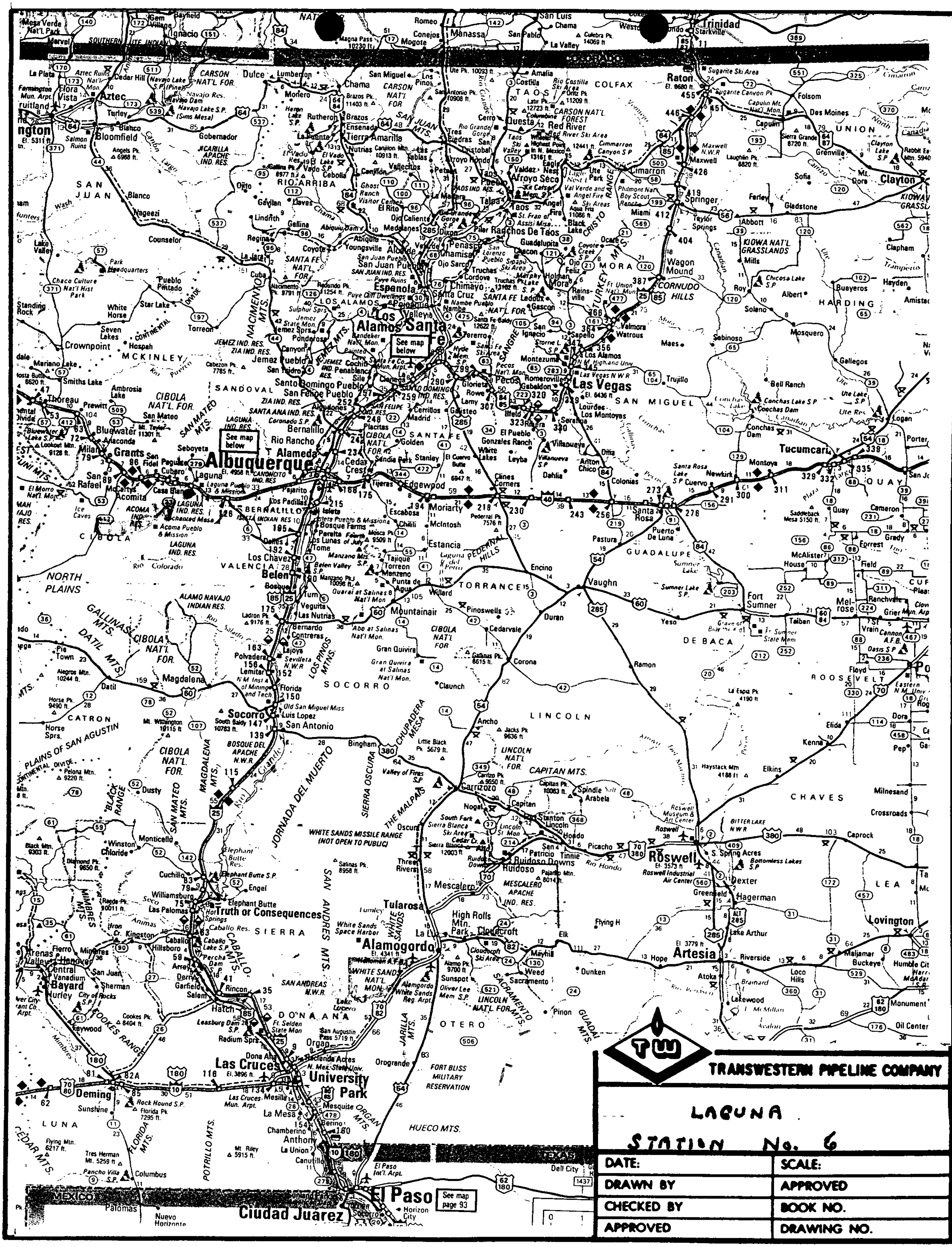
1. Flood Potential: There is no known record or indication of flooding onsite.

2. Flood Protection: Curbs, berms and culverts have been constructed.

V. ADDITIONAL INFORMATION

To be provided as requested.

APPENDIX A

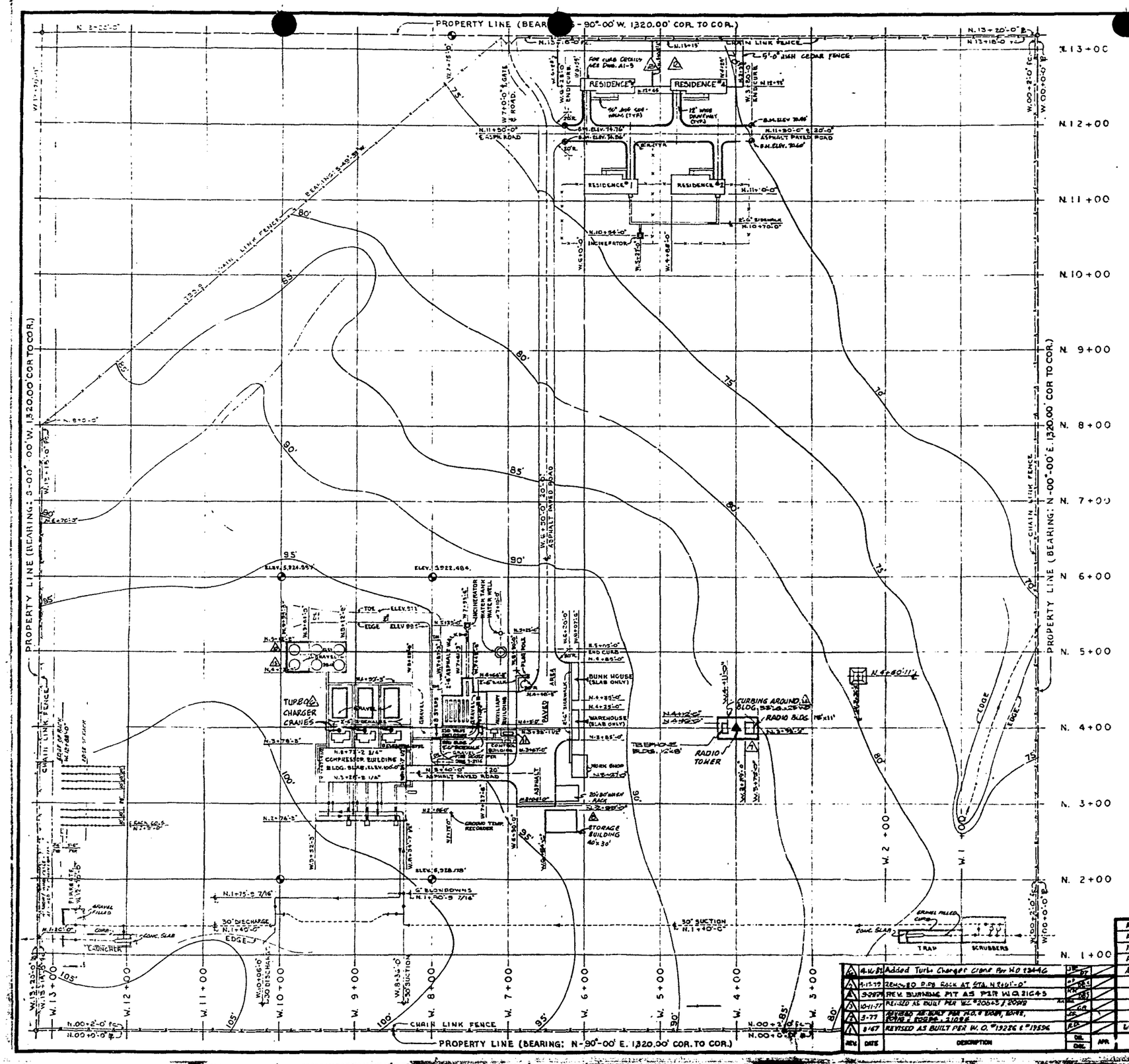


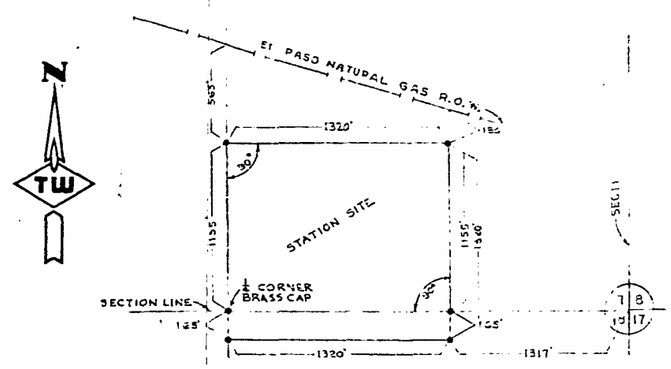
TRANSWESTERN PIPELINE COMPANY

LAQUNA

STATION No. 6

DATE:	SCALE:
DRAWN BY	APPROVED
CHECKED BY	BOOK NO.
APPROVED	DRAWING NO.





LOCATION PLAT

SCALE: 1" = 400'

A 40 ACRE SITE LOCATED IN S.E. 1/4 SECT. 7 & N.E. 1/4 SECT. 18 T.12N.-R.5W. VALENCIA COUNTY, NEW MEXICO.

NOTES

1. ALL ELEVATIONS SHOWN ARE TOP FINISH GRADE.
2. CONTOURS SHOWN ON ROADS & DRIVES ARE FINISH GRADE. SEE DWG. NO. A-3 FOR DETAILS.
3. ELEV. 100.00' THIS DRAWING = 5,927.926' TRUE.
4. LEVEL CONTOUR LINES AT 5' INTERVALS.
5.

LEGEND

BURIED PIPE ----------
ABOVE GRADE PIPE ——————
MONUMENT ⊕
NATURAL DITCH (APPROX) --►
NATURAL RIDGE (APPROX) ——————

REV.	DATE	DESCRIPTION	DR.	CHK.	APP.
1	9-10-84	INSTALLED CEDAR FENCE AT HOUSES #3&4 PER AFE NO. 7335	DT		
2	9-7-84	RENOVATE HOUSES NO. 2 PER W.J. 2-81-19	DT		
3	9/1/84	REPLACE FENCE 3 COTTAGES PER W.J. 2-81-11	DT		
4	6-6-84	INSTALL CURBING & RADIO BLDG PER W.J. 2-81-17	DT		
5	2-2-84	ADD'L CURBS & WATER RUN DOWN TANK PER AFE 22823	DT		
6	12-29-83	INSTALL 2 COMPANY COTTAGES, AFE 22823	DT		
7	12-2-83	INSTALL STATION SEWER TANK PER AFE	KC		
8	12-2-83	INSTALL STATION SEWER TANK PER FIELD INFO.	KC		
9	11-15-82	INSTALL GRAVEL PER W.J. # 2-81-9	KC		
10	10-20-82	ADDED TURBO CHARGER BLDG PER W.O. 22439	KC		
11	9-28-82	ADDED RADIO BLDG & TELE BLDG. PER FIELD INFO	KC		

A1 - 2	GENERAL GRADING PLAN	66
A1 - 3	GENERAL STATION DETAILS	"
A1 - 4	GEN. PLAN, ROADS, WALKS & CURBS	"
A11 - 1	KEY PIPING PLAN	"
A1 - 5	GENERAL STATION DETAILS	"

DWG. NO.	DESCRIPTION
REFERENCE DRAWINGS	

TRANSWESTERN PIPELINE COMPANY

GENERAL PLAN

COMPRESSOR STA. NO. 6. LAGUNA N.M.

SCALE	1" = 60'-0"	DATE	W.O.# 19226
DRAWN	G.S.	8-67	JOB NO.
CHECKED			DRAWING NO.
APPROVED			6-AB-A1-1.
APPROVED	ENG.		

APPENDIX B

LABORATORIES GROUP 6661-A Canyon Drive • Amarillo, Texas 79110 • Telephone (806) 353-4425 • Facsimile (806) 352-6454

Received: 11/20/90 12/12/90 17:15:06

REPORT TO: ENRON GAS OPERATING COMPANY
P. O. BOX 1249
BELEN, NM 87002

ATTEN: RODGER LALONDE

CLIENT: ENRON GAS 7 SAMPLES: 1
COMPANY: ENRON GAS OPERATING COMPANY
FACILITY: LAGUNA, NM

MARK ID: 500 BBL TANK - PIPELINE LIQ. S1A6.
TAKEN: 11/19/90
TRANS:
TYPE: PIPELINE LIQUIDS
P.O. #:
INVOICE: under separate cover

PREPARED BY: ENRECO LABORATORIES GROUP
6661-A CANYON DRIVE
AMARILLO, TEXAS 79110

CERTIFIED BY

ATTEN: CUSTOMER SERVICES
PHONE: (806) 353-4425 CONTACT: PATRICK MOON

WE ARE PLEASED TO PROVIDE THIS CERTIFIED REPORT OF ANALYSIS FEEL FREE TO TELEPHONE CUSTOMER SERVICES IF FURTHER ASSISTANCE IS REQUIRED.

***** SEND SECOND REPORT TO: ENRON GAS PIPELINE OP. CO.
P. O. BOX 2018
ROSWELL, NM 88201
ATTN: LARRY CAMPBELL

SAMPLE IDENTIFICATION

01 S90-0423 500 BBL TNK

TEST CODES and NAMES used on this workorder

8080_P	PCB SERIES
IGNT	IGNITABILITY/FLASH POINT
PH_C	CORROSIVITY PH
TCLP_M	TCLP METAL ANALYSIS
TCLP_O	TCLP ORGANICS
TOX	TOTAL ORGANIC HALOGENS

Flash 139°F
Tox 201

ENRECO
LABORATORIES GROUP
6661-A Canyon Drive • Amarillo, Texas 79110 • Telephone (806) 353-4425 • Facsimile (806) 352-6454

ENRECO LAB REPORT **Work Order # 90-11-117**

Received: 11/20/90

Results by Sample

SAMPLE ID **S90-0423 500 BBL TNK** SAMPLE # **01** FRACTIONS: **A,B,C**

Date & Time Collected **11/19/90** Category _____

IGNT	PH_C	TOX
139	5.89	201
DEGREES F	UNITS	MG/L

ENRECO LABORATORIES GROUP
6661-A Canyon Drive • Amarillo, Texas 79110 • Telephone (806) 353-4425 • Facsimile (806) 352-6454

ENRECO LAB REPORT Work Order # 90-11-117

Received: 11/20/90

Results by Sample

SAMPLE ID **S90-0423 500 BBL TNK** FRACTION **01B** TEST CODE **8080_P** NAME **PCB SERIES**

Date & Time Collected **11/19/90** Category

	RESULT	DET LIMIT	UNITS
PCB-1016	<20	20	MG/L
PCB-1221	<20	20	MG/L
PCB-1232	<20	20	MG/L
PCB-1242	<20	20	MG/L
PCB-1248	<20	20	MG/L
PCB-1254	<20	20	MG/L
PCB-1260	<20	20	MG/L

Notes and Definitions for this Report:

DATE RUN 11/19/90
ANALYST AI

ENRECO LABORATORIES GROUP
6661-A Canyon Drive ▪ Amarillo, Texas 79110 ▪ Telephone (806) 353-4425 ▪ Facsimile (806) 352-6454

ENRECO LAB REPORT

Work Order # 90-11-117

Received: 11/20/90

Results by Sample

SAMPLE ID **S90-0423 500 BBL TNK** FRACTION **01C** TEST CODE **TCLP_M** NAME **TCLP METAL ANALYSIS**

Date & Time Collected **11/19/90** Category

PARAMETER	RESULT	LIMIT	UNITS
ARSENIC	4.75	0.02	MG/L
BARIUM	1.90	0.03	MG/L
CADMIUM	0.08	0.01	MG/L
CHROMIUM	<0.02	0.02	MG/L
LEAD	0.20	0.04	MG/L
MERCURY	0.026	0.003	MG/L
SELENIUM	<0.05	0.05	MG/L
SILVER	<0.02	0.02	MG/L

Notes and Definitions for this Report:

DATE RUN 11/26/90
ANALYST MC

LABORATORIES GROUP 6661-A Canyon Drive • Amarillo, Texas 79110 • Telephone (806) 353-4425 • Facsimile (806) 352-6454

ENRECO LAB REPORT

Work Order # 90-11-117

Received: 11/20/90

Results by Sample

SAMPLE ID **S90-0423 500 BBL TNK** FRACTION **01B** TEST CODE **TCLP_O** NAME **TCLP ORGANICS**

Date & Time Collected **11/19/90** Category

PARAMETER	RESULT	LIMIT	UNITS
BENZENE	430.5	5	UG/L
CARBON TETRACHLORIDE	<5	5	UG/L
CHLORDANE	<30	30	UG/L
CHLOROBENZENE	<5	5	UG/L
CHLOROFORM	<5	5	UG/L
CREOSOL(O,M,P)	<10	10	UG/L
2,4-D	<100	100	UG/L
1,4-DICHLOROBENZENE	<5	5	UG/L
1,2-DICHLOROETHANE	<5	5	UG/L
1,1-DICHLOROETHYLENE	<5	5	UG/L
2,4-DINITROTOLUENE	<10	10	UG/L
ENDRIN	<10	10	UG/L
HEPTACHLOR	<8	8	UG/L
HEXACHLOROBENZENE	<10	10	UG/L
HEXACHLOROBUTADIENE	<10	10	UG/L
HEXACHLOROETHANE	<10	10	UG/L
LINDANE	<10	10	UG/L
METHOXYCLOR	<100	100	UG/L
METHYL ETHYL KETONE	<50	50	UG/L
NITROBENZENE	<10	10	UG/L
PENTACHLOROPHENOL	<50	50	UG/L
PYRIDINE	<50	50	UG/L
TETRACHLOROETHYLENE	<5	5	UG/L
TOXAPHENE	<100	100	UG/L
TRICHLOROETHYLENE	<5	5	UG/L
2,4,5-TRICHLOROPHENOL	<10	10	UG/L
2,4,6-TRICHLOROPHENOL	<10	10	UG/L
2,4,5-TP(SILVEX)	<100	100	UG/L
VINYL CHLORIDE	<10	10	UG/L

Notes and Definitions for this Report:

EXTRACTED 12/04/90

LABORATORIES GROUP
6661-A Canyon Drive • Amarillo, Texas 79110 • Telephone (806) 353-4425 • Facsimile (806) 352-6454

SAMPLE ID **S90-0423 500 BBL TNK** FRACTION **01B** TEST CODE **TCLP_O** NAME **TCLP ORGANICS**
Date & Time Collected **11/19/90** Category

DATE RUN 12/07/90
ANALYST WRW

APPENDIX C

MATERIAL SAFETY DATA SHEET

DOW CHEMICAL U.S.A. MIDLAND, MICHIGAN 48674 EMERGENCY (517) • 636 • 4400

PRODUCT NAME: AMBITROL (R) FL 50 COOLANT

Effective Date: 06/08/90 Date Printed: 06/27/90 MSDS:000584

1. INGREDIENTS: (% w/w, unless otherwise noted)

Ethylene Glycol	CAS# 000107-21-1	47-55%
Diethylene Glycol	CAS# 000111-46-6	<3%
Water	CAS# 007732-18-5	<50%
Dipotassium phosphate	CAS# 007758-11-4	<5%

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

2. PHYSICAL DATA:

BOILING POINT: 229F, 109C
VAP. PRESS: Approx. 2.5 mmHg @ 20C
VAP. DENSITY: Not applicable
SOL. IN WATER: Completely miscible
SP. GRAVITY: 1.084 @ 60/60F, 16C
APPEARANCE: Red liquid.
ODOR: Information not available.

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: None
METHOD USED: PMCC

FLAMMABLE LIMITS
LFL: Not applicable.
UFL: Not applicable.

EXTINGUISHING MEDIA: Water fog, carbon dioxide, dry chemical.

FIRE & EXPLOSION HAZARDS: After 50% of the initial volume has

(Continued on Page 2)

3. FIRE AND EXPLOSION HAZARD DATA: (CONTINUED)

evaporated, the residual solution will burn at temperatures above 290F when exposed to an ignition source.

FIRE-FIGHTING EQUIPMENT: Wear positive-pressure, self-contained breathing apparatus.

4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Not considered to be a problem under normal storage conditions.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Oxidizing material

HAZARDOUS DECOMPOSITION PRODUCTS: After water has volatilized, burning will produce carbon monoxide, carbon dioxide, and water.

HAZARDOUS POLYMERIZATION: Will not occur.

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Small spills: Cover with absorbent material, soak up and sweep into drums for disposal. Large spills: Dike around spill and pump into suitable containers for disposal or reprocessing.

DISPOSAL METHOD: Burn in approved incinerator in accordance with local, state, and federal regulations.

(Continued on Page 3)

6. HEALTH HAZARD DATA:

EYE: Essentially nonirritating to eyes. Vapors or mists may irritate eyes.

SKIN CONTACT: Prolonged or repeated exposure not likely to cause significant skin irritation. May cause more severe response if skin is abraded (scratched or cut).

SKIN ABSORPTION: A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts. The dermal LD50 has not been determined. Repeated skin exposure to large quantities may result in absorption of harmful amounts.

INGESTION: Excessive exposure may cause central nervous system effects, cardiopulmonary effects (metabolic acidosis), and kidney failure. Amounts ingested incidental to industrial handling are not likely to cause injury; however, ingestion of larger amounts could cause serious injury, even death. The oral LD50 for rats is 8200 mg/kg. Single oral dose toxicity is expected to be moderate to humans even though tests with animals show a lower degree of toxicity.

INHALATION: At room temperature, exposures to vapors are minimal due to low vapor pressure. If heated or sprayed as an aerosol, concentrations may be attained that are sufficient to cause irritation and other effects.

SYSTEMIC & OTHER EFFECTS: Excessive exposure may cause irritation to upper respiratory tract. Observations in animals include formation of bladder stones after repeated oral doses of diethylene glycol. Observations in animals include kidney and liver effects and deposition of calcium salts in various tissues after long-term dietary intake of ethylene glycol. Based on data from long-term animal studies, diethylene glycol is not believed to pose a carcinogenic risk to man. Ethylene glycol did not cause

(Continued on Page 4)

6. HEALTH HAZARD DATA: (CONTINUED)

cancer in long-term animal studies. Based on animal studies, ingestion of very large amounts of ethylene glycol appears to be the major and possibly only route of exposure to produce birth defects. Exposures by inhalation (tested nose-only in animals to prevent ingestion) or skin contact, the primary routes of occupational exposure, had minimal or essentially no effect on the fetus. Birth defects are unlikely from exposure to diethylene glycol. Exposures having no adverse effects on the mother should have no effect on the fetus. Diethylene glycol has not interfered with reproduction in animal studies. In studies on rats, ethylene glycol has been shown not to interfere with reproduction. In studies on mice, ingestion of ethylene glycol in large amounts caused a small decrease in the number of litters/pair, live pups/litter, and in live pup weight. Results of in vitro (test tube) mutagenicity tests have been negative.

7. FIRST AID:

EYES: Irrigate immediately with water for at least 5 minutes.

SKIN: Wash off in flowing water or shower.

INGESTION: If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything to an unconscious person.

INHALATION: Remove to fresh air if effects occur. Consult a physician.

NOTE TO PHYSICIAN: Consult standard literature. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient. In the treatment of intoxication by ethylene glycol, the use of ethanol, hemodialysis and

(Continued on Page 5)

PRODUCT NAME: AMBITROL (R) FL 50 COOLANT

Effective Date: 06/08/90 Date Printed: 06/27/90 MSDS:000584

7. FIRST AID: (CONTINUED)

intravenous fluids to control acidosis should be considered. N. Eng. J. Med. 304:21 1981. If burn is present, treat as any thermal burn, after decontamination.

8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): ACGIH TLV is 50 ppm ceiling for ethylene glycol.

VENTILATION: Good general ventilation should be sufficient for most conditions. Local exhaust ventilation may be necessary for some operations.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved air-purifying respirator.

SKIN PROTECTION: Use impervious gloves when prolonged or frequently repeated contact could occur.

EYE PROTECTION: Use safety glasses. If vapor exposure causes eye discomfort, use a full-face respirator.

9. ADDITIONAL INFORMATION:

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Avoid skin and eye contact. Avoid ingestion. Avoid breathing vapors or mists.

Trace quantities of ethylene oxide (EO) may be present in this product. While these trace quantities could accumulate in headspace areas of storage and transport vessels, they are not

(Continued on Page 6)

PRODUCT NAME: AMBITROL (R) FL 50 COOLANT

Effective Date: 06/08/90 Date Printed: 06/27/90 MSDS:000584

9. ADDITIONAL INFORMATION: (CONTINUED)

expected to create a condition which will result in EO concentrations greater than 0.5 ppm (8 hour TWA) in the breathing zones of the workplace for appropriate applications. OSHA has established a permissible exposure limit of 1.0 ppm 8 hr TWA for EO. (Code of Federal Regulations Part 1910.1047 of Title 29)

MSDS STATUS: Revised section 9 and regsheet.

SARA 313 INFORMATION:
This product contains the following substances subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

CHEMICAL NAME	CAS NUMBER	CONCENTRATION
ETHYLENE GLYCOL	000107-21-1	47 -55 %

CHEMICAL NAME	CAS NUMBER	CONCENTRATION
ETHYLENE GLYCOL	000107-21-1	47 -55 %

APPENDIX D

ANALYTICAL LABORATORIES, INC. • 7300 Jefferson, N.E. • Albuquerque, New Mexico 87109

REPORT

Work Order # 91-03-118

Received: 03/13/91

04/03/91 17:03:14

REPORT TO
ENRON/TRANSWESTERN PIPELINE
STATION 6
P.O. BOX 61
LAGUNA,NEW MEXICO 87026
ATTEN SCOTT STONE

CLIENT ENR04 SAMPLES 2
COMPANY ENRON/TRANSWESTERN PIPELINE
FACILITY STATION 6
BELEN, NEW MEXICO

WORK ID LAGUNA, NM
TAKEN 03/13/91
TRANS CLIENT
TYPE SOIL/LIQUID/ASBESTOS
P.O. #
INVOICE under separate cover

PREPARED BY
Assaigai Analytical Labs
7300 Jefferson NE
Albuquerque, NM 87109

ATTEN THOMAS C. DYE
PHONE (505)345-8964

CERTIFIED BY

CONTACT TOM DYE

QUESTIONS ABOUT THIS REPORT SHOULD BE ADDRESSED TO:
DIRECTOR of LABORATORIES/ASSAIGAI ANALYTICAL
7300 JEFFERSON N.E.,ALBUQUERQUE,N.M. 87109

O, M, & P CRESOLS REPORTED AS TOTAL ON M-CRESOL RESULT

SAMPLE IDENTIFICATION

01 91-5113-OWW OILY WW TANK
02 91-5113-OIL USED OIL TANK

TEST CODES and NAMES used on this workorder

BENZ	BENZENE
FLSH_P	FLASHPOINT
TCLP_F	TCLP F SERIES ENRON LIST
TCLP_M	TCLP METALS ENRON LIST
TCLP_O	TCLP ORGANICS ENRON LIST

Oily Waste water tank sample 3-13-91

ANALYTICAL LABORATORIES, INC. • 7300 Jefferson, N.E. • Albuquerque, New Mexico 87109

Received: 03/13/91

REPORT
Results by Sample

Work Order # 91-03-118

SAMPLE ID 91-5113-OWW OILY WW TANK FRACTION 01A TEST CODE TCLP_F NAME TCLP F SERIES ENRON LIST
Date & Time Collected 03/13/91 08:10:00 Category

PARAMETER	RESULT	DET LIMIT
METHYLENE CHLORIDE	<0.05	0.05
1,1,1-TRICHLOROETHANE	0.69	0.05
TRICHLORO-TRIFLUOROETHANE	<0.5	0.5
ORTHO-DICHLOROBENZENE	<0.05	0.05
TRICHLOROFLUOROMETHANE	<0.05	0.05
XYLENE	0.36	0.05
ACETONE	<0.5	0.5
ETHYL ACETATE	<0.5	0.5
ETHYL BENZENE	<0.05	0.05
ETHYL ETHER	<0.5	0.5
METHYL ISOBUTYL KETONE	<0.5	0.5
n-BUTYL ALCOHOL	<0.5	0.5
CYCLOHEXANONE	<0.5	0.5
METHANOL	<10	10
CRESYLIC ACID	<0.01	0.01
TOLUENE	0.16	0.05
CARBON DISULFIDE	<0.5	0.5
ISOBUTANOL	0.83	0.5
2-ETHOXYETHANOL	<10	10
2-NITROPROPANE	<0.5	0.5

SURROGATE	%RECOVERY	LIMITS
4-BROMOFLUOROBENZENE	105	86 - 115
1,2-DICHLOROETHANE-d4	79	76 - 114
TOLUENE-d8	101	88 - 110

Notes and Definitions for this Report:

EXTRACTED 03/19/91

ANALYTICAL LABORATORIES, INC. • 7300 Jefferson, N.E. • Albuquerque, New Mexico 87109

REPORT

Work Order # 91-03-118

Received: 03/13/91

Results by Sample

Continued From Above

SAMPLE ID 91-5113-OWW OILY WW TANK FRACTION 01A TEST CODE TCLP_F NAME TCLP F SERIES ENRON LIST

Date & Time Collected 03/13/91 08:10:00 Category

DATE RUN 04/02/91

ANALYST DD

UNITS MG/L

ANALYTICAL LABORATORIES, INC. • 7300 Jefferson, N.E. • Albuquerque, New Mexico 87109

REPORT

Work Order # 91-03-118

Received: 03/13/91

Results by Sample

SAMPLE ID 91-5113-OWW OILY WW TANK FRACTION 01B TEST CODE TCLP_M NAME TCLP METALS ENRON LIST

Date & Time Collected 03/13/91 06:10:00 Category

PARAMETER	RESULT	DET LIMIT
ARSENIC	0.009	0.005
BARIUM	2.6	0.5
CADMIUM	<0.003	0.003
CHROMIUM	<0.02	0.02
LEAD	<0.10	0.10
MERCURY	<0.0002	0.0002
SELENIUM	<0.005	0.005
SILVER	<0.01	0.01

Notes and Definitions for this Report:

EXTRACTED 03/15/91
DATE RUN 03/19/91
ANALYST JB
UNITS MG/L

ANALYTICAL LABORATORIES, INC. • 7300 Jefferson, N.E. • Albuquerque, New Mexico 87109

REPORT

Work Order # 91-03-118

Received: 03/13/91

Results by Sample

SAMPLE ID 91-5113-OWW OILY WW TANK FRACTION 01A TEST CODE TCLP_O NAME TCLP ORGANICS ENRON LIST

Date & Time Collected 03/13/91 08:10:00 Category

PARAMETER	RESULT	DET LIMIT
BENZENE	<0.05	0.05
CARBON TETRACHLORIDE	<0.05	0.05
CHLOROBENZENE	<0.05	0.05
CHLOROFORM	<0.05	0.05
1,2-DICHLOROETHANE	<0.05	0.05
1,1-DICHLOROETHYLENE	0.10	0.05
METHYL ETHYL KETONE	<0.5	0.5
TETRACHLOROETHYLENE	<0.05	0.05
TRICHLOROETHYLENE	<0.05	0.05
VINYL CHLORIDE	<0.05	0.05
O-CRESOL	*********	********
M-CRESOL	@ <0.01	0.01
P-CRESOL	*********	********
1,4-DICHLOROBENZENE	<0.01	0.01
2,4-DINITROTOLUENE	<0.01	0.01
HEXACHLOROBENZENE	<0.01	0.01
HEXACHLORO-1,3-BUTADIENE	<0.01	0.01
HEXACHLOROETHANE	<0.01	0.01
NITROBENZENE	<0.01	0.01
PENTACHLOROPHENOL	<0.05	0.05
PYRIDINE	<0.01	0.01
2,4,5-TRICHLOROPHENOL	<0.01	0.01
2,4,6-TRICHLOROPHENOL	<0.01	0.01

SURROGATE	%RECOVERY	LIMITS
4-BROMOFLUOROBENZENE	105	86 - 115
1,2-DICHLOROETHANE-d4	79	76 - 114
TOLUENE-d8	101	88 - 110

ANALYTICAL LABORATORIES, INC. • 7300 Jefferson, N.E. • Albuquerque, New Mexico 87109

Received: 03/13/91

REPORT
Results by Sample

Work Order # 91-03-118
Continued From Above

SAMPLE ID 91-5113-OWW OILY WW TANK FRACTION 01A TEST CODE TCLP_O NAME TCLP ORGANICS ENRON LIST
Date & Time Collected 03/13/91 08:10:00 Category

Notes and Definitions for this Report:

EXTRACTED	03/19/91
DATE RUN	04/02/91
ANALYST	DD
UNITS	MG/L

APPENDIX E

EARTH SCIENCE TECHNOLOGY

TEST CERTIFICATE

TANK OWNER	TRANSWESTERN PIPELINE COMPANY
CONTACT PERSON	ROGER LALONDE
ADDRESS	P.O. BOX 1249
CITY, STATE	BELEN, NEW MEXICO 87002
TELEPHONE	1-505-864-7461
TANK ADDRESS	
CITY, STATE	LAGUNA, NEW MEXICO
TEST METHOD	HORNER EZY-CHEK
TEST DATE	03-11-91

TANK	CAPACITY	PRODUCT	HIGH TEST	LOW TEST
#3	1,034 GAL.	DIESEL	+.0025	N/A
#4	2,005 GAL.	NO LEAD	-.0020	N/A

REMARKS THE ABOVE TANKS PASSED THE FULL SYSTEMS TEST. THE PRODUCT LINES TESTED TIGHT. THE ABOVE TANKS MEET ALL OF STATE, LOCAL, AND FEDERAL REGULATIONS.

APPROVAL JOHN McCONEGHEY SIGNATURE John McConeghey

HORNER EZY-CHEK

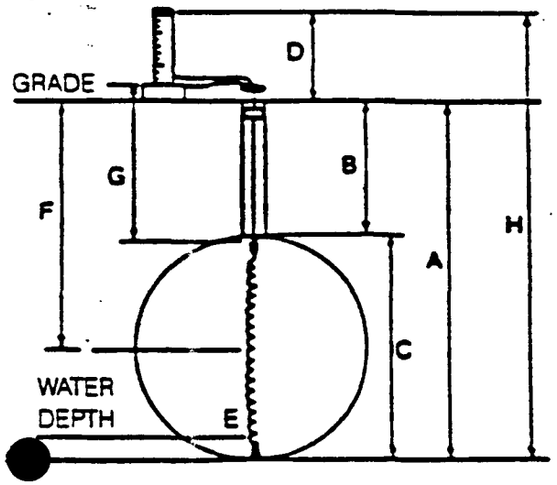
LIENT
AME OF SUPPLIER.
WNER OR DEALER TRANSWESTERN PIPELINE CO
DDRESS (NO. & STREET) P.O. BOX 1249
ITY AND STATE BELEN, N.M. 87002

DATE OF TEST 3-11-91
WEATHER WINDY TEMPERATURE 60°

ANK INFORMATION
APACITY (NOMINAL) 2000 GALS.
APACITY (CHART) 2005 GALS.
IMENSIONS: DIAMETER 64
LENGTH 104

SIZE OF FILL OR TEST OPENING 4" IN.
TOP OFF TIME 3-7-91 GALLONS 1800
NUMBER OF GALLONS ADDED TO START TEST 15
TANK NO. #4
INCHES OF WATER – BEFORE TEST 0" AFTER TEST 12"

CONTENTS (PRODUCT) UNLEADED
TANK MATERIAL STEEL
APPROX. AGE 12
PUMP SYSTEM (TYPE) SUCTION



A.	Tank Bot. to Grade	92 "
B.	Tank Top to Grade	28 "
C.	Tank Diameter	64 "
D.	Test Level above grade	34 "
E.	Depth of water in tank	0 "
F.	Depth for taking sample	60 "
G.	Temp. Probe depth (connector)	30 "
H.	Test Level to tank bottom	116 "
	Product Pressure per 1" height	.026 PSI

Test Pressure Formula

$$\frac{116}{H} \times \frac{.026}{J} - \left(\frac{0}{I} \times .036 \right) = \frac{3.02}{\text{NET TEST PRESSURE}}$$

TANK LAYOUT

NOTES:

DATA CHART FOR TANK SYSTEM TIGHTNESS TEST

Blue D

CLIENT/SITE TRANSWESTERN PIPELINE CO.

ADDRESS LAGUNA, N. M.

PRODUCT LINE TESTING

Time (Military)	Reading No.	PRODUCT MONITORING ON LL Start	End	+Gain -Loss	X Factor A	Product +Gain -Loss
430	4	321	321	0	.003	0
440	5	321	321	0	.003	0
450	6	321	321	0	.003	0

TEST---- 0

PRODUCT LINE TESTING

Time (Military)	Reading No.	PRODUCT MONITORING ON LL Start	End	+Gain -Loss	X Factor A	Product +Gain -Loss
800	1	321	321	0	.003	0
410	2	321	321	0	.003	0
420	3	321	321	0	.003	0

MONITOR---- 0

Time (Military)	Product Monitoring on LLR Start	End	+Gain -Loss	X Factor A	Product +Gain -Loss	Temperature Compensation A Start	End	+Gain -Loss	X Factor B	+Expansion -Contraction	Temperature Compensation B Start	End	+Gain -Loss	X Factor B	+Expansion -Contraction	Net Vol Change LLP
215																
220	61	61	0	.0012	0						.116	.117	+.001	1.35	+.0014	-.0014
225	40	40	0		0						.117	.118	+.001		+.0014	-.0014
230	36	37	+1		+.0012						.118	.119	+.001		+.0014	-.0028
235	37	38	+1		+.0012						.119	.120	+.001		+.0014	-.0028
240	38	39	+1		+.0012						.120	.121	+.001		+.0014	-.0028
245	39	39	0		0						.121	.120	-.001		-.0014	+.0014
250	39	39	0		0						.120	.120	0		0	0
255	39	39	0		0						.120	.120	0		0	0
300	39	39	0		0						.120	.120	0		0	0
305	39	39	0		0						.120	.121	+.001		+.0014	-.0014
310	39	39	0		0						.121	.122	+.001		+.0014	-.0014
315	39	39	0		0						.122	.122	0		0	0

MONITOR RESULTS----

Leakage Indicated	Standard Deviation
-.0040	.0009

Time (Military)	Product Monitoring on LLR Start	End	+Gain -Loss	X Factor A	Product +Gain -Loss	Temperature Compensation A Start	End	+Gain -Loss	X Factor B	+Expansion -Contraction	Temperature Compensation B Start	End	+Gain -Loss	X Factor B	+Expansion -Contraction	Net Vol Change LLP
320	39	39	0	.0012	0						.122	.122	0	1.35	0	0
325	39	40	+1		+.0012						.122	.122	0		0	+.0012
330	40	40	0		0						.122	.123	+.001		+.0014	-.0014
335	40	41	+1		+.0012						.123	.123	0		0	+.0014
340	41	41	0		0						.123	.123	0		0	0
345	41	42	+1		+.0012						.123	.124	+.001		+.0014	-.0028

Leakage Indicated	Standard Deviation
-.0029	.0008

TEST CALIBRATION

BEGIN 40 TO 61 - 21
41 TO 62 - 21
40 TO 62 - 22

END ____ TO ____ - ____
____ TO ____ - ____
____ TO ____ - ____

0.4 PSI DROP 4 HRS

MEASURED API SPECIFIC GRAVITY 57

PRODUCT TEMPERATURE 49

API SPECIFIC GRAVITY @ 60° F 58.1

COEFFICIENT OF EXPANSION .0001073

TEST RESULTS---

Tank No. 4

Tight YES

Leakage Indicated -.0029

Technician JOHN McCONEGHEY

Date Tested 7-11-91

Calibration Rod .05 - 21.67 lines = ____ FACTOR A

Size of Tank 2005 Coefficent of x Expansion .00067 = 1.35 FACTOR B

JENT
AME OF SUPPLIER.
WNER OR DEALER TRANSWESTERN PIPELINE
DDRESS (NO. & STREET) P.O BOX 1249
TY AND STATE BELEN, N.M. 87002

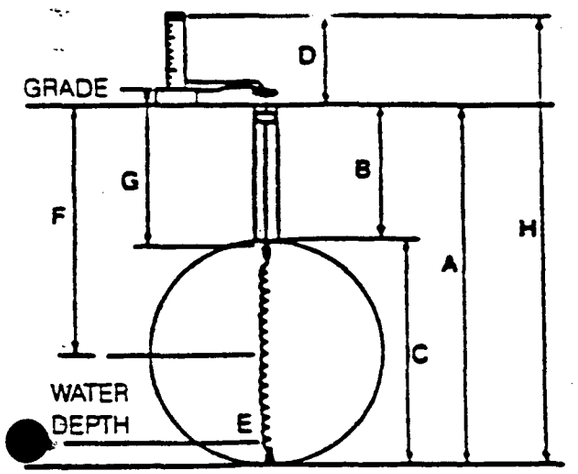
DATE OF TEST 3-11-91
WEATHER WINDY TEMPERATURE 60°

ANK INFORMATION

APACITY (NOMINAL) 1000 GALS.
APACITY (CHART) 1034 GALS.
IMENSIONS: DIAMETER 48
LENGTH 132

SIZE OF FILL OR TEST OPENING 4" IN.
TOP OFF TIME 3-7-91 GALLONS
NUMBER OF GALLONS ADDED TO START TEST 10
TANK NO. 3
INCHES OF WATER – BEFORE TEST 0" AFTER TEST 0"

CONTENTS (PRODUCT) DIESEL
TANK MATERIAL STEEL
APPROX. AGE 12
PUMP SYSTEM (TYPE) SUCTION

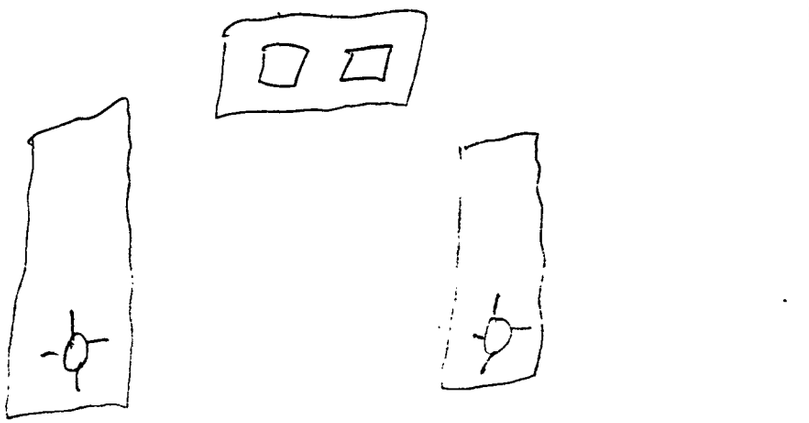


A. Tank Bot. to Grade	76	"
B. Tank Top to Grade	28	"
C. Tank Diameter	48	"
D. Test Level above grade	36	"
E. Depth of water in tank	12	"
F. Depth for taking sample	52	"
G. Temp. Probe depth (connector)	30	"
H. Test Level to tank bottom	112	"
Product Pressure per 1" height	.031	PSI

Test Pressure Formula

$$\frac{112}{H} \times \frac{.031}{J} - \left(\frac{12}{I} \times .036\right) = \frac{3.47}{\text{NET TEST PRESSURE}}$$

TANK LAYOUT



NOTES:

DATA CHART FOR TANK SYSTEM TIGHTNESS

CLIENT/SITE TRANSPORTATION DEPT.

ADDRESS LAGUNA N.M.

PRODUCT LINE TESTING

Time (Military)	Reading No.	PRODUCT MONITORING ON LL: Start	End	+Gain -Loss	X Factor A	Product +Gain -Loss
430	4	241	241	0	.003	0
440	5	241	241	0	.003	0
450	6	241	241	0	.003	0

TEST---- 0

PRODUCT LINE TESTING

Time (Military)	Reading No.	PRODUCT MONITORING ON LL: Start	End	+Gain -Loss	X Factor A	Product +Gain -Loss
500	1	241	291	0	.003	0
510	2	291	291	0	.003	0
520	3	291	291	0	.003	0

MONITOR---- 0

Time (Military)	Product Monitoring on LLP: Start	End	+Gain -Loss	X Factor A	Product +Gain -Loss	Temperature Compensation A: Start	End	+Gain -Loss	X Factor B	+Expansion -Contraction	Temperature Compensation B: Start	End	+Gain -Loss	X Factor B	+Expansion -Contraction	Net Vol Change: LLP
215																
220	92	92	0	.0009	0						.491	.490	-.001	.46	-.0005	+.0005
225	62	62	0		0						.490	.489	-.001		-.0005	+.0005
230	62	62	0		0						.489	.488	-.001		-.0005	+.0005
235	62	62	0		0						.488	.487	-.001		-.0005	+.0005
240	62	62	0		0						.487	.486	-.001		-.0005	+.0005
245	62	62	0		0						.486	.485	-.001		-.0005	+.0005
250	62	62	0		0						.485	.484	-.001		-.0005	+.0005
255	62	62	0		0						.484	.484	0		0	0
300	72	72	0		0						.484	.483	-.001		-.0005	+.0005
305	72	72	0		0						.483	.483	0		0	0
310	72	72	0		0						.483	.483	0		0	0
315	72	72	0		0											

MONITOR RESULTS----

Leakage Indicated	Standard Deviation
+.0025	.0002

Time (Military)	Product Monitoring on LLP: Start	End	+Gain -Loss	X Factor A	Product +Gain -Loss	Temperature Compensation A: Start	End	+Gain -Loss	X Factor B	+Expansion -Contraction	Temperature Compensation B: Start	End	+Gain -Loss	X Factor B	+Expansion -Contraction	Net Vol Change: LLP
320	72	72	0	.0009	0						.483	.482	-.001	.46	-.0005	+.0005
325	72	72	0		0						.482	.482	0		0	0
330	72	72	0		0						.482	.482	0		0	0
335	72	72	0		0						.482	.482	0		0	0
340	72	72	0		0						.482	.481	-.001		-.0005	+.0005
345	72	72	0		0						.481	.481	0		0	0

TEST RESULTS---

Leakage Indicated	Standard Deviation
+.0025	.0022

TEST CALIBRATION

BEGIN 70 TO 98 - 28

70 TO 99 - 27

70 TO 99 - 29

END ____ TO ____ - ____

____ TO ____ - ____

____ TO ____ - ____

0.4 PSI DROP 4 HRS

MEASURED API SPECIFIC GRAVITY 30

PRODUCT TEMPERATURE 50°

API SPECIFIC GRAVITY @ 60° F 3L8

COEFFICIENT OF EXPANSION .00044?

Tank No. 3

Tight YES

Leakage Indicated +.0025

Technician JOHN McCONNEHEY

Date Tested 7-11-91

Calibration Rod .025 - 21 lines = FACTOR A .0009

Size of Tank 1036 Coefficent of x Expansion .00044? = FACTOR B .46

APPENDIX F

KRAMER & ASSOCIATES

LABORATORY: 125 EUBANK N.E.
ALBUQUERQUE, NM 87123
505-292-4084

GROUND WATER SAMPLE ANALYSIS REPORT

TRANSWESTERN PIPELINE COMPANY

SAMPLE IS WELL #24
**** ALL UNITS ARE MG/L ****

DATE SAMPLED: 2 / 14 / 85 DATE ANALYSED: 2 / 19 / 85

		PH =	8.36
TOTAL DISS. SOLIDS =	335	CARBONATE =	1.218
CONDUCTIVITY(UMHOS)=	400	BICARBONATE =	200
		ALKALINITY =	164
HARDNESS AS CACO3 =	164	P.ALKALINITY =	2
CALCIUM =	51.2	SULFATE =	30
MAGNESIUM =	8.74		
SODIUM =	27	PHOSPHATE =	<0.05
POTASSIUM =	2.2	NITRATE AS N =	1.1
TOTAL IRON =	<0.01	CHLORIDE =	15
TOTAL MANGANESE =	0.02	FLUORIDE =	.4

READY.

ENRON
Transwestern Pipeline Company

P. O. Box 1188 Houston, Texas 77251-1188 (713) 853-6161

December 10, 1991

Mr. Dave Boyer
Oil Conservation Division
Energy and Minerals Department
State of New Mexico
310 Old Santa Fe Trail
State Land Office Building , Room 206
Santa Fe, New Mexico 87501

Re: Closure of Monitor Wells Under EPA Consent Decree, Laguna Station

Dear Mr. Boyer:

On behalf of Transwestern Pipeline Company (Transwestern), five pairs of monitor wells were originally operated for PCBs at Station 6, Laguna under the Consent Decree with EPA. These consisted of two depths of monitor wells in five clusters; one well at each location with completion at 125 to 138 feet (denoted as S),and one well at each location with completion at 215 to 341 feet (denoted as D). The locations of these wells are shown as numbers 6-1 through 6-5 on Figure 1 which is Attachment 1 to this letter.

Under the Consent Decree with EPA, only monitoring of the upper ground water is required. Earlier this year a thin shallow ground water perched on the rock at around ten feet was found for the first time. Monitor wells have been established in this perched groundwater and EPA has agreed to the closure of the initial 10 wells.

For these ten wells, details on the background and configuration of the installations and proposed procedures for closure are provided in the letter report from Daniel B. Stephens & Associates, dated January 7, 1991 which is Attachment 2 to this letter. The historic analytical data for these wells is shown in Attachment 3, "Summary Of Analytical Results", ENRON Laguna Monitor Wells, July 9, 1991.

Since the wells are not necessary and are not being monitored, Transwestern believes that they should be closed so that they cannot become a pathway for potential transport to these greater depths. Since these wells have not been sampled since April, we are in the process of sampling 6-1S, 6-3S and 6-5S to confirm that there is no change in conditions before implementation of closure process.

Transwestern would like to close these wells as soon as possible. To expedite this, Ted Ryther will call you with the results of the recent confirmation tests and, hopefully, having revied this letter and the tests giving expected results, the wells may be closed.

In the meantime, should you have any questions please call me at (713) 853-3219 or Ted Ryther at (713) 853-5634.

Yours very truly,

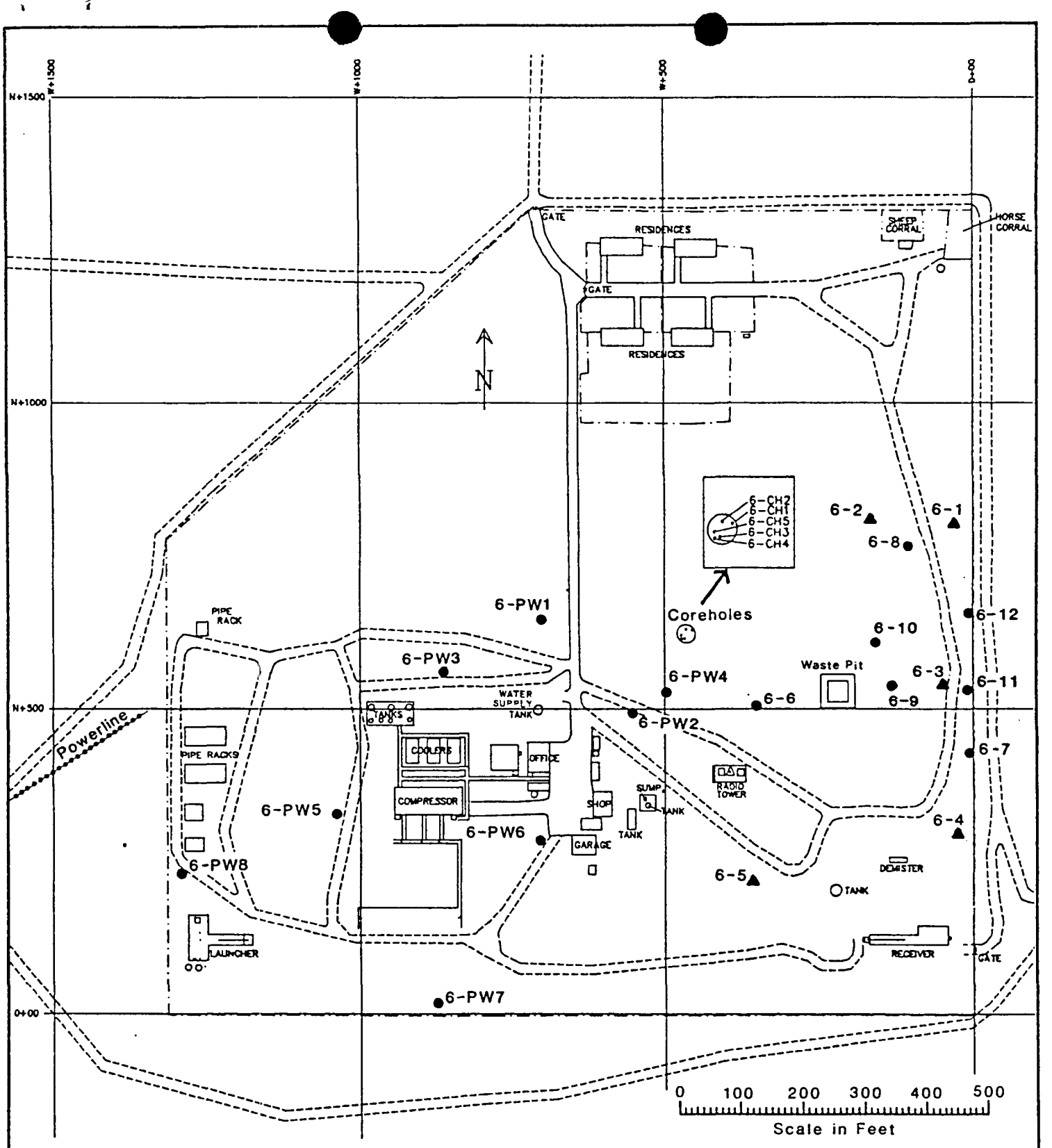
James C. Alexander
Manager of Projects, Environmental Affairs

Attachments (3)

cc: Ms. Donna Mullins, USEPA Region VI, Dallas
Mr. Thomas H. McGraw, New Mexico Dept. Of Environment, Santa Fe
Mr. Ed Wise, Entrix, Houston

ATTACHMENT 1

FIGURE 1



LEGEND

- 6-PW7 ● PERCHED AQUIFER MONITOR WELL
- 6-2 ▲ DEEPER AQUIFER MONITOR WELL
- FENCE
- GRAVEL/DIRT ROAD
- PAVED ROAD

DANIEL B. STEPHENS & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS AND ENGINEERS
ALBUQUERQUE, NEW MEXICO

FIGURE 1
MONITOR WELL LOCATIONS
TRANSWESTERN PIPELINE COMPANY
COMPRESSOR STATION NO. 6
LAGUNA, NEW MEXICO

DATE	PROJECT NO	DESIGNED BY	DRAWN BY	CHECKED BY
7/9/91	89-030L	BM	REA	JH

ATTACHMENT 2

DANIEL B. STEPHENS & ASSOCIATES LETTER

DANIEL B. STEPHENS & ASSOCIATES, INC.
ENVIRONMENTAL SCIENTISTS AND ENGINEERS

September 25, 1991

Mr. Ted Ryther
Environmental Affairs E-2575
ENRON Corporation 1400 Smith Street
P.O. Box 1188
Houston, TX 77002

RE: Closure of Monitor Wells 6-1 thorough 6-5 at Compressor Station #6, Laguna, New Mexico

Dear Mr. Ryther:

The purpose of this letter is to propose detailed closure (abandonment) plans for the subject monitor wells at Laguna. These plans have been designed to permanently eliminate potential pathways for contaminant migration from the land surface, to underlying water-bearing formations (Bluff, Summerville, and Todilto). These water-bearing bedrock units all have very low permeability. Daniel B. Stephens & Associates, Inc. (DBS&A) has designed these closure plans to ensure that all parties concerned will have a high level of confidence that potential contaminant pathways will be eliminated. Draft ASTM procedures for decommissioning wells (new Standard Practice for the Decommissioning of Ground Water Wells, Vadose Monitoring Devices, Boreholes, and Other Devices for Environmental Activities, ASTM D-18.21.06) and State of New Mexico's regulations have been consulted prior to developing these plans. The proposed closure plan in all cases meets or exceeds the requirements specified in these guidance documents.

DBS&A has used pertinent well completion, drilling, and geologic data to develop the closure plan for the wells described in the following paragraphs. Well schematics for each well are included in Attachment 1.

It is expected that drilling and grouting operations should take approximately two to three working days for each well.

Test Wells 6-1, 6-2, 6-3, 6-4, and 6-5

The five subject monitor wells are nested wells consisting of multiple single-riser/limited interval wells that are constructed in a single borehole. Each borehole contains one deep and one shallow PVC monitor well. The shallow monitor wells range in depth from 130 feet to 160 feet and the deep monitor wells range in depth from 220 feet to 341 feet (Attachment 1). The general approach for eliminating contaminant migration pathways from the ground surface to underlying aquifers involves cement grouting each borehole from total depth to the ground surface. It should be possible to remove all PVC screen and casing, the Volclay grout seal separating the wells and all filter pack by re-drilling the borehole using an 8¾-inch tri-cone rock bit. Minor amounts of a surfactant foam may be used to facilitate removal of cuttings from the borehole. The borehole will be grouted from the bottom to the surface using a 2⅜ steel tremie pipe. The cohesive nature of the formations involved suggest that it will be possible to grout all regions of each borehole.

However, if when implementing the well closure procedures described below the formation takes excessive amounts of grout (e.g. more than three times the amount calculated), DBS&A recommends an alternative method for sealing off the upper portion of the borehole. The procedure involves setting a cement basket (plug) above the zone taking excessive amounts of grout. The plug is allowed to set overnight and grouting operations resume the following day. This procedure has been previously implemented by DBS&A for closure of monitor wells at the Mountainair and Corona compressor stations. The existing 10-inch diameter by 20 foot long steel surface casing will be cut off at the surface. A steel cap with the well number and abandonment date will then be welded to the top of the steel surface casing.

If you should have any questions or concerns, please do not hesitate to call me.

Regards,

DANIEL B. STEPHENS & ASSOCIATES, INC.

K.C. Thompson
Geologist

Attachments: As stated

KCT/fg

ENRON(5)/LAGUNA/RYTHER.925

COST ESTIMATE

Monitor Well Abandonment 89-033-L
Laguna, New Mexico

TASK 1. WORK PLAN PREPARATION

Professional Services			
Project Manager	6 hours @ $72/hr	$	432.00
Health and Safety Officer	4 hours @ $72/hr	$	288.00
Project Geologist	8 hours @ $45/hr	$	360.00
Clerical	5 hours @ $25/hr	$	125.00
	Subtotal	$	1,205.00
Expenses			
Office Expenses		$	100.00
(computer, phone, xerox, postage, etc.)			
	Subtotal	$	100.00
	TASK 1 TOTAL	**$**	**1,305.00**

TASK 2. MONITOR WELL ABANDONMENT

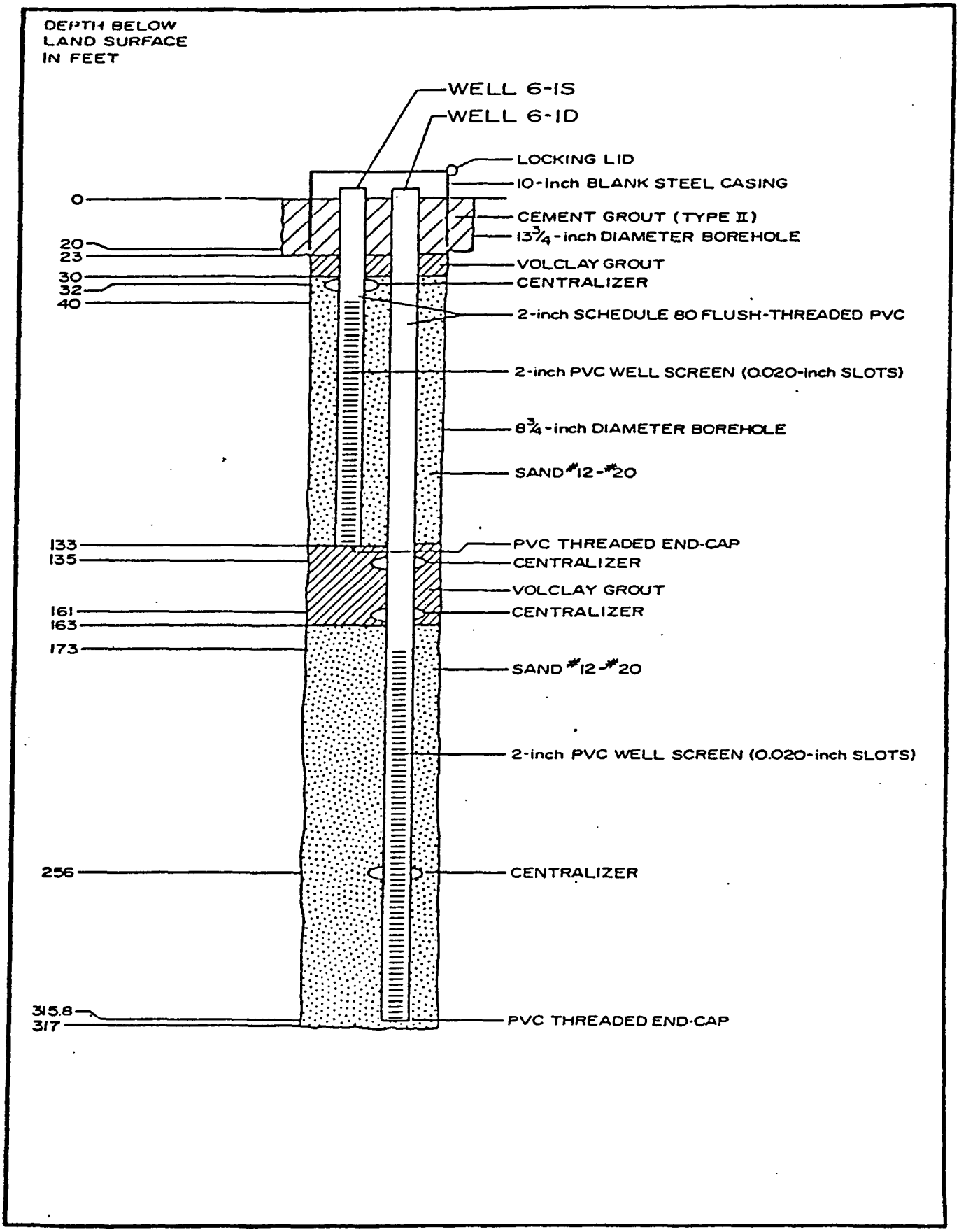
Professional Services			
Project Manager	15 hours @ $72/hr	$	1,080.00
Project Geologist	158 hours @ $45/hr	$	7,110.00
Staff Hydrologist	10 hours @ $50/hr	$	500.00
Technician	16 hours @ $30/hr	$	480.00
	Subtotal	$	9,170.00
Expenses			
Estimated based on abandonment of five deep monitor wells at three days per well.			
Stewart Brothers Drilling Co.		$	31,473.00
Field Supplies		$	200.00
(gloves, Tyvek, plastic, etc.)			
Instrument Rental (TE 5BOB OVM)	3 weeks @ $260/week	$	780.00
Maintenance and Calibration Fee		$	150.00
Instrument Shipping	2 shipments @ $30/each	$	60.00
Lodging and Per Diem	19 overnight days	$	1,425.00
Travel	21 round trips @ 65 mi x .40/mile	$	546.00
	Subtotal	$	34,634.00
	Task 2 Subtotal	**$**	**43,804.00**

COST ESTIMATE (CONTINUED)

TASK 3. REPORT PREPARATION

Professional Services			
Principal Hydrologist	3 hours @ $125/hr	$	375.00
Project Manager	12 hours @ $72/hr	$	864.00
Project Hydrogeologist	16 hours @ $45/hr	$	720.00
Drafting	30 hours @ $30/hr	$	900.00
Clerical	8 hours @ $25/hr	$	200.00
Expenses			
Office Expenses (computer, telephone, xerox, postage)		$	200.00
	TASK 3 SUBTOTAL	**$**	**3,259.00**
	Project Subtotal	$	48,368.00
	New Mexico State Gross Receipts Sales Tax	$	2,781.16
	TOTAL	**$**	**51,149.16**

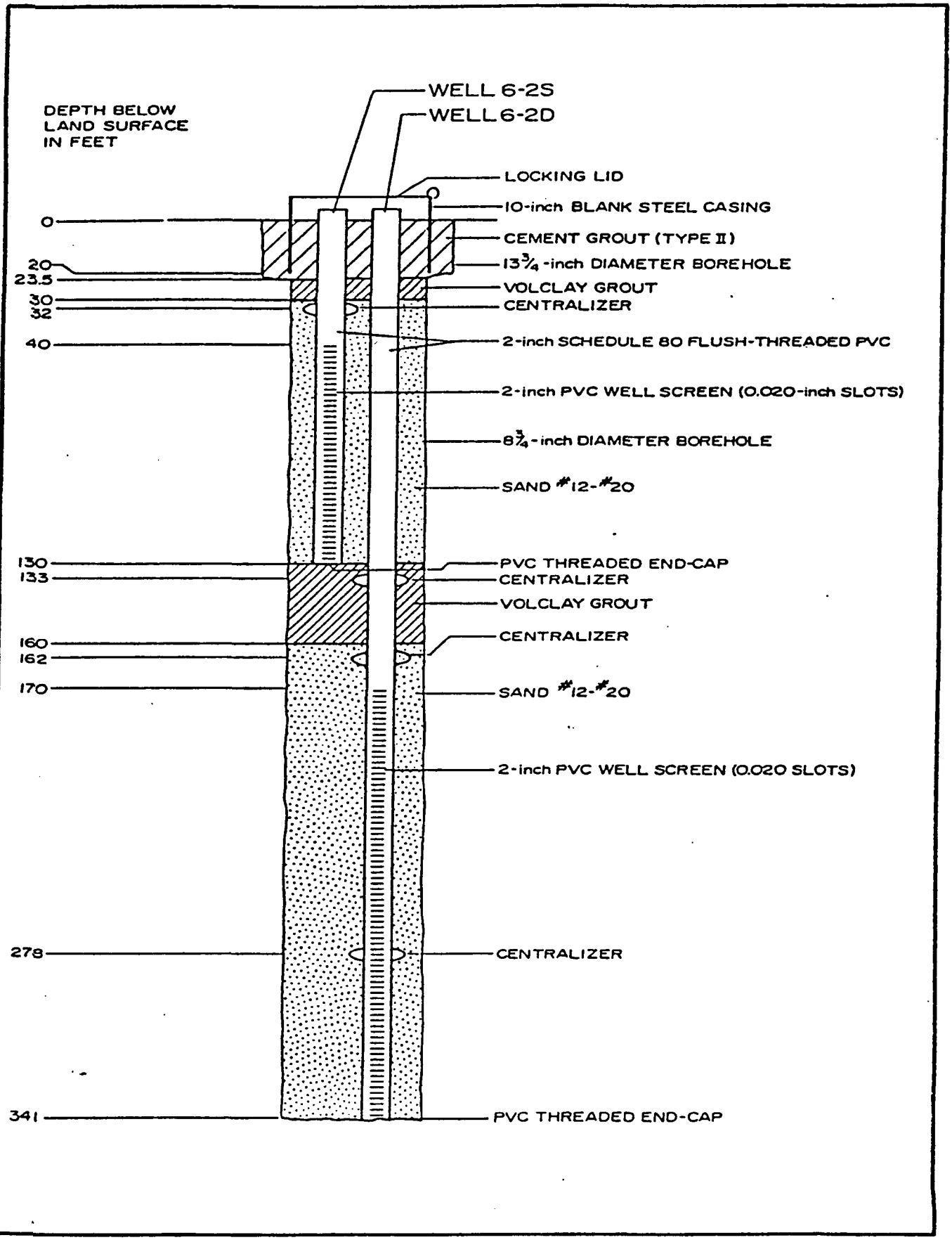
ATTACHMENT 1



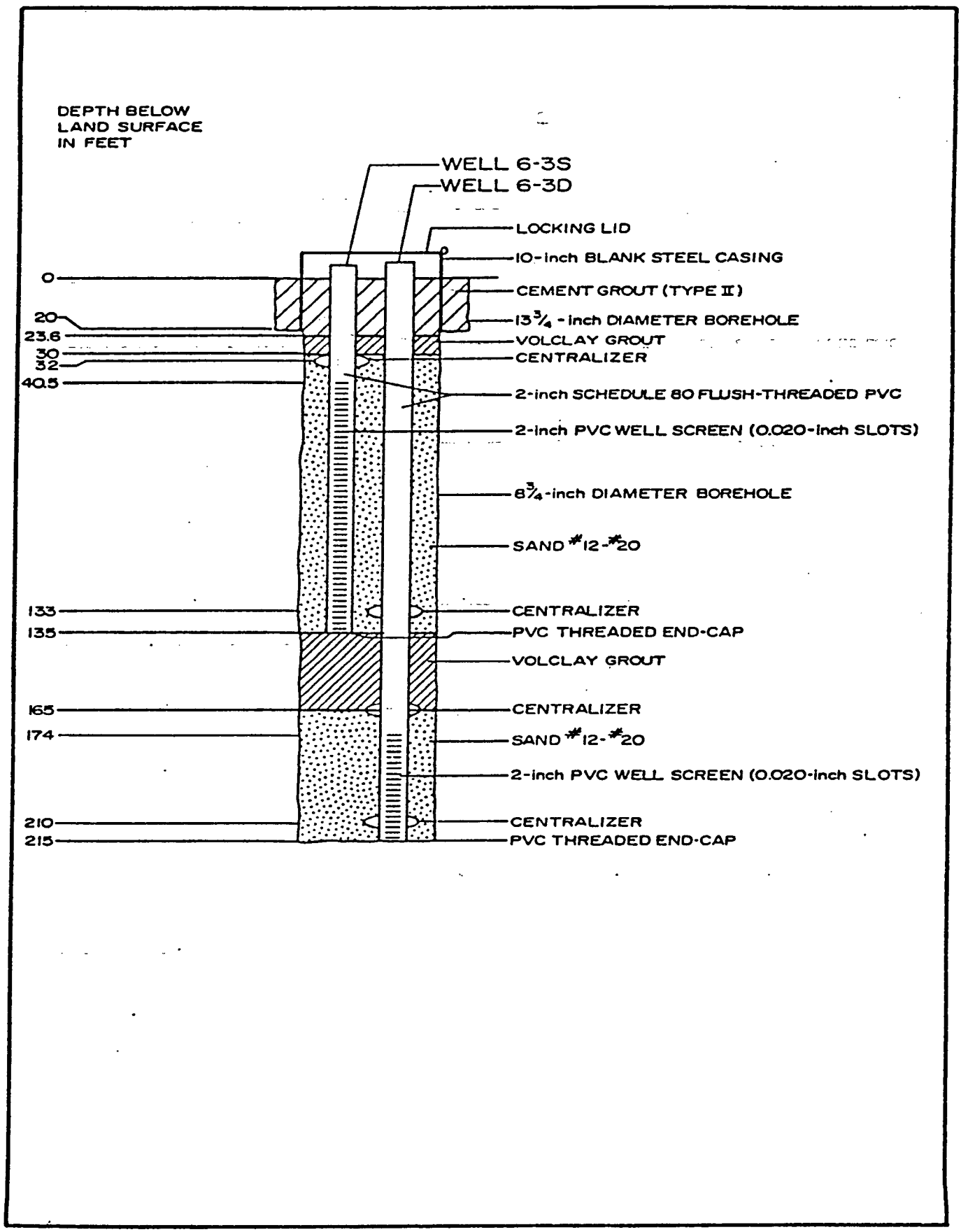
WELL SCHEMATIC

6-1

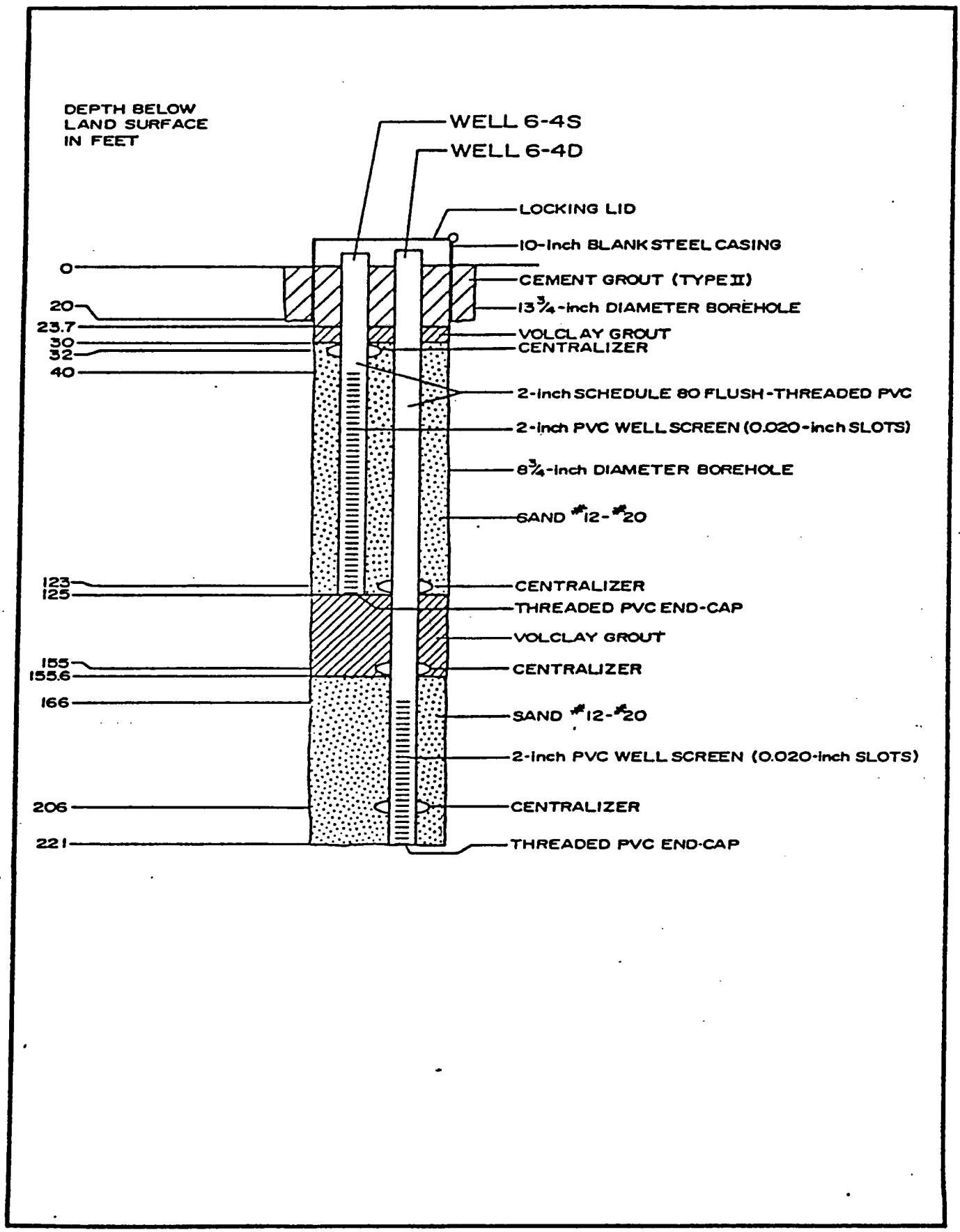
LAGUNA, NEW MEXICO



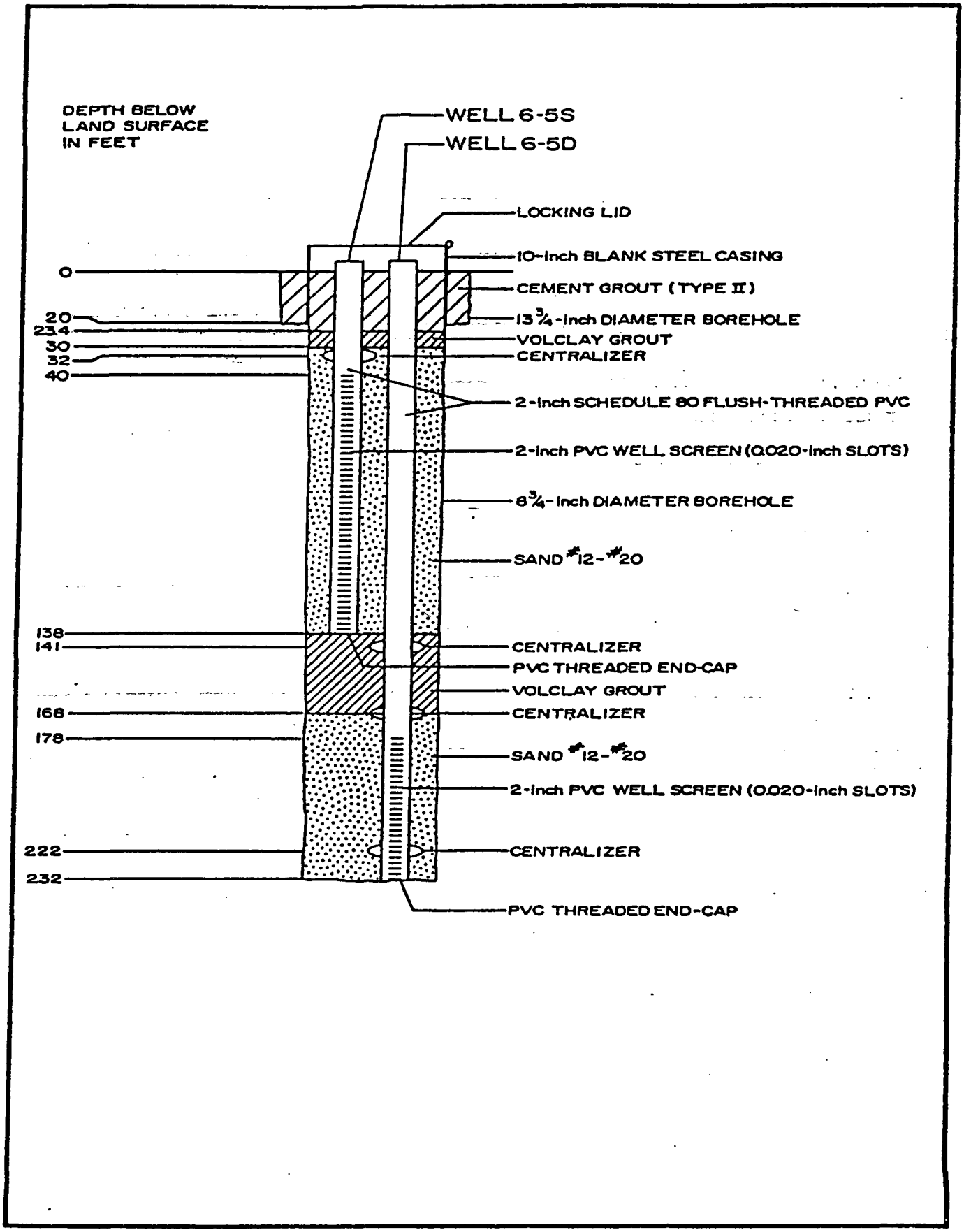
WELL SCHEMATIC
6-2
LAGUNA, NEW MEXICO



WELL SCHEMATIC
6-3
LAGUNA, NEW MEXICO



WELL SCHEMATIC
6-4
LAGUNA, NEW MEXICO



WELL SCHEMATIC
6-5
LAGUNA, NEW MEXICO

ATTACHMENT 3

SUMMARY OF ANALYTICAL RESULTS

SUMMARY OF ANALYTICAL RESULTS
ENRON LAGUNA MONITOR WELLS
JULY 9, 1991

WELL	DATE	Total PCB* (ppb)	Benzene (ppb)	Toulene (ppb)	Ethyl-benzene (ppb)	Xylene (ppb)
6-1D	07/90	ND	ND	ND	ND	ND
	08/90	ND	ND	ND	ND	ND
	11/90	ND_1	ND_1	ND_1	ND_1	ND_1
	11/90	ND	ND	1.1	ND	ND
	01/91	ND	ND	ND	ND	ND
6-1S	07/90	ND	ND	ND	ND	ND
	08/90	ND	ND	ND	ND	ND
	09/90	ND_1	ND_1	ND_1	ND_1	ND_1
	12/90	ND	ND	ND	ND	ND
	01/91	ND	ND	ND	ND	ND
	02/91	ND	ND	0.9	ND	ND
	03/91	ND	ND	ND	ND	ND
	04/91	ND	ND	ND	ND	ND
	05/91	ND	ND	ND	ND	ND
6-2D	07/90	ND	ND	ND	ND	ND
	08/90	ND	ND	ND	ND	ND
	10/90	ND_1	ND_1	ND_1	ND_1	ND_1
	01/91	ND	ND	ND	ND	ND
6-2S	07/90	ND	ND	ND	ND	ND
	08/90	ND	ND	ND	ND	ND
	09/90	ND_1	ND_1	ND_1	ND_1	ND_1
	12/90	ND	ND	ND	ND	ND
	01/91	ND	ND	ND	ND	ND
	02/91	ND	ND	ND	ND	ND
	03/91	ND	ND	ND	ND	ND

SUMMARY OF ANALYTICAL RESULTS
ENRON LAGUNA MONITOR WELLS

WELL	DATE	Total PCB* (ppb)	Benzene (ppb)	Toulene (ppb)	Ethyl-benzene (ppb)	Xylene (ppb)
	04/91	ND	ND	ND	ND	ND
	05/91	ND	ND	ND	ND	ND
6-3D	07/90	ND	ND	ND	ND	ND
	08/90	ND	ND	ND	ND	ND
	10/90	ND_1	ND_1	ND_1	ND_1	ND_1
	01/90	ND	ND	0.92	ND	ND
6-3S	07/90	ND	ND	ND	ND	ND
	08/90	ND	ND	ND	ND	ND
	11/90	ND_1	ND_1	ND_1	ND_1	ND_1
	12/90	ND	0.55	0.80	0.5	ND
	01/91	ND	ND	ND	ND	ND
	02/91	ND	ND	0.64	ND	ND
	04/91	ND	ND	ND.	ND	ND
	05/91	ND	ND	ND	ND	ND
6-4D	07/90	ND	ND	ND	ND	ND
	08/90	ND	ND	ND	ND	ND
	10/90	$3.4^{a}{}_1$	ND_1	ND_1	ND_1	ND_1
	10/90	ND	ND	ND	ND	ND
	01/90	ND	ND	ND	ND	ND
6-4S	07/90	ND	ND	ND	ND	ND
	08/90	ND	ND	ND	ND	ND
	09/90	ND_1	ND_1	ND_1	ND_1	ND_1
	10/90	ND_1	ND_1	ND_1	ND_1	ND_1
	12/90	ND	ND	ND	ND	ND
	01/91	ND	ND	ND	ND	ND

SUMMARY OF ANALYTICAL RESULTS
ENRON LAGUNA MONITOR WELLS

WELL	DATE	Total PCB* (ppb)	Benzene (ppb)	Toulene (ppb)	Ethyl-benzene (ppb)	Xylene (ppb)
	02/91	ND	ND	ND	ND	ND
	03/91	ND	ND	0.70	ND	ND
	04/91	ND	ND	ND	ND	ND
	05/91	ND	ND	ND	ND	ND
6-5D	07/90	ND	ND	ND	ND	ND
	08/90	ND	ND	ND	ND	ND
	09/90	ND_1	ND_1	ND_1	ND_1	ND_1
	10/90	ND_1	ND_1	ND_1	ND_1	ND_1
	01/91	ND	ND	ND	ND	ND
6-5S	07/90	ND	ND	ND	ND	ND
	08/90	ND	ND	ND	ND	ND
	10/90	$0.23^b{}_1$	ND_1	ND_1	ND_1	ND_1
	12/90	ND	**	**	**	**
	01/91	ND	ND	ND	ND	ND
	02/91	ND	ND	ND	ND	ND
	03/91	ND	ND	ND	ND	ND
	04/91	ND	ND	ND	1.7	1.5
	05/91	ND	ND	ND	ND	ND
6-6	04/91	ND	ND	1.5	ND	ND
	05/91	ND	ND	ND	ND	ND
	06/91	ND	ND	ND	ND	ND
6-7	04/91	ND	ND	0.80	ND	ND
	05/91	ND	ND	ND	ND	ND
	06/91	ND	ND	0.55	ND	ND
6-8	04/91	ND	ND	0.97	ND	ND

SUMMARY OF ANALYTICAL RESULTS
ENRON LAGUNA MONITOR WELLS

WELL	DATE	Total PCB* (ppb)	Benzene (ppb)	Toulene (ppb)	Ethyl-benzene (ppb)	Xylene (ppb)
	05/91	ND	0.55	0.59	ND	ND
	06/91	ND	0.77	2.0	ND	1.1

NOTES:

**Sample bottles were received broken at the lab. No BTEX results available for 12/90.

ND = Not detected at or above the reporting limit.

Unless noted all chemistry was analyzed at ENSECO's Houston Laboratory.

Standard reporting limit from ENSECO's Houston Laboratory:
PCB = 1.0 (ppb) Benzene = 0.50 (ppb)
Toluene = 0.50 (ppb) Ethylbenzene = 0.50 (ppb)
Xylene = 0.50 (ppb)

[1] Samples analyzed at Assaigai Analytical Laboratories
Standard Reporting Limit = 1.0

*Total PCB includes
Aroclor 1016 Aroclor 1248
Aroclor 1221 Aroclor 1254
Aroclor 1232 Aroclor 1260
Aroclor 1242

[a] Aroclor 1254
[b] Aroclor 1248

New Mexico Water Quality Control Commission (NM WQCC) standards:
PCB = 1 (ppb) Benzene = 10 (ppb)
Toulene = 750 (ppb) Ethylbenzene = 750 (ppb)
Xylene = 620 (ppb)

ENRON
Transwestern Pipeline Company

P. O. Box 1188 Houston, Texas 77251-1188 (713) 853-6161

November 6, 1991

Ms. Donna Mullins
USEPA Region VI
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202

Reference: Submittal of Initial Groundwater Assessment Report, Laguna Station

Dear Donna:

The enclosed report, "Plan for Ground-water Assessment Report for Compressor Station No. 6, Laguna New Mexico", dated November 4, 1991 by Daniel B. Stephans & Associates, constitutes the initial report of groundwater assessment in accordance with Section IV.D.2. of Appendix A to the Consent Decree. The report summarizes the results of the previously submitted Hydrogeology report, discussess the physical and chemical characteristics of the recently discovered perched ground water, provides the results of ground water monitoring and proposes a plan and schedule for additional investigations needed to prepare the final Ground water assessment Report.

Copies of this letter and the attached report have been forwarded directly to Mr. Thomas McGraw at the New Mexico EID and to Mr. Ed Wise of ENTRIX. In addition, the attached report has been sent to Mr. Dave Boyer of the New Mexico OCD.

Should you have any questions please call me at (713) 853-3219 or Ted Ryther at (713) 853-5634.

Yours very truly

James C. Alexander

James C. Alexander
Manager of Projects
Environmental Affairs

Attachments

cc: Mr. Thomas H. McGraw, New Mexico EID
Mr. Ed Wise, ENTRIX

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE SUITE 1200
DALLAS, TEXAS 75202-2733

July 23, 1991

Mr. Jim Alexander
Project Manager
Enron Gas Pipeline Group
P.O. Box 1188
Houston, Texas 77254-1188

Re: Transwestern Pipeline Consent Decree
Cleanup Levels for Rio Grande Receiver and Launcher Sites

Dear Jim:

This letter is in response to our meetings on June 17, 1991, and June 24, 1991, at which time we discussed the appropriate cleanup levels for the Rio Grande River Pig Receiver and Pig Launcher sites. According to the Consent Decree, page 40, paragraph B, part 2, "EPA reserves the right to require more stringent cleanup standards based on site specific conditions, including but not limited to shallow depth to groundwater, proximity to grazing lands or vegetable gardens. If upon review of the Site Remediation Work Plan the EPA Project Contact determines that a particular site requires more stringent cleanup levels, the EPA Project Contact will make a written finding based upon the specific facts of the site, to support its conclusion that a more stringent cleanup level is necessary to prevent unreasonable risk."

Based upon the site-specific factors for the two sites in question, EPA has determined that 1 ppm PCB should be the appropriate cleanup level for soils at the two sites. In addition, according to the Consent Decree, page 34, Section IV., groundwater sampling and monitoring shall be conducted at any other sites so determined by the EPA Project Contact. This determination is based upon several factors, which will be expanded upon in this letter.

The sites in question are small ancillary sites, located along the Transwestern Pipeline "right of way". The Rio Grande Pig Receiver is located at the Nicolas de Duran Chaves Grant, 6 miles south of Rio Communities, Valencia County.

1. The site is 200 yards from the Rio Grande River, located in the eastern floodplain of the Rio Grande River.

2. The site is restricted by a fence and it is surrounded by croplands.

groundwater appears to have been reached in split-spoon sample RGC-3-004. Sample RGC-3-004 was collected from a depth of 5.0 feet to 5 feet 6 inches. This indicates that PCBs greater than 1.0 ppm have potentially been detected at less than 1 foot above the water. It appears that from other photos submitted from drill hole sampling at the site, that groundwater is at a depth of approximately 5 to 6 feet across the site.

The Rio Grande Pig Launcher is located at the Nicolas de Churan Chaves Grant, 6 miles south of Rio Communities, west side of the Rio Grande River, Valencia County.

1. The site is 200 yards from the Rio Grande River, located within the western floodplain of the River.

2. The area adjacent to the site is utilized for cattle and horse grazing and agricultural purposes.

3. Several residences are within close proximity to the site.

4. The primary function of this site is to launch a pigging device into the pipeline.

At the time of the soil sampling mission in December, 1990, the concrete slabs beneath the pig launchers were heavily stained and provided no containment for liquids. At the time of the wipe sampling mission in April, 1991, the pad had been resurfaced with fresh concrete and containment capacity had been added. In addition, from pictures taken during the April, 1991, wipe sampling mission, it appears that the area directly adjacent to the site was flooded for purposes of irrigation.

At the Rio Grande River Crossing Launcher, groundwater at the site appears to be at a depth of approximately four to six feet in depth. In drill hole #2 at the site, PCBs were detected at a concentration of 8.2 ppm in sample RGCL-2-002 which was collected from a depth of 2.0 feet to 2 feet 6 inches. Based on a photo of split-spoon sample RGCL-2-003 which was collected from a depth of 3 feet 9 inches to 4 feet 3 inches, it appears that the soil material is moist to damp at that depth. This could indicate that PCBs greater than 1.0 ppm have potentially been detected at less than 2 feet above water. It appears that from other photos submitted from drill hole sampling at the site that groundwater was found at a depth of approximately 4 to 6 feet at the site. A photo of sample RGCL-1-003 which was collected at a depth of 4.0 feet to 4 feet 6 inches from drill hole #1 at the site appears to be quite saturated. Drill hole #1 is approximately 12.5 feet from drill hole #2.

3. The site is also within the boundaries of a protected area for migratory birds.

4. The primary function of this site is the receipt of pig launchers and PCB-contaminated condensate from within the pipeline.

At this time, the PCB-contaminated condensate is removed from the pipeline and stored in a 500 bbl. tank on-site. However, from 1968-1972, PCB lubricating oil was used in the gas turbine at Transwestern Pipeline's Corona, New Mexico compressor station. Seal failures led to the entry of PCB lubricating oil into the pipeline, contaminating downstream facilities. Up until as late as 1984, condensate from the pigging operations was placed into open pits or sumps at the compressor stations and pig receivers. The tank that is presently at the receiver site was not placed there until 1981. Based on past condensate storage records from the Rio Grande Pig Receiver tank from November, 1985 to February, 1987, 7935 gallons of PCB-contaminated condensate was collected during that time period. Before the tank was placed on-site, condensate was collected in a sump. The maximum amount of condensate that the sump could have contained would have been 10 bbls., or 420 gallons. The disposition of the PCB-contaminated condensate, before placement of the 500 bbl tank, is not known by EPA. Furthermore, the integrity of the catch basins underneath the two pig receivers, the piping to the sump and the sump itself (i.e. whether the sump bottom is cracked) is not known. Condensate sampling at the Rio Grande Pig Receiver and downstream at the Laguna Compressor Station indicates that PCBs at a maximum concentration of 3481 ppm PCB, as of January 26, 1984, were still being encountered. A spill cleanup was conducted at the Receiver site during January, 1990, after a 100-gallon spill of pipeline condensate. The area cleaned up was northwest of the northernmost pig receiver, between the pig receiver and the demister. This is the only cleanup at the site that EPA is aware of. It is not known whether any historical cleanup or hauling and filling at the site has occurred.

Selected core sampling was conducted at these sites during December, 1990. Samples were collected from four core holes per site and samples were obtained and analyzed at surface, two, four and six foot depth intervals. At the Rio Grande River Crossing Receiver, groundwater appears to be at a depth of approximately five to six feet in depth. In drill hole #3 at the site, PCBs were detected at a concentration of 7.3 ppm in sample RGC-3-003 which was collected at depth of 4.0 feet to 4 feet 6 inches. Based on another photo of a split-spoon sample from this drill hole,

Groundwater flow conditions have not been studied at either site, and data has not been presented documenting the direction of groundwater flow, hydraulic conductivity and/or transmissivity of the shallow aquifer material, and water quality data has not been presented to EPA Region 6. In addition, lithologic descriptions have not been documented for either site. Additional sampling or groundwater characterization may be necessary to study the potential presence of BTEX and its potential for increasing the presence and solubility of PCBs in groundwater below the site. In addition, documentation has not been provided detailing how the Rio Grande River affects hydraulic or groundwater flow conditions in the area.

To date no sampling for the presence of other constituents, such as Benzene, Toluene and Xylene (BTEX), has been conducted at either site. From circumstances encountered at the four compressor stations remediated under this Consent Decree, BTEX has been encountered at all these sites and it has increased the solubility and the mobility in the soil of the PCBs.

Therefore, based on the shallow depth to groundwater, the predominant agricultural use within the area at both sites, the lack of characterization of groundwater conditions and potential BTEX contamination and EPA's lack of knowledge of past waste handling practices at these sites, a cleanup level of 1 ppm PCB will be required to prevent unreasonable risk to human health and/or the environment.

If you have any questions concerning this response, please call me at (214) 655-7244.

Sincerely,

Donna S. Mullins
EPA Project Contact

cc: Tom McGraw, NMEID
David Boyer, NMOCD
Ed Wise, Entrix