

The Proven Presence of The Ogallala Aquifer at WCS:

Site-Specific Geologic Cross-Sections and Soil Boring Analysis Examples

Excerpted From

*Geological Survey
AM Environmental-Terra Dynamics Inc.
Project Number 92-152
Conducted January, 1993 for TNRCC -
RCRA License Suitability of Waste Control Specialists LLC
Andrews County Landfill Site
from Texas Department of Health, Bureau of Radiation
Control (TDH-BRC), License #L04971*

Additionally includes:

**Maps of the Ogallala Aquifer
State Well Locations and Drilling Data**
from United States Geological Survey and Texas Water Development Board

WCS Site Diagram b/w Topo and Details
custom composite map from USGS, TDH-BRC records.

Compiled 2003

*Tristan Mendoza
Researcher and Director - Texas Radiation Online
<http://www.TexasRadiation.org/>*

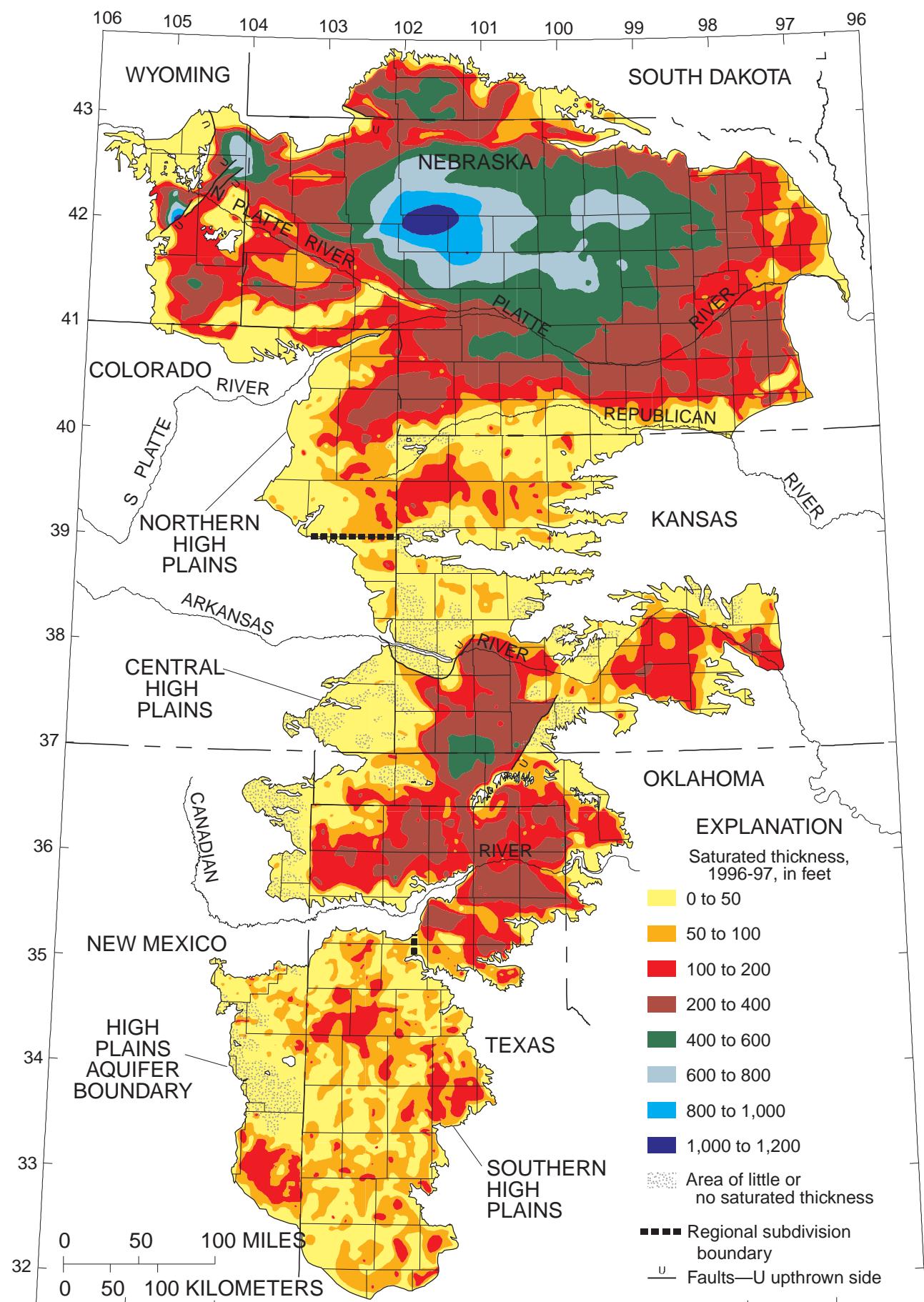
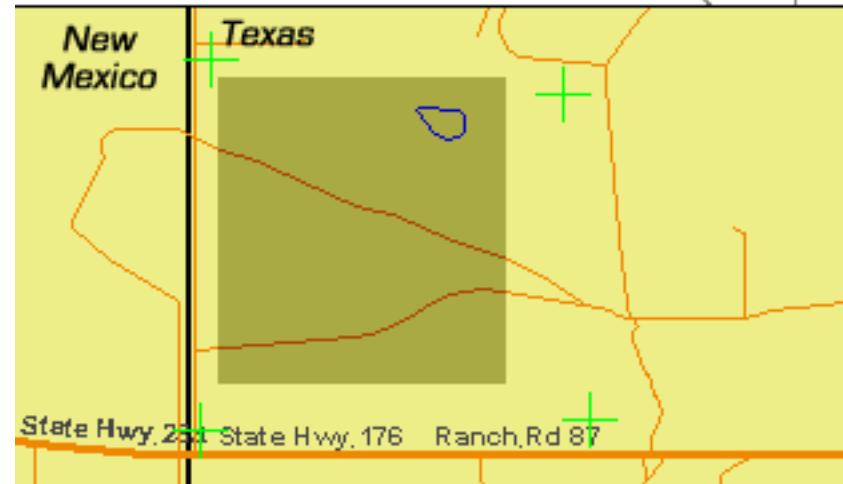
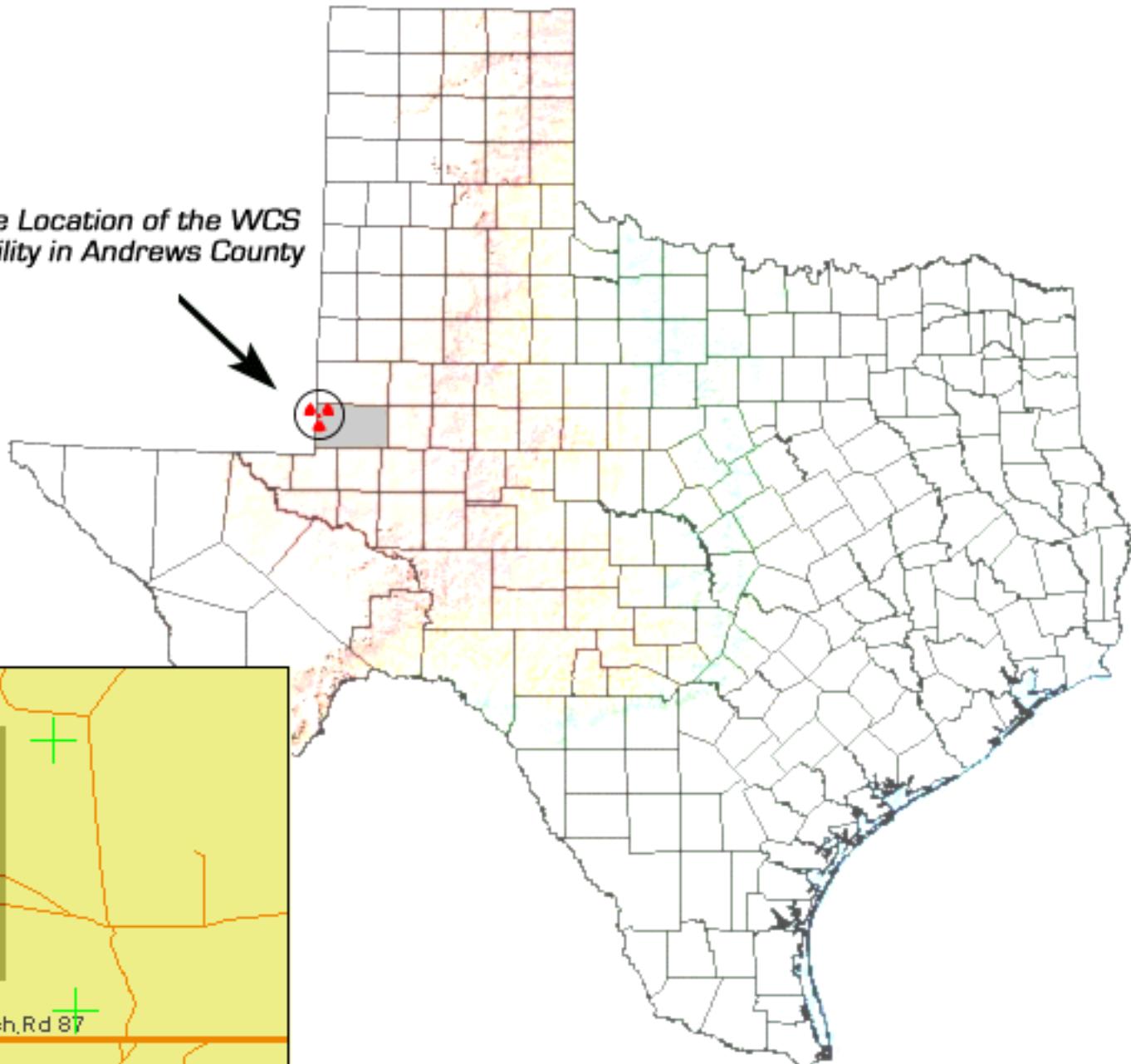
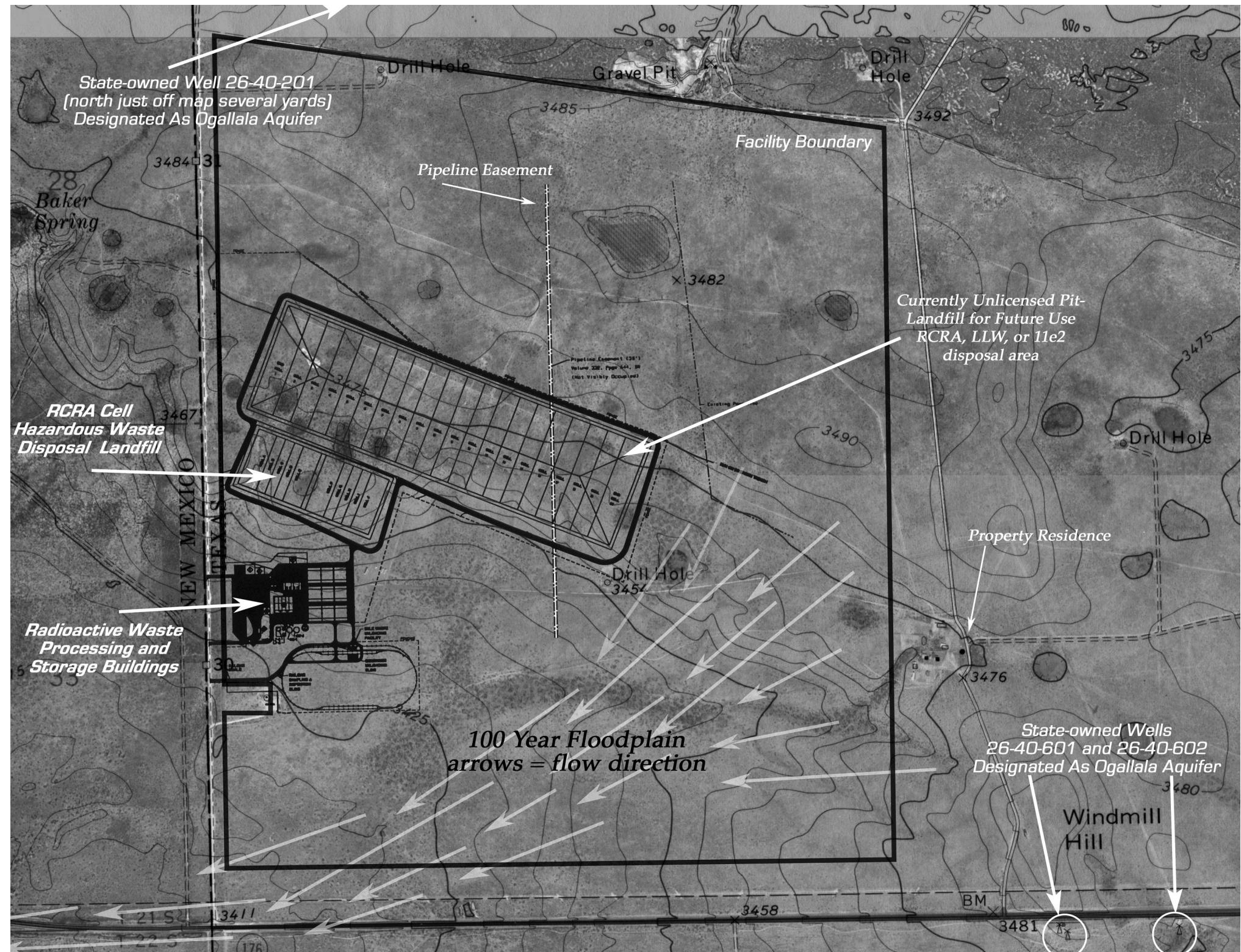


FIGURE 4. Saturated thickness of the High Plains aquifer, 1996-97.



*The Location of the WCS
facility in Andrews County*

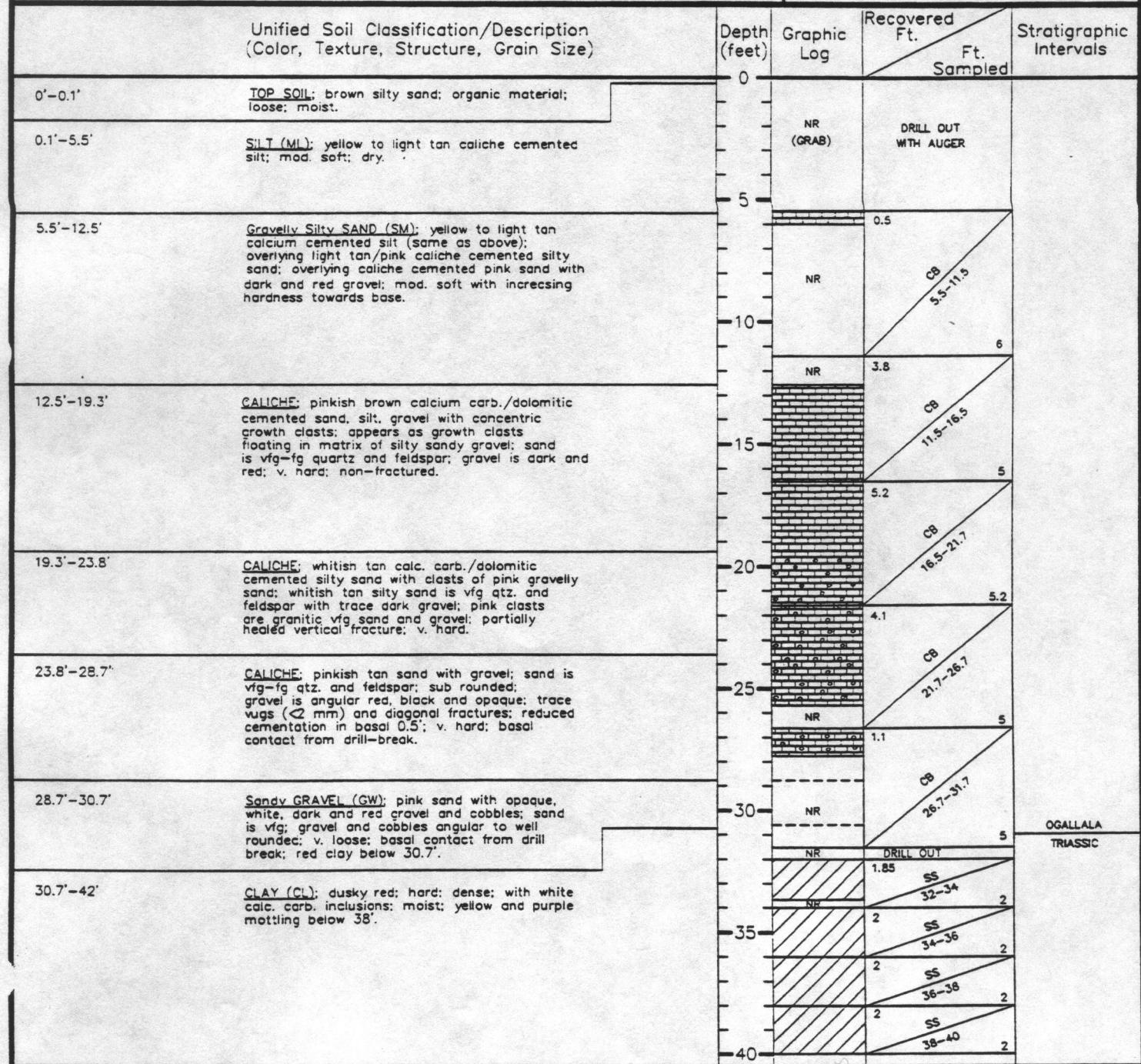




Terra Dynamics Incorporated

SOIL BORING LOG

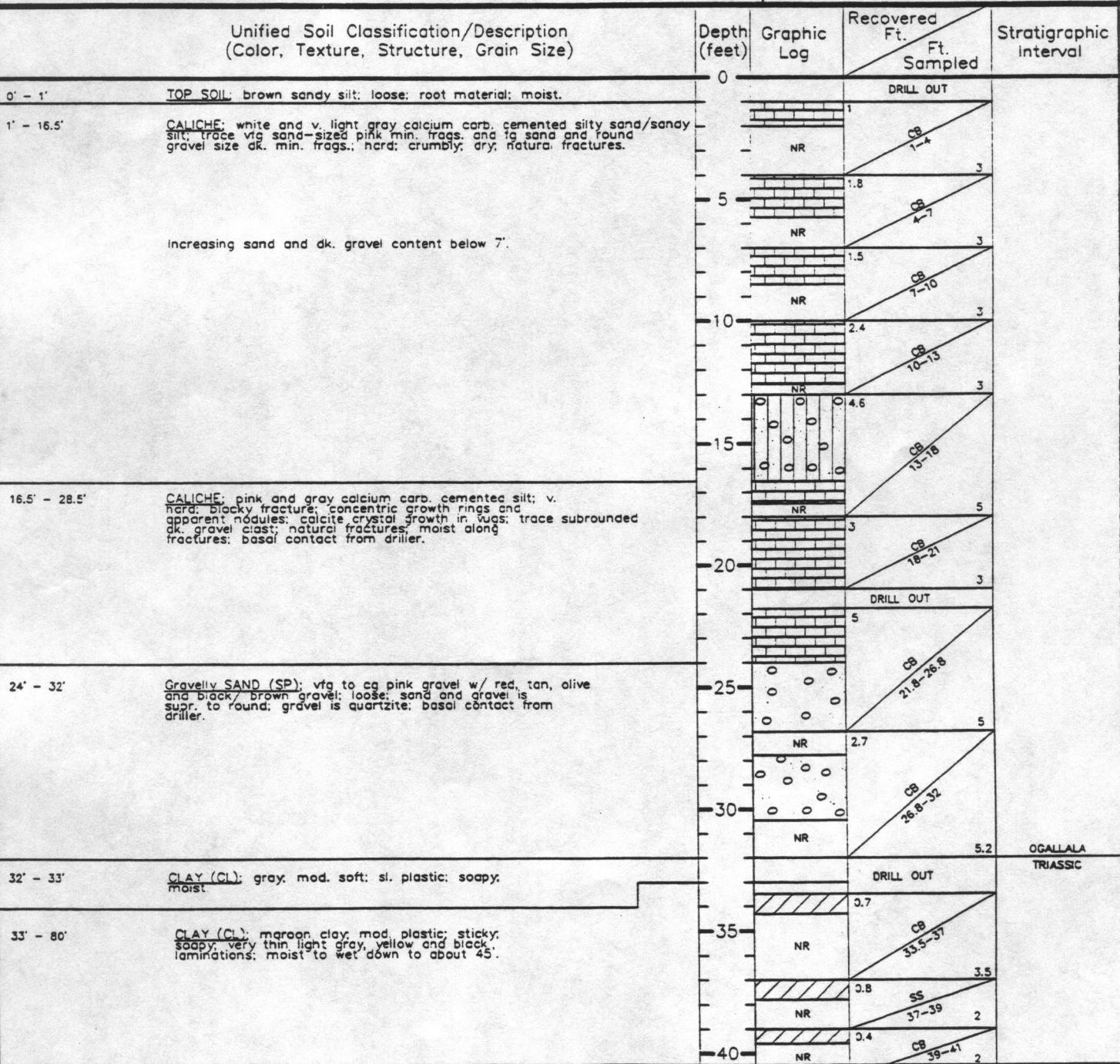
Location: ANDREWS CO. LANDFILL SITE	Project No.: 92-152	Date Drilled: 01/11/93	Boring No.: B-35	Grid No.: 11-C
Log By: A. WEEGAR/R. McGOWEN	Drilling Method & Bit Sizes: 0-31.7 MUD ROTARY (HOLT) 31.7- AIR ROTARY (SCARBOROUGH)	Survey Data:		
Drilling Company: SCARBOROUGH DRILLING, INC. LAMESA, TEXAS	Sample Method(s): CORE BARREL; SPLIT SPOON	Northing: 8496.1842		
Driller:	Total Depth: 100'	Easting: 10483.4609		
Remarks:				Ground Surface Elev. (MSL): 3,474.91



Terra Dynamics Incorporated

SOIL BORING LOG

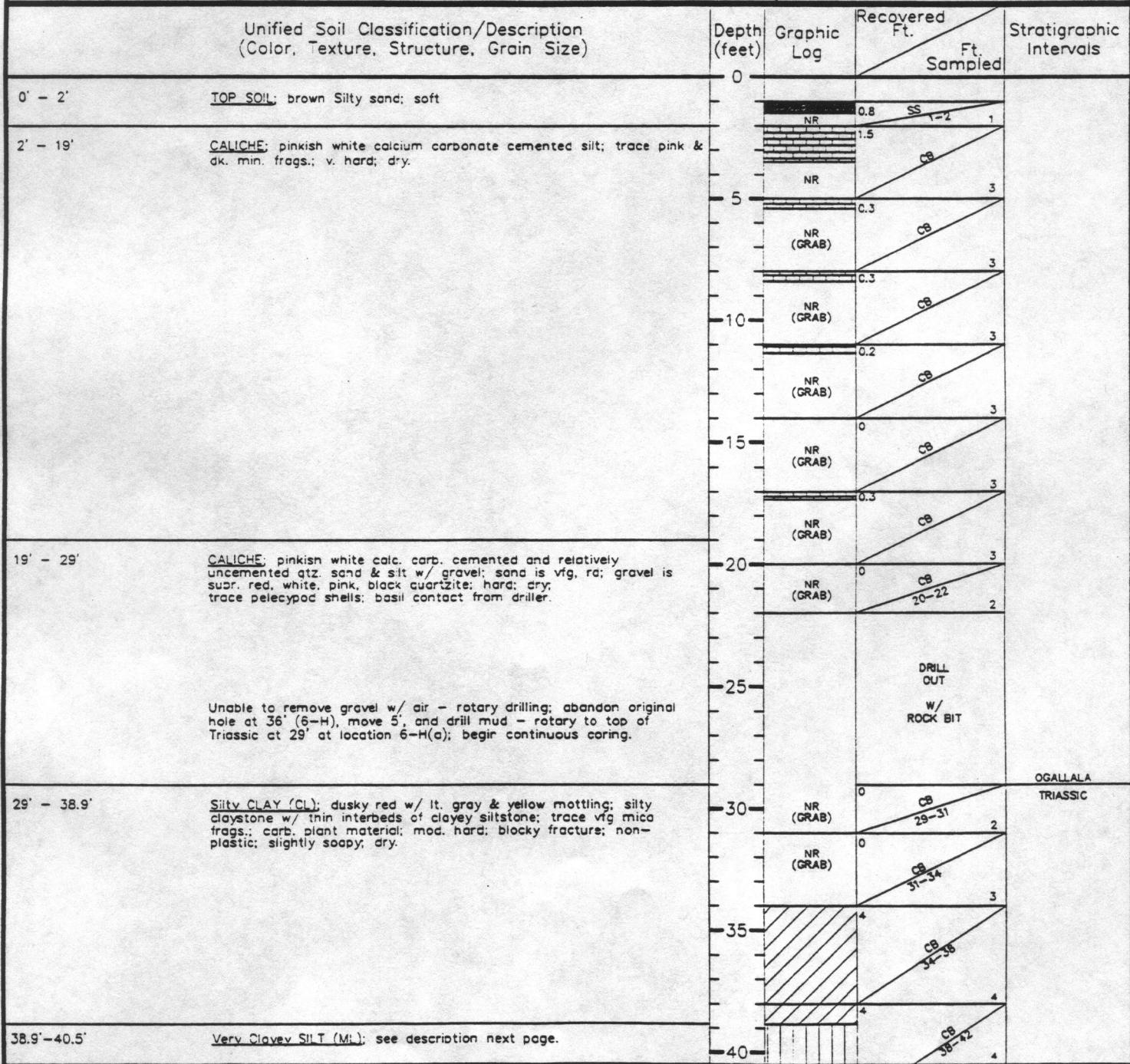
Location: ANDREWS CO. LANDFILL SITE	Project No.: 92-152	Date Drilled: 12-9-92	Boring No.: B-13	Grid No.: 9-C
Log By: A. WEEGAR	Drilling Method & Bit Sizes: AIR ROTARY: MUD ROTARY 21.8'-32'	Survey Data: Northing: 8073.4781 Easting: 11389.9571		
Drilling Company: SCARBOROUGH DRILLING, INC. LAMESA, TEXAS	Sample Method(s): SPLIT SPOON; CORE BARREL	Ground Surface Elev. (MSL): 3,476.22		
Driller: LANE SCARBOROUGH	Total Depth: 100'			
Remarks: MUD ROTARY BOREHOLE DRILLED ON 1/8/93 NEXT TO ORIGINAL BOREHOLE. LOG IS COMPOSITE OF BOTH BOREHOLES.				



Terra Dynamics Incorporated

SOIL BORING LOG

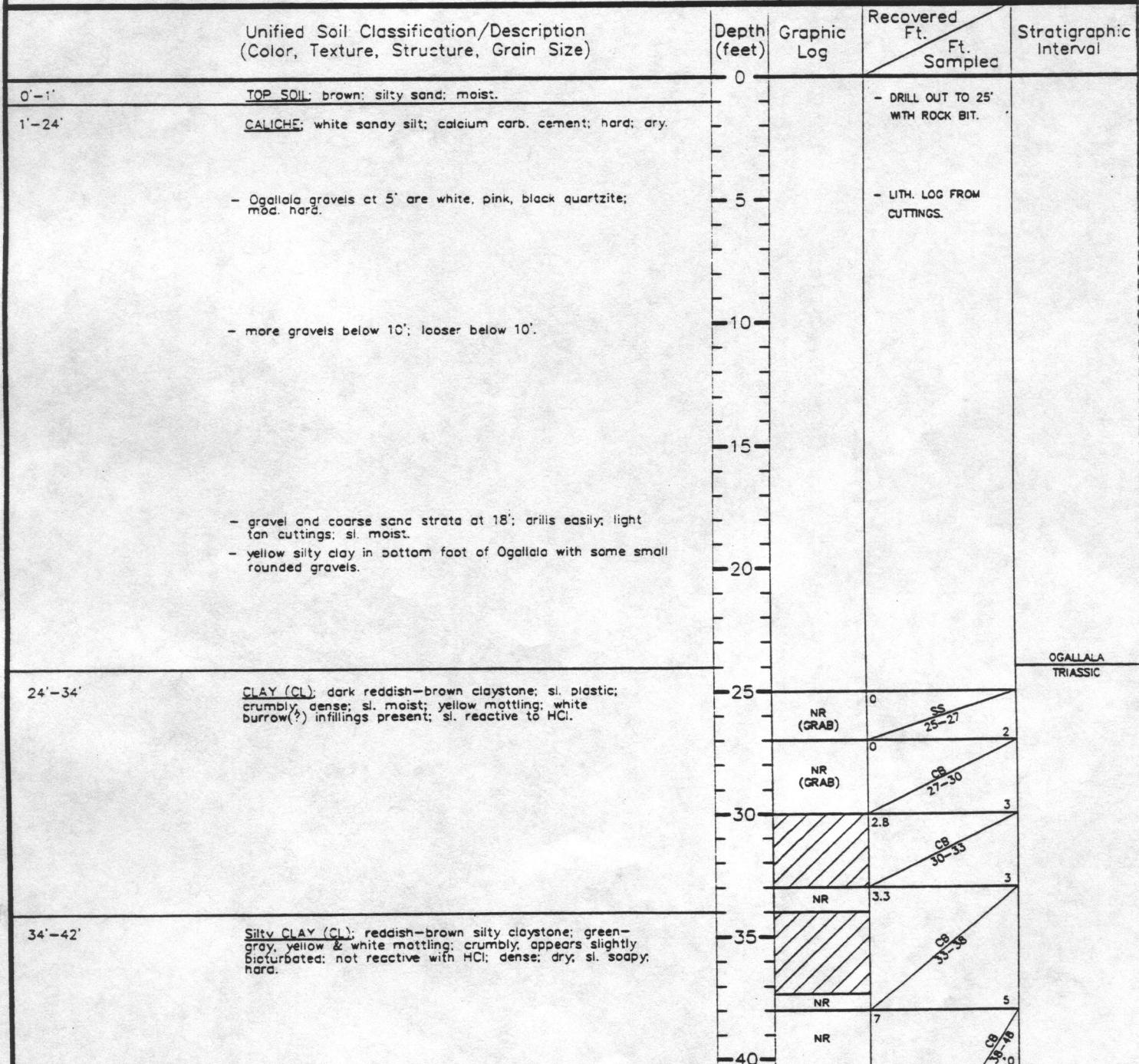
Location: ANDREWS CO. LANDFILL SITE	Project No.: 92-152	Date Drilled: 12/10/92	Boring No.: B-15	Grid No.: 6-H		
Log By: A. WEEGAR	Drilling Method & Bit Sizes: AIR ROTARY		Survey Data: Northing: 5174.0479 Easting: 11692.9915 Ground Surface Elev.(MSL): 3,433.46			
Drilling Company: SCARBOROUGH DRILLING, INC. LAMESA, TEXAS	Sample Method(s): CORE BARREL: SPLIT SPOON					
Driller: LANE SCARBOROUGH	Total Depth: 100'					
Remarks:						



Terra Dynamics Incorporated

SOIL BORING LOG

Location:	ANDREWS CO. LANDFILL SITE	Project No.:	92-152	Date Drilled:	12/22/92	Boring No.:	B-33	Grid No.:	8-F
Log By:	P. GRANT	Drilling Method & Bit Sizes: AIR ROTARY			Survey Data: Northing: 6502.8105 Easting: 11209.2032				
Drilling Company:	SCARBOROUGH DRILLING, INC. LAMESA, TEXAS	Sample Method(s): SPLIT SPOON; CORE BARREL			Ground Surface Elev. (MSL): 3,466.96				
Driller:	LANE SCARBOROUGH	Total Depth: 100'							
Remarks:									



Terra Dynamics Incorporated

SOIL BORING LOG

Location: ANDREWS CO. LANDFILL SITE

Project No.:
92-152

Date Drilled:
01/14/93

Boring No
B-38

id Nc.:
6-C

Log By: R. McGOWEN

**Drilling Method & Bit Sizes:
AIR ROTARY**

Survey Date:

Northing: 7439.5530
Easting: 12749.4139

Drilling Company:
SCARBOROUGH DRILLING, INC.
LAMESA, TEXAS

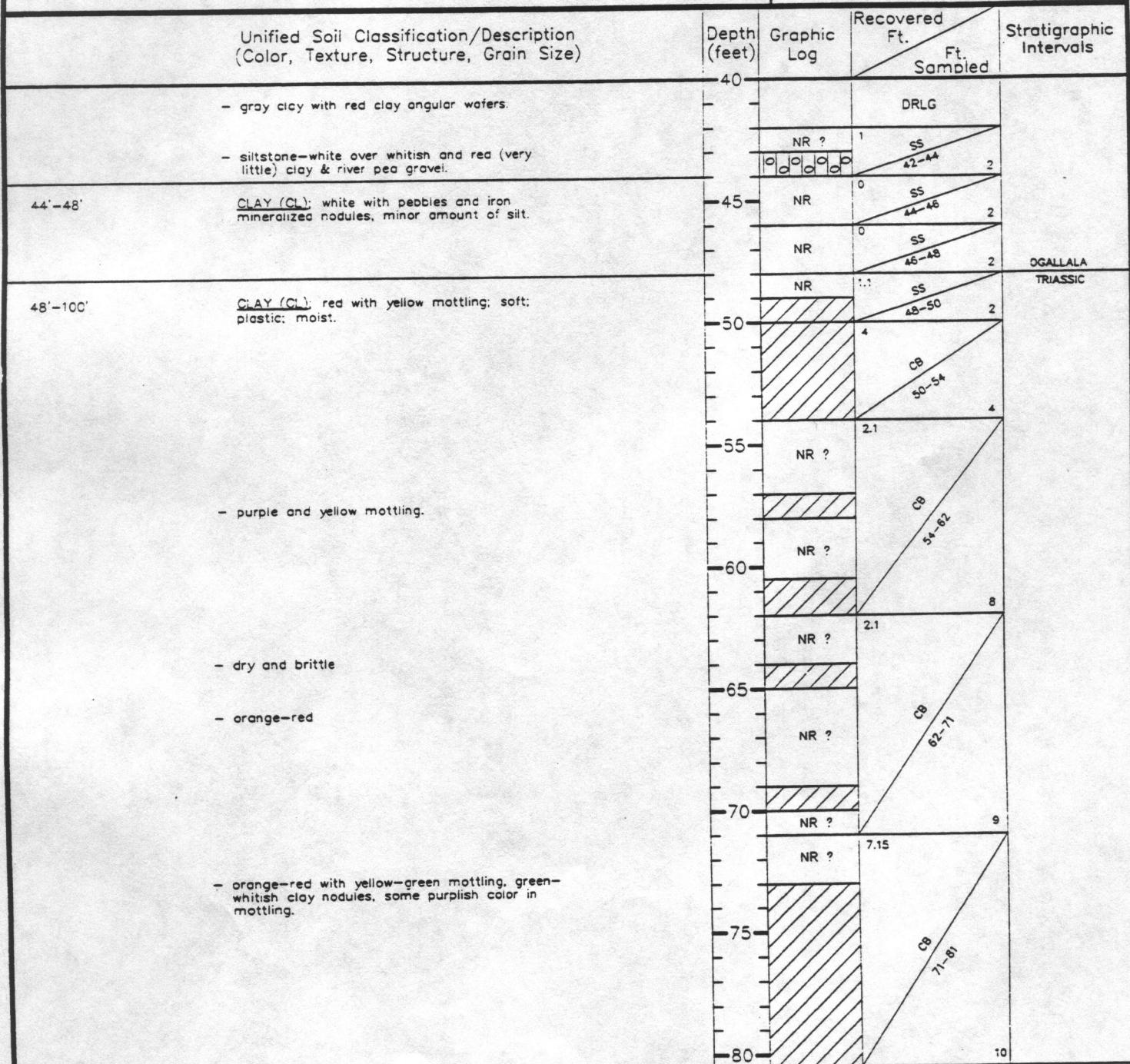
Sample Method(s):
SPLIT SPOON: CORE BARREL

Ground Surface Elev. (MSL):

Driller:

Total Depth:

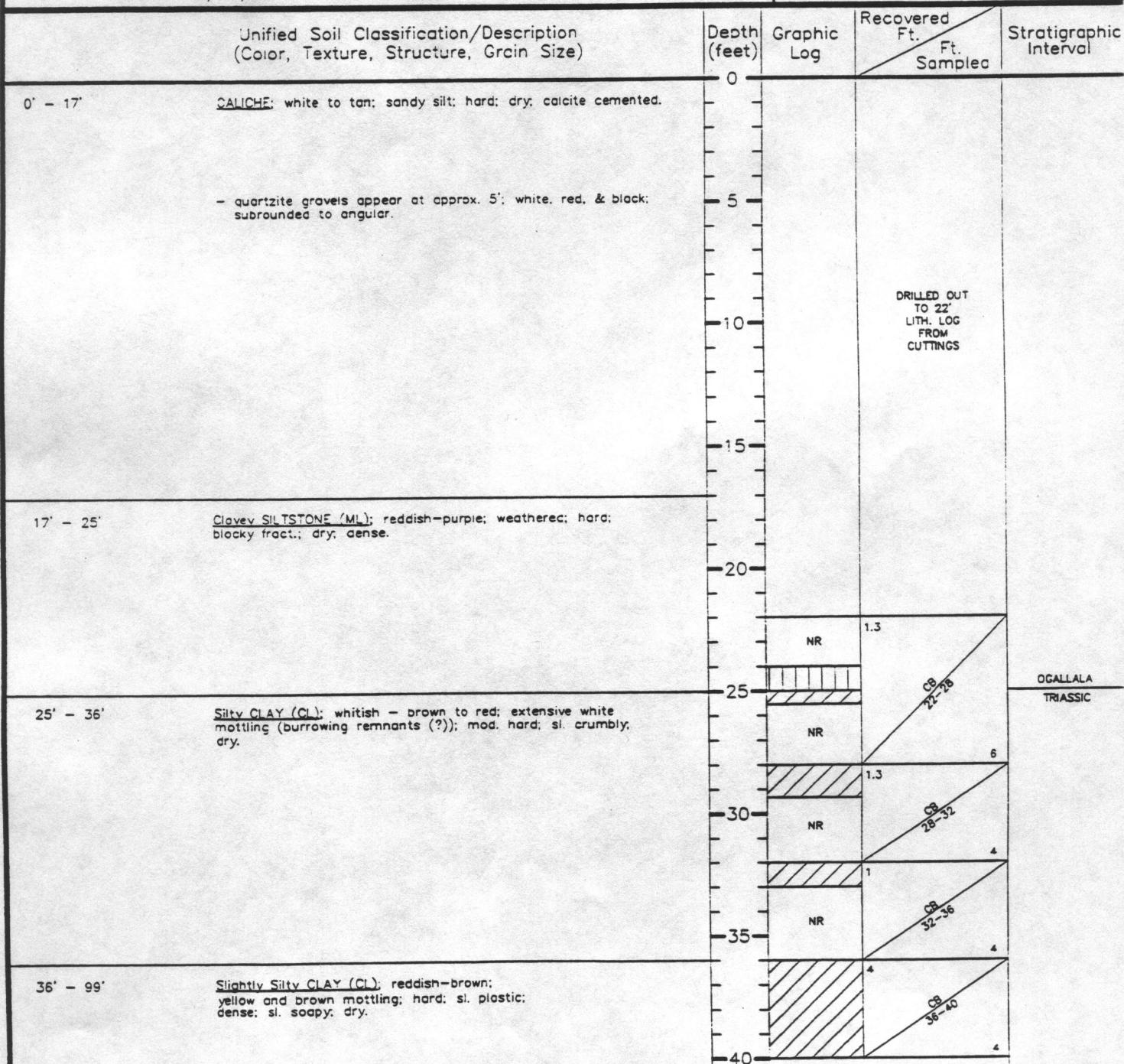
Remarks:



Terra Dynamics Incorporated

SOIL BORING LOG

Location: ANDREWS CO. LANDFILL SITE	Project No.: 92-152	Date Drilled: 12/12-12/13/92	Boring No.: B-17	Grid No.: 5-D
Log By: P. GRANT	Drilling Method & Bit Sizes: AIR ROTARY	Survey Data: Northing: 6775.0974 Easting: 12991.3313		
Drilling Company: SCARBOROUGH DRILLING, INC. LAMESA, TEXAS	Sample Method(s): CORE BARREL	Ground Surface Elev. (MSL): 3,467.79		
Driller: LANE SCARBOROUGH	Total Depth: 126'			
Remarks: CORE DESCRIBED FROM CORE SAMPLES ON 12/28/92 AT HOLT OFFICE				

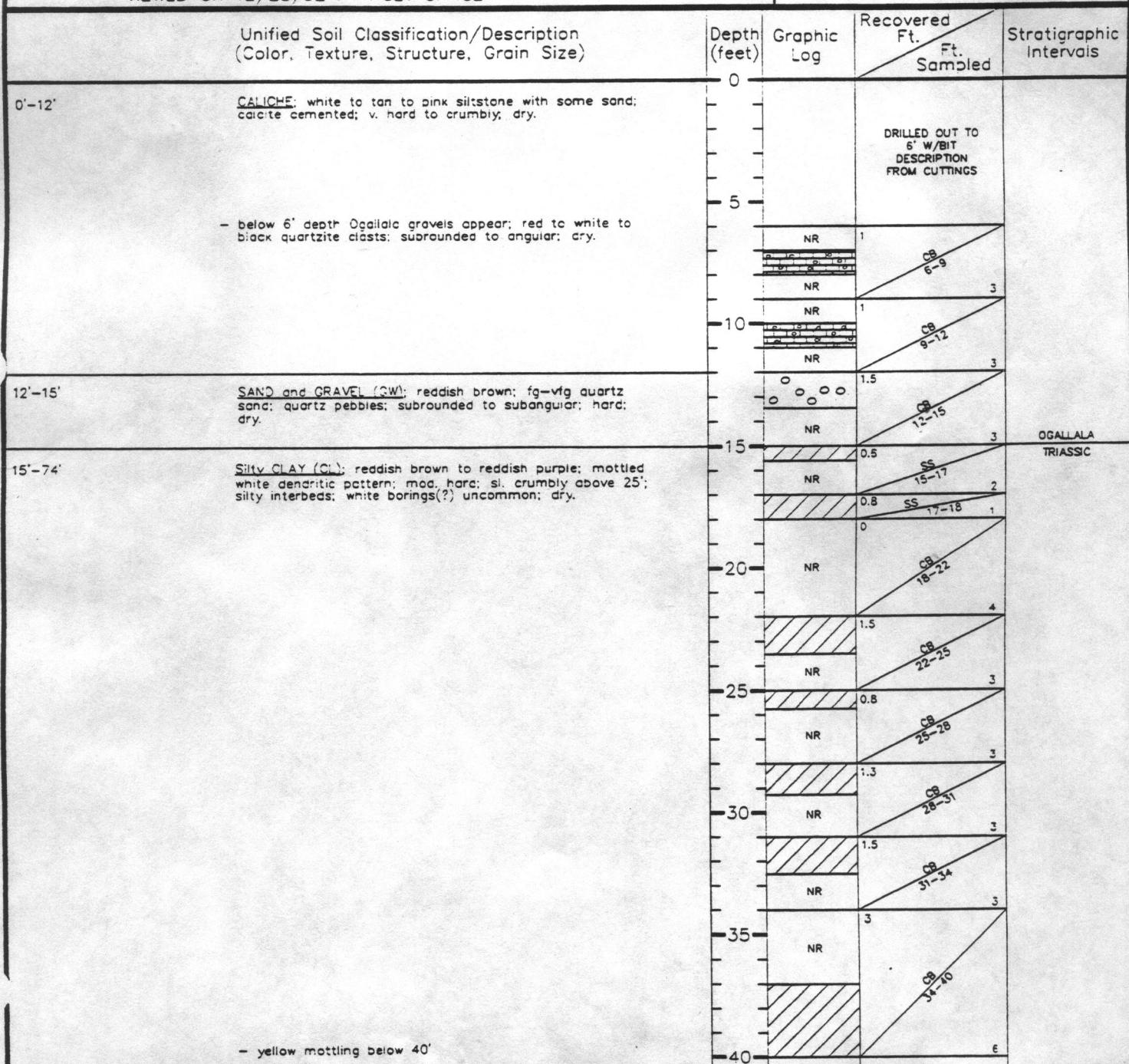


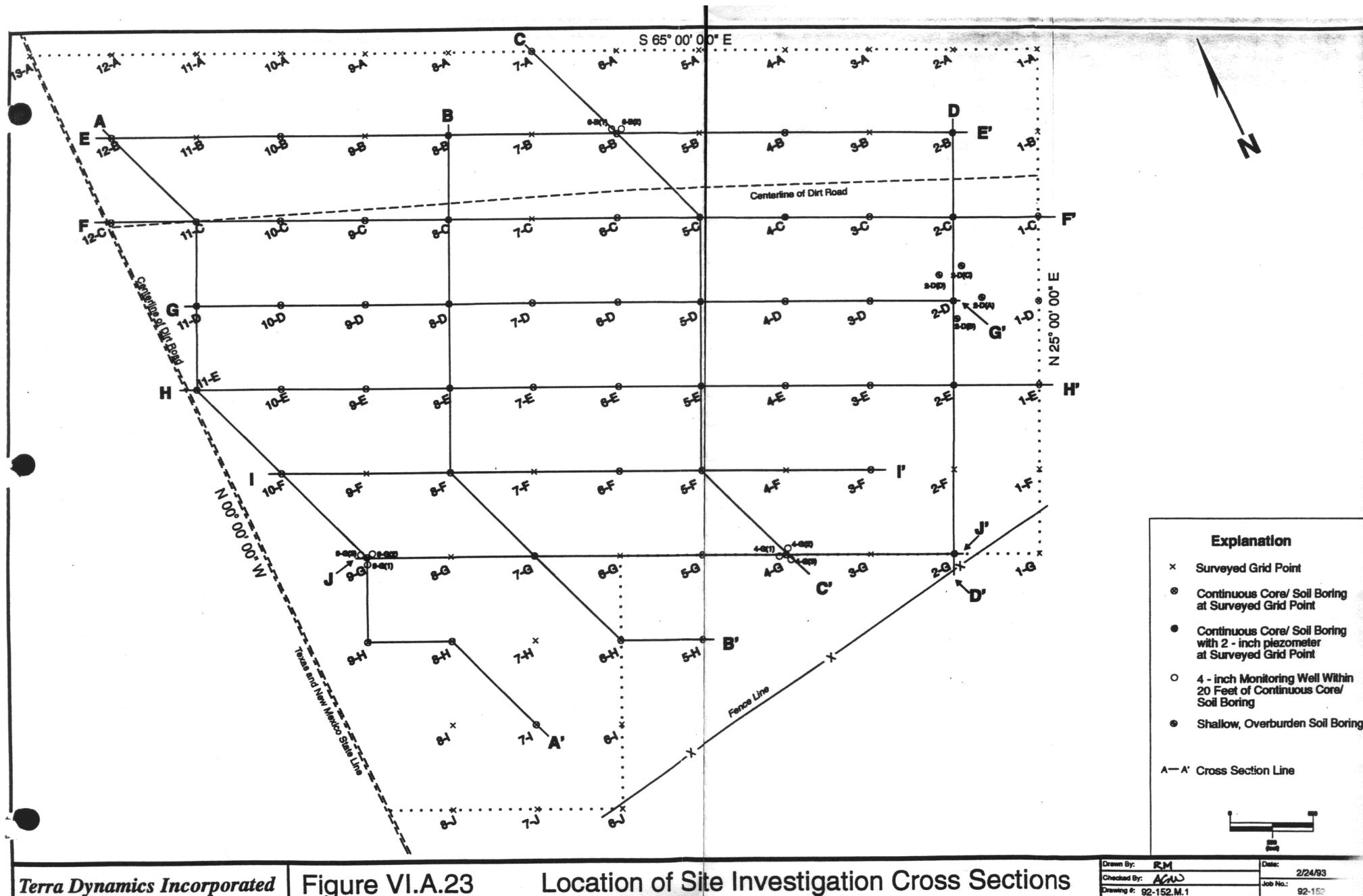
Terra Dynamics Incorporated

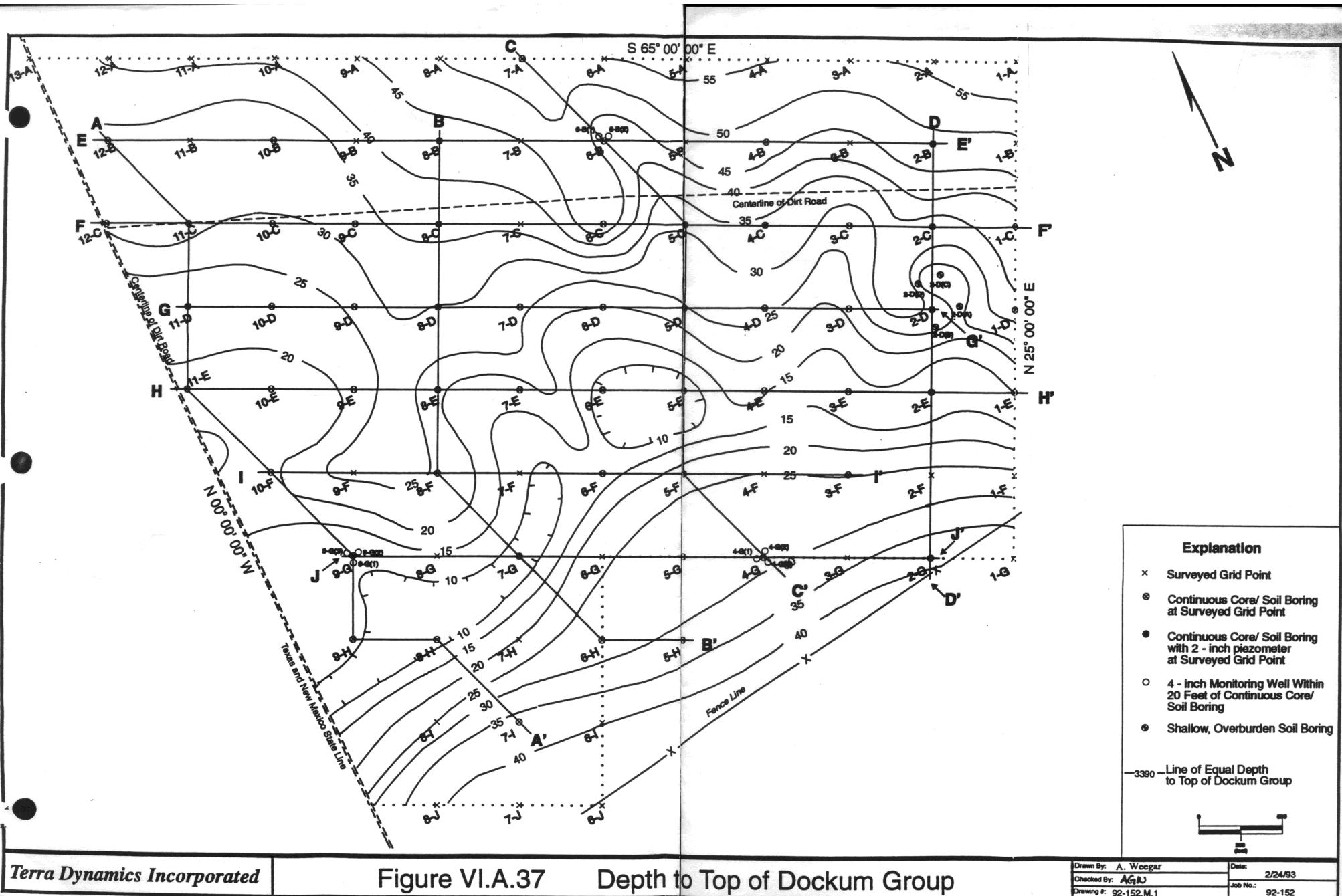
SOIL BORING LOG

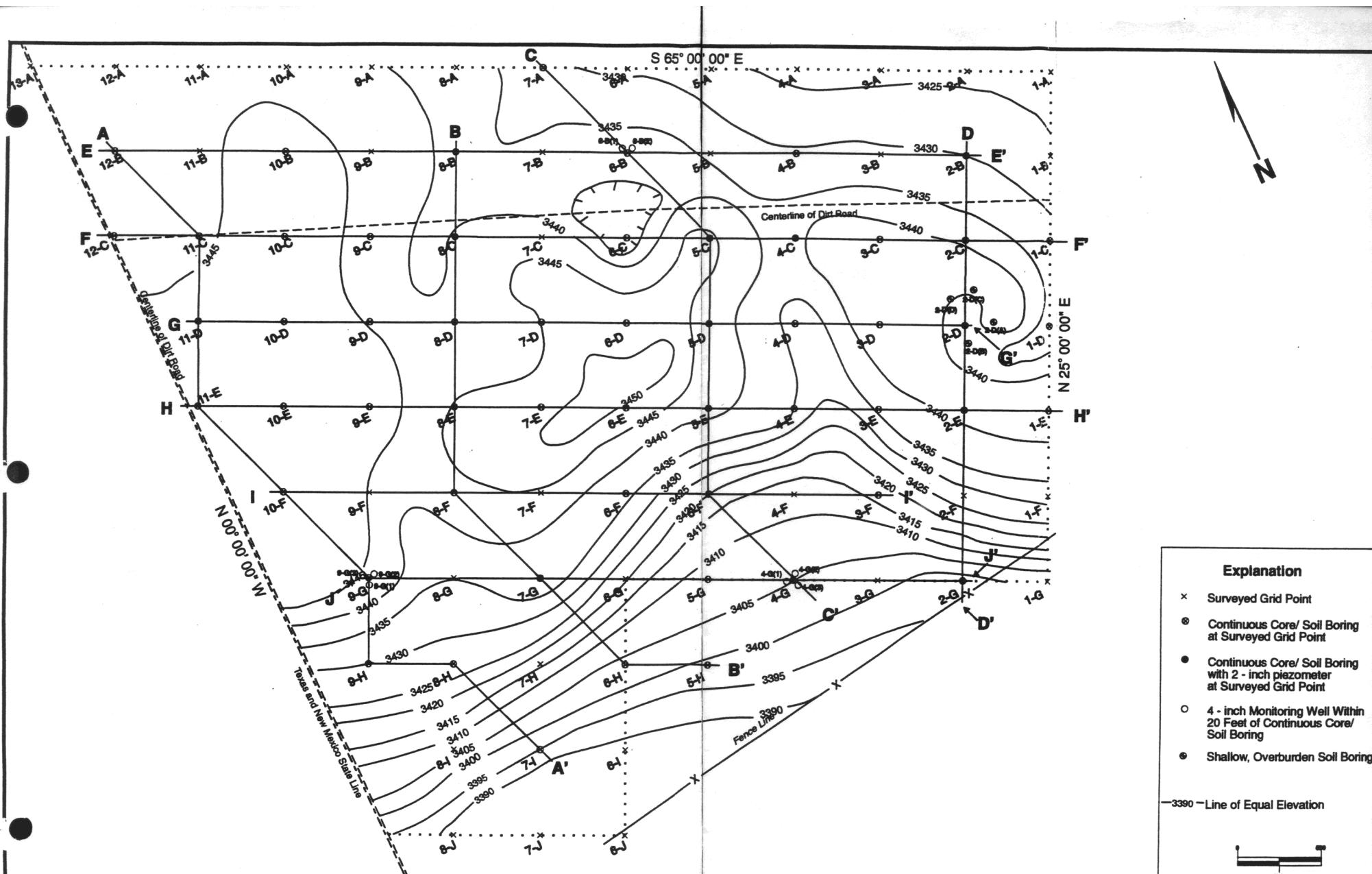
Location:	ANDREWS CO. LANDFILL SITE	Project No.:	92-152	Date Drilled:	11/23-24/92	Boring No.:	B-6	Grid No.:	4-E
-----------	---------------------------	--------------	--------	---------------	-------------	-------------	-----	-----------	-----

Log By:	P. GRANT	Drilling Method & Bit Sizes:	AIR ROTARY	Survey Data:	
Drilling Company:	SCARBOROUGH DRILLING, INC. LAMESA, TEXAS	Sample Method(s):	CORE BARREL; SPLIT SPOON	Northing:	6110.5469
Driller:	LANE SCARBOROUGH	Total Depth:	100'	Easting:	13233.0975
Remarks:	CORE DESCRIPTION FROM CORE SAMPLES VIEWED ON 12/28/92 AT HOLT OFFICE			Ground Surface Elev. (MSL):	3,450.38









Terra Dynamics Incorporated

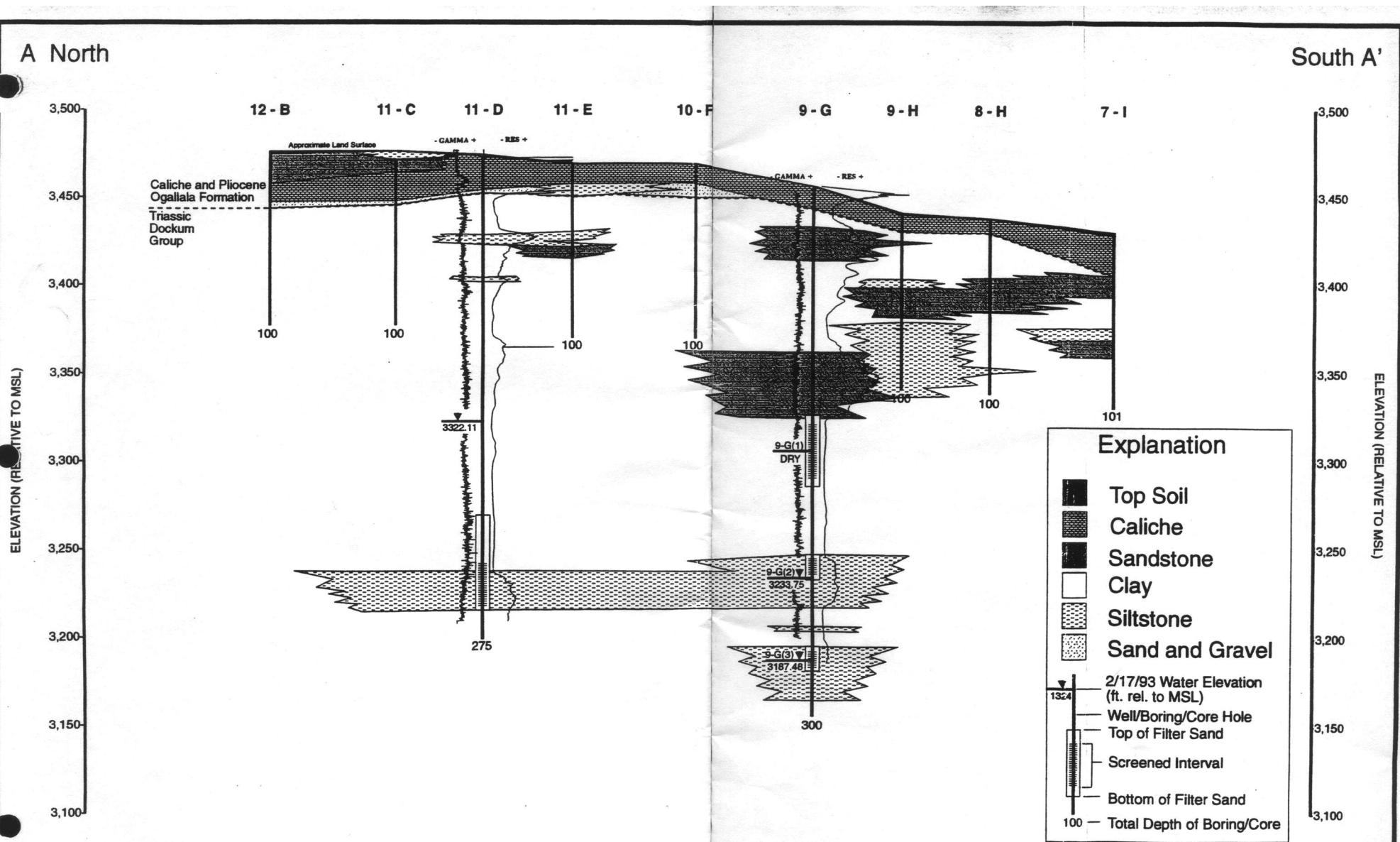
Figure VI.A.34 Structure on Top of Dockum Group

Drawn By: A. Weegar
Checked By: AGW

Date: 2/24/93
Job No.:

A North

South A'



Terra Dynamics Incorporated

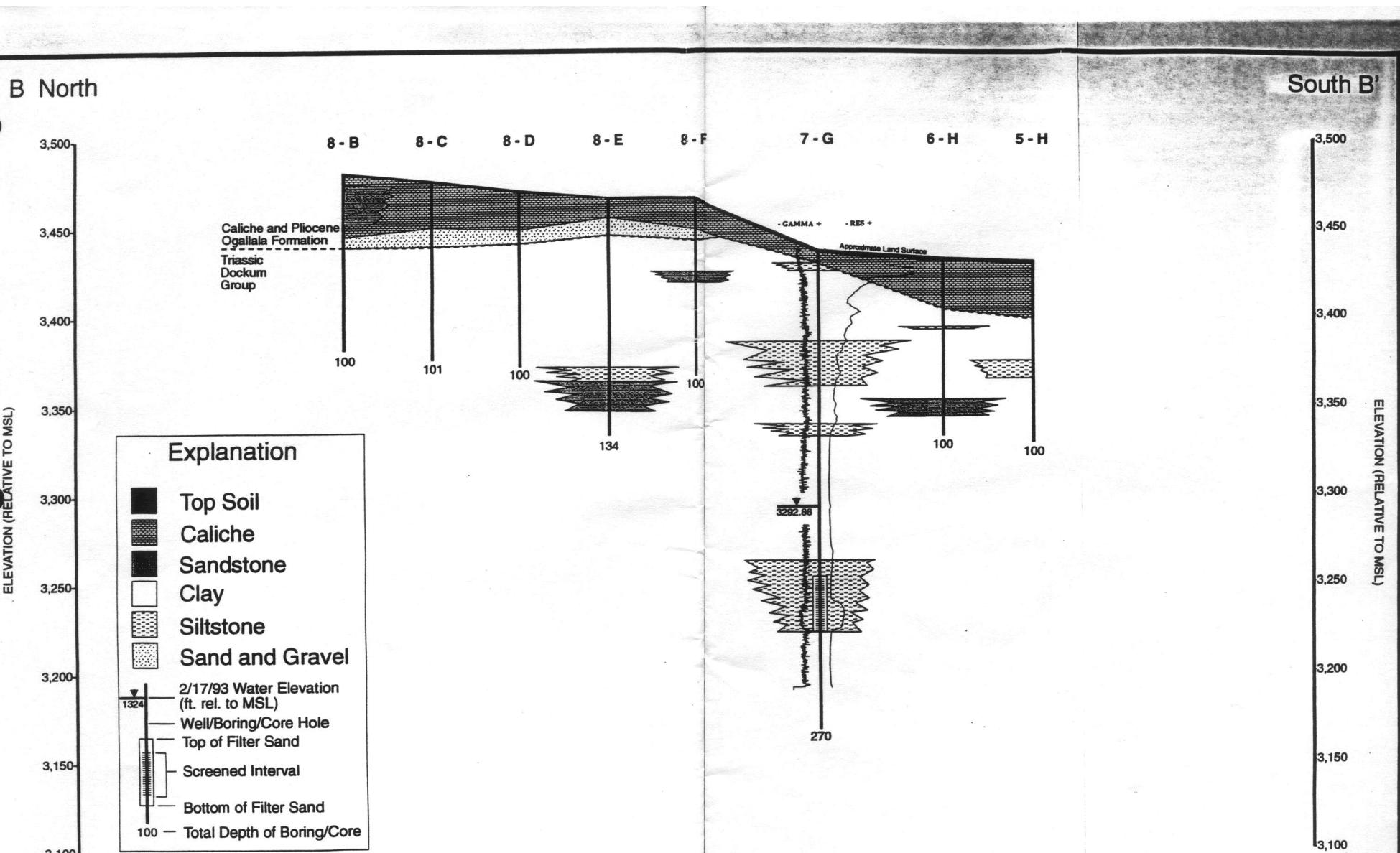
Figure VI.A.24

CROSS-SECTION A-A'

DRAWN BY: RM DATE: 3-8-93
CHECKED BY: AGW SCALE: 0 FEET 400
DRAWING #: 92-152 X.1 JOB NO: 92-152

B North

South B'



Terra Dynamics Incorporated

Figure VI.A.25

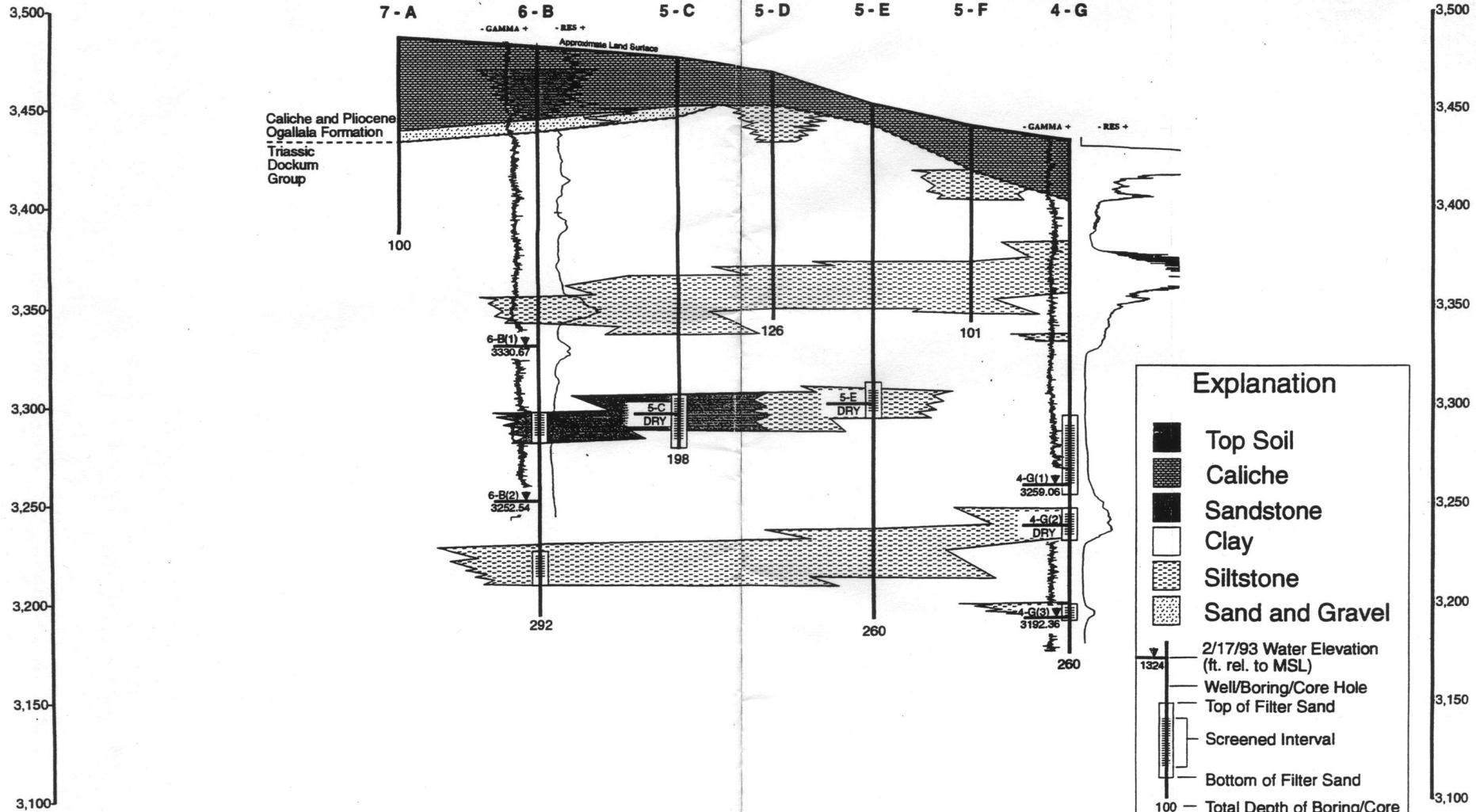
CROSS-SECTION B-B'

DRAWN BY: RM	DATE: 3-8-93
CHECKED BY: AGW	SCALE: 0 FEET
DRAWING #: 92-152.X.2	
JOB NO: 92-152	

C North

South C'

ELEVATION (RELATIVE TO MSL)



Terra Dynamics Incorporated

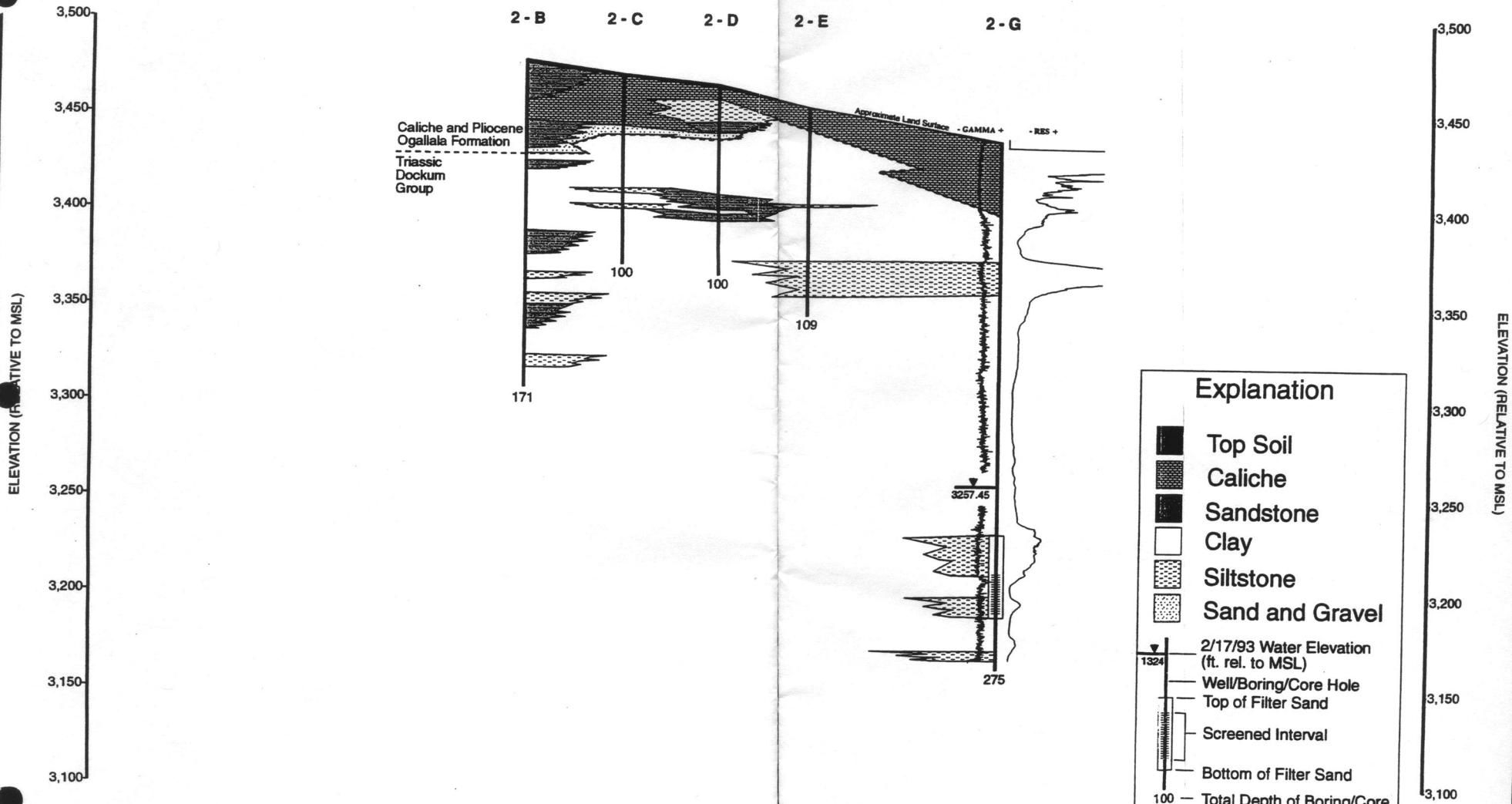
Figure VI.A.26

CROSS-SECTION C-C'

DRAWN BY: RM	DATE: 3-8-93
CHECKED BY: AGW	SCALE: 0 FEET 400
DRAWING #: 92-152.X.3	JOB NO: 92-152

D North

South D'

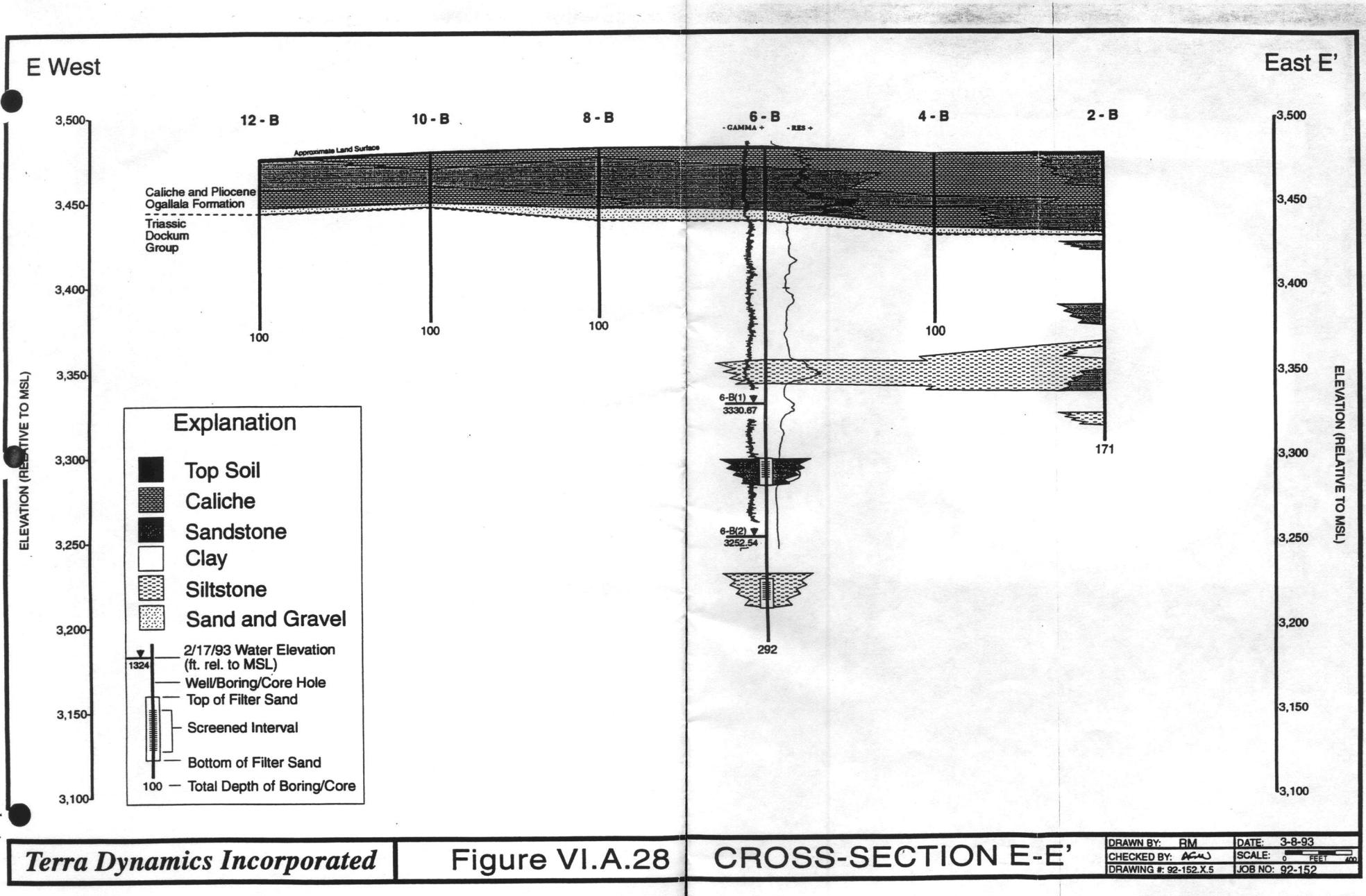


Terra Dynamics Incorporated

Figure VI.A.27

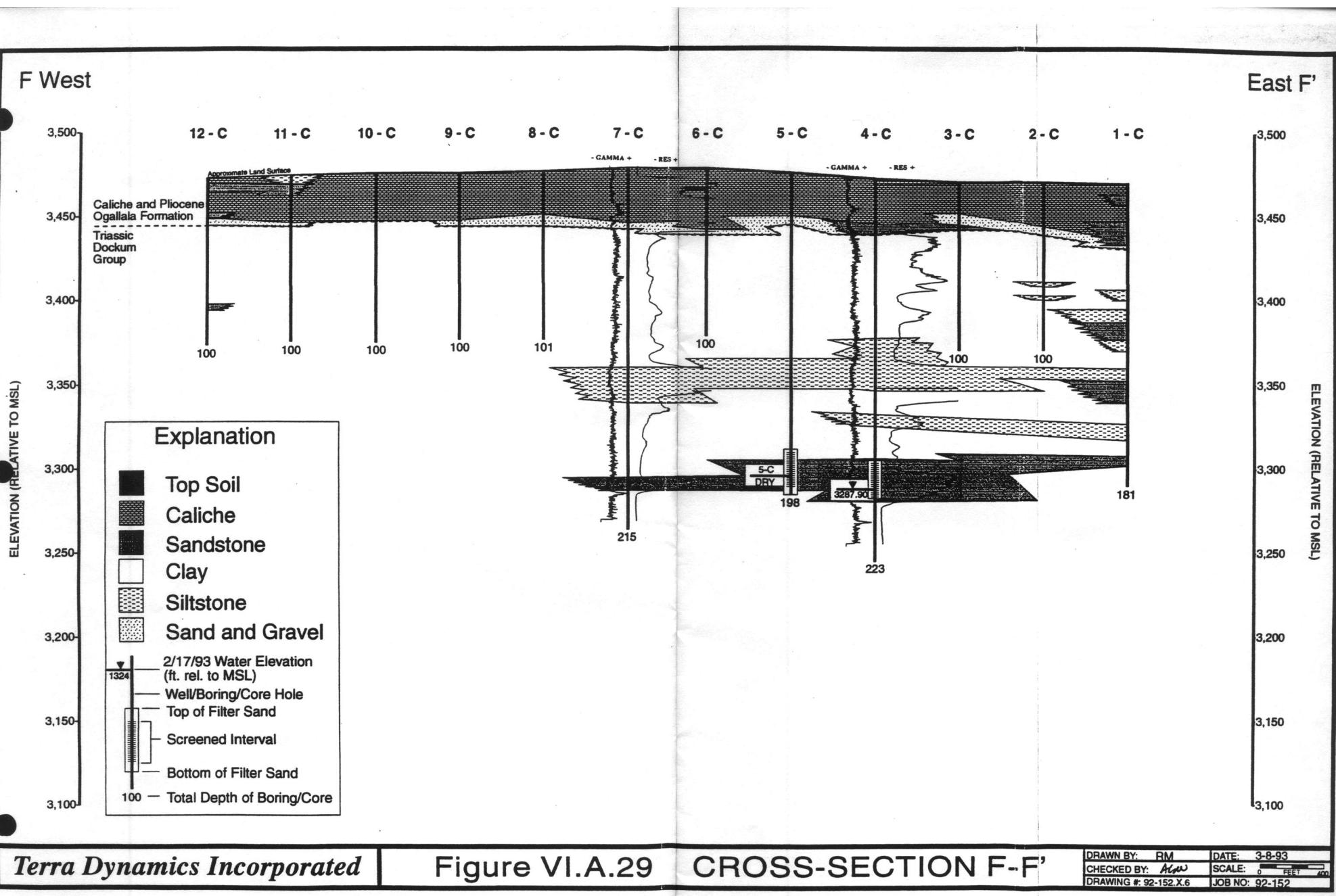
CROSS-SECTION D-D'

DRAWN BY: RM	DATE: 3-8-93
CHECKED BY: <i>[initials]</i>	SCALE: 0 FEET 400
DRAWING #: 92-152 X.4	JOB NO: 92-152



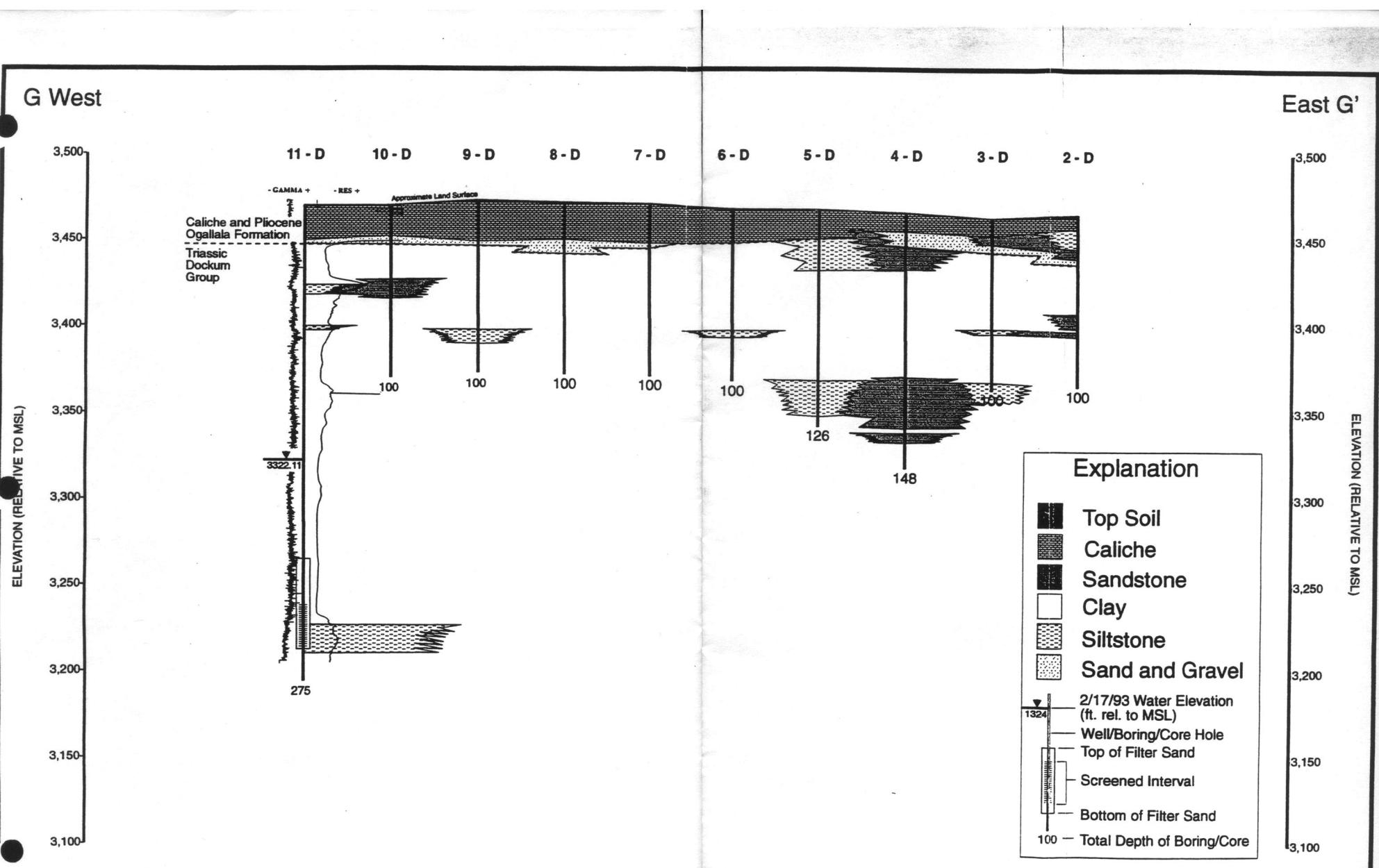
F West

East F'



G West

East G'



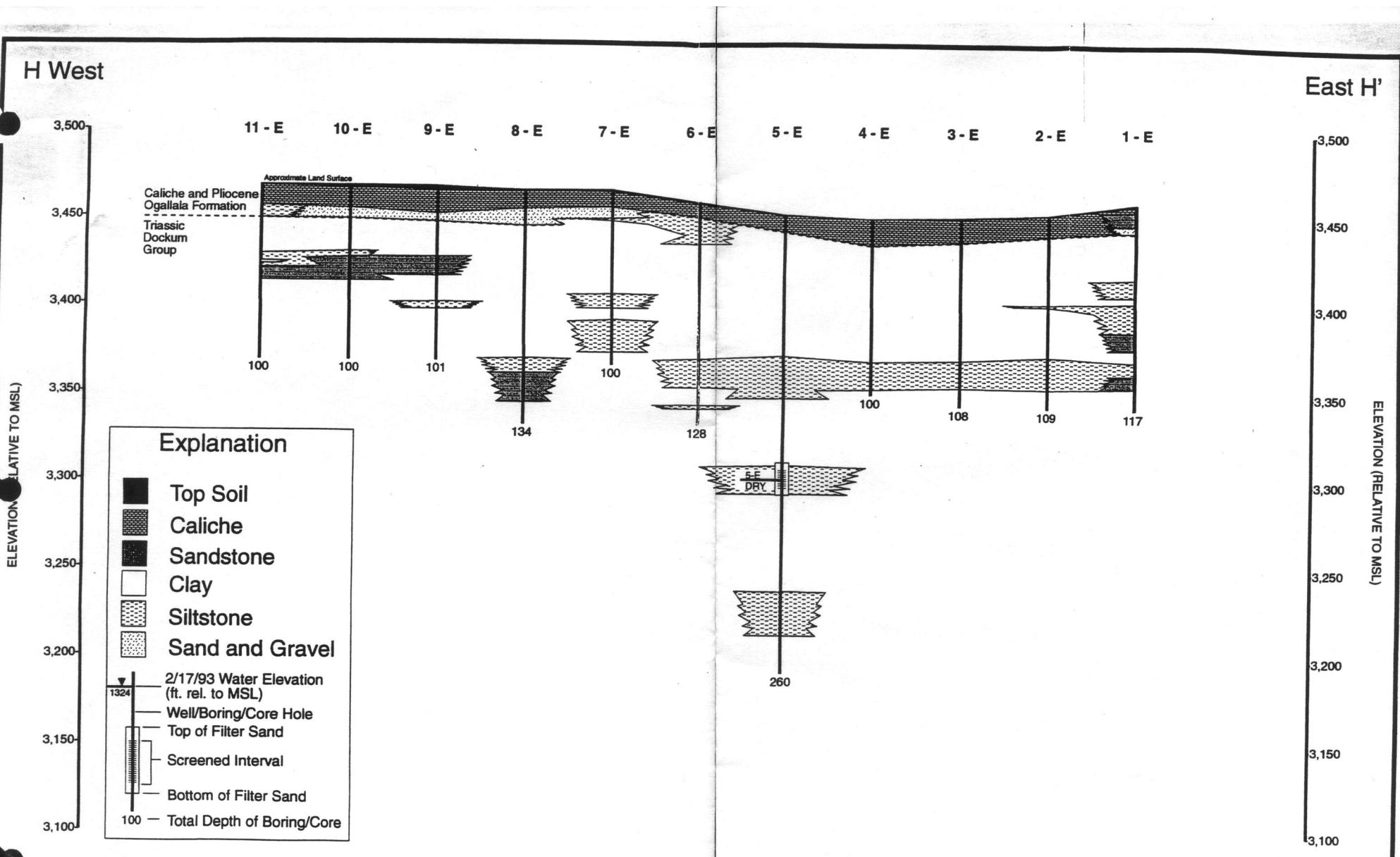
Terra Dynamics Incorporated

Figure VI.A.30 CROSS-SECTION G-G'

DRAWN BY: RM	DATE: 3-8-93
CHECKED BY: AGW	SCALE: 0 FEET
DRAWING #: 92-152.X.7	
JOB NO: 92-152	

H West

East H'



Terra Dynamics Incorporated

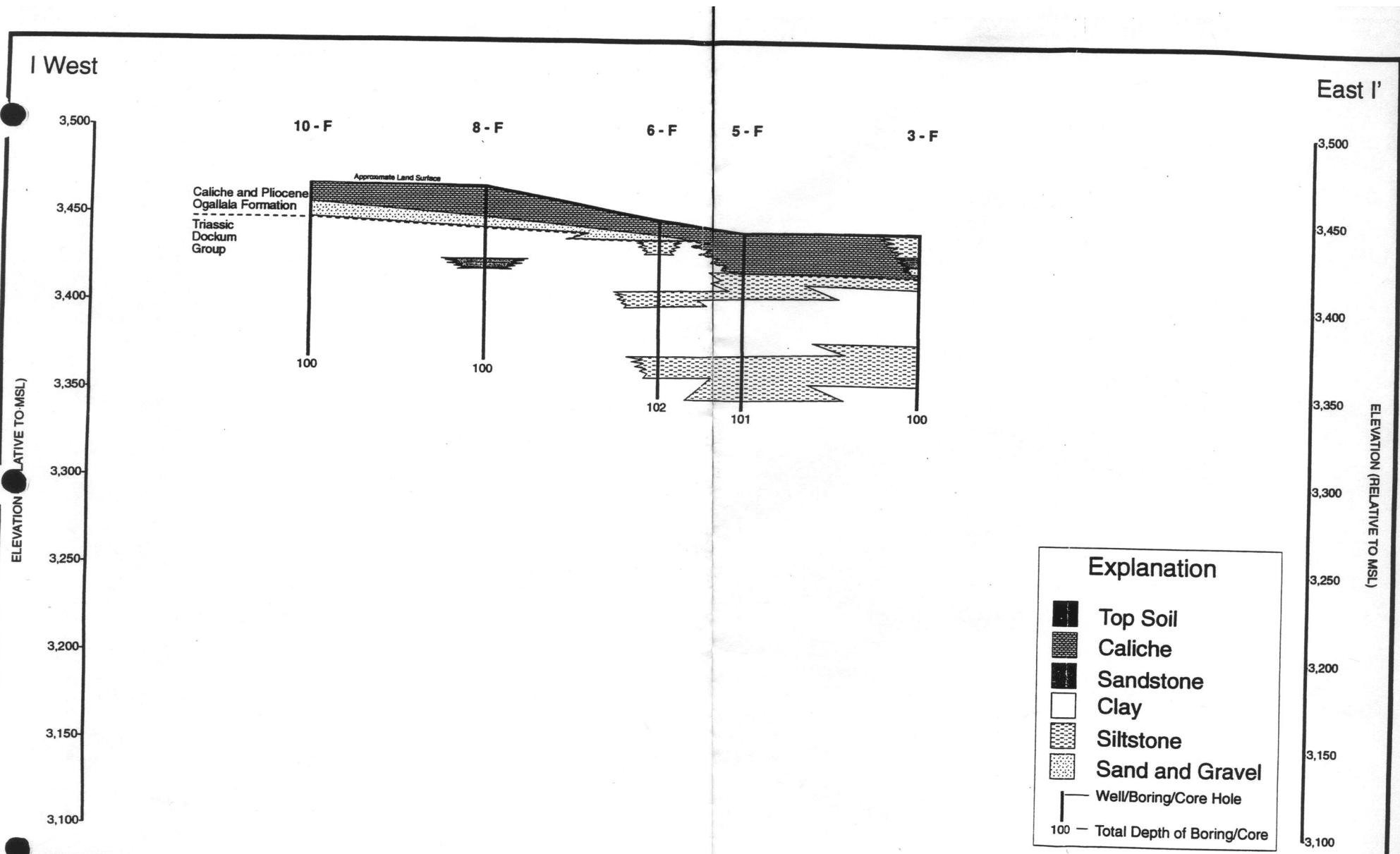
Figure VI.A.31

CROSS-SECTION H-H'

DRAWN BY: RM	DATE: 3-8-93
CHECKED BY: <i>[Signature]</i>	SCALE: 0 FEET
DRAWING #: 92-152.x.8	
JOB NO: 92-152	

I West

East I'



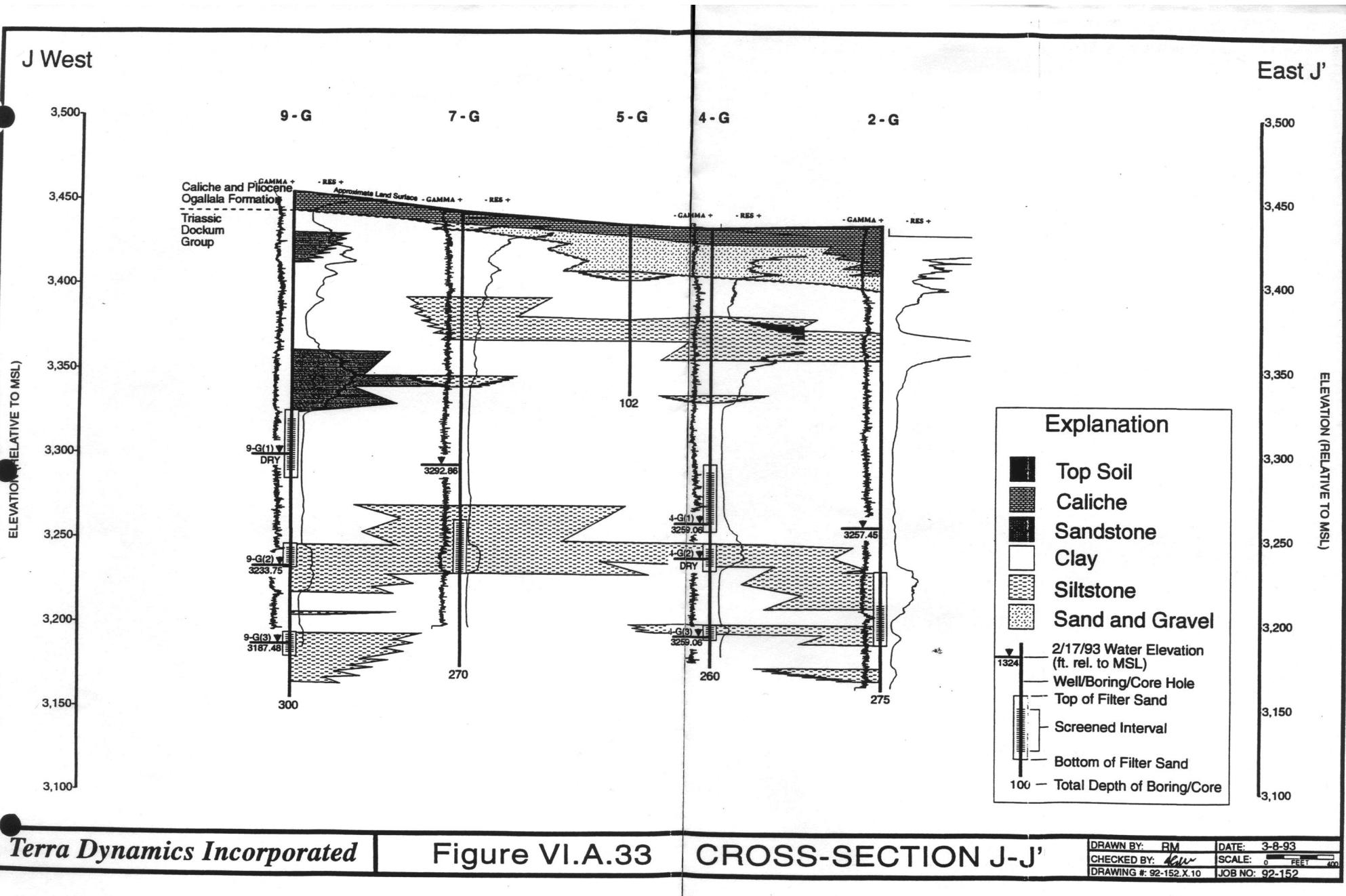
Terra Dynamics Incorporated

Figure VI.A.32 CROSS-SECTION I-I'

DRAWN BY: RM	DATE: 3-8-93
CHECKED BY: NAW	SCALE: 0 FEET 400
DRAWING #: 92-152.X.9	
JOB NO: 92-152	

J West

East J'

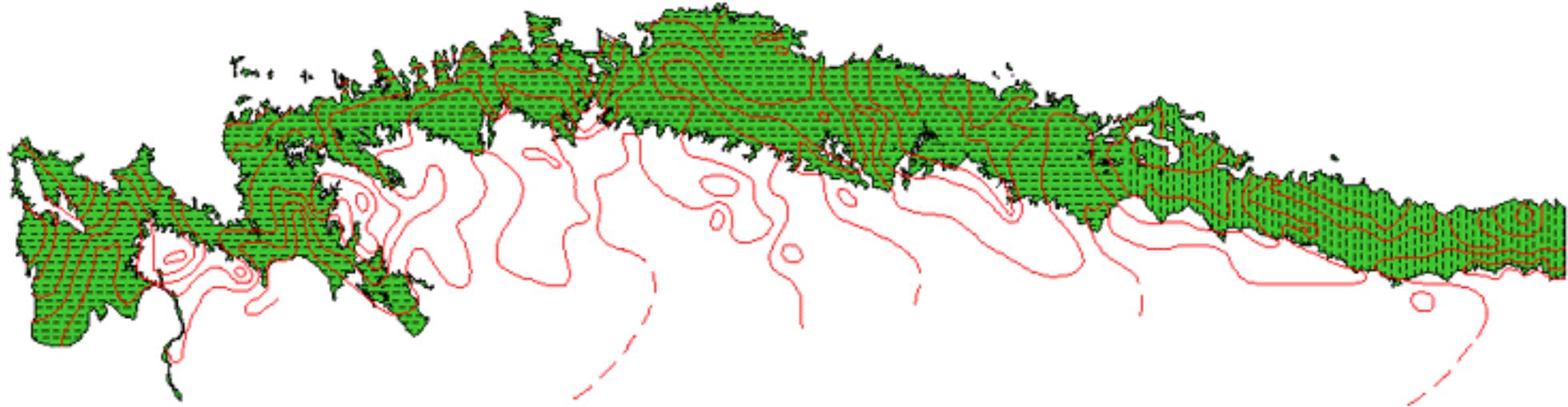


Terra Dynamics Incorporated

Figure VI.A.33

CROSS-SECTION J-J'

DRAWN BY: RM DATE: 3-8-93
CHECKED BY: Luv SCALE: 0 FEET 400
DRAWING #: 92-152.X.10 JOB NO: 92-152



Antlers Aquifer

EXPLANATION

- Water-level elevation contours in feet above sea level. Dashed where approximate. Contour interval is 50 feet. (Elevations not shown here)
- Aquifer outcrop boundary
- [Light Gray Box] Hydraulic conductivity and recharge are not known
- [Green Box] Hydraulic conductivity is 5.7 feet/day
- [White Box with Grid] Recharge of 0.32 inches/year
- [White Box with Vertical Lines] Recharge of 0.98 inches/year

Without a detailed geological survey, WCS has made the claim that the Ogallala found at their Andrews site has been misidentified by both the Terra Dynamics study, and every other State and Federal body (USGS and TWDB well data).

In this claim, they state that what was determined to be Ogallala is "Antler Sandstone". Antler Sandstone is part of the Antler formation (above) more than 300 miles away from the Andrews facility. The Antler formation does not reside anywhere near the Andrews facility, the New Mexico border, or west Texas. Despite this, the Bureau did not question this claim, and granted WCS a radioactive materials processing and storage license.

T W D B . W I L D
Water Well Data

Help

Wells in Submitted Driller's Reports - Texas



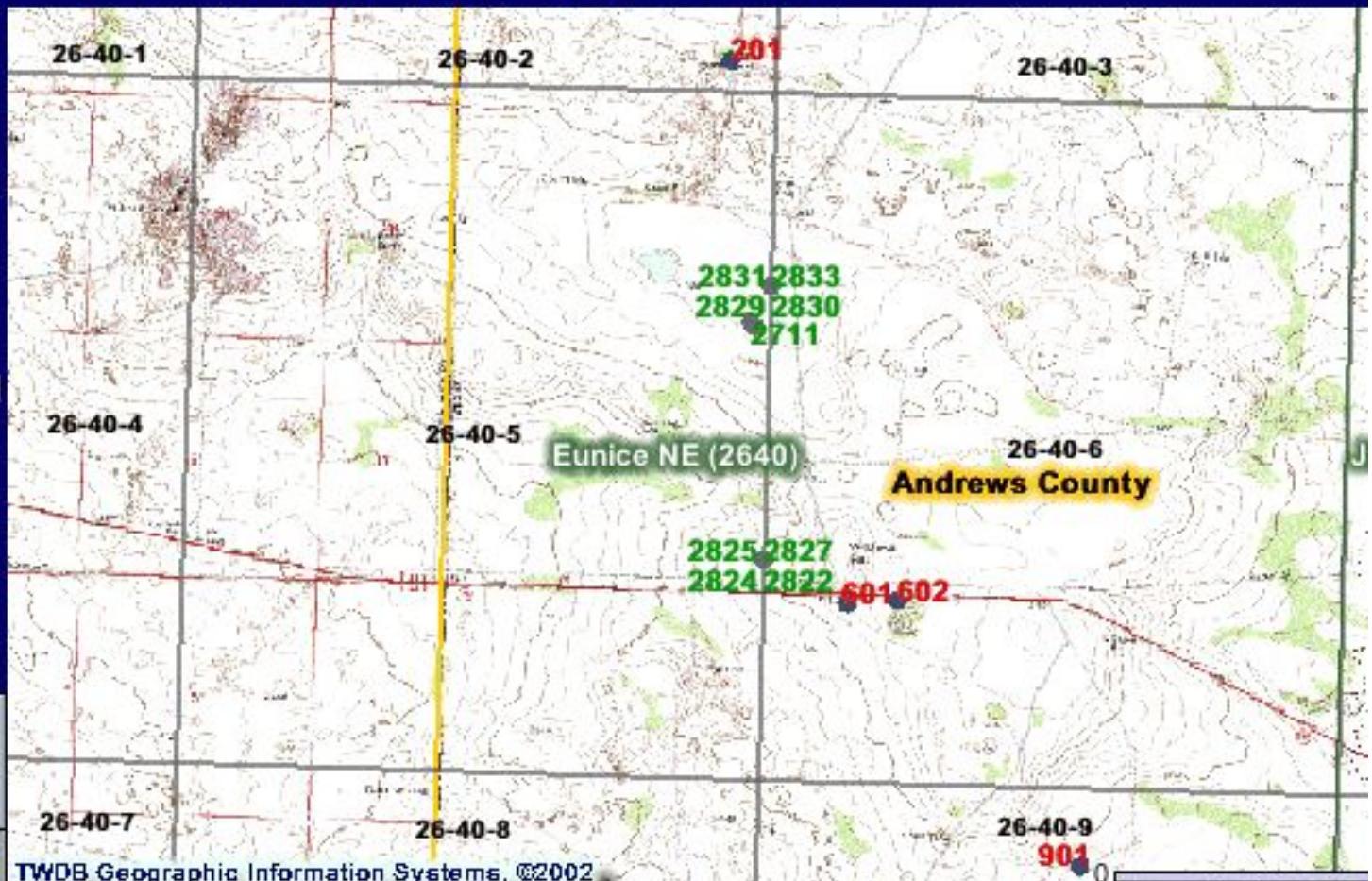
MAP TOOLS Show Help on Tools



[Layers]

Visible Active

- TWDB
- Groundwater Data
- Submitted
- Driller's Reports
- Submitted Drillers
- Reports - D.I.M.s
- 7.5' USGS Grid
- 2.5' State Grid



TWDB Geographic Information Systems, ©2002

This graphic shows area wells around the WCS site in Andrews County. The facility resides under the word "Eunice" on the map. Red numbers indicate state-owned wells, while green numbers represent private wells which are recorded. From drilling records to present day, each state-owned well records being tapped into the Ogallala. In order to maintain its wild claims about the absence of the Ogallala, WCS purposely records that its wells do not tap into the Ogallala.

Typewrite (Black ribbon) or Print Plainly
(soft pencil or black ink)
Do not use ball point pen

Texas Department of Health Laboratories
1100 West 49th Street
Austin, Texas 78756

TDWR ONLY	
Organization No.	410
Lab No.	01
Work No.	6040
S. R. S.	

NOV 6 1980

CHEMICAL WATER ANALYSIS REPORT

Send report to:

Data Collection and Evaluation Section
Texas Department of Water Resources
P.O. Box 13087
Austin, Texas 78711

County 002 Andrews
State Well No. 26-40-601
Well No.
Date Collected 10-09-80

Location _____ Sample No. _____ By F. Bilberry

Source (type of well) Windmill Owner _____

Date Drilled _____ Depth _____ ft. WBF Ogallala

Producing intervals _____ Water level _____ ft. Sample depth _____ ft.

Sampled after pumping POA hrs. Yield _____ GPM meas. est. Temperature 069°F 0°C

Point of collection Disch. Pipe Appearance clear turbid colored other

Use Stock Remarks _____

(FOR LABOR)

CE1- 1768

CHEMICAL ANALYSIS
OCT 16 1980

10/05 '80

Laboratory No. _____ Date Received _____ Date Reported _____

	MG/L	ME/L	MG/L	ME/L
Silica 00955	44		0	
Calcium 00915	62	3.12	23.3	3.82
Magnesium 00925	8	0.66	19	0.40
Sodium 00929	20	0.87	8	0.24
	Total	4.65		
<input type="checkbox"/> Potassium 00937	3.0	0.108	0	
³ <input checked="" type="checkbox"/> Manganese 01055		4.73		
<input type="checkbox"/> Boron 01022				
³ <input checked="" type="checkbox"/> Total Iron 01045		SAR		
<input type="checkbox"/> (other) _____	MG/L	RSC		
Specific Conductance (micromhos/cm ³) 00095	0415			
Diluted Conductance (micromhos/cm ³) 4 x 118	472			

" " items will be analyzed if checked.

¹The bicarbonate reported in this analysis can be converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure used in the computation of dissolved solids.

²Nitrogen cycle requires separate sample.

³Total Iron and Manganese require separate sample.

Carbonate 00445	0	
Bicarbonate 00440	23.3	
Sulfate 00945	19	
Chloride 00940	8	
Fluoride 00951	0.8	
Nitrate 71850	23.2	
pH 00403	8.0	Total
		4.83
¹ Dissolved Solids (residue at 180°C)	70300	308
Phenolphthalein Alkalinity as CaCO ₃ 00415	0	
Total Alkalinity as CaCO ₃ (3.84) 00410		191
Total Hardness as CaCO ₃ (3.78) 00900		185
² Nitrogen Cycle		
Ammonia - N 00610		
Nitrite - N RECEIVED 00615		
Nitrate - N APR 13 1981 00620		
Organic Nitrogen GRATDWR 00605		

Analyst _____ Checked By _____

Texas Water Development Board
Well Schedule

State Well No. 24 40 102 Previous Well No. County Andrews 003

River Basin Po Grande Zone 23 Region 03 Lat. 32 25 39 Long. 103 01 53 Source of Coord. 1

Owner's Well No. _____ Location 1/4, 1.4, Section, Block _____, Survey _____

Owner Flying M Diamond Ranch Driller

Address PO Box 967 - Eunice, N.M. 88231 Tenant/Oper. Bill Vance

Date Drilled Depth 80 Source of Depth Datum O Altitude 3477 Source of Alt. Datum M

Aquifer Ogallala Well Type W User

Well Const. Casing Material

Completion Screen Material

Lift Data Pump Mfr. Type Centrifugal C No. Stages

Bowls Diam. _____ in. Setting _____ ft. Column Diam. _____ in.

Motor Mfr. Fuel or Power Windmill W Horsepower

Yield Flow GPM Pump 2-3 GPM Meas., Rpt., Est. 10/10/90 Date

Performance Test Date Length of Test Production GPM

Static Level ft. Pumping Level ft. Drawdown ft. Sp.Cap. GPM/ft.

Quality (Remarks)

Water Use Primary Stock 5 Secondary Tertiary

Other Data Available Water Level N Water Quality V Logs Other Data

Date Meas. • _____

Water Levels Date Meas. • _____

Date Meas. • _____

Casing or Blank Pipe (C) Well Screen or Slotted Zone (S) Open Hole (O) Cemented from _____ to _____ Diam. (in.) From To	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	

Recorded By E. Zapata Date Record Collected or Updated 10/10/1990 (20 max) Reporting Agency 01

Remarks 1	
2	
3	
4	
5	
6	

Aquifer Ogallala
Well No. 24-40-102

TEXAS DEPARTMENT OF WATER RESOURCES
WELL SCHEDULE

Aquifer(s) Ogallala Project No. "WATER TANK" State Well No. 26-40-201
--(136)--- Field No./Owner's Well No. County Andrews (002)

1. Location: _____, _____, Section _____, Block _____, Survey _____, Lat. **32-27-47**, Long. **103-02-39**

2. Owner: Ed Tinsley Address: Lamesa, Texas
Tenant (other): Buddy Brandon Address: Eunice, New Mexico
Driller: Kenneth Pike, Person

3. Land Surface Elevation: 3491 ft. above msl determined by Tape

4. Drilled: - - - - - 19 - - - ; Dug, Cable Tool, Rotary, Air, - - -

5. Depth: Rept. _____ ft. Meas. _____ ft.

6. Borehole Completion: Open Hole, Straight Wall, Underreamed, Gravel Packed

7. Pump: Mfr. _____ Type _____

No. Stages Bowls Diam. in. Section

Column B: , don't want him, setting it.

Column drain, _____ in., Length tail pipe, _____ ft.

6. MOTOR: At Fuel Wind HP.

9. Yield: Flow _____ gpm, Pump _____ gpm, Meas., Rept., Est. _____ Date _____

0. Performance Test: Date _____ Length of Test _____ Made by _____

Static Level ____ ft. Pumping Level ____ ft. Drawdown ____ ft.

Production _____ gpm Specific Capacity _____ gpm/ft.

1. Quality: (Remarks on taste, odor, color, etc.)

Analyses

Date	Laboratory	TDS	Sp. Cond.
------	------------	-----	-----------

Date Laboratory TDS So. Gaud.

12. Other data available (as circled): Bumpus Test, Brown & Yield Test, Dutton's Law

Formation Samples - Geophysical Log(s)

13. Water Level(s): 82.97 ft. ^{rept.} _{meas.} U-15-1979 ^{above} _{below} Edge Casting which is 0.5 ft. ^{above} _{below} Land Surface

ft. rept. meas. 19 above
below which is ft. above Land Surface

14. Use: Dom., Stock Public Supply, Ind., Irr., Observation, Other (Test Hole, Oil Test, etc.)

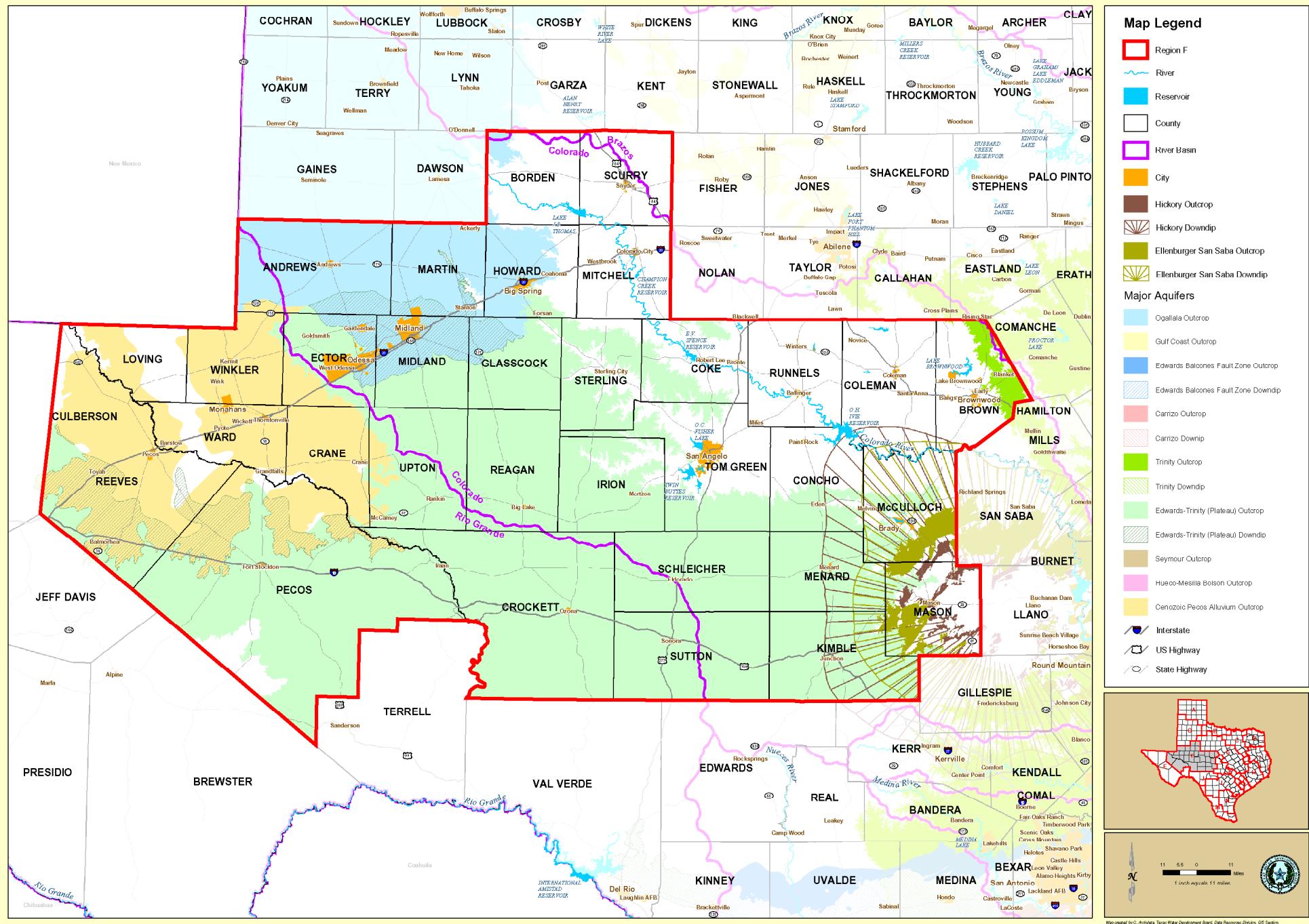
15. Recorded by: Crim Source of data: Field Obs Date: Nov-15-79

16. Remarks: "Water tank" will fall on top of the bridge.

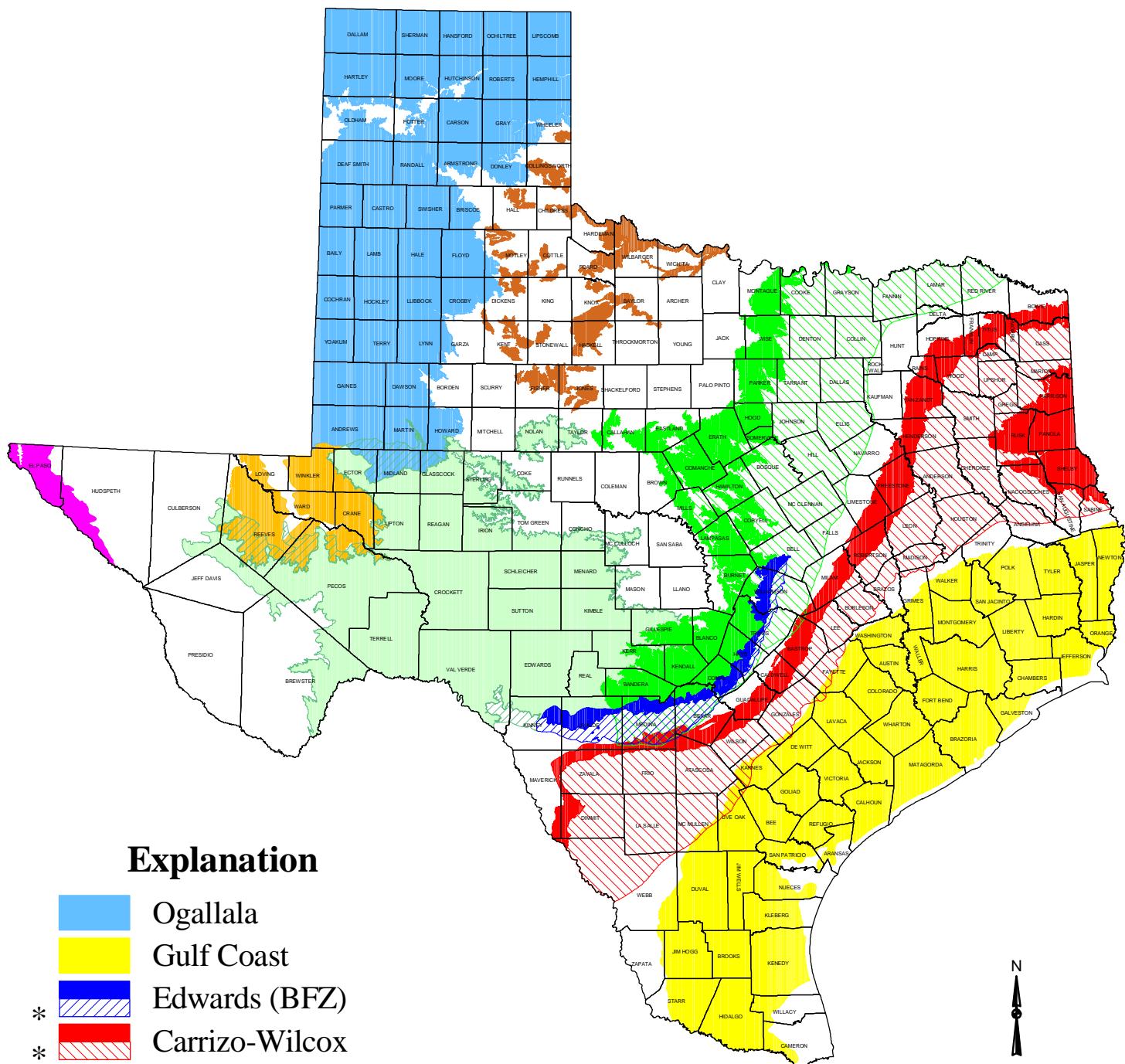
Digitized by srujanika@gmail.com

M.P. = +0.5 E_{0.94} of Casing

Regional Water Planning Group - Region F



Major Aquifers of Texas



Explanation

- █ Ogallala
- █ Gulf Coast
- Edwards (BFZ)
- Carrizo-Wilcox
- Trinity
- Edwards-Trinity (Plateau)
- █ Seymour
- █ Hueco-Mesilla Bolson
- █ Cenozoic Pecos Alluvium

OUTCROP (That part of a water-bearing rock layer which appears at the land surface)

* DOWNDIP (That part of a water-bearing rock layer which dips below other rock layers)



July 13, 2000

