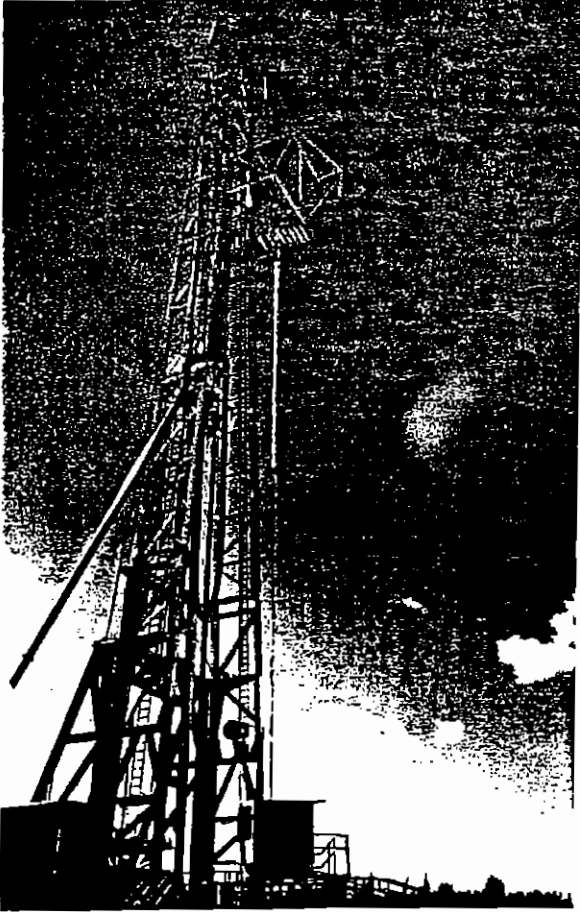


MDWASD West Wellfield ASR System
ASR Facility No. 18



*Engineering Report of
the Construction and
Testing of the Aquifer
Storage and Recovery
(ASR) System
at the MDWASD West
Wellfield*

Prepared for

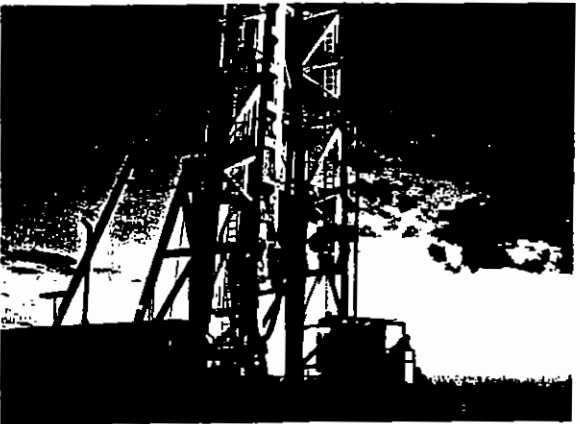


*Miami-Dade
Water and Sewer Department
MDWASD Contract W-740A*

Prepared by

CH2MHILL

May 1998



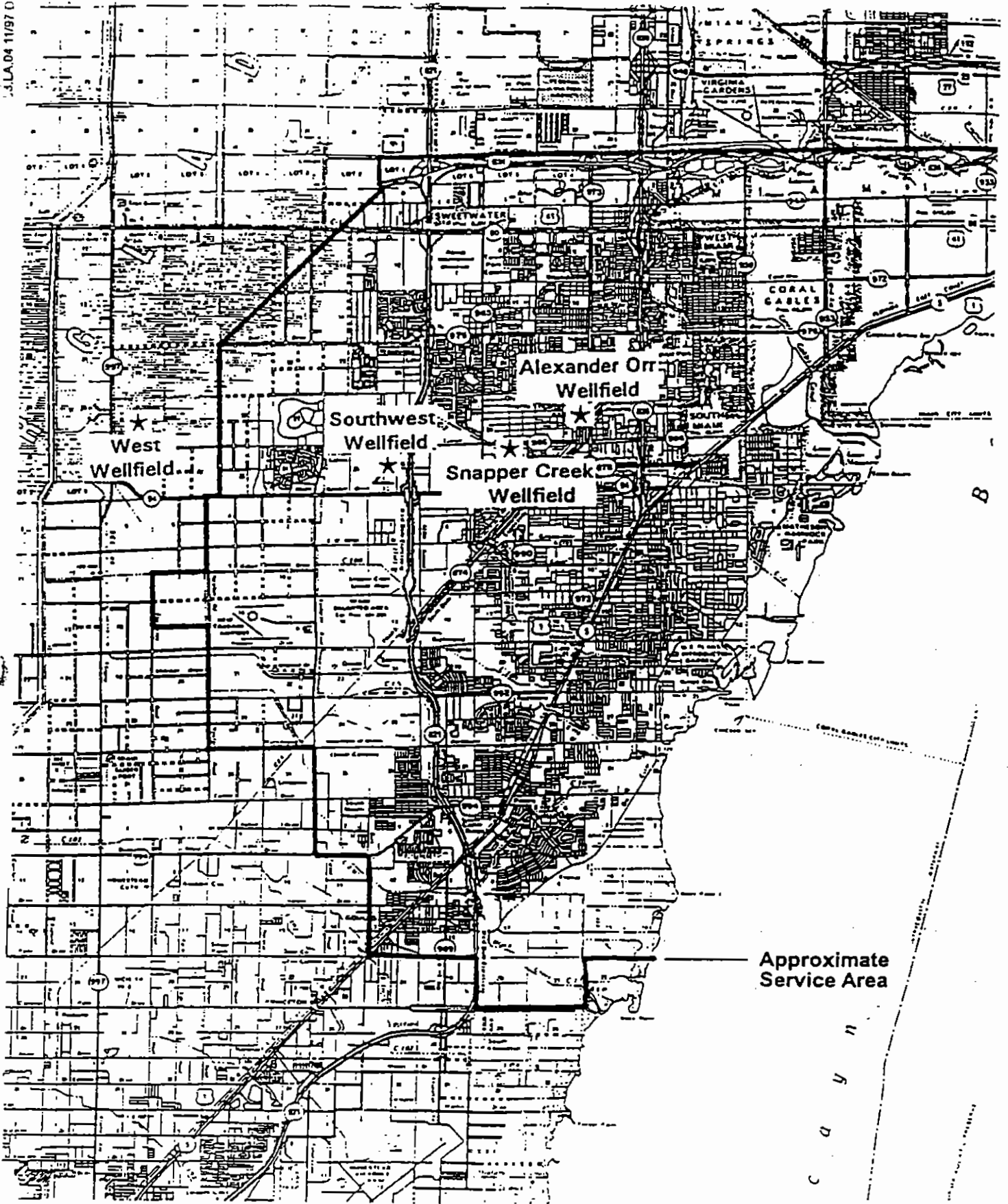


Figure 1-1
Wellfield Location Map



0 150'
SCALE IN FEET

APPROX. 2 MILES
OF LAPPED
36" R.I.P. WATER
PIPELINE (NOT
CONV. TO W.P.E.)

172nd SW AVE (THEO)

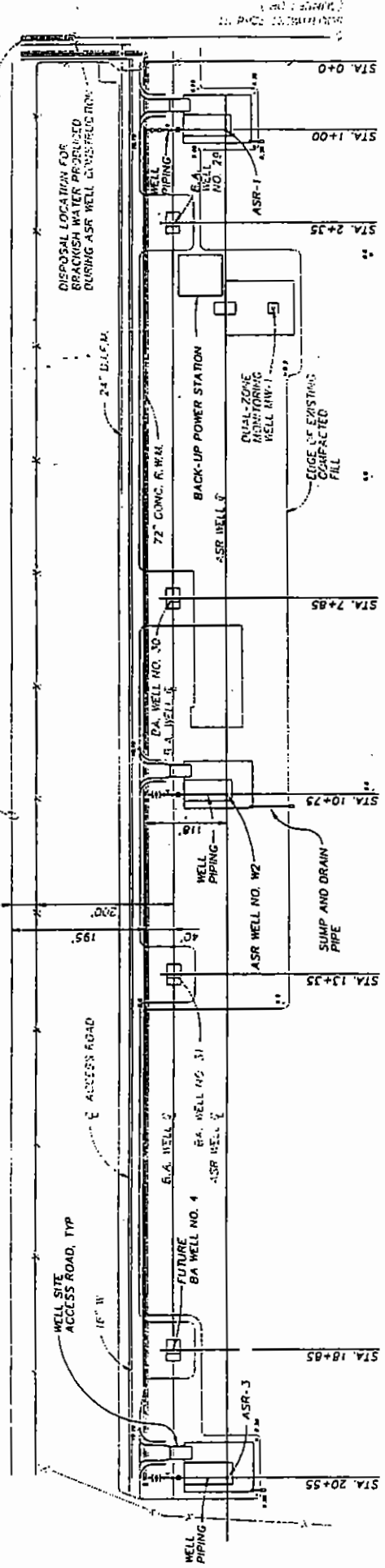


FIGURE 1-2



TABLE 2-1
Summary of Well Cementing Operations
MDWASD - West Wellfield ASR Project

| ASR-1 | | | | | | |
|----------|--------------------|--------------------|-----------------------|----------------|--------------------|--------------------------|
| Date | Casing ID (inches) | Casing OD (inches) | Casing Depth (ft bpl) | Type | Quantity (Barrels) | Cement Interval (ft bpl) |
| 11/26/96 | 39 | 40 | 170 | Pressure Grout | 209 | 0 to 170 |
| 12/5/96 | 29 | 30 | 850 | Pressure Grout | 367 | 105 to 850 |
| 12/6/96 | 29 | 30 | 850 | Tremie Grout | 58 | 0 to 105 |
| ASR-2 | | | | | | |
| 1/8/97 | 39 | 40 | 170 | Pressure Grout | 141 | 0 to 170 |
| 1/16/97 | 29 | 30 | 845 | Pressure Grout | 358 | 0 to 845 |
| ASR-3 | | | | | | |
| 2/14/97 | 39 | 40 | 170 | Pressure Grout | 209 | 0 to 170 |
| 2/21/97 | 29 | 30 | 835 | Pressure Grout | 393 | 0 to 835 |
| MW-1 | | | | | | |
| 1/2/97 | 12 | 2 | NA | Tremie Grout | 92 | 1,350 to 1,227 |
| 1/3/97 | 12 | 2 | NA | Tremie Grout | 85 | 1,227 to 1,010 |

Notes:

ID = Inside Diameter

OD = Outside Diameter

ft bpl = feet below pad level

All cement is neat cement (no additives)

ASR WELL (ASR-1) MONITOR WELL (MW-1) ASR WELL (ASR-2) ASR WELL (ASR-3)

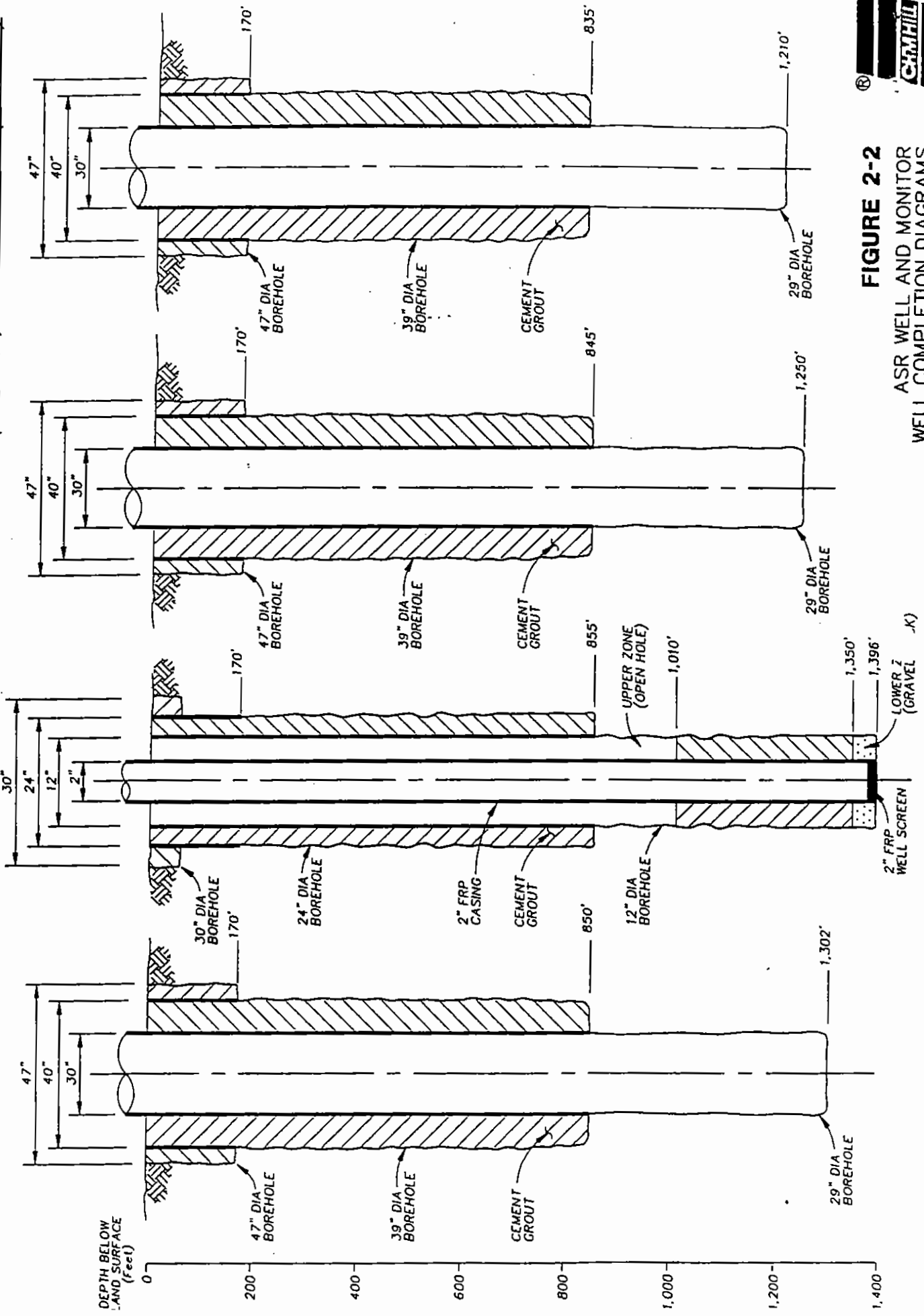


FIGURE 2-2 ASR WELL AND MONITOR WELL COMPLETION DIAGRAMS



**RESULTS OF THE
UPPER FLORIDAN AQUIFER SYSTEM
INVESTIGATION**

WEST WELLFIELD

Prepared For:

**Miami-Dade Water and Sewer Department
Contract No. W-711
ER No. 13374**

June 1995

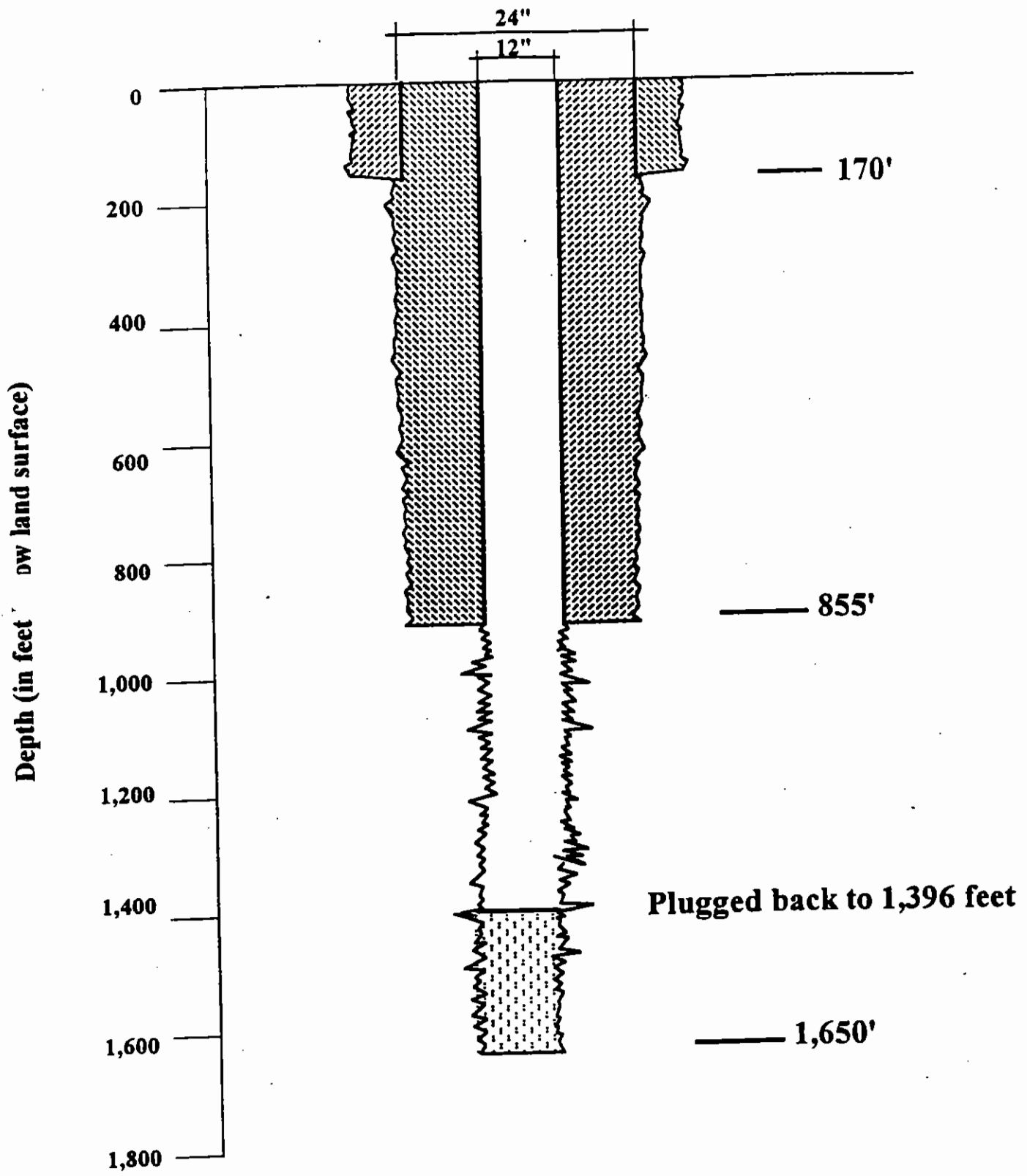


FIGURE 2-1
 WELL CONSTRUCTION DIAGRAM