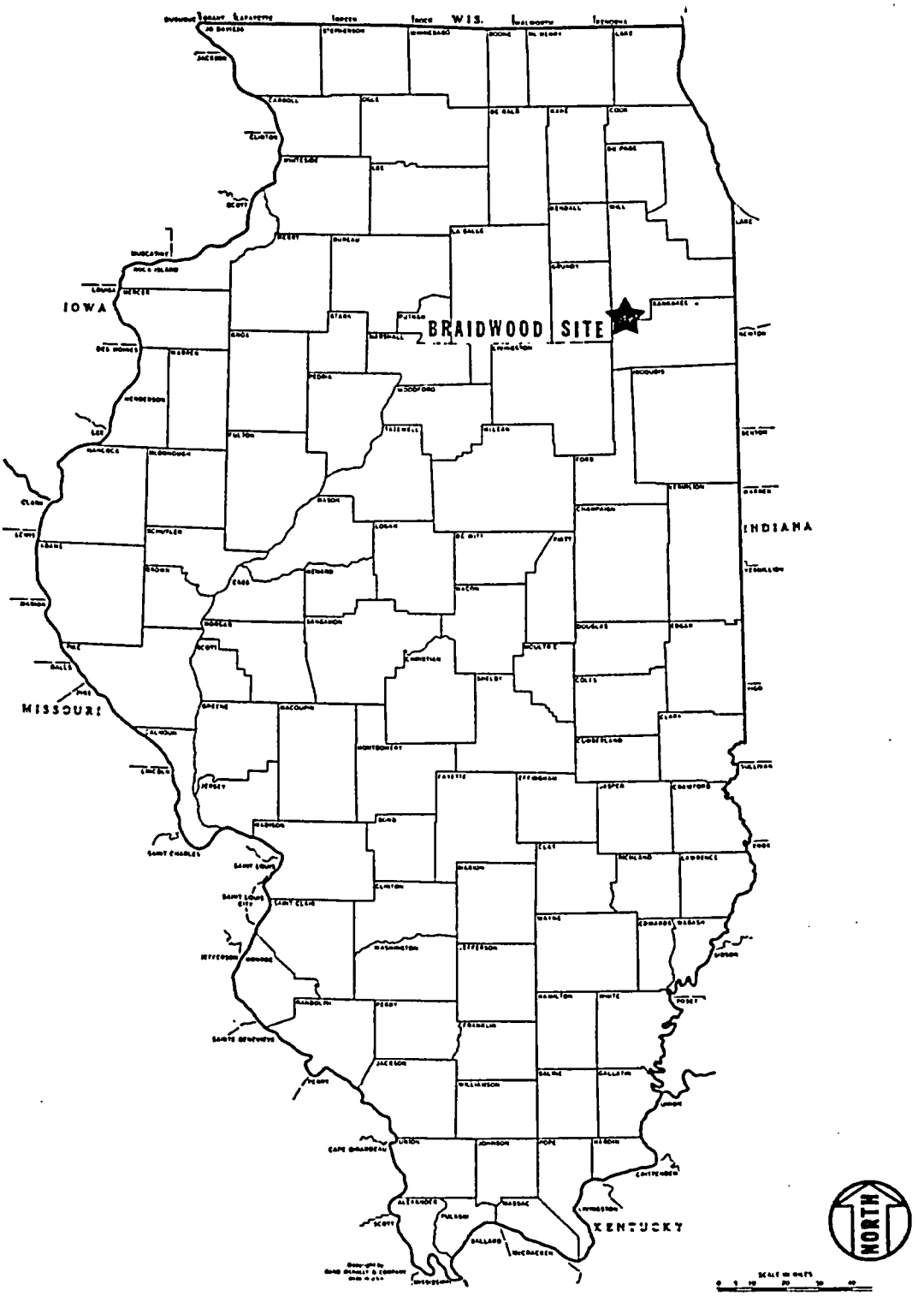
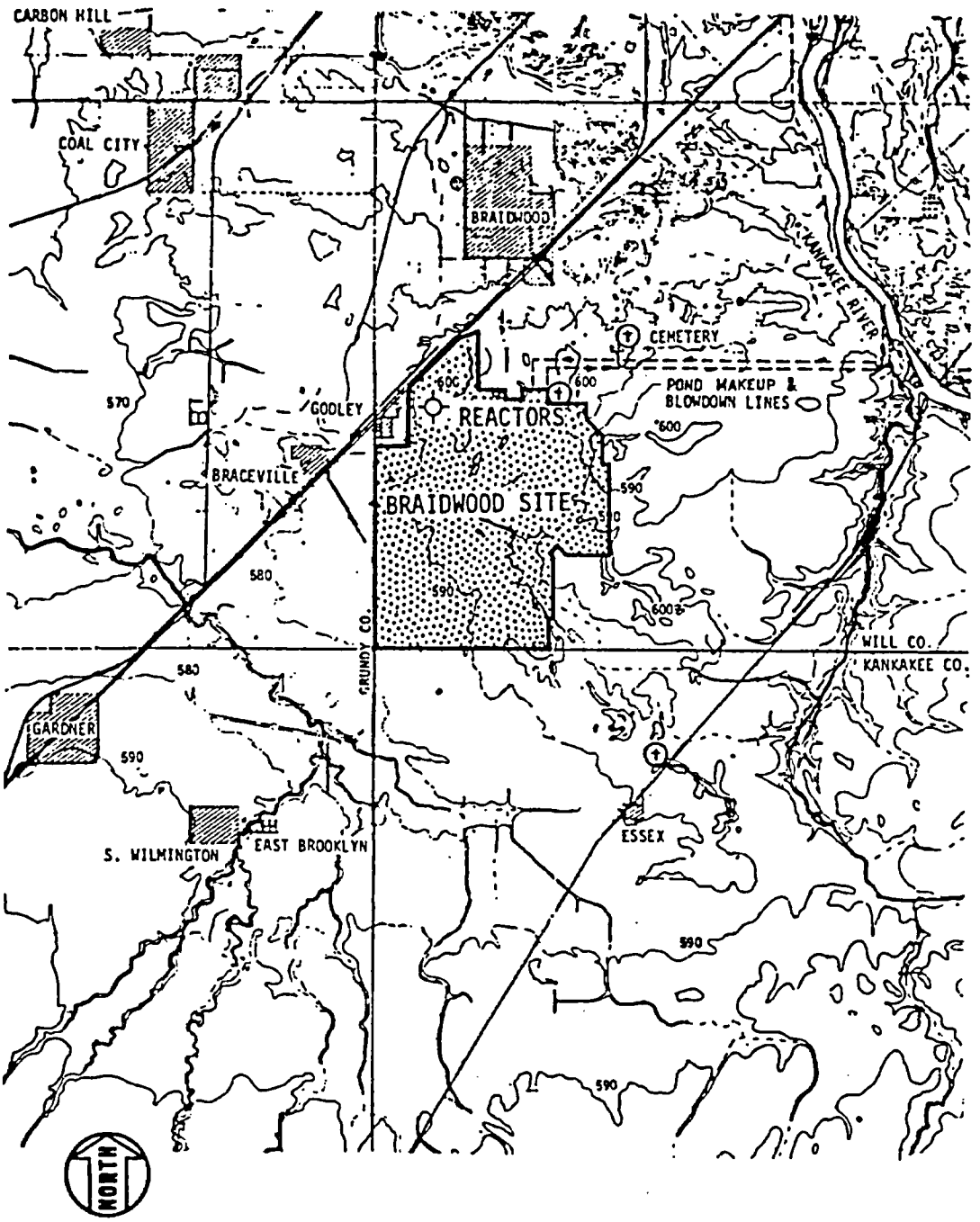


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.1-1.

LOCATION OF THE SITE WITHIN THE STATE OF ILLINOIS



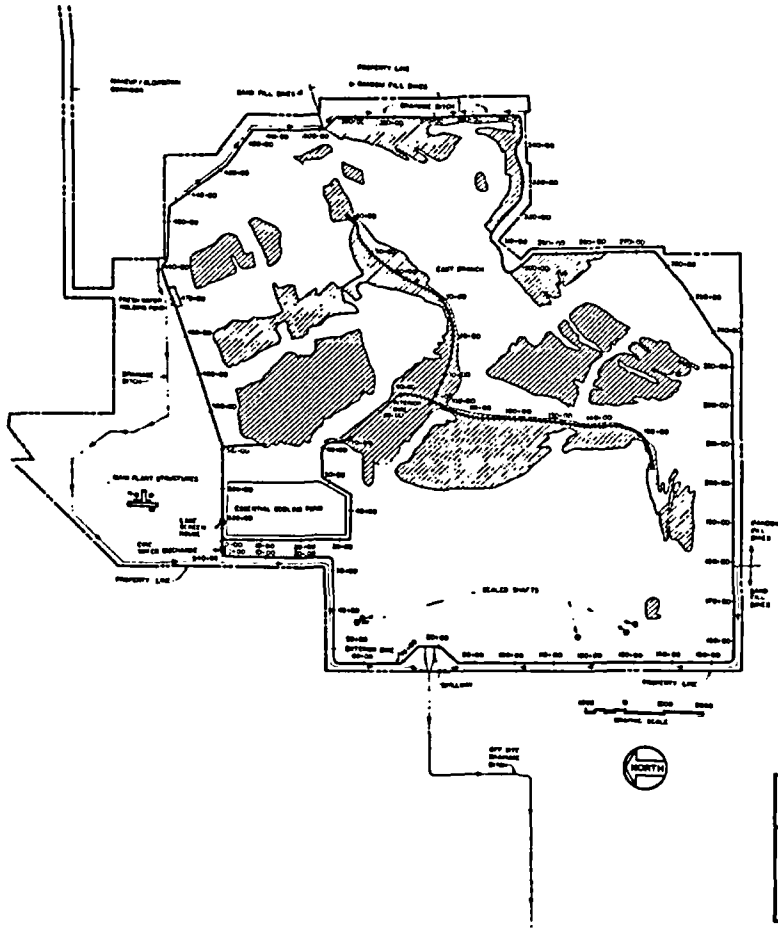
0 1 2 3

SCALE IN MILES

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.1-2

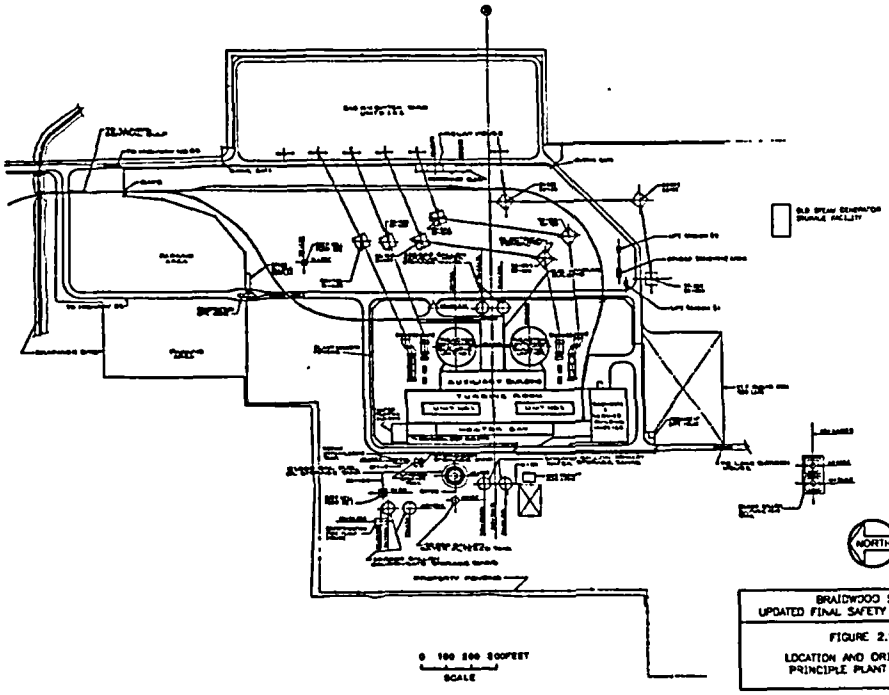
SITE WITH RESPECT TO KANKAKEE RIVER AND COUNTY BOUNDARIES



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.1-3

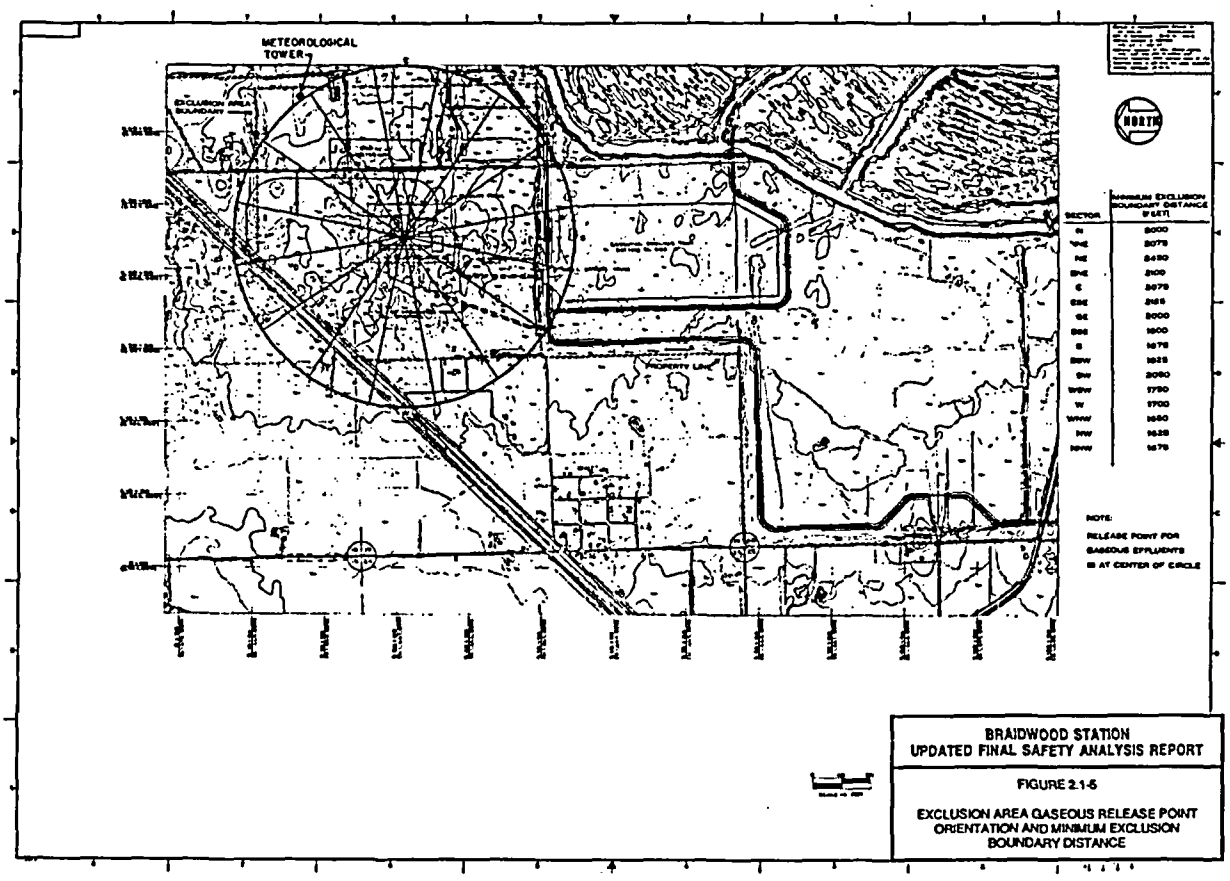
SITE BOUNDARY AND COOLING LAKE



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.1-4

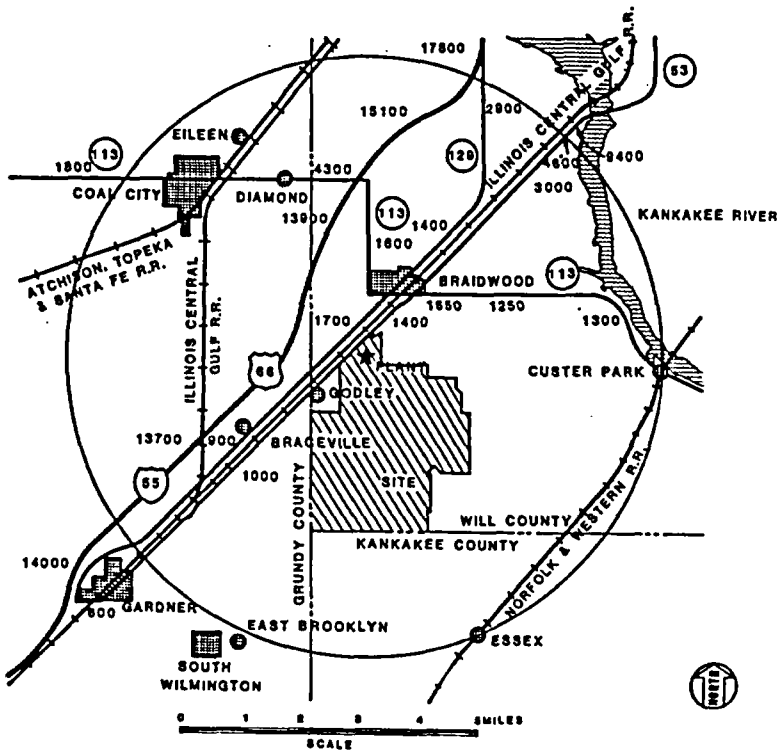
LOCATION AND ORIENTATION OF PRINCIPLE PLANT STRUCTURES



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.1-5

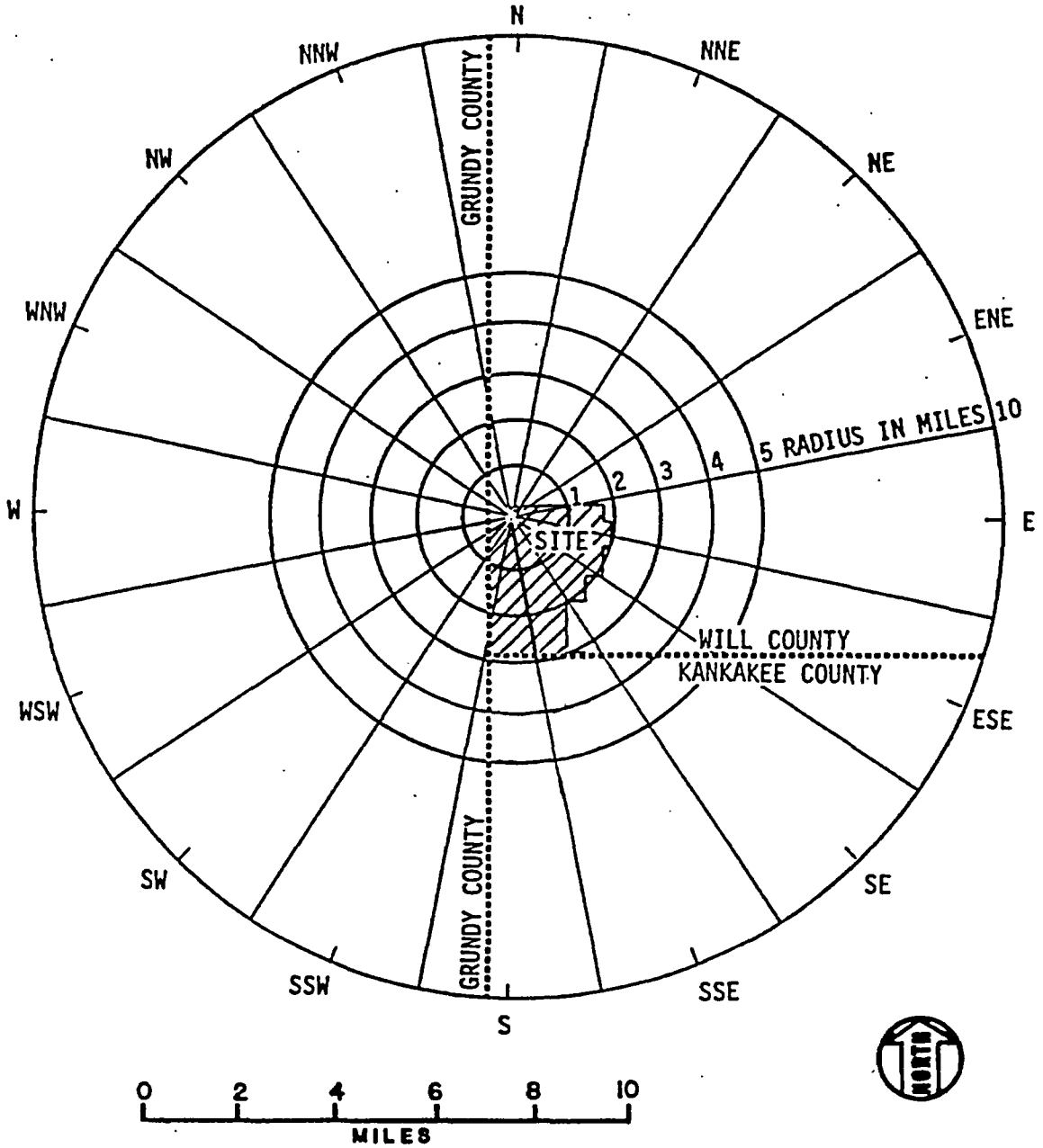
EXCLUSION AREA GASEOUS RELEASE POINT ORIENTATION AND MINIMUM EXCLUSION BOUNDARY DISTANCE



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.1-6

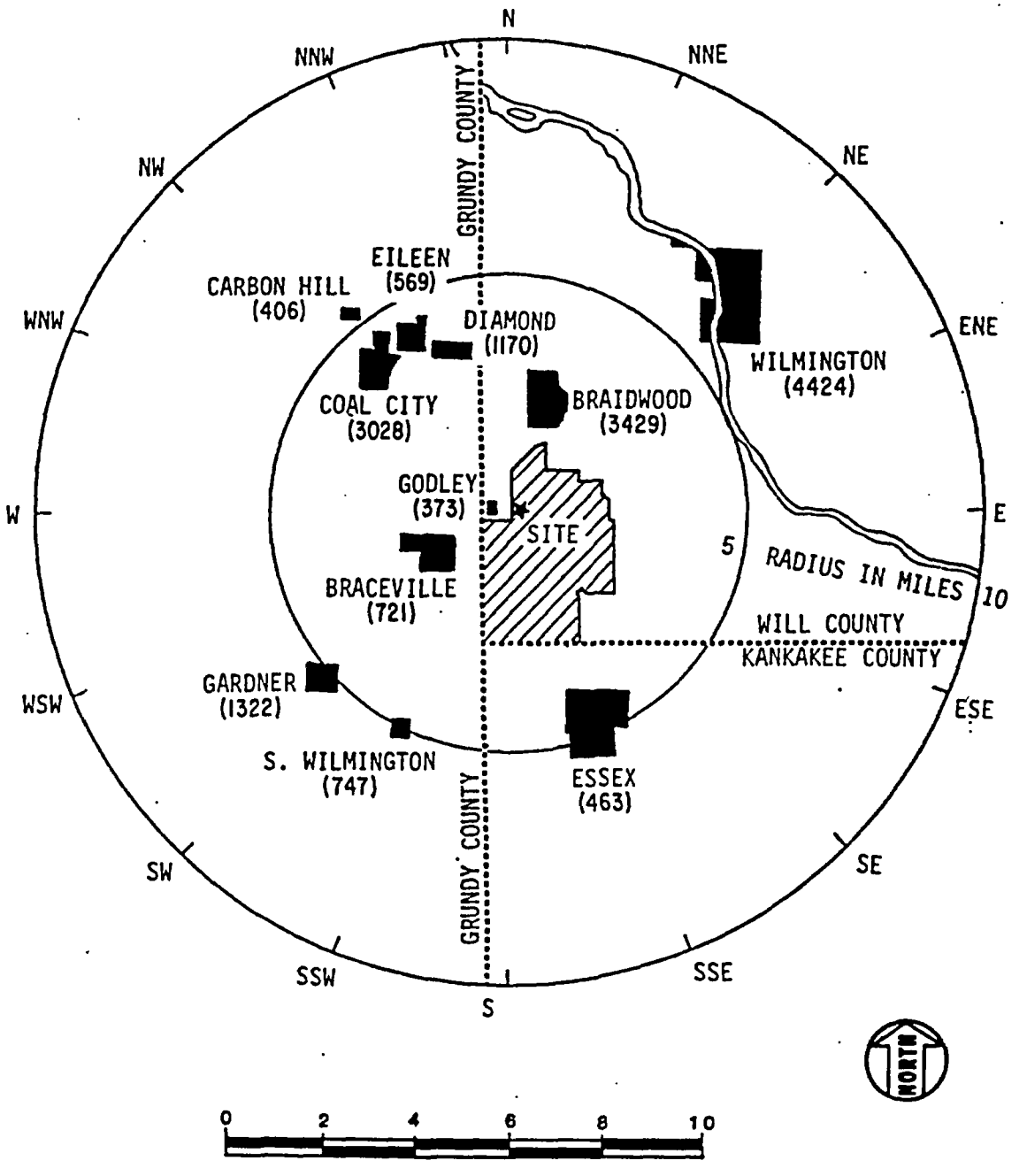
TRANSPORTATION NETWORKS WITHIN 5 MILES OF THE SITE



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.1-7

SECTOR DESIGNATIONS FROM 0 TO 10 MILES

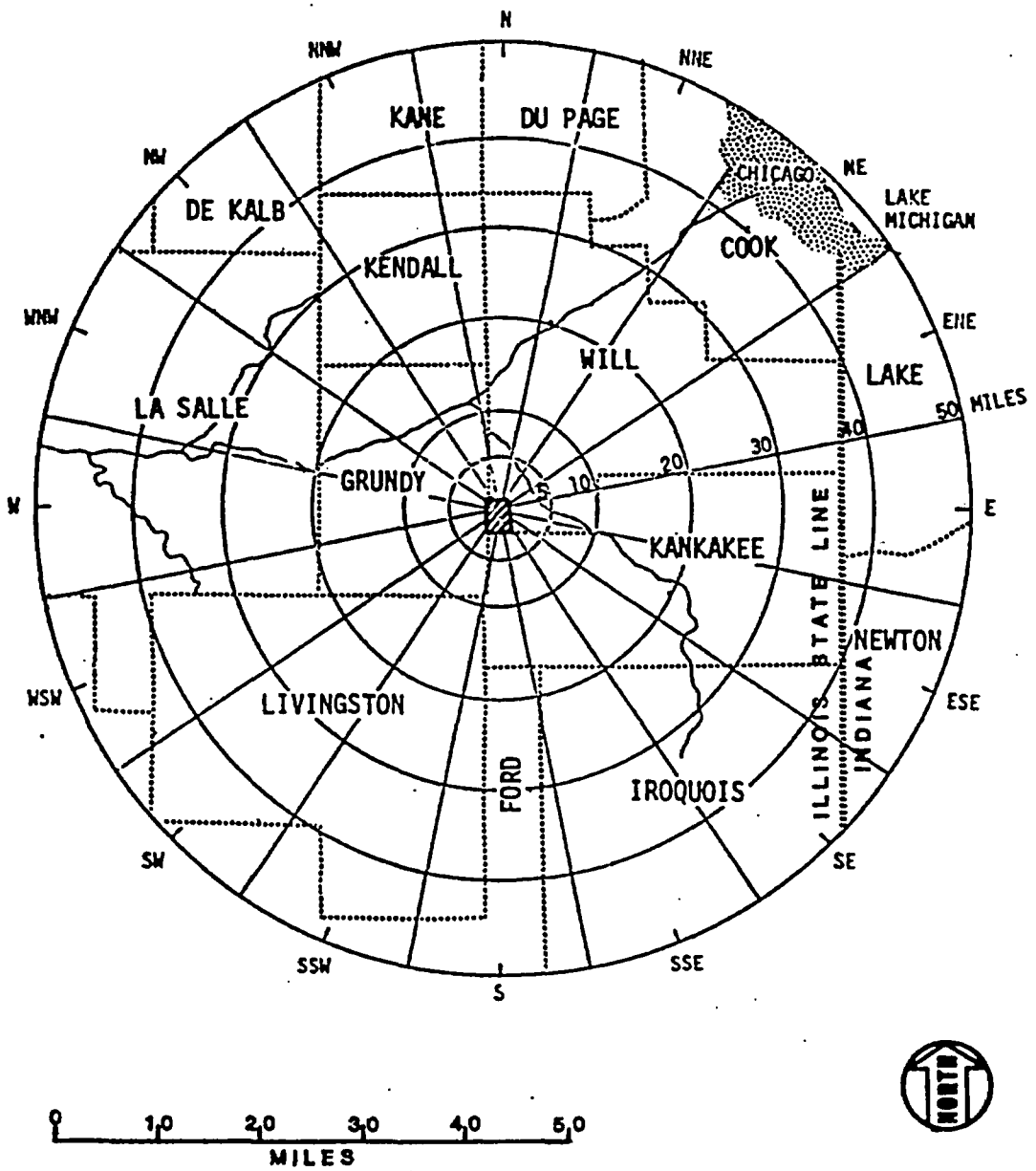


( ) INDICATES 1980 CENSUS POPULATION

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.1-8

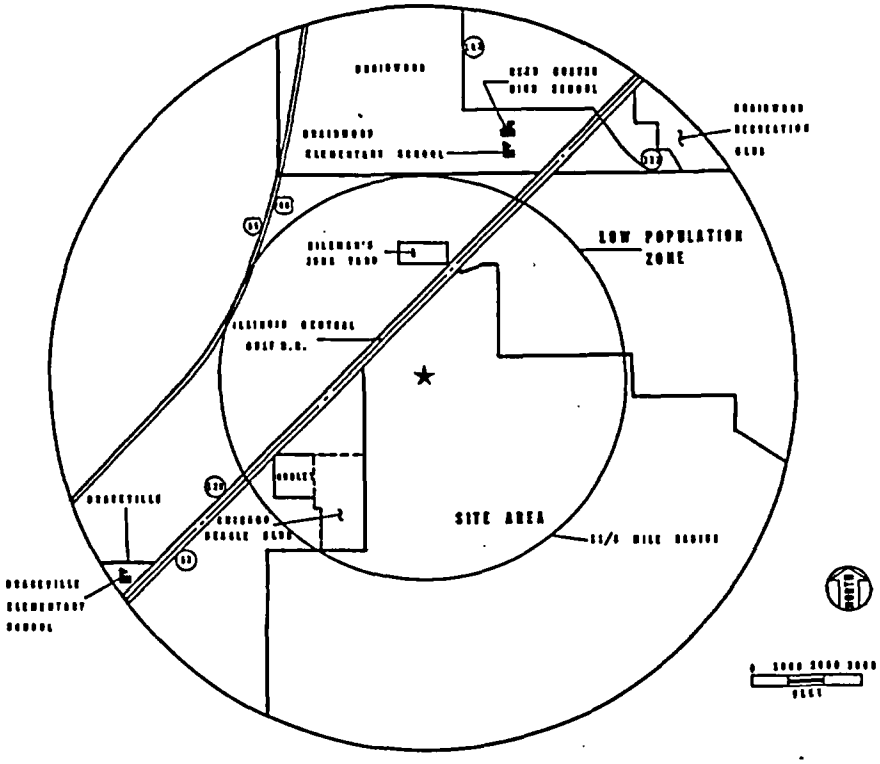
CITIES AND VILLAGES WITHIN
10 MILES OF THE SITE



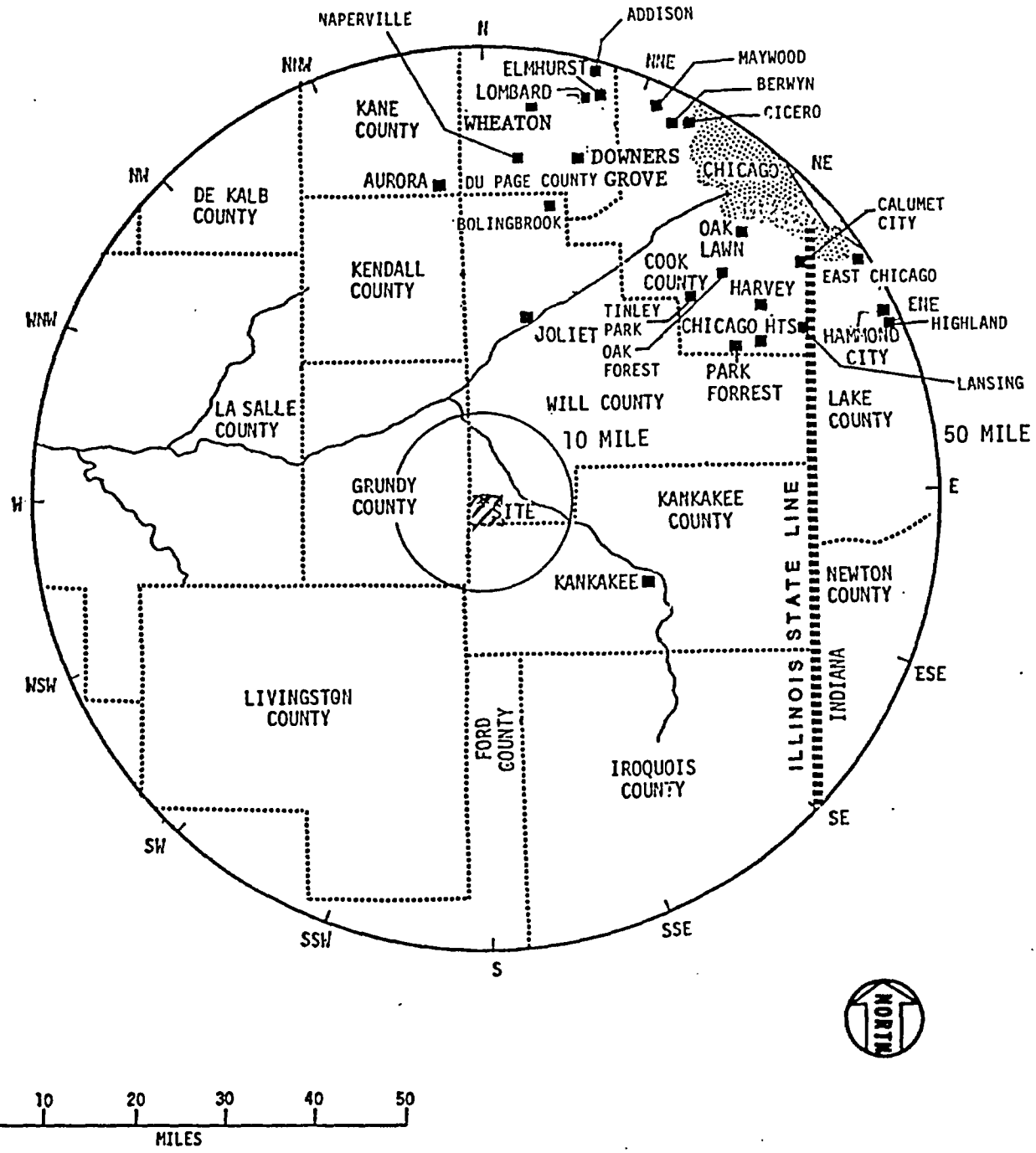
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.1-9

SECTOR DESIGNATIONS WITHIN 50 MILES



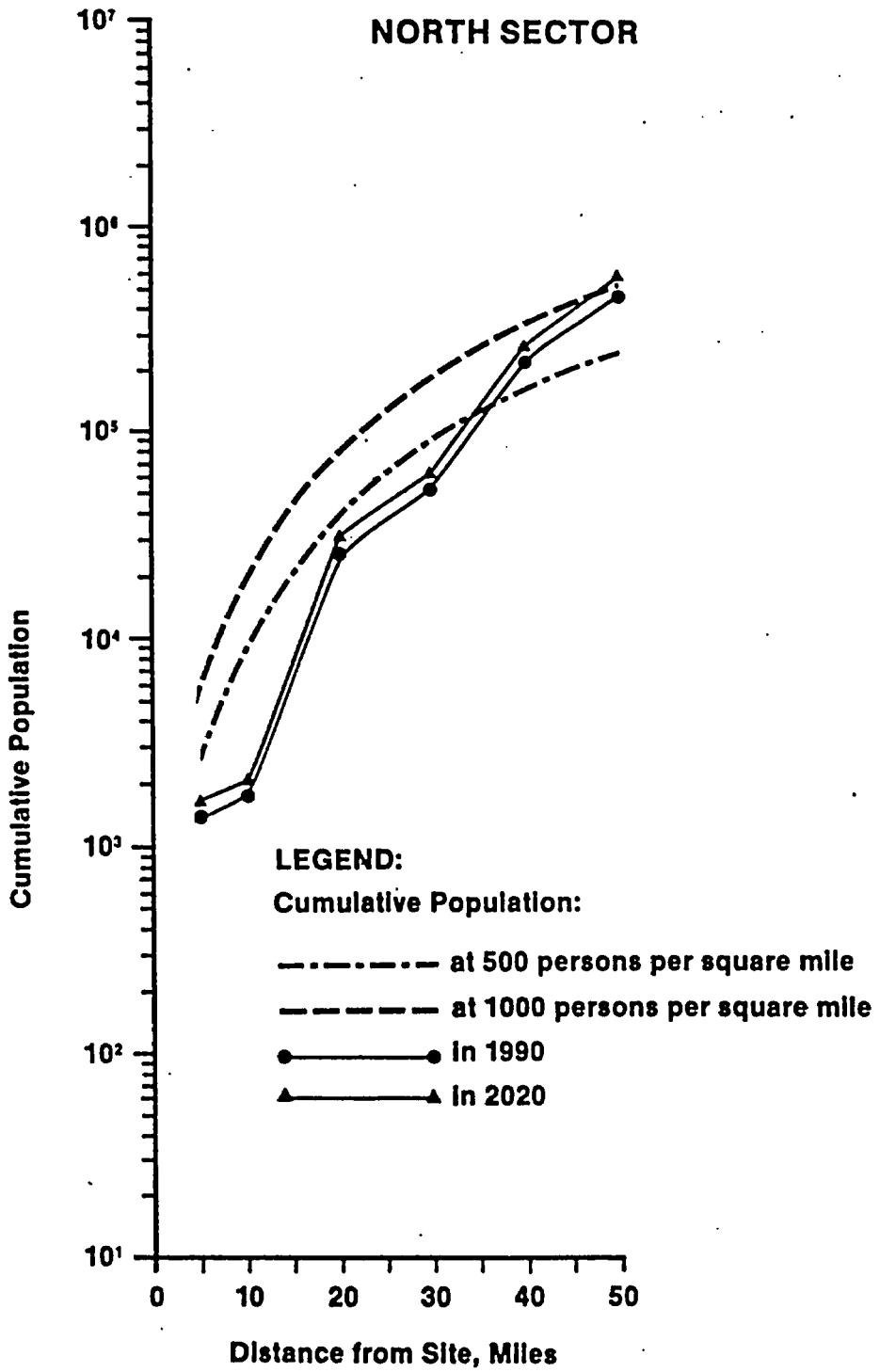
BRAIDWOOD STATION UPDATED FINAL SAFETY ANALYSIS REPORT
FIGURE 2.1-10
PUBLIC FACILITIES WITHIN THE LOW POPULATION ZONE



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.1-11

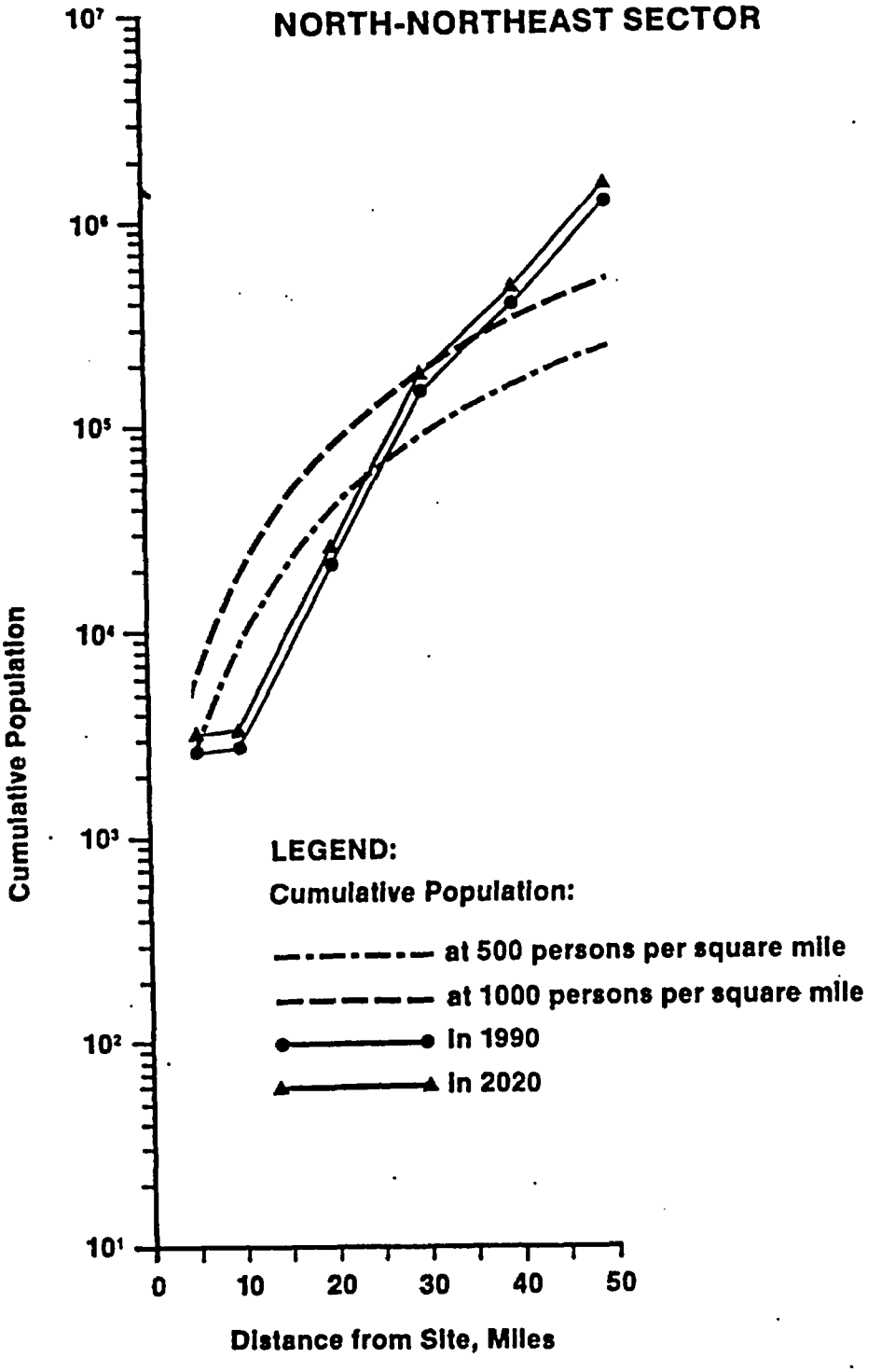
POPULATION CENTERS WITHIN
50 MILES OF THE SITE



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.1-12

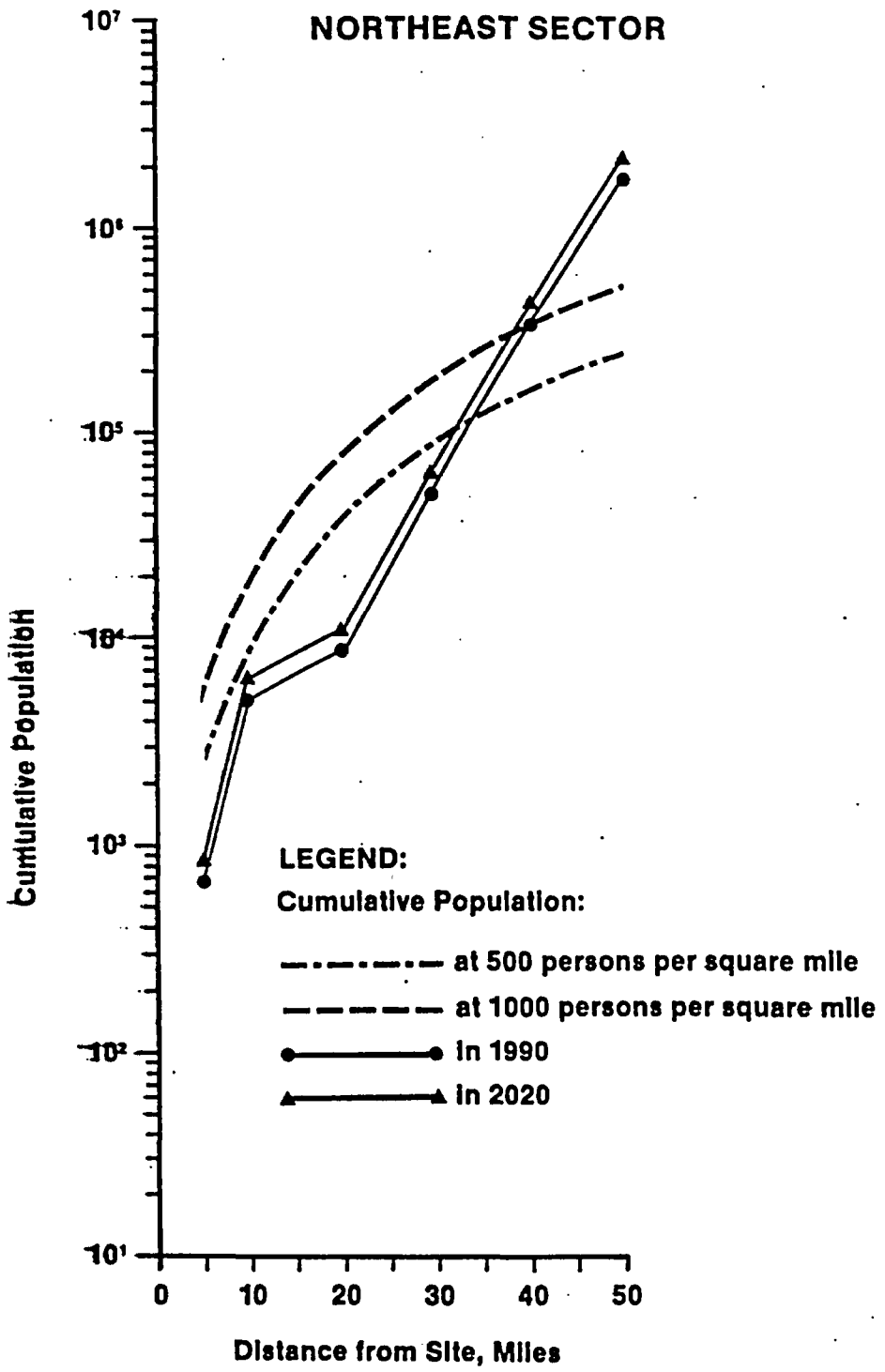
1990 AND 2020 POPULATION DENSITY
WITHIN 50 MILES OF THE SITE
(SHEET 1 OF 16)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.1-12

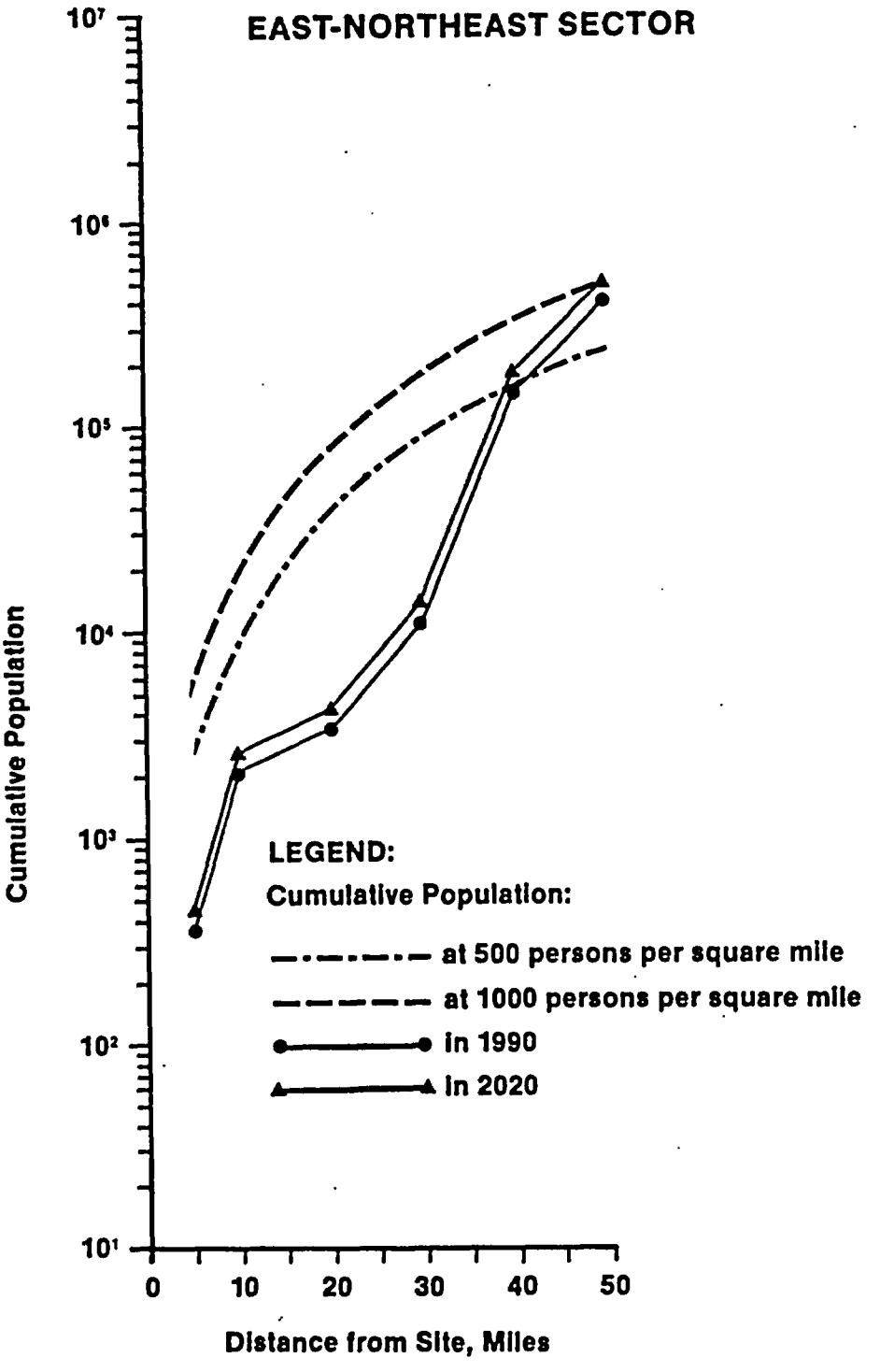
1990 AND 2020 POPULATION DENSITY
WITHIN 50 MILES OF THE SITE
(SHEET 2 OF 16)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.1-12

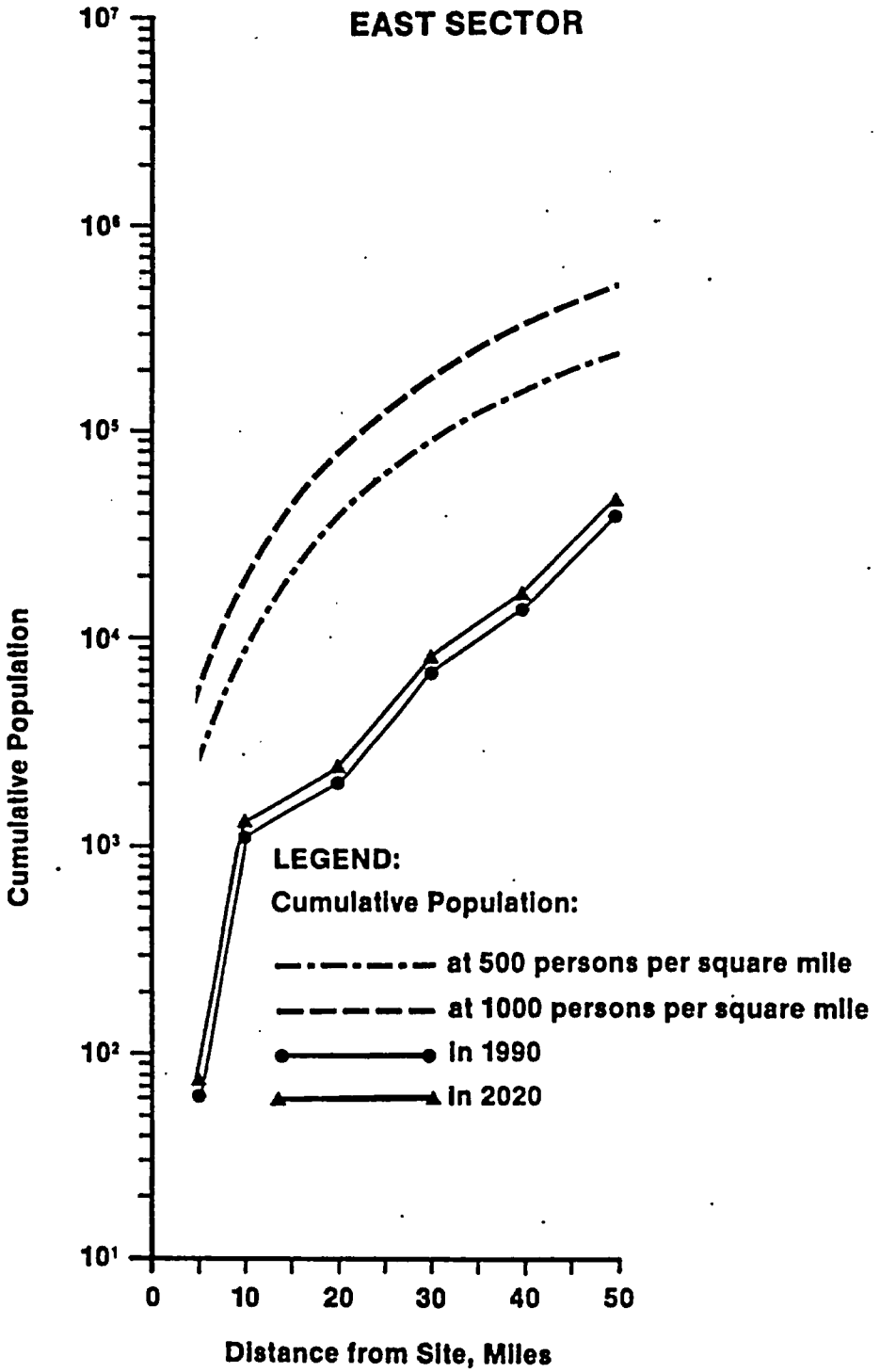
1990 AND 2020 POPULATION DENSITY
WITHIN 50 MILES OF THE SITE
(SHEET 3 OF 16)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.1-12

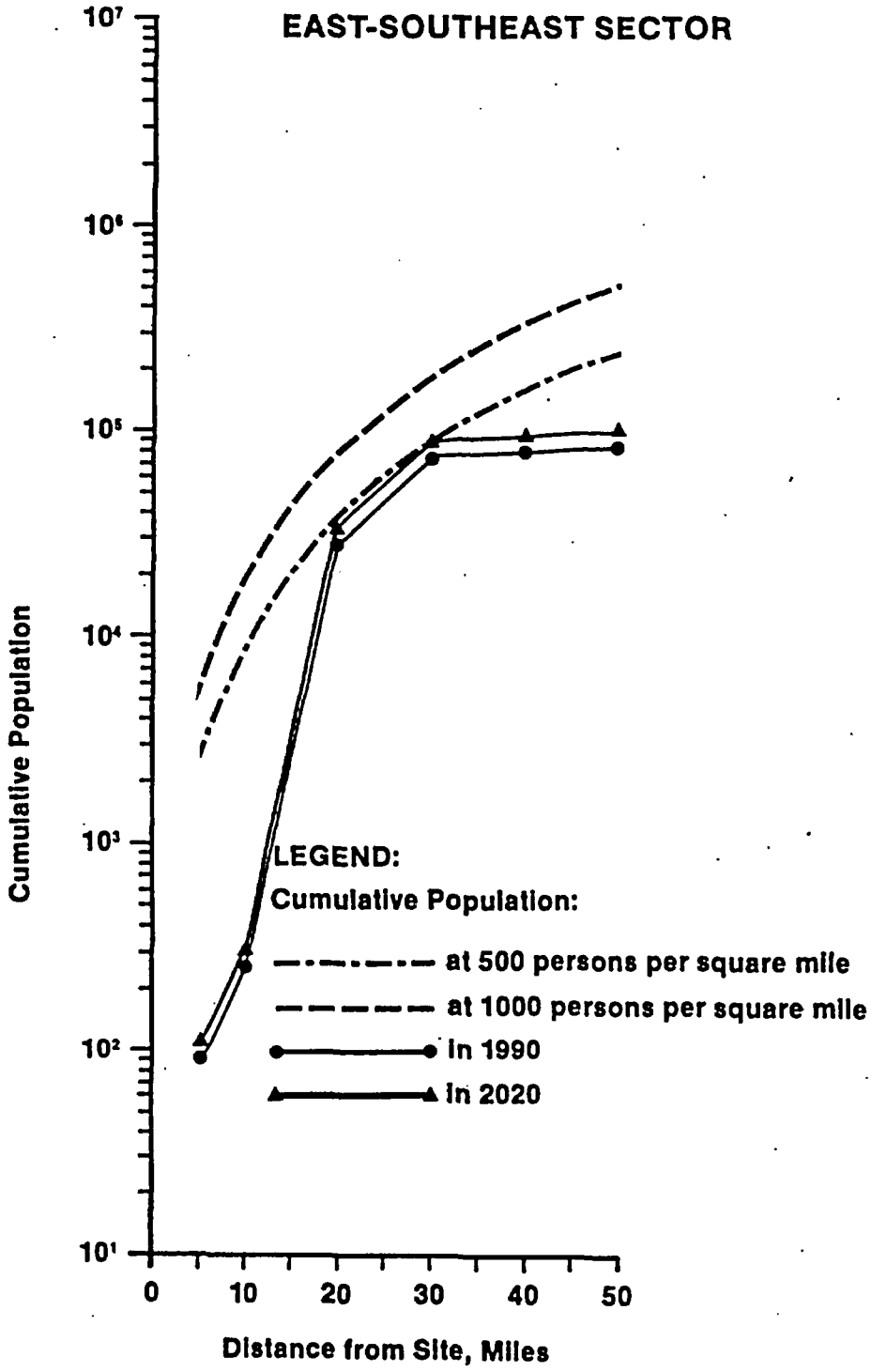
1990 AND 2020 POPULATION DENSITY
WITHIN 50 MILES OF THE SITE
(SHEET 4 OF 16)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.1-12

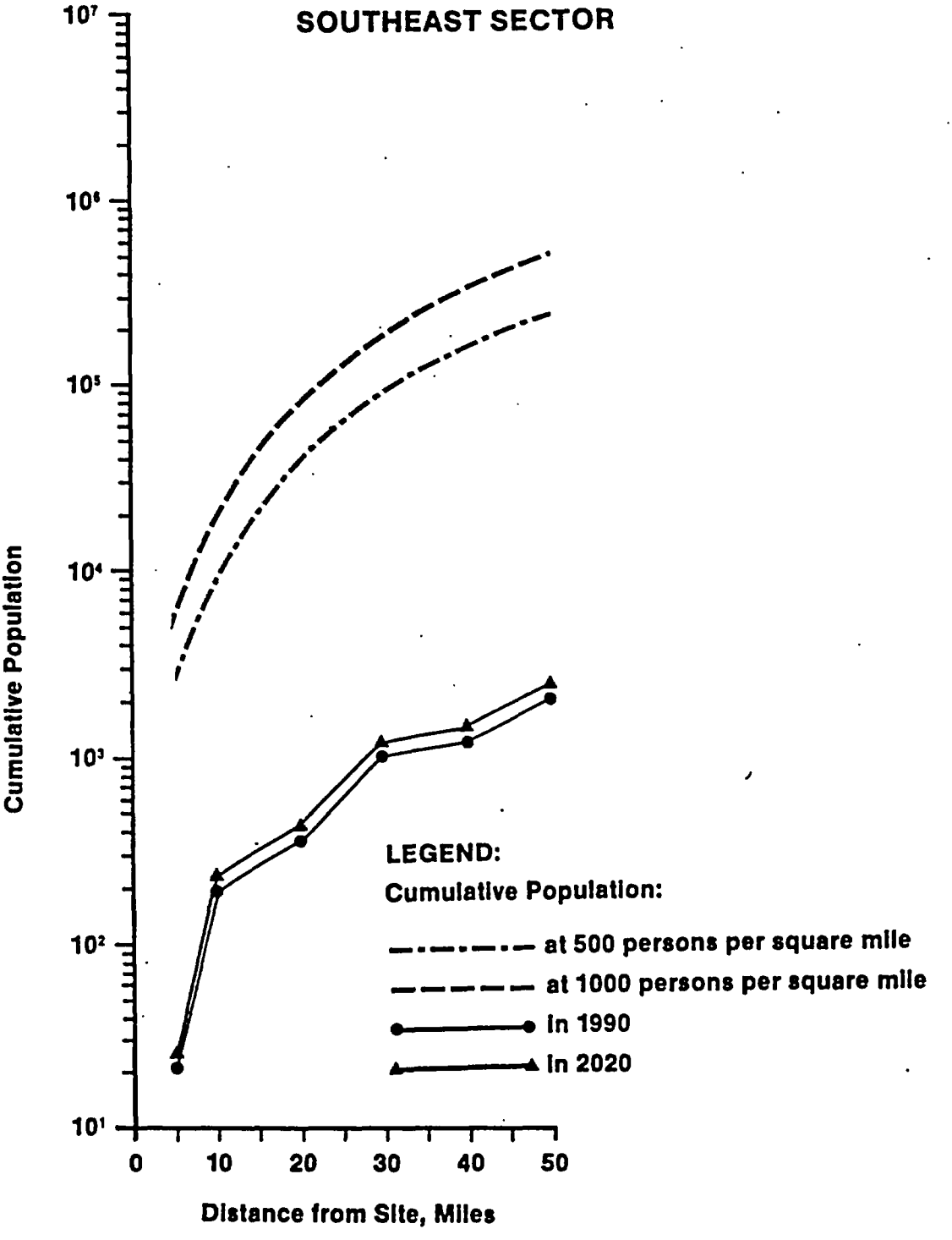
1990 AND 2020 POPULATION DENSITY
WITHIN 50 MILES OF THE SITE
(SHEET 5 OF 16)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.1-12

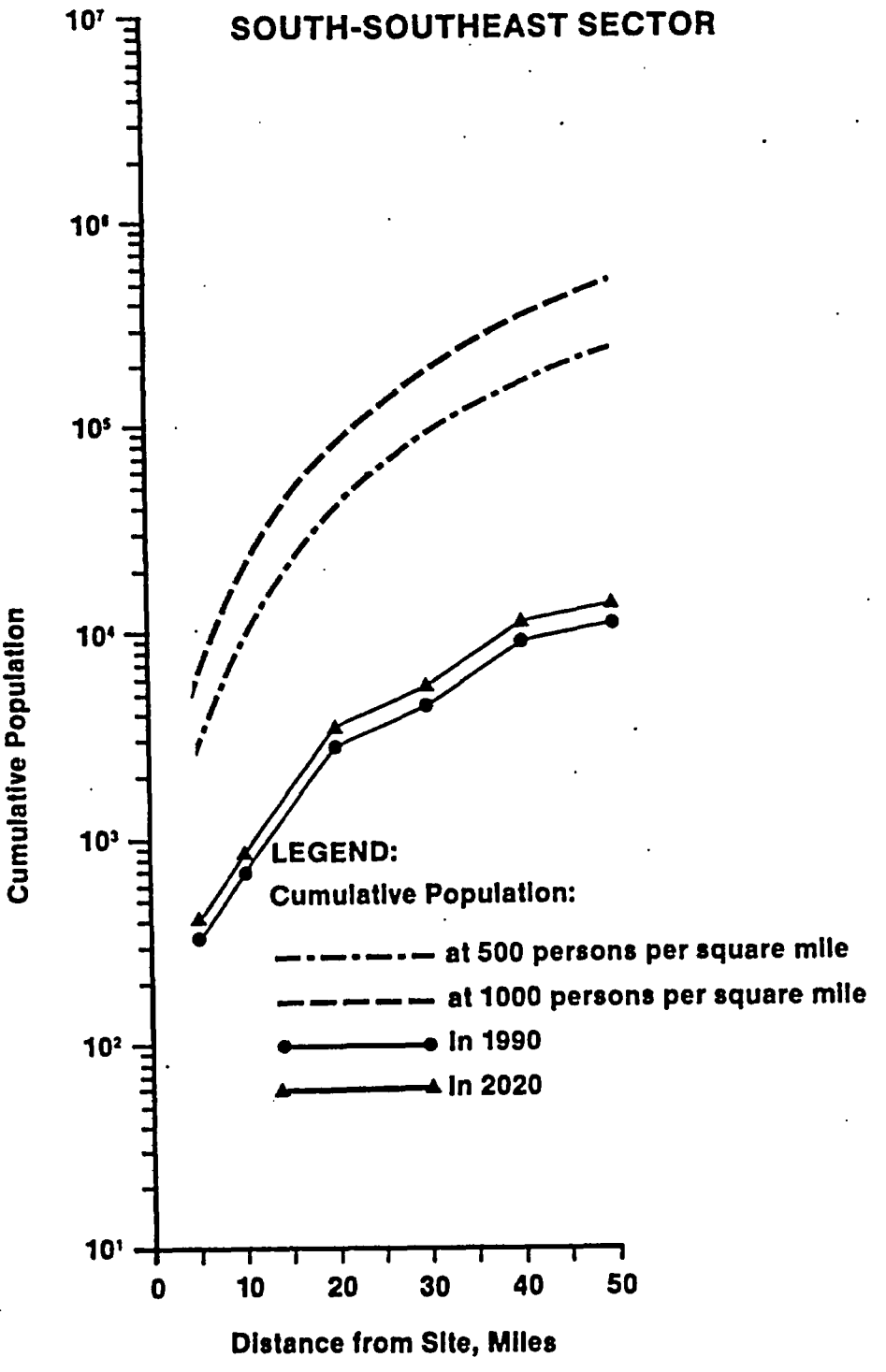
1990 AND 2020 POPULATION DENSITY
WITHIN 50 MILES OF THE SITE
(SHEET 6 OF 16)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.1-12

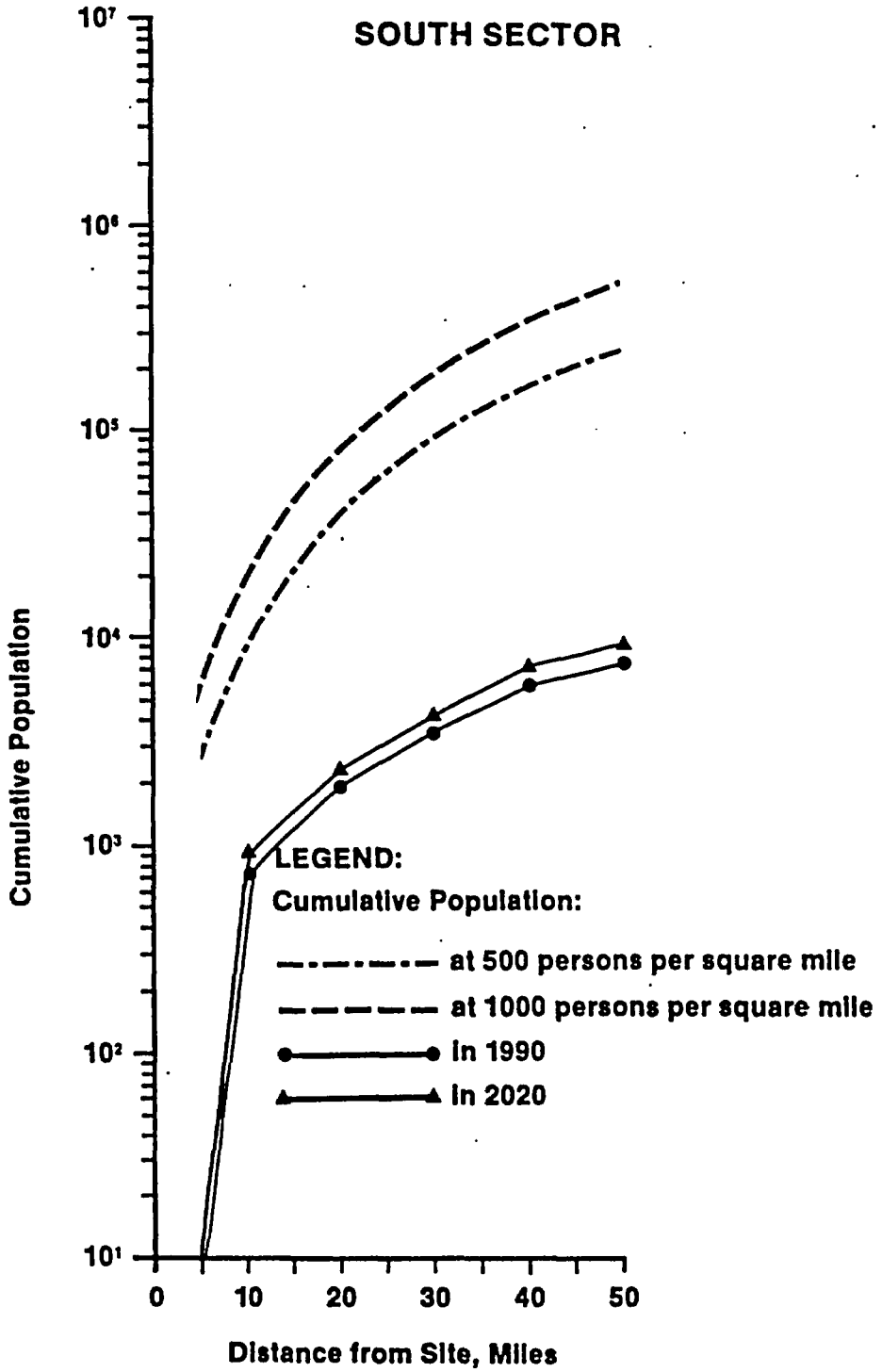
1990 AND 2020 POPULATION DENSITY
WITHIN 50 MILES OF THE SITE
(SHEET 7 OF 16)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.1-12

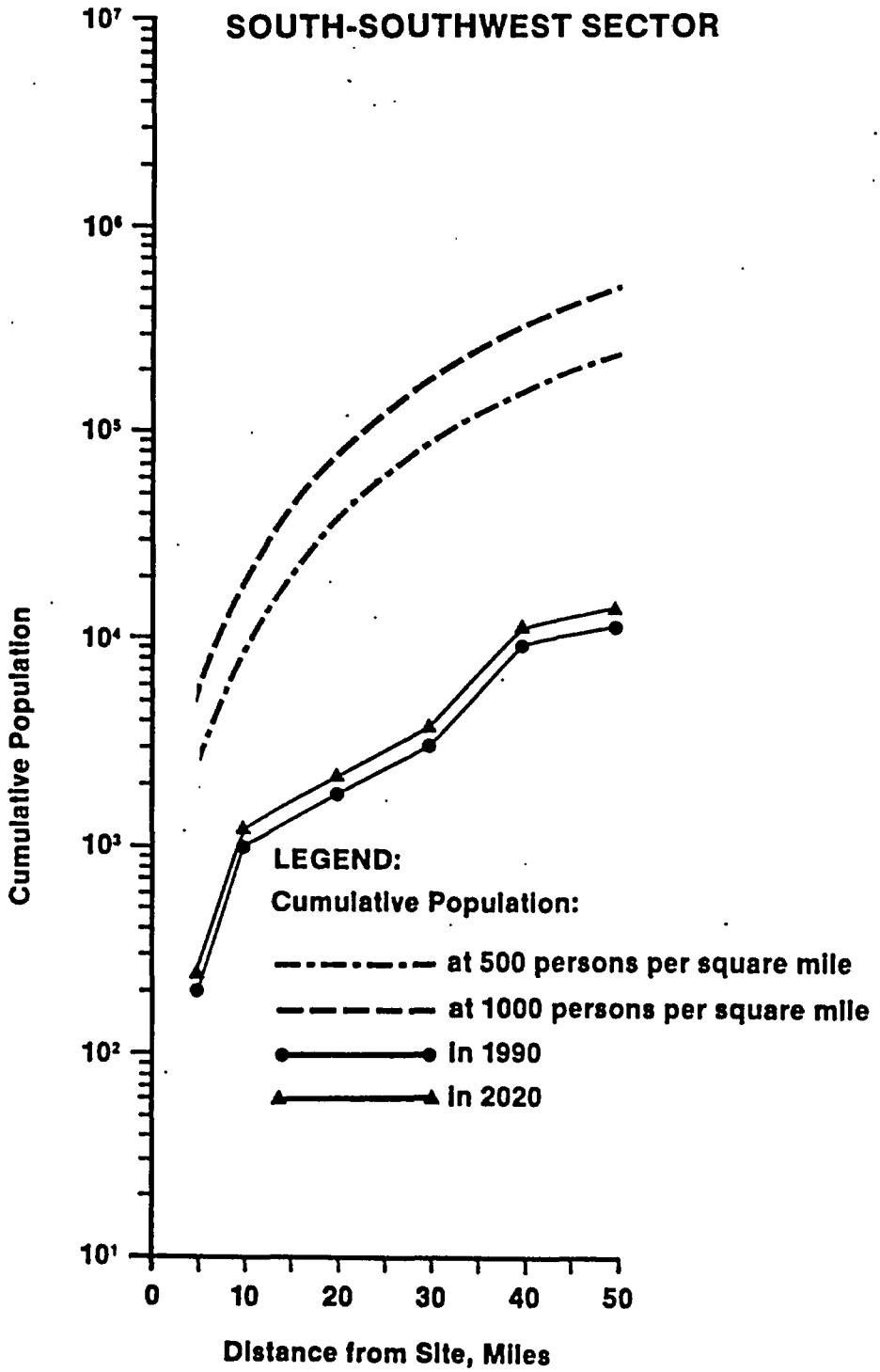
1990 AND 2020 POPULATION DENSITY
WITHIN 50 MILES OF THE SITE
(SHEET 8 OF 16)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.1-12

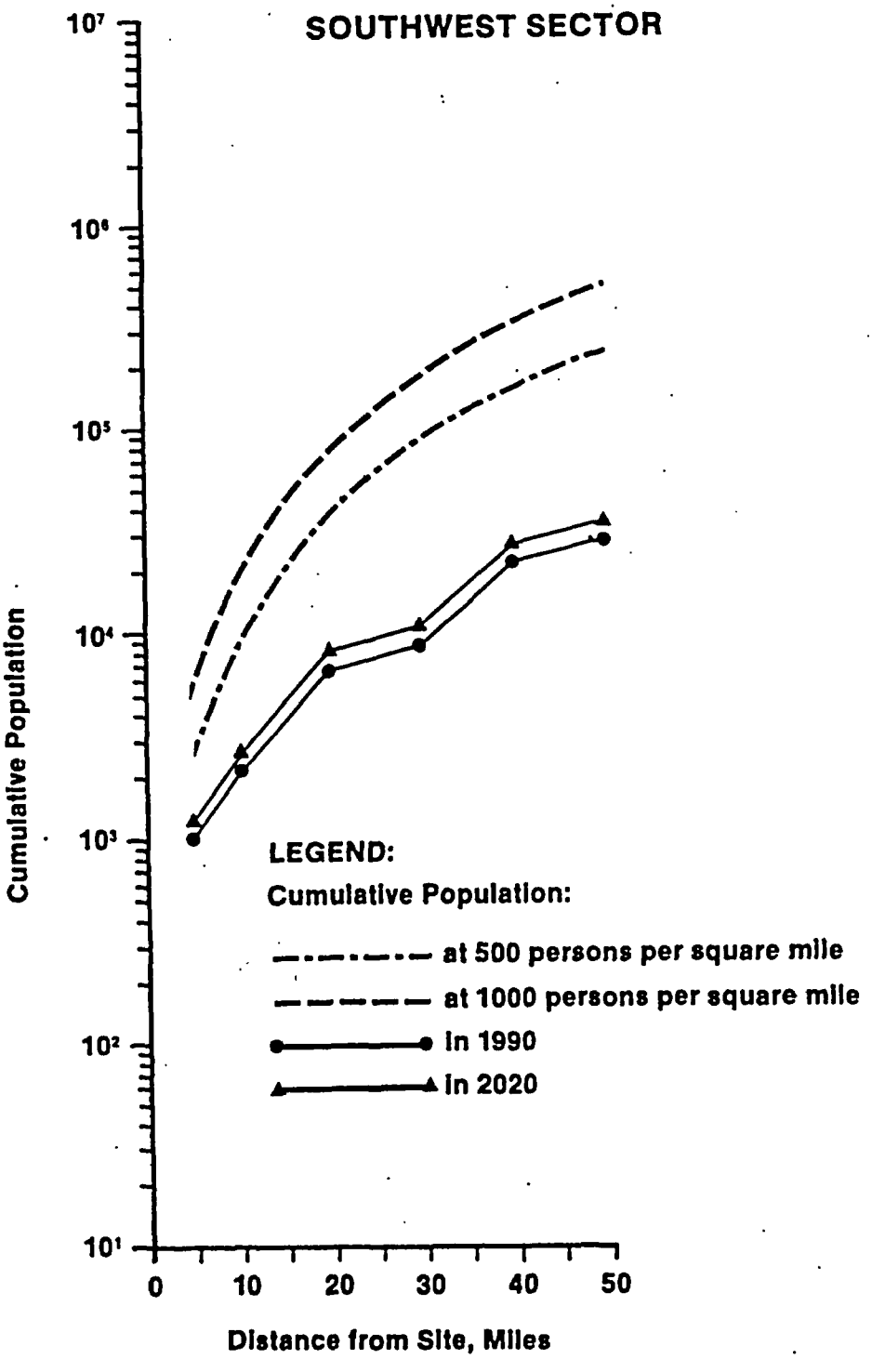
1990 AND 2020 POPULATION DENSITY
WITHIN 50 MILES OF THE SITE
(SHEET 9 OF 16)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.1-12

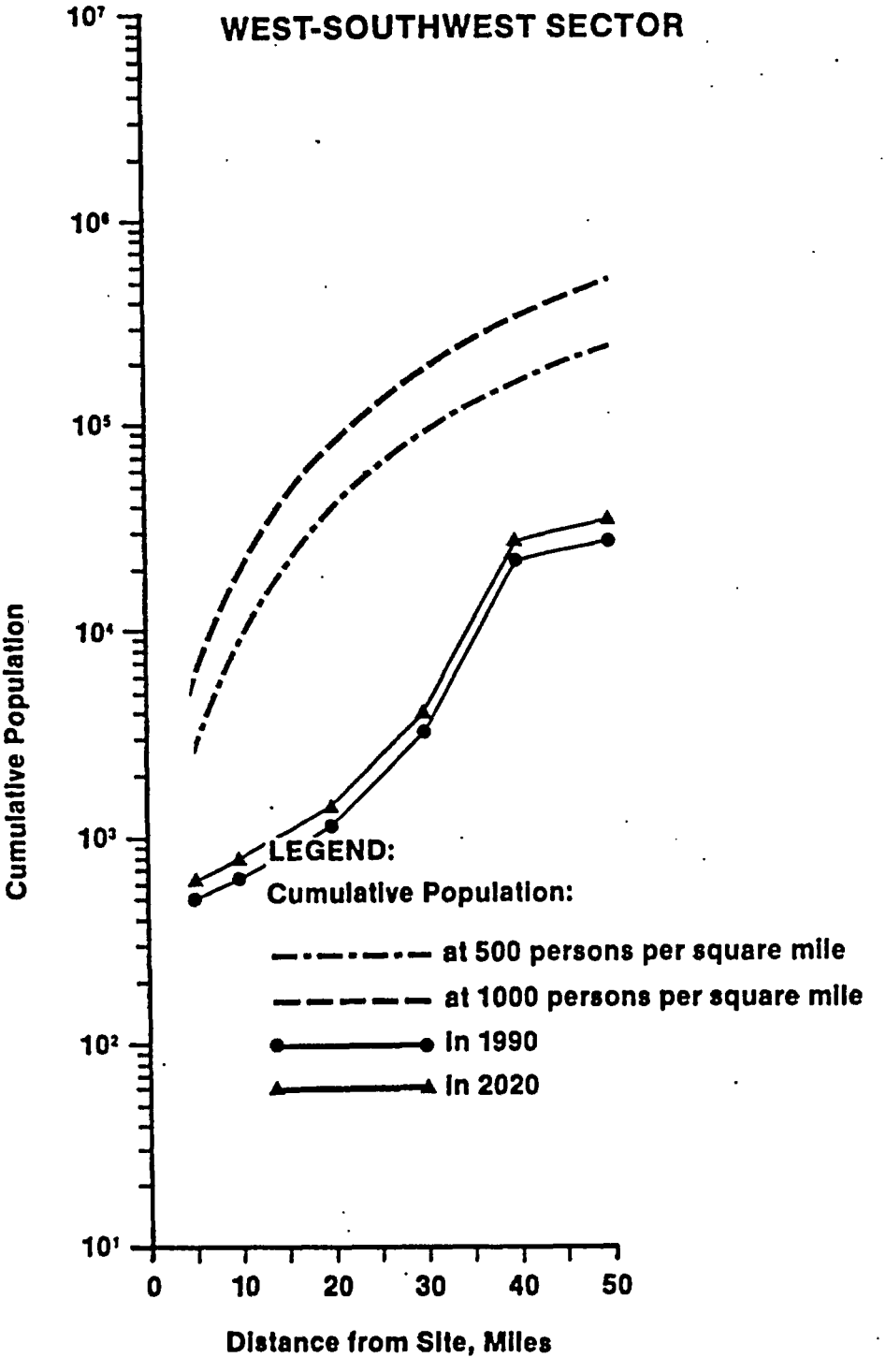
1990 AND 2020 POPULATION DENSITY
WITHIN 50 MILES OF THE SITE
(SHEET 10 OF 16)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.1-12

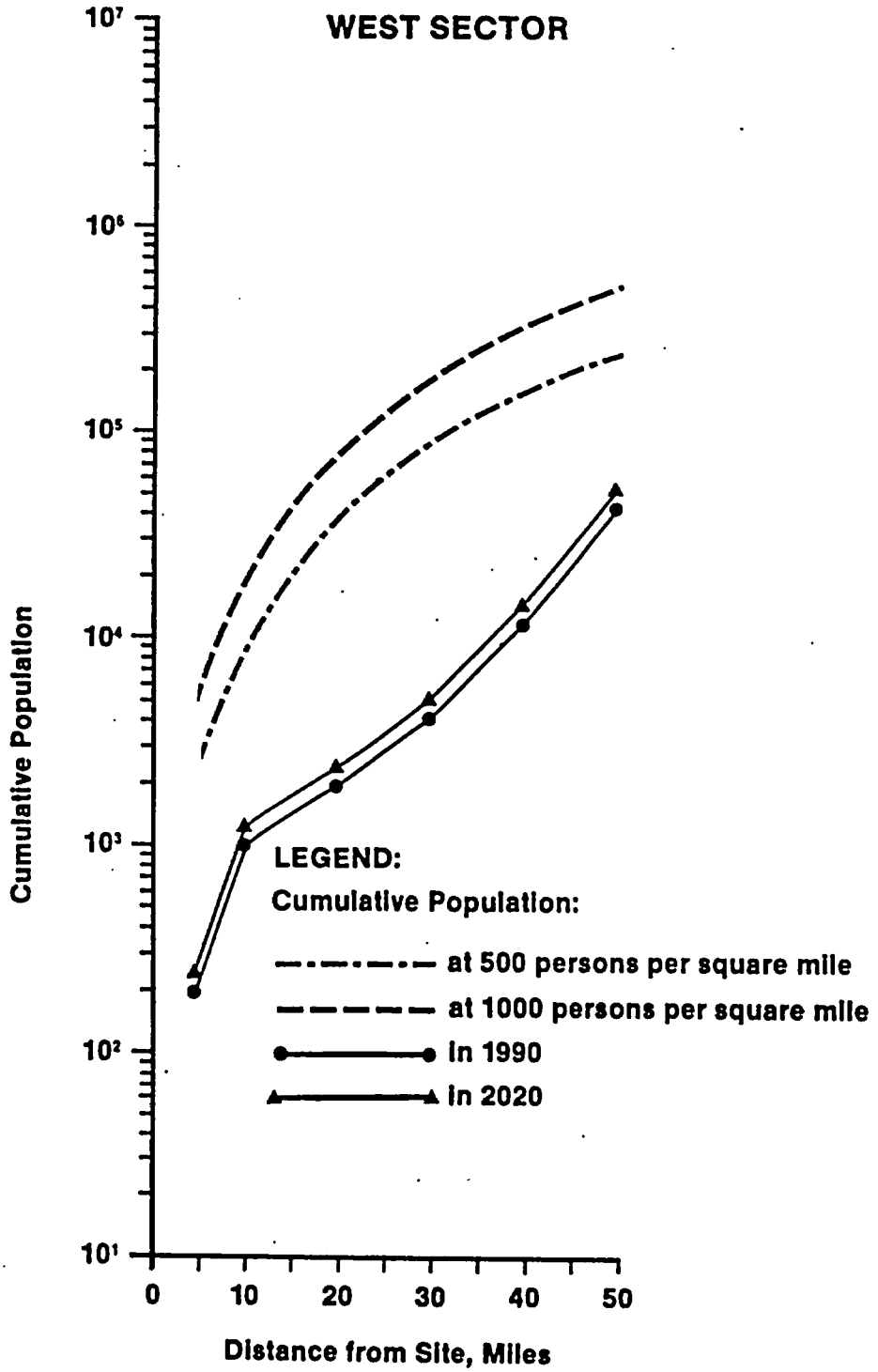
1990 AND 2020 POPULATION DENSITY
WITHIN 50 MILES OF THE SITE
(SHEET 11 OF 16)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.1-12

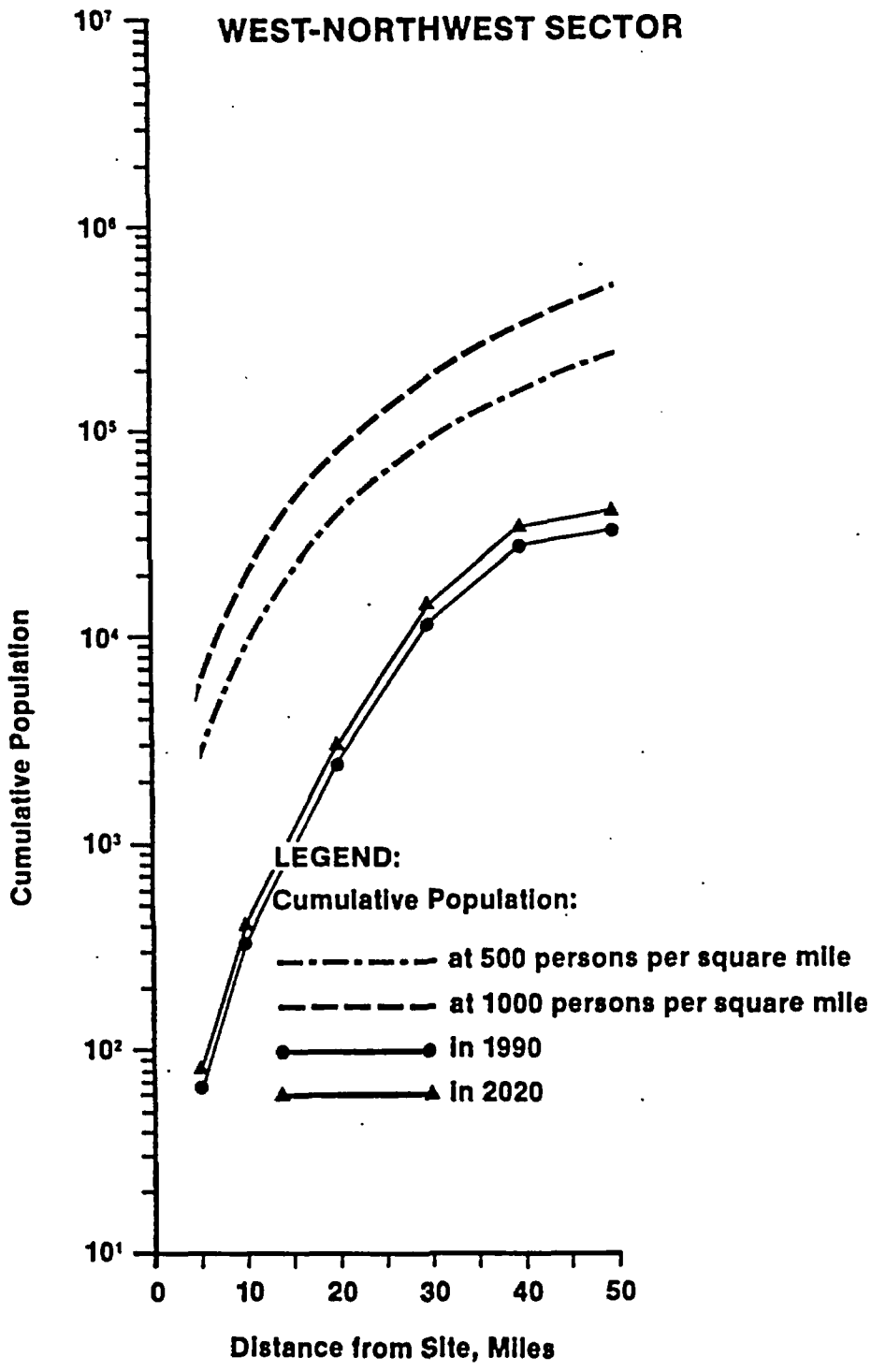
1990 AND 2020 POPULATION DENSITY
WITHIN 50 MILES OF THE SITE
(SHEET 12 OF 16)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.1-12

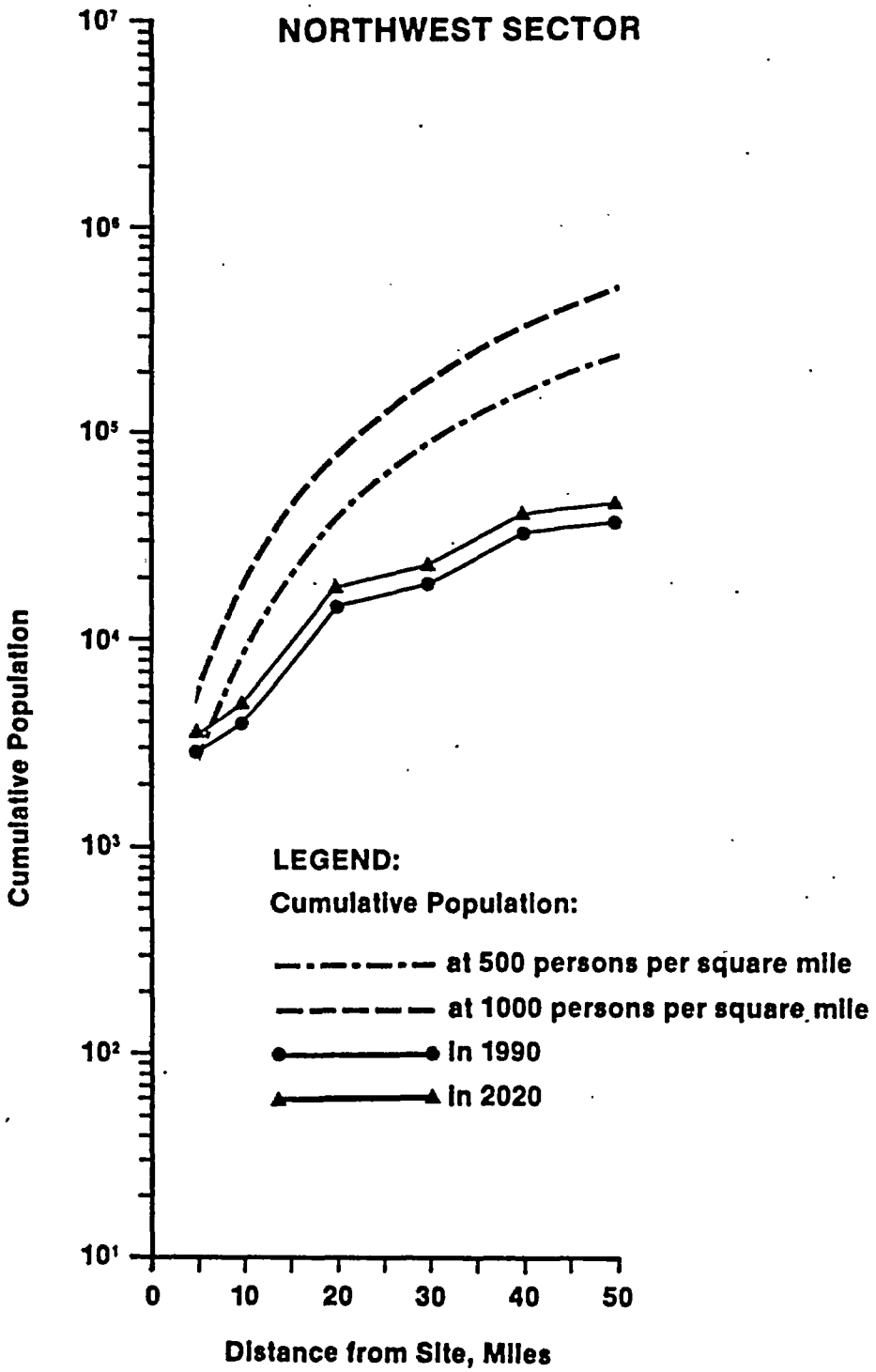
1990 AND 2020 POPULATION DENSITY
WITHIN 50 MILES OF THE SITE
(SHEET 13 OF 16)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.1-12

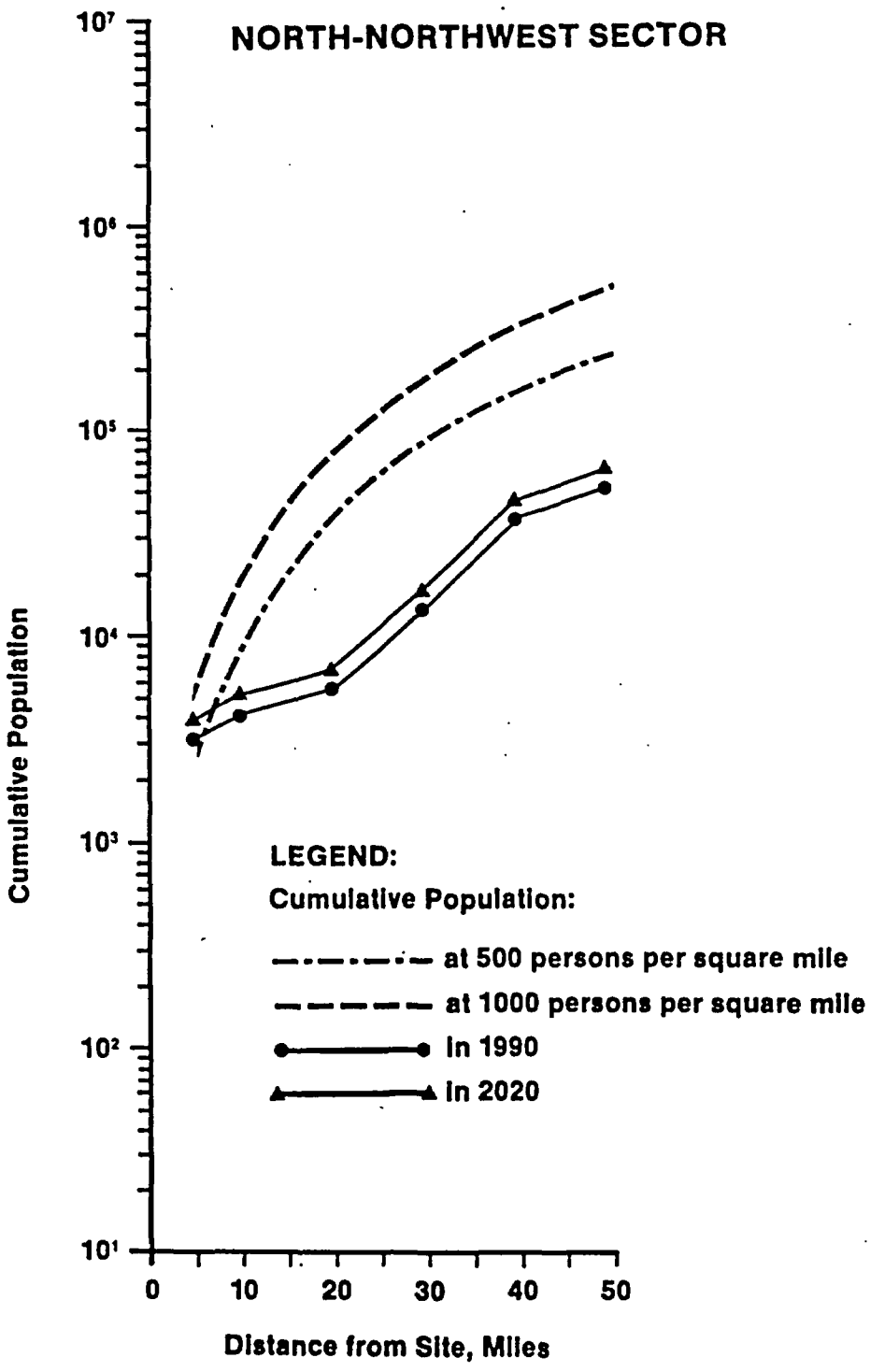
1990 AND 2020 POPULATION DENSITY
WITHIN 50 MILES OF THE SITE
(SHEET 14 OF 16)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.1-12

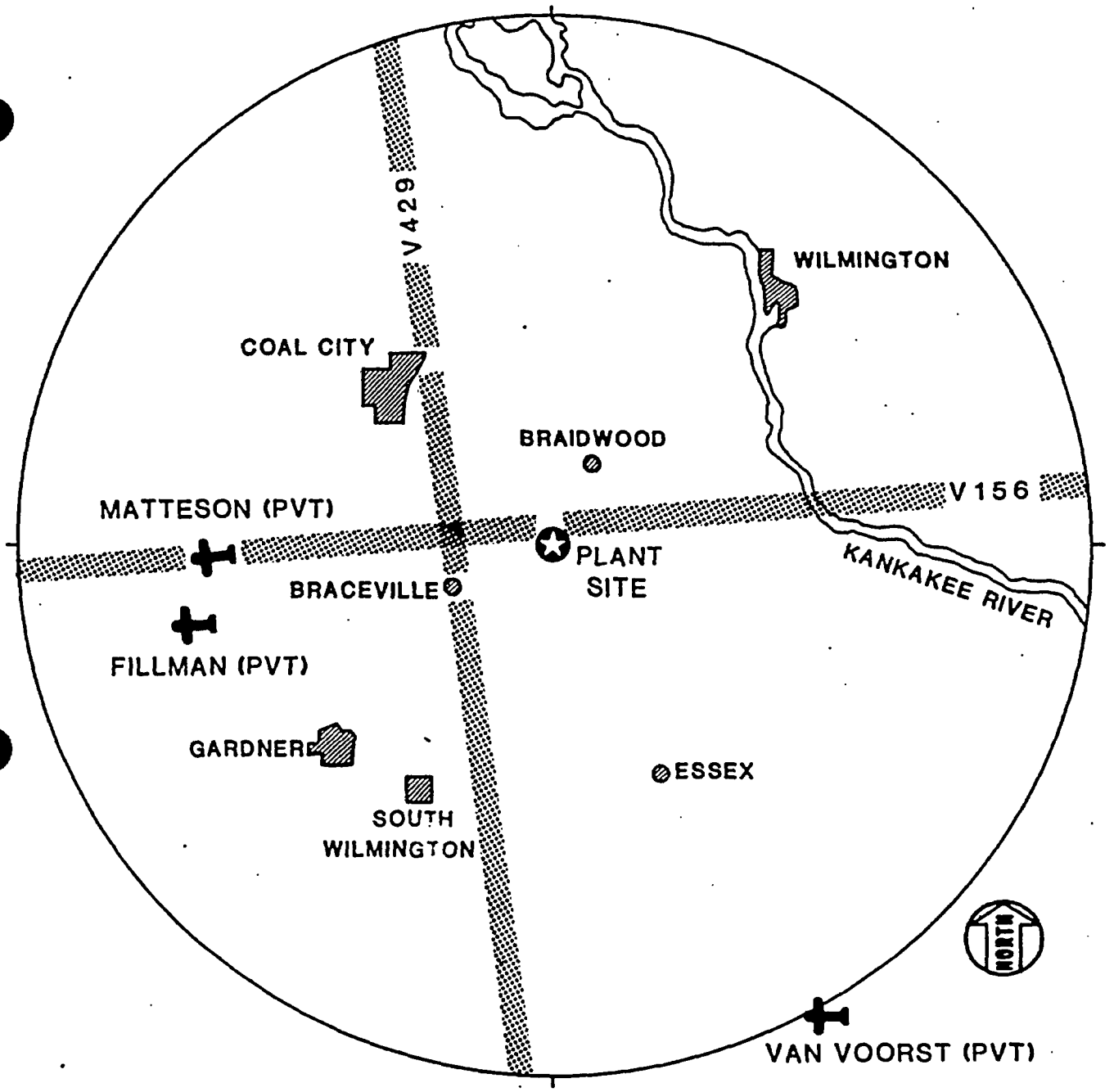
1990 AND 2020 POPULATION DENSITY
WITHIN 50 MILES OF THE SITE
(SHEET 15 OF 16)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.1-12

1990 AND 2020 POPULATION DENSITY
WITHIN 50 MILES OF THE SITE
(SHEET 16 OF 16)



LEGEND

CITIES & VILLAGES

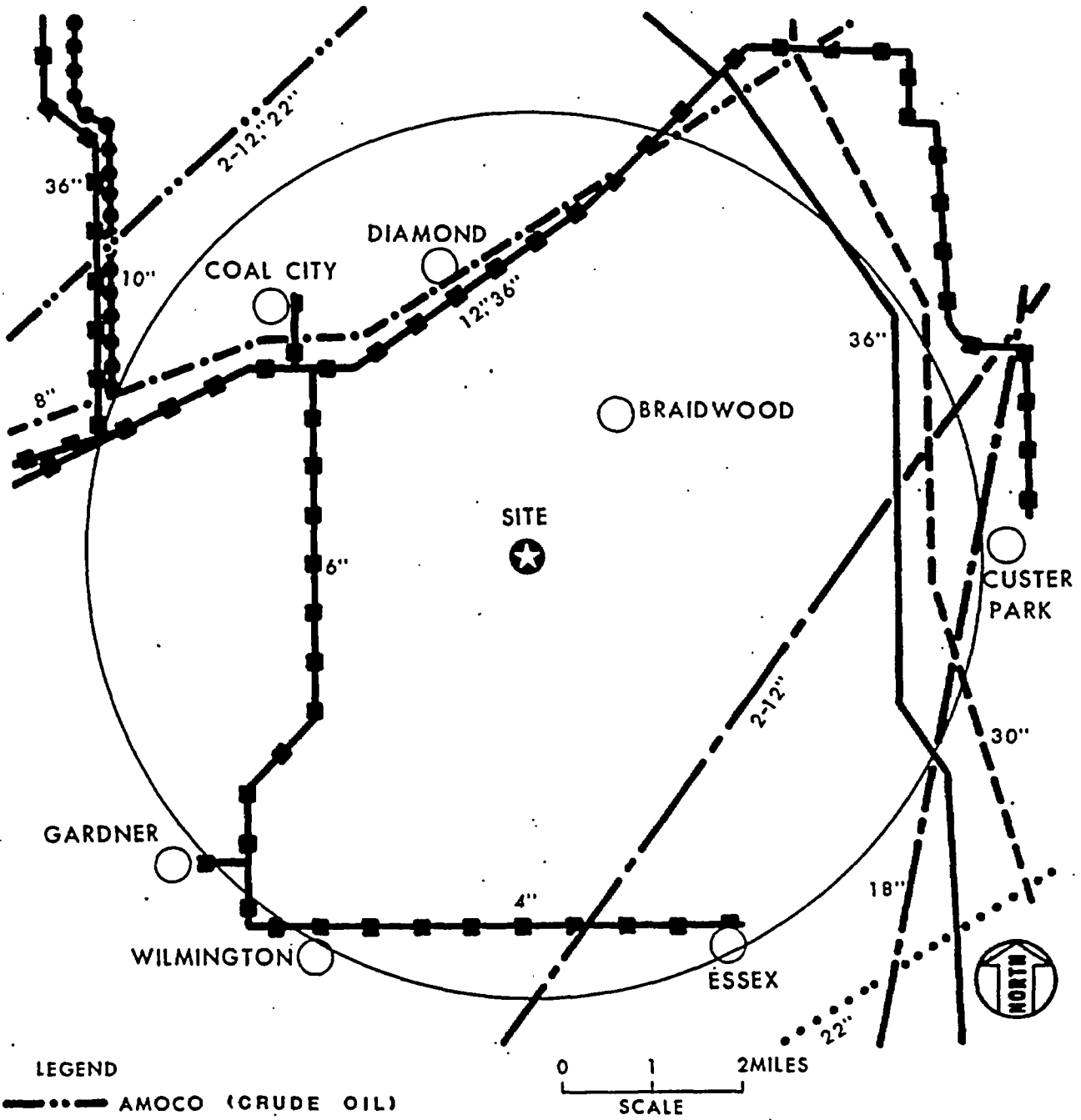
AIRPORT

AIRWAY

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.2-1

AIRPORTS AND LOW ALTITUDE FEDERAL AIRWAYS WITHIN 10 MILES OF THE SITE



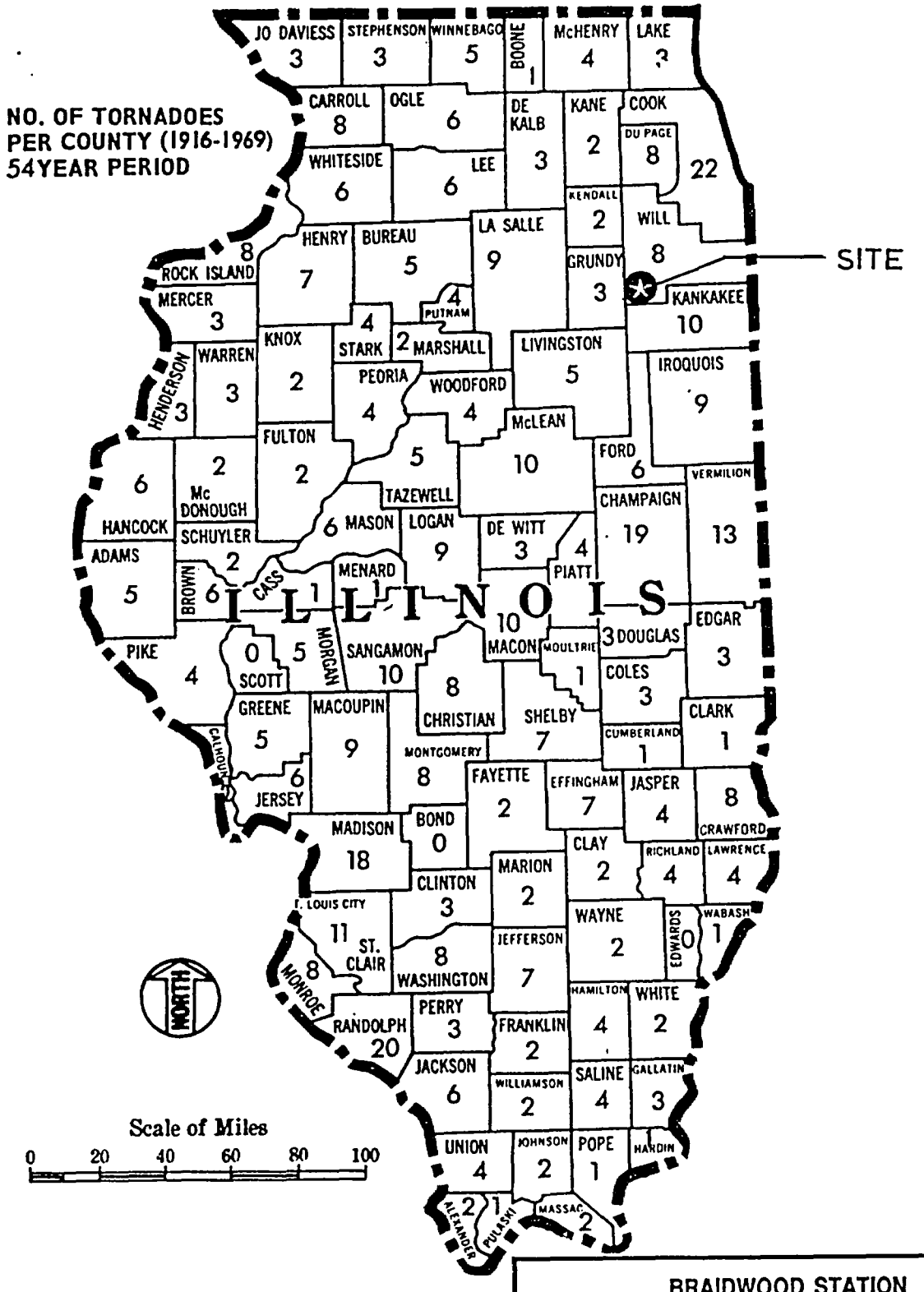
LEGEND

- AMOCO (CRUDE OIL)
- ARCO (CRUDE OIL)
- ARCO (REFINED PRODUCTS)
- MIDWESTERN GAS TRANSMISSION CO. (NATURAL GAS)
- NATURAL GAS PIPELINE CO. OF AMERICA (NATURAL GAS)
- NORTHERN ILLINOIS GAS CO. (NATURAL GAS)
- NORTHERN ILLINOIS GAS CO. (REFINED PRODUCTS)
- TEXACO-CITIES SERVICE PIPELINE CO. (CRUDE OIL)

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.2-2

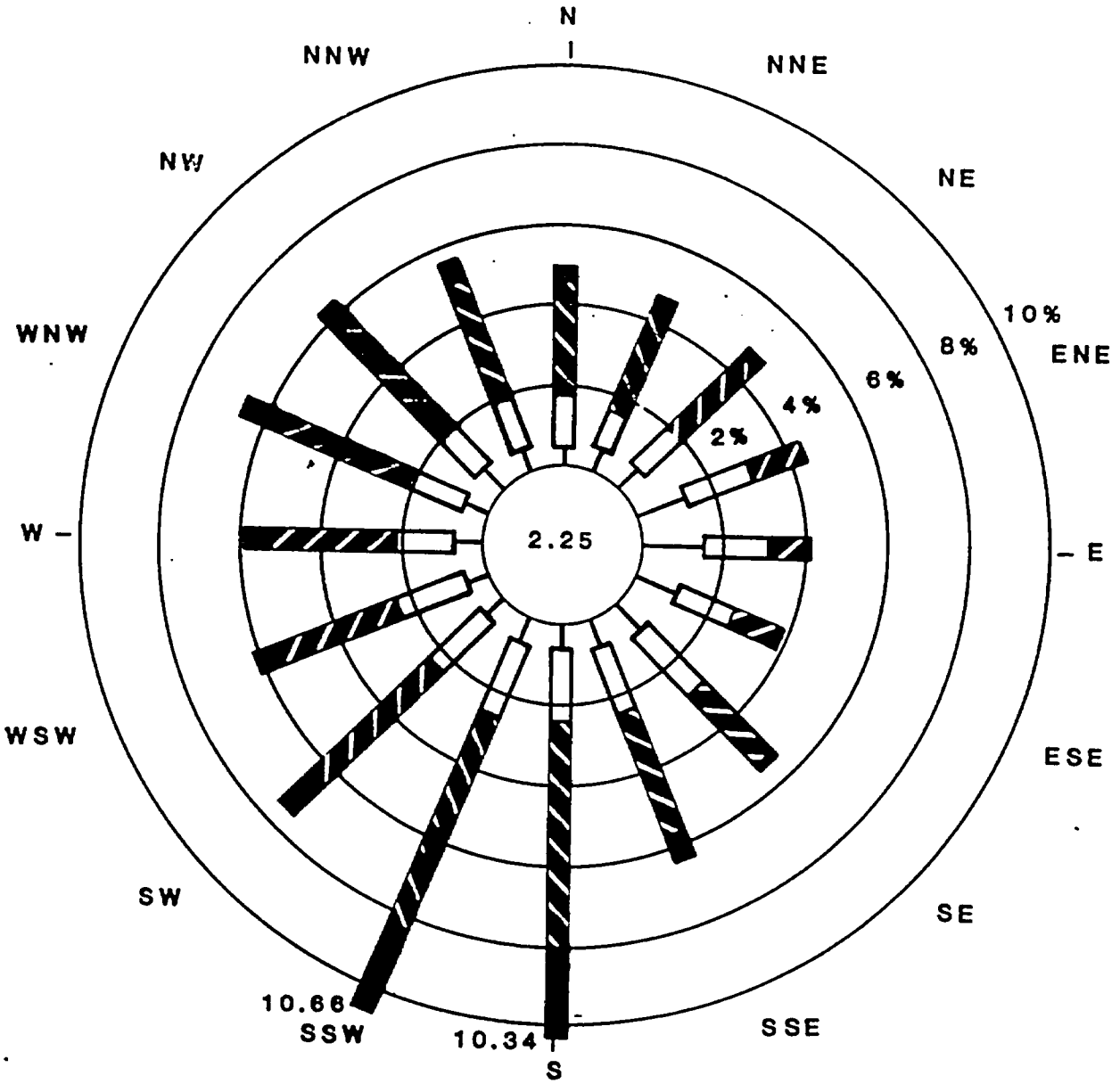
PIPELINES WITHIN 5 MILES OF THE SITE

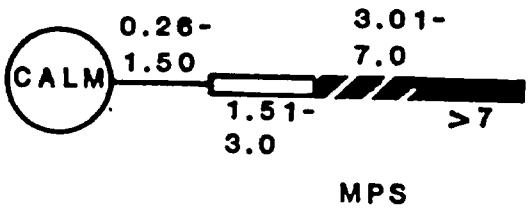


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-1

NUMBER OF TORNADOES ORIGINATING IN EACH COUNTY IN THE STATE OF ILLINOIS, 1916-1969

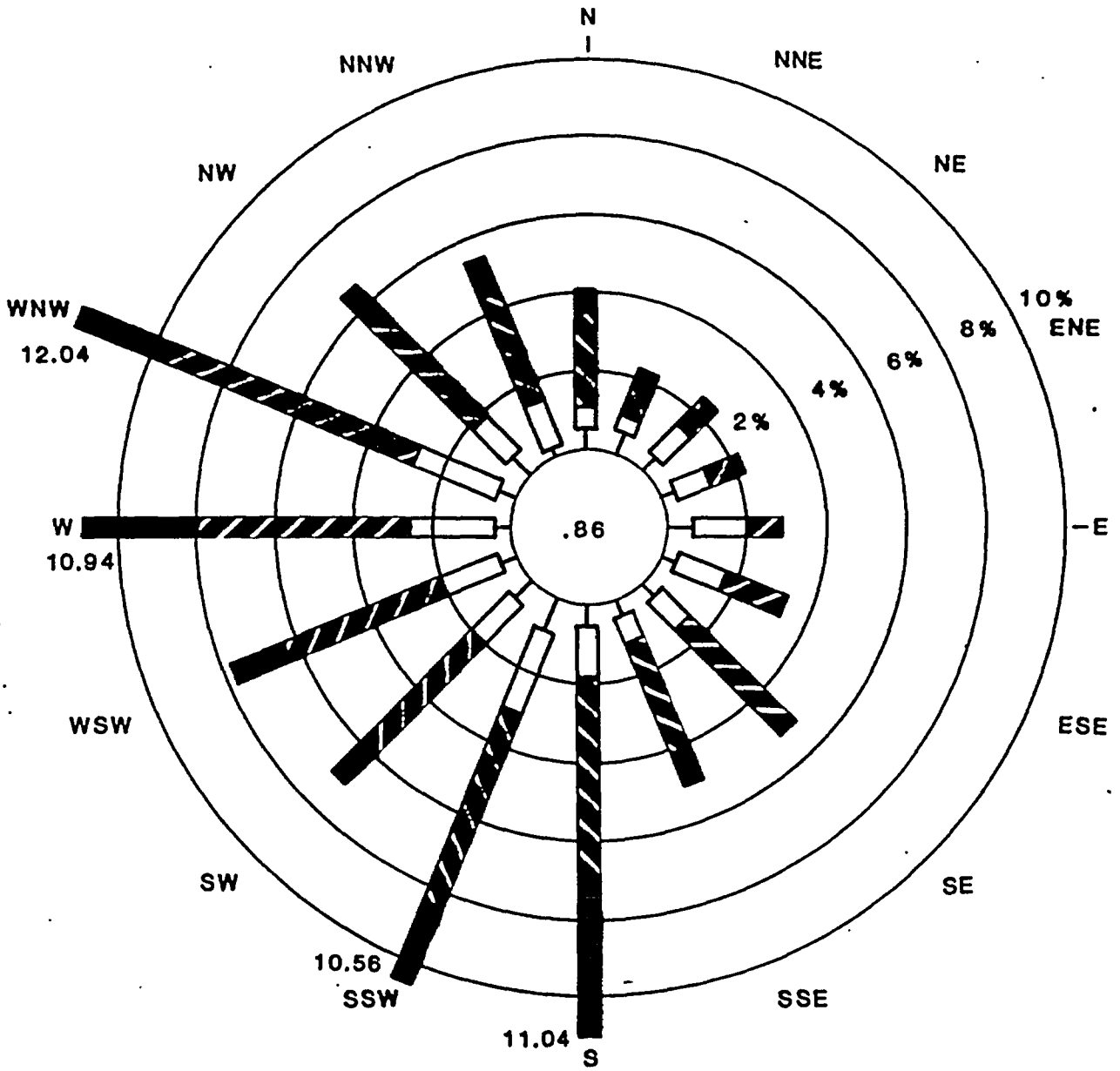


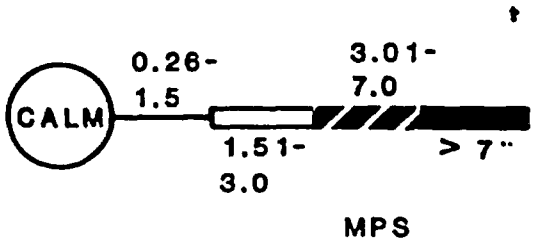


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-2

ANNUAL WIND ROSE 30-FOOT LEVEL
BRAIDWOOD SITE
(1974-1976)

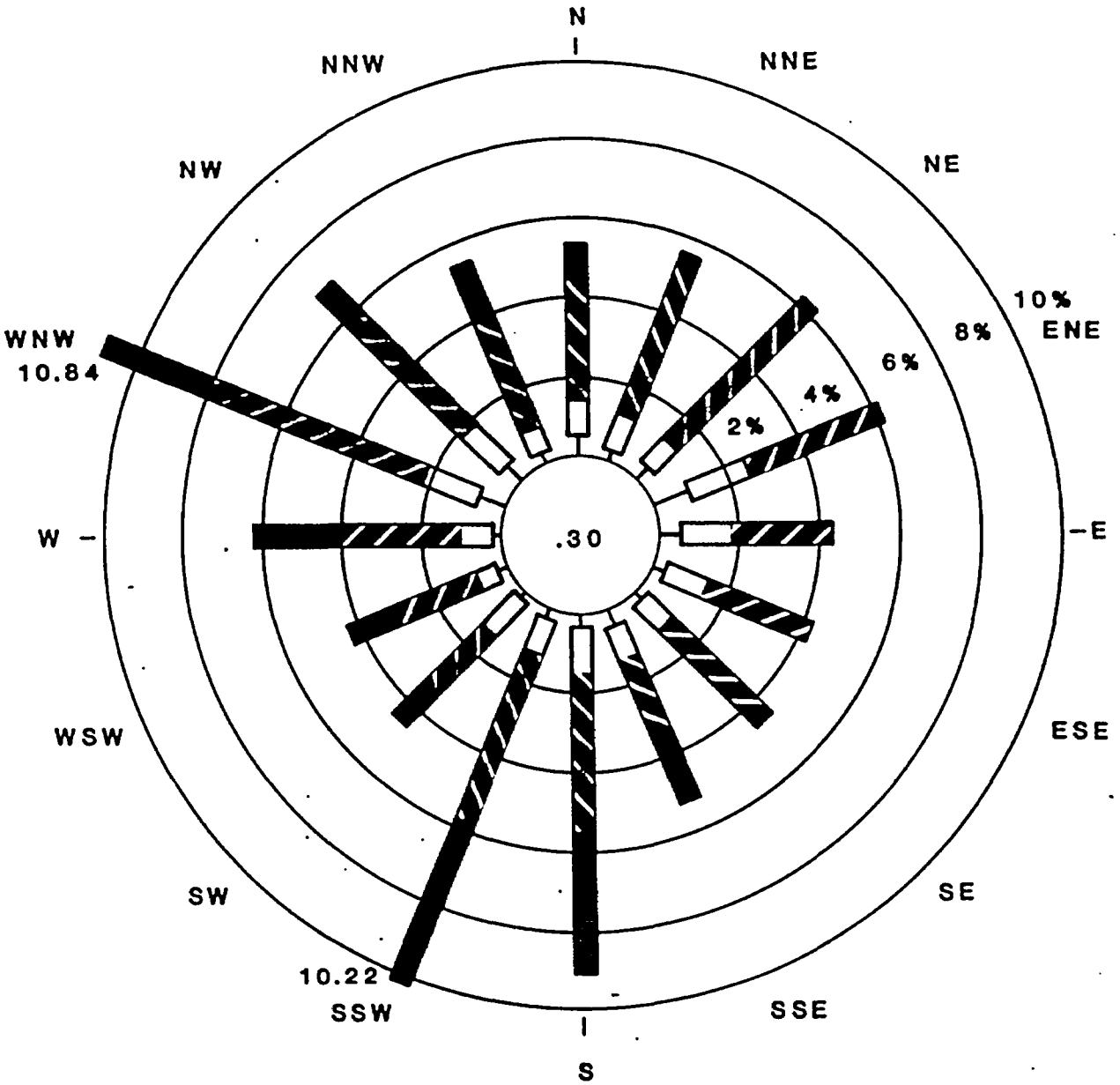


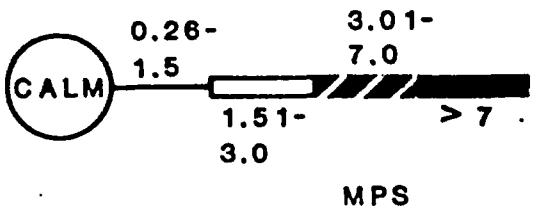


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

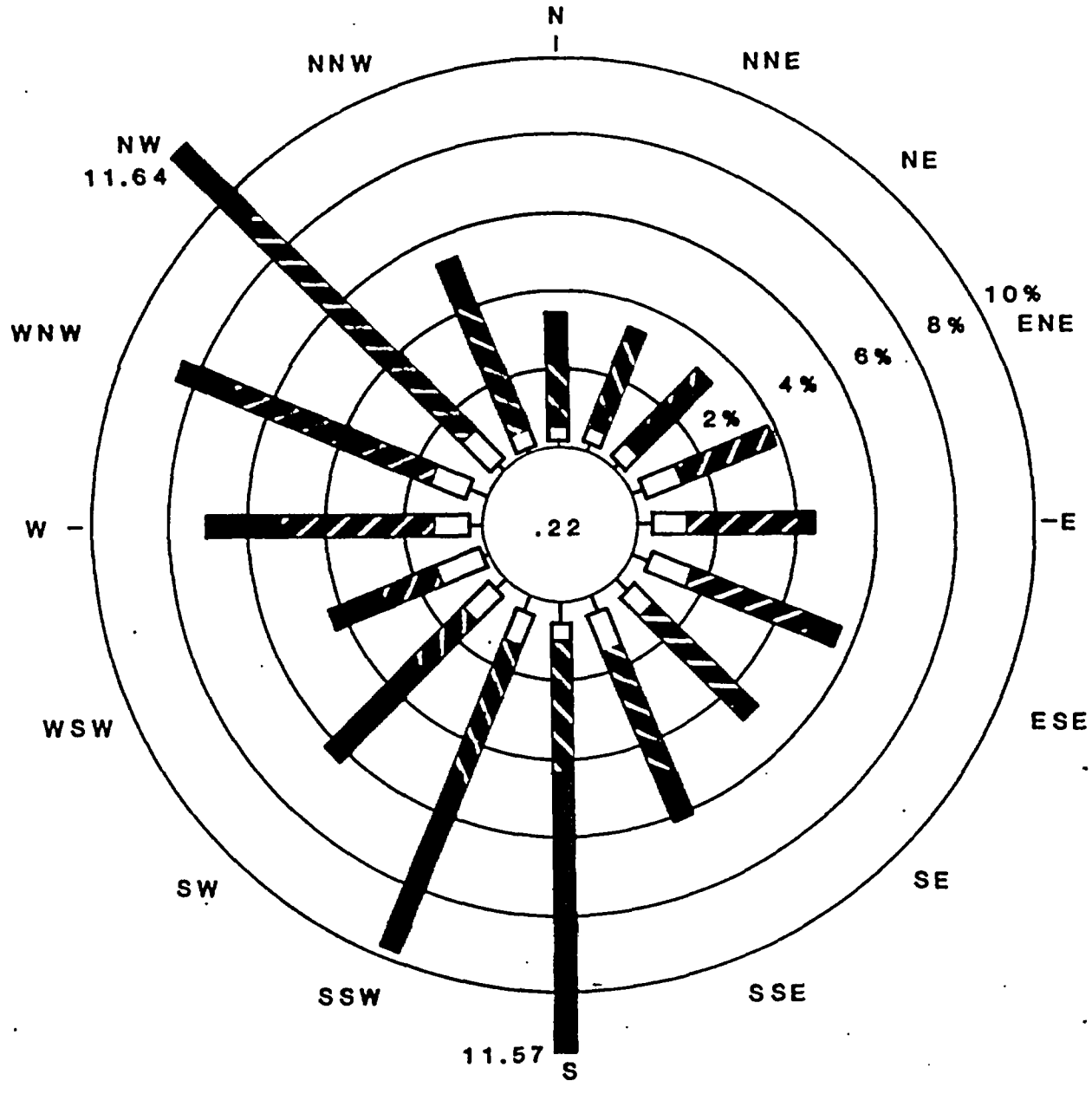
FIGURE 2.3-3

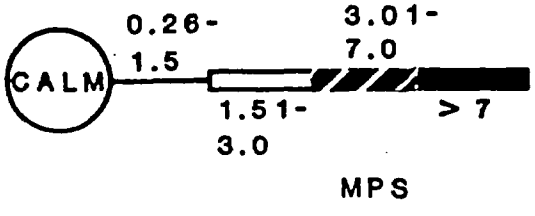
JANUARY WIND ROSE 30-FOOT LEVEL
BRAIDWOOD SITE
(1974-1976)





BRAIDWOOD STATION UPDATED FINAL SAFETY ANALYSIS REPORT
FIGURE 2.3-4 FEBRUARY WIND ROSE 30-FOOT LEVEL BRAIDWOOD SITE (1974-1976)

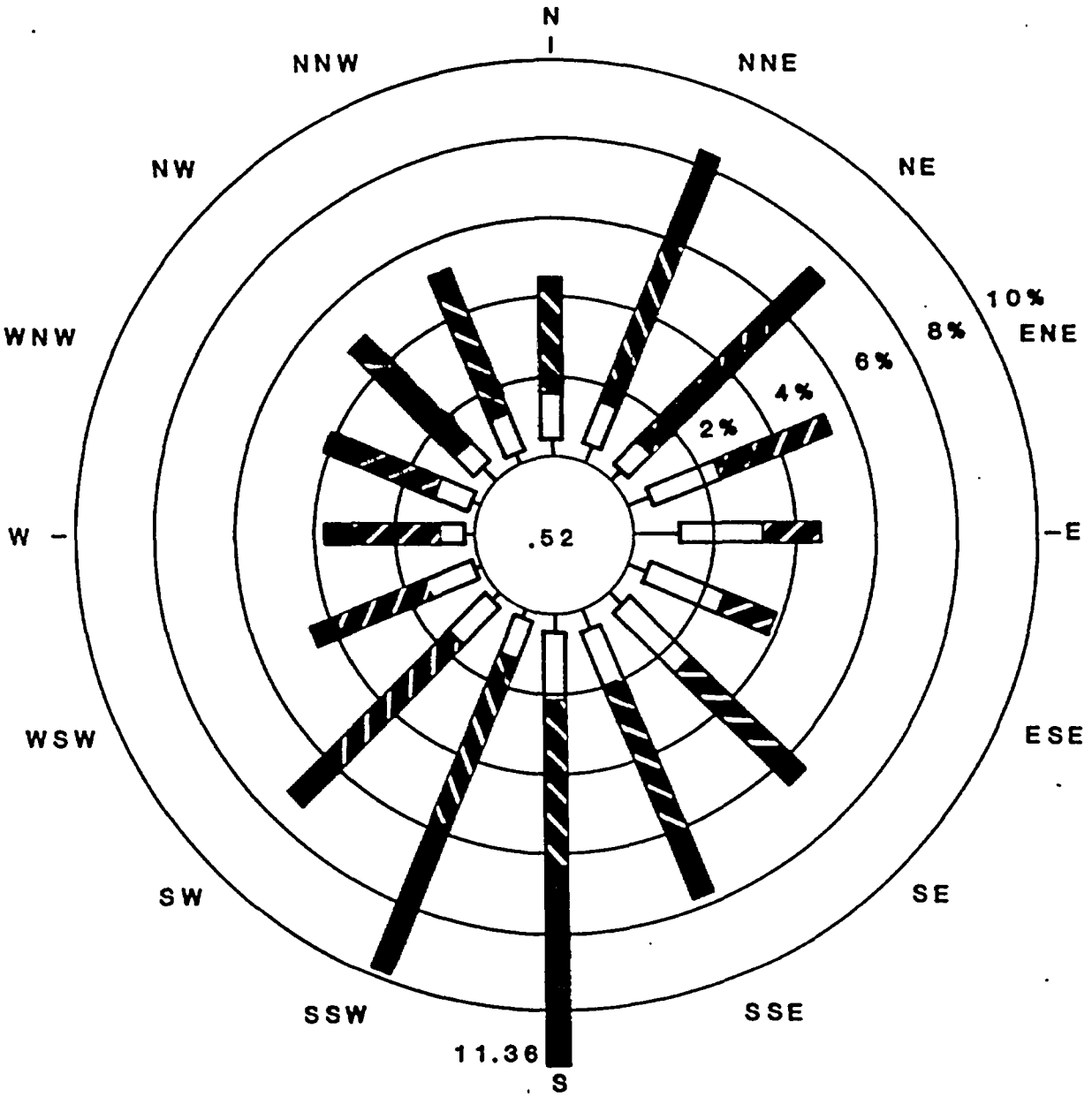


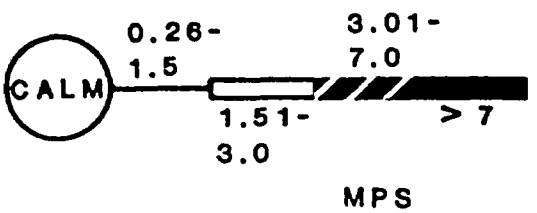


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-5

MARCH WIND ROSE 30-FOOT LEVEL
BRAIDWOOD SITE
(1974-1976)

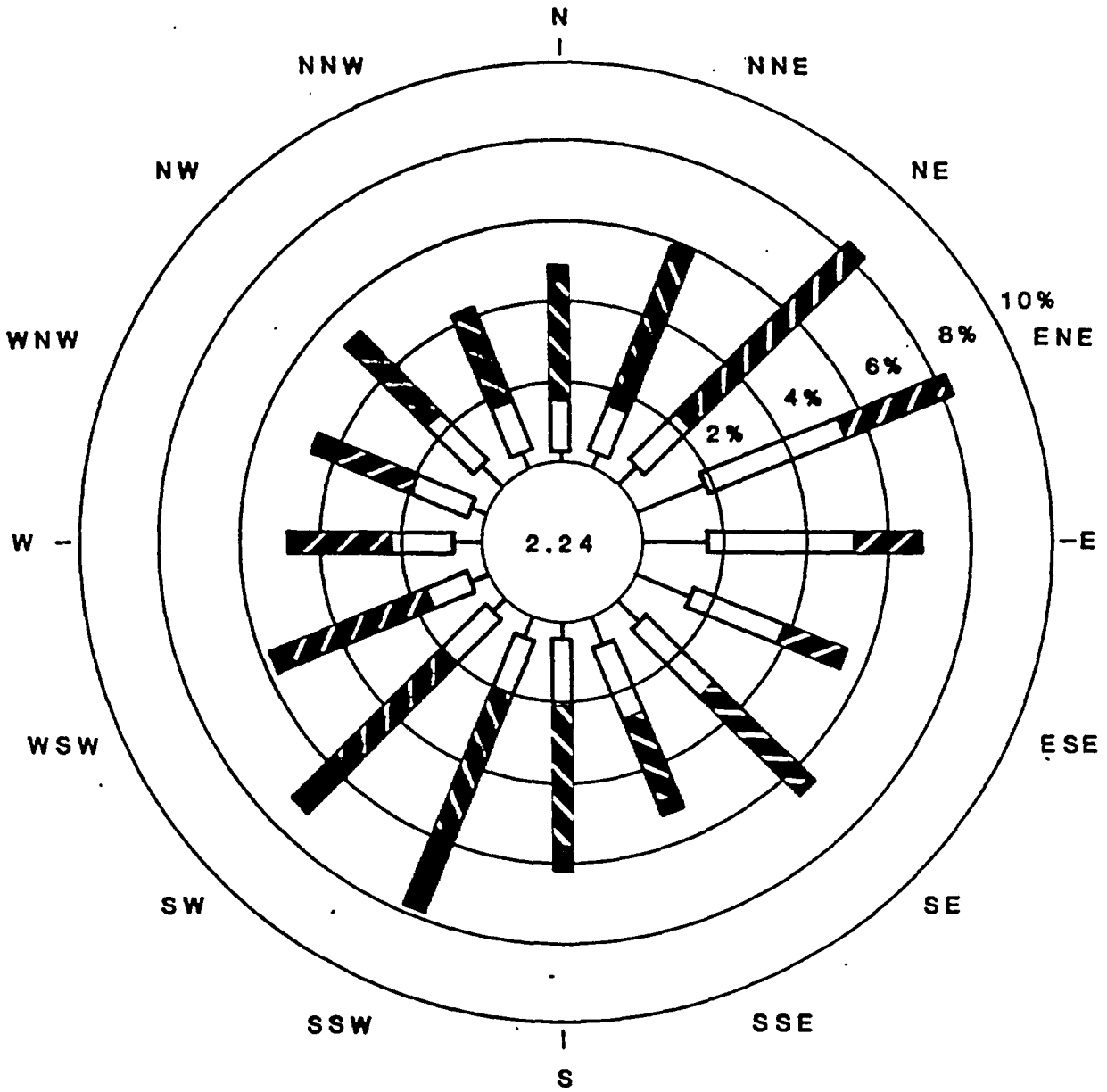


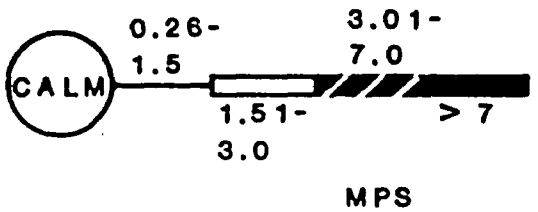


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-6

APRIL WIND ROSE 30-FOOT LEVEL
BRAIDWOOD SITE
(1974-1976)

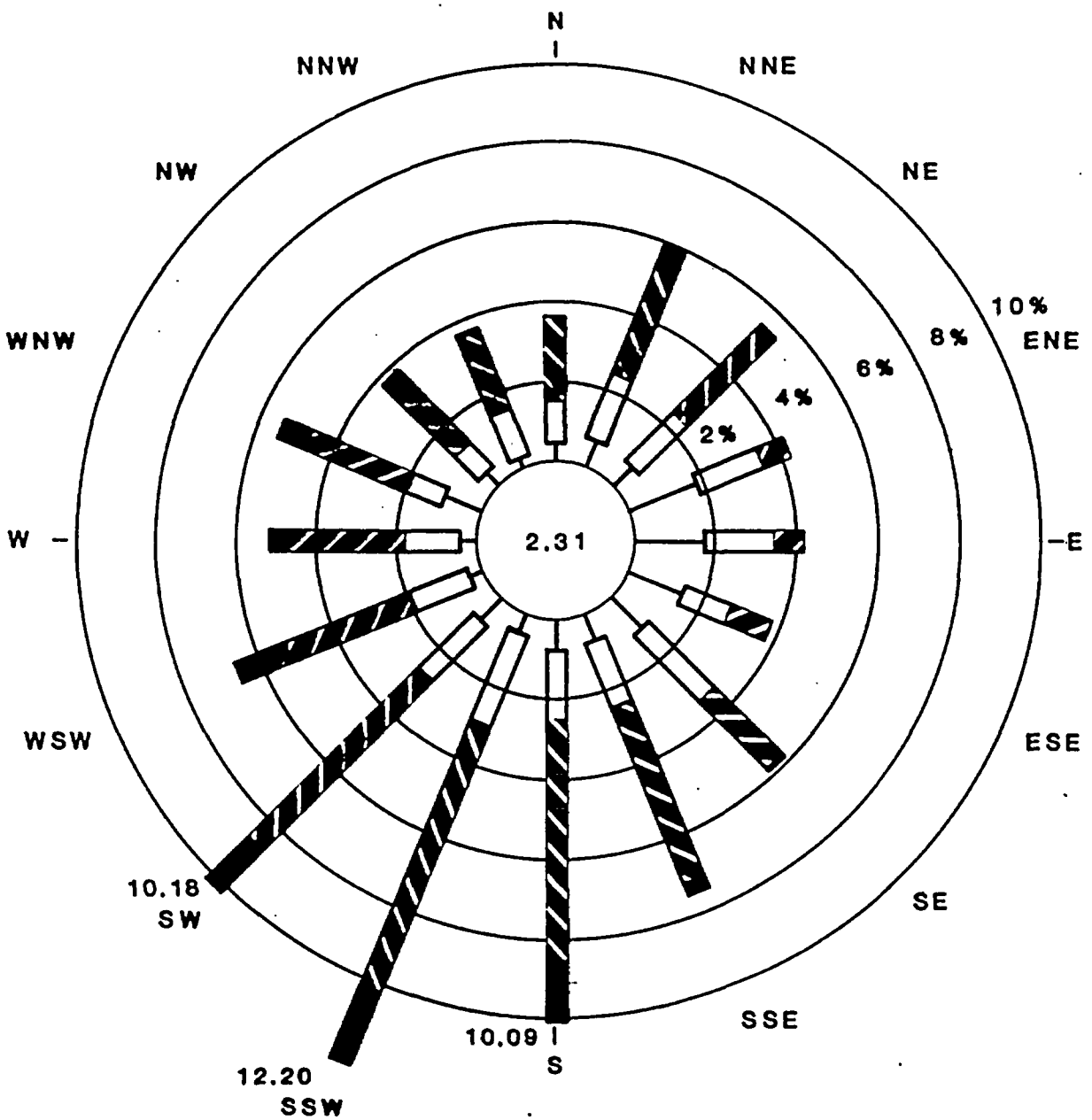


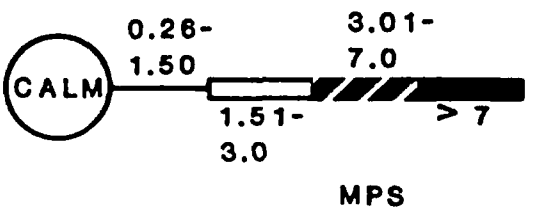


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-7

MAY WIND ROSE 30-FOOT LEVEL
BRAIDWOOD SITE
(1974-1976)

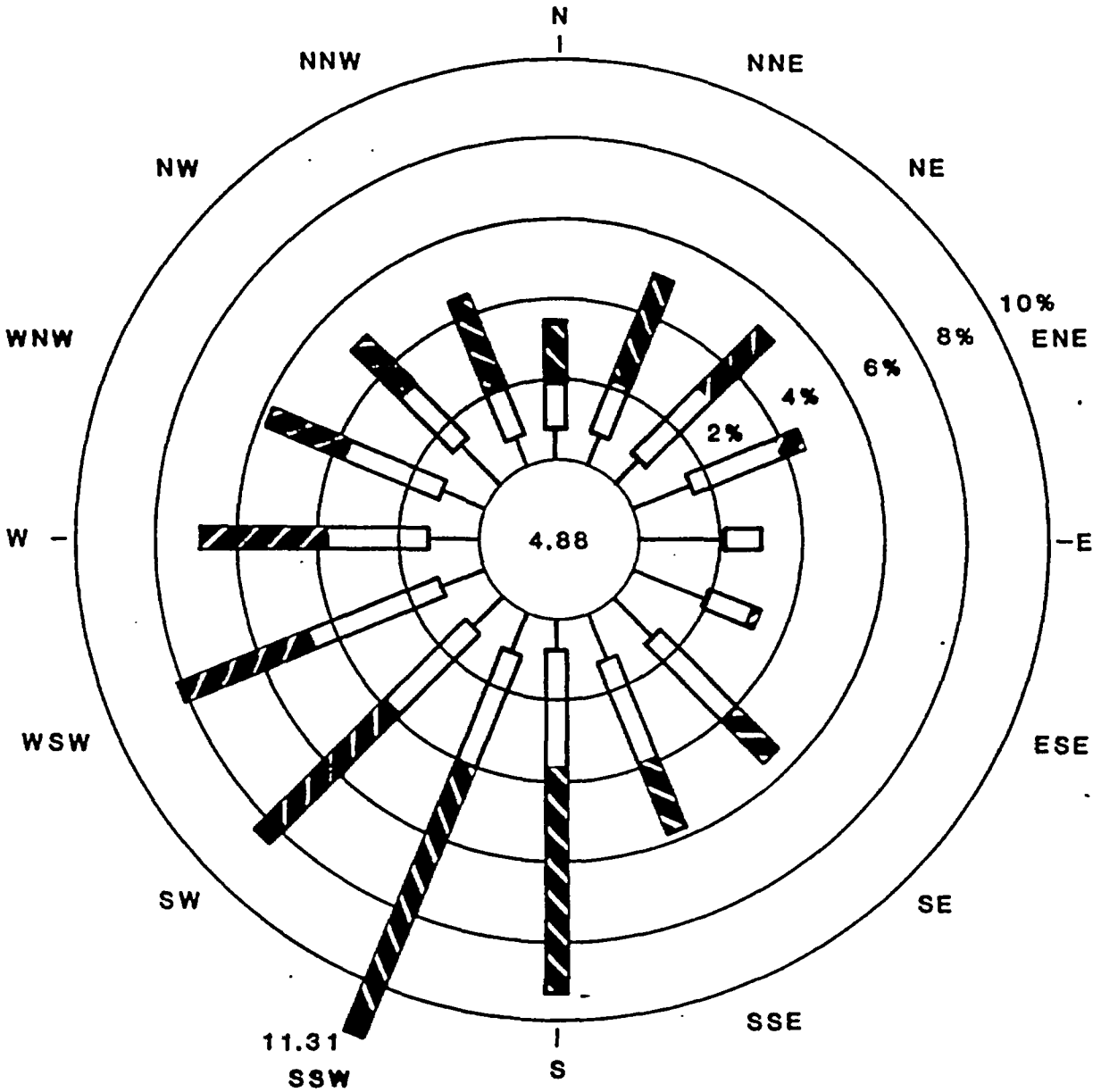


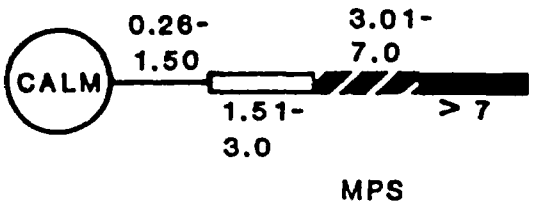


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-8

JUNE WIND ROSE 30-FOOT LEVEL
BRAIDWOOD SITE
(1974-1976).

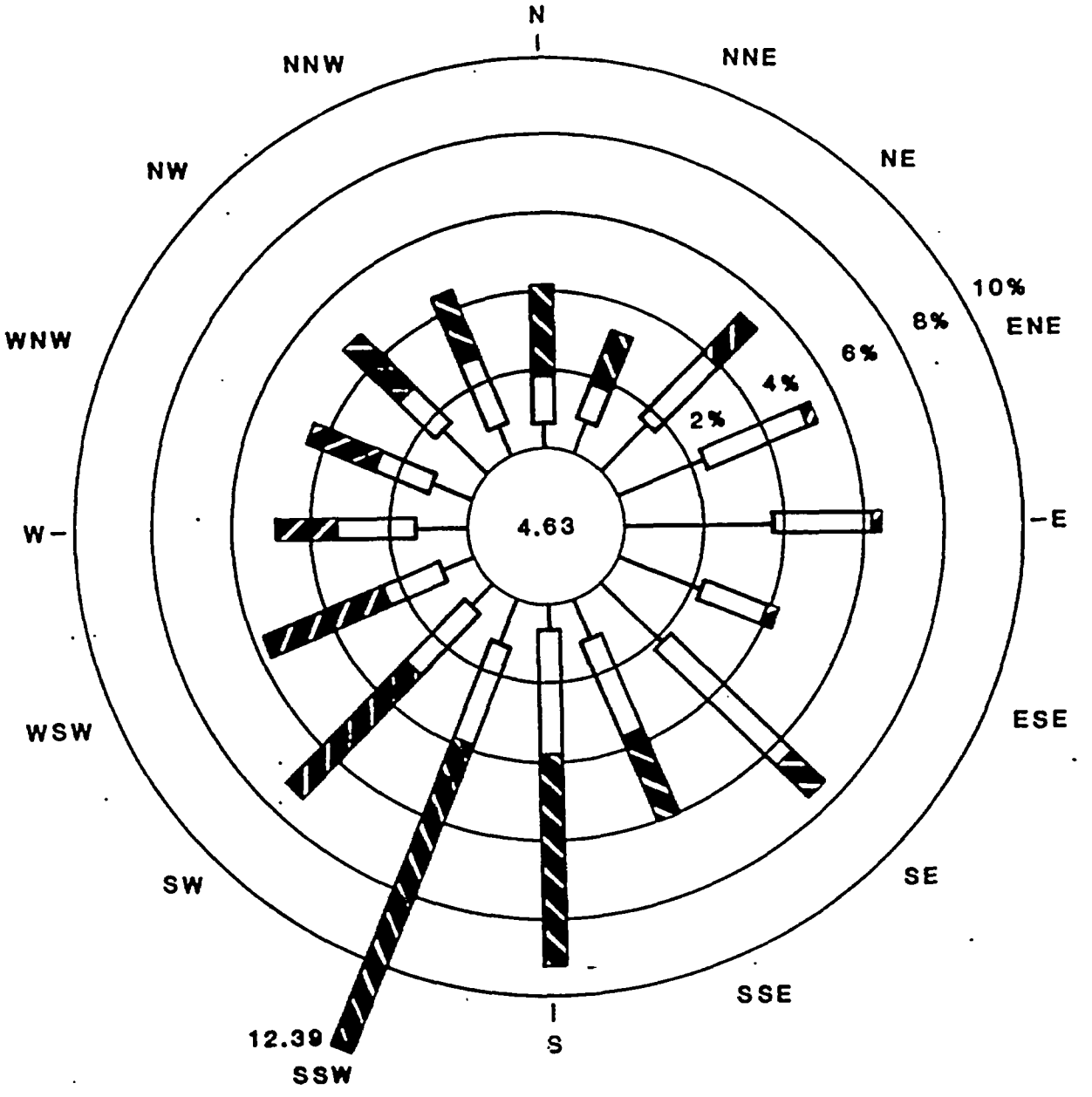


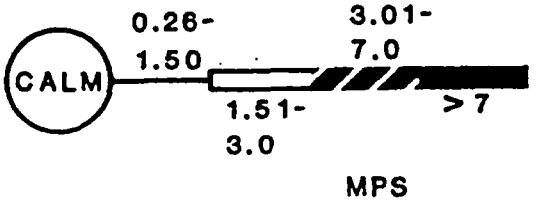


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-9

JULY WIND ROSE 30-FOOT LEVEL
BRAIDWOOD SITE
(1974-1976)

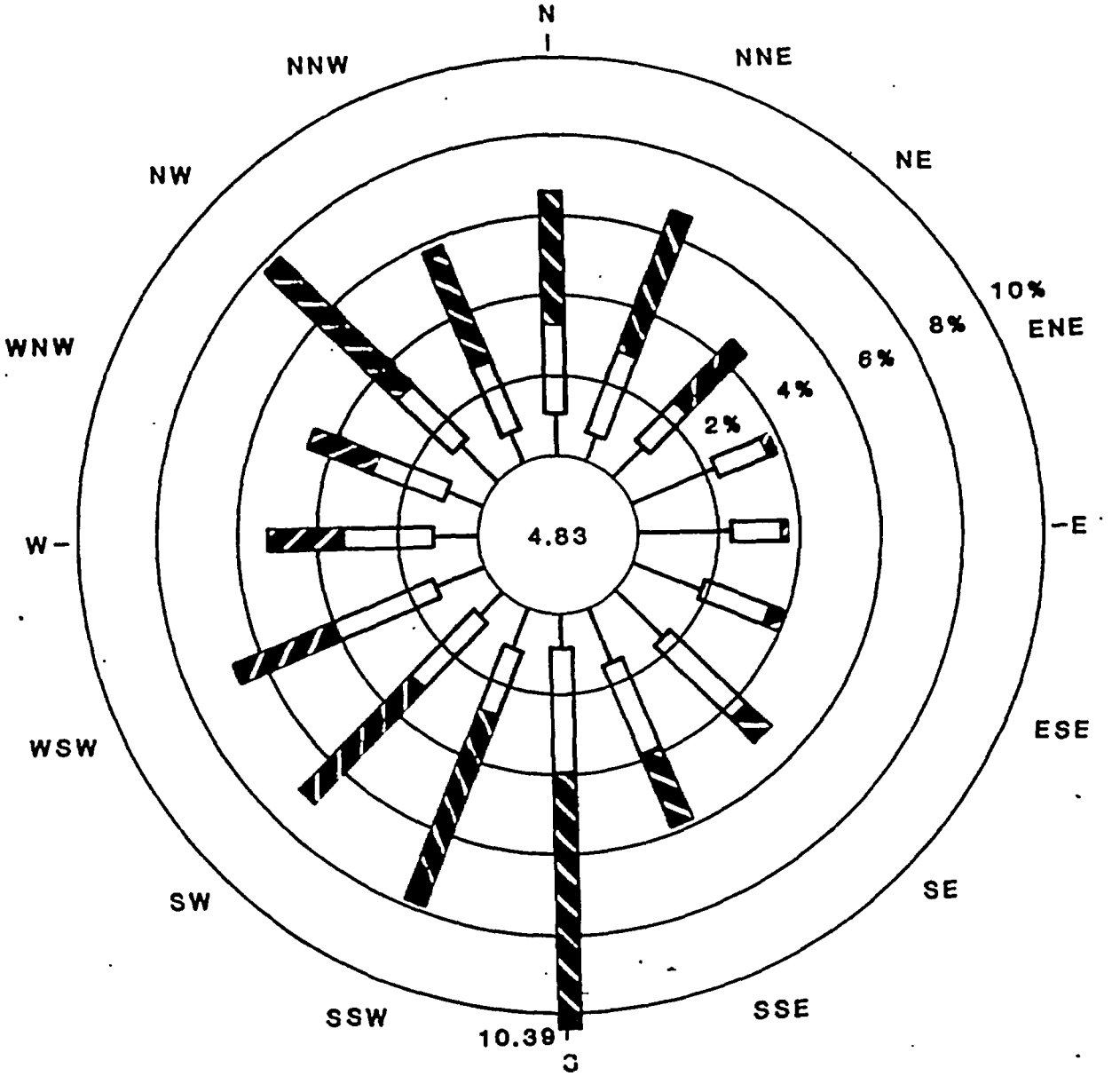


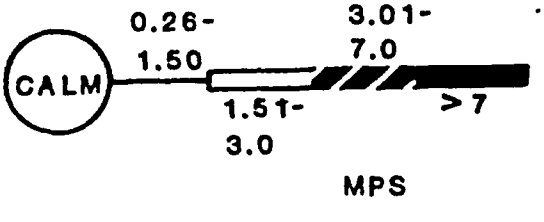


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-10

AUGUST WIND ROSE 30-FOOT LEVEL
BRAIDWOOD SITE
(1974-1976)

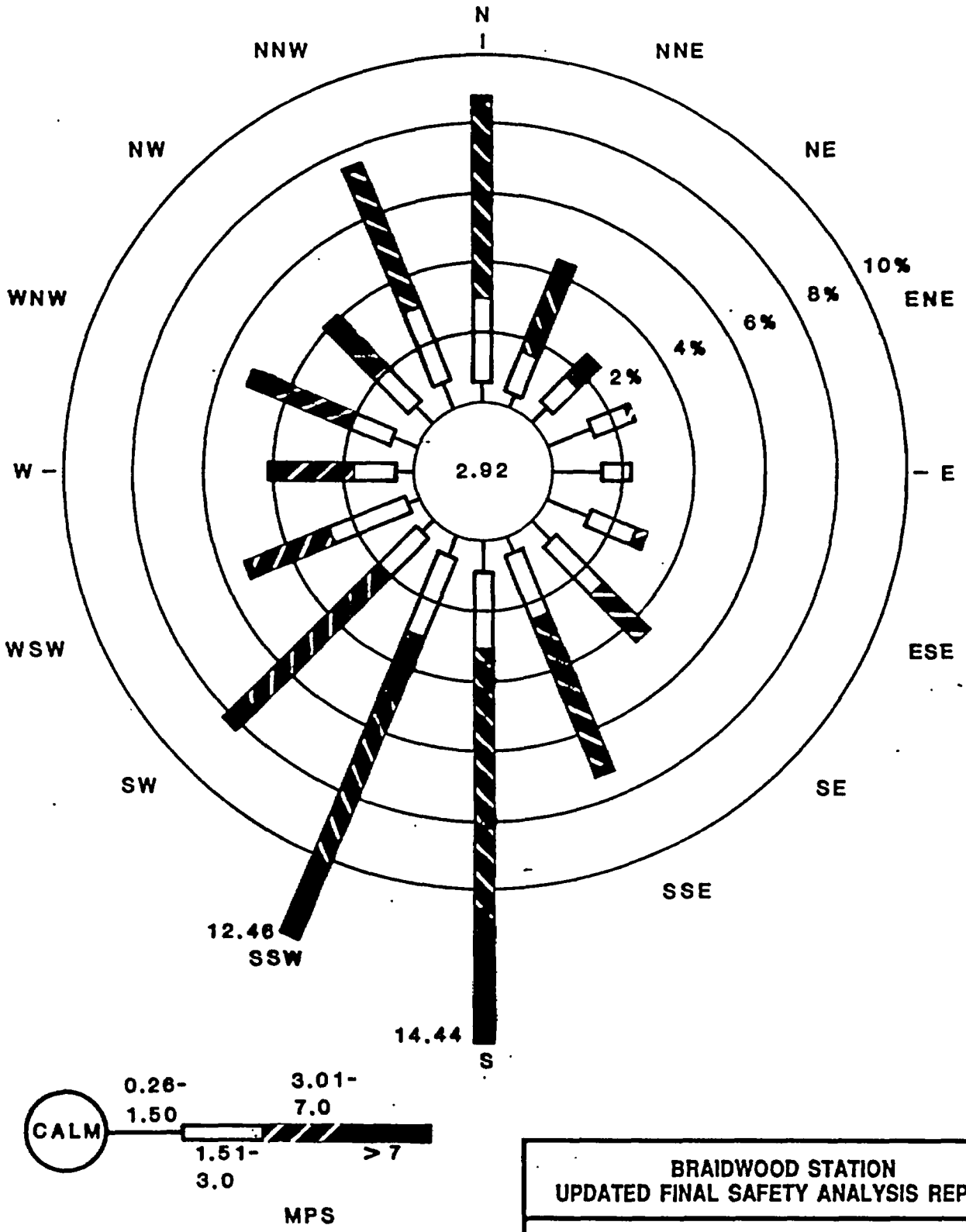




BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-11

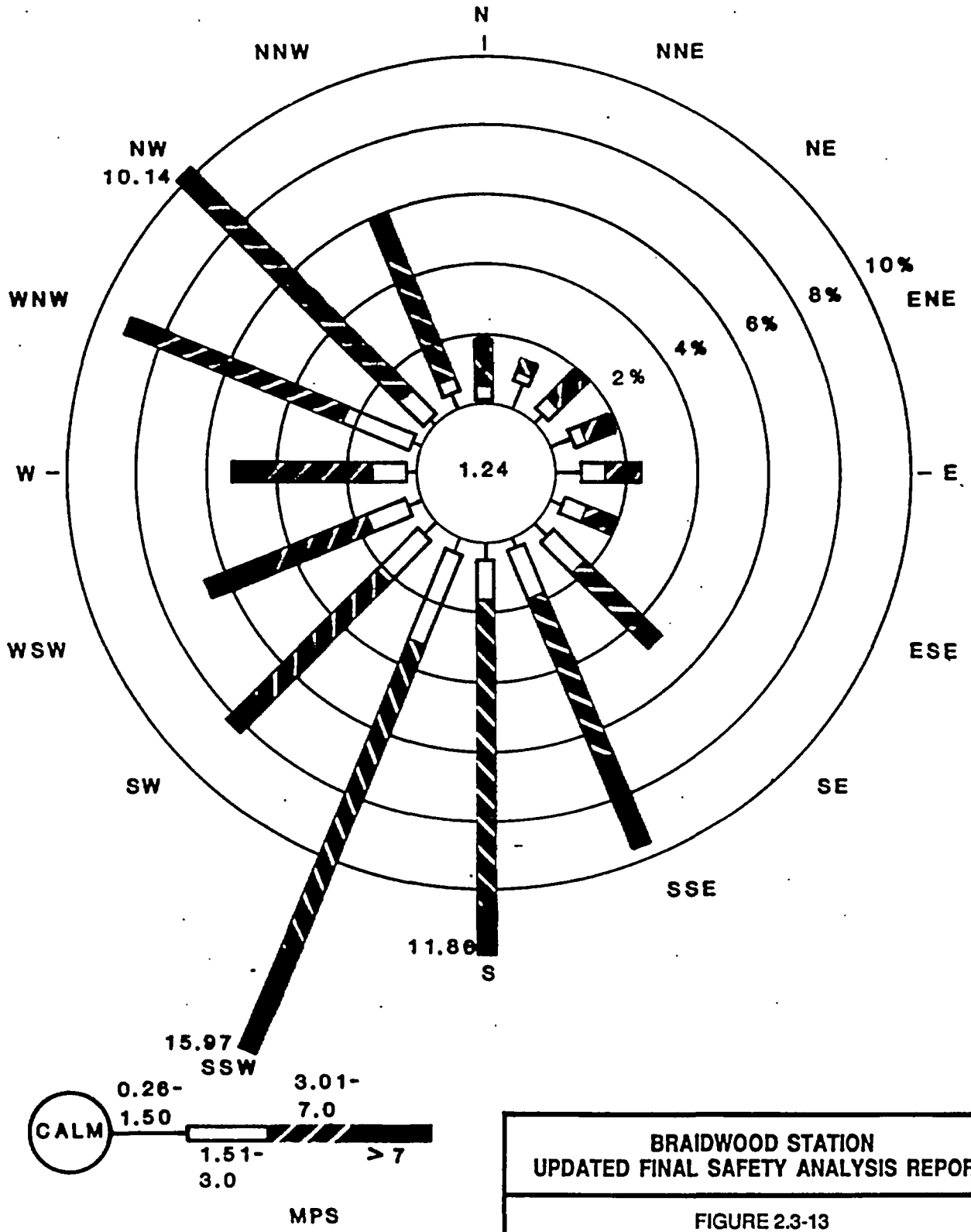
SEPTEMBER WIND ROSE 30-FOOT LEVEL
BRAIDWOOD SITE
(1974-1976)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-12

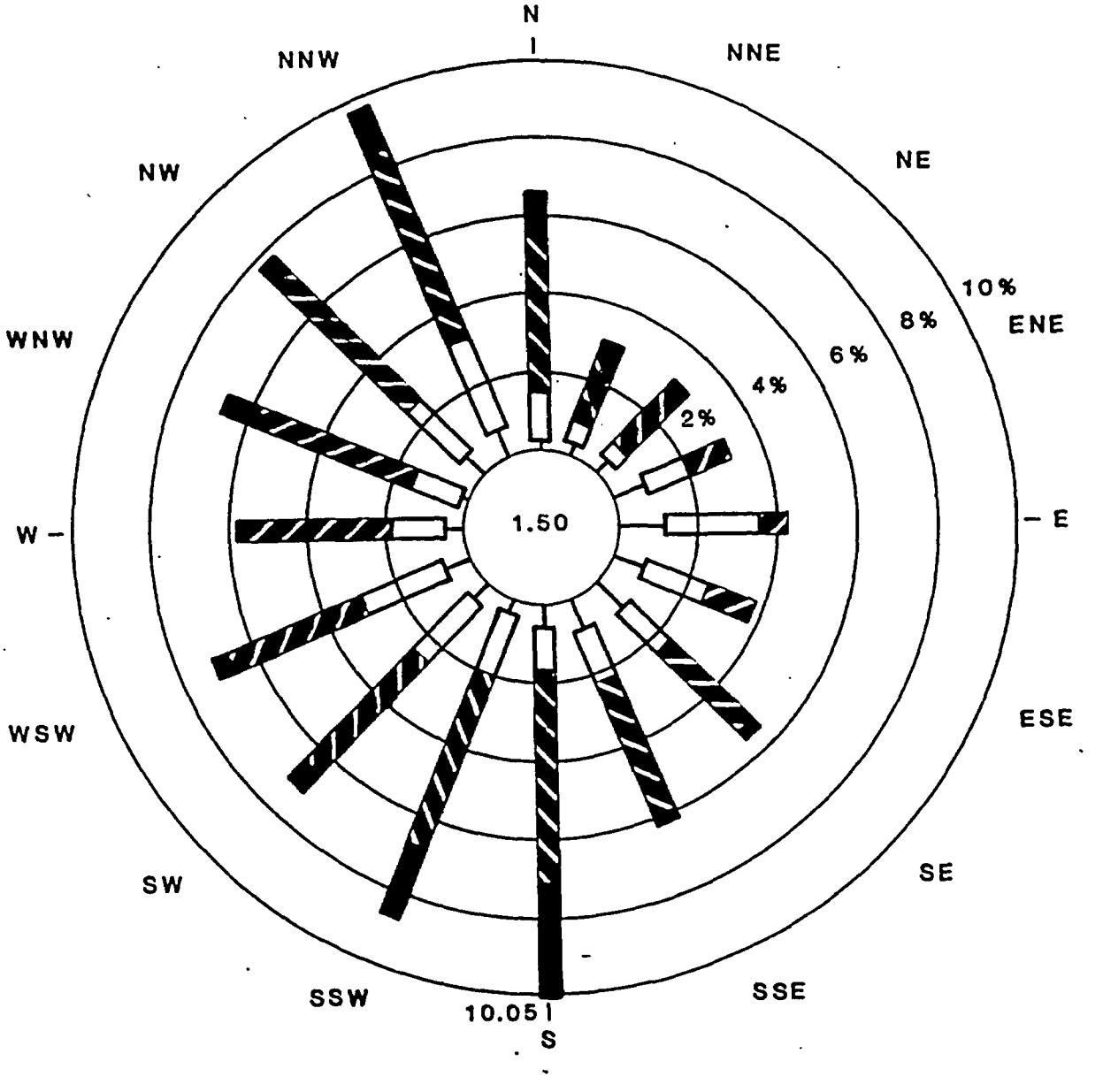
OCTOBER WIND ROSE 30-FOOT LEVEL
BRAIDWOOD SITE
(1974-1976)

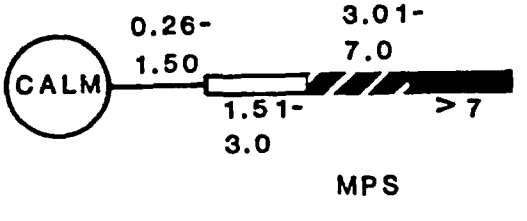


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-13

NOVEMBER WIND ROSE 30-FOOT LEVEL
BRAIDWOOD SITE
(1974-1976)

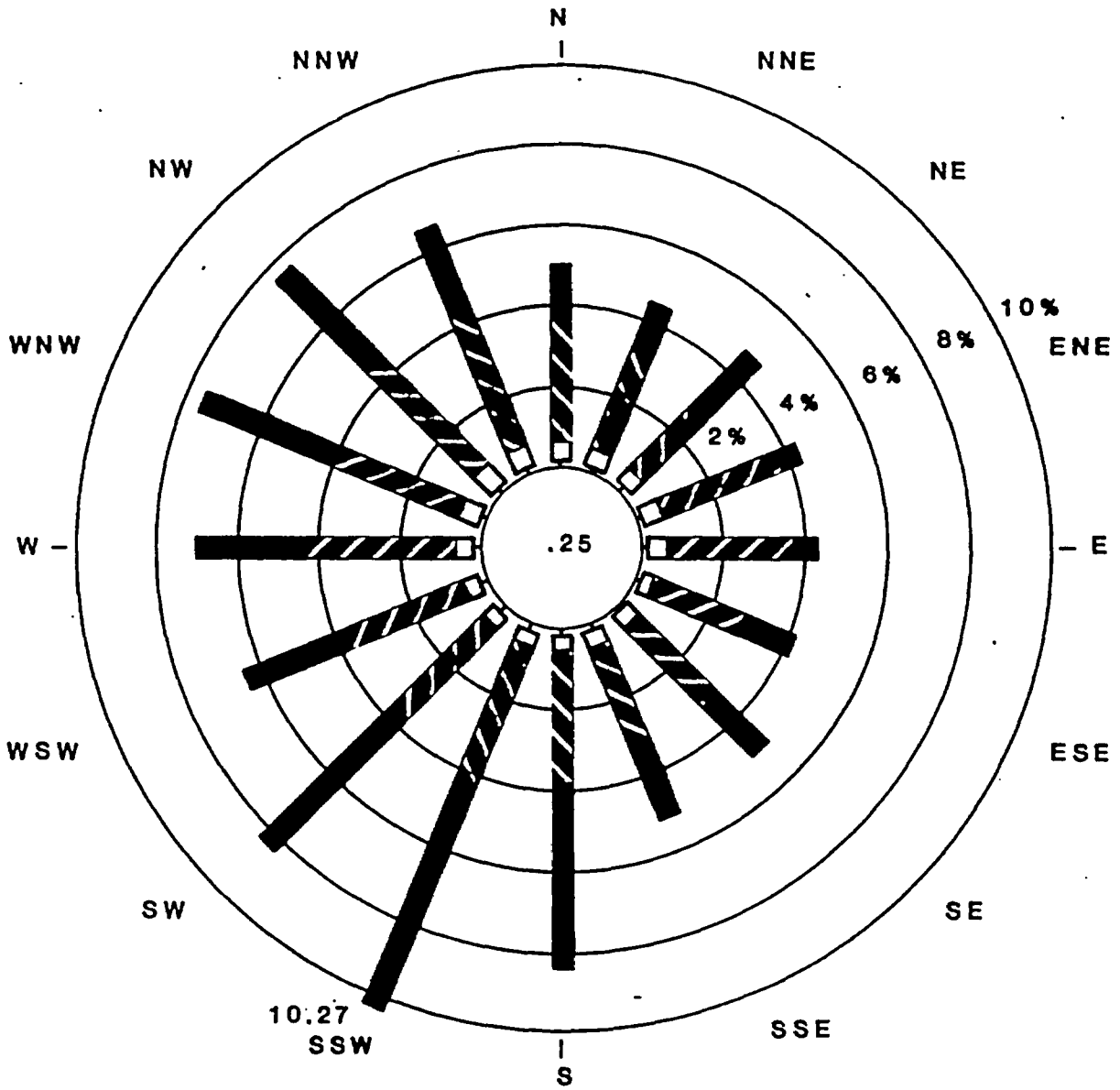


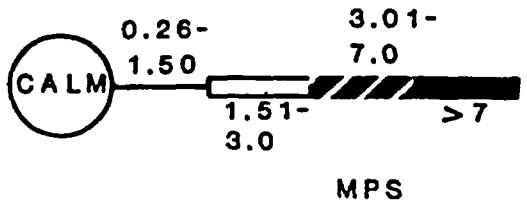


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-14

DECEMBER WIND ROSE 30-FOOT LEVEL
BRAIDWOOD SITE
(1974-1976)

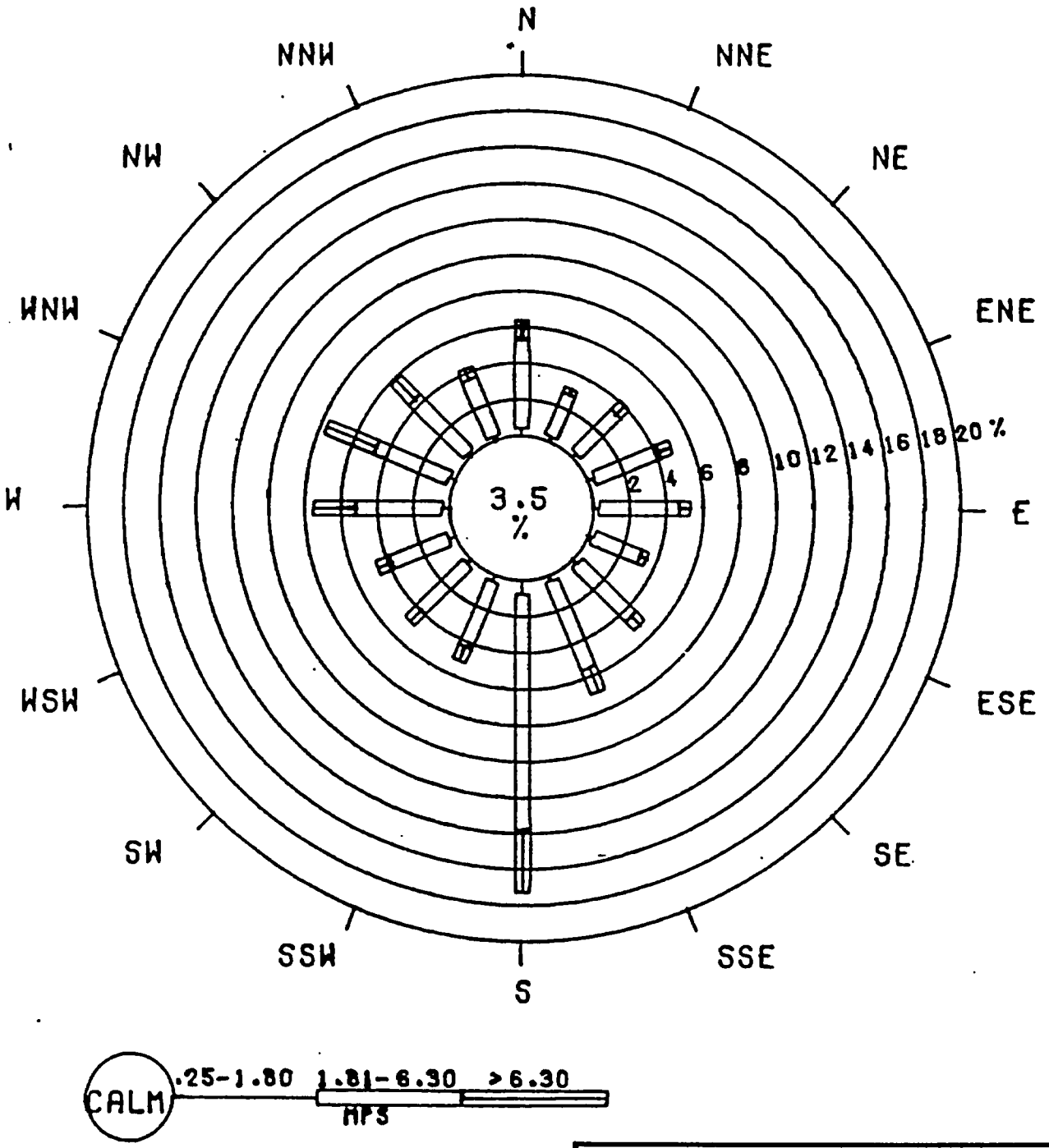




BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-15

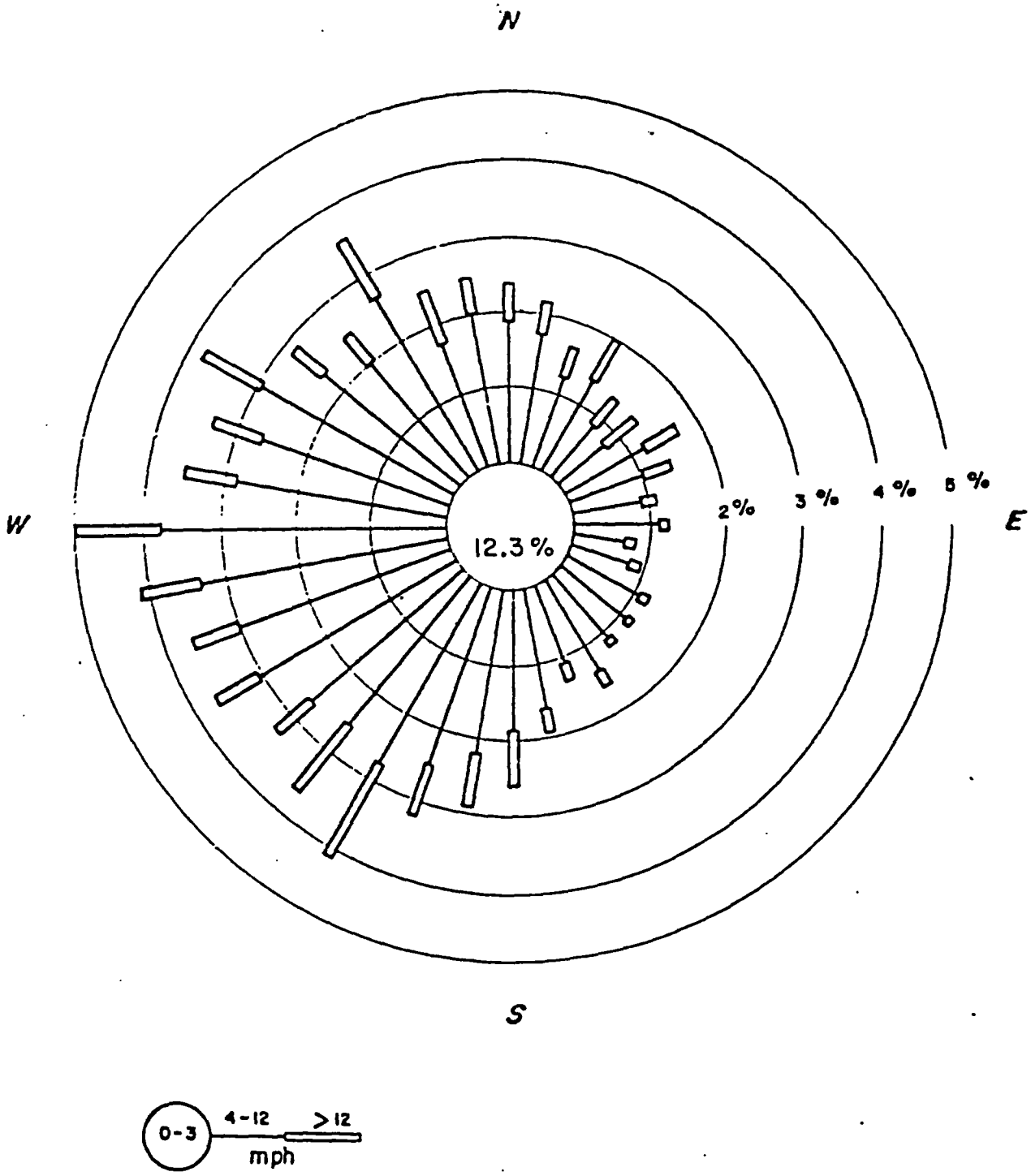
ANNUAL WIND ROSE 199-FOOT LEVEL
BRAIDWOOD SITE
(1974-1976)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-16

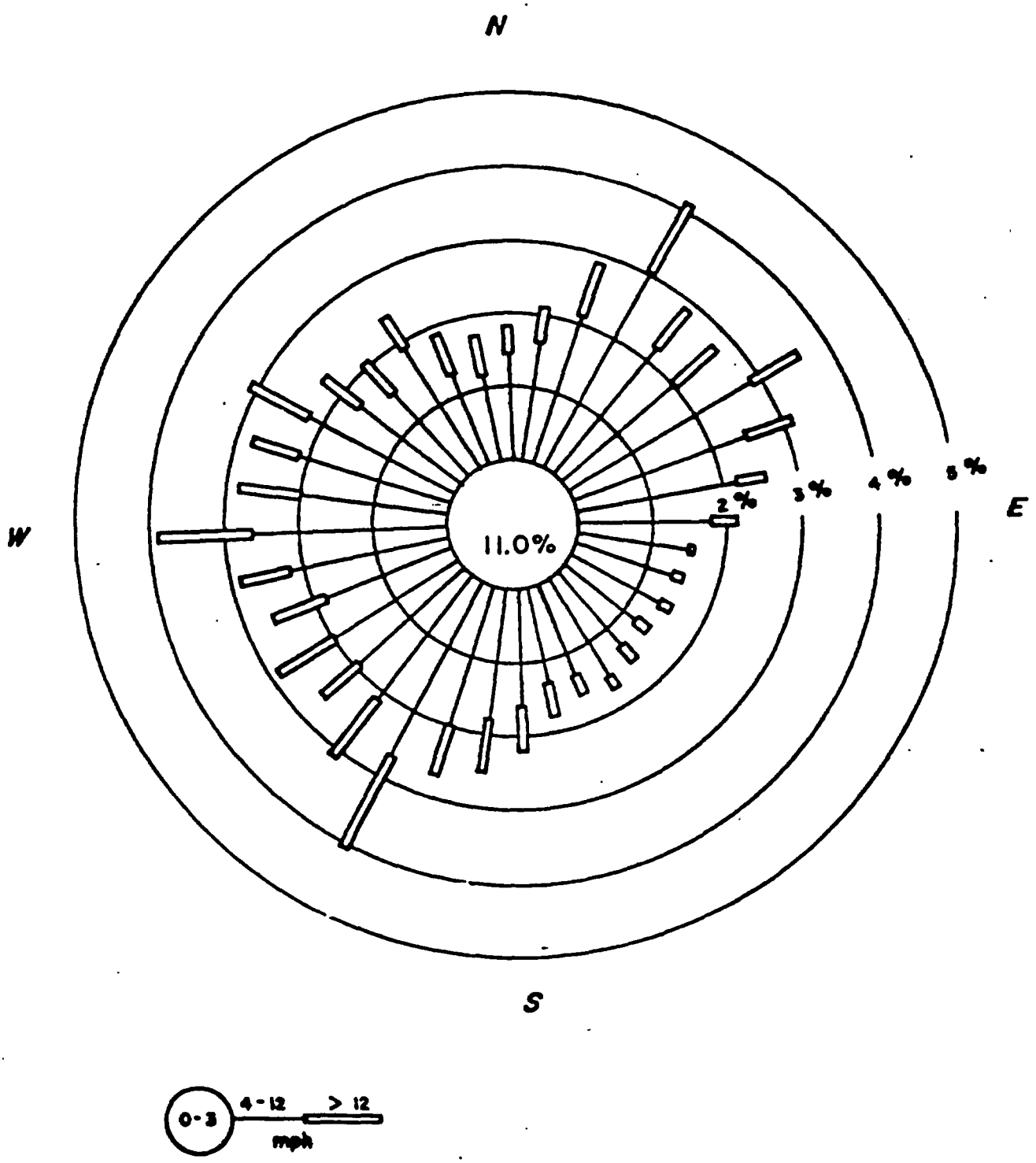
ANNUAL WIND ROSE 20-FOOT LEVEL
PEORIA, ILLINOIS
(1966-1975)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-17

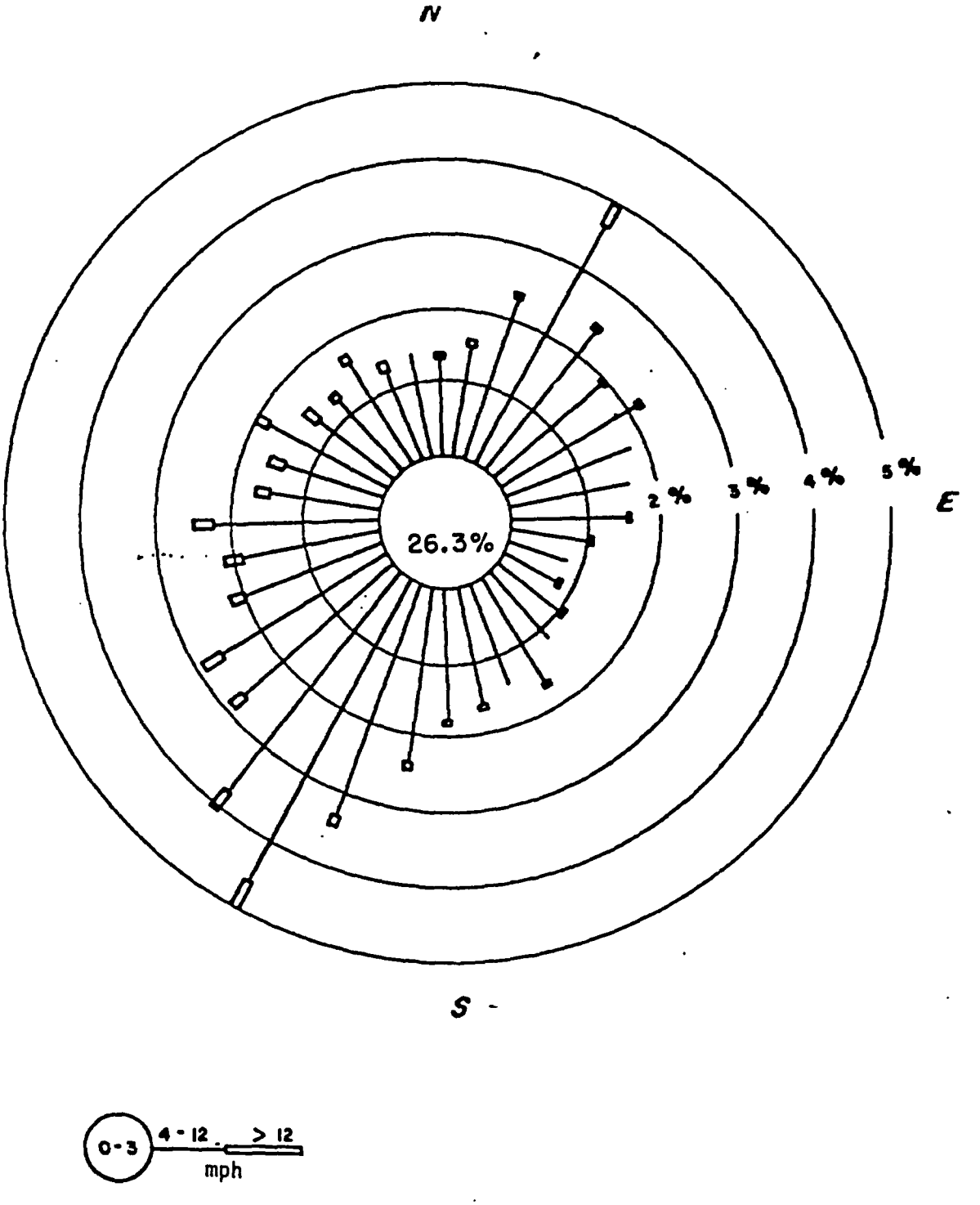
WINTER WIND ROSE 19-FOOT LEVEL
ARGONNE, ILLINOIS
(1950-1964)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-18

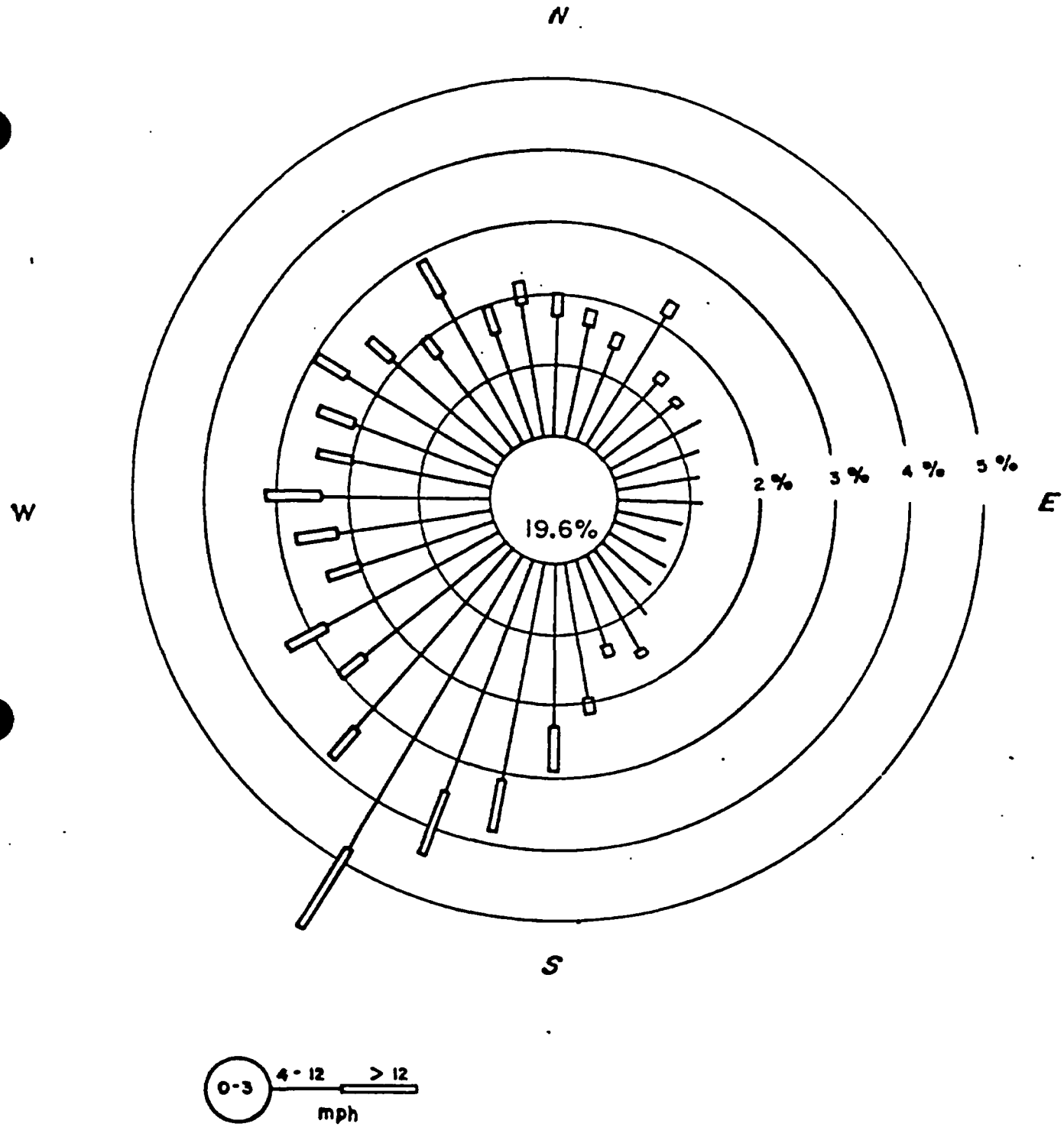
SPRING WIND ROSE 19-FOOT LEVEL
ARGONNE, ILLINOIS
(1950-1964)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-19

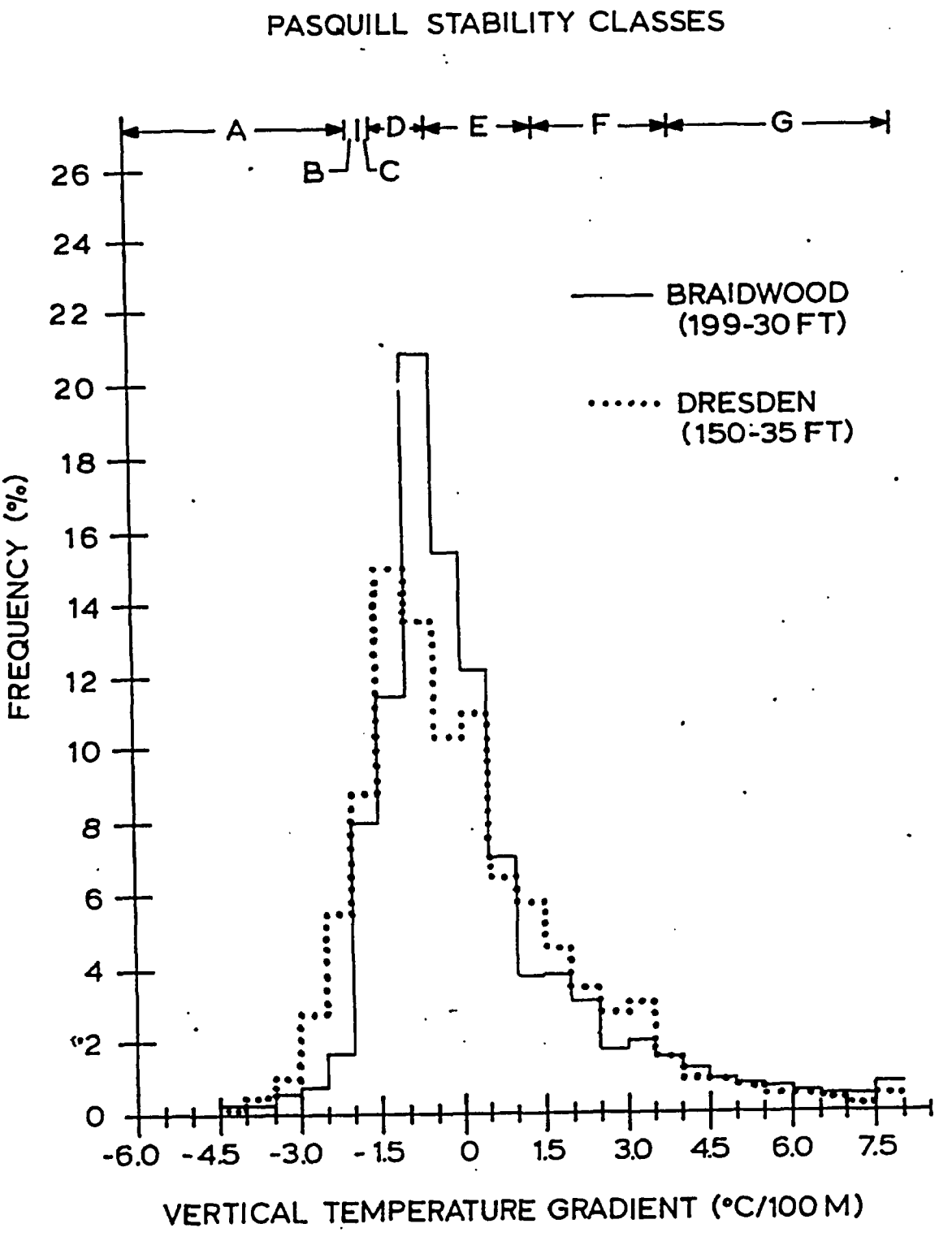
SUMMER WIND ROSE 19-FOOT LEVEL
ARGONNE, ILLINOIS
(1950-1964)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-20

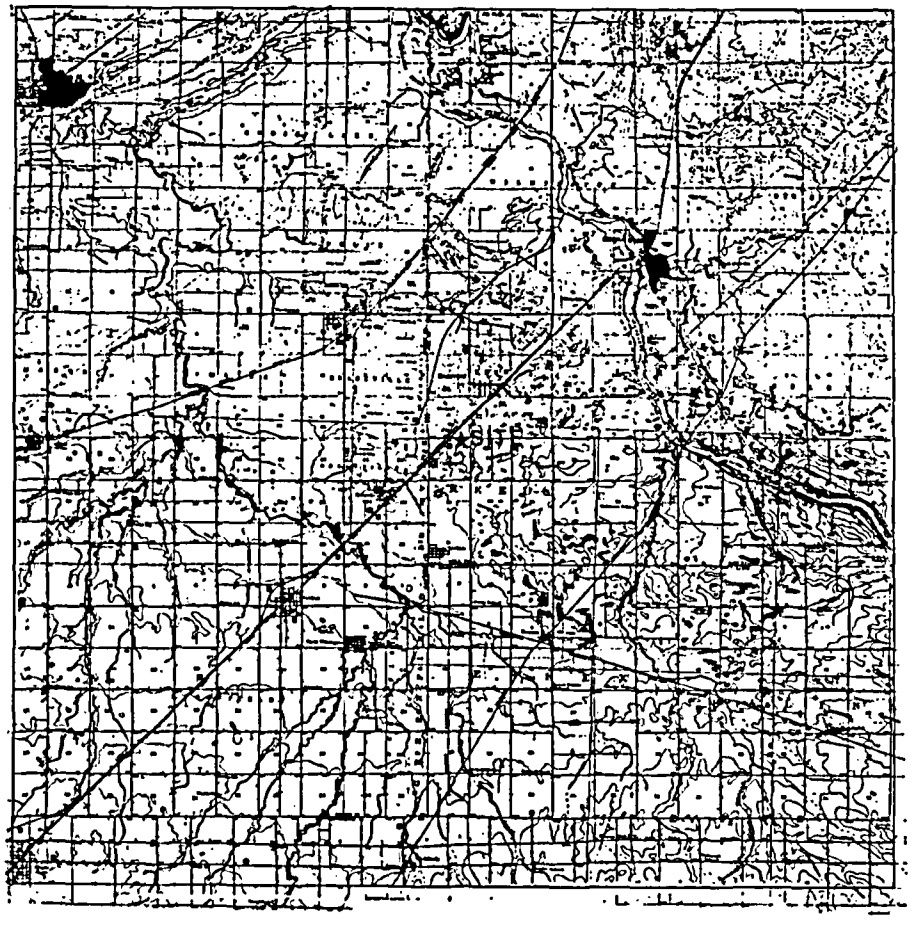
FALL WIND ROSE 19-FOOT LEVEL
ARGONNE, ILLINOIS
(1950-1964)

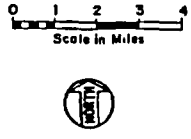


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-21

VERTICAL TEMPERATURE GRADIENT HISTOGRAMS FOR BRAIDWOOD AND DRESDEN (1974-1976)

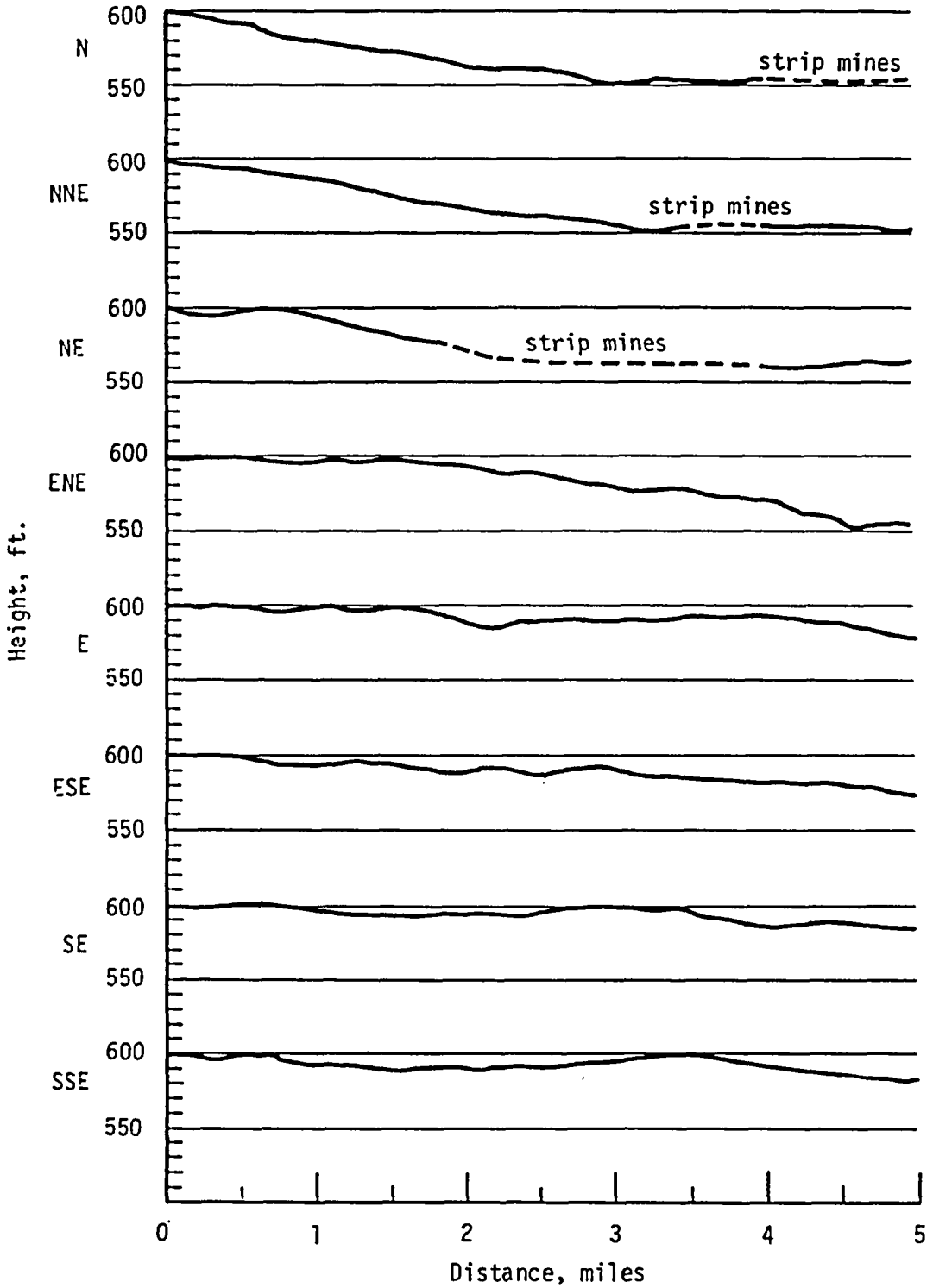




BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-22

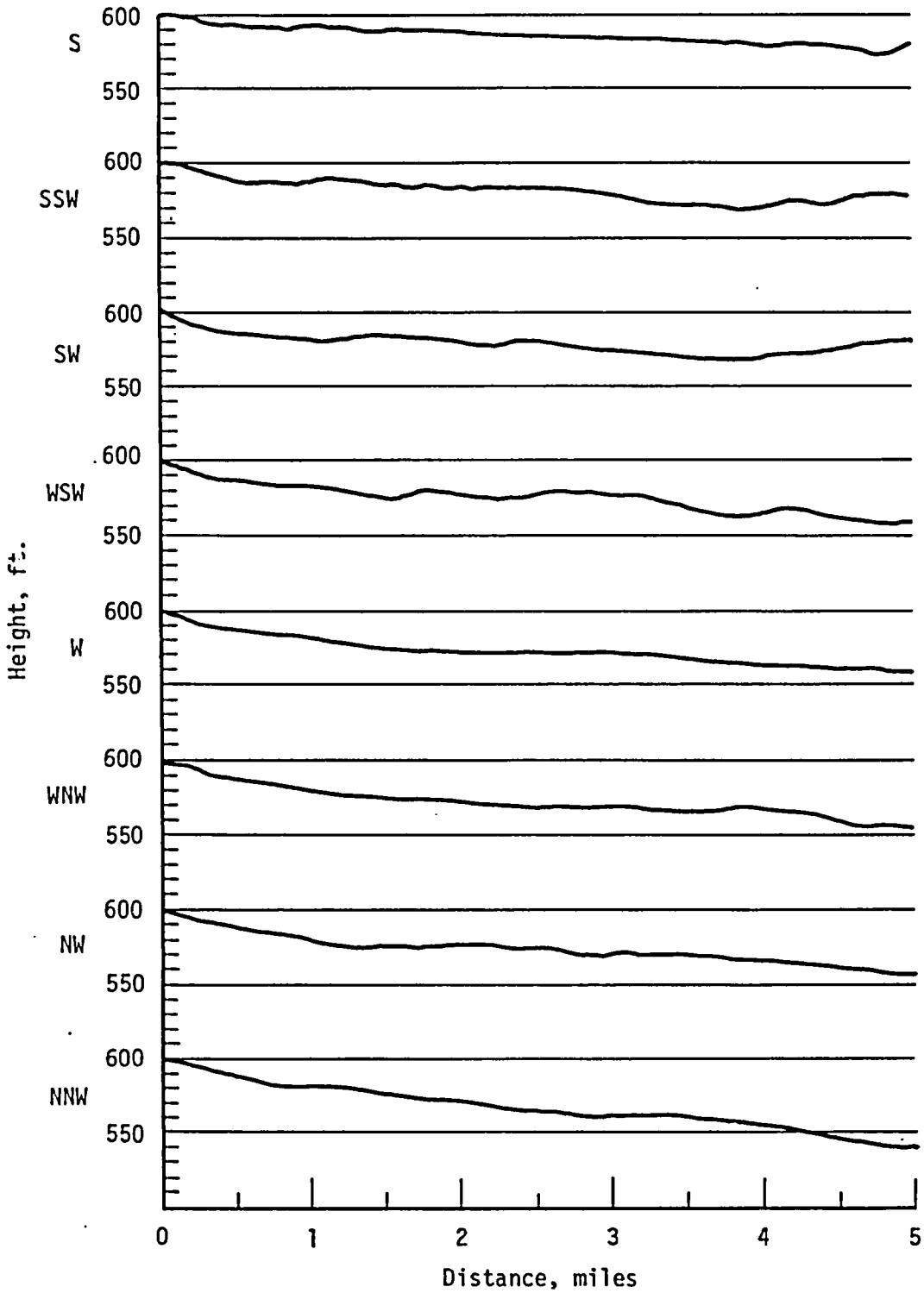
TOPOGRAPHICAL MAP OF THE SITE VICINITY WITHIN A 10-MILE RADIUS



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-23

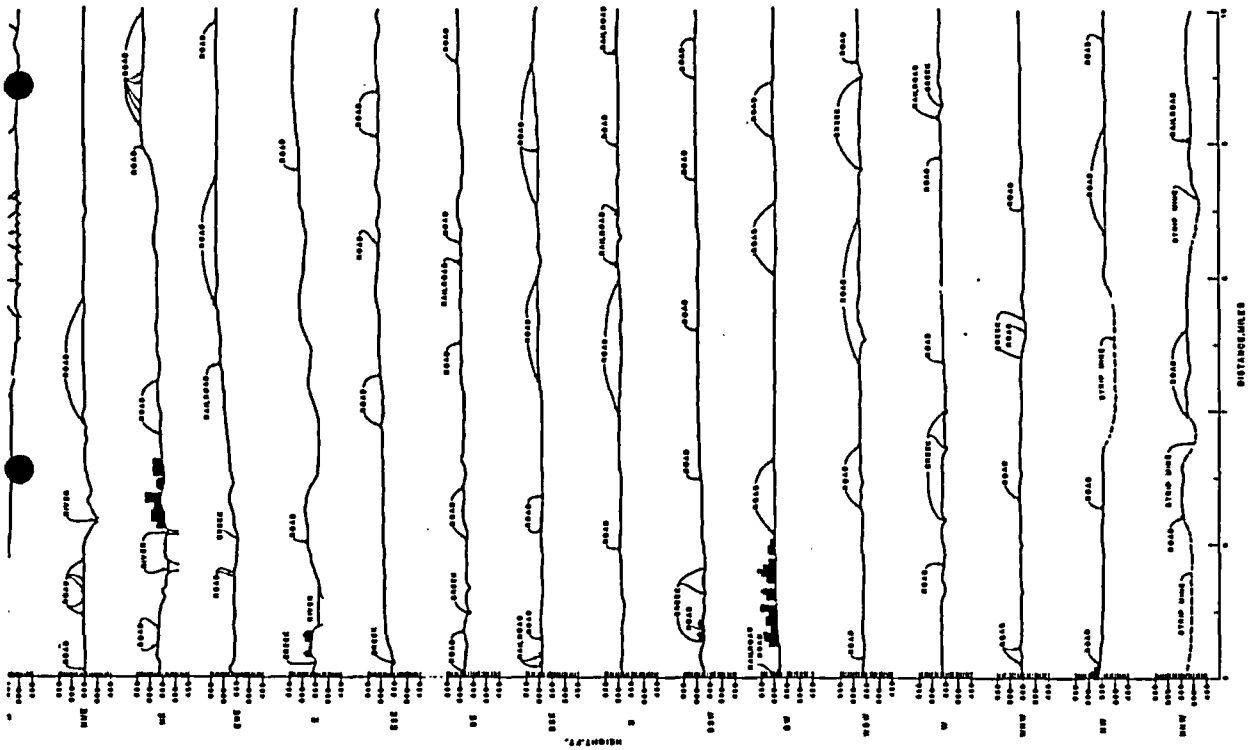
TOPOGRAPHICAL CROSS SECTIONS WITHIN A 10-MILE RADIUS OF THE BRAIDWOOD SITE (SHEET 1 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-23

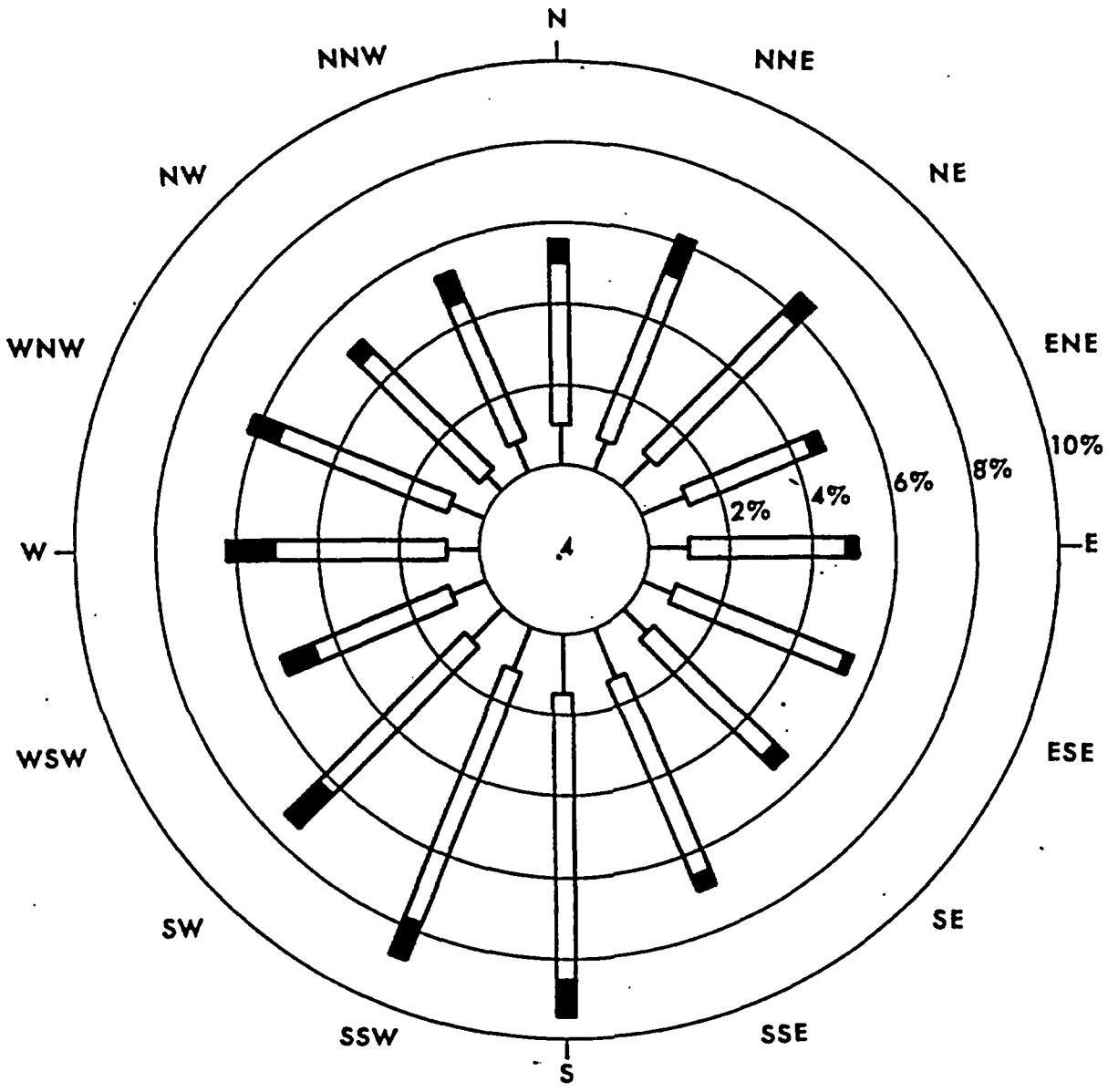
TOPOGRAPHICAL CROSS SECTIONS WITHIN A 10-MILE RADIUS OF THE BRAIDWOOD SITE (SHEET 2 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-23

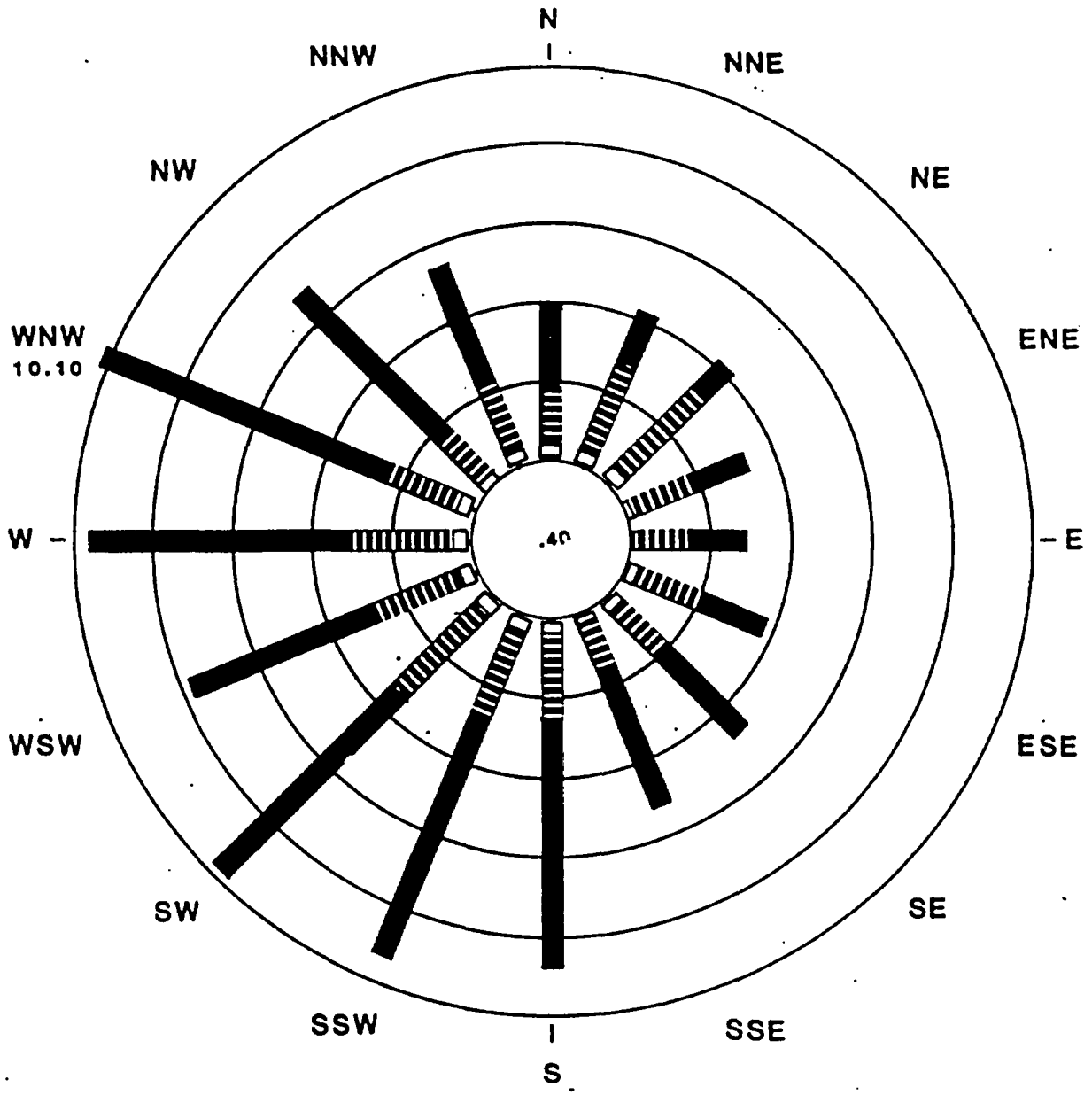
TOPOGRAPHICAL CROSS SECTIONS WITHIN A 10-MILE RADIUS OF THE BRAIDWOOD SITE (SHEET 3 OF 3)

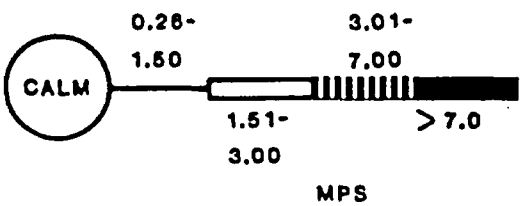


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-24

ANNUAL WIND ROSE FOR 10-METER LEVEL
AT CLINTON POWER STATION
(5-72 TO 4-73)





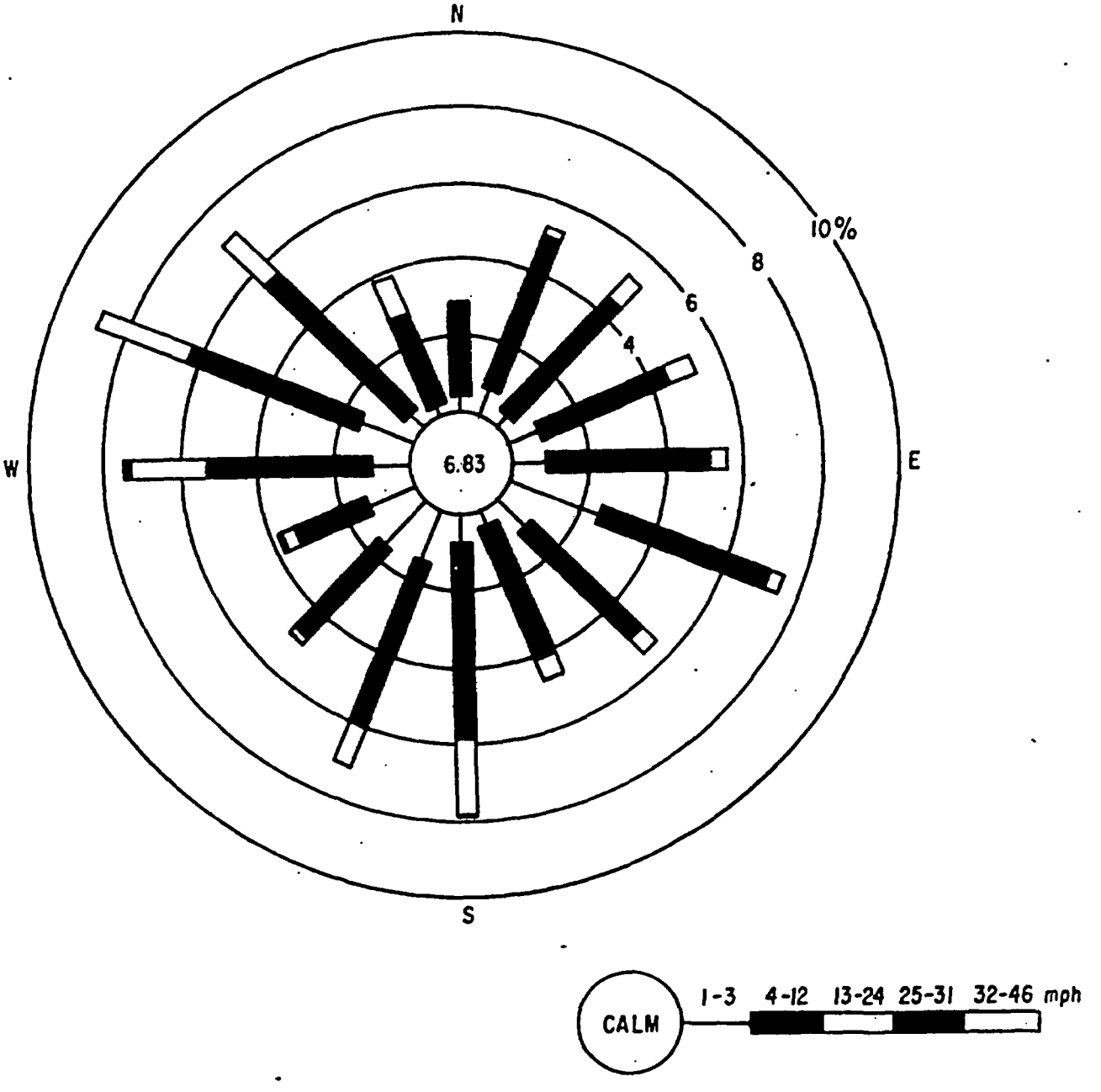
NOTE:

ANNUAL VALUES BASED ON DATA COLLECTED OCTOBER 1, 1976 THROUGH SEPTEMBER 30, 1977.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.3-25

ANNUAL WIND ROSE FOR 375-FOOT LEVEL AT LASALLE COUNTY STATION (10-1-76 TO 9-30-77)



BRAIDWOOD STATION
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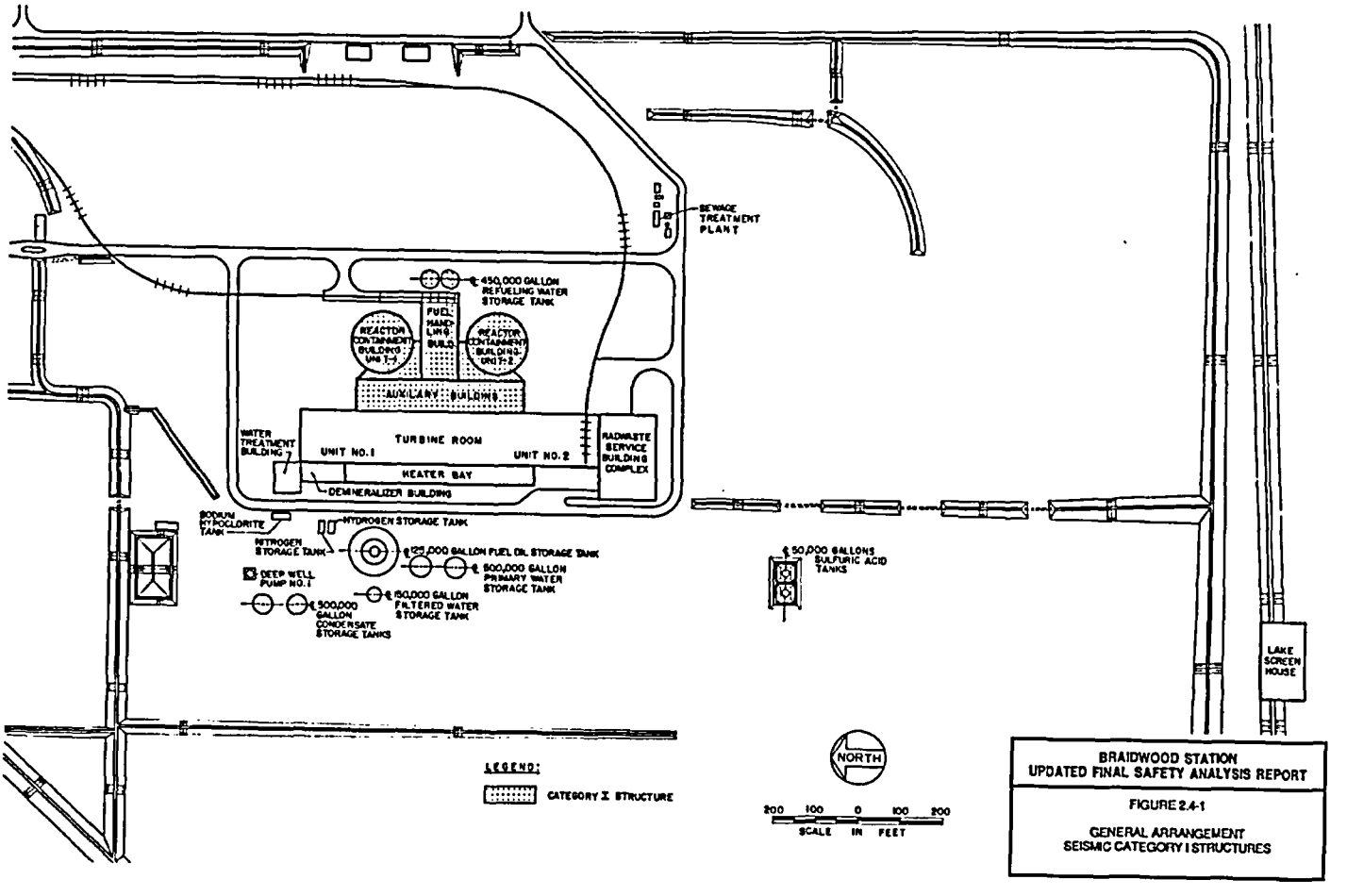
FIGURE 2.3-26

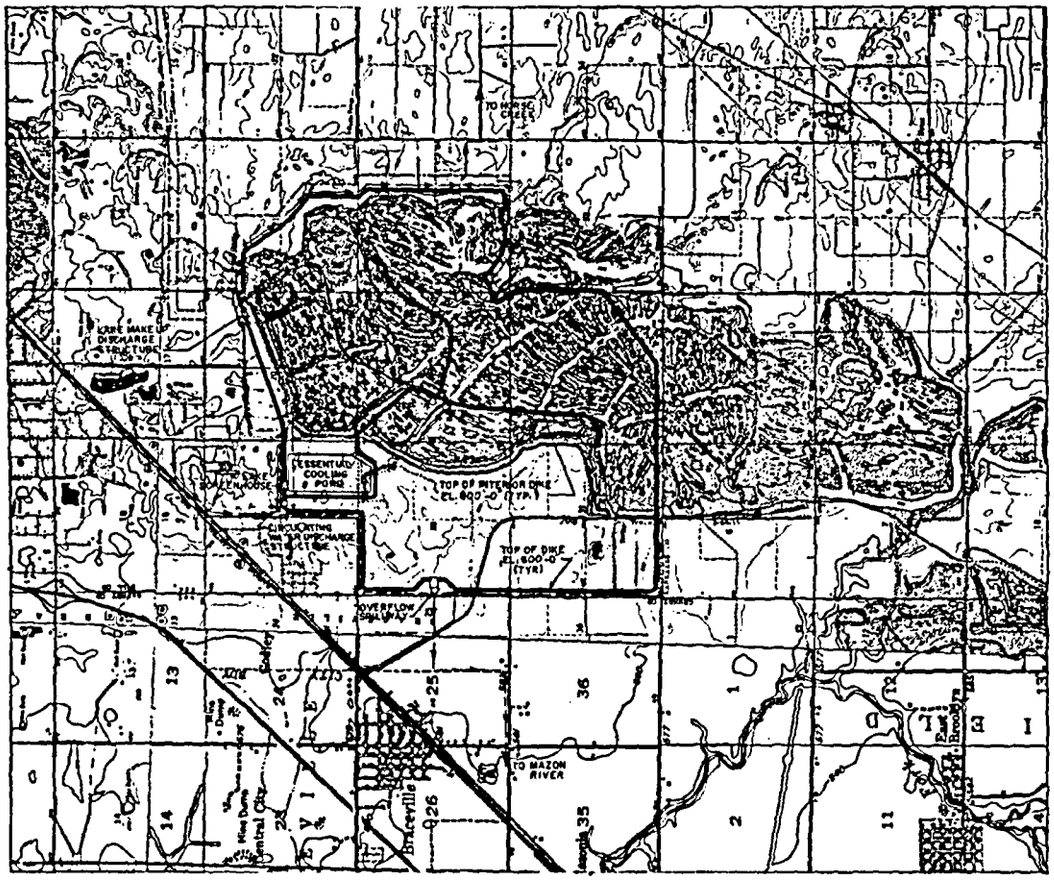
ANNUAL WIND ROSE FOR 35-FOOT LEVEL AT DRESDEN



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.4-1

GENERAL ARRANGEMENT
SEISMIC CATEGORY I STRUCTURES



LEGEND:

- EXISTING DRAINAGE
- NEW DITCHES
- DIKES
- PROPERTY LINE

NORTH

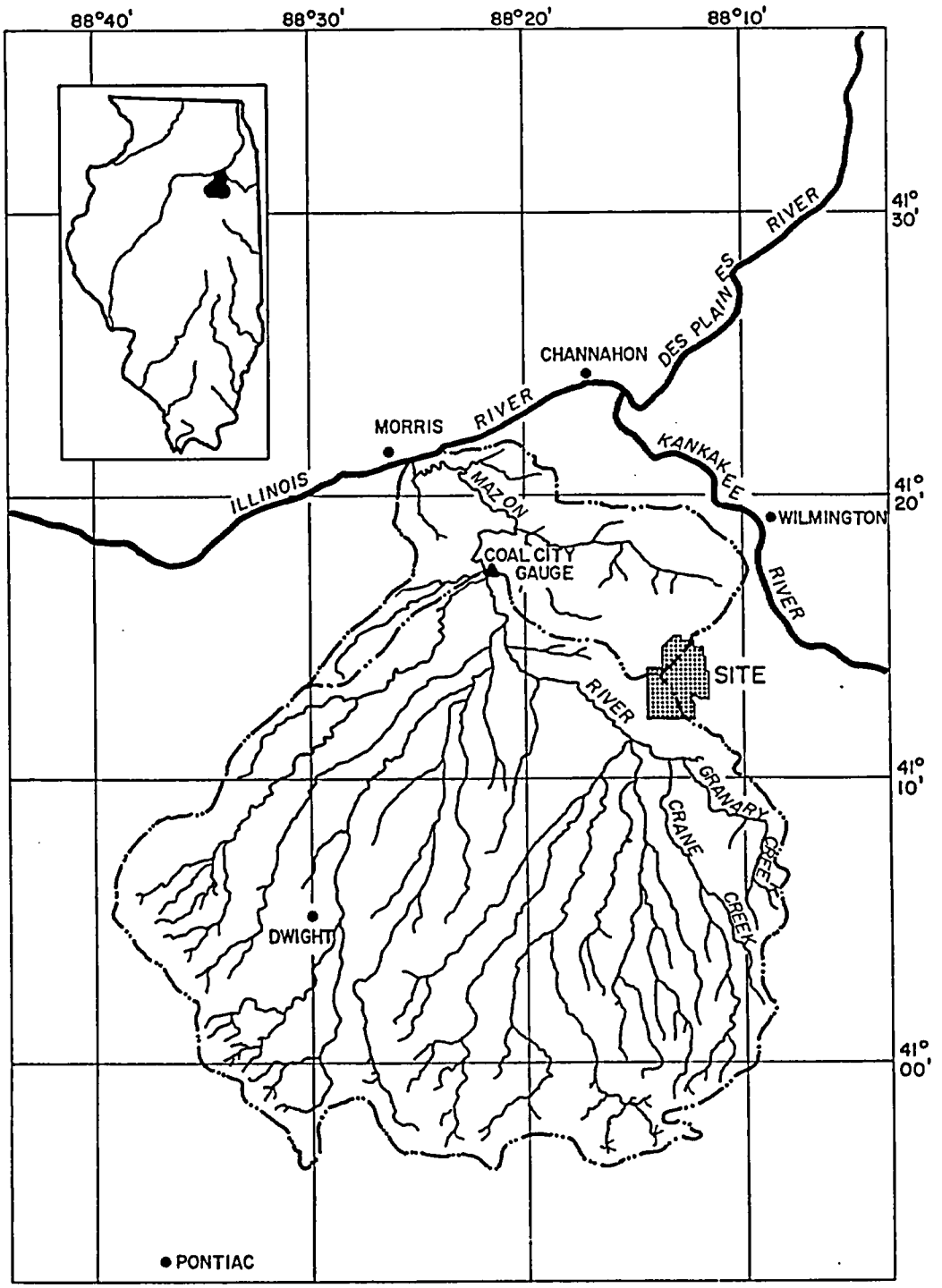
3000 0 3000

SCALE IN FEET

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.4-2

SITE CHARACTERISTICS AND CHANGES TO EXISITING DRAINAGE FEATURES



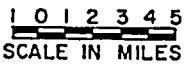


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FIGURE 2.4-3

DRAINAGE BASIN OF MAZON RIVER

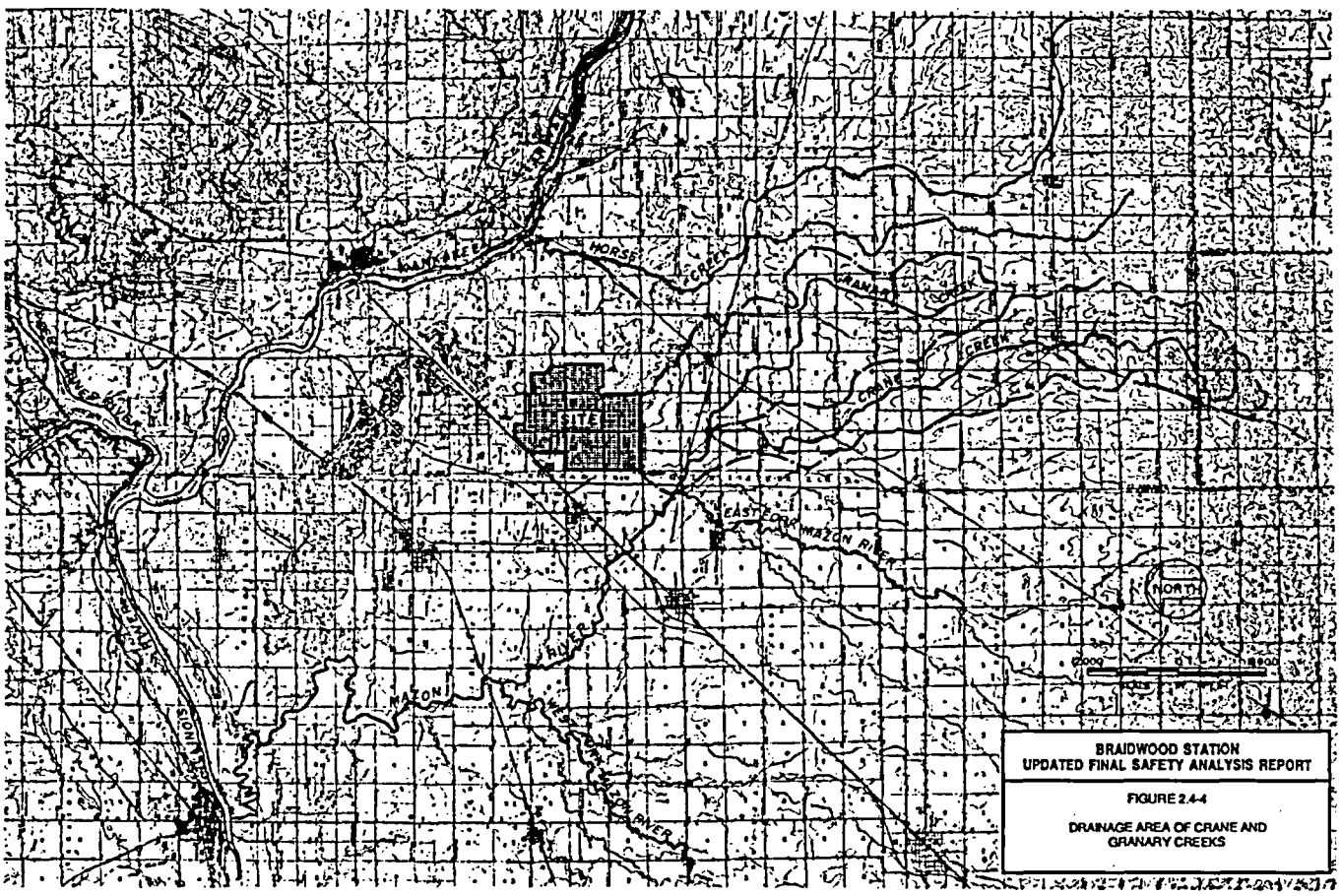

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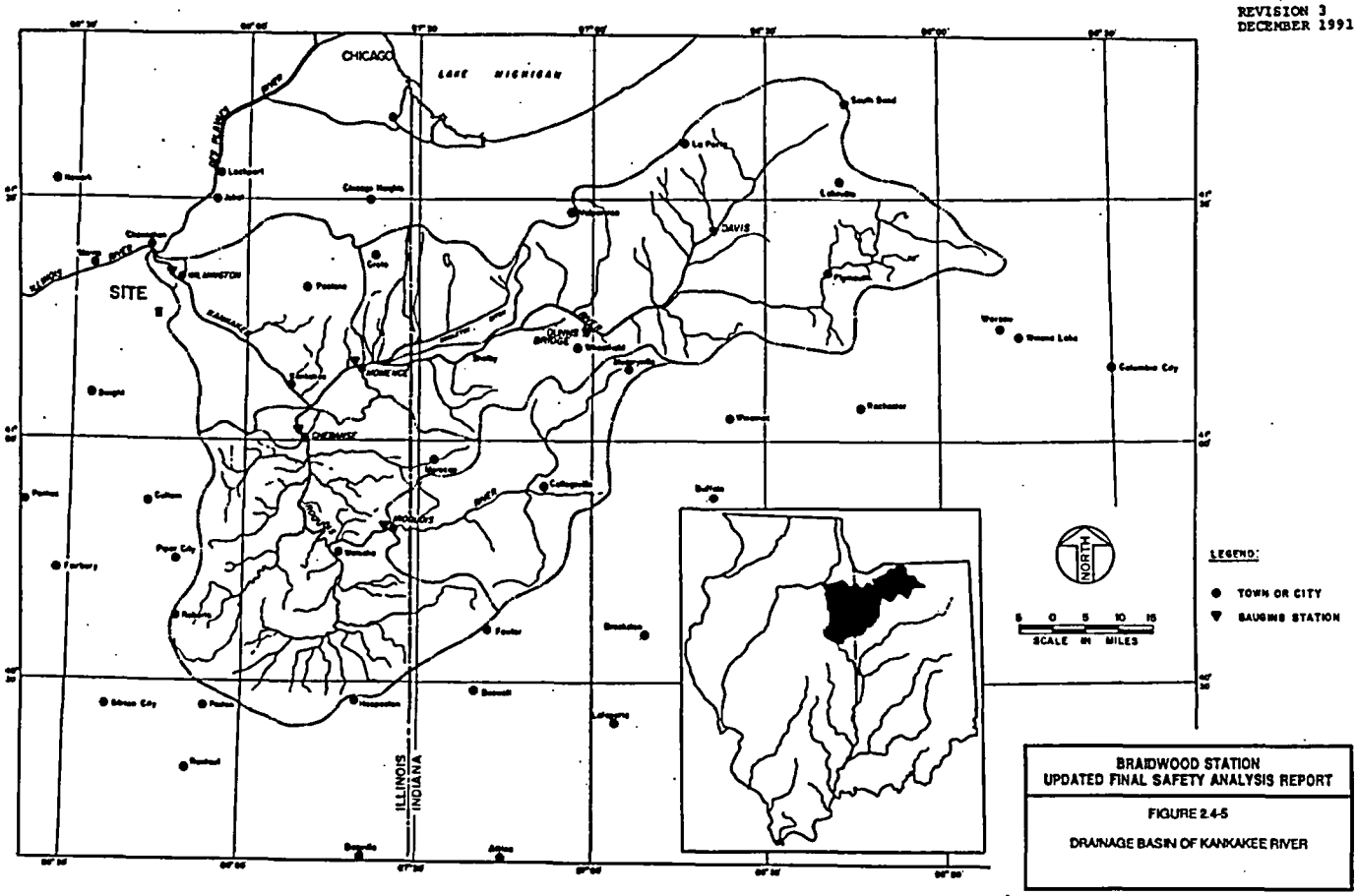
FIGURE 2.4-4

DRAINAGE AREA OF CRANE AND GRANARY CREEKS

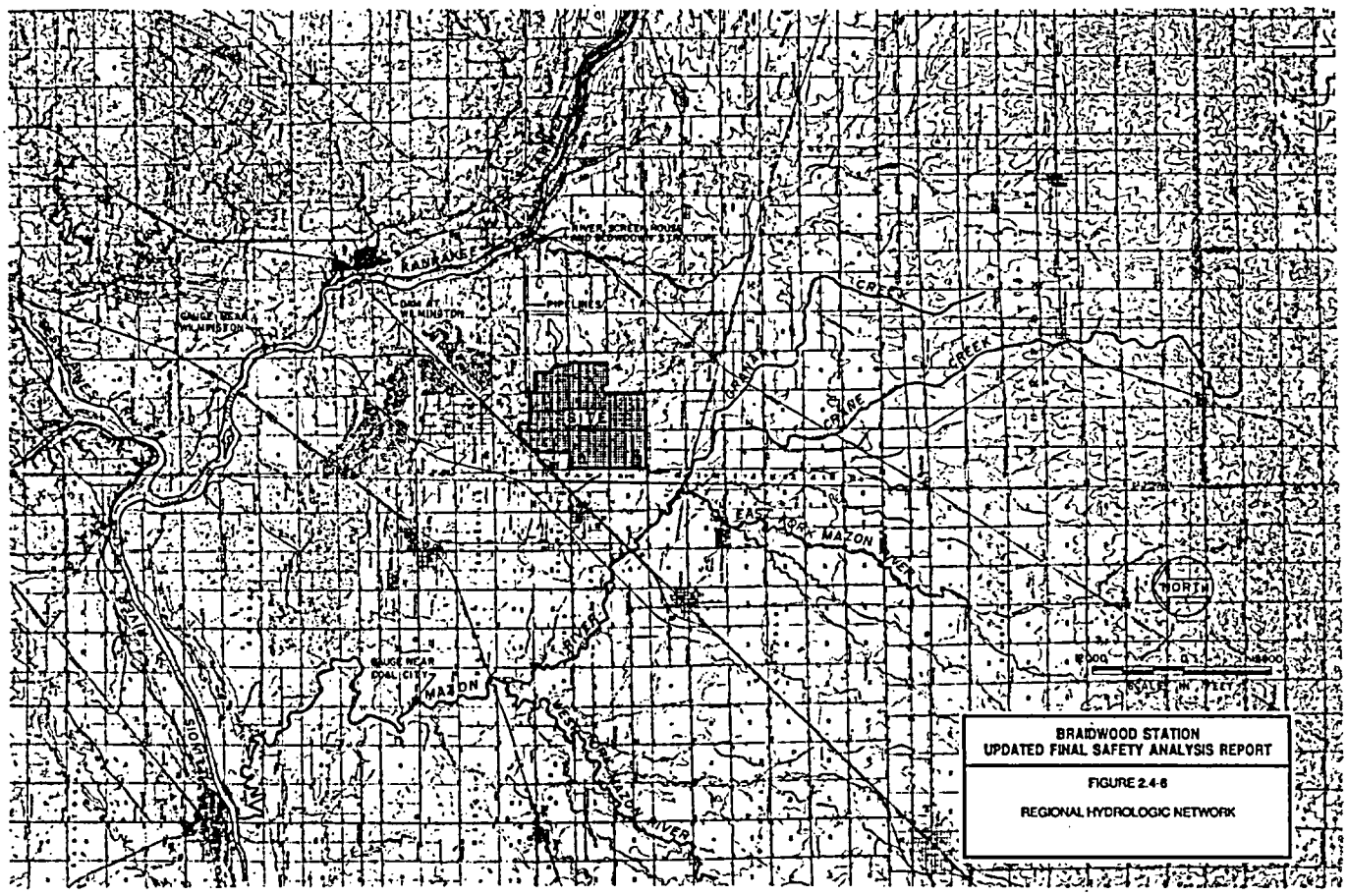
REVISION 3
DECEMBER 1991



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.4-5

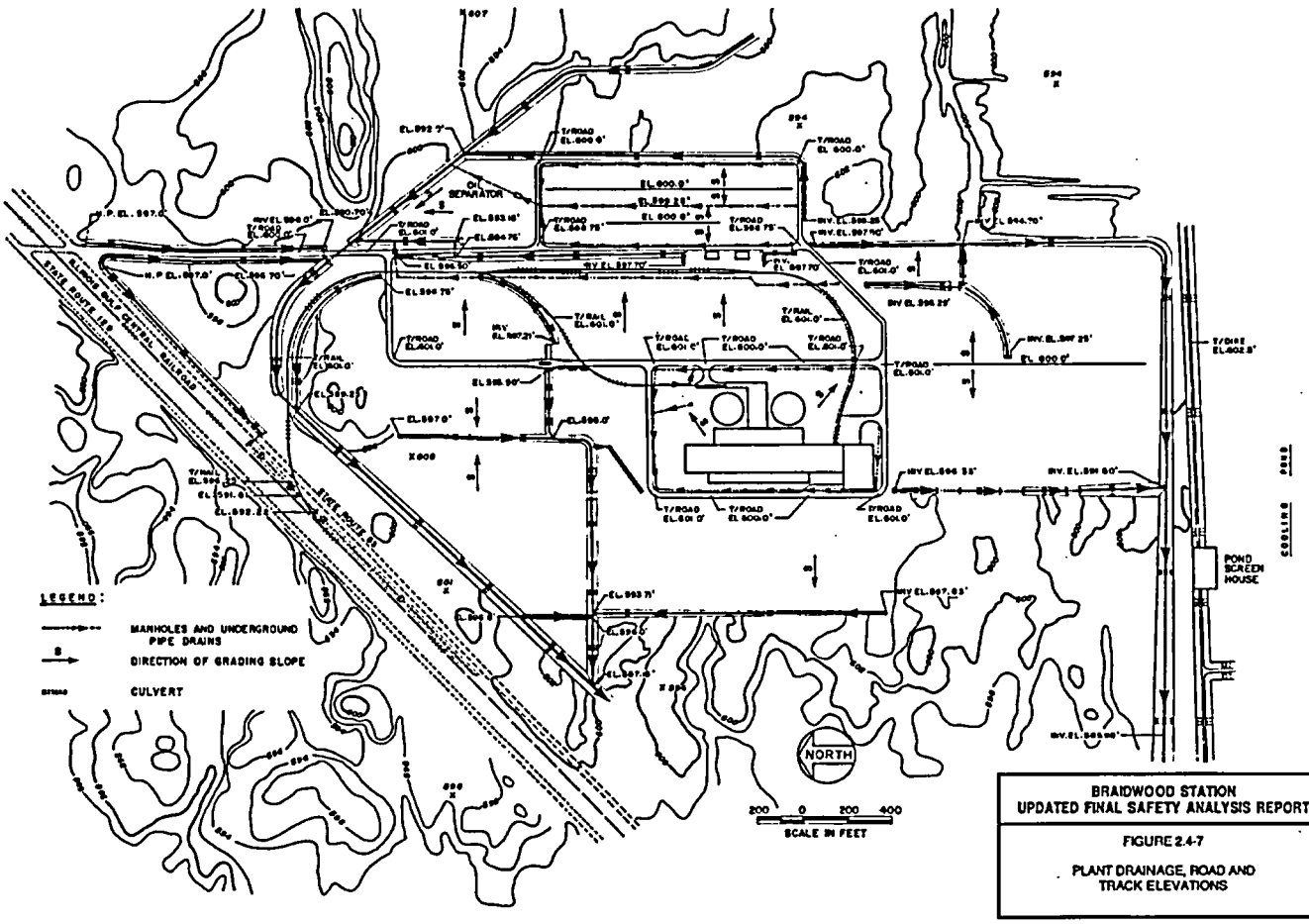
DRAINAGE BASIN OF KANKAKEE RIVER



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.4-6

REGIONAL HYDROLOGIC NETWORK



BRAIDWOOD STATION
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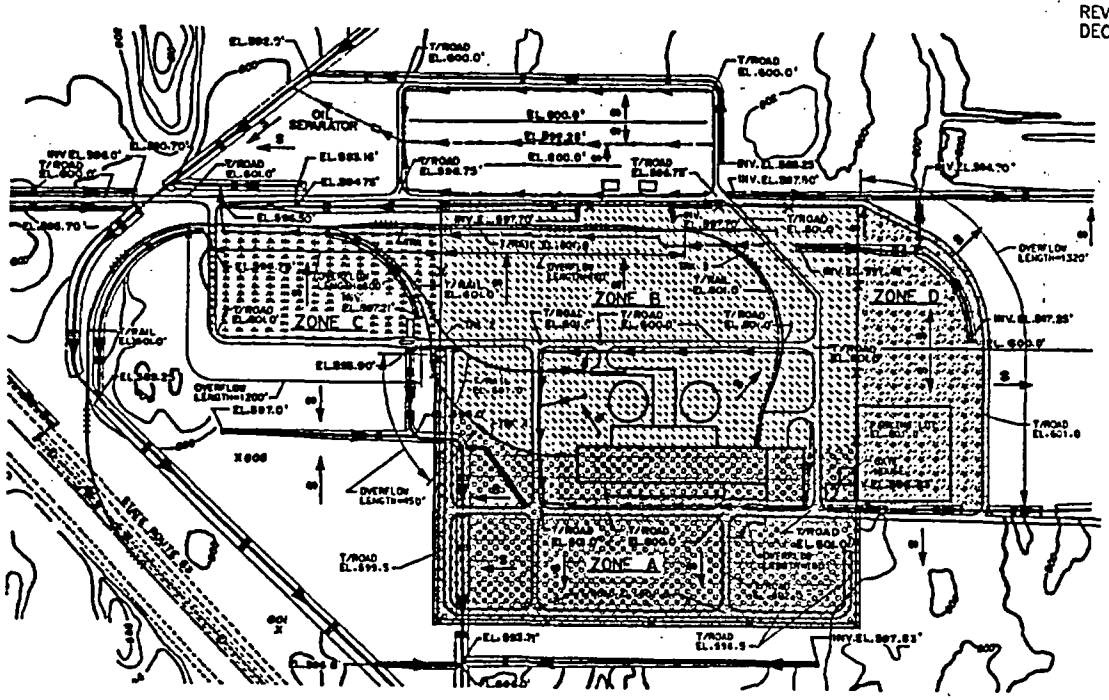
FIGURE 2.4-7

PLANT DRAINAGE, ROAD AND TRACK ELEVATIONS

REVISION 6
DECEMBER 1996



LEGEND:

MANHOLES AND UNDERGROUND PIPE DRAINS

DIRECTION OF GRADING SLOPE

CULVERT

300 0 300 600
GRAPHIC SCALE

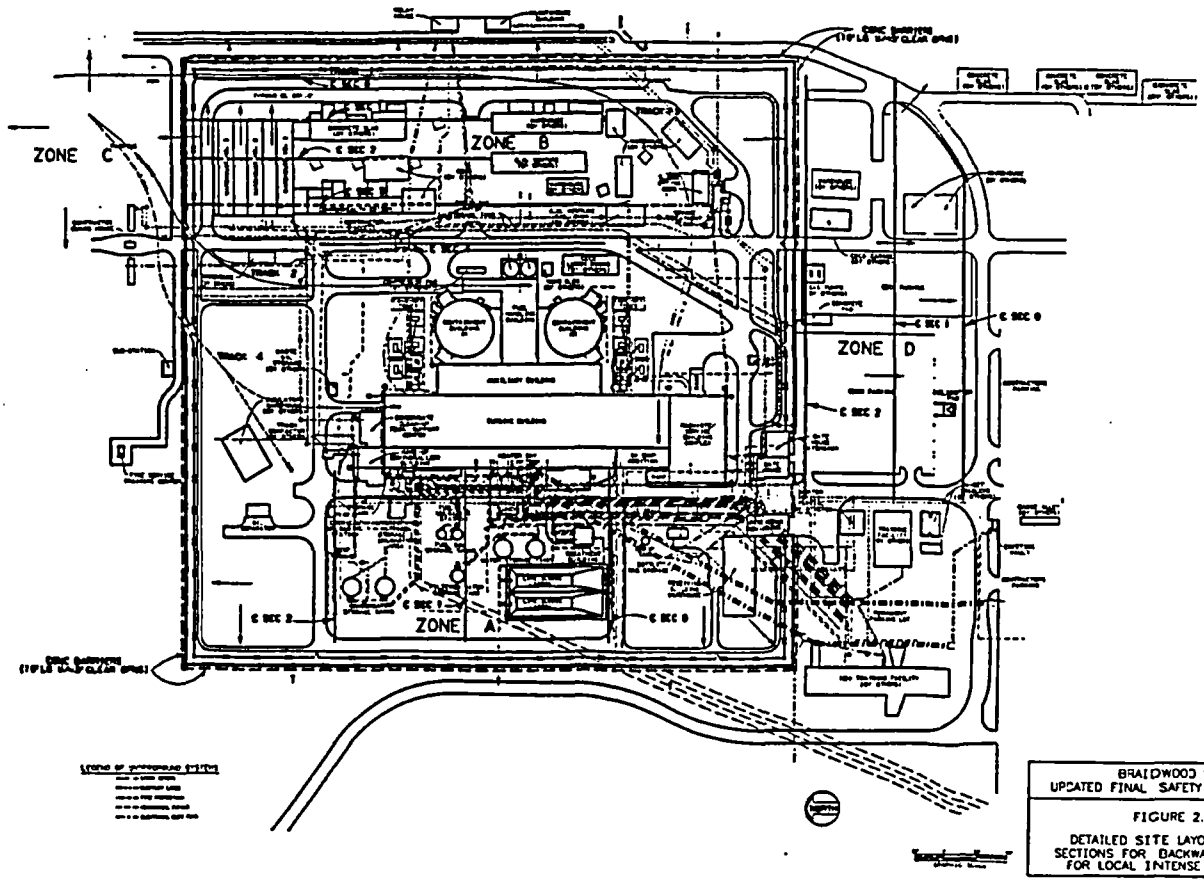
NORTH

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.4-7A

SUBDIVISION OF PLANT AREA FOR LOCAL INTENSE PRECIPITATION ANALYSIS

REVISION 8
DECEMBER 2000



BRAIDWOOD STATION
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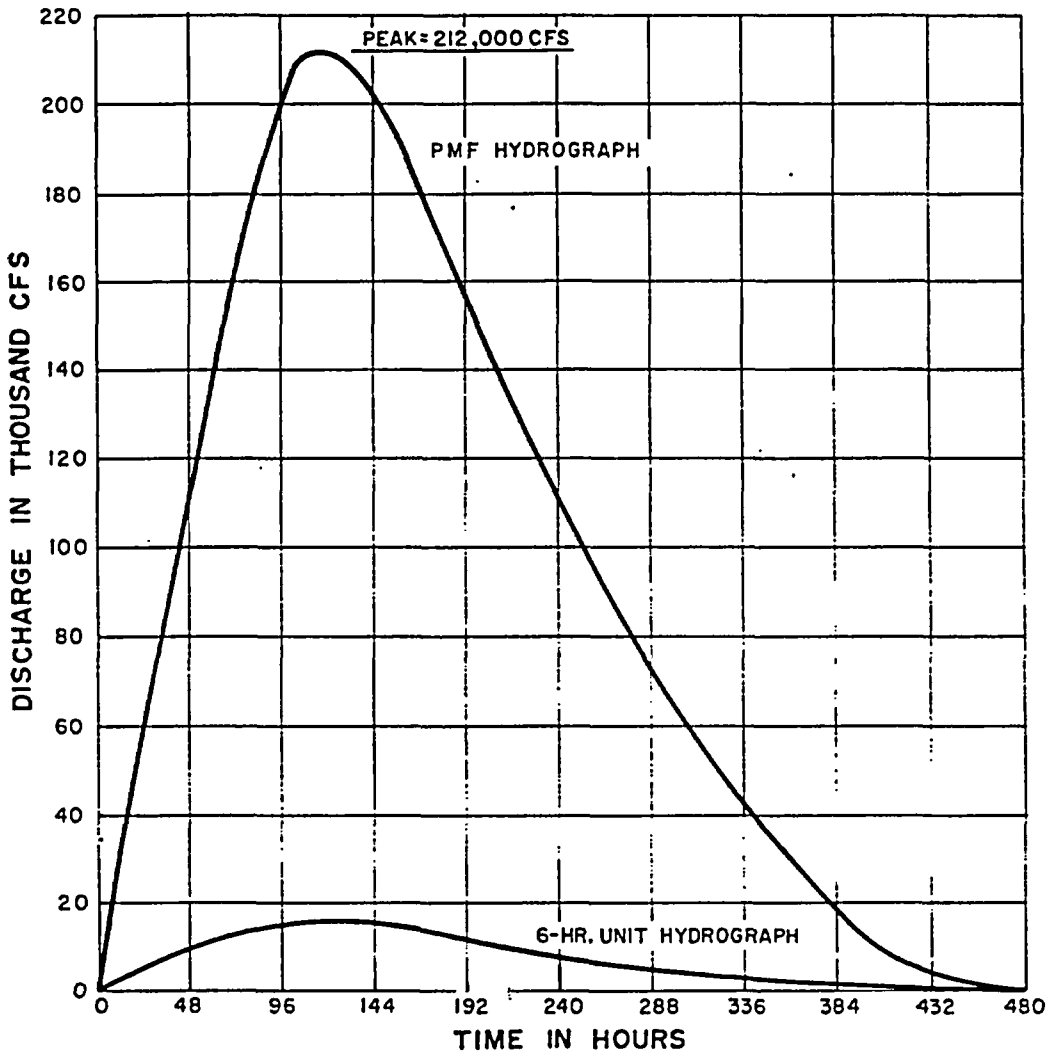
FIGURE 2.4-7B

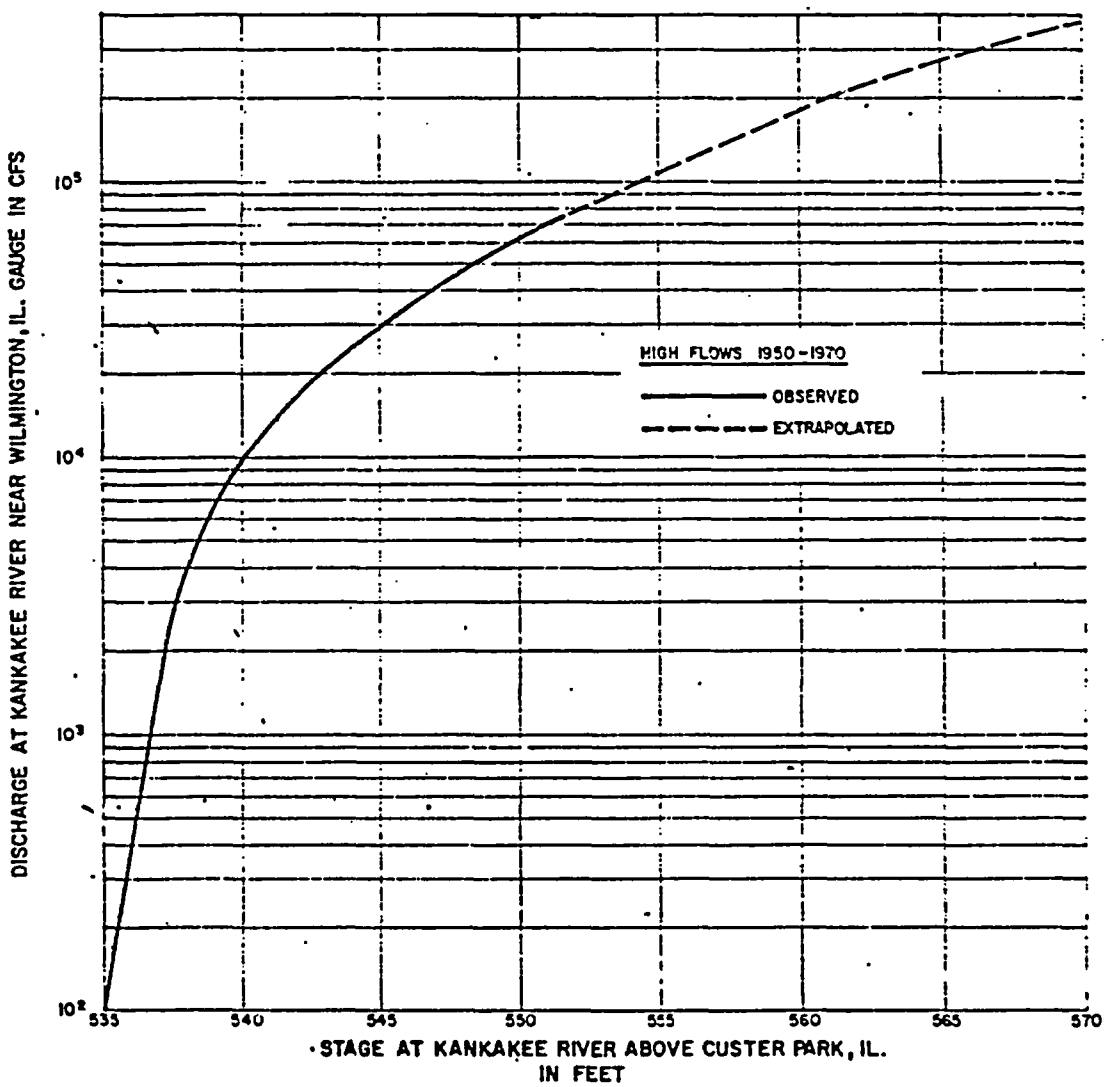
DETAILED SITE LAYOUT AND CROSS SECTIONS FOR BACKWATER CALCULATION FOR LOCAL INTENSE PRECIPITATION



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.4-8

UNIT HYDROGRAPH AND PMF HYDROGRAPH FOR KANKAKEE RIVER NEAR WILMINGTON



BRAIDWOOD STATION
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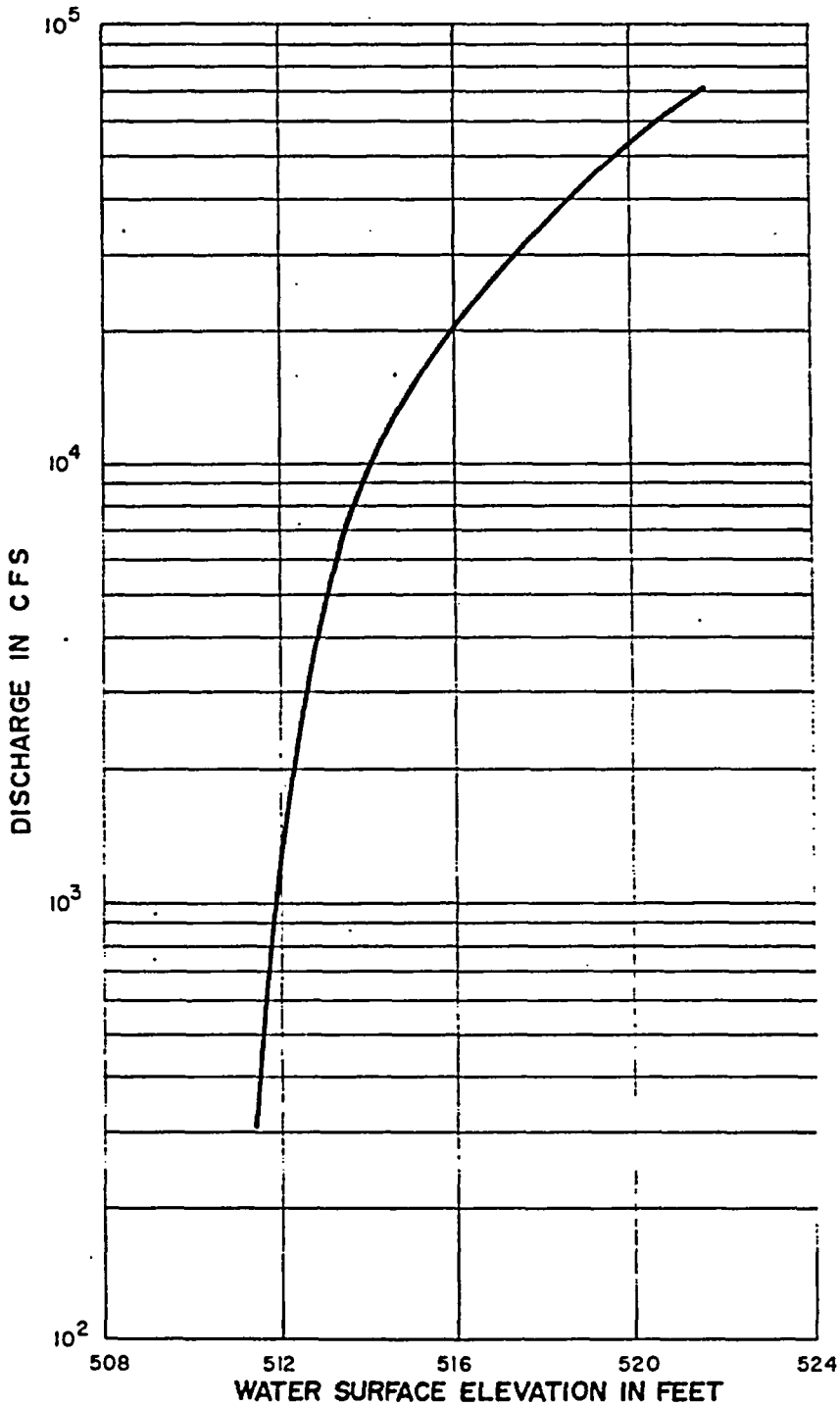
FIGURE 2.4-9

KANKAKEE RIVER STAGE AT CUSTER PARK
VERSUS DISCHARGE AT WILMINGTON, ILLINOIS



BRAIDWOOD STATION
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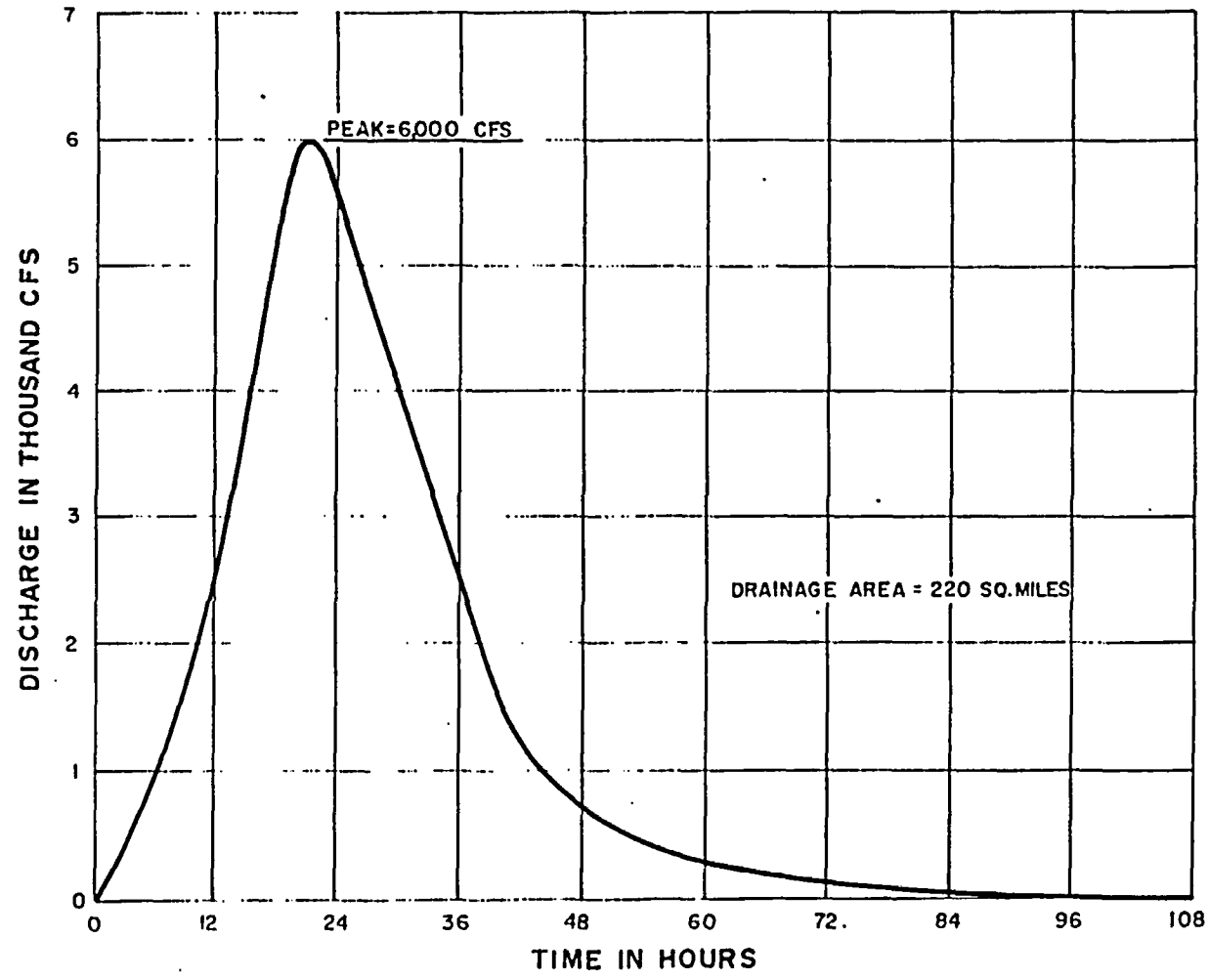
FIGURE 2.4-10

RATING CURVE FOR KANKAKEE RIVER
NEAR WILMINGTON GAUGING STATION



BRAIDWOOD STATION
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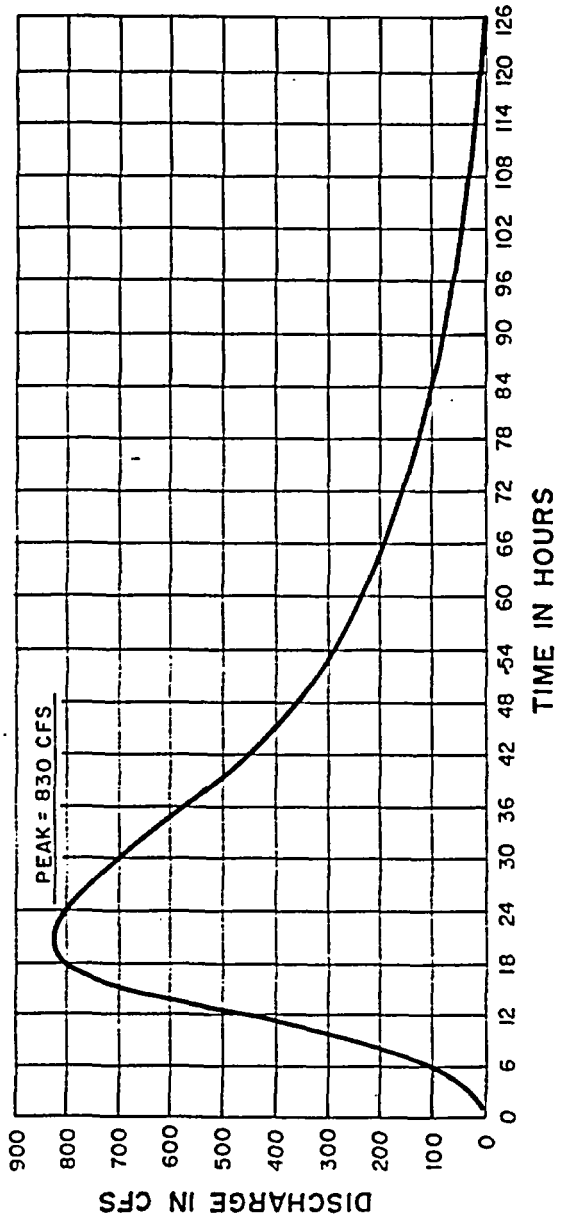
FIGURE 2.4-11

MAZON RIVER 3-HOUR UNIT HYDROGRAPH



BRAIDWOOD STATION
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FIGURE 2.4-12

3-HOUR UNIT HYDROGRAPH CRANE AND GRANARY CREEKS AT THE CONFLUENCE WITH EAST FORK MAZON RIVER

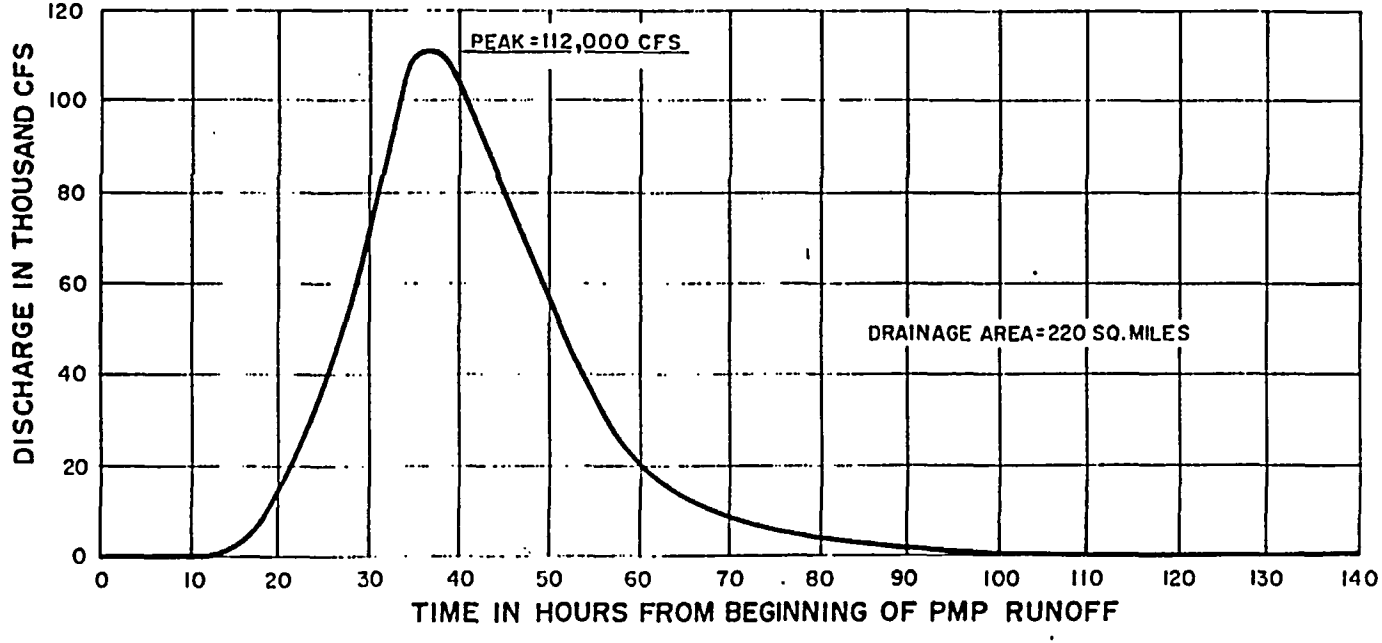

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FIGURE 2.4-13

MAZON RIVER PMF HYDROGRAPH

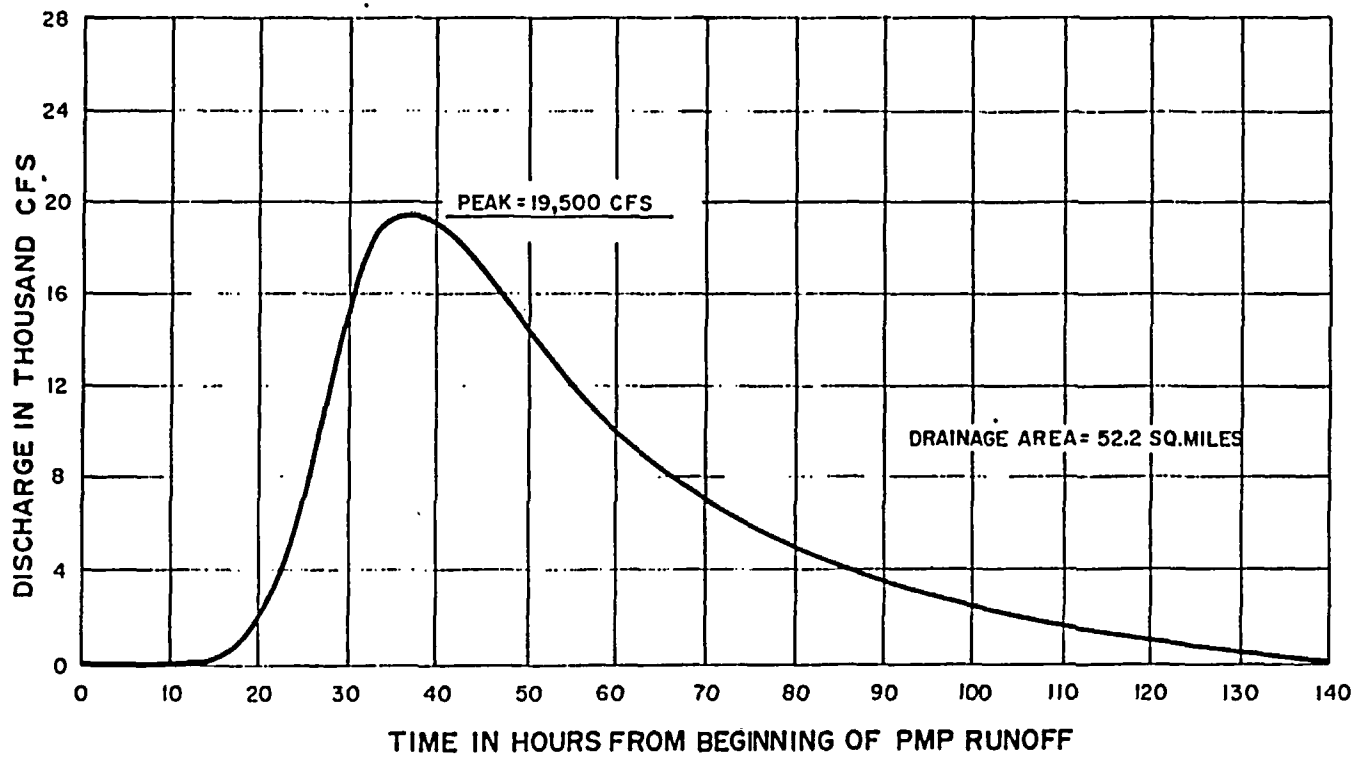

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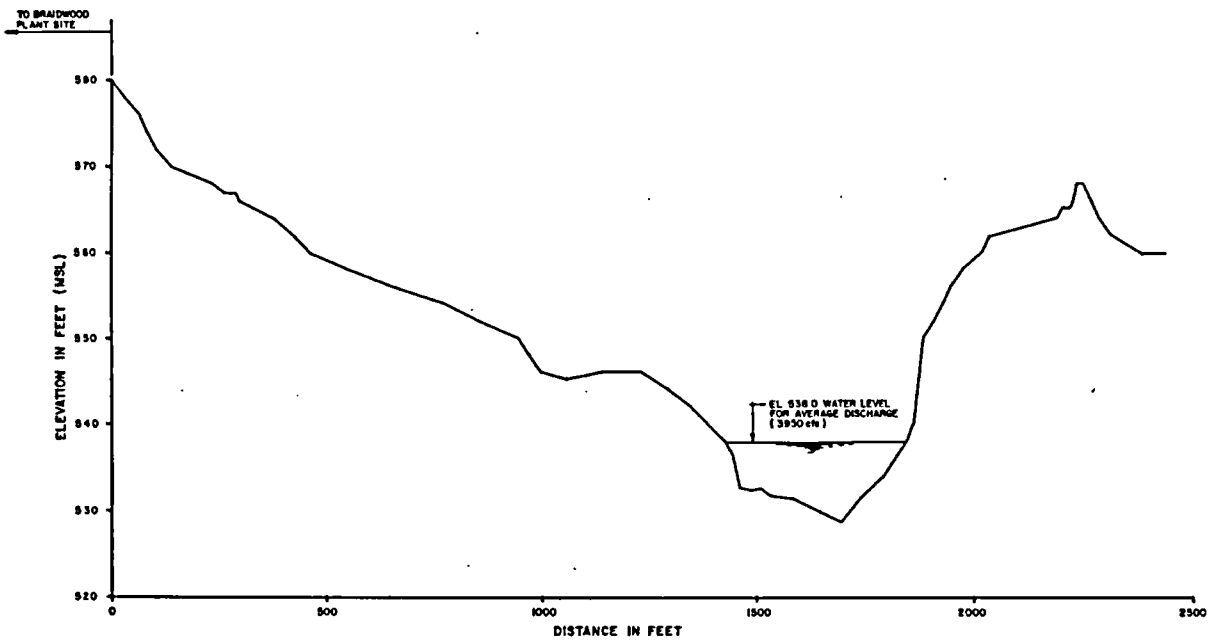
FIGURE 2.4-14

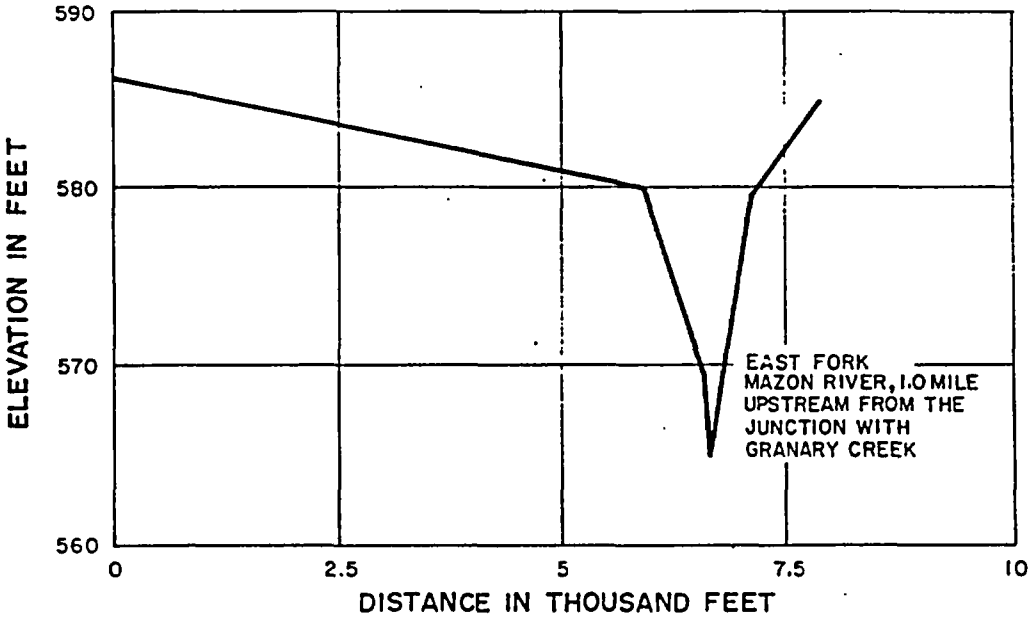
CRANE AND GRANARY CREEKS
PMF HYDROGRAPH



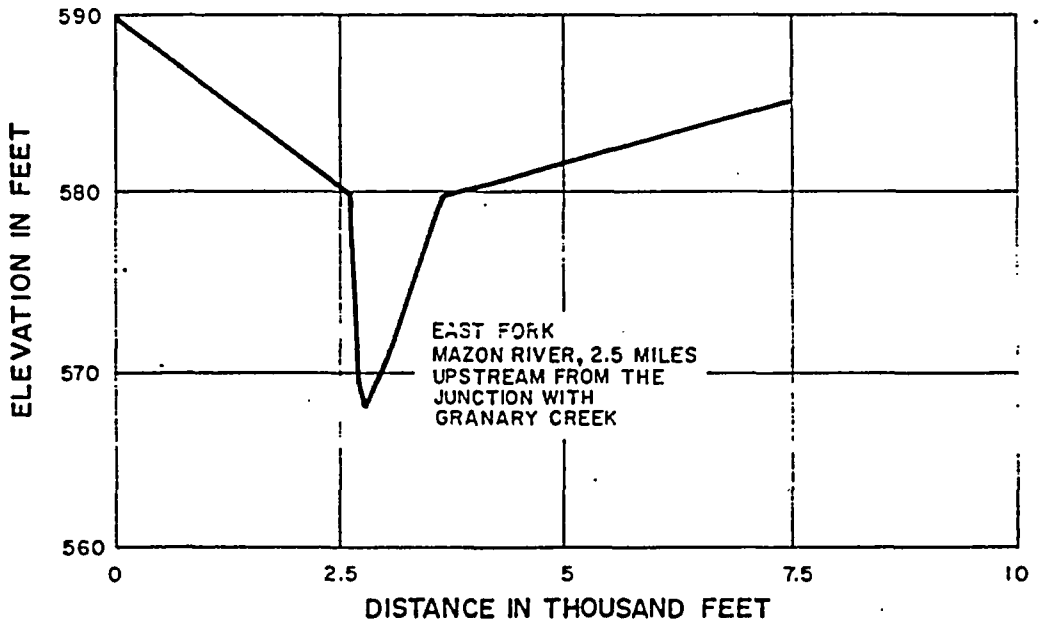
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.4-14a

TYPICAL CROSS SECTION OF THE KANKAKEE RIVER NEAR THE RIVER SCREENHOUSE



SECTION X-MU2



SECTION X-MU1

BRAIDWOOD STATION
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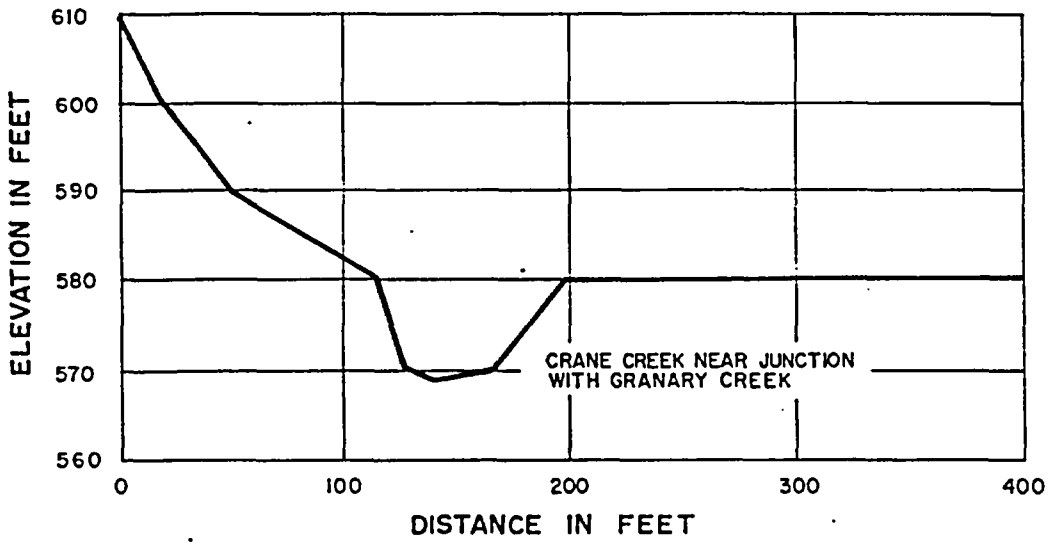
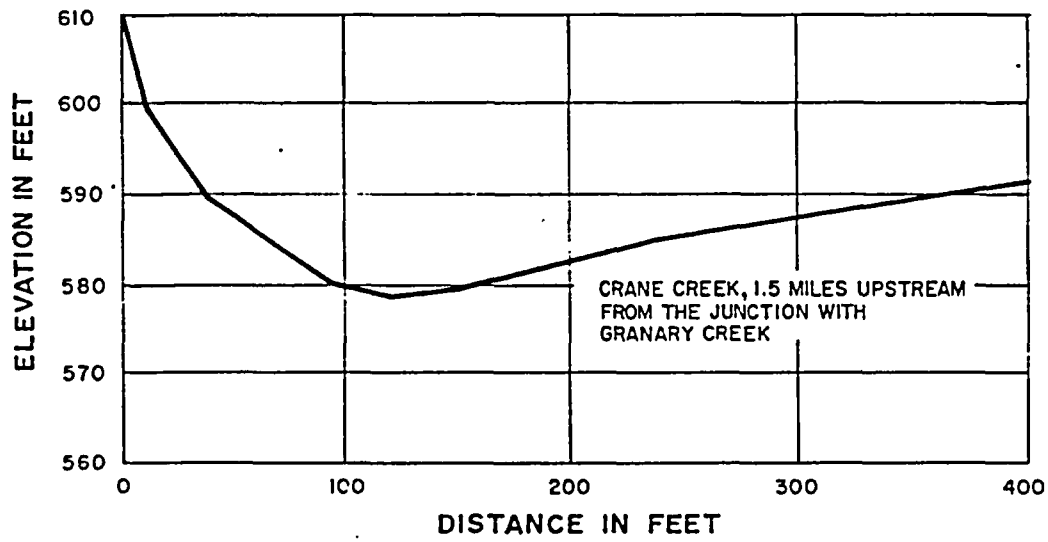
FIGURE 2.4-15

CROSS SECTIONS FOR EAST FORK MAZON RIVER UPSTREAM FROM GRANARY CREEK



SECTION X-CD

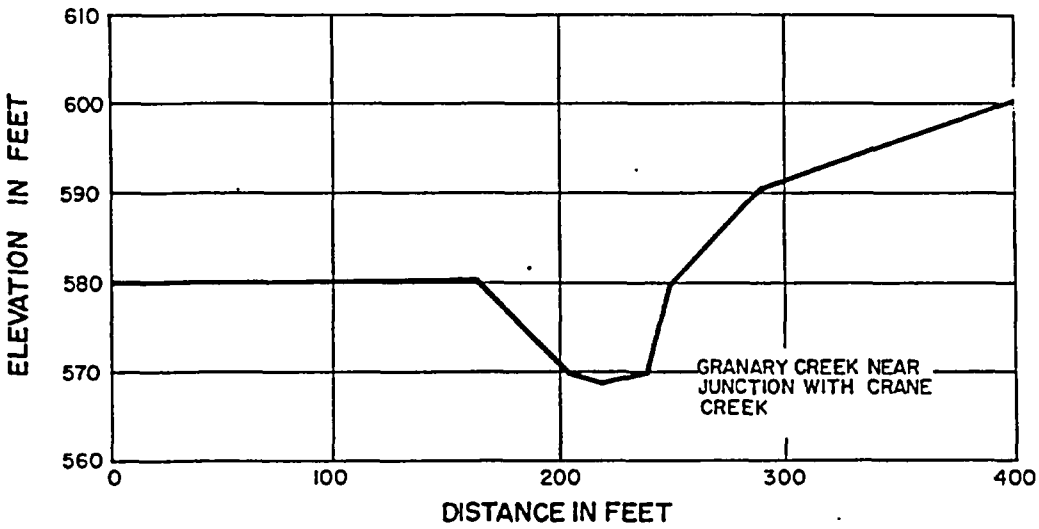


SECTION X-CU

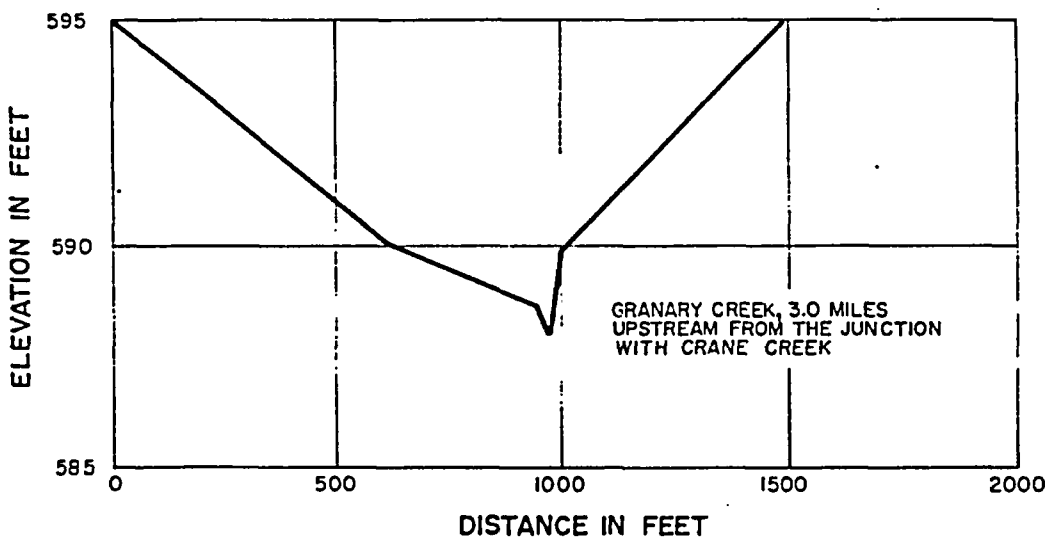
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.4-16

CROSS SECTIONS OF CRANE CREEK



SECTION X-GD



SECTION X-GU

BRAIDWOOD STATION
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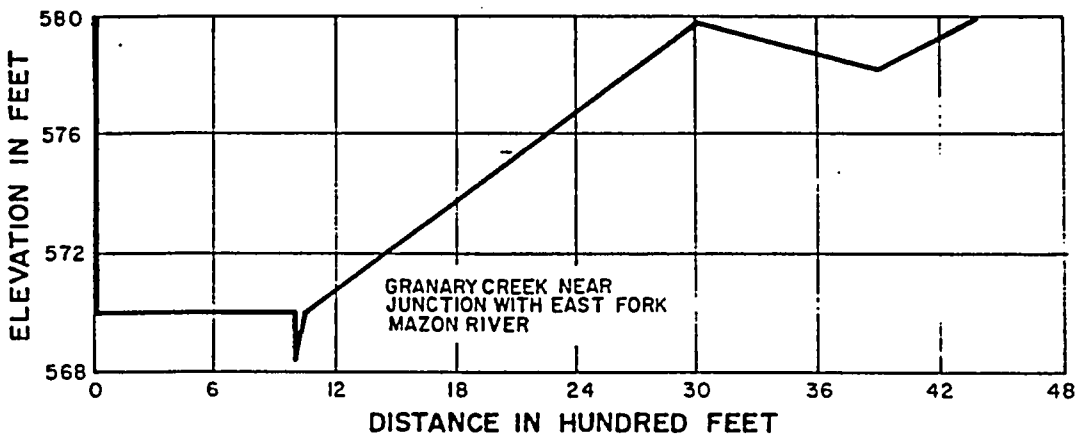
FIGURE 2.4-17

CROSS SECTIONS OF GRANARY CREEK



BRAIDWOOD STATION
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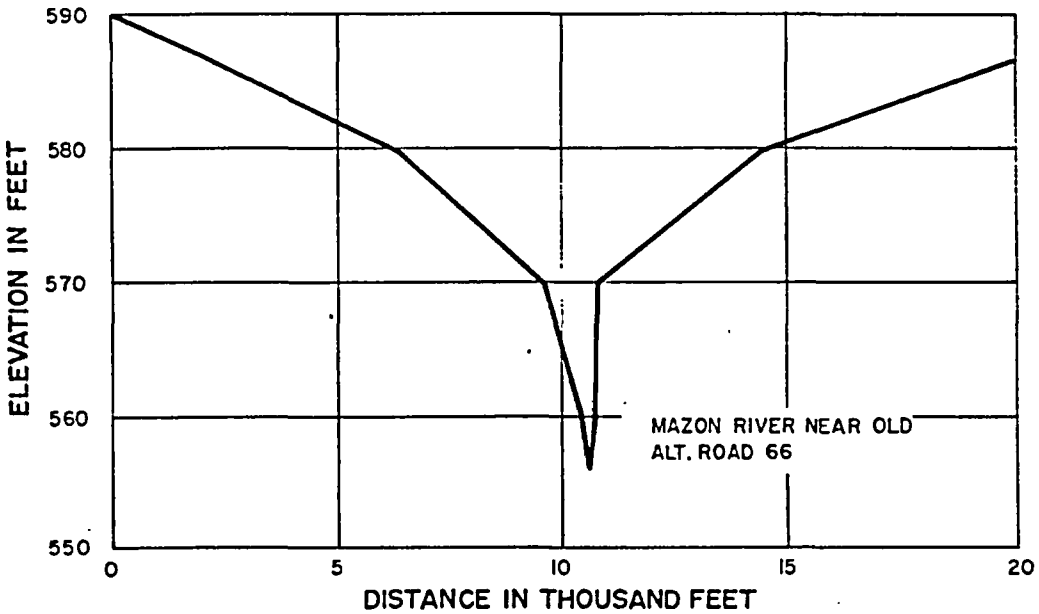
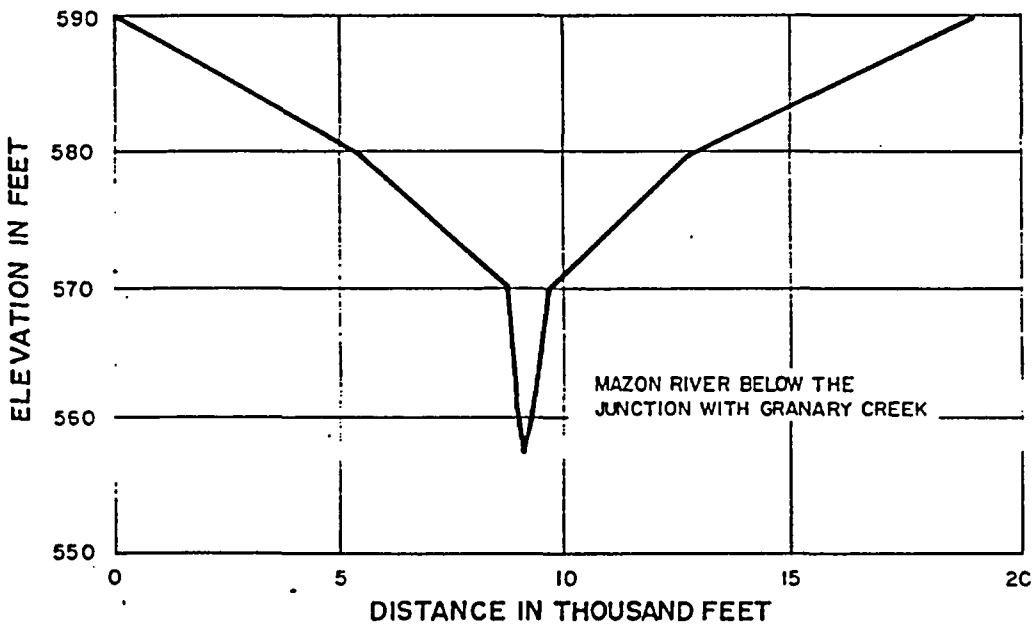
FIGURE 2.4-17a

CROSS SECTION OF GRANARY CREEK JUST UPSTREAM OF EAST FORK MAZON RIVER



SECTION X-MD2



SECTION X-MD1

BRAIDWOOD STATION
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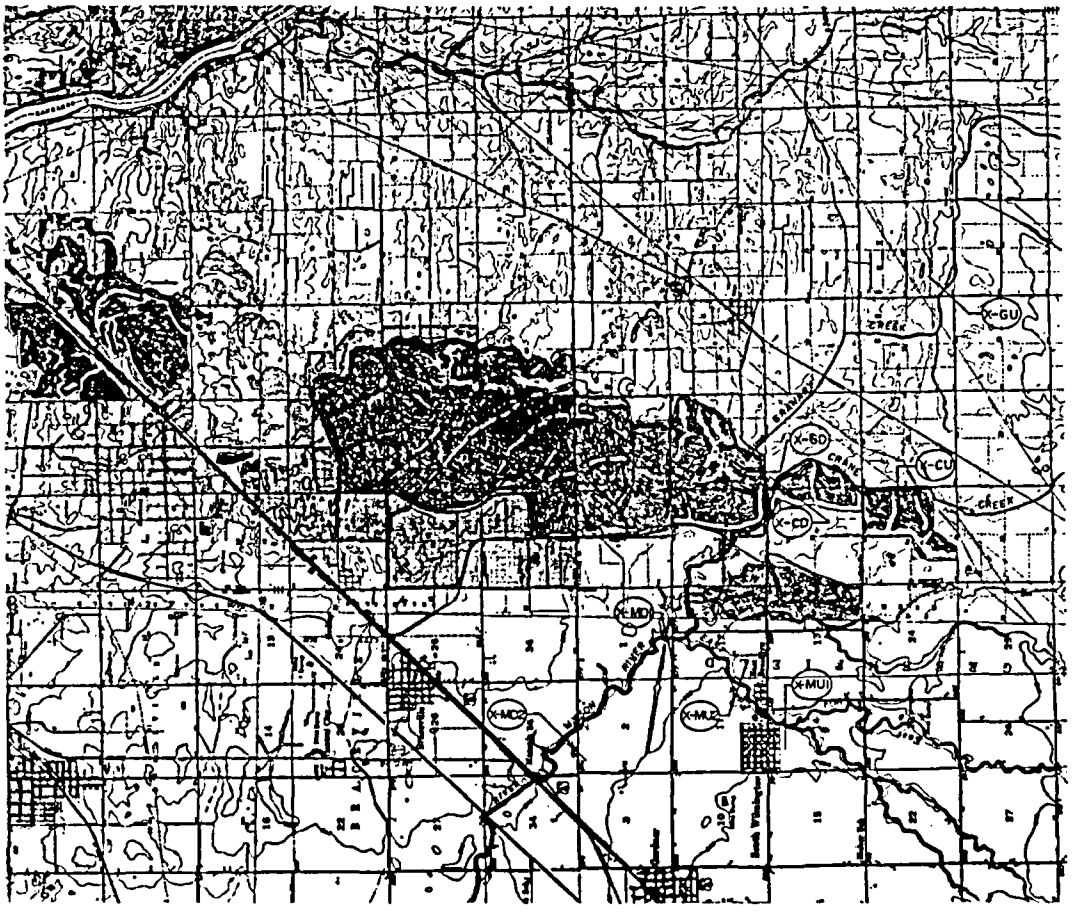
FIGURE 2.4-18

CROSS SECTIONS FOR MAZON RIVER
DOWNSTREAM FROM GRANARY CREEK



BRAIDWOOD STATION
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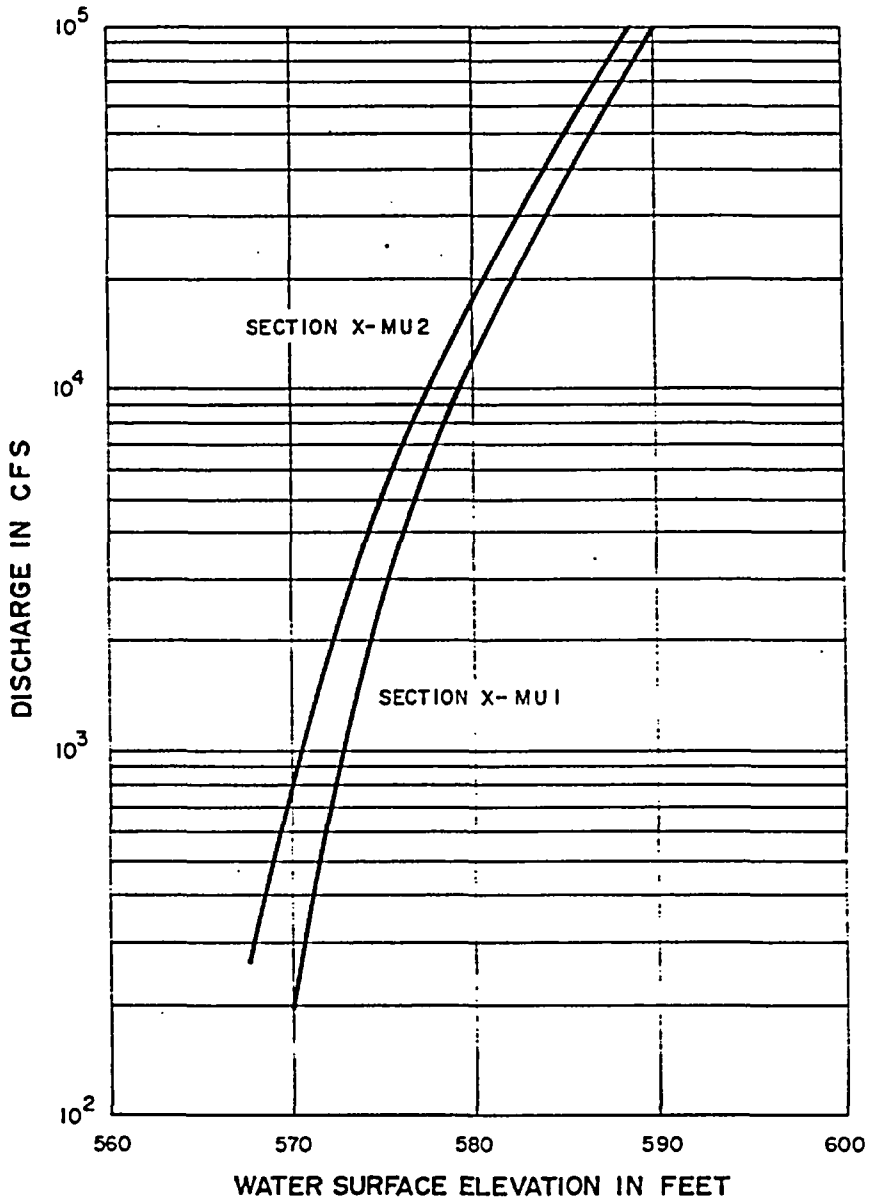
FIGURE 2.4-19

CROSS SECTIONS OF MAZON RIVER, CRANE AND GRANARY CREEKS

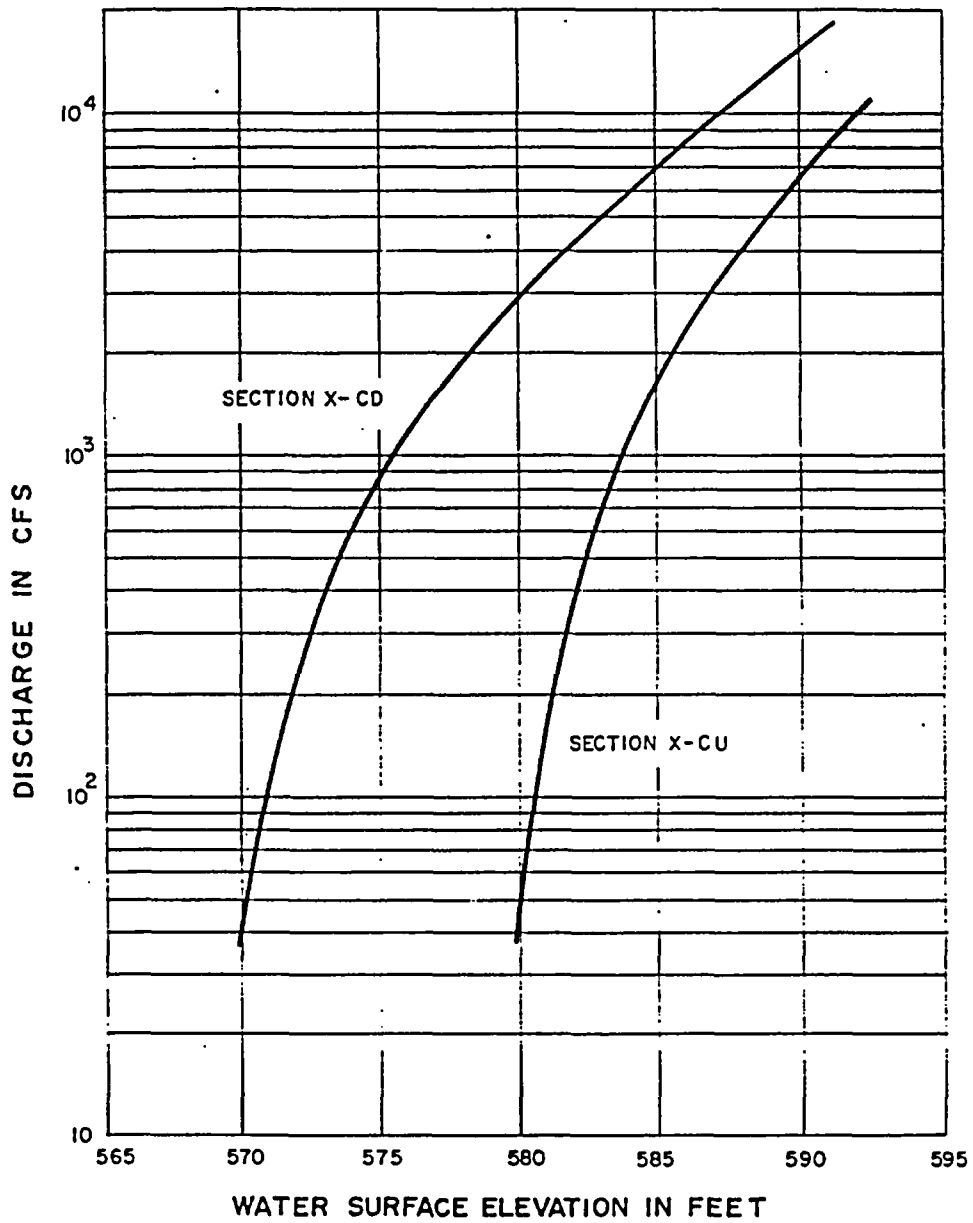


NOTE: REFER TO FIGURE 2.4-19 FOR THE LOCATION OF CROSS SECTIONS

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.4-20

RATING CURVES FOR EAST FORK MAZON RIVER UPSTREAM FROM GRANARY CREEK

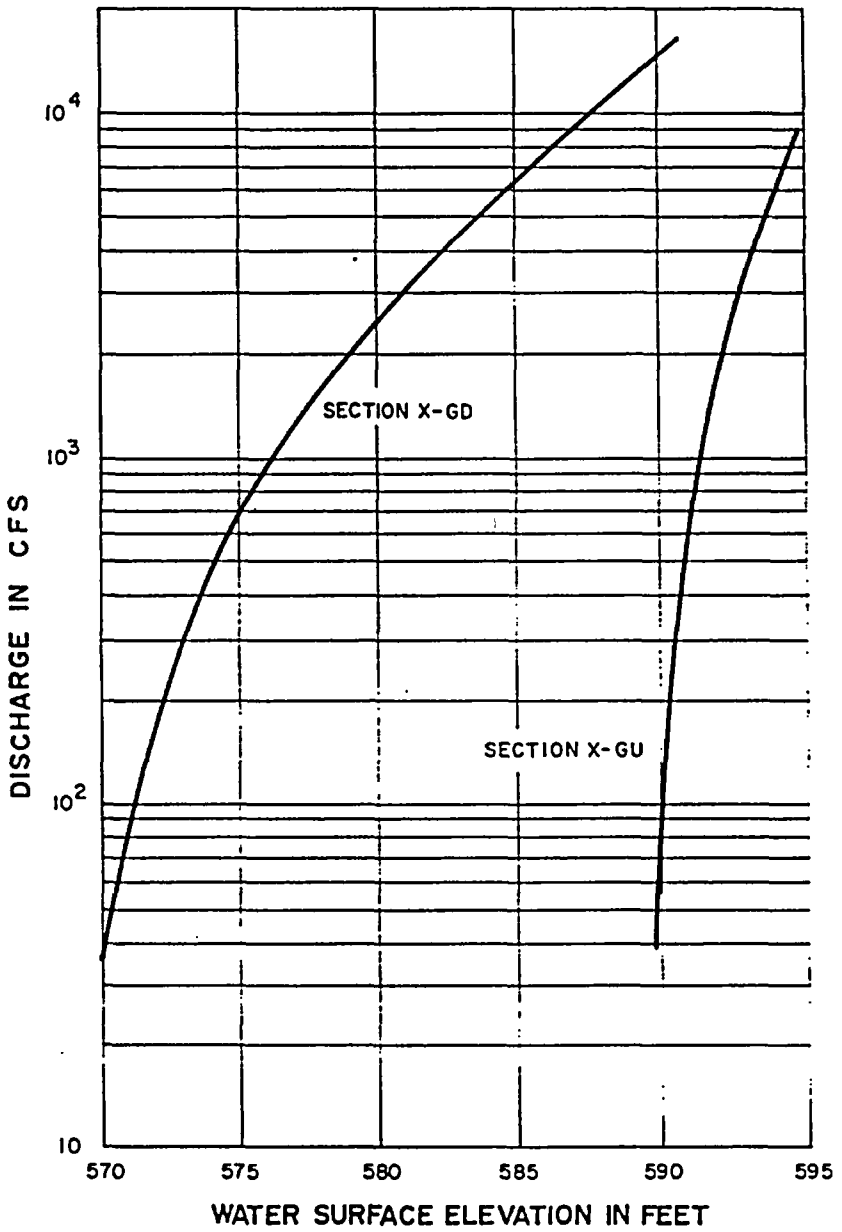


NOTE: REFER TO FIGURE 2.4-19 FOR THE LOCATION OF CROSS SECTIONS

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.4-21

RATING CURVES FOR CRANE CREEK



NOTE: REFER TO FIGURE 2.4 FOR THE LOCATION OF CROSS SECTIONS

BRAIDWOOD STATION
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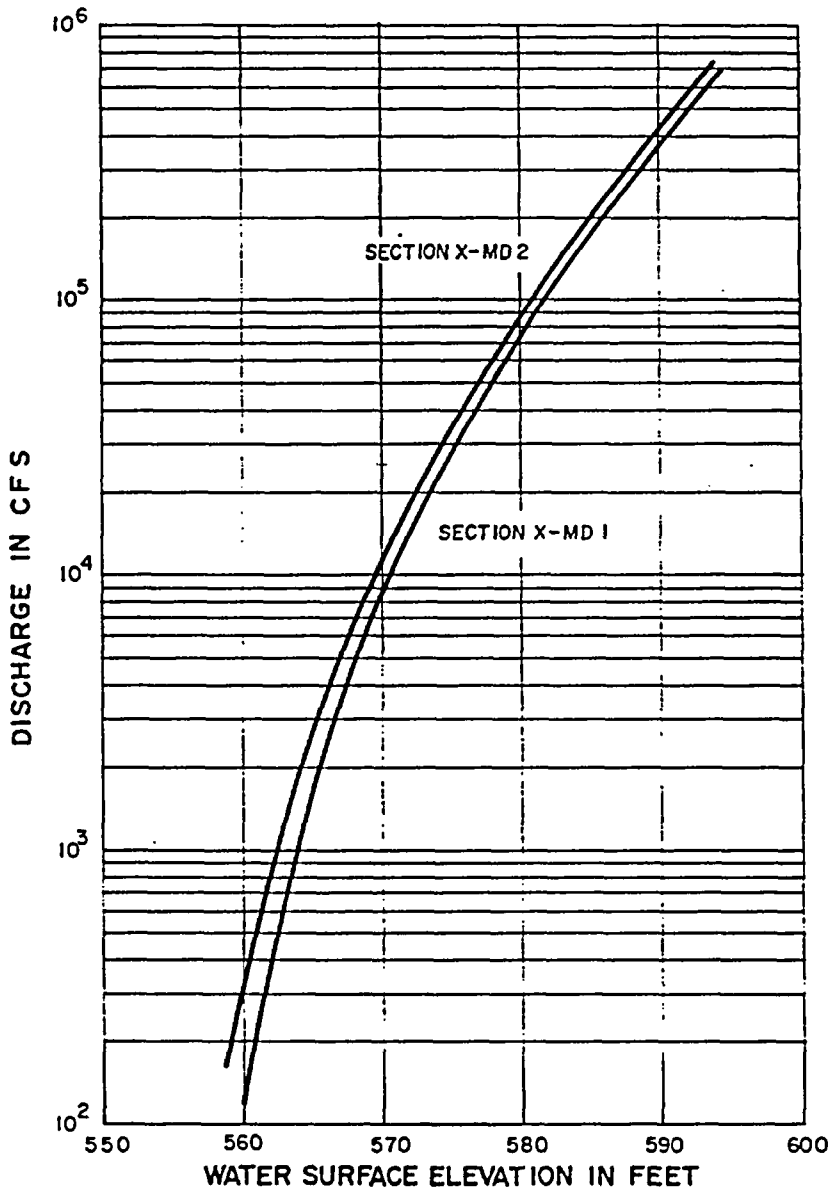
FIGURE 2.4-22

RATING CURVES FOR GRANARY CREEK

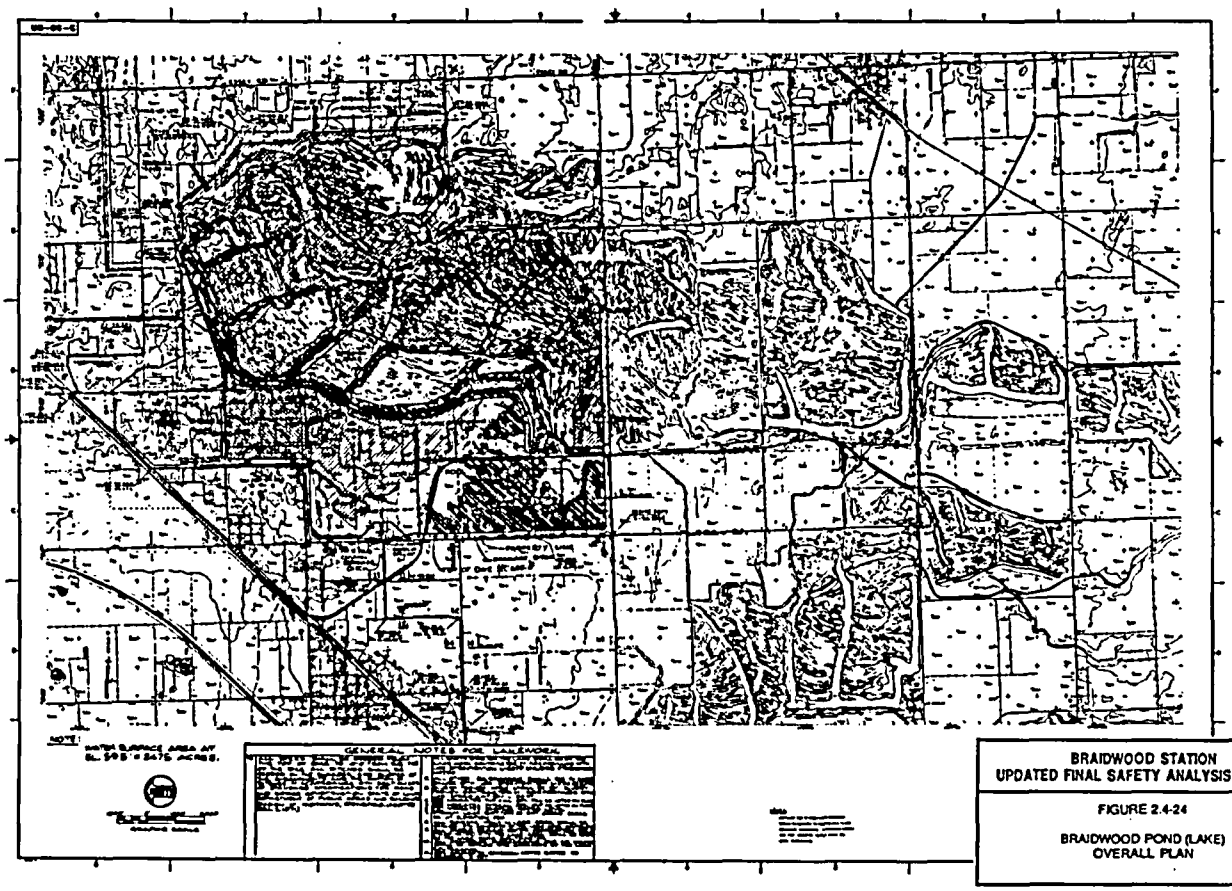


NOTE : REFER TO FIGURE 2.4-19 FOR THE LOCATION OF CROSS SECTIONS

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.4-23

RATING CURVES FOR EAST FORK MAZON RIVER DOWNSTREAM FROM GRANARY CREEK



BRAIDWOOD STATION
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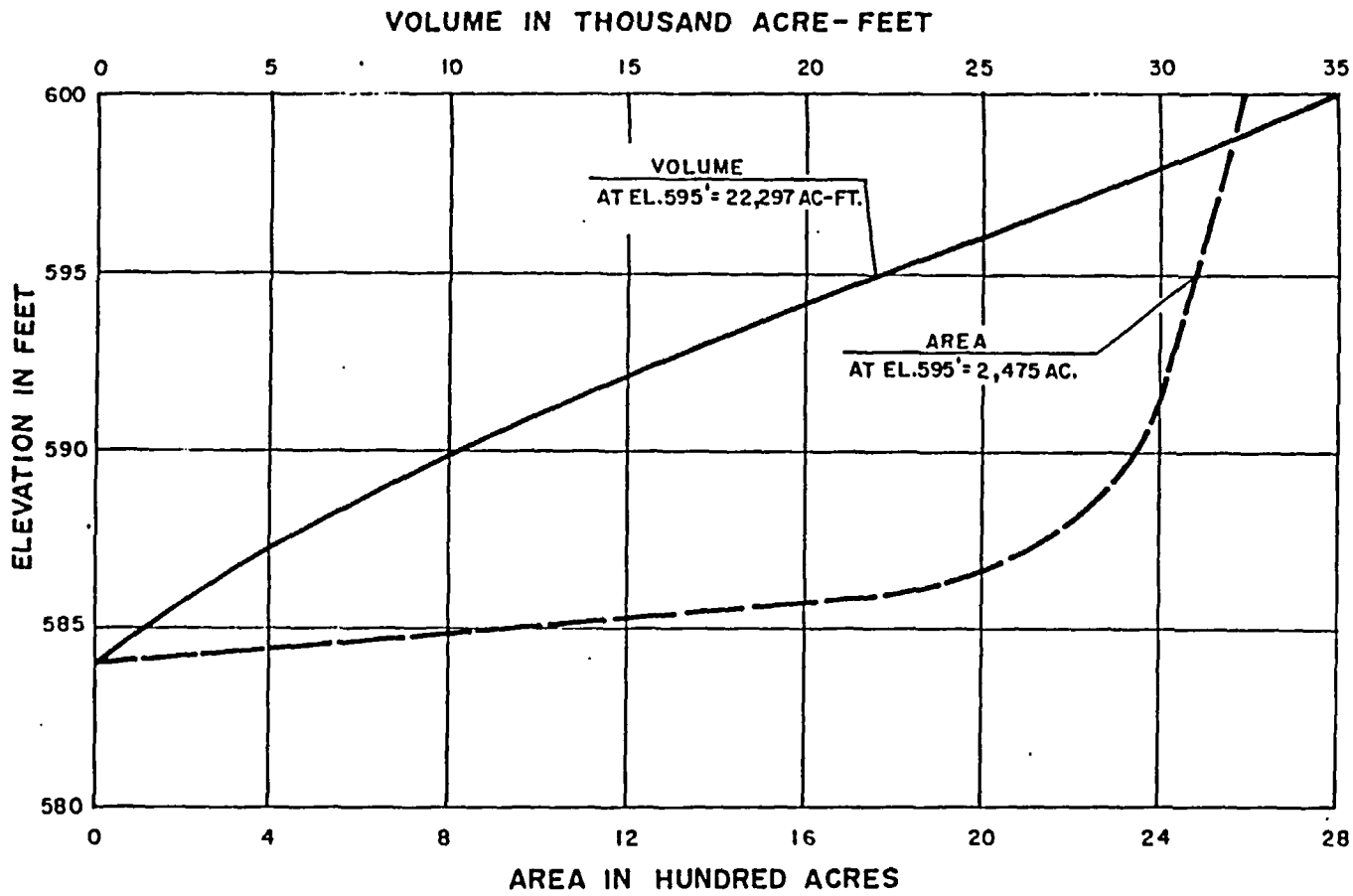
FIGURE 2.4-24

BRAIDWOOD POND (LAKE)
OVERALL PLAN



BRAIDWOOD STATION
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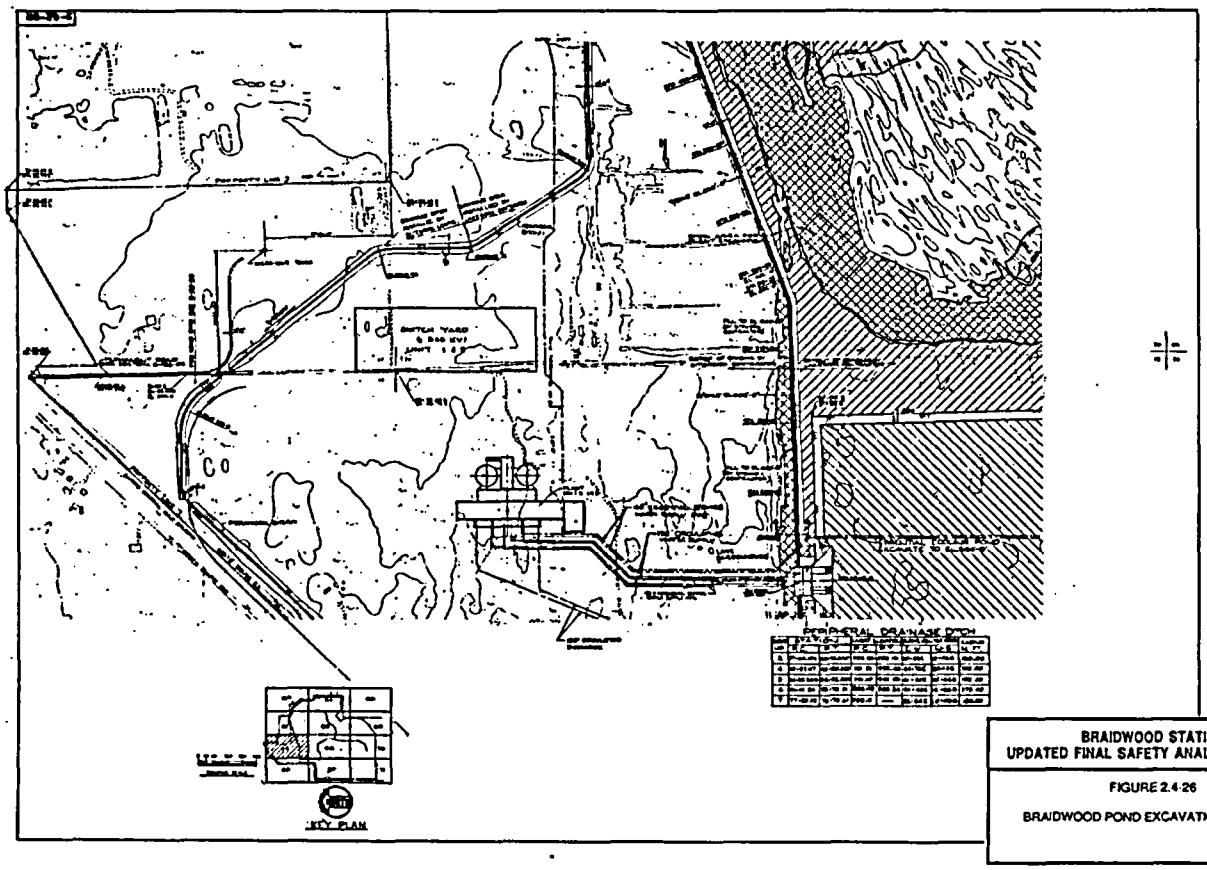
FIGURE 2.4-25

AREA-CAPACITY CURVE FOR
BRAIDWOOD POND



BRAIDWOOD STATION
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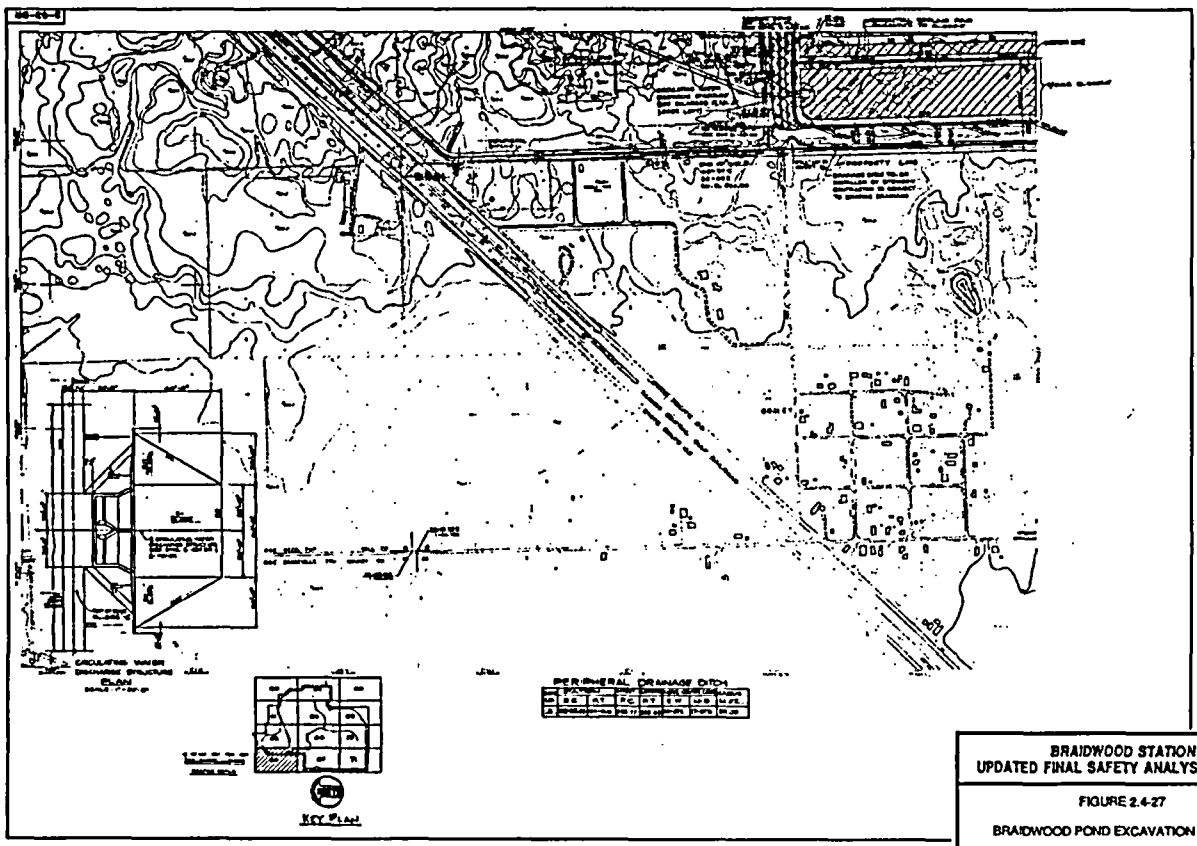
FIGURE 2.4-26

BRAIDWOOD POND EXCAVATION AND FILL



BRAIDWOOD STATION
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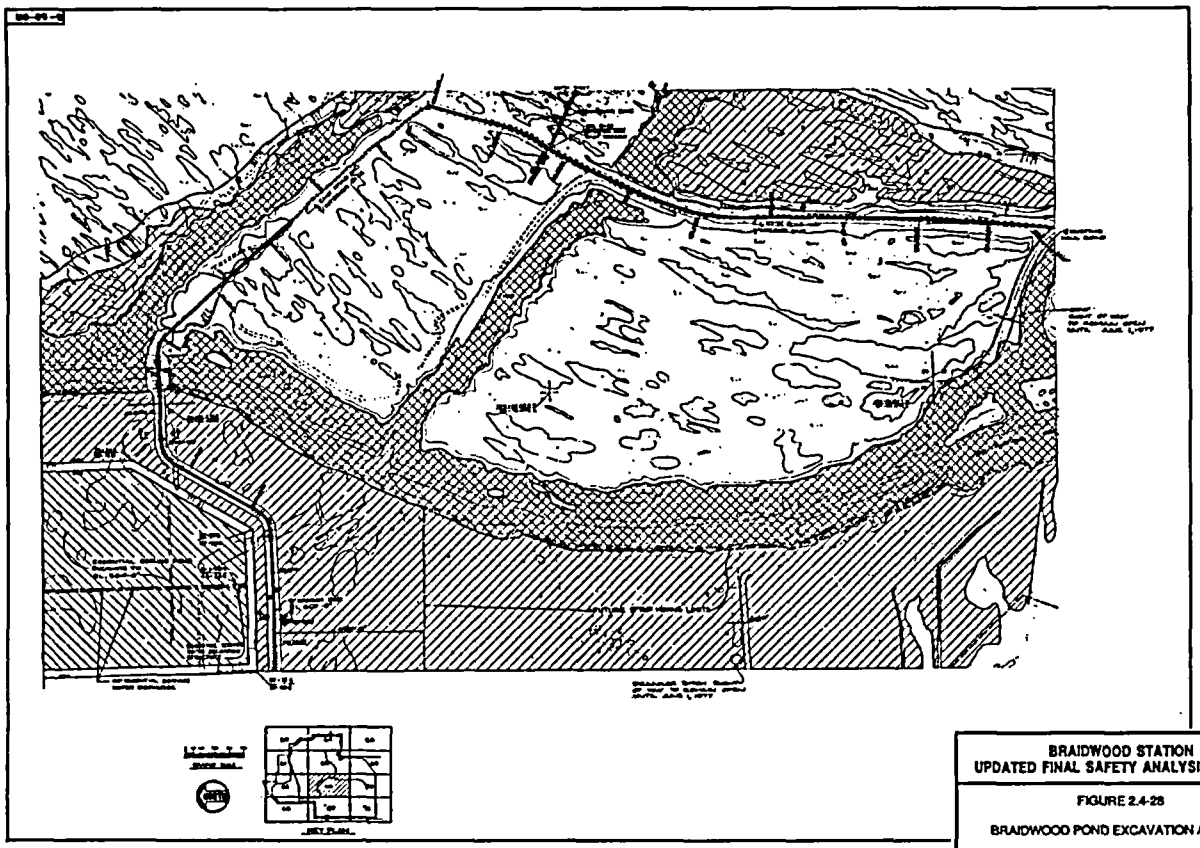
FIGURE 2.4-27

BRAIDWOOD POND EXCAVATION AND FILL



BRAIDWOOD STATION
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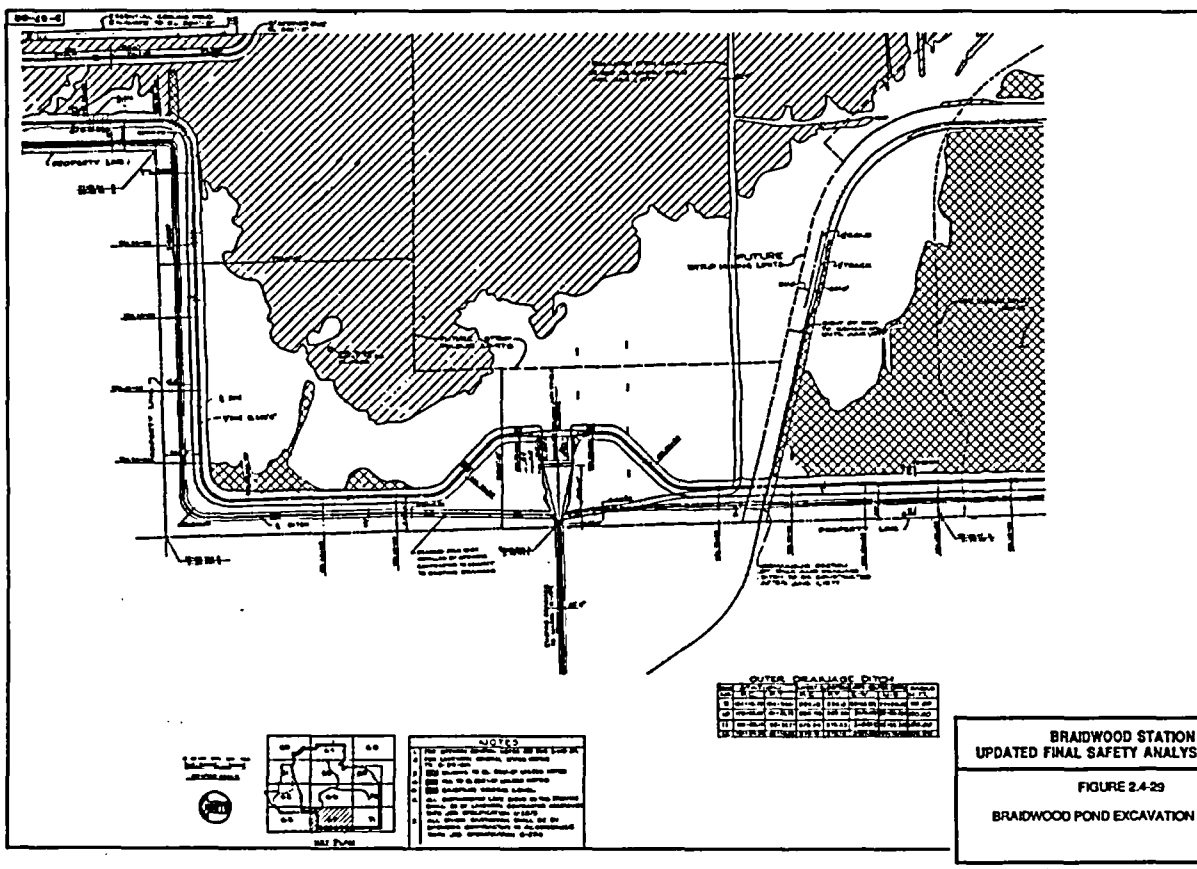
FIGURE 2.4-28

BRAIDWOOD POND EXCAVATION AND FILL



BRAIDWOOD STATION
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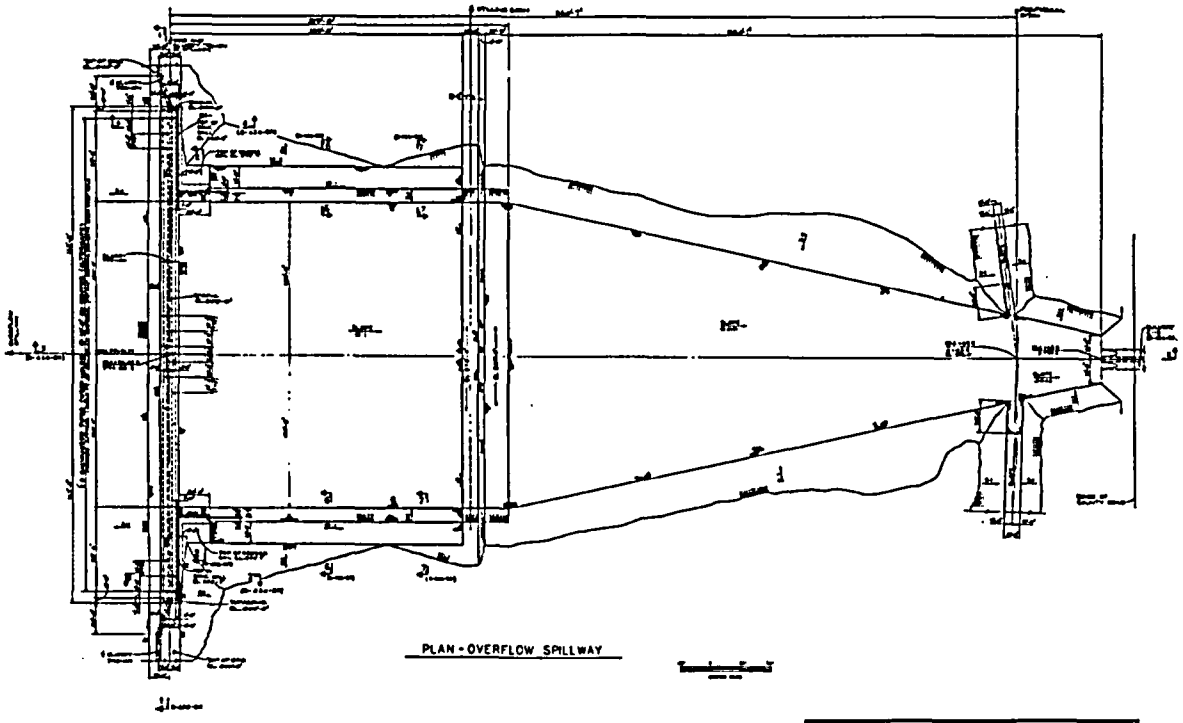
FIGURE 2.4-29

BRAIDWOOD POND EXCAVATION AND FILL



BRAIDWOOD STATION
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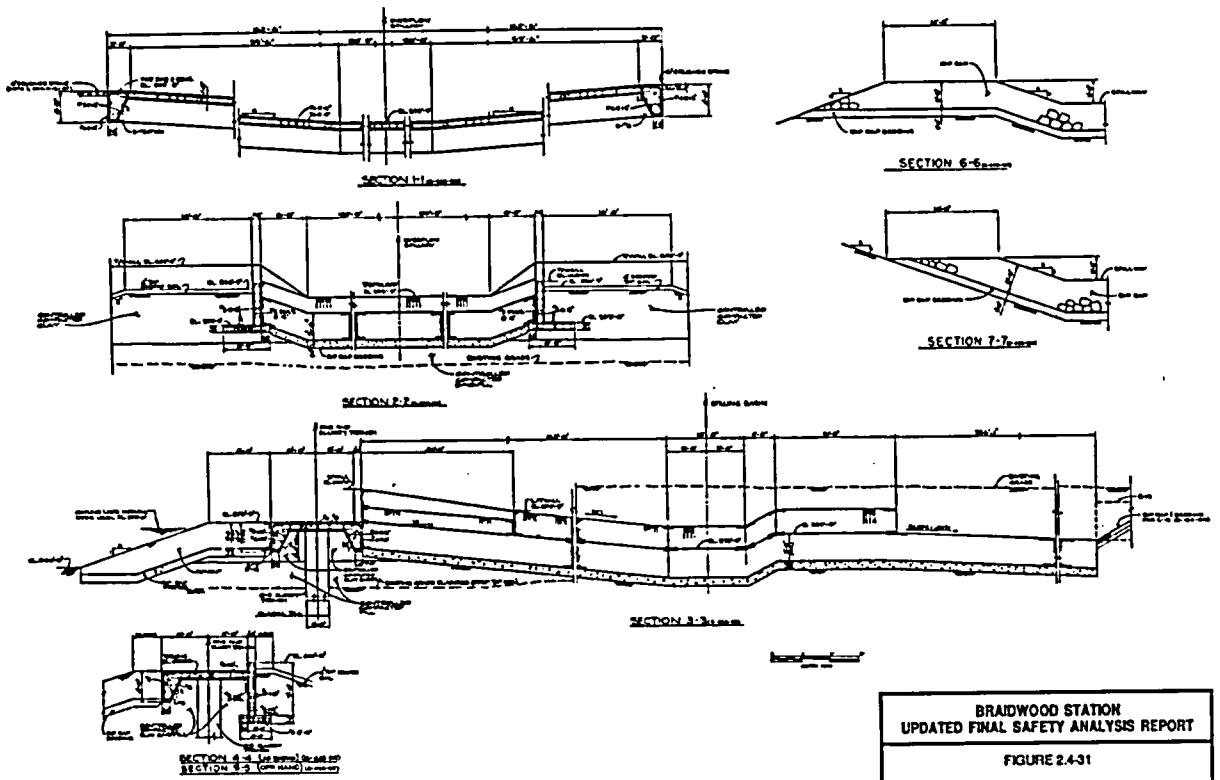
FIGURE 2.4-30

PLAN—OVERFLOW SPILLWAY



BRAIDWOOD STATION
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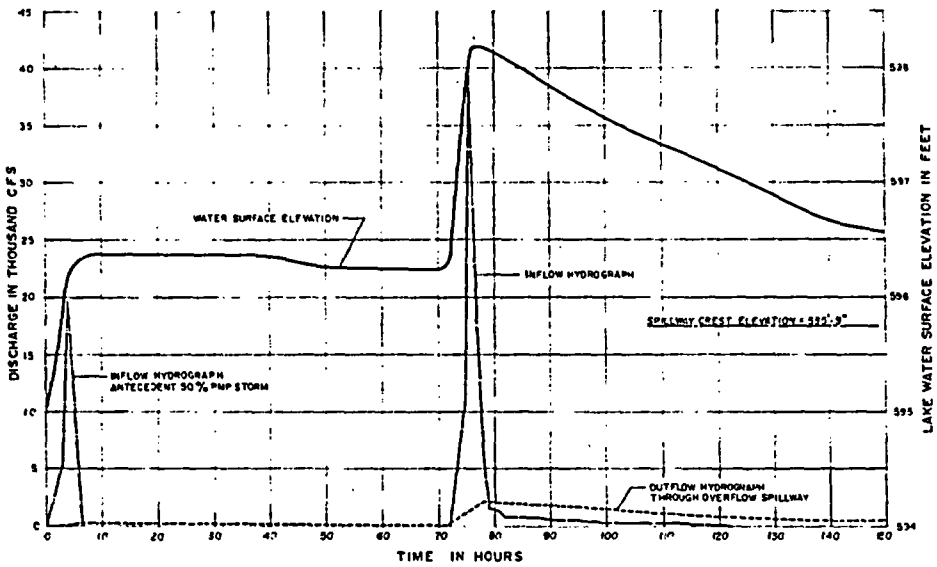
FIGURE 2.4-31

SECTION—OVERFLOW SPILLWAY



BRAIDWOOD STATION
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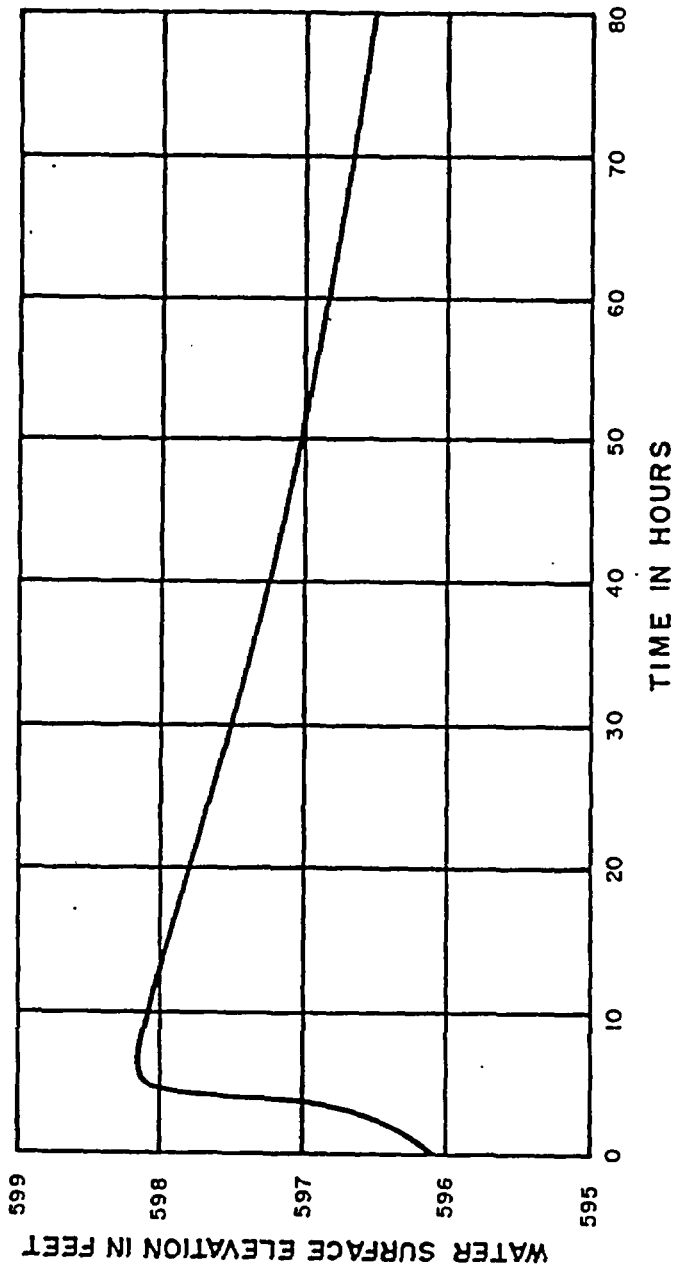
FIGURE 2.4-32

PMF INFLOW AND OUTFLOW HYDROGRAPH



BRAIDWOOD STATION
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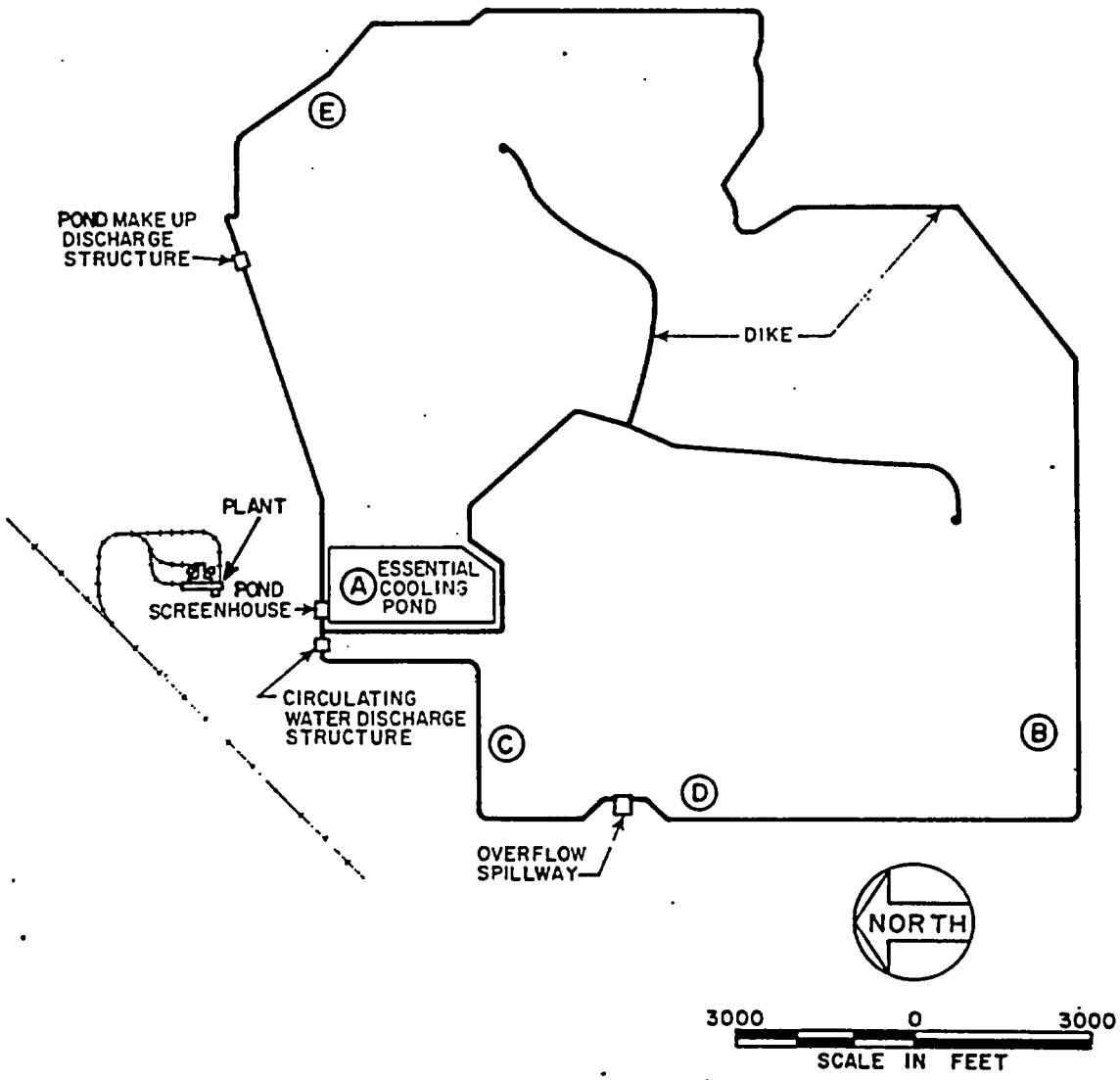
FIGURE 2.4-33

PMF WATER SURFACE TIME HISTORY



BRAIDWOOD STATION
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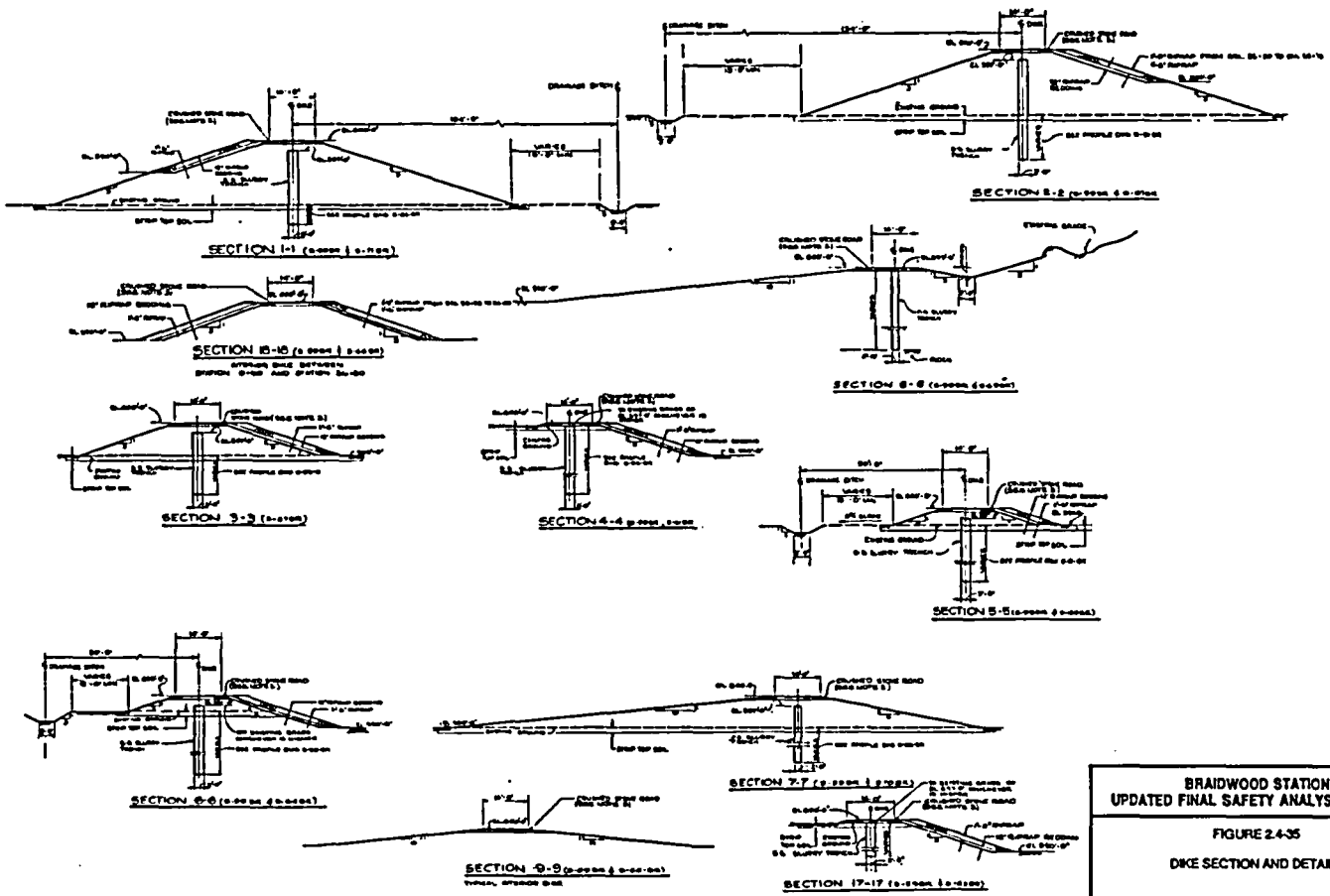
FIGURE 2.4-34

LOCATION OF DIKE REACHES FOR
WIND WAVE ANALYSIS



BRAIDWOOD STATION
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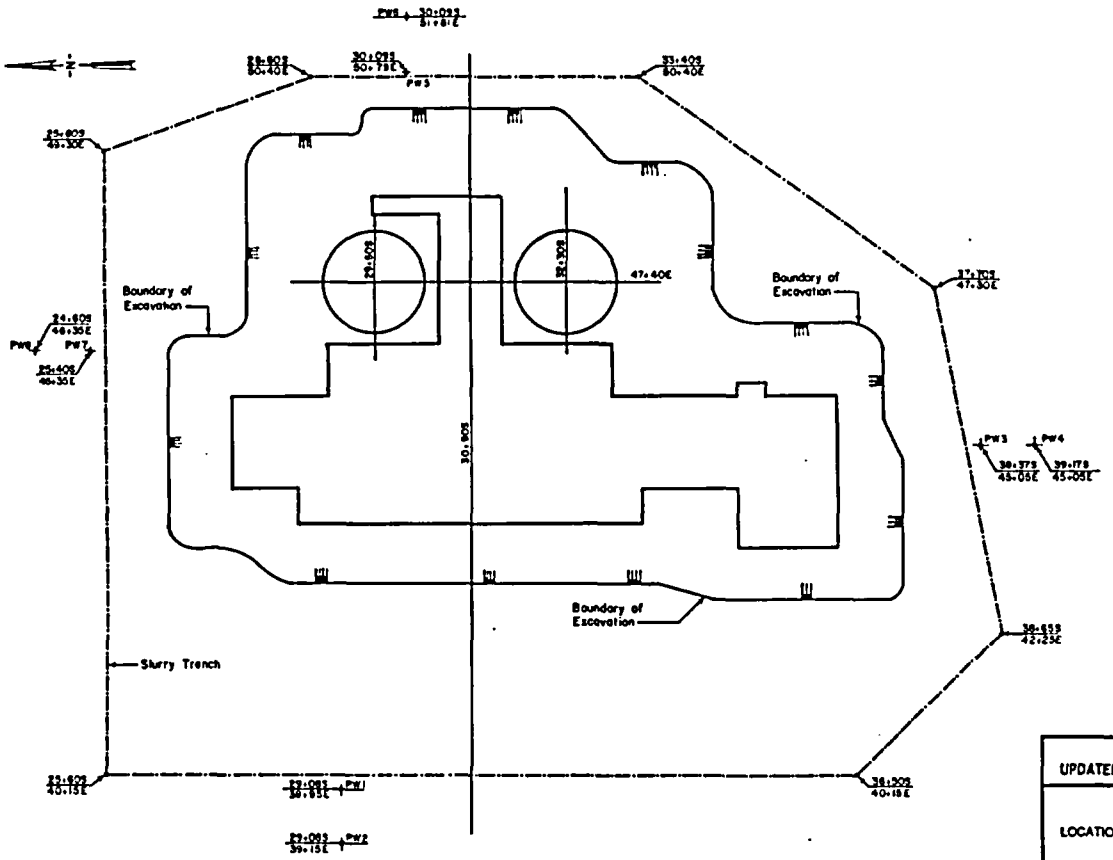
FIGURE 2.4-35

DIKE SECTION AND DETAILS



BRAIDWOOD STATION
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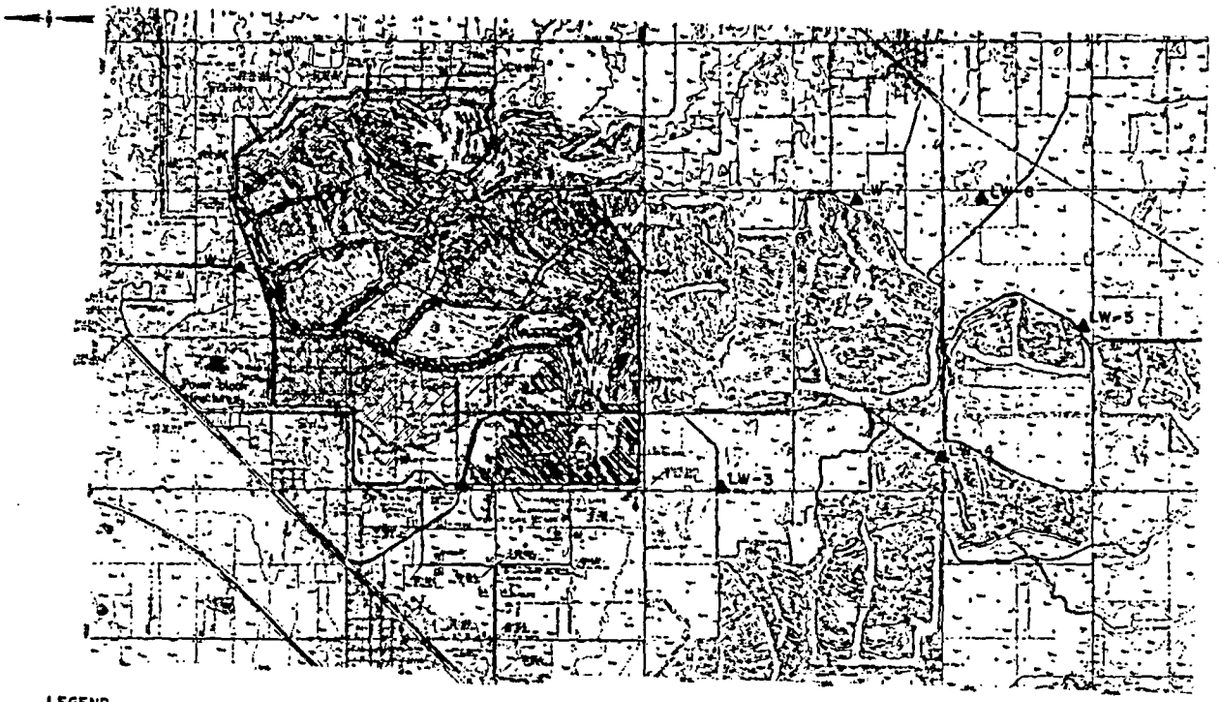
FIGURE 2.4-36

LOCATIONS OF STATION OBSERVATION WELLS



LEGEND

▲ LW-2 Observation well

——— Boundary of cooling lake

NOTE

1. Average monthly ground water levels in the observation wells are shown on Figure 2.4-45

BRAIDWOOD STATION
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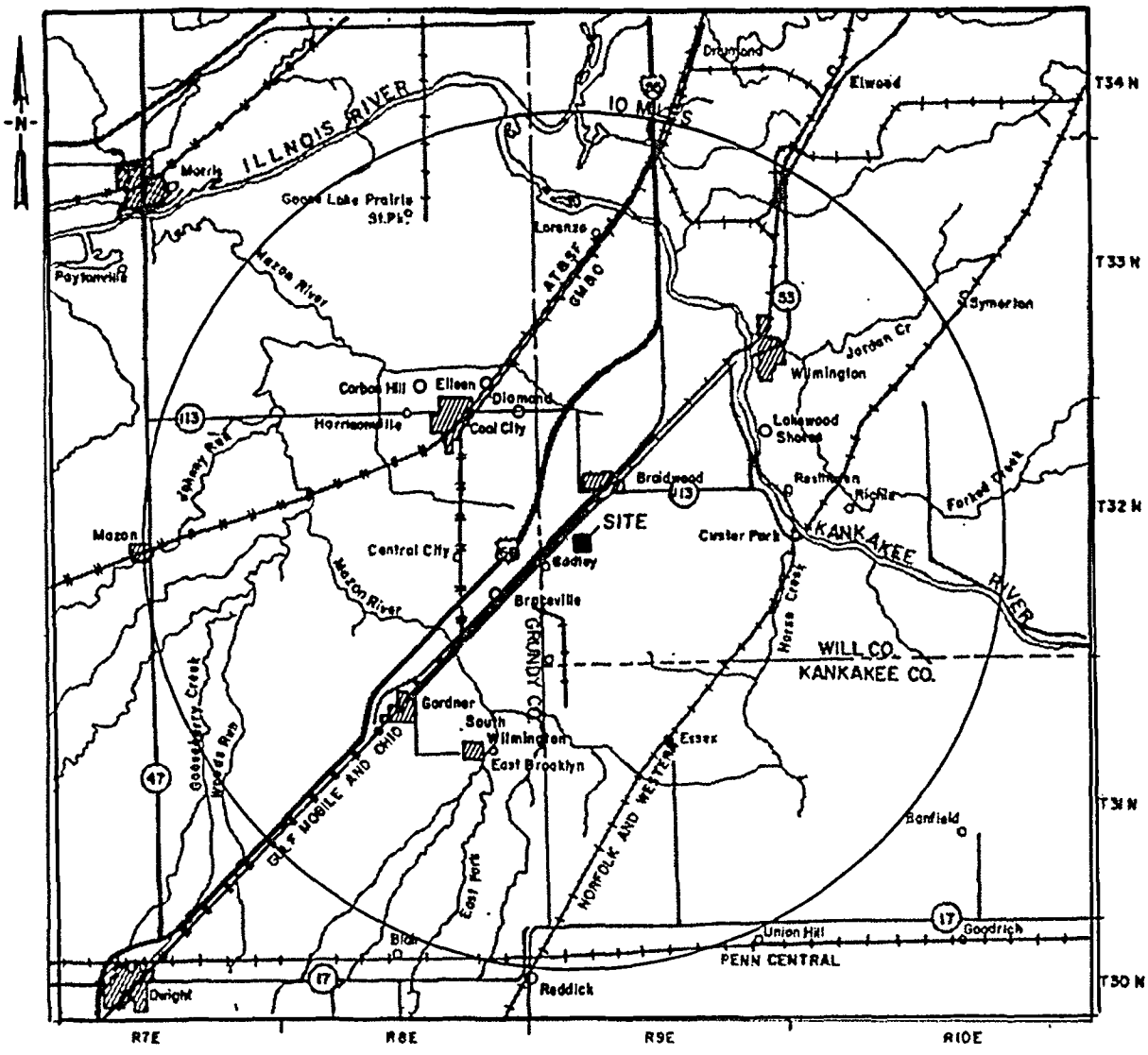
FIGURE 2.4-37

LOCATIONS OF POND OBSERVATION WELLS



NOTES

1. Data for public ground-water supplies within 10 miles are presented in Table 2.4-22
2. Base map modified from USGS, 1:250,000 series (topographic), Aurora, Illinois (NK16-F), 1958.

5 0 5
Scale in Miles

BRAIDWOOD STATION
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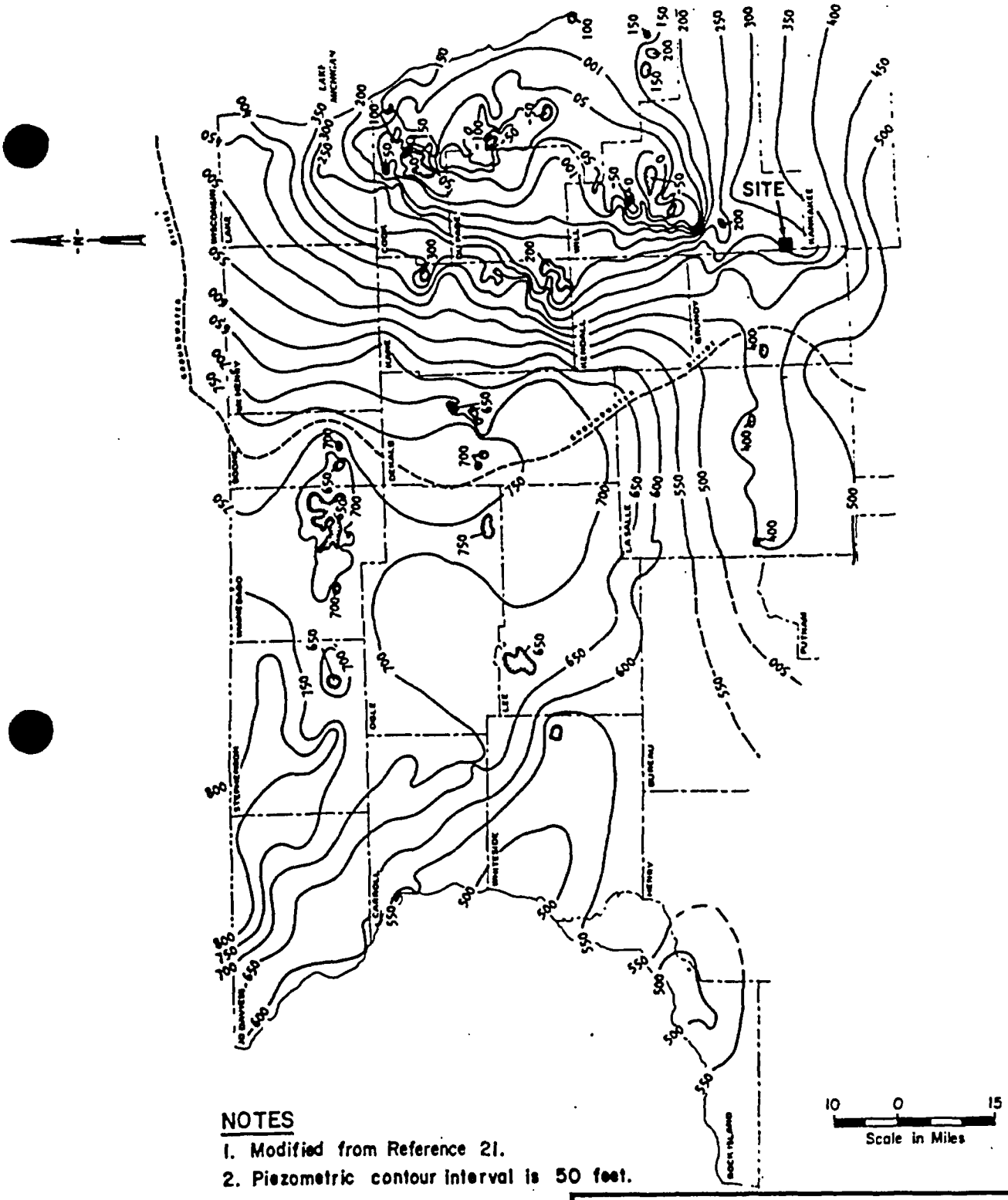
FIGURE 2.4-38

PUBLIC GROUNDWATER SUPPLIES WITHIN 10 MILES



NOTES

1. Modified from Reference 21.
2. Piezometric contour interval is 50 feet.

BRAIDWOOD STATION
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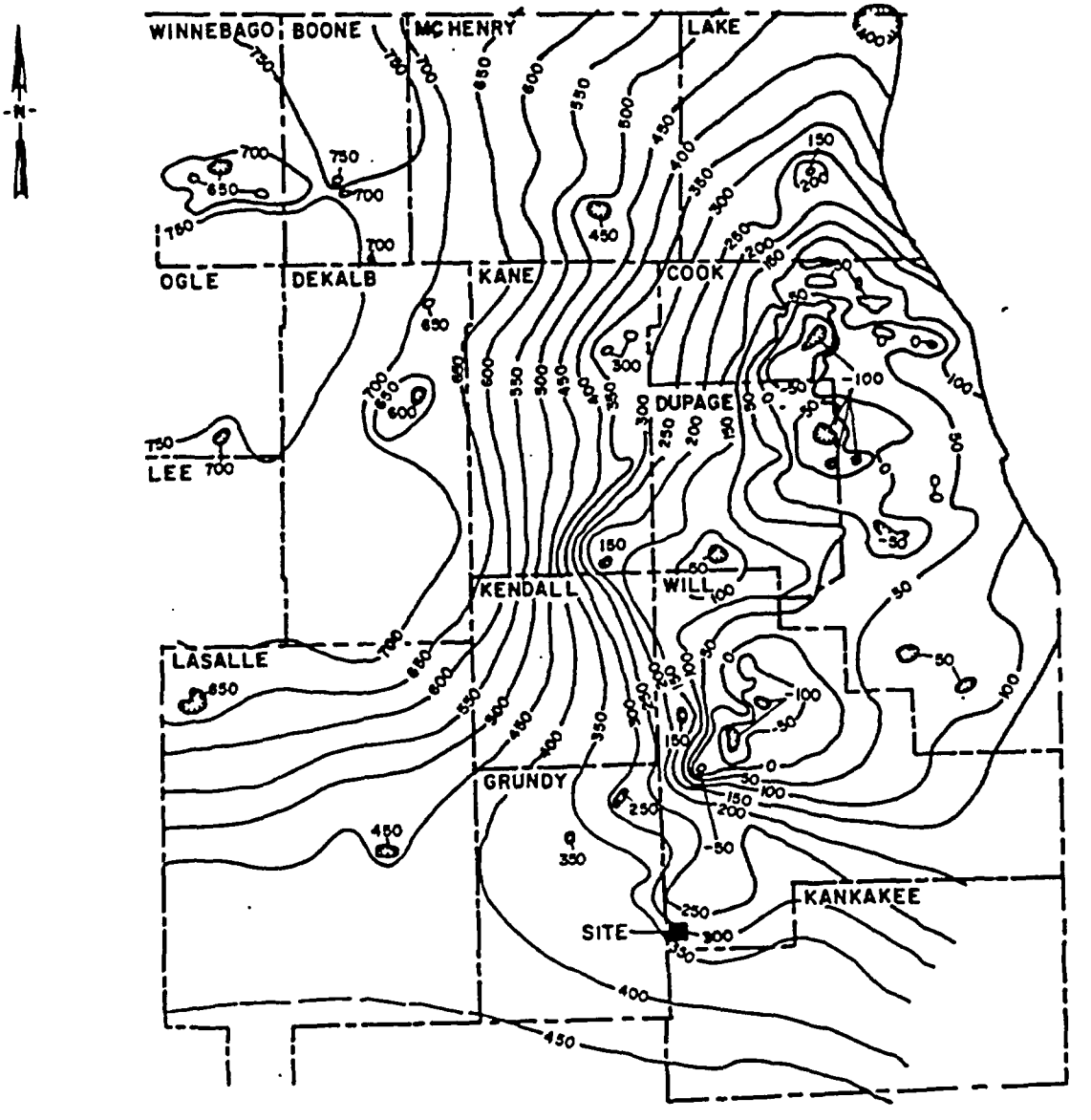
FIGURE 2.4-39

PIEZOMETRIC SURFACE OF THE CAMBRIAN-ORDOVICIAN AQUIFER, OCTOBER 1971



10 0 15
Scale in Miles

NOTE

1. Modified from Reference 22 in print.
2. Piezometric contour interval is 50 feet.

BRAIDWOOD STATION
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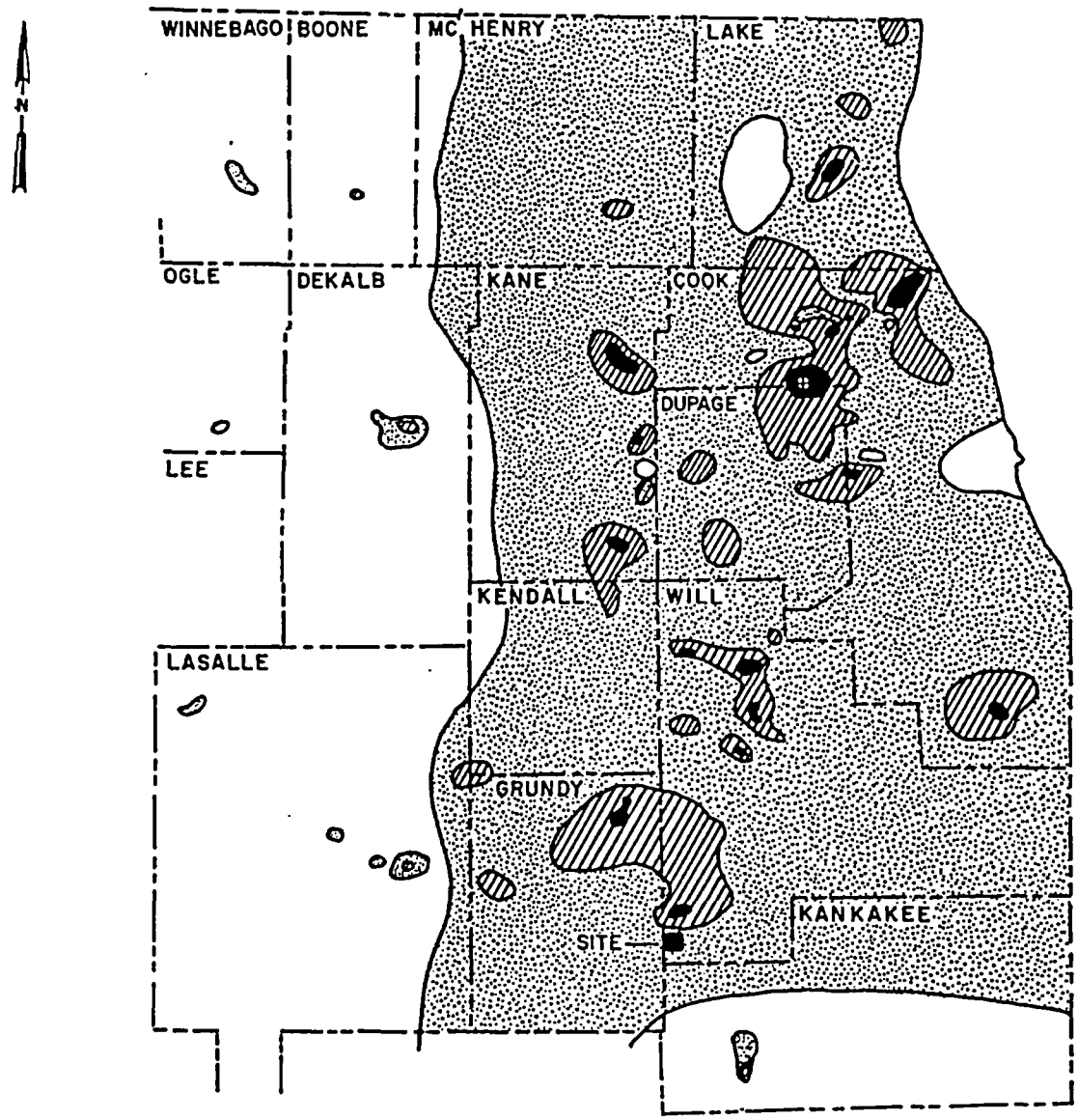
FIGURE 2.4-40

PIEZOMETRIC SURFACE OF THE CAMBRIAN-ORDOVICIAN AQUIFER, OCTOBER 1975



LEGEND

Water Level Changes:

- Little Change
- 0 to -50 feet
- -50 to -100 feet
- -100 to -150 feet
- -150 to -200 feet

10 0 15
Scale in Miles

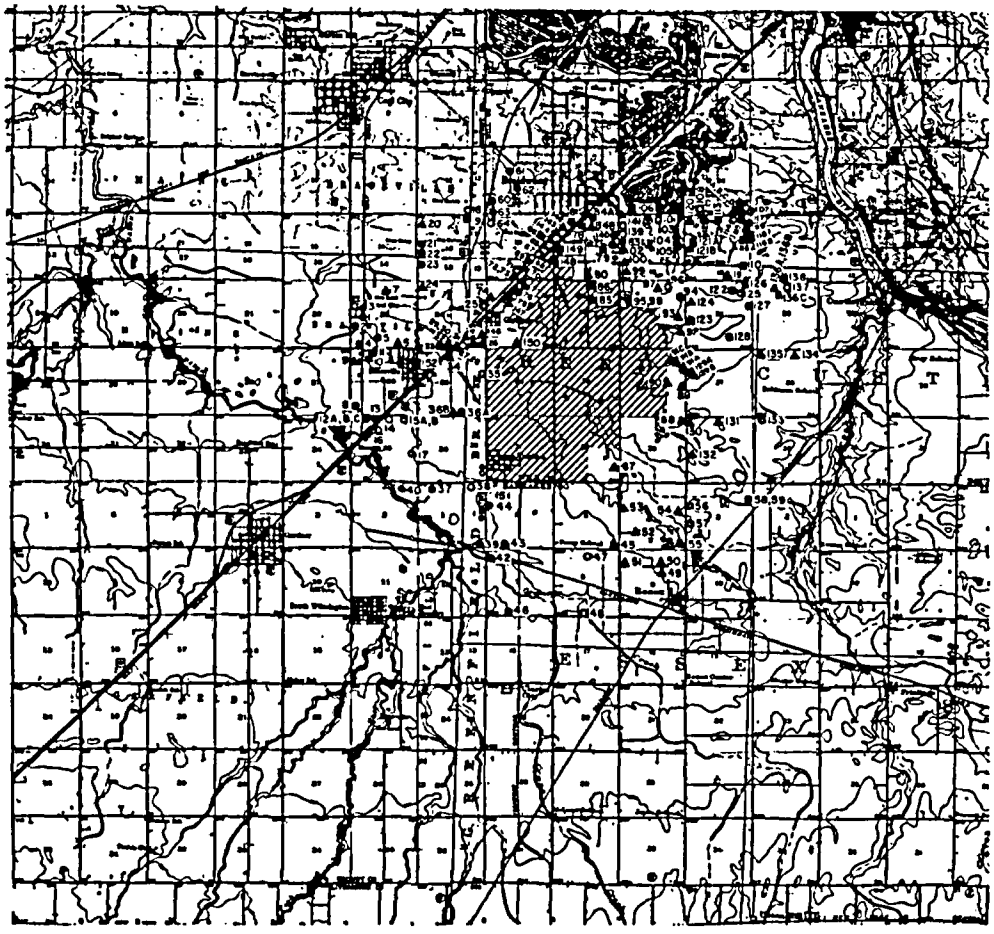
NOTE

1. Modified from Reference 22

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.4-41

CHANGES IN WATER LEVELS IN THE CAMBRIAN-ORDOVICIAN AQUIFER, 1971-1975



LEGEND

- Drilled Well
- Dug Well
- Sandpoint
- Unidentified Well
- Braidwood Project Site

NOTE

1. A tabulation of the private wells within 2 miles of the site is presented in Table 2.4-23
2. Base map modified from: U.S.G.S., 1:62,500 series (topographic), Dwight, 1948, Herscher, 1923, Morris, 1954, and Wilmington, 1954.

0

Scale in Miles
Contour Interval = 10 ft.

BRAIDWOOD STATION
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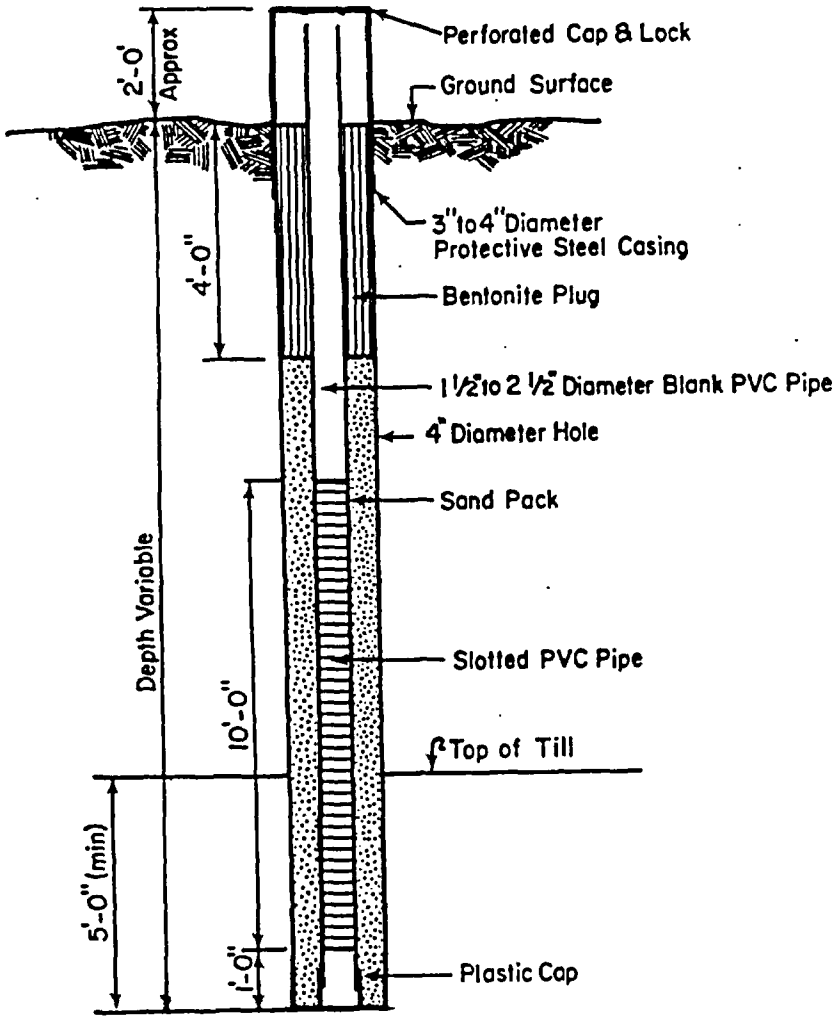
FIGURE 2.4-42

PRIVATE WATER SUPPLY WELLS WITHIN 2 MILES OF THE SITE



NOTES

1. Not drawn to scale.
2. Location of observation wells are shown on Figure 2.4-36

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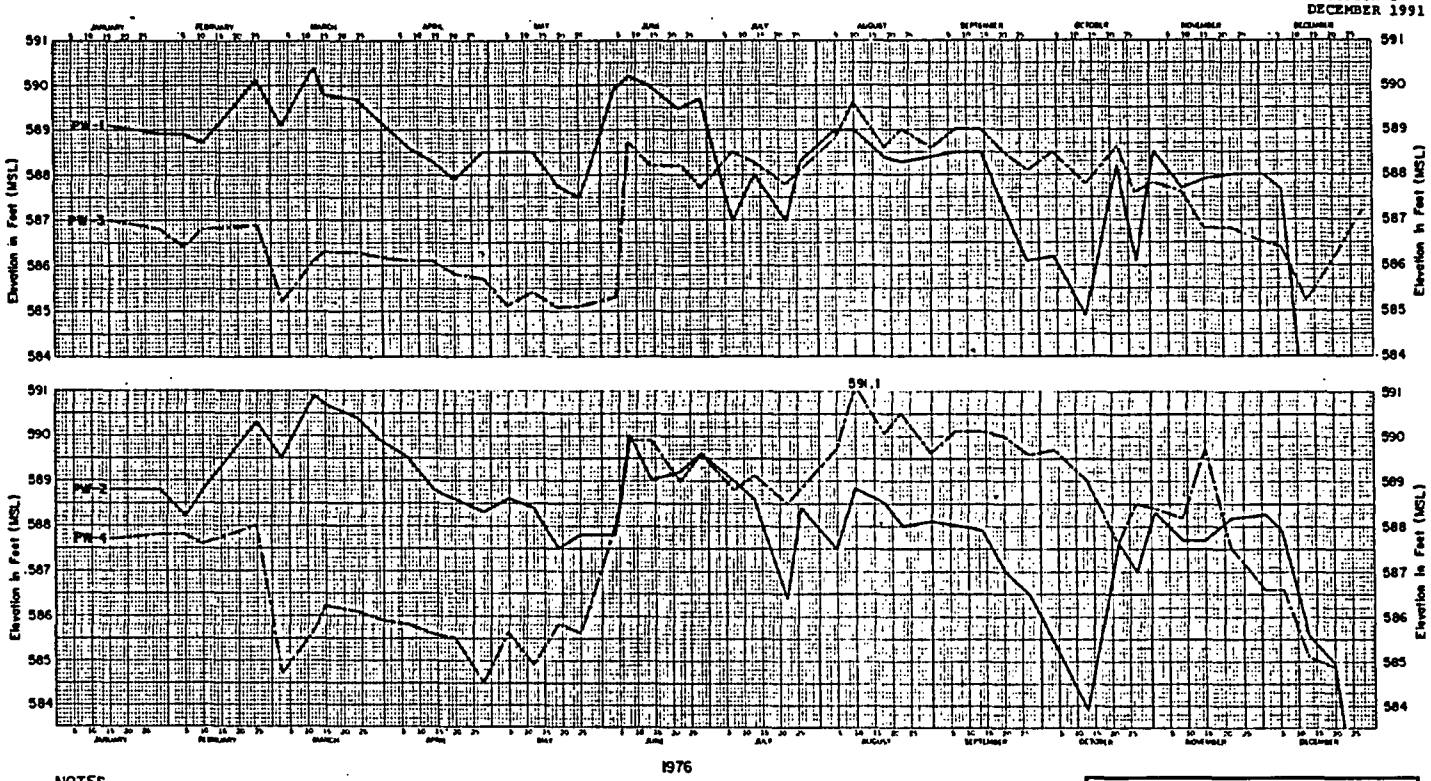
FIGURE 2.4-43

TYPICAL DETAIL FOR STATION OBSERVATION WELL

REVISION 3
DECEMBER 1991



NOTES

1. Locations of station observation wells are shown on Figure 2.4-36
2. Groundwater levels were measured weekly in the observation wells.
3. Groundwater levels measured in PW-1 and PW-2 were affected by the excavation of a nearby slurry trench in December.

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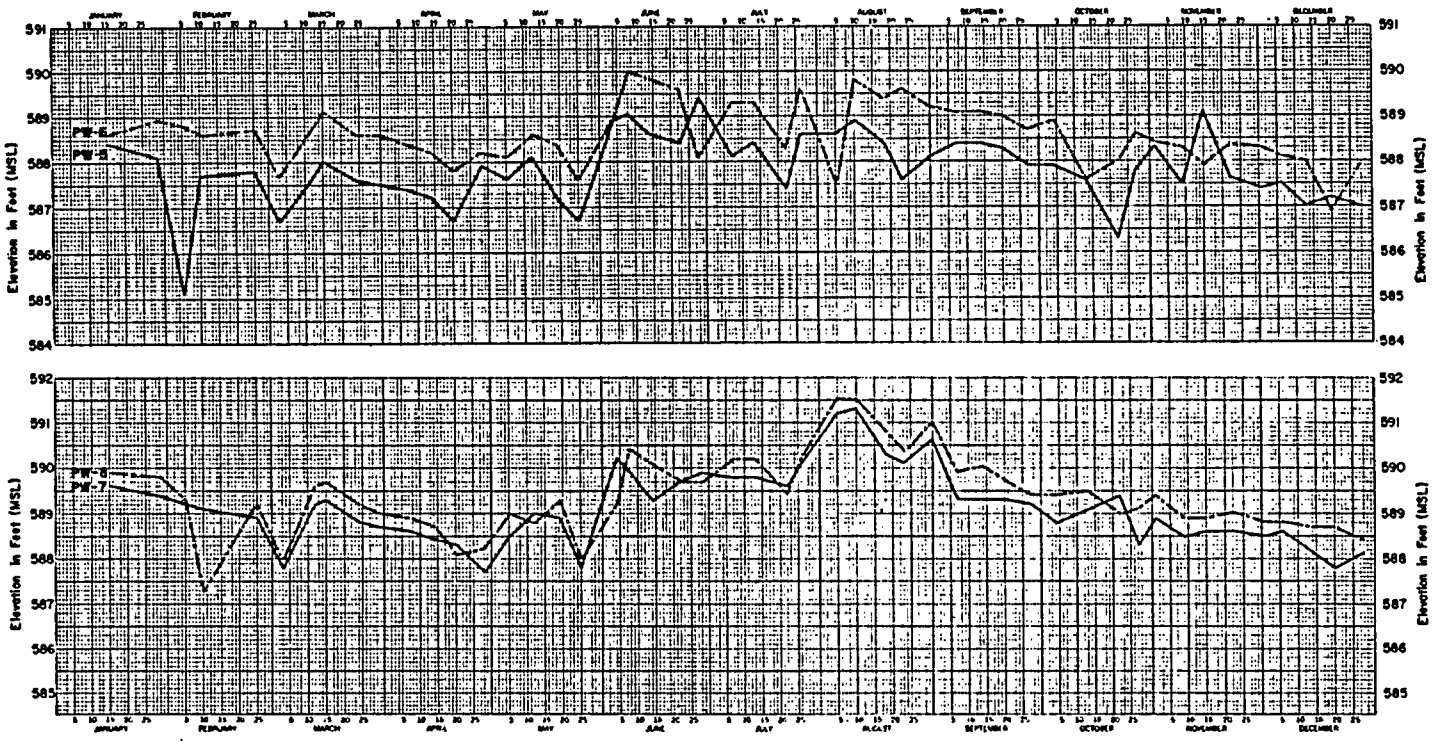
FIGURE 2.4-44

GROUNDWATER LEVELS IN STATION OBSERVATION WELLS, 1976
(SHEET 1 OF 10)

REVISION 3
DECEMBER 1991



NOTES

1. Locations of station observation wells are shown on Figure 2.4-36
2. Groundwater levels were measured weekly in the observation wells.

1976

BRAIDWOOD STATION
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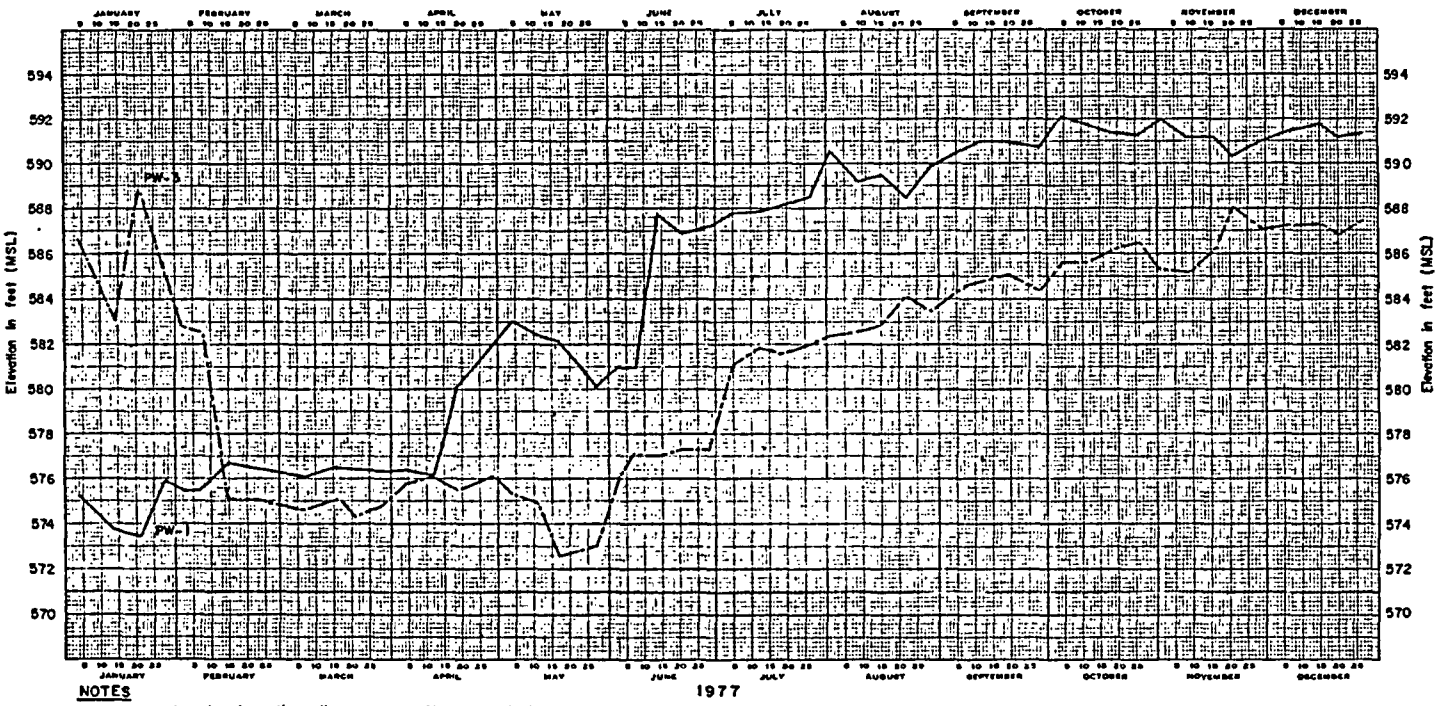
FIGURE 2.4-44

GROUNDWATER LEVELS IN STATION OBSERVATION WELLS, 1976
(SHEET 2 OF 10)

REVISION 3
DECEMBER 1991



NOTES

1. Locations of station observation wells are shown on Figure 2.4-36
2. Groundwater levels were measured weekly in the observation wells.
3. Vertical scale is different than other station observation well graphs.

BRAIDWOOD STATION
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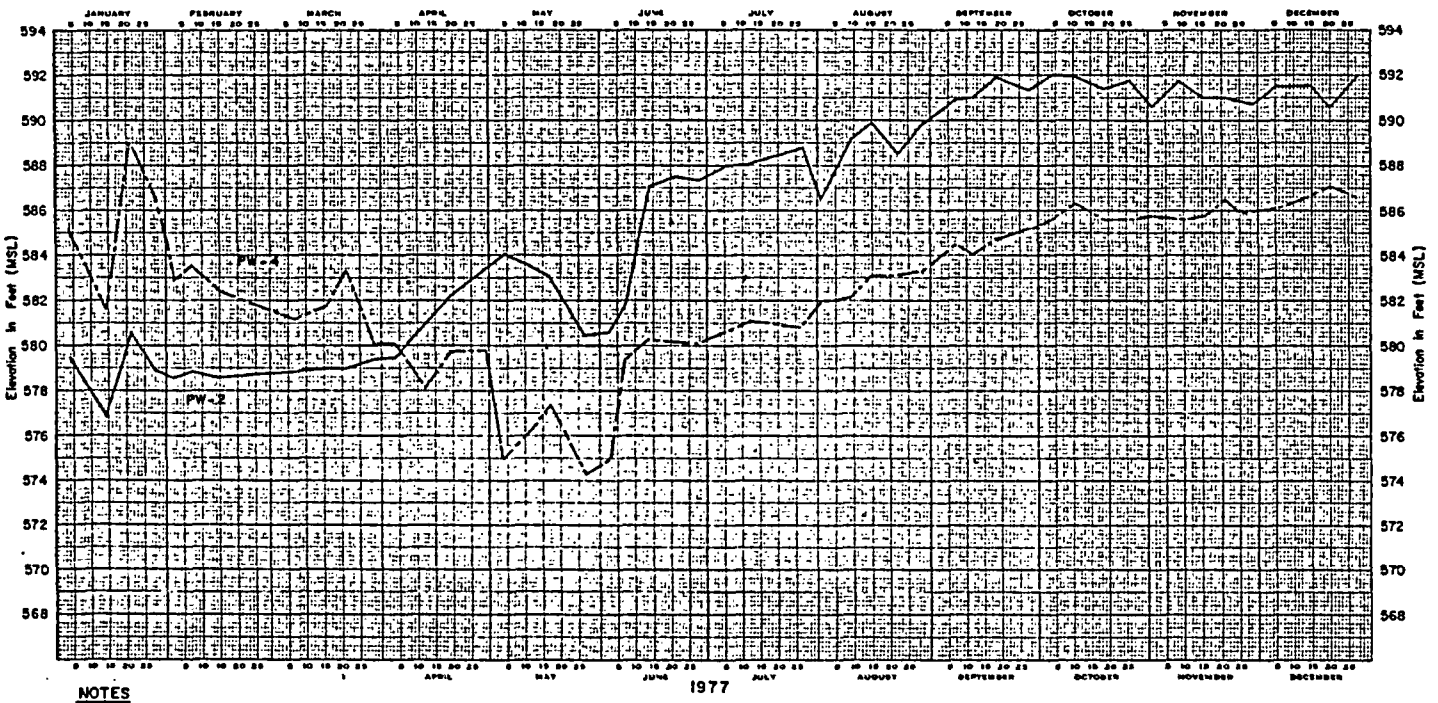
FIGURE 2.4-44

GROUNDWATER LEVELS IN STATION OBSERVATION WELLS, 1976
(SHEET 3 OF 10)

REVISION 3
DECEMBER 1991



NOTES

1. Locations of station observation wells are shown on Figure 2.4-36
2. Groundwater levels were measured weekly in the observation wells.
3. Vertical scale is different than other station observation well graphs.

BRAIDWOOD STATION
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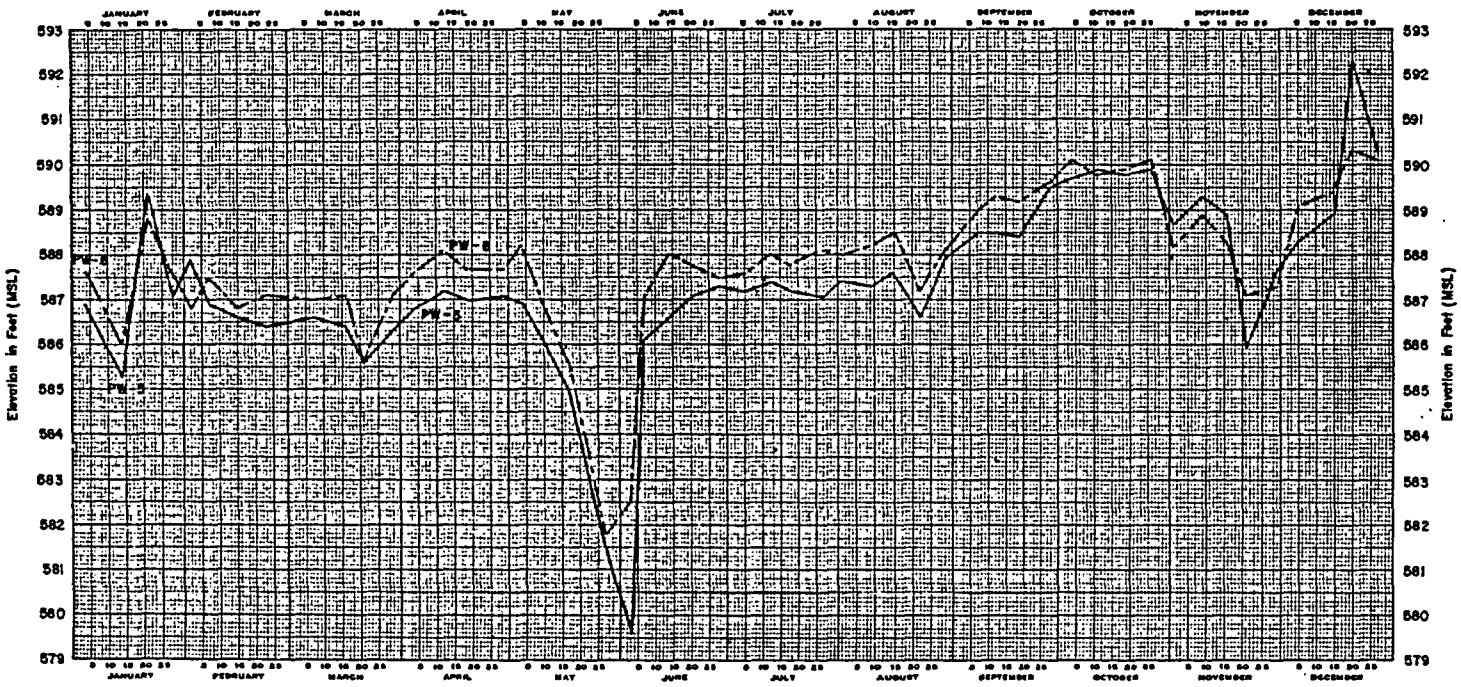
FIGURE 2.4-44

GROUNDWATER LEVELS IN STATION OBSERVATION WELLS, 1976
(SHEET 4 OF 10)



1977

NOTES

1. Locations of station observation wells are shown on Figure 2.4-36
2. Groundwater levels were measured weekly in the observation wells.

BRAIDWOOD STATION
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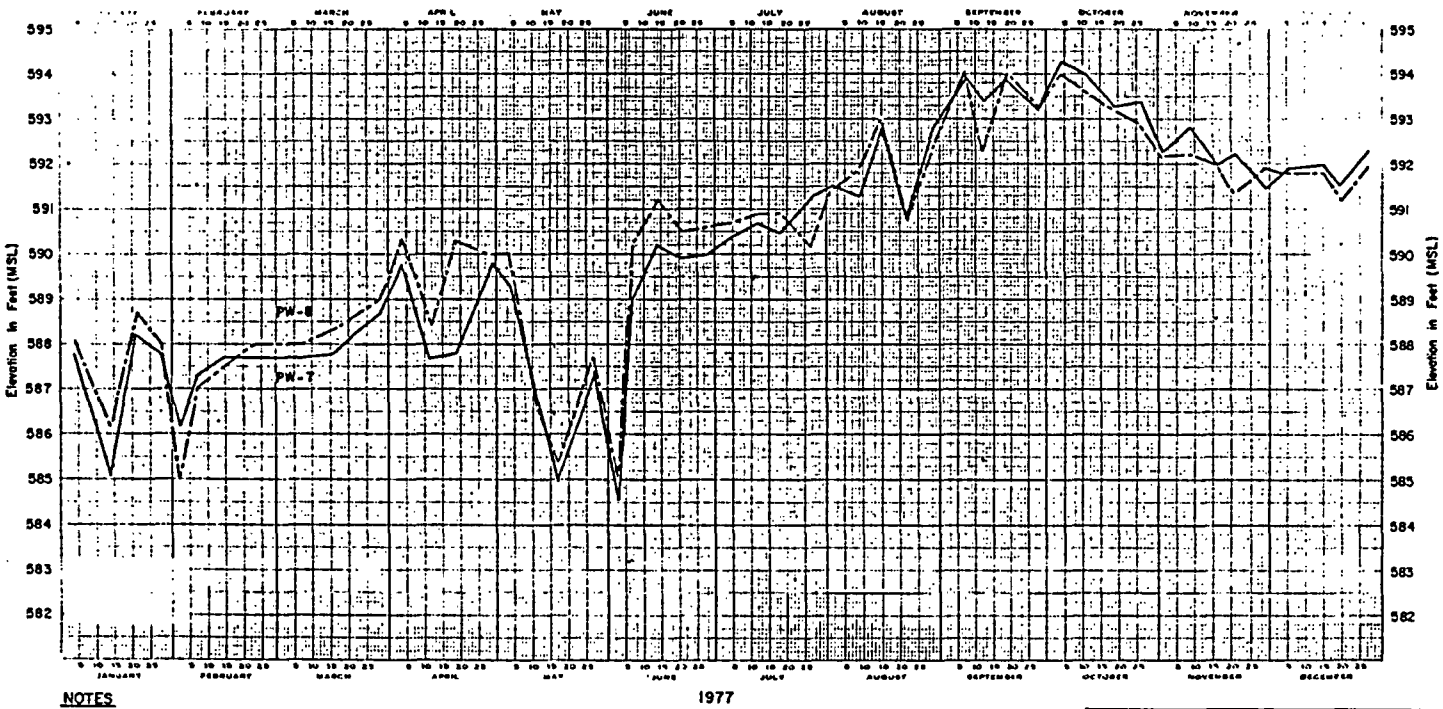
FIGURE 2.4-44

GROUNDWATER LEVELS IN STATION OBSERVATION WELLS, 1976
(SHEET 5 OF 10)



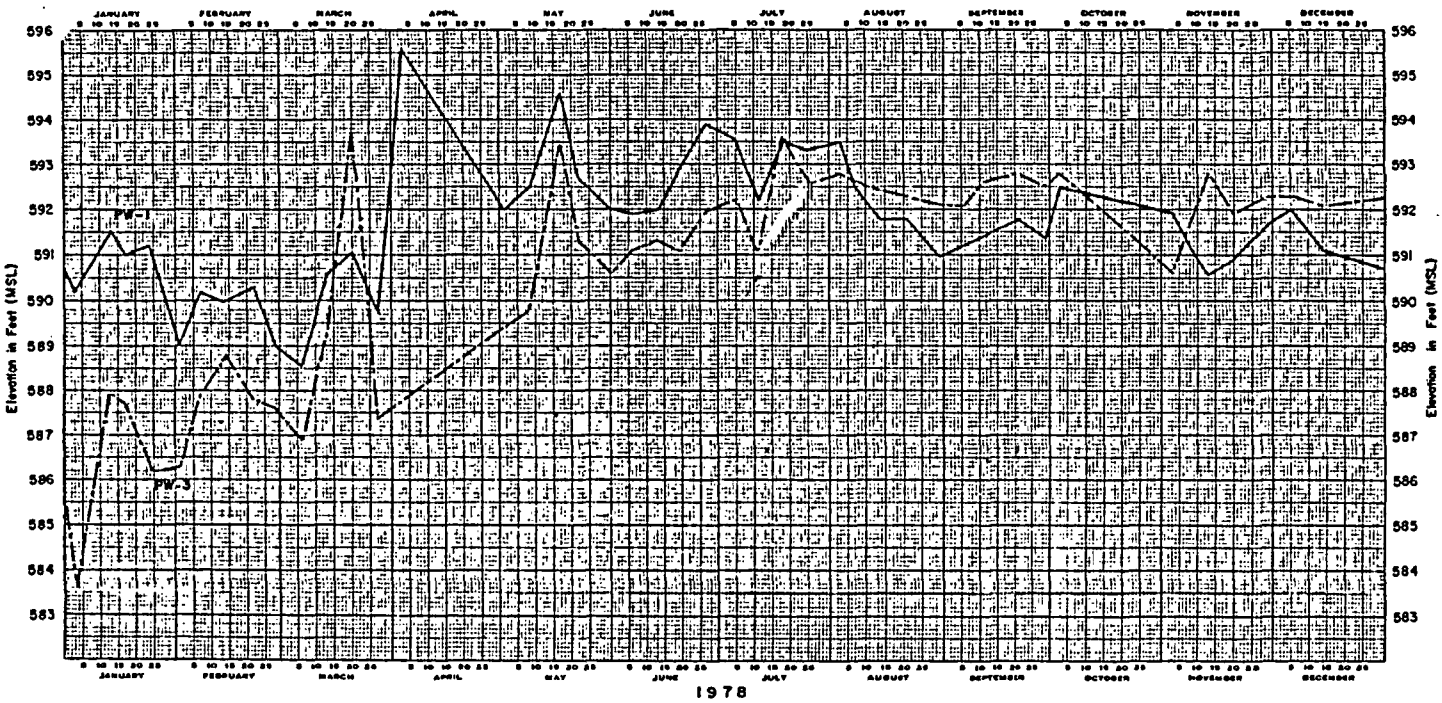
NOTES

1. Location of station observation wells are shown on Figure 2.4-36
2. Groundwater levels were measured weekly in the observation wells.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.4-44

GROUNDWATER LEVELS IN STATION OBSERVATION WELLS, 1976
(SHEET 6 OF 10)



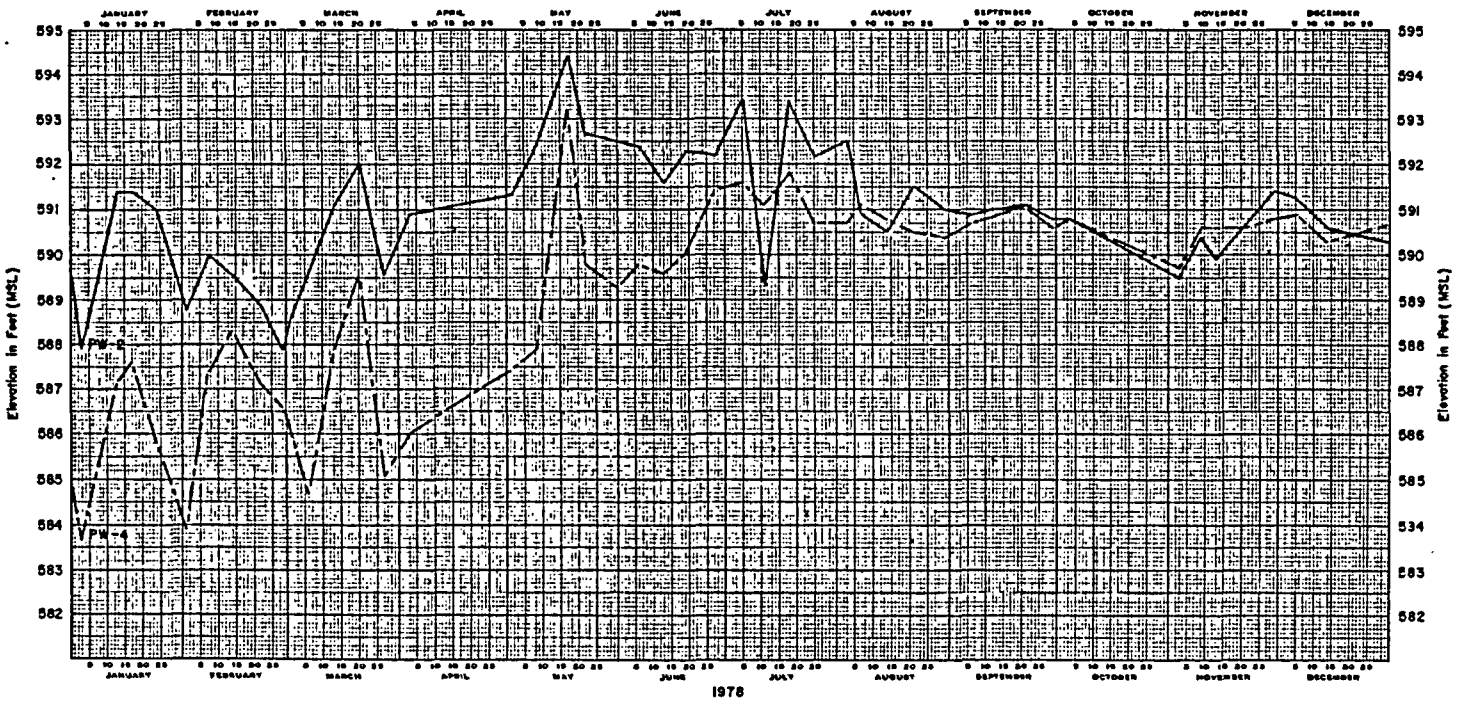
NOTES

1. Locations of station observation wells are shown on Figure 2.4-36
2. Groundwater levels were measured weekly in the observation wells.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.4-44

GROUNDWATER LEVELS IN STATION OBSERVATION WELLS, 1976
(SHEET 7 OF 10)



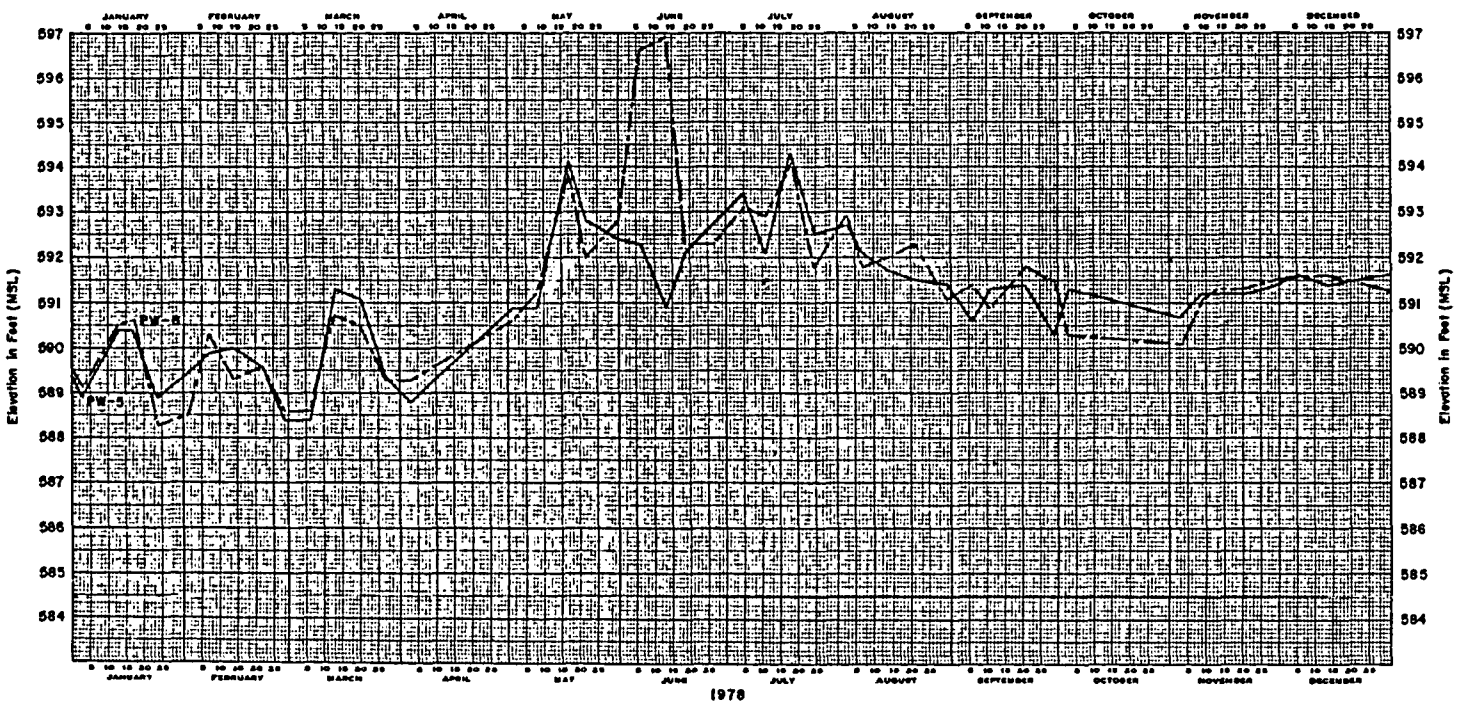
NOTES

1. Locations of station observation wells are shown on Figure 2.4-36
2. Groundwater levels were measured weekly in the observation wells.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.4-44

GROUNDWATER LEVELS IN STATION OBSERVATION WELLS, 1976
(SHEET 8 OF 10)



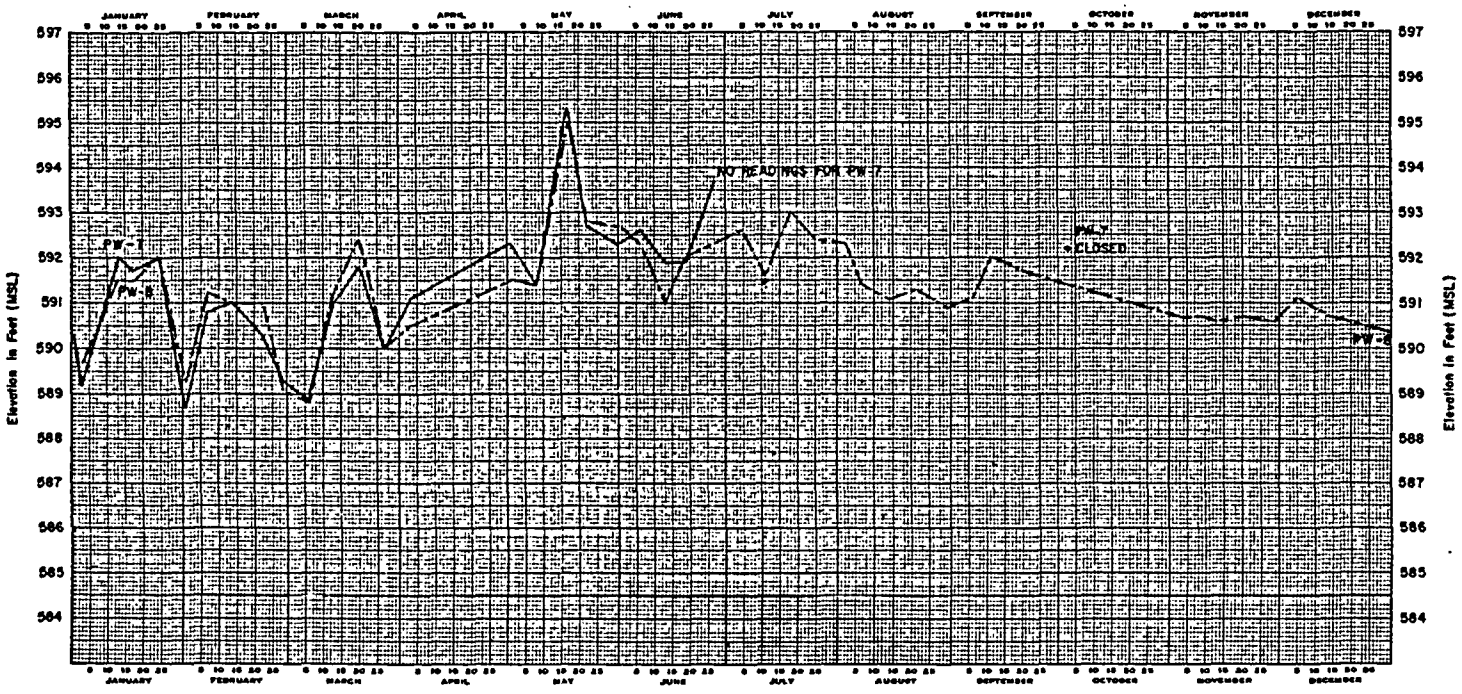
NOTES

1. Locations of station observation wells are shown on Figure 2.4-36
2. Groundwater levels were measured weekly in the observation wells.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.4-44

GROUNDWATER LEVELS IN STATION OBSERVATION WELLS, 1976
(SHEET 9 OF 10)



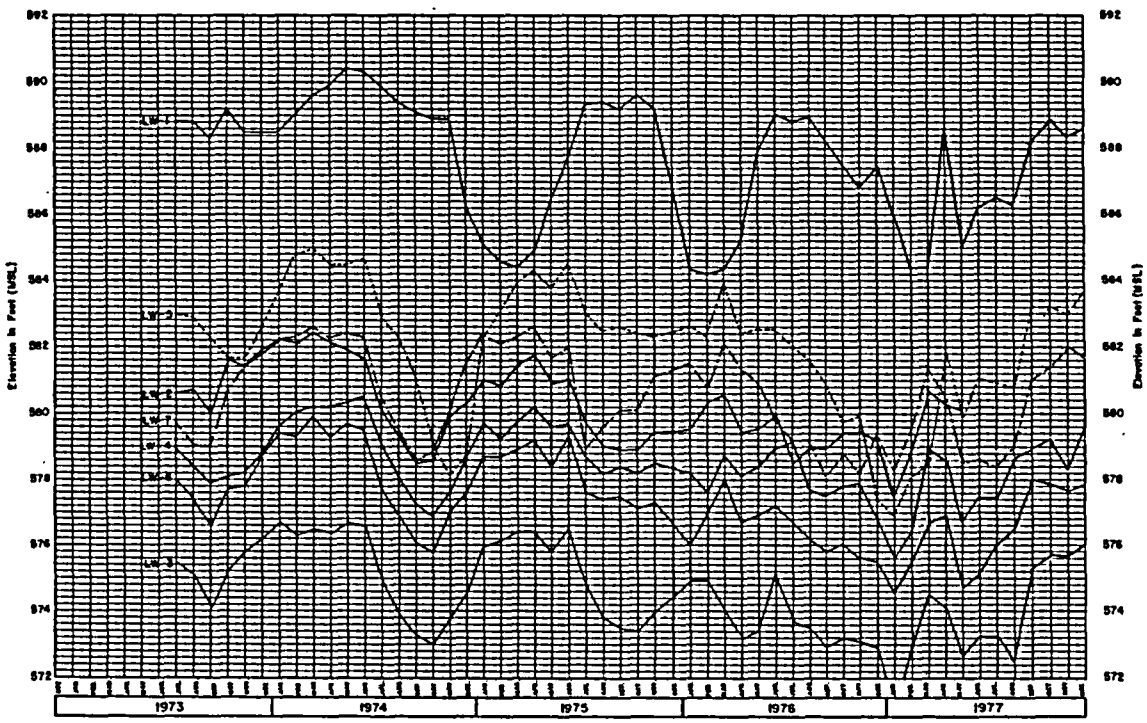
NOTES

1. Locations of station observation wells are shown on Figure 2.4-36
2. Groundwater levels were measured weekly in the observation wells.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.4-44

GROUNDWATER LEVELS IN STATION OBSERVATION WELLS, 1978
(SHEET 10 OF 10)



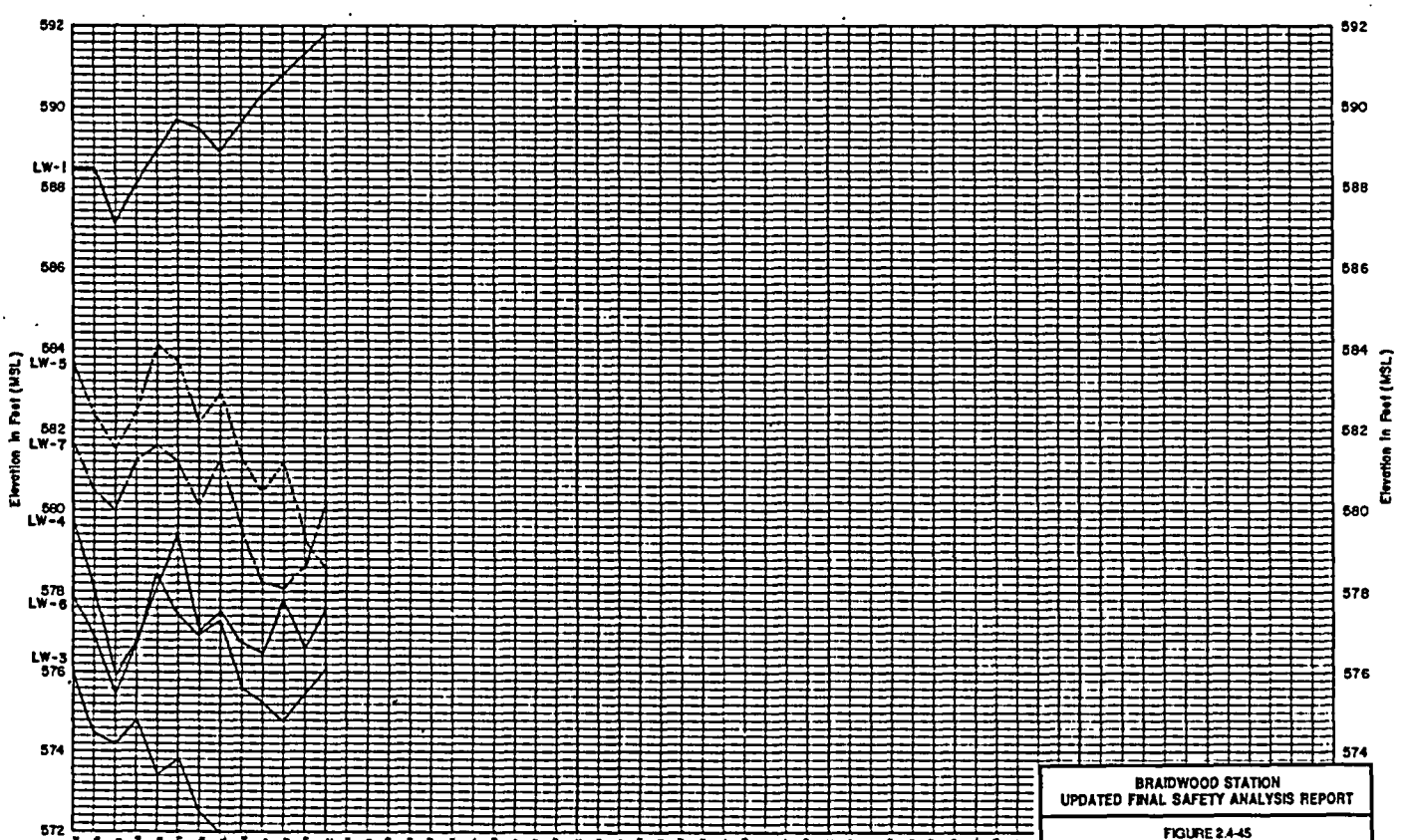
NOTES

1. Locations of pond observation wells are shown on Figure 2.4-37
2. Groundwater levels were measured weekly in the observation wells.
3. Groundwater levels measured in LW-1 were affected by water levels in or adjacent ditch (Subsection 2.4.13.2.2.2).
4. LW-2 was grouted closed during May 1977 due to construction of the lake dike.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.4-45

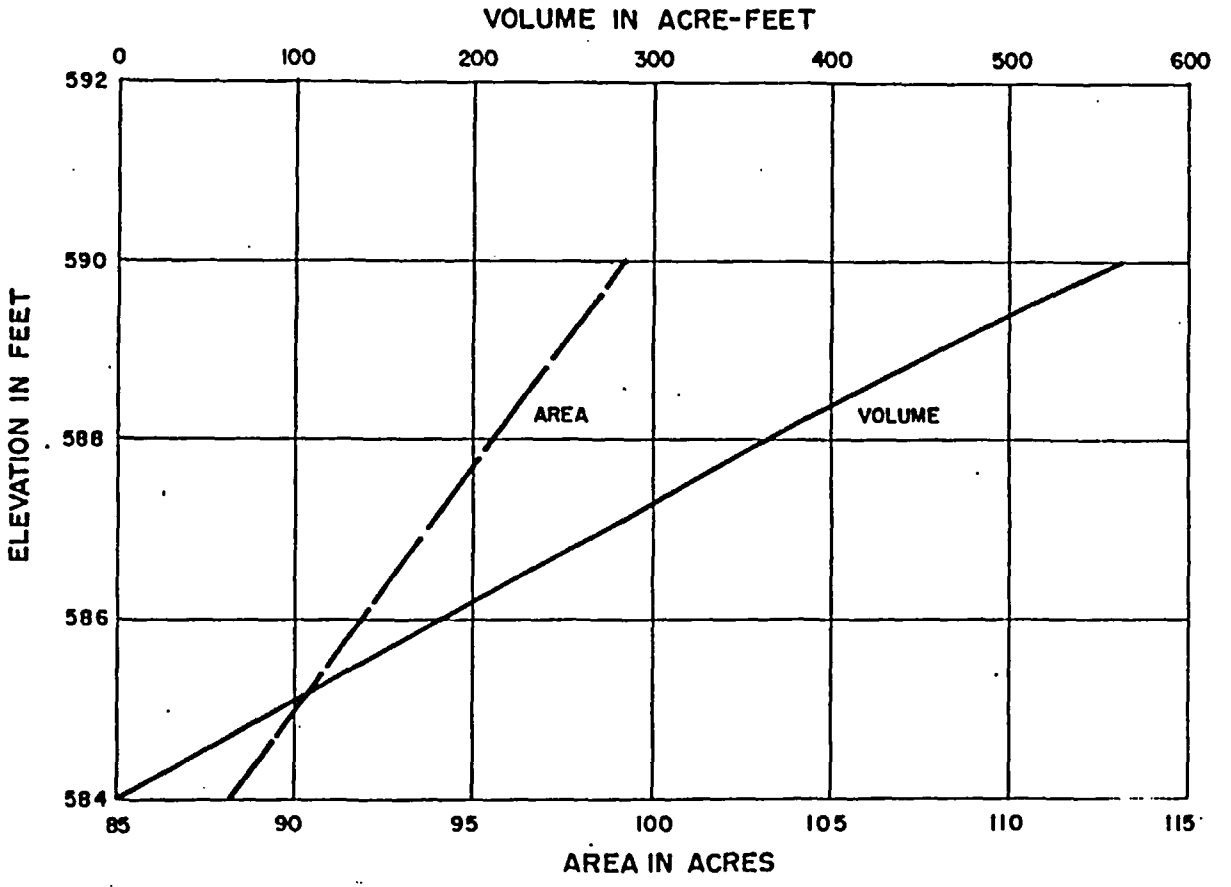
AVERAGE MONTHLY GROUNDWATER LEVELS IN LAKE OBSERVATION WELLS (SHEET 1 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.4-45

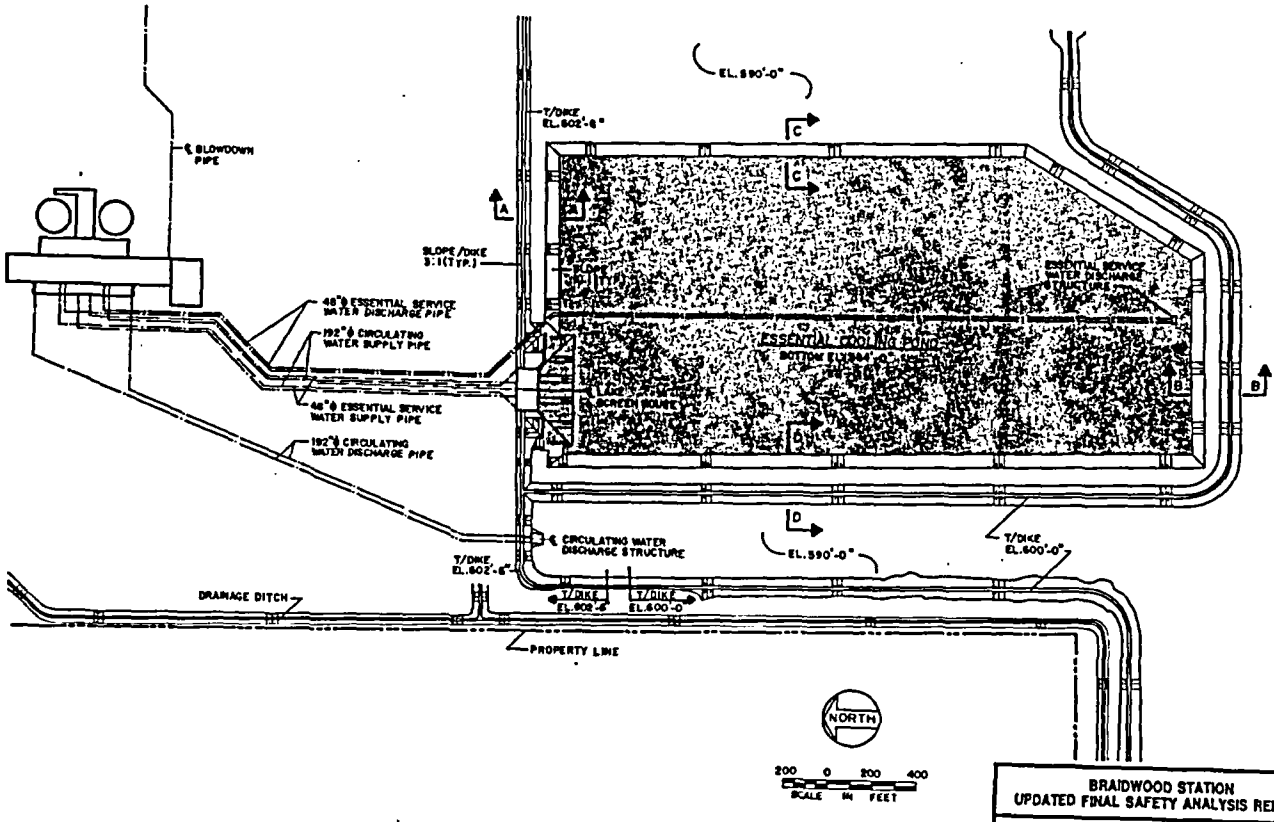
AVERAGE MONTHLY GROUNDWATER LEVELS
IN LAKE OBSERVATION WELLS
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.4-46

ESSENTIAL COOLING POND
AREA-CAPACITY CURVES

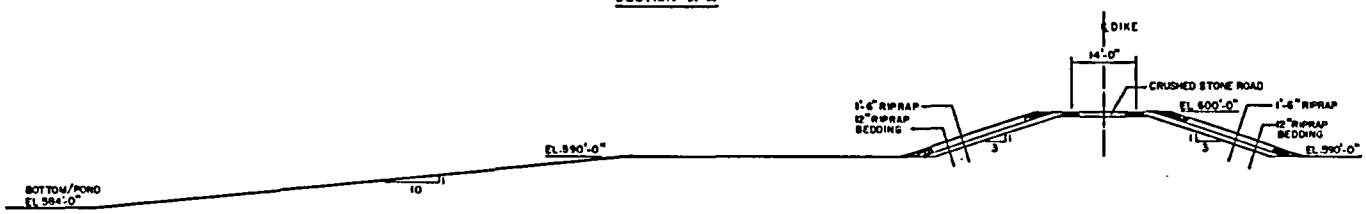


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

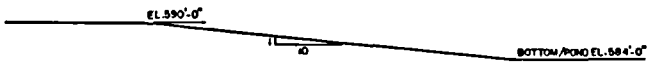
FIGURE 2.4-47

ESSENTIAL COOLING POND

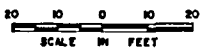
SECTION A-A



SECTION B-B
SECTION D-D



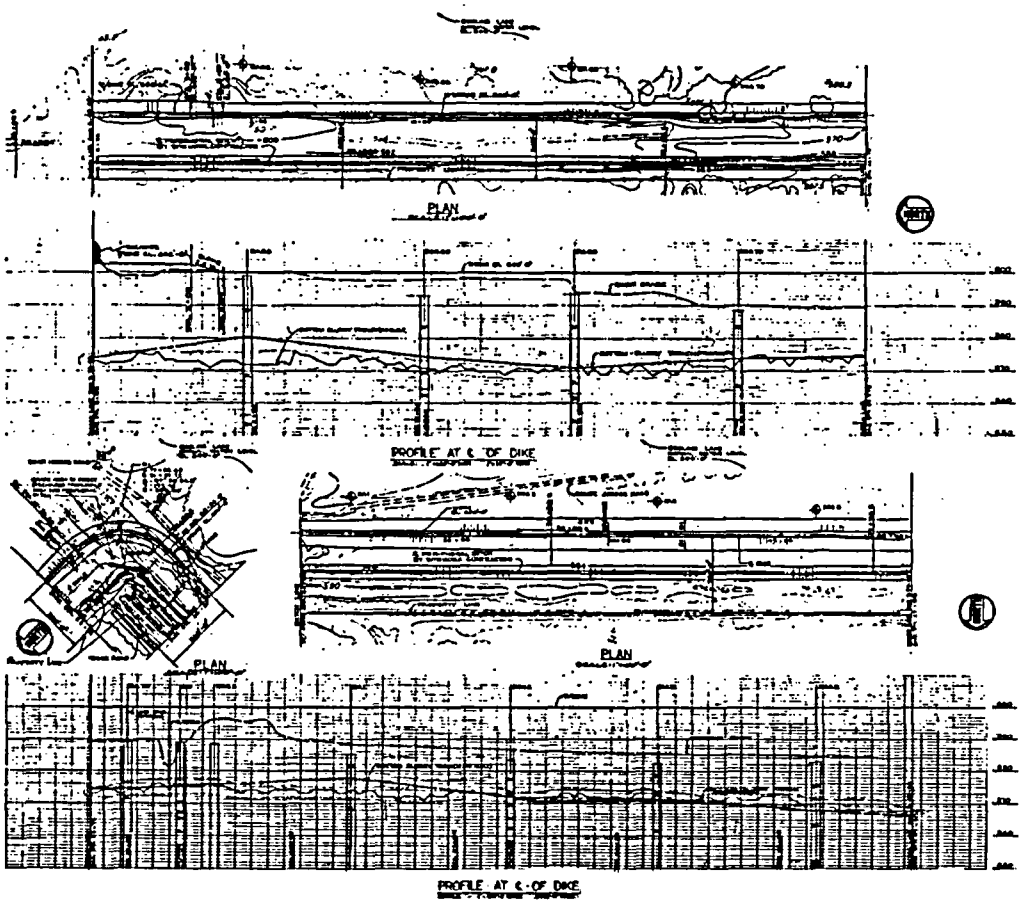
SECTION C-C

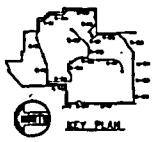


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.4-48

ESSENTIAL COOLING POND SECTIONS

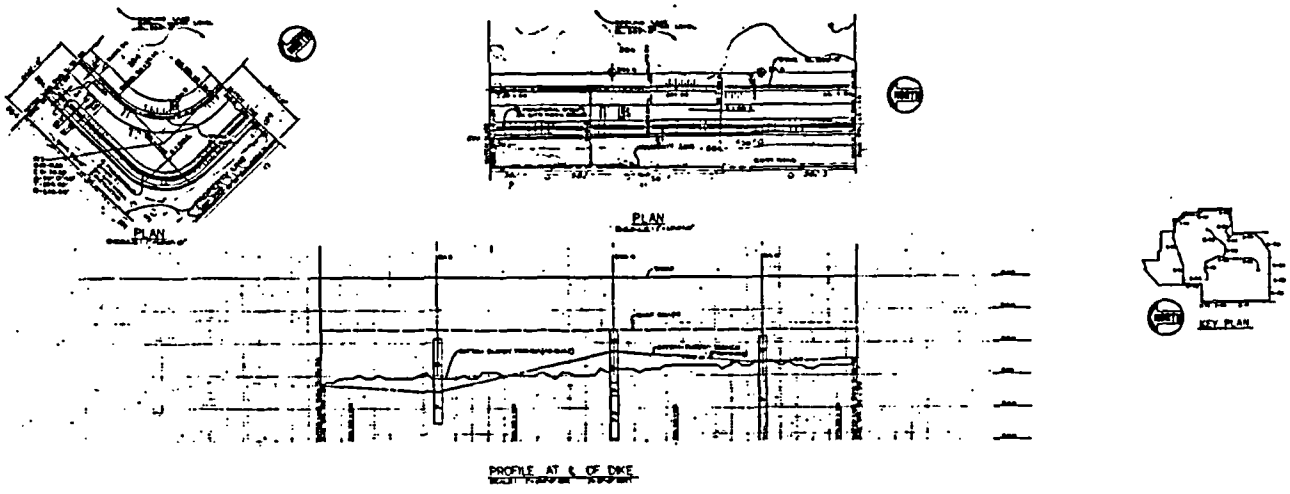




BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.4-49

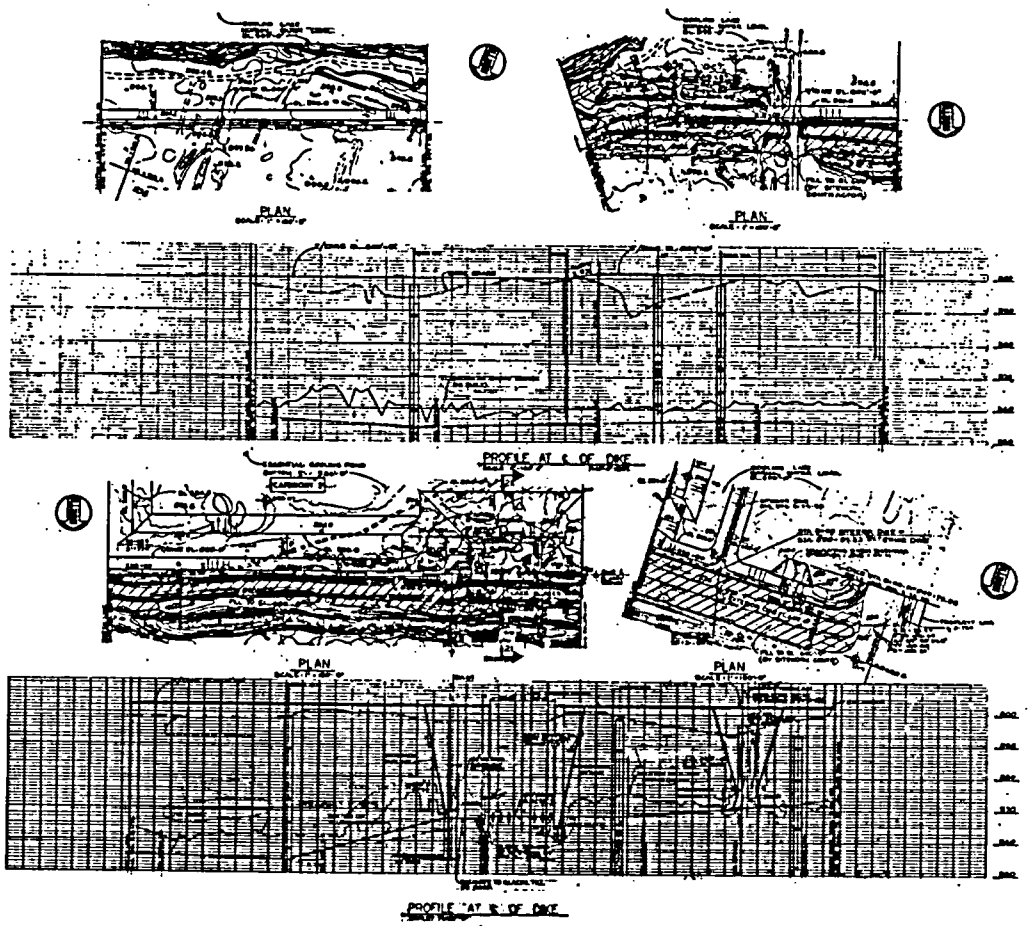
EXTERIOR DIKE PROFILE
STA 0 + 00 TO STA 49 + 00

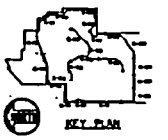


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.4-50

EXTERIOR DIKE PROFILE
STA 49 + 00 TO STA 65 + 50

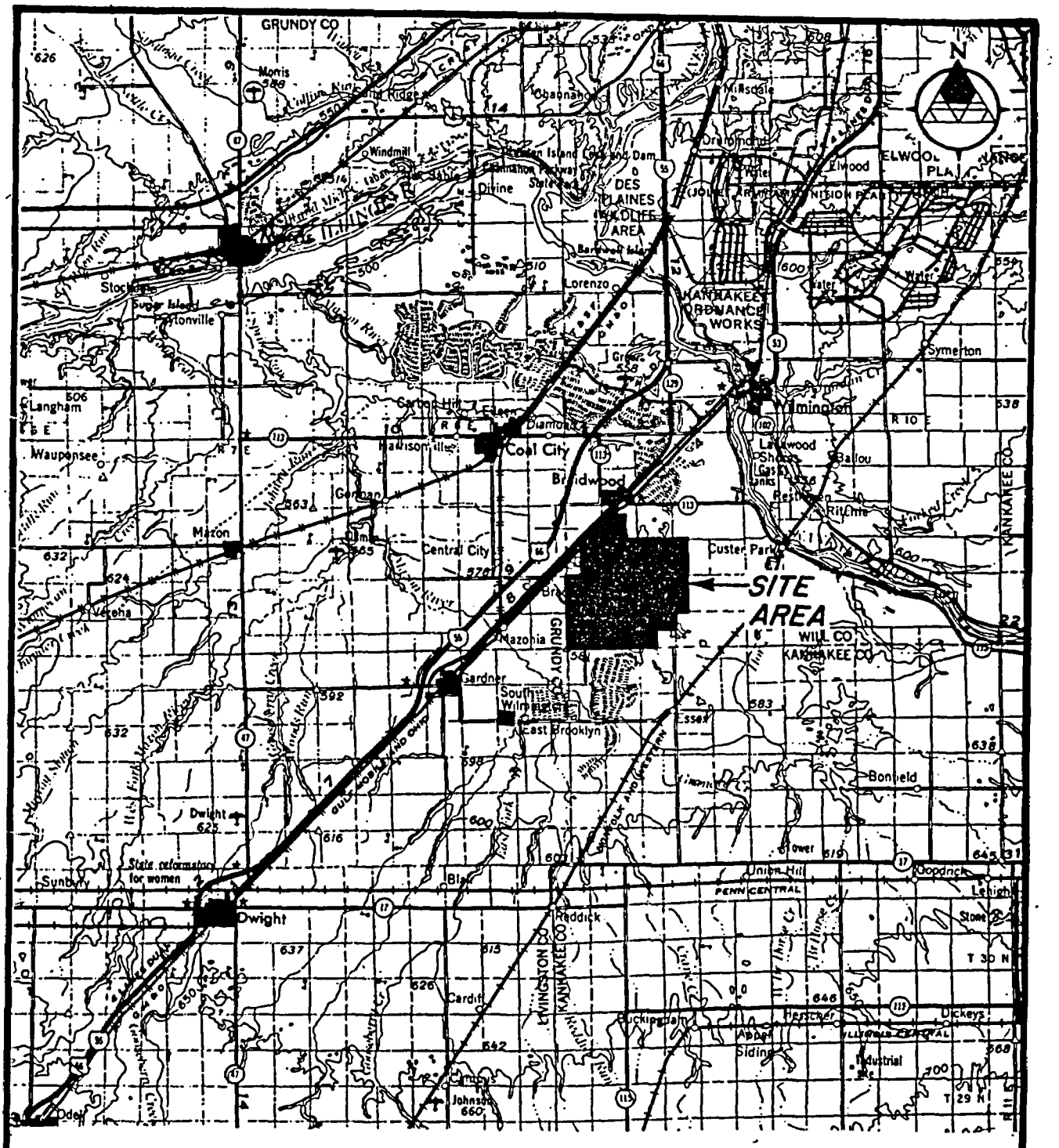




BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.4-51

EXTERIOR DIKE PROFILE
STA 499 + 15 TO STA 540 + 79.6



MILES

CONTOUR INTERVAL 100 FEET

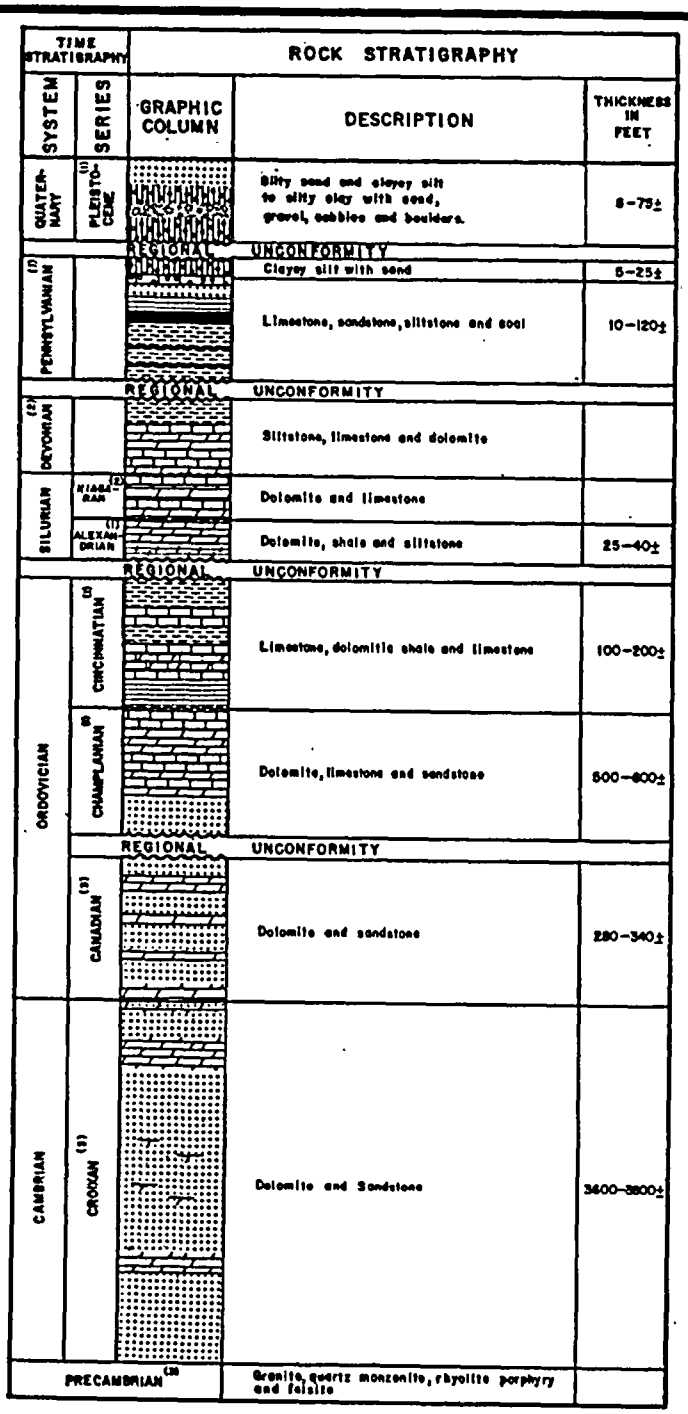
REFERENCE:

MODIFIED FROM: UNITED STATES GEOLOGICAL SURVEY, AURORA, ILLINOIS 1:250,000 MAP, DATED 1958.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-1

SITE AREA MAP



NOTES:

(1) STRATA PENETRATED IN SITE BORINGS.

(2) STRATA NOT PRESENT BENEATH THE SITE.

(3) STRATA PRESENT BENEATH THE SITE BUT NOT PENETRATED IN SITE BORINGS.

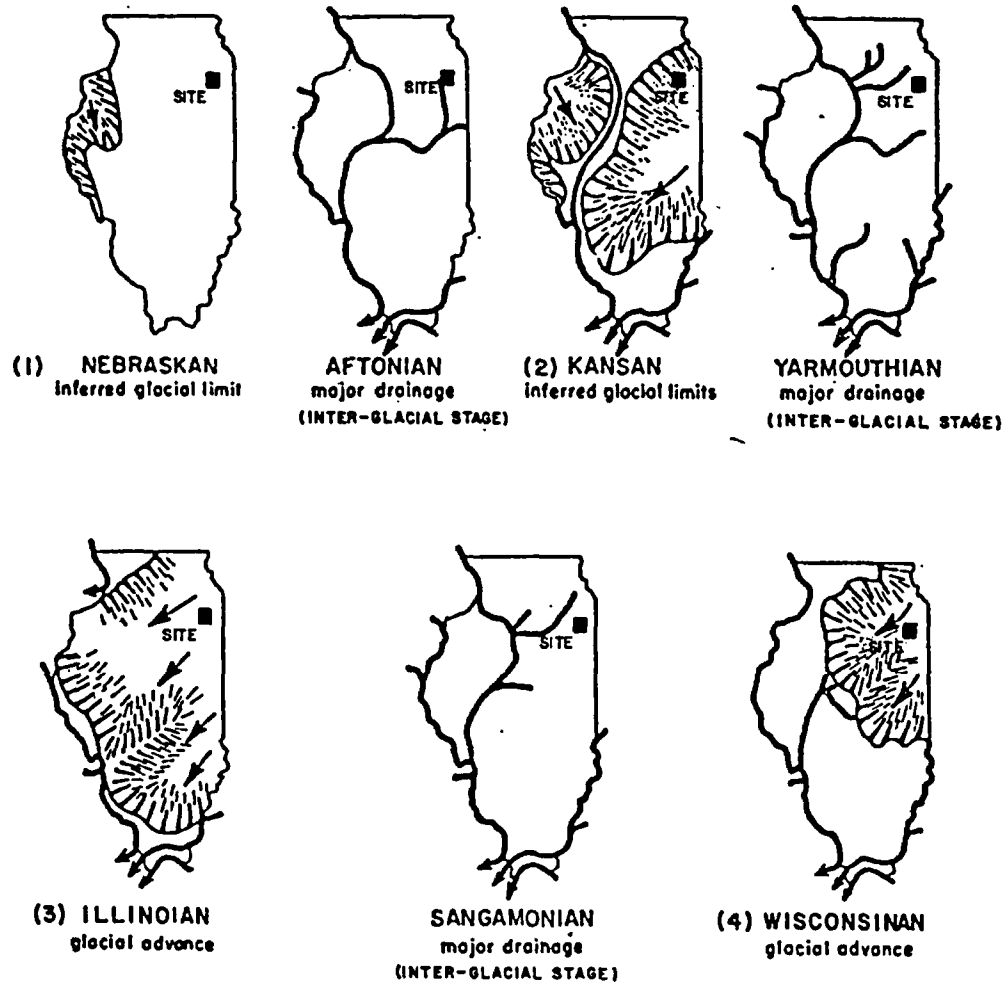
REFERENCE:

BUSCHBACH, T.C., 1964, CAMBRIAN AND ORDOVICIAN STRATA OF NORTHEASTERN ILLINOIS: ILLINOIS STATE GEOLOGICAL SURVEY, REPORT OF INVESTIGATIONS 218.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-2

REGIONAL STRATIGRAPHIC COLUMN



LEGEND:

ICE FRONT

DIRECTION OF MOVEMENT

MAJOR DRAINAGE ROUTES

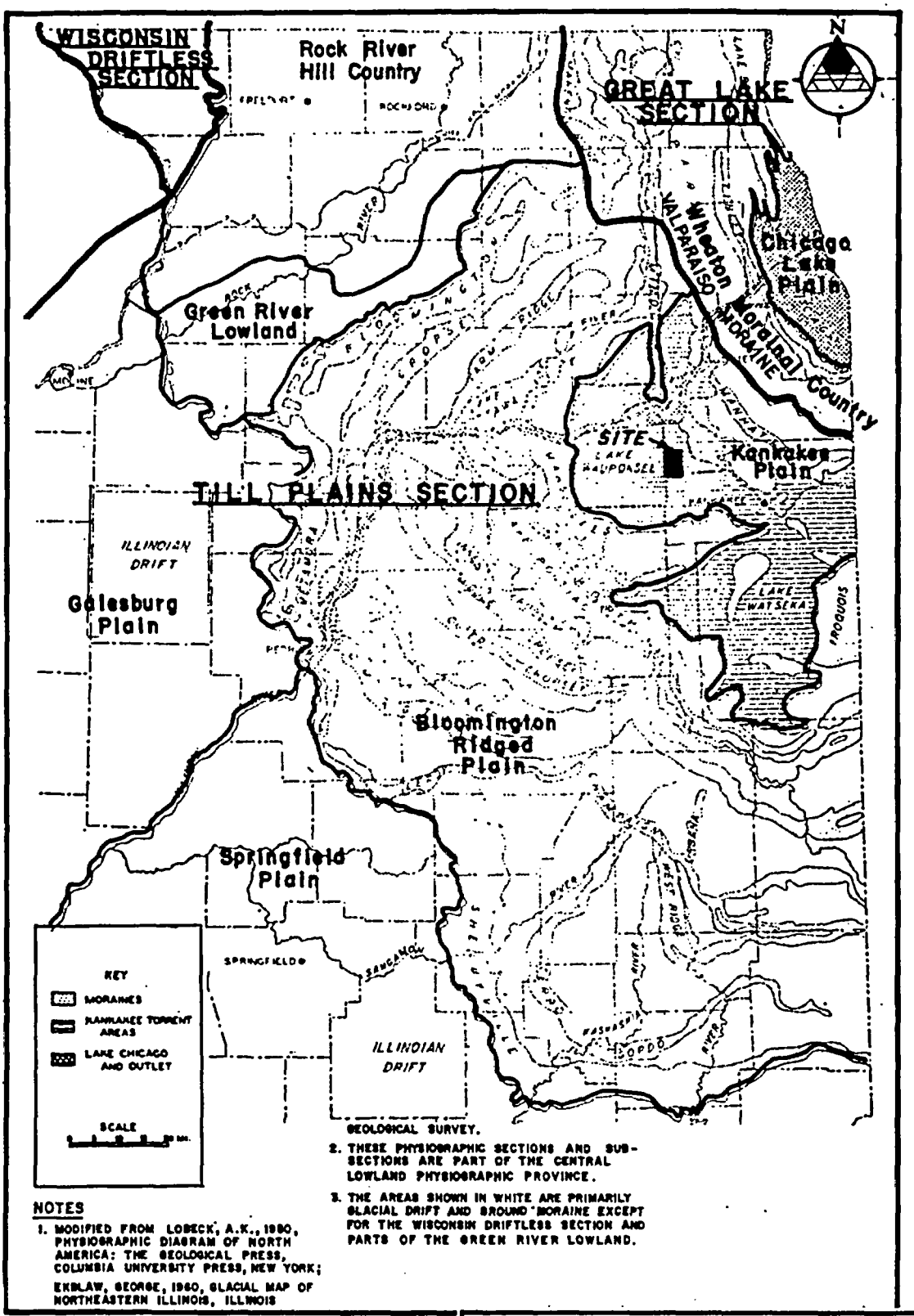
REFERENCE:

MODIFIED FROM WILLMAN AND FRYE, 1970, PLEISTOCENE STRATIGRAPHY OF ILLINOIS, ILLINOIS STATE GEOLOGICAL SURVEY, BULLETIN 94

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-3

REGIONAL GLACIATION



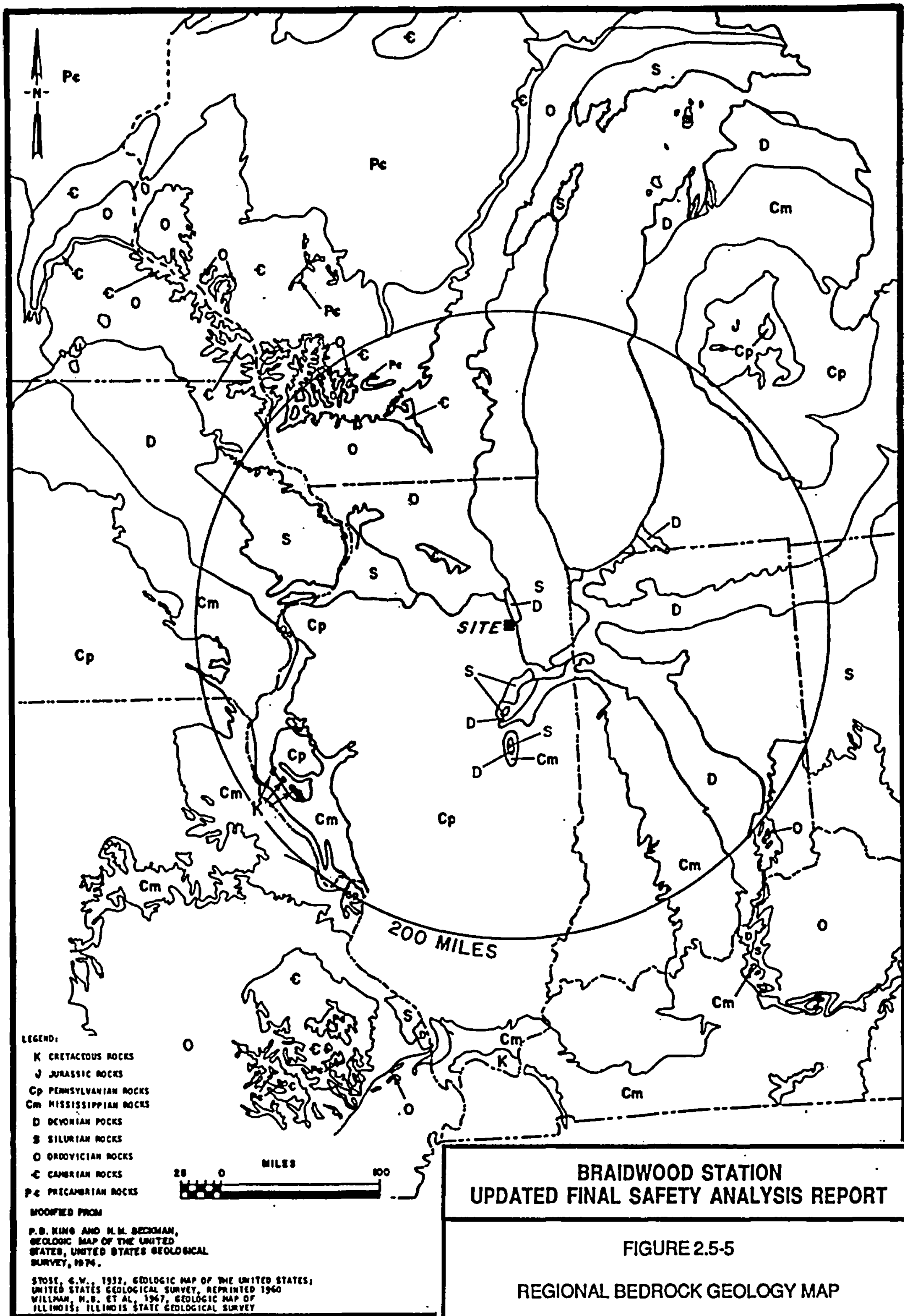
NOTES

1. MODIFIED FROM LOBECK, A.K., 1950, PHYSIOGRAPHIC DIAGRAM OF NORTH AMERICA: THE GEOLOGICAL PRESS, COLUMBIA UNIVERSITY PRESS, NEW YORK; EKBLAW, GEORGE, 1960, GLACIAL MAP OF NORTHEASTERN ILLINOIS, ILLINOIS GEOLOGICAL SURVEY.
2. THESE PHYSIOGRAPHIC SECTIONS AND SUB-SECTIONS ARE PART OF THE CENTRAL LOWLAND PHYSIOGRAPHIC PROVINCE.
3. THE AREAS SHOWN IN WHITE ARE PRIMARILY GLACIAL DRIFT AND GROUND MORAINE EXCEPT FOR THE WISCONSIN DRIFTLESS SECTION AND PARTS OF THE GREEN RIVER LOWLAND.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-4

REGIONAL PHYSIOGRAPHIC MAP



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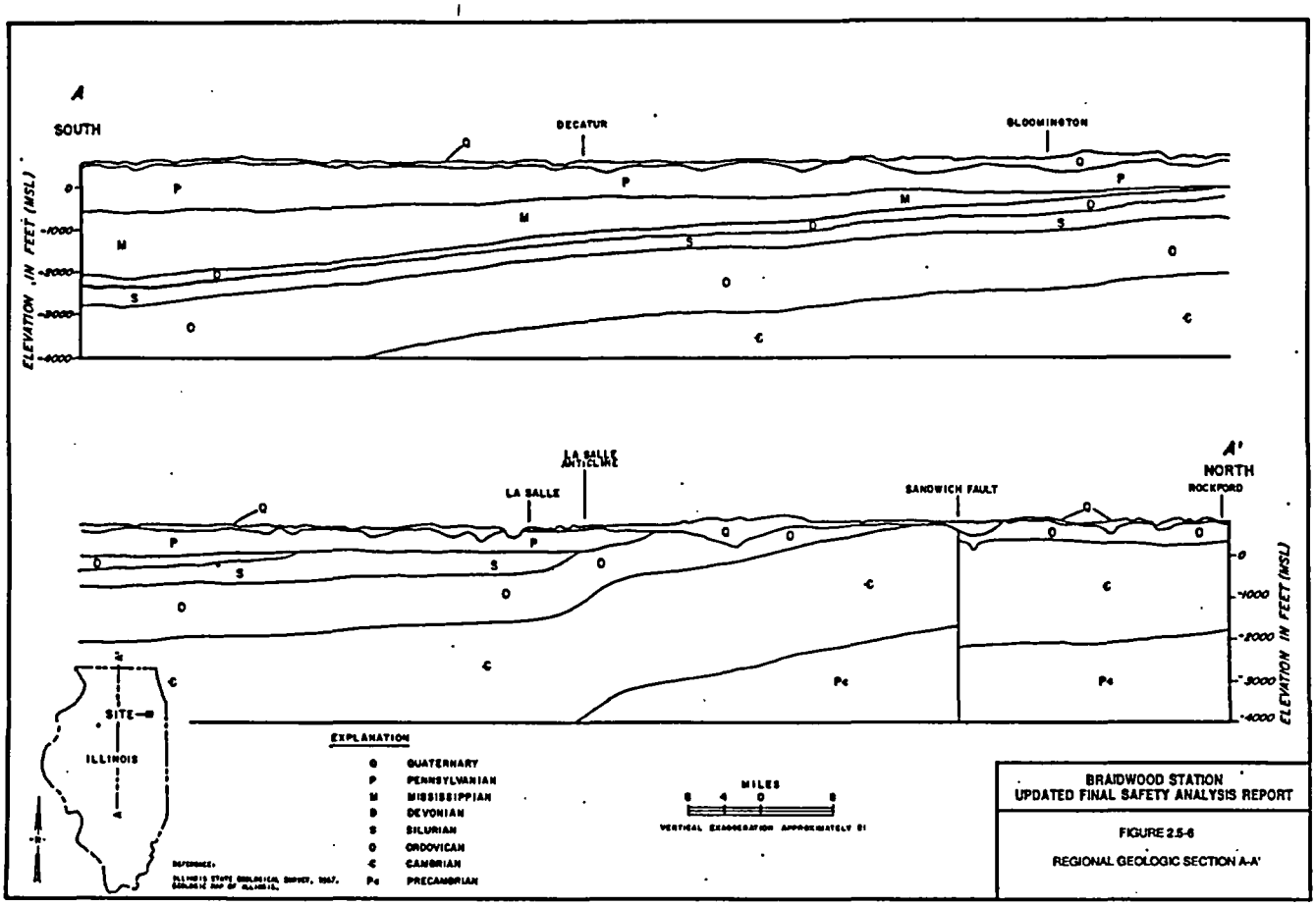
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-5

REGIONAL BEDROCK GEOLOGY MAP



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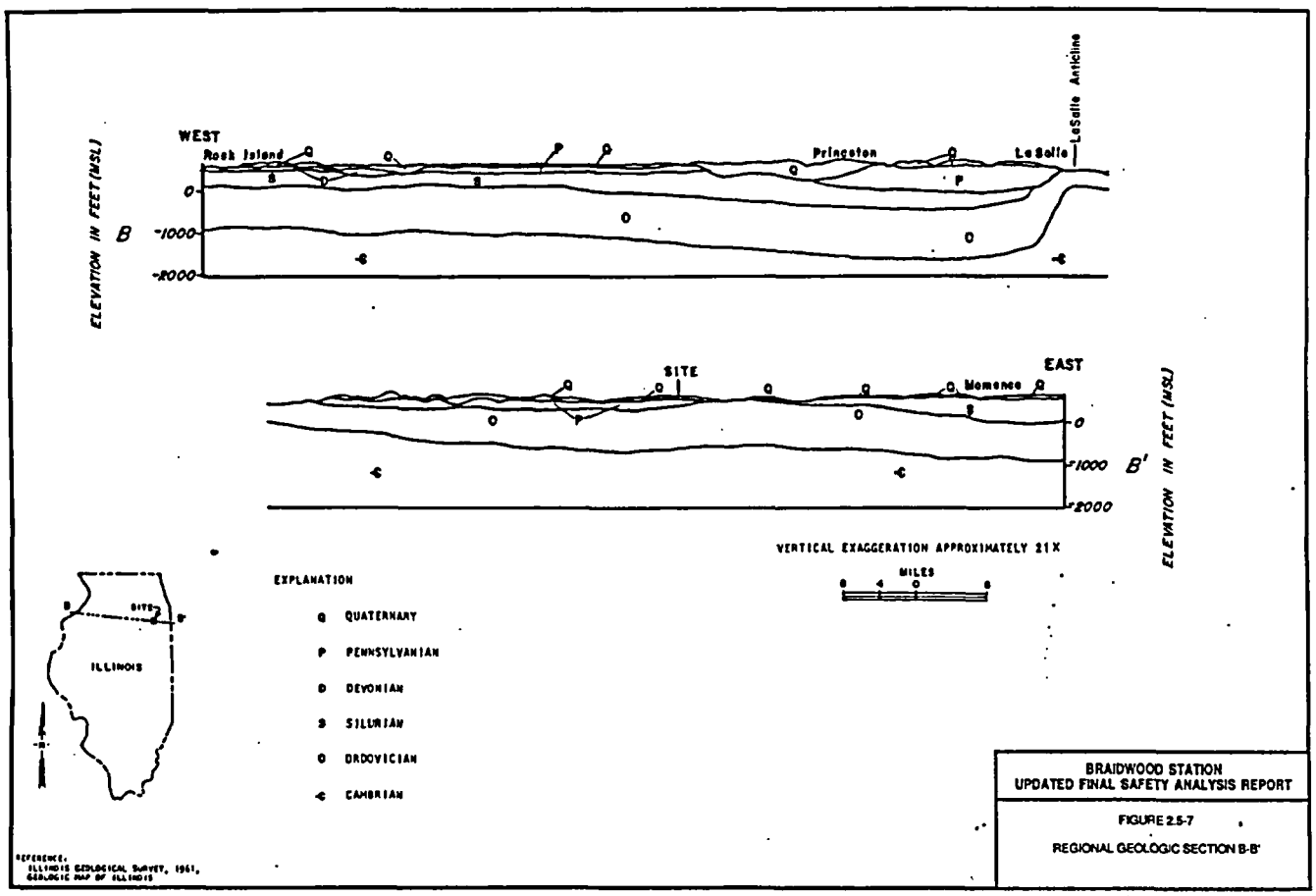
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-6

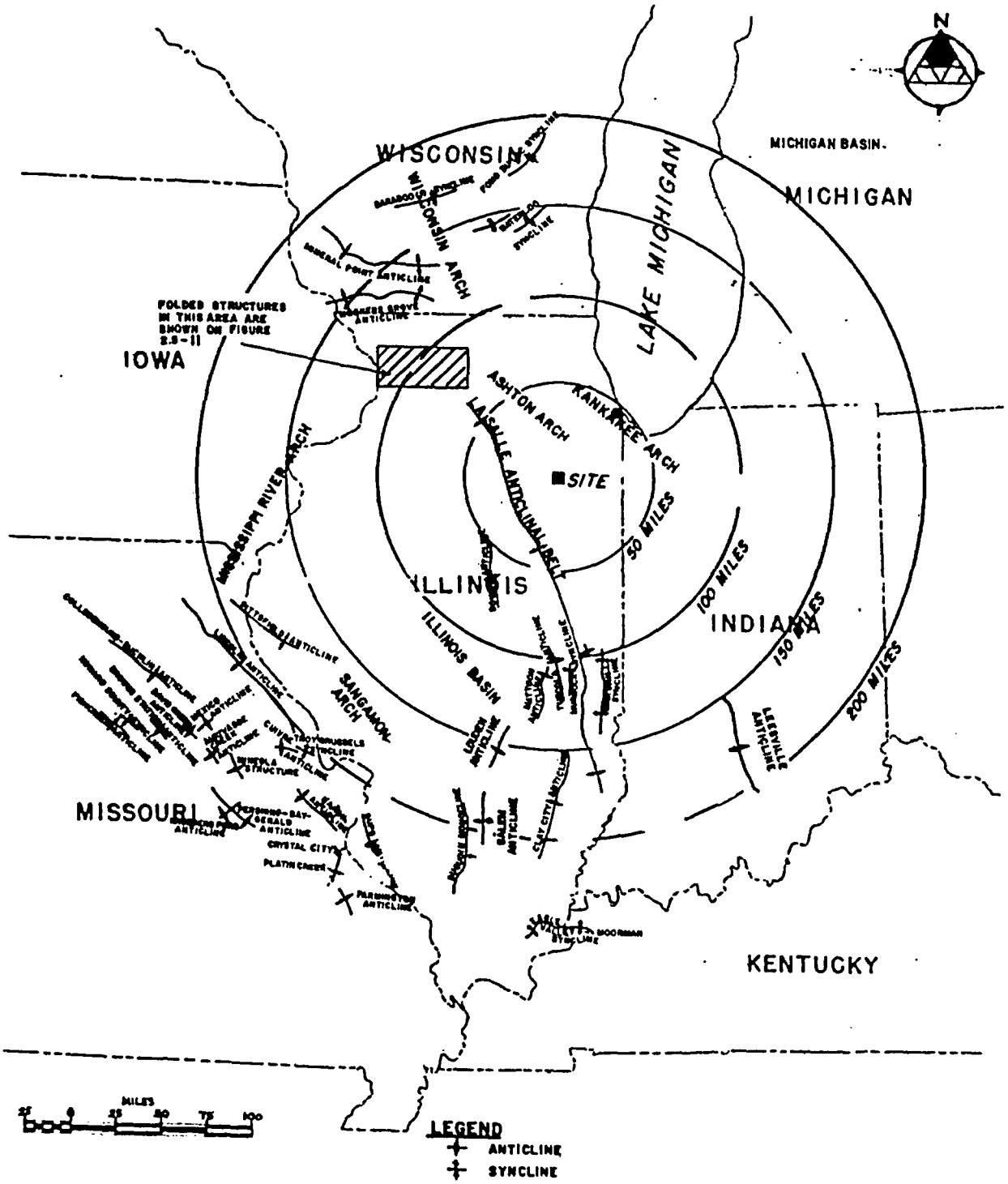
REGIONAL GEOLOGIC SECTION A-A'



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-7

REGIONAL GEOLOGIC SECTION B-B'



NOTES

COMPILED FROM:

A. UNITED STATES GEOLOGICAL SURVEY AND THE AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, 1962, TECTONIC MAP OF THE UNITED STATES.

B. THWAITES, F.T., 1957, BURIED PRE-CAMBRIAN OF WISCONSIN, UNIVERSITY OF WISCONSIN AND WISCONSIN GEOLOGICAL SURVEY.

C. ILLINOIS GEOLOGICAL SURVEY, 1967, GEOLOGIC MAP OF ILLINOIS

D. CLEGG, K.E., 1965, SUBSURFACE GEOLOGY AND COAL RESOURCES OF THE PENNSYLVANIAN SYSTEM IN CLARK AND EDGAR COUNTIES, ILLINOIS; ILLINOIS STATE GEOLOGICAL SURVEY CIRCULAR 380.

E. MCCRACKEN, M.H., 1971, STRUCTURAL FEATURES OF MISSOURI; MISSOURI GEOLOGICAL SURVEY, REPORT OF INVESTIGATIONS NUMBER 49

F. MCGINNIS, L.D., AND BRADBURY, W.C., 1964, AEROMAGNETIC STUDY OF THE HARDIN COUNTY AREA, ILLINOIS; ILLINOIS STATE GEOLOGICAL SURVEY CIRCULAR 363.

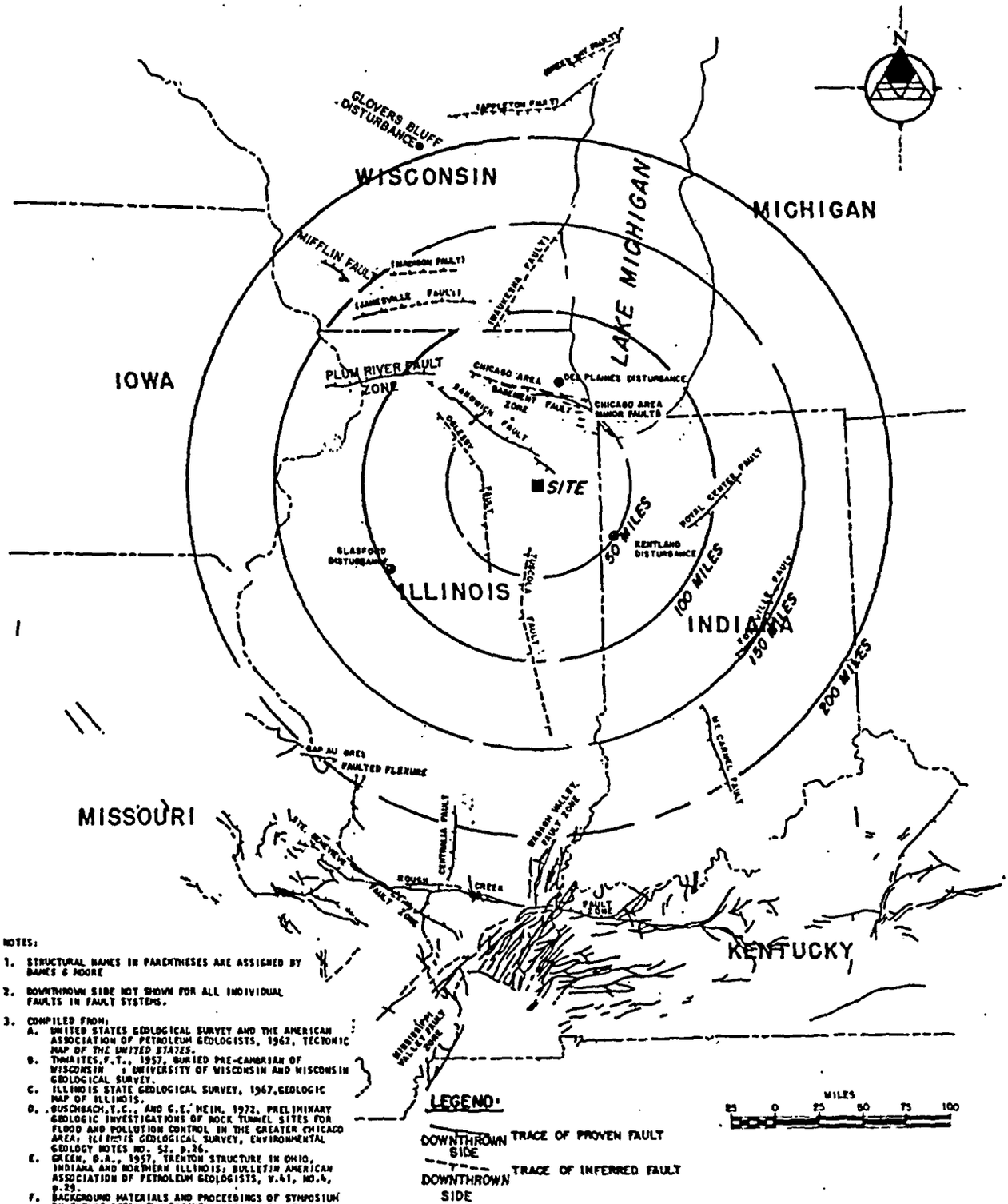
G. Kolata, D.R. and Buschbach, T.C., Plum River Fault Zone of Northwestern Illinois; Illinois State Geological Survey, Circular 461.

2. Data are Summarized in Table 2.5-1

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-8

MAJOR FOLDS



NOTES:

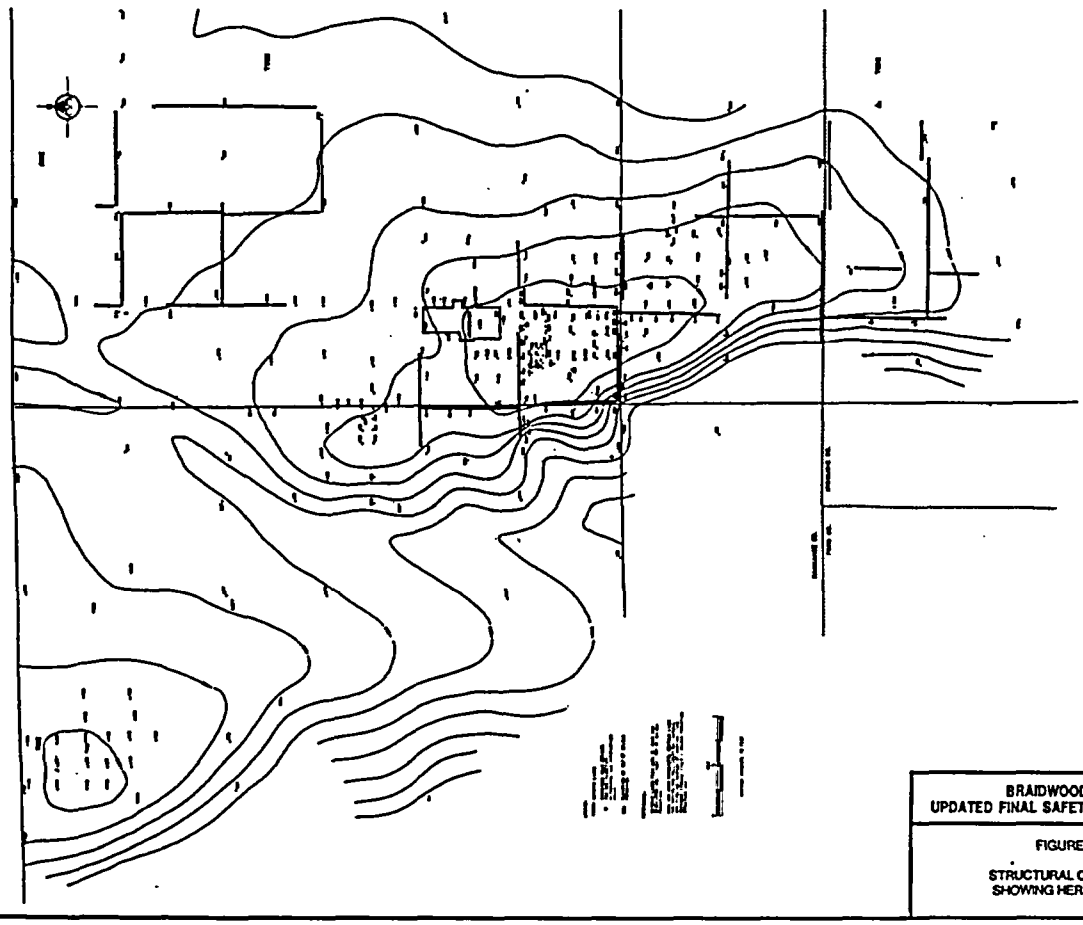
1. STRUCTURAL NAMES IN PARENTHESES ARE ASSIGNED BY BAMES & MOORE
2. DOWNTHROWN SIDE NOT SHOWN FOR ALL INDIVIDUAL FAULTS IN FAULT SYSTEMS.
3. COMPILED FROM:
   A. UNITED STATES GEOLOGICAL SURVEY AND THE AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, 1962, TECTONIC MAP OF THE UNITED STATES.
   B. THWAITES, F.T., 1957, BURIED PRE-CAMBRIAN OF WISCONSIN : UNIVERSITY OF WISCONSIN AND WISCONSIN GEOLOGICAL SURVEY.
   C. ILLINOIS STATE GEOLOGICAL SURVEY, 1967, GEOLOGIC MAP OF ILLINOIS.
   D. BUSCHBACH, T.C., AND G.E. HEIM, 1972, PRELIMINARY GEOLOGIC INVESTIGATIONS OF ROCK TUNNEL SITES FOR FLOOD AND POLLUTION CONTROL IN THE GREATER CHICAGO AREA; ILLINOIS GEOLOGICAL SURVEY, ENVIRONMENTAL GEOLOGY NOTES NO. 52, p.26.
   E. GREEN, D.A., 1957, TRENTON STRUCTURE IN OHIO, INDIANA AND NORTHERN ILLINOIS; BULLETIN AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS, V.41, NO.4, p.29.
   F. BACKGROUND MATERIALS AND PROCEEDINGS OF SYMPOSIUM ON FUTURE PETROLEUM POTENTIAL OF N.P.C. REGION 9; ILLINOIS STATE GEOLOGICAL SURVEY, ILLINOIS PETROLEUM 95 AND 96.
   G. HEYL, A.V., ET.AL., 1965, REGIONAL STRUCTURE OF THE SOUTHEAST MISSOURI AND ILLINOIS-KENTUCKY MINERAL DISTRICTS, UNITED STATES GEOLOGICAL SURVEY BULLETIN 1202-B.
   H. M.E. Ostrom, Wisconsin Geological and Natural History Survey, Madison, Wisconsin, Written Communication 1978.
   I. C.E. Dutton and R.E. Bradley, "Lithologic, Geophysical and Mineral Commodity Maps of Precambrian rocks in Wisconsin", Map I-631, Miscellaneous Geological Investigations, Plate 8, U.S. Geological Survey (1970)
   J. G.R. Kolata and T.C. Buschbach, Plum River Fault Zone of Northwestern Illinois, Illinois State Geological Survey, Cir. 491 (1976).
   K. L. D. MCGINNIS, CRUSTAL TECTONICS AND PRECAMBRIAN BASEMENT IN NORTHEASTERN ILLINOIS, ILLINOIS STATE GEOLOGICAL SURVEY, REPORT OF INVESTIGATIONS 219.

* Data and commentary in Table 2.5-9

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-9

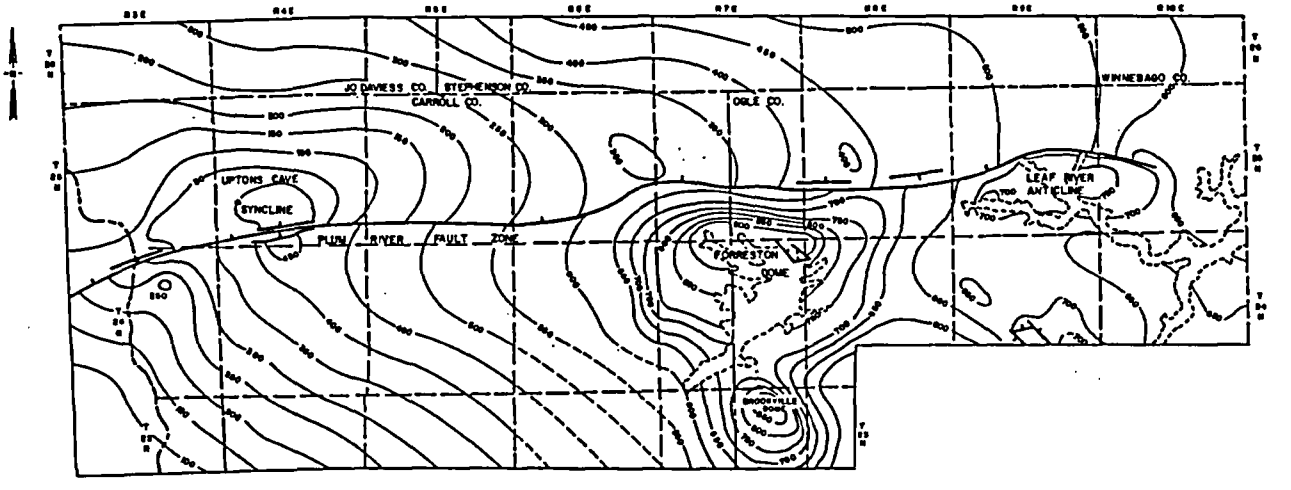
MAJOR FAULTS



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-10

STRUCTURAL CONTOUR MAP
SHOWING HERSCHER DOME



LEGEND

- Structure contours on top of Glenwood Formation
- Structure contours on top of Glenwood Formation, Inferred
- Top of Glenwood Formation eroded
- State Line
- Township Lines
- County Lines
- Trace of Fault (Downthrust Side)

NOTE

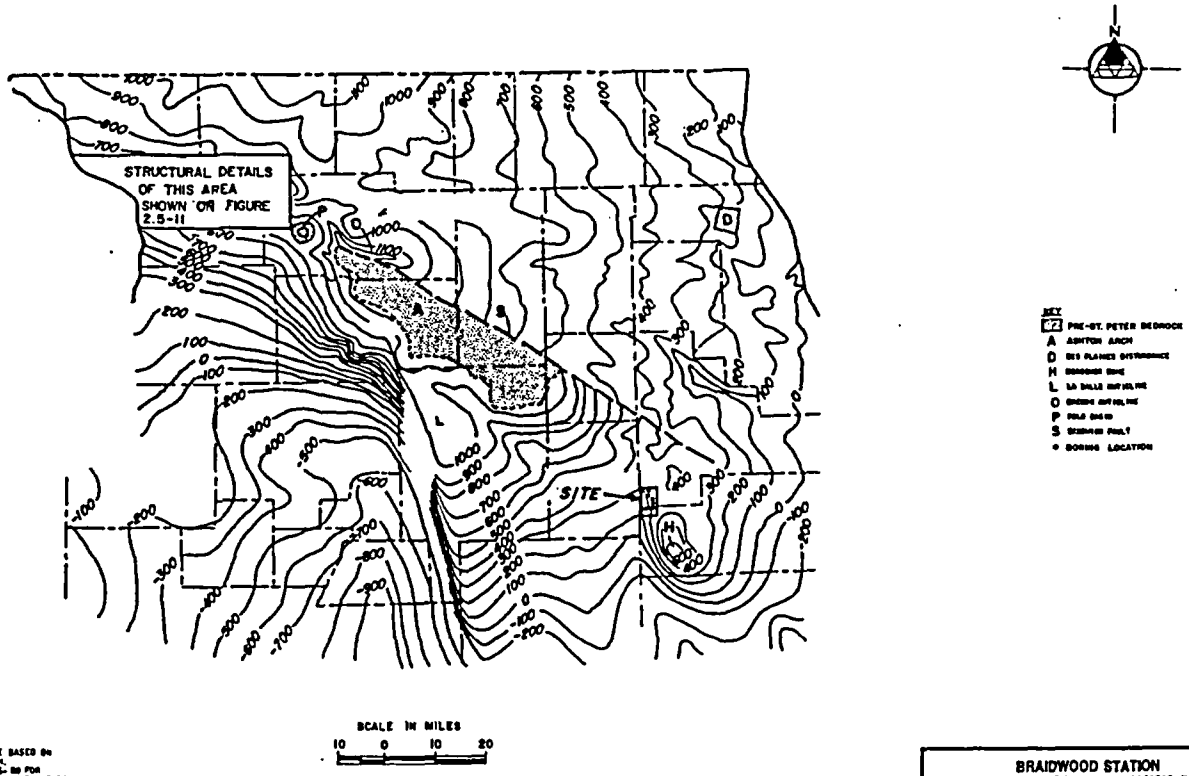
1. Modified from Kolata D.R. and Buschbach T.C., Plum River Fault Zone of Northwestern Illinois, Illinois State Geological Survey Circular 491, 1976.

0 1 2 3 4 5
Scale in Miles

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-11

PLUM RIVER FAULT ZONE



NOTE:

1. ELEVATIONS ARE BASED ON U.S.G.S. DATUM.
2. SEE FIGURE 2.5-10 FOR ENLARGED VIEW OF STRUCTURAL CONTOURS AND BORINGS IN SITE AREA.

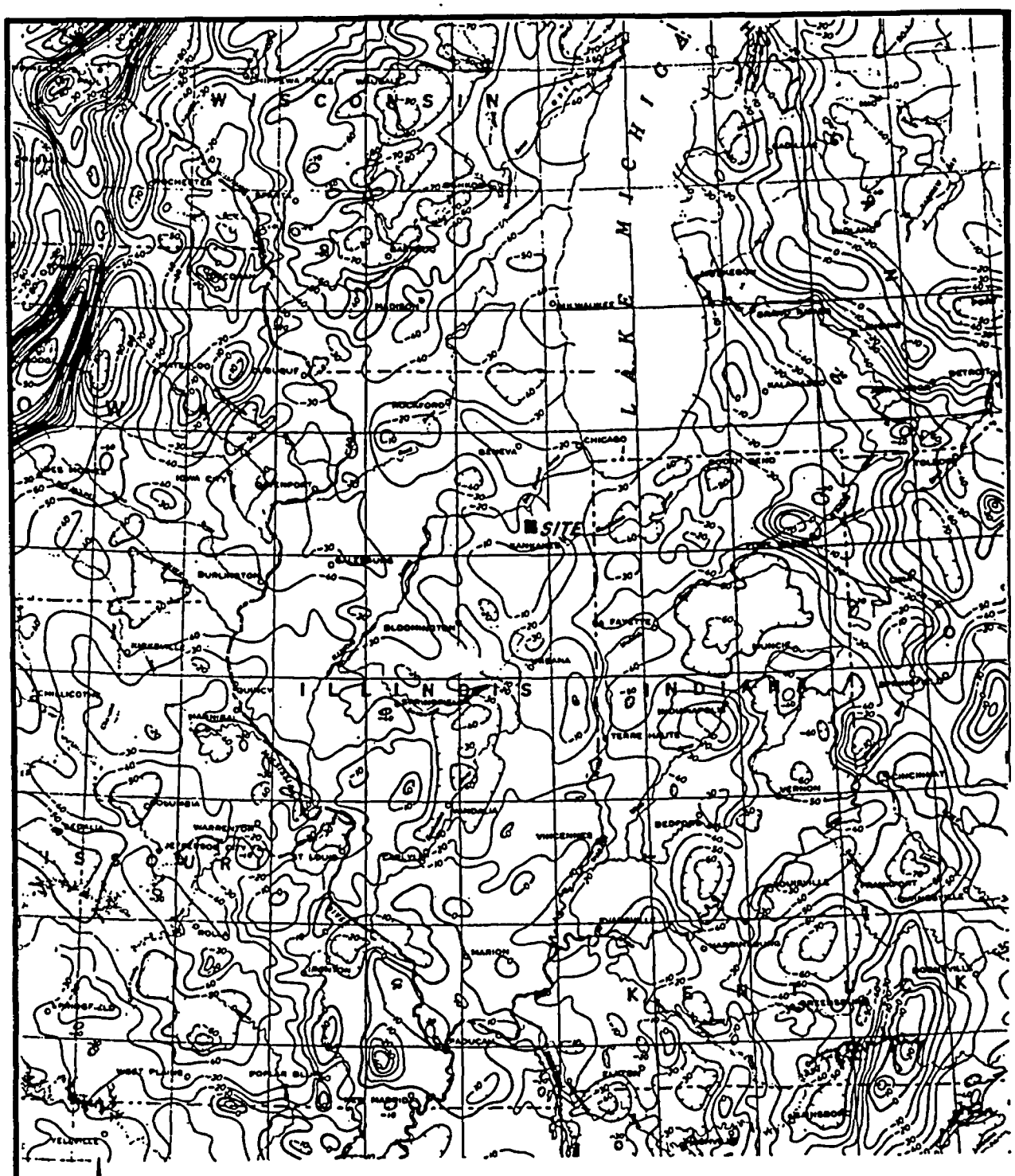
REFERENCE:

TEMPLETON, J.S., AND H.D. WILLIAMS 1953, CENTRAL ILLINOIS-GUIDEBOOK FOR THE 14TH ANNUAL FIELD CONFERENCE OF THE TRI-STATE GEOLOGICAL SOCIETY; ILLINOIS GEOLOGICAL SURVEY, GUIDEBOOK SERIES 2, 47 p.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-12

REGIONAL STRUCTURE CONTOURS ON TOP OF THE GALENA GROUP



-N-

LEGEND:

-60- BOUGUER GRAVITY CONTOUR (CONTOUR INTERVAL 10 MILLIGALS)

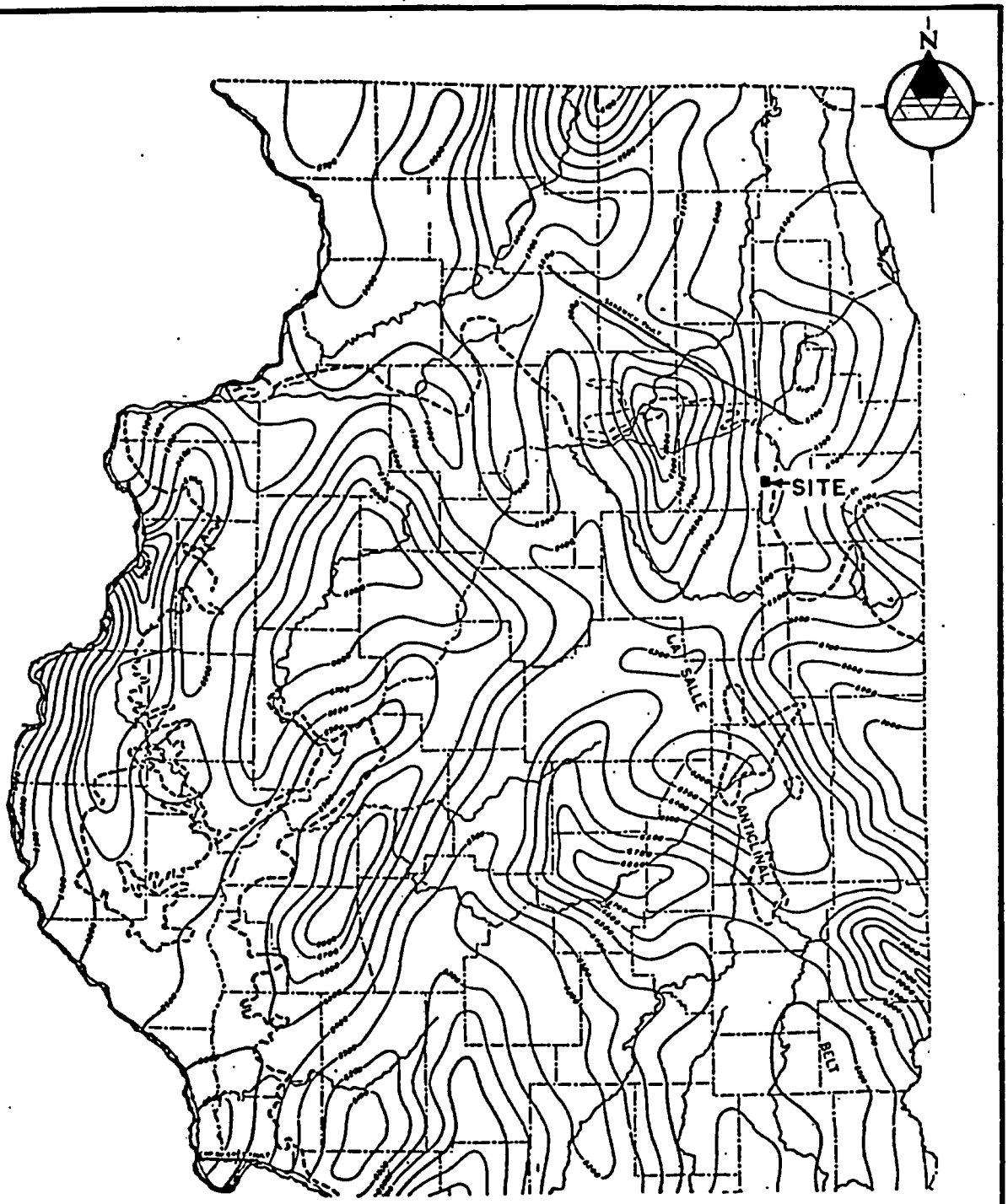
REFERENCE:

BASE MAP FROM: WOOLARD, G.P. AND JOESTING, H.R., 1964, BOUGUER GRAVITY ANOMALY MAP OF THE UNITED STATES; AMERICAN GEOPHYSICAL UNION AND UNITED STATES GEOLOGICAL SURVEY.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-13

BOUGUER GRAVITY ANOMALY MAP



KEY

Magnetic contour lines, interval 100 gammas

Faults, hachures indicate downthrown side

Boundary of the Pennsylvanian rocks

SCALE

0 5 10 20 30 40 Miles

REFERENCE:

MODIFIED FROM: McGINNIS, L.D., & P.C. HEIGOLD, 1961, REGIONAL MAPS OF VERTICAL MAGNETIC INTENSITY IN ILLINOIS: ILLINOIS GEOLOGICAL SURVEY, CIRCULAR 324, 12 p.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-14

REGIONAL AEROMAGNETIC MAP

FEET
2000 0 2000
APPROXIMATE SCALE

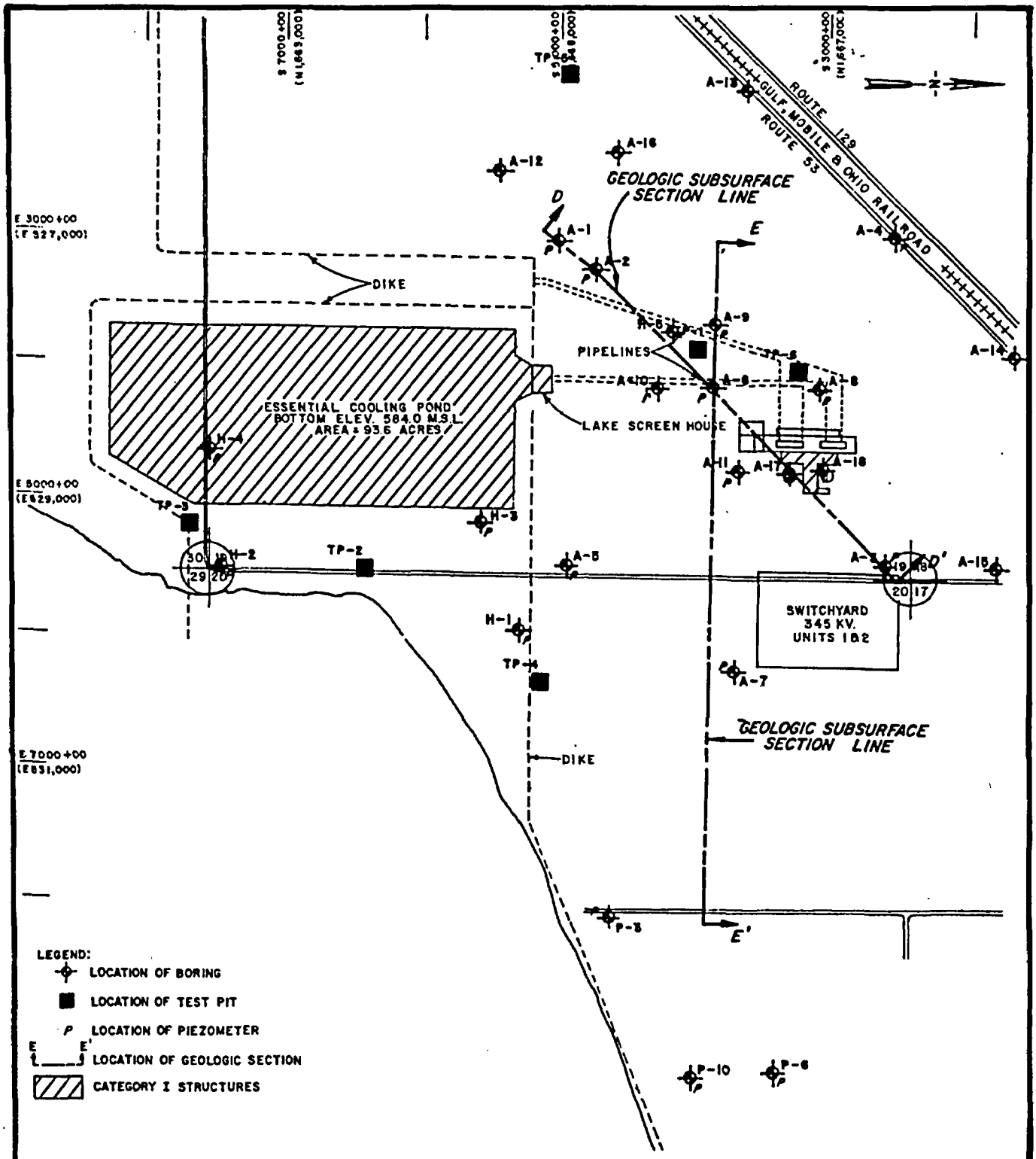
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-15

AIR PHOTO OF PLANT SITE

REFERENCE:

FROM AIR PHOTO AMF-38
BY PARK AERIAL SURVEYS, INC.
DATED: 12-22-71



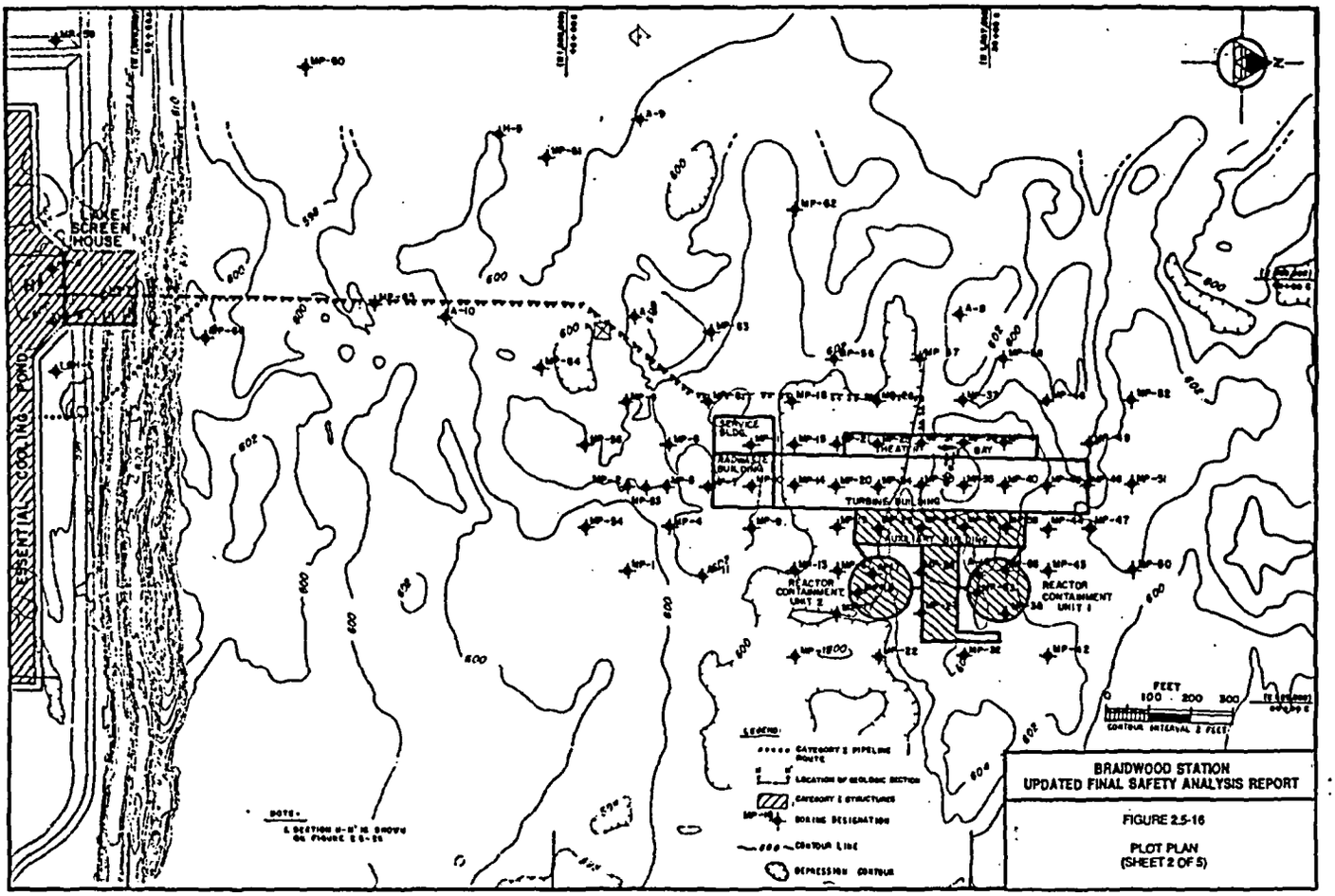
NOTE:
1. SECTIONS D-D' AND E-E' ARE SHOWN ON FIGURES 2.5-23 AND 2.5-24, RESPECTIVELY.

DRAWING REFERENCE:
TITLED: PROPERTY DEVELOPEMENT, BRAIDWOOD SITE
BY: SARGENT & LUNDY, ENGINEERS
FOR: COMMONWEALTH EDISON COMPANY
DRAWING NO.: M-2
DATED: 2-12-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-16

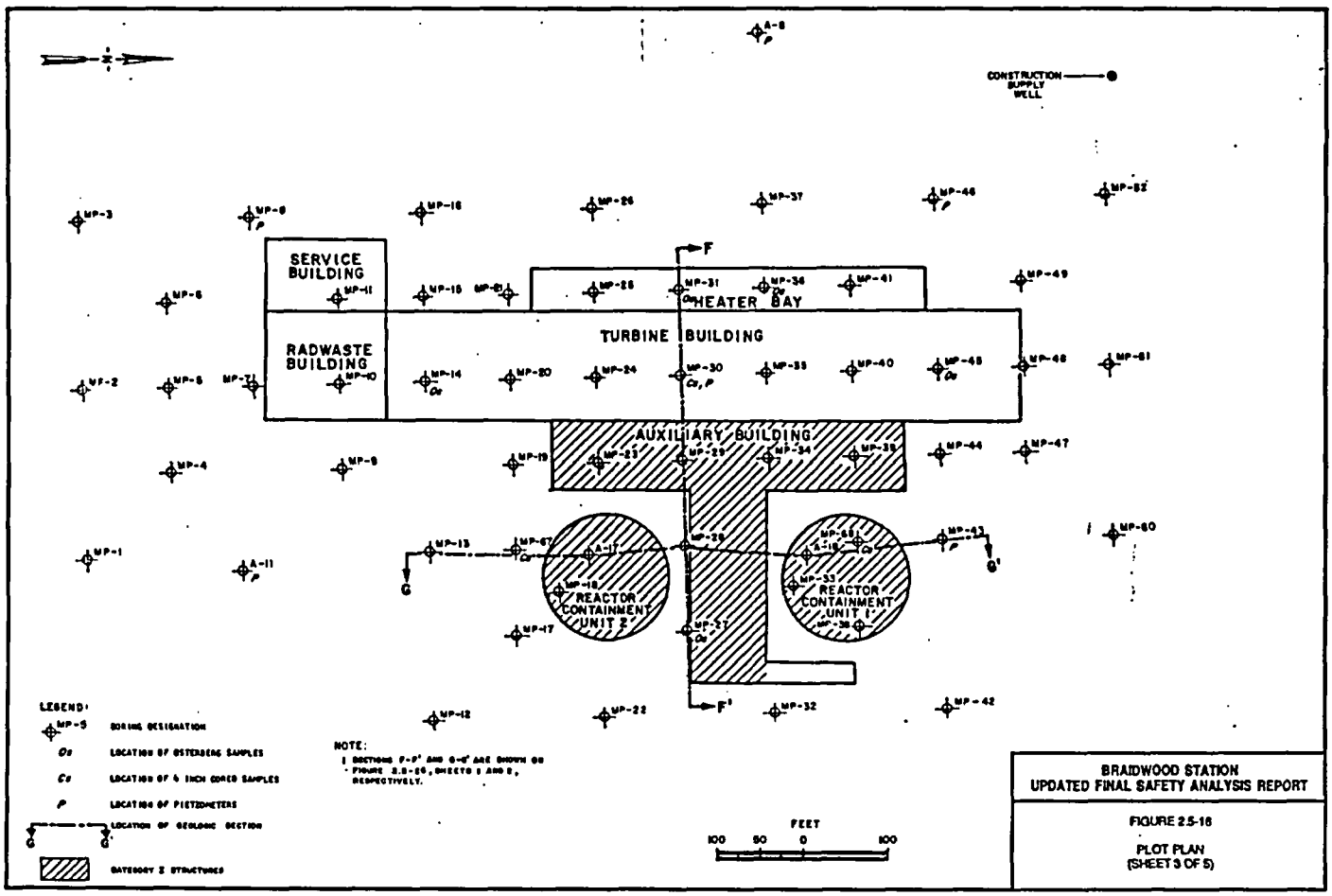
PLOT PLAN
(SHEET 1 OF 5)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-16

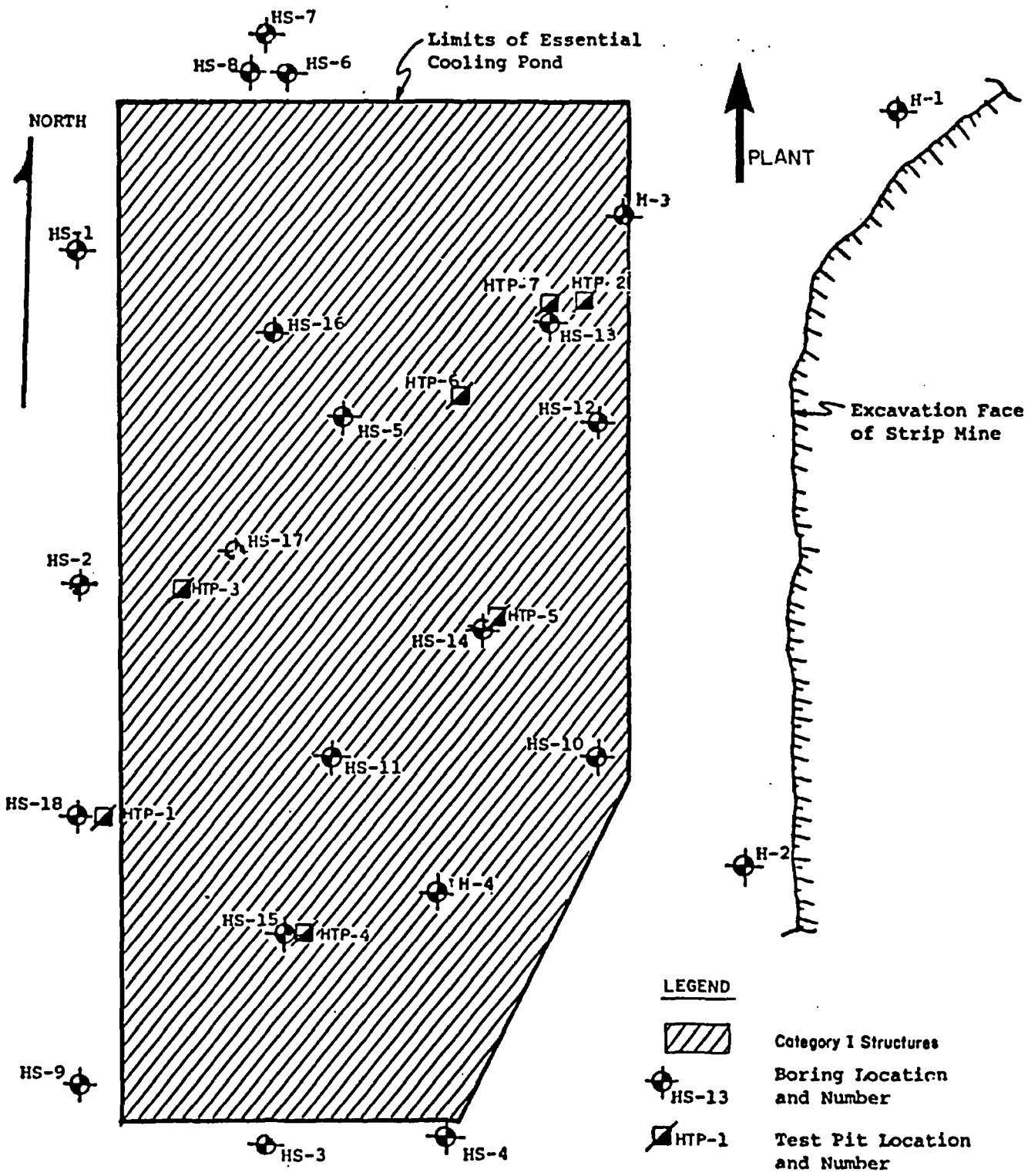
PLOT PLAN
(SHEET 2 OF 5)

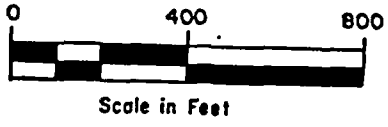


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-16

PLOT PLAN
(SHEET 3 OF 5)

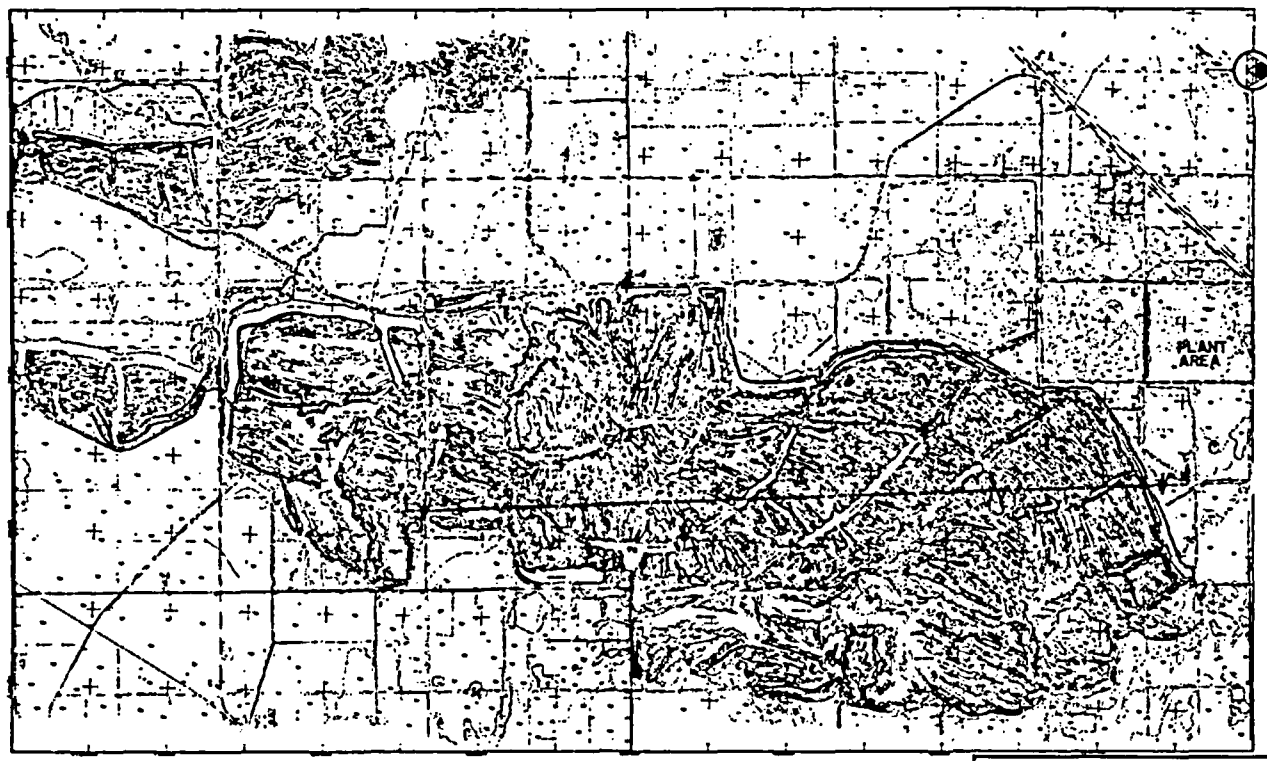




BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-16

PLOT PLAN
(SHEET 4 OF 5)



LEGEND:

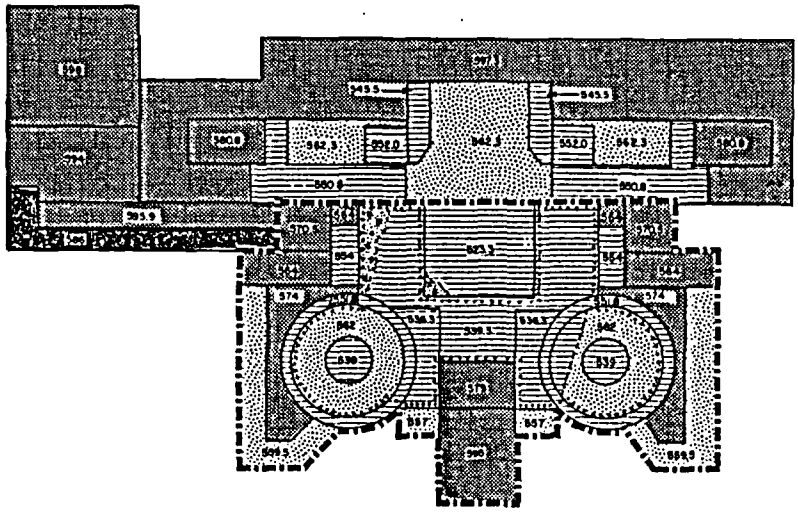
NOTE:

REFERENCE:

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-16

PLOT PLAN
(SHEET 5 OF 5)



LEGEND

BOUNDARY OF CATEGORY I STRUCTURE

BOUNDARY OF PORTION OF EXCAVATION FLOOR THAT WAS COVERED WITH MUD MATS AT TIME OF EXCAVATION MAPPING (GEOLOGY INFERRED FROM WALLS)

COMPACTED FILL

WEDRON FORMATION GLACIAL TILL

CARBONDALE FORMATION FRANCIS CREEK SHALE MEMBER

CHANNEL SANDSTONE DEPOSITS

SILTSTONE

SANDSTONE COAL AND CONGLOMERATE

FEET

NOTES:

1. ELEVATIONS REFER TO U.S.G.S. DATUM.
2. NUMBERS WITHIN THE EXCAVATION BOUNDARIES REFER TO ELEVATION OF THE BOTTOM OF THE EXCAVATION
3. DETAILED EXCAVATION LIMITS SHOWN ON FIGURE 2.5-72.
4. DETAILED BACKFILL LIMITS SHOWN ON FIGURE 2.5-73.

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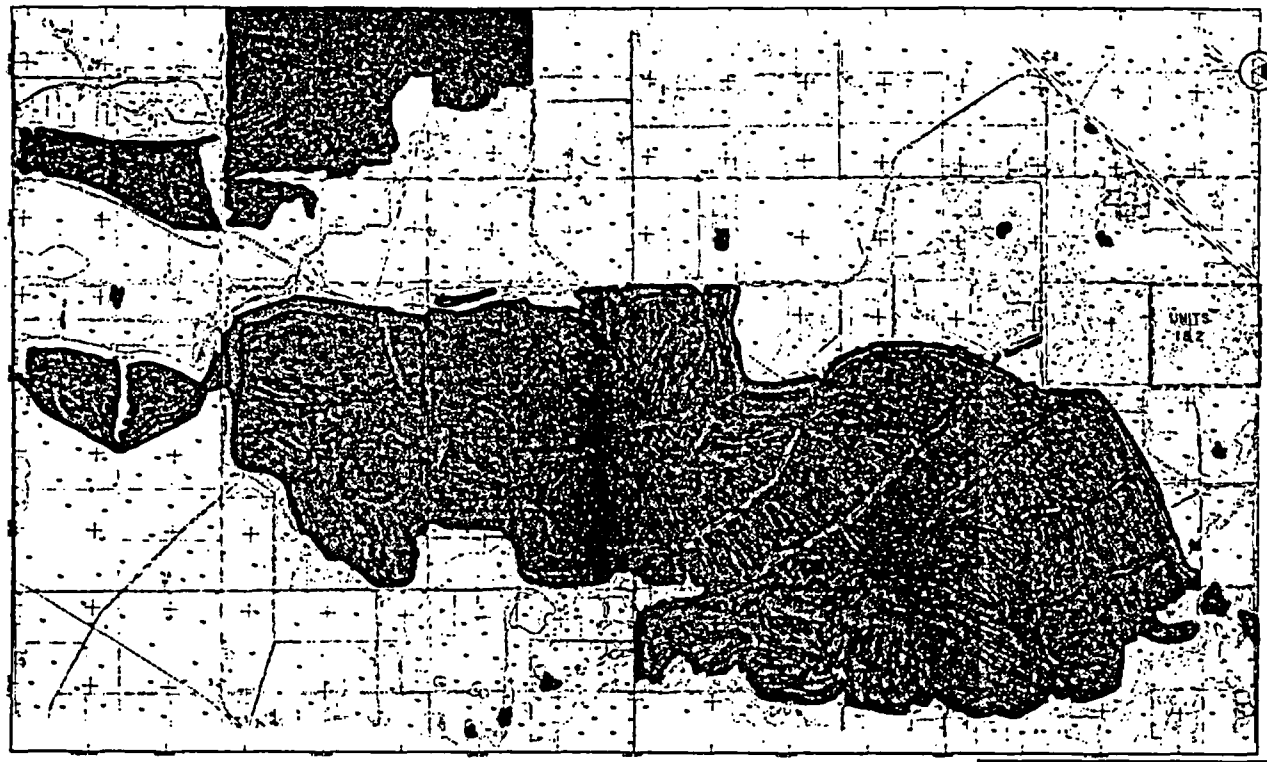
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-17

PLANT FOUNDATIONS AND SUBGRADE MATERIAL FOR MAJOR STRUCTURES



LEGEND:

INDICATES REGIONS OF 2 - 100% SLOPE IN STRIP MINED AREAS

INDICATES REGIONS OF 0 - 2% NATURAL SLOPE

NOTE:

THE ENTIRE AREA IS A FORMER GLACIAL LAKE PLAIN

REFERENCE:

FROM PHOTO GRAMMETRIC RESURVEY BY AIRMAPS INC., DATED: 6-10-72

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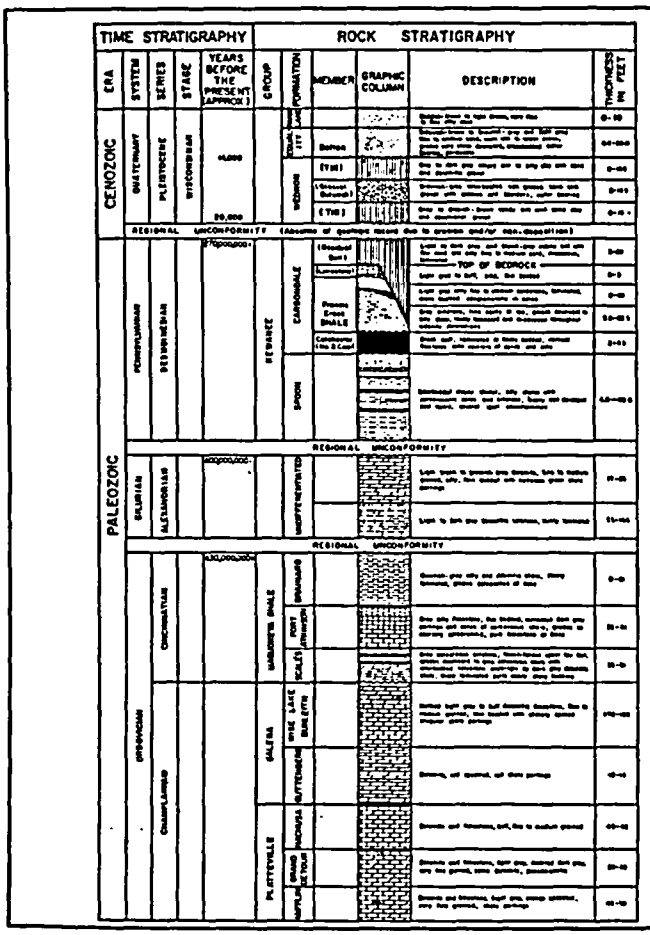
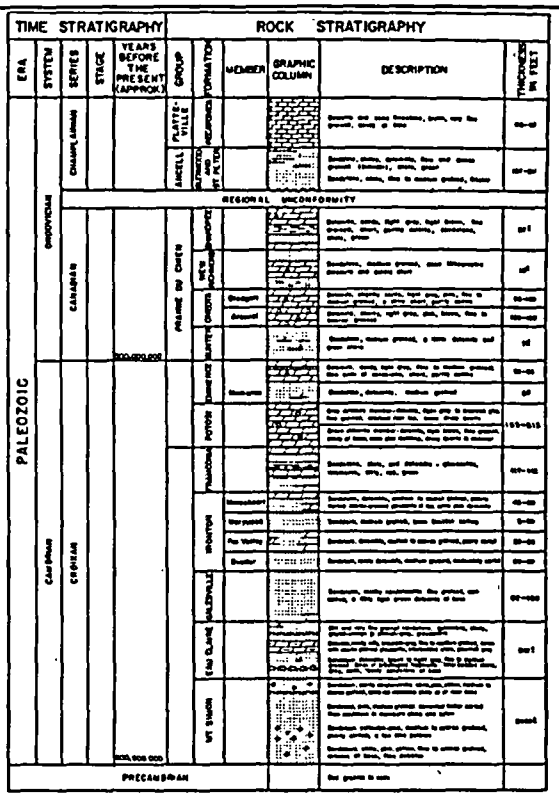
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-16

PHYSIOGRAPHIC MAP—SITE AREA





NOTE:

THICKNESSES OF FORMATIONS DOWN TO AND INCLUDING THE SCALESHALE ARE BASED ON SITE BORINGS. THICKNESSES OF UNITS BELOW THE SCALES SHALE ARE ESTIMATED FROM EXISTING ILLINOIS STATE GEOLOGICAL SURVEY WELL RECORDS.

BRAIDWOOD STATION
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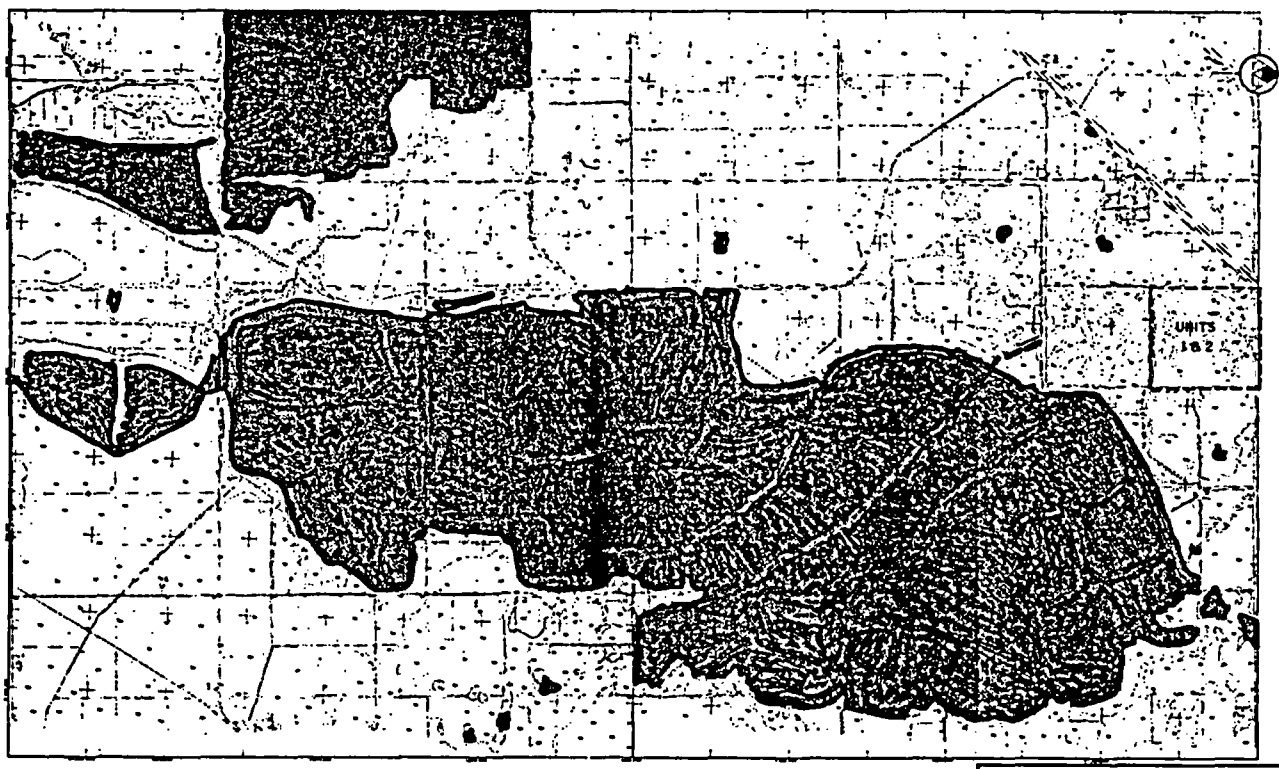
FIGURE 2.5-19

SITE STRATIGRAPHIC SECTION



LEGEND

INDICATES STRIP MINE DEBRIS

INDICATES LOCAL EXTENT OF PARKLAND SAND AND EQUALITY FORMATION

CONTOUR INTERVAL 10 FEET

REFERENCE:
FROM PHOTO GRAMMETRIC METHODS BY AIRWAYS INC., DATED: 8-10-72

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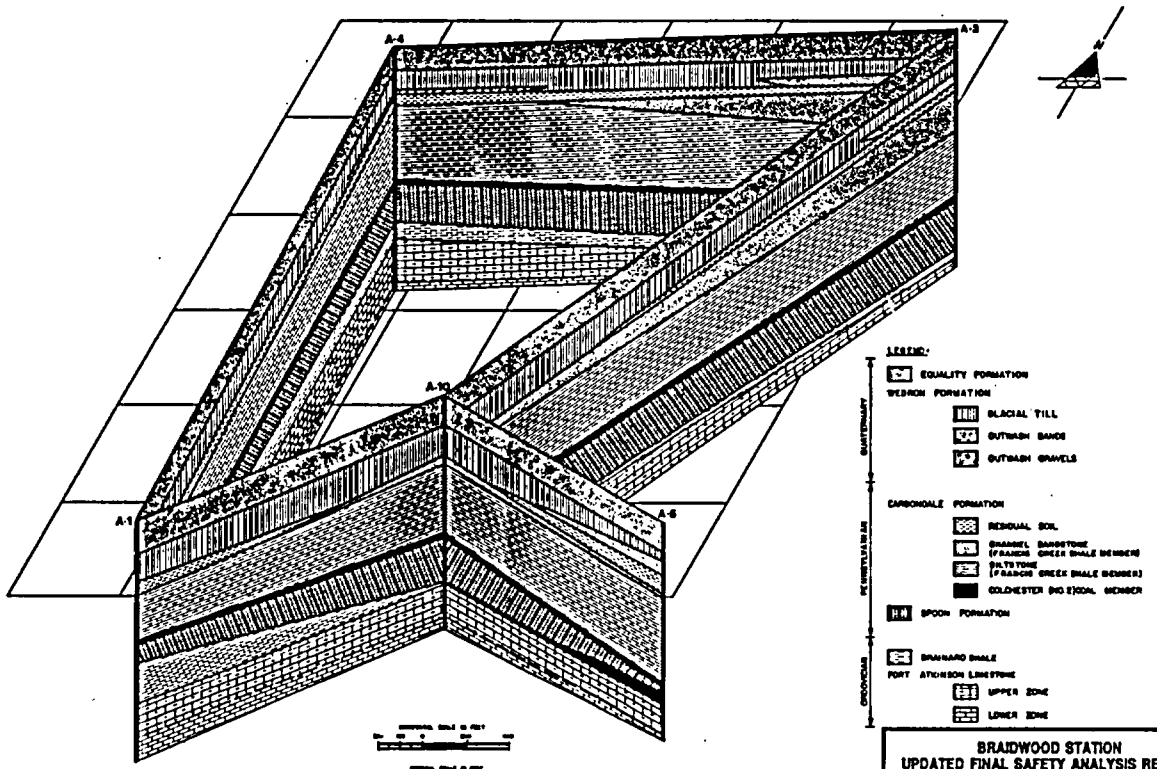
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-20

SURFICIAL GEOLOGIC MAP—SITE AREA



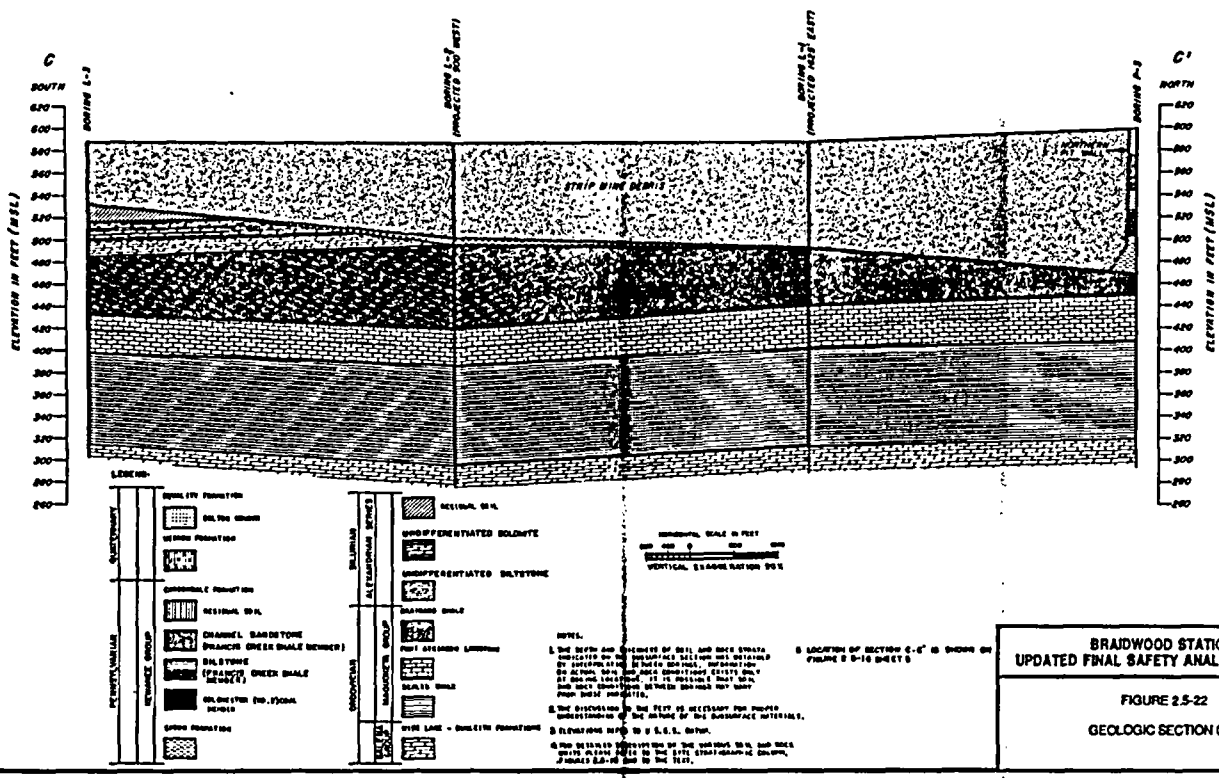
NOTE:

1. FOR DETAILED DESCRIPTIONS OF THE VARIOUS UNITS PLEASE REFER TO THE GEOTECHNICAL STRATIGRAPHIC COLUMN FOR THE SITE AREA AND TO THE TEXT UNDER SITE GEOLOGY.
2. PARKLAND SAND IS NOT DIFFERENTIATED FROM THE EQUALITY FORMATION IN THIS FENCE.
3. LOCATION OF BORINGS ARE SHOWN ON FIGURE 2.5-10, SHEET 1.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-21

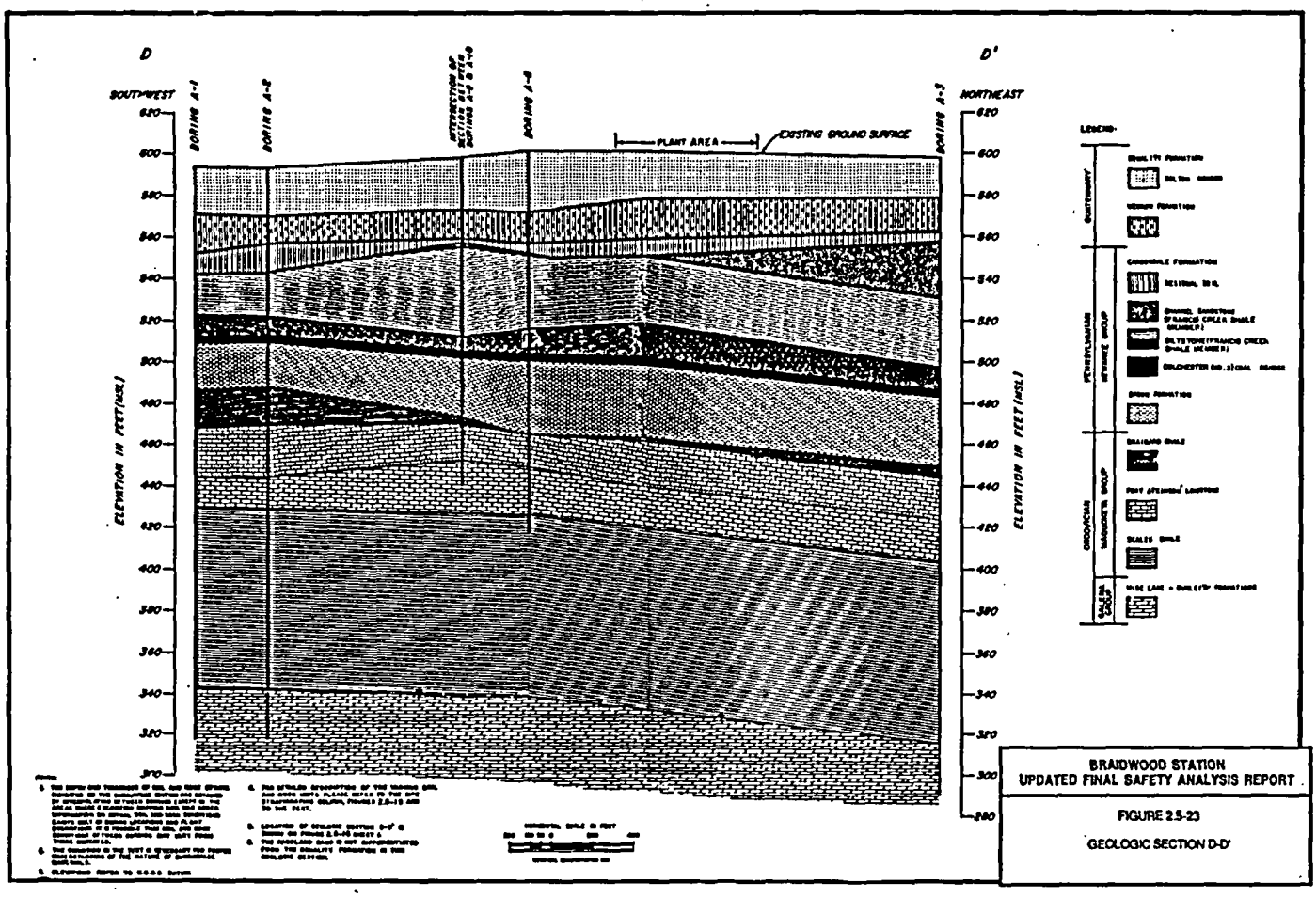
FENCE DIAGRAM OF SITE AREA



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-22

GEOLOGIC SECTION C-C'



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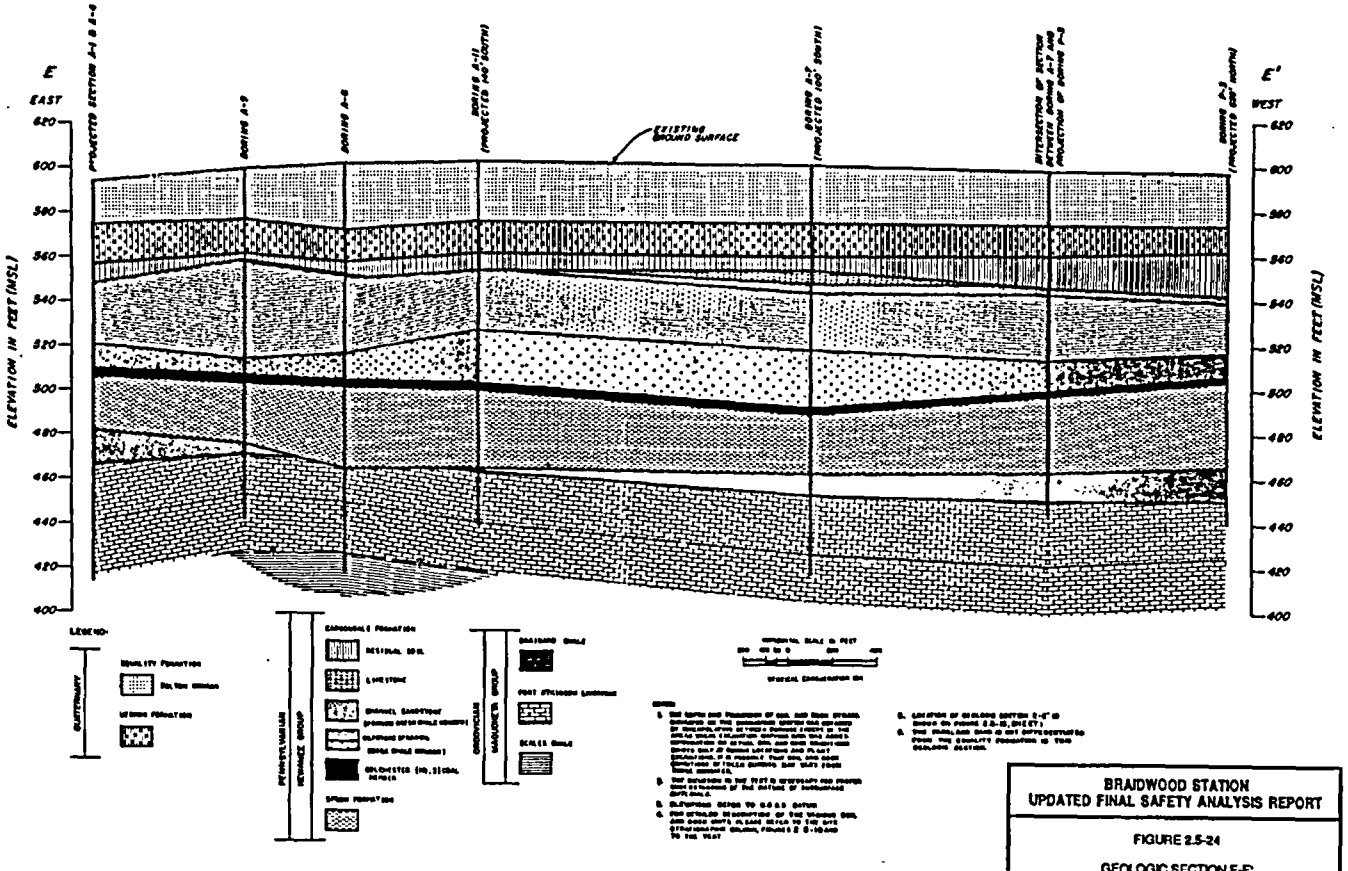
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-23

GEOLOGIC SECTION D-D'



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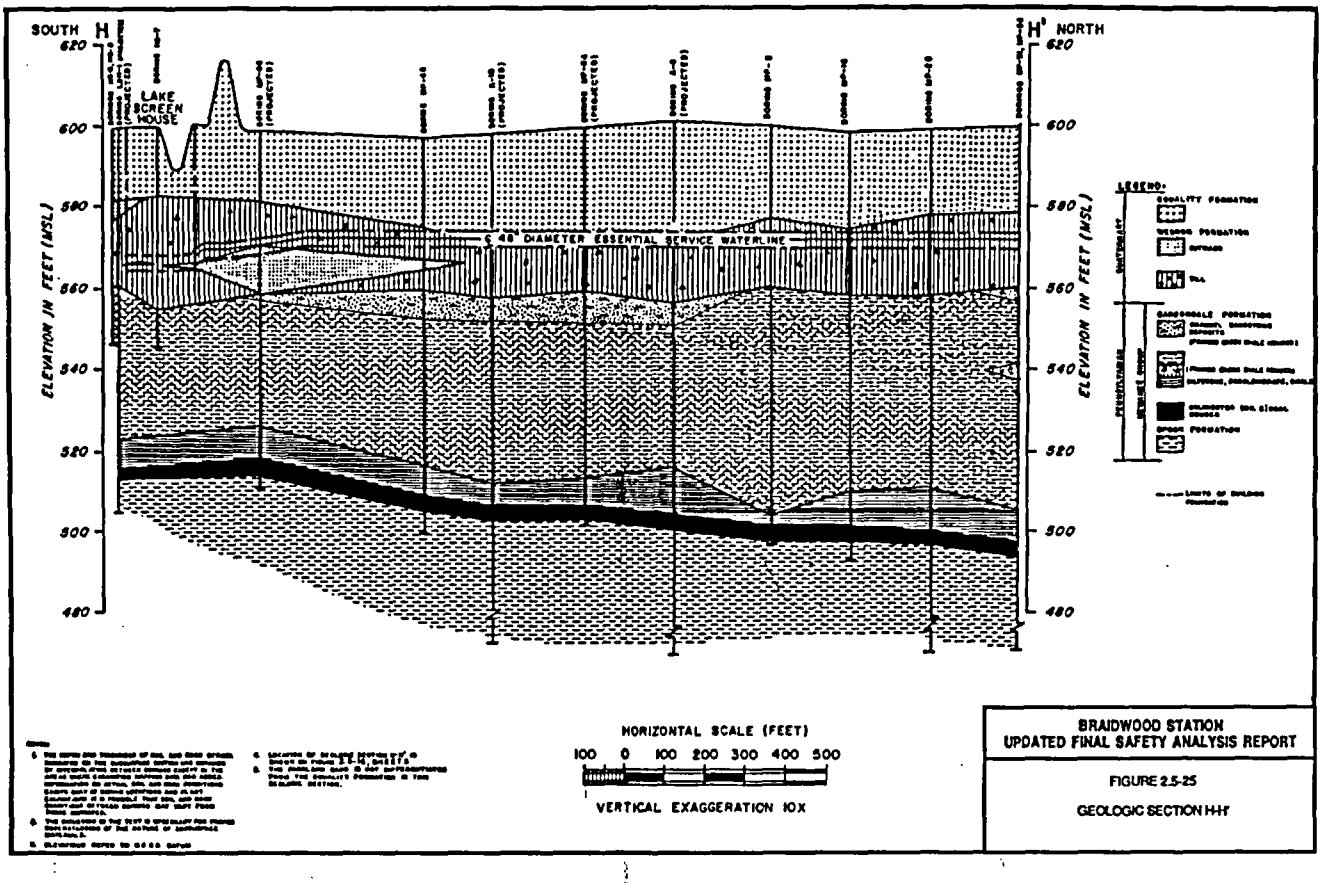
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-24

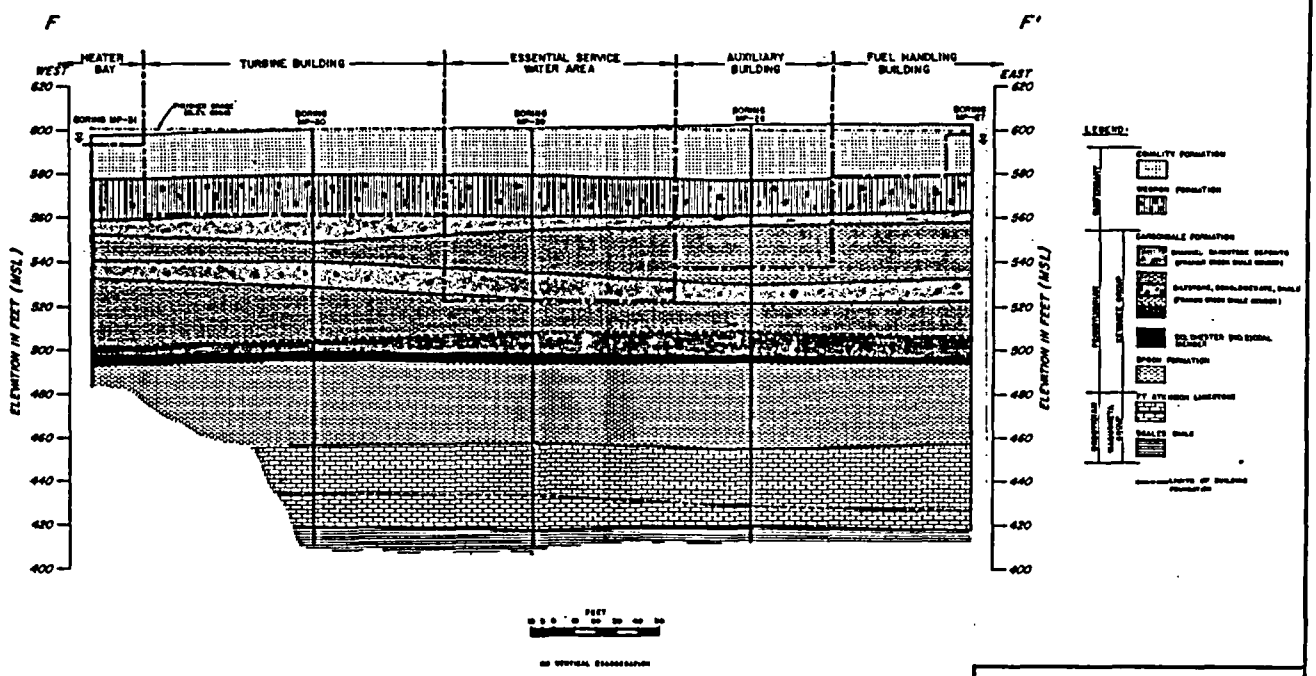
GEOLOGIC SECTION E-E'



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-25

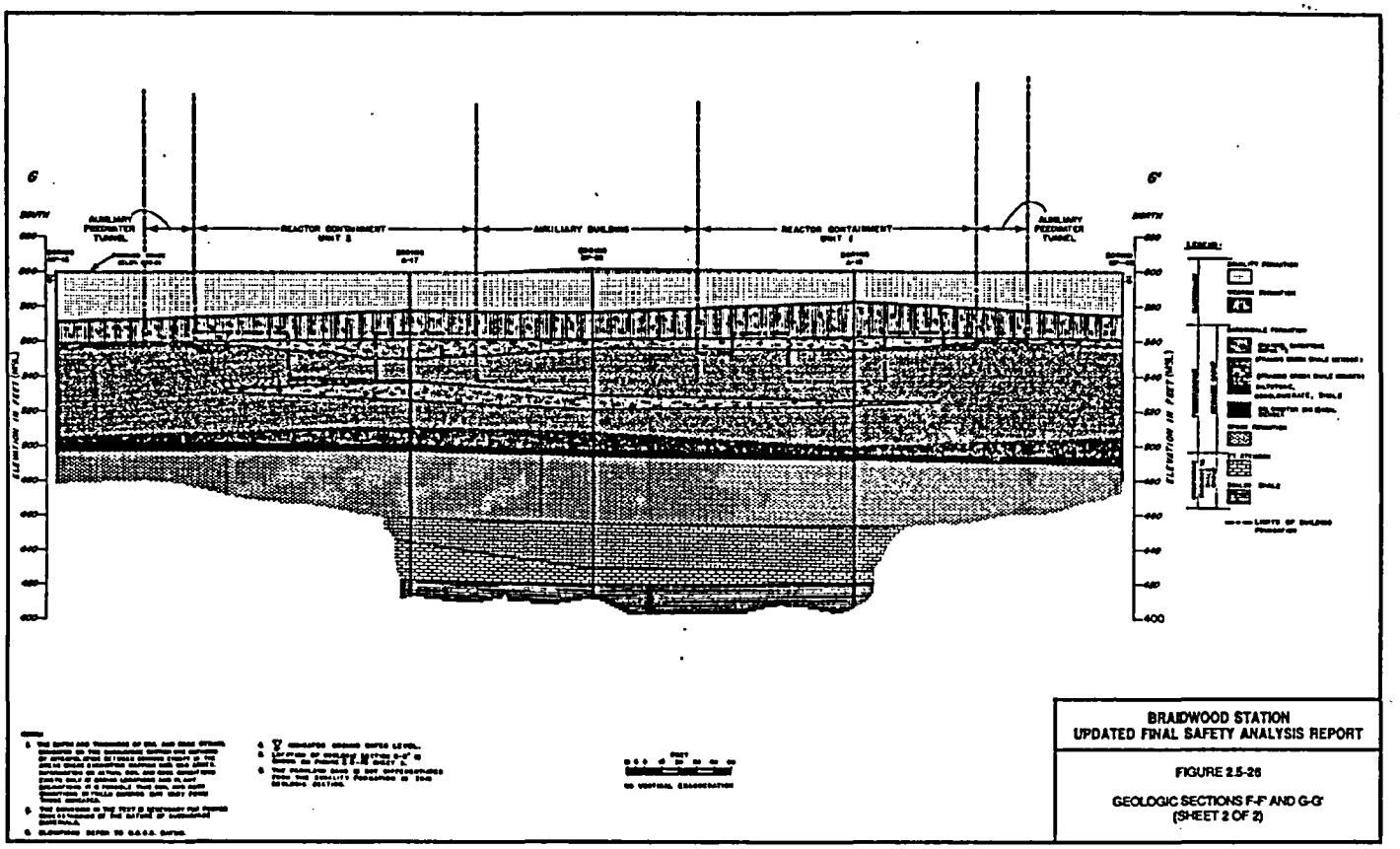
GEOLOGIC SECTION H-H'



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-26

GEOLOGIC SECTIONS F-F' AND G-G'
(SHEET 1 OF 2)



NOTES

1. THE DATA AND THICKNESS OF SOIL AND ROCK STRATA SHOWN ON THE DIAGRAMS BETWEEN AND BEYOND BORINGS ARE ESTIMATED BY INTERPOLATION OR EXTRAPOLATION BASED ON THE ACTUAL DATA AND ARE CONSIDERED TO BE TYPICAL FOR THE SITE. THE ACTUAL SOIL AND ROCK CONDITIONS AND PLANT EXCAVATIONS, IF IN FUTURE, THAT SOIL AND ROCK CONDITIONS OF FIELD DIFFERS SAY VERY FROM THOSE INDICATED.
2. THE DIFFERENCE IN THE FIRST ELEVATION FOR EACH BORING IS A FUNCTION OF THE DEPTH OF INDIVIDUAL BORINGS.
3. ELEVATIONS REFER TO U.S.G.S. DATUM.
4. ▽ INDICATES GROUND WATER LEVEL.
5. LOCATION OF GEOLOGIC SECTION F-F' IS SHOWN ON FIGURE 2.5-25 SHEET 1.
6. THE PLANTLAND SHALE IS NOT DIFFERENTIATED FROM THE SHALLOW PENNSYLVANIAN IN THIS GEOLOGIC SECTION.

FEET
0 5 10 20 30 40
NO VERTICAL EXAGGERATION

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-26

GEOLOGIC SECTIONS F-F' AND G-G'
(SHEET 2 OF 2)

SOIL CLASSIFICATION CHART

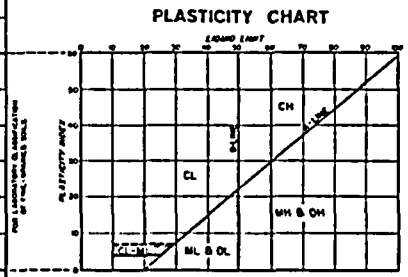
MAJOR DIVISIONS			GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS		GW	[illegible]
				GP	[illegible]
		GRAVELS WITH FINES		GM	[illegible]
				GC	[illegible]
	SAND AND SANDY SOILS	CLEAN SAND		SW	[illegible]
				SP	[illegible]
		SANDS WITH FINES		SM	[illegible]
				SC	[illegible]
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	[illegible]
				CL	[illegible]
				OL	[illegible]
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	[illegible]
				CH	[illegible]
				OH	[illegible]
HIGHLY ORGANIC SOILS				PT	[illegible]

GRADATION CHART

MATERIAL SIZE	PARTICLE SIZE			
	LOWER LIMIT		UPPER LIMIT	
	MILLIMETERS	INCHES	MILLIMETERS	INCHES
SAND				
FINE	[illegible]	[illegible]	[illegible]	[illegible]
MEDIUM	[illegible]	[illegible]	[illegible]	[illegible]
COARSE	[illegible]	[illegible]	[illegible]	[illegible]
GRAVEL				
FINE	[illegible]	[illegible]	[illegible]	[illegible]
COARSE	[illegible]	[illegible]	[illegible]	[illegible]
COBBLES	[illegible]	[illegible]	[illegible]	[illegible]
BOULDERS	[illegible]	[illegible]	[illegible]	[illegible]

* U.S. STANDARD * CLEAR SQUARE OPENINGS

PLASTICITY CHART



FOR LABORATORY CLASSIFICATION OF FINE-GRAINED SOILS

NOTES

1. [illegible]
2. [illegible]

COHESIVE SOILS		COHESIONLESS SOILS	
	APPROXIMATE SHEAR STRENGTH (KSF)		
VERY SOFT	LESS THAN .25	VERY LOOSE	THESE ARE VALUES EARNED ON AN EXCAVATION OF SOIL SAMPLES, DEPENDING ON SATURATION, DENSITY, AGE, AND SOIL SENSITIVITY.
SOFT	.25 TO .5	LOOSE	
MEDIUM STIFF	.5 TO 1.0	MEDIUM DENSE	
STIFF	1.0 TO 2.0	DENSE	
VERY STIFF	2.0 TO 4.0	VERY DENSE	
HARD	GREATER THAN 4.0		

SAMPLES

- [illegible]
- [illegible]
- [illegible]
- [illegible]

NOTE

DEFINITIONS OF ANY ADDITIONAL DATA REGARDING SAMPLES ARE SUPPLIED ON THE FIRST LOG ON WHICH THE DATA APPEARS

UNIFIED SOIL CLASSIFICATION SYSTEM

BRAIDWOOD STATION
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FIGURE 2.5-27

UNIFIED SOIL CLASSIFICATION SYSTEM

GENERAL NOTES FOR LOG OF BORINGS

KEY TO TEST DATA:

SHEAR STRENGTH DEFINED AS ONE-HALF THE PEAK AXIAL COMPRESSIVE STRESS IN PSF DETERMINED BY UNCONFINED COMPRESSION TESTS AND UNCONSOLIDATED-UNDRAINED TRIAXIAL TESTS.

90% PERCENT RECOVERED INDICATES TOTAL AMOUNT OF CORE RECOVERED FOR EACH RUN, EXPRESSED AS A PERCENTAGE OF THE TOTAL LENGTH OF THE CORE RUN.

RQD ROCK QUALITY DESIGNATION
A MODIFIED CORE RECOVERY PERCENTAGE IN WHICH ALL THE PIECES OF SOUND CORE 4 INCHES OR LONGER ARE COUNTED AS RECOVERY. THE MODIFIED SUM OF CORE RECOVERED IS THE EXPRESSED AS A PERCENTAGE OF THE TOTAL LENGTH OF THE CORE RUN.

WATER LOSS (LUGEONS) TERMINOLOGY:		SYMBOLS FOR OTHER TESTS:	
LESS THAN .9 LUGEONS		TX/DY	DYNAMIC TRIAXIAL COMPRESSION TEST
.9 TO 3 LUGEONS		RES	RESONANT COLUMN TEST
3 TO 6 LUGEONS		DS	DIRECT SHEAR TEST
6 TO 10 LUGEONS		C	CONSOLIDATION TEST
10 TO 25 LUGEONS		SA	SIEVE ANALYSIS
GREATER THAN 25 LUGEONS		UC/R	UNCONFINED COMPRESSION TEST ON ROCK

KEY TO SAMPLES:

INDICATES THE NUMBER OF BLOWS REQUIRED TO DRIVE A STANDARD PENETRATION TEST SAMPLER.

13 ▣ INDICATES DEPTH OF STANDARD PENETRATION TEST (2" O.D. SPLIT SPOON SAMPLER)

INDICATES THE NUMBER OF BLOWS REQUIRED TO DRIVE A DAMES & MOORE TYPE U SAMPLER.

13 ■ INDICATES DEPTH OF SAMPLE OBTAINED WITH DAMES & MOORE TYPE U SAMPLER (3.25" O.D. 2.42" I.D. SPLIT SPOON SAMPLER)

P INDICATES SAMPLER PUSHED TO OBTAIN SAMPLE

□ INDICATES DEPTH OF SAMPLING ATTEMPT WITH NO RECOVERY

■ INDICATES DISTURBED SAMPLE

NOTES:

ELEVATIONS REFER TO U.S.G.S. DATUM (MEAN SEA LEVEL)

THE PARKLAND SAND IS NOT DIFFERENTIATED FROM THE EQUALITY FORMATION IN THE BORING LOGS.

5% VUGS INDICATES THE ESTIMATED RATIO OF VUGGED CORE SURFACE AREA TO TOTAL CORE SURFACE AREA. BOTH OPEN AND FILLED VUGS ARE INCLUDED IN THE VUGGED CATEGORY.

BEDDING TERMINOLOGY:

THINLY LAMINATED	-	LESS THAN 1/4 INCH
LAMINATED	-	1/4 TO 2 INCHES
THIN BEDDED	-	2 TO 6 INCHES
MEDIUM BEDDED	-	6 TO 12 INCHES
MASSIVE BEDDED	-	GREATER THAN 12 INCHES

THE DISCUSSION IN THE TEXT IS NECESSARY FOR PROPER UNDERSTANDING OF THE NATURE OF THE SUBSURFACE MATERIALS.

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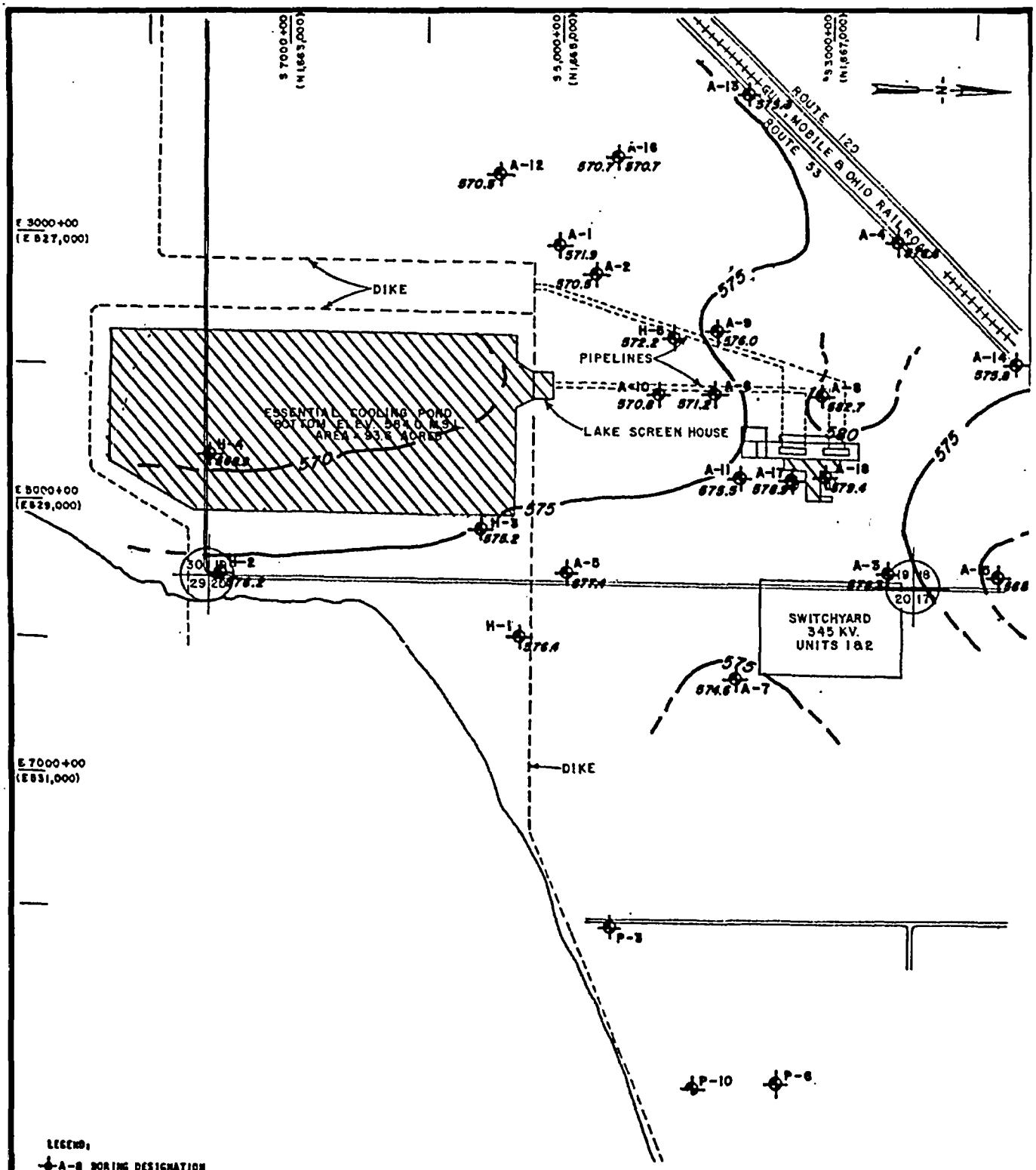
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-28

GENERAL NOTES FOR LOG OF BORINGS



LEGEND:

A-8 BORING DESIGNATION

582.4 ELEVATION, TOP OF WEDRON FORMATION

570 CONTOUR LINE, SURFACE OF TOP OF WEDRON FORMATION

CATEGORY I STRUCTURES

500 0 500 1000 FEET

CONTOUR INTERVAL 5 FEET

DRAWING REFERENCE:
TITLED: PROPERTY DEVELOPMENT, BRAIDWOOD SITE
BY: SARGENT & LUNDY, ENGINEERS
FOR: COMMONWEALTH EDISON COMPANY
DRAWING NO.: H-2
DATED: 2-12-73

BRAIDWOOD STATION
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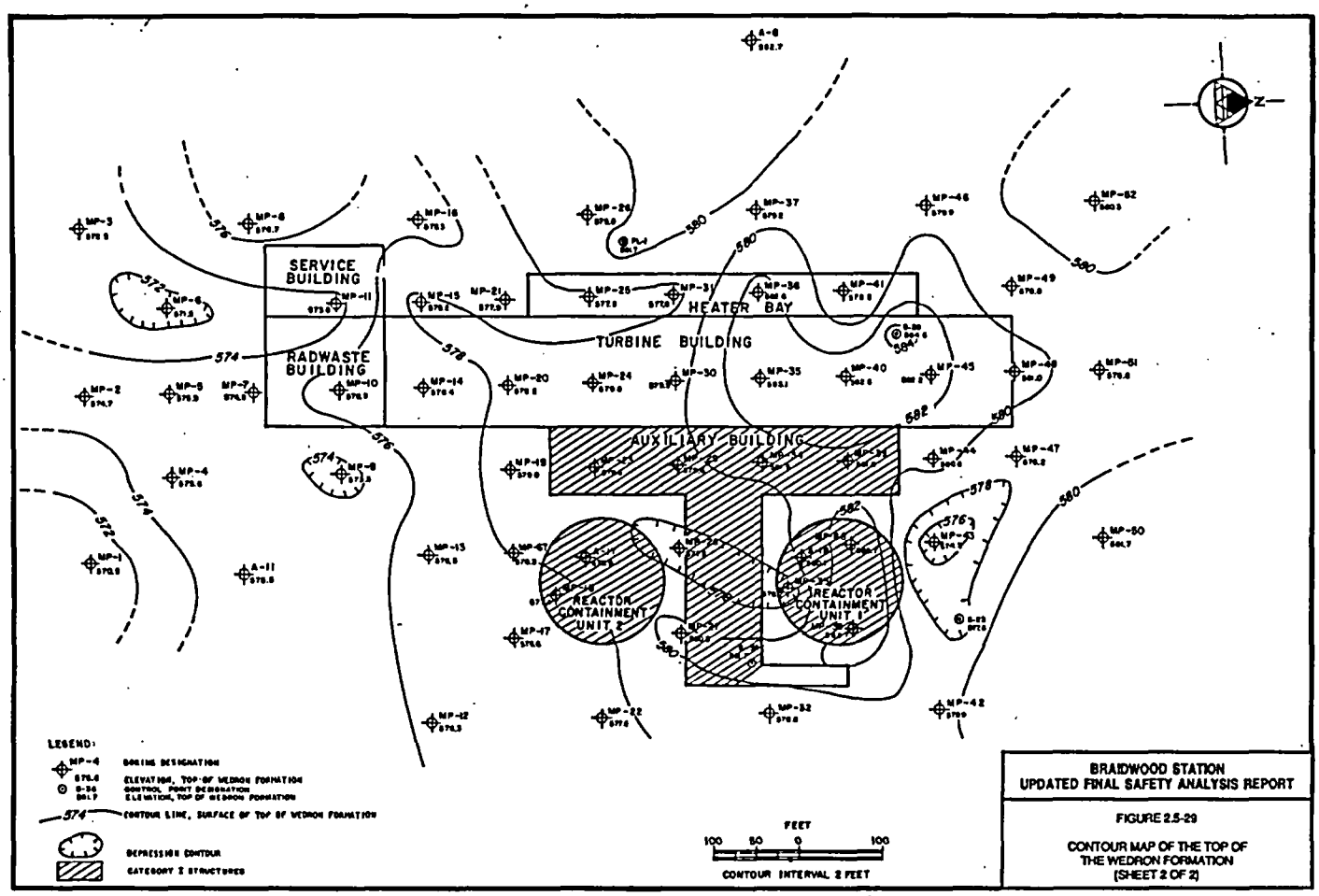
FIGURE 2.5-29

CONTOUR MAP OF THE TOP OF THE WEDRON FORMATION (SHEET 1 OF 2)



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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-29

CONTOUR MAP OF THE TOP OF THE WEDRON FORMATION (SHEET 2 OF 2)

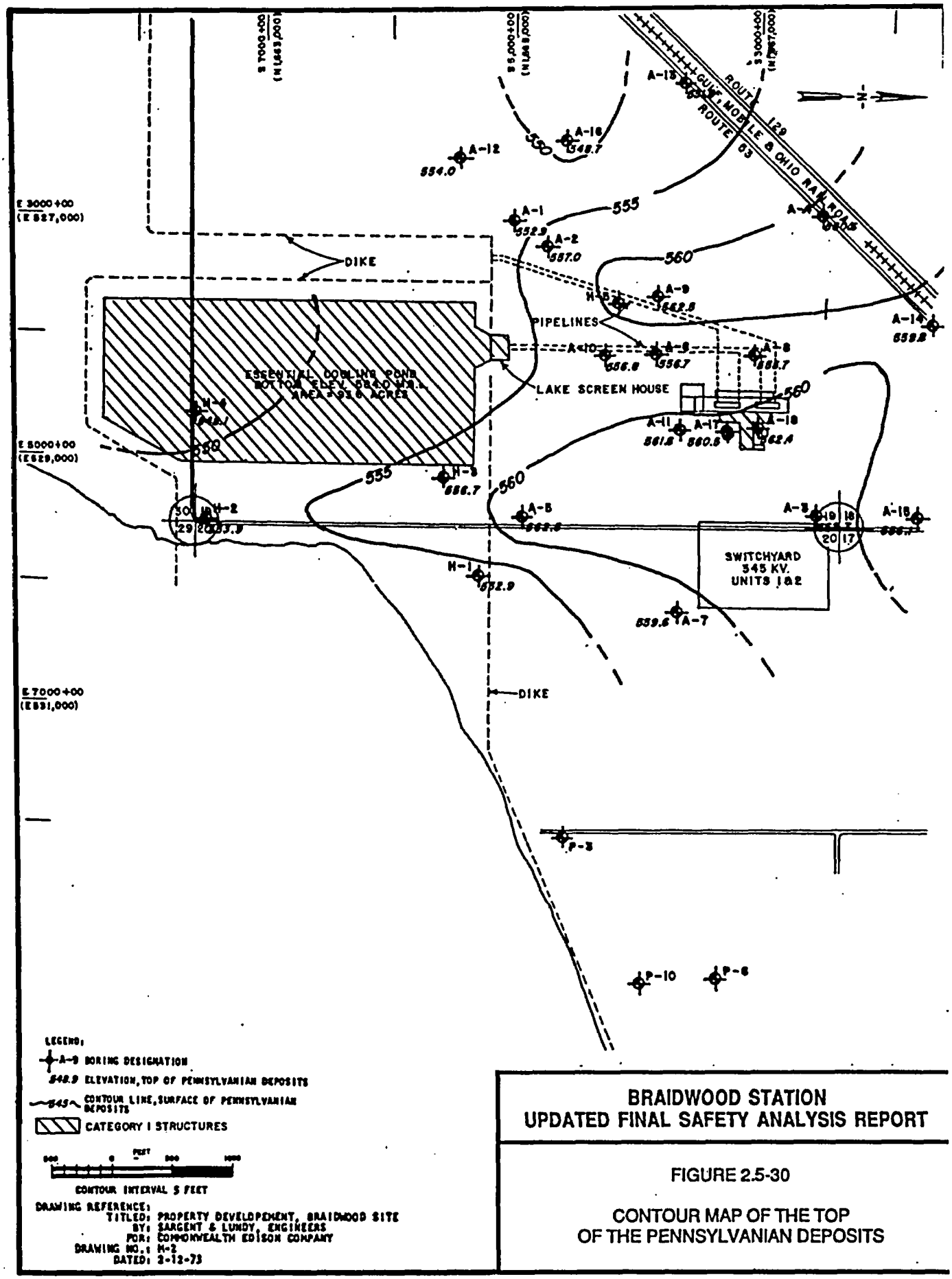

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FIGURE 2.5-30

CONTOUR MAP OF THE TOP
OF THE PENNSYLVANIAN DEPOSITS

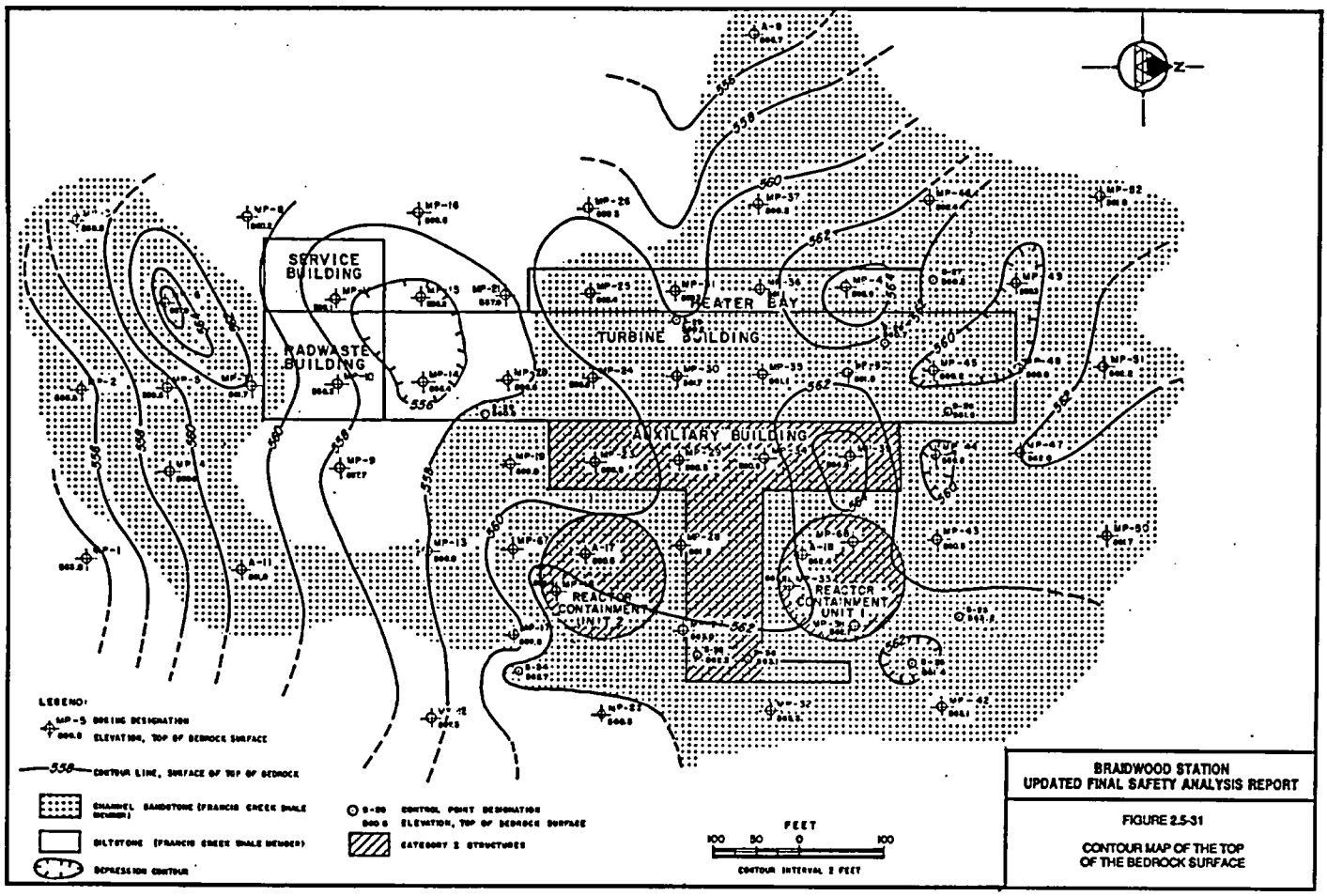

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FIGURE 2.5-31

CONTOUR MAP OF THE TOP OF THE BEDROCK SURFACE

DEPTH TO TOP OF UNIT	SYSTEM	GROUP	FORMATION	LITHOLOGY	ELEVATION AT TOP OF UNIT
0	QUATERNARY			LACUSTRINE SANDS AND GLACIAL TILLS	577
45	PENNSYLVANIAN		CARBONDALE-SPOON	SILTSTONE, SHALE, COAL, AND SANDSTONE	532
145	ORDOVICIAN	MAQUOKETA SHALE	FORT ATKINSON	LIMESTONE AND DOLOMITE, WHITE, LIGHT GRAY, BROWN, PINK, FINE- TO COARSE- GRAINED, INTERBEDDED SHALE	432
185			SCALES	SHALE, DOLOMITIC, SILTY, BROWN, GRAY; "DEPAUPERATE" FOSSIL ZONES NEAR BASE AND TOP	392
272		GALENA	WISE LAKE-DUNLEITH	DOLOMITE AND SOME LIMESTONE, BUFF TO LIGHT GRAY, ORANGE SPECKLED AT TOP, BLACK SPECKLED AT BASE, FINE- TO MEDIUM- GRAINED	305
			GUTTENBERG	DOLOMITE, RED SPECKLED, RED SHALE PARTINGS	
460		PLATTEVILLE	MACHUSA	DOLOMITE AND LIMESTONE, BUFF, FINE- TO MEDIUM- GRAINED	117
515			GRAND DETOUR	LIMESTONE AND DOLOMITE, LIGHT GRAY, MOTTLED DARK GRAY, VERY FINE- GRAINED; SOME DOLOMITE, PSEUDO-OOLITIC	62
565			MIFFLIN	LIMESTONE AND DOLOMITE, LIGHT GRAY, ORANGE SPECKLED, VERY FINE- GRAINED, SHALE PARTINGS	12
595			PECATONICA	DOLOMITE AND LIMESTONE, BROWN, VERY FINE- TO FINE- GRAINED, SANDY AT BASE	-18
640		ANCELL	GLENWOOD-ST. PETER	SANDY DOLOMITE AND DOLOMITIC SANDSTONE, FINE- TO MEDIUM- GRAINED, GREEN SHALE PARTINGS AT TOP SANDSTONE, WHITE, FINE- TO MEDIUM- GRAINED, FRIABLE	-63
860		PRAIRIE DU CHIEN	SHAKOPEE	DOLOMITE, SANDY, LIGHT GRAY, LIGHT BROWN, FINE- GRAINED; CHERT, PARTLY OOLITIC	-283
960			NEW RICHMOND	SANDSTONE, MEDIUM-GRAINED; SOME LITHOGRAPHIC DOLOMITE & OOLITIC CHERT	-383
995			ONEOTA-GUNTER	DOLOMITE, SANDY AT TOP, CHERTY AT BASE, LIGHT GRAY, PINK, FINE- TO COARSE- GRAINED SANDSTONE, MEDIUM- GRAINED, A LITTLE DOLOMITE AND GREEN SHALE	-418
1190	CAMBRIAN		EMINENCE	DOLOMITE, SANDY, LIGHT GRAY, FINE- TO MEDIUM- GRAINED, THIN BEDS OF SANDSTONE; CHERT, PARTLY OOLITIC; DOLOMITIC SANDSTONE AT BASE	-613
1280			POTOSI	DOLOMITE, LIGHT GRAY TO LIGHT BROWN, FINE- GRAINED, SOME DRUSY QUARTZ; SANDY AT BASE	-703
1405			FRANCONIA	SANDSTONE, SHALE, AND DOLOMITE, GLAUCONITIC, MICACEOUS, SILTY, RED, GREEN	-828
1548			IRONTON	SANDSTONE, DOLOMITIC, MEDIUM- TO COARSE- GRAINED	-971

NOTE:

STRATIGRAPHIC INTERPRETATION UPDATED BY THE ILLINOIS STATE GEOLOGICAL SURVEY ON THE BASIS OF ELECTRIC LOG, SAMPLE STUDY, AND DRILLER'S LOG (BUSCHBACH, ORAL COMMUNICATION, JUNE 1, 1973).

REFERENCES:

COMPILED FROM A LOG OF CITY OF BRAIDWOOD, ILLINOIS, DEEP WELL NO.1, DRILLED IN 1937, SECTION 8-32N-9E, WILL COUNTY.

SAMPLE STUDY BY J. POTSCH (1937).

DESCRIPTIONS OF LITHOLOGIES BASED ON:

COMPOSITE STRATIGRAPHIC LOG FOR NORTHEASTERN ILLINOIS, BUSCHBACH, T.C. AND WILLMAN, H.S. (1968)

CAMBRIAN AND ORDOVICIAN STRATA OF NORTHEASTERN ILLINOIS, BUSCHBACH, T.C. (1964).

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-32

GEOLOGIC LOG OF CITY OF BRAIDWOOD DEEP WELL NUMBER 1

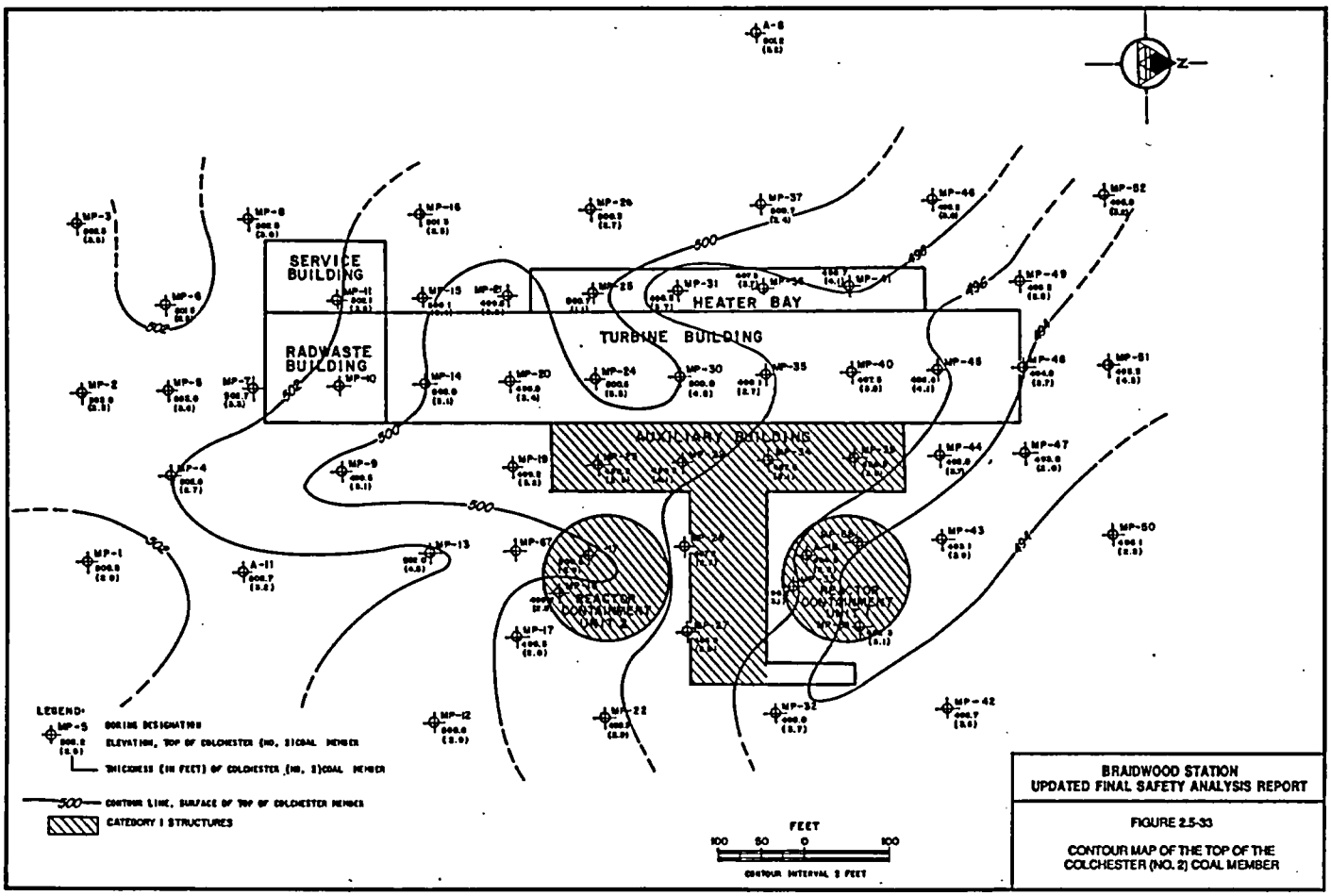

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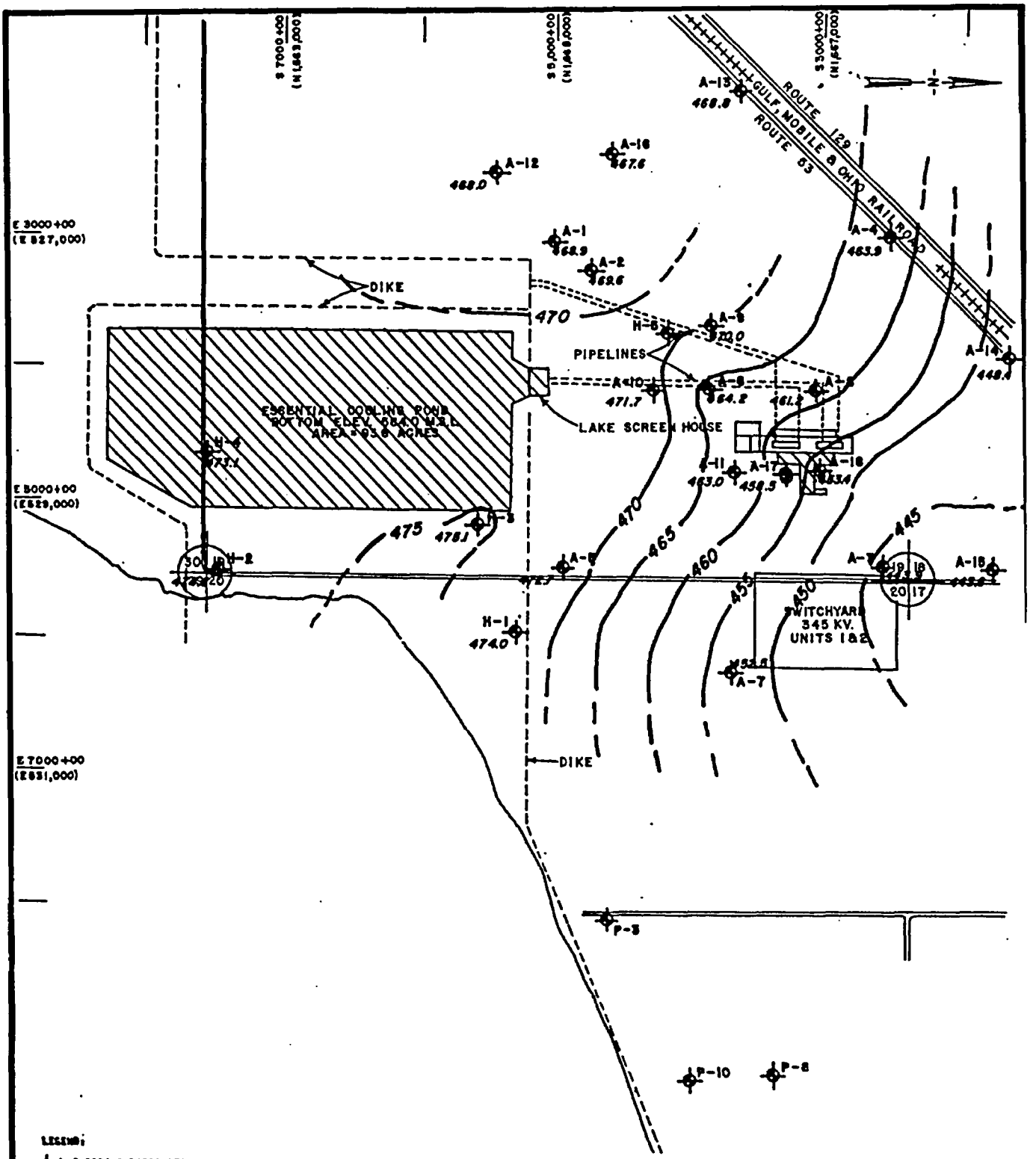
FIGURE 2.5-33

CONTOUR MAP OF THE TOP OF THE COLCHESTER (NO. 2) COAL MEMBER



LEGEND:

A-6 BORING DESIGNATION

464.2 ELEVATION, TOP OF FORT ATKINSON LIMESTONE

475 CONTOUR LINE, SURFACE OF TOP OF FORT ATKINSON LIMESTONE

CATEGORY I STRUCTURES

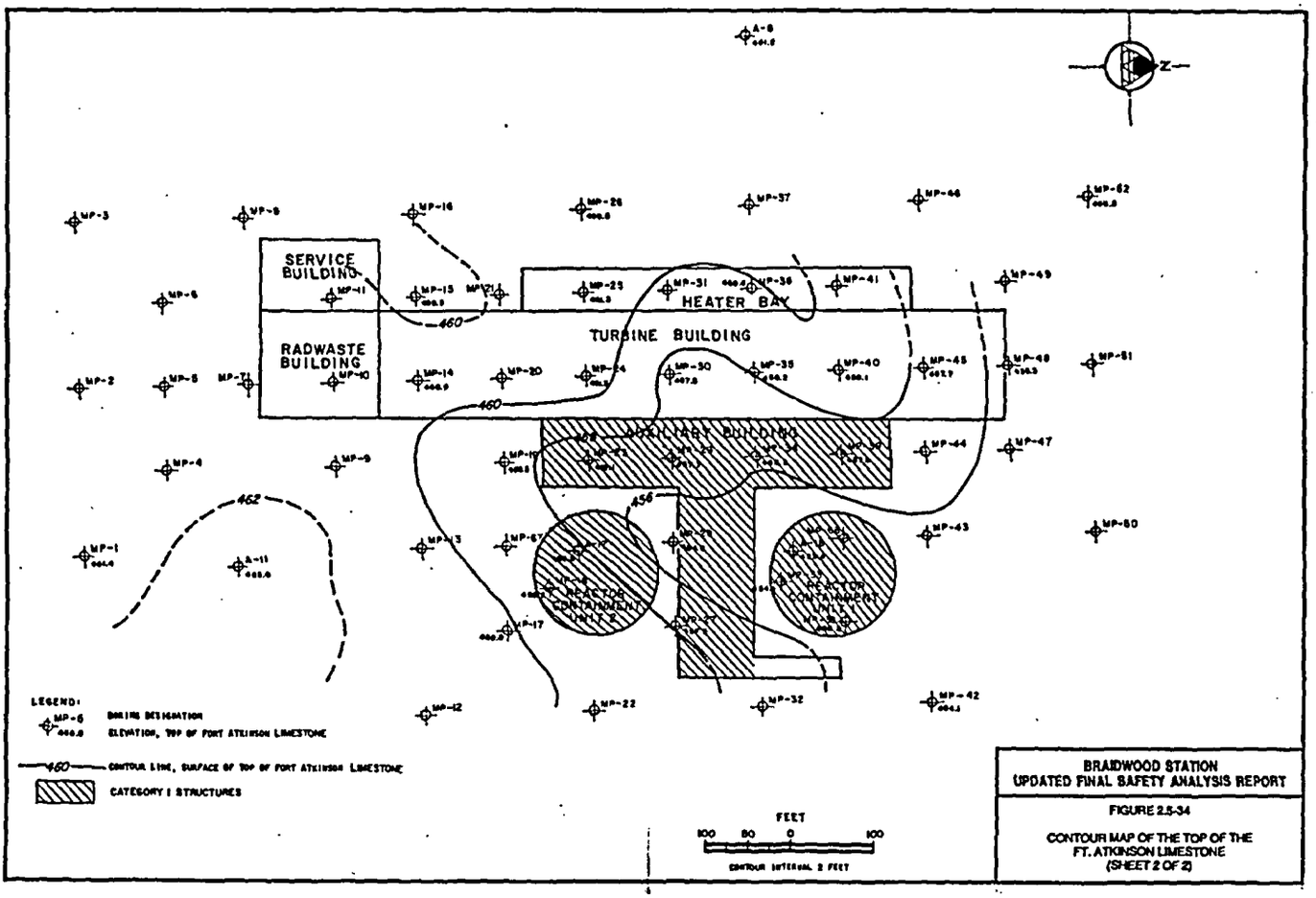
CONTOUR INTERVAL 5 FEET

DRAWING REFERENCE:
TITLED: PROPERTY DEVELOPMENT, BRAIDWOOD SITE
BY: SARGENT & LUNDY, ENGINEERS
FOR: COMMONWEALTH EDISON COMPANY
DRAWING NO.: M-2
DATED: 2-12-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-34

CONTOUR MAP OF THE TOP OF THE FT. ATKINSON LIMESTONE (SHEET 1 OF 2)



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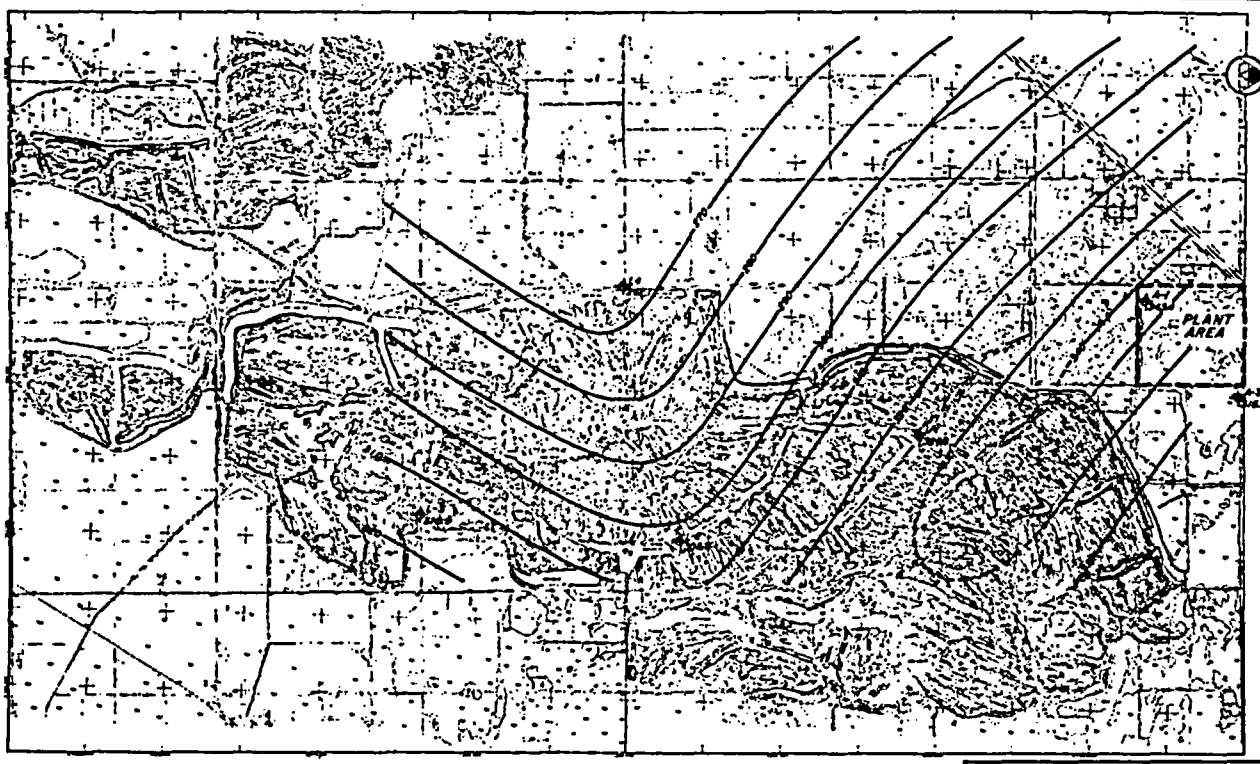
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-34

CONTOUR MAP OF THE TOP OF THE FT. ATKINSON LIMESTONE (SHEET 2 OF 2)



LEGEND:

—4—4— BORING DESIGNATION

+ 1262 — ELEVATION, TOP OF GALENA GROUP

—— 300 —— CONTOUR LINE, SURFACE OF TOP OF GALENA GROUP

REFERENCE:

FROM PHOTO GRAMMETRIC METHODS BY AIRMAPS INC., DATED: 8-10-72

CONTOUR INTERVAL 10 FEET

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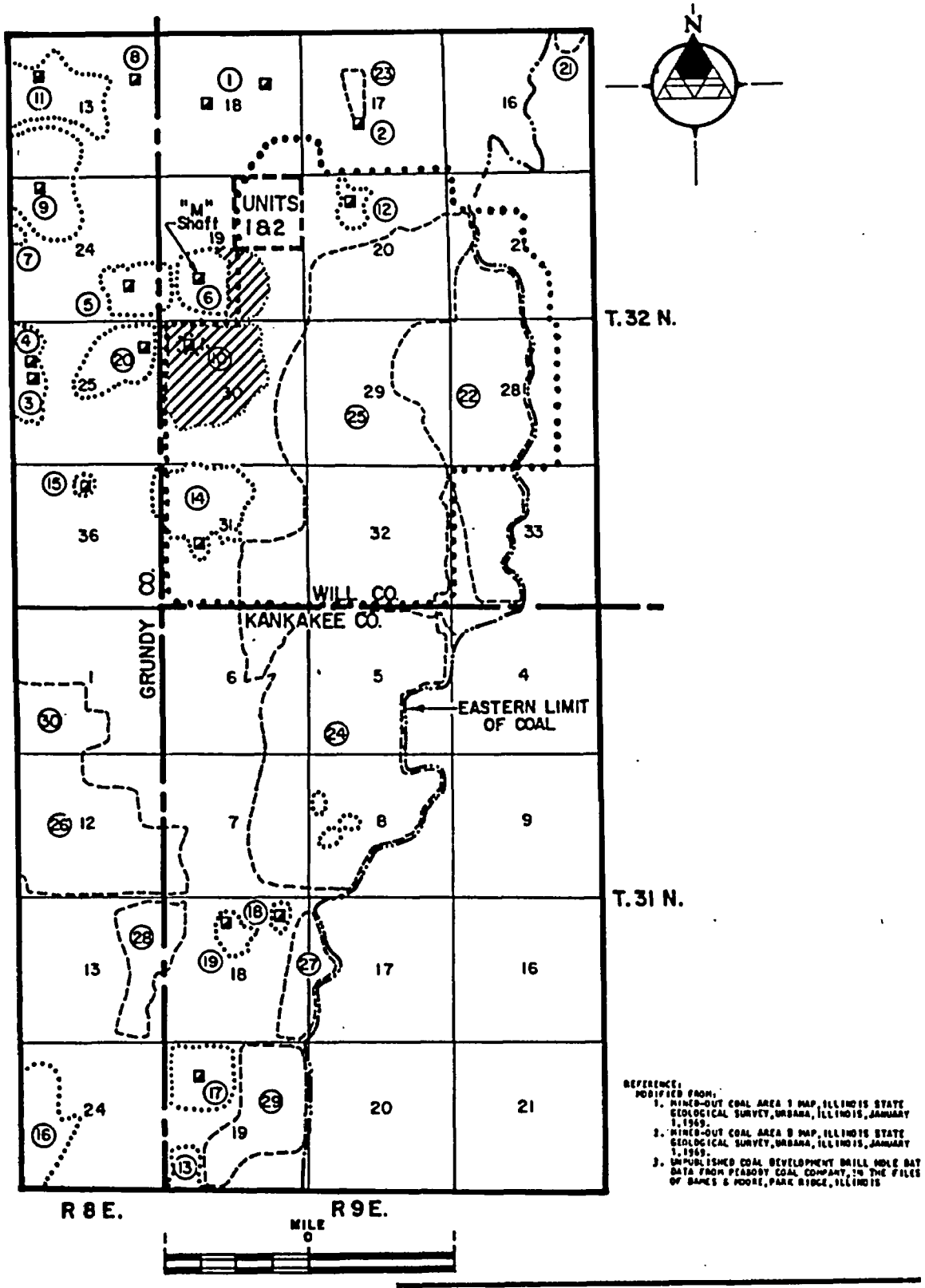
FIGURE 2.5-35

STRUCTURE CONTOUR MAP OF THE TOP OF THE GALENA GROUP



LEGEND

- MINE SHAFT LOCATION
- UNDERGROUND MINING LIMIT BASED ON ILLINOIS STATE GEOLOGICAL SURVEY MINED-OUT COAL MAPS AND PEABODY COAL COMPANY COAL DEVELOPMENT DRILL HOLES
- STRIP MINE BOUNDARY
- MINE NUMBER
- PEABODY COAL COMPANY DEVELOPMENT DRILL HOLE DATA INDICATE THAT UNDERGROUND COAL MINING HAS NOT OCCURRED WITHIN THIS PORTION OF LIMITS INDICATED BY ILLINOIS STATE GEOLOGICAL SURVEY MINED-OUT COAL AREA 8 MAP
- SITE BOUNDARY

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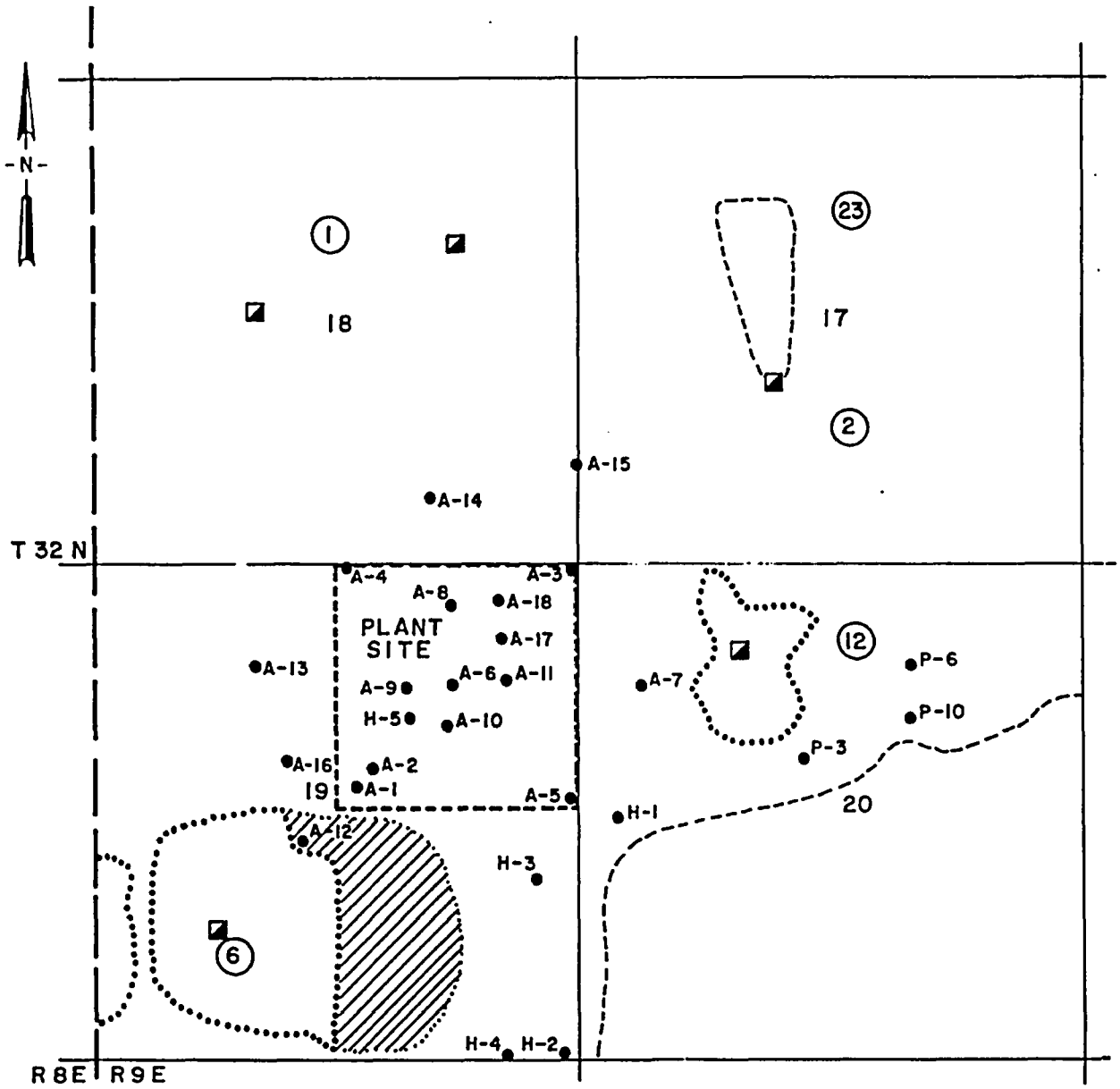
FIGURE 2.5-36

MAP SHOWING KNOWN COAL MINES IN VICINITY OF SITE



LEGEND

- MINE SHAFT LOCATION
- UNDERGROUND MINING LIMIT BASED ON ILLINOIS GEOLOGICAL SURVEY MINED-OUT COAL MAPS AND PEABODY COAL COMPANY COAL DEVELOPMENT DRILL HOLES
- STRIP MINE BOUNDARY
- (6) MINE MULCER
- PEABODY COAL COMPANY DEVELOPMENT DRILL HOLE DATA INDICATE THAT UNDERGROUND COAL MINING HAS NOT OCCURED WITHIN THIS PORTION OF LIMITS INDICATED BY ILLINOIS STATE GEOLOGICAL SURVEY MINED-OUT COAL AREA 8 MAP.

REFERENCE

MODIFIED FROM:

1. MINED-OUT COAL AREA 1 MAP, ILLINOIS STATE GEOLOGICAL SURVEY URBANA, ILLINOIS, JANUARY 1, 1969.
2. MINED-OUT COAL AREA 8 MAP, ILLINOIS STATE GEOLOGICAL SURVEY URBANA, ILLINOIS, JANUARY 1, 1969.
3. UNPUBLISHED COAL DEVELOPMENT DRILL HOLE DATA FROM PEABODY COAL COMPANY, IN THE FILES OF DAMES AND MOORE, PARK RIDGE, ILLINOIS. (COAL DEVELOPMENT DRILL HOLES ARE SPACED ON APPROXIMATELY 300 FOOT CENTERS IN SECTION 20 AND THE EASTERN ONE-HALF OF SECTION 19).

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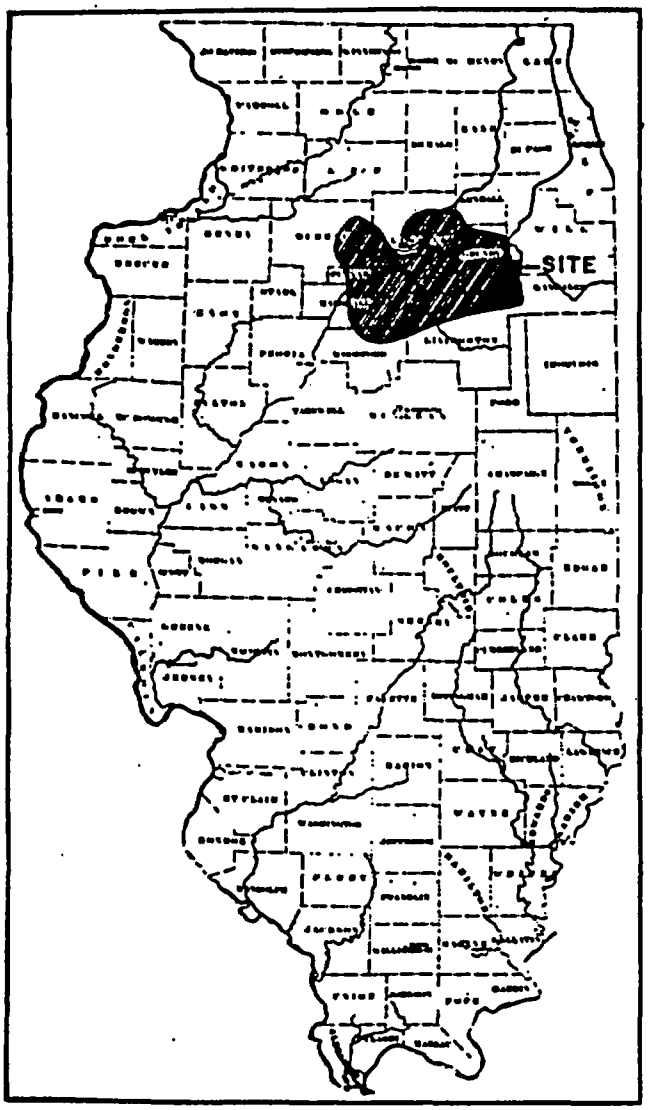
FIGURE 2.5-36a

KNOWN COAL MINES IN PLANT AREA



SCALE IN MILES

LEGEND:

LONGWALL COAL MINING DISTRICT

REFERENCE:

FROM MAP DRAWN BY F.H. KAY, IN ILLINOIS COAL MINING INVESTIGATIONS BULLETIN 6, JULY, 1914

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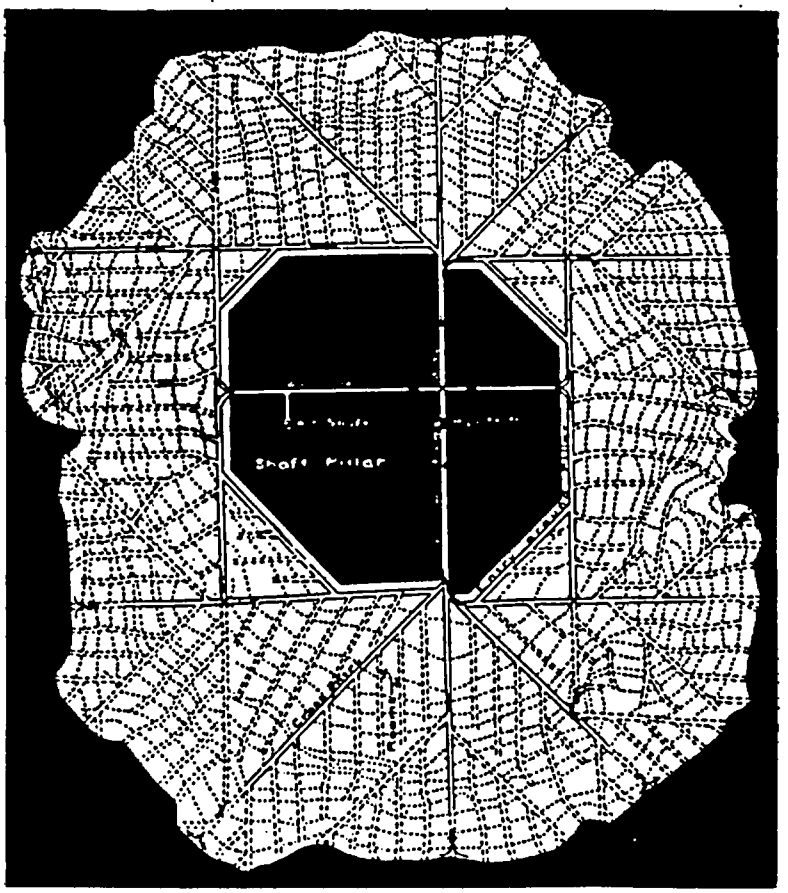
FIGURE 2.5-37

MAP SHOWING THE LONGWALL COAL MINING DISTRICT



REFERENCE:
FROM ILLINOIS COAL MINING INVESTIGATIONS
BULLETIN 5, JULY, 1914

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FIGURE 2.5-38

SCHEMATIC PLAN OF A TYPICAL
LONGWALL COAL MINE

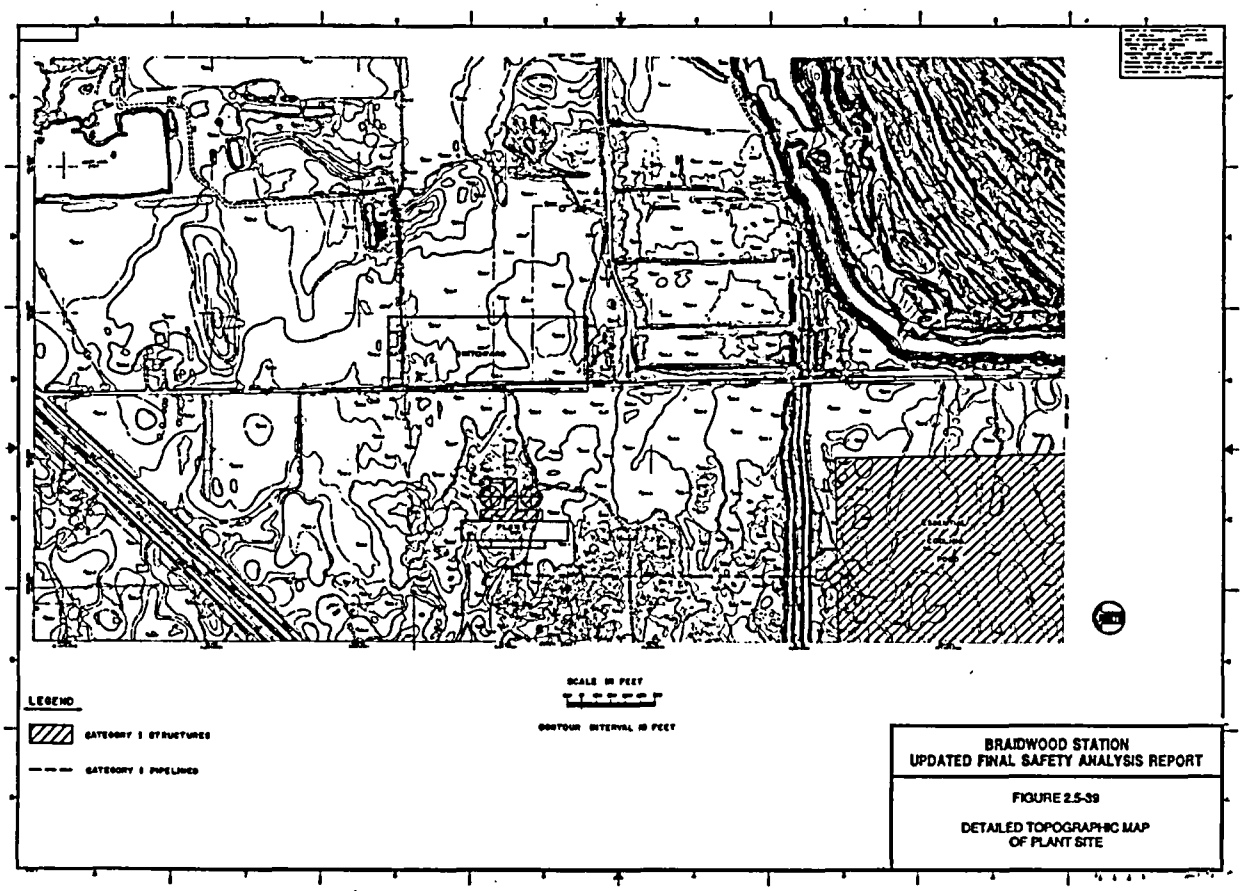

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FIGURE 2.5-39

DETAILED TOPOGRAPHIC MAP
OF PLANT SITE

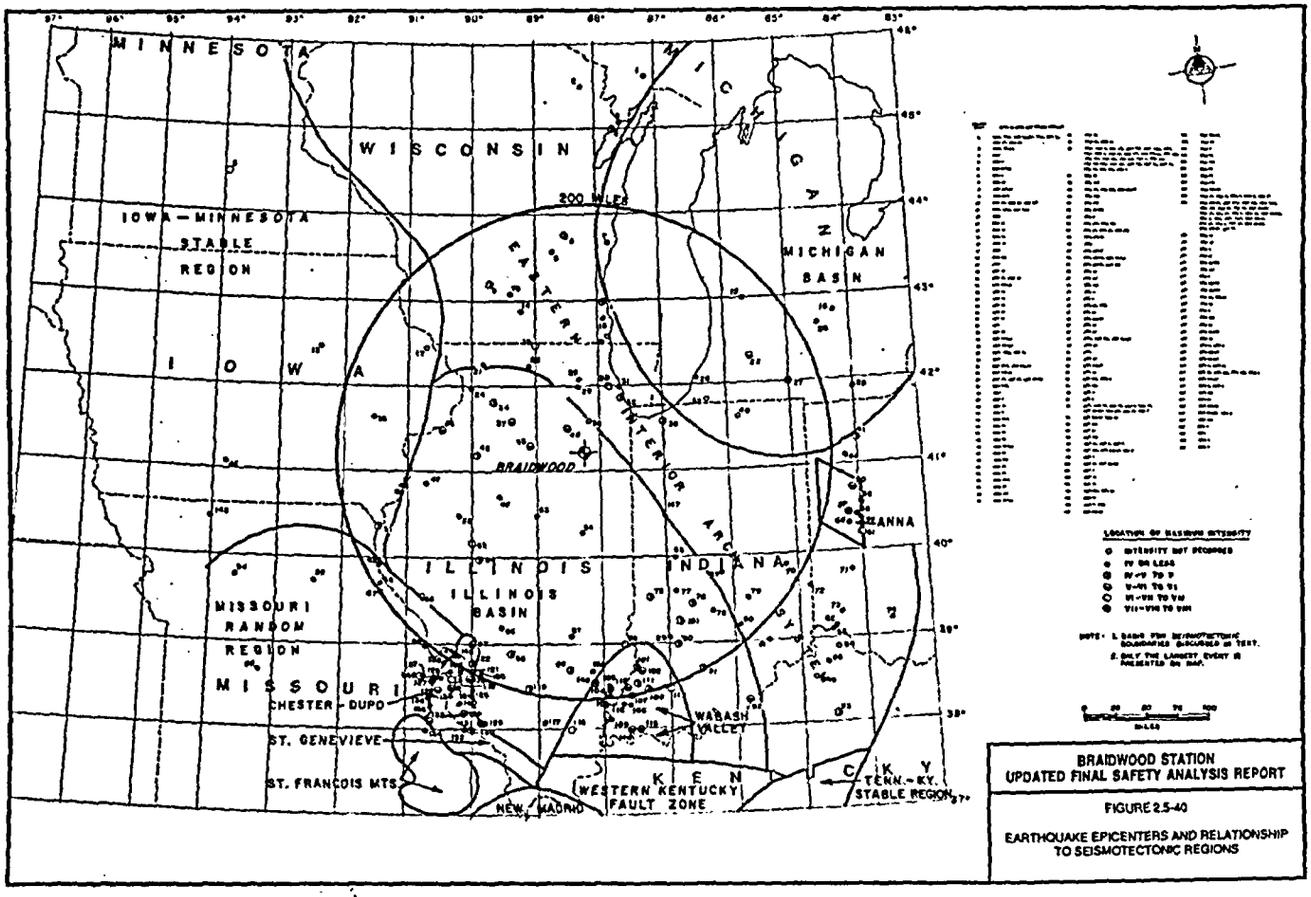

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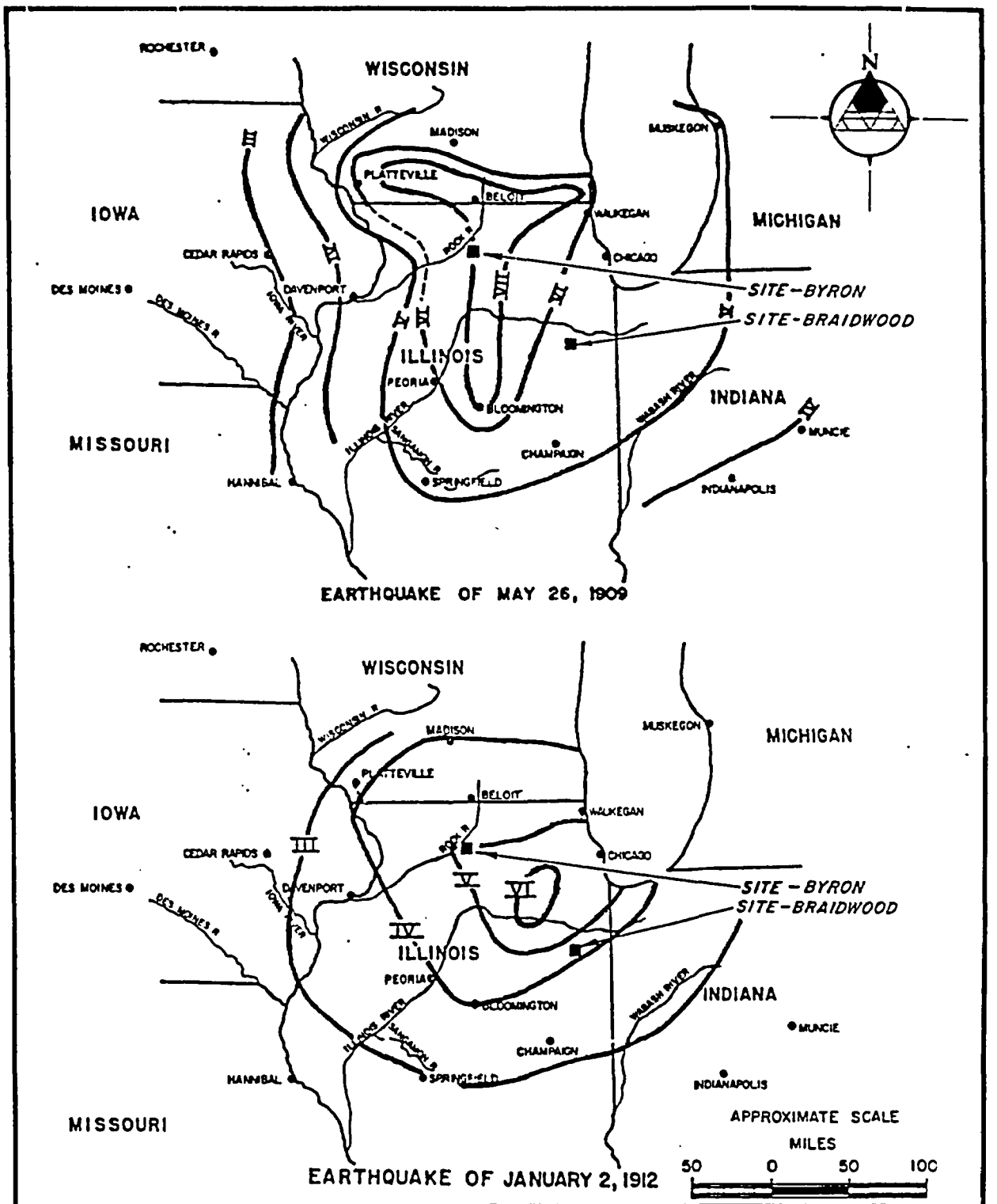
FIGURE 2.5-40

EARTHQUAKE EPICENTERS AND RELATIONSHIP TO SEISMOTECTONIC REGIONS



REFERENCE:

UDDEN, J.A., 1910. OBSERVATIONS ON THE EARTHQUAKE IN THE UPPER MISSISSIPPI VALLEY, MAY 26, 1909; ILLINOIS ACADEMY OF SCIENCE TRANSACTIONS, p. 132-143.

UDDEN, A.D., 1912. ON THE EARTHQUAKE OF JANUARY 2, 1912, IN THE UPPER MISSISSIPPI VALLEY; ILLINOIS ACADEMY OF SCIENCE TRANSACTIONS, V. 5, p. 111-115.

NOTE:

ROSSI-FOREL INTENSITIES. SEE MODIFIED MERCALLI SCALE FOR DEFINITION OF ROSSI-FOREL INTENSITIES.

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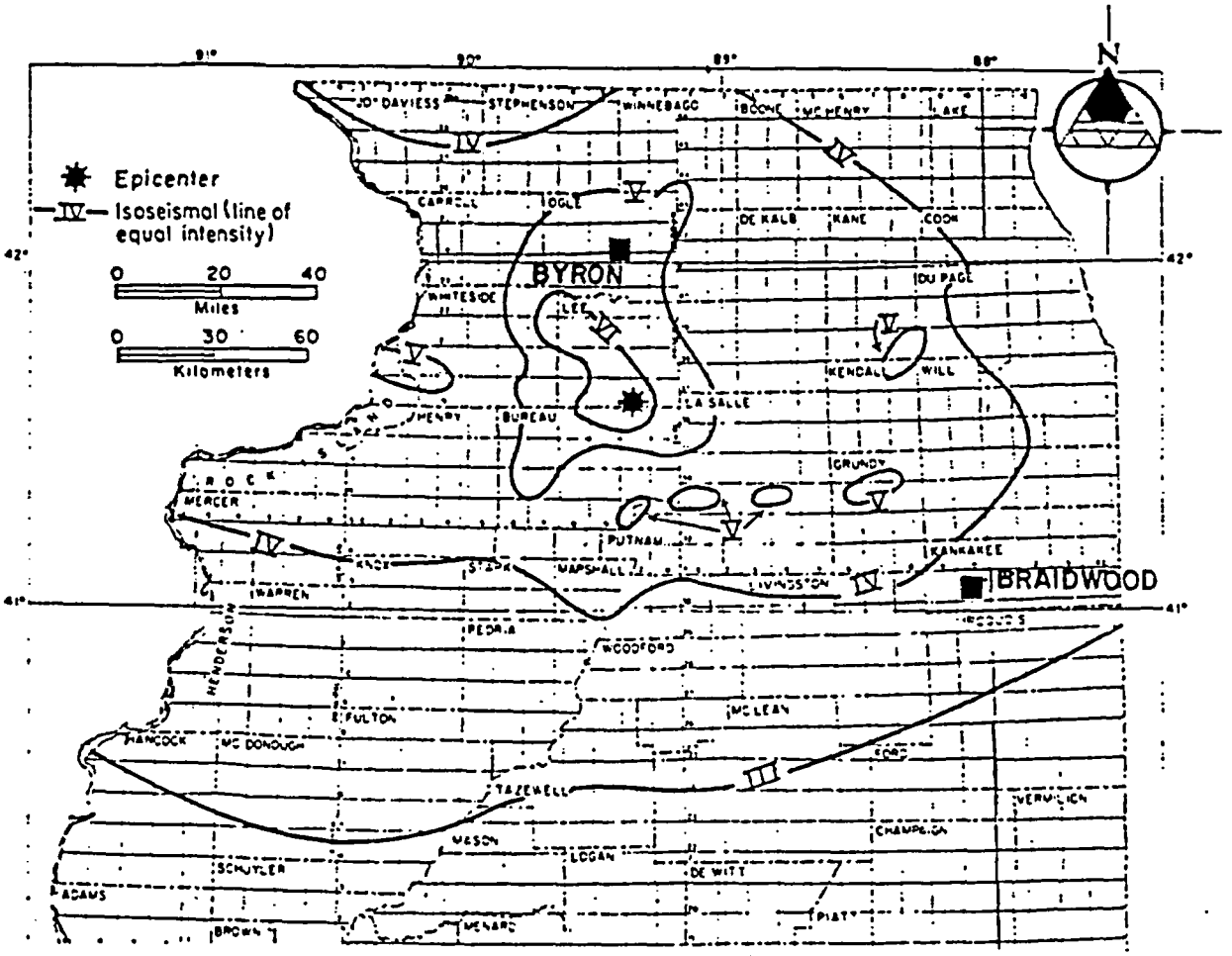
FIGURE 2.5-41

ISOSEISMAL MAPS FOR EARTHQUAKES OF MAY 26, 1909 AND JANUARY 2, 1912



NOTES:

1. INTENSITIES REFER TO THE 1931 MODIFIED MERCALLI SCALE.

2. ISOSEISMAL LINES INDICATE THE APPROXIMATE OUTER BOUNDARY OF THE REGION OF SPECIFIED INTENSITY.

REFERENCE:

HEIGOLD, PAUL C., 1972, NOTES ON THE EARTHQUAKE OF SEPTEMBER 15, 1972, IN NORTHERN ILLINOIS; ILLINOIS GEOL. SURVEY ENVIRON. GEOL. NOTE, NO. 59, 15p.

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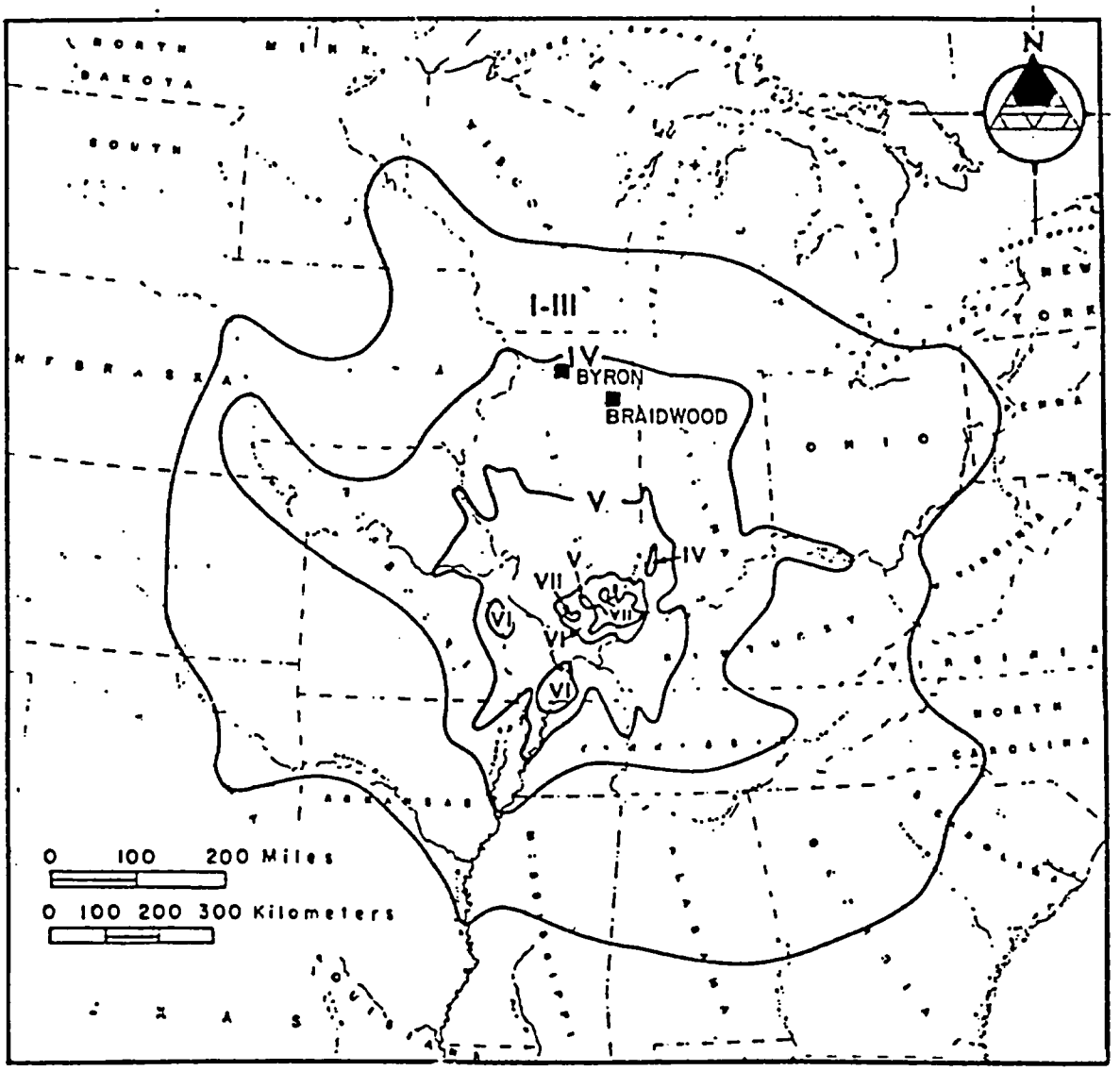
FIGURE 2.5-42

ISOSEISMAL MAP FOR EARTHQUAKE OF SEPTEMBER 15, 1972



NOTES:

1. INTENSITIES REFER TO THE 1931 MODIFIED MERCALLI SCALE.

2. ISOSEISMAL LINES INDICATE THE APPROXIMATE OUTER BOUNDARY OF THE REGION OF SPECIFIED INTENSITY.

REFERENCE:

GORDON, D.W., T.J. BENNETT, R.B. HERRMANN, AND A.M. ROGERS, 1970, THE SOUTH-CENTRAL ILLINOIS EARTHQUAKE OF NOVEMBER 9, 1968; MACROSEISMIC STUDIES; SEIS. SOC. AMERICA BULL. V. 60, NO. 3, P. 953-971.

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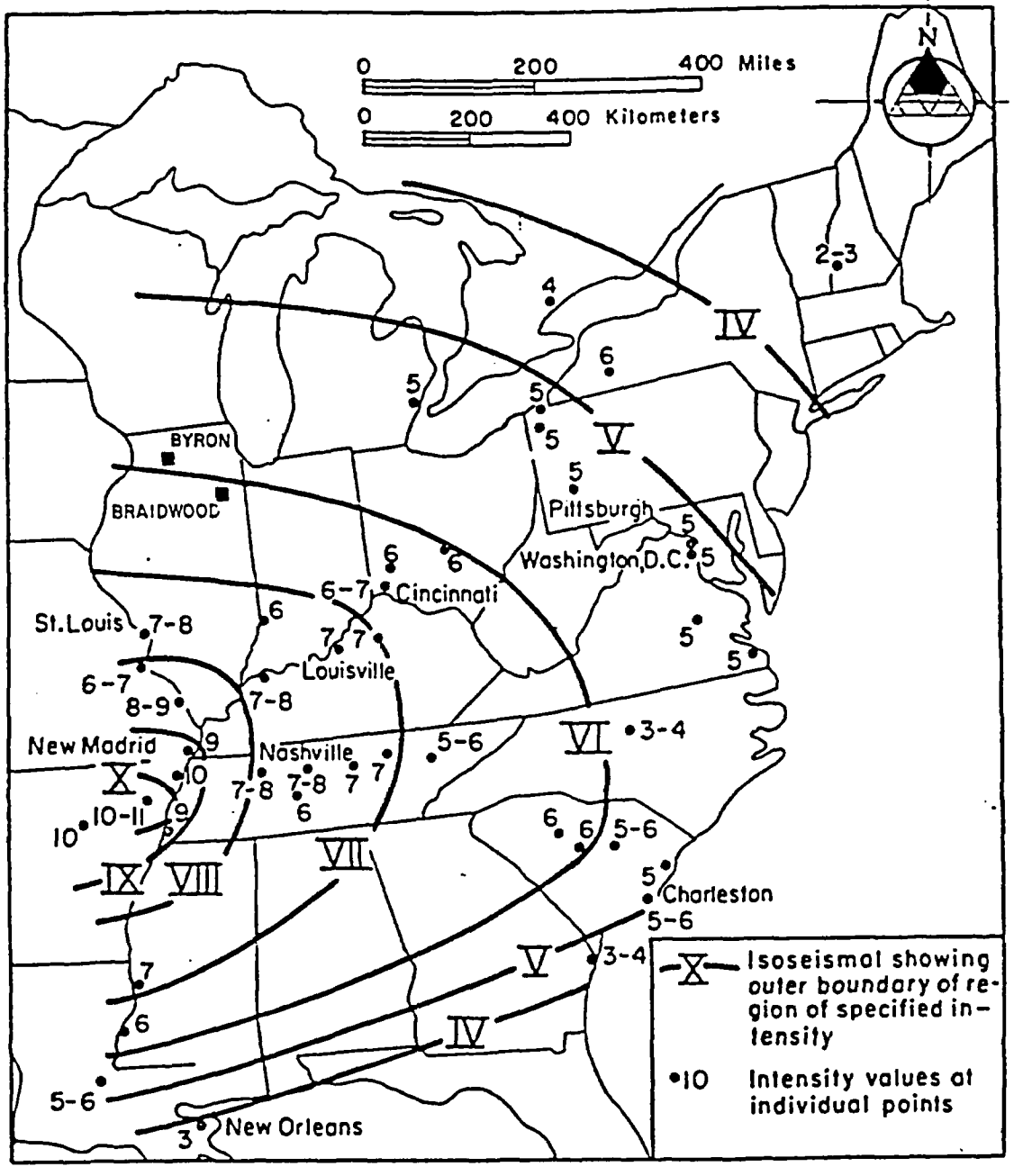
FIGURE 2.5-43

ISOSEISMAL MAP FOR EARTHQUAKE OF NOVEMBER 9, 1968



NOTES:

1. INTENSITIES REFER TO THE 1931 MODIFIED MERCALLI SCALE.
2. ISOSEISMAL LINES INDICATE THE APPROXIMATE OUTER BOUNDARY OF THE REGION OF SPECIFIED INTENSITY.

REFERENCE:

NUTTLI, O.W., 1973, THE MISSISSIPPI VALLEY EARTHQUAKE OF 1811 AND 1812, INTENSITIES, GROUNDMOTION, AND MAGNITUDES; SEISMOLOGICAL SOCIETY OF AMERICA, BULL. 63, NO. 1 P. 227-248.

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FIGURE 2.5-44

ISOSEISMAL MAP FOR NEW MADRID EARTHQUAKE OF DECEMBER 16, 1811

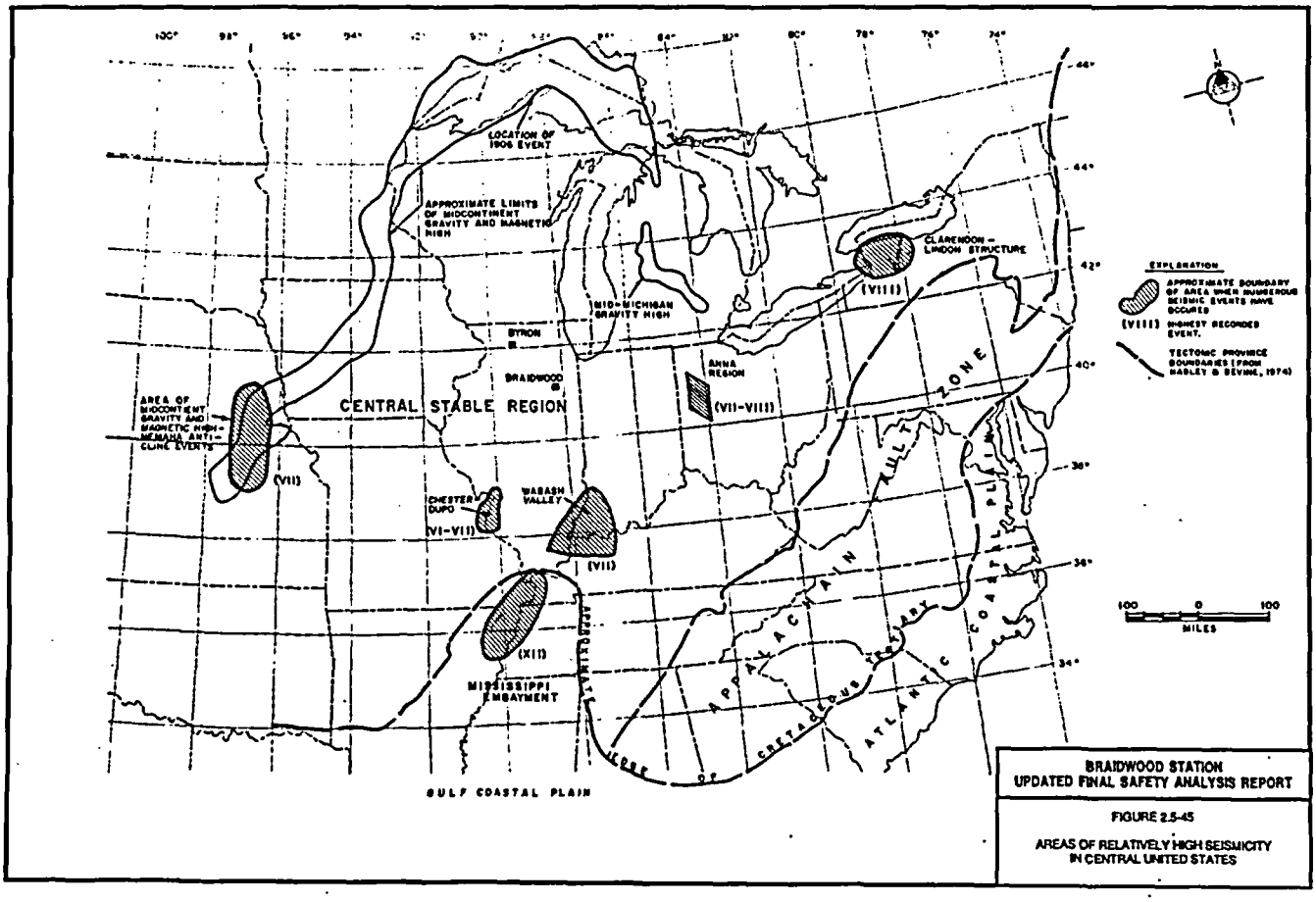

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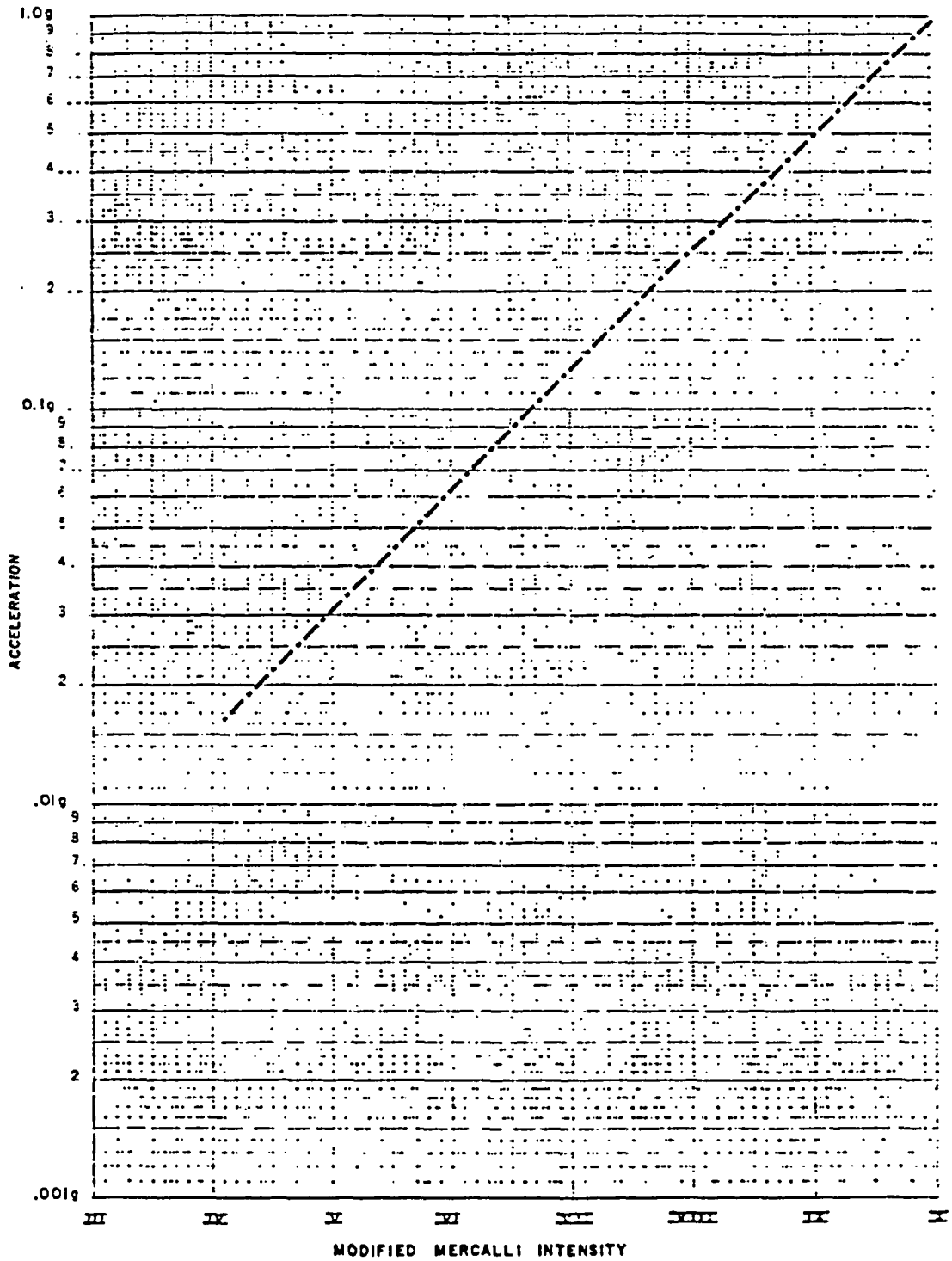
FIGURE 2.5-45

AREAS OF RELATIVELY HIGH SEISMICITY IN CENTRAL UNITED STATES



REFERENCE: TRIFUNAC, M.D., AND BRADY, A.G. 1975, ON THE CORRELATION OF SEISMIC INTENSITY SCALES WITH THE PEAKS OF RECORDED STRONG GROUND MOTION: SEISMOL. SOC. AMERICA BULL., VOL. 65, NO. 1, pp.139-162.

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FIGURE 2.5-46

CORRELATION OF EARTHQUAKE INTENSITY AND ACCELERATION

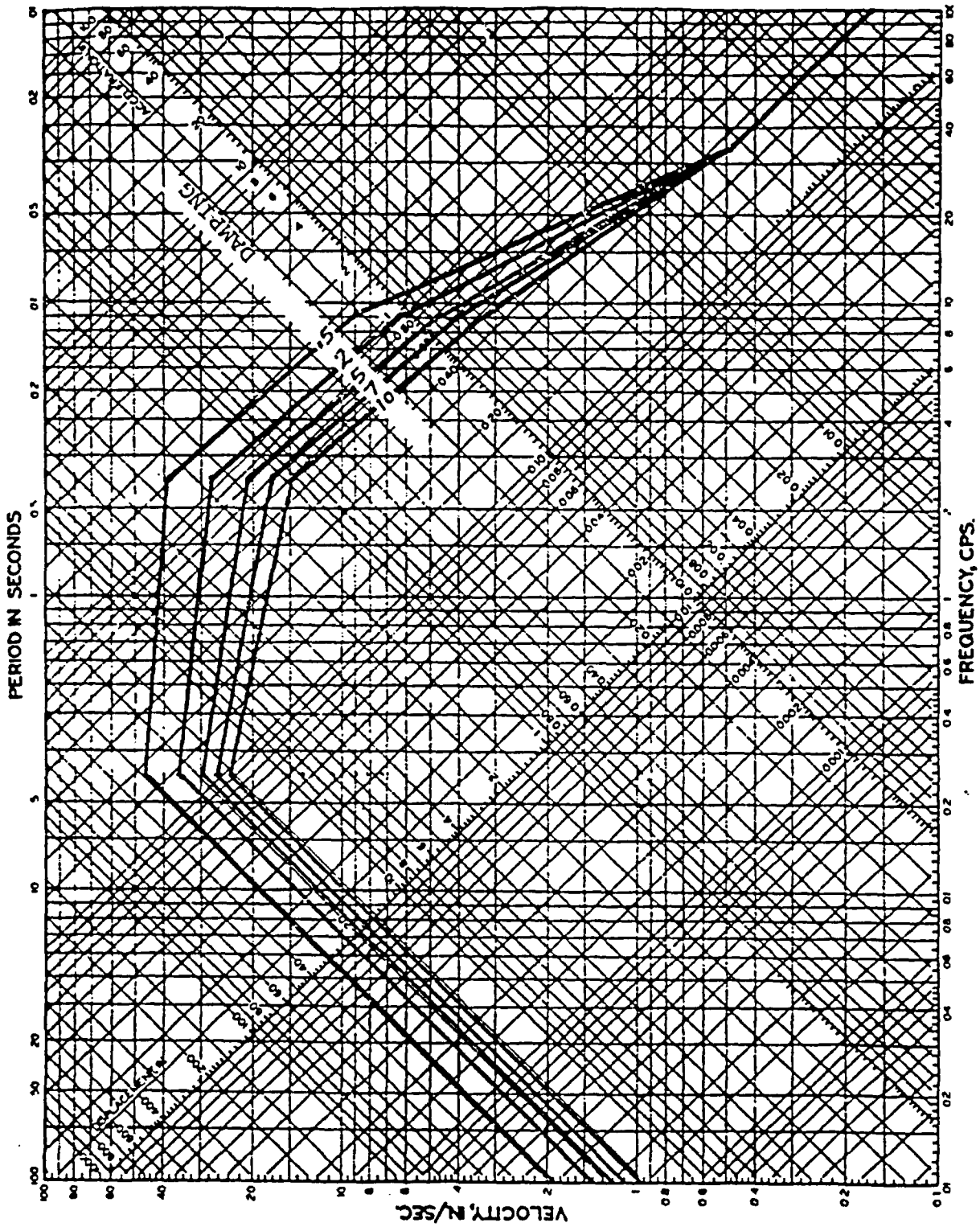

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FIGURE 2.5-47

HORIZONTAL RESPONSE SPECTRA
SAFE SHUTDOWN EARTHQUAKE (.26g)

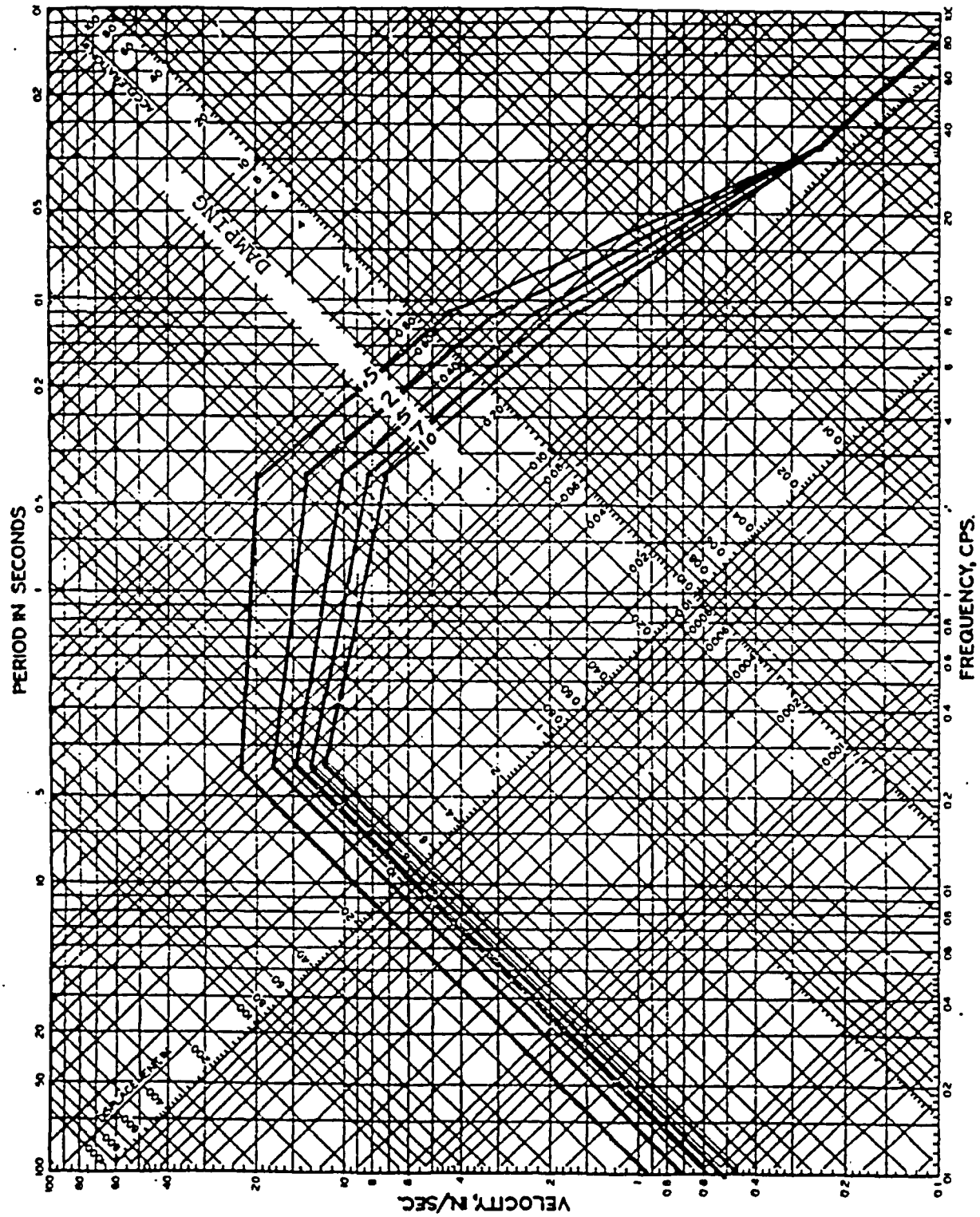

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FIGURE 2.5-48

HORIZONTAL RESPONSE SPECTRA
OPERATING BASIS EARTHQUAKE (.13g)

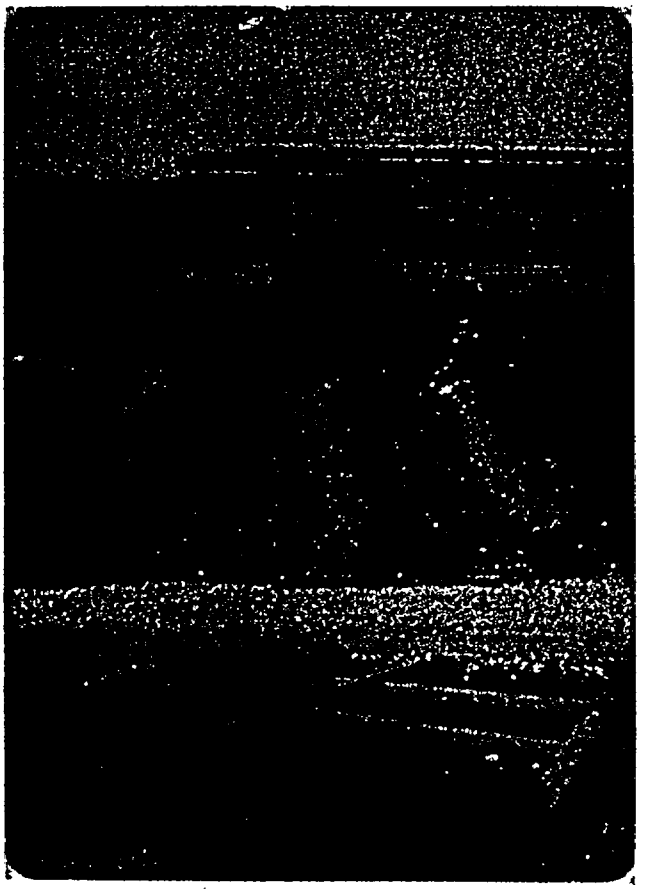


PHOTO-138 (SECTION 23) - SOIL SECTION IN BRAIDWOOD EXCAVATION SHOWING PARKLAND SAND, EQUALITY FORMATION, AND WEDRON FORMATION. CONTROL POINT S-23 IS IN THE TRENCH AND ABOUT LEVEL WITH GEOLOGIST'S HAND.

View is to the north. Photo scale is 5 feet long with 6-inch divisions.

NOTES:

1. SECTION 23 IS PRESENTED ON FIGURE 2.5-50 .
2. LOCATION OF SECTION 23 IS SHOWN ON FIGURE 2.5-55 .

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

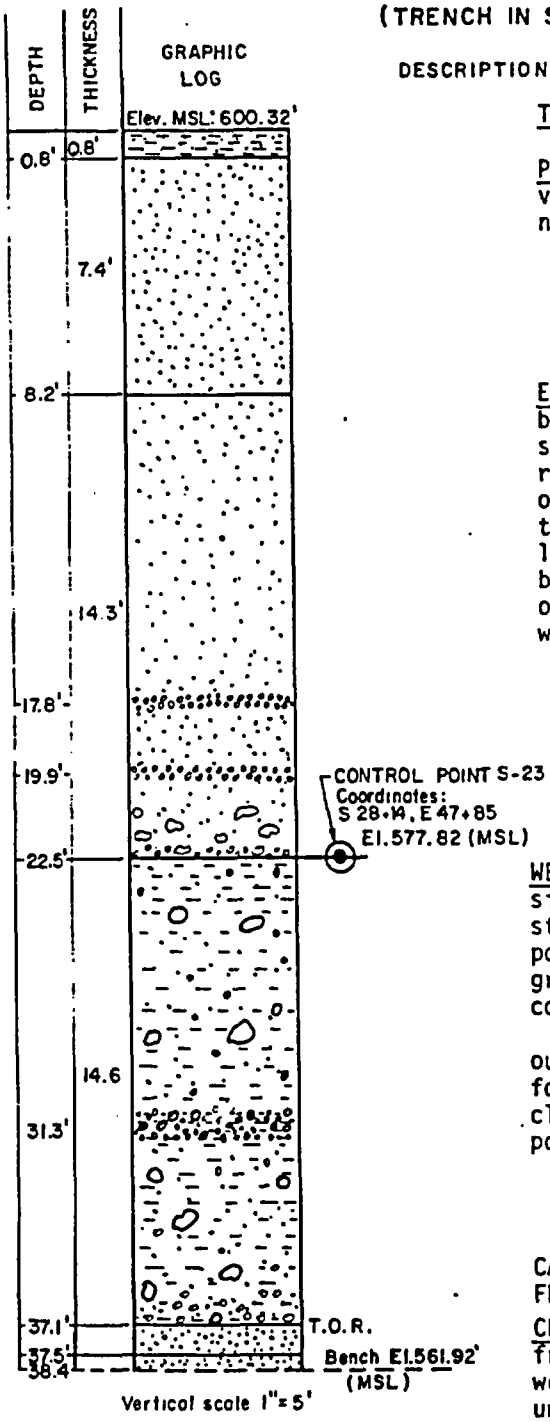
FIGURE 2.5-49

PHOTOGRAPH OF SECTION 23

SECTION 23

SHOWN IN PHOTO 138, UNIT 1, AREA-NORTH WALL OF EXCAVATION

(TRENCH IN SOIL)



DESCRIPTION

TOPSOIL - black, sandy clay w/organics

PARKLAND SAND - orange-brown to brown, very fine to fine, silty sand; mottled, no visible bedding

EQUALITY FORMATION - brown to gray-brown, slightly silty, fine to medium sand; some scattered x-bedding and ripple marks, widely scattered layers of clayey sand, two 4-6" layers of fine to course gravel near bottom, bottom 1-1.5' has rip-up clasts of Wedron till, bottom 1-2" is a lag gravel consisting of course sand and fine gravel, many water seeps at base of formation

WEDRON FORMATION - red-brown to gray silty, slightly sandy and gravelly, stiff, moist to wet clay; scattered pockets of very silty clay, mostly gray in color below 24.0', scattered cobbles and boulders,

outwash layer at about 30', about one foot thick, gray, silty, sandy, gravelly clay scattered cobbles and boulders, pockets of medium course sand

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER

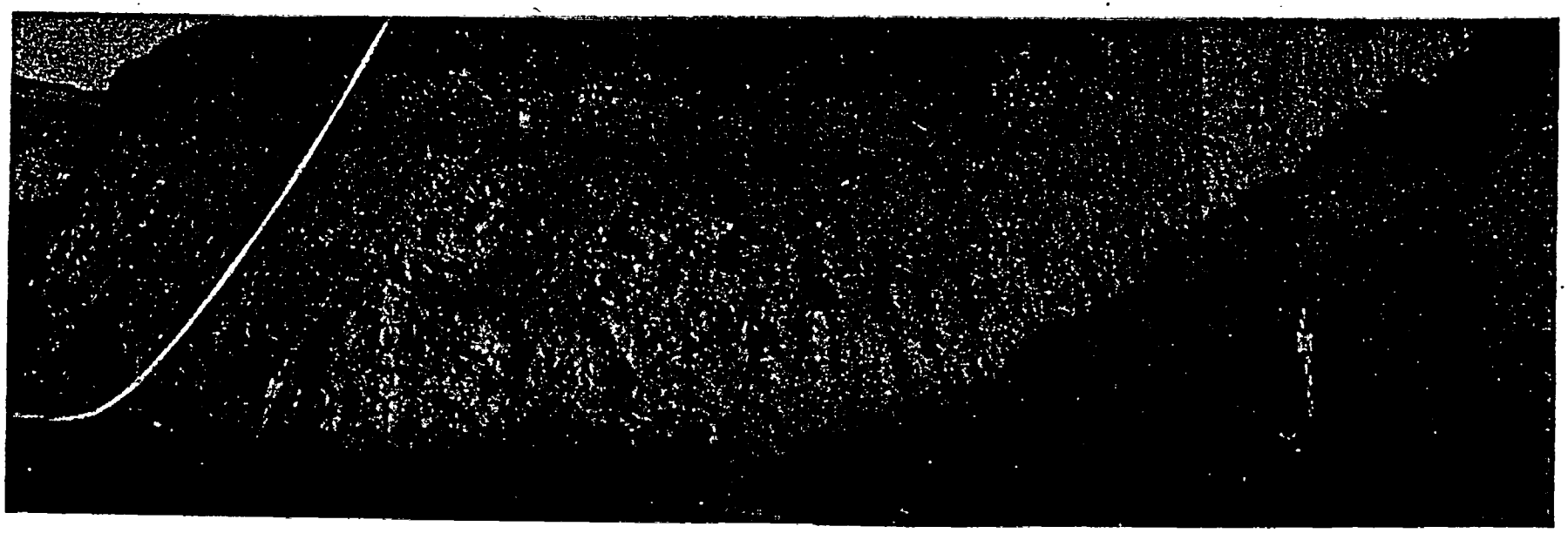
CHANNEL SANDSTONE - gray, weathered, friable, fine to medium sandstone, weathered to about 38' w/clasts of unweathered sandstone; below 38', fairly well cemented

NOTES:
1. PHOTO OF SECTION 23 IS PRESENTED ON FIGURE 2.5-49 .
2. LOCATION OF SECTION 23 IS SHOWN ON FIGURE 2.5-55 .

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-50

SECTION 23



PHOTOS 111-113 (SECTION 12) - UPPER PORTION OF ROCK SECTION IN BRAIDWOOD EXCAVATION SHOWING CHANNEL SANDSTONE AND SILTSTONE OF THE FRANCIS CREEK SHALE MEMBER OF THE CARBONDALE FORMATION. CONTROL POINT S-12 IS ABOVE THE BACKPACKS, ABOUT 2/3 OF THE WAY UP THE WALL IN PHOTO 112.

View is to the east. Photo scale is 5 feet long with 6-inch divisions.

NOTES:
1. SECTION 12 IS PRESENTED ON FIGURE 2.5-52 .
2. LOCATION OF SECTION 12 IS SHOWN ON FIGURE 2.5-55 .

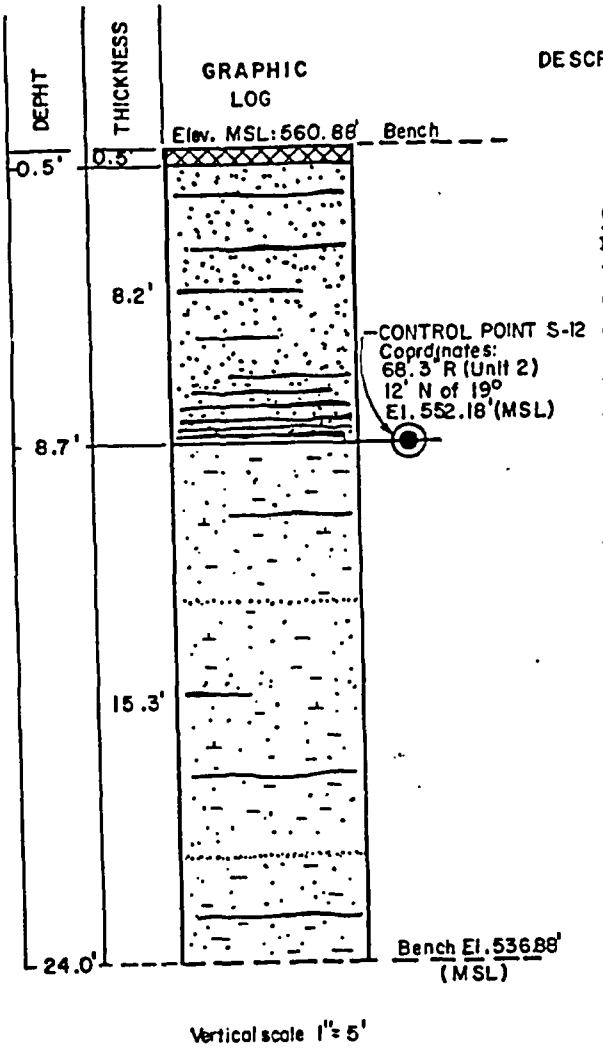
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-51

PHOTOGRAPH OF SECTION 12

SECTION 12

SHOWN IN PHOTO 112 ,UNIT 2 , WESTERN PORTION OF REACTOR PERIMETER WALL (TENDON TUNNEL)



DESCRIPTION

MUD MAT

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER

CHANNEL SANDSTONE - gray, fine to medium grained, micaceous, friable, thin to medium bedded sandstone; thickly bedded sandstone; thickly bedded in places and fairly well cemented, cross-bedded in places, scattered joints, scattered thin coal seams and stringers becoming abundant in bottom 1-2'.

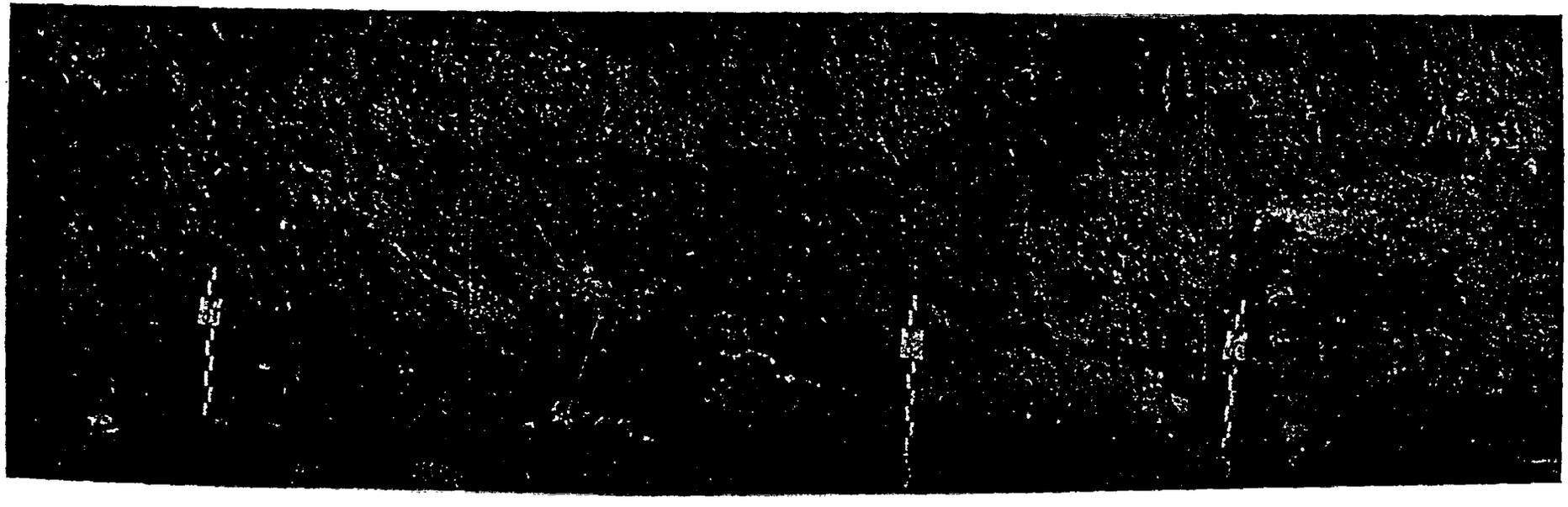
SILTSTONE - gray to light gray, slightly sandy to sandy, micaceous, finely laminated, shaley, blocky siltstone; calcareous in places, scattered thin coal seams and thin seams of fine sandstone, scattered joints

NOTES:
1. PHOTOS OF SECTION 12 IS PRESENTED ON FIGURE 2.5-51.
2. LOCATION OF SECTION 12 IS SHOWN ON FIGURE 2.5-55.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-52

SECTION 12



PHOTOS 101-103 (SECTION 11) - LOWER PORTION OF ROCK SECTION IN BRAIDWOOD EXCAVATION SHOWING SILTSTONE, SANDSTONE, AND COAL BEDS OF THE FRANCIS CREEK SHALE MEMBER. CONTROL POINTS S-11 IS TO THE RIGHT OF THE SCALE IN PHOTO 101.

View is to the east. Photo scale is 5 feet long with 6-inch divisions.

NOTES:
1. SECTION 11 IS PRESENTED ON FIGURE 2.5-54 .
2. LOCATION OF SECTION 11 IS SHOWN ON FIGURE 2.5-55 .

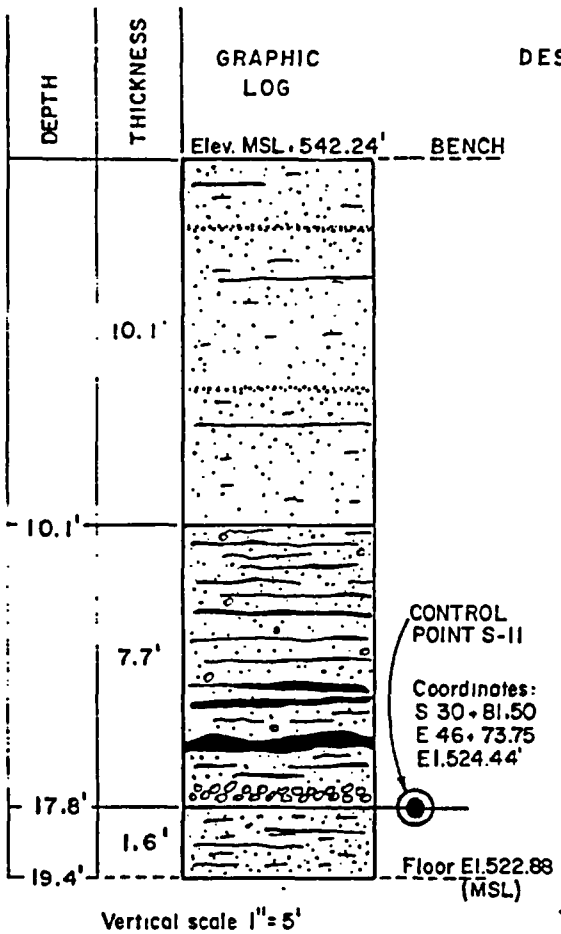
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-53

PHOTOGRAPH OF SECTION 11

SECTION 11

SHOWN IN PHOTO 101 , AUXILIARY BUILDING - EAST WALL



DESCRIPTION

CARBONDALE FORMATION

FRANCIS CREEK SHALE MEMBER - gray to light gray, slightly sandy to sandy, micaceous, thinly laminated, shaley, blocky siltstone; calcareous in places, scattered thin coal seams varying from hairline to ½" in thickness, scattered fine sand lenses with occasional cross-bedding, scattered joints

-gray, silty to slightly silty, micaceous, thin to medium bedded, sometimes calcareous, fine to medium grained sandstone interbedded with lenses and seams of black, thinly bedded coal varying from hairline to ½" in thickness; scattered siderite pebbles; ½" basal conglomerate bed of siderite pebbles in matrix of gray, medium to coarse grained, well-cemented sandstone

-gray, slightly sandy, shaley, thinly laminated siltstone; scattered thin coal seams

NOTES:
1. PHOTOS OF SECTION 11 ARE PRESENTED ON FIGURE 2.5-53
2. LOCATION OF SECTION 11 IS SHOWN ON FIGURE 2.5-55

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-54

SECTION 11

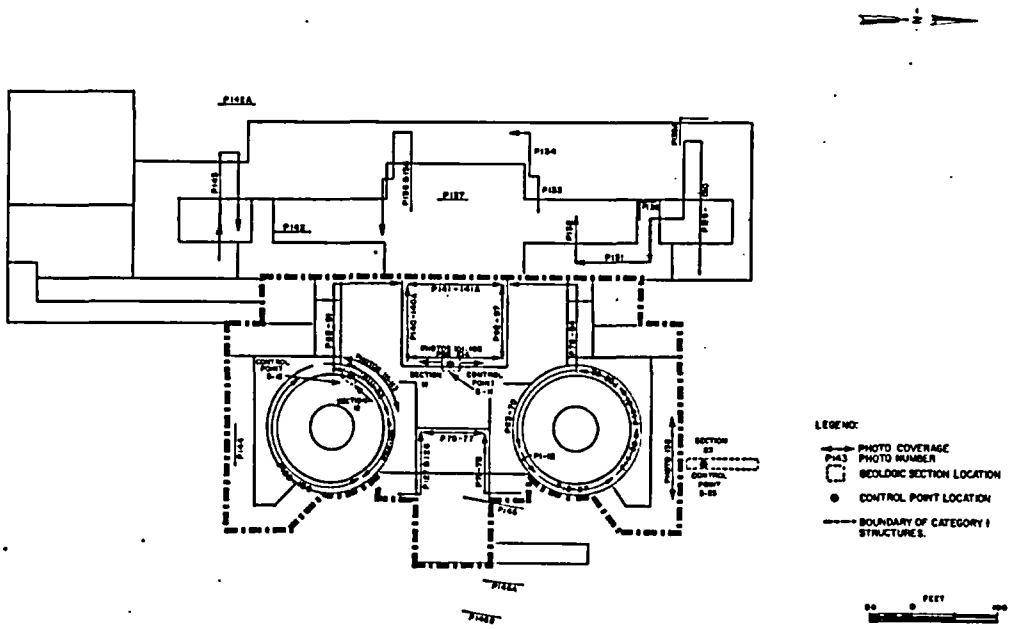


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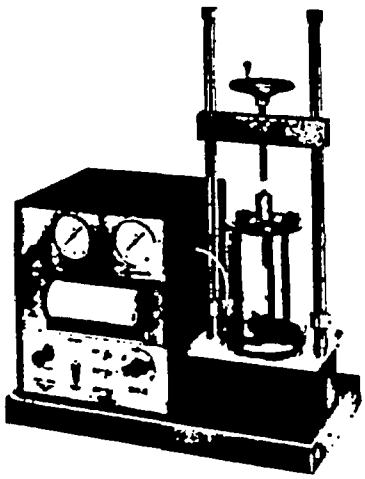
FIGURE 2.5-55

EXCAVATION MAPPING PHOTOGRAPH LOCATION MAP

METHODS OF PERFORMING UNCONFINED COMPRESSION AND TRIAXIAL COMPRESSION TESTS

THE SHEARING STRENGTHS OF SOILS ARE DETERMINED FROM THE RESULTS OF UNCONFINED COMPRESSION AND TRIAXIAL COMPRESSION TESTS. IN TRIAXIAL COMPRESSION TESTS THE TEST METHOD AND THE MAGNITUDE OF THE CONFINING PRESSURE ARE CHOSEN TO SIMULATE ANTICIPATED FIELD CONDITIONS.

UNCONFINED COMPRESSION AND TRIAXIAL COMPRESSION TESTS ARE PERFORMED ON UNDISTURBED OR REMOLDED SAMPLES OF SOIL APPROXIMATELY SIX INCHES IN LENGTH AND TWO AND ONE-HALF INCHES IN DIAMETER. THE TESTS ARE RUN EITHER STRAIN-CONTROLLED OR STRESS-CONTROLLED. IN A STRAIN-CONTROLLED TEST THE SAMPLE IS SUBJECTED TO A CONSTANT RATE OF DEFLECTION AND THE RESULTING STRESSES ARE RECORDED. IN A STRESS-CONTROLLED TEST THE SAMPLE IS SUBJECTED TO EQUAL INCREMENTS OF LOAD WITH EACH INCREMENT BEING MAINTAINED UNTIL AN EQUILIBRIUM CONDITION WITH RESPECT TO STRAIN IS ACHIEVED.



TRIAXIAL COMPRESSION TEST UNIT

YIELD, PEAK, OR ULTIMATE STRESSES ARE DETERMINED FROM THE STRESS-STRAIN PLOT FOR EACH SAMPLE AND THE PRINCIPAL STRESSES ARE EVALUATED. THE PRINCIPAL STRESSES ARE PLOTTED ON A MOHR'S CIRCLE DIAGRAM TO DETERMINE THE SHEARING STRENGTH OF THE SOIL TYPE BEING TESTED.

UNCONFINED COMPRESSION TESTS CAN BE PERFORMED ONLY ON SAMPLES WITH SUFFICIENT COHESION SO THAT THE SOIL WILL STAND AS AN UNSUPPORTED CYLINDER. THESE TESTS MAY BE RUN AT NATURAL MOISTURE CONTENT OR ON ARTIFICIALLY SATURATED SOILS.

IN A TRIAXIAL COMPRESSION TEST THE SAMPLE IS ENCASED IN A RUBBER MEMBRANE, PLACED IN A TEST CHAMBER, AND SUBJECTED TO A CONFINING PRESSURE THROUGHOUT THE DURATION OF THE TEST. NORMALLY, THIS CONFINING PRESSURE IS MAINTAINED AT A CONSTANT LEVEL, ALTHOUGH FOR SPECIAL TESTS IT MAY BE VARIED IN RELATION TO THE MEASURED STRESSES. TRIAXIAL COMPRESSION TESTS MAY BE RUN ON SOILS AT FIELD MOISTURE CONTENT OR ON ARTIFICIALLY SATURATED SAMPLES. THE TESTS ARE PERFORMED IN ONE OF THE FOLLOWING WAYS:

UNCONSOLIDATED-UNDRAINED: THE CONFINING PRESSURE IS IMPOSED ON THE SAMPLE AT THE START OF THE TEST. NO DRAINAGE IS PERMITTED AND THE STRESSES WHICH ARE MEASURED REPRESENT THE SUM OF THE INTERGRANULAR STRESSES AND PORE WATER PRESSURES.

CONSOLIDATED-UNDRAINED: THE SAMPLE IS ALLOWED TO CONSOLIDATE FULLY UNDER THE APPLIED CONFINING PRESSURE PRIOR TO THE START OF THE TEST. THE VOLUME CHANGE IS DETERMINED BY MEASURING THE WATER AND/OR AIR EXPELLED DURING CONSOLIDATION. NO DRAINAGE IS PERMITTED DURING THE TEST AND THE STRESSES WHICH ARE MEASURED ARE THE SAME AS FOR THE UNCONSOLIDATED-UNDRAINED TEST.

DRAINED: THE INTERGRANULAR STRESSES IN A SAMPLE MAY BE MEASURED BY PERFORMING A DRAINED, OR SLOW, TEST. IN THIS TEST THE SAMPLE IS FULLY SATURATED AND CONSOLIDATED PRIOR TO THE START OF THE TEST. DURING THE TEST, DRAINAGE IS PERMITTED AND THE TEST IS PERFORMED AT A SLOW ENOUGH RATE TO PREVENT THE BUILDUP OF PORE WATER PRESSURES. THE RESULTING STRESSES WHICH ARE MEASURED REPRESENT ONLY THE INTERGRANULAR STRESSES. THESE TESTS ARE USUALLY PERFORMED ON SAMPLES OF GENERALLY NON-COHESIVE SOILS, ALTHOUGH THE TEST PROCEDURE IS APPLICABLE TO COHESIVE SOILS IF A SUFFICIENTLY SLOW TEST RATE IS USED.

AN ALTERNATE MEANS OF OBTAINING THE DATA RESULTING FROM THE DRAINED TEST IS TO PERFORM AN UNDRAINED TEST IN WHICH SPECIAL EQUIPMENT IS USED TO MEASURE THE PORE WATER PRESSURES. THE DIFFERENCES BETWEEN THE TOTAL STRESSES AND THE PORE WATER PRESSURES MEASURED ARE THE INTERGRANULAR STRESSES.

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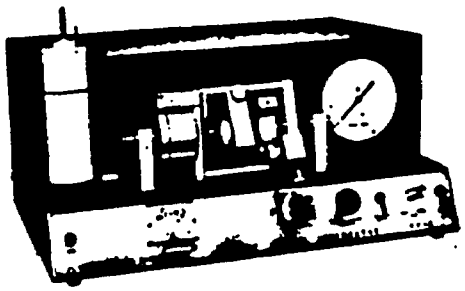
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-56

STRENGTH TESTS, METHODS
(SHEET 1 OF 2)

METHOD OF PERFORMING DIRECT SHEAR AND FRICTION TESTS

DIRECT SHEAR TESTS ARE PERFORMED TO DETERMINE THE SHEARING STRENGTHS OF SOILS. FRICTION TESTS ARE PERFORMED TO DETERMINE THE FRICTIONAL RESISTANCES BETWEEN SOILS AND VARIOUS OTHER MATERIALS SUCH AS WOOD, STEEL, OR CONCRETE. THE TESTS ARE PERFORMED IN THE LABORATORY TO SIMULATE ANTICIPATED FIELD CONDITIONS.



DIRECT SHEAR TESTING & RECORDING APPARATUS

EACH SAMPLE IS TESTED WITHIN THREE BRASS RINGS, TWO AND ONE-HALF INCHES IN DIAMETER AND ONE INCH IN LENGTH. UNDISTURBED SAMPLES OF IN-PLACE SOILS ARE TESTED IN RINGS TAKEN FROM THE SAMPLING DEVICE IN WHICH THE SAMPLES WERE OBTAINED. LOOSE SAMPLES OF SOILS TO BE USED IN CONSTRUCTING EARTH FILLS ARE COMPACTED IN RINGS TO PREDETERMINED CONDITIONS AND TESTED.

DIRECT SHEAR TESTS

A THREE-INCH LENGTH OF THE SAMPLE IS TESTED IN DIRECT DOUBLE SHEAR. A CONSTANT PRESSURE, APPROPRIATE TO THE CONDITIONS OF THE PROBLEM FOR WHICH THE TEST IS BEING PERFORMED, IS APPLIED NORMAL TO THE ENDS OF THE SAMPLE THROUGH POROUS STONES. A SHEARING FAILURE OF THE SAMPLE IS CAUSED BY MOVING THE CENTER RING IN A DIRECTION PERPENDICULAR TO THE AXIS OF THE SAMPLE. TRANSVERSE MOVEMENT OF THE OUTER RINGS IS PREVENTED.

THE SHEARING FAILURE MAY BE ACCOMPLISHED BY APPLYING TO THE CENTER RING EITHER A CONSTANT RATE OF LOAD, A CONSTANT RATE OF DEFLECTION, OR INCREMENTS OF LOAD OR DEFLECTION. IN EACH CASE, THE SHEARING LOAD AND THE DEFLECTIONS IN BOTH THE AXIAL AND TRANSVERSE DIRECTIONS ARE RECORDED AND PLOTTED. THE SHEARING STRENGTH OF THE SOIL IS DETERMINED FROM THE RESULTING LOAD-DEFLECTION CURVES.

FRICTION TESTS

IN ORDER TO DETERMINE THE FRICTIONAL RESISTANCE BETWEEN SOIL AND THE SURFACES OF VARIOUS MATERIALS, THE CENTER RING OF SOIL IN THE DIRECT SHEAR TEST IS REPLACED BY A DISK OF THE MATERIAL TO BE TESTED. THE TEST IS THEN PERFORMED IN THE SAME MANNER AS THE DIRECT SHEAR TEST BY FORCING THE DISK OF MATERIAL FROM THE SOIL SURFACES.

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FIGURE 2.5-56

STRENGTH TESTS, METHODS
(SHEET 2 OF 2)

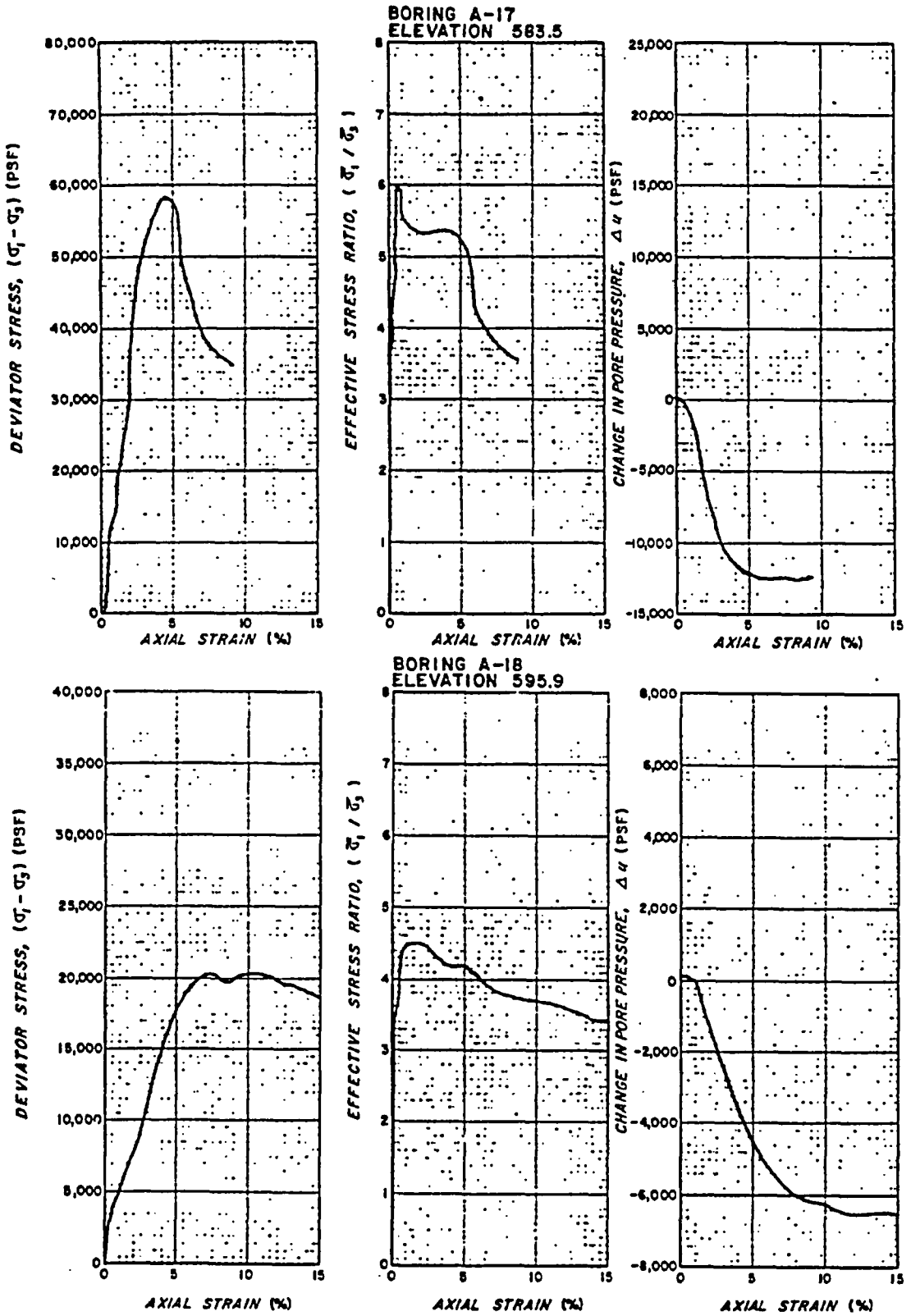

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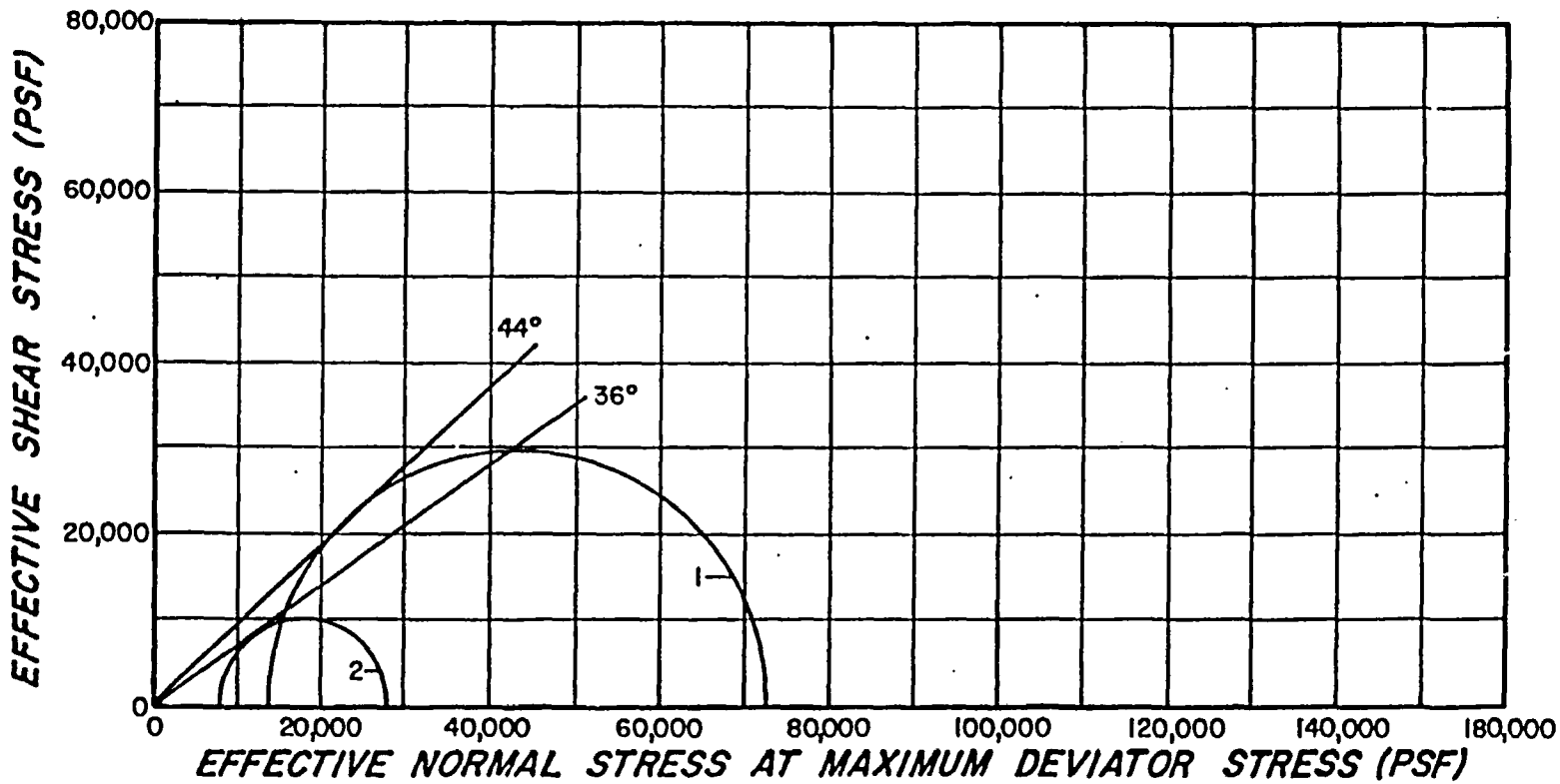
FIGURE 2.5-57

TRIAXIAL TESTS, RESULTS
(SHEET 1 OF 2)

SOIL TYPE - GRAY FINE SAND WITH TRACES OF COARSE SAND AND SILT

SAMPLES TESTED:			FIELD CONDITIONS:	
KEY	BORING	ELEVATION (FEET)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)
1	A-17	583.5	19.4	106.7
2	A-18	595.9	20.2	99.8



TRIAXIAL TEST DATA—MOHR CIRCLES

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

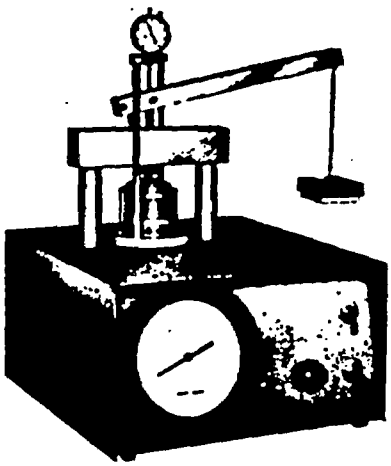
FIGURE 2.5-57

TRIAXIAL TESTS, RESULTS
(SHEET 2 OF 2)

METHOD OF PERFORMING CONSOLIDATION TESTS

CONSOLIDATION TESTS ARE PERFORMED TO EVALUATE THE VOLUME CHANGES OF SOILS SUBJECTED TO INCREASED LOADS. TIME-CONSOLIDATION AND PRESSURE-CONSOLIDATION CURVES MAY BE PLOTTED FROM THE DATA OBTAINED IN THE TESTS. ENGINEERING ANALYSES BASED ON THESE CURVES PERMIT ESTIMATES TO BE MADE OF THE PROBABLE MAGNITUDE AND RATE OF SETTLEMENT OF THE TESTED SOILS UNDER APPLIED LOADS.

EACH SAMPLE IS TESTED WITHIN BRASS RINGS TWO AND ONE-HALF INCHES IN DIAMETER AND ONE INCH IN LENGTH. UNDISTURBED SAMPLES OF IN-PLACE SOILS ARE TESTED IN RINGS TAKEN FROM THE SAMPLING DEVICE IN WHICH THE SAMPLES WERE OBTAINED. LOOSE SAMPLES OF SOILS TO BE USED IN CONSTRUCTING EARTH FILLS ARE COMPACTED IN RINGS TO PREDETERMINED CONDITIONS AND TESTED.



DEAD LOAD-PNEUMATIC CONSOLIDOMETER

IN TESTING, THE SAMPLE IS RIGIDLY CONFINED LATERALLY BY THE BRASS RING. AXIAL LOADS ARE TRANSMITTED TO THE ENDS OF THE SAMPLE BY POROUS DISKS. THE DISKS ALLOW DRAINAGE OF THE LOADED SAMPLE. THE AXIAL COMPRESSION OR EXPANSION OF THE SAMPLE IS MEASURED BY A MICROMETER DIAL INDICATOR AT APPROPRIATE TIME INTERVALS AFTER EACH LOAD INCREMENT IS APPLIED. EACH LOAD IS ORDINARILY TWICE THE PRECEDING LOAD. THE INCREMENTS ARE SELECTED TO OBTAIN CONSOLIDATION DATA REPRESENTING THE FIELD LOADING CONDITIONS FOR WHICH THE TEST IS BEING PERFORMED. EACH LOAD INCREMENT IS ALLOWED TO ACT OVER AN INTERVAL OF TIME DEPENDENT ON THE TYPE AND EXTENT OF THE SOIL IN THE FIELD.

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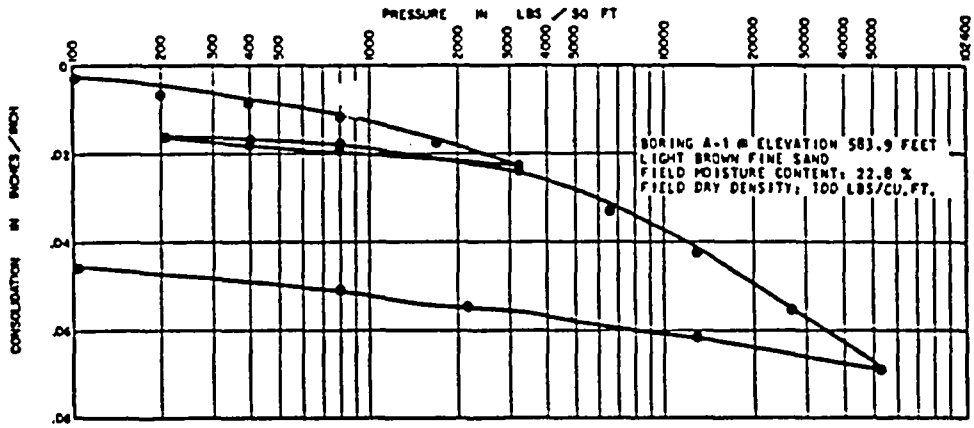
FIGURE 2.5-58

CONSOLIDATION TESTS, METHOD



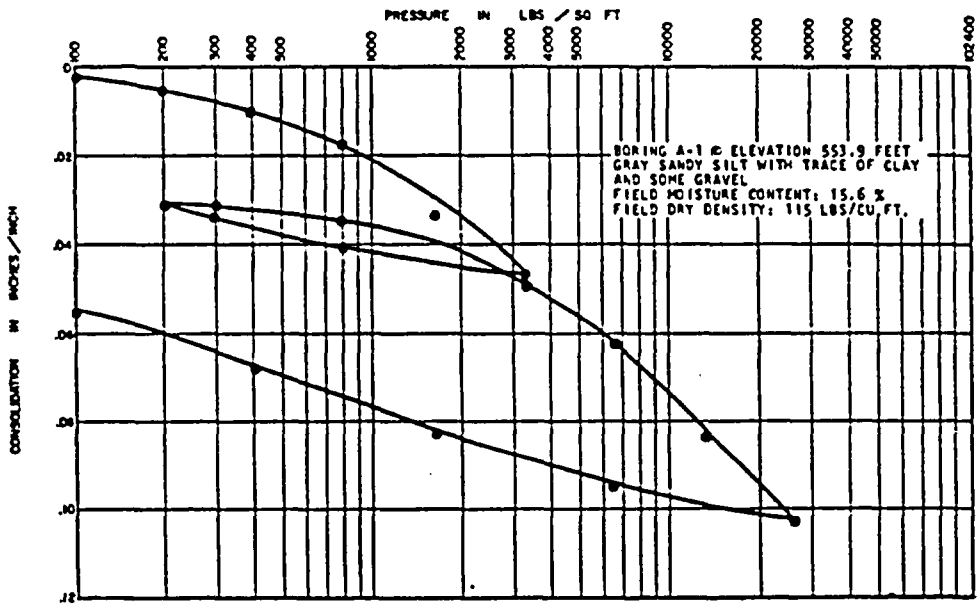


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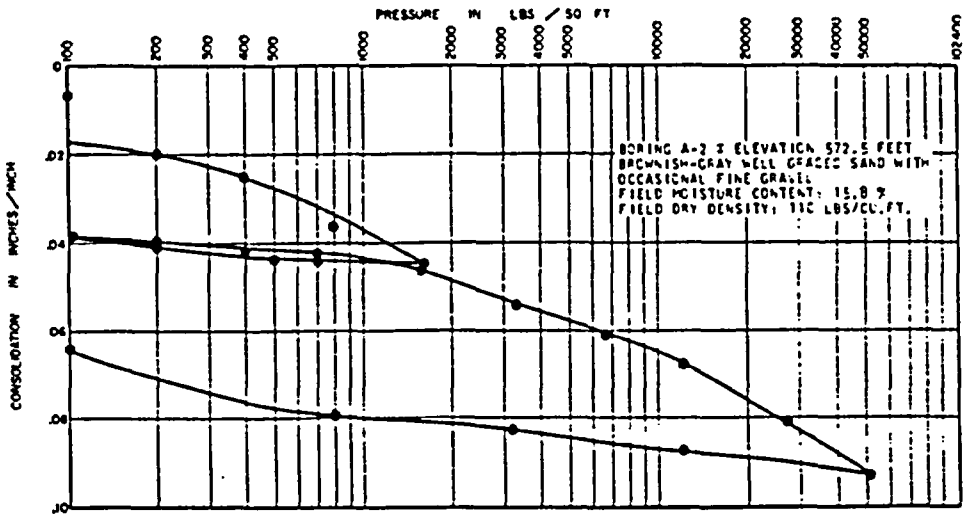
FIGURE 2.5-59

CONSOLIDATION TESTS, RESULTS
(SHEET 1 OF 8)



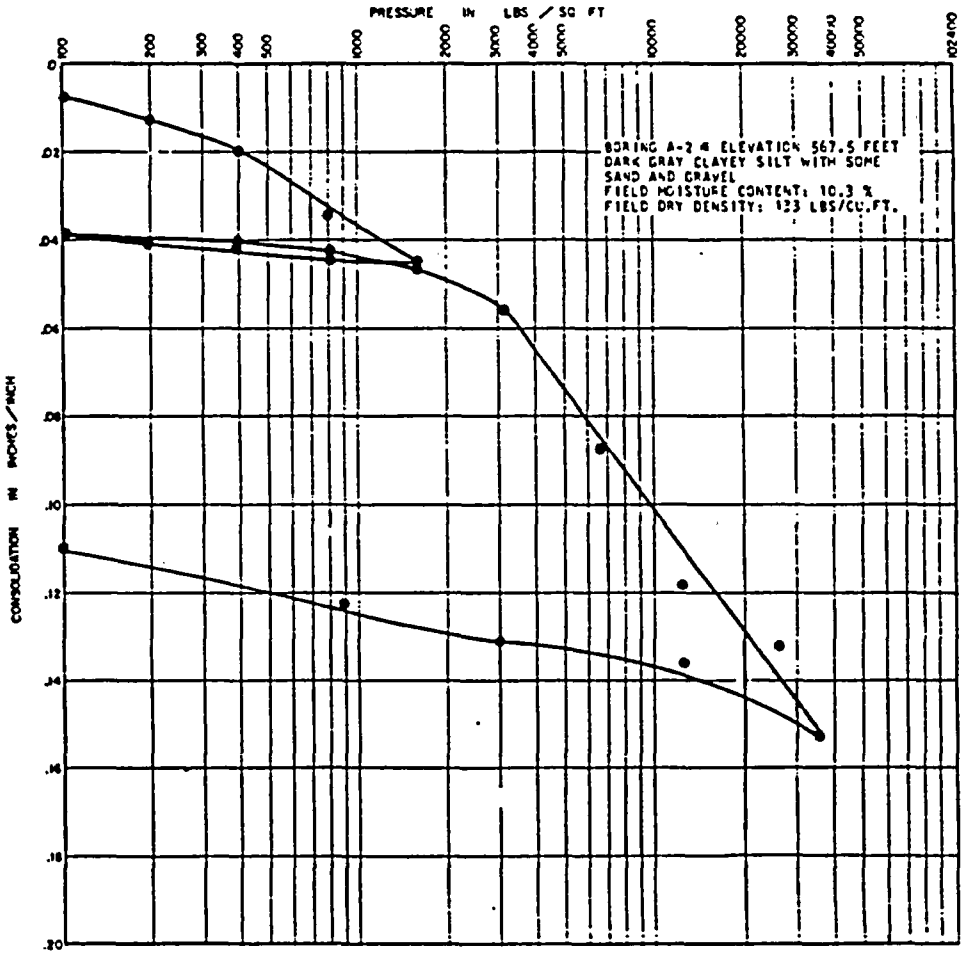


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FIGURE 2.5-59

CONSOLIDATION TESTS, RESULTS
(SHEET 2 OF 8)

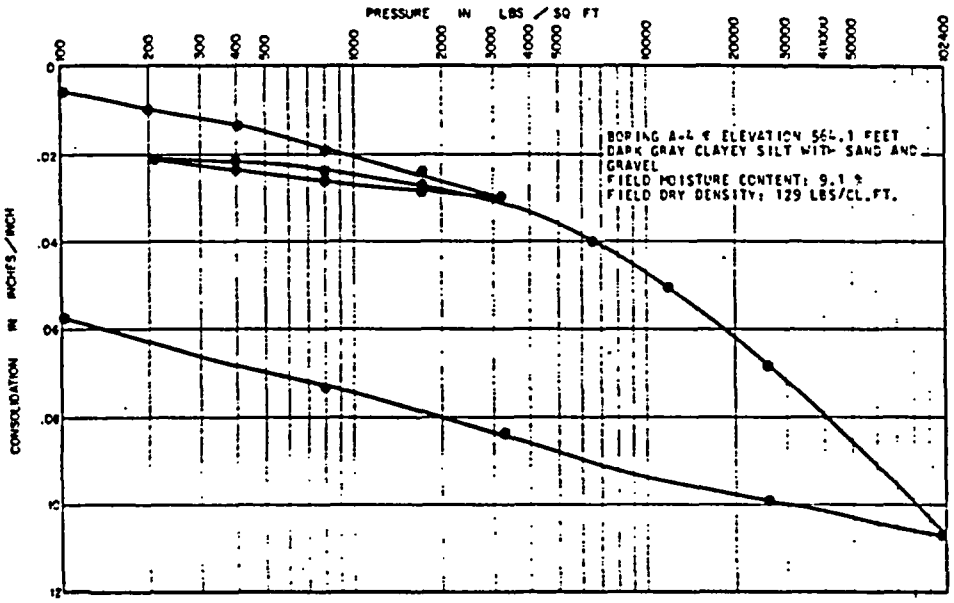

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FIGURE 2.5-59

CONSOLIDATION TESTS, RESULTS
(SHEET 3 OF 8)

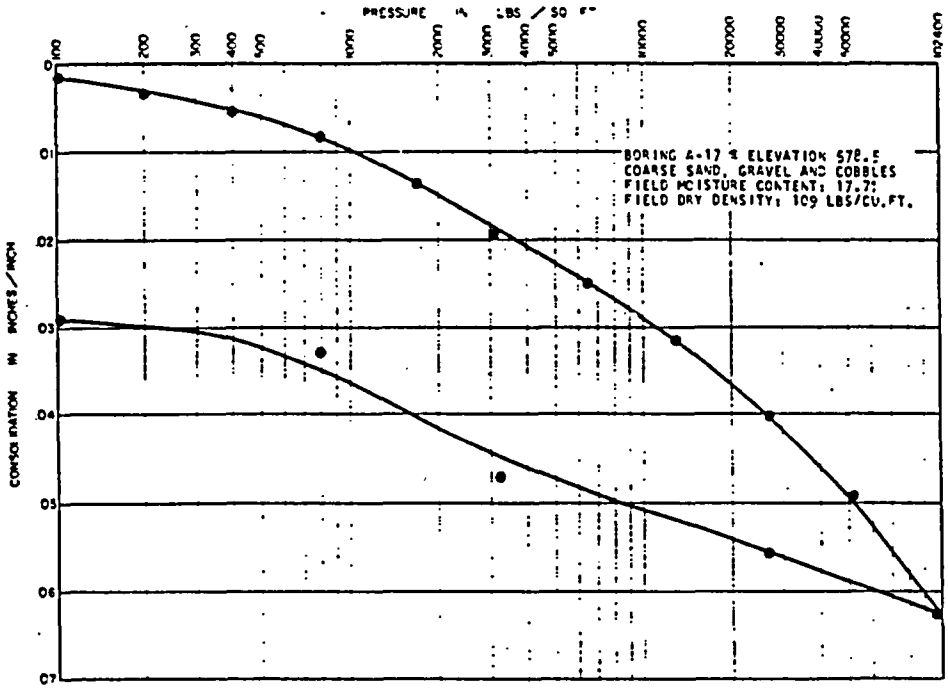

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FIGURE 2.5-59

CONSOLIDATION TESTS, RESULTS
(SHEET 4 OF 8)

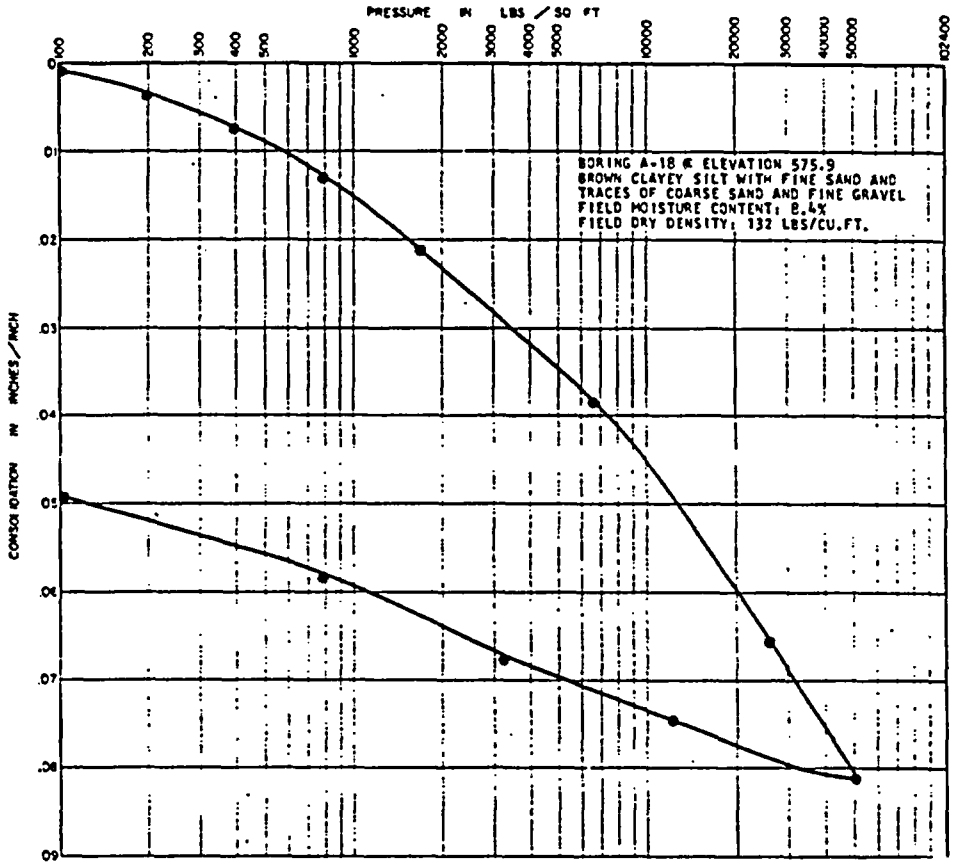

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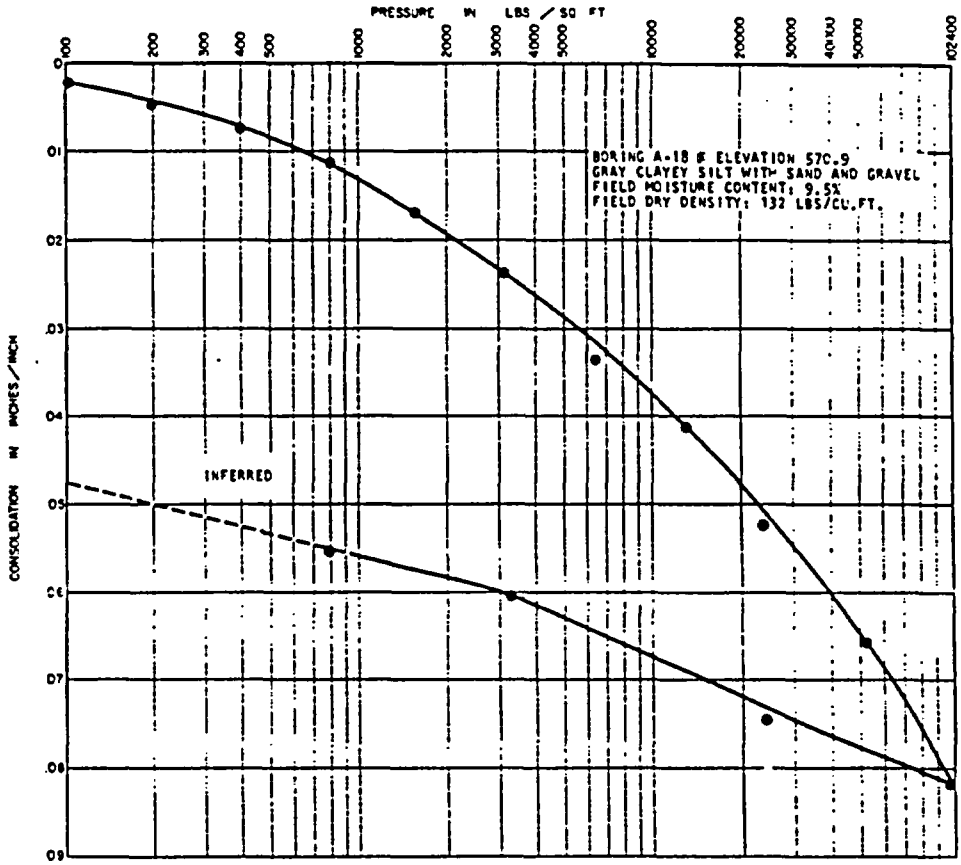
FIGURE 2.5-59

CONSOLIDATION TESTS, RESULTS
(SHEET 5 OF 8)



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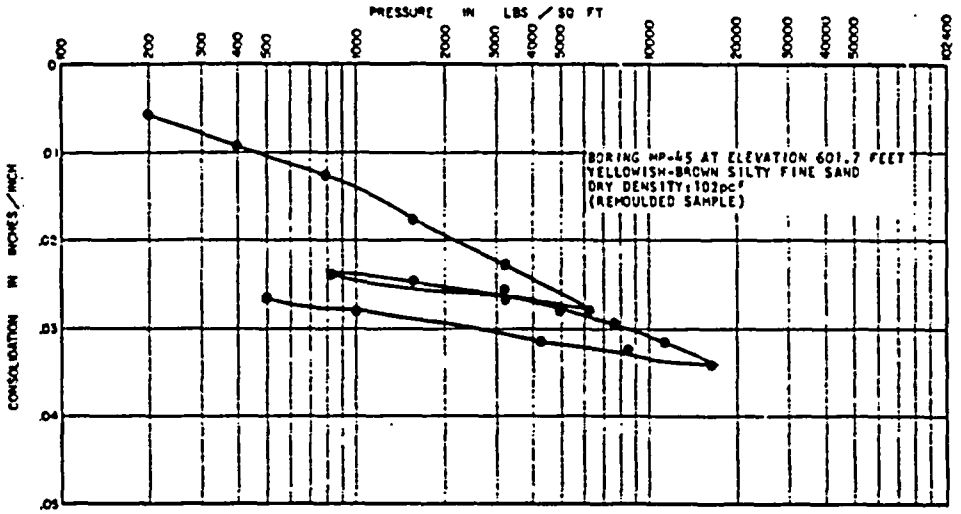
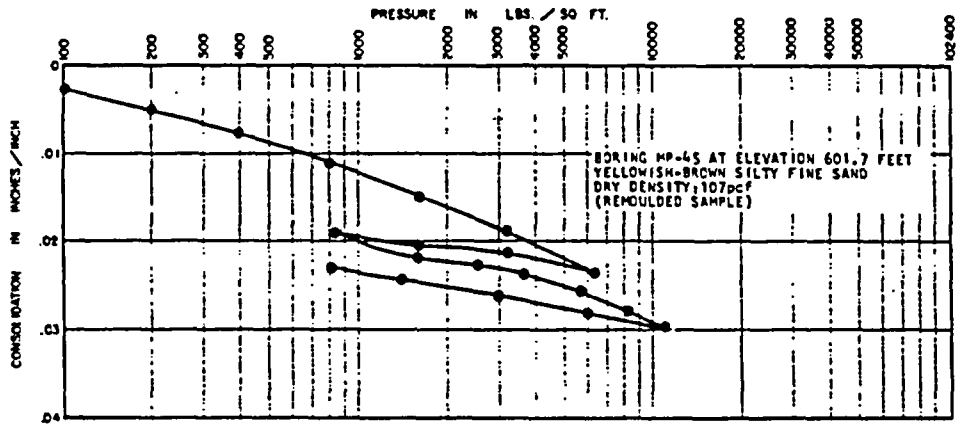
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-59

CONSOLIDATION TESTS, RESULTS
(SHEET 6 OF 8)





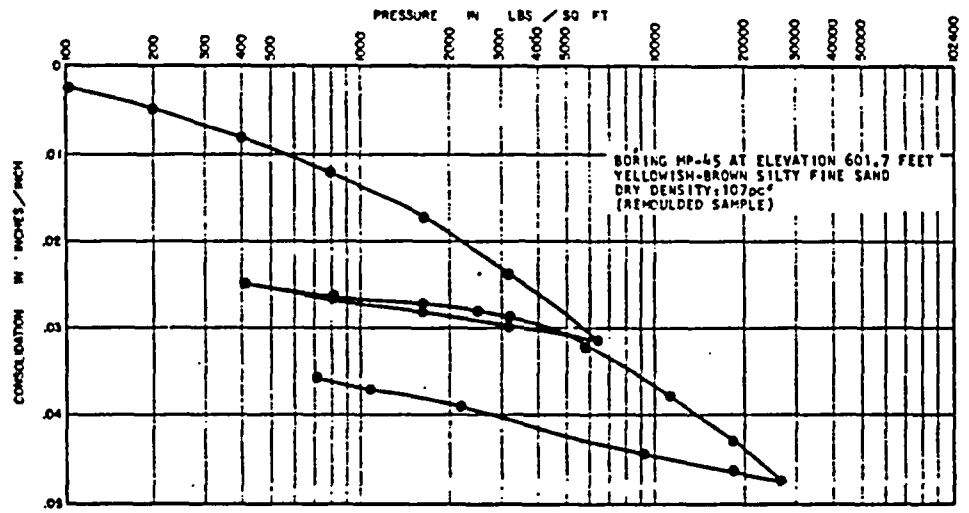


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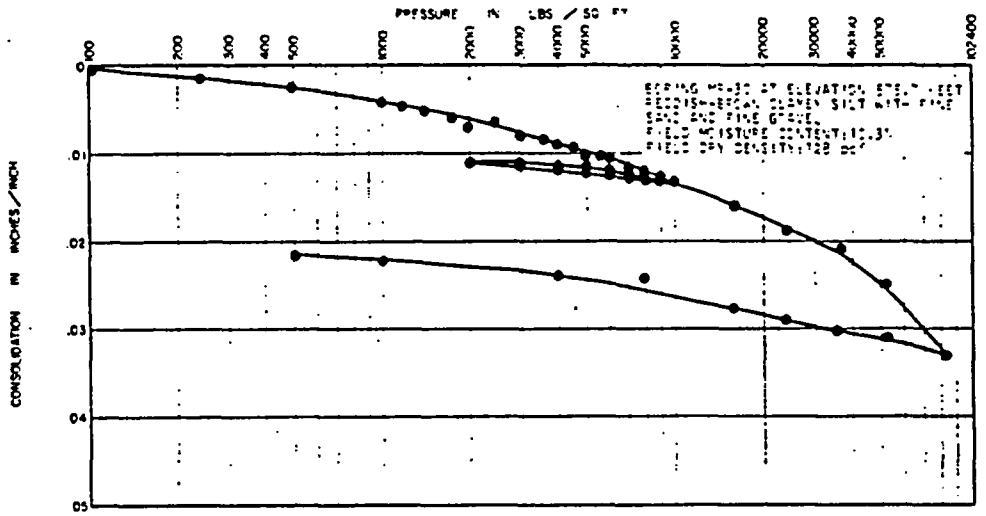
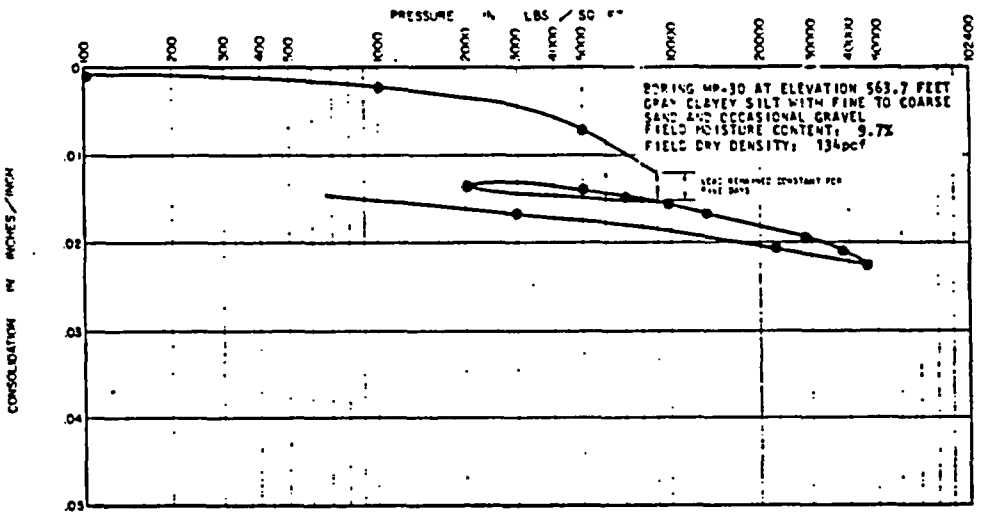
FIGURE 2.5-59

CONSOLIDATION TESTS, RESULTS
(SHEET 7 OF 8)





* TEST CONDUCTED ON 4 INCH DIAMETER CORED SAMPLE.

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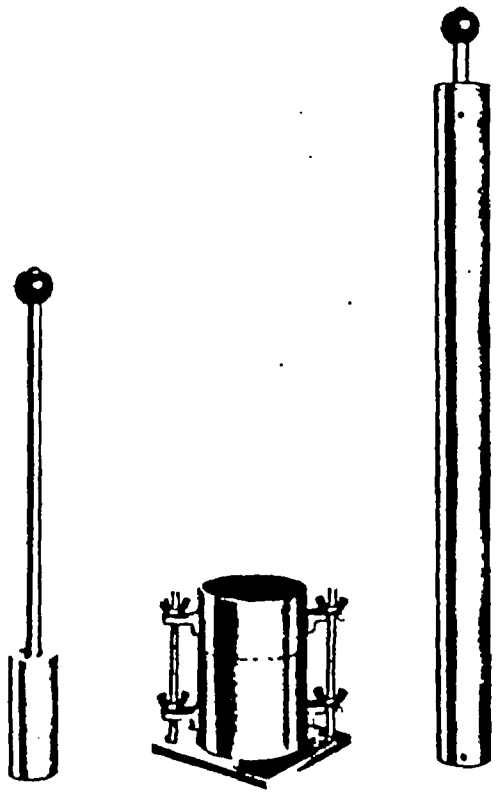
FIGURE 2.5-59

CONSOLIDATION TESTS, RESULTS
(SHEET 8 OF 8)

METHOD OF PERFORMING COMPACTION TESTS
(STANDARD AND MODIFIED A.A.S.H.O. METHODS)

IT HAS BEEN ESTABLISHED THAT WHEN COMPACTING EFFORT IS HELD CONSTANT, THE DENSITY OF A ROLLED EARTH FILL INCREASES WITH ADDED MOISTURE UNTIL A MAXIMUM DRY DENSITY IS OBTAINED AT A MOISTURE CONTENT TERMED THE "OPTIMUM MOISTURE CONTENT," AFTER WHICH THE DRY DENSITY DECREASES. THE COMPACTION CURVE SHOWING THE RELATIONSHIP BETWEEN DENSITY AND MOISTURE CONTENT FOR A SPECIFIC COMPACTING EFFORT IS DETERMINED BY EXPERIMENTAL METHODS. TWO COMMONLY USED METHODS ARE DESCRIBED IN THE FOLLOWING PARAGRAPHS.

FOR THE "STANDARD A.A.S.H.O." (A.S.T.M. D698-58T & A.A.S.H.O. T99-57) METHOD OF COMPACTION A PORTION OF THE SOIL SAMPLE PASSING THE NO. 4 SIEVE IS COMPACTED AT A SPECIFIC MOISTURE CONTENT IN THREE EQUAL LAYERS IN A STANDARD COMPACTION CYLINDER HAVING A VOLUME OF 1/30 CUBIC FOOT, USING TWENTY-FIVE 12-INCH BLOWS OF A STANDARD 5-1/2 POUND RAMMER TO COMPACT EACH LAYER.



SOME APPARATUS FOR PERFORMING COMPACTION TESTS
Shows, from left to right, 5-1/2 pound rammer (sleeve controlling 12" height of drop removed), 1/30 cubic-foot cylinder with removable collar and base plate, and 10 pound rammer within sleeve.

IN THE "MODIFIED A.A.S.H.O." (A.S.T.M. D-1557-58T & A.A.S.H.O. T 180-57) METHOD OF COMPACTION A PORTION OF THE SOIL SAMPLE PASSING THE NO. 4 SIEVE IS COMPACTED AT A SPECIFIC MOISTURE CONTENT IN FIVE EQUAL LAYERS IN A STANDARD COMPACTION CYLINDER HAVING A VOLUME OF 1/30 CUBIC FOOT, USING TWENTY-FIVE 18-INCH BLOWS OF A 10-POUND RAMMER TO COMPACT EACH LAYER. SEVERAL VARIATIONS OF THESE COMPACTION TESTING METHODS ARE OFTEN USED AND THESE ARE DESCRIBED IN A.A.S.H.O. & A.S.T.M. SPECIFICATIONS.

FOR BOTH METHODS, THE WET DENSITY OF THE COMPACTED SAMPLE IS DETERMINED BY WEIGHING THE KNOWN VOLUME OF SOIL; THE MOISTURE CONTENT, BY MEASURING THE LOSS OF WEIGHT OF A PORTION OF THE SAMPLE WHEN OVEN DRIED; AND THE DRY DENSITY, BY COMPUTING IT FROM THE WET DENSITY AND MOISTURE CONTENT. A SERIES OF SUCH COMPACTIONS IS PERFORMED AT INCREASING MOISTURE CONTENTS UNTIL A SUFFICIENT NUMBER OF POINTS DEFINING THE MOISTURE-DENSITY RELATIONSHIP HAVE BEEN OBTAINED TO PERMIT THE PLOTTING OF THE COMPACTION CURVE. THE MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT FOR THE PARTICULAR COMPACTING EFFORT ARE DETERMINED FROM THE COMPACTION CURVE.

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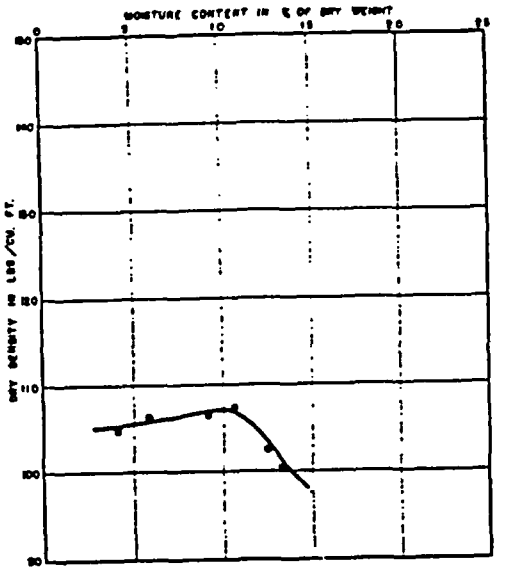
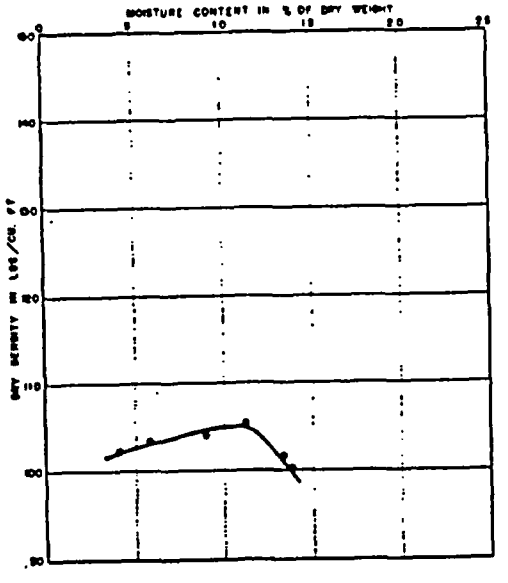
FIGURE 2.5-60

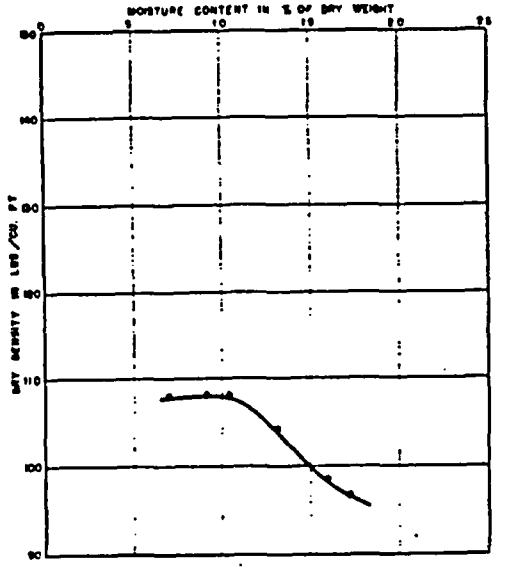
COMPACTION TEST, METHODS



MIXED SAMPLE FROM BORINGS MP-14
AND MP-31 (ELEVATION 598 TO 581 FEET)
YELLOWISH-BROWN SILTY FINE SAND
OPTIMUM MOISTURE CONTENT: 10.5%
MAXIMUM DRY DENSITY: 107 LBS/CU.FT.



MIXED SAMPLE FROM BORINGS MP-14
AND MP-31 (ELEVATION 588 TO 581 FEET)
YELLOWISH-BROWN SILTY FINE SAND
OPTIMUM MOISTURE CONTENT: 11.5%
MAXIMUM DRY DENSITY: 105 LBS/CU.FT.

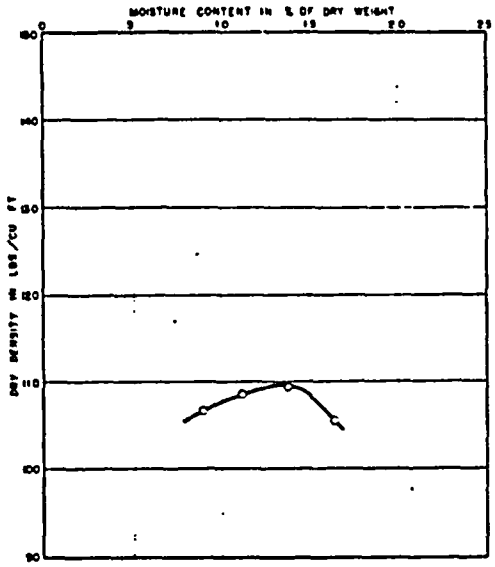


MIXED SAMPLE FROM BORINGS MP-14
AND MP-31 (ELEVATION 598 TO 588 FEET)
YELLOWISH-BROWN SILTY FINE SAND
OPTIMUM MOISTURE CONTENT: 9.5%
MAXIMUM DRY DENSITY: 108 LBS/CU.FT.

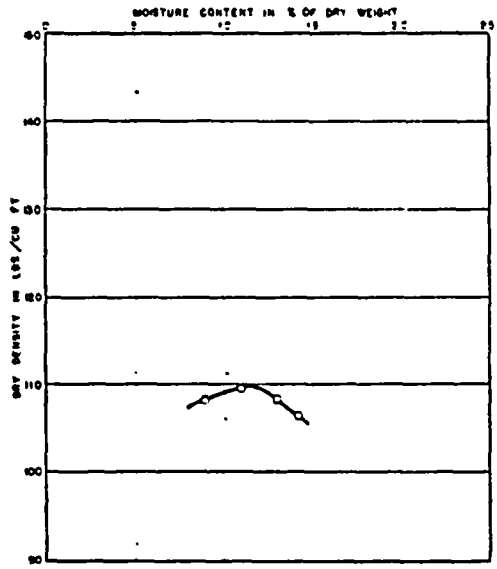
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-61

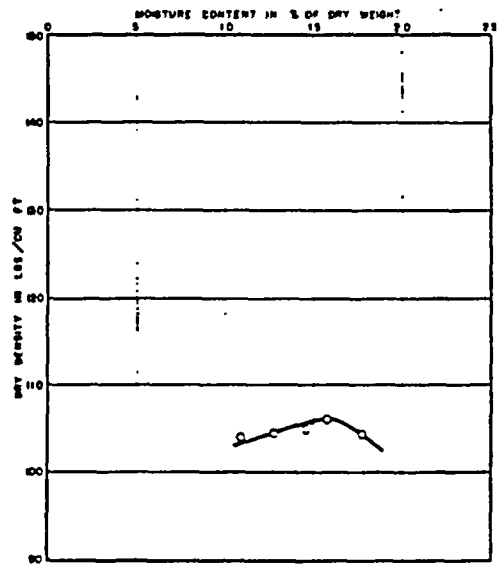
COMPACTION TEST, RESULTS
(SHEET 1 OF 3)



MIXED SAMPLE FROM DITCH BANK
1500 FEET SOUTH OF PLANT
(0-5 FOOT DEPTH)
YELLOWISH-BROWN SILTY FINE SAND
OPTIMUM MOISTURE CONTENT: 14.5%
MAXIMUM DRY DENSITY: 110 LBS/CU.FT.



MIXED SAMPLE FROM DITCH BANK
1500 FEET SOUTH OF PLANT
(5 TO 10 FOOT DEPTH)
YELLOWISH-BROWN FINE SAND
OPTIMUM MOISTURE CONTENT: 14.5%
MAXIMUM DRY DENSITY: 110 LBS/CU.FT.



MIXED SAMPLE FROM DITCH BANK
1500 FEET SOUTH OF PLANT
(10 TO 15 FOOT DEPTH)
YELLOWISH-BROWN FINE SAND
OPTIMUM MOISTURE CONTENT: 16.0%
MAXIMUM DRY DENSITY: 107 LBS/CU.FT.

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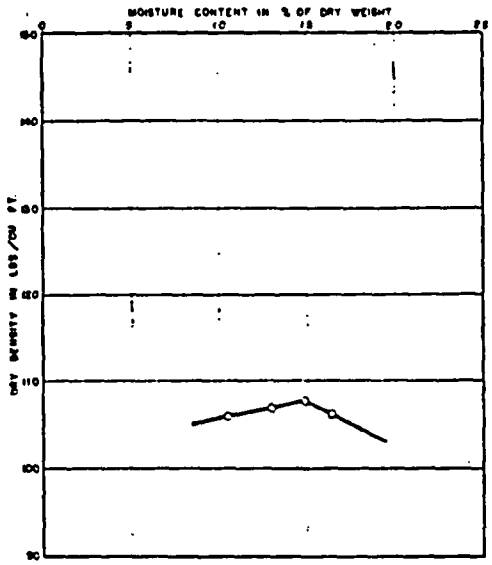
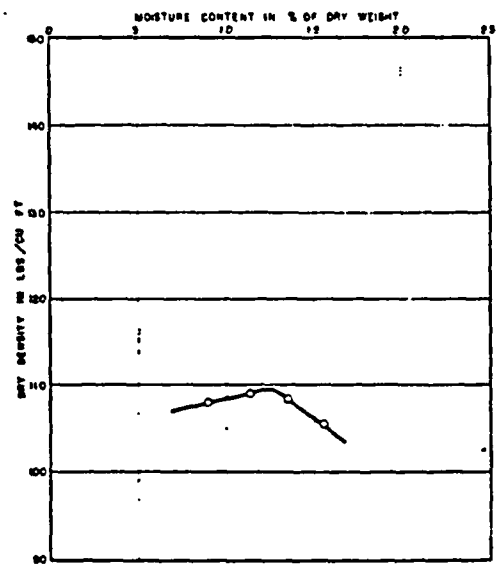
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-61

COMPACTION TEST, RESULTS
(SHEET 2 OF 3)



MIXED SAMPLE FROM DITCH BANK
1500 FEET SOUTH OF PLANT
(0 TO 5 FOOT DEPTH)
YELLOWISH-BROWN SILTY FINE SAND
OPTIMUM MOISTURE CONTENT: 14.5%
MAXIMUM DRY DENSITY: 108 LBS./CU.FT.



MIXED SAMPLE FROM DITCH BANK
1500FEET SOUTH OF PLANT
(5 TO 10 FOOT DEPTH)
YELLOWISH-BROWN FINE SAND
OPTIMUM MOISTURE CONTENT: 12.5%
MAXIMUM DRY DENSITY: 110 LBS/CU.FT.

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FIGURE 2.5-61

COMPACTION TEST, RESULTS
(SHEET 3 OF 3)

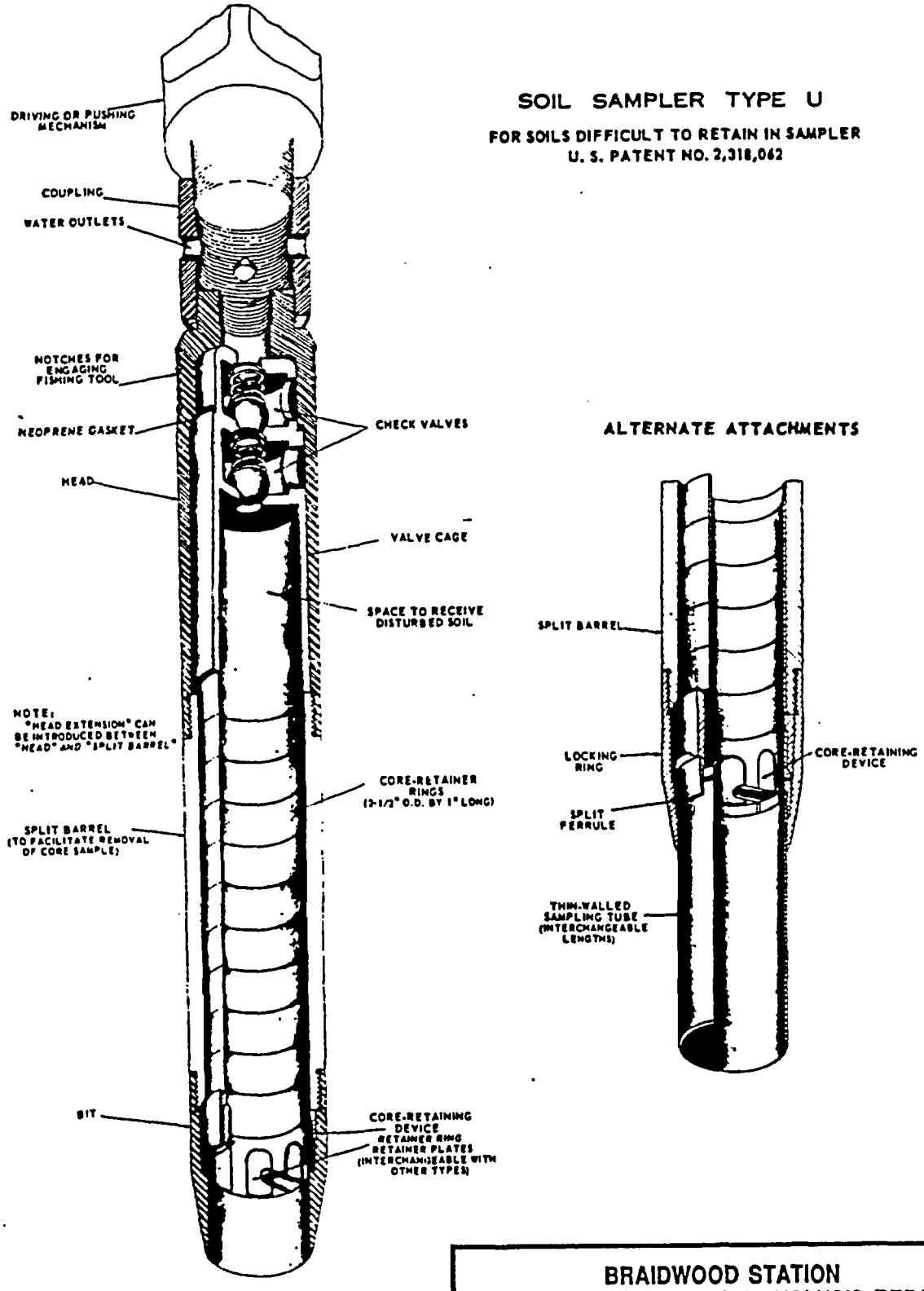

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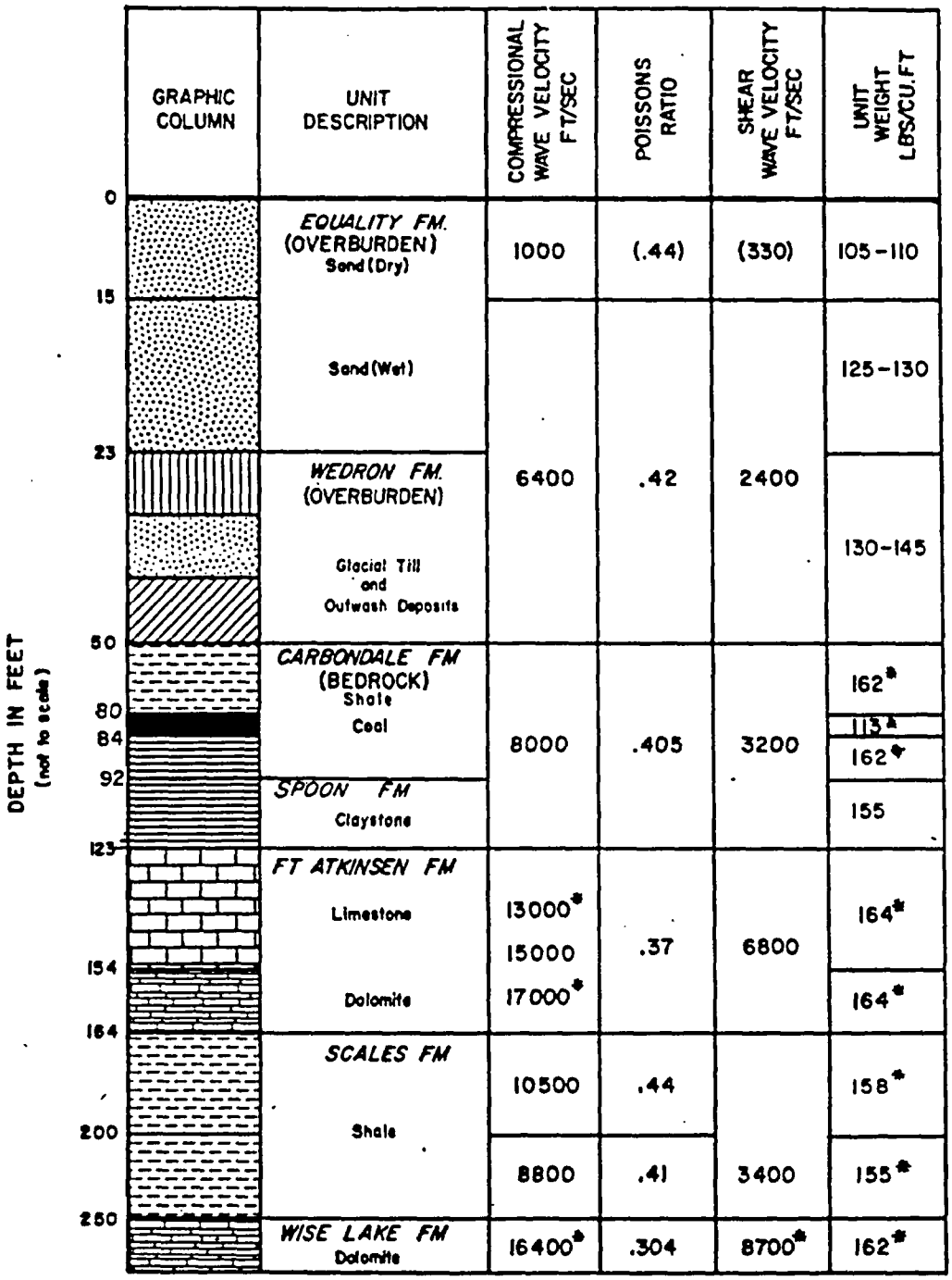
FIGURE 2.5-62

DAMES AND MOORE U TYPE SAMPLER



( ) Indicates estimated values
Indicates average values obtained
* Birdwell Elastic Properties Logs

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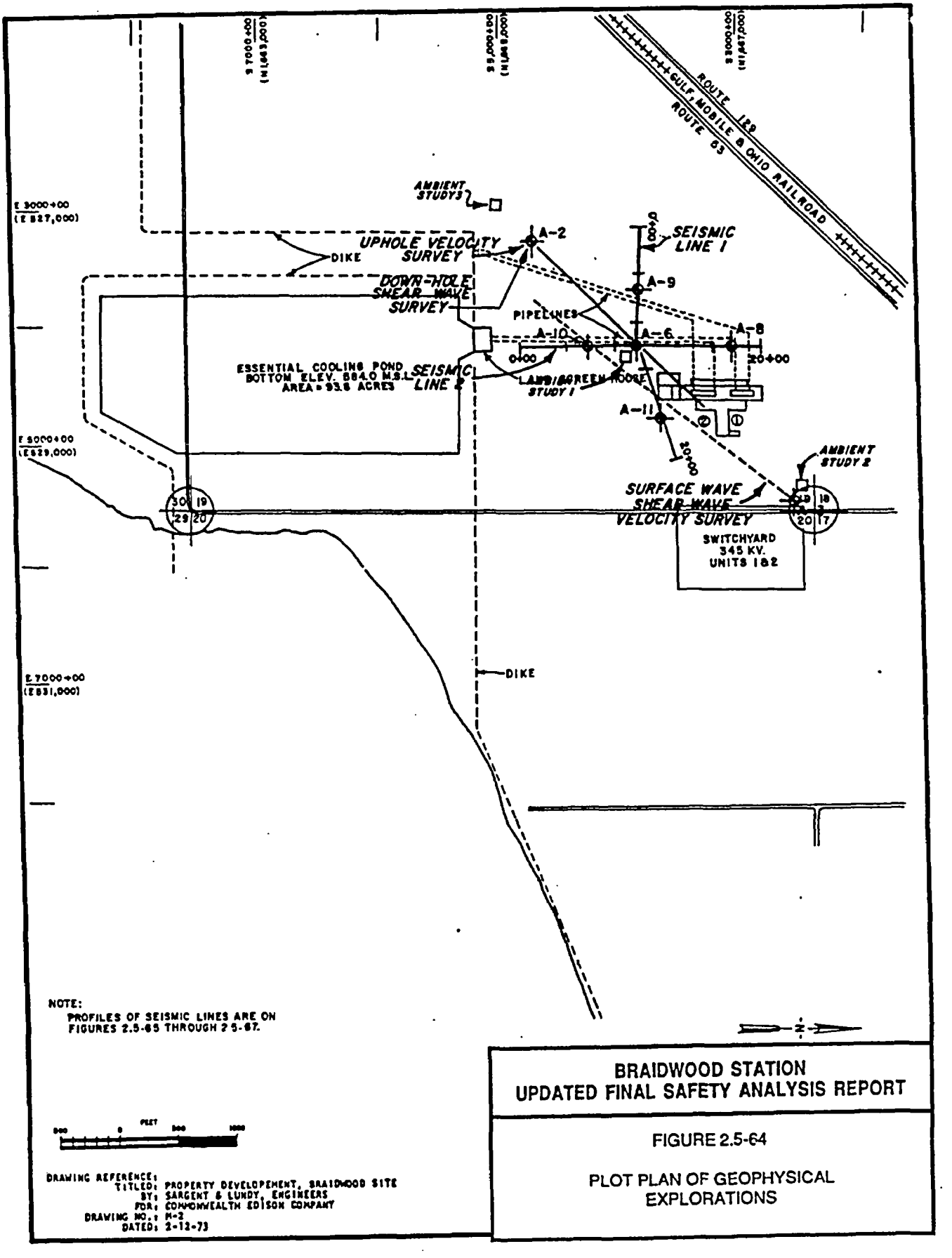
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-63

REPRESENTATIVE GEOLOGIC PROFILE SHOWING GEOPHYSICAL PROPERTIES



BRAIDWOOD STATION
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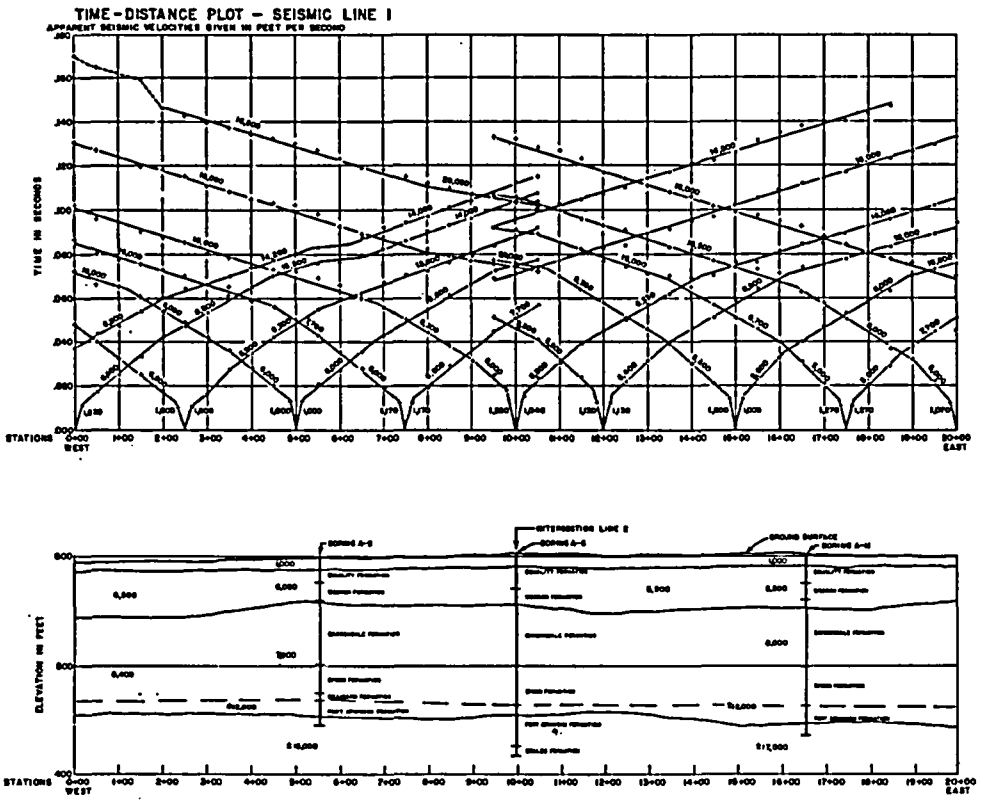
FIGURE 2.5-64

PLOT PLAN OF GEOPHYSICAL EXPLORATIONS



NOTE:

TIME DISTANCE PLOTS REFLECT INFORMATION COLLECTED FROM SHOT POINTS MADE AT VERTICAL LOCATIONS ALONG A SEISMIC LINE. FOR CLARIFICATION, THE PLOT SYMBOLS HAVE BEEN USED TO INDICATE THE ORIGIN OF THE SIGNAL, FROM THE LEFT (.) FROM THE RIGHT (+).

THE SUBSURFACE SECTIONS SHOWN REPRESENT THE EVALUATION OF THE MOST PROBABLE CONDITIONS BASED UPON INTERPRETATION OF PREVIOUSLY AVAILABLE DATA. SOME DEVIATIONS FROM THESE CONDITIONS MUST BE EXPECTED.

TIME SHIFTING DETECTED LINE SEGMENTS ARE DUE TO DIFFERENCES IN SHOT DEPTH AND OFFSET DISTANCES.

THE 15,000 FEET PER SECOND LAYER IS A HYPOTHETICAL LAYER AND HAS BEEN EXTRAPOLATED FROM SHERRELL 2-D VELOCITY LOGS.

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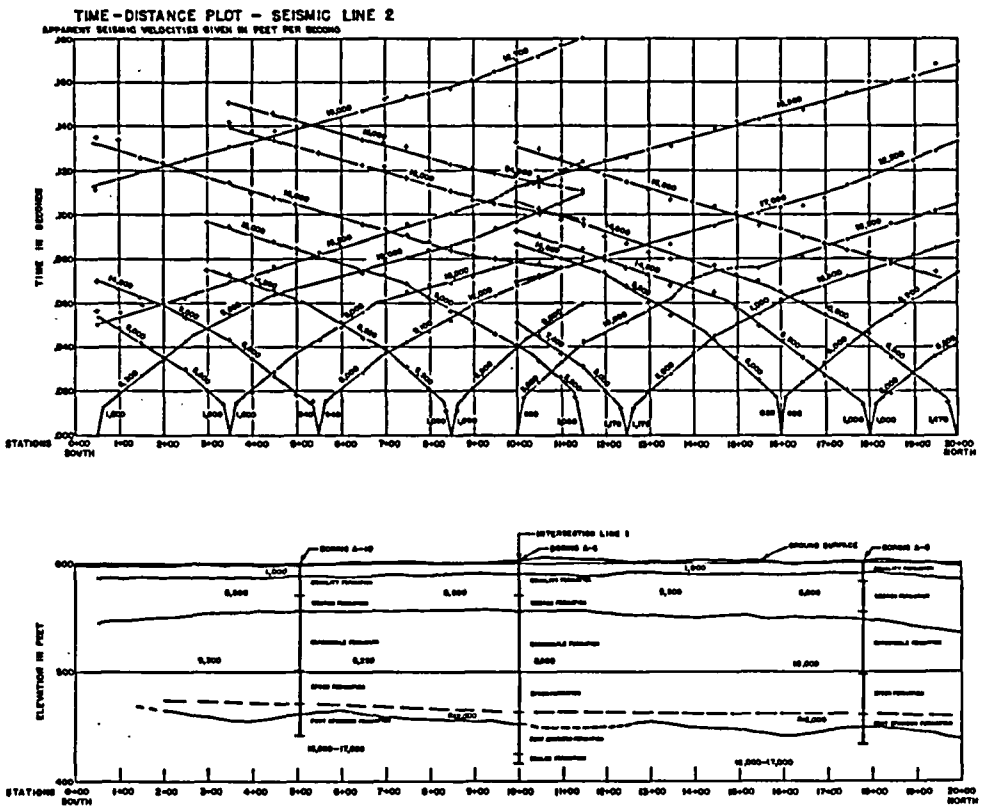
FIGURE 2.5-65

SEISMIC REFRACTION SURVEY
LINE 1



NOTE:

TIME DISTANCE PLOTS REFLECT INFORMATION COLLECTION FROM SHOT POINTS MADE AT SEVERAL LOCATIONS ALONG A SEISMIC LINE. FOR CLARIFICATION, THE PLOT SYMBOLS HAVE BEEN USED TO INDICATE THE ORIGIN OF THE SHOTS FROM THE LEFT (L) FROM THE RIGHT (R).

THE SUBSURFACE SECTIONS SHOWN REPRESENT THE EVALUATION OF THE MOST PROBABLE CONDITIONS BASED UPON INTERPRETATIONS OF PROVIDABLE AVAILABLE DATA. SOME VARIATIONS FROM THESE CONDITIONS MAY BE EXPECTED.

TIME SHIFTED SEGMENTS LINE SEGMENTS ARE DUE TO DIFFERENCES IN SHOT DEPTHS AND OFFSET DISTANCES.

THE 10,000 FEET PER SECOND LAYER IS A HIDDEN LAYER AND ONE DERIVED INTERPRETED FROM SHORELL 3-D VELOCITY LOGS.

FROM STATIONS 10+00 TO 13+00 A SLIGHT DEPRESSION MAY BE PRESENT IN THE 10,000 FEET PER SECOND LAYER. THIS EFFECT MAY HOWEVER BE CAUSED BY CHANGE IN CHARACTER OR THICKNESS OF OVERLYING MATERIAL.

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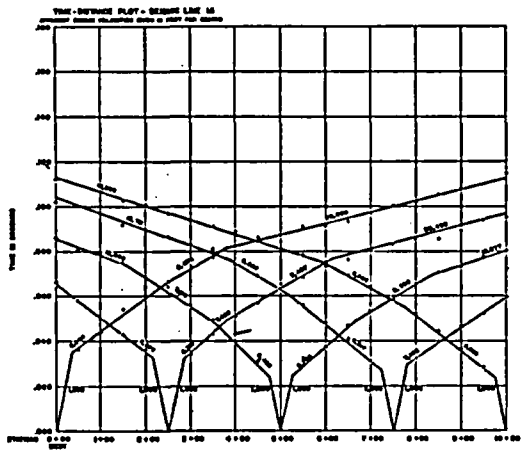
FIGURE 2.5-66

SEISMIC REFRACTION SURVEY
LINE 2



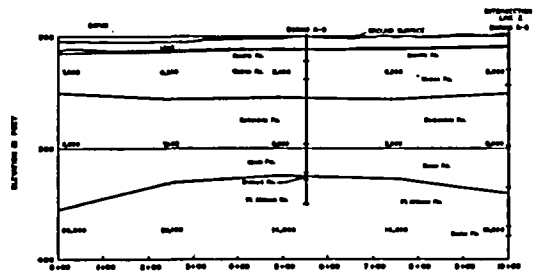


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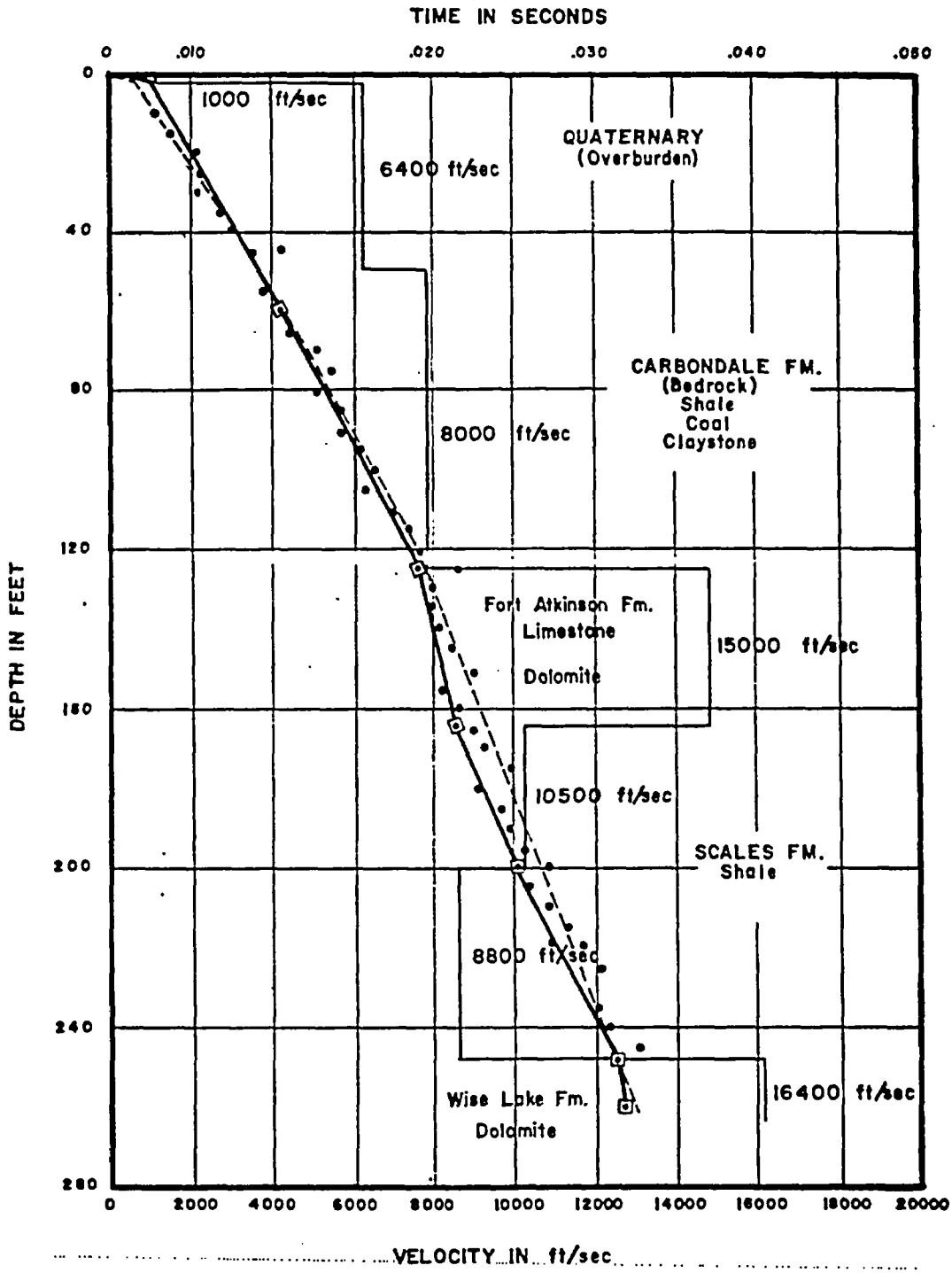
FIGURE 2.5-67

SEISMIC REFRACTION SURVEY
LINE 1A



COMPRESSIONAL WAVE VELOCITY

INTEGRATED UP HOLE SURVEY BORING A-2

• Original travel time data

⊡ Integrated travel time from Birdwell logs

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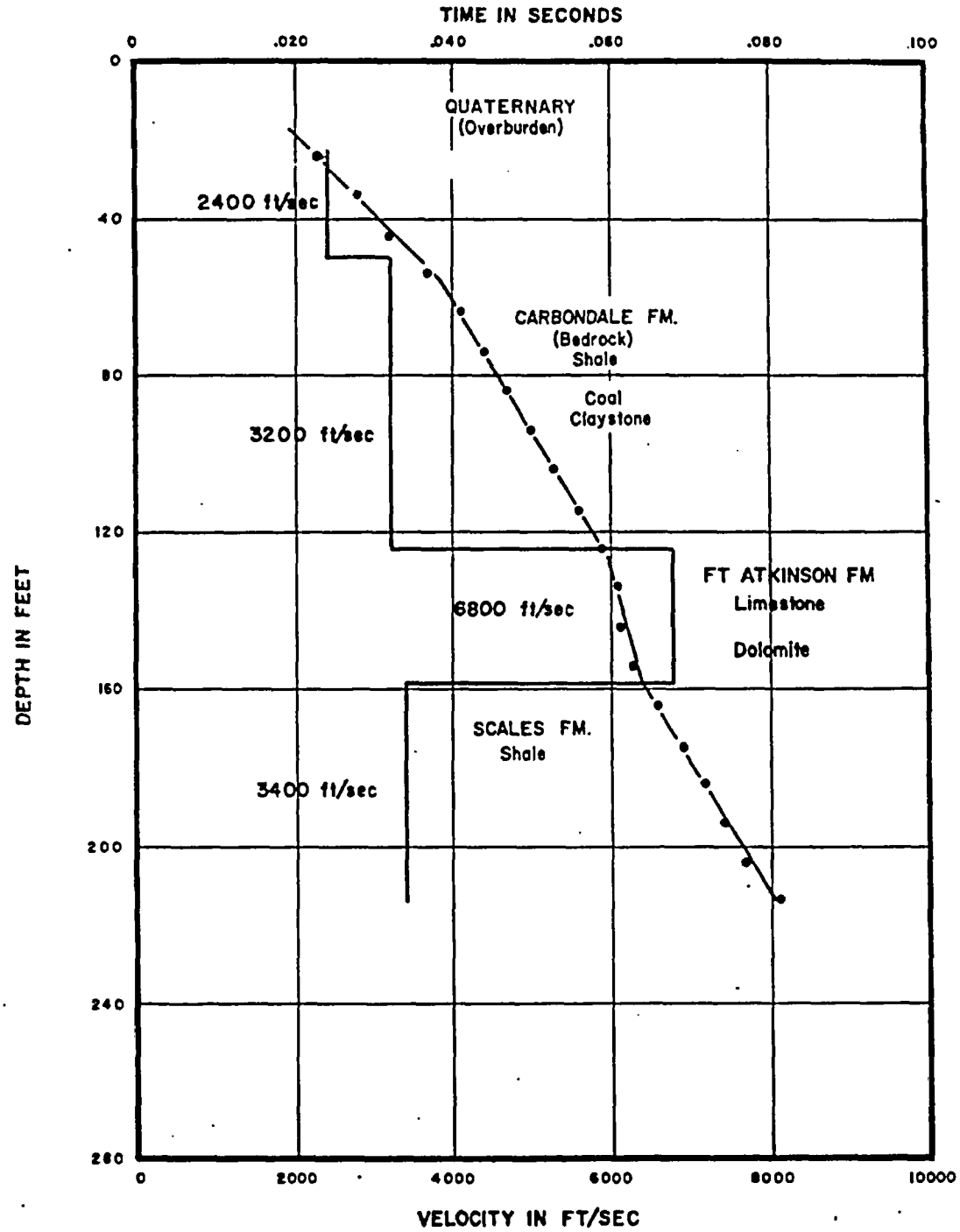
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-68

UPHOLE VELOCITY SURVEY
COMPRESSIONAL WAVE VELOCITY



DOWN HOLE VELOCITY SURVEY

SHEAR WAVE VELOCITY BORING A-2

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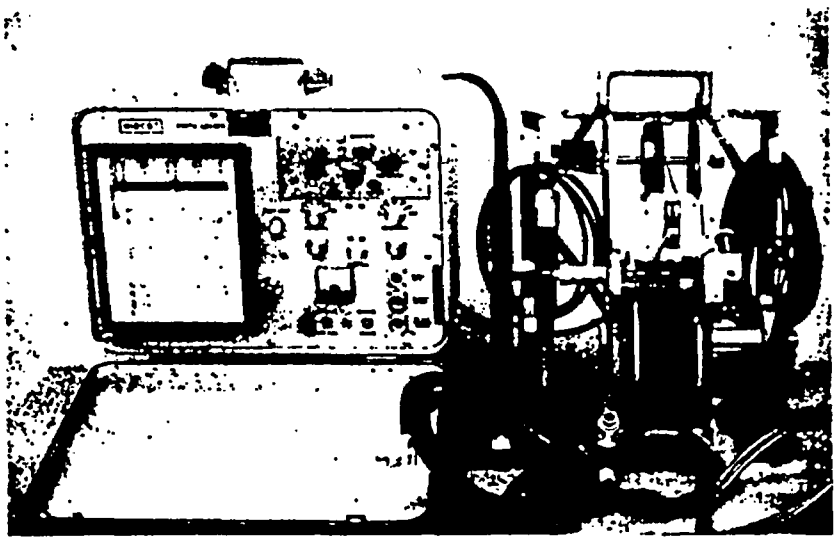
FIGURE 2.5-69 DOWNHOLE VELOCITY SURVEY SHEAR WAVE VELOCITY

THE WIDCO PORTA-LOGGER

THE WIDCO PORTA-LOGGER IS A BOREHOLE GEOPHYSICAL DEVICE WHICH UTILIZES A NUMBER OF WIRELINE PROBES IN CONJUNCTION WITH AN ELECTRONIC MODULE AND RECORDING UNIT. DEPENDING ON THE NATURE OF THE PROBE USED, A GRAPHICAL PRINT-OUT OF GEOPHYSICAL PROPERTIES VERSUS HOLE DEPTH IS PRODUCED. GEOPHYSICAL PROPERTIES MEASURED BY THIS INSTRUMENT INCLUDE ELECTRICAL RESISTANCE, SPONTANEOUS POTENTIAL, GAMMA RADIATION AND TEMPERATURE. IN VARIOUS COMBINATIONS, THESE LOGS CAN BE USED FOR A WIDE VARIETY OF GEOLOGICAL AND ENGINEERING APPLICATIONS WHICH SUPPLEMENT INFORMATION DERIVED FROM THE ROCK AND SOIL SAMPLES NORMALLY RECOVERED FROM BORINGS. TYPICAL APPLICATIONS INCLUDE STRATIGRAPHIC CORRELATION, IDENTIFICATION OF LITHOLOGY AND BED THICKNESSES, DEFINITION OF AQUIFER BOUNDARIES, LIMITED WATER QUALITY DETERMINATION, MINERAL PROSPECTING (PARTICULARLY COAL AND URANIUM) AND IDENTIFICATION OF BOREHOLE TEMPERATURE GRADIENTS.



ELECTRICAL LOGGING SURVEY

SINGLE ELECTRODE RESISTANCE AND SPONTANEOUS POTENTIAL (SP) ARE RECORDED SIMULTANEOUSLY. THE LOGGING PROBE CANNOT BE USED INSIDE OF CASING AND MUST BE IMMERSED IN A CONDUCTIVE FLUID SUCH AS WATER OR DRILLING MUD. THE SINGLE ELECTRODE RESISTANCE IS EXPRESSED IN UNITS OF OHMS, AND IS RECORDED ON THE RIGHT TRACK OF THE RECORDER CHART. SPONTANEOUS POTENTIAL IS EXPRESSED IN UNITS OF MILLIVOLTS, AND IS RECORDED ON THE LEFT TRACK OF THE RECORDER CHART. THE SP LOG IS ESPECIALLY SIGNIFICANT WHEN A SALINITY CONTRAST EXISTS BETWEEN FORMATION WATER AND THE BOREHOLE FLUID.

GAMMA RAY LOGGING SURVEY

THE GAMMA RAY LOG PROVIDES A PROFILE OF NATURALLY OCCURRING RADIATION EMITTED FROM GEOLOGIC FORMATIONS AND EXPRESSED IN TERMS OF COUNTS PER SECOND. THE SOURCE OF THIS RADIOACTIVITY IS PRINCIPALLY DERIVED FROM NATURAL DECAY OF URANIUM, THORIUM, AND A POTASSIUM ISOTOPE OF ATOMIC WEIGHT 40. FORMATIONS SUCH AS CLAY AND SHALE USUALLY CONTAIN A HIGHER PROPORTION OF THESE ELEMENTS THAN DO SANDSTONES AND LIMESTONES, AND THEREFORE SHOW A RELATIVELY HIGHER LEVEL OF GAMMA RADIATION. THE GAMMA RAY LOGGING TOOL MAY BE USED IN HOLES WHICH ARE CASED OR UNCASED, AND IS NOT AFFECTED BY THE PRESENCE OR ABSENCE OF BOREHOLE FLUID.

TEMPERATURE LOGGING SURVEY

THIS LOG PROVIDES A PROFILE OF BOREHOLE TEMPERATURE AND CAN BE USED TO LOCATE SIGNIFICANT POINTS OF FLUID ENTRY. THE THERMOCOUPLE PROBE IS IMMERSED IN WATER OR DRILLING FLUID TO GAIN SATISFACTORY SENSITIVITY.

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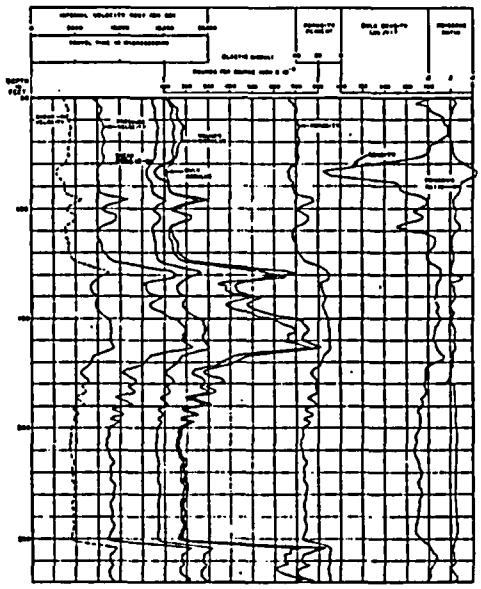
UPDATED FINAL SAFETY ANALYSIS REPORT

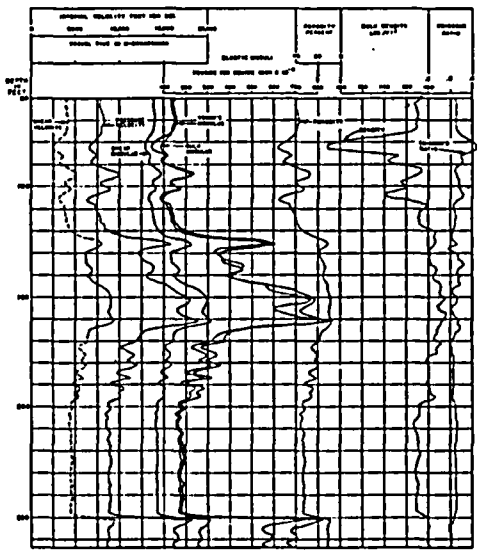
FIGURE 2.5-70

WIDCO PORTA-LOGGER

BORING A-1



BORING A-2



NOTE

[illegible]

THE ELASTIC PROPERTIES LOG IS BASED UPON COMPUTER PROCESSED DATA OBTAINED FROM 3-DIMENSIONAL VELOCITY LOG, DENSITY LOG AND CALIPER LOG SURVEYS PERFORMED BY SCHLUMBERGER DIVISION OF SCHLUMBERGER OFFSHORE CORPORATION.

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FIGURE 2.5-71 ELASTIC PROPERTIES, LOGS A-1 AND A-2

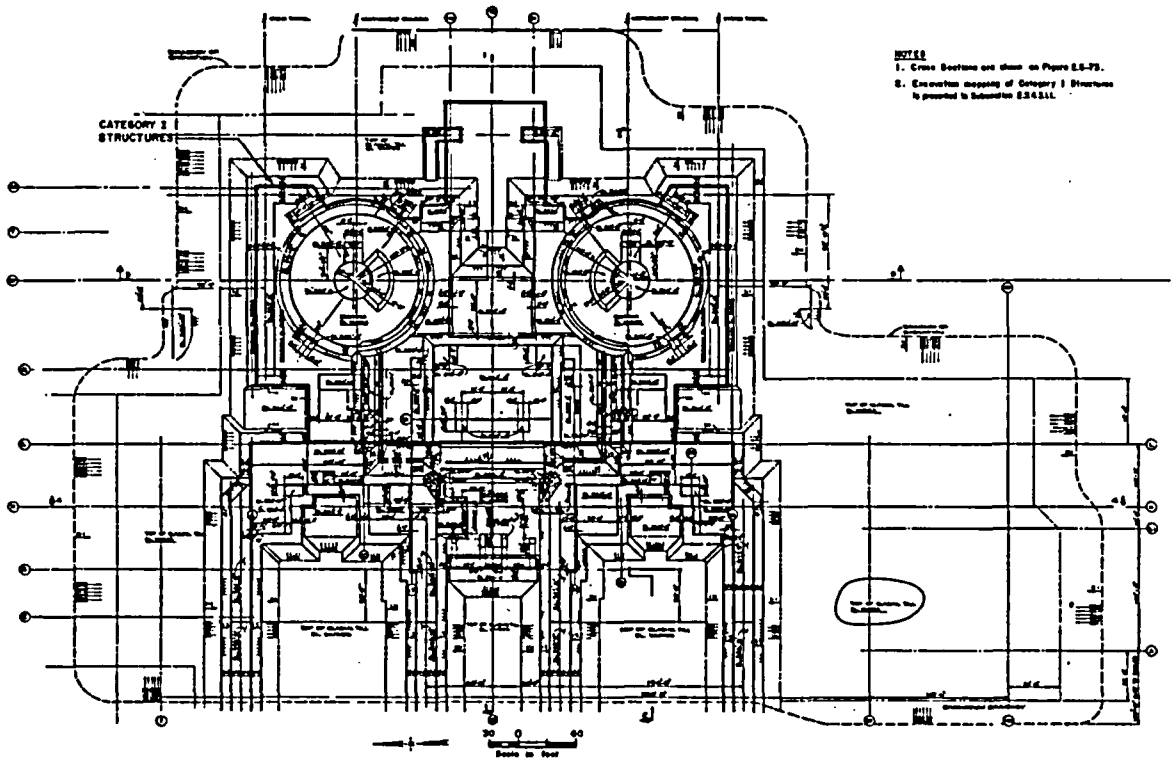

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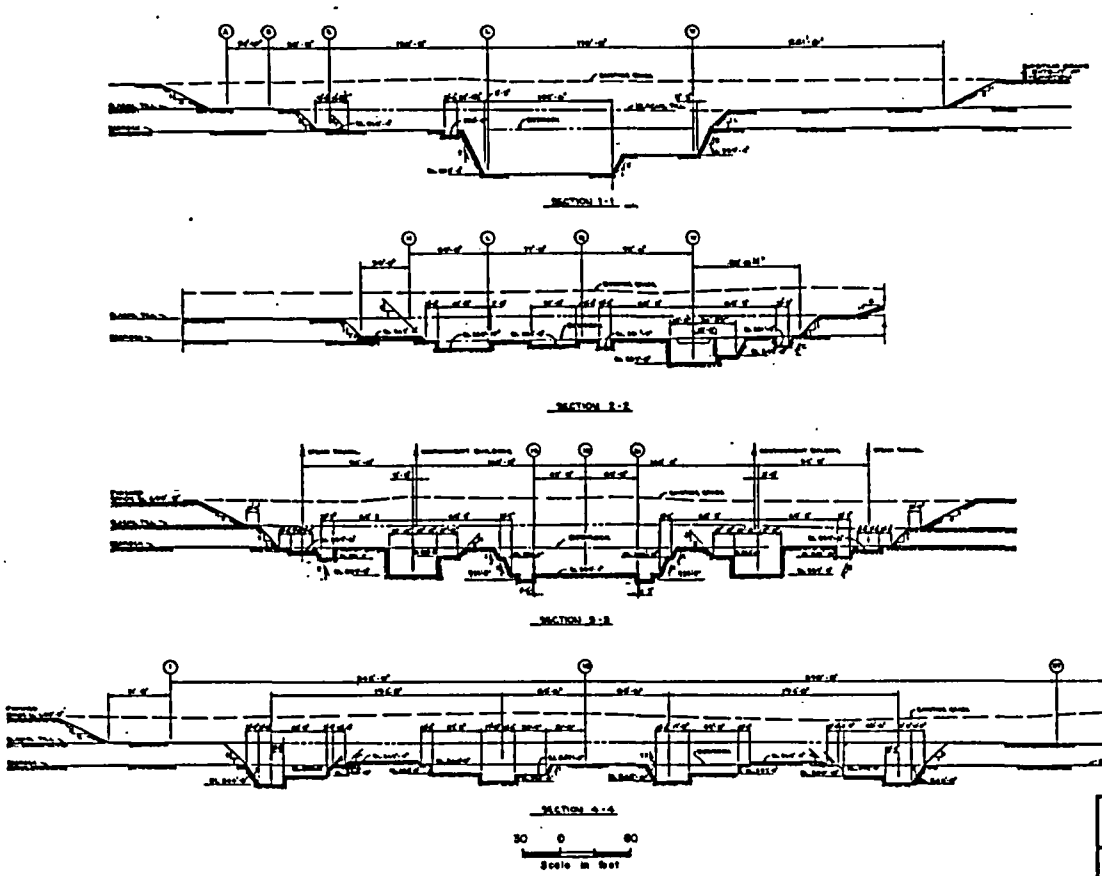
FIGURE 2.5-72

FOUNDATION EXCAVATION PLAN



NOTES

1. Location of sections are shown on Figure 2.5-72.
2. Excavation mapping for Category I Structure is presented in Subsection 2.5.4.3.1.1

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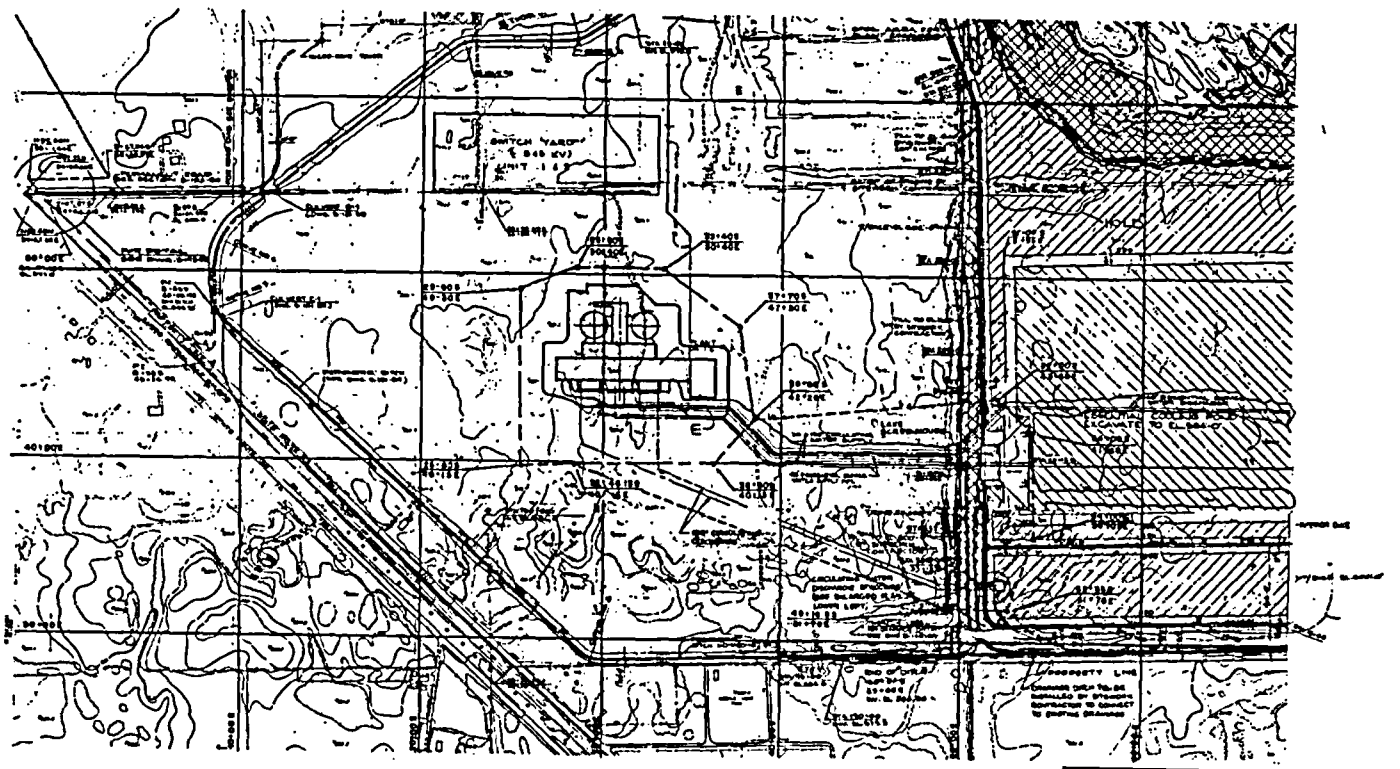
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-73

FOUNDATION EXCAVATION SECTIONS



LEGEND:

CEMENT-BENTONITE SLURRY TRENCH

SOIL-BENTONITE SLURRY TRENCH

500 0 500

SCALE IN FEET

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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-74

SLURRY TRENCH LOCATION

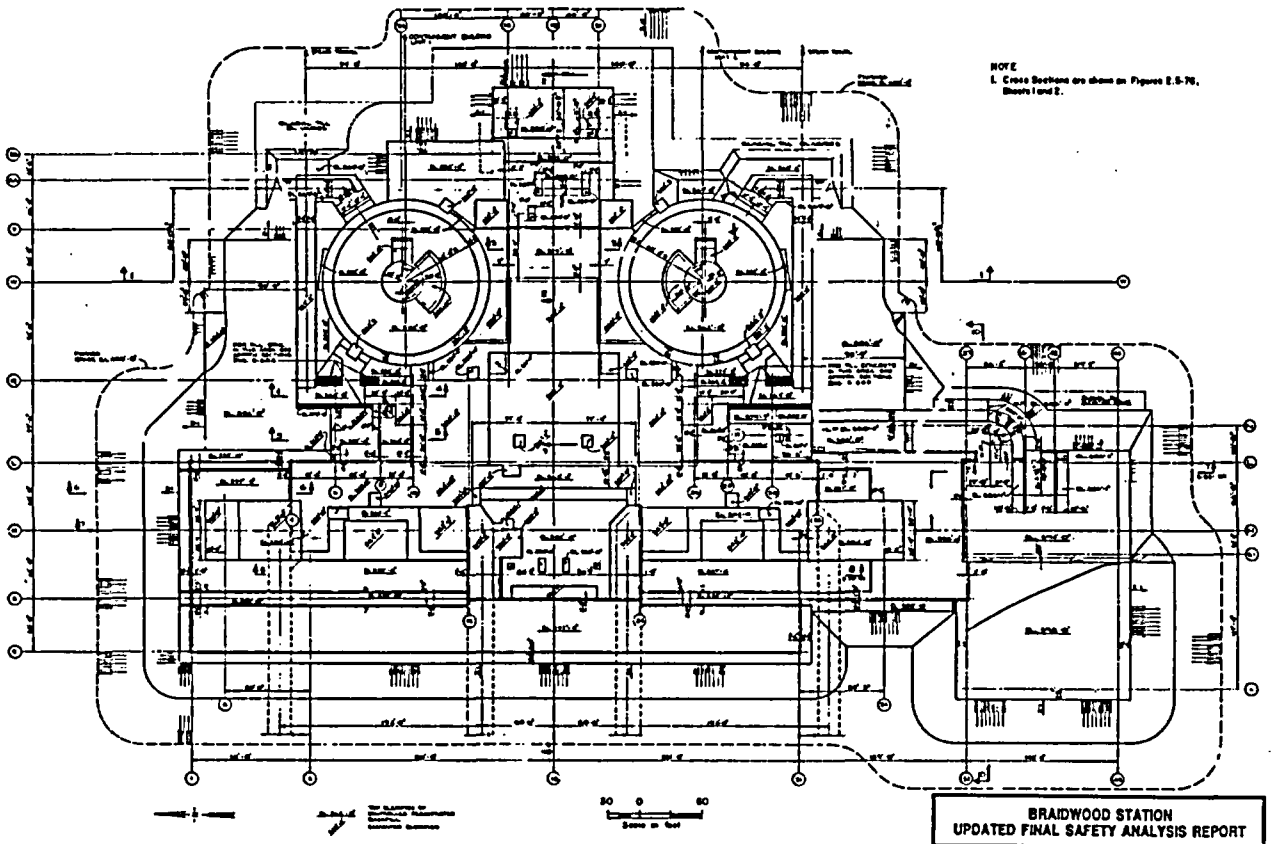

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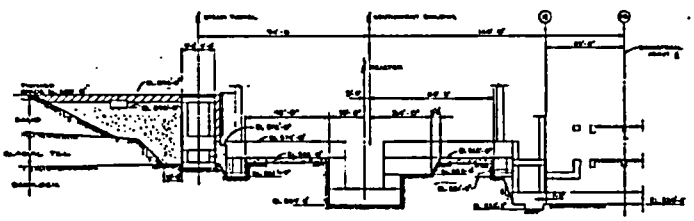
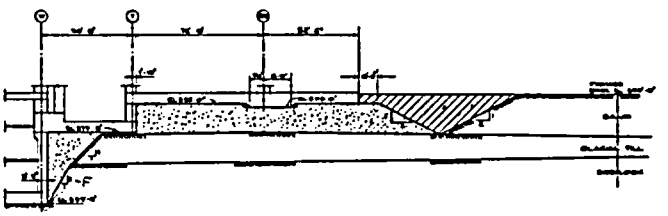
FIGURE 2.5-75

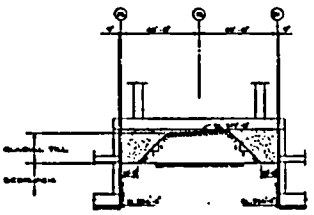
FOUNDATION BACKFILL PLAN



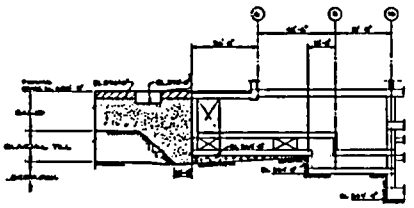
SECTION 1-1



SECTION 2-2



SECTION 3-3



SECTION 4-4

LEGEND

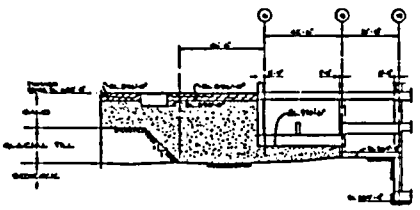
Concrete (f'c = 2000 PSI)

Minimum 85% relative density

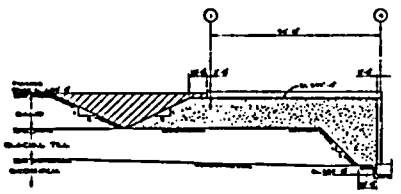
Minimum 80% relative density

NOTE

1. Location of sections are shown on Figure 2.5-75
2. Additional sections are shown on Figure 2.5-76, sh.2.



SECTION 5-5



SECTION 6-6

20 0 20 40

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FIGURE 2.5-76

FOUNDATION BACKFILL SECTIONS
(SHEET 1 OF 2)

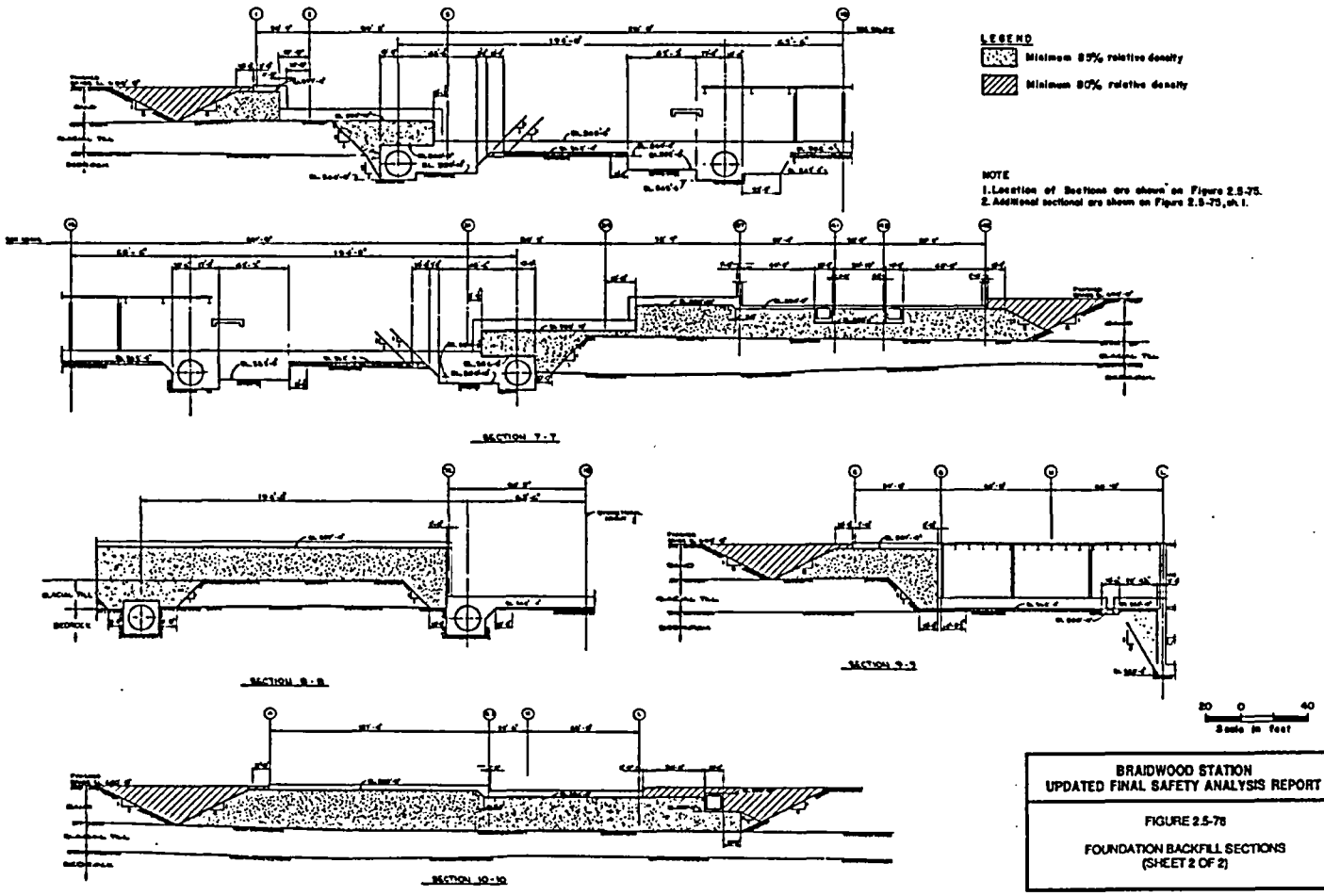

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FIGURE 2.5-76

FOUNDATION BACKFILL SECTIONS
(SHEET 2 OF 2)

SAND

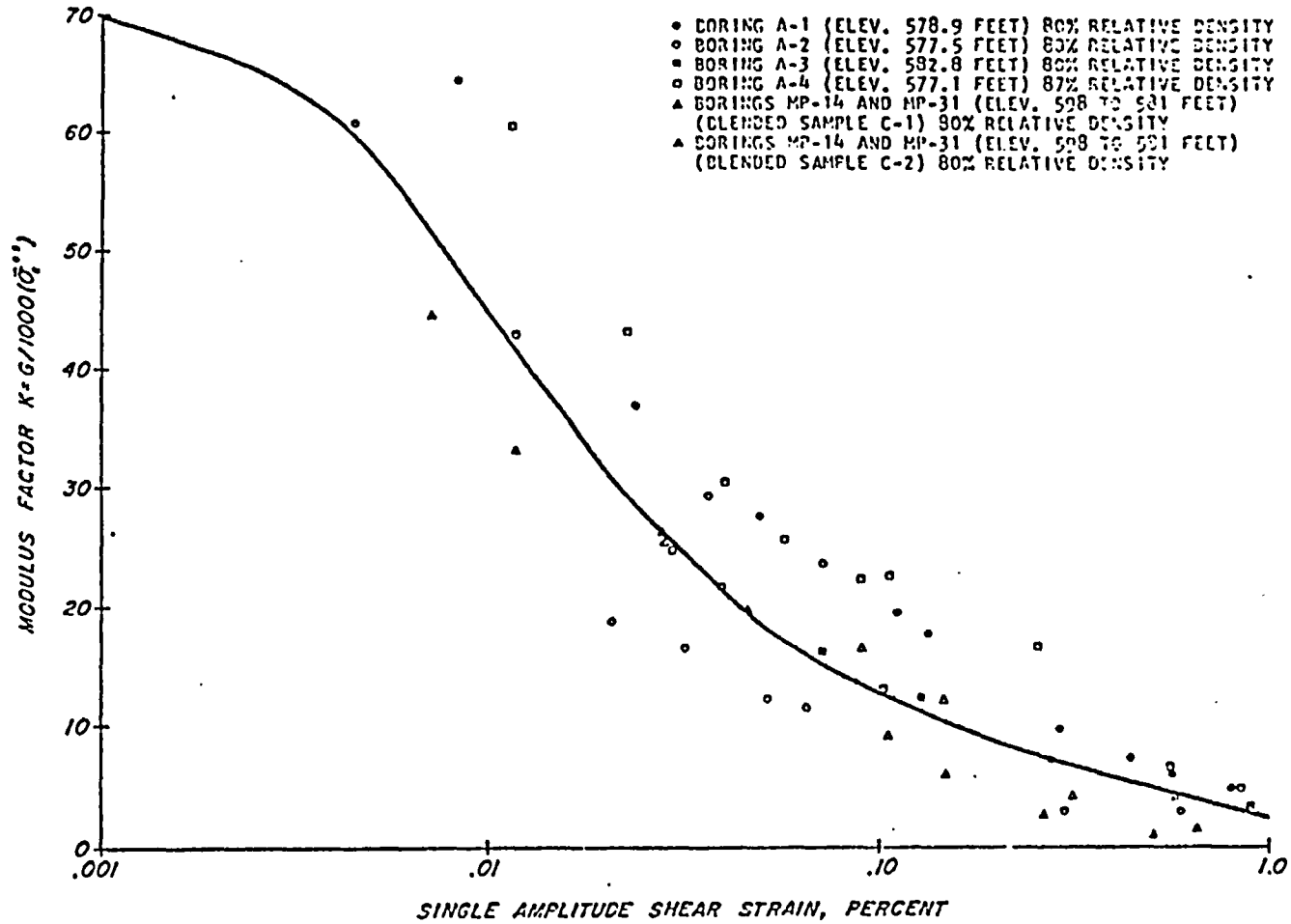

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FIGURE 2.5-77

STRAIN DEPENDENT SHEAR MODULUS
FOR SAND

SAND

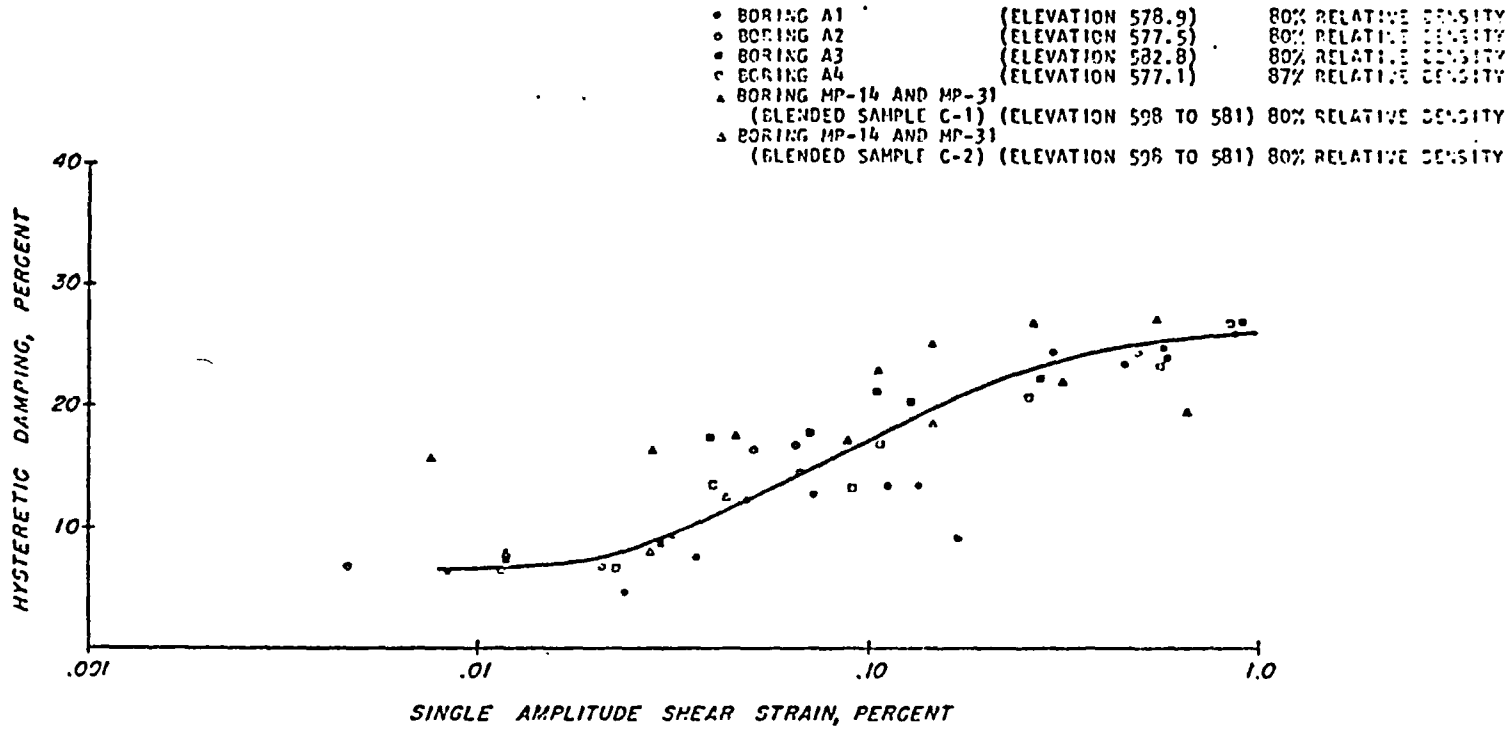

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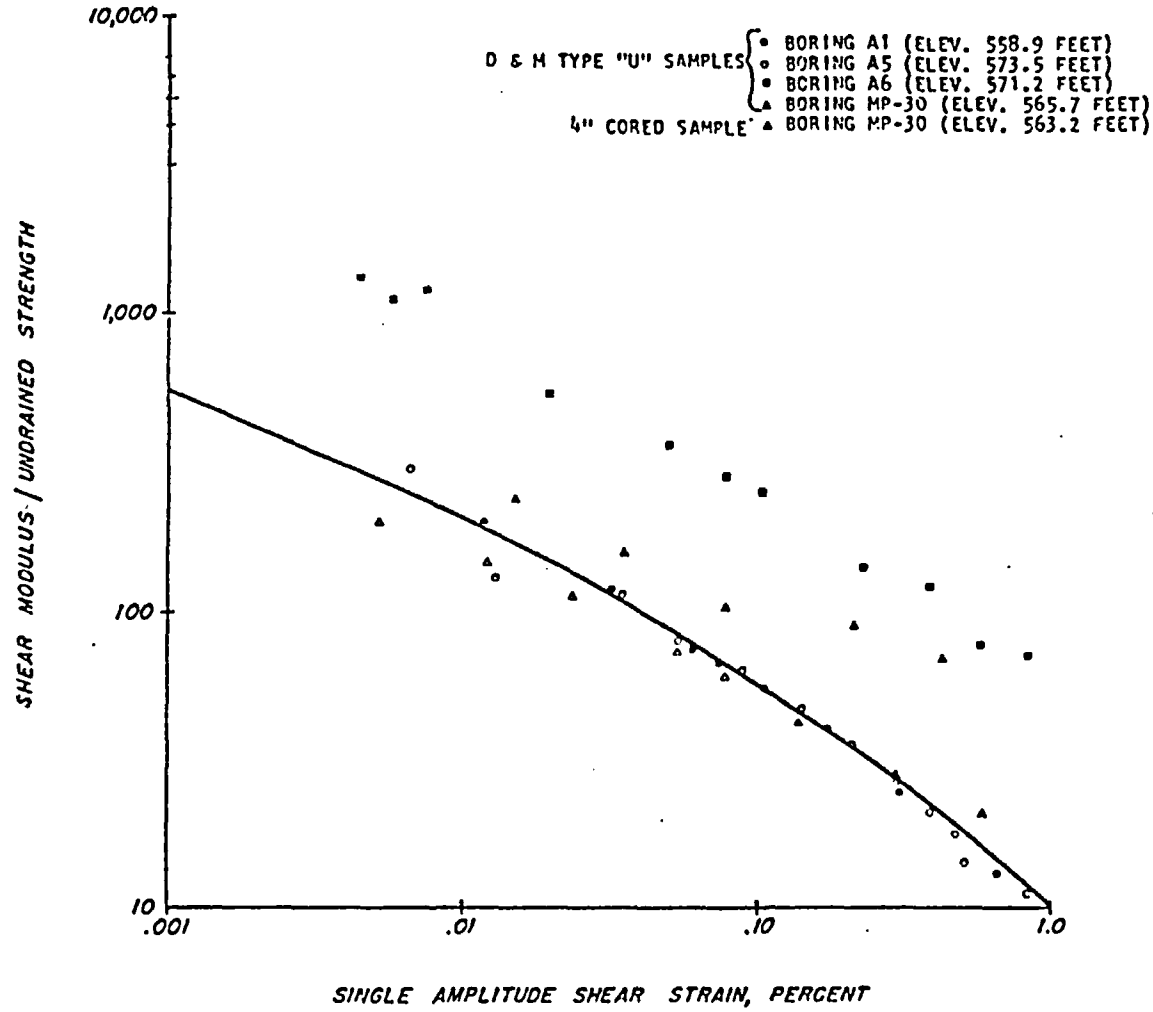
FIGURE 2.5-78

STRAIN DEPENDENT HYSTERATIC DAMPING FOR SAND

GLACIAL TILL



$Su = 10^4$ psf

NOTE:

- $Su = 10^4$ psf used as a reasonable estimate for seismic analysis.

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FIGURE 2.5-79

STRAIN DEPENDENT SHEAR MODULUS FOR TILL

GLACIAL TILL

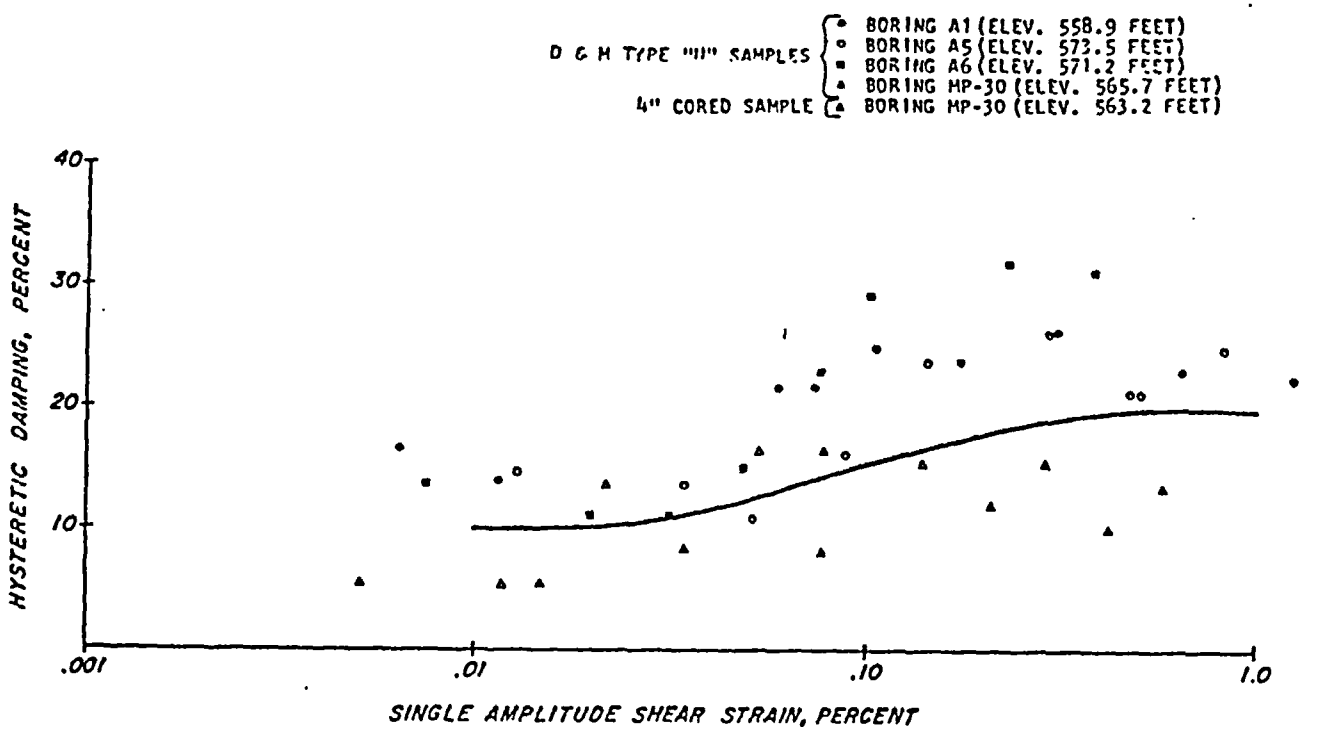

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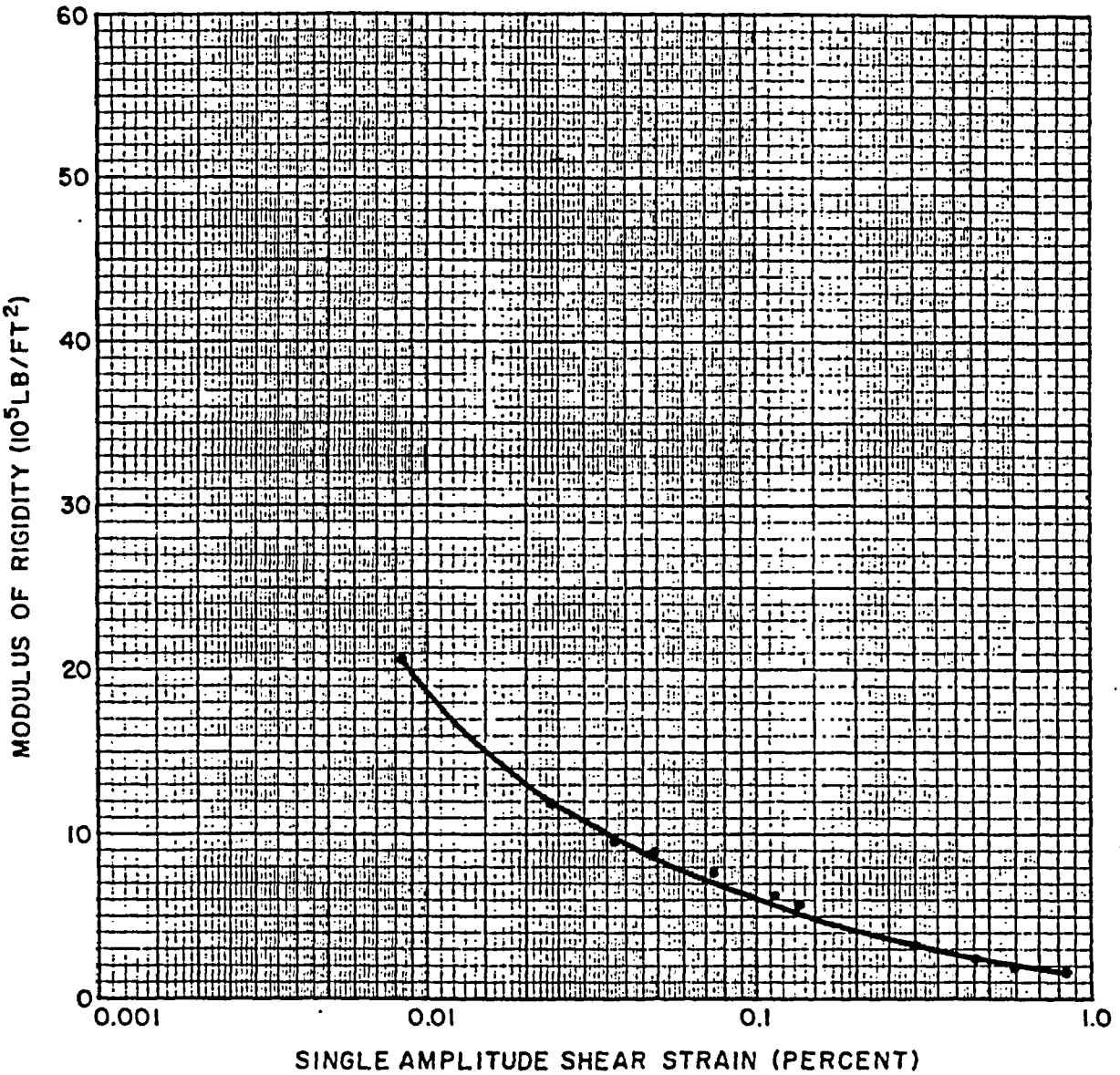
FIGURE 2.5-80

STRAIN DEPENDENT HYSTERATIC DAMPING FOR TILL

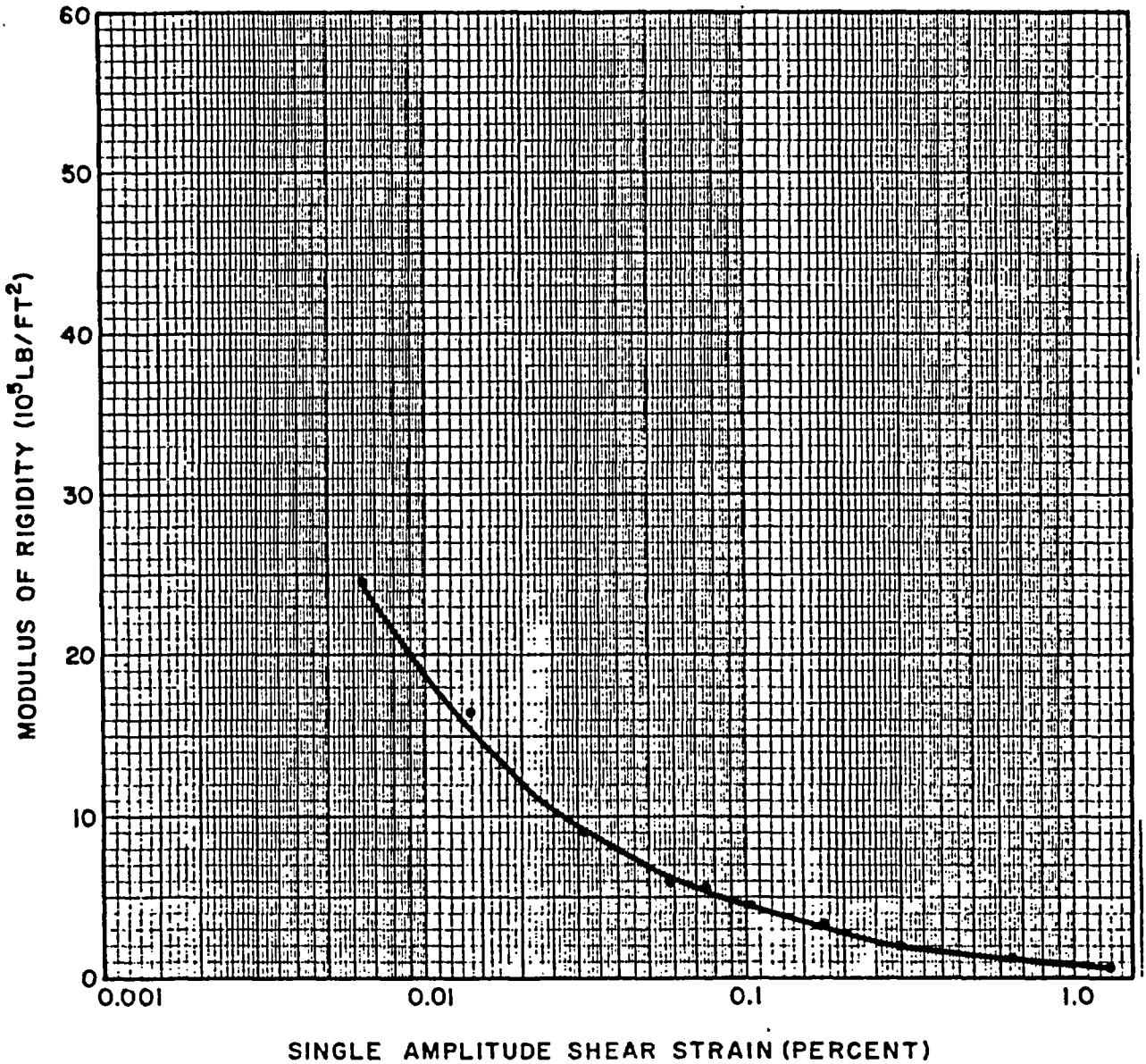


BORING NO. A-1
DEPTH: 15.0 FEET (ELEVATION 578.9)
SOIL TYPE: SP (EQUALITY FORMATION)
MOISTURE CONTENT: 22.3%
DRY DENSITY: 105 LB/FT^3
CONFINING PRESSURE: 1000 LB/FT^2

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-81

DYNAMIC TRIAXIAL TEST RESULTS
(SHEET 1 OF 11)

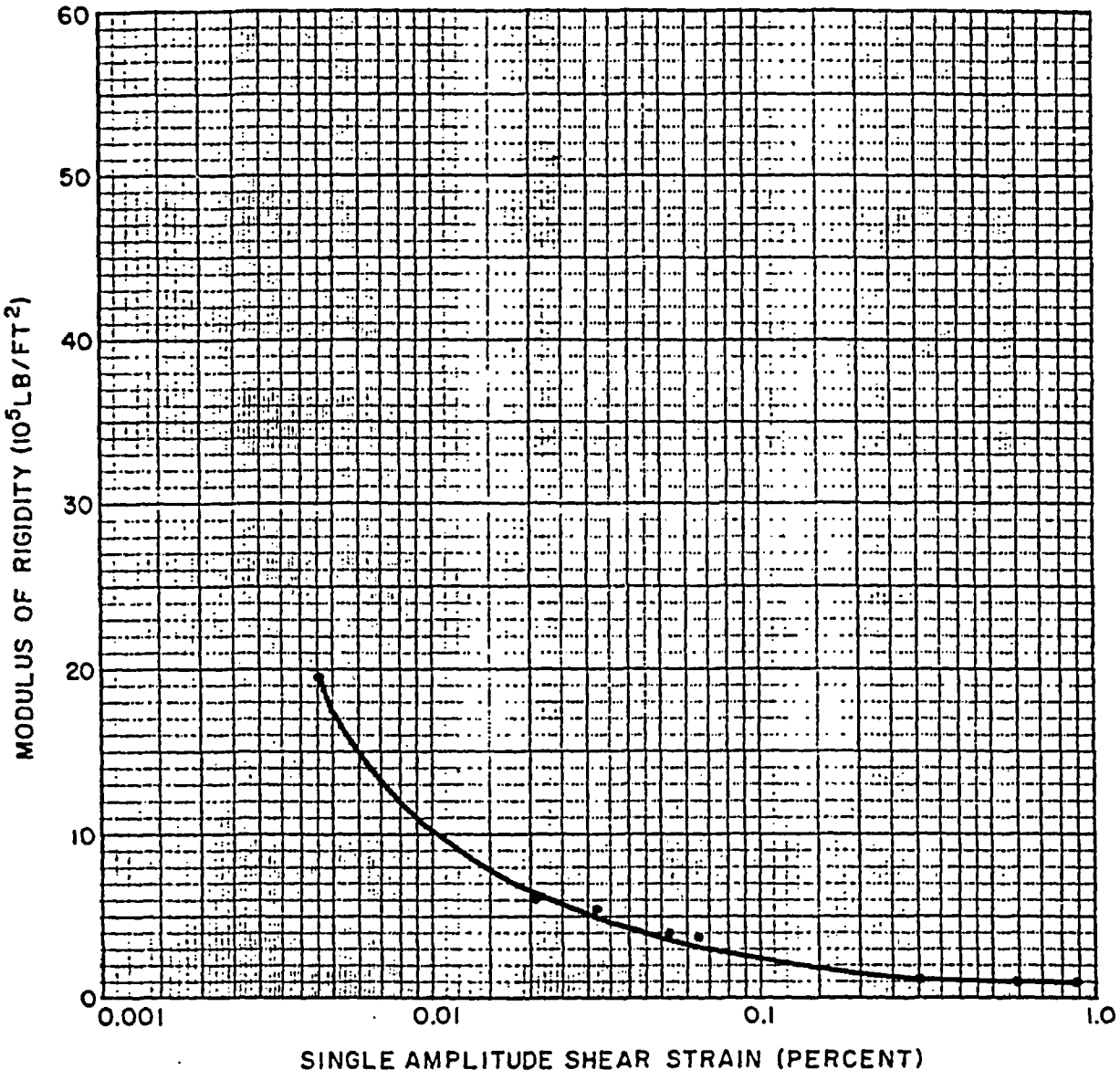


BORING NO. A-1
DEPTH: 35.0 FEET (ELEVATION 558.9)
SOIL TYPE: ML (WEDRON FORMATION)
MOISTURE CONTENT: 11.4%
DRY DENSITY: 129 LB/FT^3
CONFINING PRESSURE: 3000 LB/FT^2

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-81

DYNAMIC TRIAXIAL TEST RESULTS
(SHEET 2 OF 11)



BORING NO. A-2
DEPTH: 15.0 FEET (ELEVATION 578.0)
SOIL TYPE: SP (EQUALITY FORMATION)
MOISTURE CONTENT: 22.3%
DRY DENSITY: 105 LB/FT3
CONFINING PRESSURE: 1000 LB/FT^2

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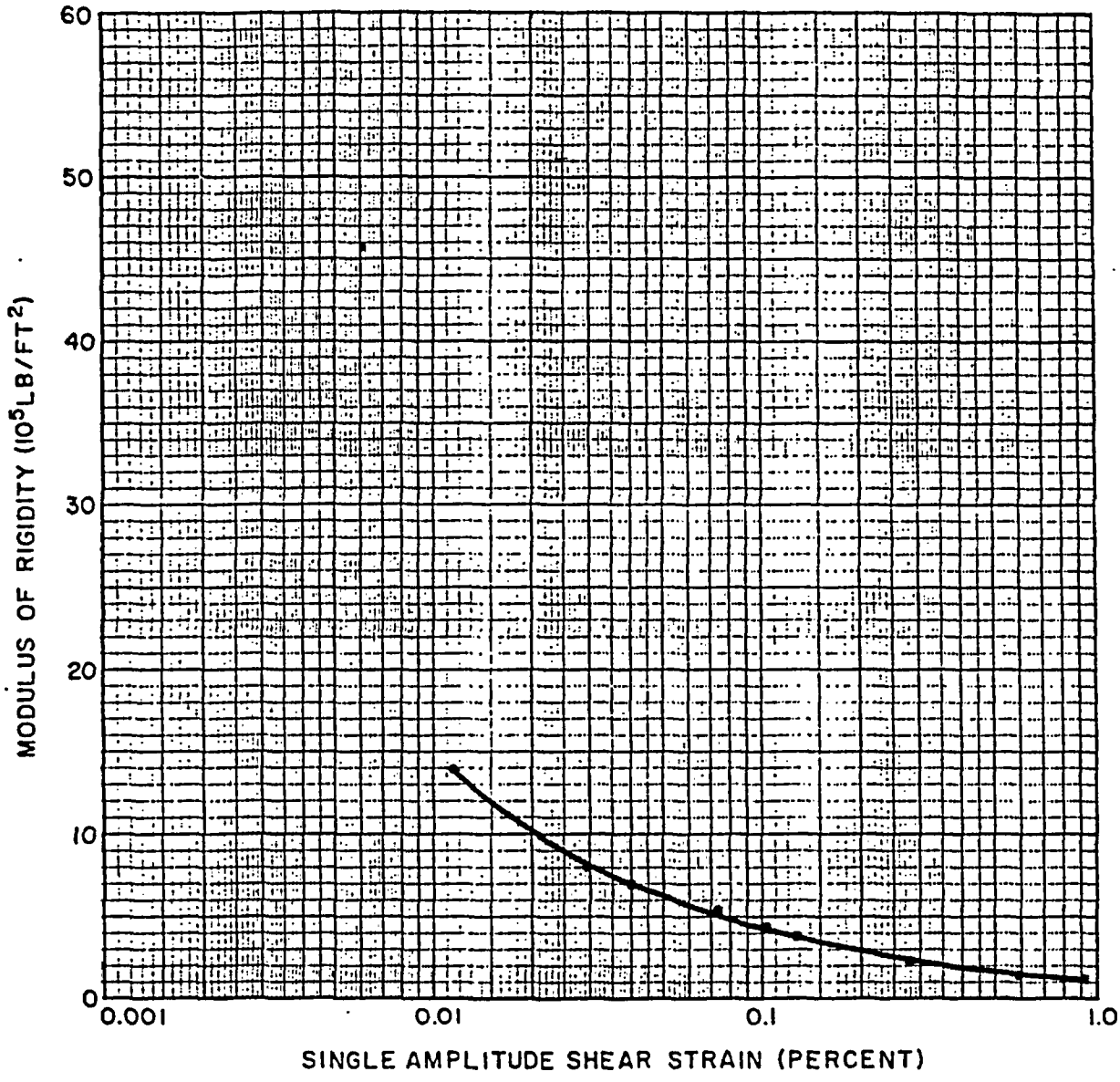
FIGURE 2.5-81

DYNAMIC TRIAXIAL TEST RESULTS
(SHEET 3 OF 11)

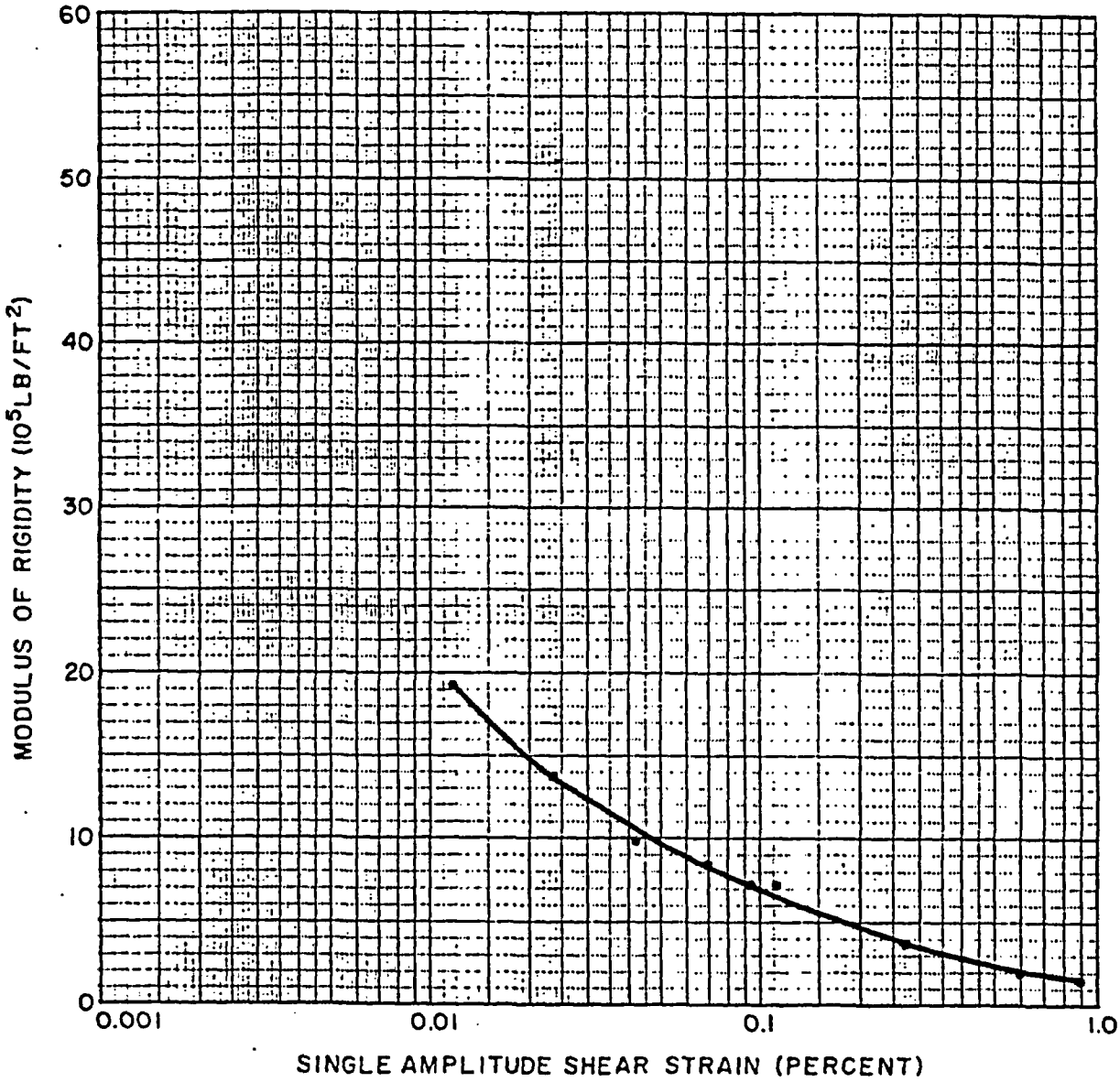


BORING NO. A-3
DEPTH: 15.0 FEET (ELEVATION 583.3)
SOIL TYPE: SP (EQUALITY FORMATION)
MOISTURE CONTENT: 22.1%
DRY DENSITY: 105 LB/FT^3
CONFINING PRESSURE: 1000 LB/FT^2

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-81

DYNAMIC TRIAXIAL TEST RESULTS
(SHEET 4 OF 11)

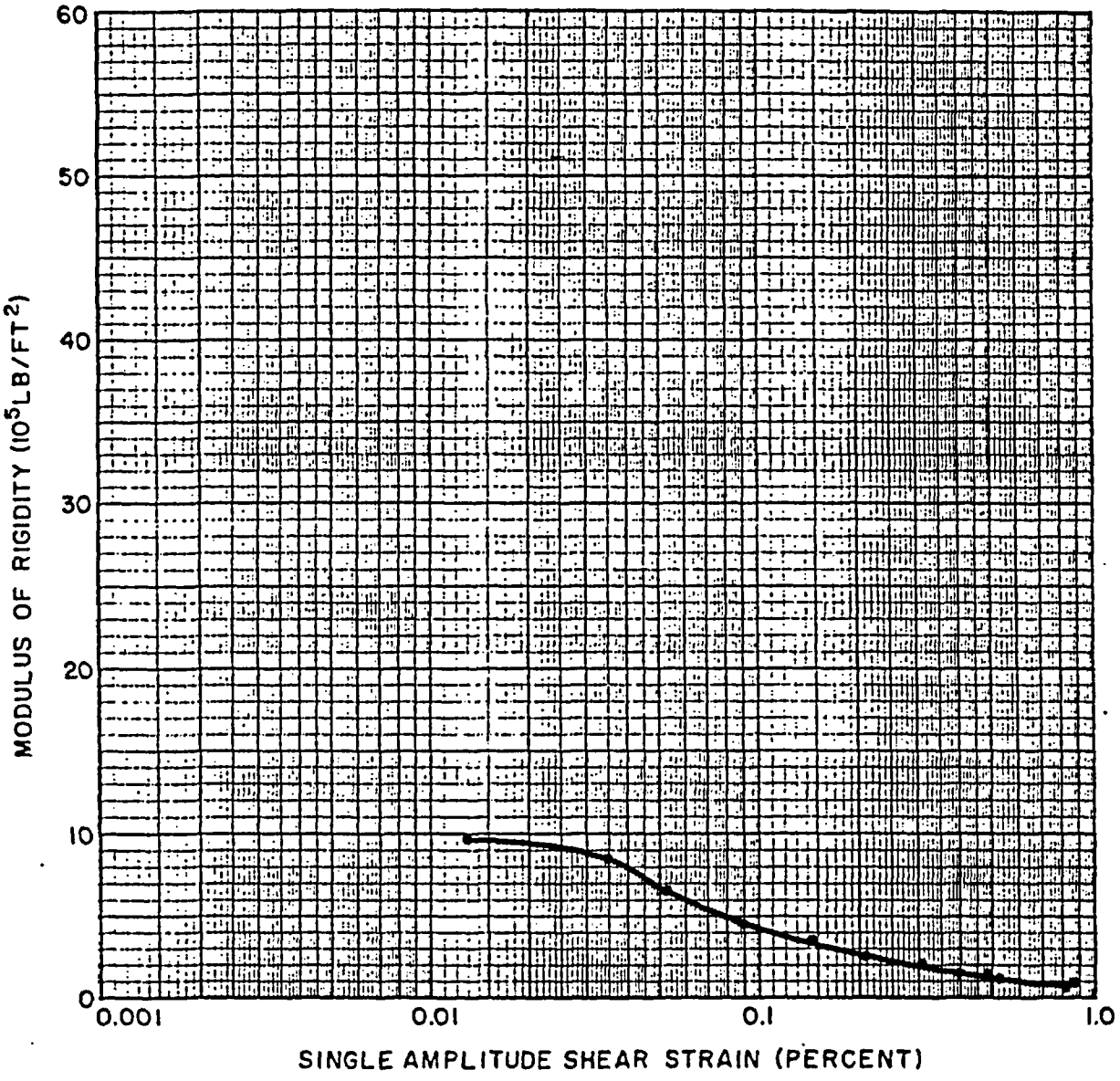


BORING NO. A-4
DEPTH: 13.0 FEET (ELEVATION 579.6)
SOIL TYPE: SP (EQUALITY FORMATION)
MOISTURE CONTENT: 20.8%
DRY DENSITY: 107 LB/FT^3
CONFINING PRESSURE: 1000 LB/FT^2

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-81

DYNAMIC TRIAXIAL TEST RESULTS
(SHEET 5 OF 11)

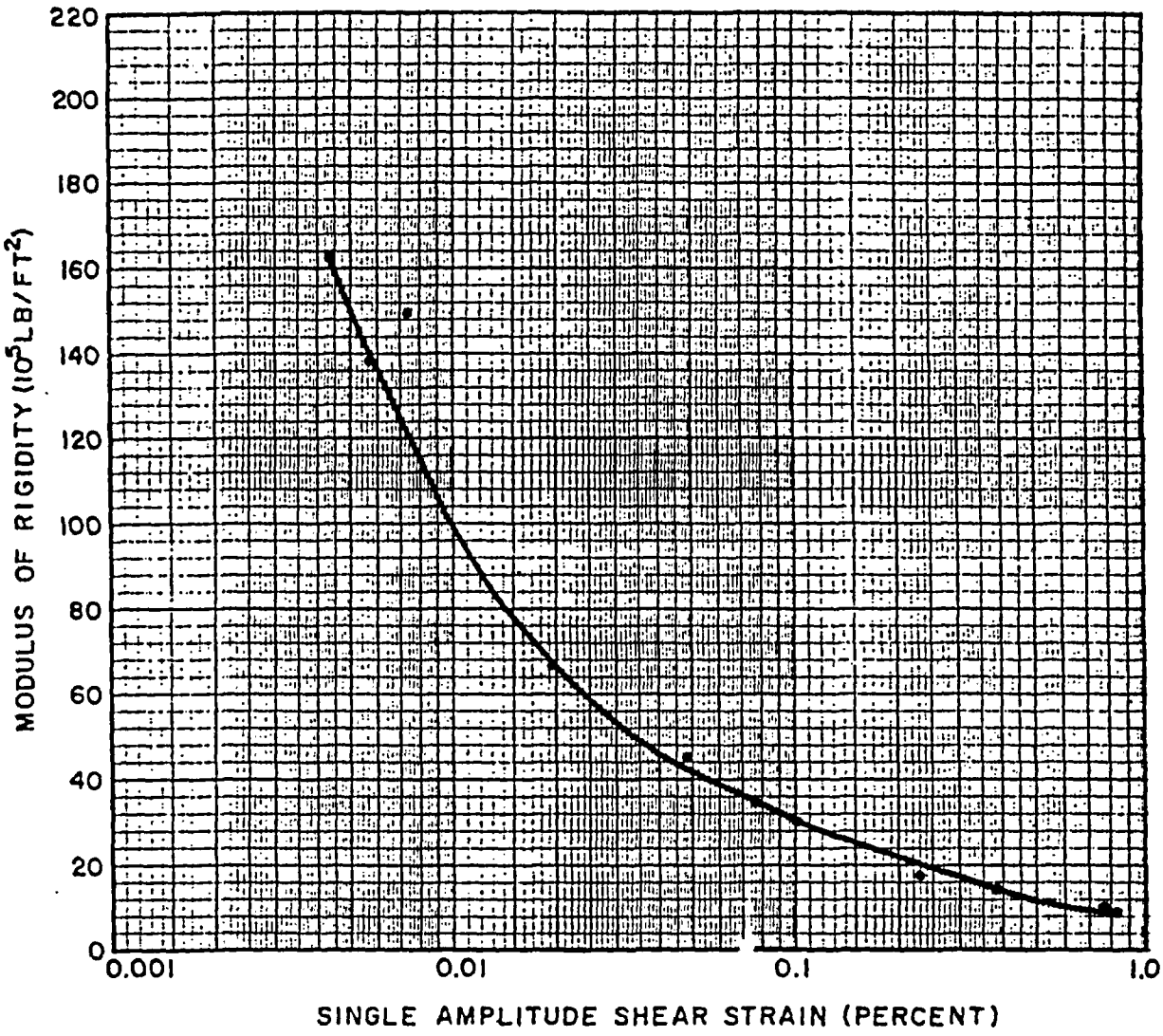


BORING NO. A-5
DEPTH: 25.0 FEET (ELEVATION 573.5)
SOIL TYPE: ML (WEDRON FORMATION)
MOISTURE CONTENT: 12.5%
DRY DENSITY: 125 LB/FT^3
CONFINING PRESSURE: 2000 LB/FT^2

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-81

DYNAMIC TRIAXIAL TEST RESULTS
(SHEET 6 OF 11)

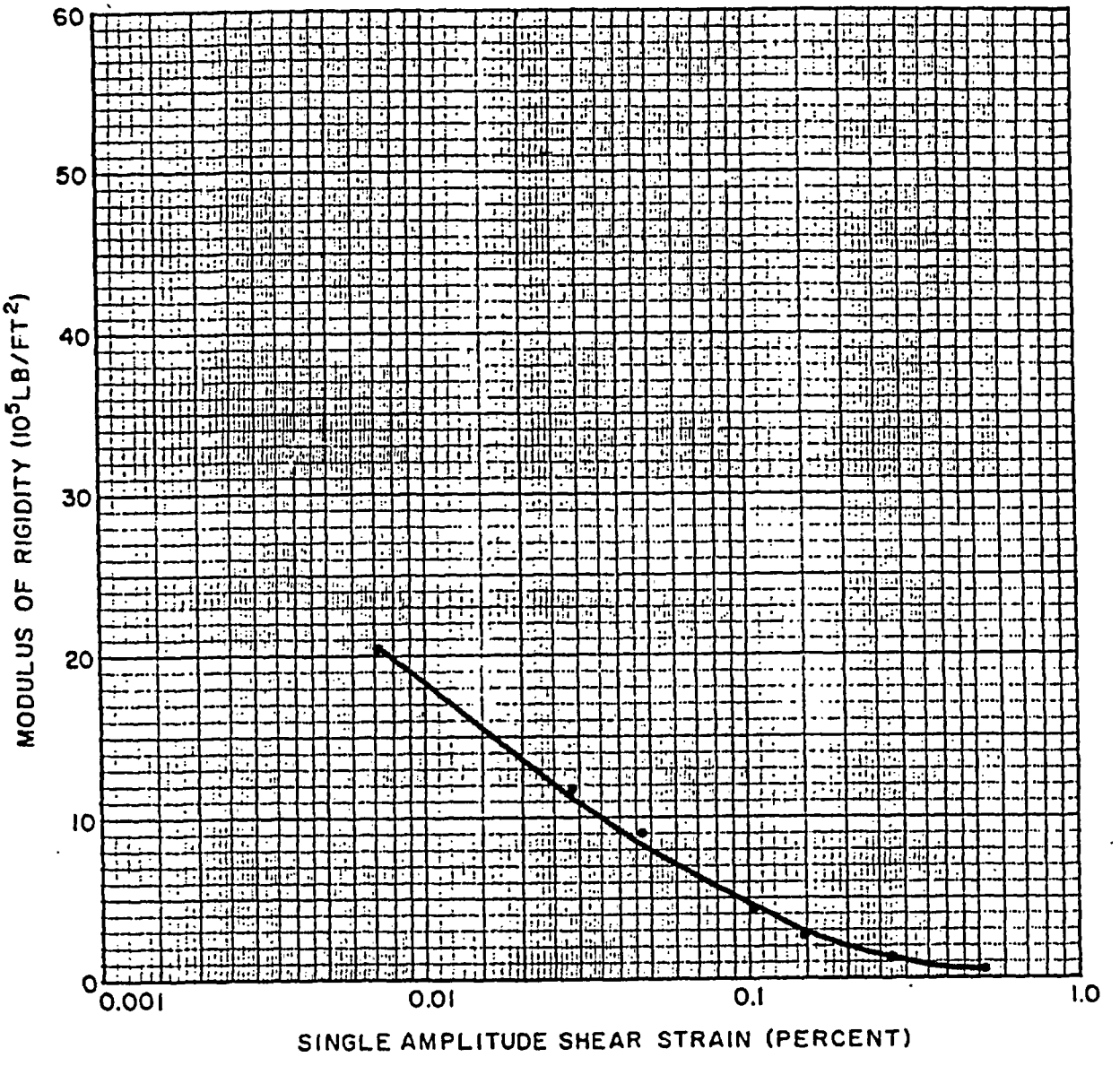


BORING NO. A-6
DEPTH: 30.0 FEET (ELEVATION 571.2)
SOIL TYPE: ML (WEDRON FORMATION)
MOISTURE CONTENT: 7.7%
DRY DENSITY: 137 LB/FT^3
CONFINING PRESSURE: 2500 LB/FT^2

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-81

DYNAMIC TRIAXIAL TEST RESULTS
(SHEET 7 OF 11)



BORING NOS. MP-14 AND MP-31
DEPTH: 1.0 TO 18.0 FEET (ELEVATION 597.1-580.1)
SOIL TYPE: SM.SP (EQUALITY FORMATION)
MOISTURE CONTENT: 20.0%
DRY DENSITY: 107 LB/FT^3
CONFINING PRESSURE: 2000 LB/FT^2

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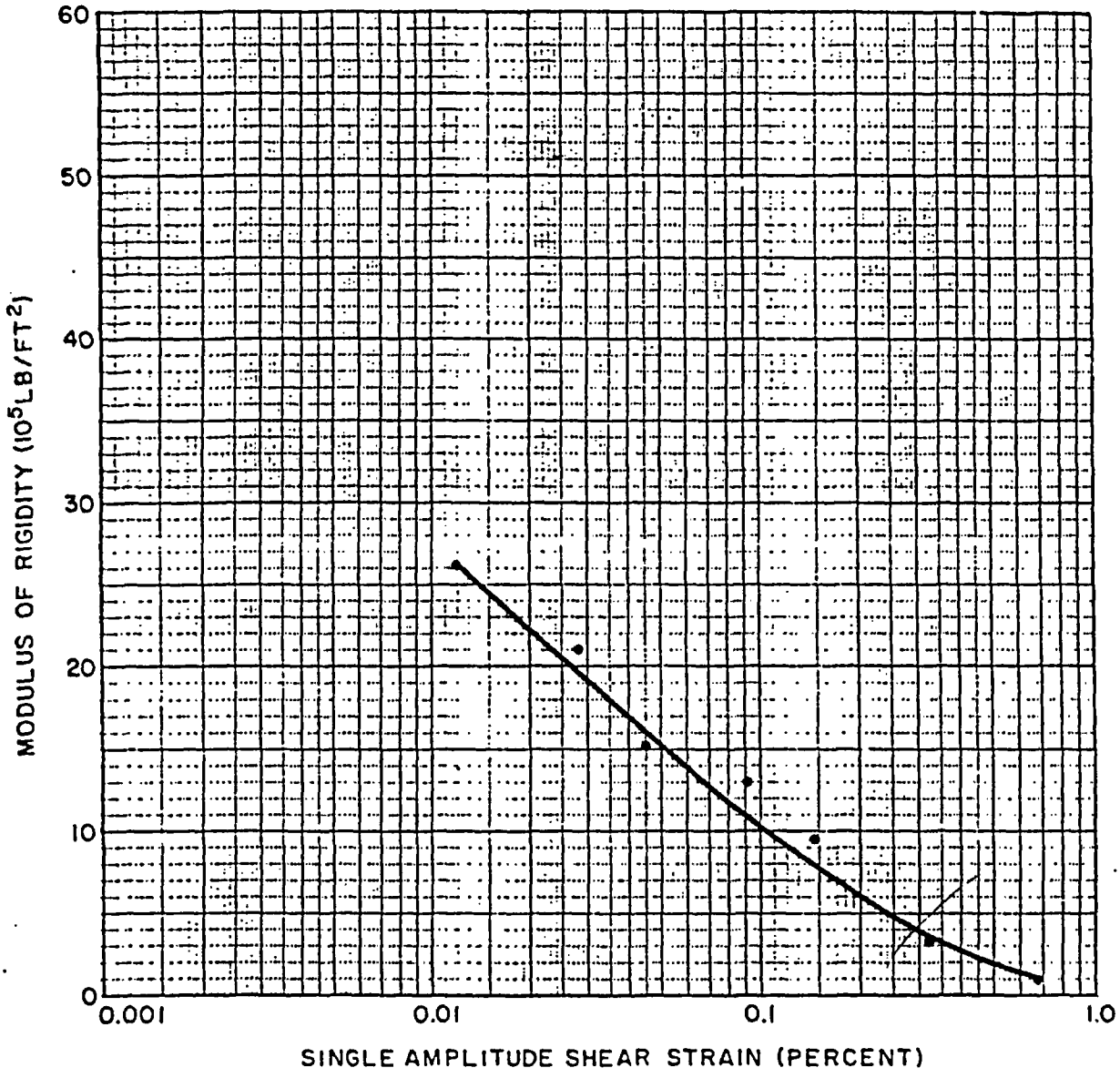
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-81

DYNAMIC TRIAXIAL TEST RESULTS
(SHEET 8 OF 11)



BORING NOS. MP-14 AND MP-31
DEPTH: 1.0 TO 18.0 (ELEVATION 597.1-580.1)
SOIL TYPE: SM.SP (EQUALITY FORMATION)
MOISTURE CONTENT: 21.3%
DRY DENSITY: 107 LB/FT^3
CONFINING PRESSURE: 6000 LB/FT^2

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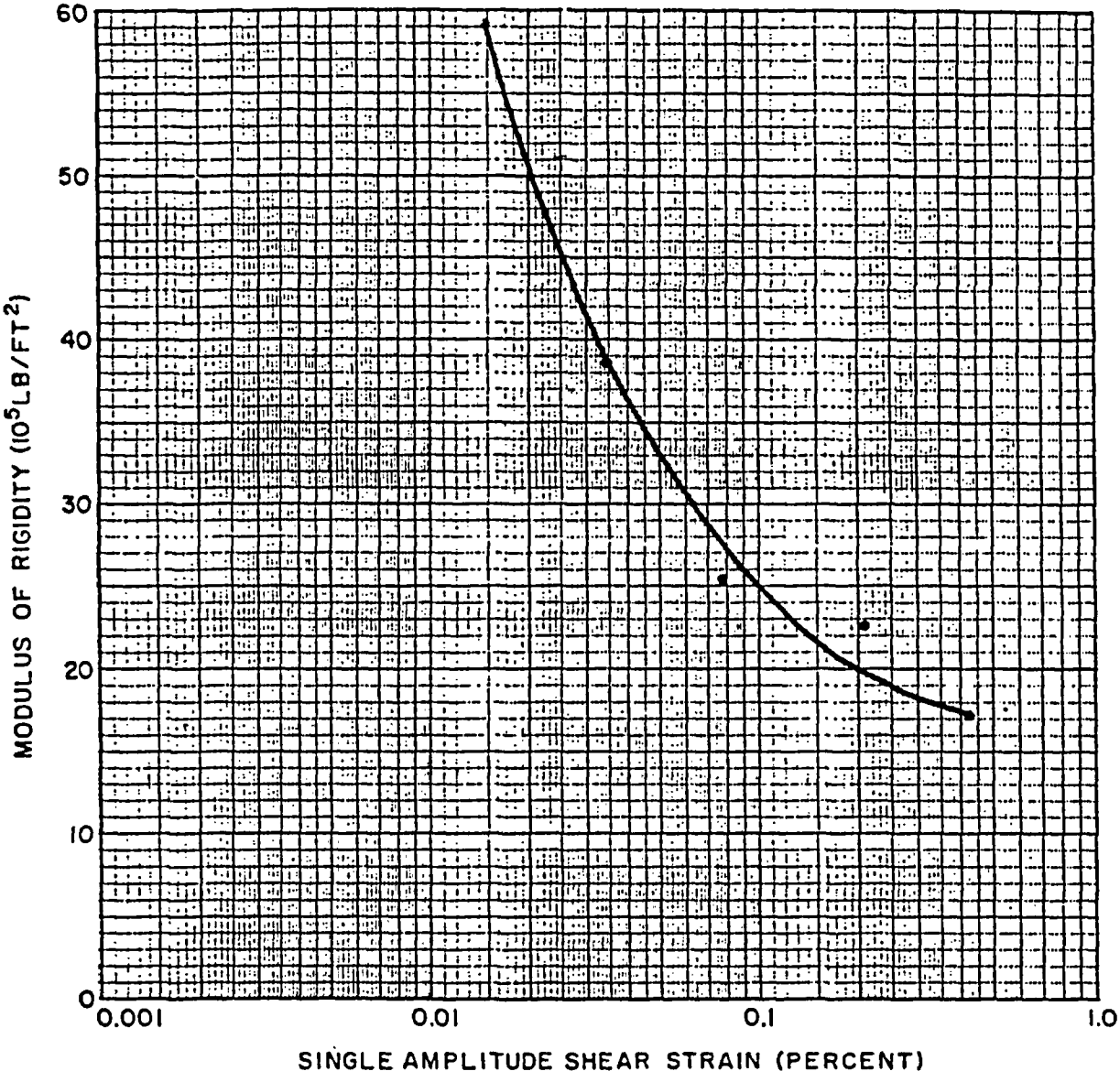
FIGURE 2.5-81

DYNAMIC TRIAXIAL TEST RESULTS
(SHEET 9 OF 11)



BORING NO. MP-30
DEPTH: 35.5 FEET (ELEVATION 565.7)
SOIL TYPE: ML (WEDRON FORMATION)
MOISTURE CONTENT: 7.3%
DRY DENSITY: 139 LB/FT^3
UNDRAINED PEAK SHEAR STRENGTH: 25491 LB/FT^2
CONFINING PRESSURE: 3200 LB/FT^2

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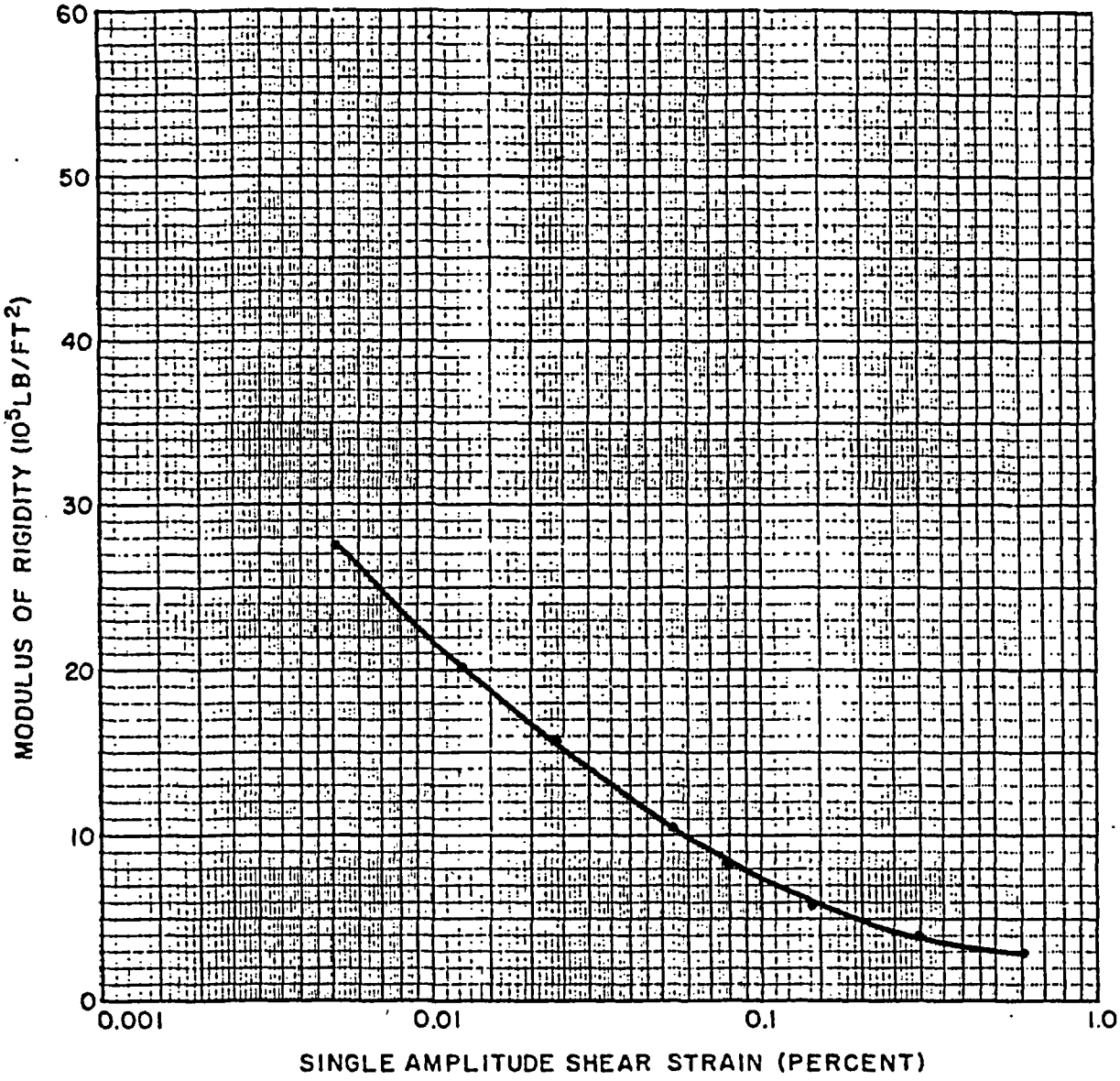
FIGURE 2.5-81

DYNAMIC TRIAXIAL TEST RESULTS
(SHEET 10 OF 11)



BORING NO. MP-30
DEPTH: 38.0 FEET (ELEVATION 562.7)
SOIL TYPE: ML (WEDRON FORMATION)
MOISTURE CONTENT: 9.7%
DRY DENSITY: 134 LB/FT^3
(TEST CONDUCTED ON 4-INCH DIAMETER CORED SAMPLE)
UNDRAINED PEAK SHEAR STRENGTH: 14114 LB/FT^2
CONFINING PRESSURE: 4100 LB/FT^2

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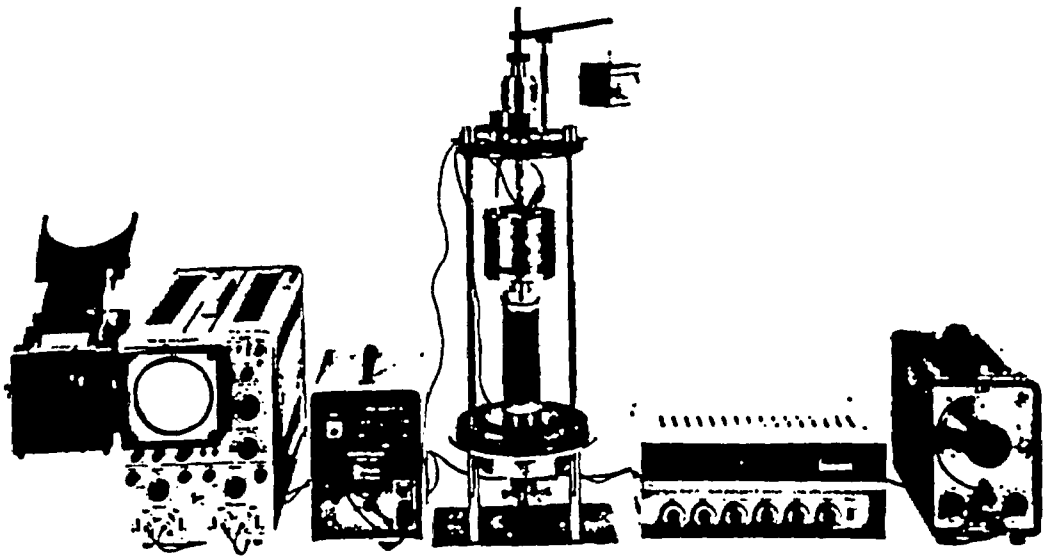
FIGURE 2.5-81

DYNAMIC TRIAXIAL TEST RESULTS
(SHEET 11 OF 11)

METHODS OF PERFORMING RESONANT COLUMN TESTS



RESONANT COLUMN TESTS ARE PERFORMED TO EVALUATE THE DYNAMIC PROPERTIES OF THE SOIL OR ROCK SAMPLES. UTILIZING THE RESONANT COLUMN APPARATUS, A CYLINDRICAL COLUMN OF SOIL OR ROCK IS SUBJECTED TO A STEADY STATE SINUSOIDAL FORCING FUNCTION, WHICH STRESSES THE SAMPLE IN TORSION. THE FREQUENCY OF THE APPLIED FORCE IS VARIED UNTIL THE RESONANT FREQUENCY OF THE SOIL APPARATUS SYSTEM IS OBTAINED. THE RESONANT FREQUENCY IS THAT WHICH PRODUCES THE MAXIMUM AMPLITUDE OF OUTPUT RECORDED. THE RESONANT FREQUENCY THUS OBTAINED IS RELATED TO THE TORSIONAL SHEAR MODULUS OF THE MATERIAL TESTED.

RESONANT COLUMN TESTS ARE PERFORMED ON UNDISTURBED OR RECONSTITUTED CYLINDRICAL SAMPLES OF SOIL APPROXIMATELY 6 INCHES IN LENGTH AND 2½ INCHES IN DIAMETER. THE SAMPLES ARE ENCASED IN A RUBBER MEMBRANE AND PLACED IN A TEST CHAMBER. THE TESTS MAY BE PERFORMED CONFINED OR UNCONFINED ON SOILS AT FIELD MOISTURE OR ON ARTIFICIALLY SATURATED SAMPLES. THE APPARATUS EMPLOYS A VIBRATION EXCITATION DEVICE, POWERED BY A VARIABLE FREQUENCY SINE WAVE GENERATOR WHICH APPLIES A FORCING TORQUE TO THE FREE END OF THE SPECIMEN. THE RESULTING VIBRATIONS ARE MEASURED BY AN ACCELEROMETER WHICH PRODUCES A CALIBRATED OUTPUT THAT IS A MEASURE OF THE ANGULAR ACCELERATION OF THE FREE END OF THE SPECIMEN. THE SINUSOIDAL VOLTAGE USED TO PRODUCE THE FORCING TORQUE AND THE OUTPUT OF THE ACCELEROMETER ARE DISPLAYED ON THE X-Y AXES OF THE OSCILLOSCOPE RESULTING IN ELLIPTICAL CONFIGURATIONS FOR ASSOCIATED FREQUENCIES. THESE ELLIPTICAL LOOPS ARE PHOTOGRAPHED AND EVALUATED TO DETERMINE THE DAMPING CHARACTERISTICS OF THE SAMPLES TESTED.

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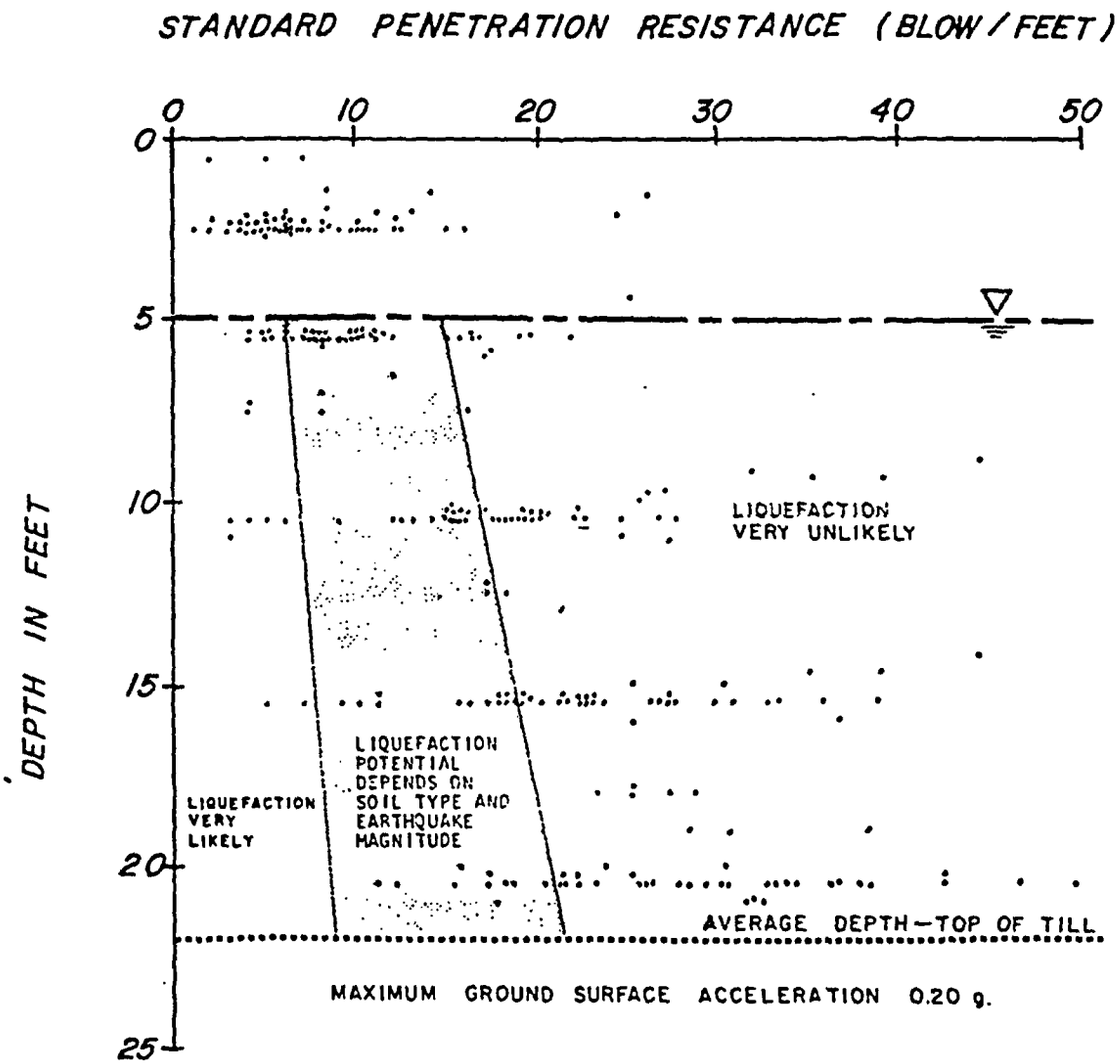
FIGURE 2.5-82

RESONANT COLUMN TEST, METHOD



KEY:

- • MEASURED STANDARD PENETRATION RESISTANCE, CORRECTED FOR SILTY SANDS BELOW THE WATER TABLE.
- ▽ GROUND WATER LEVEL

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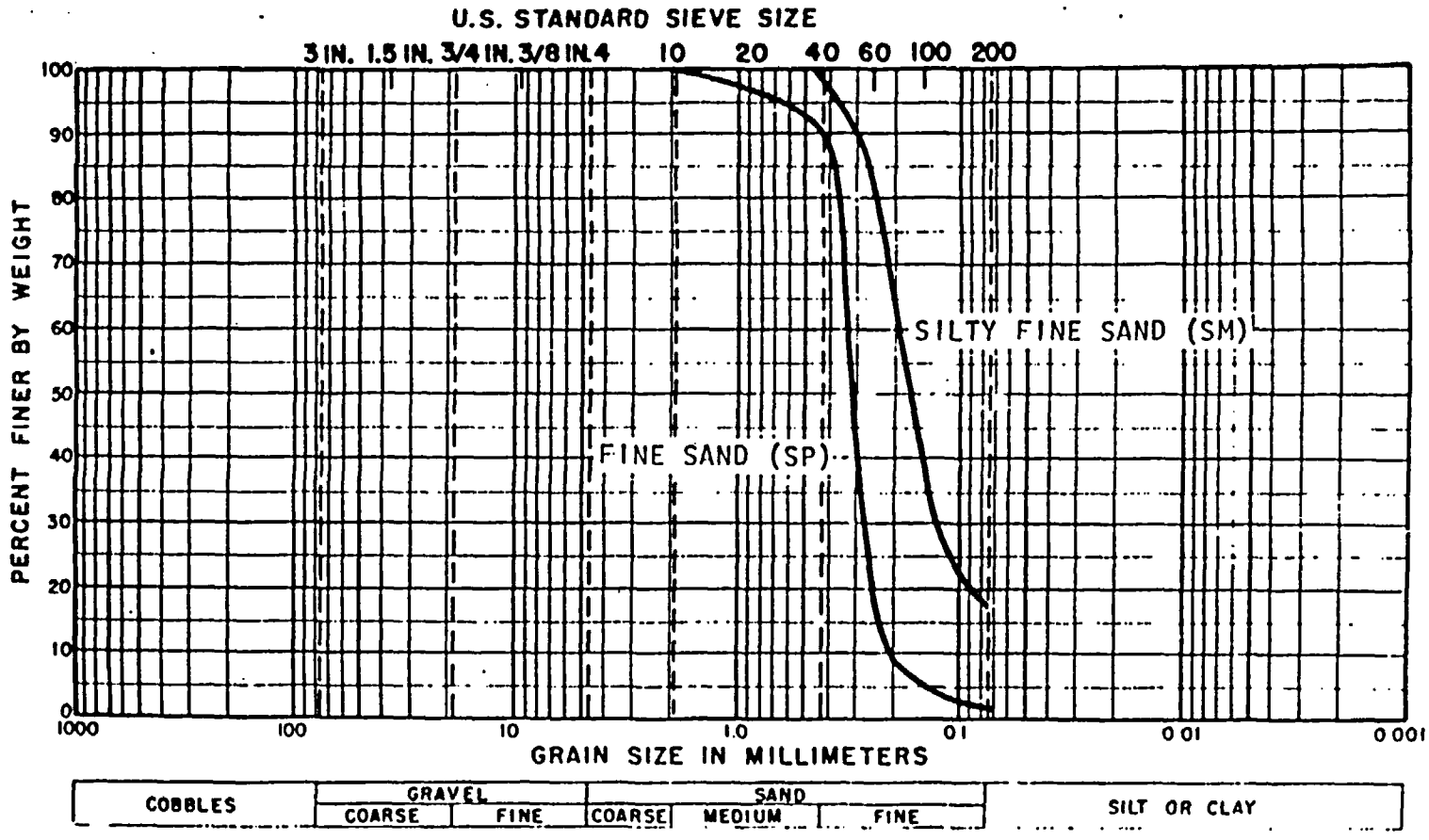
FIGURE 2.5-83

LIQUEFACTION EVALUATION - SIMPLIFIED METHOD



GRADATION CURVE

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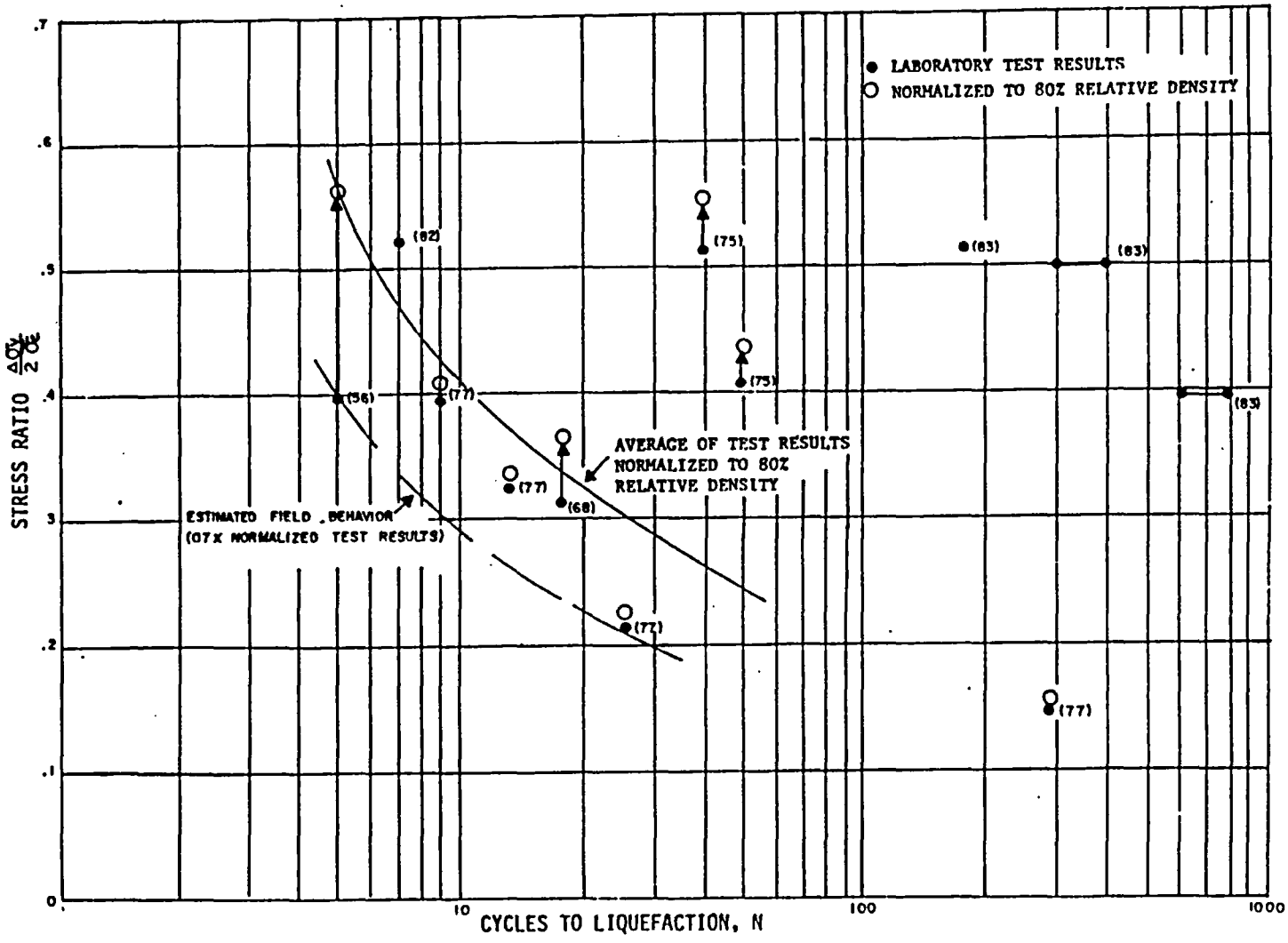
FIGURE 2.5-84

GRAIN - SIZE CHARACTERISTICS OF LIQUEFACTION SAMPLES



NOTE

1. NUMBERS IN PARENTHESS ARE VALUES OF RELATIVE DENSITY.

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FIGURE 2.5-85

CYCLIC STRENGTH CURVE FOR COMPACTED GRANULAR SOIL

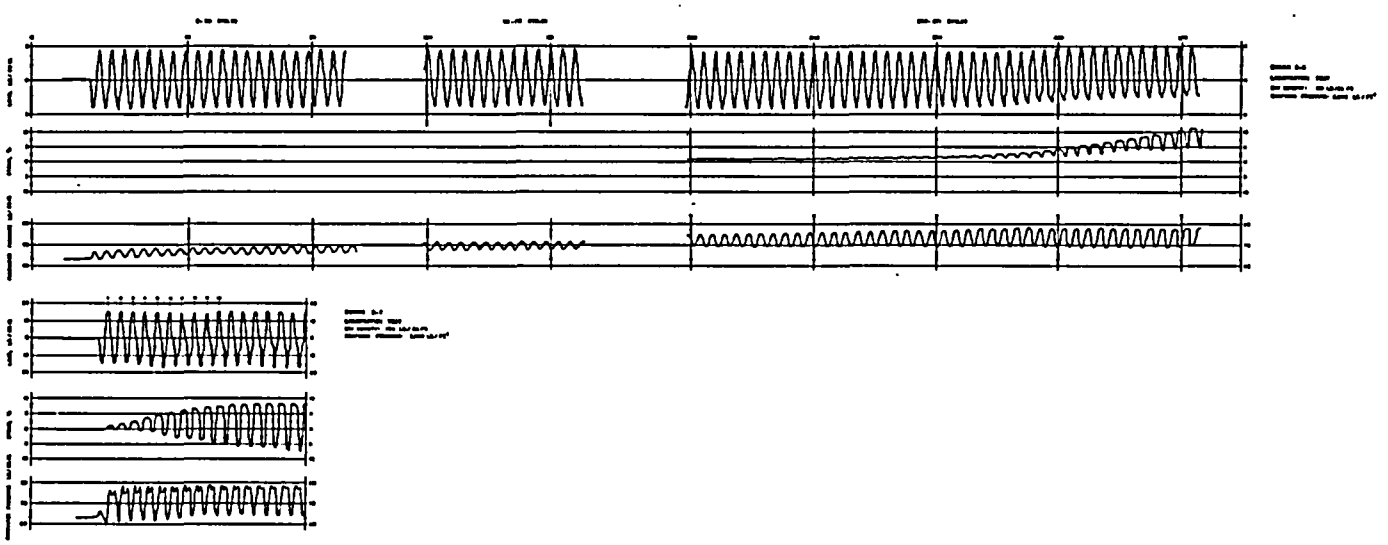

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FIGURE 2.5-66

LIQUEFACTION TEST TYPICAL
RESPONSE CURVE

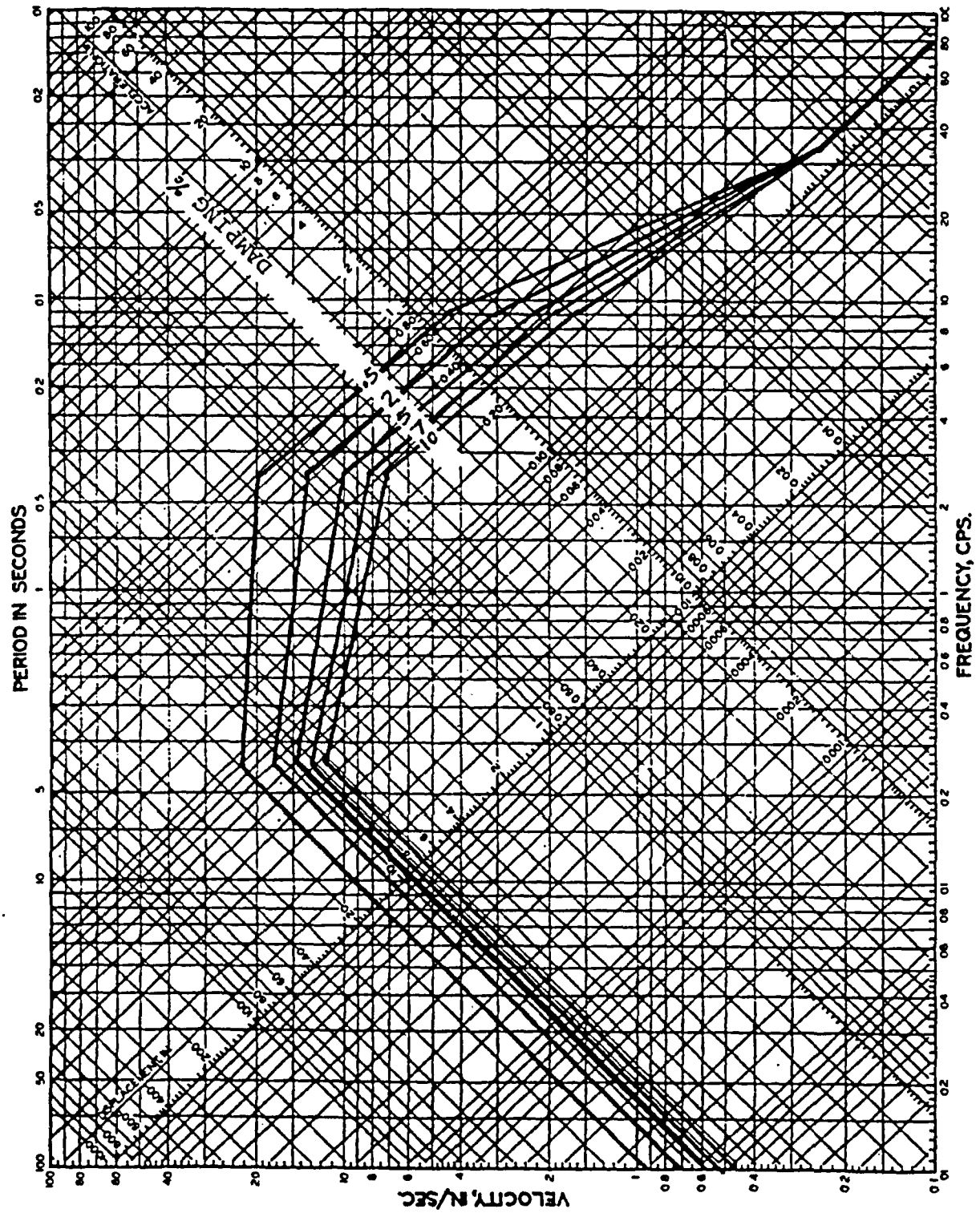

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FIGURE 2.5-87

RESPONSE SPECTRA FOR OPERATING BASIS EARTHQUAKE WITH HORIZONTAL GROUND ACCELERATION = 0.13g

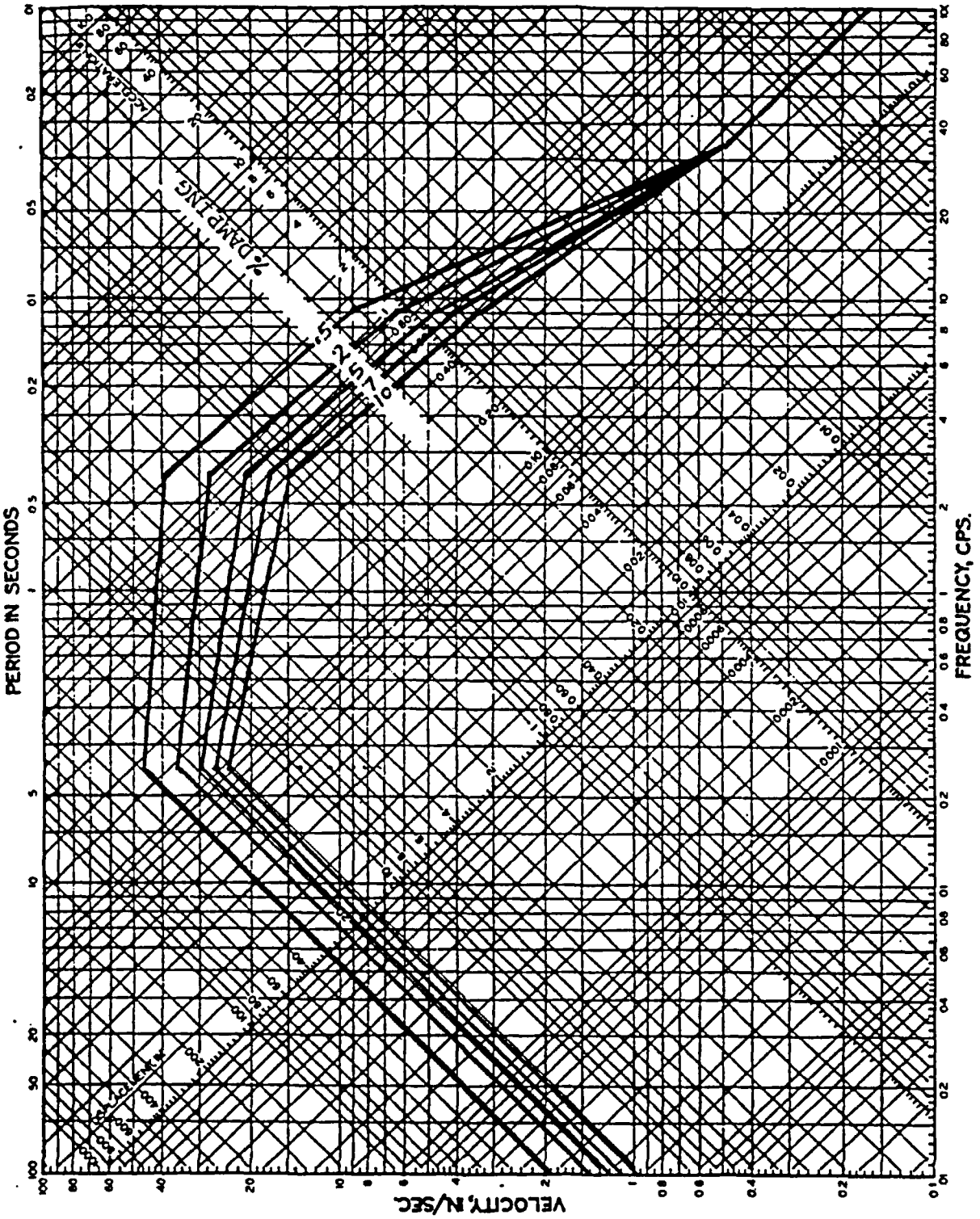

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FIGURE 2.5-88

RESPONSE SPECTRA FOR SAFE SHUTDOWN EARTHQUAKE WITH HORIZONTAL GROUND ACCELERATION = 0.26g

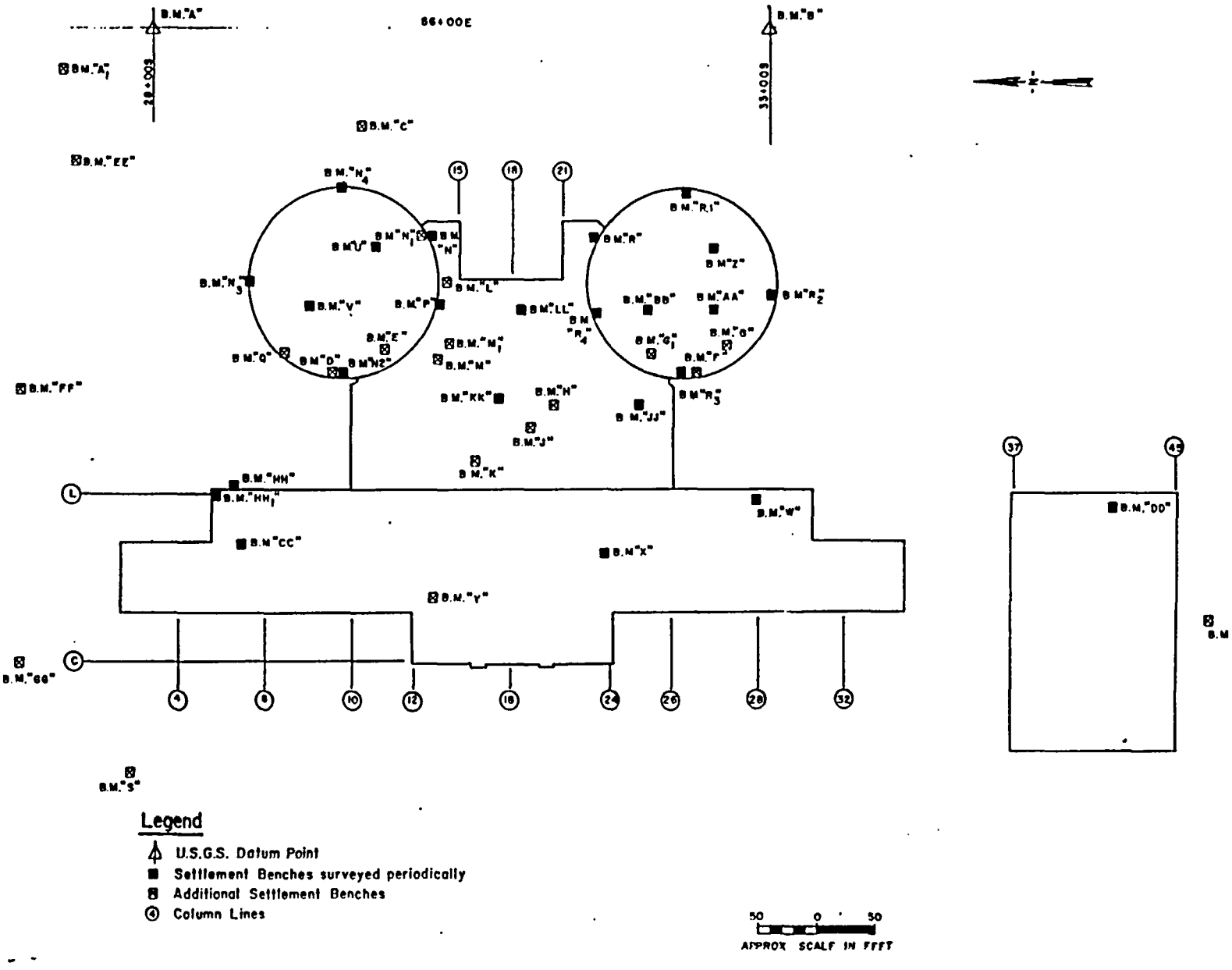

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FIGURE 2.5-89

SETTLEMENT BENCHMARK LOCATIONS

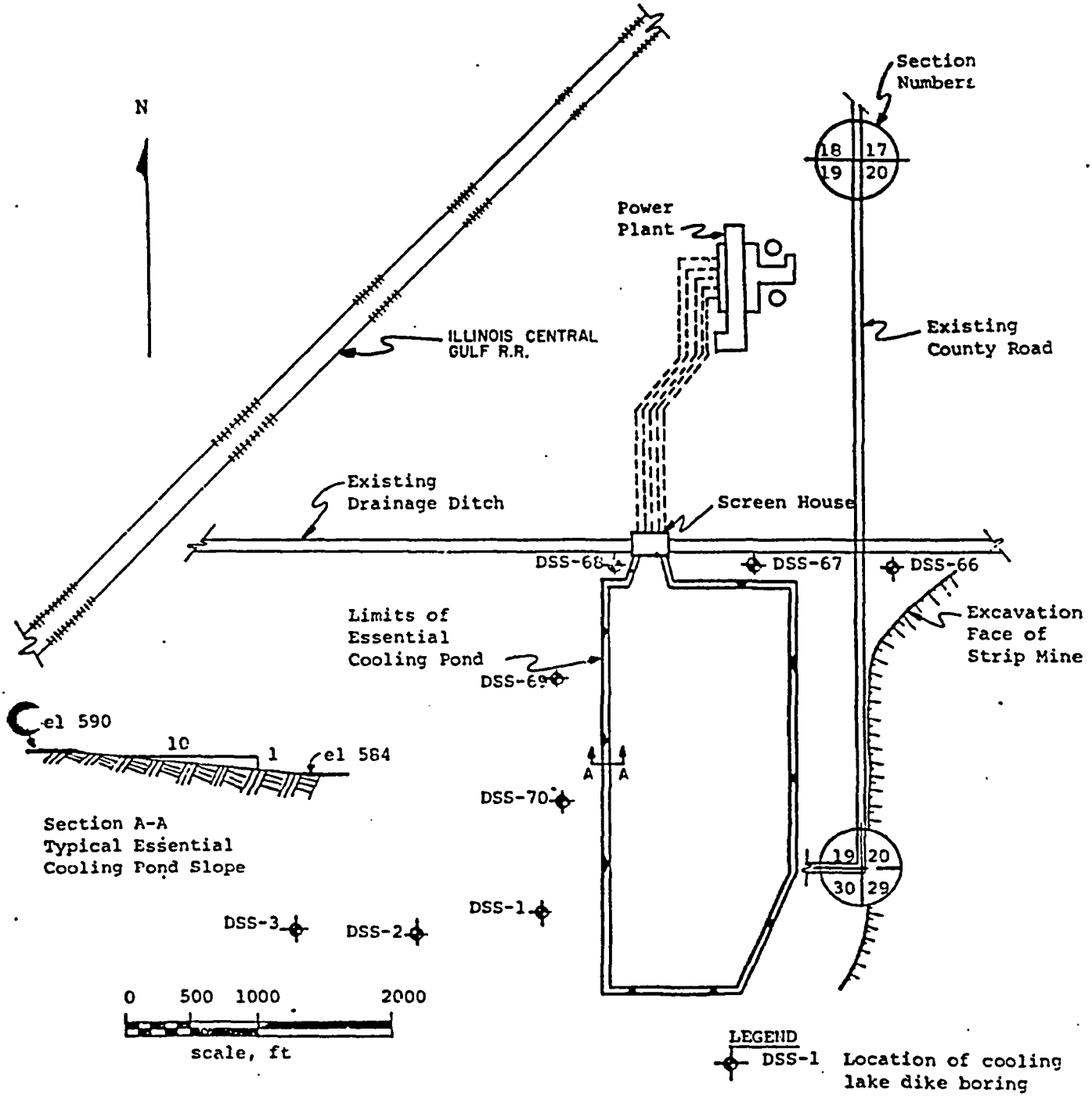

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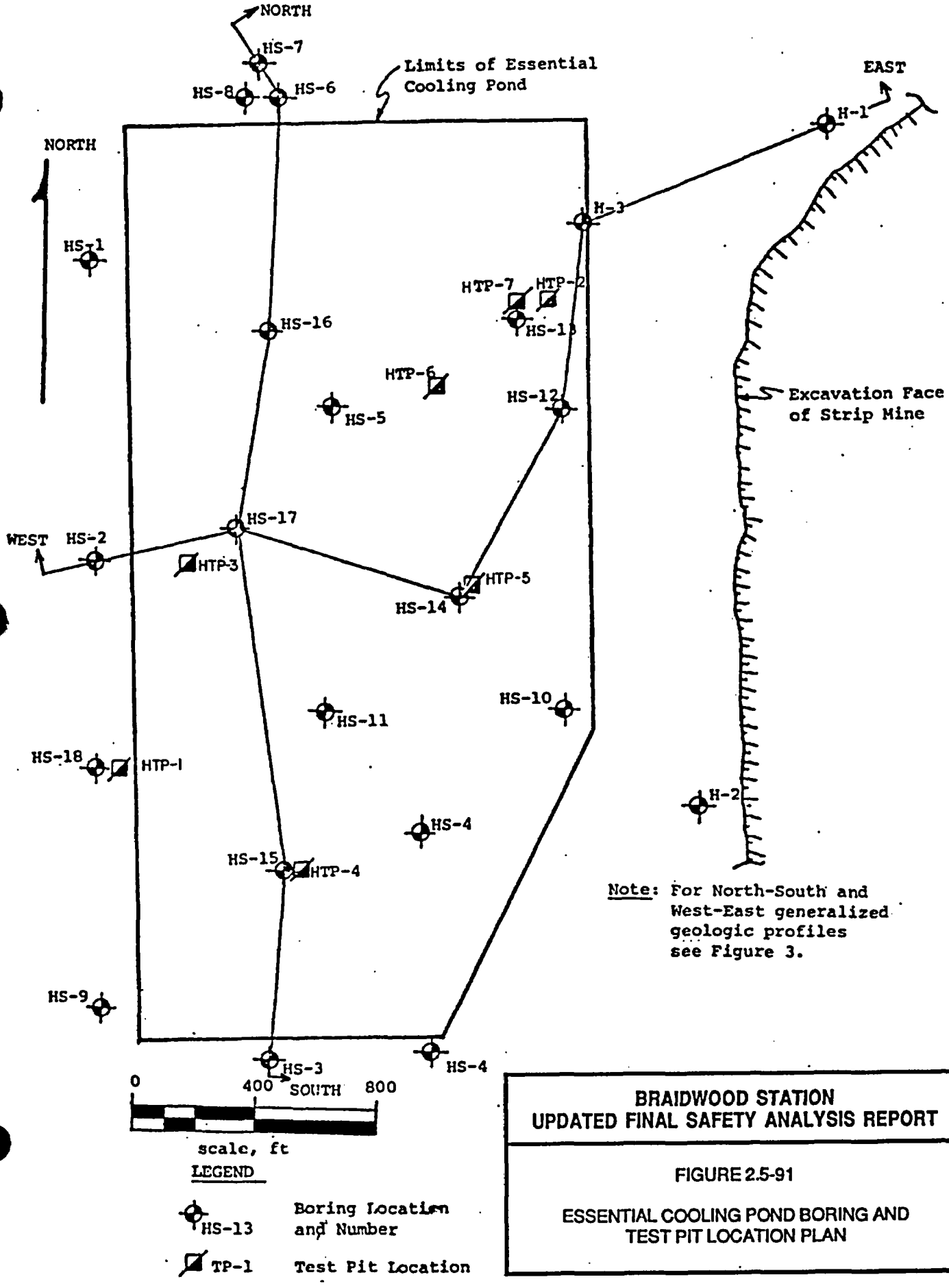
FIGURE 2.5-90

ESSENTIAL COOLING POND ARRANGEMENT
SECTION LOCATION



Note: For North-South and West-East generalized geologic profiles see Figure 3.

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FIGURE 2.5-91

ESSENTIAL COOLING POND BORING AND TEST PIT LOCATION PLAN

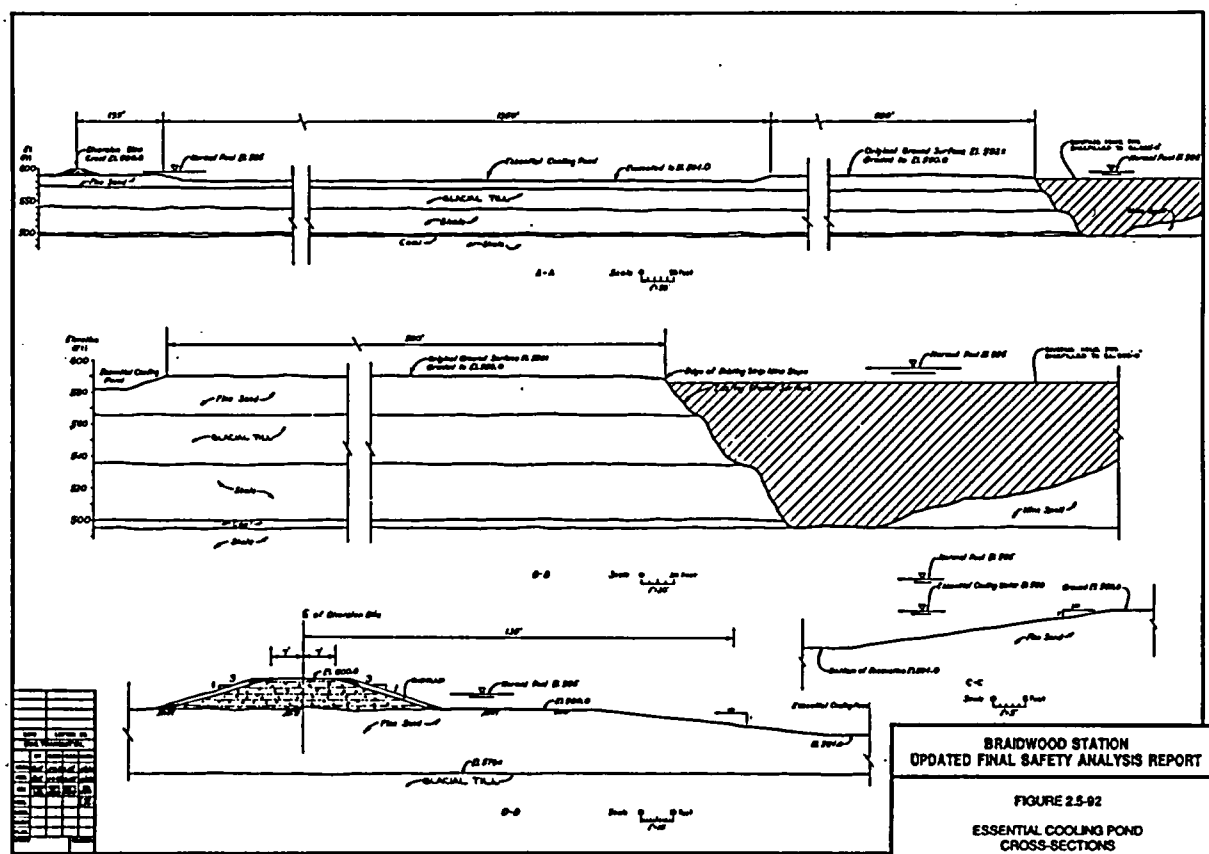

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FIGURE 2.5-92

ESSENTIAL COOLING POND
CROSS-SECTIONS

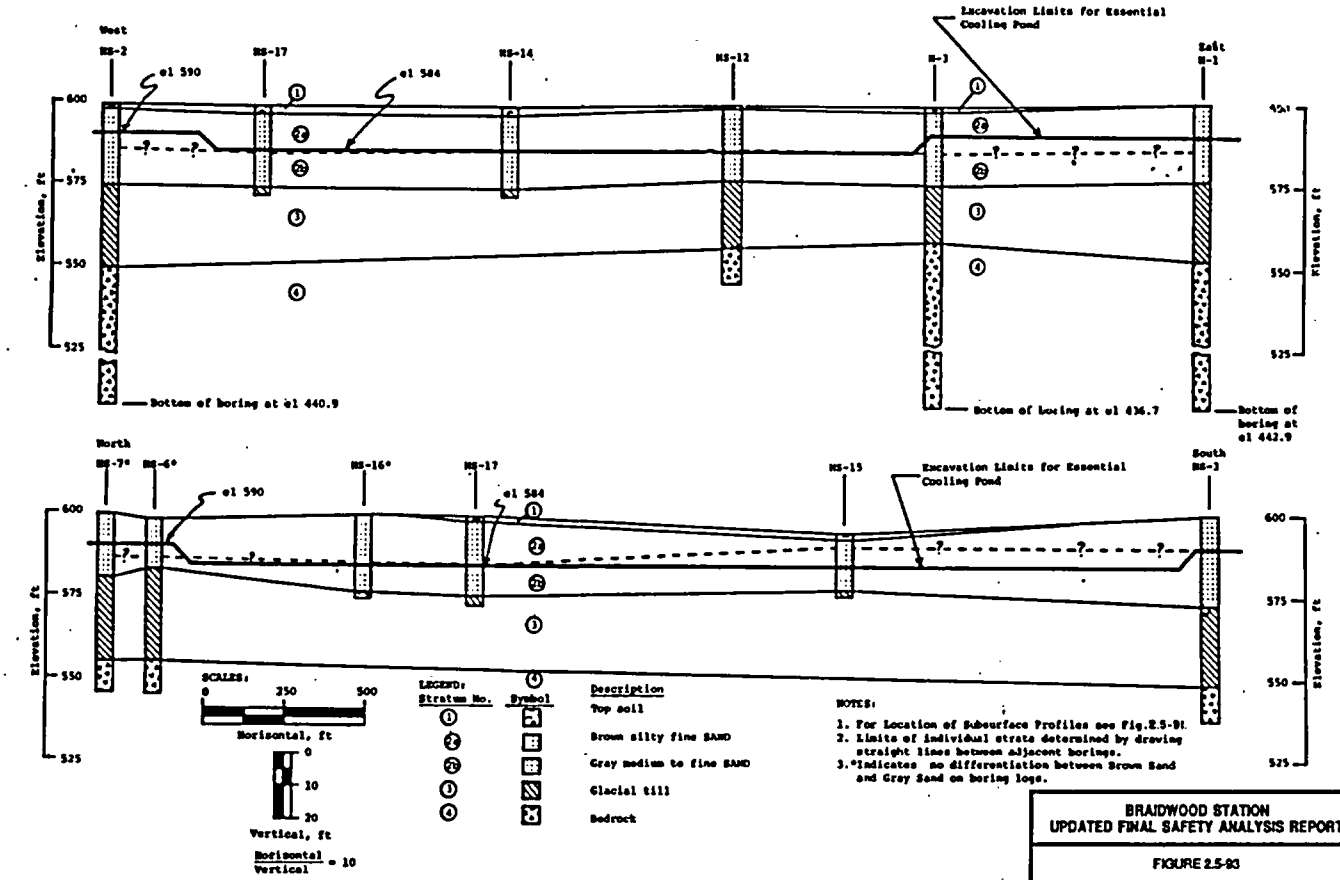

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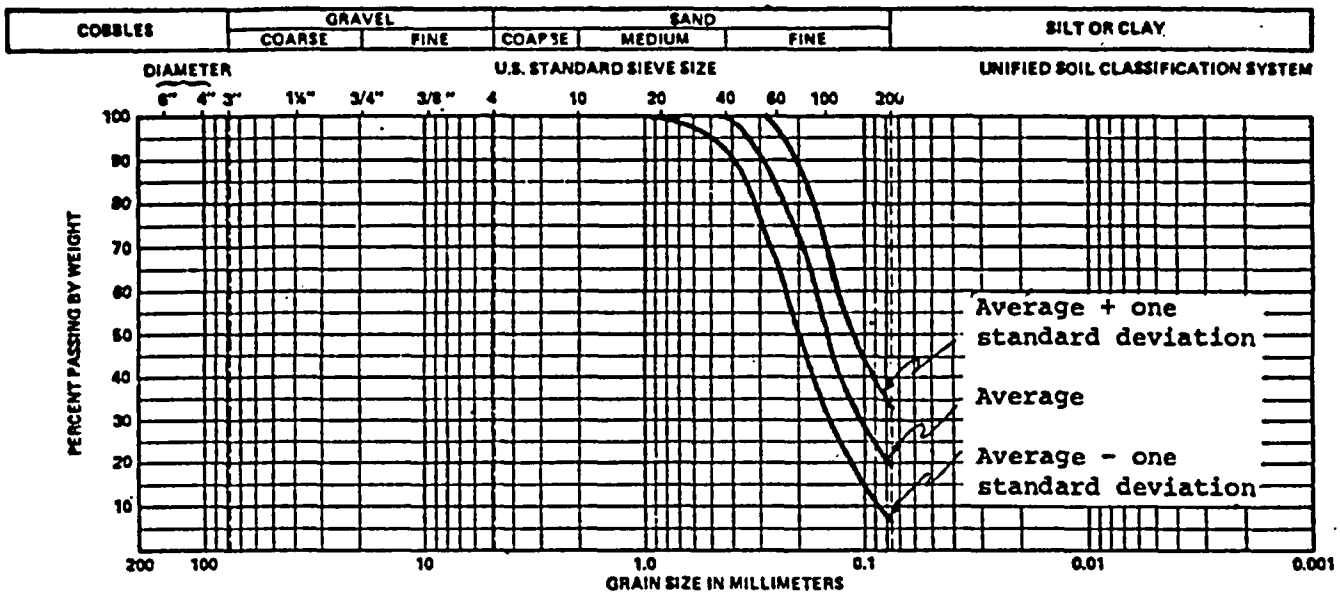
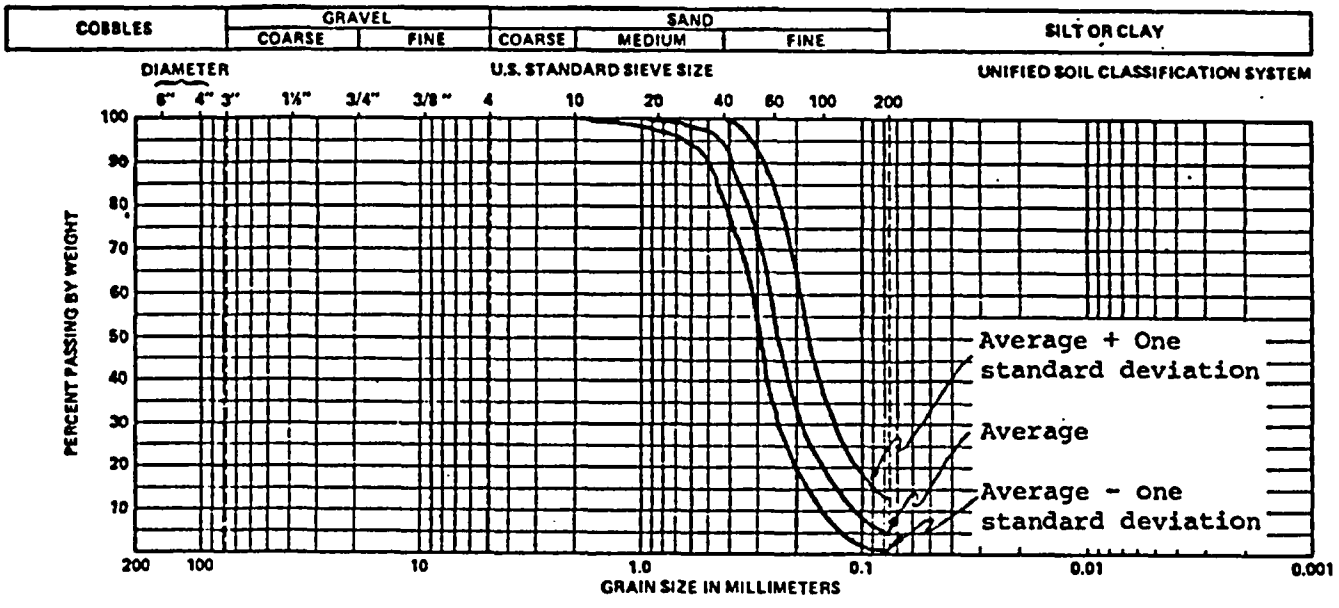
FIGURE 2.5-93

GENERALIZED GEOLOGIC PROFILES WITHIN ESSENTIAL COOLING POND



a) Brown Silty Fine SAND



b) Gray Fine SAND, Trace Silt

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FIGURE 2.5-94

TYPICAL GRADATION OF SAND DEPOSIT

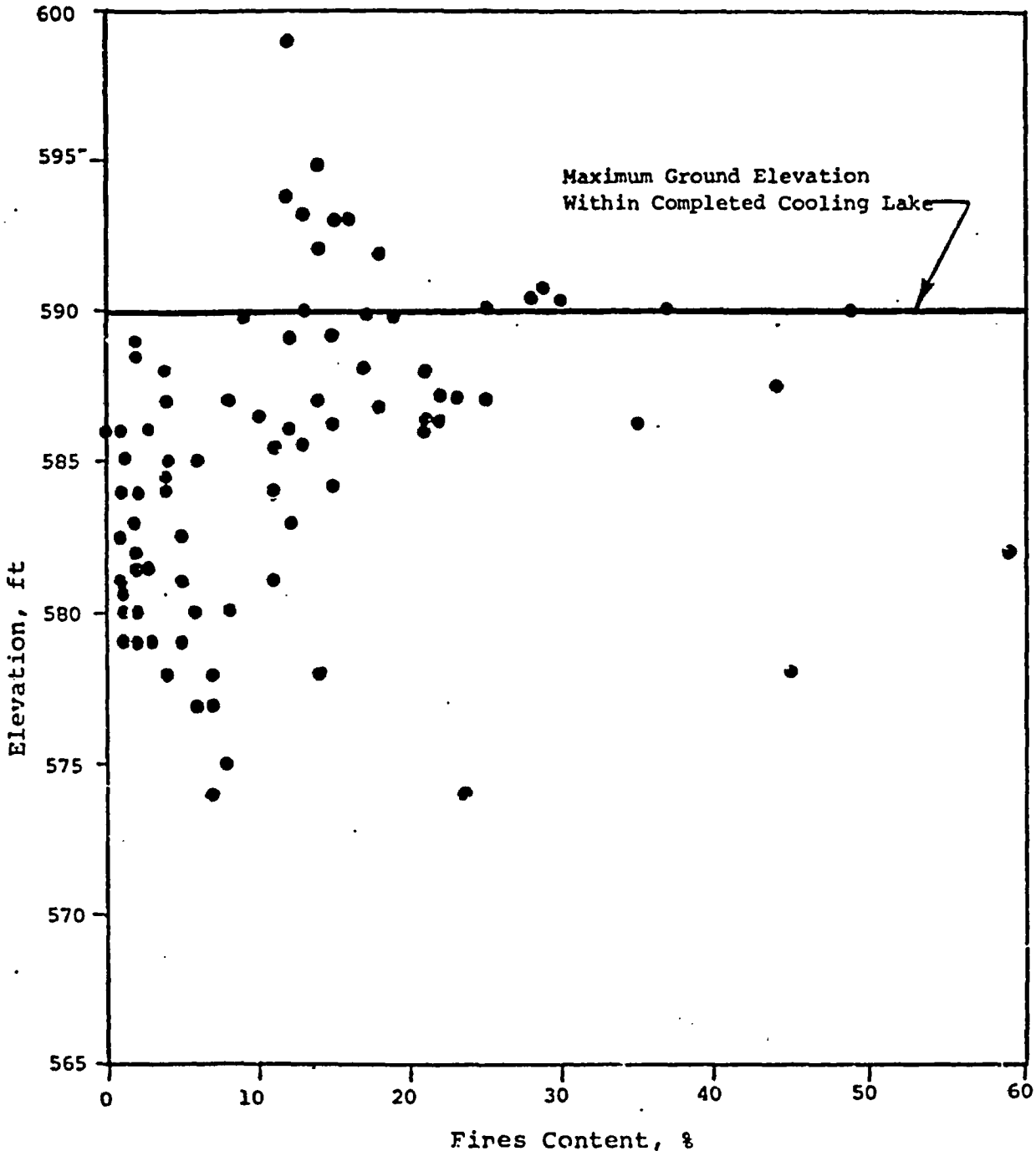

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FIGURE 2.5-95

FINES CONTENT OF SAND DEPOSIT
VS. ELEVATION

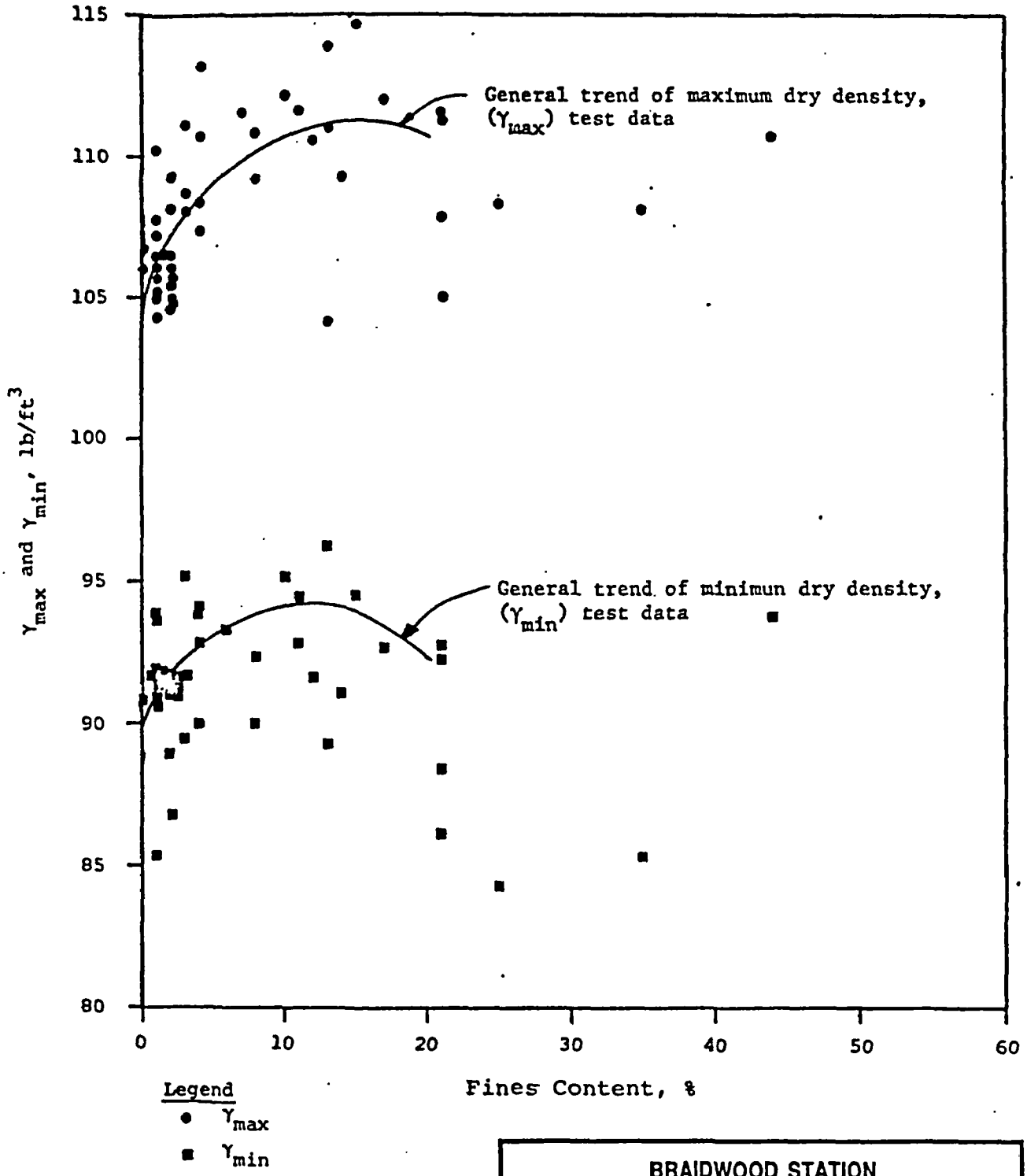

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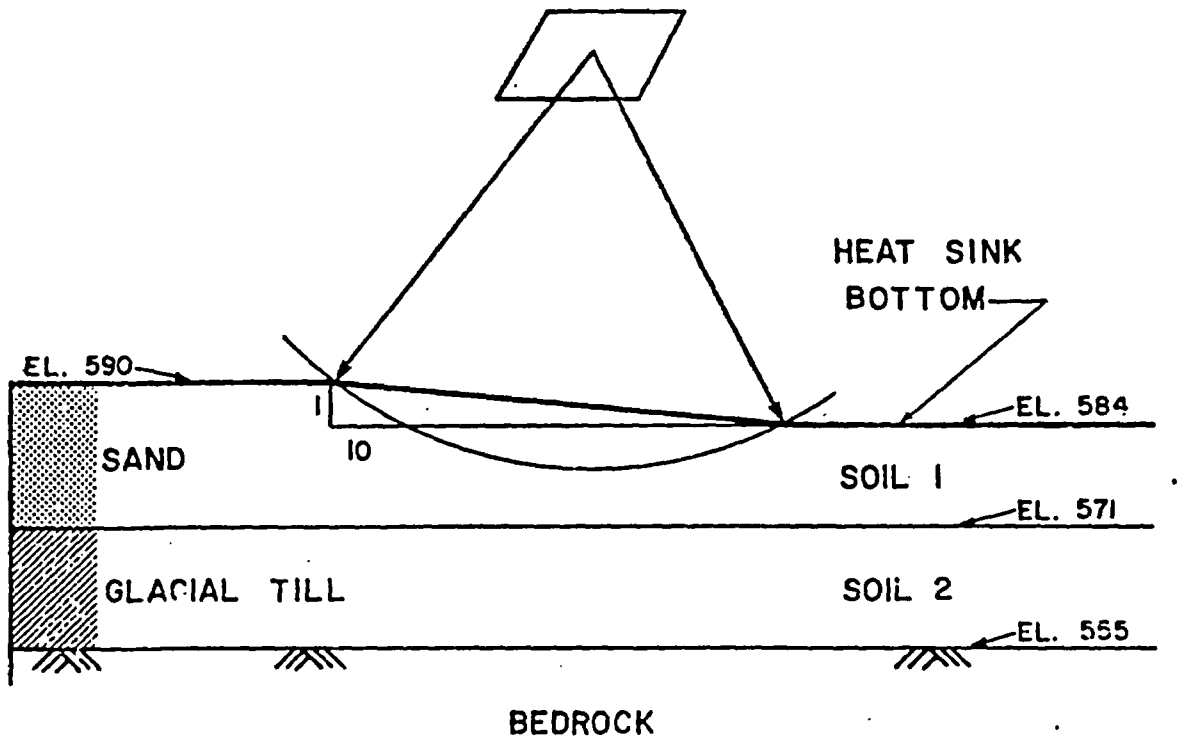
FIGURE 2.5-96

MAXIMUM AND MINIMUM DRY DENSITY VS. FINES CONTENT FOR SAND DEPOSIT WITHIN ECP



	SATURATED UNIT WEIGHT (lbs./ft.^{3})	SHEAR STRENGTH PARAMETERS	
		ϕ	C(PSF)
SOIL 1	125	34°	0
SOIL 2	140	30°	190

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FIGURE 2.5-97

GEOMETRY AND SOIL PROPERTIES USED FOR SLOPE STABILITY ANALYSIS

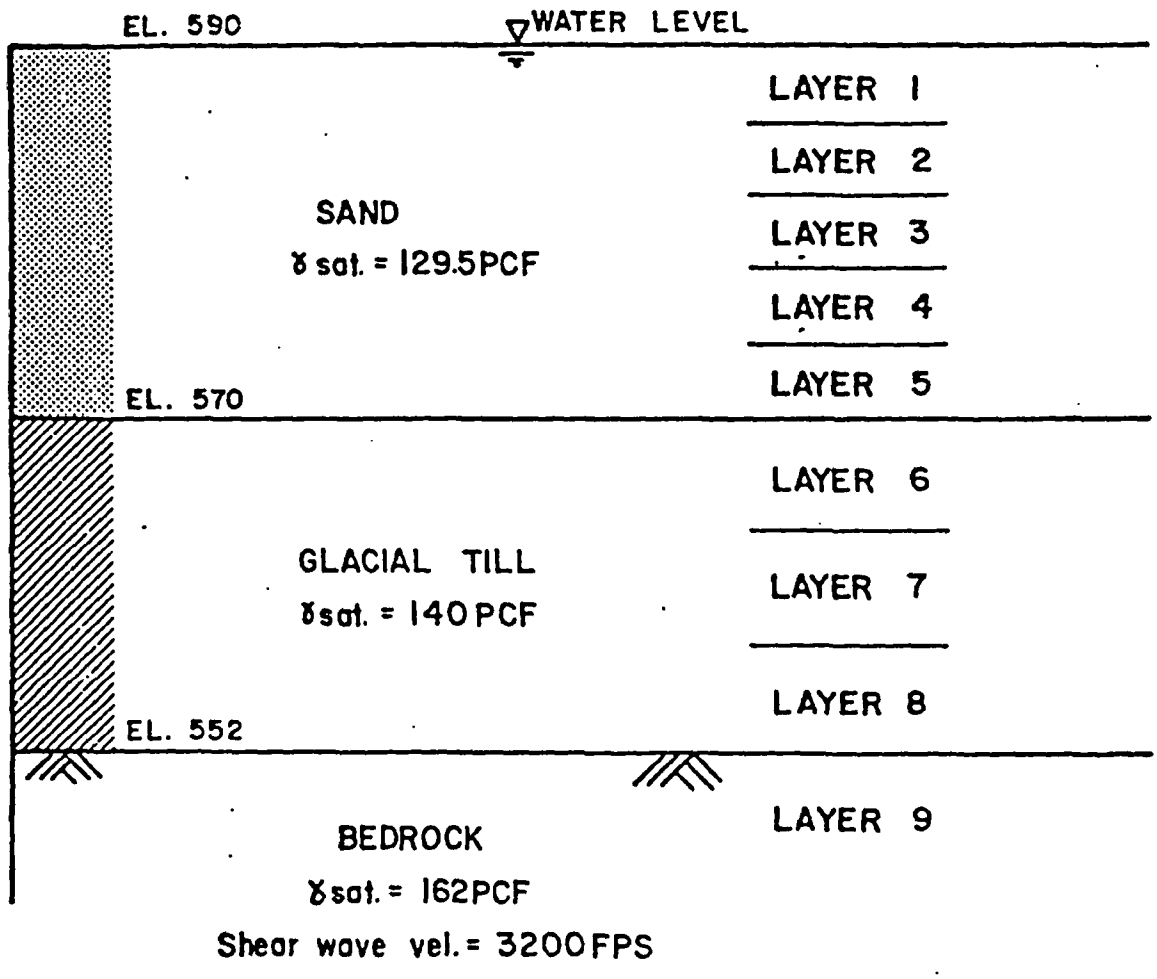

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FIGURE 2.5-98

SOIL PROPERTIES USED FOR
SLOPE STABILITY ANALYSIS

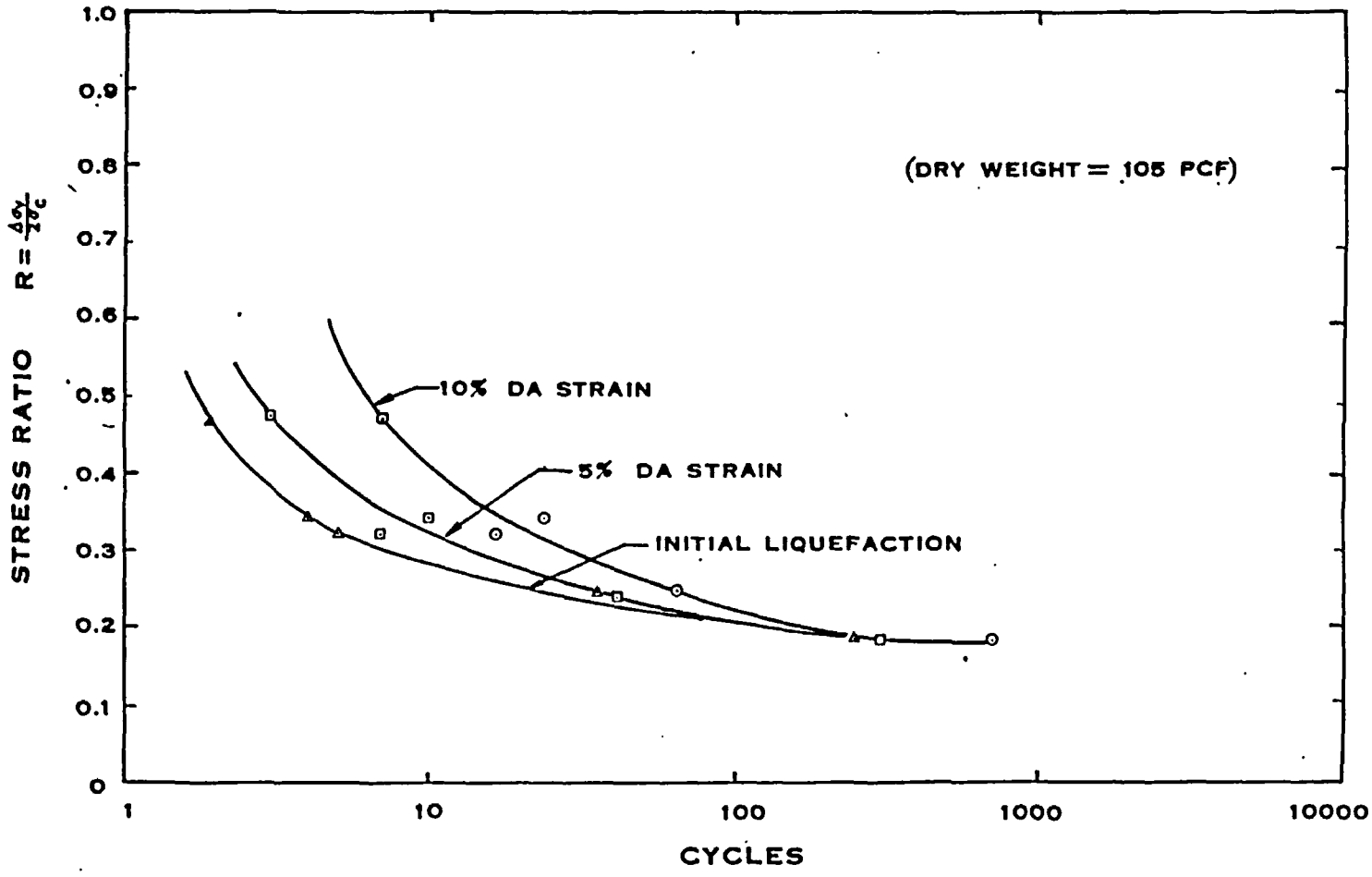

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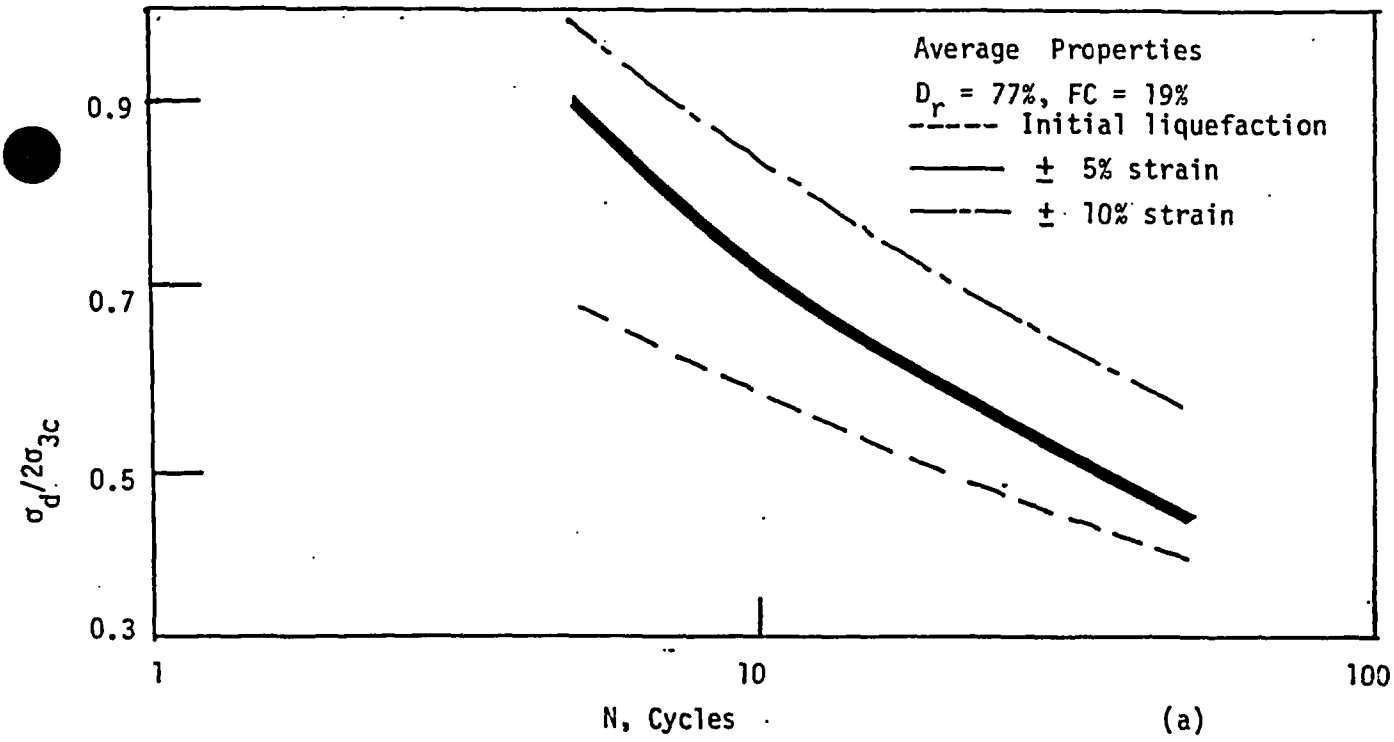
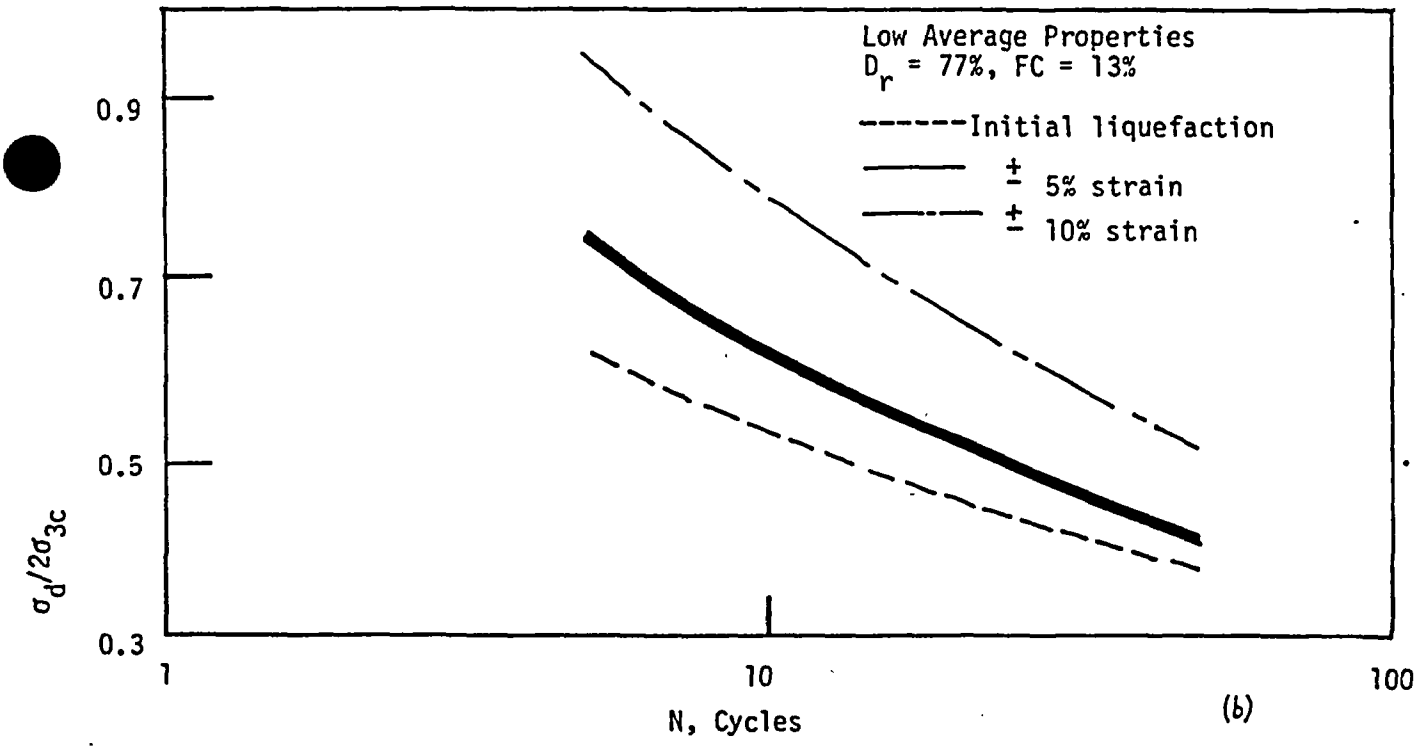
FIGURE 2.5-99

LIQUEFACTION POTENTIAL FOR DENSE UNIFORM FINE SANDS





NOTE: Curves determined using test data from reconstituted test specimens.

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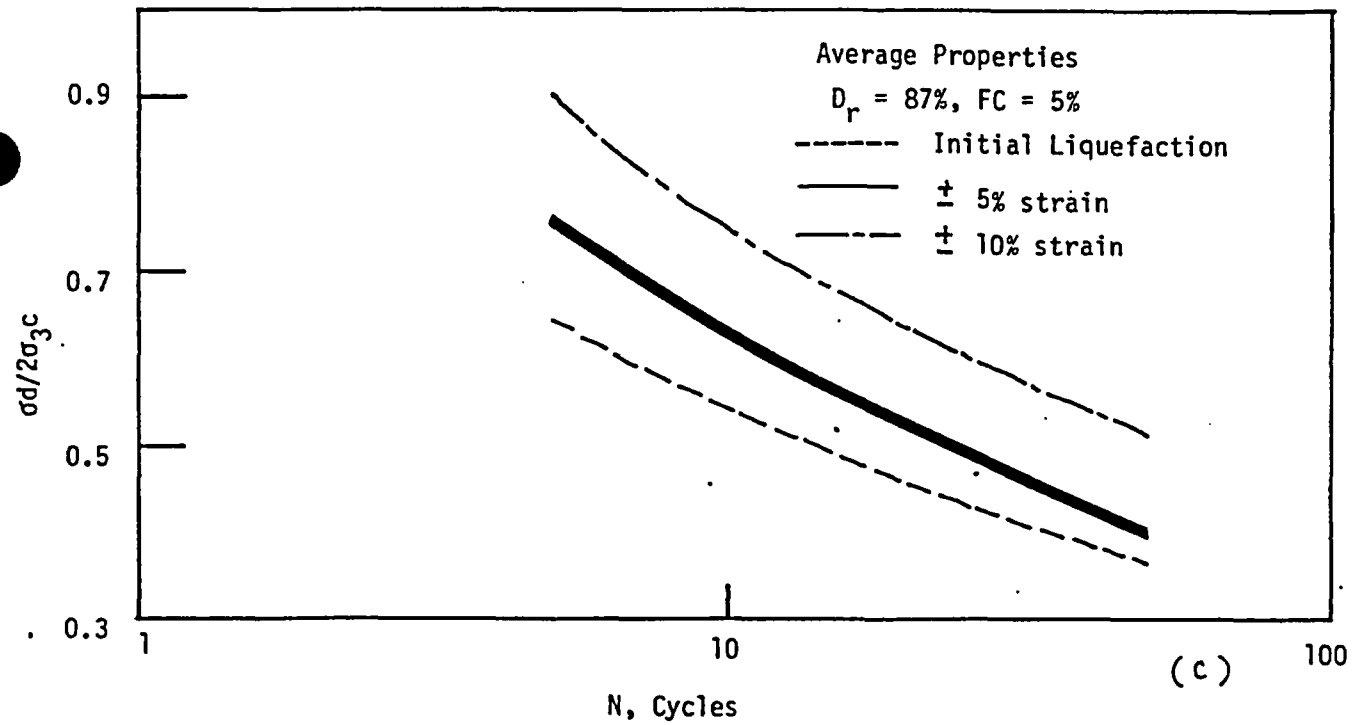
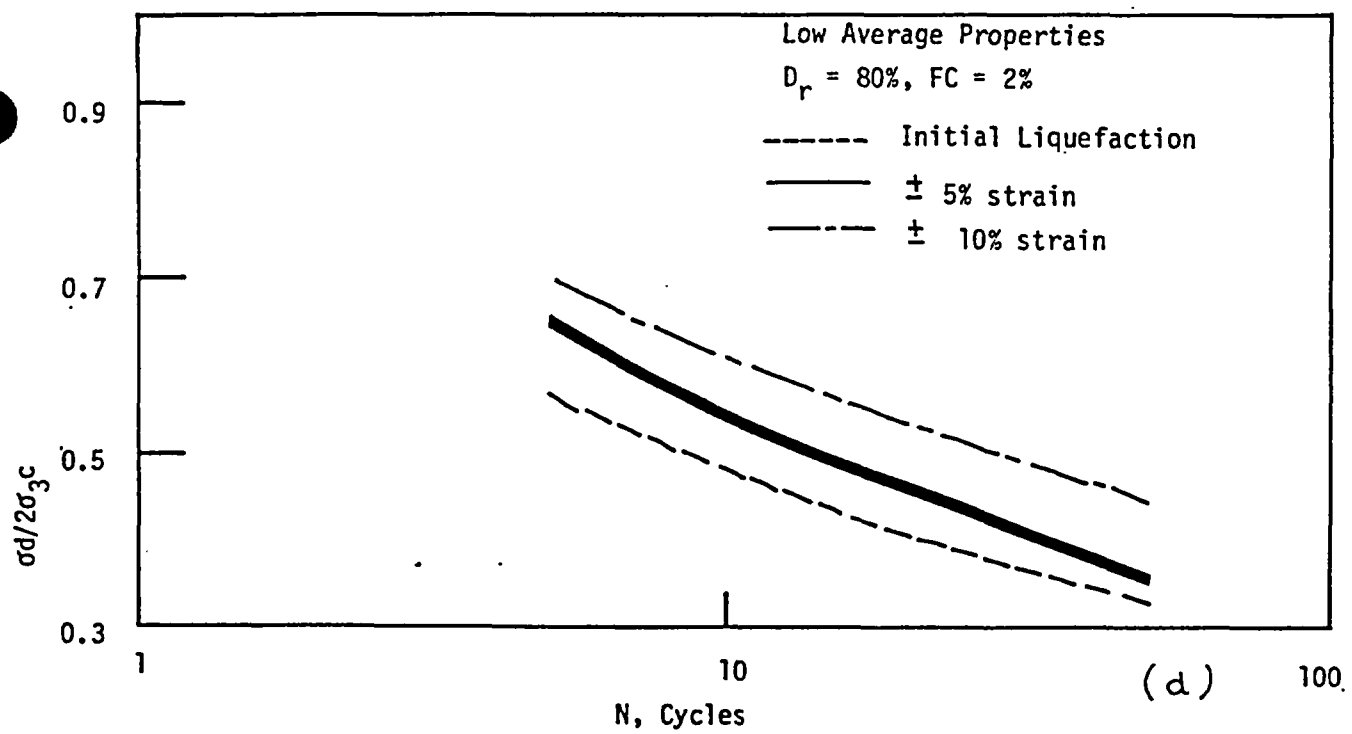
FIGURE 2.5-100

LABORATORY CYCLIC STRENGTH CURVES FOR BROWN SILTY SAND





NOTE:
1. CURVES DETERMINED USING TEST DATA FROM RECONSTITUTED TEST SPECIMENS.

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FIGURE 2.5-101

LABORATORY CYCLIC STRENGTH CURVES FOR GRAY FINE SAND

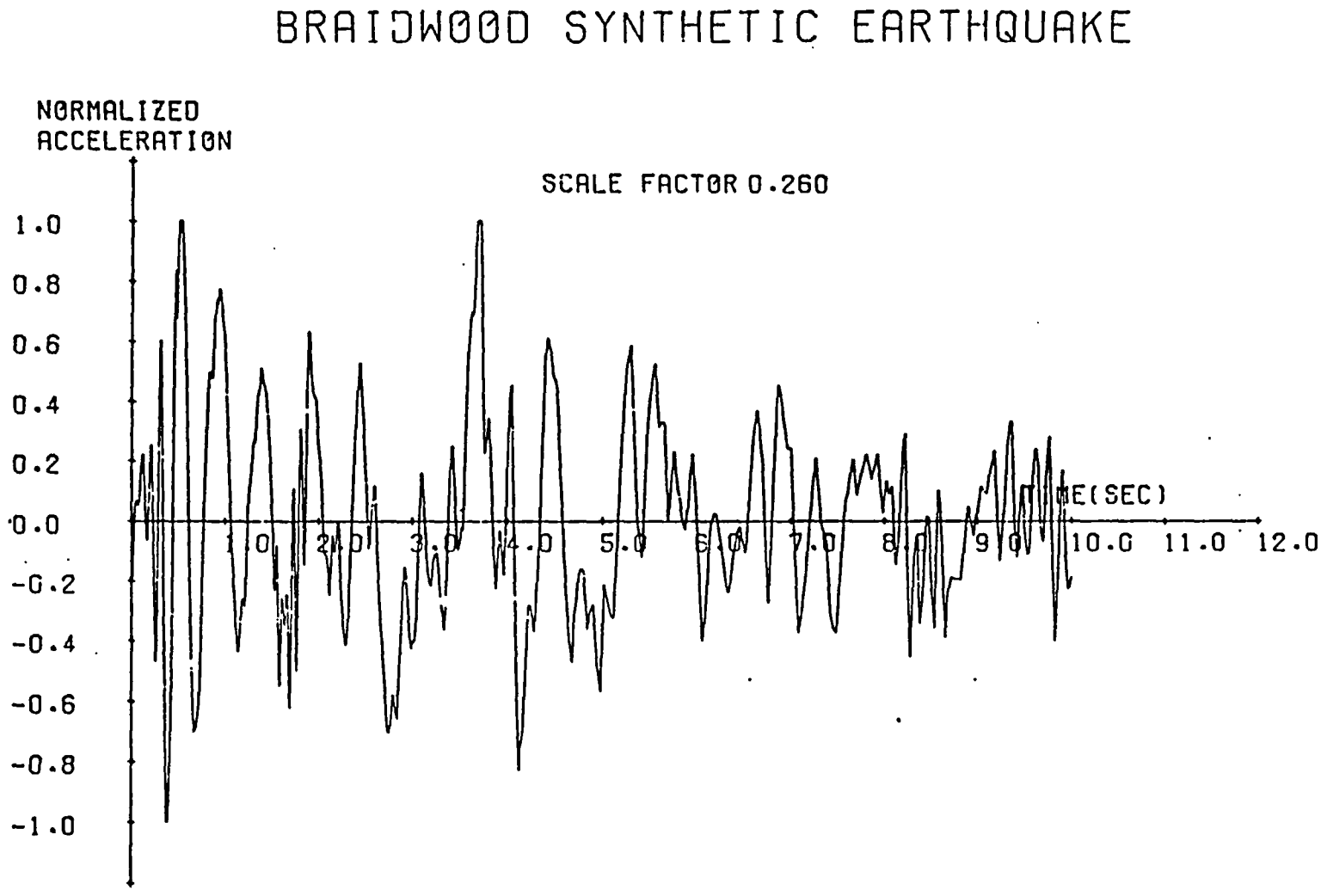

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FIGURE 2.5-102

SYNTHETIC EARTHQUAKE TIME HISTORY
USED FOR LIQUEFACTION ANALYSIS

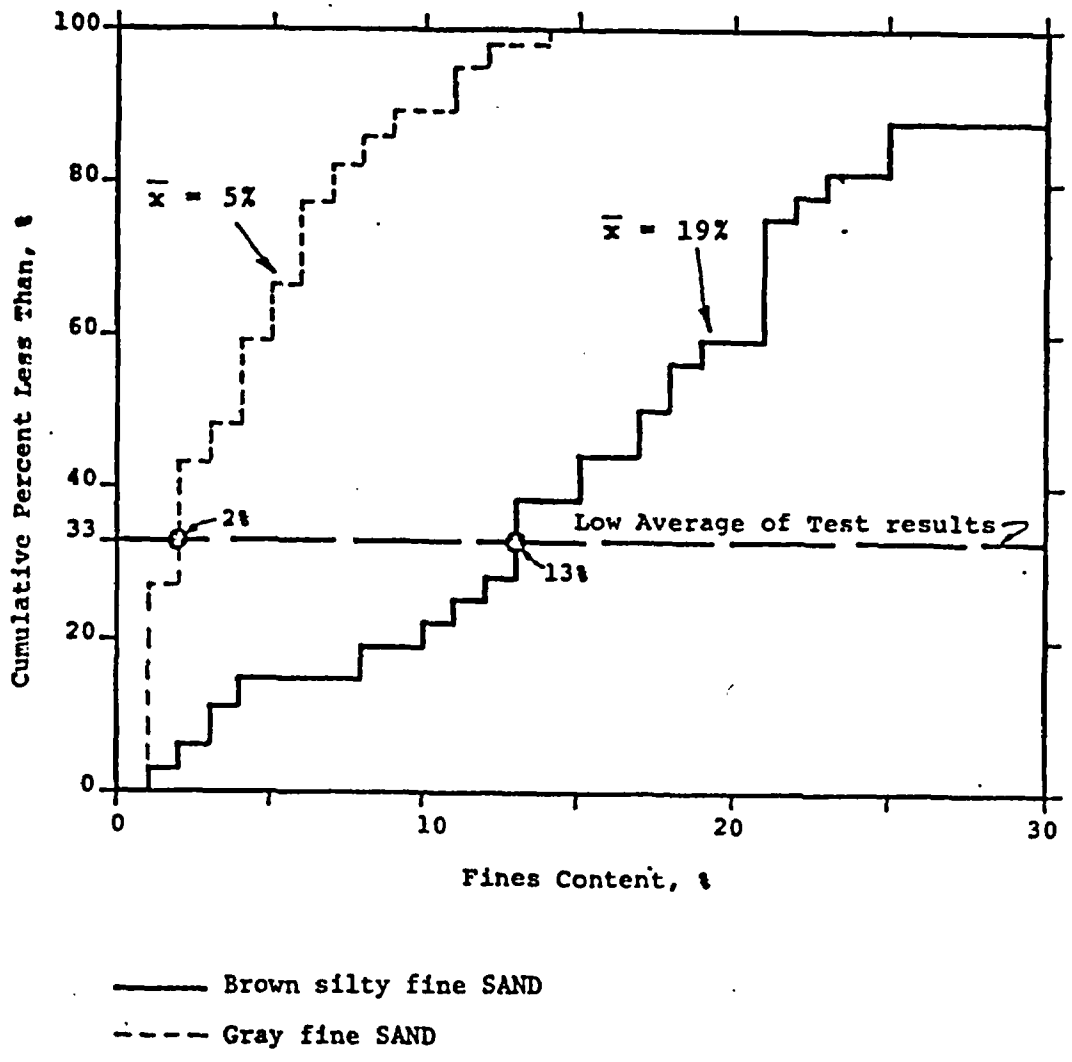

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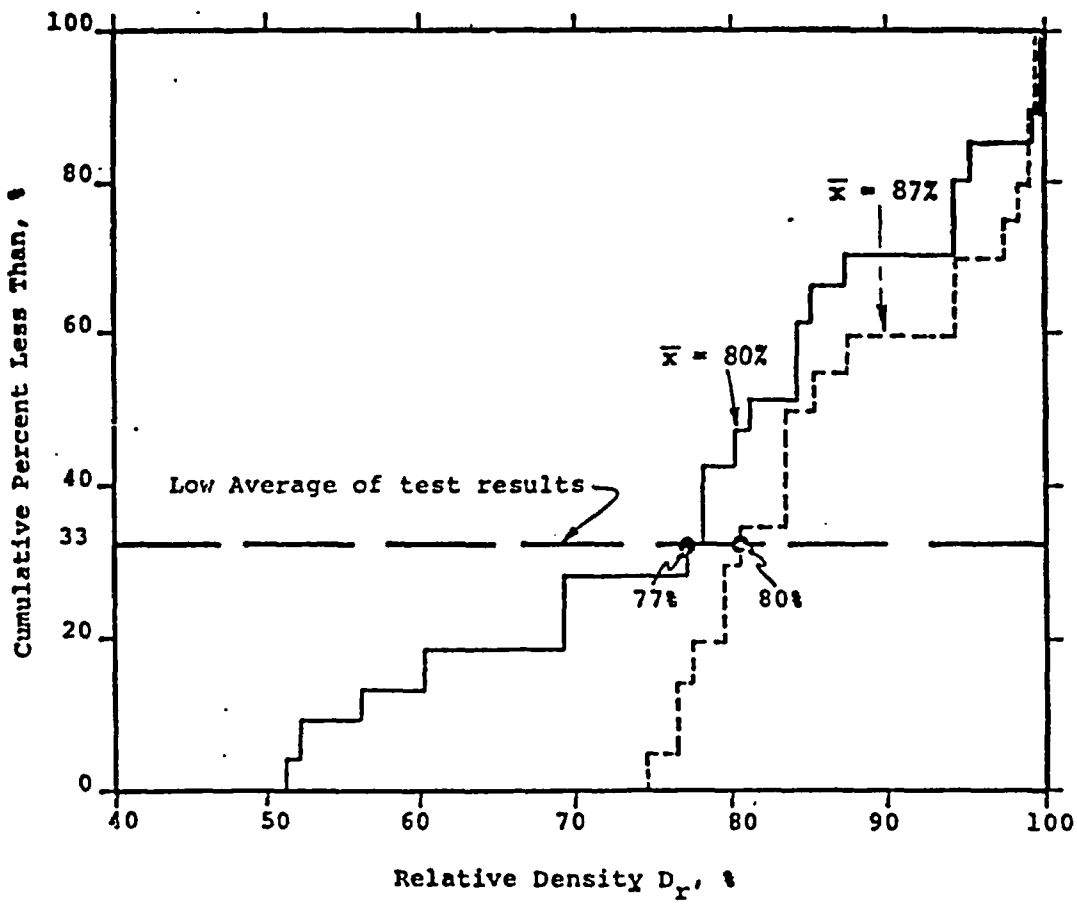
FIGURE 2.5-103

CUMULATIVE OCCURRENCE OF FINES CONTENT OF SAND DEPOSIT



——— Brown Silty Fine Sand between el 590 and el 585

------ Gray Fine Sand below el 585

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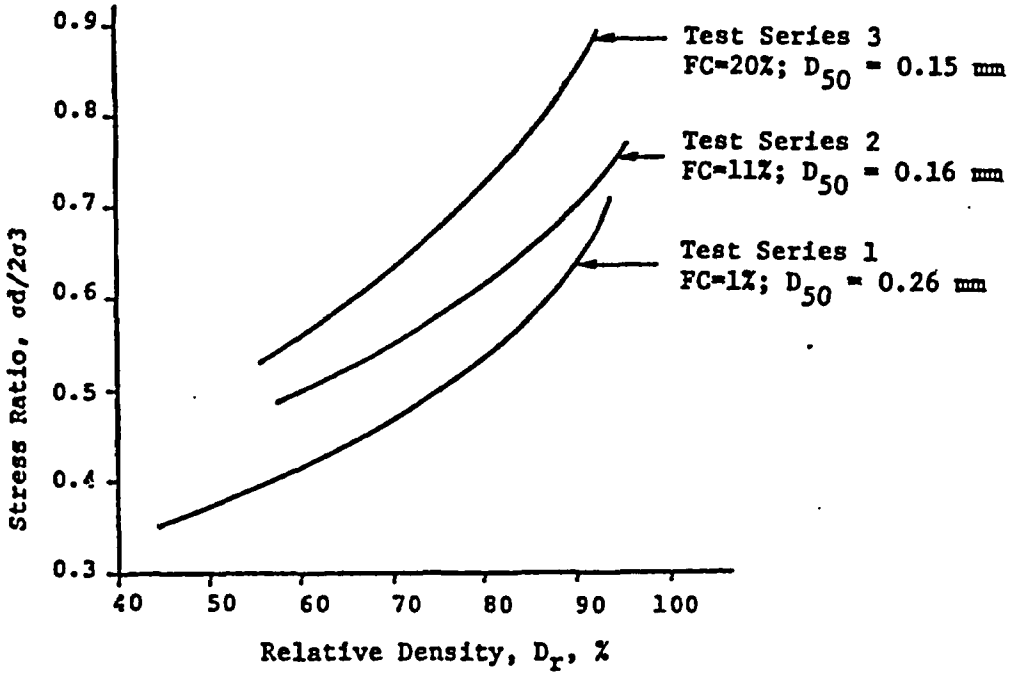
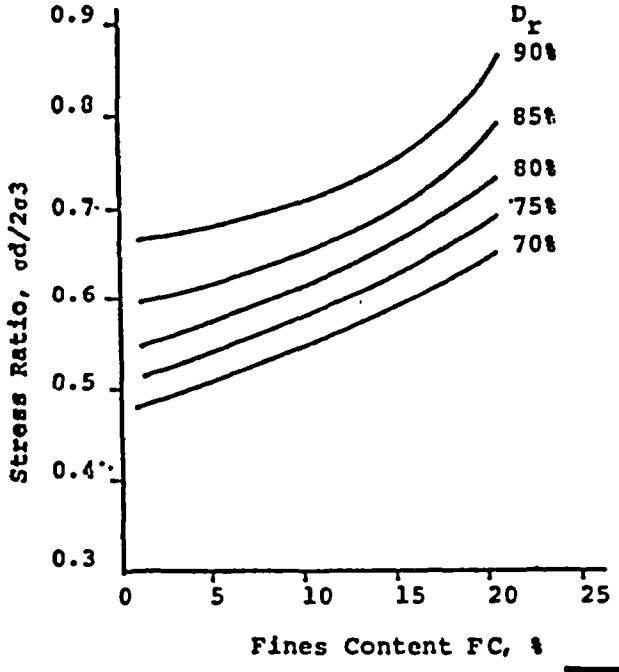
FIGURE 2.5-104

CUMULATIVE OCCURRENCE OF RELATIVE DENSITY OF SAND DEPOSIT



(a)



Note: The stress ratio shown is that required to cause 10% double amplitude strain in 10 cycles

(b)

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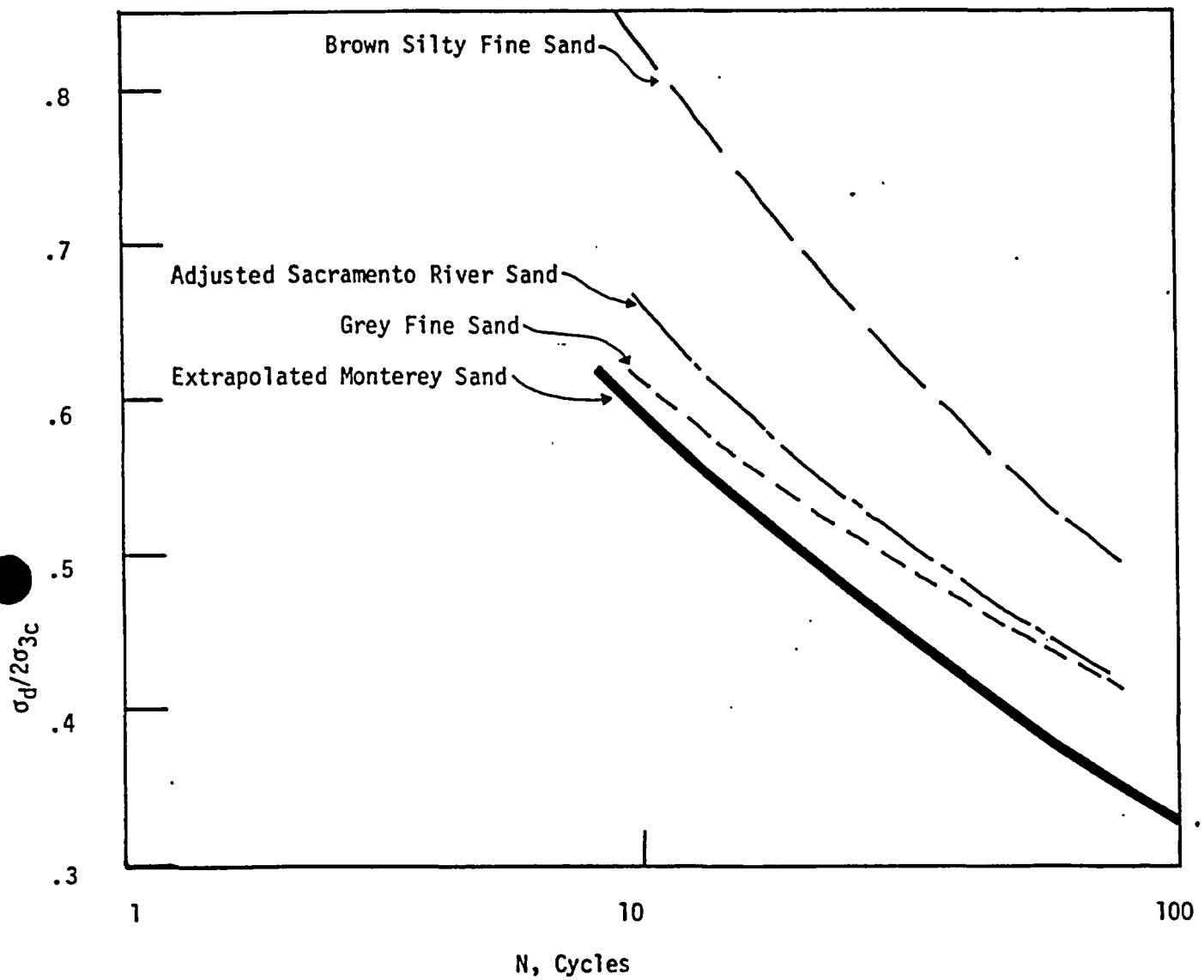
FIGURE 2.5-105

VARIATION OF CYCLIC SHEAR STRENGTH WITH FINES CONTENT AND RELATIVE DENSITY



NOTE: Comparison was made of cyclic strength of reconstituted test specimens formed using a "wet tamping" compaction procedure. Data were compared for ± 10% axial strain of test specimen compacted to D_r of 80%.

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FIGURE 2.5-106

COMPARISON OF CYCLIC STRENGTH OF SAND DEPOSITS WITH CYCLIC STRENGTH OF OTHER CLEAN FINE SANDS

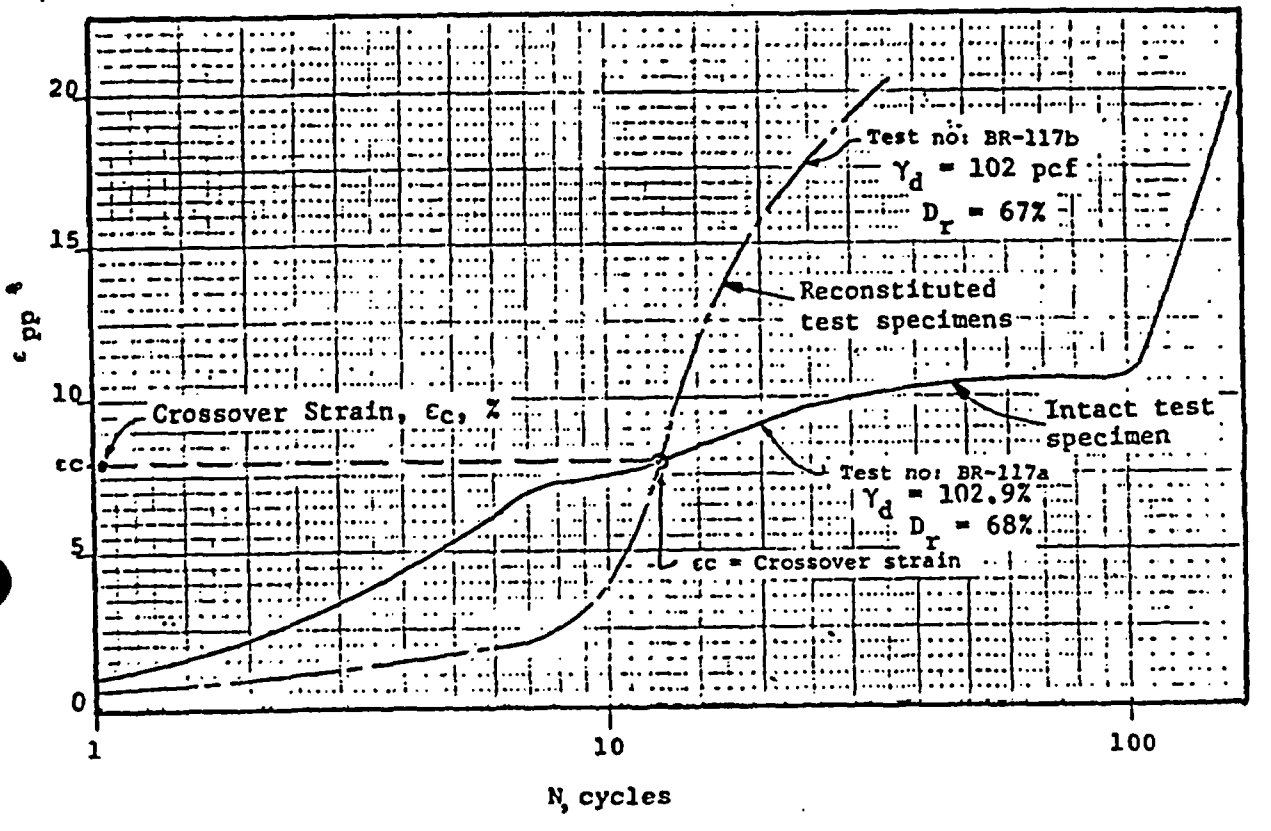

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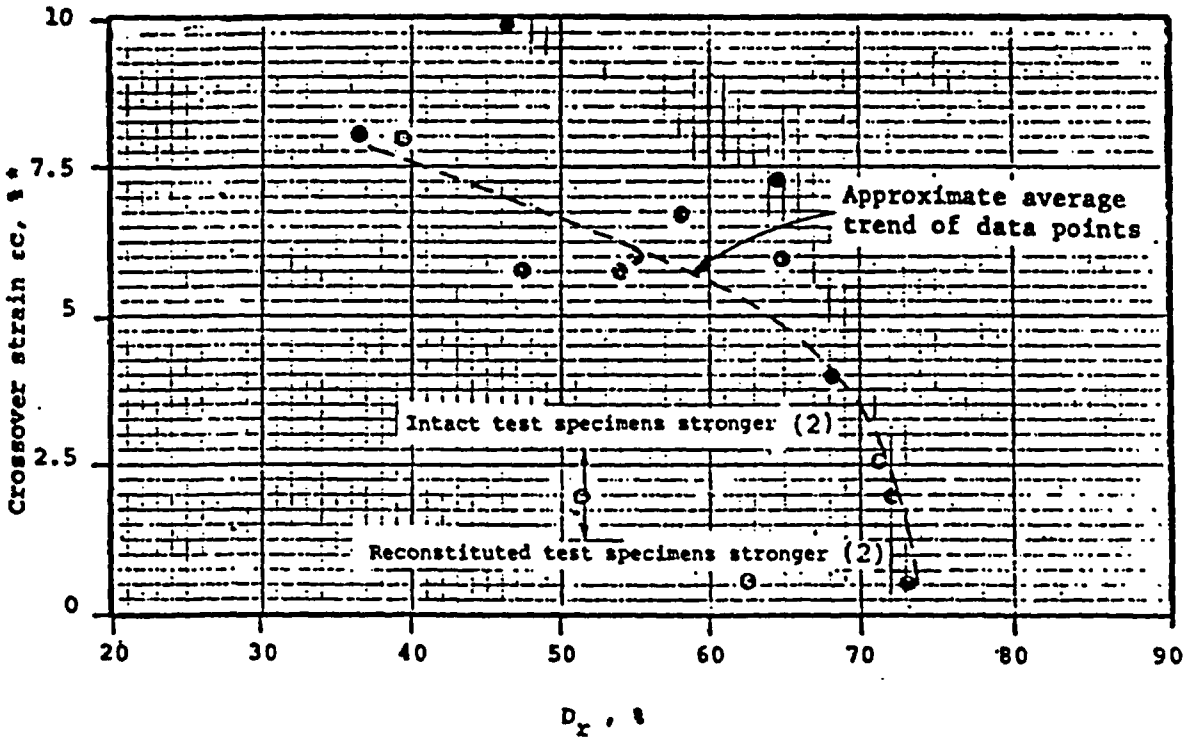
FIGURE 2.5-107

TYPICAL RESULTS OF CYCLIC TEST ON INTACT AND "COMPANION" RECONSTITUTED TEST SPECIMENS



Note: (1) εc expressed on 1/2 the peak-to-peak axial strain

(2) This relationship applies to each data point independently

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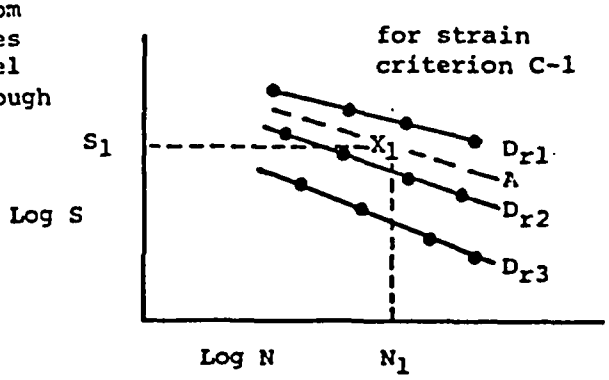
FIGURE 2.5-108

CROSSOVER STRAIN VS. RELATIVE DENSITY OF TEST SPECIMENS

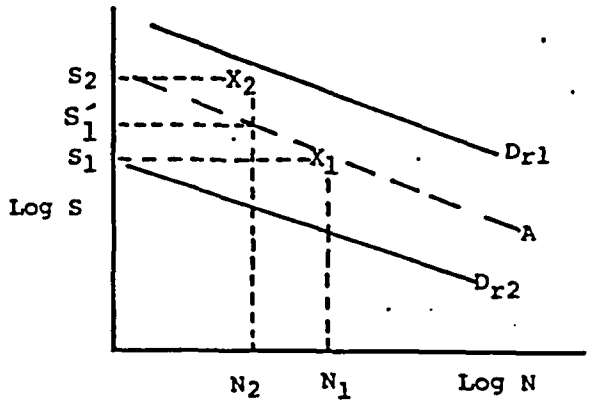
STEP 1 --Overplot remolded test results (X_1) from Phase 2 study on log-log strength curves from the Phase 1 study and draw parallel strength curve (A) (straight line) through the point (X_1)

$$\left(S = \frac{\sigma d}{2\sigma_{3c}} \right)$$

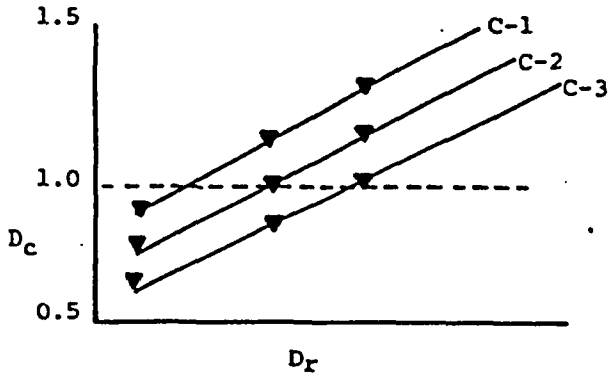


STEP 2 --Plot companion intact strength result (X_2) on the same graph

STEP 3 --Determine the equivalent value of strength (S_1') for the (X_1) specimen at the same number of cycles (N_2) of the X_2 specimen as shown



STEP 4 --Calculate the value of the ratio of strength ($S_2/S_1'=D_c$) and plot it as a function of the measured relative density. Repeat for other companion specimens and other criteria to determine liquefaction.



NOTES:

1. Typically C-1 = strength to cause ±10% strain
   C-2 = strength to cuase ±5% strain
   C-3 = strength to cause initial liquefaction

2. If D_r for the companion specimens are different a revised value of X_2 can be determined by interpolation between D_{r1} and D_{r2} curves in Step 2.

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FIGURE 2.5-109

SCHEMATIC DIAGRAM TO EVALUATE THE RATIO BETWEEN CYCLIC STRENGTH OF INTACT SAND DEPOSITS AND DETERMINED ON RECONSTITUTED TEST SPECIMENS (D_C)

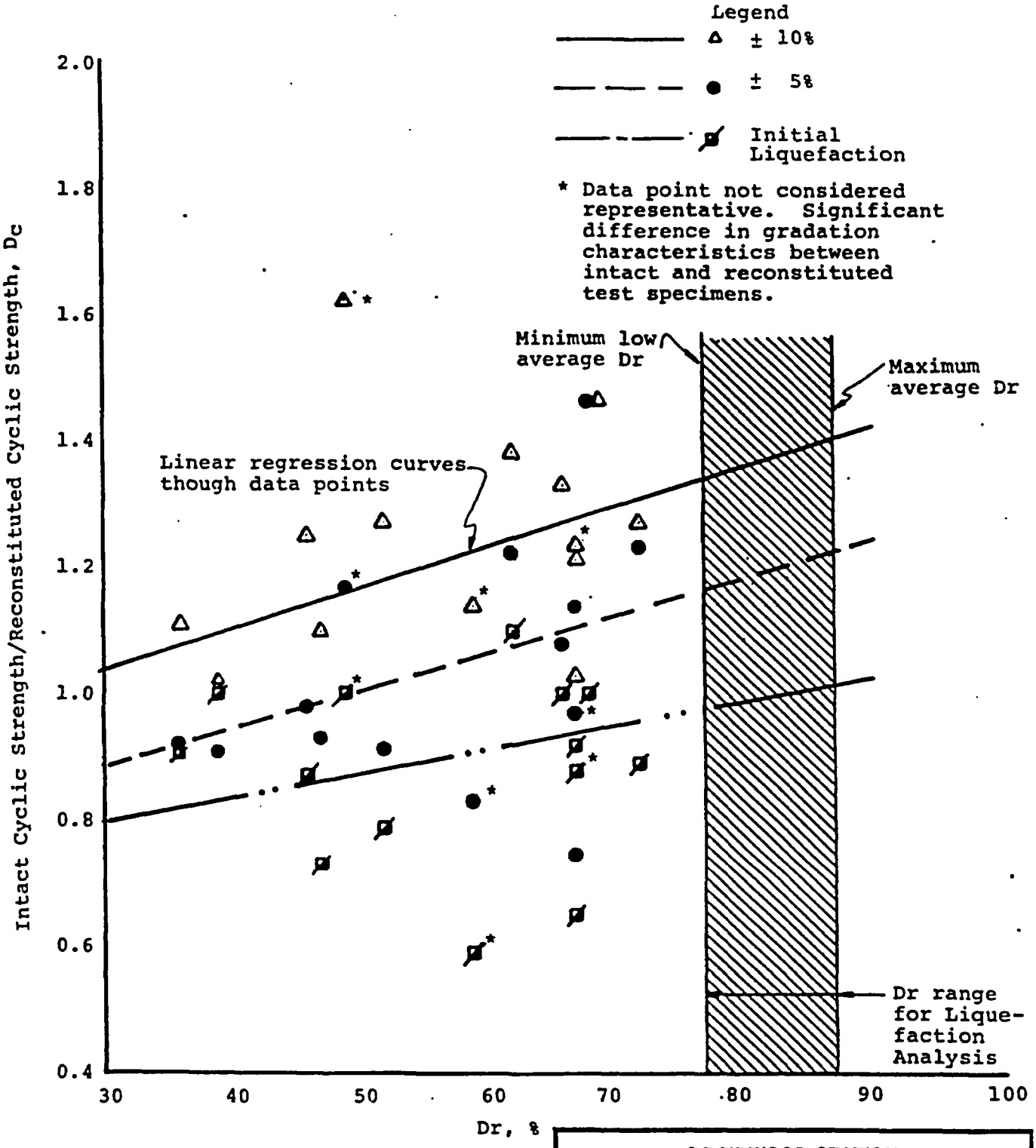

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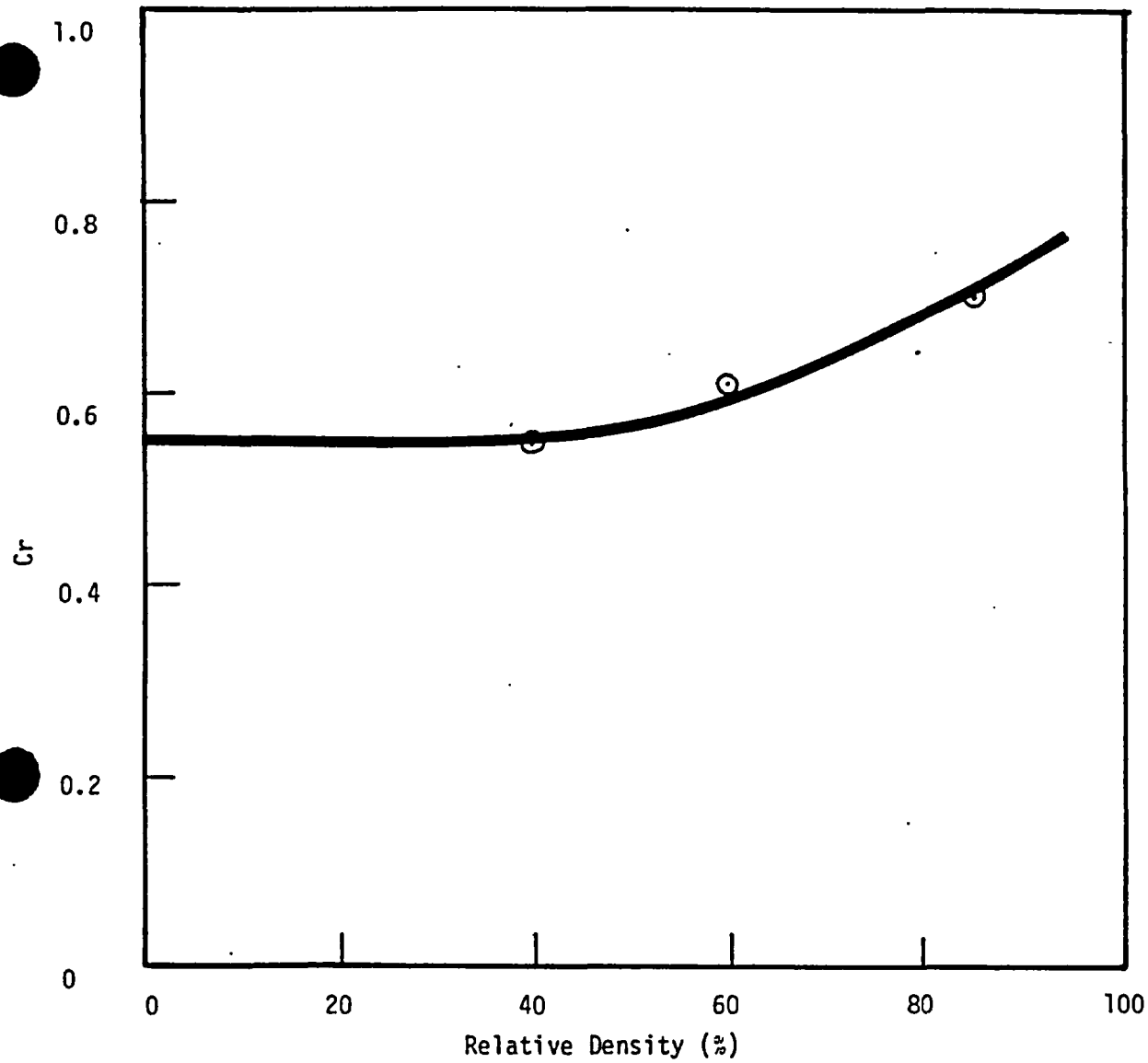
FIGURE 2.5-110

COMPARISON OF CYCLIC STRENGTH TESTS ON INTACT AND "COMPANION" RECONSTITUTED TEST SPECIMENS—BRAIDWOOD ESSENTIAL COOLING POND LIQUEFACTION POTENTIAL ANALYSIS



After Seed and Peacock (105)

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FIGURE 2.5-111

RELATIONSHIP BETWEEN C_R AND RELATIVE DENSITY

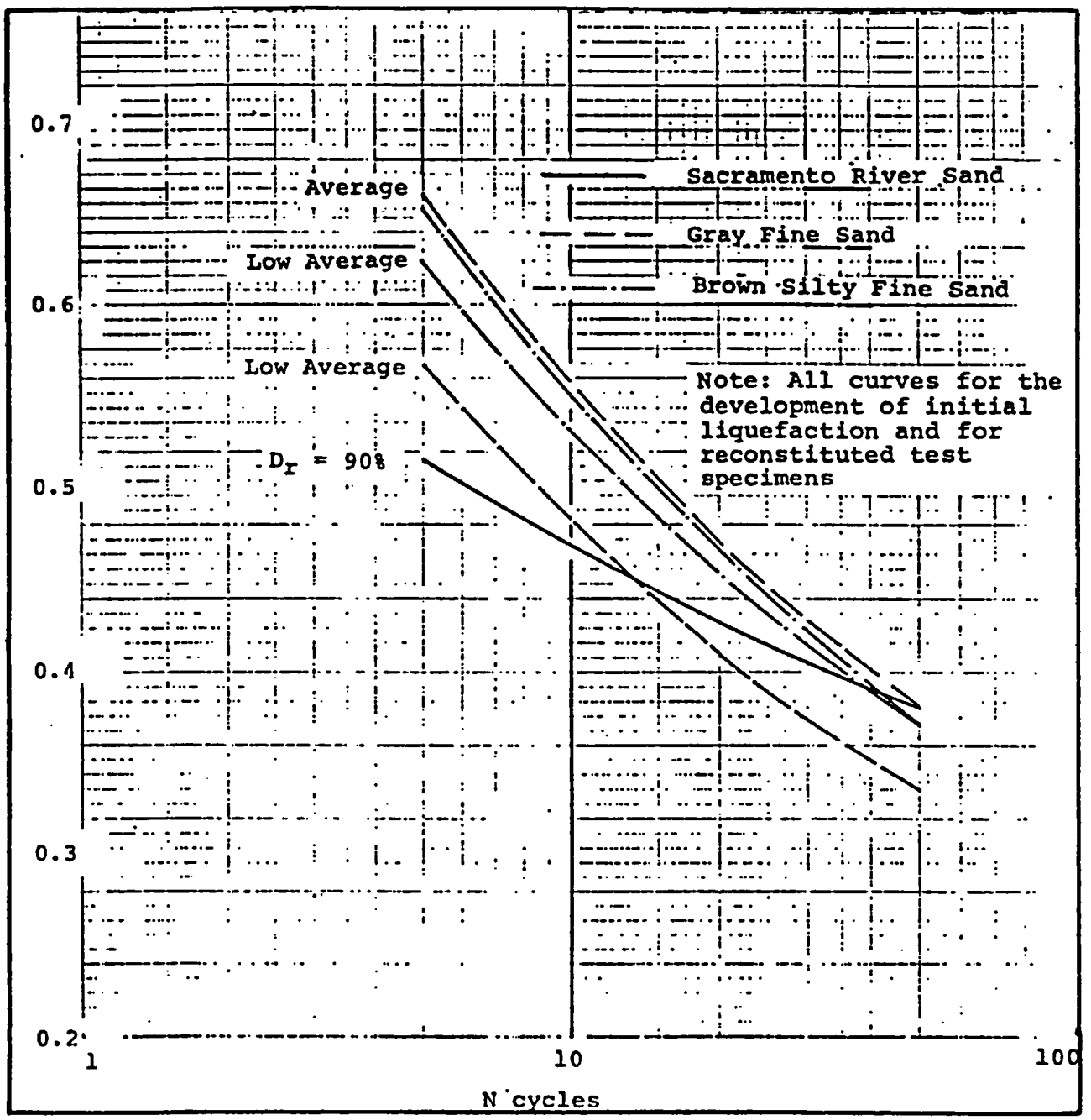

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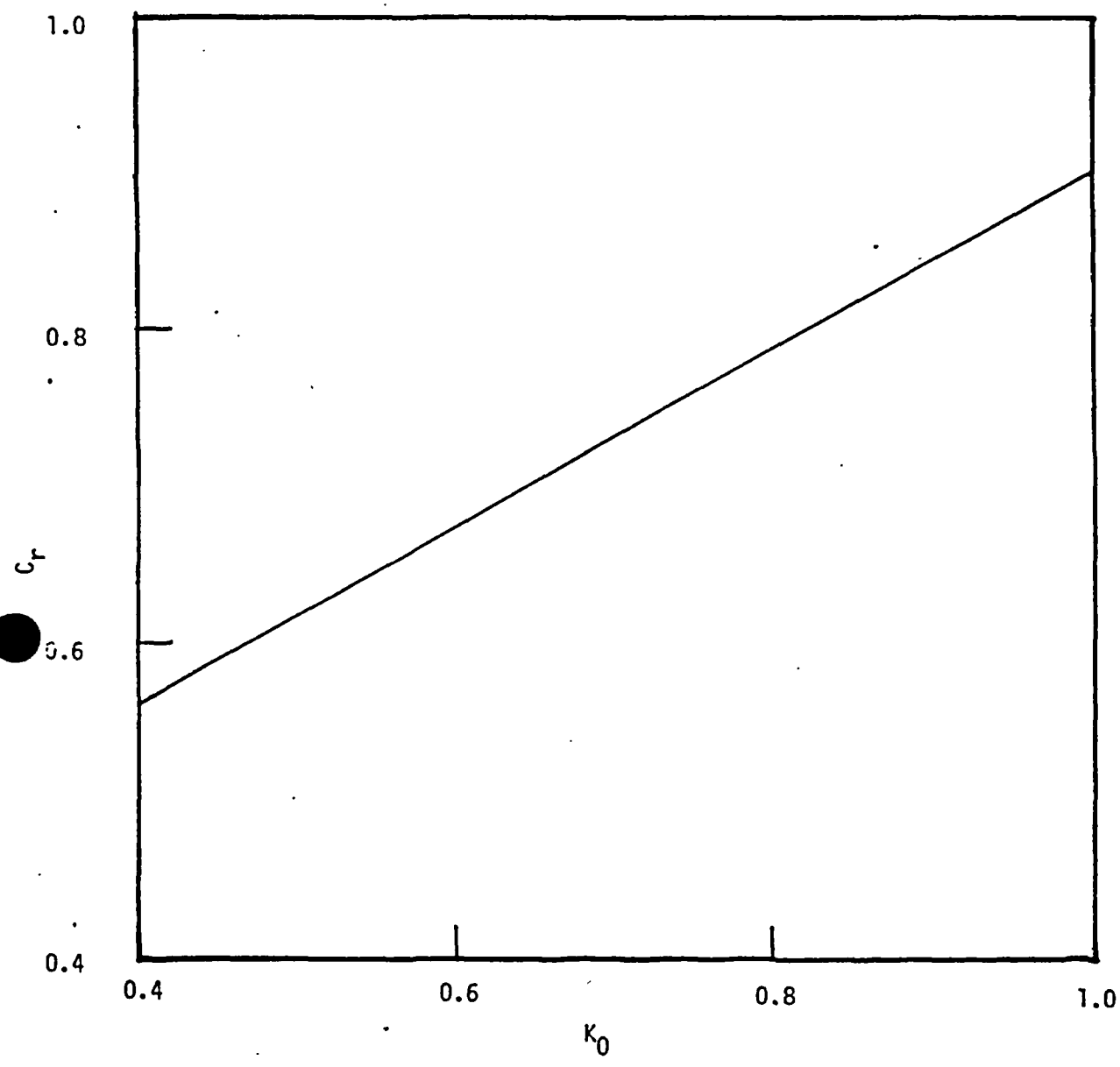
FIGURE 2.5-112

DETERMINATION OF EQUIVALENT D_r TO SELECT C_r VALUE



(After Seed 1975 - personal communication)

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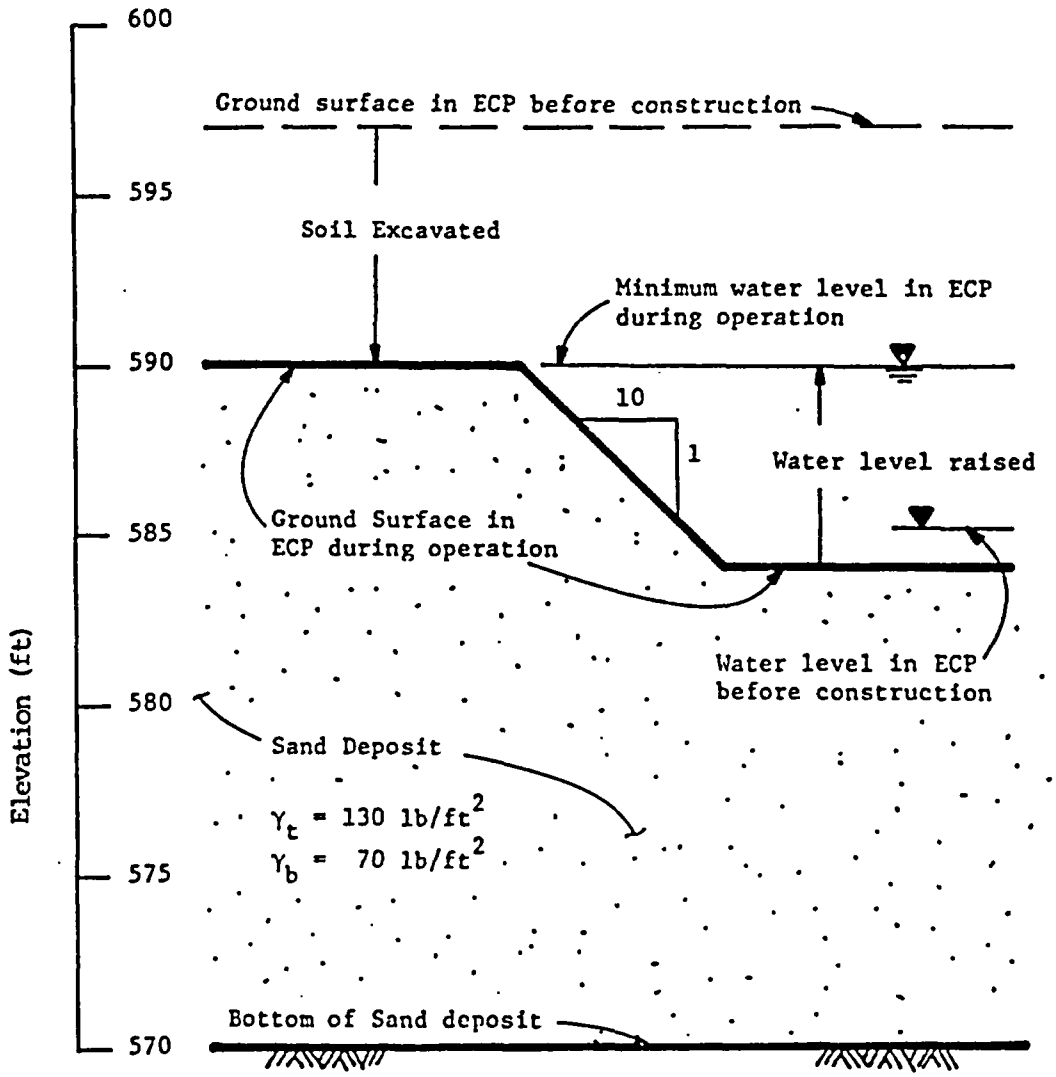
FIGURE 2.5-113

PROPOSED RELATIONSHIP BETWEEN C_r AND PRINCIPAL STRESS RATIO (K_O)



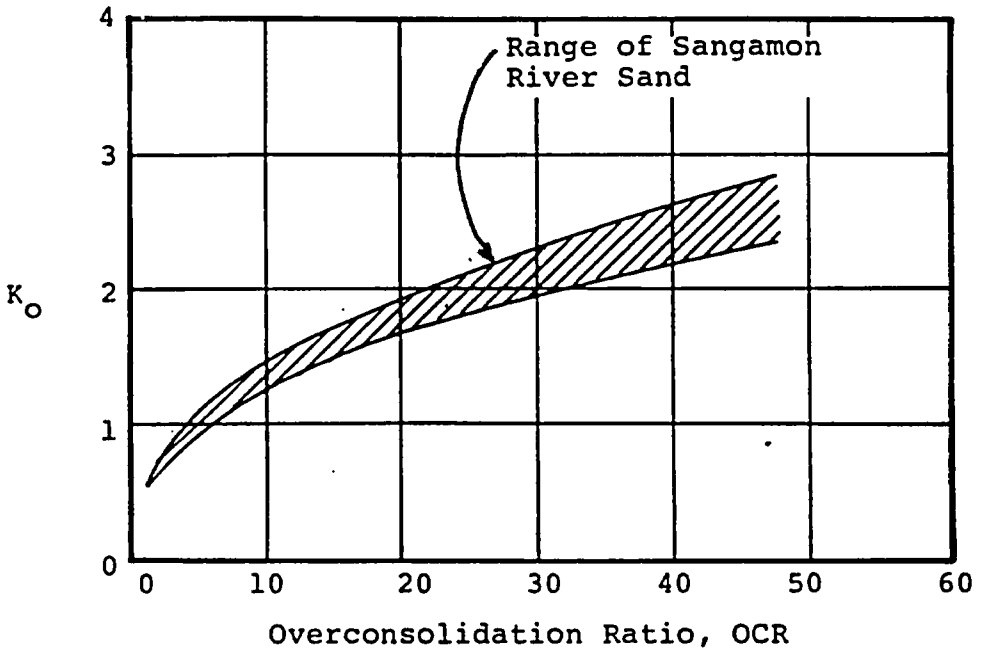
	BEFORE CONSTRUCTION			DURING OPERATION		
el ft	$\bar{\sigma}_b$ lb/ft^2	K_o	$\bar{\sigma}_h$ lb/ft^2	$\bar{\sigma}_a$ lb/ft^2	OCR*	K_o
585[1]	1560	0.40	620	350	4.5	0.88
580	1910	0.40	764	700	2.7	0.70
575	2260	0.40	900	1050	2.1	0.63
570	2610	0.40	1040	1400	1.8	0.55

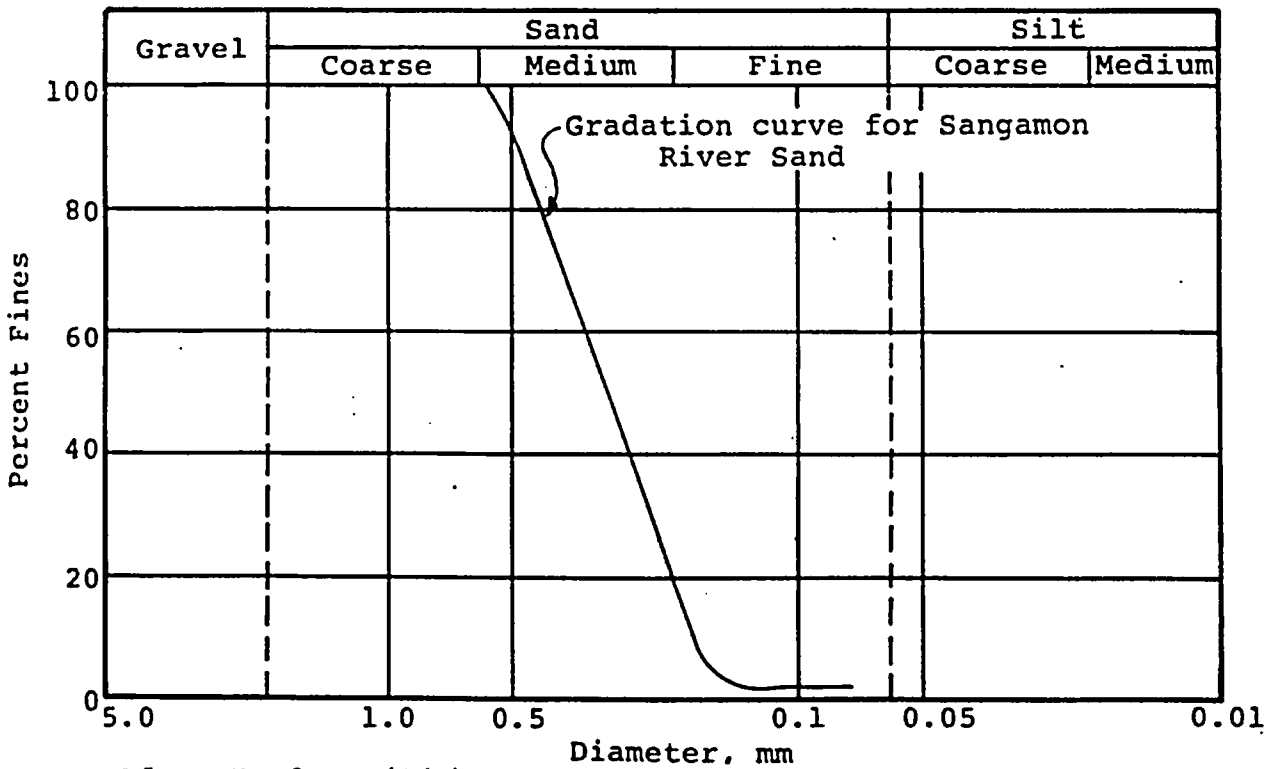
*OCR = Overconsolidation ratio = $\frac{\bar{\sigma}_b}{\bar{\sigma}_a} = \frac{\text{Effective Overburden Pressure Before Construction}}{\text{Effective Overburden Pressure After Construction}}$

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-114

MINIMUM PRINCIPAL STRESS RATIO WITHIN SAND DEPOSIT DURING OPERATION





- After Hendron (54A)

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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-115

RELATIONSHIP BETWEEN K_o AND OVERCONSOLIDATION RATIO

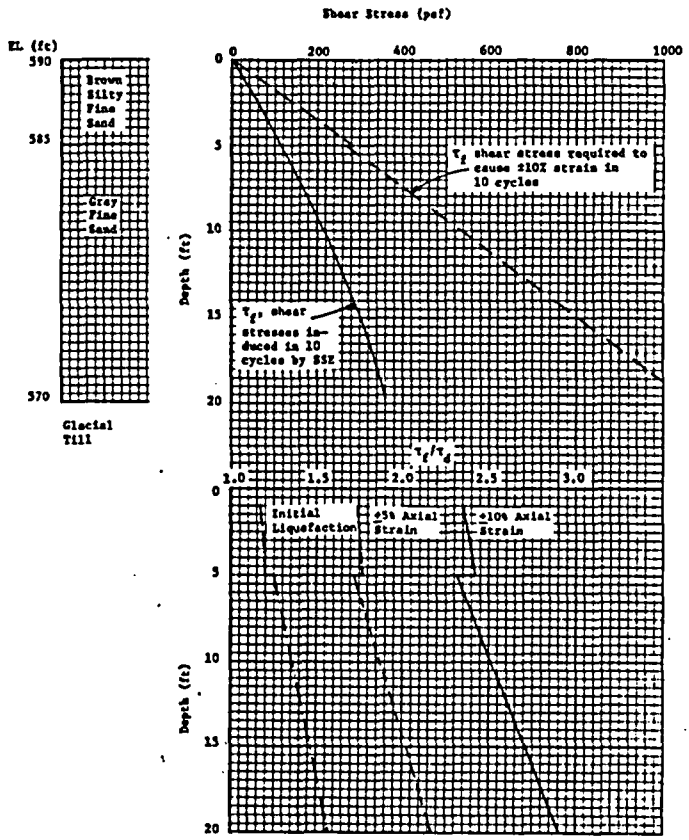

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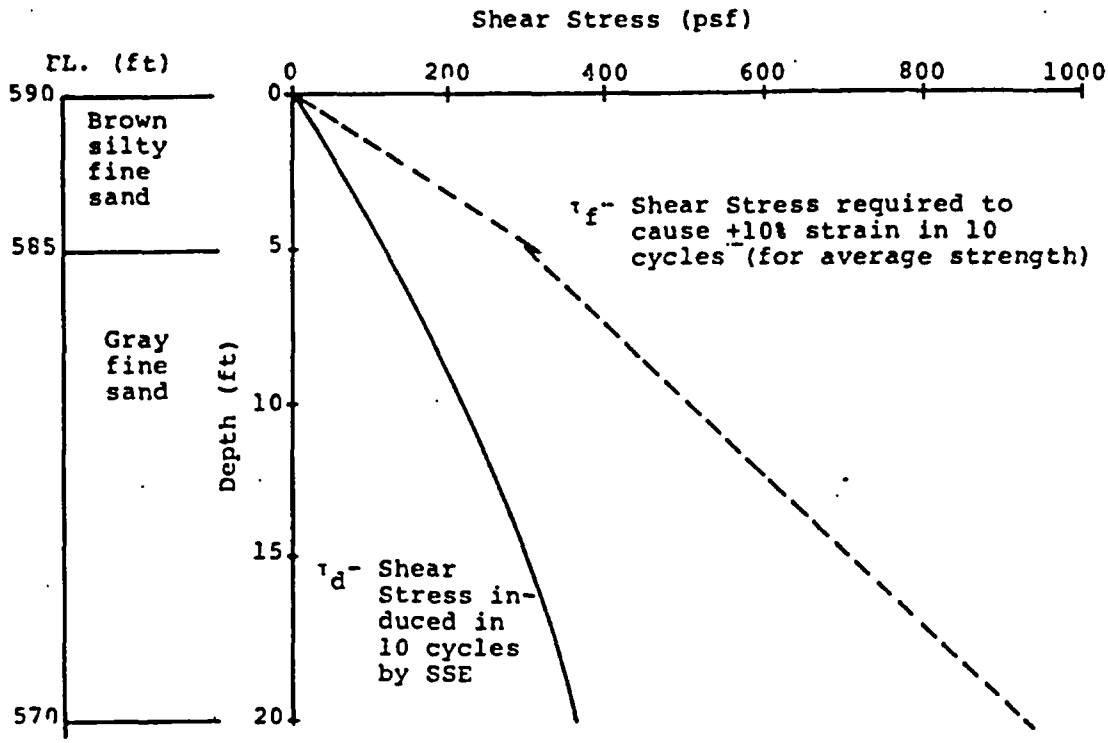
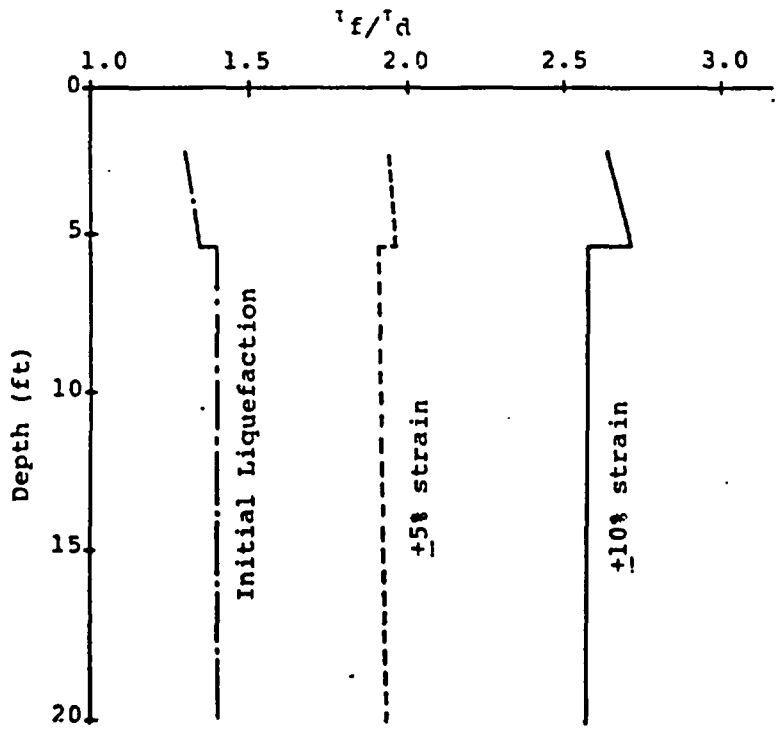
FIGURE 2.5-116

EVALUATION OF LIQUEFACTION POTENTIAL
C_r BASED ON D_r

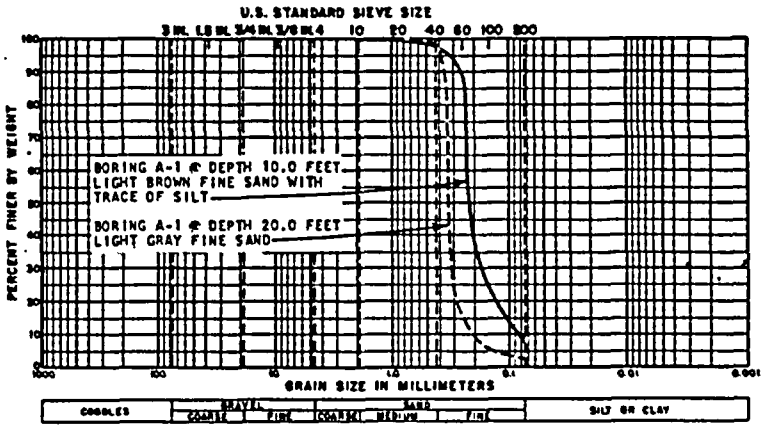


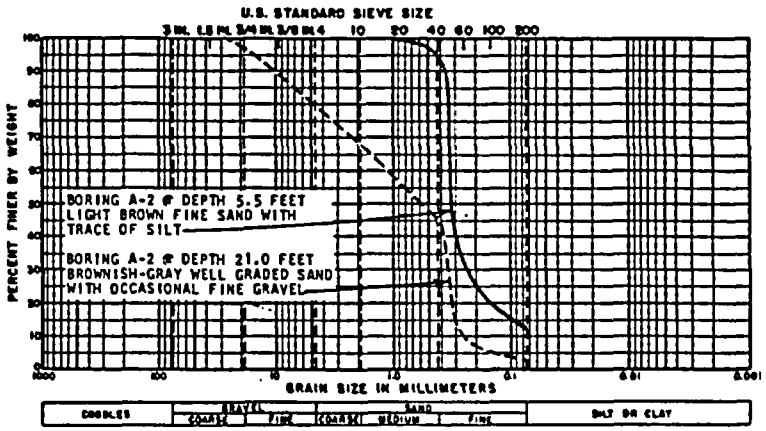


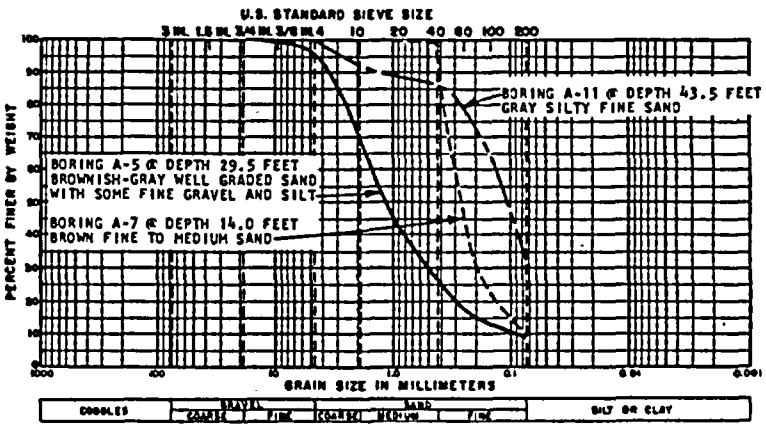
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-117

EVALUATION OF LIQUEFACTION POTENTIAL
C_r BASED ON K_o



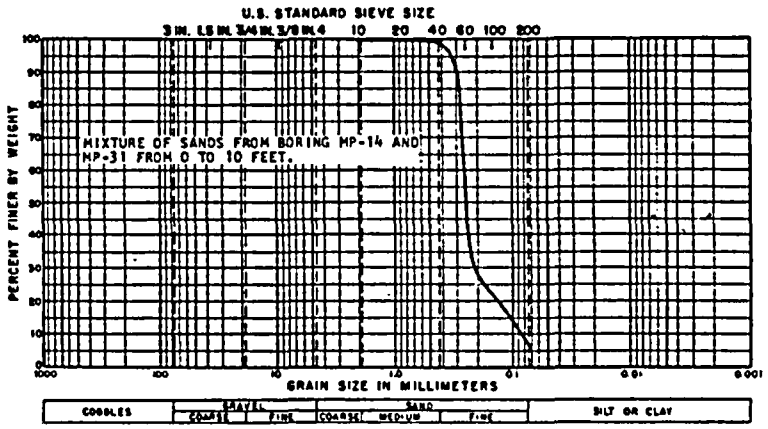


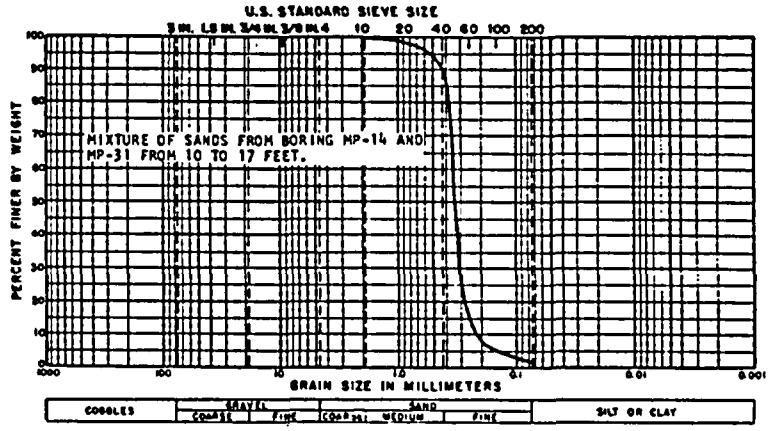


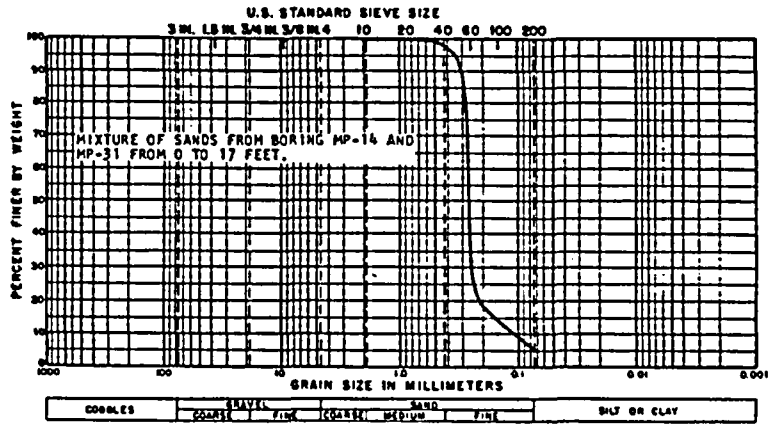
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-118

PARTICLE SIZE ANALYSIS
(SHEET 1 OF 11)



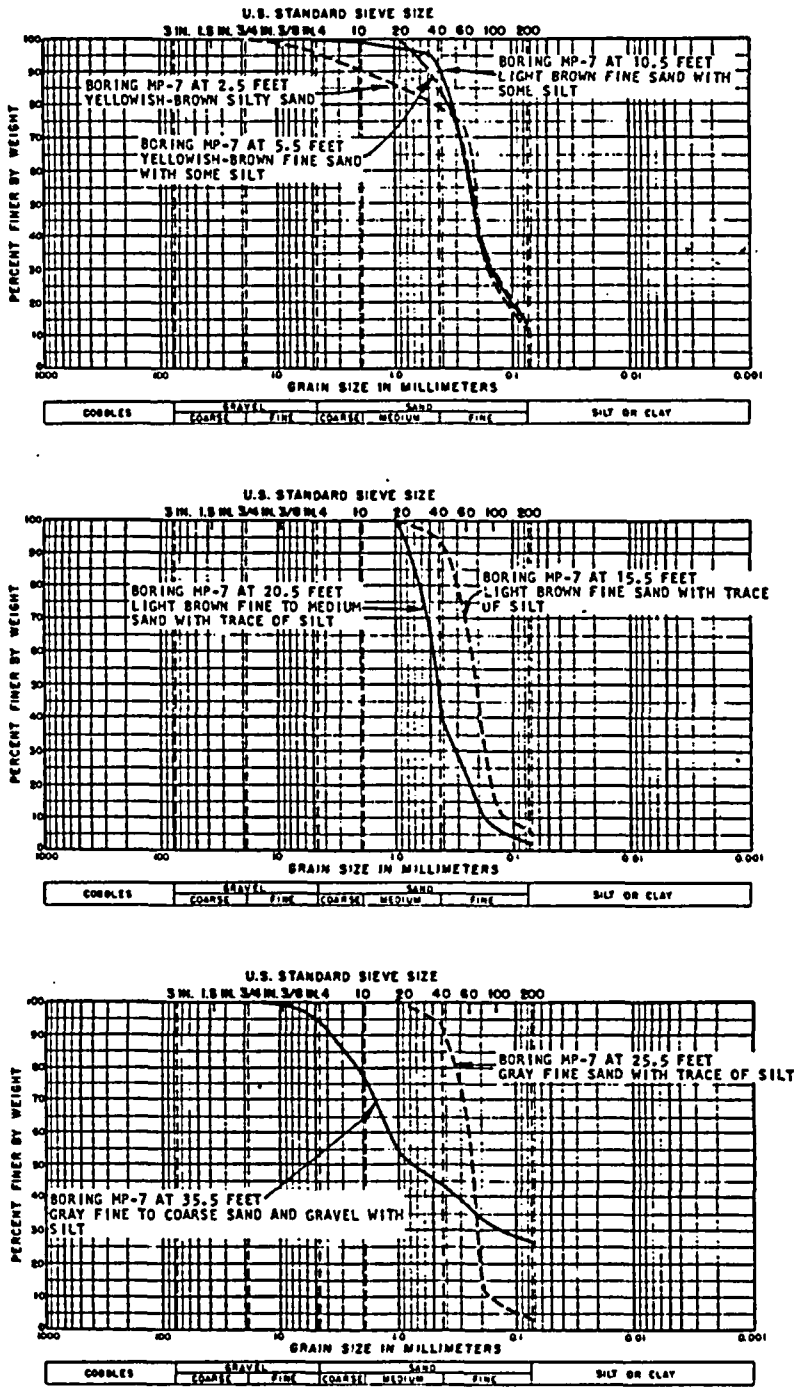




BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-118

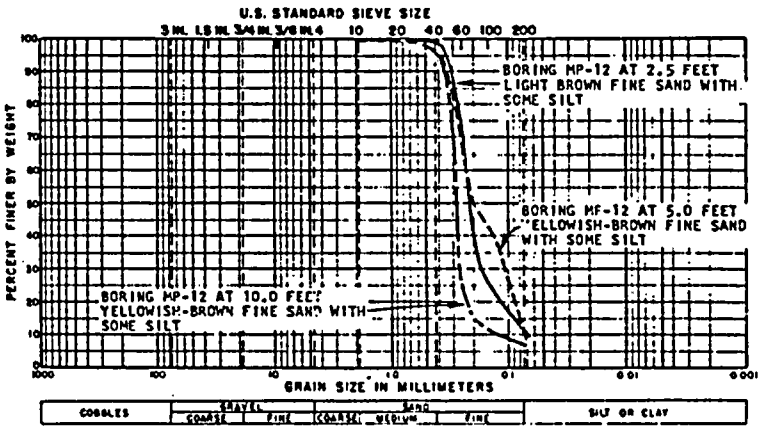
PARTICLE SIZE ANALYSIS
(SHEET 2 OF 11)

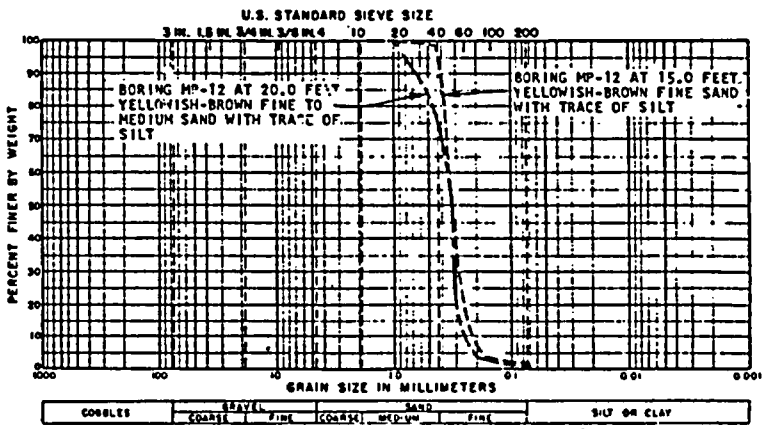


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-118

PARTICLE SIZE ANALYSIS
(SHEET 3 OF 11)

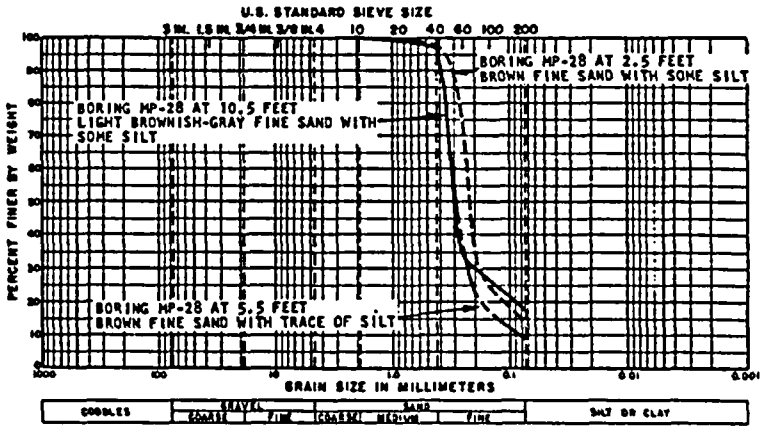


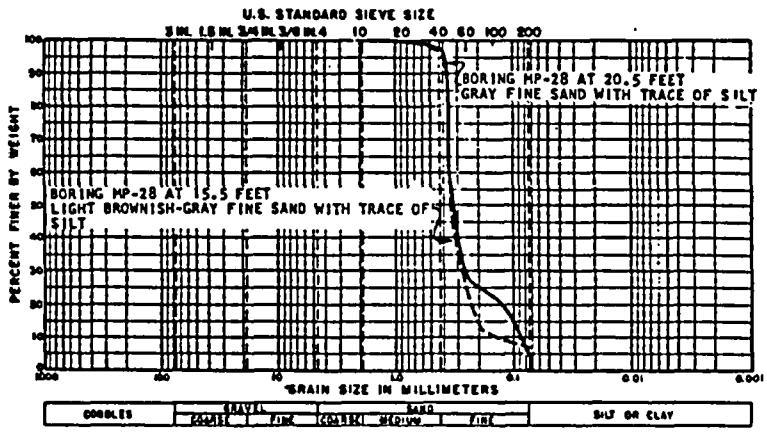


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-118

PARTICLE SIZE ANALYSIS
(SHEET 4 OF 11)





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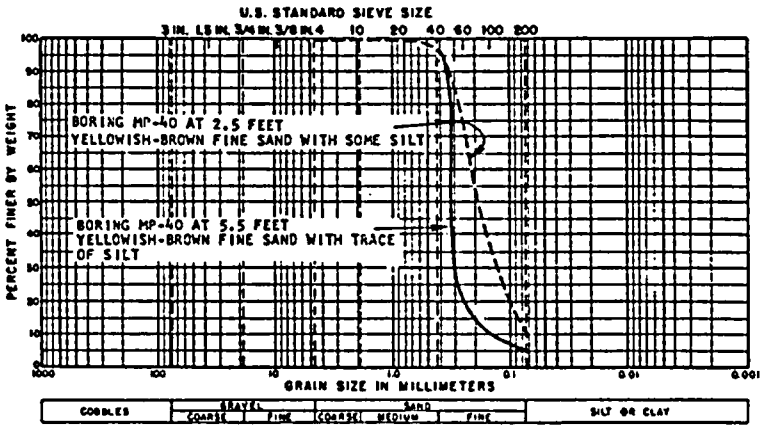
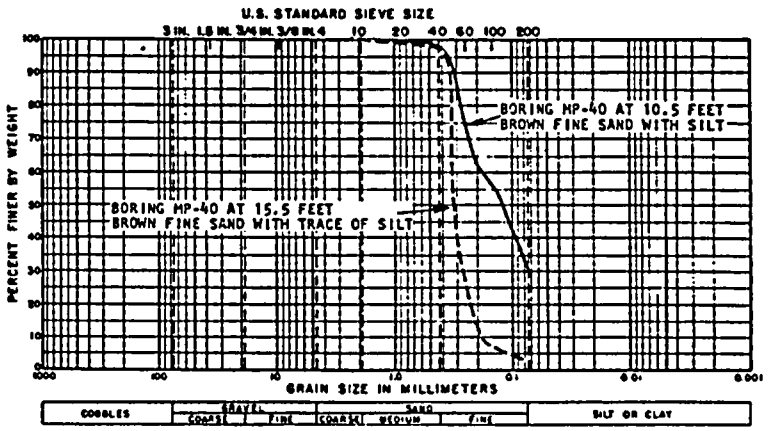
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-118

PARTICLE SIZE ANALYSIS
(SHEET 5 OF 11)





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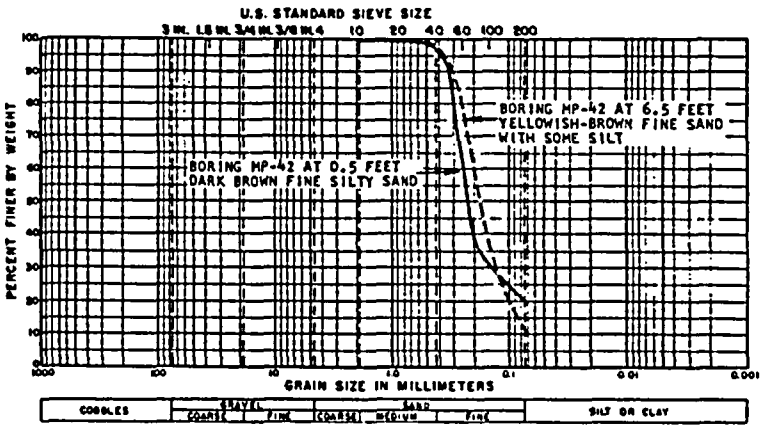
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-118

PARTICLE SIZE ANALYSIS
(SHEET 6 OF 11)



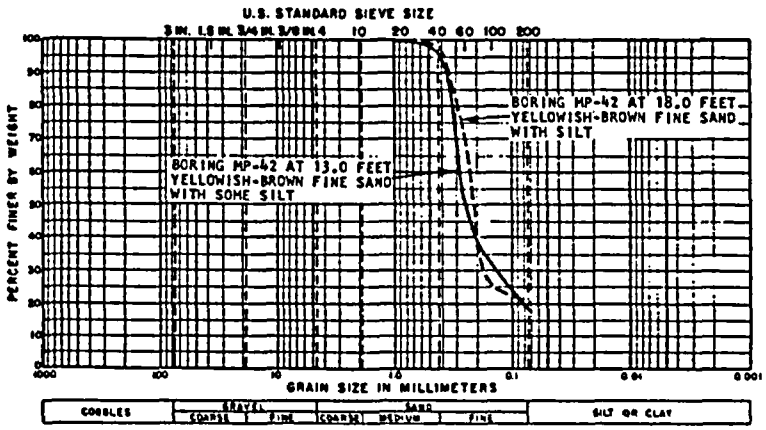


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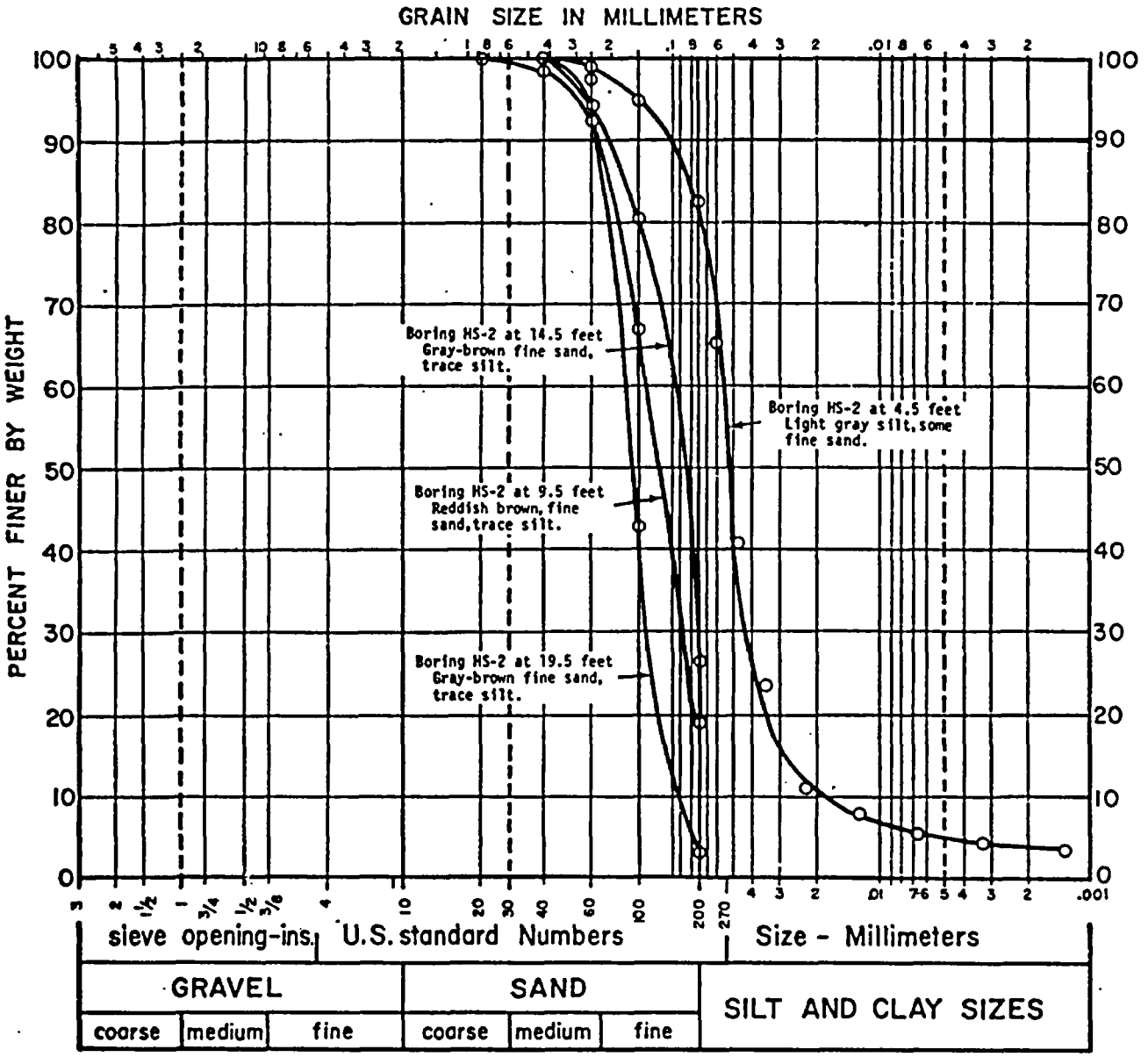
FIGURE 2.5-118

PARTICLE SIZE ANALYSIS
(SHEET 7 OF 11)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-118

PARTICLE SIZE ANALYSIS
(SHEET 8 OF 11)

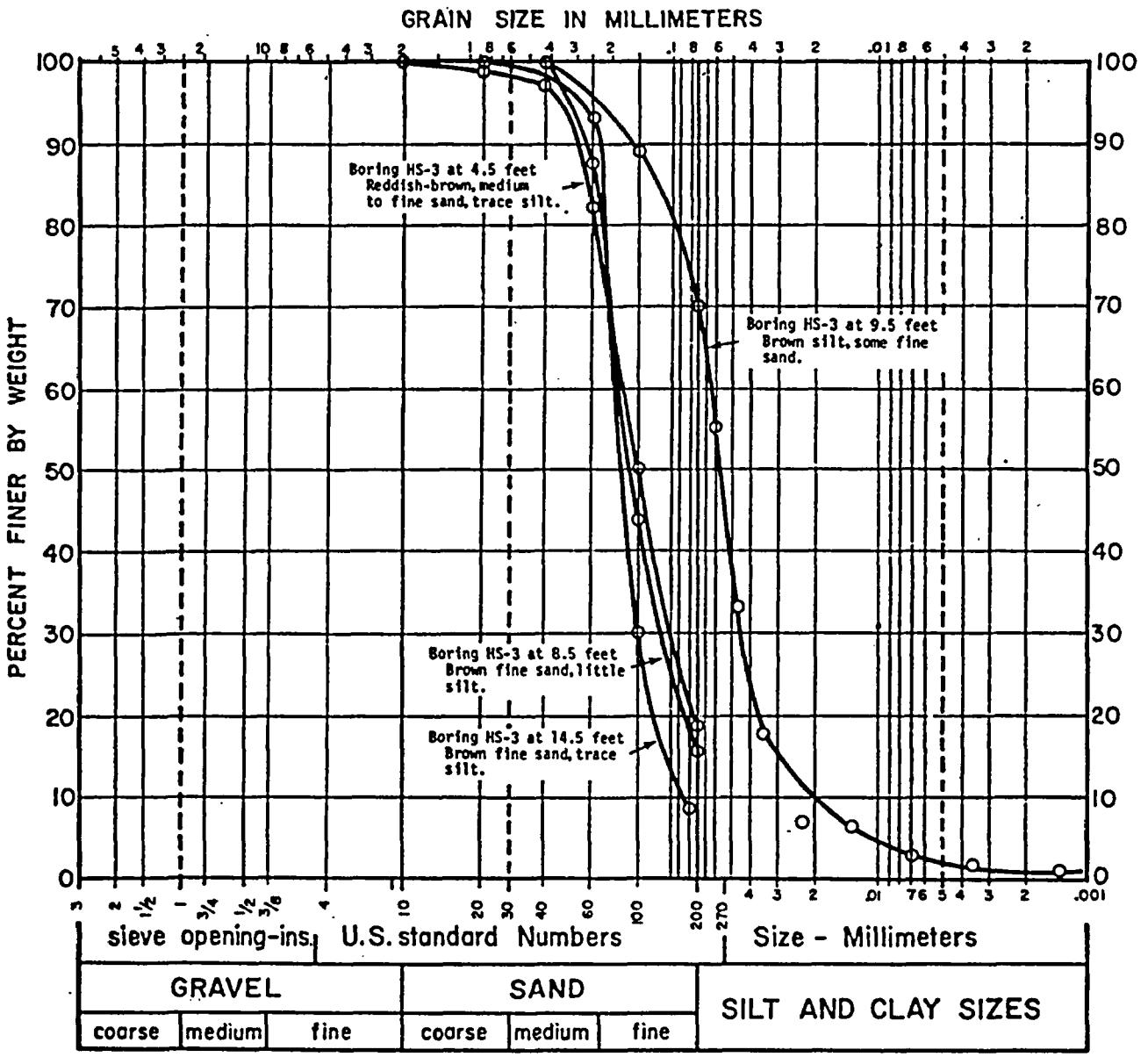


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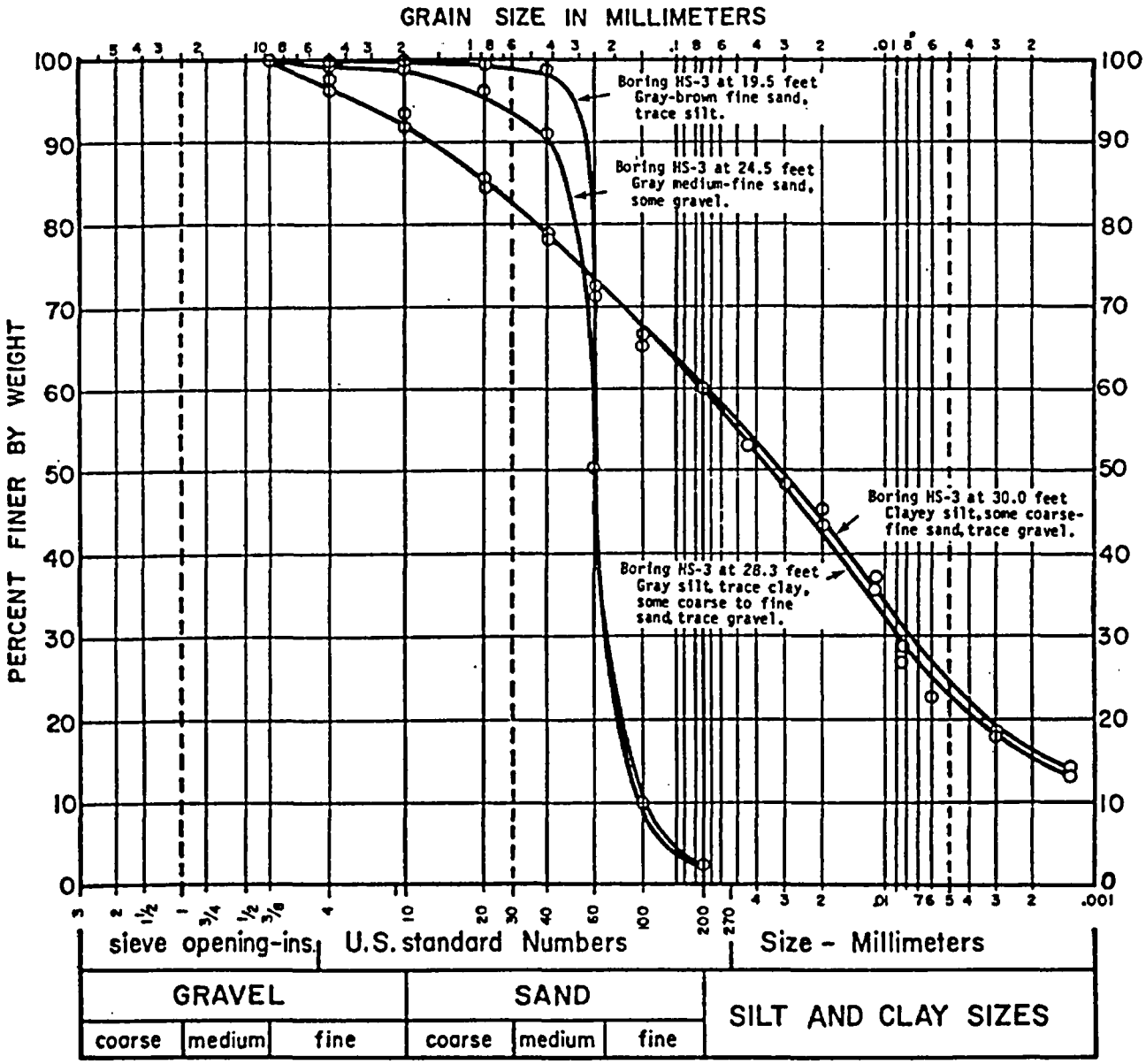
FIGURE 2.5-118

PARTICLE SIZE ANALYSIS
(SHEET 9 OF 11)



BRAIDWOOD STATION
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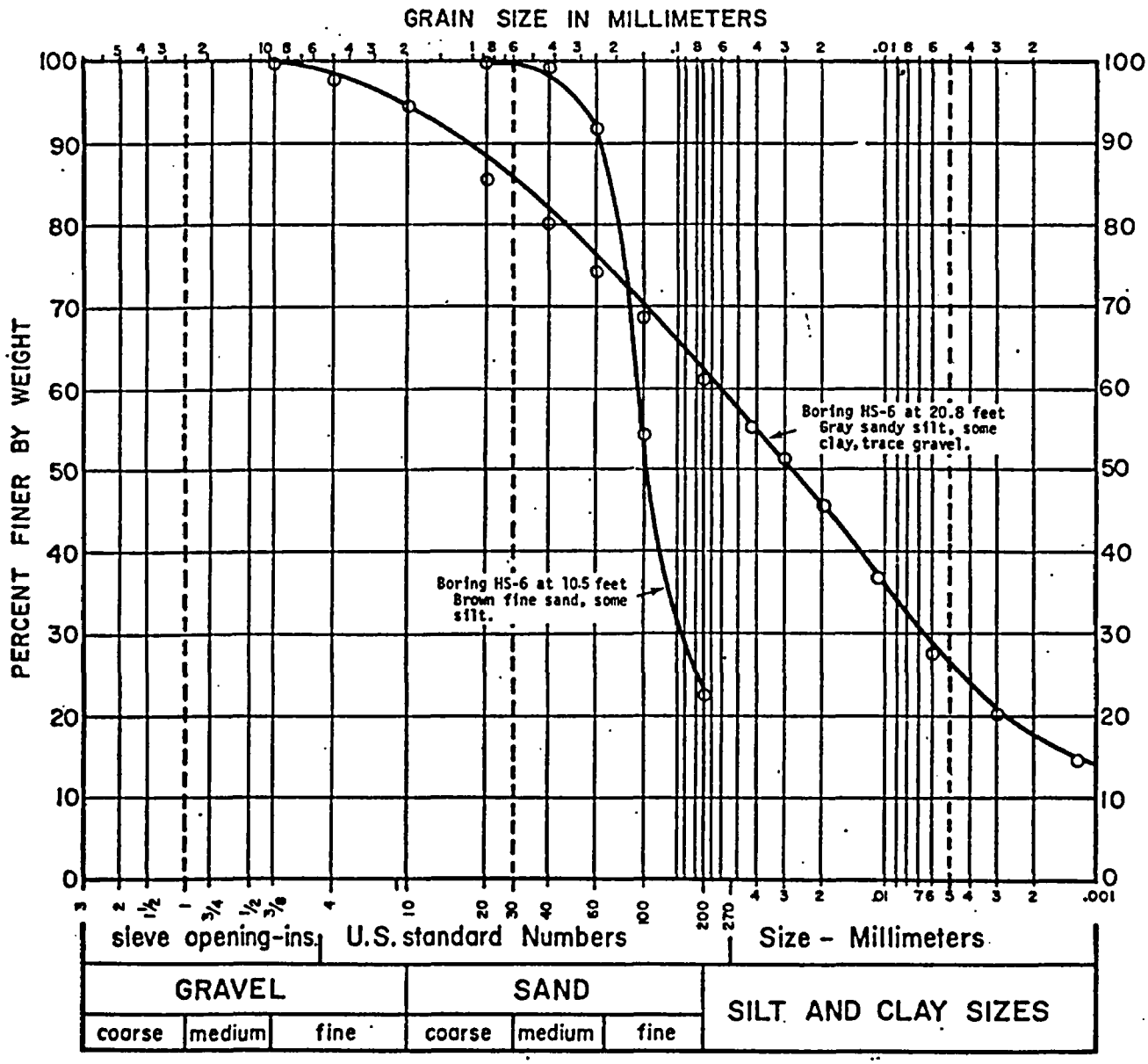
FIGURE 2.5-118

PARTICLE SIZE ANALYSIS
(SHEET 10 OF 11)



BRAIDWOOD STATION
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FIGURE 2.5-118

PARTICLE SIZE ANALYSIS
(SHEET 11 OF 11)

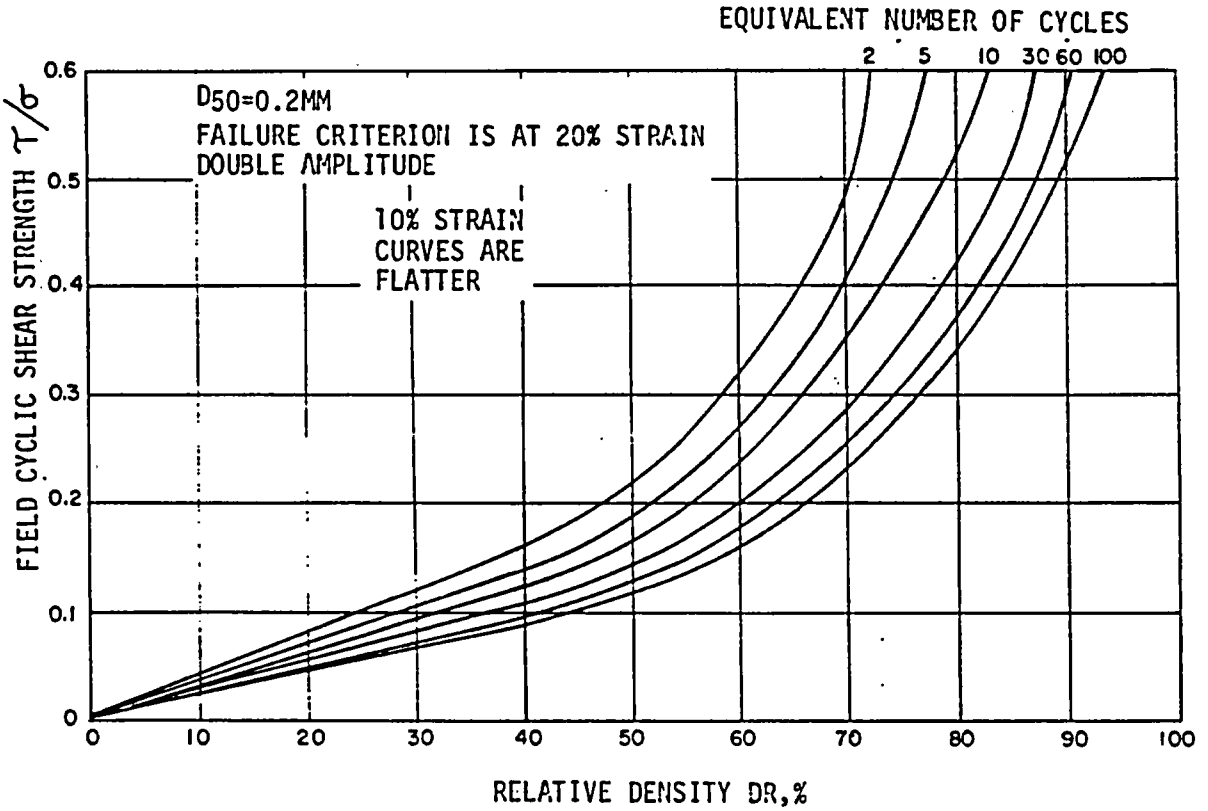

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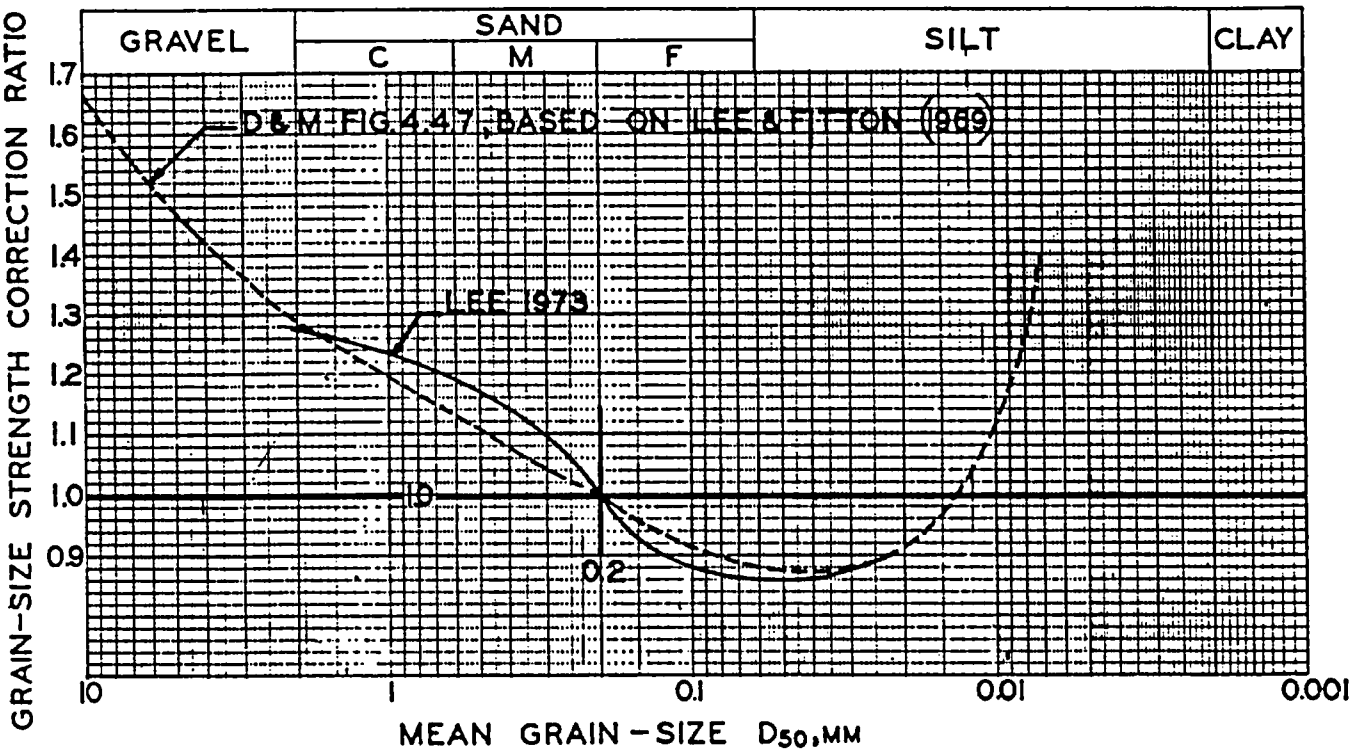
FIGURE 2.5-119

FIELD CYCLIC SHEAR STRENGTH VS. RELATIVE DENSITY

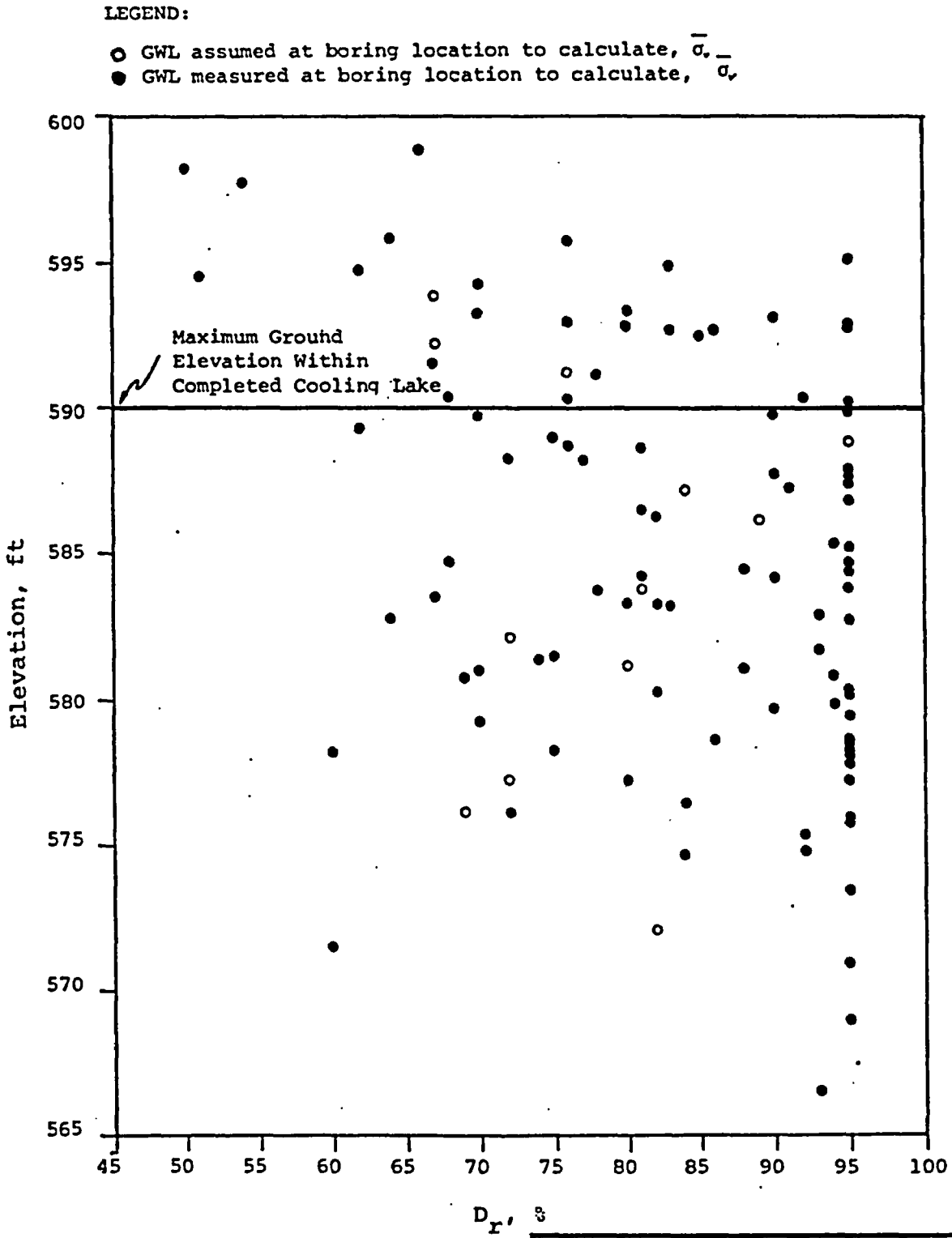


CYCLIC SHEAR STRENGTHS RELATIVE TO MEAN GRAIN SIZE

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-120

PLOT OF CYCLIC SHEAR STRENGTH CORRECTION RATIO VS. GRAIN SIZE

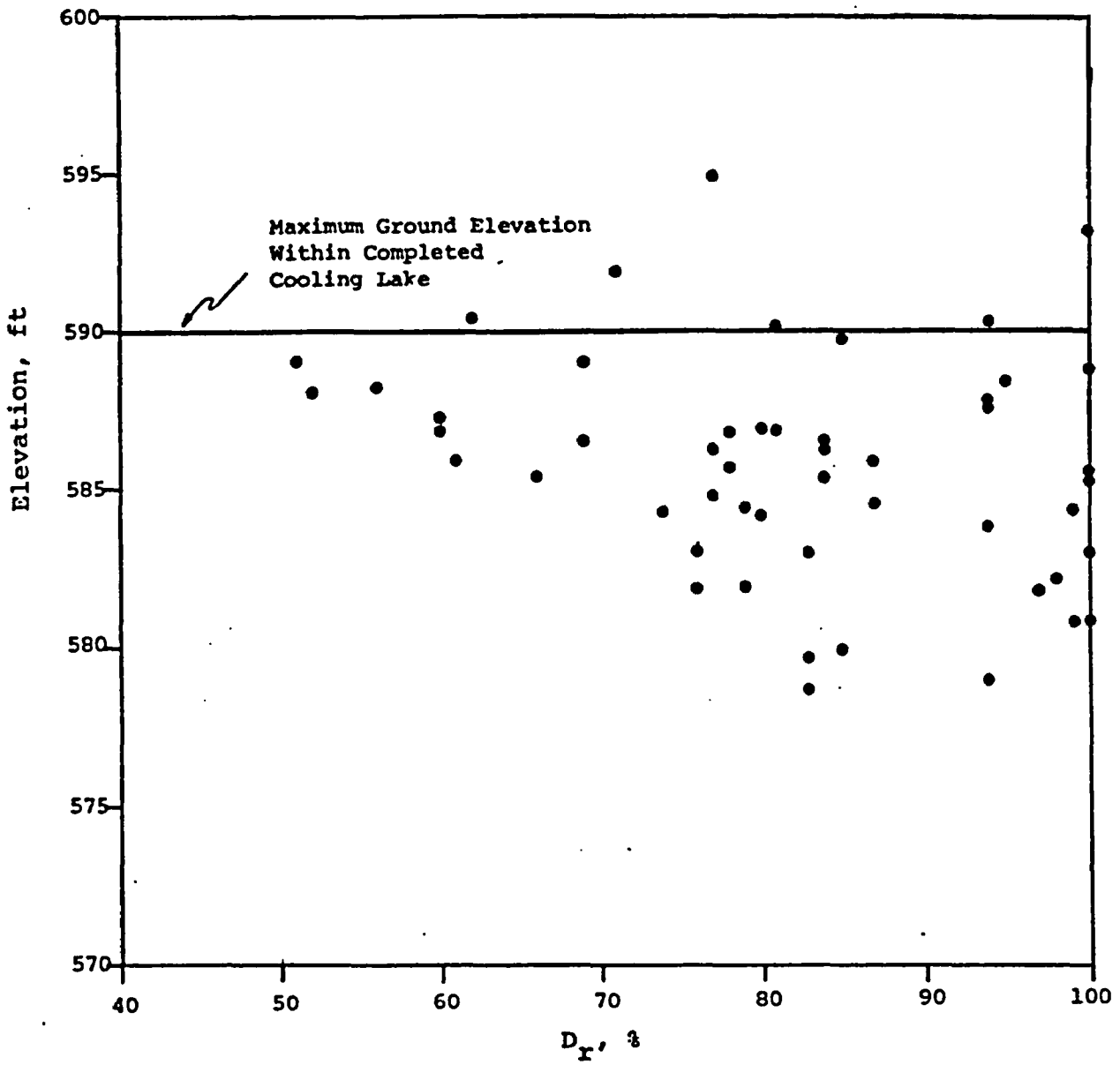


NOTES: 1. D_r determined in accordance with the Gibbs and Holtz (1957) relationship between N value, D_r and effective overburden pressure.
2. Data from borings H-1 through H-4, and HS-1 through HS-18.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-121

INFERRED RELATIVE DENSITY VS. ELEVATION OF SAND DEPOSIT



NOTE: $D_r = \frac{\gamma_{max}}{\gamma_d}\left[\frac{\gamma_d - \gamma_{min}}{\gamma_{max} - \gamma_{min}}\right]$ For summarized results of D_r determinations see Table 2.5-34.

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FIGURE 2.5-122

MEASURED RELATIVE DENSITY VS.
ELEVATION OF SAND DEPOSIT

BORING A-1

SURFACE ELEVATION 593.9

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
0										
5						11.8	110			
10						22.9	100			
15										
20										
25		12725				9.3	134			
30		9950				9.7	133			
35						11.4	129			
40						15.6	115			
45										
50										
55									100	80
60										
65									100	95
70										
75									100	89

BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
			595
25, 23	SM	REDDISH-BROWN SILTY FINE SAND WITH SOME FINE ORGANIC DEBRIS IN ZONES (MEDIUM DENSE) (EQUALITY FORMATION)	590
30, 33, 22	SP	LIGHT BROWN FINE SAND WITH TRACE OF SILT (MEDIUM DENSE)	585
		GRADES VERY CLEAN	580
		GRADES TO LIGHT GRAY COLOR	575
165, 79, 49	ML	DARK GRAY CLAYEY SILT WITH SAND AND DOLOMITE GRAVEL, OCCASIONAL COBBLE OR BOULDER (HARD) LARGE BOULDER FROM 23 TO 26 FEET (WEDRON FORMATION)	570
			565
		GRADES TO MORE CLAY (STIFF)	560
47	ML	GRAY SANDY SILT WITH TRACE OF CLAY AND SOME GRAVEL (HARD)	555
		TOP OF BEDROCK (CARBONDALE FORMATION) GRAY FINE SANDY SILTSTONE, MICACEOUS, THINLY LAMINATED, IRREGULAR, CROSS BEDDED IN ZONES, WEATHERED, FRIABLE, HIGH ANGLE AND 45° FRACTURES SPACED 2 TO 10 INCHES FROM 52.0 TO 61.6 FEET.	550
			545
			540
		BEDDING GRADES HORIZONTAL, REGULAR AT 55.5 FEET	
		GRADES WELL INDURATED AT 60.2 FEET, BASE OF WEATHERED ZONE	535
		HIGH ANGLE FRACTURE 62.7 TO 63.3 FEET	530
		HIGH ANGLE FRACTURES 65.6 TO 66.3 FEET	
			525
		GRAY SILTY SHALE, FINELY MICACEOUS; THINLY LAMINATED, HORIZONTAL, OCCASIONAL 1 INCH SIDERITE CONCRETION	520
		BORING CONTINUED	

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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-123

LOG OF BORING A-1
(SHEET 1 OF 4)

BORING A-1 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									100	55
85										
90									83	70
95										
100									93	76
105										
110									100	71
115										
120									100	100
125										
130									100	95
135										
140									100	97
145										
150									100	100

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		520
	45° FRACTURE AT 78.8 FEET	515
	GRADES CARBONACEOUS AT 80.5 FEET	
	BLACK COAL; THIN BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY	510
	DARK GRAY CLAYEY SHALE, CARBONACEOUS; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES	
	GRADES LIGHT GRAY, NONCARBONACEOUS AT 87.0 FEET (SPOON FORMATION)	505
	GRADES TO DARK GRAY CARBONACEOUS SHALE BELOW 91.8 FEET	
	LIGHT GREENISH-GRAY FINE SANDY SILTSTONE, MICACEOUS, THINLY LAMINATED	500
	BLACK CLAYEY SHALE, CARBONACEOUS, HIGHLY FRAGMENTED WITH RANDOM SLICKENSIDES	495
	GRAY SILTY SHALE, FINELY MICACEOUS; BRITTLE; NUMEROUS SLICKENSIDES ALONG RANDOM PLANES OF WEAKNESS AT 106.0 FEET	
	45° FRACTURES SPACED APPROXIMATELY 12 INCHES BELOW 103.7 FEET WITH SLICKENSIDES	490
	GRADES CARBONACEOUS BELOW 106.0 FEET	
	MOTTLED BROWNISH-RED AND GRAYISH-GREEN SHALE; INDISTINCT BEDDING; HIGHLY FRACTURED AND FRAGMENTED, NUMEROUS RANDOM SLICKENSIDES; SCATTERED OOLITIC GRANULES IN ZONES	485
	GREENISH-GRAY DOLOMITIC SHALE; THINLY LAMINATED; OCCASIONAL MARINE FOSSIL; NEAR VERTICAL FRACTURE 114.1 TO 114.7 FEET (BRAINARD FORMATION)	480
		475
	GRADES CALCAREOUS AT 123.4 FEET	470
	GRAY SILTY LIMESTONE, FINE TO MEDIUM CRYSTALLINE; INTERBEDDED WITH IRREGULAR STRINGERS AND GRADATIONAL ZONES OF CALCAREOUS SHALE 1/4 TO 2 INCHES THICK, SPACED 1/2 TO 5 INCHES; HIGHLY FOSSILIFEROUS 1/4 TO 1/2 INCH OIL FILLED VUGS, SPACED 1 TO 2 INCHES FROM 127.8 TO 128.2 FEET 2 INCH OPEN VUG WITH CALCITE CRYSTALS AT 129.7 FEET	465
	(FORT ATKINSON FORMATION)	460
		455
		450
	LIGHT GRAY LIMESTONE, COARSELY CALCARENITIC, FOSSILIFEROUS THIN TO MEDIUM BEDDED, FINE IRREGULAR SHALE PARTINGS CONCENTRATED IN 2 TO 4 INCH ZONES SPACED 2 TO 8 INCHES	445

BORING CONTINUED

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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-123

LOG OF BORING A-1
(SHEET 2 OF 4)

BORING A-1 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WASH LOSS (LUMEONS)	PERCENT RECOVERED	RQD
150										
155										
160									100	97
165										
170									98	95
175										
180									92	88
185										
190									100	97
195										
200									96	90
205										
210									100	95
215										
220									100	100
225										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		445
	1/8 TO 1 INCH OIL FILLED VUGS SPACED 1 TO 6 INCHES WITH NUMEROUS SMALLER OPENINGS FROM 151.2 TO 152.5 FEET	440
	LIGHT BUFF TO WHITE, LIMESTONE, PURE, COARSELY CALCARENITIC, FOSSILIFEROUS; HAIR LINE SHALE PARTINGS AND STYOLITES SPACED 1 TO 12 INCHES	435
	DARK GRAY CALCAREOUS SILTSTONE; HIGHLY FOSSILIFEROUS; LAMINATED WITH NUMEROUS WHITE IRREGULAR FOSSIL BANDS; INTERBEDDED 1/4 TO 1 INCH GRADATIONAL ZONES OF SILTY LIMESTONE	430
	GRADES LESS FOSSILIFEROUS BELOW 168.2 FEET (SCALES FORMATION)	425
	DARK GRAY SILTY SHALE, DOLOMITIC; THINLY LAMINATED, INTERBEDDED 1 TO 4 INCH LAYERS OF LIGHT GRAY SILTY AND FOSSILIFEROUS LIMESTONE SPACED 3 TO 18 INCHES	420
		415
	GRADING TO 4 TO 20 INCH ZONES OF LIGHT GRAY SILTY LIMESTONE SPACED 20 TO 48 INCHES; FOSSILIFEROUS	410
		405
	45° FRACTURE WITH SLICKENSIDES AT 194.0 FEET 45° FRACTURE WITH SLICKENSIDES AT 195.6 FEET THICK LIMESTONE BEDS GRADING OUT; INTERBEDDED 2 TO 6 INCH CALCAREOUS ZONES SPACED 1 TO 2 1/2 FEET	400
		395
		390
	45° FRACTURES 206.8 TO 207.3 FEET NEAR VERTICAL FRACTURE 208.0 TO 208.5 FEET	385
		380
		375
	CALCAREOUS ZONES GRADING 1 TO 3 INCHES THICK SPACED 1 1/2 TO 5 FEET	370

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-123

LOG OF BORING A-1
(SHEET 3 OF 4)

BORING A-1 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
225										
230									100	100
235										
240									98	97
245										
250									100	100
255										
260									100	100
265										
270									100	100
275										
280										

SYMBOLS

DESCRIPTIONS

MOTTLED LIGHT GRAY TO BUFF DOLOMITIC LIMESTONE; FINE TO MEDIUM CRYSTALLINE; THIN BEDDED, NUMEROUS WAVY HAIR-LINE SHALE PARTINGS SPACED 1/4 TO 6 INCHES THROUGHOUT; UPPER CONTACT WITH NUMEROUS 1 TO 2 INCH VOIDS WHICH HAVE BEEN FILLED BY OVERLYING DEPOSITS, WELL INDURATED, TIGHT
(WISE LAKE - DUNLEITH FORMATIONS)

60° FRACTURE 273.3 TO 273.7 FEET WITH DRUSY CRYSTALLINE SURFACE

BORING COMPLETED AT 276.0 FEET
ON 9-30-72

CASING INSTALLED TO DEPTH OF 45 FEET
WATER LEVEL MEASURED AT ELEVATION 580.0 FEET
ON 10-10-72
300 POUND HAMMER FALLING 18 INCHES

ELEVATION (FEET): 370, 365, 360, 355, 350, 345, 340, 335, 330, 325, 320, 315

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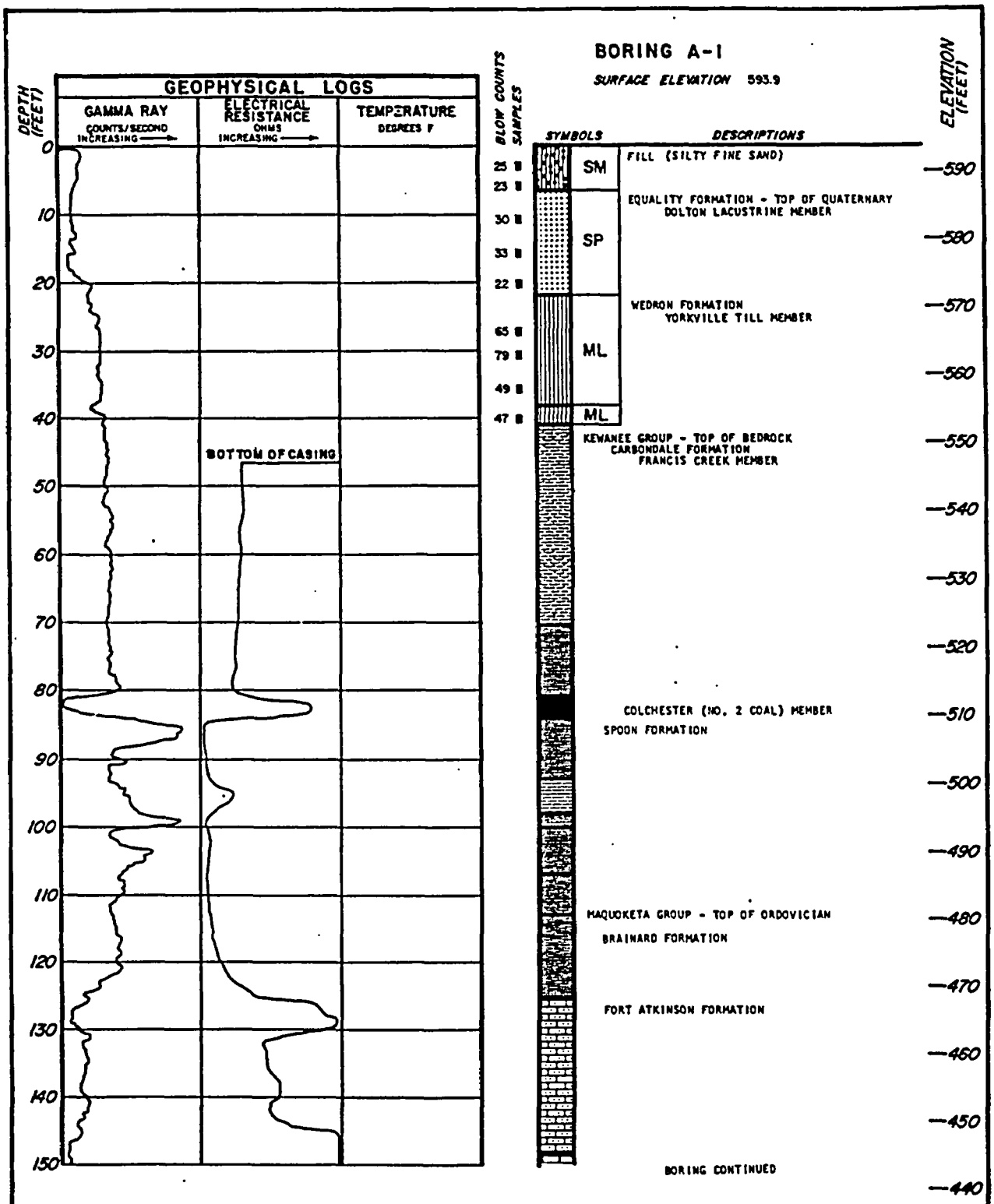
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-123

LOG OF BORING A-1
(SHEET 4 OF 4)



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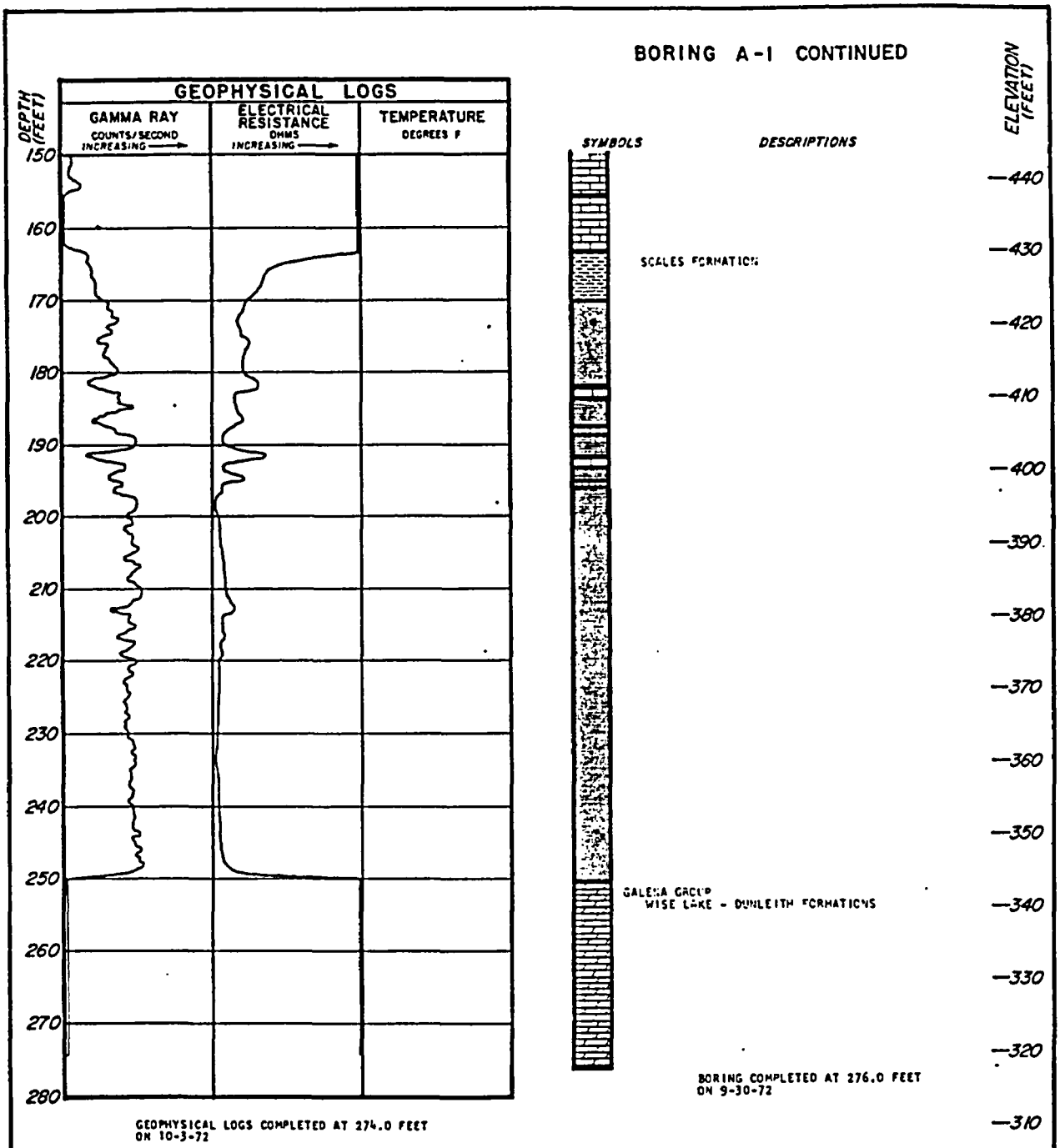
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-124

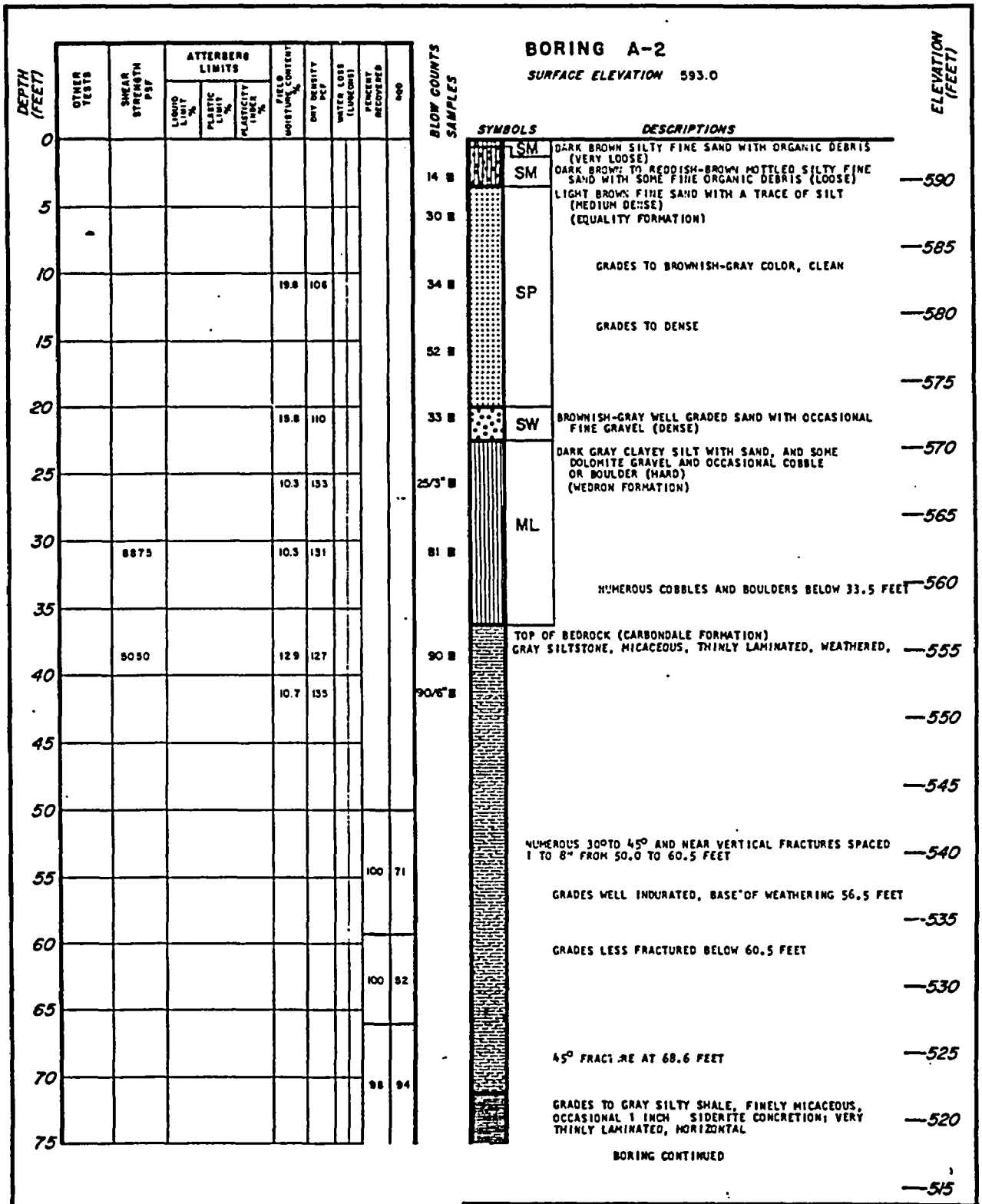
LOG OF BORING A-1 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-124

LOG OF BORING A-1 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-125

LOG OF BORING A-2
(SHEET 1 OF 4)

BORING A-2 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									96	34
85										
90									100	83
95										
100									90	66
105										
110									95	72
115										
120									98	93
125										
130									100	100
135										
140									100	95
145										
150									100	91

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	35° AND HIGH ANGLE FRACTURES SPACED 2 TO 12 INCHES FROM 75.5 TO 78.5 FEET	
	ZONE OF FRACTURED DISTORTED LAMINATIONS 78.5 TO 79.8 FEET	—515
	BLACK COAL; THIN BEDDED; NUMEROUS VERTICAL TIGHT FRACTURES WITH SOME PYRITE AND CLAY; GRADES TO HIGHLY CARBONACEOUS SHALE IN BASAL 3 INCHES	—510
	DARK GRAY CLAYEY SHALE, CARBONACEOUS; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES (SPOON FORMATION)	
	GRADES LESS CARBONACEOUS, LIGHT BROWN TO GRAY COLOR BELOW 87.0 FEET	—505
	GRADES CARBONACEOUS AT 90.5 FEET	
	LIGHT GRAY FINE SANDY SILTSTONE, MICACEOUS; INDISTINCTLY LAMINATED	—500
	GRADES THINLY LAMINATED BELOW 96.0 FEET	
	2 INCH LAYER OF BROWN SILTY OOLITIC SIDERITE AT 98.2 FEET	—495
	DARK BROWNISH-GRAY CLAYEY SHALE, CARBONACEOUS IN ZONES; FRAGMENTED WITH NUMEROUS SLICKENSIDES ALONG RANDOM PLANES OF WEAKNESS	
		—490
	GRADES HIGHLY CARBONACEOUS 104.9 TO 105.3 FEET	
	MOTTLED BROWNISH-RED TO GREEN SHALE, INDISTINCTLY LAMINATED; FRAGMENTED, NUMEROUS RANDOM FRACTURES WITH SLICKENSIDES	—485
	DARK GREENISH-GRAY SHALE, DOLOMITIC; LAMINATED 30° AND 45° FRACTURES AT 110.5 AND 111.5 FEET (BRAINARD FORMATION)	—480
		—475
	GRADES CALCAREOUS AT 122.0 FEET	—470
	GRAY SILTY LIMESTONE, FINE TO MEDIUM CRYSTALLINE, FOSSILIFEROUS; THIN BEDDED WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4 TO 2 INCH ZONES OF CALCAREOUS SHALE SPACED 1/4 TO 10 INCHES. (FORT ATKINSON FORMATION)	—465
		—460
		—455
		—450
	LIGHT GRAY LIMESTONE WITH SOME SILT, CALCARENITIC; THIN BEDDED, IRREGULAR HAIR LINE SHALE PARTINGS AND STYOLITES SPACED 1/2 TO 8 INCHES	—445
	BORING CONTINUED	—440

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FIGURE 2.5-125

LOG OF BORING A-2
(SHEET 2 OF 4)

BORING A-2 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155										
160									100	98
165										
170									100	100
175										
180									98	96
185										
190									100	88
195										
200									100	67
205										
210									98	93
215										
220									99	99
225										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	NEAR VERTICAL FRACTURE 149.5 TO 151.1 FEET 1 INCH OPEN VUG AT 149.7 FEET; OIL STAINED THROUGHOUT	
	NEAR VERTICAL FRACTURE 152.5 TO 153.5 FEET, VERY TIGHT	440
	GRADES TO LIGHT BUFF PURE LIMESTONE, COARSELY CALCARENITIC BELOW 155.0 FEET, MEDIUM BEDDED; NEAR VERTICAL TIGHT FRACTURE WITH OIL STAIN FROM 155.0 TO 156.3 FEET	435
	1/2 INCH OPEN VUG AT 162.5 FEET	430
	DARK GRAY CALCAREOUS SILTSTONE; LAMINATED, EXTREMELY ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS; INTERBEDDED GRADATIONAL 1/2 TO 2 INCH ZONES OF GRAY SILTY LIMESTONE SPACED 1 TO 6 INCHES (SCALES FORMATION)	425
	DARK GRAY SILTY SHALE, DOLOMITIC; LAMINATED; 1 TO 6 INCH CALCAREOUS AND FOSSILIFEROUS ZONES SPACED 1 TO 18 INCHES; FISSILE IN SHALEY ZONES	420
		415
	GRADES TO INTERBEDDED ZONES OF GRAY SILTY LIMESTONE 6 TO 18 INCHES THICK SPACED 1 TO 4 FEET; FINE TO COARSELY CRYSTALLINE, CALCARENITIC AND FOSSILIFEROUS IN ZONES	410
		405
		400
		395
	INTERBEDDED SILTY LIMESTONE BEDS GRADE OUT AT 198.3 FEET DARK GRAY SILTY SHALE, DOLOMITIC, LAMINATED, FISSILE; INTERBEDDED 2 TO 6 INCHES CALCAREOUS ZONES SPACED 6 INCHES TO 3 FEET	390
		385
		380
		375
		370
	BORING CONTINUED	365

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FIGURE 2.5-125

LOG OF BORING A-2
(SHEET 3 OF 4)

BORING A-2 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
225										
230									100	98
235										
240									100	100
245										
250									100	100
255										
260									100	100
265										
270									100	98
275										
280										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	CALCAREOUS ZONES GRADED THINNER AND MORE WIDELY SPACED BELOW 227.0 FEET	365
		360
		355
		350
		345
	MOTTLED LIGHT GRAY TO BUFF DOLOMITIC LIMESTONE: FINE TO MEDIUM CRYSTALLINE: THIN TO MEDIUM BEDDED, NUMEROUS IRREGULAR HAIR LINE SHALE PARTINGS SPACED 1/2 TO 12 INCHES; UPPER CONTACT DISPLAYS NUMEROUS 1 TO 3 INCH SOLUTION CAVITIES WHICH HAVE BEEN FILLED COMPLETELY BY CONSOLIDATED MATERIAL WHICH GRADES INTO THE OVERLYING SCALES FORMATION	340
	1 INCH VUG AT 256.3 FEET, PARTIALLY FILLED WITH CALCITE CRYSTALS	335
	(WISE LAKE - DUNLEITH FORMATIONS)	
		330
		325
		320
	1/2 INCH OPEN VUG AT 274.5 FEET	
	BORING COMPLETED AT 276.0 FEET ON 9-14-72 300 POUND HAMMER FALLING 18 INCHES	315
		310

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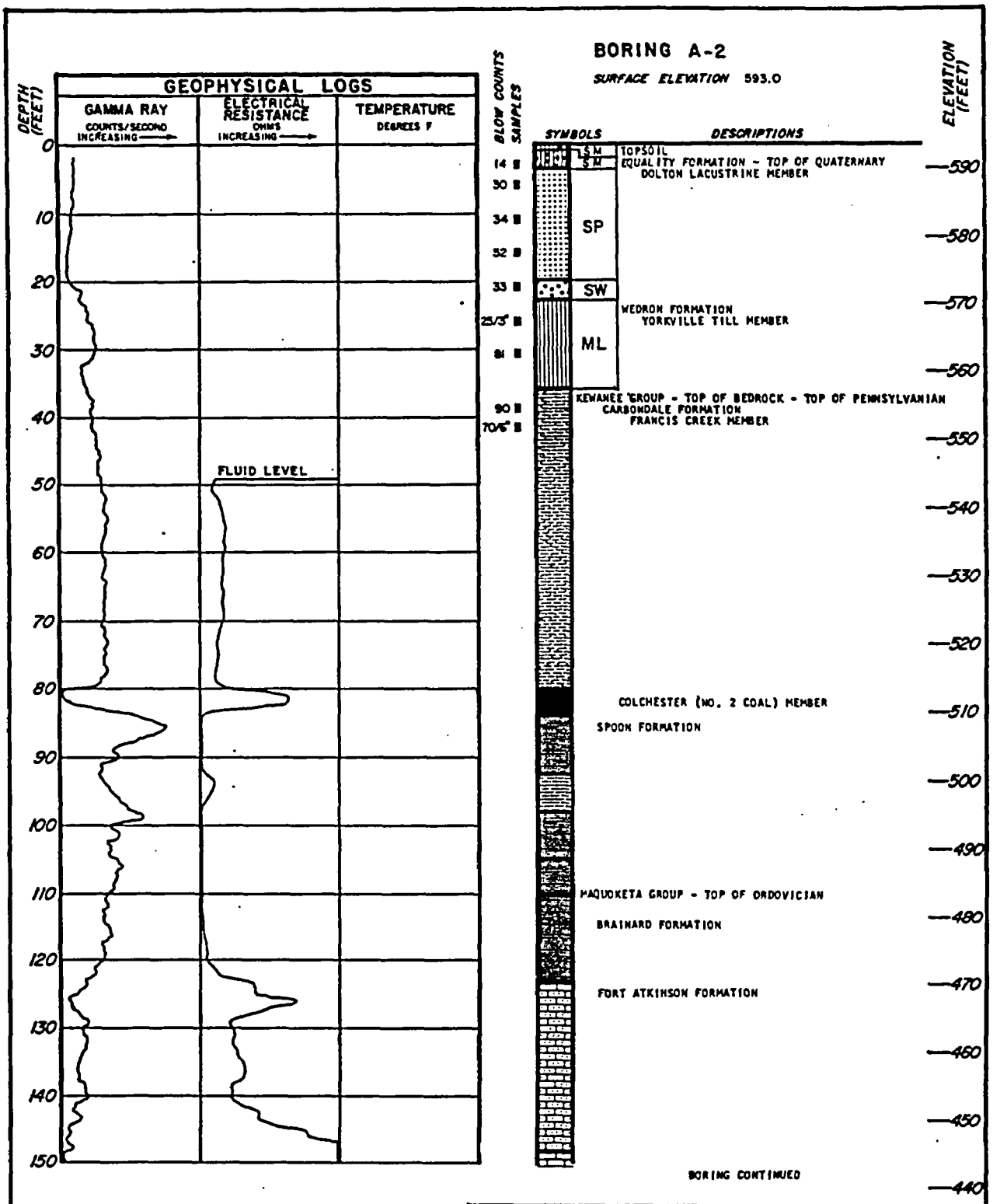
FIGURE 2.5-125

LOG OF BORING A-2
(SHEET 4 OF 4)



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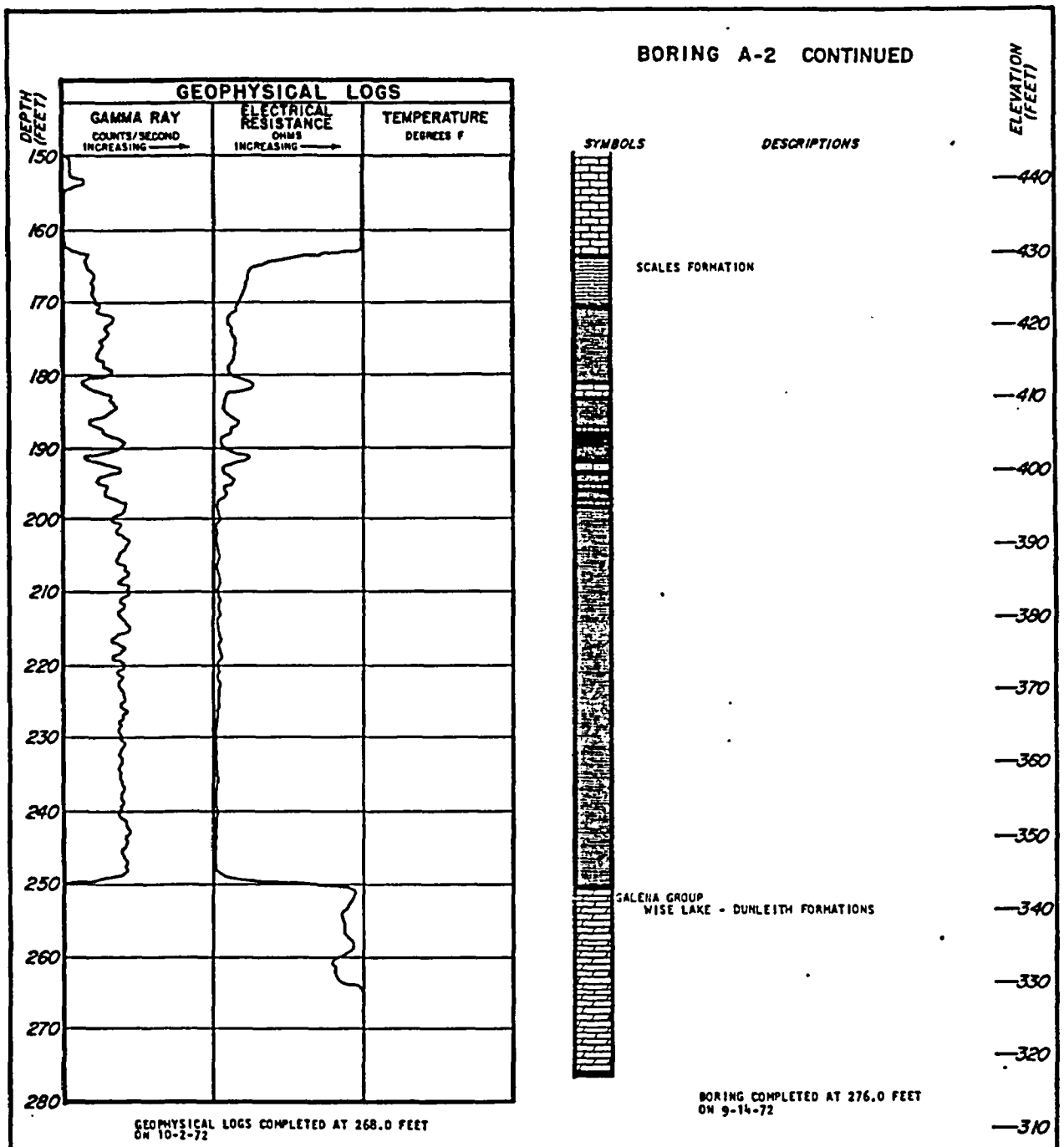
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-126

LOG OF BORING A-2 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)



BRAIDWOOD STATION
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FIGURE 2.5-126

LOG OF BORING A-2 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)

BORING A-3

SURFACE ELEVATION 598.3

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD	BLOW COUNTS SAMPLES
0											
5											14
											26
10						19.6	106				32
15											48
20											41/3"
25						19.5	110				50
30						7.5	129				74
35						13.4	118				148
40											
45									94	38	
50											
55									100	25	
60									99	66	
65											
70									100	96	
75											

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
SM	BROWN SILTY FINE SAND WITH ORGANIC DEBRIS (VERY LOOSE)	
SP	REDDISH-BROWN SAND WITH SOME SILT AND A TRACE OF FINE ORGANIC DEBRIS (MEDIUM DENSE) (EQUALITY FORMATION)	595
	GRADES TO GRAYISH-BROWN COLOR, CLEAN	
	GRADES TO DENSE	590
	GRADES TO GRAY COLOR, VERY CLEAN	585
		580
ML	DARK GRAY CLAYEY SILT WITH ABUNDANT SAND AND DOLOMITE GRAVEL, OCCASIONAL COBBLE (HARD) (WEDRON FORMATION)	
ML	GRAY FINE SANDY SILT WITH SOME CLAY, MICACEOUS (MEDIUM STIFF TO STIFF)	575
		570
SW	GRAY WELL GRADED SAND WITH TRACES OF SILT AND GRAVEL IN ZONES (VERY DENSE)	
SP	BROWNISH-GRAY FINE SAND WITH SOME SILT, COARSE SAND AND GRAVEL IN ZONES (MEDIUM DENSE)	565
SP	LIGHT GRAY FINE TO MEDIUM SAND WITH SOME SILT, MICACEOUS, VERY POORLY CONSOLIDATED (VERY DENSE) (RESIDUAL SOIL)	560
	TOP OF BEDROCK (CARBONDALE FORMATION) LIGHT GRAY SANDSTONE, FINE GRAINED, SILTY, MICACEOUS; LAMINATED BEDDING WITH OCCASIONAL PAPER THIN CARBONACEOUS PARTINGS; OCCASIONAL 35° - 45° FRACTURE; MODERATELY WEATHERED	555
	CONGLOMERITIC ZONE WITH BLACK IRREGULAR COAL GRAVEL AND IRREGULAR LAYERS IN A LIGHT GRAY SANDSTONE MATRIX	
	LIGHT GRAY SILTY SHALE, THINLY LAMINATED, CROSS BEDDED, NUMEROUS 30° TO 45° AND HIGH ANGLE FRACTURES FROM 48.4 TO 52.0 FEET	550
	BASE OF WEATHERED ZONE AT 52.0 FEET	
	LIGHT GRAY SANDSTONE FINE TO MEDIUM GRAINED, SILTY, MICACEOUS; BEDDING INDISTINCT TO THINLY LAMINATED; ZONE WITH NUMEROUS IRREGULAR AND VERY THIN CARBONACEOUS PARTINGS 45° FRACTURE AT 55.0 FEET	545
		540
	GRAY SILTSTONE, THINLY LAMINATED, NUMEROUS MICACEOUS PARTINGS	
	LIGHT GRAY SANDSTONE FINE TO MEDIUM GRAINED, SILTY, MICACEOUS; BEDDING INDISTINCT TO THINLY LAMINATED; ZONE WITH NUMEROUS IRREGULAR AND VERY THIN CARBONACEOUS PARTINGS	535
		530
	GRAY SILTY SHALE, THINLY LAMINATED WITH NUMEROUS MICACEOUS SILTSTONE PARTINGS, CROSS BEDDED; OCCASIONAL 1 TO 1/2 INCH SIDERITE NODULE; 30° FRACTURE 69.2 TO 69.8 FEET	
		525
	BORING CONTINUED	
		520

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FIGURE 2.5-127

LOG OF BORING A-3
(SHEET 1 OF 5)

BORING A-3 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									100	74
85										
90									98	68
95										
100									94	76
105										
110									96	63
115										
120									100	83
125										
130									98	59
135										
140									100	88
145										
150										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	30° FRACTURES SPACED 1 INCH AT 75.6 FEET	
	LIGHT GRAY SILTY SANDSTONE, NUMEROUS CARBONACEOUS PLANT FOSSILS, SIDERITE NODULES AT BASE	520
	GRAY SILTSTONE, THINLY LAMINATED, IRREGULAR CROSS BEDDING WITH NUMEROUS GRADATIONAL ZONES OF SILTY SAND AND SHALE, OCCASIONAL 1 TO 3 INCH SIDERITE NODULE, OCCASIONAL 45° FRACTURE SPACED 1 TO 3.5 FEET	515
	LIGHT GRAY SILTY SANDSTONE, THINLY LAMINATED WITH NUMEROUS CARBONACEOUS PARTING THROUGHOUT; OCCASIONAL SIDERITE NODULE	510
	GRAY SILTSTONE, THINLY LAMINATED WITH NUMEROUS MICACEOUS AND FINE SANDY PARTINGS, SOME 30° TO 45° FRACTURES	505
	GRAY SILTY SANDSTONE, INDISTINCT BEDDING; GRADES SHALEY AND CONGLOMERATIC WITH NUMEROUS SIDERITE NODULES BELOW 98 FEET	500
	GRAY SILTSTONE, THINLY LAMINATED, BEDDING GRADES EVEN AND REGULAR	
	GRADES TO SILTY SHALE, EVENLY BEDDED WITH NUMEROUS VERY THIN ALTERNATING LAMINATIONS OF MICACEOUS SILT AND SHALE	495
		490
	BLACK COAL, THIN BEDDED, NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY	485
	LIGHT GRAY CLAY SHALE, HIGHLY FRAGMENTED WITH NUMEROUS SLICKENSIDES THROUGHOUT (SPOON FORMATION) 3 INCH LAYER OF COAL AT 116.7 FEET	
	LIGHT GRAY CLAY SHALE, HIGHLY FRAGMENTED, OCCASIONAL 1/2 TO 1 INCH CARBONACEOUS LAYER	480
	6 INCH LAYER OF COAL AT 121.2 FEET	
	BLACK CARBONACEOUS SHALE, FRAGMENTED, SOME NEAR VERTICAL FRACTURES	475
	15 INCH LAYER OF COAL AT 123.1 FEET	
	GRAY SILTY SHALE, MICACEOUS, THINLY LAMINATED; 45° FRACTURES SPACED 2 TO 6 INCHES FROM 124.3 TO 125.0 FEET	
	LIGHT GREENISH-GRAY SILTSTONE, LAMINATED, HIGHLY MICACEOUS, SANDY IN ZONES	470
	BLACK CARBONACEOUS SHALE, FRAGMENTED, NUMEROUS SLICKENSIDES ALONG RANDOM PLANES OF WEAKNESS; 45° AND HIGH ANGLE FRACTURES FROM 131.8 TO 132.7 FEET	465
	7 INCH LAYER OF COAL AT 135.0 FEET	
	DARK GRAYISH-BROWN SHALE, CARBONACEOUS IN ZONES, FRAGMENTED WITH NUMEROUS SLICKENSIDES	
	GRADES NON CARBONACEOUS, SILTY AT 138.5 FEET	460
	GRADES SILTY AT 141.5 FEET, NUMEROUS INTERBEDDED LAMINATIONS OF MICACEOUS SILTSTONE UP TO 1/10 INCH THICK	455
	GRADES INCREASINGLY CARBONACEOUS BELOW 145.0 FEET NUMEROUS INTERBEDDED PARTINGS UP TO 1/20 INCH THICK	450
	GREENISH-GRAY SILTY SHALE, THINLY LAMINATED, OCCASIONAL MARINE FOSSIL, 45° FRACTURE AT 149.4 FEET (BRAINARD FORMATION)	
	BORING CONTINUED	445

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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-127

LOG OF BORING A-3
(SHEET 2 OF 5)

BORING A-3 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155									97	90
160									100	96
165										
170									100	97
175										
180									100	92
185										
190									100	95
195										
200									100	92
205										
210									98	93
215										
220									99	99
225										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	GRADES CALCAREOUS AT 153.0 FEET	445
	GRAY SILTY LIMESTONE, FINE TO MEDIUM CRYSTALLINE; INTERBEDDED IRREGULAR PARTINGS AND GRADATIONAL ZONES OF CALCAREOUS SHALE 1/4 TO 2 INCHES THICK SPACED 1 TO 8 INCHES; HIGHLY FOSSILIFEROUS (FORT ATKINSON FORMATION)	440
		435
		430
		425
	GRADES TO LIGHT GRAY LIMESTONE, COARSELY CRYSTALLINE CALCARENITIC; IRREGULAR SHALE PARTINGS IN 1 TO 3 INCH ZONES SPACED 3 TO 12 INCHES; FOSSILIFEROUS	420
	6 INCH SILTY ZONE; HIGHLY FOSSILIFEROUS 185.0 TO 185.5 FEET	415
	GRADES TO LIGHT BUFF LIMESTONE, VERY PURE, COARSELY CALCARENITIC, THICK BEDDED, OCCASIONAL VERY THIN AND TIGHT STYOLITE; 1/2 INCH CRYSTAL LINED SOLUTION CHANNEL AT 186.0 FEET	410
		405
	DARK GRAY CALCAREOUS SILTY SHALE, LAMINATED BEDDING; HIGHLY FOSSILIFEROUS; 2 TO 4 INCH ZONES OF BROWN SILTY LIMESTONE SPACED 3 TO 12 INCHES (SCALES FORMATION)	400
	GRADES TO DOLOMITIC SILTY SHALE, LESS FOSSILIFEROUS; 2 TO 6 INCH CALCAREOUS LAYERS SPACED 1 TO 2 FEET, LAMINATED	395
		390
		385
		380
	GRADES TO INTERBEDDED ZONES OF LIGHT GRAY SILTY LIMESTONE 7 TO 18 INCHES THICK SPACED 1 TO 5 FEET, FINE TO COARSELY CRYSTALLINE, CALCARENITIC AND FOSSILIFEROUS IN ZONES	375
	BORING CONTINUED	370

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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-127

LOG OF BORING A-3
(SHEET 3 OF 5)

BORING A-3 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
225										
230									99	99
235										
240									100	89
245										
250									96	97
255										
260									100	100
265										
270									95	95
275										
280									100	98
285										
290										

SYMBOLS

DESCRIPTIONS

INTERBEDDED SILTY LIMESTONE GRADES OUT

DARK GRAY CLAYEY SHALE; HIGHLY FRACTURED WITH NUMEROUS SLICKENSIDES 238.9 TO 239.3 FEET

GRADES PYRITIC AT 282.0 FEET

MOTTLED LIGHT GRAY TO BUFF DOLOMITIC LIMESTONE, FINE TO MEDIUM CRYSTALLINE, GRADES FOSSILIFEROUS AND CALCARENITIC IN ZONES, ARGILLACEOUS; THIN BEDDED WITH NUMEROUS IRREGULAR HAIR LINE PARTINGS OF SHALE SPACED 1/4 TO 4 INCHES; OCCASIONAL 1/2 TO 1 INCH VUG WITH CALCITE FILLING, TIGHT; NO FRACTURES OBSERVED IN CORE (WISE LAKE - DUNLEITH FORMATIONS)

BORING CONTINUED

ELEVATION (FEET): 370, 365, 360, 355, 350, 345, 340, 335, 330, 325, 320, 315, 310, 305

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FIGURE 2.5-127

LOG OF BORING A-3
(SHEET 4 OF 5)

BORING A-3 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
290										
295									100	100
300									100	100
305										
310										

SYMBOLS

DESCRIPTIONS

1/2 INCH ISOLATED VUG WITH CALCITE CRYSTALS AT 305 FEET

BORING COMPLETED AT 308.0 FEET ON 9-27-72

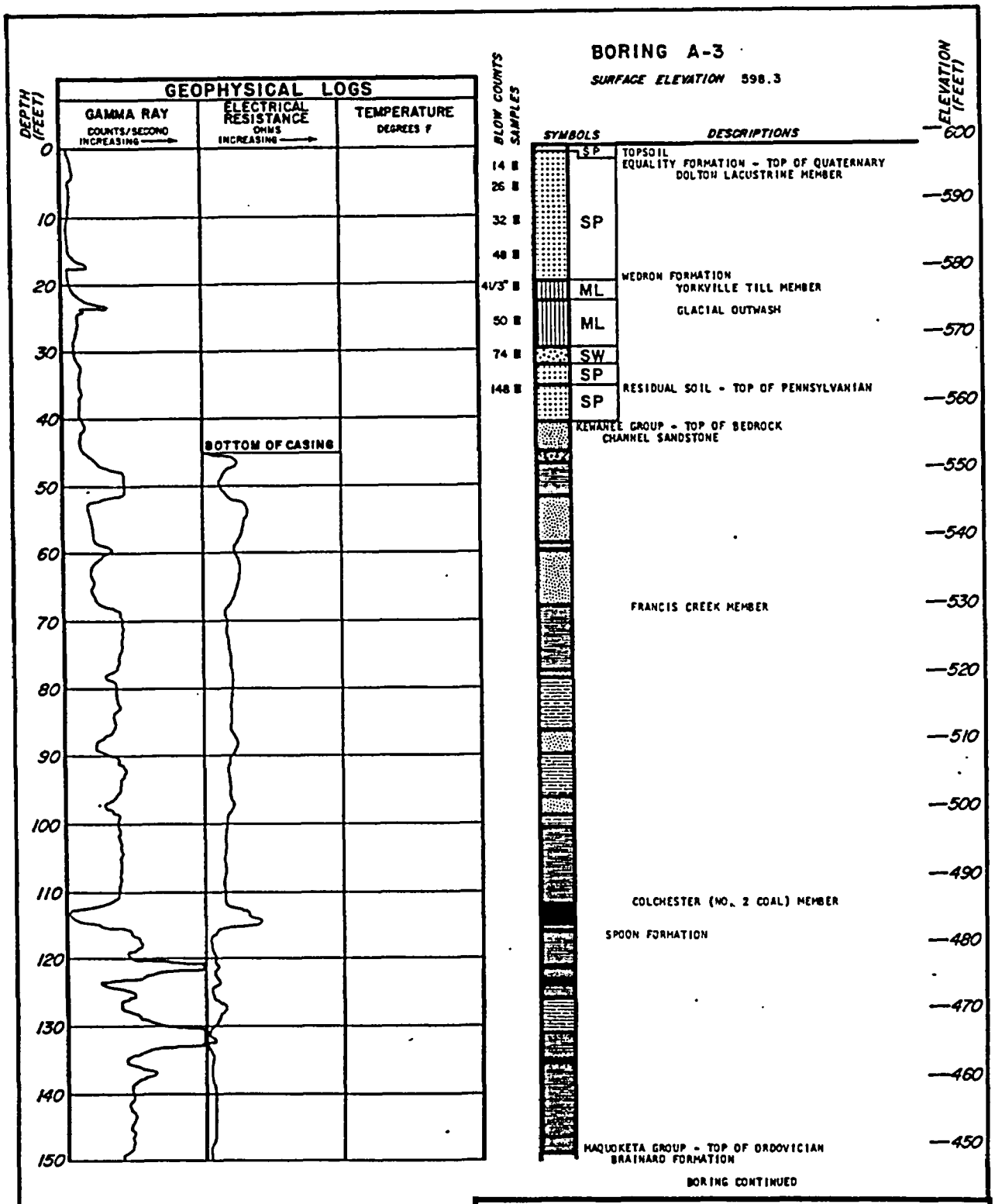
ELEVATION (FEET)

305
300
295
290
285

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-127

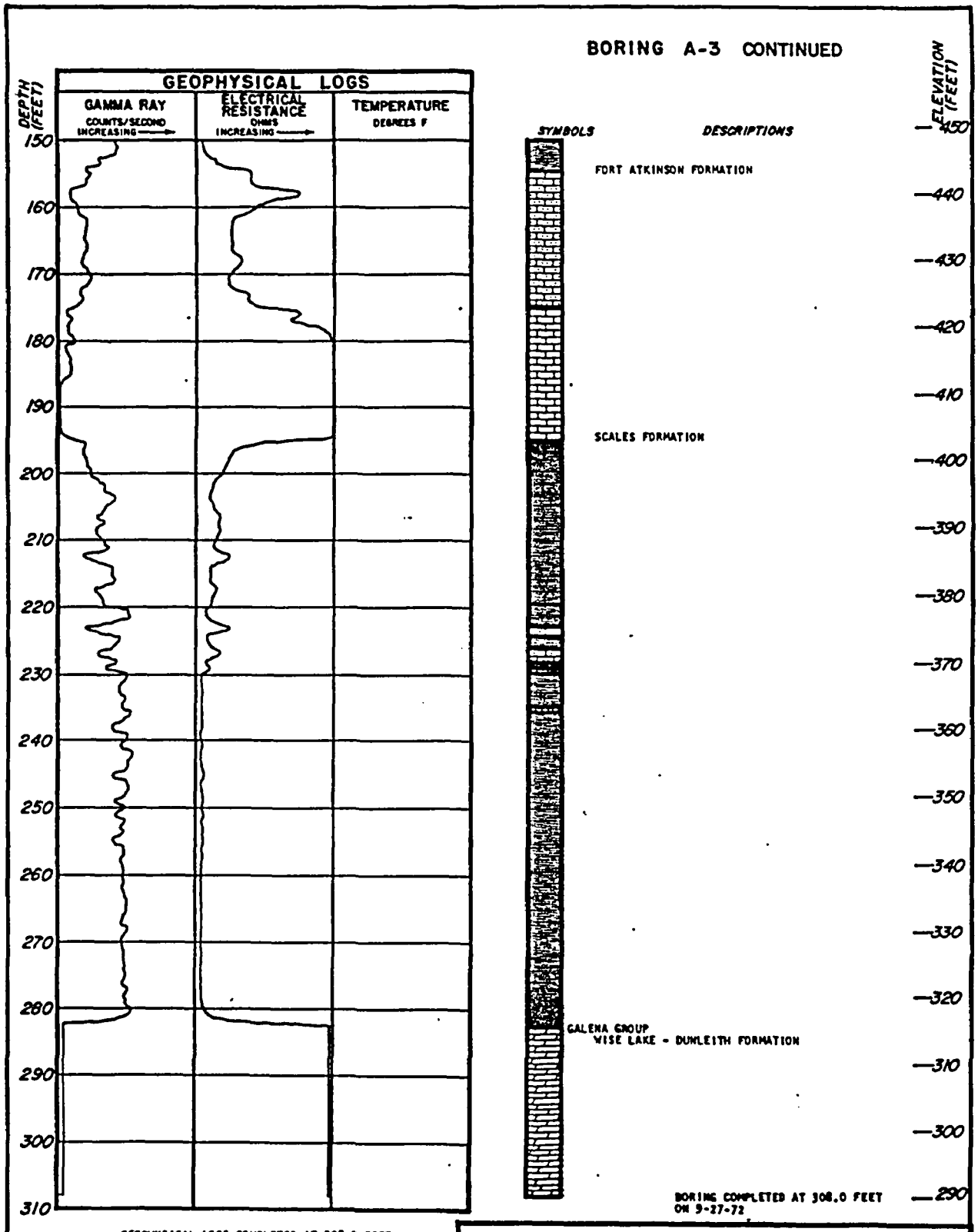
LOG OF BORING A-3
(SHEET 5 OF 5)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-128

LOG OF BORING A-3 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-128

LOG OF BORING A-3 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)

BORING A-4

SURFACE ELEVATION 592.6

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD	BLOW COUNTS SAMPLES
0											8
											11
5						21.7	105				
											19
10											
											24
15											
											25
20											
		13925				10.1	131				117
25											
						9.1	129				42/2"
30											
35		8400									70/2"
											104/4"
40											
									95	83	
45											
									100	42	
50											
55											
									95	65	
60											
65											
									100	74	
70											
75											

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
SM	DARK BROWN SILTY FINE SAND WITH ORGANIC DEBRIS (VERY LOOSE)	
SM	MOTTLED LIGHT TO DARK REDDISH-BROWN SILTY FINE SAND (LOOSE) (EQUALITY FORMATION)	590
SP	LIGHT BROWN FINE TO MEDIUM SAND, VERY CLEAN (MEDIUM DENSE)	585
SP	GRADES TO LIGHT BROWNISH-GRAY	580
ML	DARK GRAY CLAYEY SILT WITH SAND AND DOLOMITE GRAVEL (HARD) (WEDRON FORMATION)	575
ML		570
ML		565
GW	NUMEROUS COBBLES AND BOULDERS FROM 30.0 TO 31.5 FEET	
	TOP OF BEDROCK (CARBONDALE FORMATION) LIGHT GRAY FINE SANDY SILTSTONE, MICACEOUS, THINLY LAMINATED, CROSS BEDDED, WEATHERED, NUMEROUS 30° TO 45° AND HIGH ANGLE FRACTURES SPACED 2 TO 6 INCHES	560
		555
		550
	GRADES LESS SANDY BELOW 45.5 FEET	
	FRAGMENTED ZONE 48.0 TO 48.8 FEET	545
		540
	GRADES TO NUMEROUS INTERBEDDED SANDY AND MICACEOUS LAMINATIONS, IRREGULAR, DISCONTINUOUS; LAMINATIONS DISPLACED ALONG NUMEROUS NEAR HORIZONTAL TO 45° SLIPPAGE PLANES; SLUMP FEATURE FORMED DURING SEDIMENTATION, 55.0 TO 63.0 FEET	535
		530
	FRAGMENTED ZONE 66.0 TO 66.7 FEET	
	GRADES WELL INDURATED BELOW 69.0 FEET, BASE OF WEATHERED ZONE; FRACTURES DECREASING	525
	45° FRACTURE AT 73.2 FEET	520
	BORING CONTINUED	
		515

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FIGURE 2.5-129

LOG OF BORING A-4
(SHEET 1 OF 3)

BORING A-4 (CONTINUED)

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									97	80
85									94	59
90										
95									98	85
100										
105									92	80
110										
115									100	50
120									70	25
125									95	89
130										
135									100	96
140										
145									100	98
150										

BLOW COUNTS SAMPLES

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

GRAY SILTY SHALE, FINELY MICACEOUS; THINLY LAMINATED, REGULAR AND HORIZONTAL — 515

80° FRACTURE FROM 83.0 TO 83.6 FEET — 510

45° FRACTURES AT 85.0 AND 86.5 FEET — 505

GRADES CARBONACEOUS AT 88.7 FEET

BLACK COAL; THIN BEDDED; NUMEROUS VERTICAL TIGHT FRACTURES WITH SOME PYRITE AND CLAY

BLACK HIGHLY CARBONACEOUS SHALE; THINLY LAMINATED; FRAGMENTED (SPOON FORMATION) — 500

COAL LAYER FROM 93.1 TO 93.6 FEET

DARK BROWNISH-GRAY CLAYEY SHALE, CARBONACEOUS, INDISTINCT BEDDING; HIGHLY FRAGMENTED, NUMEROUS RANDOM SLICKENSIDES

GRADES TO LIGHT GRAY SHALE AT 98.5 FEET; FRAGMENTED, NON CARBONACEOUS — 495

LIGHT GRAY SILTSTONE, MICACEOUS; THINLY LAMINATED, SANDY IN THIN ZONES

2 INCH ZONE SILTY OOLITIC SANDSTONE AT 102.0 FEET — 490

DARK GRAY TO BLACK SHALE, CARBONACEOUS; FRAGMENTED, NUMEROUS RANDOM SLICKENSIDES

LIGHT GREENISH GRAY FINE SANDY SILTSTONE, MICACEOUS; INDISTINCTLY BEDDED, GRADES THINLY LAMINATED BELOW 109.3 FEET — 485

BLACK TO DARK BROWNISH-GRAY CLAYEY SHALE, CARBONACEOUS; FRAGMENTED, NUMEROUS RANDOM SLICKENSIDES — 480

GRADES LESS CARBONACEOUS, SILTY BELOW 116.0 FEET — 475

MOTTLED DARK BROWNISH TO GREENISH-GRAY SHALE; INDISTINCTLY LAMINATED, VERY HIGHLY FRAGMENTED WITH SOME SLICKENSIDES, OOLITIC GRANULES IN ZONES

HORIZONTAL SLICKENSIDES SPACED 1/10 TO 1/2 INCH FROM 121.0 TO 121.6 FEET

GREENISH-GRAY SHALE, THINLY LAMINATED, PARTS EASILY ALONG BEDDING PLANES(BRAINARD FORMATION) — 470

GRADES DOLOMITIC AT 124.5 FEET

GRADES CALCAREOUS AND FOSSILIFEROUS BELOW 127.0 FEET — 465

GRAY SILTY LIMESTONE, FINE TO MEDIUM CRYSTALLINE, CALCARENITIC AND HIGHLY FOSSILIFEROUS IN ZONES; THIN BEDDED, NUMEROUS IRREGULAR AND GRADATIONAL CALCAREOUS SHALE LAYERS 1/4 TO 2 INCHES THICK SPACED 1/2 TO 6 INCHES (FORT ATKINSON FORMATION) — 460

— 455

— 450

— 445

BORING CONTINUED

— 440

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-129

LOG OF BORING A-4
(SHEET 2 OF 3)

BORING A-4 (CONTINUED)

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155										
160									100	97
165										

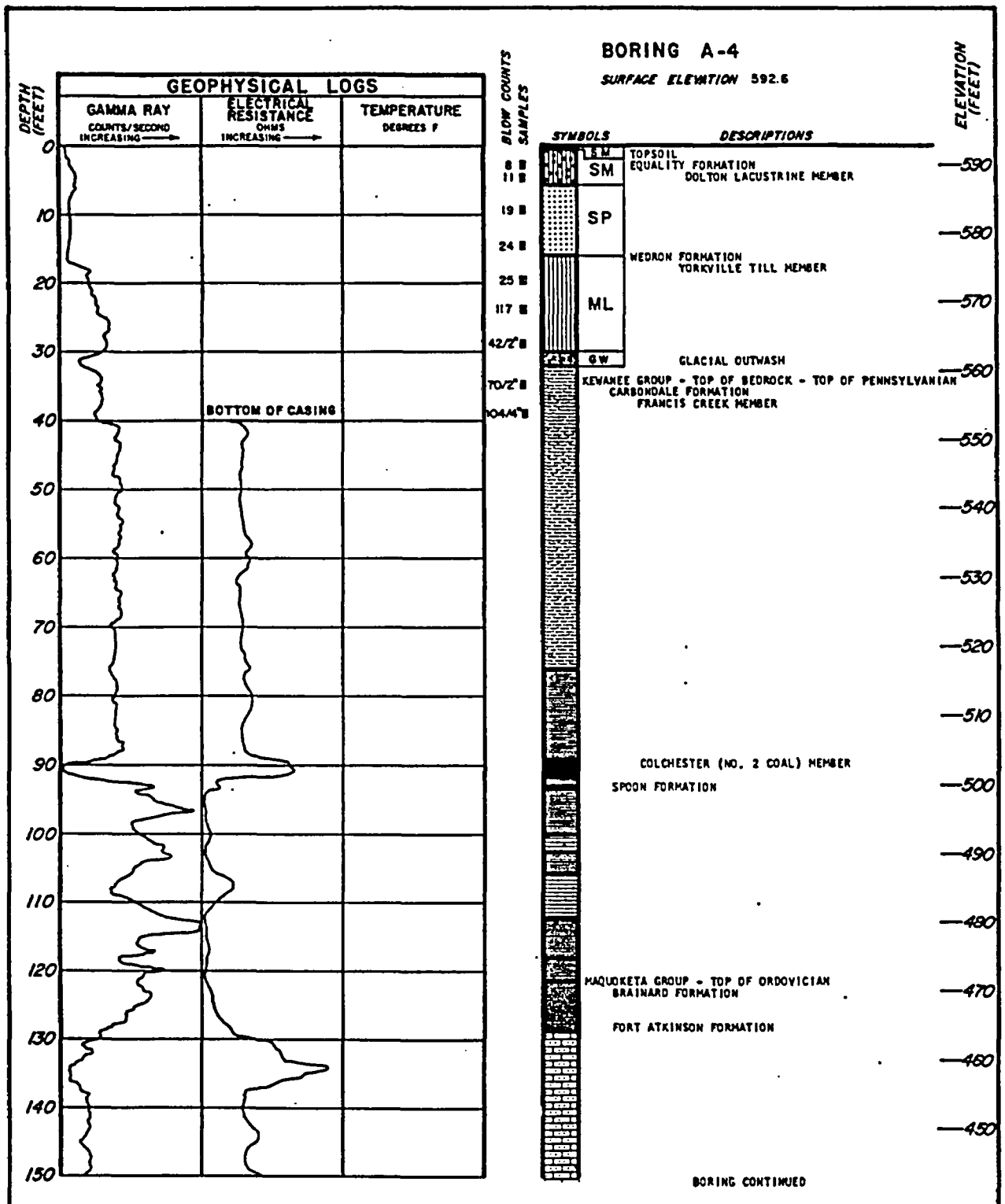
BLOW COUNTS
SAMPLES

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	GRADES LESS SILTY BELOW 152.3 FEET 1/10 INCH [illegible]GS SPACED 1/2 TO 4 INCHES WITH OIL STAIN FROM 152.6 TO 153.3 FEET	440
		435
	LIGHT GRAY TO BUFF PURE LIMESTONE, COARSELY CALCARENITIC; THIN TO MEDIUM BEDDED, HAIR LINE SHALE PARTINGS AND STYOLITES SPACED 1/2 TO 12 INCHES	430
	BORING COMPLETED AT 164.0 FEET ON 10-3-72 300 POUND HAMMER FALLING 24 INCHES	425

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-129

LOG OF BORING A-4
(SHEET 3 OF 3)



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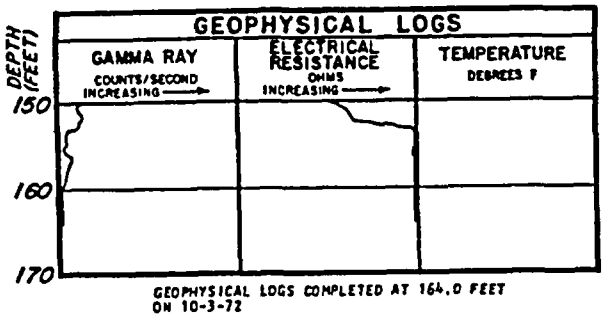
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-130

LOG OF BORING A-4 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)

BORING A-4 CONTINUED



SYMBOLS

DESCRIPTIONS

BORING COMPLETED AT 164.0 FEET ON 10-3-72

ELEVATION (FEET)

440

430

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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-130

LOG OF BORING A-4 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)

BORING A-5

SURFACE ELEVATION 598.5

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD	BLOW COUNTS SAMPLES
0											
5						11.8	101				26
10											12
15											35
20						21.0	101				57
25						12.5	131				70
30						13.3	121				65
35						17.0	113				58
40											124
45											100/3"
50											100/4"
55									94	28	100/4"
60									94	79	
65									99	68	
70											
75											

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		600
SM	BLACK SILTY FINE SAND WITH ORGANIC DEBRIS (VERY LOOSE)	
SP	BROWN FINE SAND WITH TRACES OF SILT AND FINE ORGANIC DEBRIS; GRADES TO LIGHT BROWN CLEAN SAND AT 7.5 FEET (MEDIUM DENSE) (EQUALITY FORMATION)	595
	GRADES TO DENSE AT 8.0 FEET	590
	GRADES TO GRAYISH-BROWN AT 12.0 FEET	585
	GRADES TO BROWNISH-GRAY FINE TO MEDIUM SAND, CLEAN AT 20.0 FEET (VERY DENSE)	580
ML	GRAY SILT WITH SOME CLAY AND SAND (VERY STIFF) (WEDRON FORMATION)	575
SW	BROWNISH-GRAY WELL GRADED SAND WITH SOME FINE GRAVEL AND SOME SILT (DENSE)	570
ML	DARK GRAY SANDY SILT WITH TRACE OF CLAY, OCCASIONAL GRAVEL (HARD)	
SM	GRAY SILTY FINE SAND WITH TRACE OF COARSE SAND AND FINE GRAVEL (VERY DENSE)	565
SP SM	GRAY SILTY FINE SAND, MICACEOUS (VERY DENSE) (RESIDUAL SOIL)	560
ML	GRAY FINE SANDY SILT WITH TRACE OF CLAY, MICACEOUS, LAMINATED (HARD)	555
		550
	TOP OF BEDROCK (CARBONDALE FORMATION) LIGHT GRAY SANDSTONE, SILTY, FINE GRAINED, MICACEOUS; THINLY LAMINATED AND CROSS BEDDED; WEATHERED, FRIABLE; 30° AND 45° FRACTURE 51.5 TO 52.0 FEET	
	LIGHT GRAY SILTSTONE, FINE SANDY IN ZONES, MICACEOUS; THINLY LAMINATED; WEATHERED, PARTS EASILY ALONG LAMINATIONS; OCCASIONAL HIGH ANGLE FRACTURE	545
	APPROXIMATE BASE OF WEATHERING; ROCK BECOMES WELL INDURATED AT 56.0 FEET	540
	NEAR VERTICAL FRACTURES FROM 61.5 TO 62.7 FEET	535
	HIGH ANGLE AND 45° FRACTURES FROM 68.1 TO 74.5 FEET	530
		525

BORING CONTINUED

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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-131

LOG OF BORING A-5
(SHEET 1 OF 2)

BORING A-5 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									100	93
85									98	87
90										
95									100	86
100										
105									97	80
110									100	0
115									100	35
120									100	45
125										
130									100	78
135										
140									100	98
145									100	97
150										

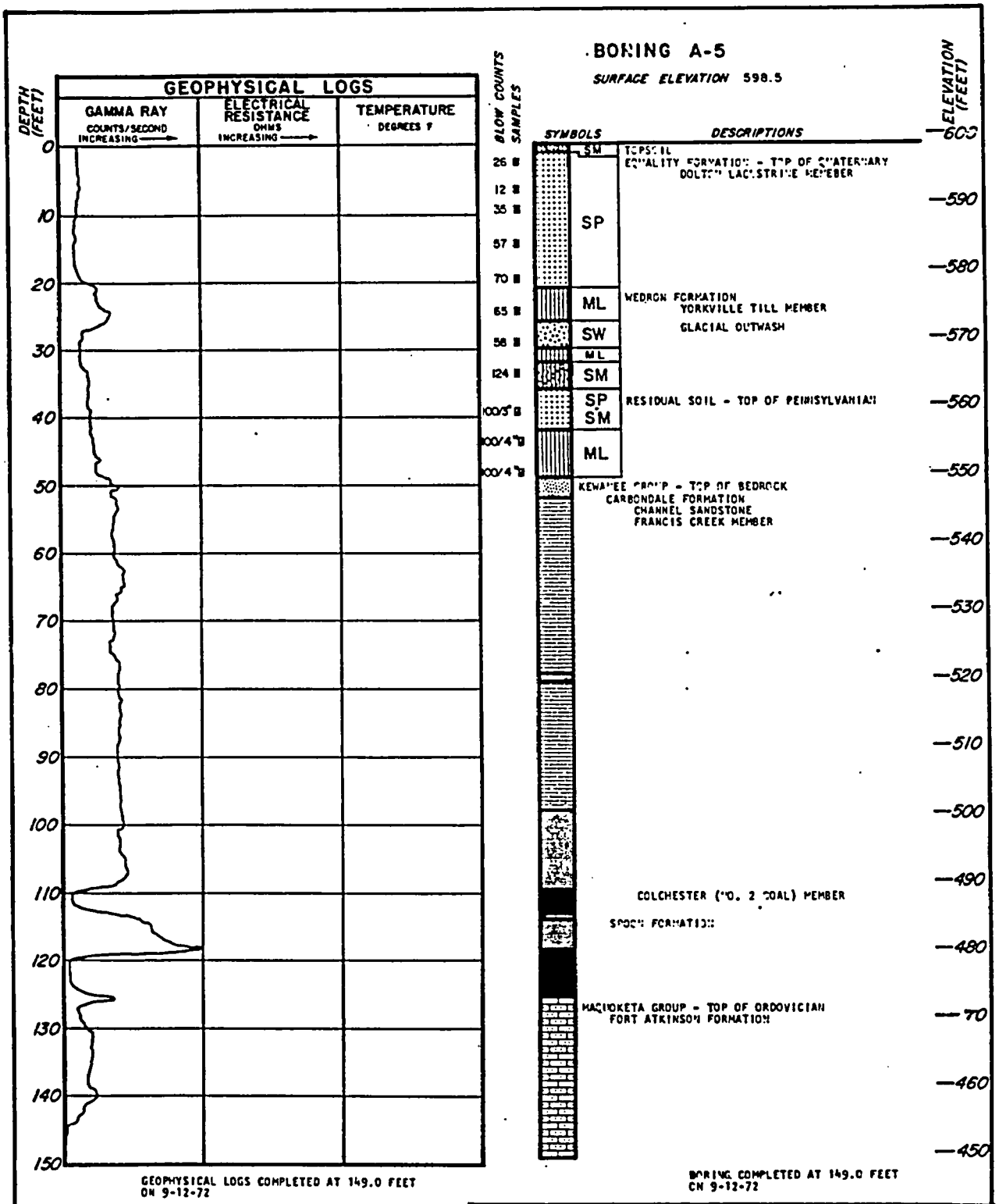
SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		525
	GRAY SILTY SHALE, MICACEOUS; FRAGMENTED WITH NUMEROUS FRACTURES	520
	SILTSTONE LAMINATIONS GRADE IRREGUALR AT 80.0 FEET WITH DIPS OF 30° TO 45°, STEEPLY DIPPING LAYERS ARE OFFSET ALONG NEAR HORIZONTAL PLANES AS A RESULT OF SLUMPING AND LATERAL DISPLACEMENT DURING SEDIMENTATION, FAULTING IS NOT INDICATED	515
	45° FRACTURE AT 89.3 FEET	510
	SILTSTONE LAMINATIONS GRADE NEAR HORIZONTAL AND REGULAR; 45° FRACTURE AT 93.2 FEET	505
	GRAY SILTY SHALE, FINELY MICACEOUS; THINLY LAMINATED, CR CROSS BEDDED 14 ZONES WITH DIPS FROM 10° TO 45°; OCCASIONAL SIDERITE CONCRETIONS	500
	45° FRACTURE AT 99.3 FEET	
	30° FRACTURES SPACED 1 TO 8 INCHES FROM 104.6 TO 105.6 FEET	495
	45° FRACTURE AT 108.5 FEET	490
	BLACK COAL, VERY THIN BEDDED; NUMEROUS VERTICAL FRACTURES WITH PYRITE AND KAOLONITE	
	DARK GRAY CLAYEY SHALE; FRAGMENTED WITH NUMEROUS SLICKENSIDES IN ALL DIRECTIONS (SPOON FORMATION)	485
	1 INCH COAL LAYER AT 114.1 FEET	
	GRADES TO BLACK SHALE, HIGHLY CARBONACEOUS BELOW 115.8 FEET	
	BLACK COAL, VERY THIN BEDDED; NUMEROUS VERTICAL FRACTURES WITH PYRITE AND KAOLONITE	480
		475
	4 INCH ZONE OF DARK GRAY FINE SANDY SILTSTONE, CARBONACEOUS; THINLY LAMINATED, NUMEROUS PLANT FOSSILS	
	YUGGY ZONE FROM 127.5 TO 127.8 FEET WITH 1/10 TO 1 INCH CRYSTAL LINED VUGS, SPACED 1/2 TO 2 INCHES	
	LIGHT GRAY SILTY LIMESTONE, FINE TO MEDIUM CRYSTALLINE, INTERBEDDED WITH IRREGULAR AND GRADATIONAL 1/10 TO 2 INCH PARTINGS AND LAYERS OF CALCAREOUS SHALE SPACED 1/10 TO 12 INCHES; FOSSILIFEROUS. (FORT ATKINSON FORMATION)	470
		465
		460
	GRADES TO LIGHT GRAY AND BUFF PURE LIMESTONE, COARSELY CALCARENITIC; THIN BEDDED, HAIR LINE SHALE PARTINGS AND STYOLITES SPACED 1/4 TO 10 INCHES	455
		450

BORING COMPLETED AT 149.0 FEET
ON 9-12-72
300 POUND HAMMER FALLING 24 INCHES

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-131

LOG OF BORING A-5
(SHEET 2 OF 2)



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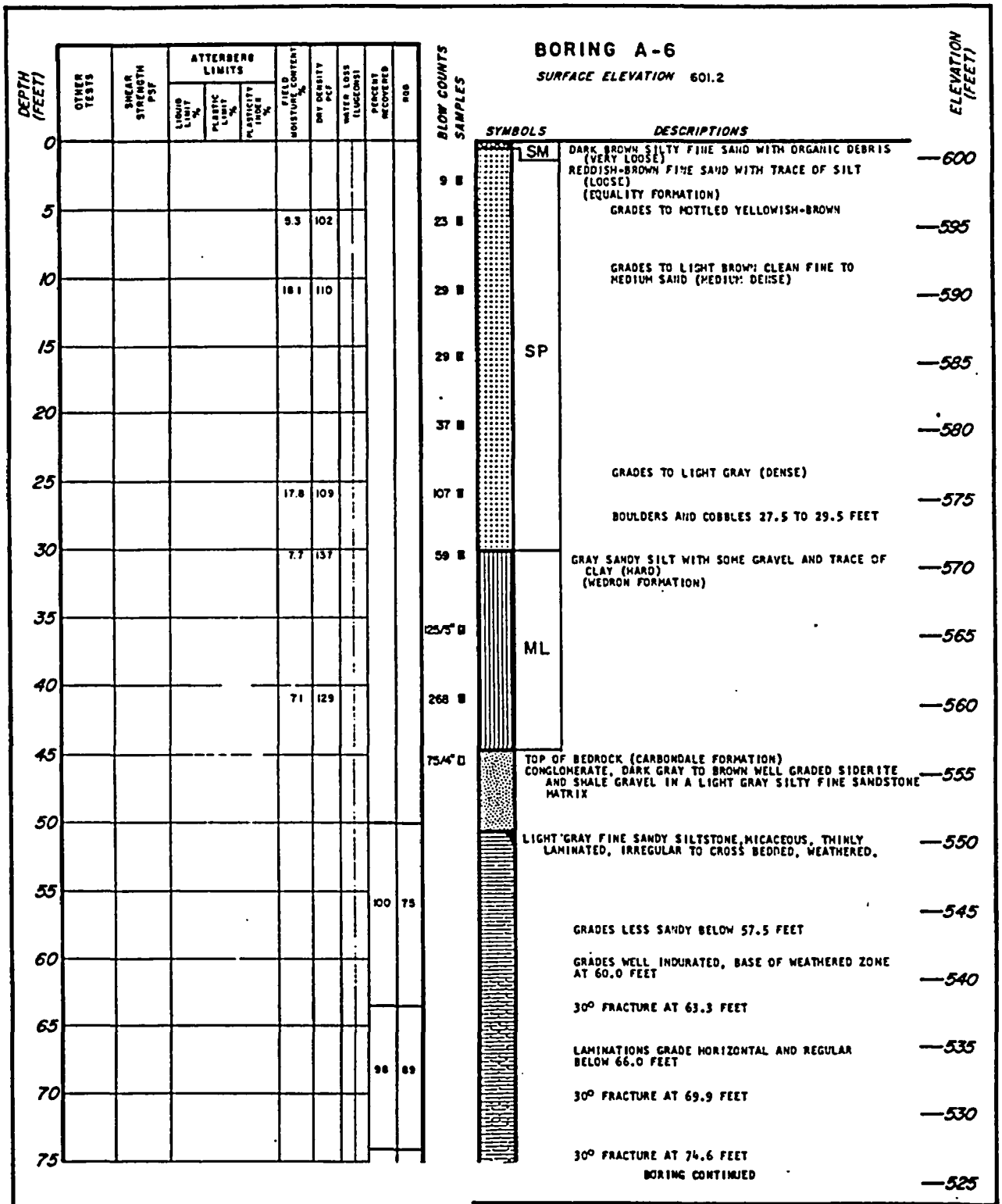
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-132

LOG OF BORING A-5 (GEOPHYSICAL LOG)



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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-133

LOG OF BORING A-6
(SHEET 1 OF 3)

BORING A-6 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									100	91
85									100	88
90										
95									100	46
100										
105									95	88
110										
115									93	72
120										
125									99	89
130										
135									98	70
140										
145									100	96
150										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		525
	VERTICAL FRACTURE 79.9 TO 81.6 FEET	520
	GRAY SILTY SHALE, FINELY MICACEOUS; THINLY LAMINATED, HORIZONTAL BEDDING, OCCASIONAL 1 TO 1/2 INCH SIDERITE NODULE	515
		510
	HIGH ANGLE FRACTURE 94.3 TO 95.0 FEET 30° FRACTURE AT 95.6 FEET	505
	BLACK COAL; THIN BEDDED; NUMEROUS VERTICAL TIGHT FRACTURES WITH SOME PYRITE AND CLAY	
	DARK BROWNISH GRAY SHALE, CARBONACEOUS, INDISTINCTLY LAMINATED, HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES (SPOON FORMATION)	500
	GRADES LESS CARBONACEOUS BELOW 105.0 FEET	495
	LIGHT GRAY FINE SANDY SILTSTONE, MICACEOUS, INDISTINCT BEDDING	
	DARK GRAY CARBONACEOUS SHALE, SILTY IN ZONES, THINLY LAMINATED; FRAGMENTED, NUMEROUS SLICKENSIDES	490
	LIGHT GREENISH-GRAY FINE SANDY SILTSTONE, MICACEOUS; LAMINATED BEDDING, GRADES IRREGULAR AND CROSS BEDDED BELOW 116.5 FEET	485
		480
	GRAYISH-BROWN TO BLACK SHALE; THINLY LAMINATED TO INDISTINCT BEDDING; HIGHLY CARBONACEOUS IN ZONES, BRITTLE WITH CONCHOIDAL FRACTURE, FRAGMENTED IN ZONES WITH NUMEROUS SLICKENSIDES HIGHLY CARBONACEOUS 121.8 TO 122.6 FEET	475
	HIGHLY CARBONACEOUS 127.8 TO 128.2 FEET	
		470
	GRADES CARBONACEOUS AND THINLY LAMINATED AT 134.5 FEET ABUNDANT PYRITE IN BASAL 4 INCHES OF SHALE	465
	GRAY SILTY LIMESTONE, FINE TO MEDIUM CRYSTALLINE; THIN BEDDED, NUMEROUS IRREGULAR PARTINGS AND GRADATIONAL ZONES OF CALCAREOUS SHALE 1/4 TO 3 INCHES THICK SPACED 1/2 TO 6 INCHES, NEAR VERTICAL FRACTURE 139.0 TO 140.5 FEET (FORT ATKINSON FORMATION)	460
		455
	BORING CONTINUED	450

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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-133

LOG OF BORING A-6
(SHEET 2 OF 3)

BORING A-6 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155										
160									100	98
165										
170									100	100
175										
180									100	93
185										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		450
	LIGHT GRAY TO BUFF PURE LIMESTONE, COARSELY CALCARENITIC; THIN TO MEDIUM BEDDED, IRREGULAR HAIR LINE TO 1/4 INCH SHALE PARTINGS AND STYOLITES SPACED 1/2 TO 12 INCHES; OIL STAINED POROUS ZONE FROM 152.6 TO 163.9 FEET	445
		440
		435
		430
	DARK GRAY CALCAREOUS SILTSTONE, HIGHLY FOSSILIFEROUS IN NUMEROUS IRREGULAR THIN WHITE BANDS; LAMINATED, 1 TO 4 INCH LAYERS OF SILTY LIMESTONE SPACED 2 TO 8 INCHES (SCALES FORMATION)	425
		420
	DARK GRAY SILTY SHALE, CALCAREOUS; LAMINATED, INTERBEDDED SILTY LIMESTONE	
	BORING COMPLETED AT 184.0 FEET ON 10-7-72 300 POUND HAMMER FALLING 18 INCHES	415

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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-133

LOG OF BORING A-6
(SHEET 3 OF 3)

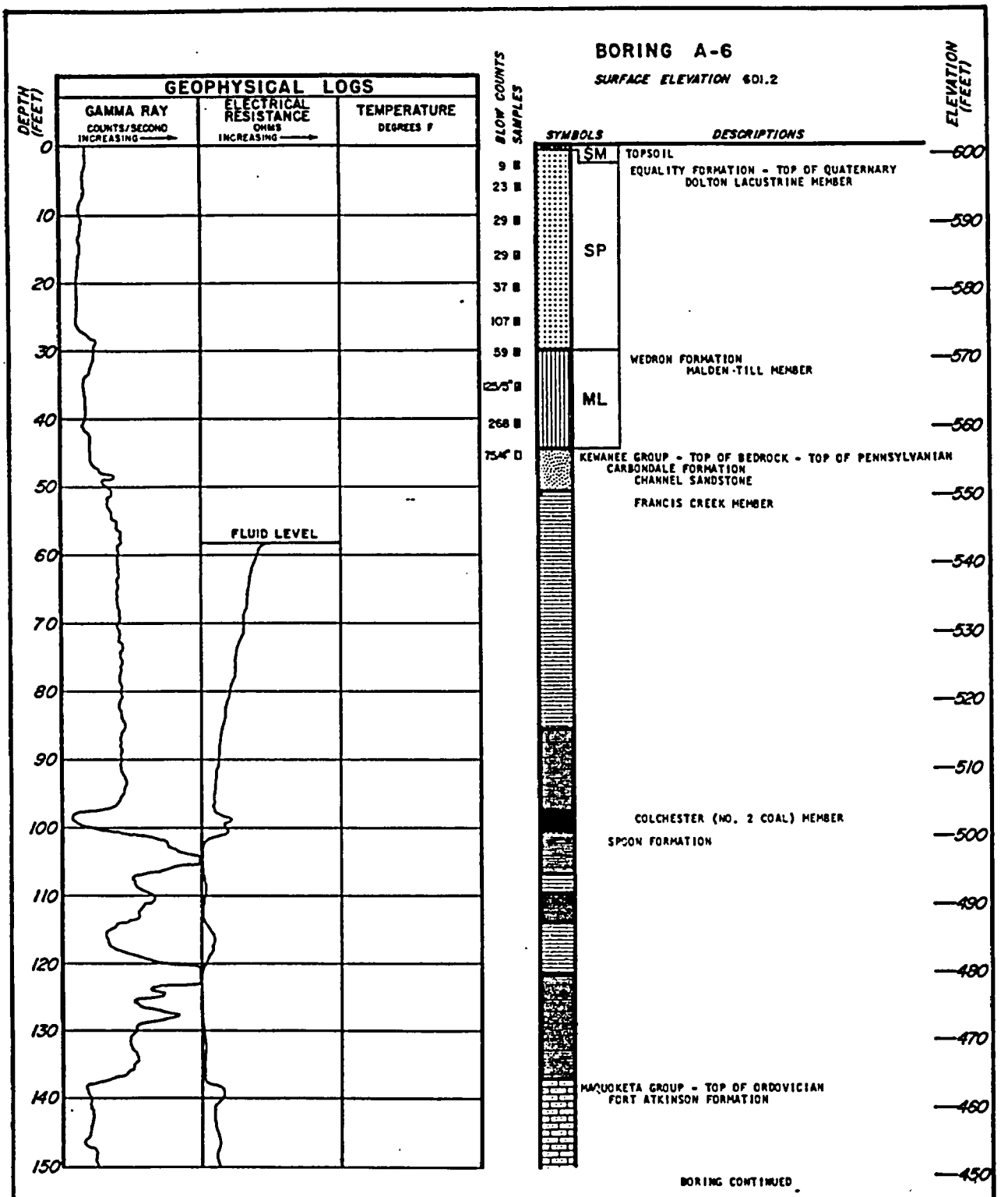

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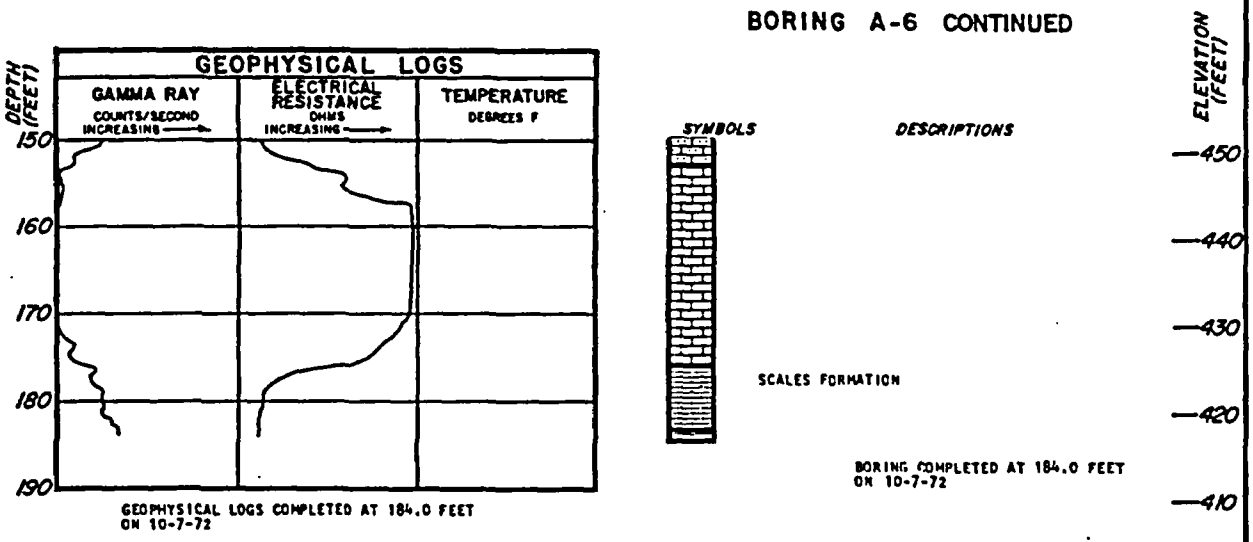
FIGURE 2.5-134

LOG OF BORING A-6 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)



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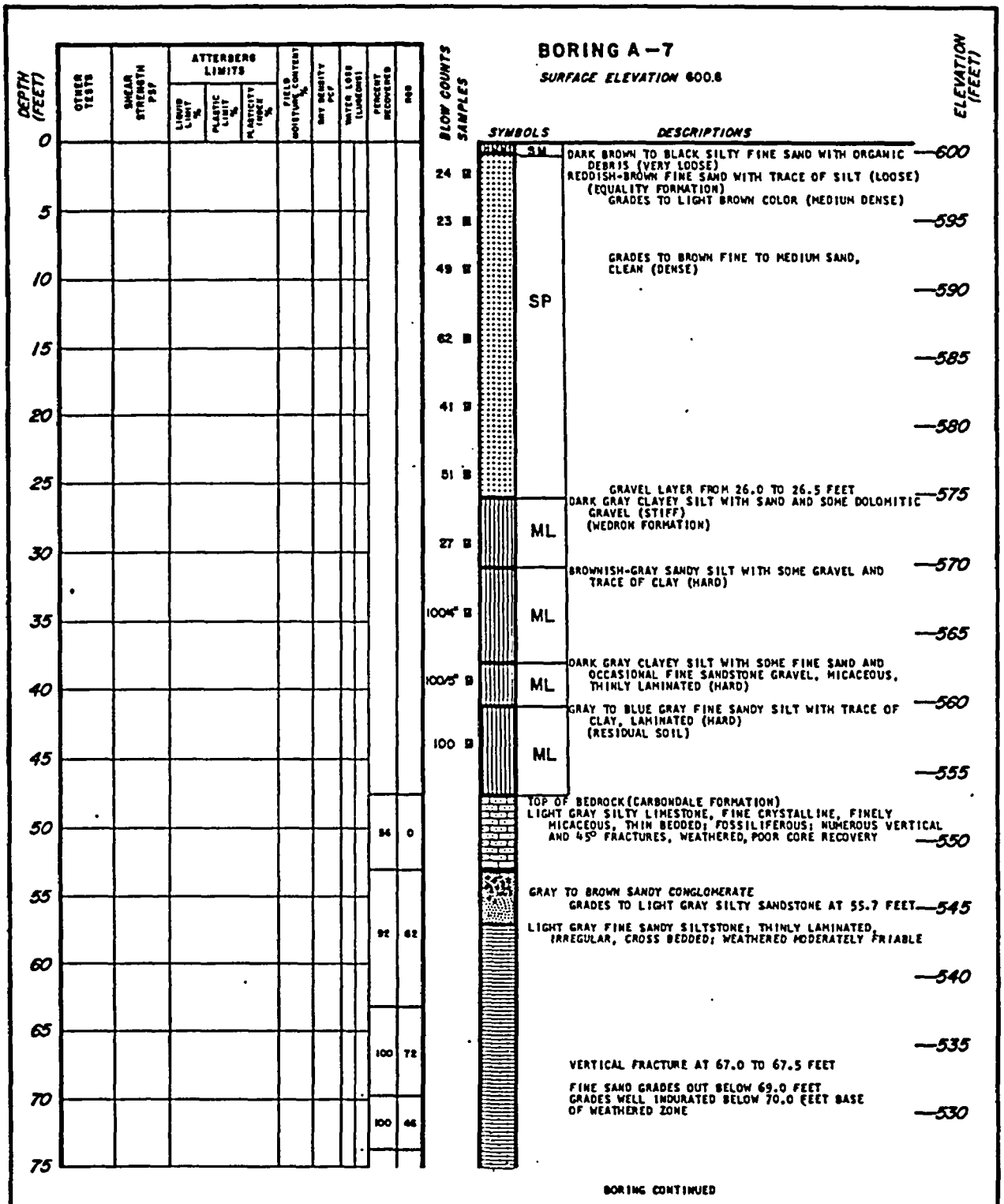
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-134

LOG OF BORING A-6 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)



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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-135

LOG OF BORING A-7
(SHEET 1 OF 3)

BORING A-7 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									98	86
85									98	79
90										
95									98	30
100										
105									96	26
110										
115									68	19
120									73	36
125										
130									100	83
135									99	61
140									98	78
145										
150										

BLOW COUNTS
SAMPLES

SYMBOLS | DESCRIPTIONS | ELEVATION (FEET)

525

520

515

510

GRAY SILTY SHALE, FINELY MICACEOUS; THINLY LAMINATED, HORIZONTAL BEDDING; OCCASIONAL 1/2 TO 1 INCH SIDERITE CONCRETION

505

500

495

BLACK COAL; THIN BEDDED; NUMEROUS VERTICAL TIGHT FRACTURES WITH SOME PYRITE AND CLAY

490

DARK BROWNISH-GRAY TO BLACK SHALE, CARBONACEOUS IN ZONES; THINLY LAMINATED, HIGHLY FRAGMENTED WITH NUMEROUS RAND M SLICKENSIDES (SPOON FORMATION)

485

21 INCH LAYER OF BLACK COAL AT 118.0 FEET

DARK GRAY SILTSTONE, MICACEOUS; LAMINATED, IRREGULAR BEDDING; FRAGMENTED IN ZONES; POOR CORE RECOVERY

480

475

GRADES TO DARK BROWNISH-GRAY COLOR BELOW 127.5 FEET FINELY MICACEOUS; INDISTINCT BEDDING; NUMEROUS NEAR VERTICAL FRACTURES FROM 128.4 TO 129.0 FEET

20° FRACTURE AT 131.0 FEET

470

GRADES DARK GRAY TO BLACK CARBONACEOUS SILTSTONE AT 132.5 FEET
45° FRACTURES SPACED 2 INCH FROM 134.5 TO 135.3 FEET

465

GREENISH-GRAY SILTY SHALE, DOLOMITIC, THINLY LAMINATED; OCCASIONAL MARINE FOSSIL (BRAINARD FORMATION)

460

GRADES INCREASINGLY CALCAREOUS BELOW 144.5 FEET

455

GRAY SILTY LIMESTONE, FINE TO MEDIUM CRYSTALLINE, CALCARENITIC IN ZONES; THIN BEDDED, NUMEROUS IRREGULAR PARTINGS AND GRADATIONAL ZONES OF CALCAREOUS SHALE 1/4 TO 2 INCHES THICK SPACED 1/4 TO 4 INCHES; FOSSILIFEROUS THROUGHOUT (FORT ATKINSON FORMATION)

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-135

LOG OF BORING A-7
(SHEET 2 OF 3)

BORING A-7 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155									100	90
160									92	7
165										
170									100	44
175										
180									95	72
185										

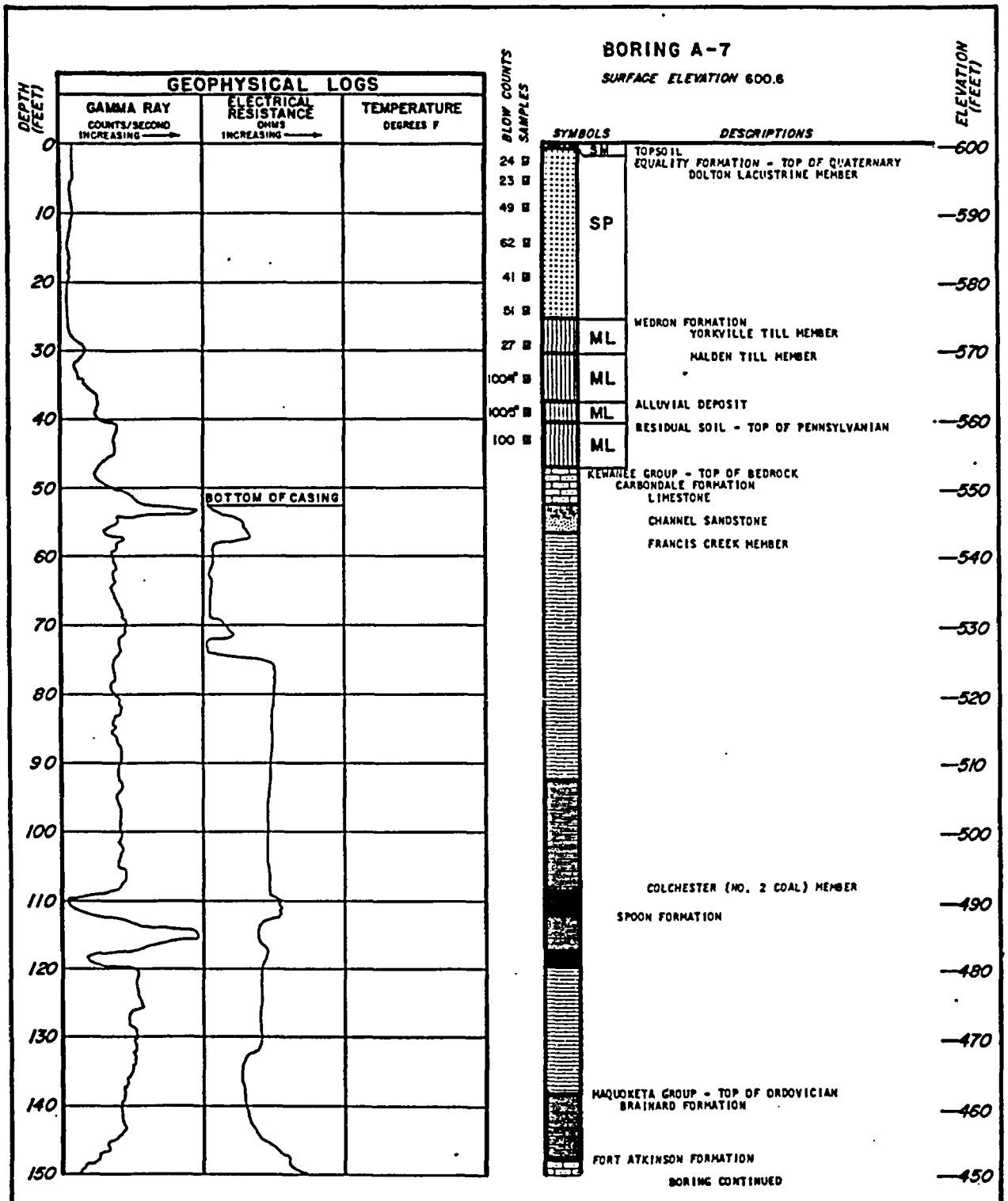
BLOW COUNTS SAMPLES

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	1/2 INCH VUG AT 150.3 FEET, PARTIALLY FILLED WITH CALCITE CRYSTALS	450
		445
		440
		435
	GRADES LESS SILTY BELOW 172.0 FEET, CALCARENITIC	430
	LIGHT GRAY TO BUFF PURE LIMESTONE, COARSELY CALCARENITIC, FOSSILIFEROUS, SHALE PARTINGS AND STYOLITES SPACED 2 TO 8 INCHES	425
		420
	BORING COMPLETED AT 184.0 FEET ON 10-10-72 140 POUND HAMMER FALLING 30 INCHES	415

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-135

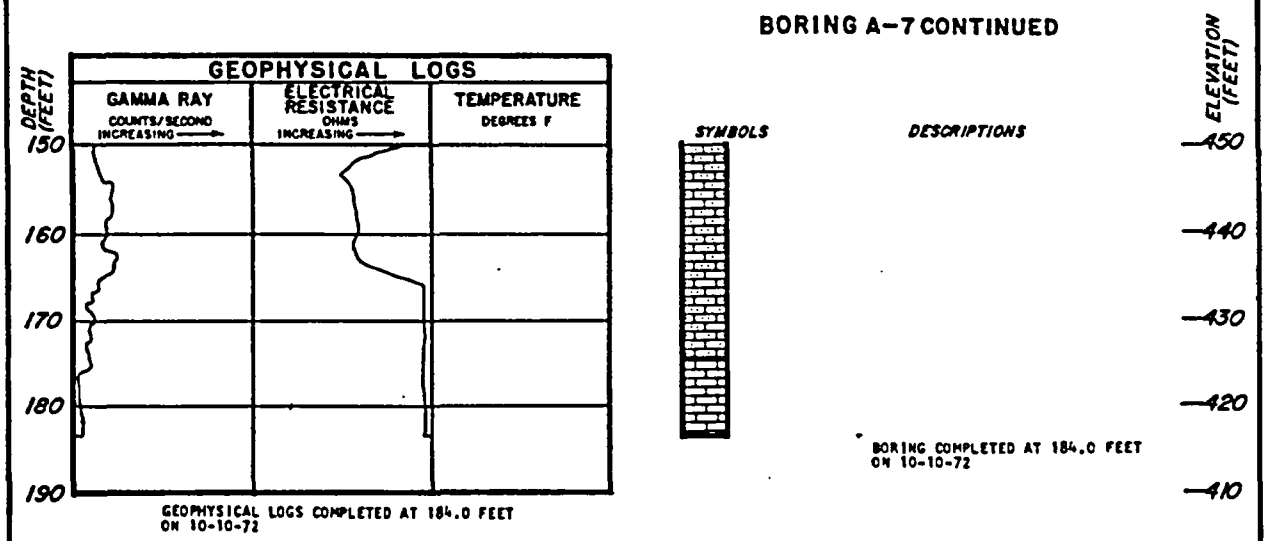
LOG OF BORING A-7
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-136

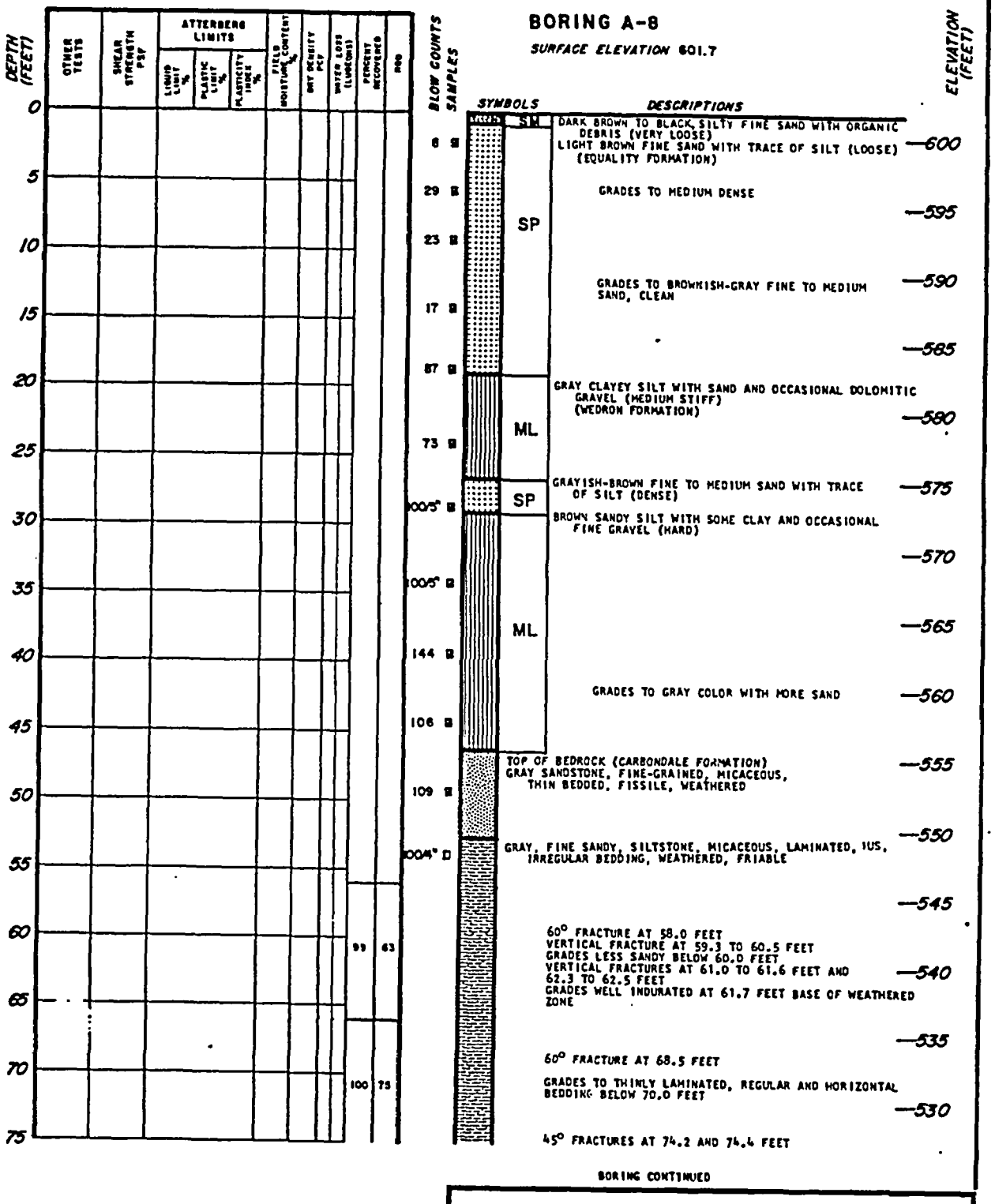
LOG OF BORING A-7 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-136

LOG OF BORING A-7 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-137

LOG OF BORING A-8
(SHEET 1 OF 3)

BORING A-8 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									100	95
85										
90									92	85
95										
100									100	56
105									65	30
110									93	72
115										
120									95	73
125										
130									100	62
135										
140									100	87
145										
150										

BLOW COUNTS SAMPLES

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	30° FRACTURE AT 76.2 FEET	525
	30° FRACTURE AT 84.3 FEET	520
		515
	45° FRACTURE AT 92.1 FEET	510
	GRAY SILTY SHALE FINELY MICACEOUS; THINLY LAMINATED, HORIZONTAL BEDDING; OCCASIONAL 1/2 TO 1 INCH SIDERITE CONCRETION 60° FRACTURE AT 97.0 FEET AND 45° FRACTURE AT 97.7 FEET BLACK COAL, THIN BEDDED, NUMEROUS VERTICAL TIGHT FRACTURES WITH SOME PYRITE AND CLAY	505
	2 INCH COAL LAYER AT 103.6 FEET. BLACK TO DARK GRAY CLAYEY SHALE, HIGHLY CARBONACEOUS; INDISTINCT BEDDING; HIGHLY FRAGMENTED, NUMEROUS RANDOM SLICKENSIDES (SPOON FORMATION)	500
	GRADES BROWNISH-GRAY BELOW 108.3 FEET, NON CARBONACEOUS	495
	LIGHT GREENISH-GRAY FINE SANDY SILTSTONE, MICACEOUS, NUMEROUS OOLITIC GRANULES; INDISTINCTLY LAMINATED DARK GRAY TO BLACK SILTY SHALE, CARBONACEOUS IN ZONES, THINLY LAMINATED; FRAGMENTED, NUMEROUS SLICKENSIDES	490
		485
	LIGHT GREENISH-GRAY FINE SANDY SILTSTONE, MICACEOUS; THINLY LAMINATED, IRREGULAR BEDDING; WELL INDURATED 1/4 INCH CHANNEL AT 119.4 FEET	480
	LIGHT TO DARK GRAYISH-BROWN AND BLACK SHALE, CARBONACEOUS IN ZONES; INDISTINCT BEDDING, BRITTLE; HIGHLY FRAGMENTED, NUMEROUS RANDOM SLICKENSIDES	475
		470
	16 INCH LAYER OF BLACK COAL AT 133.5 FEET; NUMEROUS VERTICAL TIGHT FRACTURES WITH PYRITE AND CLAY DARK GRAY TO BLACK SILTSTONE, FINELY MICACEOUS; PARTINGS; FRAGMENTED ZONES 135.6 TO 136.0 FEET AND 137.3 TO 137.8 FEET GRADES INCREASINGLY SILTY BELOW 138.0 FEET	465
	4 INCHES OF GREENISH-GRAY SILTY SHALE, CALCAREOUS, THINLY LAMINATED (BRAINARD FORMATION) GRAY SILTY LIMESTONE, FINE TO MEDIUM CRYSTALLINE, CALCARENITIC IN ZONES, FOSSILIFEROUS; THIN BEDDED, NUMEROUS IRREGULAR PARTINGS AND GRADATIONAL ZONES OF CALCAREOUS SHALE 1/10 TO 3 INCH THICK SPACED 1/4 TO 7 INCH (FORT ATKINSON FORMATION)	460
	OIL STAINED ZONE WITH PINPOINT POROSITY FROM 140.4 TO 140.6 FEET, 1 INCH OPEN VUGS AT 140.7 FEET, AND 142.0 FEET 45° FRACTURE AT 147.6 FEET	455

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-137

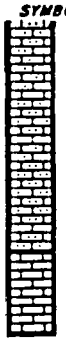
LOG OF BORING A-8
(SHEET 2 OF 3)

BORING A-8 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
									100	96
155										
160										
									100	96
165										
170										

BLOW COUNTS SAMPLES

SYMBOLS



DESCRIPTIONS

ELEVATION (FEET)

450

445

OIL STAINED ZONE WITH NUMEROUS PINPOINT OPENINGS FROM 161.3 TO 161.7 FEET

440

LIGHT GRAY TO BUFF PURE LIMESTONE, COARSELY CALCARENITIC, MEDIUM BEDDED, VERY THIN SHALE PARTINGS AND STYOLITES SPACED 1 TO 10 INCHES

OIL STAINED POROUS ZONES WITH NUMEROUS PINPOINT TO 1/10 INCH OPENINGS FROM 185.7 TO 186.2 FEET; 186.6 TO 187.2 FEET, AND 167.6 TO 168.0 FEET

435

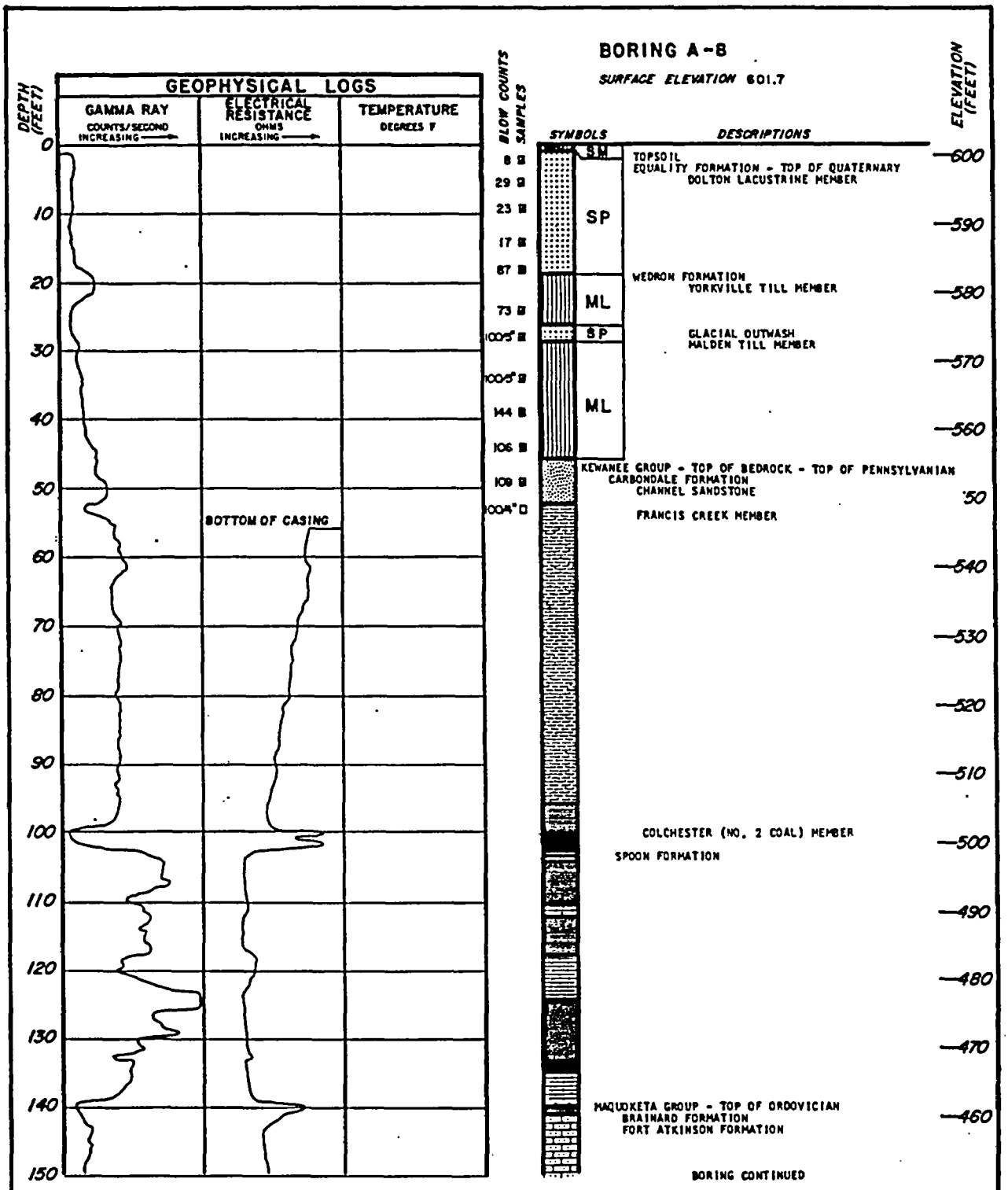
BORING COMPLETED AT 168.0 FEET
ON 10-14-72
140 POUND HAMMER FALLING 30 INCHES

430

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-137

LOG OF BORING A-8
(SHEET 3 OF 3)

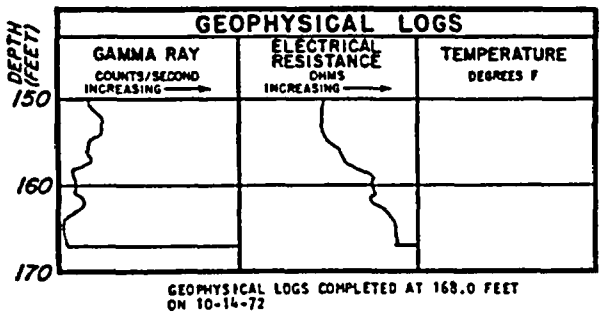


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-138

LOG OF BORING A-8 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)

BORING A-8 CONTINUED



DESCRIPTIONS

BORING COMPLETED AT 168.0 FEET
ON 10-14-72

ELEVATION (FEET)

450

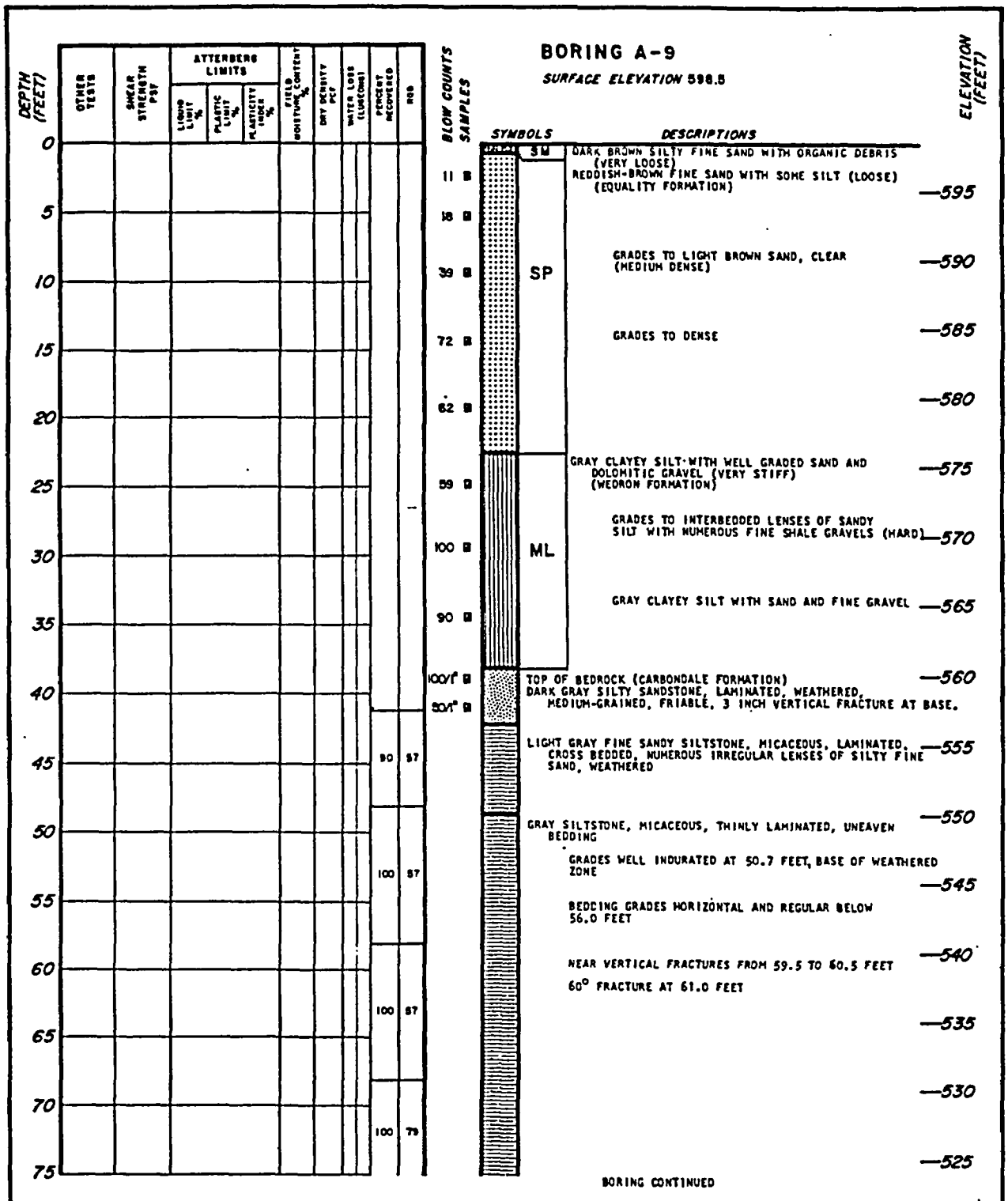
440

430

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-138

LOG OF BORING A-8 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-139

LOG OF BORING A-9
(SHEET 1 OF 3)

BORING A-9 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LINE/DRS)	PERCENT RECOVERED	RQD
75										
80									100	82
85										
90									100	48
95										
100									100	88
105										
110									100	48
115										
120									100	66
125										
130									98	73
135										
140									100	90
145										
150										

BLOW COUNTS SAMPLES

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

520

45° GRACTURE AT 85.0 FEET
GRAY SILTY SHALE, FINELY MICACEOUS; THINLY LAMINATED, HORIZONTAL BEDDING

515

510

BLACK COAL; THIN BEDDED; NUMEROUS VERTICAL TIGHT FRACTURES WITH SOME PYRITE AND CLAY

505

3 INCH COAL LAYER AT 96.4 FEET (SPOON FORMATION)
DARK GRAY TO BLACK CLAYEY SHALE, HIGHLY CARBONACEOUS; THINLY LAMINATED; HIGHLY FRAGMENTED, NUMEROUS RANDOM SLICKENSIDES

500

GRADES LIGHT GRAY, NON CARBONACEOUS BELOW 101.9 FEET

LIGHT GREENISH-GRAY SILTSTONE, MICACEOUS, FINE SANDY, LAMINATED, 30° FRACTURES AT 103.7 AND 104.1 FEET

495

DARK GRAY SHALE; THINLY LAMINATED; HIGHLY FRAGMENTED, NUMEROUS SLICKENSIDES

LIGHT GREENISH-GRAY SILTSTONE, MICACEOUS, FINE SANDY; INDISTINCTLY LAMINATED

490

485

DARK GRAY TO BLACK SHALE, HIGHLY CARBONACEOUS; THINLY LAMINATED; FRAGMENTED IN ZONES WITH NUMEROUS RANDOM SLICKENSIDES

DARK GRAYISH-BROWN SHALE, CARBONACEOUS IN ZONES, INDISTINCT BEDDING; BRITTLE; FRAGMENTED NUMEROUS IRREGULAR SLICKENSIDES

480

GREENISH-GRAY SHALE, THINLY LAMINATED, IRREGULAR BEDDING; 30° FRACTURES AT 123.4 AND 124.0 FEET (BRAINARD FORMATION)

475

GRADES SILTY AND DOLOMITIC AT 125.0 FEET
30° FRACTURE AT 126.0 FEET
GRADES CALCAREOUS AT 127.5 FEET

GRAY SILTY LIMESTONE, FINE TO MEDIUM CRYSTALLINE, CALCARENITIC IN ZONES, FOSSILIFEROUS THIN BEDDED, NUMEROUS IRREGULAR PARTINGS AND GRADATIONAL ZONES OF CALCEREOUS SHALE 1/4 TO 2 INCH THICK SPACED 1/4 TO 4 INCH (FORT ATKINSON FORMATION)

470

OPEN IRREGULAR VUG WITH CALCITE CRYSTALS AND OIL STAIN 130.4 TO 130.7 FEET

465

460

2 INCH VUG AT 146.3 FEET, FILLED WITH LARGE CALCITE CRYSTALS, OIL STAINED; OIL STAINED POROUS ZONE WITH NUMEROUS PINPOINT OPENINGS FROM 146.8 TO 148.1 FEET

455

LIGHT GRAY TO BUFF PURE LIMESTONE, COARSELY CALCARENITIC; MEDIUM BEDDED, VERY THIN SHALE PARTINGS AND STYOLITES SPACED 1 TO 18 INCHES

450

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-139

LOG OF BORING A-9
(SHEET 2 OF 3)

BORING A-9 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155									96	90
160										

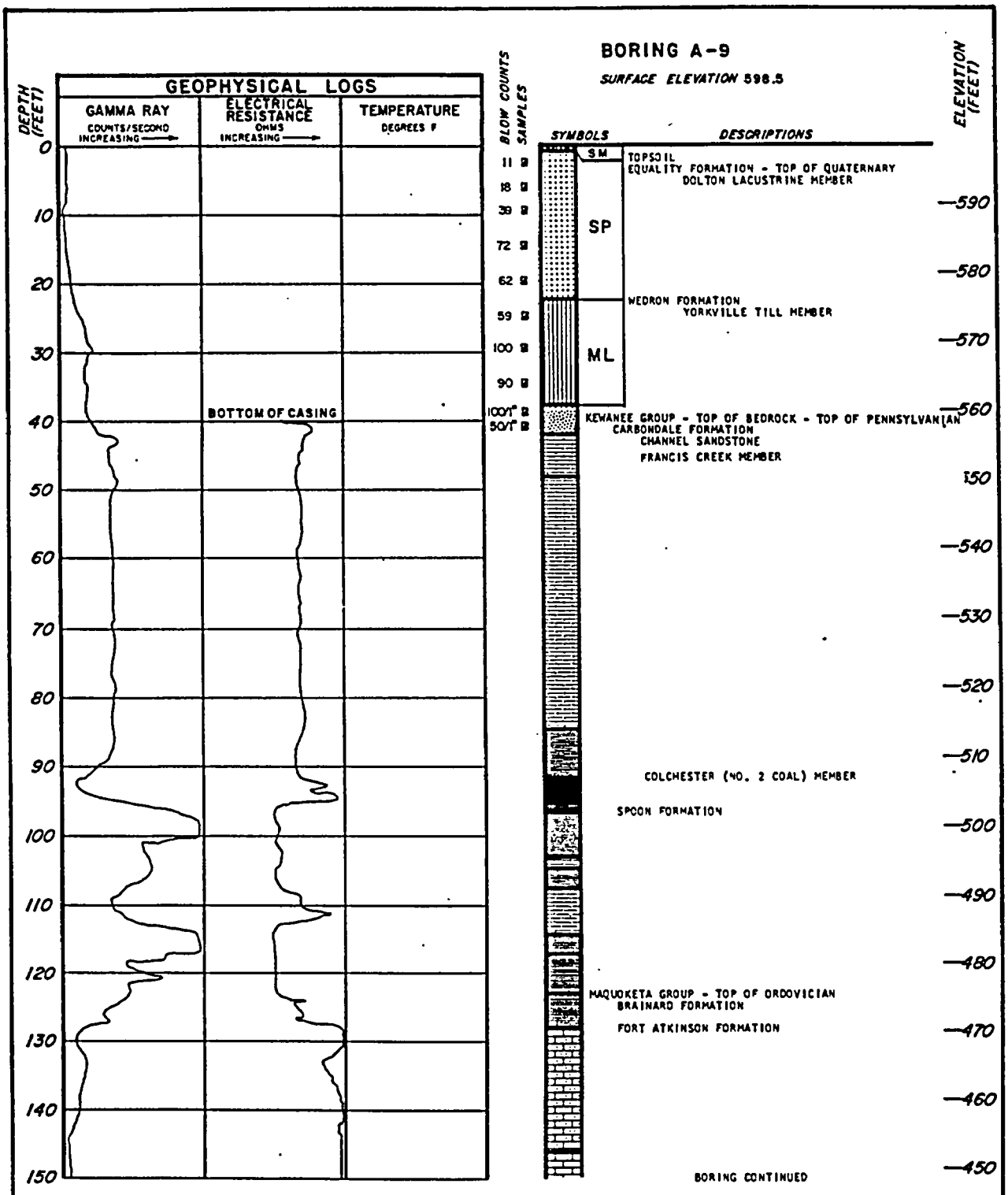
BLOW COUNTS SAMPLES

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	NEAR VERTICAL FRACTURE 153.5 TO 154.3 FEET, TIGHT	
	POROUS OIL STAINED ZONES WITH NUMEROUS PINPOINT OPENINGS AT 150.7 TO 151.2 FEET, 153.3 TO 154.4 FEET, AND 155.1 TO 155.8 FEET.	445
	BORING COMPLETED AT 157.5 FEET ON 10-17-72 140 POUND HAMMER FALLING 30 INCHES	440

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-139

LOG OF BORING A-9
(SHEET 3 OF 3)

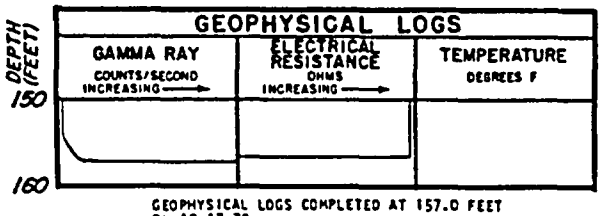


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-140

LOG OF BORING A-9 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)

BORING A-9 CONTINUED



GEOPHYSICAL LOGS COMPLETED AT 157.0 FEET ON 10-17-72

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

450

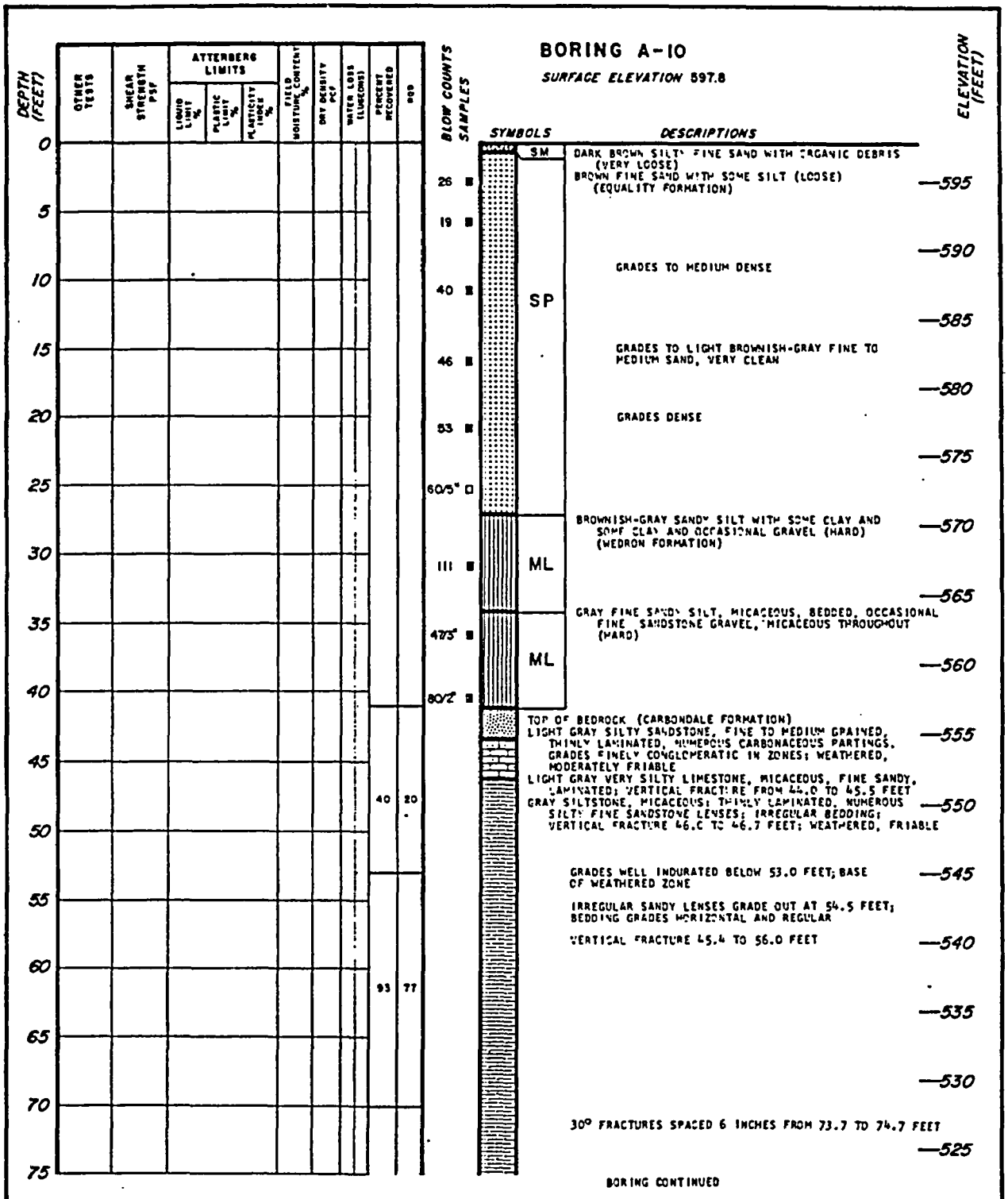
BORING COMPLETED AT 157.5 FEET ON 10-17-72

440

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-140

LOG OF BORING A-9 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-141

LOG OF BORING A-10
(SHEET 1 OF 3)

BORING A-10 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD	BLOW COUNTS SAMPLES
75											
80									92	87	
85											
90									64	10	
95											
100									93	86	
105											
110											
115									90	73	
120											
125											
130									93	79	
135											
140											
145									91	84	
150											

SYMBOLS

DESCRIPTIONS

30° FRACTURE AT 84.8 FEET

GRAY SILTY SHALE, FINELY MICACEOUS; THINLY LAMINATED, HORIZONTAL BEDDING

30° FRACTURE AT 88.3 FEET

45° FRACTURE AT 91.1 FEET

BLACK COAL; THIN BEDDED; NUMEROUS VERTICAL TIGHT FRACTURES VERTICAL TIGHT FRACTURES WITH SOME PYRITE AND CLAY

DARK BROWNISH-GRAY BLACK CLAYEY SHALE, CARBONACEOUS IN ZONES; INDISTINCTLY BEDDED, BRITTLE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES (SPOON FORMATION)

GRADES SILTY BELOW 101.0 FEET, FINELY MICACEOUS

LIGHT GREENISH-GRAY FINE SANDY SILTSTONE, FINELY MICACEOUS, THINLY LAMINATED

DARK GRAY TO BLACK CLAYEY SHALE, HIGHLY CARBONACEOUS; THINLY LAMINATED, FRAGMENTED WITH NUMEROUS SLICKENSIDES

GRADES SILTY BELOW 114.2 FEET, CARBONACEOUS IN ZONES, BRITTLE.

1 INCH HIGHLY PYRITIZED ZONE AT 125.5 FEET
6 INCHES GREENISH-GRAY SHALE, CALCAREOUS; THINLY LAMINATED (BRAINARD FORMATION)
GRAY SILTY LIMESTONE, FINE TO MEDIUM CRYSTALLINE, CALCARENITIC IN ZONES; THIN BEDDED, NUMEROUS IRREGULAR PARTINGS AND GRADATIONAL ZONES OF CALCAREOUS SHALE 1/10 TO 2 INCHES THICK SPACED 1/4 TO 6 INCHES; FOSSILIFEROUS THROUGHOUT
OIL STAINED ZONE WITH 1 INCH OPEN VUGS AND ABUNDANT PINPOINT POROSITY FROM 127.5 TO 128.1 FEET (FORT ATKINSON FORMATION)

LIGHT GRAY TO BUFF PURE LIMESTONE, COARSELY CALCARENITIC; MEDIUM BEDDED, PAPER THIN SHALE PARTINGS AND STYOLITES SPACED 1 TO 12 INCHES; OIL STAINED ZONES WITH ABUNDANT PINPOINT POROSITY FROM 144.0 TO 146.2 FEET, 147.4 TO 149.2 FEET, 151.3 TO 151.5 FEET, 152.3 TO 153.5 FEET, AND 156.4 TO 156.7 FEET

BORING CONTINUED

ELEVATION (FEET): 520, 515, 510, 505, 500, 495, 490, 485, 480, 475, 470, 465, 460, 455, 450

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-141

LOG OF BORING A-10
(SHEET 2 OF 3)

BORING A-10 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155										
160										

BLOW COUNTS
SAMPLES

SYMBOLS

DESCRIPTIONS

BORING COMPLETED AT 158.0 FEET
ON 10-16-72
140 POUND HAMMER FALLING 30 INCHES

ELEVATION (FEET)

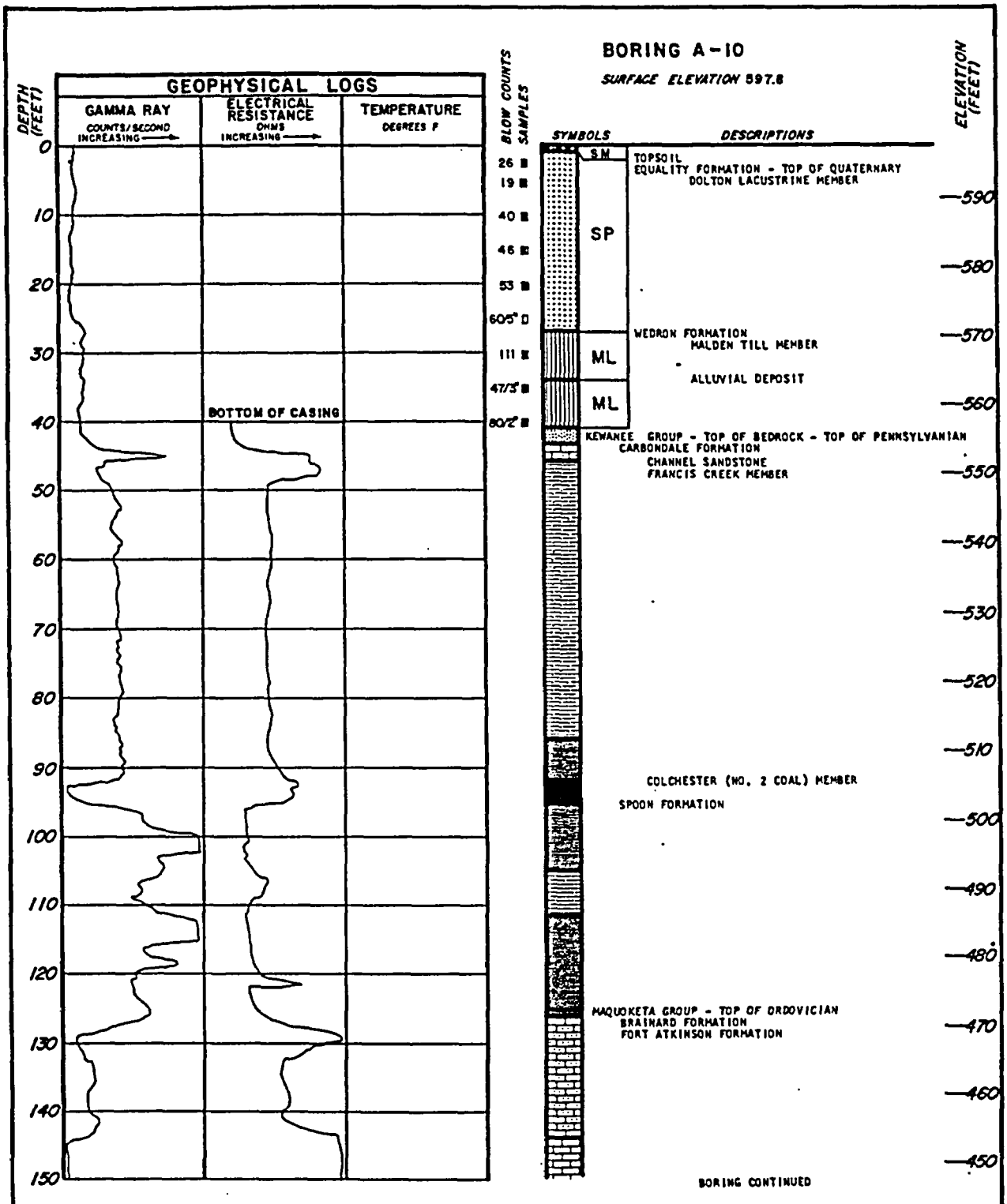
445

440

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-141

LOG OF BORING A-10
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-142

LOG OF BORING A-10 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)

BORING A-10 CONTINUED

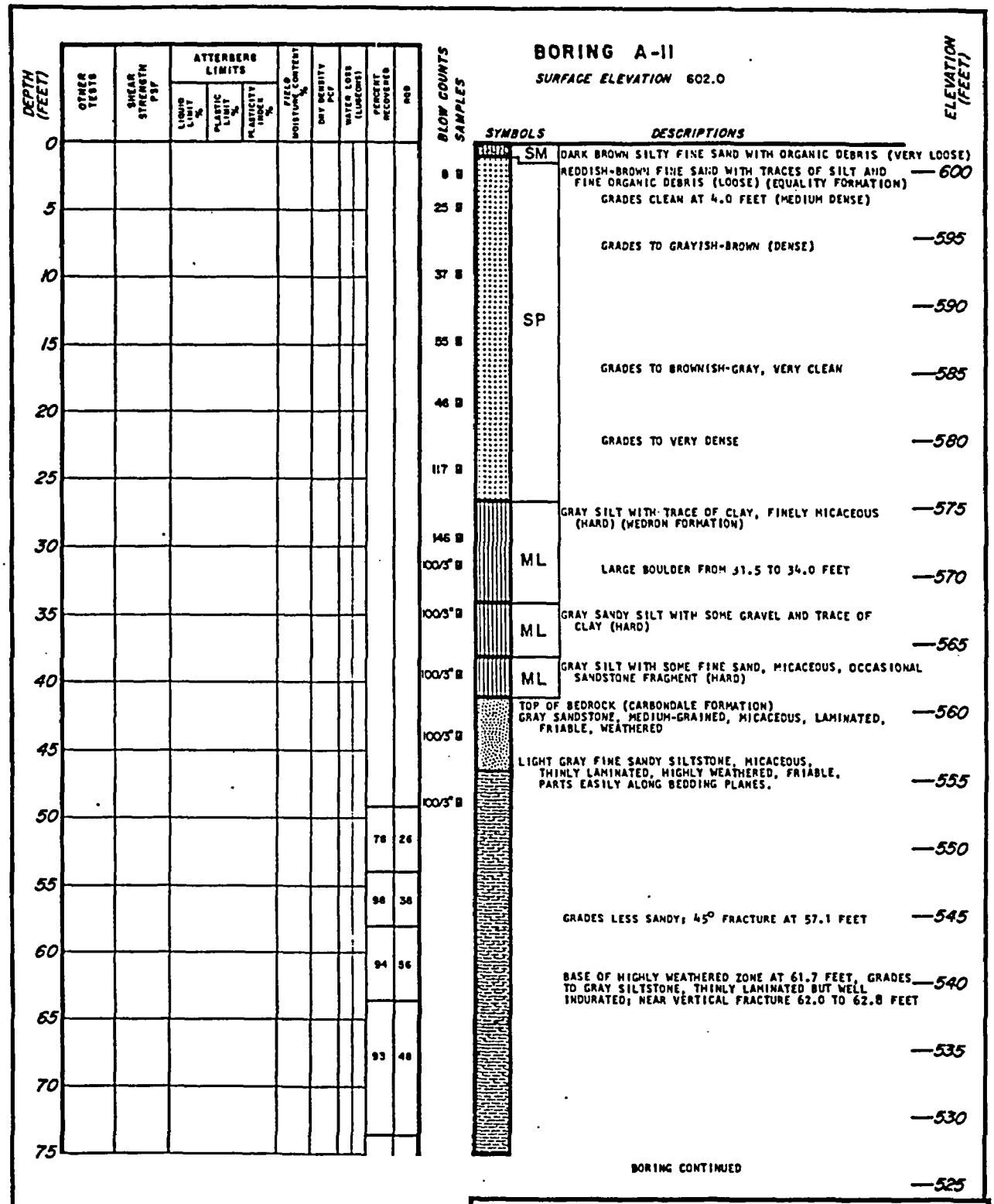
DEPTH (FEET)	GEOPHYSICAL LOGS			SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	GAMMA RAY COUNTS/SECOND INCREASING →	ELECTRICAL RESISTANCE OHMS INCREASING →	TEMPERATURE DEGREES F			
150						
160					BORING COMPLETED AT 158.0 FEET ON 10-16-72	440

GEOPHYSICAL LOGS COMPLETED AT 158.0 FEET ON 10-16-72

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-142

LOG OF BORING A-10 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-143

LOG OF BORING A-11
(SHEET 1 OF 3)

BORING A-11 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									100	48
85									97	54
90										
95									100	49
100									0	0
105									96	67
110									76	65
115									98	63
120										
125									100	15
130									100	59
135									100	79
140										
145										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	GRAY SILTY SHALE, MICACEOUS; BEDDING IS THINLY LAMINATED, HORIZONTAL AND REGULAR; OCCASIONAL SIDERITE NODULE; SOME HIGH ANGLE AND 45° FRACTURE FROM 75.4 TO 79.2 FEET	525
	NEAR VERTICAL FRACTURE FROM 83.4 TO 84.0 FEET	520
	45° AND HIGH ANGLE FRACTURES SPACED 3 TO 18 INCHES FROM 86.0 TO 91.5 FEET	515
	ZONE OF HIGHLY CONTORTED AND FRACTURED LAMINATIONS FROM 92.0 TO 92.8 FEET NEAR VERTICAL FRACTURE 93.0 TO 93.5 FEET	510
		505
	BLACK COAL THINLY LAMINATED, NUMEROUS TIGHT VERTICAL FRACTURES THROUGHOUT WITH PYRITE AND CLAY	500
	GRAY CLAYEY SHALE, FRAGMENTED WITH NUMEROUS SLICKENSIDES ALONG RANDOM ORIENTED PLANES OF WEAKNESS, MICACEOUS. SILTY IN ZONES (SPOON FORMATION)	495
	LIGHT GRAY SILTSTONE, MICACEOUS, INDISTINCTLY BEDDED	
	GRAY CLAYEY SHALE, FRAGMENTED WITH NUMEROUS SLICKENSIDES GRADES DARK GRAY, CARBONACEOUS AT 110.8 FEET	490
	LIGHT GREENISH-GRAY SILTSTONE, FINE SANDY, MICACEOUS, INDISTINCTLY LAMINATED	485
	LIGHT GRAY SILTY SHALE, THINLY LAMINATED, FISSILE GRADES BLACK, HIGHLY CARBONACEOUS AT 120.5 FEET	
	11 INCH COAL LAYER AT 121.2 FEET MOTTLED DARK BROWN TO GRAY SHALE, HIGHLY FRAGMENTED, CARBONACEOUS IN ZONES	480
		475
	DARK BROWNISH-GRAY SILTSTONE, FINELY MICACEOUS, INDISTINCTLY LAMINATED WITH NUMEROUS FRAGMENTED ZONES, OCCASIONAL CARBONACEOUS LAYER	470
	45° FRACTURE AT 133.2 FEET	
	BLACK SHALE, HIGHLY CARBONACEOUS, THINLY LAMINATED WITH NUMEROUS INTERLAYERED PLANT IMPRESSIONS, FISSILE	465
	DARK GREENISH-GRAY CALCAREOUS SHALE, INDISTINCT BEDDING GRAY CALCAREOUS SILTSTONE WITH IRREGULAR THIN LAMINATIONS OF SHALE, FOSSILIFEROUS (BRAINARD FORMATION) GRAY SILTY LIMESTONE, FINE TO MEDIUM CRYSTALLINE, COARSELY CALCARENITIC IN ZONES; INTERBEDDED WITH NUMEROUS 1/4 TO 1/2 INCH IRREGULAR SHALE PARTINGS SPACED 1 TO 8 INCHES; FOSSILIFEROUS THROUGHOUT, NO FRACTURES OBSERVED IN CORE (FORT ATKINSON FORMATION)	460
	BORING CONTINUED	455

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

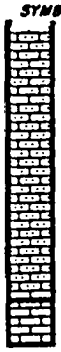
FIGURE 2.5-143

LOG OF BORING A-11
(SHEET 2 OF 3)

BORING A-11 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
145										
150									100	88
155									100	96
160										
165										

SYMBOLS



DESCRIPTIONS

3/4 INCH CALCITE LINED VUG AT 159.5 FEET

GRADES TO LIGHT GRAY AND BUFF PURE LIMESTONE, CALCARENITIC, MEDIUM BEDDED, OCCASIONAL VERY THIN STYOLITE

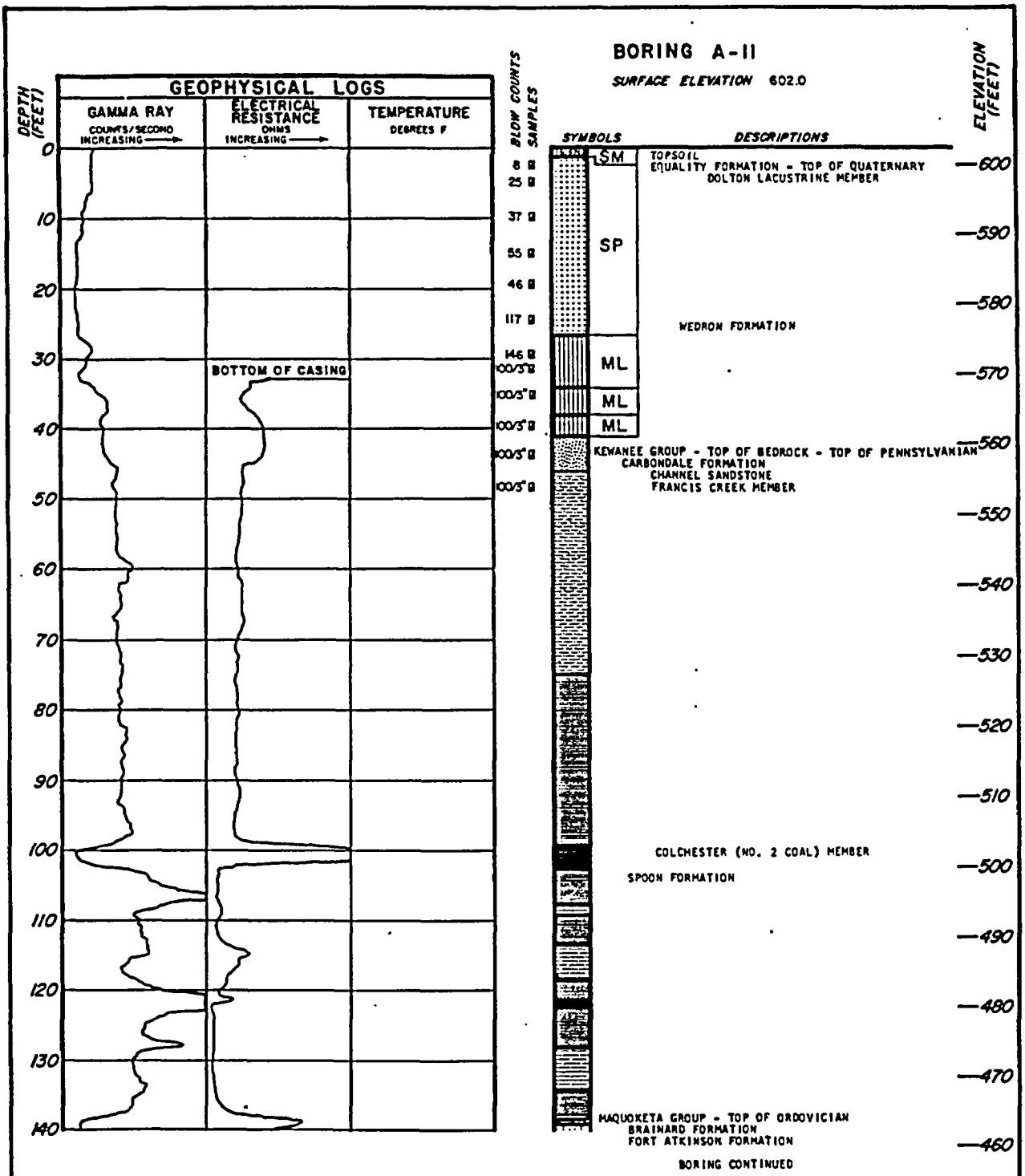
BORING COMPLETED AT 163.5 FEET
ON 9-19-72
140 POUND HAMMER FALLING 30 INCHES

ELEVATION (FEET): 455, 450, 445, 440, 435

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-143

LOG OF BORING A-11
(SHEET 3 OF 3)

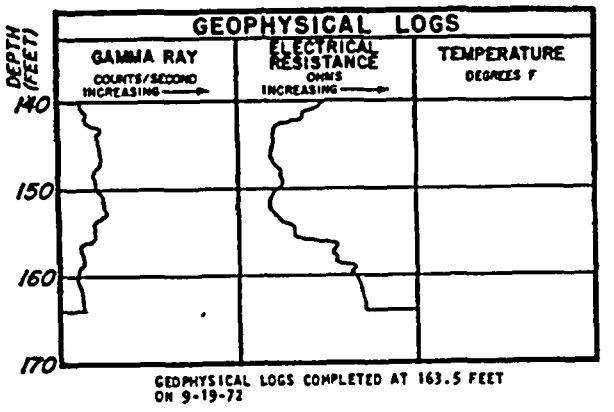


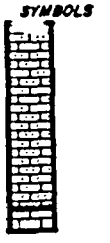
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-144

LOG OF BORING A-11 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)

BORING A-11 CONTINUED





DESCRIPTIONS

BORING COMPLETED AT 163.5 FEET
ON 9-19-72

ELEVATION (FEET)

460
450
440
430

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-144

LOG OF BORING A-11 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)

BORING P-3

SURFACE ELEVATION 597.6

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD	BLOW COUNTS / SAMPLES
0											
5											28
											26
10											42
15											37
20											36
25											66
30											122
35											21/1"
40											109/6"
45											55/2"
50											
55									98	52	
60											
65									97	57	
70									98	66	
75											

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
SW	LIGHT BROWN SAND AND GRAVEL WITH SOME SILT	
SP	REDDISH-BROWN FINE SAND WITH TRACE OF SILT (MEDIUM DENSE) (EQUALITY FORMATION)	595
	GRADES TO LIGHT BROWN, CLEAN (DENSE)	590
	GRADES TO BROWNISH-GRAY COLOR	585
		580
		575
SW	GRAYISH-BROWN WELL GRADED SAND WITH SOME GRAVEL AND TRACE OF SILT (DENSE) (WEDRON FORMATION)	
SM	GRAY SILTY WELL GRADED SAND WITH OCCASIONAL GRAVEL AND TRACE OF CLAY (HARD)	570
		565
SW	GRAY WELL GRADED SAND WITH OCCASIONAL FINE GRAVEL AND TRACE OF SILT (VERY DENSE)	560
ML	GRAY SILT WITH SAND AND GRAVEL AND SOME CLAY (HARD)	555
ML	GRAY FINE SANDY SILT (HARD) (RESIDUAL SOIL)	550
	TOP OF BEDROCK (CARBONDALE FORMATION) LIGHT GRAY SILTY SANDSTONE, FINE TO MEDIUM GRAINED, MICACEOUS; THIN BEDDED, WEATHERED, MODERATELY FRIABLE 45° FRACTURES SPACED 3 INCHES 51.5 TO 52.3 FEET GRADES CONGLOMERITIC WITH FINE TO COARSE GRAVELS OF SIDERITE AND COAL FROM 52.2 TO 53.1 FEET	545
	LIGHT GRAY SILTY SANDSTONE, FINE TO MEDIUM GRAINED, MICACEOUS; THIN BEDDED, WEATHERED, MODERATELY FRIABLE WITH IRREGULAR LENSES OF THINLY LAMINATED AND CROSS BEDDED SILTSTONE 1/2 TO 2 INCHES THICK, SPACED 1 TO 4 INCHES; ROUNDED GRAVELS OF SIDERITE AND SILTSTONE IN ZONES; PARTS READILY ALONG SILTSTONE LENSES	540
	GRAY FINE SANDY SILTSTONE, MICACEOUS; BEDDING IS THINLY LAMINATED, REGULAR AND NEAR HORIZONTAL; GRADES WELL INDURATED, BASE OF WEATHERED ZONE AT 60.3 FEET, 45° FRACTURE AT 62.0 FEET, NEAR VERTICAL FRACTURE FROM 62.2 TO 64.0 FEET	535
		530
		525
	BORING CONTINUED	520

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-145

LOG OF BORING P-3
(SHEET 1 OF 5)

BORING P-3 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									90	83
85										
90									94	26
95										
100									100	69
105										
110									97	89
115										
120									96	63
125										
130									100	95
135										
140									98	98
145										
150									100	100

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	GRADES TO GRAY SILTY SHALE, FINELY MICACEOUS; THINLY LAMINATED, HORIZONTAL BEDDING; OCCASIONAL 1 TO 2 INCH SIDERITE CONCRETION 50° FRACTURE AT 81.0 FEET	—520
		—515
	45° FRACTURE AT 86.2 FEET	—510
	NEAR VERTICAL FRACTURE 90.5 TO 91.0 FEET 20° FRACTURE AT 91.5 FEET, GRADES CARBONACEOUS	
	BLACK COAL; THIN BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH THIN DEPOSITS OF PYRITE AND KAOLONITE	—505
	BLACK HIGHLY CARBONACEOUS SHALE FROM 95.6 TO 96.1 FEET DARK BROWNISH GRAY CLAYEY SHALE; INDISTINCT BEDDING; HIGHLY FRAGMENTED WITH NUMEROUS SLICKENSIDES ALONG RANDOM PLANES OF WEAKNESS (SPOON FORMATION)	—500
	GRADES TO GRAY BELOW 99.0 FEET	
	LIGHT GRAY FINE SANDY SILTSTONE, MICACEOUS, INDISTINCTLY LAMINATED; SOME HIGH ANGLE AND 45° FRACTURES FROM 100.4 TO 102.0 FEET	—495
	DARK GRAY SILTY SHALE, FRAGMENTED WITH NUMEROUS SLICKENSIDES, CARBONACEOUS ALONG UPPER CONTACT	
	LIGHT GREENISH-GRAY SILTSTONE, MICACEOUS, FINE SANDY IN IRREGULAR POCKETS AND LENSES HIGH ANGLE FRACTURE FROM 105.3 TO 106.0 FEET	—490
	GRADES TO DARKER COLOR AT 110.0 FEET	
	GRADES INCREASINGLY SANDY WITH NUMEROUS INTERBEDDED THIN LAMINATIONS GRADES TO SILTY SANDSTONE BELOW 113.5 FEET	—485
	BLACK TO DARK BROWN SHALE, HIGHLY CARBONACEOUS, FRAGMENTED 6 INCH LAYER OF COAL FROM 115.9 TO 116.4 FEET DARK BROWNISH-GRAY SHALE, FRAGMENTED WITH NUMEROUS SLICKENSIDES ALONG RANDOM PLANES OF WEAKNESS	—480
	1 INCH COAL SEAM IN 3 INCHES OF BLACK CARBONACEOUS SHALE	
	DARK GRAY SILTSTONE, MICACEOUS; THINLY LAMINATED, CROSS BEDDED IN ZONES GRADES SANDY IN NUMEROUS IRREGULAR LAMINATIONS BELOW 124.0 FEET	—475
	25° FRACTURES SPACED 1/2 INCH AT 127.5 FEET GRADES VERY SANDY; CARBONACEOUS IN NUMEROUS IRREGULAR LAMINATIONS	—470
	DARK GREENISH-GRAY SILTY SHALE, CALCAREOUS; INDISTINCTLY LAMINATED, HORIZONTAL, OCCASIONAL MARINE FOSSIL (BRAINARD FORMATION)	—465
	NEAR VERTICAL FRACTURE FROM 137.0 TO 138.2 FEET, TIGHT	—460
		—455
	GRADES DOLOMITIC BELOW 146.0 FEET	—450
	GRAY SILTY LIMESTONE, FINE TO MEDIUM CRYSTALLINE; THIN BEDDED, NUMEROUS GRADATIONAL AND IRREGULAR 1/4 TO 2 INCH ZONES OF CALCAREOUS SHALE SPACED 1/2 TO 6 INCHES; FOSSILIFEROUS THROUGHOUT (FORT ATKINSON FORMATION) BORING CONTINUED	—445

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FIGURE 2.5-145

LOG OF BORING P-3
(SHEET 2 OF 5)

BORING P-3 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155										
160									100	69
165										
170									100	90
175										
180									98	96
185										
190									98	98
195										
200									100	72
205										
210									99	97
215										
220									98	84
225										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		445
		440
		435
	LIGHT GRAY LIMESTONE WITH SOME SILT, COARSELY CALCAENITIC; THIN BEDDED WITH 1 TO 2 INCHES SHALEY ZONES SPACED 2 TO 12 INCHES	430
	GRADES TO LIGHT BUFF PURE LIMESTONE AT 169.5 FEET, CALCARENITIC; THIN BEDDED WITH STYOLITES SPACED 1 TO 4 INCHES	425
	ZONE OF IRREGULAR TIGHT FRACTURES 177.0 TO 178.5 FEET WITH 1/4 TO 1/2 INCH CRYSTALLINE VUGS SPACED 1 TO 2 INCHES	420
	1/4 INCH VUG AT 180.7 FEET	415
	1/2 INCH VUG AT 189.8 FEET	410
	DARK GRAY CALCAREOUS SILTSTONE; LAMINATED WITH EXTREMELY NUMEROUS WHITE IRREGULAR FOSSIL BANDS (SCALES FORMATION)	405
	GRADES TO DARK GRAY SILTY SHALE AT 194.5 FEET, CALCAREOUS; LAMINATED, 1 TO 2 INCH INTERBEDDED ZONES OF SILTY LIMESTONE SPACED 2 TO 18 INCHES	400
		395
		390
	LIGHT GRAY SILTY LIMESTONE; THIN BEDDED, NUMEROUS WAVY SHALE PARTINGS; FOSSILIFEROUS	
	DARK GRAY SILTY SHALE, CALCAREOUS; LAMINATED, 1 TO 2 INCH INTERBEDDED ZONES OF SILTY LIMESTONE SPACED 2 TO 18 INCHES	385
		380
	LIGHT GRAY SILTY LIMESTONE, FOSSILIFEROUS.	
	VERY DARK GRAY SHALE, DOLOMITIC; LAMINATED, PARTS READILY ALONG HORIZONTAL BUT UNEVEN BEDDING PLANES SPACED 1/10 TO 1/4 INCH; 2 TO 10 INCH CALCAREOUS AND FOSSILIFEROUS ZONES SPACED 1 TO 4 FEET	375
	45° FRACTURE AT 224.2 FEET	
	BORING CONTINUED	370

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FIGURE 2.5-145

LOG OF BORING P-3
(SHEET 3 OF 5)

BORING P-3 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
225										
230									100	96
235										
240									98	98
245										
250									98	93
255										
260									99	96
265										
270									100	96
275										
280									100	100
285									100	100
290										

SYMBOLS

DESCRIPTIONS

30° FRACTURE AT 245.7 FEET

CALCAREOUS ZONES GRADE OUT

MOTTLED LIGHT GRAY AND BUFF DOLOMITIC LIMESTONE, FINE TO MEDIUM CRYSTALLINE; THIN BEDDED, NUMEROUS WAVY HAIR LINE SHALE PARTINGS SPACED 1/2 TO 4 INCHES; FOSSILIFEROUS IN ZONES

2 INCH CRYSTAL FILLED VUG AT 280.3 FEET, TIGHT

(WISE LAKE - DUNLEITH FORMATIONS)

1/2 INCH CRYSTALLINE VUG AT 288.4 FEET, OPEN
1 INCH CRYSTALLINE VUG AT 289.0 FEET, OPEN

BORING CONTINUED

ELEVATION (FEET): 370, 365, 360, 355, 350, 345, 340, 335, 330, 325, 320, 315, 310, 305

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-145

LOG OF BORING P-3
(SHEET 4 OF 5)

BORING P-3 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (GALLONS)	PERCENT RECOVERED	RQD
290										
295										
300									100	98
305										

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

—305

—300

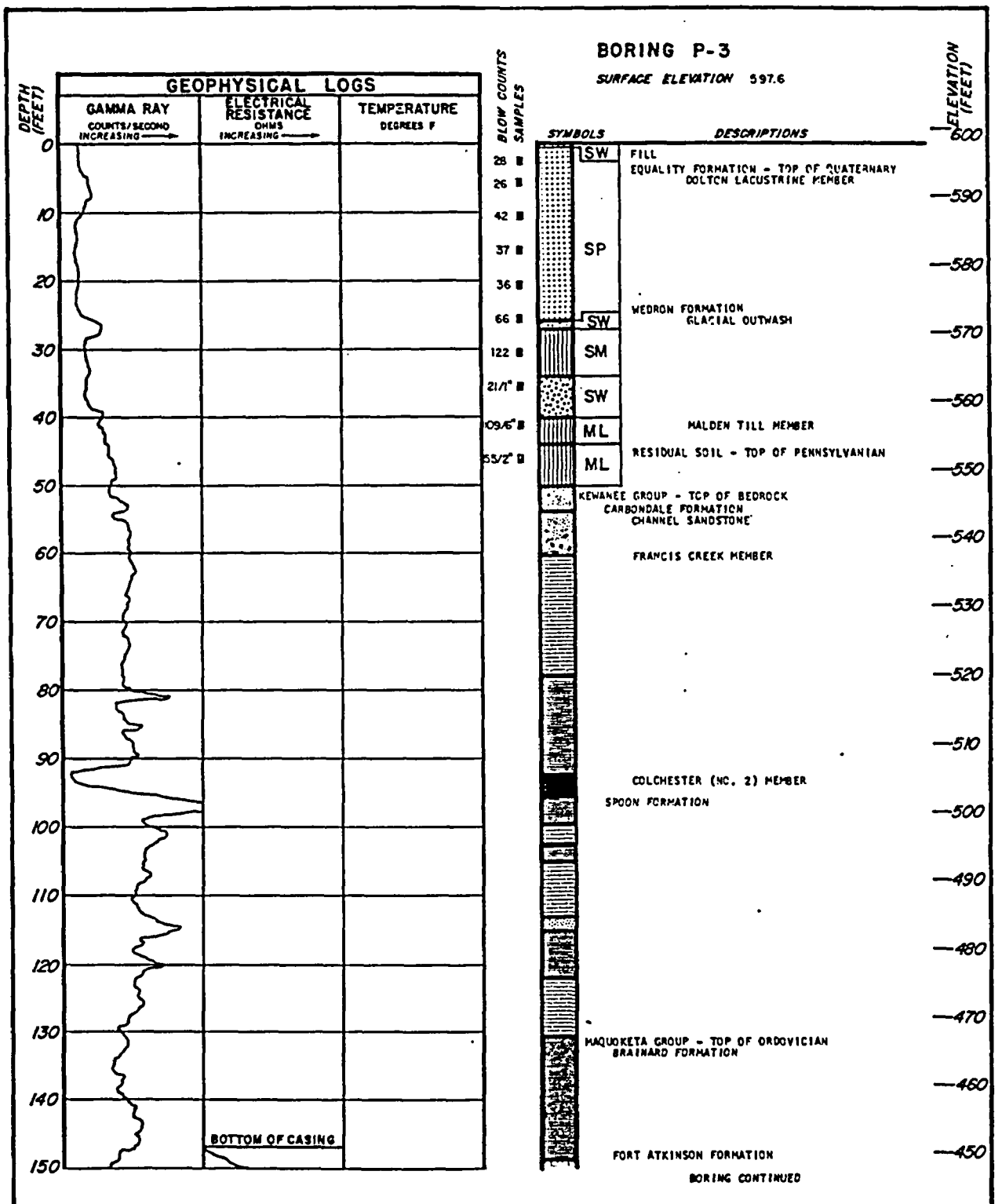
—295

BORING COMPLETED AT 305.0 FEET
ON 9-8-72
300 POUND FALLING 18 INCHES

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-145

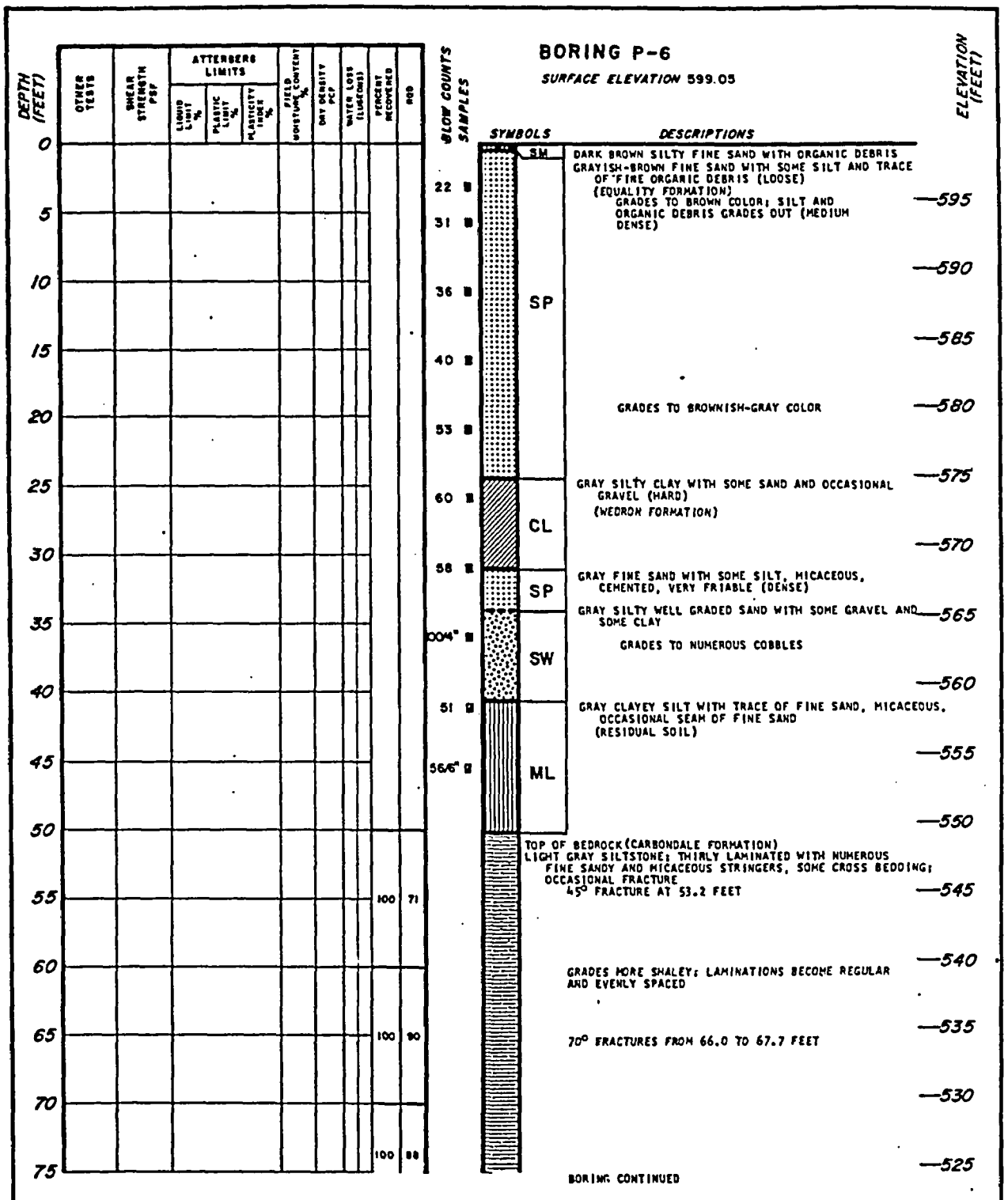
LOG OF BORING P-3
(SHEET 5 OF 5)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-146

LOG OF BORING P-3 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-147

LOG OF BORING P-6
(SHEET 1 OF 4)

BORING P-6 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									100	97
90										
95									98	95
100										
105									100	100
110									96	91
115									87	87
120									95	71
125									100	88
130										
135									100	94
140										
145									100	92
150										

BLOW COUNTS SAMPLES

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		520
	45° FRACTURE AT 83.2 FEET	
		515
	LIGHT GRAY SILTY SHALE; THINLY LAMINATED WITH REGULARLY SPACED SILTY AND SHALEY LAYERS, SOME GRAVEL SIZED SIDERITE CONCRETIONS WITH OCCASIONAL FOSSIL, FEW FRACTURES	510
		505
	BLACK COAL; THIN BEDDED, NUMEROUS VERTICAL FRACTURES WITH SOME MINERALIZATION	500
	DARK GRAY CARBONACEOUS SHALE, FRAGMENTED, NUMEROUS SLICKENSIDES (SPOON FORMATION)	495
	BLACK COAL; THIN BEDDED, NUMEROUS VERTICAL FRACTURES WITH SOME MINERALIZATION	
	GRAY FINE SANDY SILTSTONE, MICACEOUS, THICK BEDDED, NUMEROUS 30° TO 45° FRACTURES SPACED 2 TO 6 INCHES	
	LIGHT GREENISH-GRAY SILTY SHALE, INDISTINCT BEDDING, FRAGMENTED IN ZONES WITH SLICKENSIDES	490
	DARK GRAY CARBONACEOUS SHALE, FRAGMENTED, NUMEROUS RANDOM ORIENTED PLANES OF WEAKNESS WITH SLICKENSIDES CARBONACEOUS MATERIAL GRADES OUT	485
	GRAY SILTY SHALE, THINLY LAMINATED, FEW FRACTURES	
	LIGHT GRAY SILTY SANDSTONE, MEDIUM GRAINED, POORLY CEMENTED, FRIABLE	480
	GRAY SHALE, FRAGMENTED	
	GRAY SILTY SHALE, VERY THIN IRREGULAR BEDDING, FRAGMENTED IN ZONES	
		475
	GRADES DARK GRAY WITH MORE SILT, LAMINATED WITH VERY THIN CARBONACEOUS AND MICACEOUS SILT STRINGERS, SOME CROSS BEDDING, AND FEW FRACTURES	470
	GRADES CONGLOMERATIC FROM 133.0 TO 133.5 FEET	
	GREENISH-GRAY SILTY SHALE, OCCASIONAL MARINE FOSSIL, THICKLY BEDDED IN FRESH CORE BUT BREAKS READILY INTO THIN LAMINATIONS ON EXPOSURE TO WEATHERING, FEW FRACTURES	465
	(BRAINARD FORMATION)	460
		455
	45° FRACTURE AT 145.8 AND AT 147.0 FEET	
	GRADES INCREASINGLY CALCAREOUS	
	BORING CONTINUED	450

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-147

LOG OF BORING P-6
(SHEET 2 OF 4)

BORING P-6 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (CLOSCHT)	PERCENT RECOVERED	RQD
150										
155									100	96
160										
165									100	85
170										
175									100	100
180										
185									100	98
190										
195									95	90
200										
205									100	100
210										
215									100	100
220										
225										

BLOW COUNTS SAMPLES

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

GRAY SILTY LIMESTONE, MEDIUM TO COARSE CRYSTALLINE, WITH IRREGULAR INTER BEDDED ZONES AND STRINGERS OF CALCAREOUS SILTSTONE, THIN TO MEDIUM BEDDED, FOSSILIFEROUS, FEW FRACTURES
1 INCH CRYSTAL LINED VUG AT 151.0 FEET
1/2 INCH VUG AT 151.7 FEET
(FORT ATKINSON FORMATION) — 445

— 440

— 435

LIMESTONE GRADES LESS SILTY; NUMEROUS THIN CALCAREOUS SILTSTONE PARTINGS

— 430

GRADES TO LIGHT GRAY LIMESTONE, COARSE CRYSTALLINE CALCARENITIC, OCCASIONAL ZONE WITH THIN IRREGULAR SILTSTONE PARTINGS, MEDIUM BEDDED, FEW FRACTURES

SILTSTONE PARTINGS GRADE OUT — 425

GRADES TO LIGHT BUFF LIMESTONE, COARSELY CRYSTALLINE, PURE, THICK BEDDED, FEW FRACTURES

— 420

— 415

GRAY CALCAREOUS SILTSTONE, HIGHLY FOSSILIFEROUS IN THIN ANGULAR TO CURVING BANDS, INDISTINCTLY MEDIUM BEDDED, OCCASIONAL IRREGULAR ZONE OF SILTY LIMESTONE, FEW FRACTURES (SCALES FORMATION) — 410

GRADES LESS FOSSILIFEROUS

— 405

— 400

— 395

GRADATIONAL CONTACT
DARK GRAY CALCAREOUS SHALE WITH IRREGULAR GRADATIONAL ZONES OF SILTY LIMESTONE, FOSSILIFEROUS, FEW FRACTURES

— 390

— 385

GRAY SILTY LIMESTONE, FOSSILIFEROUS, HARD, NO FRACTURES

DARK GRAY SHALE, THINLY LAMINATED, FOSSIFIFEROUS
GRADES DOLOMITIC — 380

SILTY LIMESTONE, FOSSILIFEROUS, HARD, NO FRACTURES

DARK GRAY SHALE, DOLOMITIC, THINLY LAMINATED, HARD
LIGHT GRAY CALCAREOUS SILTSTONE, FOSSILIFEROUS

DARK GRAY SHALE; DOLOMITIC, THINLY LAMINATED, FEW FRACTURES, OCCASIONAL THIN LAYER OF CALCAREOUS SILTSTONE — 375

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-147

LOG OF BORING P-6
(SHEET 3 OF 4)

BORING P-6 CONTINUED

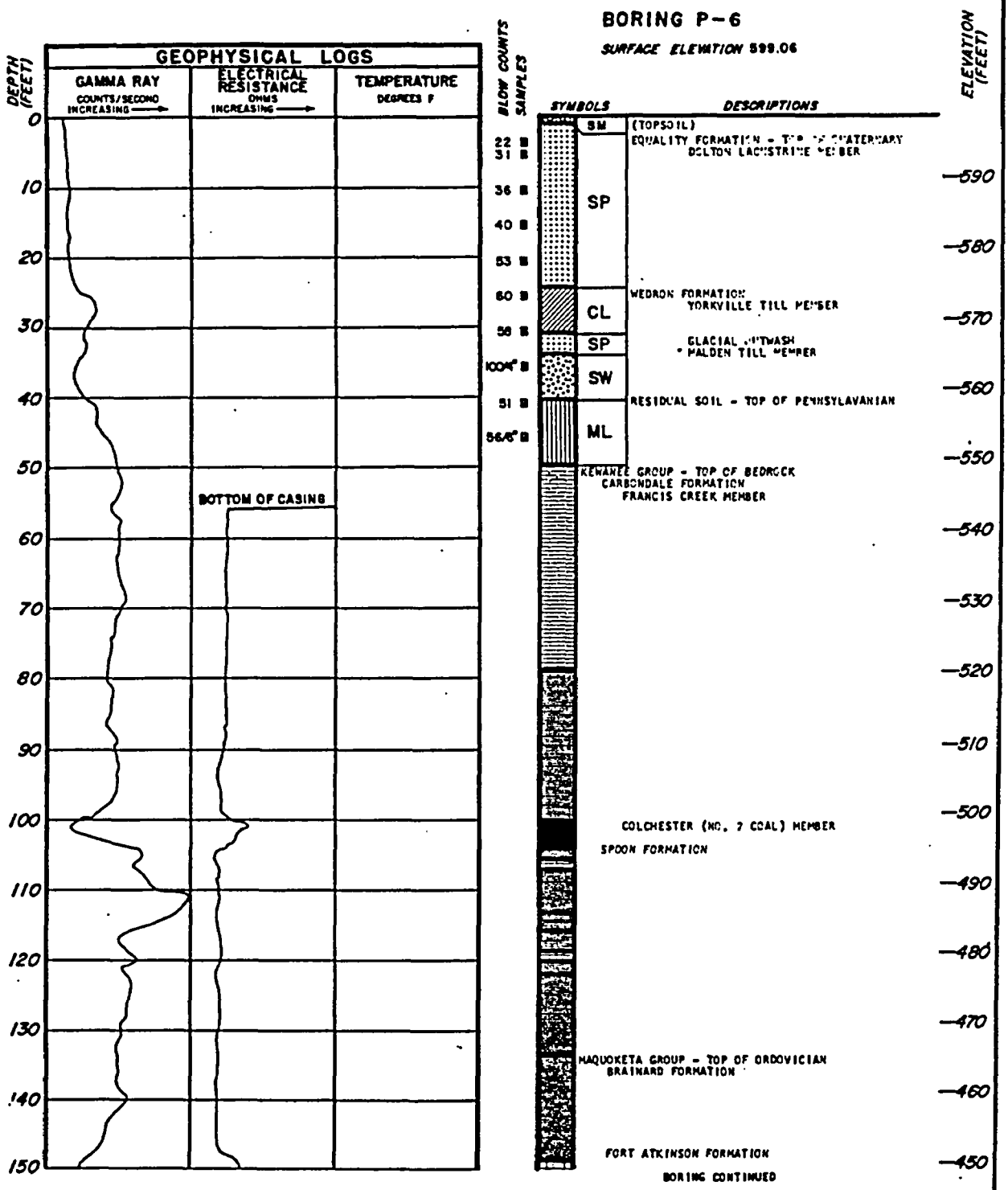
DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD	BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
225									97	97				375
230														370
235														365
														360

BORING COMPLETED AT 212.0 FEET
ON 8-28-72
CASING USED AT A DEPTH OF 50.0 FEET
300 POUND HAMMER FALLING 18 INCHES

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-147

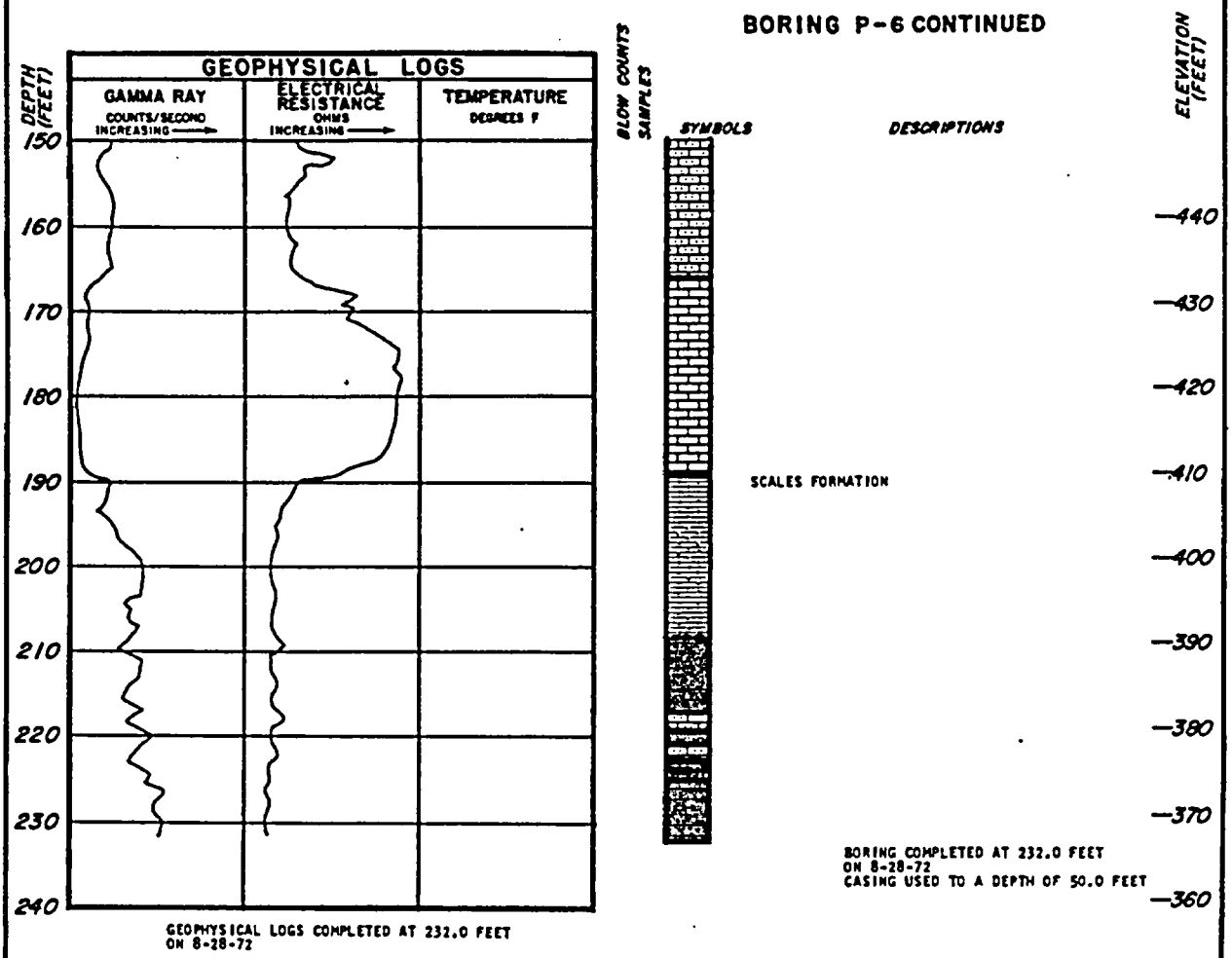
LOG OF BORING P-6
(SHEET 4 OF 4)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-148

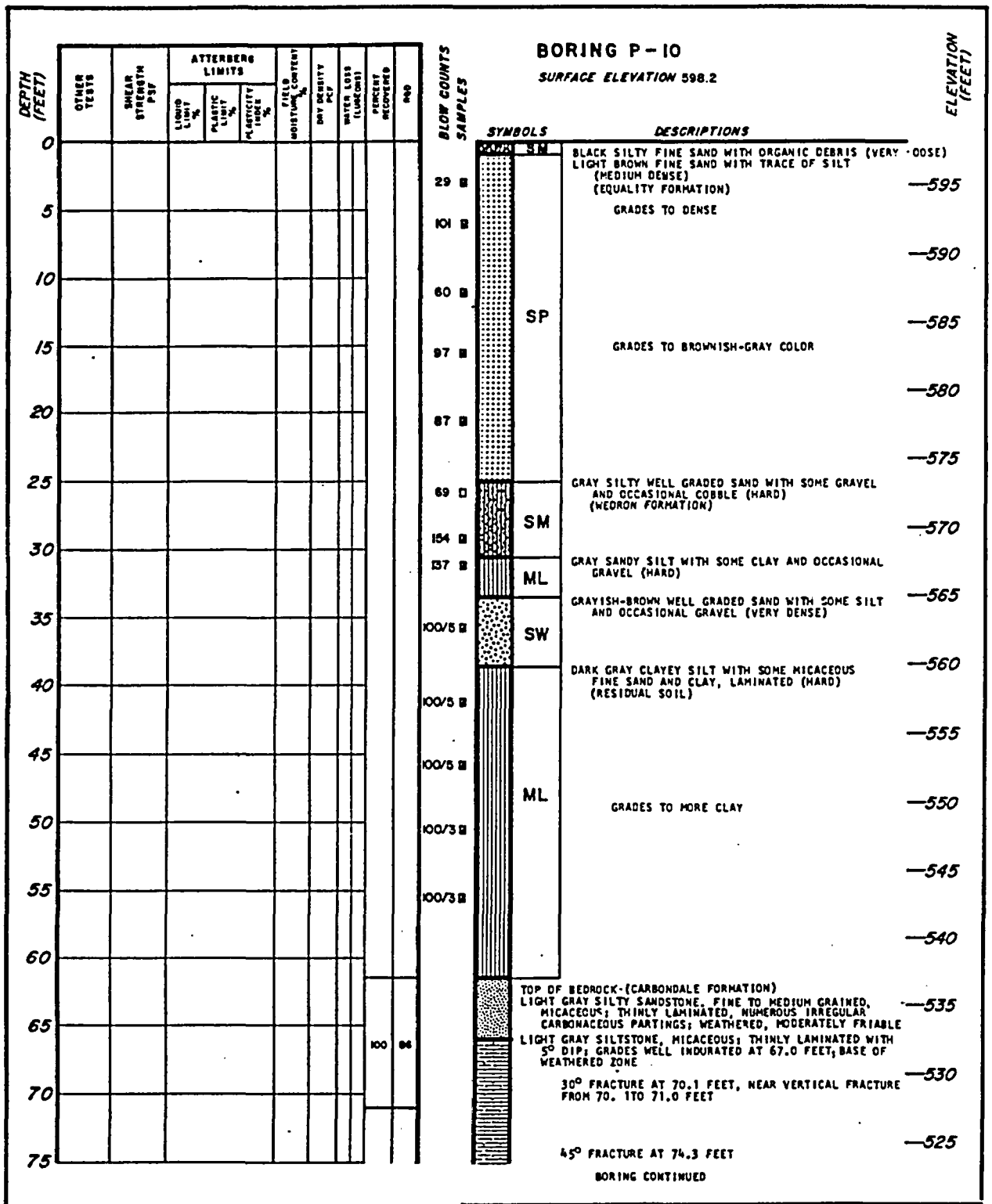
LOG OF BORING P-6 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-148

LOG OF BORING P-6 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-149

LOG OF BORING P-10
(SHEET 1 OF 3)

BORING P-10 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									95	88
85									100	96
90										
95									93	26
100										
105									41	38
110										
115									73	63
120										
125									94	83
130										
135									98	88
140										
145									100	87
150										

BLOW COUNTS SAMPLES

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		520
		515
	GRADES LESS SILTY AT 85.0 FEET	
	30° FRACTURE AT 86.8 FEET	510
	VERTICAL FRACTURE 88.0 TO 90.0 FEET, 45° FRACTURE AT 88.6 FEET	
	GRAY SILTY SHALE, FINELY MICACEOUS; THINLY LAMINATED, HORIZONTAL BEDDING; OCCASIONAL 1 INCH SIDERITE CONCRETION	505
		500
	BLACK COAL; THIN BEDDED; NUMEROUS VERTICAL TIGHT FRACTURES WITH SOME PYRITE AND CLAY	495
	GRAY FINE SANDY SILTSTONE, THINLY LAMINATED, CROSS BEDDED IN ZONES (SPOON FORMATION)	
	GRADES CONGLOMERATIC BELOW 109.6 FEET, SANDSTONE AND SHALE PARTICLES WITH NUMEROUS IRREGULAR CARBONACEOUS LAMINATIONS	490
	10 INCH COAL LAYER FROM 110.8 TO 111.6 FEET	
	DARK GRAY SHALE; HIGHLY FRAGMENTED, NUMEROUS RANDOM PLANES OF WEAKNESS WITH SLICKENSIDES	485
	12 INCH COAL LAYER 118.5 TO 119.5 FEET	480
	DARK GRAY SHALE; INDISTINCT BEDDING; FRAGMENTED WITH NUMEROUS SLICKENSIDES; DISTINCT 45° FRACTURES SPACED 1 TO 14 INCHES FROM 120.0 TO 126.0 FEET	
	2 INCH COAL LAYER AT 123.8 FEET	475
	DARK GRAY SILTSTONE, FINELY MICACEOUS; LAMINATED; GRADES FINE SANDY WITH NUMEROUS CARBONACEOUS PARTINGS BELOW 131.5 FEET	470
	GREENISH-GRAY SILTY SHALE, DOLOMITIC; THINLY LAMINATED, HORIZONTAL BEDDING; OCCASIONAL MARINE FOSSIL; 20° FRACTURE AT 133.4 FEET (BRAINARD FORMATION)	465
		460
		455
	GRADES CALCAREOUS WITH INCREASING PERCENTAGE OF SILTY LIMESTONE BELOW 145.5 FEET	
	GRAY SILTY LIMESTONE, FINE TO MEDIUM CRYSTALLINE, CALCARENITIC IN ZONES; THIN BEDDED, NUMEROUS	450

BORING CONTINUED

BRAIDWOOD STATION
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FIGURE 2.5-149

LOG OF BORING P-10
(SHEET 2 OF 3)

BORING P-10 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155									99	99
160										
165									100	100
170										
175									100	100
180										

BLOW COUNTS SAMPLES

SYMBOLS

DESCRIPTIONS

IRREGULAR PARTINGS AND GRADATIONAL ZONES OF CALCAREOUS SHALE 1/4 TO 2 INCH THICK SPACED 1/4 TO 6 INCH; FOSSILIFEROUS (FORT ATKINSON FORMATION)

1/2 INCH OPEN VUGS AT 149.4 FEET, OIL STAINED

3 INCH OPEN VUG WITH CALCITE CRYSTALS AND TRACE OF OIL AT 164.2 FEET

VERTICAL FRACTURE 167.4 TO 167.9 FEET, TIGHT, OIL STAINED

LIGHT GRAY TO BUFF PURE LIMESTONE, COARSELY CALCARENITIC, FOSSILIFEROUS; MEDIUM BEDDED, HAIRLINE SHALE PARTINGS AND STYOLITES SPACED 1 TO 16 INCHES

BORING COMPLETED AT 178.0 FEET
ON 8-31-72
140 POUND HAMMER FALLING 30 INCHES

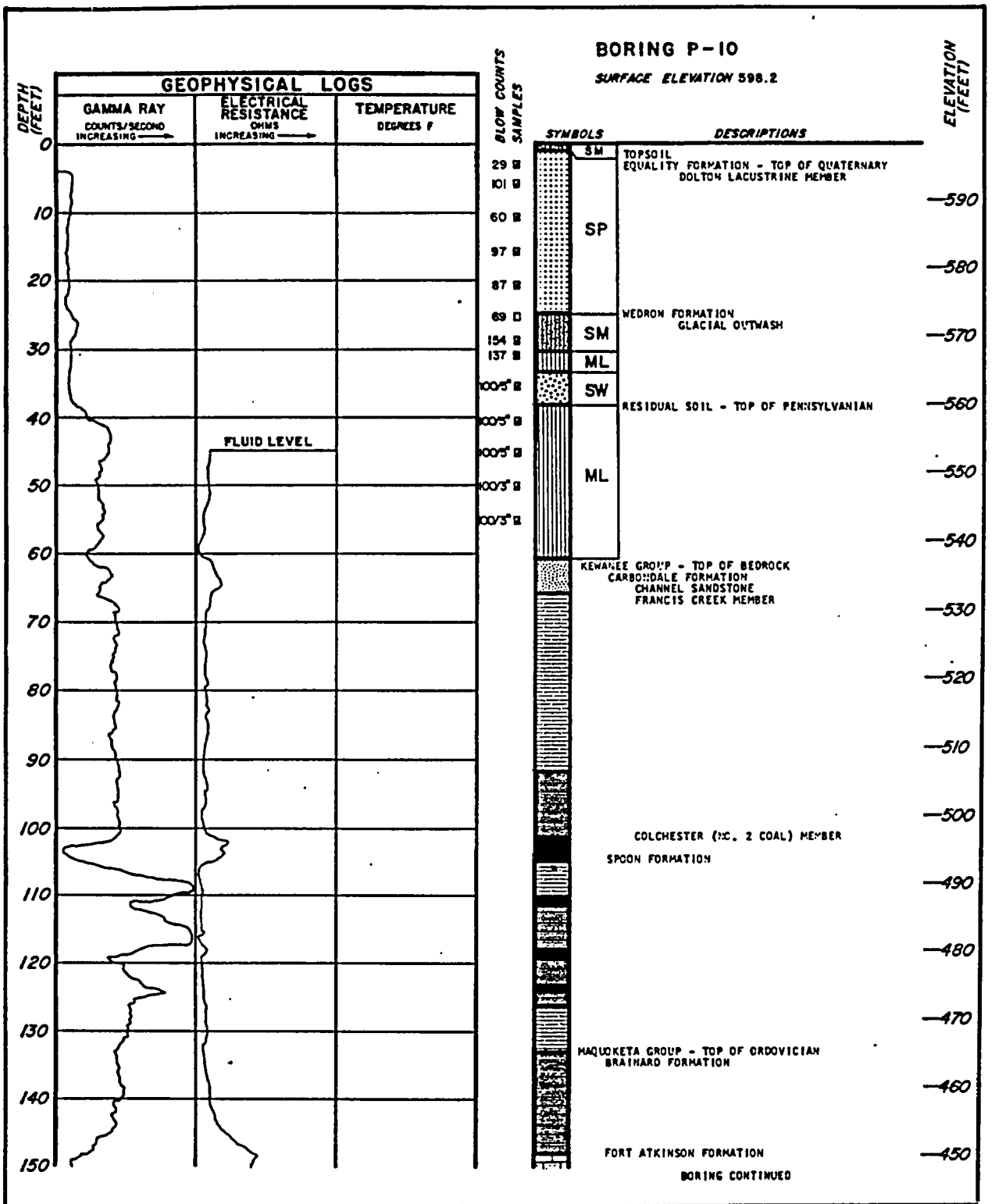
ELEVATION (FEET)

445
440
435
430
425
420

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-149

LOG OF BORING P-10
(SHEET 3 OF 3)

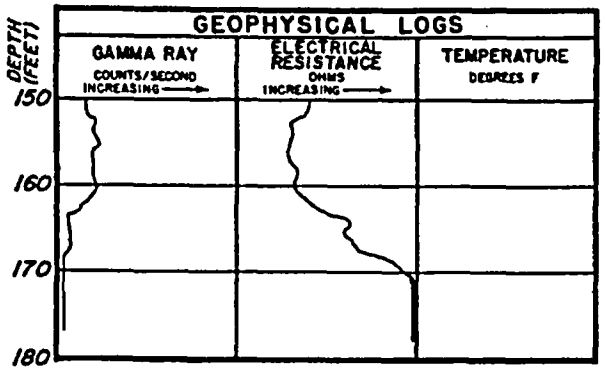


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-150

LOG OF BORING P-10 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)

BORING P-10 CONTINUED



GEOPHYSICAL LOGS COMPLETED AT 178.0 FEET ON 8-31-72

SYMBOLS

DESCRIPTIONS

BORING COMPLETED AT 178.0 FEET ON 8-31-72

ELEVATION (FEET)

440

430

420

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-150

LOG OF BORING P-10 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)

BORING L-1

SURFACE ELEVATION 564.1

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
0										
5										
10										
15										
20										
25										
30										
35										
40										
45									88	44
50									63	39
55										
60									100	85
65										
70									90	30
75										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	STRIP MINE DEBRIS	
		—560
		—555
		—550
		—545
		—540
		—535
		—530
		—525
		—520
	TOP OF BEDROCK (SPOON FORMATION) LIGHT GREENISH-GRAY SILTSTONE, FINE SANDY, MICACEOUS; THINLY LAMINATED; WELL INDURATED DARK BROWNISH-GRAY SHALE, CARBONACEOUS IN ZONES, SILTY BELOW 47.0 FEET; THINLY LAMINATED; FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES, BRITTLE	—515
	MOTTLED LIGHT GREENISH-GRAY AND GRAY SILTY SHALE, DOLOMITIC DOLITIC GRANULES IN ZONES; THINLY LAMINATED (BRAINARD FORMATION)	
	MOTTLED GRAY COLOR GRADES OUT BELOW 56.5 FEET	—510
		—505
	VERTICAL FRACTURE 63.7 TO 65.0 FEET	—500
	GRADES TO DARK GREENISH-GRAY SILTY SHALE BELOW 69.2 FEET, DOLOMITIC, LAMINATED, FISSILE	—495
	VERTICAL FRACTURE 70.7 TO 71.5 FEET 45° FRACTURE AT 73.0 FEET	
	NEAR VERTICAL FRACTURE 75.0 TO 75.5 FEET	—490

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-151

LOG OF BORING L-1
(SHEET 1 OF 4)

BORING L–I CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									96	94
85										
90									99	97
95										
100									96	94
105										
110									100	95
115										
120									99	97
125										
130									99	98
135										
140									99	95
145										
150									97	95

BLOW COUNTS SAMPLES

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

30° FRACTURE AT 93.2 FEET — 485

— 480

— 475

— 470

— 465

— 460

GRADES CALCAREOUS BELOW 110.0 FEET, ABUNDANT PYRITE IN BASAL 4 INCHES — 455

GRAY SILTY LIMESTONE, FINE TO MEDIUM CRYSTALLINE, CALCARENITIC IN ZONES; THIN BEDDED, NUMEROUS IRREGULAR PARTINGS AND GRADATIONAL ZONES OF CALCAREOUS SHALE 1/10 TO 4 INCH, THICK SPACED 1/4 TO 6 INCH; HIGHLY FOSSILIFEROUS THROUGHOUT (FORT ATKINSON FORMATION) — 450

VERTICAL FRACTURE AT 113.7 TO 114.1 FEET

— 445

LIGHT GRAY TO BUFF PURE LIMESTONE, COARSELY CALCARENITIC, FOSSILIFEROUS; MEDIUM BEDDED, VERY THIN SHALE PARTINGS AND STYOLITES SPACE 1 TO 20 INCHES — 440

2 INCH OPEN VUG WITH CALCITE LINING AT 126.3 FEET

— 435

1 INCH VUG AT 132.0 FEET

— 430

1/2 INCH VUG AT 139.5 FEET
1/4 INCH VUG AT 140.2 FEET — 425

NEAR VERTICAL FRACTURE FROM 143.0 TO 143.6 FEET

— 420

BORING CONTINUED — 415

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-151

LOG OF BORING L-1
(SHEET 2 OF 4)

BORING L-1 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155										
160									94	94
165										
170									90	87
175										
180									100	95
185										
190									98	
195										
200									100	93
205										
210									96	96
215										
220									91	91
225										

BLOW COUNTS SAMPLES

SYMBOLS

DESCRIPTIONS

GRAY CALCAREOUS SILTSTONE; THINLY LAMINATED, HIGHLY FOSSILIFEROUS IN NUMEROUS CLOSELY SPACED IRREGULAR WHITE BANDS; POROUS ZONE FROM 150.9 TO 152.5 FEET WITH 1/10 TO 1/2 INCH OPEN CAVITIES AND CHANNEL WAYS SPACED 1/4 TO 3 INCHES, LESS THAN 5% VOIDS (SCALES FORMATION)

GRADES LESS FOSSILIFEROUS BELOW 158.0 FEET

DARK GRAY SHALE, DOLOMITIC, FISSILE; LAMINATED, SILTY IN ZONES, INTERBEDDED GRADATIONAL LAYERS OF SILTY LIMESTONE 1 TO 3 INCHES THICK, SPACED 2 TO 18 INCHES

GRADES TO INTERBEDDED LAYERS OF SILTY LIMESTONE 8 TO 20 INCHES THICK, SPACED 5 TO 40 INCHES, THIN BEDDED, FOSSILIFEROUS
VERTICAL FRACTURE AT 173.3 TO 174.2 FEET

INTERBEDDED LAYERS OF SILTY LIMESTONE GRADE OUT BELOW 185.7 FEET; OCCASIONAL 1 TO 3 INCH LAYER OF CALCAREOUS SHALE SPACED 2 TO 24 INCHES

20 TO 30° FRACTURES SPACED 1 TO 2 INCHES AT 195.0 FEET; CALCAREOUS ZONES GRADE VERY THIN AND WIDELY SPACED

BORING CONTINUED

ELEVATION (FEET): 415, 410, 405, 400, 395, 390, 385, 380, 375, 370, 365, 360, 355, 350, 345, 340

BRAIDWOOD STATION
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FIGURE 2.5-151

LOG OF BORING L-1
(SHEET 3 OF 4)

BORING L-1 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
225										
230									95	93
235										
240									99	99
245										
250									100	97
255										

BLOW COUNTS SAMPLES

SYMBOLS

DESCRIPTIONS

MOTTLED LIGHT GRAY AND BUFF DOLOMITIC LIMESTONE, FINE TO MEDIUM CRYSTALLINE, SILTY; THIN BEDDED, IRREGULAR HAIRLINE SHALE PARTINGS SPACED 1/2 TO 4 INCHES (WISE LAKE-DUNLEITH FORMATIONS)

1/2 INCH VUGS SPACED 2 INCHES AT 243.3 FEET PARTIALLY FILLED WITH CALCITE

1/2 INCH VUG AT 245.5 FEET
1/10 TO 1 INCH VUGS SPACED 1/4 TO 2 INCH FROM 246.6 TO 246.9 FEET AND 247.0 TO 248.5 FEET

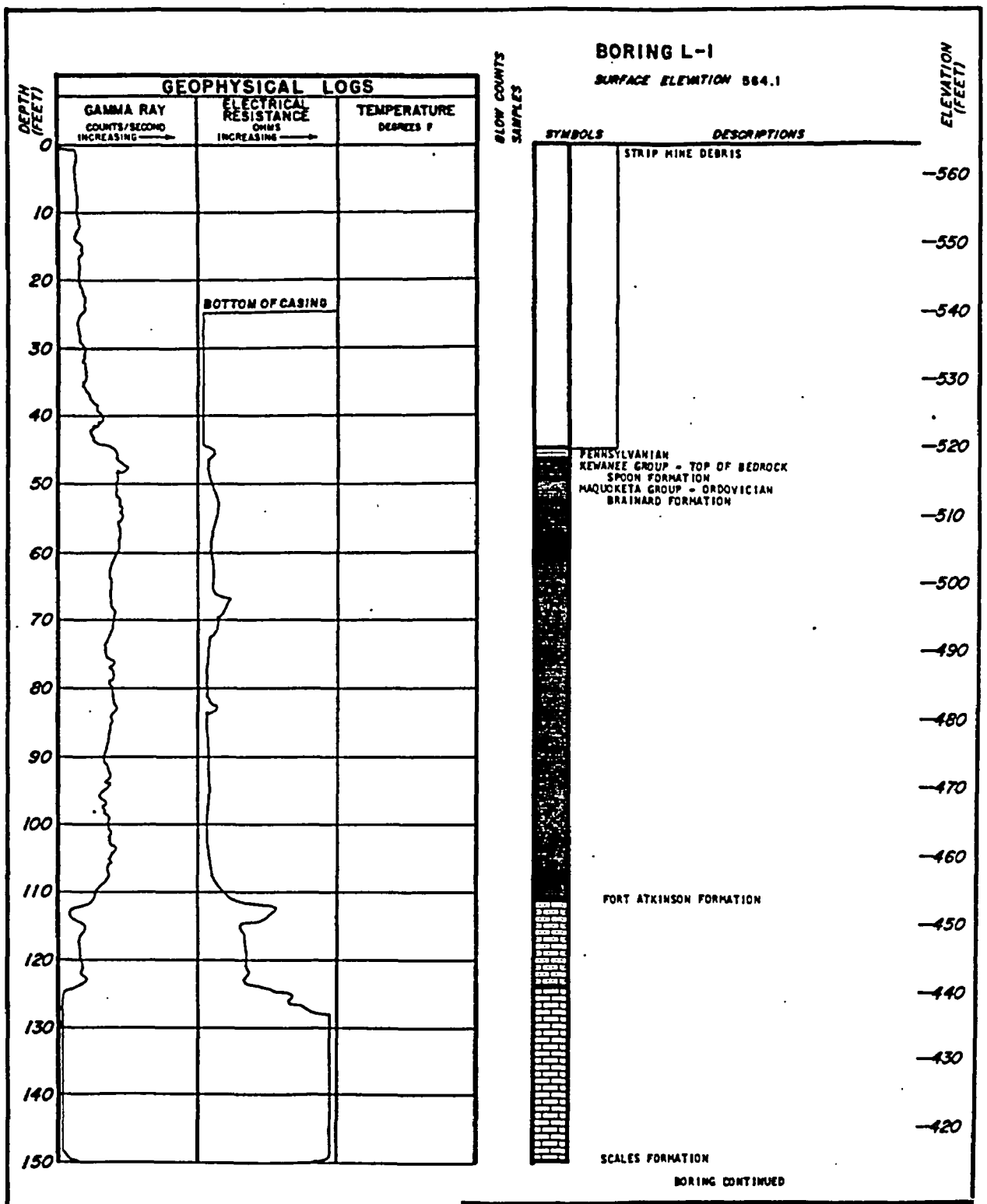
BORING COMPLETED AT 255.0 FEET ON 10-18-72

ELEVATION (FEET): 340, 335, 330, 325, 320, 315, 310

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-151

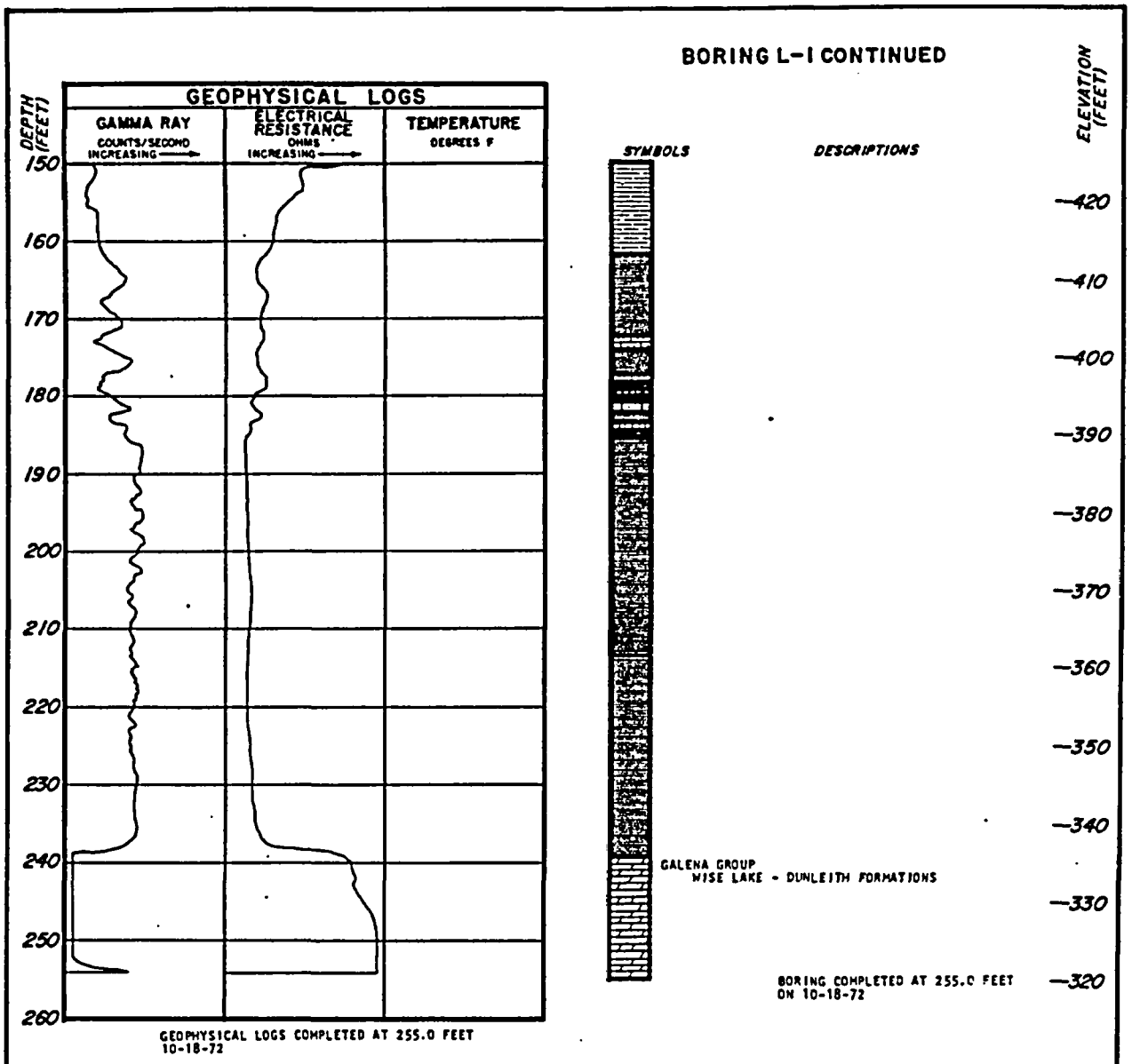
LOG OF BORING L-1
(SHEET 4 OF 4)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-152

LOG OF BORING L-1 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-152

LOG OF BORING L-1 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)

BORING L-2

SURFACE ELEVATION 587.7

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
0										
5										
10										
15										
20										
25										
30										
35										
40										
45										
50										
55										
60										
65										
70										
75										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	STRIP MINE DEBRIS	585
		580
		575
		570
		565
		560
		555
		550
		545
		540
		535
		530
		525
		520
	TOP OF BEDROCK (SPOON FORMATION) GRAY TO DARK GRAY SILTSTONE, FINE SANDY, MICACEOUS, CARBONACEOUS IN ZONES; THINLY LAMINATED; FRAGMENTED	515

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-153

LOG OF BORING L-2
(SHEET 1 OF 5)

BORING L-2 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									25	0
85									97	82
90										
95									96	87
100										
105									99	99
110										
115									94	72
120										
125									95	65
130										
135									94	93
140										
145									93	85
150										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		510
	LIGHT GRAY SILTY SANDSTONE IN BASAL 5 INCHES	
	GREENISH-GRAY SHALE, SILTY, DOLOMITIC; THINLY LAMINATED; PARTS EASILY ALONG IRREGULAR BEDDING PLANES (BRAINARD FORMATION)	505
		500
	VERTICAL FRACTURE 93.0 TO 96.2 FEET	495
		490
		485
		480
		475
	GRADES TO DARK GREENISH-GRAY AT 118.5 FEET	470
	NEAR VERTICAL FRACTURES FROM 120.1 TO 121.4 FEET	
		465
		460
		455
		450
		445
	BORING CONTINUED	440

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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-153

LOG OF BORING L-2
(SHEET 2 OF 5)

BORING L-2 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155									99	91
160										
165									99	64
170										
175									99	65
180										
185									100	43
190										
195									100	82
200										
205									95	73
210										
215									98	68
220										
225										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	GRADES TO MORE SILT BELOW 153.0 FEET	435
		430
	GRADES CALCAREOUS AT 160.0 FEET	
	LIGHT GRAY VERY SILTY LIMESTONE, FOSSILIFEROUS; LAMINATED TO THINLY BEDDED, NUMEROUS IRREGULAR PARTINGS AND GRADATIONAL ZONES OF CALCAREOUS SHALE (FORT ATKINSON FORMATION)	425
	1/4 TO 2 INCH CAVITIES AND IRREGULAR CHANNELS SPACED 2 TO 6 INCHES FROM 166.0 TO 169.2 FEET DRUSY CRYSTAL DEPOSITS THROUGHOUT; LESS THAN 2% VOIDS	420
	POROUS ZONE 173.2 TO 174.0 FEET WITH CLOSELY SPACED PINPOINT OPENINGS, LESS THAN 1% VOIDS	415
	GRADES LESS SILTY AND COARSELY CALCARENITIC BELOW 174.0 FEET, NUMEROUS THIN IRREGULAR SHALE PARTINGS IN 1 TO 2 INCH ZONES	410
	1 INCH OPEN VUG AT 180.5 FEET LIGHT GRAY TO BUFF LIMESTONE, VERY PURE, COARSELY CALCARENITIC; MEDIUM BEDDED, HAIRLINE SHALE PARTINGS AND STYOLITES SPACED 1 TO 6 INCHES 1/4 INCH SOLUTION CHANNEL AT 182.0 FEET	405
	POROUS ZONE 183.2 TO 183.6 FEET WITH 5% OPEN VOIDS 1/4 INCH AND SMALLER	400
	VERTICAL FRACTURE 190.9 TO 191.7 FEET	395
	BROWNISH-GRAY SILTSTONE, CALCAREOUS, THINLY LAMINATED; NUMEROUS WHITE FOSSILIFEROUS BANDS IN ZONES, SOME PYRITE THROUGHOUT; OCCASIONAL PINPOINT TO 1/4 INCH VOIDS ASSOCIATED WITH SOLUTION OF FOSSIL FRAGMENTS SPACED 1 TO 11 INCHES. (SCALES FORMATION)	390
	2 INCH CALCITE FILLED VUG AT 202.5 FEET 1 INCH OPEN SOLUTION CHANNEL AT 204.0 FEET, MINERALIZED	385
	GRAY SHALE, SILTY, DOLOMITIC; THINLY LAMINATED, INTERBEDDED 1 TO 6 INCH LAYERS OF SILTY LIMESTONE SPACED 3 TO 30 INCHES.	380
	GRADES LESS SILTY BELOW 213.0 FEET, PARTS EASILY ALONG BEDDING PLANES	375
		370
	GRADES TO INTERBEDDED LAYERS OF GRAY SILTY LIMESTONE 6 TO 24 INCHES THICK SPACED 16 TO 23 INCHES, FOSSILIFEROUS; LAMINATED TO THINLY BEDDED	365

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-153

LOG OF BORING L-2
(SHEET 3 OF 5)

BORING L-2 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LLUGEONS)	PERCENT RECOVERED	RQD
225										
230									92	41
235									100	89
240										
245									96	96
250										
255										
260									100	100
265										
270										
275										
280									100	100
285										
290										
295										
300										

SYMBOLS

DESCRIPTIONS

SILTY LIMESTONE LAYERS GRADE OUT BELOW 231.1 FEET

DARK GRAY SHALE, DOLOMITIC; LAMINATED, OCCASIONAL 1 TO 4 INCH LAYER OF CALCAREOUS SILTSTONE SPACED 1 TO 5 INCHES, PARTS EASILY ALONG IRREGULAR BEDDING PLANES

CALCAREOUS SILTSTONE LAYERS GRADE OUT, SILTY IN ZONES BELOW 258.0 FEET

MOTTLED LIGHT GRAY AND BUFF DOLOMITIC LIMESTONE, FINE TO MEDIUM CRYSTALLINE; THIN BEDDED, NUMEROUS IRREGULAR HAIRLINE SHALE PARTINGS SPACED 1/2 TO 2 INCHES (WISE LAKE-DUNLEITH FORMATIONS)

5% OPEN VUGS AND SOLUTION CHANNELS FROM 287.0 TO 295.0 FEET, OPENINGS FROM PINPOINT SIZE TO 1 1/2 INCH; RESIDUAL OIL STAINS

BORING CONTINUED

ELEVATION (FEET): 360, 355, 350, 345, 340, 335, 330, 325, 320, 315, 310, 305, 300, 295, 290

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-153

LOG OF BORING L-2
(SHEET 4 OF 5)

BORING L-2 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)		PERCENT RECOVERED	RQD
300											
305										100	100
310											
315											

SYMBOLS

DESCRIPTIONS

BORING COMPLETED AT 312.0 FEET
ON 10-27-72

ELEVATION (FEET)

285

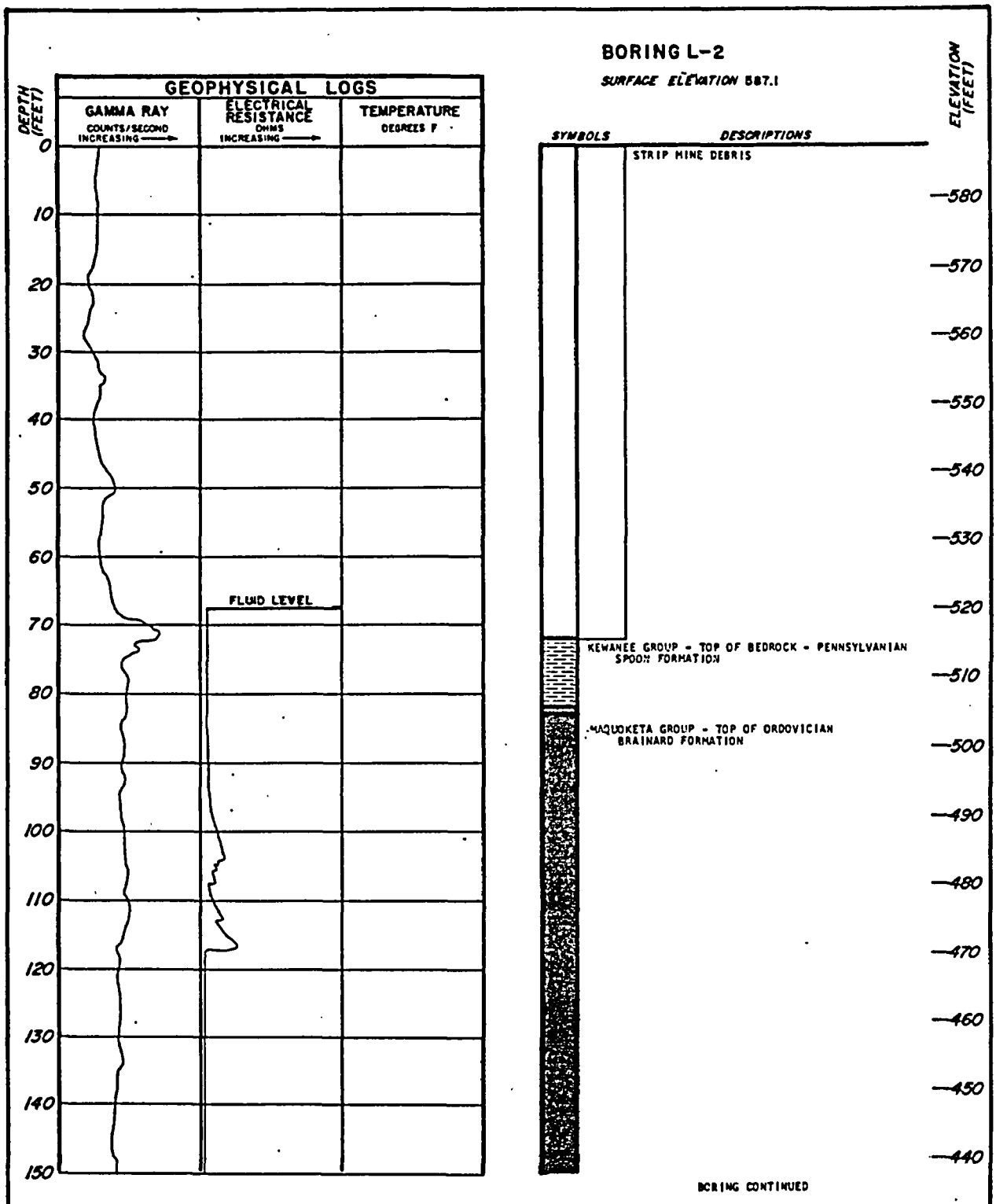
280

275

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-153

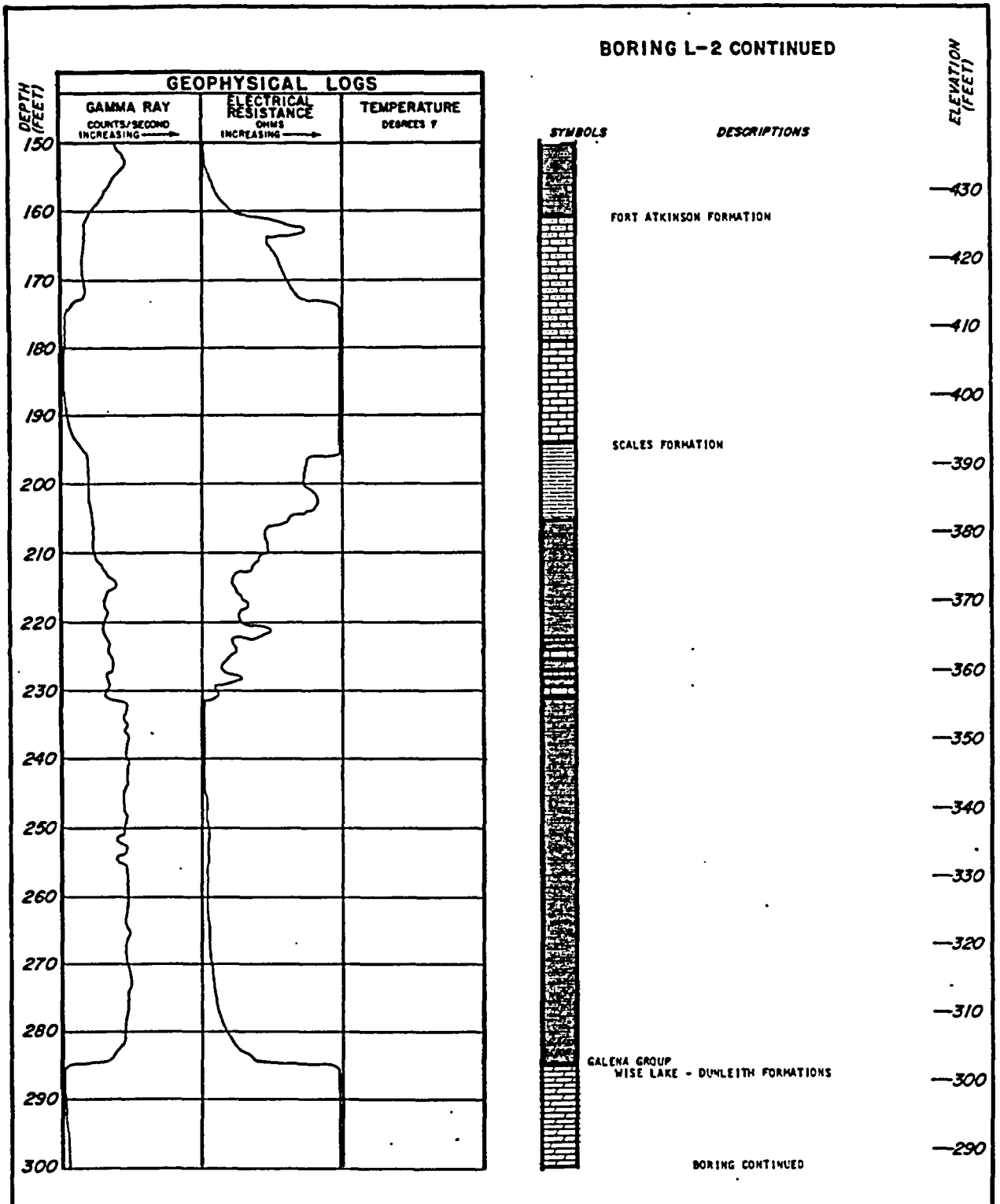
LOG OF BORING L-2
(SHEET 5 OF 5)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-154

LOG OF BORING L-2 (GEOPHYSICAL LOG)
(SHEET 1 OF 3)

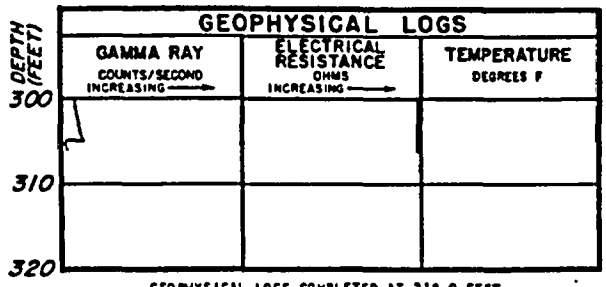


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-154

LOG OF BORING L-2 (GEOPHYSICAL LOG)
(SHEET 2 OF 3)

BORING L-2 CONTINUED



GEOPHYSICAL LOGS COMPLETED AT 312.0 FEET ON 10-27-72

SYMBOLS

DESCRIPTIONS

BORING COMPLETED AT 312.0 FEET ON 10-27-72

ELEVATION (FEET)

280

270

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-154

LOG OF BORING L-2 (GEOPHYSICAL LOG)
(SHEET 3 OF 3)

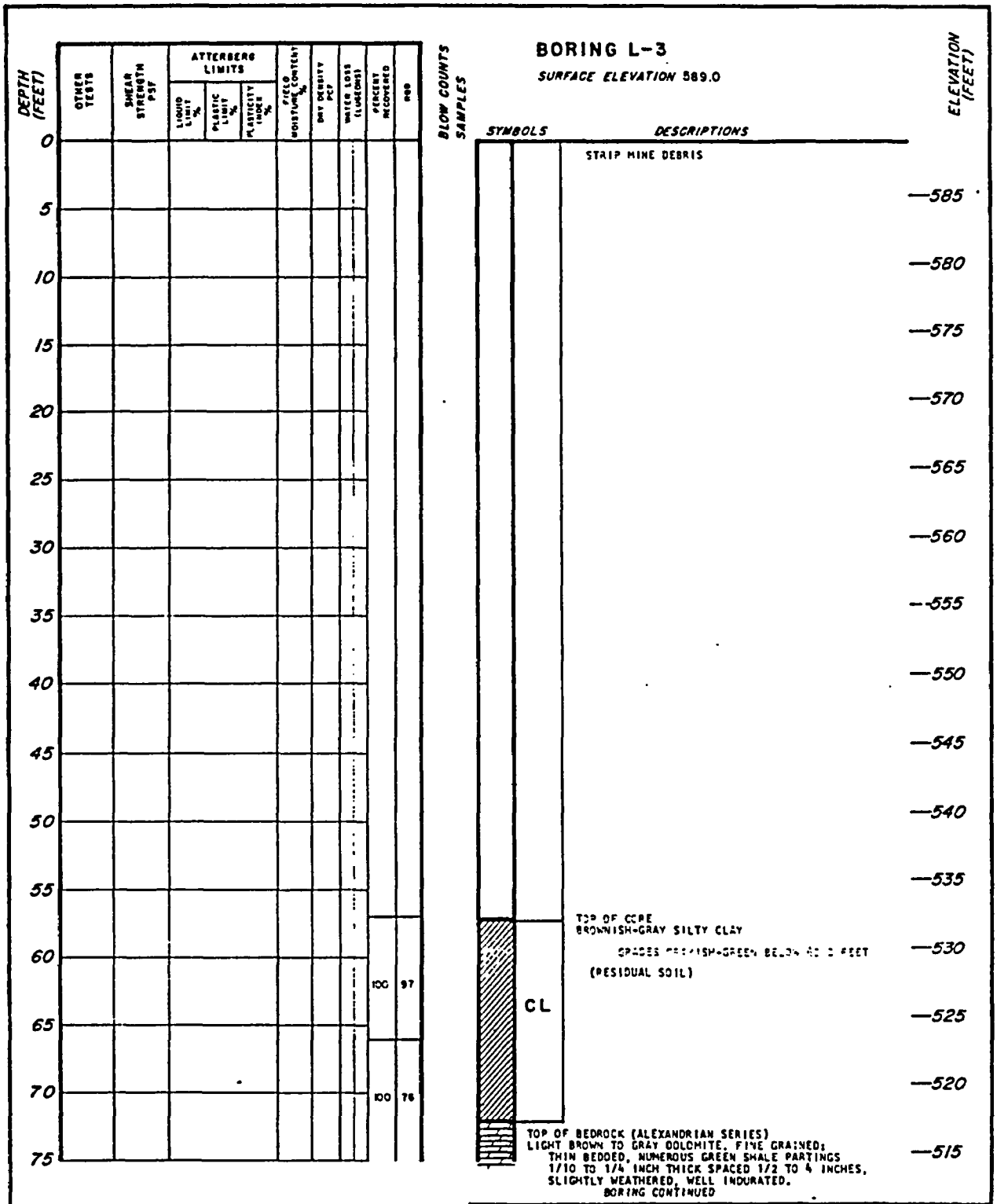


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FIGURE 2.5-155

LOG OF BORING L-3
(SHEET 1 OF 4)

BORING L-3 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									100	90
85										
90									100	87
95										
100									100	99
105										
110									100	98
115										
120									100	98
125										
130									100	93
135										
140									100	99
145										
150										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	GRAYISH-GREEN SILTY CLAY	
	POROUS ZONE WITH NUMEROUS PINPOINT TO 1/10 INCH OPENINGS FROM 77.6 TO 78.8 FEET, LESS THAN 1% VOIDS	
	1/2 TO 1 INCH SOLUTION CAVITIES SPACED 3 TO 6 INCHES FROM 78.0 TO 79.2 FEET, APPROXIMATELY 5% VOIDS	510
	GRADES TO GREENISH-GRAY COLOR BELOW 79.5 FEET, MASSIVE BEDDING	
	BROWNISH-GRAY SILTSTONE, DOLOMITIC, WELL INDURATED; THINLY LAMINATED	505
	INTERBEDDED 1 TO 7 INCH ZONES OF DARK GRAY SHALE SPACED 1 TO 3 INCHES BELOW 88.5 FEET	500
	DARK GREENISH-GRAY SHALE, SILTY, DOLOMITIC; LAMINATED; PARTS EASILY ALONG BEDDING PLANES; FINE SANDY IN ZONES WITH IRREGULAR BEDDING (BRAINARD FORMATION)	495
		490
	OCCASIONAL 1 TO 3 INCH ZONE OF SILTY DOLOMITE SPACED 2 TO 18 INCHES FROM 105.8 TO 109.3 FEET	485
	VERTICAL FRACTURE FROM 109.3 TO 110.0 FEET	
		480
		475
		470
		465
		460
	1 TO 6 INCH DOLOMITIC ZONES SPACED 18 TO 30 INCHES, FROM 134.0 TO 148.0 FEET	455
		450
		445

BORING CONTINUED

BRAIDWOOD STATION
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FIGURE 2.5-155

LOG OF BORING L-3
(SHEET 2 OF 4)

BORING L-3 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150									100	100
155									100	96
160										
165									100	100
170										
175									100	93
180										
185									99	99
190										
195									100	100
200										
205									99	99
210										
215									100	100
220										
225										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		440
	GRAY SILTY LIMESTONE, FOSSILIFEROUS; LAMINATED TO THIN BEDDED, NUMEROUS IRREGULAR PARTINGS AND GRADATIONAL ZONES OF CALCAREOUS SHALE 1/4 TO 2 INCHES THICK AND SPACED 1/4 TO 4 INCHES. (FORT ATKINSON FORMATION)	435
	VERTICAL FRACTURE FROM 163.0 TO 164.7 FEET, TIGHT	430
		425
	GRADES LESS SILTY AND COARSELY CALCARENITIC AT 169.7 FEET, THIN BEDDED, NUMEROUS VERY THIN SHALE PARTINGS IN 1 TO 2 INCH ZONES SPACED 3 TO 8 INCHES	420
	1/2 INCH VUG WITH MINERAL DEPOSITS AT 172.5 FEET	415
	POROUS ZONE FROM 180.0 TO 181.7 FEET, NUMEROUS PINPOINT TO 1/4 INCH OPENINGS, 2 INCH VOID AT 181.5 FEET MINERALIZED THROUGHOUT; APPROXIMATELY 5% VOIDS	410
	LIGHT GRAY TO BUFF LIMESTONE, PURE, COARSELY, CALCARENITIC, MEDIUM BEDDED, IRREGULAR SHALE PARTINGS AND STYOLITES SPACED 1 TO 8 INCHES, POROUS ZONE FROM 183.7 TO 185.6 FEET, NUMEROUS PINPOINT TO 1/2 INCH OPENINGS WITH OIL STAIN, LESS THAN 5% VOIDS	405
	GRAY CALCAREOUS SILTSTONE; THINLY LAMINATED, HIGHLY FOSSILIFEROUS, 1 INCH VOID AT 188.3 FEET, MINERIZED (SCALES FORMATION)	400
	GRAY SILTY SHALE, CALCAREOUS; LAMINATED, INTERBEDDED GRADATIONAL 1 TO 4 INCH ZONES OF SILTY LIMESTONE SPACED 2 TO 9 INCHES	395
		390
		385
	GRADES TO INTERBEDDED LAYERS OF SILTY LIMESTONE 7 TO 24 INCHES THICK SPACED 6 TO 27 INCHES, LAMINATED, FOSSILIFEROUS	380
		375
	SILTY LIMESTONE LAYERS GRADE OUT BELOW 219.4 FEET	
	DARK GRAY SHALE, DOLOMITIC; LAMINATED, PARTS EASILY ALONG BEDDING PLANES; INTERBEDDED 1/2 TO 4 INCH ZONES OF CALCAREOUS SILTSTONE SPACED 1 TO 4 INCHES	370

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-155

LOG OF BORING L-3
(SHEET 3 OF 4)

BORING L-3 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
225										
230									99	96
235										
240									100	100
245										
250									96	98
255										
260									99	99
265										
270									100	100
275										
280									100	100
285										
290										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		365
	45° FRACTURE WITH SLICKENSIDES AT 228.5 FEET	360
		355
		350
	CALCAREOUS SILTSTONE LAYERS GRADE OUT BELOW 245.0 FEET	345
		340
		335
		330
		325
		320
	MOTTLED LIGHT GRAY TO BUFF DOLOMITIC LIMESTONE, FINE TO MEDIUM GRAINED, SILTY, FOSSILIFEROUS; THIN BEDDED, THIN IRREGULAR SHALE PARTINGS AND STYOLITES, SPACED 1/2 TO 4 INCHES. (WISE LAKE - DUNLEITH FORMATIONS) POROUS ZONE FROM 276.4 TO 283.5 FEET WITH NUMEROUS PINPOINT TO 1/4 INCH VOIDS, 1/2 INCH VOID AT 279.3 FEET, 1 INCH VOID AT 283.5 FEET; LESS THAN 5% VOIDS THROUGHOUT	315
		310
	BORING COMPLETED AT 286.1 FEET ON 10-24-72	305

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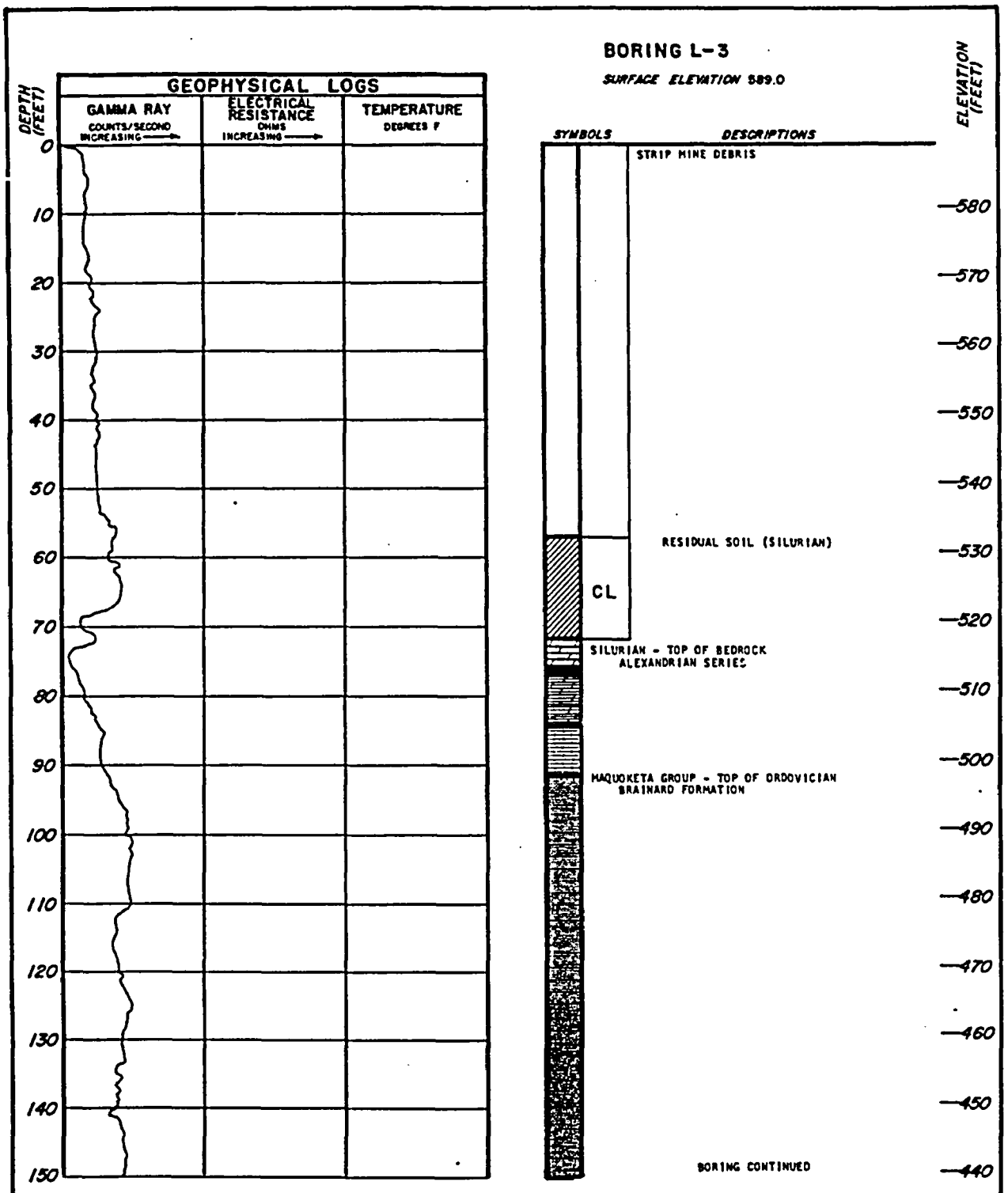
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-155

LOG OF BORING L-3
(SHEET 4 OF 4)



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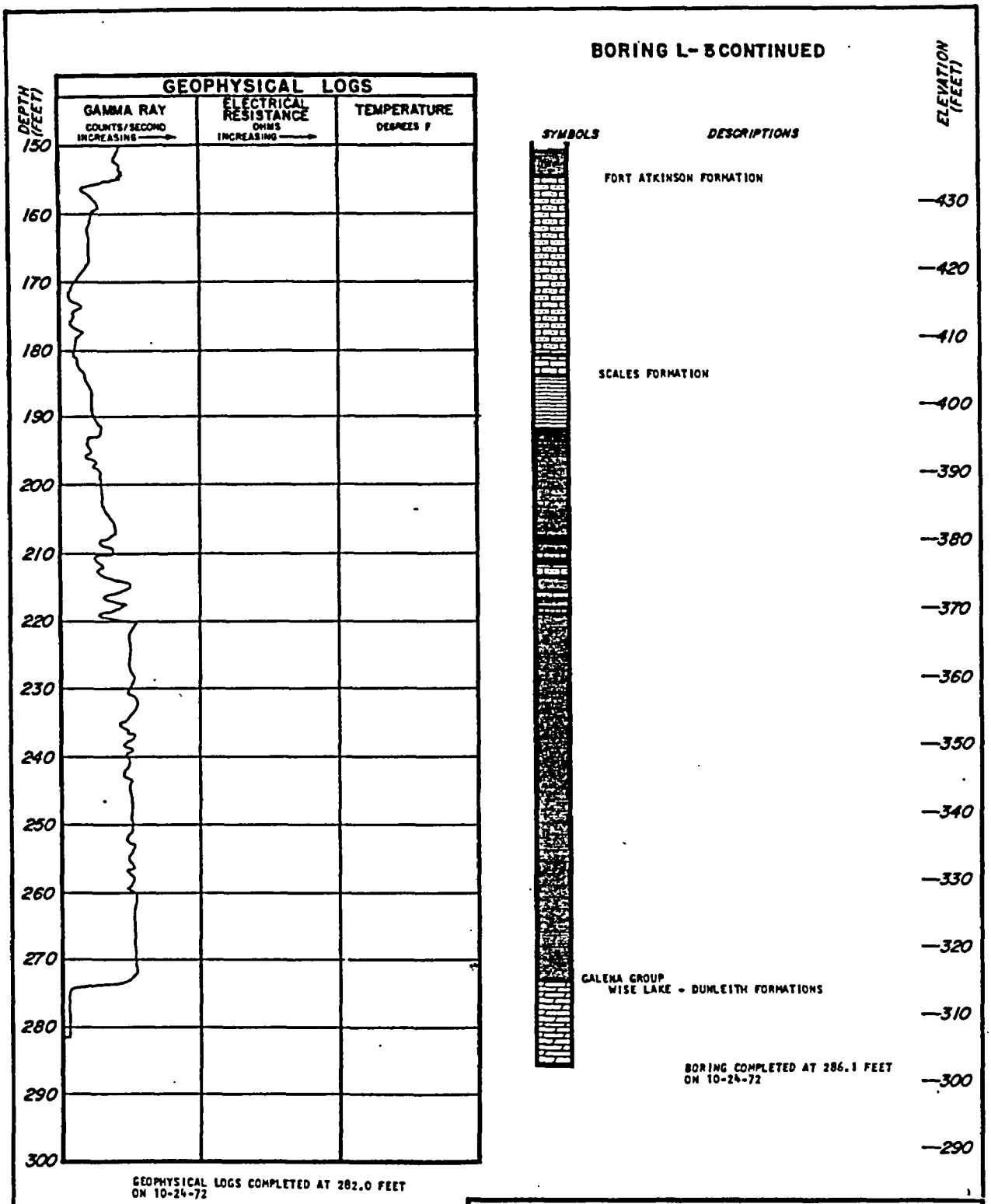
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-156

LOG OF BORING L-3 (GEOPHYSICAL LOG)
(SHEET 1 OF 2)



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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-156

LOG OF BORING L-3 (GEOPHYSICAL LOG)
(SHEET 2 OF 2)

BORING L-4

SURFACE ELEVATION 581.6

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
0										
5										
10										
15										
20										
25										
30										
35										
40									98	92
45										
50									100	99
55										
60									100	98
65										
70									97	92
75										

BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	SM	DARK BROWN SILTY FINE SAND WITH ORGANIC DEBRIS (VERY LOOSE)	580
13	SP	GRAYISH-BROWN FINE SAND WITH SOME SILT (LOOSE) (EQUALITY FORMATION)	
18	SP	GRADES TO BROWN FINE TO MEDIUM SAND, VERY CLEAN	
	ML	BROWNISH-GRAY CLAYEY SILT WITH SAND AND OCCASIONAL GRAVEL (STIFF) (WEDRON FORMATION)	575
48	ML		570
	GW	GRAVEL COBBLES AND BOULDERS	
51	ML	BROWNISH-GRAY SANDY SILT WITH SOME CLAY AND OCCASIONAL FINE GRAVEL (HARD)	565
100/2"	ML		560
150/4"	ML	GREENISH-GRAY FINE SANDY SILT WITH TRACE OF CLAY, MICACEOUS, OCCASIONAL SHALE AND SANDSTONE GRAVEL (HARD) (RESIDUAL SOIL)	555
240	ML	GRAY FINE SANDY SILT WITH TRACE OF CLAY, MICACEOUS, LAMINATED (HARD)	550
		TOP OF BEDROCK (CARBONDALE FORMATION) GRAY SILTSTONE, FINE SANDY AND MICACEOUS; THINLY LAMINATED; WEATHERED, MODERATELY FRIABLE; 30° TO NEAR VERTICAL FRACTURES SPACED 2 TO 12 INCHES	545
		GRADES WELL INDURATED BELOW 42.2 FEET, BASE OF WEATHERED ZONE	540
		45° FRACTURE AT 48.0 FEET	535
			530
		45° FRACTURE AT 55.9 FEET	525
		60° FRACTURE AT 58.6 FEET	
			520
		GRAY SILTY SHALE, FINELY MICACEOUS; THINLY LAMINATED	515
		30° FRACTURE AT 68.9 FEET 45° FRACTURE AT 70.5 FEET 45° FRACTURES AT 71.8 FEET 30° FRACTURES AT 72.5 FEET	510

BORING CONTINUED

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FIGURE 2.5-157

LOG OF BORING L-4
(SHEET 1 OF 5)

BORING L-4 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									95	70
85										
90									99	88
95										
100									95	81
105										
110									96	86
115										
120									100	80
125										
130									100	100
135										
140									95	92
145										
150									100	93

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	BLACK COAL; THINLY LAMINATED TO THIN BEDDED; NUMEROUS VERTICAL TIGHT FRACTURES WITH SOME PYRITE AND CLAY	505
	DARK BROWNISH-GRAY SILTY SHALE, CARBONACEOUS; THINLY LAMINATED; NEAR VERTICAL FRACTURE 79.4 TO 80.0 FEET	
	LIGHT GRAY SILTSTONE, FINE SANDY IN ZONES, MICACEOUS; THINLY LAMINATED, INDISTINCT IRREGULAR BEDDING (SPOON FORMATION)	500
		495
	DARK BROWNISH-GRAY SHALE, CARBONACEOUS; THINLY LAMINATED; FRAGMENTED WITH SLICKENSIDES	490
	LIGHT GRAY VERY SILTY SANDSTONE, FINE GRAINED, MICACEOUS; THINLY BEDDED.	
	LIGHT GRAY FINE SANDY SILTSTONE, MICACEOUS; THINLY LAMINATED, IRREGULAR	485
	LIGHT TO DARK BROWNISH-GRAY CLAYEY SHALE; INDISTINCTLY LAMINATED; FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES	
	GRADES MOTTLED RED AND GREEN COLOR AT 103.5 FEET	480
	BROWN SILTY SANDSTONE WITH OOLITIC IRON GRANULES	
	LIGHT BROWN TO GREENISH-GRAY DOLOMITE, FINE TO MEDIUM CRYSTALLINE, SILTY; THIN BEDDED, NUMEROUS THIN IRREGULAR GREEN SHALE PARTINGS SPACED 1/2 TO 5 INCHES (ALEXANDRIAN SERIES)	475
		470
	VERTICAL FRACTURE WITH DRUSY CRYSTALLINE SURFACE FROM 113.1 TO 114.1 FEET	
	VERTICAL FRACTURES SPACED 1/2 INCH FROM 115.0 TO 117.7 FEET, TIGHT TO WELL HEALED	465
		460
		455
	LIGHT GREENISH-GRAY TO DARK GRAY SILTSTONE, DOLOMITIC; THINLY LAMINATED (BRAINARD FORMATION)	450
		445
	DARK GREENISH-GRAY SHALE, SILTY, DOLOMITIC; THINLY LAMINATED, PARTS EASILY ALONG BEDDING PLANES	
		440
		435
	45° FRACTURE AT 149.2 FEET	

BORING CONTINUED

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FIGURE 2.5-157

LOG OF BORING L-4
(SHEET 2 OF 5)

BORING L-4 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155										
160									99	99
165										
170									100	96
175										
180									100	100
185										
190									100	100
195										
200									100	98
205										
210									98	98
215										
220									100	96
225										

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

—430

—425

—420

—415

—410

—405

—400

—395

—390

GRADES CALCAREOUS AT 195.0 FEET

—385

GRAY SILTY LIMESTONE: THIN BEDDED, NUMEROUS IRREGULAR PARTINGS AND GRADATIONAL ZONES OF DARK GRAY CALCAREOUS SILTSTONE 1/4 TO 6 INCHES THICK SPACED 1/2 TO 4 INCHES (FORT ATKINSON FORMATION)

—380

—375

—370

LIGHT GRAY LIMESTONE WITH SOME SILT, VERY COARSELY CALCARENITIC; MEDIUM BEDDED, NUMEROUS BLACK CLOSELY SPACED SHALE PARTINGS IN ZONES; HIGHLY FOSSILIFEROUS

1/2 IN VUG AT 214.5 FEET

—365

LIGHT GRAY TO BUFF LIMESTONE, PURE, COARSELY CALCARENITIC; MEDIUM BEDDED, IRREGULAR THIN SHALE PARTINGS AND STYOLITES SPACED 2 TO 8 INCHES

—360

POROUS ZONES FROM 220.8 TO 221.8 AND 222.9 TO 223.2 FEET WITH 1/4 TO 1/10 INCH OPENINGS SPACED 1/4 TO 2 INCHES

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-157

LOG OF BORING L-4
(SHEET 3 OF 5)

BORING L-4 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
225										
230									100	100
235										
240									100	100
245										
250									100	100
255										
260									100	100
265										
270									100	100
275										
280									96	87
285										
290									100	100
295										
300										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		355
	GRAY CALCAREOUS SILTSTONE, FINE SANDY, LAMINATED, HIGHLY FOSSILIFEROUS IN ZONES WITH NUMEROUS VERY THIN IRREGULAR WHITE BANDS, INTERBEDDED GRADATIONAL LAYERS OF SILTY LIMESTONE 1 TO 6 INCHES THICK, SPACED 1 TO 12 INCHES; PINPOINT POROSITY AND 1/4 INCH OPEN VUGS SPACED 1/2 TO 2 INCHES FROM 233.3 TO 233.7 FEET (SCALES FORMATION)	350
	1 INCH OPEN VUG AT 237.2 FEET, MINERAL DEPOSITS	345
		340
		335
	GRAY SILTY SHALE, CALCAREOUS; THINLY LAMINATED; INTERBEDDED GRADATIONAL ZONES OF SILTY LIMESTONE 1 TO 6 INCHES THICK, SPACED 4 TO 16 INCHES	330
	GRADES TO INTERBEDDED LAYERS OF LIGHT GRAY SILTY LIMESTONE 6 TO 16 INCHES THICK, SPACED 7 TO 32 INCHES	325
		320
		315
	DARK GRAY SHALE, DOLOMITIC; THICKLY LAMINATED, OCCASIONAL INTERBEDDED ZONES OF LIGHT GRAY CALCAREOUS SILTSTONE OR VERY SILTY LIMESTONE 2 TO 6 INCHES THICK, SPACED 2 TO 4 FEET	310
		305
		300
		295
	CALCAREOUS SILTSTONE LAYERS GRADE OUT BELOW 290.0 FEET	290
		285

BORING CONTINUED

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FIGURE 2.5-157

LOG OF BORING L-4
(SHEET 4 OF 5)

BORING L-4 CONTINUED

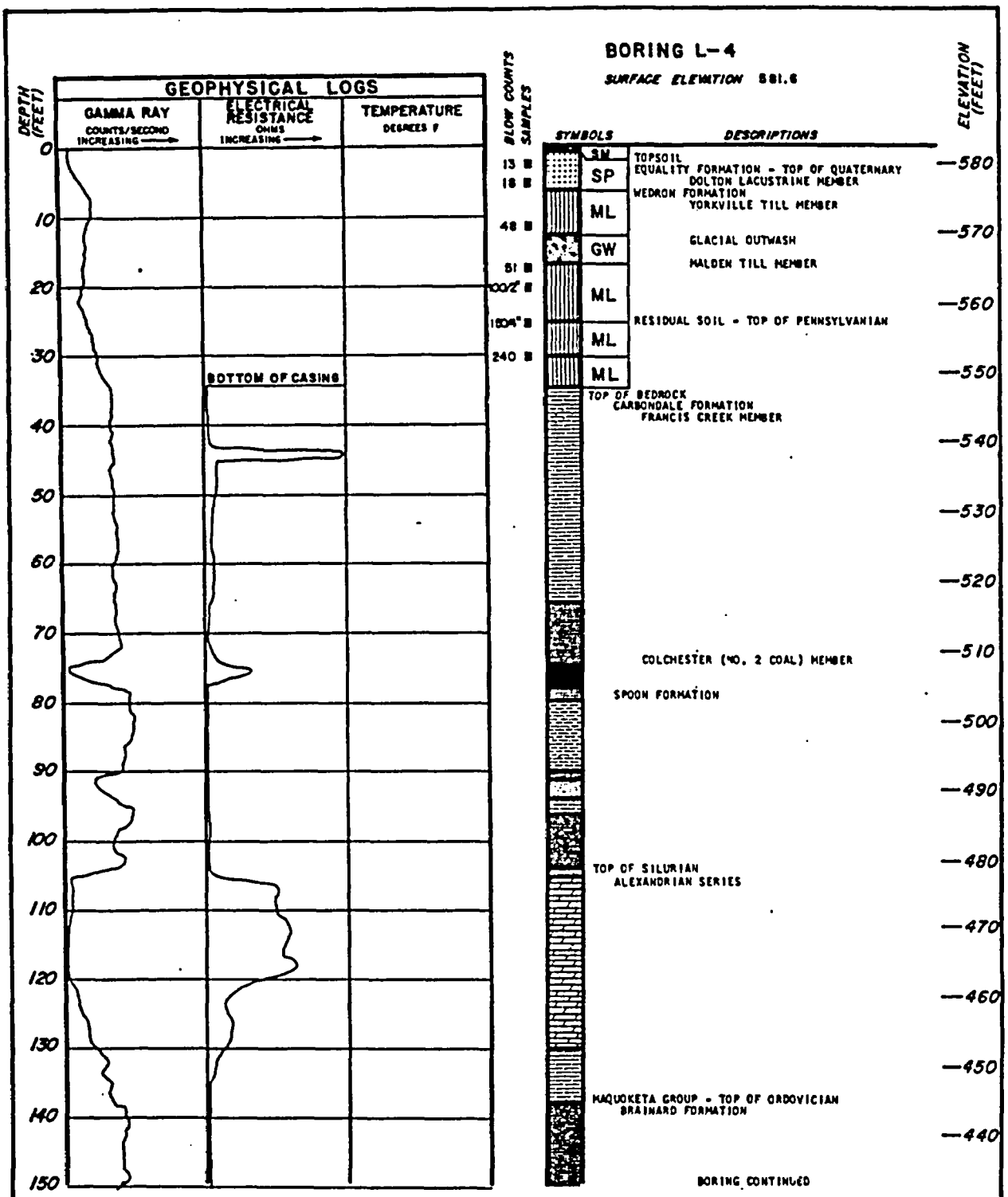
DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (GPM/FOOT)	PERCENT RECOVERED	RQD
300									98	99
305										
310									100	96
315										
320									100	100
325										
330									100	100
335										
340									100	100
345										
350										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		280
		275
		270
	GRADES TO OCCASIONAL SMALL PYRITE CONCRETION BELOW 317.0 FEET	265
	MOTTLED LIGHT GRAY AND BUFF DOLOMITIC LIMESTONE, FINE TO MEDIUM CRYSTALLINE; THIN BEDDED, NUMEROUS IRREGULAR HAIRLINE SHALE PARTINGS SPACED 1/4 TO 3 INCHES (WISE LAKE - DUNLEITH FORMATIONS)	260
		255
	POROUS ZONE WITH NUMEROUS 1/4 TO 1/10 INCH OPENINGS FROM 327.3 TO 328.2 FEET	
	1/2 INCH VUG AT 333.0 FEET	250
		245
	1/2 INCH CRYSTAL LINE VUG AT 342.7 FEET	240
	BORING COMPLETED AT 345.7 FEET ON 10-13-72 300 POUND HAMMER FALLING 18 INCHES	235

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-157

LOG OF BORING L-4
(SHEET 5 OF 5)



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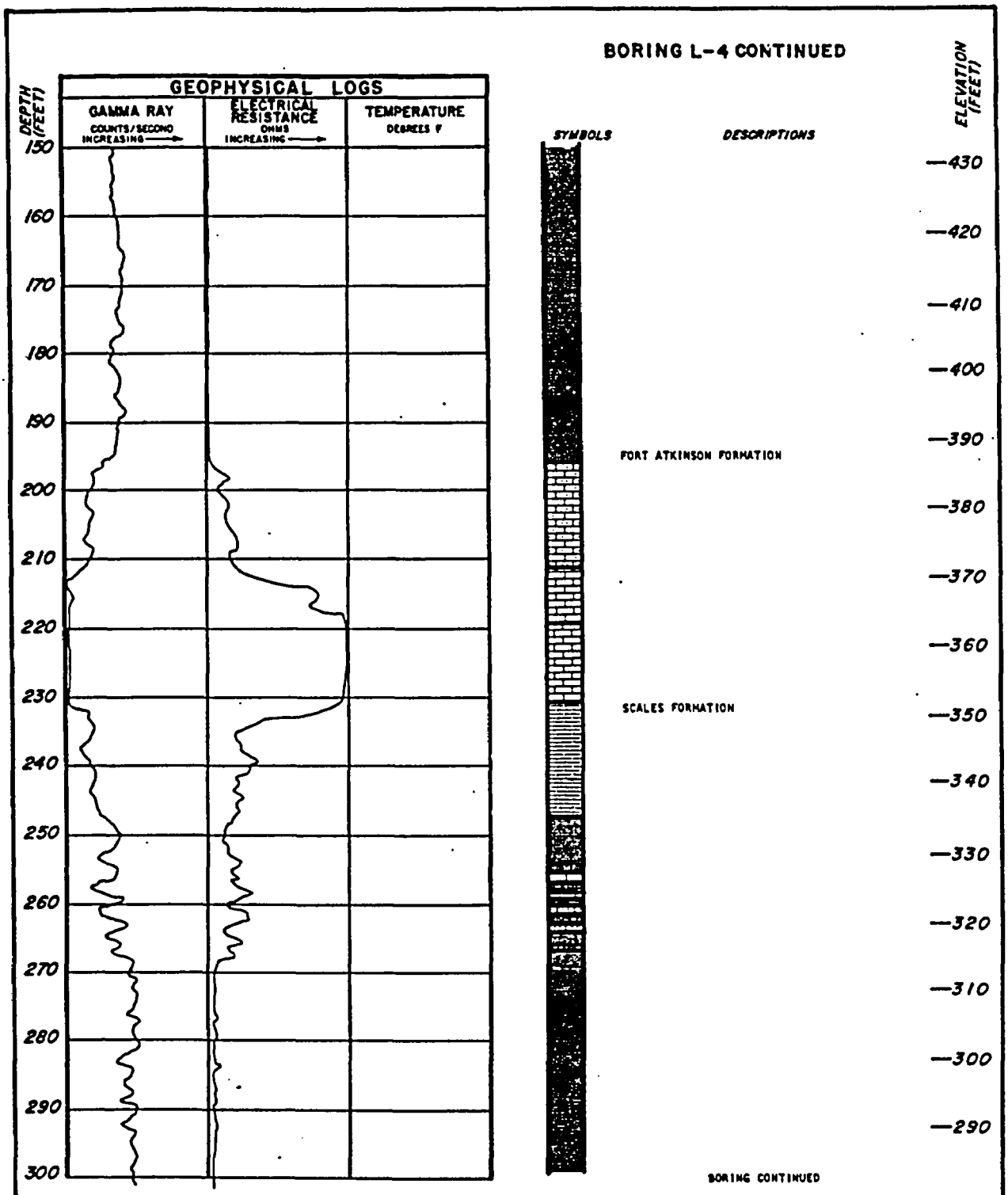
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-158

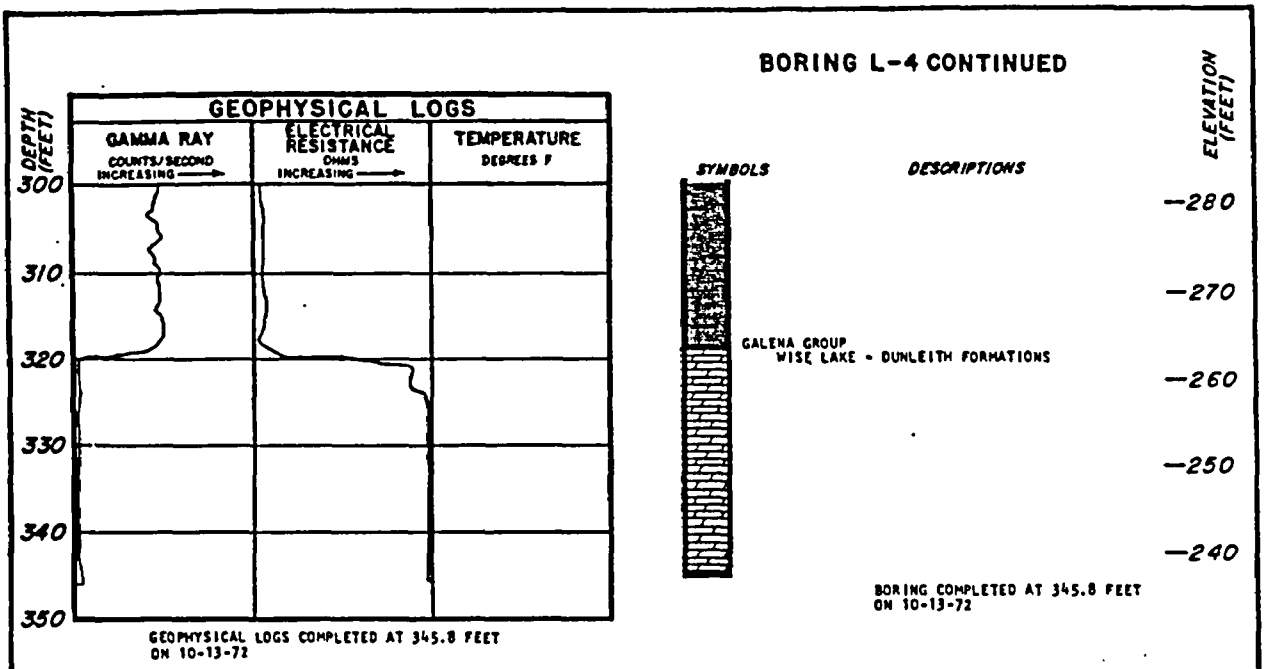
LOG OF BORING L-4 (GEOPHYSICAL LOG)
(SHEET 1 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-158

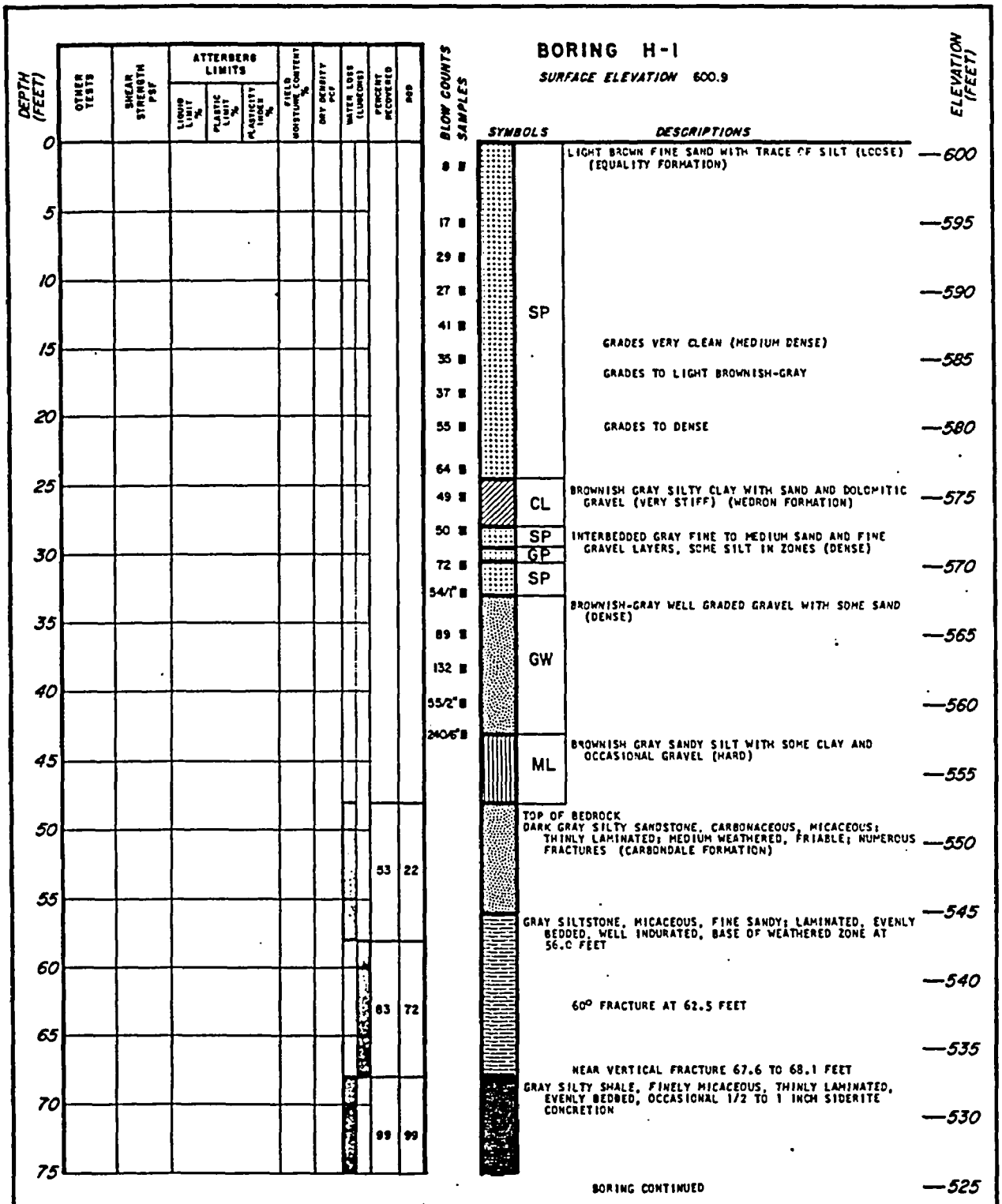
LOG OF BORING L-4 (GEOPHYSICAL LOG)
(SHEET 2 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-158

LOG OF BORING L-4 (GEOPHYSICAL LOG)
(SHEET 3 OF 3)



BRAIDWOOD STATION
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FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 1 OF 22)

BORING H-1 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									79	70
90									78	67
95										
100									55	12
105										
110									82	54
115										
120									94	64
125										
130									43	82
135										
140										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		525
		520
	BLACK COAL: LAMINATED TO THINLY BEDDED; NUMEROUS VERTICAL FRACTURES WITH VEINLETS OF PYRITE AND CLAY	515
	DARK GRAY TO BROWNISH-GRAY CLAYEY SHALE: THINLY LAMINATED, CARBONACEOUS IN ZONES; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES (SPOON FORMATION)	510
	LIGHT GREENISH-GRAY FINE SANDY SILTSTONE, MICACEOUS, LAMINATED	
	DARK BROWNISH GRAY SILTY SHALE, CLAYEY AND CARBONACEOUS IN ZONES; THINLY LAMINATED; FRAGMENTED WITH SLICKENSIDES	505
	LIGHT GREENISH-GRAY SANDY SILTSTONE, MICACEOUS; INDISTINCTLY BEDDED TO LAMINATED	500
	BROWNISH-GRAY TO GRAY SILTY SHALE, CLAYEY IN ZONES, BRITTLE; THINLY LAMINATED, CARBONACEOUS PARTINGS IN ZONES; FRAGMENTED WITH SLICKENSIDES	495
		490
	GRADES MORE SILTY BELOW 113.7 FEET, LESS FRAGMENTED	
	45° FRACTURES AT 115.2 AND 116.0 FEET	485
	DARK GRAY SILTSTONE; THINLY LAMINATED, NUMEROUS CARBONACEOUS PARTINGS 45° FRACTURE AT 119.0 FEET	
	DARK GREENISH-GRAY SHALE, DOLOMITIC, THINLY LAMINATED (BRAINARD FORMATION)	480
	45° FRACTURE AT 121.3 FEET 70° FRACTURES 123.3 TO 124.4 FEET	
	GRADES CALCAREOUS BELOW 125.5 FEET	475
	GRAY SILTY LIMESTONE, FOSSILIFEROUS; THIN BEDDED TO LAMINATED, NUMEROUS DARK GRAY IRREGULAR PARTINGS AND GRADATIONAL ZONES OF CALCAREOUS SHALE (FORT ATKINSON FORMATION)	470
		465
	BORING CONTINUED	460

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 2 OF 22)

BORING H-1 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
140										
145									93	58
150									91	88
155										
160										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		460
	GRADES LESS SILTY AND COARSELY CALCARENITIC BELOW 144.6 FEET	455
	LIGHT GRAY TO BUFF LIMESTONE, VERY PURE, COARSELY CALCARENITIC; MEDIUM BEDDED, VERY THIN SHALE PARTINGS AND STYOLITES SPACED 1/2 TO 8 INCHES; OCCASIONAL 1 TO 3 INCH OIL STAINED ZONES WITH POORLY DEVELOPED POROSITY	450
		445
	BORING COMPLETED AT 158.0 FEET ON 10-24-72	440

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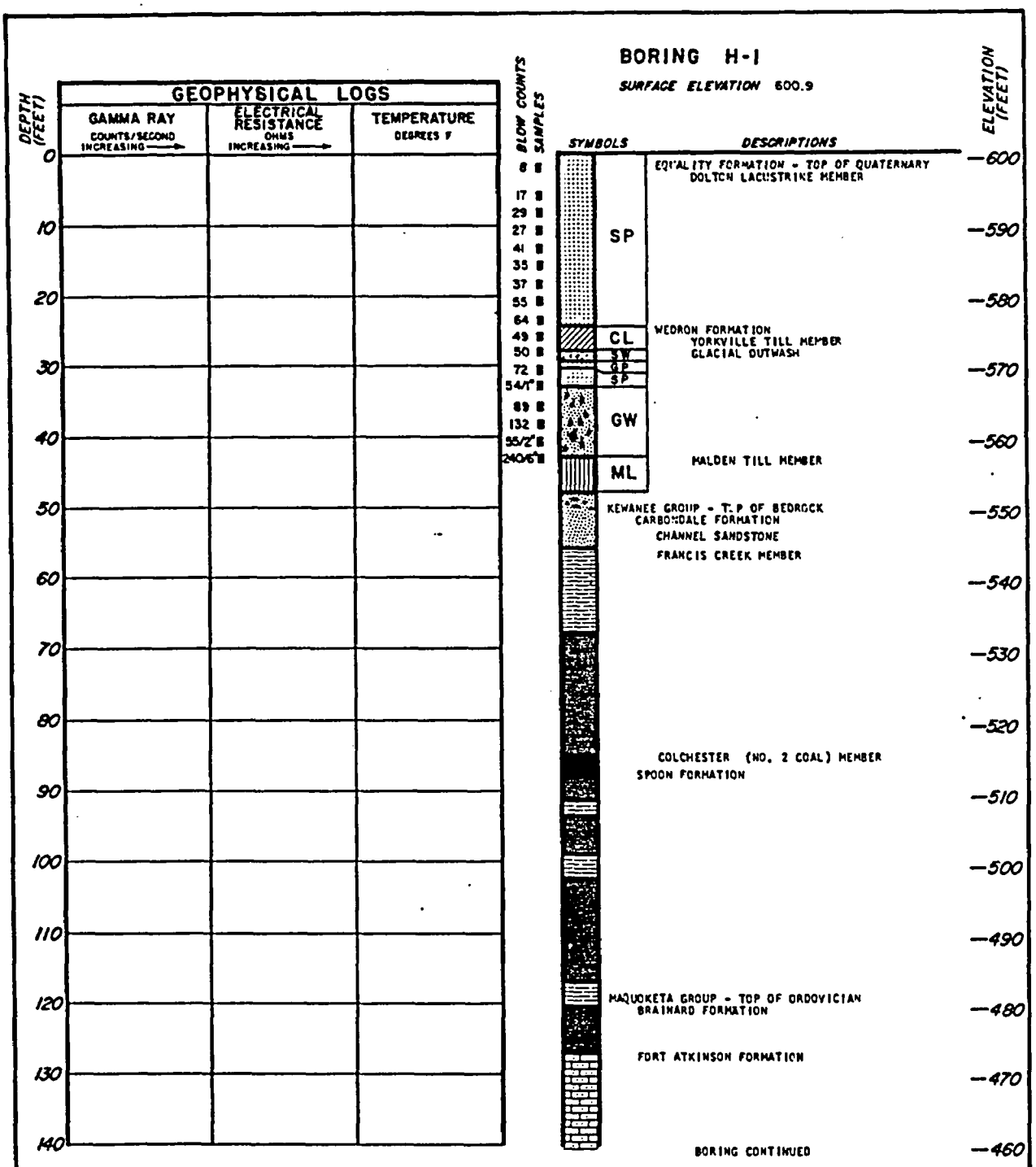
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 3 OF 22)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 4 OF 22)

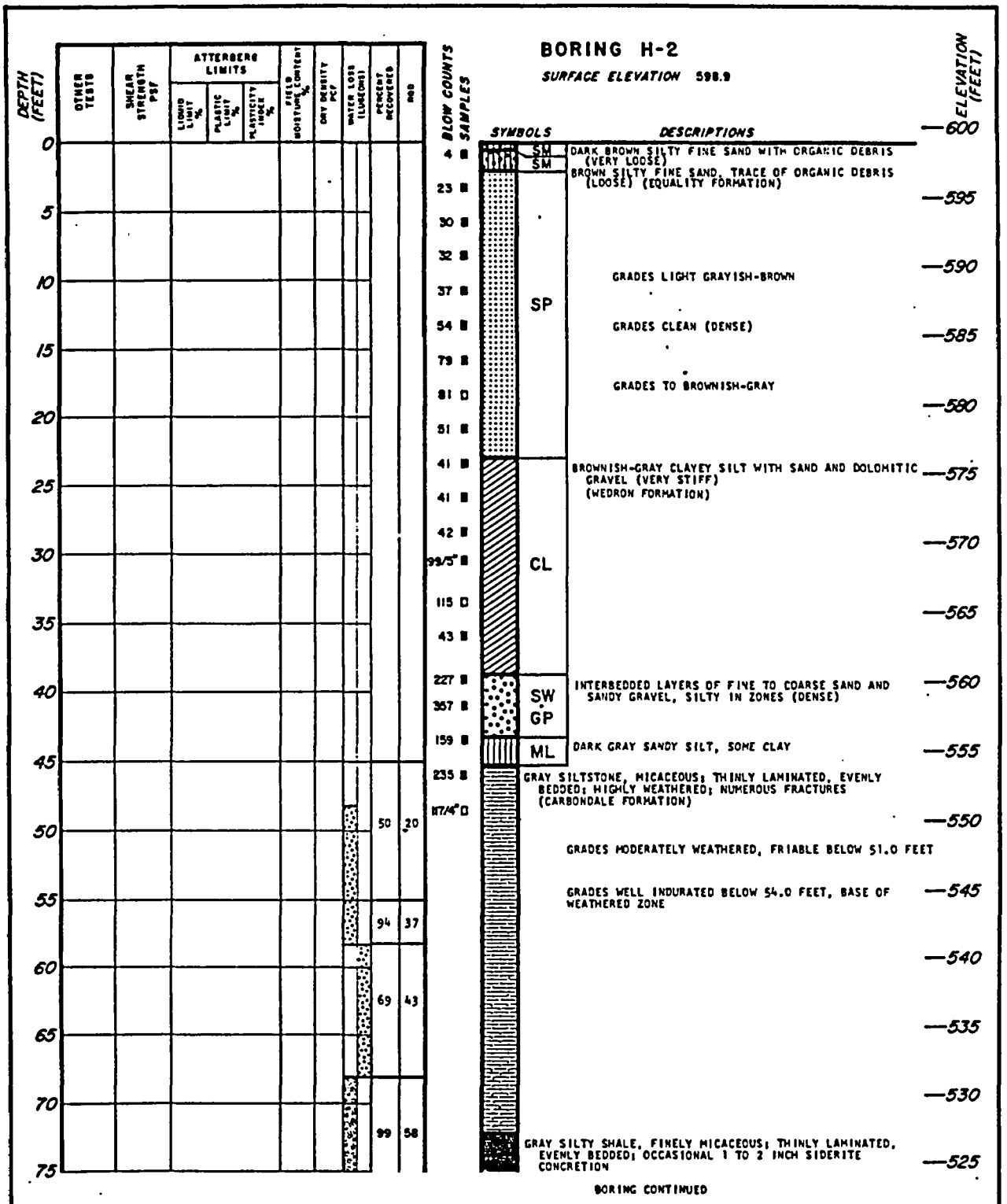
BORING H-I CONTINUED

DEPTH (FEET)	GEOPHYSICAL LOGS			SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	GAMMA RAY COUNTS/SECOND INCREASING →	ELECTRICAL RESISTANCE OHMS INCREASING →	TEMPERATURE DEGREES F			
140						460
150						450
160					BORING COMPLETED AT 158.0 FEET ON 10-11-72	440

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 5 OF 22)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 6 OF 22)

BORING H-2 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									75	40
85										
90									85	42
95										
100									84	39
105										
110									98	72
115										
120									100	65
125										
130									100	100
135										
140										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		525
		520
	BLACK COAL; LAMINATED TO THINLY BEDDED; NUMEROUS VERTICAL TIGHT FRACTURES WITH SOME PYRITE AND CLAY	515
	LIGHT TO DARK BROWNISH-GRAY CLAYEY SHALE, CARBONACEOUS IN ZONES; THINLY LAMINATED; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES (SPOON FORMATION)	510
	GRADES LIGHT BROWNISH-GRAY BELOW 90.8 FEET	
	LIGHT GREENISH-GRAY SILTSTONE, MICACEOUS, FINE SANDY IN ZONES; THINLY LAMINATED	505
	DARK BROWNISH-GRAY TO BLACK CLAYEY SHALE; THINLY LAMINATED, CARBONACEOUS IN ZONES, BRITTLE; FRAGMENTED, SLICKENSIDES	500
	LIGHT GREENISH-GRAY SANDY SILTSTONE, MICACEOUS; INDISTINCTLY LAMINATED	
	DARK BROWNISH-GRAY TO BLACK CLAYEY SHALE; INDISTINCT BEDDING IN ZONES, BRITTLE; CARBONACEOUS IN ZONES, FRAGMENTED, SLICKENSIDES	495
		490
	BROWNISH-GRAY SILTSTONE, FINELY MICACEOUS, FINELY LAMINATED, WELL INDURATED	
		485
	GRADES INCREASINGLY CARBONACEOUS BELOW 118.5 FEET	480
	DARK GREENISH-GRAY SHALE, SILTY, DOLOMITIC; THINLY LAMINATED, PARTS EASILY ALONG BEDDING PLANES GRADES CALCAREOUS BELOW 122.3 FEET (BRAINARD FORMATION)	475
	GRAY SILTY LIMESTONE, FOSSILIFEROUS; LAMINATED TO THINLY BEDDED, NUMEROUS IRREGULAR PARTINGS AND GRADATIONAL ZONES OF CALCAREOUS SHALE (FORT ATKINSON FORMATION) 2 INCH VUG WITH MINERAL DEPOSITS AT 124.8 FEET	
		470
	45° FRACTURE WITH SLICKENSIDES AT 132.5 FEET	
		465
		460

BORING CONTINUED

BRAIDWOOD STATION
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FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 7 OF 22)

BORING H-2 CONTINUED

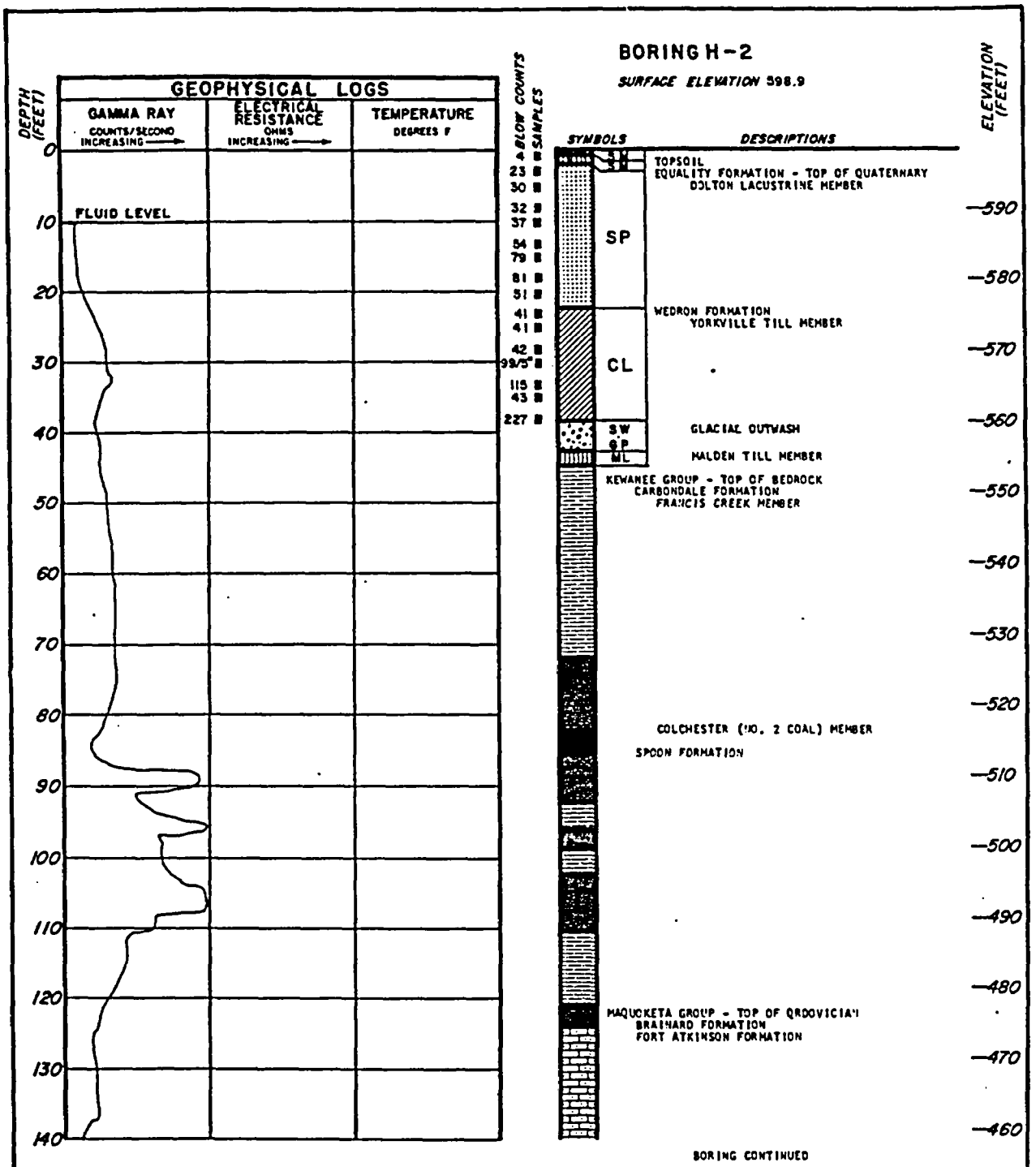
DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
140										
145									98	98
150									98	98
155										
160										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	GRADES LESS SILTY, COARSE CALCARENITIC AT 141.7 FEET	460
		455
	LIGHT GRAY TO BUFF LIMESTONE, VERY PURE, COARSELY CALCARENITIC; MEDIUM BEDDED, OCCASIONAL VERY THIN SHALE PARTING AND STYOLITE SPACED 1 TO 8 INCHES	450
	2 TO 4 INCH OIL STAINED ZONES WITH MINOR POROSITY AT 151.7, 154.0, AND 157.0 FEET	445
	BORING COMPLETED AT 158.0 FEET ON 10-31-72	440

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 8 OF 22)



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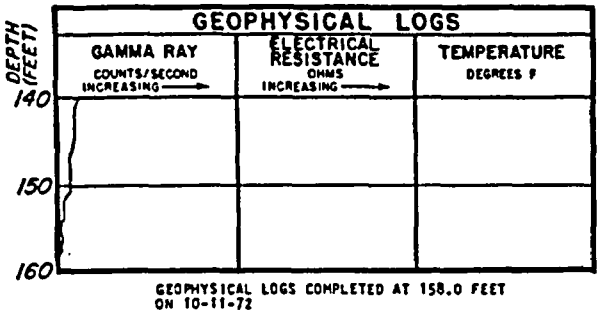
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 9 OF 22)

BORING H-2 CONTINUED



GEOPHYSICAL LOGS COMPLETED AT 158.0 FEET ON 10-11-72

SYMBOLS

DESCRIPTIONS

BORING COMPLETED AT 158.0 FEET ON 10-11-72

ELEVATION (FEET)

460

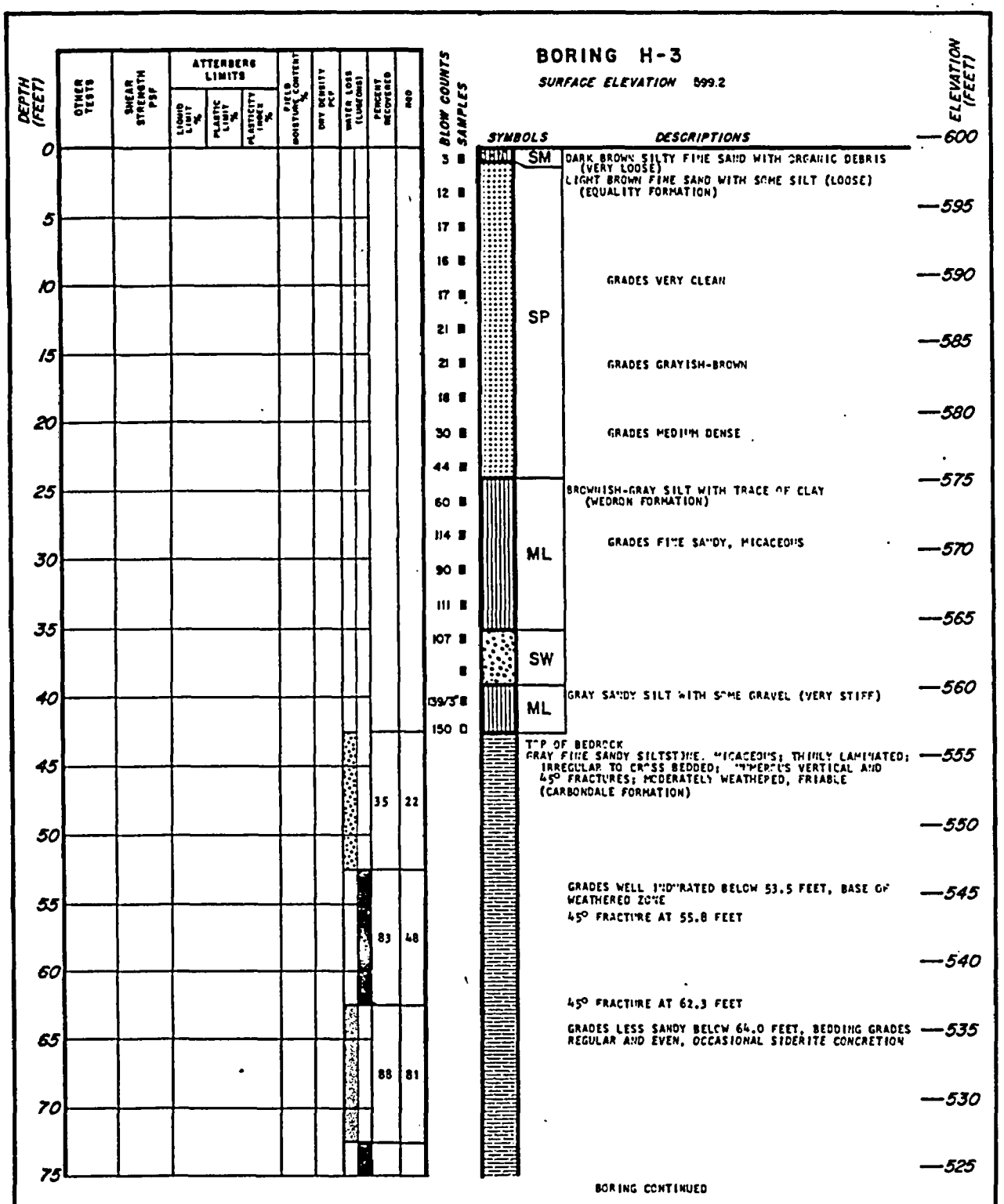
450

440

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 10 OF 22)



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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 11 OF 22)

BORING H-3 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									99	87
90										
95									91	83
100										
105									18	0
110									69	30
115									96	83
120										
125									93	77
130										
135									94	88
140										

SYMBOLS | DESCRIPTIONS | ELEVATION (FEET)

525

520

515

VERTICAL FRACTURE 86.7 TO 87.5 FEET

510

45° FRACTURE AT 92.5 FEET

505

GRAY SILTY SHALE, MICACEOUS, THINLY LAMINATED, EVENLY BEDDED

NEAR VERTICAL FRACTURE 96.5 TO 97.5 FEET

30° FRACTURE AT 97.8 FEET

500

BLACK COAL, THINLY LAMINATED TO THIN BEDDED; NUMEROUS VERTICAL FRACTURES WITH SOME PYRITE AND CLAY

DARK GRAY TO BLACK CLAYEY SHALE, HIGHLY CARBONACEOUS IN ZONES; THINLY LAMINATED; FRAGMENTED WITH NUMEROUS SLICKENSIDES (SPOON FORMATION)

495

BLACK COAL, THINLY LAMINATED TO THIN BEDDED; NUMEROUS VERTICAL FRACTURES WITH SOME PYRITE AND CLAY

DARK GRAY TO BLACK CLAYEY SHALE, HIGHLY CARBONACEOUS IN ZONES; THINLY LAMINATED; FRAGMENTED WITH NUMEROUS SLICKENSIDES

490

BLACK COAL, THINLY LAMINATED TO THIN BEDDED; NUMEROUS VERTICAL FRACTURES WITH SOME PYRITE AND CLAY

DARK GRAY SILTSTONE, FINE SANDY, MICACEOUS, CARBONACEOUS; THINLY LAMINATED

485

480

GRADES CONGLOMERATIC FROM 120.8 TO 121.0 FEET

GREENISH-GRAY SHALE, SILTY, DOLOMITIC; THINLY LAMINATED, GRADES CALCAREOUS BELOW 123.0 FEET (BRAINARD FORMATION)

475

GRAY SILTY LIMESTONE, FOSSILIFEROUS; THIN BEDDED TO LAMINATED, NUMEROUS IRREGULAR PARTINGS AND GRADATIONAL ZONES OF DARK GRAY CALCAREOUS SHALE (FORT ATKINSON FORMATION)

470

465

460

BORING CONTINUED

BRAIDWOOD STATION
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FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 12 OF 22)

BORING H-3 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
140										
145									99	96
150										
155									99	96
160										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		460
	GRADES LESS SILTY AND COARSELY CALCARENITIC BELOW 145.0 FEET	455
	TWO 1/2 TO 1 INCH VUGS WITH MINERAL DEPOSITS AT 146.3 FEET	
	1 FEET CRYSTAL LINE VUG AT 149.0 FEET 3 INCH POROUS ZONE WITH OIL STAINS AT 150.4 FEET MINOR OIL STAINS AT 151.5 FEET	450
	LIGHT GRAY TO BUFF LIMESTONE, VERY PURE, COARSELY CALCARENITIC; MEDIUM BEDDED, OCCASIONAL VERY THIN SHALE PARTING OR STYOLITE SPACED 1 TO 8 INCHES	445
	2 INCH CRYSTAL LINED VUG AT 156.7 FEET	440
	BORING COMPLETED AT 162.5 ON 10-20-72	

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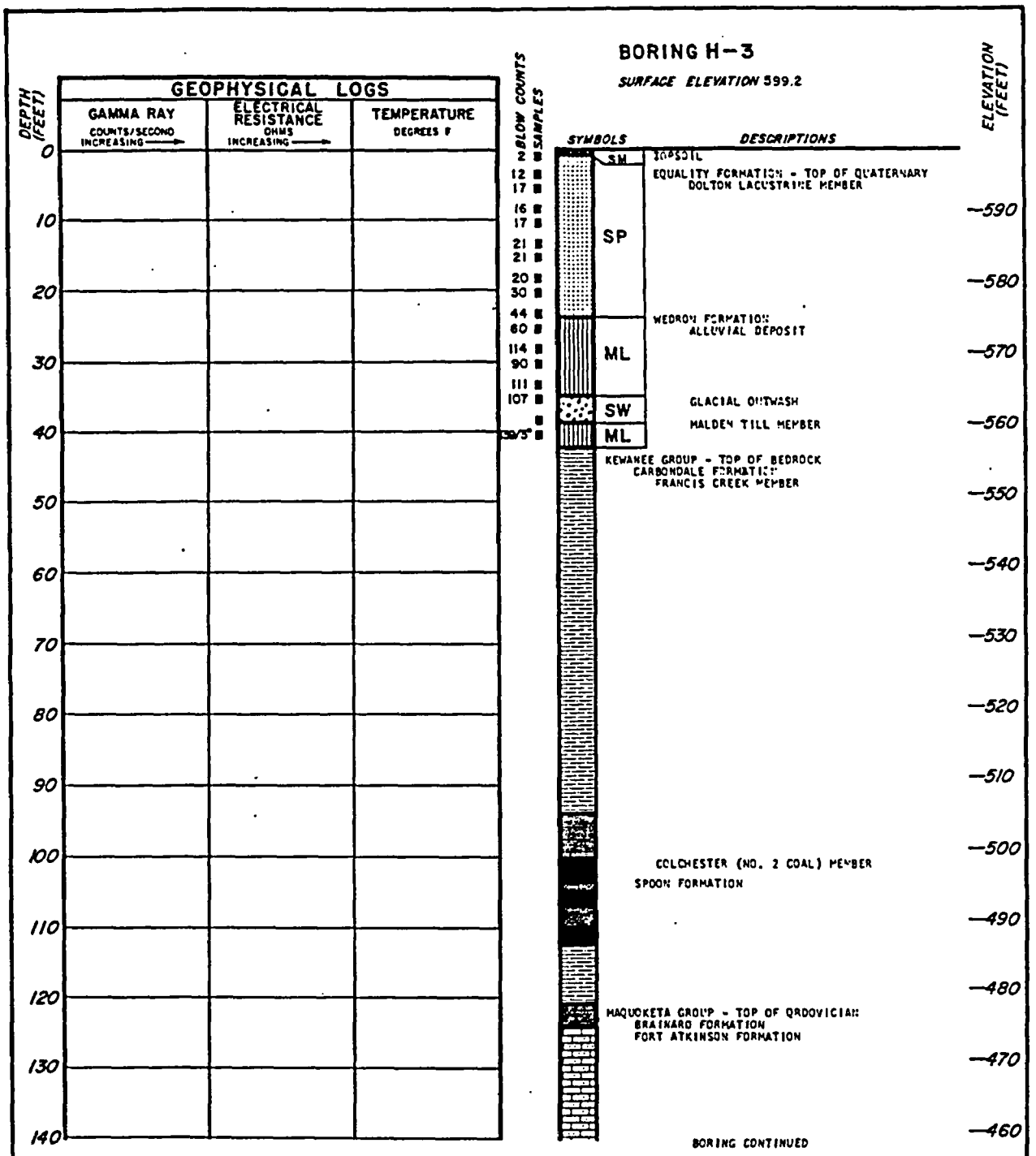
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 13 OF 22)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 14 OF 22)

BORING H-3 CONTINUED

DEPTH (FEET)	GEOPHYSICAL LOGS		
	GAMMA RAY COUNTS/SECOND INCREASING →	ELECTRICAL RESISTANCE OHMS INCREASING →	TEMPERATURE DEGREES F
140			
150			
160			
170			

SYMBOLS

DESCRIPTIONS

BORING COMPLETED AT 162.5 FEET ON 10-12-72

ELEVATION (FEET)

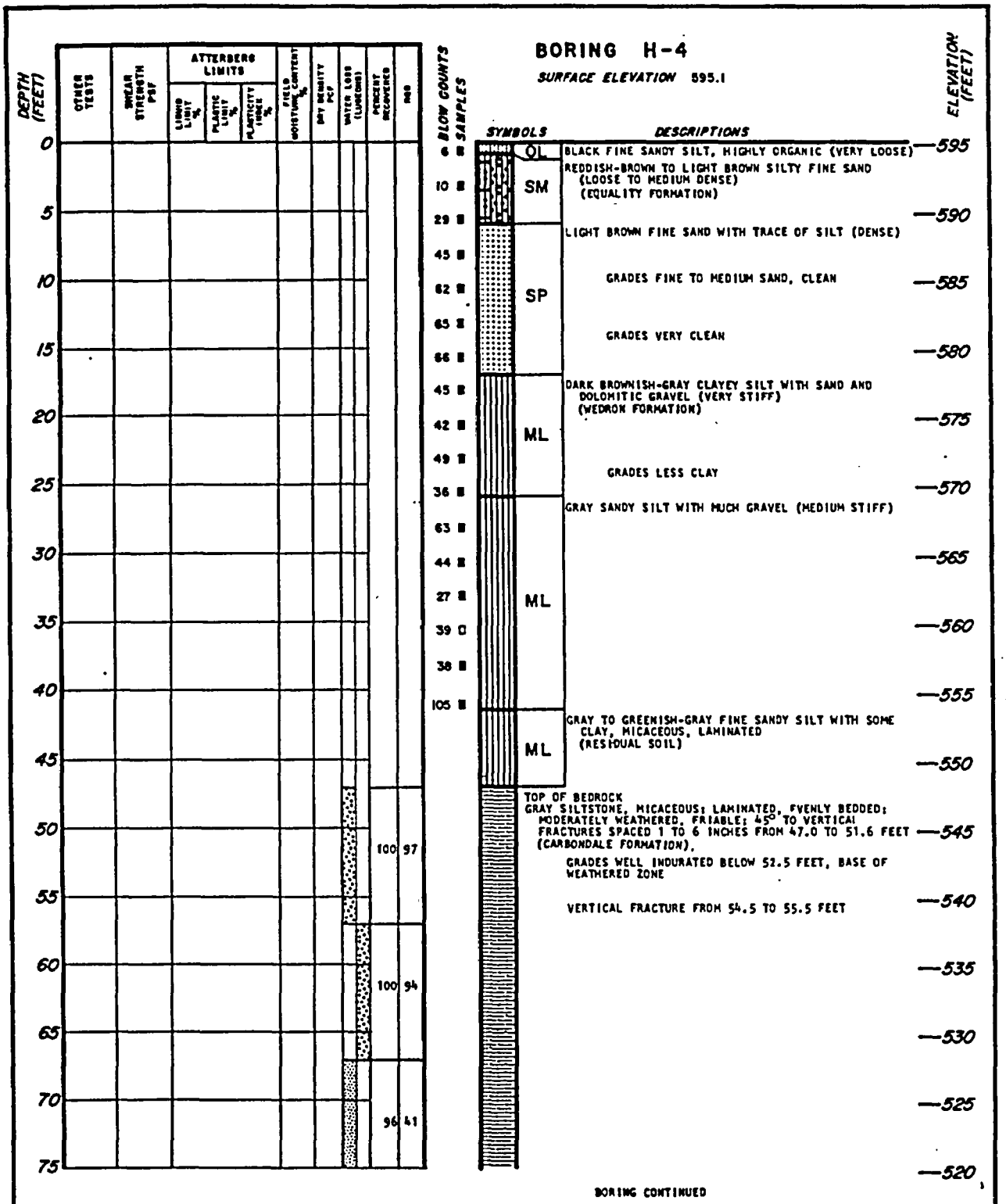
—450

—440

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 15 OF 22)



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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 16 OF 22)

BORING H-4 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									97	34
85										
90									87	60
95										
100									93	83
105										
110									89	22
115										
120									96	47
125										
130									95	40
135										
140										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		520
	GRAY SILTY SHALE, FINELY MICACEOUS; THINLY LAMINATED, EVENLY BEDDED; OCCASIONAL SIDERITE CONCRETION	515
	GRADES CARBONACEOUS BELOW 84.5 FEET	510
	BLACK COAL; LAMINATED TO THINLY BEDDED; NUMEROUS VERTICAL FRACTURES WITH VEINLETS OF PYRITE AND CLAY	
	DARK GRAY TO BLACK CLAYEY SHALE, CARBONACEOUS; THINLY LAMINATED; FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES (SPOON FORMATION) GRADES LIGHT GRAY BELOW 90.7 FEET	505
	LIGHT GREENISH-GRAY SILTSTONE, MICACEOUS, FINE SANDY, INDISTINCTLY LAMINATED; VERTICAL FRACTURES 93.4 TO 93.6 FEET AND 94.7 TO 95.5 FEET	500
	GRAY TO DARK GRAY CLAYEY SHALE, CARBONACEOUS; THINLY LAMINATED, BRITTLE; FRAGMENTED WITH SLICKENSIDES	
	LIGHT GREENISH-GRAY SILTSTONE, MICACEOUS, FINE SANDY, BEDDING IS INDISTINCT TO THINLY LAMINATED	495
	BLACK TO BROWNISH-GRAY CLAYEY SHALE, BRITTLE; CARBONACEOUS IN ZONES WITH NUMEROUS PLANT IMPRESSIONS; BEDDING IS INDISTINCT TO THINLY LAMINATED; FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES	490
		485
		480
	DARK BROWNISH-GRAY SILTSTONE, MICACEOUS, THINLY LAMINATED, NUMEROUS CARBONACEOUS PARTINGS BELOW 118.5 FEET	
	DARK GREENISH-GRAY SHALE, SILTY, DOLOMITIC; LAMINATED, IRREGULAR BEDDING, GRADES CALCAREOUS BELOW 121.0 FEET (BRAINARD FORMATION)	475
	GRAY SILTY LIMESTONE, FOSSILIFEROUS; LAMINATED TO THINLY BEDDED, NUMEROUS IRREGULAR PARTINGS AND GRADATIONAL ZONES OF CALCAREOUS SHALE (FORT ATKINSON FORMATION) 45° FRACTURE AT 125.7 FEET, SLICKENSIDES	470
		465
	GRADES LESS SILTY BELOW 136.0 FEET, CALCARENITIC	460
	LIGHT GRAY TO BUFF LIMESTONE, PURE, COARSELY CALCARENITIC; MEDIUM BEDDED, OCCASIONAL VERY THIN IRREGULAR SHALE PARTINGS AND STYOLITES SPACED 1 TO 11 INCHES	
	BORING CONTINUED	455

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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 17 OF 22)

BORING H-4 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
140									100	94
145										
150									100	98
155										
160										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	OIL STAINS FROM 141.0 TO 144.2 FEET, FINELY POROUS, NO DISTINCT VOIDS	455
	60° FRACTURE AT 143.3 FEET, MINERALIZED	450
	VERTICAL FRACTURE 149.3 TO 149.7 FEET	445
	OIL STAINS FROM 153.4 TO 154.7 FEET, FINELY POROUS	440
	BORING COMPLETED AT 157.0 FEET ON 10-13-72	435

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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 18 OF 22)

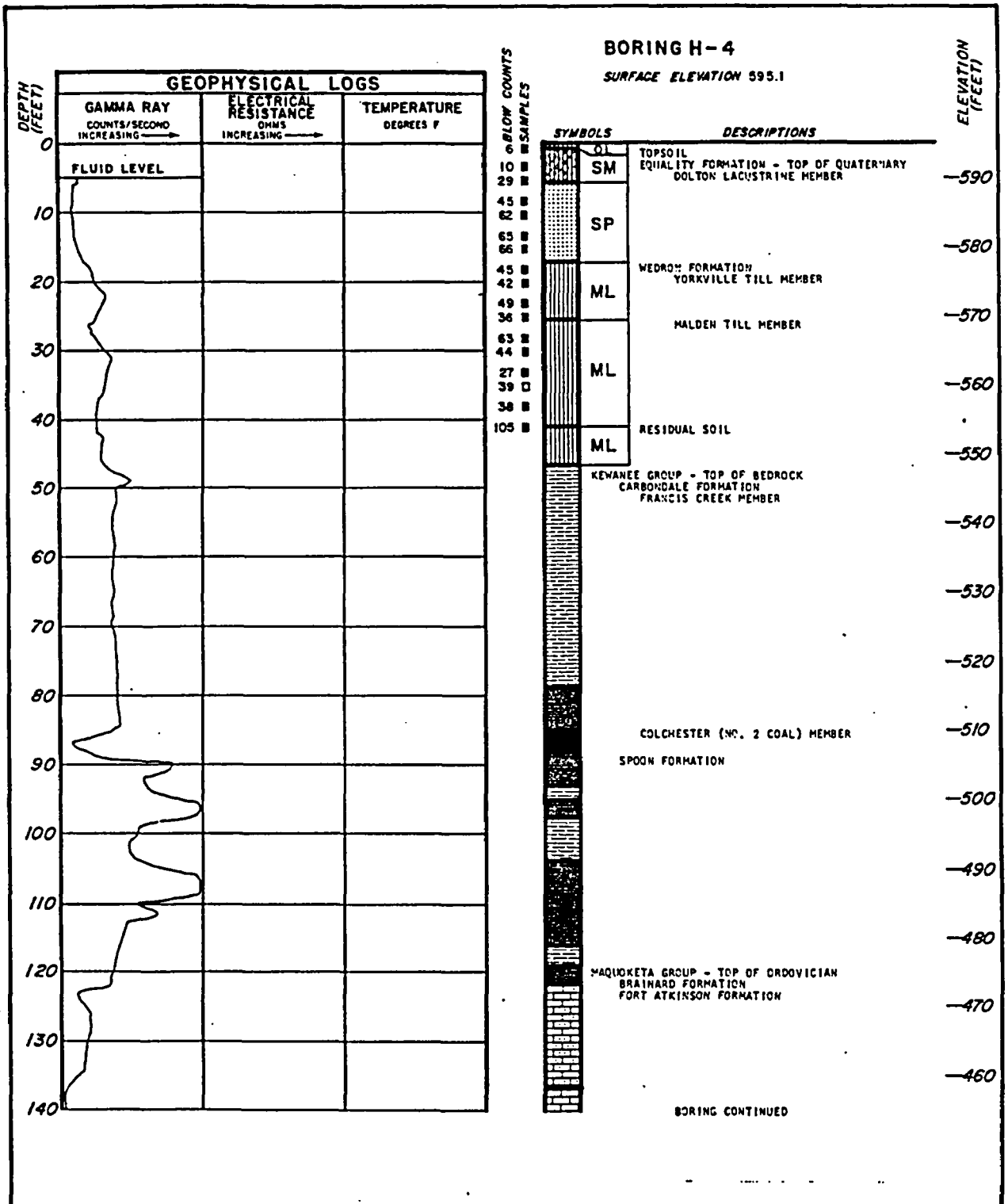

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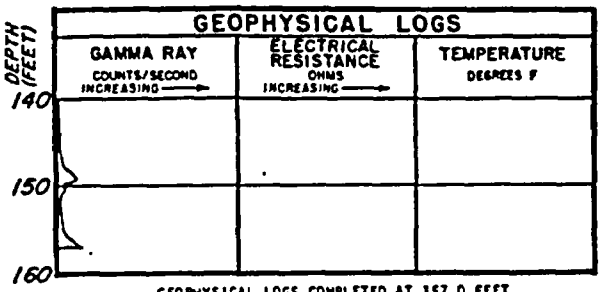
FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 19 OF 22)

BORING H-4 CONTINUED



GEOPHYSICAL LOGS COMPLETED AT 157.0 FEET ON 10-13-72

SYMBOLS

DESCRIPTIONS

BORING COMPLETED AT 157.0 FEET ON 10-13-72

ELEVATION (FEET)

450

BRAIDWOOD STATION
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FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 20 OF 22)

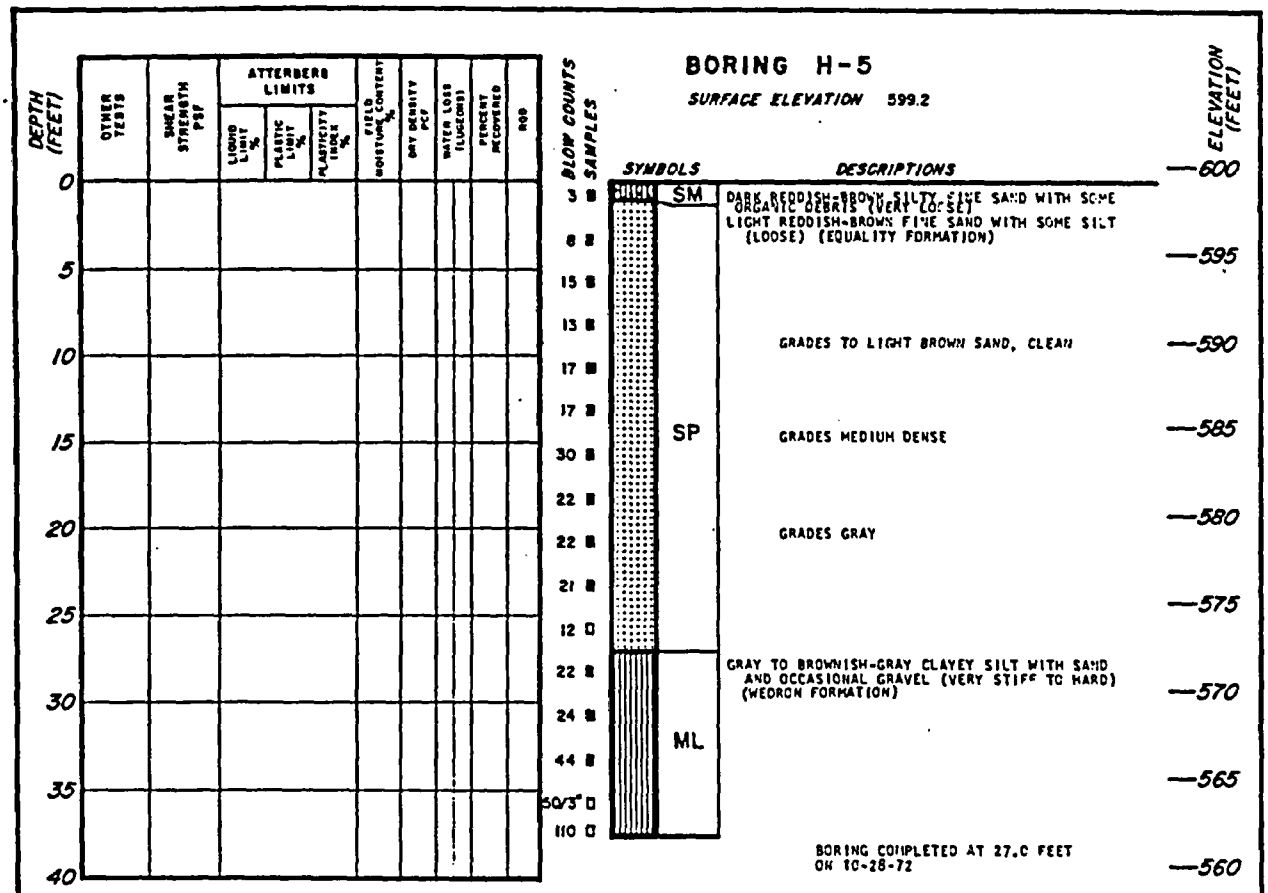

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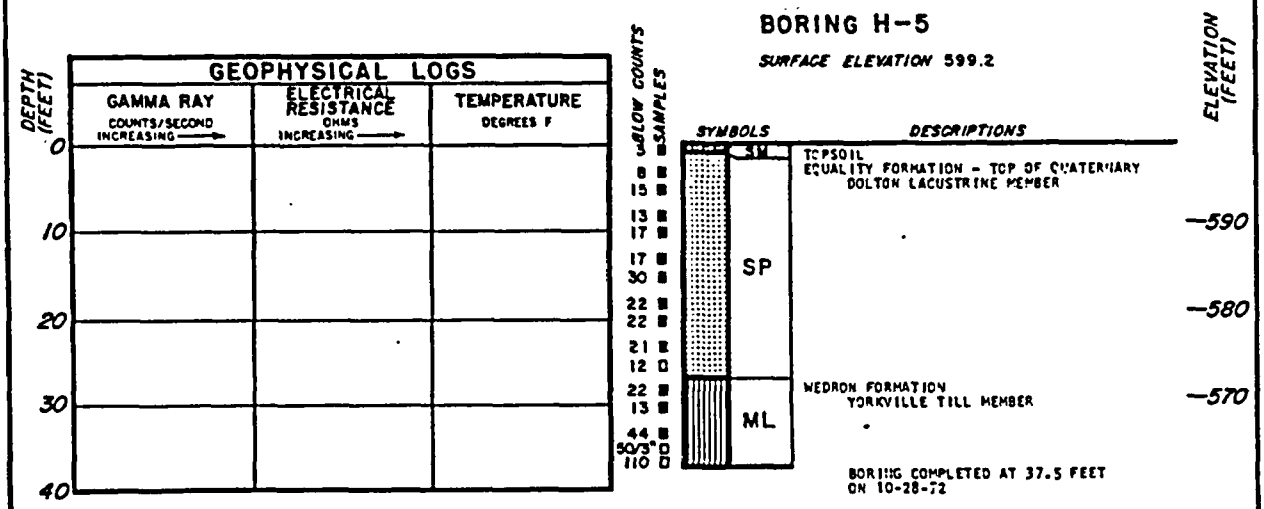
FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 21 OF 22)



BRAIDWOOD STATION
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FIGURE 2.5-159

LOGS OF "H" BORINGS
(SHEET 22 OF 22)

BORING A-12

SURFACE ELEVATION 592.5

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD	BLOW COUNTS SAMPLES
0											
5											7 B
10											17 B
15											23 B
20											21 B
25											41 B
30											109 B
35											61 B
40											58 B
45											109 B
50											
55									97	97	
60											
65									99	99	
70											
75									100	86	

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
SM	DARK BROWN SILTY FINE SAND WITH ORGANIC DEBRIS (VERY LOOSE)	
SP	REDDISH-BROWN FINE SAND WITH TRACES OF SILTY ORGANIC DEBRIS (LOOSE) (EQUALITY FORMATION)	590
	GRADES TO MOTTLED REDDISH-BROWN AND YELLOWISH-BROWN (MEDIUM DENSE)	585
	GRADES TO LIGHT BROWN FINE TO MEDIUM SAND, CLEAN	
	GRADES TO GRAY	580
	GRADES WITH TRACES OF COARSE SAND COBBLES AT 21.5 FEET	
		575
ML	GRAY SILT WITH A TRACE OF FINE GRAVEL (HARD) (WEDRON FORMATION)	570
		565
		560
	(RESIDUAL SOIL)	555
ML	LIGHT GRAY SILT WITH SOME CLAY, MICACEOUS (HARD)	
		550
		545
	TOP OF BEDROCK (CARBONDALE FORMATION) GRAY SILTSTONE, MICACEOUS, THINLY LAMINATED WEATHERED	
	60° TO VERTICAL FRACTURES SPACED 1" TO 12" FROM 51.1' TO 55.5'	540
	BASE OF WEATHERING AT 55.3'' VERTICAL FRACTURE FROM 55.6' TO 55.8'	
	GRADES TO LESS FRACTURES BELOW 56.0'	535
	VERTICAL FRACTURE AT 62.0'	
	70° FRACTURE FROM 64.7' TO 65.9'	530
	GRAY SILTY SHALE, FINELY MICACEOUS, VERY THINLY LAMINATED, OCCASSIONAL THIN PYRITE LAMINAE WITH SOME FINE-GRAINED SIDERITE	525
	VERTICAL FRACTURE FROM 69.0' TO 70.0'	
	30° FRACTURE AT 73.0'	520

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-160

LOG OF BORING A-12
(SHEET 1 OF 5)

BORING A-12 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									100	94
90										
95									89	99
100										
105									100	90
110										
115									100	97
120										
125									100	98
130										
135									100	97
140										
145									100	94
150										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	70° FRACTURE AT 76.0' TO 76.7' ZONE OF DISTORTED LAMINATIONS WITH NUMEROUS 45° FRACTURES 77.5 TO 79.0'; GRADING CARBONACEOUS	— 515
	BLACK COAL; THIN-BEDDED; NUMEROUS VERTICAL TIGHT FRACTURES WITH SOME PYRITE AND CLAY; GRADES TO HIGHLY CARBONACEOUS SHALE IN BASAL 3 INCHES. (SPOON FORMATION)	
	DARK GRAY CLAYEY SHALE, CARBONACEOUS, HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES GRADES LESS CARBONACEOUS, LIGHT BROWN TO GRAY COLOR BELOW 85.8'	— 510
		— 505
	GRADES LESS CARBONACEOUS AT 88.5'	
	LIGHT GRAY, FINE SANDY SILTSTONE, MICACEOUS, INDISTINCTLY LAMINATED, WITH SOME FINE-GRAINED SIDERITE. GRADES TO THINLY LAMINATED BELOW 93.7'	— 500
	DARK BROWNISH-GRAY CLAYEY SHALE, CARBONACEOUS IN ZONES, FRAGMENTED WITH NUMEROUS SLICKENSIDES	
	MOTTLED BROWNISH-RED TO GREEN SHALE, MASSIVE, SIDERITIC, FRACTURES WITH NUMEROUS SLICKENSIDES. GRADES TO GREEN SHALE WITH A HIGHLY WEATHERED ZONE AT 99.9'	— 495
	DARK GREENISH-GRAY SHALE, DOLOMITIC, LAMINATED, WELL INDURATED (BRAINARD FORMATION)	— 490
	VERTICAL FRACTURE AT 104.6'	
	VERTICAL FRACTURE AT 107.6'	— 485
	80° FRACTURE AT 109.1' WITH CALCITE FILLED VUG 30° FRACTURE AT 111.4'	— 480
	VERTICAL FRACTURE AT 115.7'	— 475
	GRADES FOSSILIFEROUS AT ABOUT 119'	
	GRADES CALCAREOUS AT 123.7'	— 470
	(FORT ATKINSON FORMATION)	
	GRAY SILTY LIMESTONE, FINE TO MEDIUM GRAINED FOSSILIFEROUS, THIN-BEDDED WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 2" ZONES OF CALCAREOUS SHALES SPACED 1/4" TO 10".	— 465
		— 460
		— 455
		— 450
	LIGHT GRAY COARSE-GRAINED LIMESTONE, WITH SOME SILT, CALCARENITIC, THIN-BEDDED, IRREGULAR HAIR-LINE PARTINGS AND STYLOLITES SPACED 1/2" TO 8". GRADES TO LIGHT BUFF IN COLOR WITH NUMEROUS SMALL OPEN VUGS, OIL STAINED THROUGHOUT BELOW 149'	— 445

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-160

LOG OF BORING A-12
(SHEET 2 OF 5)

BORING A-12 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	WET DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150									100	98
155										
160									100	100
165										
170									100	100
175										
180										

SYMBOLS

DESCRIPTIONS

(SCALES FORMATION)

DARK GRAY CALCAREOUS SILTSTONE; LAMINATED EXTREMELY ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS; INTERBEDDED GRADATIONAL 1/2" TO 2" ZONES OF GRAY SILTY LIMESTONE SPACED 1" TO 6"

DARK GRAY SILTY SHALE, DOLOMITIC; LAMINATED 1" TO 6"

CALCAREOUS AND FOSSILIFEROUS ZONES SPACED 1" TO 8"; FISSILE IN SHALEY ZONES.

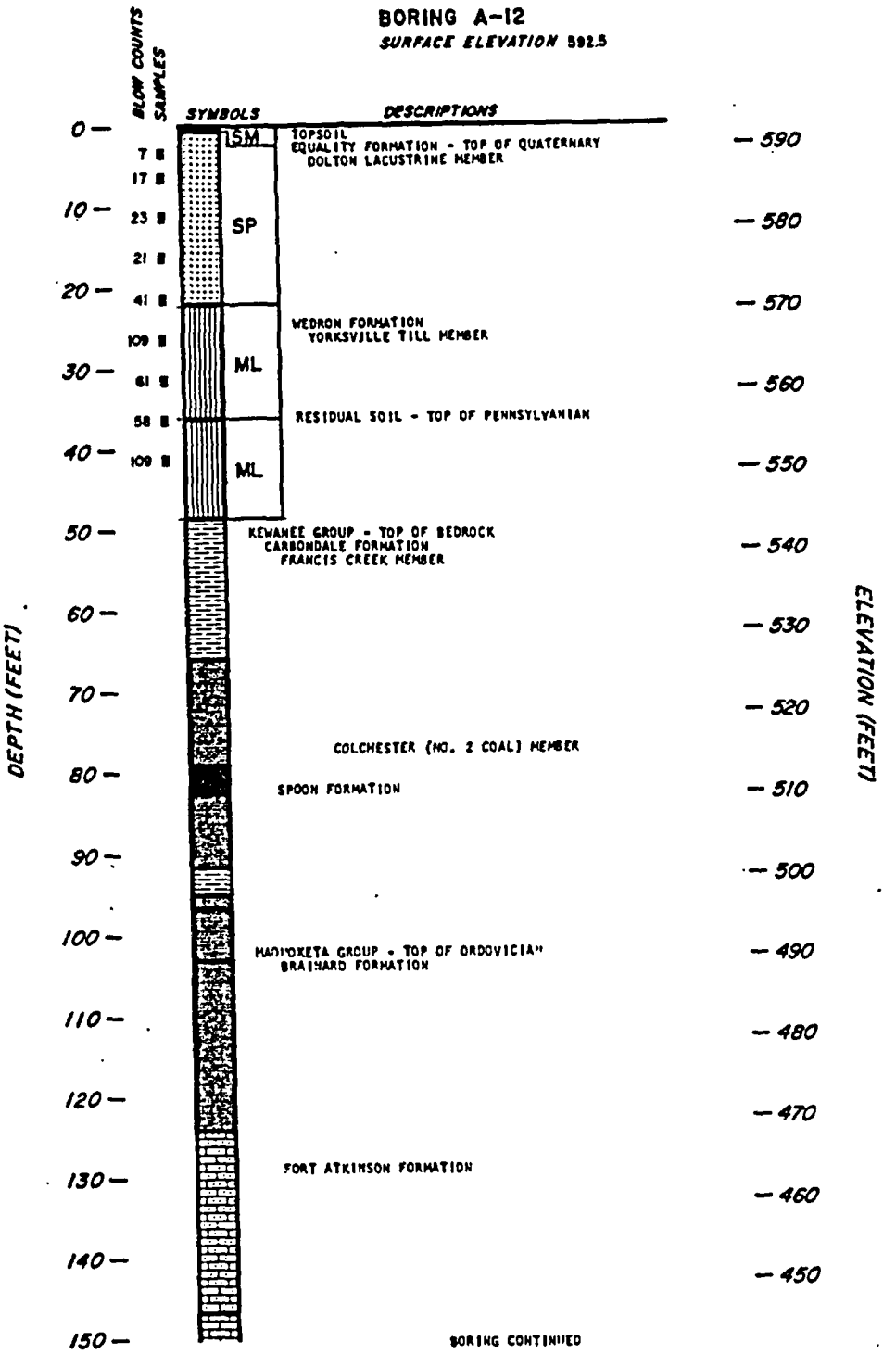
BORING COMPLETED AT 176.5' ON 12-4-72.

ELEVATION (FEET): 440, 435, 430, 425, 420, 415

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-160

LOG OF BORING A-12
(SHEET 3 OF 5)

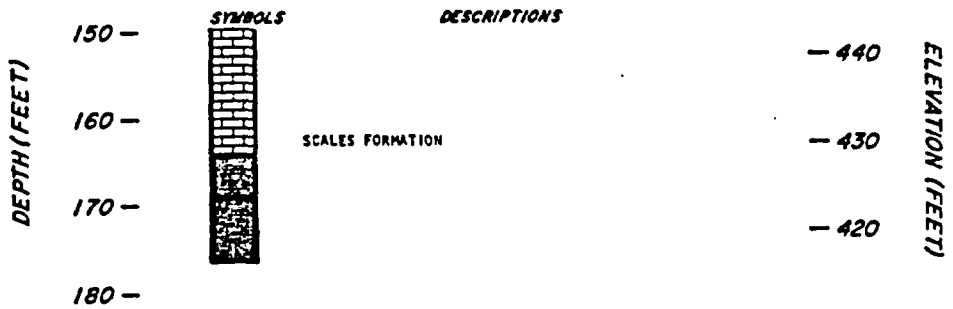


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-160

LOG OF BORING A-12
(SHEET 4 OF 5)

BORING A-12 CONTINUED



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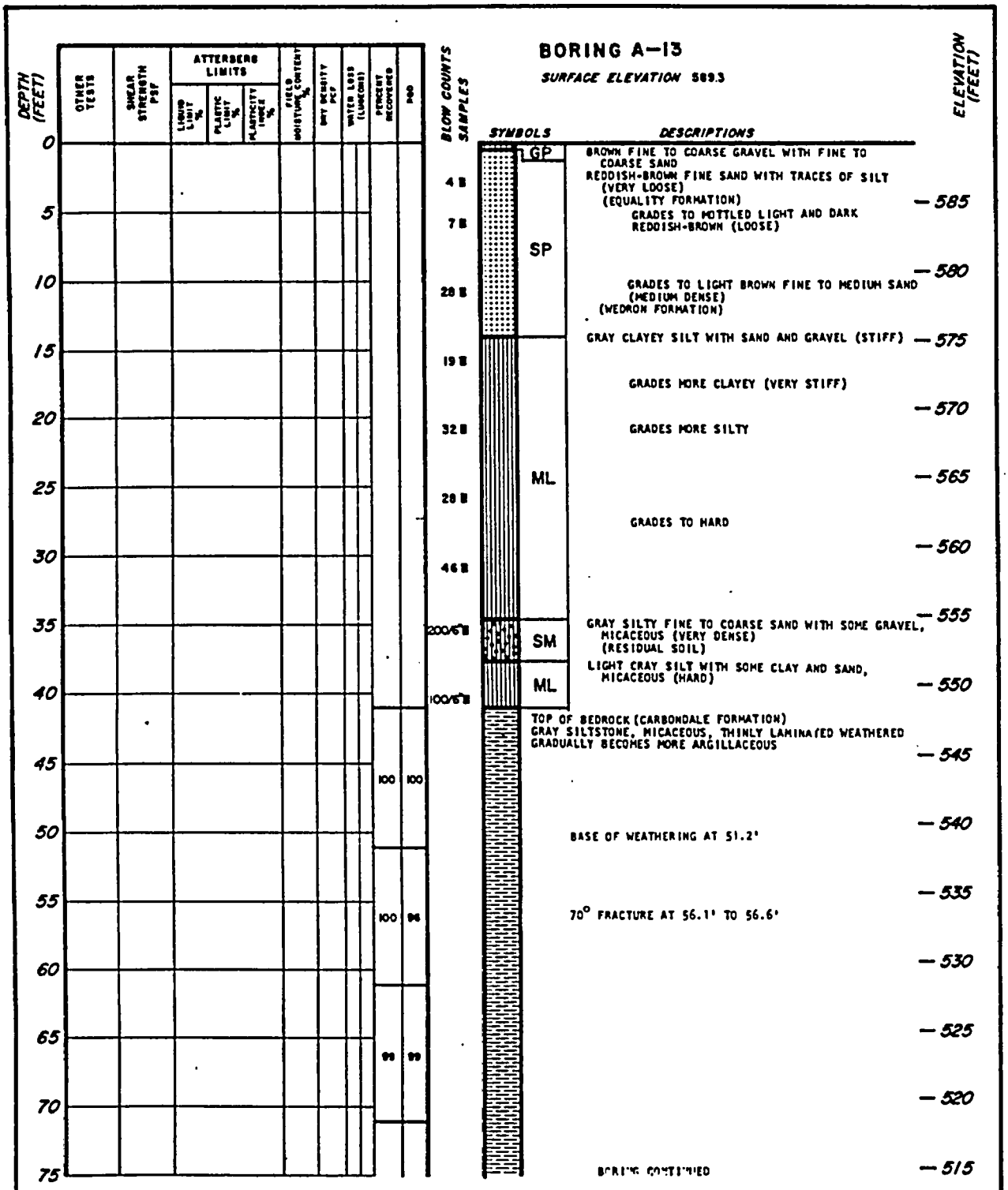
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-160

LOG OF BORING A-12
(SHEET 5 OF 5)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-161

LOG OF BORING A-13
(SHEET 1 OF 5)

BORING A-13 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUBECON)	PERCENT RECOVERED	RQD
75									100	100
80										
85									64	33
90										
95									100	96
100										
105									100	100
110										
115									100	80
120										
125									100	80
130										
135									100	92
140										
145									100	98
150										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	GRAY SILTY SHALE, FINELY MICACEOUS, VERY THINLY HORIZONTALLY LAMINATED WITH SMALL AMOUNTS OF PYRITE AND SIDERITE	510
	SCATTERED CONGLOMERATIC LAYERS 1/4" TO 1" SPACED 1" TO 2' BELOW 80'	
	GRADES HIGHLY CARBONACEOUS AT 85.6'	505
	BLACK COAL, THIN-BEDDED, NUMEROUS TIGHT VERTICAL FRACTURES, WITH SOME PYRITE AND CLAY; GRADES TO HIGHLY CARBONACEOUS SHALE IN BASAL 3"	500
	DARK GRAY SHALE, HIGHLY CARBONACEOUS; CONGLOMERATIC IN TOP 10" TO 12"; GRADING TO SILTY SHALE HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES	495
	GRAY SANDSTONE, FINE TO COARSE, MICACEOUS, SIDERITIC, WITH CARBONIZED PLANT FOSSILS	
	GRAY SHALE, CARBONACEOUS, THIN-BEDDED, WITH ABUNDANT PLANT FOSSILS	490
	GRADES SILTY AT 104.3'	485
	GRAY SANDSTONE, MEDIUM-GRAINED, MICACEOUS, CARBONACEOUS; WITH SOME PLANT FOSSILS	
	GRAY SHALE, MASSIVE, FINELY MICACEOUS, CARBONACEOUS, GRADES SILTY BETWEEN 107.8' AND 108.0'	
	GRADES HIGHLY CARBONACEOUS AND THINLY LAMINATED AT 108.5'	480
	GRADES MASSIVE AT 109.9' WITH MANY SLICKENSIDED FRACTURES	
	BROWN SHALE, SILTY, DENSE AND HARD, CARBONACEOUS	
	LIGHT BROWN SILTSTONE, COARSE, CARBONACEOUS, SIDERITIC, THIN-BEDDED, SANDY IN BASAL 1"	
	LIGHT BROWN SHALE, SILTY, CARBONACEOUS, THIN-BEDDED	475
	GREEN SILTSTONE, SANDY, MASSIVE, ARGILLACEOUS	
	(FORT ATKINSON FORMATION) GRADES SLIGHTLY CALCAREOUS AT 119.9'	470
	GRAY SILTY LIMESTONE, FINE TO MEDIUM-GRAINED, FOSSILIFEROUS, THIN-BEDDED WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 3" ZONES OF CALCAREOUS SHALE SPACED 1/4" TO 6" OIL-STAINED TO 125.7'	
		465
		460
		455
		450
	3" DOLOMITE LINED OPEN VUG AT 144.7', OIL-STAINED 2" DOLOMITE LINED OPEN VUG AT 145.8', OIL-STAINED 1" DOLOMITE LINED OPEN VUG AT 146.7', OIL-STAINED	445
	LIGHT BUFF PURE LIMESTONE, COARSE-GRAINED CALCARENITIC, FOSSILIFEROUS, THIN-BEDDED, IRREGULAR HAIRLINE SHALE PARTINGS AND STYOLITES SPACED 1" TO 6"	440

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-161

LOG OF BORING A-13
(SHEET 2 OF 5)

BORING A-13 CONTINUED

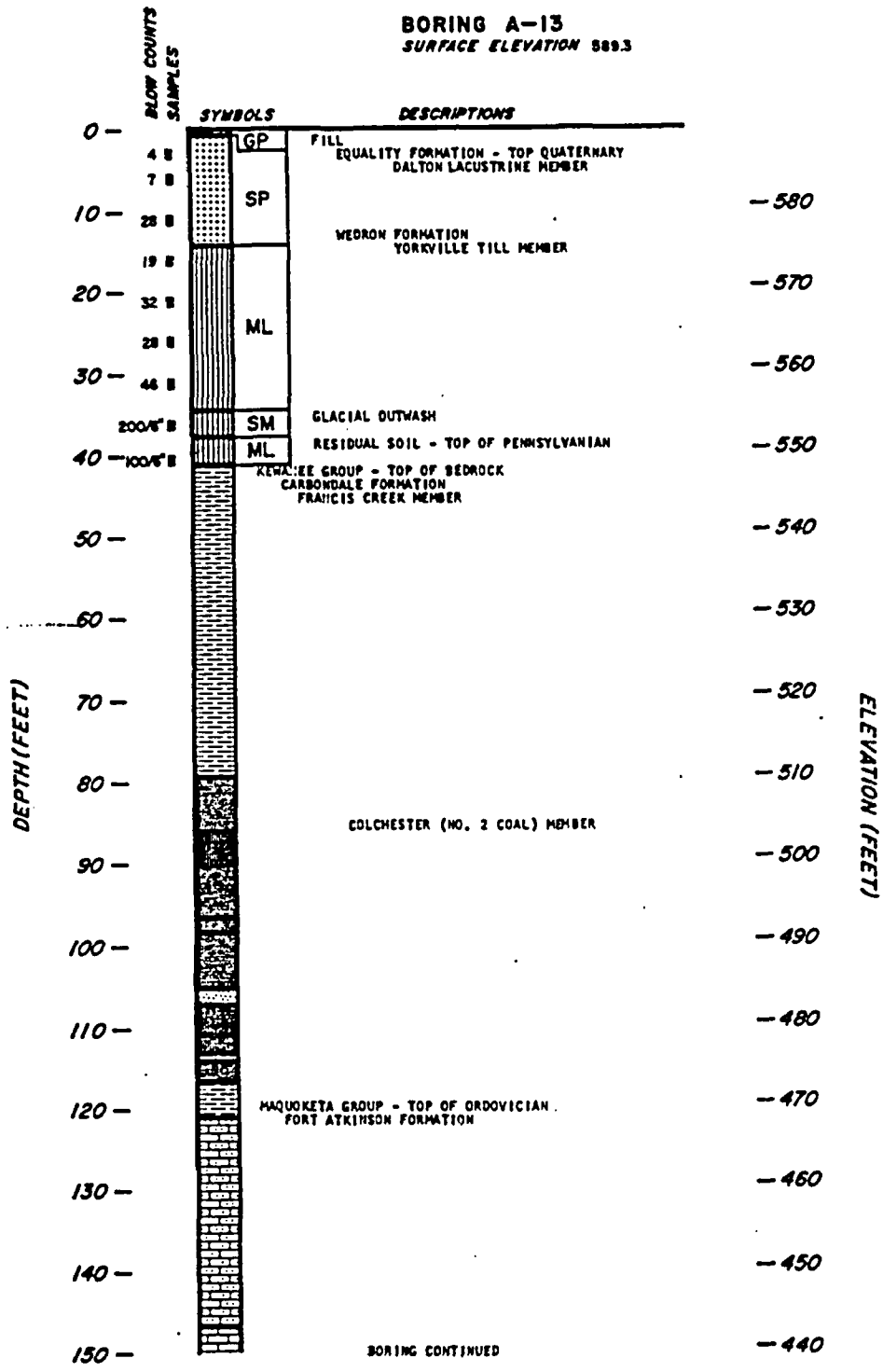
DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155									100	100
160									100	98
165										
170										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	1/4" OPEN VUG AT 149.8' 2" DOLOMITE LINED OPEN VUG AT 152.9' OIL-STAINED 1' ZONE OF INTERBEDDED CARBONACEOUS SHALES AND LIMESTONE WITH THIN WHITE FOSSILS ABUNDANT FROM 153.8' TO 154.7'	
		— 435
	1/4" OPEN VUG AT 146.8'	
	(SCALES FORMATION)	— 430
	DARK GRAY CALCAREOUS SILTSTONE, LAMINATED, EXTREMELY ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS, INTERBEDDED GRADATIONAL 1/2" TO 4" ZONES OF LIGHT GRAY SILTY LIMESTONE SPACED 1" TO 6"	
		— 425
	BORING COMPLETED AT 168.0 FEET	
		— 420

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-161

LOG OF BORING A-13
(SHEET 3 OF 5)

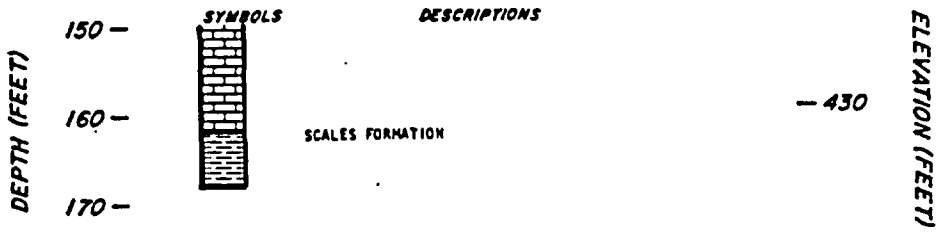


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-161

LOG OF BORING A-13
(SHEET 4 OF 5)

BORING A-13 CONTINUED



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-161

LOG OF BORING A-13
(SHEET 5 OF 5)

BORING A-14

SURFACE ELEVATION 598.8

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD	BLOW COUNTS SAMPLES
0											
5											4 B
10											8 B
15											29 B
20											30 B
25											32 B
30											21 B
35											20 B
40											65/4" B
45									100	48	
50											
55									100	83	
60											
65									100	75	
70											
75											

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
SM	DARK GRAY SILTY SAND WITH ORGANIC DEBRIS (VERY LOOSE)	
	BROWN FINE SAND WITH TRACES OF SILT AND ORGANIC DEBRIS (VERY LOOSE)	595
	(EQUALITY FORMATION) GRADES TO MOTTLED BROWN AND REDDISH-BROWN (LOOSE)	
		590
SP	GRADES TO BROWN WITH ORGANIC DEBRIS (MEDIUM DENSE)	
		585
	GRADES TO LIGHT BROWN	
		580
	(WEDRON FORMATION) GRAY CLAY WITH TRACES OF SILT (STIFF)	575
CL		570
	GRAY CLAYEY SILT WITH SAND AND GRAVEL (HARD)	565
ML	(RESIDUAL SOIL)	560
SM	GRAY SILTY SAND, MICACEOUS	
	TOP OF BEDROCK (CARBONDALE FORMATION) GRAY SANDSTONE, FINE TO MEDIUM-GRAINED, MICACEOUS, THIN-BEDDED, FRIABLE, WITH VERY THIN CARBONACEOUS LAYERS.	555
		550
	LESS CARBONACEOUS BELOW 50.6'	
	2" CLAY SEAM AT 55.3'	545
	LIMESTONE, WHITE, SANDY, MICACEOUS, THIN-BEDDED	
	GRAY SANDSTONE, FINE TO MEDIUM-GRAINED, MICACEOUS, THIN-BEDDED, FRIABLE, WITH VERY THIN CARBONACEOUS LAYERS	
	SILTSTONE, GRAY, SANDY, MICACEOUS, LAMINATED, FISSILE	540
	GRAY SANDSTONE, FINE TO MEDIUM-GRAINED, MICACEOUS, THIN-BEDDED; WITH THIN INTERBEDDED SILTY LAYERS AND LENSES AND CARBONACEOUS IN INFREQUENT THIN LAYERS	
	GRAY SILTSTONE, SANDY, MICACEOUS, LAMINATED, FISSILE	
	GRAY SANDSTONE, FINE TO MEDIUM-GRAINED, MICACEOUS, THIN-BEDDED; WITH THIN CARBONACEOUS LAYERS IN UPPER 7" AND SMALL SIDERITE NODULES BELOW 64.0'	535
	GRAY SILTSTONE, SANDY, MICACEOUS, LAMINATED, FISSILE, WITH INTERBEDDED 1/8" TO 1/2" SANDSTONE LAYERS	
	GRAY SANDSTONE, FINE TO MEDIUM-GRAINED, MICACEOUS, THIN-BEDDED, WITH INTERBEDDED 1/8" TO 1/2" SILTSTONE LAYERS	530
	SILTSTONE LAYERS GRADE OUT BELOW 70.5'	
	50° FRACTURE AT 72.6'	
	SILTSTONE BEDS FROM 74.7' TO 75.1'	525

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-162

LOG OF BORING A-14
(SHEET 1 OF 5)

BORING A-14 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85										
90										
95										
100										
105										
110										
115										
120										
125										
130										
135										
140										
145										
150										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	TWO 1" SIDERITE NODULES AT 78.4' SANDSTONE BECOMES GENERALLY CROSS-BEDDED AND CARBONACEOUS IN VERY THIN BEDS BELOW 78.8'	520
	1" SIDERITE NODULE AT 85.9' AND 86.3' 2" SIDERITE NODULE AT 87.7' AND 87.9' 60° FRACTURE AT 88.5' ZONE OF 1/2" TO 1" SIDERITE NODULES FROM 88.9' TO 89.3'	515
	SILTSTONE, GRAY, SANDY, MICACEOUS, LAMINATED, FISSILE	510
	GRAY SANDSTONE, FINE TO MEDIUM-GRAINED, MICACEOUS, THIN-BEDDED, WITH INTERBEDDED 1/8" TO 1/2" SILTSTONE LAYERS	505
	BECOMES HIGHLY CARBONACEOUS AT 96.8' BLACK COAL, THIN-BEDDED, NUMEROUS VERTICAL TIGHT FRACTURES; WITH INTERBEDDED SIDERITIC LAYERS AND SOME PYRITE AND CLAY	500
	BROWNISH-GRAY CLAYEY SHALE, HIGHLY CARBONACEOUS, MASSIVE, HIGHLY FRACTURED; WITH NUMEROUS RANDOM SLICKENSIDES GRADES FROM BROWN TO GRAY IN COLOR BELOW 103.5'	495
	45° FRACTURE AT 108.1'	
	SILTSTONE, GRAY, FINE SANDY, FINELY MICACEOUS, THIN-BEDDED	490
	BROWNISH-GRAY CLAYEY SHALE, HIGHLY CARBONACEOUS, MASSIVE, HIGHLY FRACTURED SILTSTONE, GRAY, FINE SANDY, FINELY MICACEOUS, THIN-BEDDED; WITH NUMEROUS CARBONIZED PLANT FOSSILS	485
	BROWNISH-GRAY CLAYEY SHALE, CARBONACEOUS, MASSIVE, HIGHLY FRACTURED WITH NUMEROUS RANDOM SLICKENSIDES	480
	70° FRACTURE AT 122.5'; FRACTURE AREA LIMONITE STAINED 45° FRACTURE AT 123.8'; FRACTURE AREA LIMONITE STAINED	
	MOTTLED RED AND GRAYISH-GREEN SHALE, MASSIVE, FRACTURE WITH NUMEROUS SLICKENSIDES, HIGHLY WEATHERED	475
	DARK GREENISH-GRAY SHALE WITH LIMONITE STAINED ZONES, DOLOMITIC, WELL INDURATED, FISSILE; BASE OF WEATHERING AT 128.9' (BRAINARD FORMATION)	470
	45° FRACTURE AT 131.3' 45° FRACTURE AT 133.2'	465
	VERTICAL FRACTURE AT 135.4' FIRST FOSSILS BEGIN TO APPEAR AT 136.0'	460
		455
	GRADES CALCAREOUS AT 149'	450
	BORING CONTINUED	

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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-162

LOG OF BORING A-14
(SHEET 2 OF 5)

BORING A-14 CONTINUED

SURFACE ELEVATION

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150									100	100
155										
160									100	96
165										
170									100	92
175										
180									100	100
185										
190									100	100
195										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	GRAY SILTY LIMESTONE, MEDIUM-GRAINED, FOSSILIFEROUS, THIN-BEDDED, WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 2" ZONES OF CALCAREOUS SHALES SPACED 1/4" TO 10".	
	(FORT ATKINSON FORMATION)	445
		440
		435
		430
	LIGHT GRAY, COARSE-GRAINED LIMESTONE WITH SOME SILT CALCARENITIC, FOSSILIFEROUS, PYRITIC, THIN-BEDDED, IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1/2" TO 8"	425
	GRADES TO LIGHT BUFF, FOSSILIFEROUS, PURE LIMESTONE AT 176.9;	420
	VERTICAL FRACTURE AT 180.9'	
		415
	DARK GRAY CALCAREOUS SILTSTONE, LAMINATED, EXTREMELY ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS; INTERBEDDED, GRADATIONAL 1/2" TO 2" ZONES OF LIGHT GRAY SILTY LIMESTONE SPACED 1 TO 6".	410
	(SCALES FORMATION)	405

BORING COMPLETED AT 194.0' ON 1-10-73.

BRAIDWOOD STATION
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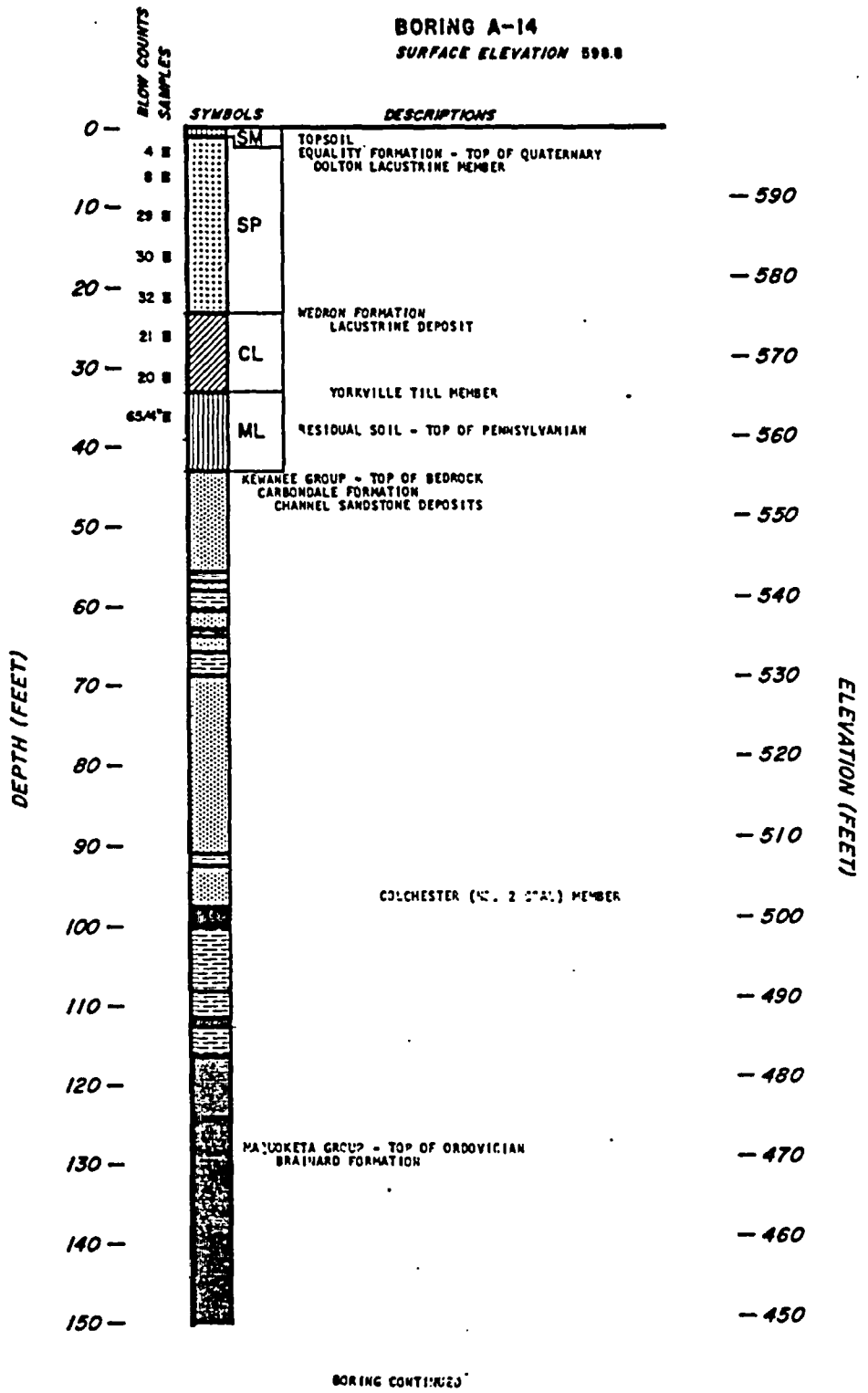
FIGURE 2.5-162

LOG OF BORING A-14
(SHEET 3 OF 5)



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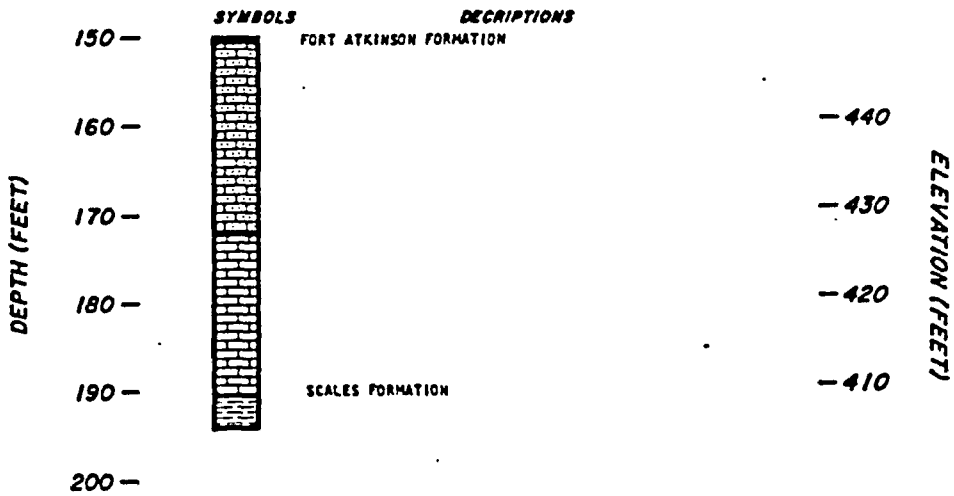
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-162

LOG OF BORING A-14
(SHEET 4 OF 5)

BORING A-14 CONTINUED



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-162

LOG OF BORING A-14
(SHEET 5 OF 5)

BORING A-15

SURFACE ELEVATION 597.1

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
0										
5										
10										
15										
20										
25										
30										
35										
40										
45										
50									98	31
55										
60									100	85
65										
70									100	87
75										

BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
11 ■	SM	BLACK SILTY FINE SAND WITH ORGANIC DEBRIS (VERY LOOSE)	
		GRADES TO DARK BROWN WITH SOME SILT (EQUALITY FORMATION)	595
8 ■	SP	BROWN FINE SAND WITH A TRACE OF SILT (LOOSE)	
		GRADES TO FINE TO MEDIUM SAND	590
4 ■		GRADES TO FINE SAND (VERY LOOSE)	585
19 ■		GRADES TO CLEAN LIGHT BROWN FINE TO MEDIUM SAND (MEDIUM DENSE)	580
30 ■		GRADES TO GRAY	575
16 ■		(WEDRON FORMATION) GRADES TO FINE SAND	570
32 ■	SM	GRAY SILTY FINE TO COARSE SAND WITH TRACES OF CLAY AND GRAVEL, OCCASIONAL COBBLE (MEDIUM DENSE)	565
163 ■	SP	GRAY FINE TO MEDIUM SAND WITH SOME COARSE SAND (VERY DENSE)	560
100/5" ■	SM	GRAY SILT WITH SOME CLAY AND FINE SAND, MICACEOUS (HARD) (RESIDUAL SOIL)	555
		TOP OF BEDROCK (CARBONDALE FORMATION) GRAY SILTSTONE, CARBONACEOUS, PYRITIC, THINLY LAMINATED	550
		GRAY SANDSTONE, FINE TO MEDIUM-GRAINED, MICACEOUS, FRIABLE THIN-BEDDED, SILTY AND ARGILLACEOUS FROM 47.5' TO 48.6' GRAY SILTSTONE	
		MICACEOUS, CARBONACEOUS, THINLY LAMINATED, SANDY IN ZONES	545
		GRADES WELL INDURATED BELOW 52.5' WITH SHALEY ZONES OF ABOUT 2" SPACED 8" TO 10"	540
			535
			530
		GRAY SANDSTONE, FINE TO MEDIUM-GRAINED, MICACEOUS, THIN-BEDDED, FRIABLE, WITH VERY THIN CARBONACEOUS LAYERS.	525

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-163

LOG OF BORING A-15
(SHEET 1 OF 5)

BORING A—15 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									100	87
85										
90									100	93
95										
100									84	61
105										
110									70	27
115										
120									100	74
125										
130									95	34
135										
140									100	70
145										
150										

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

— 520

— 515

GRADES CONGLOMERATIC WITH COAL FRAGMENTS FROM 87.2' TO 87.9'

— 510

— 505

— 500

LIGHT GRAY TO BROWN CONGLOMERATE WITH SIDERITE AND COAL FRAGMENTS

BLACK COAL, THIN-BEDDED; NUMEROUS VERTICAL TIGHT FRACTURES WITH SOME PYRITE AND CLAY; — 495

GRADES TO HIGHLY CARBONACEOUS SHALE IN BASAL 2"

LIGHT GRAY SILTY SHALE, WITH CARBONACEOUS SHALE IN ZONES (SPOON FORMATION)

GRAY SANDY SILTSTONE, THIN-BEDDED WITH A 3" HIGHLY CARBONACEOUS SHALE LAYER AT 108.6' AND A 2" SANDSTONE LAYER FROM 108.9' TO 109.3' — 490

GRAY, SILTY SHALE, CARBONACEOUS, HIGHLY FRACTURED; WITH NUMEROUS RANDOM SLICKENSIDES; GRADES LESS CARBONACEOUS AND LESS FRACTURED BELOW 110.7' 485

45° FRACTURE AT 116' (WITH SLICKENSIDES)

LIGHT GRAY SILTSTONE, FINE SANDY, MICACEOUS THIN-BEDDED WITH OCCASIONAL SANDSTONE LAYERS 1" TO 2" THICK — 480

GRAY SHALE, SILTY, THIN-BEDDED, WITH ABUNDANT CARBONIZED PLANT FOSSILS

GRADES TO A HIGHLY CARBONACEOUS ZONE 120.4' TO 121.3'

GRAY SHALE, SILTY, MASSIVE WITH NUMEROUS SLICKENSIDED FRACTURES, WITH A HIGHLY CARBONACEOUS ZONE 122.0' TO 123.8' — 475

LIGHT GRAY SILTSTONE FINE SANDY, MICACEOUS THIN-BEDDED; SOME CARBONIZED PLANT FOSSILS.
GRADES TO A CARBONACEOUS MASSIVE SHALE IN BASAL 6" — 470

COAL, DARK GRAY, VERY HIGHLY ARGILLACEOUS, THIN-BEDDED; WITH NUMEROUS SHALEY LAYERS 1 TO 2" THICK SPACED 8 TO 10"

DARK GRAY SHALE, CARBONACEOUS, THIN-BEDDED — 465

COAL, DARK GRAY, VERY HIGHLY ARGILLACEOUS, THIN-BEDDED; WITH NUMEROUS SHALEY LAYERS 1 TO 2" THICK SPACED 8 TO 10"

LIGHT GRAY SILTSTONE, FINE SANDY, MICACEOUS THIN-BEDDED

GRAY SHALE, SILTY, CARBONACEOUS, SIDERITIC, MASSIVE; GRADES TO THIN-BEDDED SILTY SHALE BELOW 137.9' WITH ABUNDANT CARBONIZED PLANT FOSSILS. — 460

GRAY SILTSTONE, THIN-BEDDED; WITH ABUNDANT CARBONIZED PLANT FOSSILS

GRAY SHALE, SILTY, MICACEOUS, CARBONACEOUS, THIN-BEDDED — 455

GRAY SILTSTONE, FINE SANDY, MICACEOUS, CARBONACEOUS, THIN-BEDDED; WITH ABUNDANT CARBONIZED PLANT FOSSILS AND FREQUENT PAPER THIN CARBONACEOUS SHALE PARTINGS — 450

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-163

LOG OF BORING A-15
(SHEET 2 OF 5)

BORING A-15 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150									100	79
155										
160									99	89
165										
170									100	100
175										--
180									100	93
185										
190									100	94
195										
200									100	95
205										

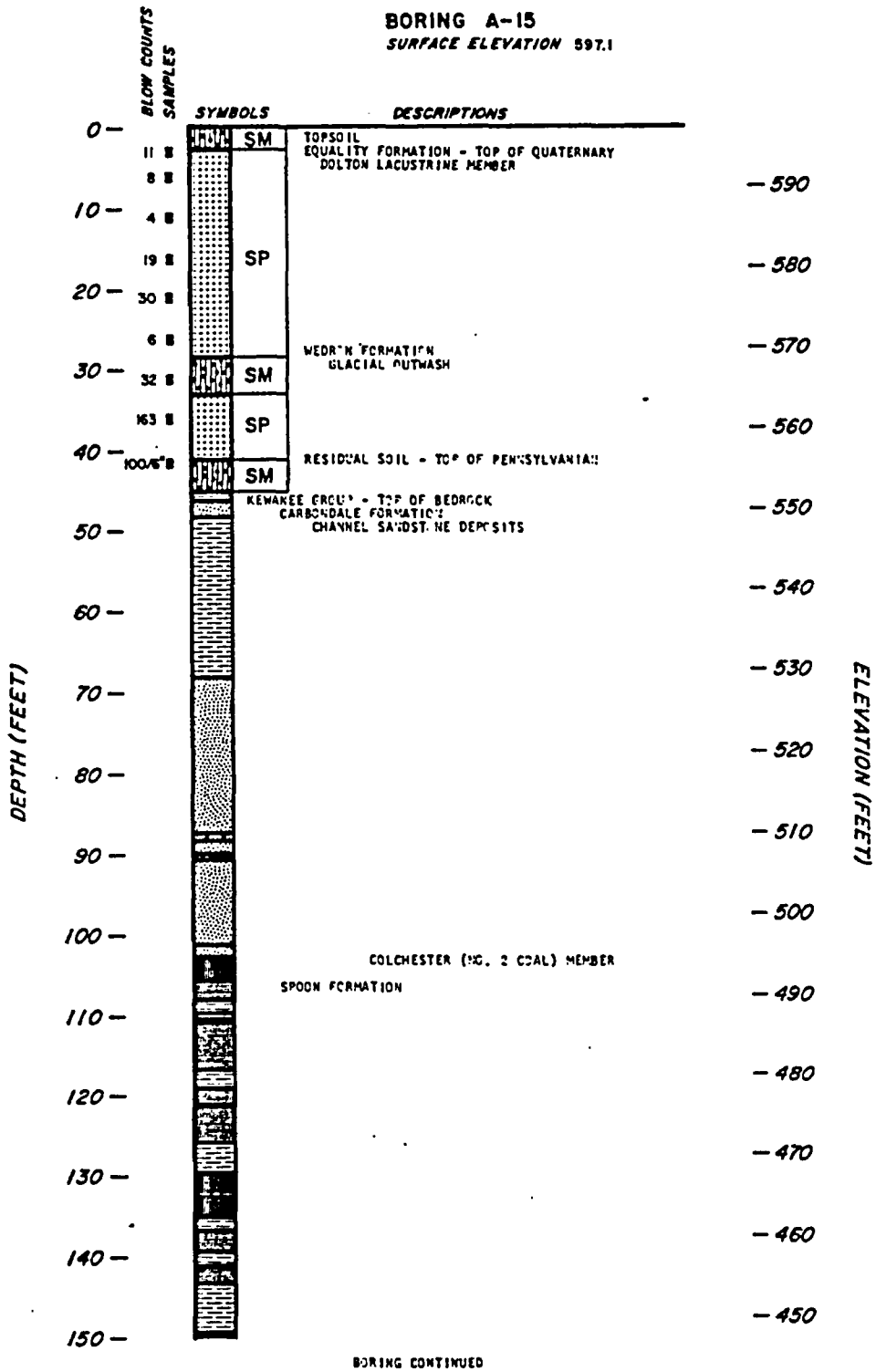
SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	GRAY SHALE, MICACEOUS, CARBONACEOUS, THINLY LAMINATED, FISSILE; WITH NUMEROUS PAPER-THIN CARBONACEOUS PARTINGS, AND CARBONIZED PLANT FOSSILS GRADES CALCAREOUS IN BASAL 4" (FORT ATKINSON FORMATION)	445
	GRAY LIMESTONE, SILTY, COARSE-GRAINED, FOSSILIFEROUS, THIN-BEDDED, WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4 TO 2" ZONES OF CALCAREOUS SHALES SPACED 1/4 TO 10" TWO HALF-INCH OPEN VUGS WITH OIL-STAINING	440
		435
		430
	LIGHT GRAY COARSE-GRAINED LIMESTONE, FOSSILIFEROUS CALCARENITIC, THIN-BEDDED, IRREGULAR HAIRLINE TO 3" SHALE LAYERS SPACED 1/4" TO 15"; OIL-STAINED THROUGHOUT VERTICAL FRACTURE AT 174.6' 80° FRACTURE AT 175' VERTICAL FRACTURE AT 176.6' GRADES TO LIGHT BUFF PURE LIMESTONE WITH VERY WELL DEVELOPED STYLOLITES EVERY 1" TO 6" BELOW 176.2'. CONTINUED FOSSILIFEROUS AND OIL-STAINED	425 420
		415
	VERTICAL FRACTURE 184.9' TO 185.1'	
		410
		405
	DARK GRAY CALCAREOUS SILTSTONE, LAMINATED, ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS; INTER-BEDDED GRADATIONAL 1/2 TO 2" ZONES OF LIGHT GRAY SILTY-LIMESTONE SPACED 1" TO 6" (SCALES FORMATION)	400
	FOSSILS AND CALCAREOUS ZONES END AT 200.8'	
		395

BORING COMPLETED AT 205.0' ON 1-11-73.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-163

LOG OF BORING A-15
(SHEET 3 OF 5)

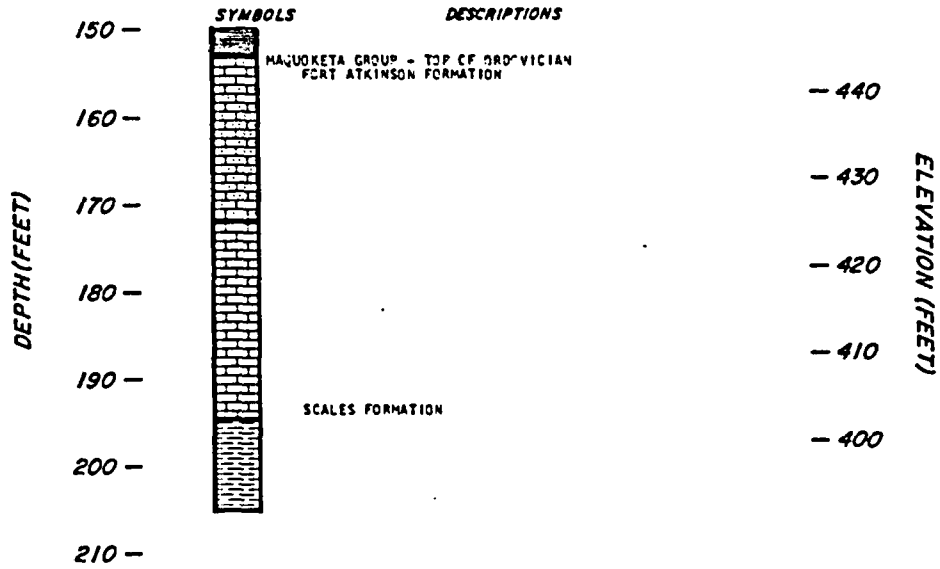


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-163

LOG OF BORING A-15
(SHEET 4 OF 5)

BORING A-15 CONTINUED



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-163

LOG OF BORING A-15
(SHEET 5 OF 5)

BORING A-16

SURFACE ELEVATION 591.7

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD	BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
0												SM	BLACK SANDY SILT WITH ORGANIC DEBRIS (VERY LOOSE) (EQUALITY FORMATION)	
											16 B	SP	REDDISH-BROWN FINE SAND WITH TRACES OF SILT AND ORGANIC DEBRIS (LOOSE)	590
5											14 B	SP	GRADES TO SOME SILT, BROWN COLOR AT 6 FEET	585
10											24 B	SP	GRADES TO LIGHT GRAY COLOR WITH TRACES OF SILT (MEDIUM DENSE)	580
15											76 B	SP	GRADES TO FINE TO MEDIUM SAND	575
20											17 B	SP	(WEDRON FORMATION) GRADES WITH COARSE SAND, GRAVEL AND COBBLES AT 20 FEET	
												ML	GRAY CLAYEY SILT WITH SOME SAND AND GRAVEL (STIFF)	570
25											35 B	ML	GRADES WITH OCCASIONAL COBBLE	565
30											92 B	CL	GRAY SILTY CLAY WITH SAND AND GRAVEL (HARD)	560
35											38 B	ML	GRADES TO VERY STIFF	555
40											172/1" B	SP	GRAY FINE TO MEDIUM SAND WITH TRACES OF COARSE SAND AND SILT (DENSE)	
												SW GP	GRAY AND BROWN FINE TO COARSE SAND AND FINE TO MEDIUM GRAVEL (RESIDUAL SOIL)	550
45												ML	GRAY SILT WITH SOME FINE SAND, MICACEOUS (HARD)	
													TOP OF BEDROCK (CARBONDALE FORMATION) GRAY SANDY SILTSTONE, MICACEOUS, THINLY LAMINATED, WEATHERED	545
50									100	62			70° TO VERTICAL FRACTURE FROM 46.4' TO 48.9' VERTICAL FRACTURE FROM 49.0' TO 49.5' 45° FRACTURE FROM 50.0' TO 50.2' 60° TO VERTICAL FRACTURE FROM 52.0' TO 52.6' BASE OF WEATHERING AT 54.0' GRADES TO LESS FRACTURES BELOW 55.5'	540
55														535
60									99	92				530
65														525
70									96	94			GRADES TO SILTY SHALE, FINELY MICACEOUS, VERY THINLY LAMINATED	520
75														

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-164

LOG OF BORING A-16
(SHEET 1 OF 5)

BORING A-16 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									82	60
85										
90									100	96
95										
100									95	83
105										
110									99	87
115										
120									98	98
125										
130									99	96
135										
140									100	95
145										
150										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	GRADES CARBONACEOUS BELOW 80.9'	515
	BLACK COAL, THIN-BEDDED, NUMEROUS VERTICAL TIGHT FRACTURES WITH SOME PYRITE AND CLAY; GRADES TO HIGHLY CARBONACOUS SHALE IN BASAL 7" (SPOON FORMATION)	510
	GRAY HIGHLY CARBONACEOUS SHALE LAYER 5" THICK COAL LAYER 2" THICK DARK GRAY CLAYEY SHALE; CARBONACEOUS, MASSIVE, HIGHLY FRAGMENTED, WITH NUMEROUS RANDOM SLICKENSIDES GRADES TO LESS CARBONACEOUS, GRAY COLOR BELOW 87.5' GRADES TO CARBONACEOUS, LIGHT BROWN TO GRAY COLOR BELOW 90.7'	505 500
	LIGHT GRAY FINE SANDY SILTSTONE, INDISTINCTLY LAMINATED WITH SOME FINE-GRAINED SIDERITE GRADES TO THINLY LAMINATED BELOW 96.4' WITH SMALL SHALEY LAYERS 1/16" TO 1/8" THICK; SPACED 1/4" TO 1/2"	495
	DARK BROWNISH-GRAY CLAYEY SHALE, CARBONACEOUS IN ZONES, THINLY LAMINATED, GRADING TO MASSIVE BELOW 101.6'; FRAGMENTED; WITH NUMEROUS RANDOM SLICKENSIDES MOTTLED BROWN-RED TO GREEN SHALE, MASSIVE, SIDERITIC, FRACTURED; WITH NUMEROUS SLICKENSIDES, HIGHLY WEATHERED. 30° FRACTURE AT 104.8' GRADES TO LESS WEATHERED AND GRAY COLOR BELOW 105.5' 45° FRACTURE AT 107.5'	490 485
	GRADES CARBONACEOUS AND HIGHLY WEATHERED AT 109.2' (BRAINARD FORMATION) DARK GREEN-GRAY SHALE, LAMINATED WITH LIMONITE AND SIDERITE STAINED ZONES, DOLOMITIC, WELL INDURATED, BASE OF WEATHERING AT 112.3' 30° TO 70° FRACTURE AT 114' 80° FRACTURE 105.0' TO 105.5'	480
	GRADES MORE DOLOMITIC BELOW 119.2'	475
	GRADES FOSSILIFEROUS AT 120.5' GRADES CALCAREOUS AT 122.6' (FORT ATKINSON FORMATION)	470
	GRAY SILTY LIMESTONE, FINE TO MEDIUM-GRAINED, FOSSILIFEROUS, THIN-BEDDED, WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 2" ZONES OF CALCAREOUS SHALES, SPACED 1/4" TO 10". OPEN DOLOMITE LINED VUGS AT 127.6', 127.8', 128.5' IN A ZONE OF COARSE-GRAINED LIMESTONE FROM 127.0' TO 126.6'	465
		460
		455
	45° FRACTURE AT 140.2' 30° FRACTURE AT 143.1'	450
	LIGHT GRAY COARSE-GRAINED LIMESTONE WITH SOME SILT, CALCARENITIC, FOSSILIFEROUS, THIN-BEDDED, IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1/2" TO 8", SOME FINE-GRAINED PYRITE VERTICAL FRACTURE FROM 149.6' TO 151.6'	445

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-164

LOG OF BORING A-16
(SHEET 2 OF 5)

BORING A—16 CONTINUED

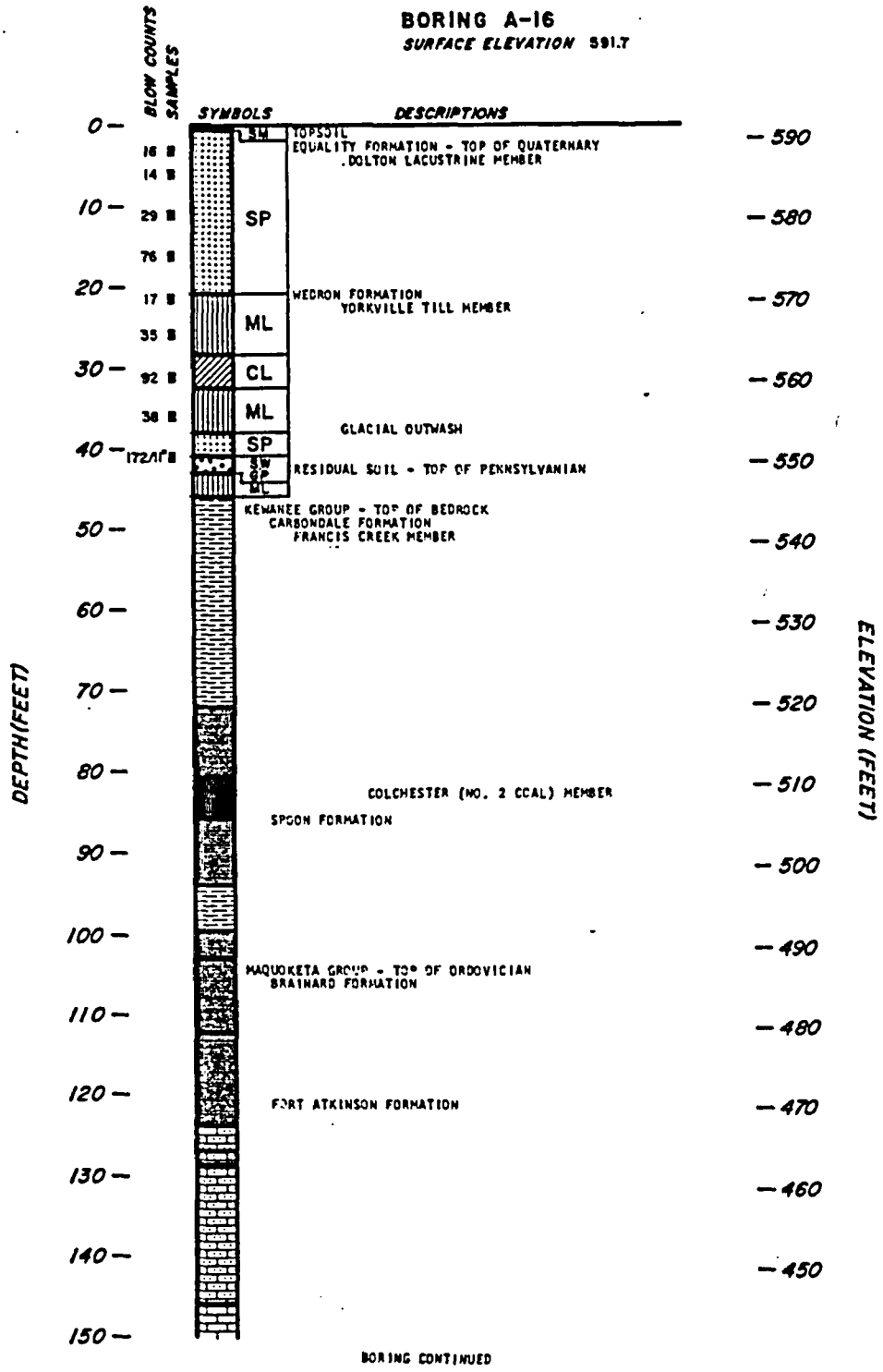
DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150									100	94
155										
160									100	100
165										
170									100	100
175										
180									99	99
185										
190										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	GRADES TO LIGHT BUFF FOSSILIFEROUS PURE LIMESTONE WITH NUMEROUS SMALL OPEN VUGS, OIL-STAINED THROUGHOUT, BELOW 151.1'	440
		435
		430
	DARK GRAY CALCAREOUS SILTSTONE, LAMINATED, ABUNDANT FOSSILS IN THIN, WHITE, IRREGULAR BANDS; INTERBEDDED GRADATIONAL 1/2" TO 2" ZONES OF LIGHT GRAY SILTY LIMESTONE SPACED 1" TO 6" (SCALES FORMATION)	425
		420
		415
		410
	BORING COMPLETED AT 188.0' ON 12-20-72.	405

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-164

LOG OF BORING A-16
(SHEET 3 OF 5)

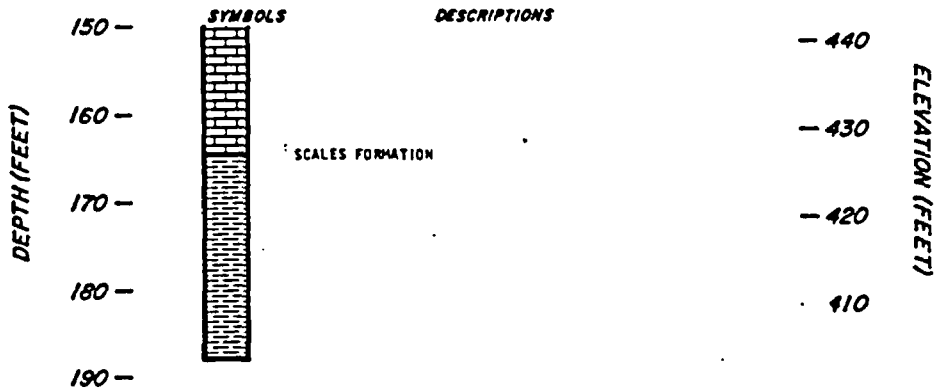


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-164

LOG OF BORING A-16
(SHEET 4 OF 5)

BORING A-16 CONTINUED



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-164

LOG OF BORING A-16
(SHEET 5 OF 5)

BORING A-17

SURFACE ELEVATION 599.0

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD	BLOW COUNTS SAMPLES
0											
						16.5	110				11 ■
5											11 ■
10											23 ■
15											56 ■
20											61 ■
25						8.2	131				120/1" ■
30						7.7	137				122 ■
35						9.2	137				142 ■
40											
45									72	24	
50											
55									93	76	
60											
65									90	88	
70											
75									97	74	

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
SM	BLACK FINE SANDY SILT WITH ORGANIC DEBRIS (VERY LOOSE)	
SM	GRAY AND BROWN SILTY SAND (LOOSE) (EQUALITY FORMATION)	
SP	BROWN FINE SAND WITH TRACES OF COARSE SAND AND SILT (LOOSE)	595
SP	GRADES WITHOUT COARSE SAND	590
SP	GRADES TO GRAY COLOR	585
SP	GRADES WITH COARSE SAND, GRAVEL AND COBBLES AT 20.5 FEET (WEDRON FORMATION)	580
ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND FINE GRAVEL (HARD)	
ML	GRADES TO BROWN, OCCASIONAL COBBLE	575
ML	4 INCH REDDISH-GRAY SILTY SAND LAYER AT 26.0 FEET	
ML	GRADES WITH OCCASIONAL BROWN FINE SAND STRINGER BOULDER AT 32.0 FEET	570
CL	GRAY SILTY CLAY WITH SAND AND GRAVEL (HARD)	565
	TOP OF BEDROCK (CARBONDALE FORMATION) LIGHT GRAY FINE TO MEDIUM-GRAINED SANDSTONE, MICACEOUS, THINLY BEDDED, FRIABLE	560
	LIGHT GRAY CONGLOMERATIC SANDSTONE, MICACEOUS, THIN-BEDDED, WITH ELONGATE FRAGMENTS OF COAL 1/16" TO 1" IN THICKNESS, GRADES SILTY IN BASAL 8" TO 10"	555
	DARK GRAY SILTY SHALE, CARBONACEOUS IN UPPER 4", MICACEOUS, THIN-BEDDED	550
	30° FRACTURE AT 56.2' 30° FRACTURE AT 56.9' 30° FRACTURE AT 58.8' 45° FRACTURE AT 60.1'	545
	GRAY SHALEY SILTSTONE, MICACEOUS, THIN-BEDDED	540
	LIGHT GRAY SILTY SANDSTONE, MICACEOUS, THIN-BEDDED, CARBONACEOUS	
	BLACK COAL WITH INTERBEDDED SAND AND CLAY LAYERS 1/16" TO 1/2" THICK; GRADES TO HIGHLY CARBONACEOUS SHALE IN BASAL 2"	
	GREEN-GRAY CONGLOMERATIC SHALE, WITH COAL AND SIDERITE CLASTS	535
	BLACK COAL THIN BEDDED, FRAGMENTED, WITH SMALL AMOUNT OF CLAY	
	LIGHT GRAY CONGLOMERATIC SANDSTONE, MICACEOUS, THIN-BEDDED FRIABLE, WITH FRAGMENTS OF COAL 1/16" TO 1" IN THICKNESS	
	BLACK SANDY, MICACEOUS COAL, THIN-BEDDED, FRACTURED	530
	LIGHT GRAY CONGLOMERATIC SANDSTONE, WITH SIDERITE AND COAL FRAGMENTS, GRADES TO SHALE	
	GRAY SHALEY SILTSTONE, MICACEOUS, THINLY LAMINATED 30° FRACTURE AT 74.5'	525

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-165

LOG OF BORING A-17
(SHEET 1 OF 5)

BORING A–17 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LU/FT/MIN)	PERCENT RECOVERED	RQD
75										
80									99	99
85										
90									98	96
95										
100										
105									79	44
110									100	93
115										
120									99	65
125										
130									100	100
135										
140									100	78
145										
150										

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

— 520

— 515

GRAY SILTY SHALE, FINELY MICACEOUS, VERY THINLY LAMINATED, GRADES CARBONACEOUS IN BASAL 2"

— 510

— 505

BLACK COAL, THINLY BEDDED, NUMEROUS VERTICAL TIGHT FRACTURES, WITH SOME PYRITE AND CLAY, GRADES TO HIGHLY CARBONACEOUS SHALE IN BASAL 4" (SPOON FORMATION) — 500

DARK GRAY SHALE, CARBONACEOUS, MASSIVE, HIGHLY FRAGMENTED, NUMEROUS FRACTURES WITH SLICKENSIDES

— 495

LIGHT BROWN-GRAY SILTY SHALE, FINELY MICACEOUS, MASSIVE, NUMEROUS FRACTURES WITH SLICKENSIDES

GRAY SILTSTONE, FINE SANDY, FINELY MICACEOUS, THIN-BEDDED, WITH A SANDY ZONE FROM 100.5' TO 111.1' — 490

BROWN-GRAY SILTY SHALE, CARBONACEOUS, FINELY MICACEOUS, LAMINATED IN UPPER 13"; GRADING MASSIVE WITH NUMEROUS FRACTURES WITH SLICKENSIDES

— 485

BROWN-GRAY SILTSTONE, FINE SANDY, FINELY MICACEOUS, THIN-BEDDED
OIL-STAINED ZONE 116.8' TO 117.9'
BELOW 118.9', SILTSTONE BECOMES INTERBEDDED WITH VERY THIN SHALEY LAYERS

— 480

BROWN-BLACK SHALE, VERY HIGHLY CARBONACEOUS, THIN-BEDDED NUMEROUS TIGHT VERTICAL FRACTURES, FISSILE; GRADES TO COAL WITH ARGILLACEOUS PARTINGS BELOW 124.2'

BROWN-GRAY SILTY SHALE, CARBONACEOUS, FINELY MICACEOUS MASSIVE, NUMEROUS FRACTURES WITH SLICKENSIDES, ABUNDANT CARBONIZED PLANT FOSSILS — 475
GRADES LESS MASSIVE AND MORE SILTY, WITH LESS FRACTURES BELOW 129.3'

GRAY SILTSTONE, FINE SANDY, FINELY MICACEOUS, CARBONACEOUS, THIN-BEDDED, FISSILE, NUMEROUS ZONES OF CARBONIZED PLANT FOSSILS — 470
INCREASE IN CARBON AND FOSSIL CONTENT AND VERY FISSILE BELOW 135.0'

— 465

SEVERAL 1/4" TO 1/2" COAL SEAMS 136.2' TO 136.8'
(BRAINARD FORMATION)

MOTTLED GREEN SHALE, MASSIVE, HIGHLY WEATHERED; WITH NUMEROUS SLICKENSIDES, WEATHERED
DARK GRAY DOLOMITIC SHALE, THIN-BEDDED, WELL INDURATED — 460
GRAY SILTY LIMESTONE, FINE TO MEDIUM-GRAINED, FOSSILIFEROUS, THIN-BEDDED, WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 2" ZONES OF CALCAREOUS SHALES SPACED 1/4" TO 10"

— 455

— 450

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-165

LOG OF BORING A-17
(SHEET 2 OF 5)

BORING A-17 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150									100	99
155										
160									100	98
165										
170									100	96
175										
180									100	100
185										
190										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	LIGHT GRAY COARSE-GRAINED LIMESTONE, FOSSILIFEROUS, CALCARENITIC, THIN-BEDDED, IRREGULAR HAIRLINE TO 2" SHALE LAYERS SPACED 1" TO 5", OIL-STAINED THROUGHOUT	445
	1" OPEN VUG AT 158.8' GRADES TO LIGHT BUFF PURE LIMESTONE WITH VERY WELL DEVELOPED STYLOLITES EVERY 1" TO 6" BELOW 159.7', FOSSILIFEROUS AND OIL-STAINED	440
		435
		430
	1" DOLOMITE LINED OPEN VUG AT 173.6'	
	2 VERTICAL PYRITIZED FRACTURES AT 175.5' AND 176.0'	
	(SCALES FORMATION)	425
	DARK GRAY CALCAREOUS SILTSTONE, LAMINATED, FISSILE, EXTREMELY ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS, INTERBEDDED GRADATIONAL 1/2" TO 2" ZONES OF LIGHT GRAY, SILTY LIMESTONE SPACED 1/2" TO 6"	420
	FOSSILS AND INTERBEDDED LIMESTONES DECREASE BELOW 183.2'	415
	BORING COMPLETED AT 186.5' ON 1-3-73	

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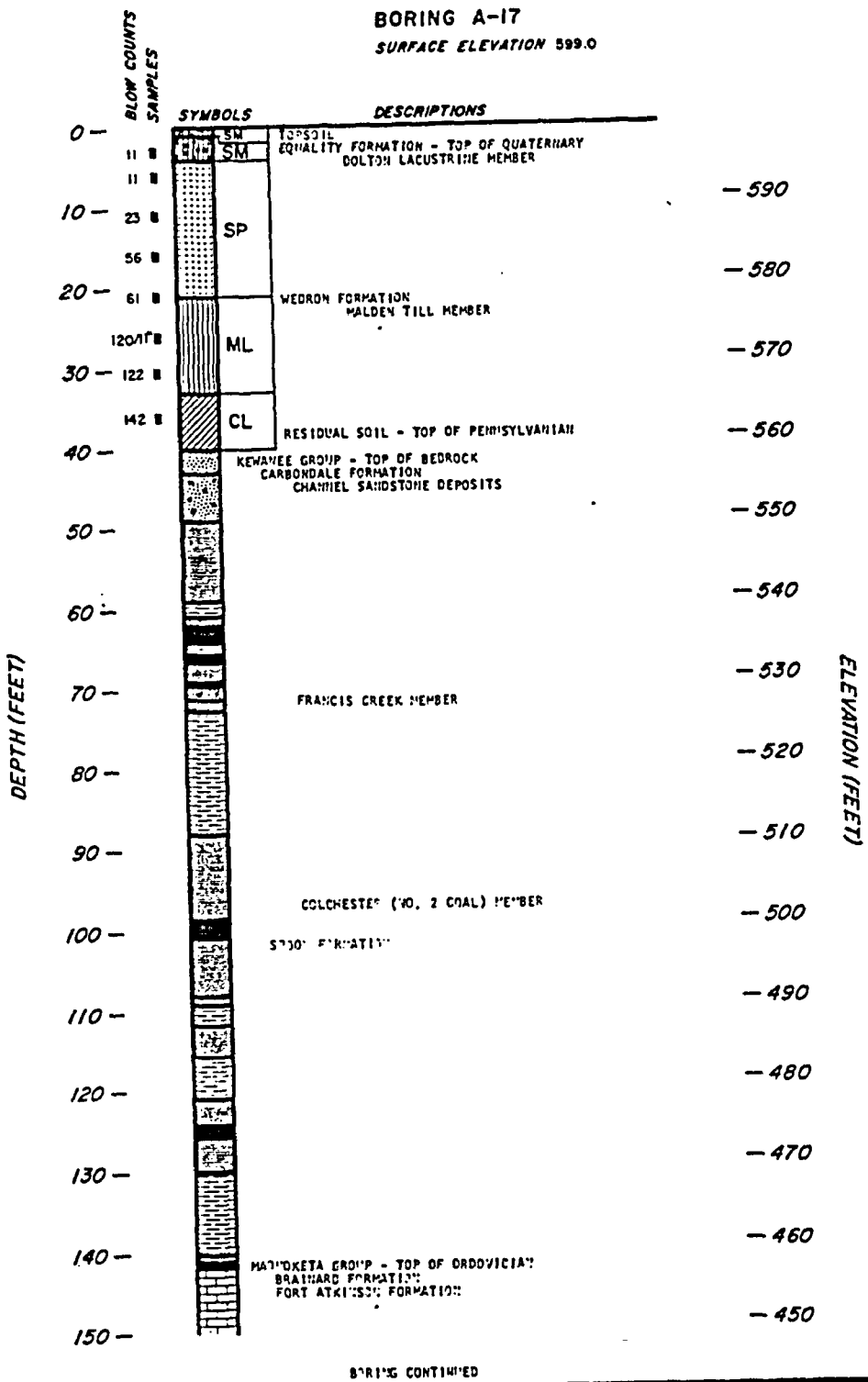
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-165

LOG OF BORING A-17
(SHEET 3 OF 5)

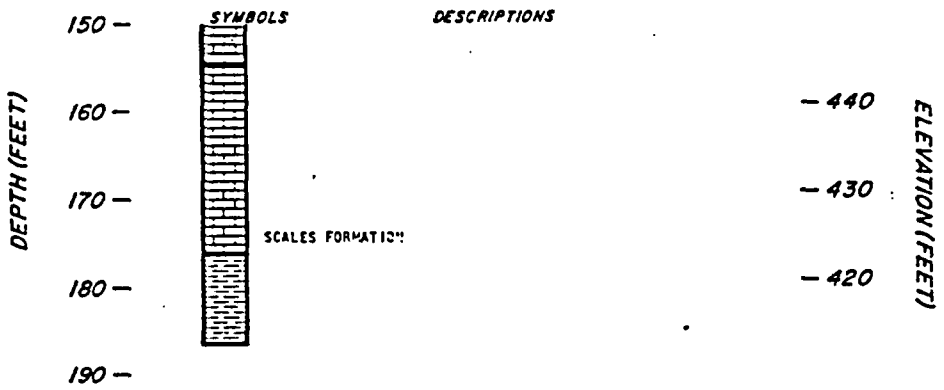


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-165

LOG OF BORING A-17
(SHEET 4 OF 5)

BORING A-17 CONTINUED



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-165

LOG OF BORING A-17
(SHEET 5 OF 5)

BORING A-18

SURFACE ELEVATION 601.4

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD	BLOW COUNTS / SAMPLES
0											
						8.2	100				4
5											11
10											41
15						19.1	108				39
20											53
25											45/4"
30											90/6"
35						10.2	131				50/4"
40											
45											
50									98	91	
55											
60									100	95	
65											
70									100		
75											

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
SM	DARK BROWN SILTY SAND WITH ORGANIC DEBRIS (VERY LOOSE)	
	REDDISH-BROWN FINE SAND WITH TRACE OF SILT AND ORGANIC DEBRIS (VERY LOOSE) (EQUALITY FORMATION)	600
SP	GRADES TO BROWN COLOR WITH SOME SILT (LOOSE)	595
	GRADES WITHOUT ORGANIC DEBRIS (MEDIUM DENSE)	590
		585
ML	BLACK-BROWN SILT WITH VERY FINE SAND AND TRACES OF CLAY, MICACEOUS	
SP	GRAY, FINE TO MEDIUM SAND WITH TRACES OF SILT AND OCCASIONAL GRAY SILTY CLAY STRINGERS (DENSE)(WEDRON FORMATION)	580
ML	BROWN CLAYEY SILT WITH FINE SAND AND TRACES OF COARSE SAND AND FINE GRAVEL (HARD)	575
	GRADES TO GRAY CLAYEY SILT WITH SAND AND GRAVEL (HARD)	570
		565
	TOP OF BEDROCK (CARBONDALE FORMATION) GRAY SANDSTONE, MICACEOUS, CARBONACEOUS, THIN BEDDED, FRIABLE, WEATHERED.	560
	GRAY SANDY SILTSTONE, MICACEOUS, VAGUELY LAMINATED, WEATHERED AND FRACTURED.	555
	70° FRACTURE AT 47.1' TO 47.5' 60° FRACTURE AT 51.1' TO 51.4' BASE OF WEATHERING AT 51.9'	550
	60° FRACTURE AT 55.7' TO 56.0'	545
	SANDY ZONE FROM 59.8' TO 60.2' VERTICAL FRACTURE FROM 60.2' TO 61.0' 45° FRACTURE AT 62.1'	540
	45° FRACTURE AT 66.8'	535
	45° FRACTURE FROM 72.2' TO 72.7' FINE SANDY LAYER FROM 73.5' TO 73.7'	530
	VERTICAL FRACTURE AT 74.4' TO 75.3'	
	BORING CONTINUED	

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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-166

LOG OF BORING A-18
(SHEET 1 OF 5)

BORING A-18 CONTINUED

SURFACE ELEVATION

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									100	
85										
90									100	100
95										
100									94	92
105										
110									88	58
115										
120									100	90
125										
130									100	86
135										
140									99	92
145										
150									100	87

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	GRAY CONGLOMERATIC SANDSTONE, FINE TO MEDIUM-GRAINED, MICACEOUS, THIN-BEDDED, FRIABLE, WITH FLATTENED COAL FRAGMENTS, BASAL 10" HAS A CALCAREOUS SANDSTONE MATRIX	525
	GRAY SANDY SILTSTONE, MICACEOUS, LAMINATED, FISSILE	520
	80° FRACTURE FROM 87.7' TO 88.6'	515
		510
		505
	GRAY SILTY SHALE, FINELY MICACEOUS, VERY THINLY LAMINATED	500
	BLACK COAL, THIN-BEDDED, NUMEROUS VERTICAL, TIGHT FRACTURES WITH SOME PYRITE AND CLAY, GRADES TO HIGHLY CARBONACEOUS SHALE IN BASAL 2" (SPOON FORMATION)	495
	BROWN-GRAY CLAYEY SHALE, SILTY, HIGHLY CARBONACEOUS, MASSIVE, HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES	490
	GRAY SILTSTONE, FINE, SANDY, MICACEOUS, THIN-BEDDED	
	GREEN-GRAY SHALE, SILTY, MICACEOUS, THINLY LAMINATED, GRADES CARBONACEOUS IN BASAL 1"	485
	BROWN CLAYEY SHALE, SOME SILT, HIGHLY CARBONACEOUS, MICACEOUS, MASSIVE, HIGHLY FRAGMENTED WITH NUMEROUS SLICKENSIDES, GRADES LESS CARBONACEOUS AND MORE SILTY BELOW 119.6'	
	GRAY-SANDSTONE, FINE-GRAINED, MICACEOUS, THIN-BEDDED,	480
	LIGHT GREEN-GRAY SILTSTONE, SANDY, MICACEOUS, THIN-BEDDED, INTERBEDDED WITH 1/8" TO 2" SANDSTONE LENSES	
	DARK GRAY CARBONACEOUS SHALE; THIN-BEDDED, WITH 2" COAL SEAM AT 127.7'	475
	BROWN TO BLACK CLAY SHALE, HIGHLY CARBONACEOUS, PYRITIC, MASSIVE, HIGHLY FRAGMENTED; WITH NUMEROUS RANDOM SLICKENSIDES; GRADES TO BROWN-GRAY COLOR AND LESS CARBONACEOUS BELOW 130.4' GRADES BROWN AND HIGHLY CARBONACEOUS BELOW 133.5'	470
	BROWN-GRAY SILTSTONE, CARBONACEOUS, MICACEOUS, THINLY LAMINATED	465
	GRADES FISSILE WITH ABUNDANT CARBONIZED PLANT FOSSILS BELOW 141.4'	460
	GRADES SLIGHTLY CALCAREOUS BELOW 146.0'	
	(FORT ATKINSON FORMATION) GRAY SILTY LIMESTONE, FINE TO MEDIUM-GRAINED, FOSSILIFEROUS, THIN-BEDDED, WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 3" ZONES OF CALCAREOUS SHALES SPACED 1/4" TO 6"	455

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-166

LOG OF BORING A-18
(SHEET 2 OF 5)

BORING A-18 CONTINUED

SURFACE ELEVATION

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155										
160									96	96
165										
170									96	
175										
180									100	100
185										
190									100	99
195										

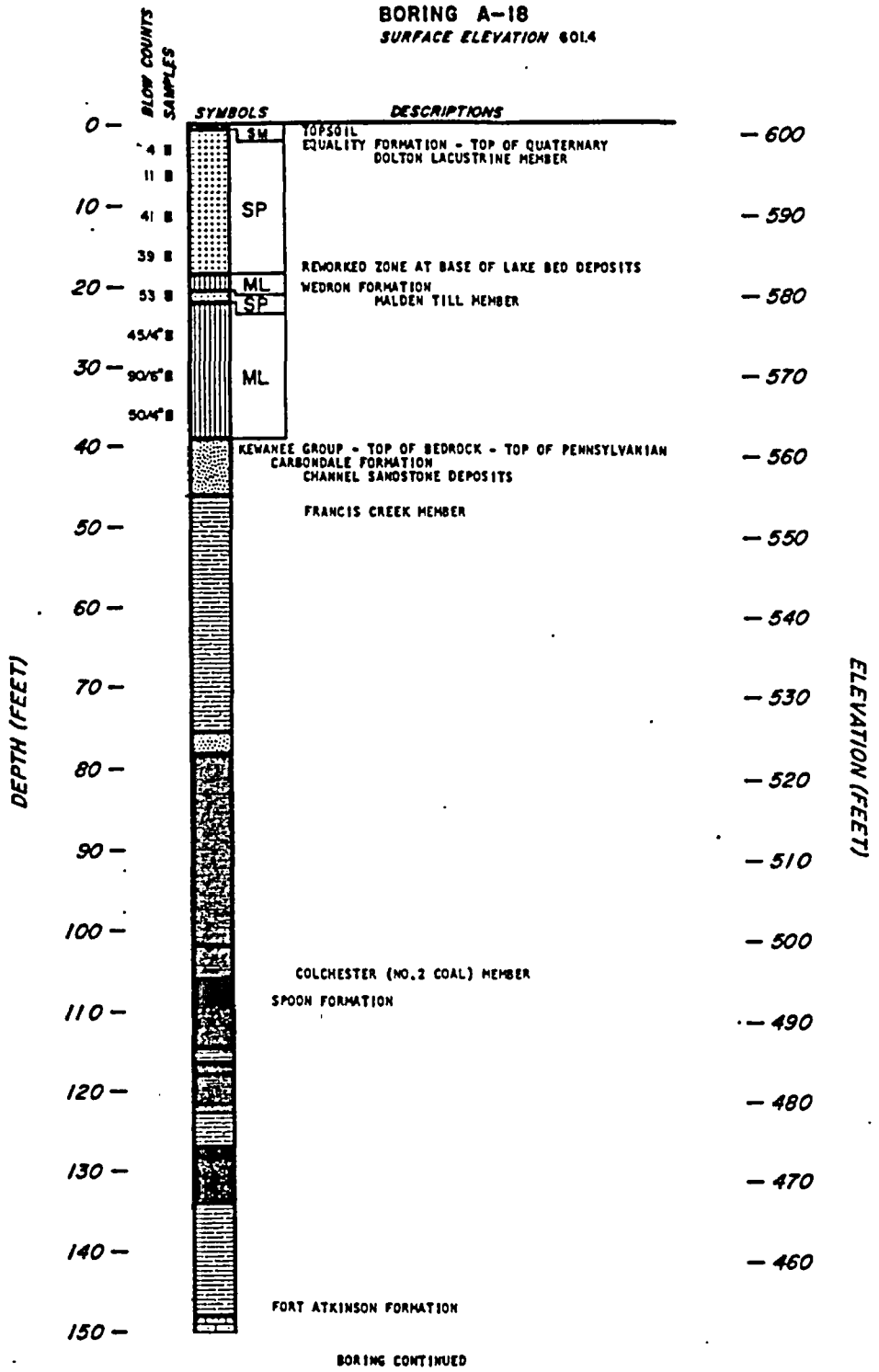
SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		450
		445
		440
		435
		430
	LIGHT BUFF PURE LIMESTONE, COARSE-GRAINED, CALCARENITIC, FOSSILIFEROUS, THIN-BEDDED, IRREGULAR HAIRLINE SHALE PARTINGS AND STYOLITES SPACED 1" TO ¼", OIL-STAINED	
		425
	(SCALES FORMATION) DARK GRAY CALCAREOUS SILTSTONE, LAMINATED, ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS, INTERBEDDED GRADATIONAL 1/2" TO 4" ZONES OF LIGHT GRAY SILTY LIMESTONE SPACED 1" TO 6"	420
		415
	FOSSILS AND INTERBEDDED LIMESTONES DECREASE BELOW 190.1'	410

BORING COMPLETED AT 194.0'
3/4 1-9-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-166

LOG OF BORING A-18
(SHEET 3 OF 5)

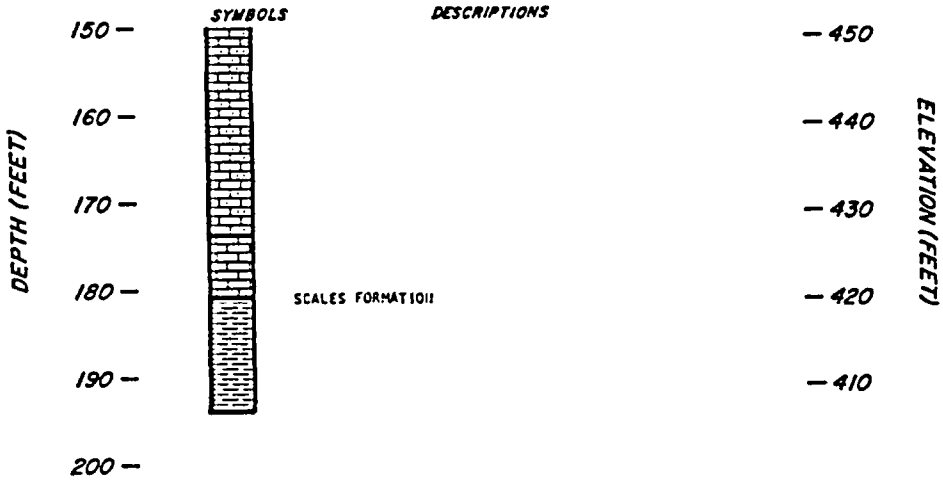


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-166

LOG OF BORING A-18
(SHEET 4 OF 5)

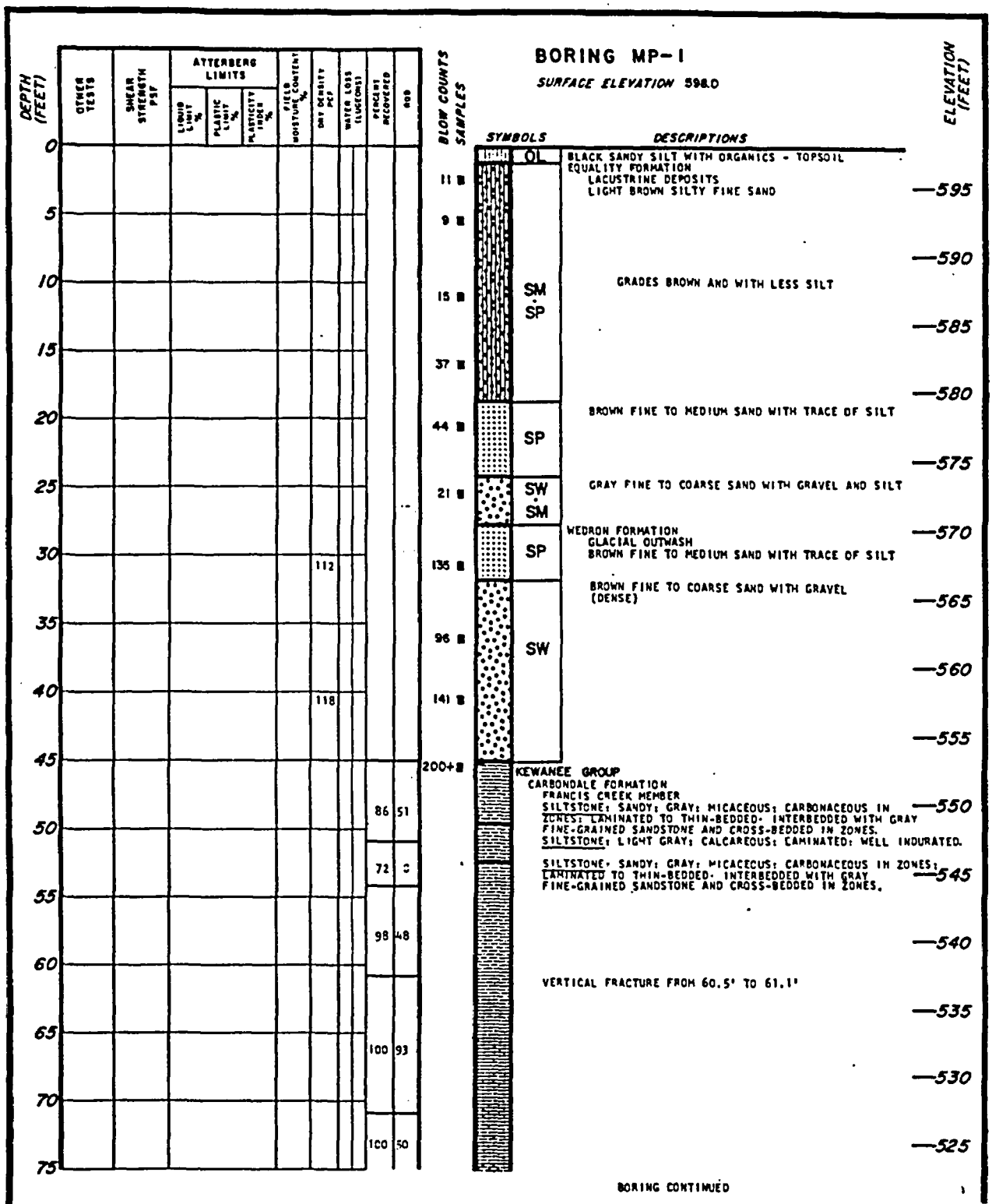
BORING A-18 CONTINUED



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-166

LOG OF BORING A-18
(SHEET 5 OF 5)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-167

LOG OF BORING MP-1
(SHEET 1 OF 3)

BORING MP-1 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
									97	73
85										
									100	88
90										
95										
									77	35
100										
									100	70
105										
110									100	60
115										
120									81	26
125										
130									90	68
135										
140									99	38
145									99	43
150										

SYMBOLS

DESCRIPTIONS

GRADES HORIZONTALLY LAMINATED BELOW 76.2'

—520

—515

—510

SHALE: SILTY: GRAY: FINELY MICACEOUS: THINLY LAMINATED; FISSILE.

—505

GRADES CARBONACEOUS BELOW 96.9'

COLCHESTER (NO. 2 COAL) MEMBER

COAL: BLACK: THIN-BEDDED: NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.

—500

SPOON FORMATION

SHALE: CARBONACEOUS: DARK GRAY: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

GRADES BROWNISH-GRAY AND SILTY BELOW 102.7'

—495

SILTSTONE: SANDY: LIGHT GRAY: MICACEOUS: CARBONACEOUS: THIN-BEDDED: WELL INDURATED

SHALE: SILTY: BROWNISH-GRAY: CARBONACEOUS: MICACEOUS: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

—490

SILTSTONE: SANDY: LIGHT GREENISH-GRAY: MICACEOUS: CARBONACEOUS: SIDERITIC: THIN-BEDDED: WELL INDURATED.

—485

SILTSTONE: SANDY: GREENISH-GRAY: MICACEOUS: CARBONACEOUS: THIN-BEDDED: INTERBEDDED WITH LIGHT GREENISH-GRAY SANDSTONE LAYERS: WELL INDURATED.

SHALE: SILTY: GRAY TO BROWNISH-GRAY: CARBONACEOUS: MICACEOUS: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

—480

—475

1" COAL SEAM AT 124.5'

SILTSTONE: SANDY: DARK GRAY TO BROWNISH-GRAY: MICACEOUS: CARBONACEOUS: LAMINATED TO THIN-BEDDED: WELL INDURATED.

VERTICAL FRACTURE FROM 125.4' TO 125.8'

—470

30° FRACTURES AT 131.7', 131.9' AND 132.3'

—465

GRADES FISSILE WITH ABUNDANT CARBONIZED PLANT FOSSILS BELOW 134.0'

GRADES CALCAREOUS BELOW 136.0'

—460

MAQUOKETA GROUP

FORT ATKINSON FORMATION

LIMESTONE: SILTY: GRAY: FINE-TO MEDIUM-GRAINED: FOSSILIFEROUS: THIN-BEDDED: WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 4" ZONES OF CALCAREOUS SHALE SPACED. 1/4" TO 10"

1/4" OPEN OIL-STAINED VUG AT 137.7'

—455

—450

ELEVATION (FEET)

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-167

LOG OF BORING MP-1
(SHEET 2 OF 3)

BORING MP-1 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155										
160									98	77
165										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	VERTICAL FRACTURES FROM 151.5' TO 151.9'	445
	LIMESTONE: LIGHT BUFF: COARSE-GRAINED: CALCARENITIC: FOSSILIFEROUS: THIN-BEDDED WITH IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1/4" TO 10": OIL-STAINED THROUGHOUT. TWO 1" CALCITE LINED OIL-STAINED VUGS AT 157.9' OIL-STAINED ZONES FROM 157.8' TO 158.2' AND 158.4' TO 158.6'	440
		435

BORING COMPLETED AT 164.2' FEET ON 3-8-73
CASING USED TO A DEPTH OF 47.0 FEET
WATER LEVEL MEASURED AT 4.5 FEET ON 3-8-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-167

LOG OF BORING MP-1
(SHEET 3 OF 3)

BORING MP-2

SURFACE ELEVATION 600.2

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
0										
							95			
5										
							103			
10										
							109			
15										
							101			
20										
25										
30							116			
35										
40							123			
45										
50									86	54
55									99	61
60										
65									85	27
70										
75									100	55

BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	OL	BLACK SANDY SILT WITH ORGANICS - TOPSOIL	600
		EQUALITY FORMATION LACUSTRINE DEPOSITS YELLOWISH-BROWN SILTY FINE SAND (LOOSE)	
5 ■			
5 ■		GRADES BROWN	595
3 ■	SM SP		590
7 ■		GRADES WITH LESS SILT	585
			580
16 ■	CL	WEDRON FORMATION GLACIAL OUTWASH GRAY SILTY CLAY WITH FINE GRAVEL	575
24 ■	SW	BROWN FINE TO COARSE SAND WITH FINE GRAVEL	570
20 ■			565
74 ■		GRADES WITH COARSE SAND AND MORE GRAVEL	560
93 ■		KEWANEE GROUP CARBONDALE FORMATION CHANNEL SANDSTONE DEPOSITS SANDSTONE: GRAY; FINE TO MEDIUM-GRAINED; FRIABLE; THIN-BEDDED. FRANCIS CREEK MEMBER	555
		SILTSTONE: SANDY; GRAY; MICACEOUS; CARBONACEOUS IN ZONES; LAMINATED TO THIN-BEDDED; INTERBEDDED WITH GRAY FINE-GRAINED SANDSTONE LAYERS AND CROSS-BEDDED IN ZONES.	550
		VERTICAL FRACTURE FROM 56.1' TO 56.6'	545
			540
		VERTICAL FRACTURE FROM 64.0' TO 64.5'	
			535
		GRADES HORIZONTALLY LAMINATED AND FISSILE BELOW 73.9'	530
		70° FRACTURE FROM 74.1' TO 74.6'	

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-168

LOG OF BORING MP-2
(SHEET 1 OF 2)

BORING MP-2 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									100	100
90									52	7
95										
100									60	17
105										

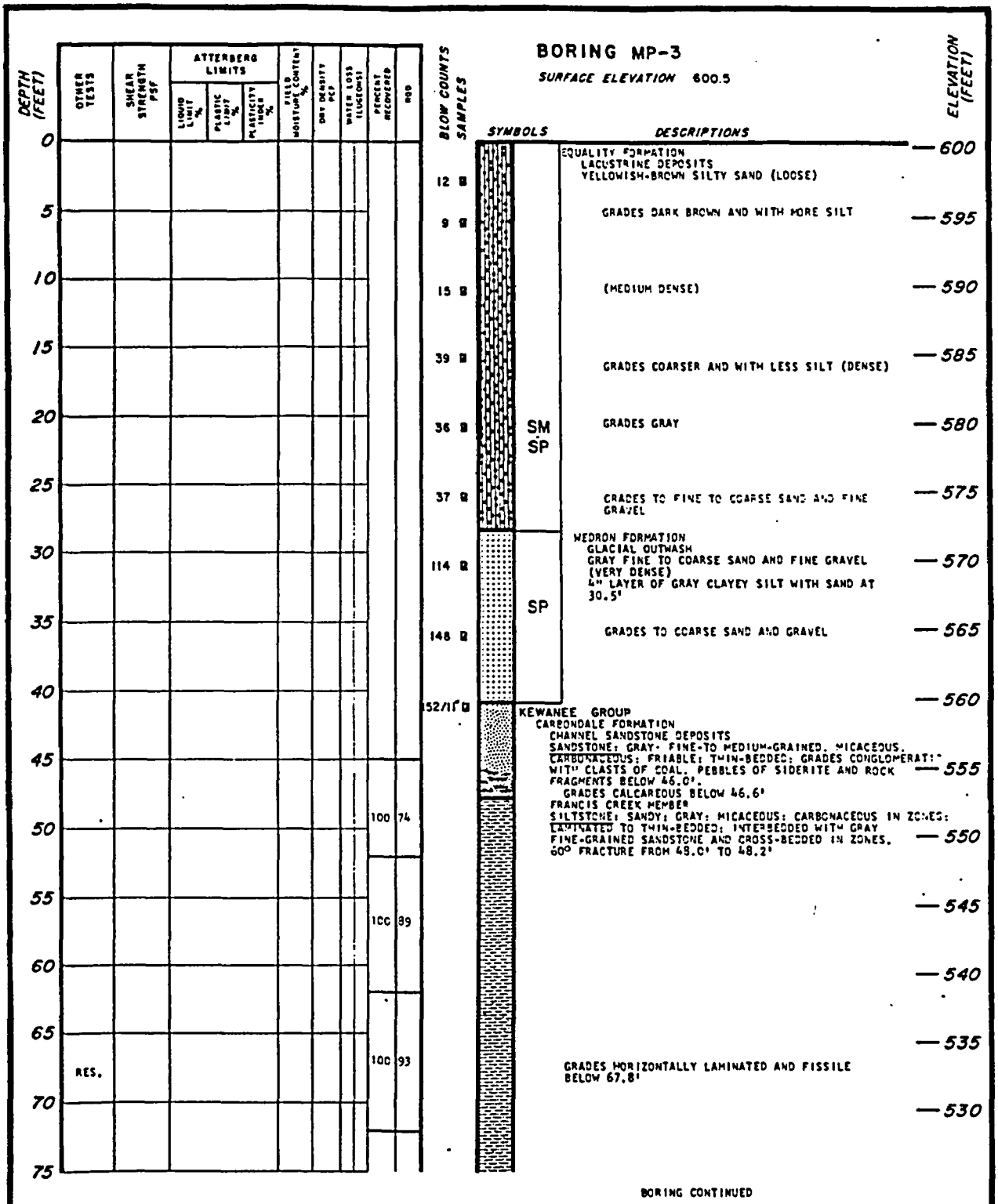
SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		525
	VERTICAL FRACTURE FROM 79.3' TO 79.4'	
		520
	60° FRACTURE FROM 82.1' TO 82.4'	
		515
		510
	SHALE: SILTY: GRAY: FINELY MICACEOUS: THINLY LAMINATED: FISSTLE.	
		505
	COLCHESTER (NO..2 COAL) MEMBER COAL: BLACK: THIN-BEDDED: NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	
	SPOON FORMATION SHALE: CARBONACEOUS: DARK GRAY HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	500

BORING COMPLETED AT 102.0 FEET ON 3-14-73
CASING USED TO A DEPTH OF 47.0 FEET
WATER LEVEL MEASURED AT 6.8 FEET ON 3-13-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-168

LOG OF BORING MP-2
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

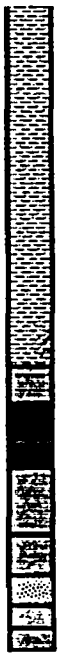
FIGURE 2.5-169

LOG OF BORING MP-3
(SHEET 1 OF 2)

BORING MP-3 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									93	89
85									100	100
90										
95									100	68
100										
105	UC/R								100	96
110										
115										

SYMBOLS



DESCRIPTIONS

30° FRACTURES AT 93.6' AND 93.8'

1" SIDERITE NODULE AT 94.5'

SHALE: SILTY: GRAY: FINELY MICACEOUS: THINLY LAMINATED: FISSILE.

COLCHESTER (NO. 2 COAL) MEMBER

COAL: BLACK: THIN-BEDDED: NUMEROUS VERTICAL TIGHT FRACTURES WITH SOME PYRITE AND CLAY.

SPOON FORMATION

SHALE: CARBONACEOUS: BROWNISH-GRAY TO BLACK: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

BLACK COAL BED FROM 105.1' TO 105.3'

SHALE: SILTY: BROWN TO GRAY: CARBONACEOUS: MICACEOUS: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

SANDSTONE: SILTY: LIGHT GRAY: FINE-GRAINED: MICACEOUS: CARBONACEOUS: THIN-BEDDED: WELL INDURATED.

SHALE: SILTY: GRAY: CARBONACEOUS: MICACEOUS: THIN-BEDDED TO MASSIVE:

1/2" COAL SEAM AT 110.7'

SHALE: CARBONACEOUS: BROWN TO GRAY: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

BORING COMPLETED AT 112.0 FEET ON 3-6-73

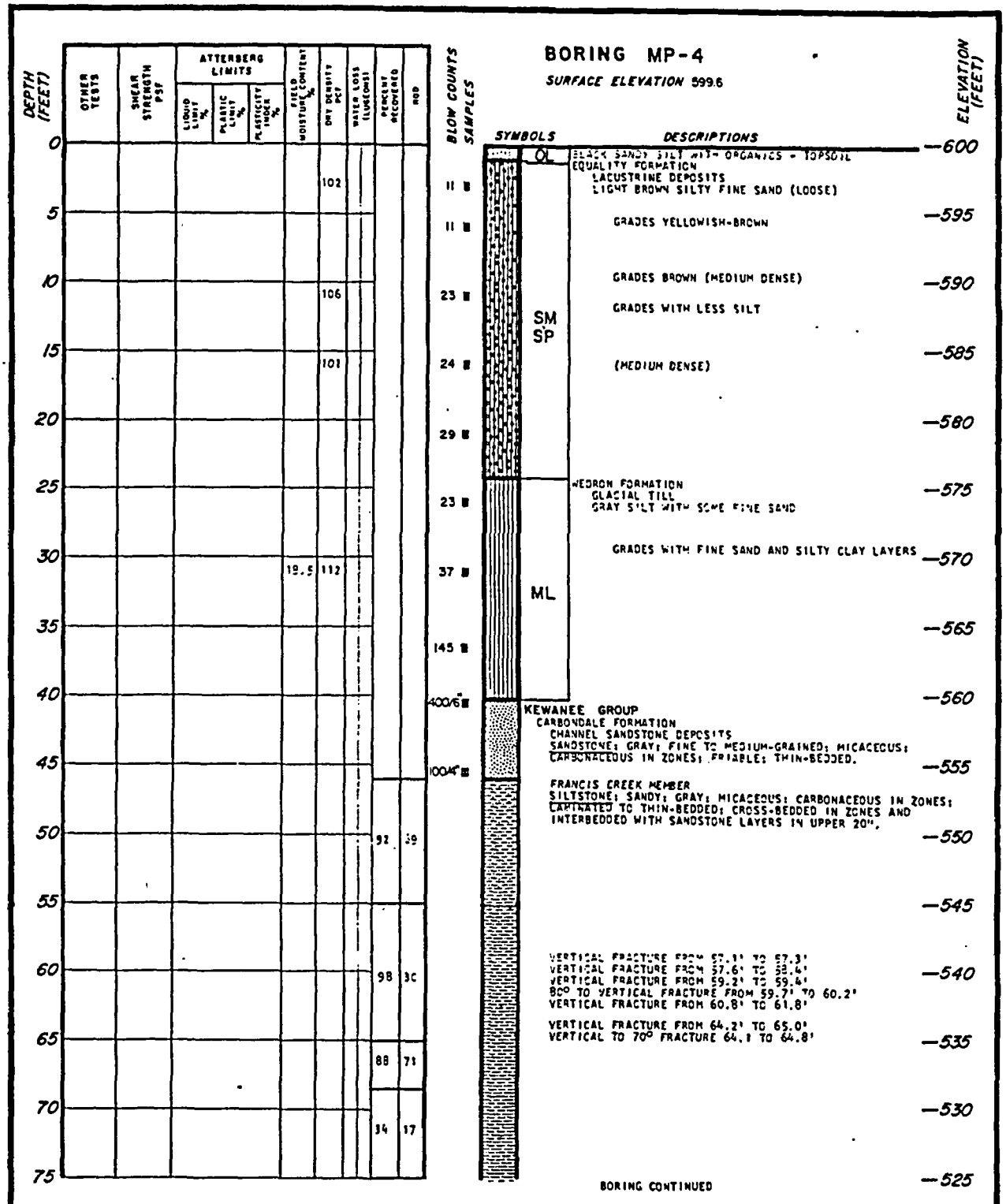
WATER LEVEL RECORDED AT 7.0 FEET ON 3-5-73

ELEVATION (FEET): 525, 520, 515, 510, 505, 500, 495, 490, 485, 480, 475

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-169

LOG OF BORING MP-3
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-170

LOG OF BORING MP-4
(SHEET 1 OF 2)

BORING MP-4 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75									97	75
80									93	77
85										
90									100	82
95										
100									100	63
105										

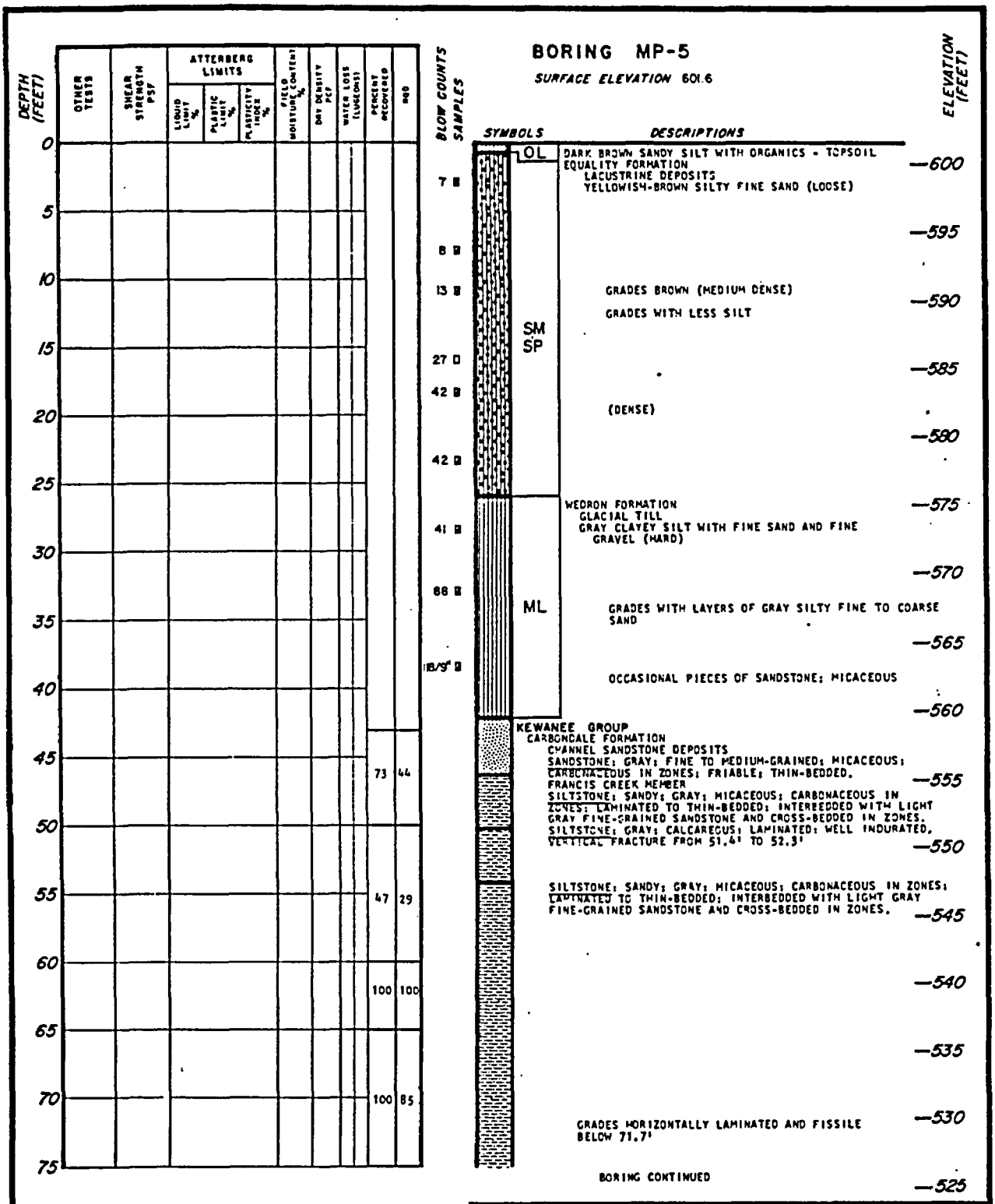
SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		—525
	HORIZONTALLY LAMINATED AND FISSILE BELOW 78.0'	
	VERTICAL FRACTURE FROM 79.5' TO 80.3'	—520
	VERTICAL FRACTURE FROM 82.1' TO 82.7'.	
		—515
	VERTICAL FRACTURE FROM 86.9' TO 87.5'	
	VERTICAL FRACTURE FROM 89.1' TO 89.6'	—510
	VERTICAL FRACTURE FROM 92.7' TO 93.3'	
	VERTICAL FRACTURE FROM 93.8' TO 94.5'	
	SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.	—505
	COLCHESTER (NO. 2 COAL) MEMBER COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	—500
	SPOON FORMATION SHALE; CARBONACEOUS; DARK GRAY TO BROWN; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	
		—495

BORING COMPLETED AT 102.5 FEET ON 3-13-73
CASING USED TO A DEPTH OF 46.0 FEET
WATER LEVEL MEASURED AT 6.5 FEET ON 3-12-73
WATER LEVEL MEASURED AT 7.2 FEET ON 3-13-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-170

LOG OF BORING MP-4
(SHEET 2 OF 2)



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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-171

LOG OF BORING MP-5
(SHEET 1 OF 2)

BORING MP-5 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									90	78
85										
90									100	100
95									100	50
100										
105										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	VERTICAL FRACTURE FROM 76.9' TO 78.1'	525
		520
		515
		510
	SHALE: SILTY: GRAY: FINELY MICACEOUS: THINLY LAMINATED: FISSILE. 2" SIDERITE NODULE AT 94.8' 2" SIDERITE NODULE AT 95.3' 1/2" SIDERITE NODULE AT 97.0' 1/2" SIDERITE NODULE AT 97.9' COLCHESTER (NO. 2 COAL) MEMBER COAL: BLACK: THIN-BEDDED: NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY. SPOON FORMATION SHALE: CARBONACEOUS: BROWN TO GRAY: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	505 500
	BORING COMPLETED AT 103.0 FEET ON 3-15-73 CASING USED TO A DEPTH OF 43.0 FEET WATER LEVEL RECORDED AT 8.0 FEET ON 3-14-73	495

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FIGURE 2.5-171

LOG OF BORING MP-5
(SHEET 2 OF 2)

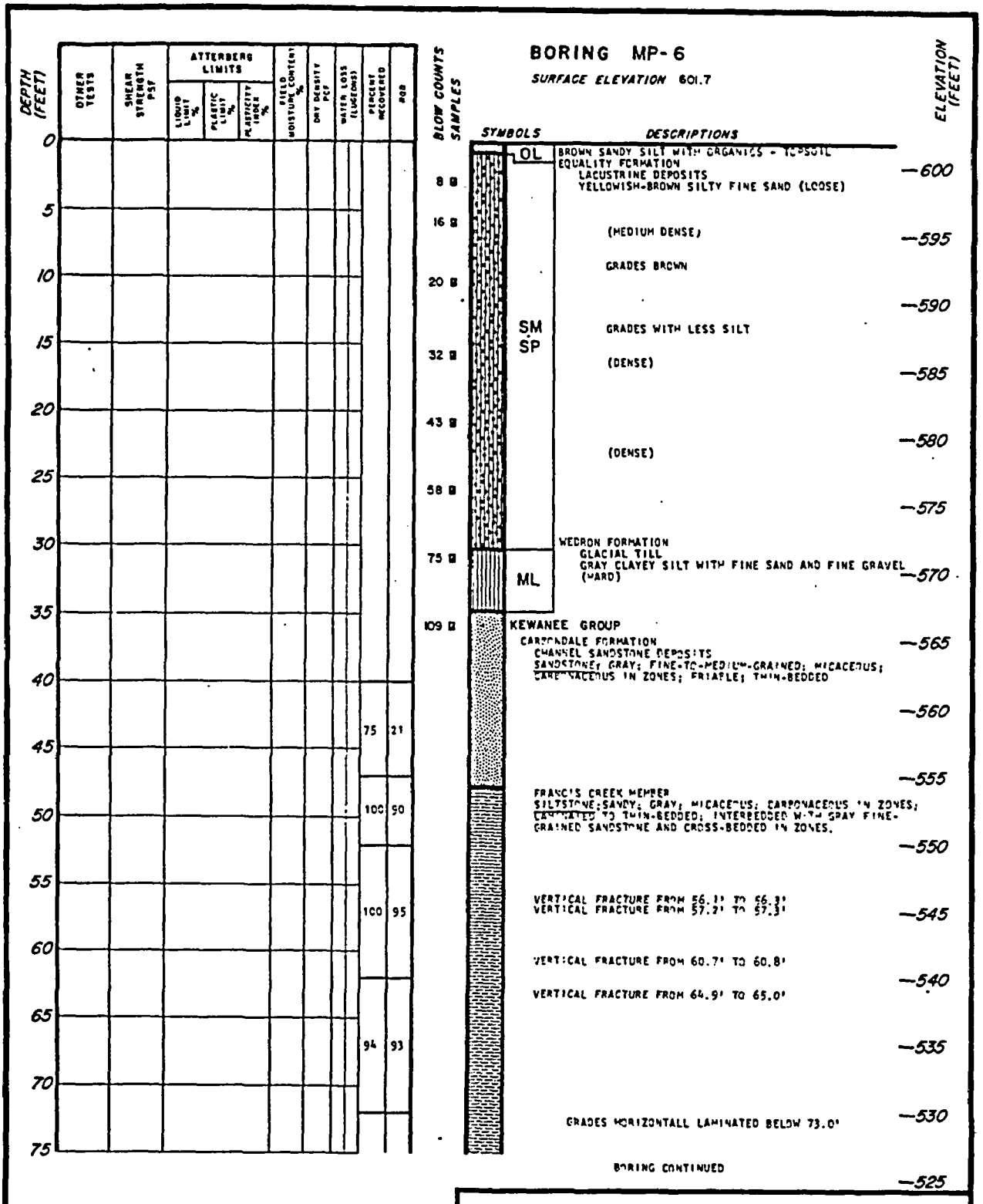

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FIGURE 2.5-172

LOG OF BORING MP-6
(SHEET 1 OF 2)

BORING MP-6 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
									100	97
80										
85									95	95
90										
95									100	83
100										
105									100	33
110										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		—525
	VERTICAL FRACTURE FROM 82.0' TO 82.4'	—520
		—515
		—510
	1" SIDERITE NODULE AT 95.7' SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE. 1" SIDERITE NODULE AT 97.6' 1" SIDERITE NODULE AT 99.3' AND 99.8' COLCHESTER (NO. 2 COAL) MEMBER COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES; WITH SOME PYRITE AND CLAY.	—505
	SPOON FORMATION SHALE; CARBONACEOUS; BROWN TO DARK GRAY; MASSIVE; HIGHLY FRACTURED WITH NUMEROUS RANDOM SLICKENSIDES.	—500
		—495
	GRADES SILTY BELOW 108.5'	
	BORING COMPLETED AT 110.0 FEET ON 3-7-73 CASING USED TO A DEPTH OF 35.0 FEET WATER LEVEL RECORDED AT 8.5 FEET ON 3-7-73	—490

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FIGURE 2.5-172

LOG OF BORING MP-6
(SHEET 2 OF 2)

BORING MP-7

SURFACE ELEVATION 602.9

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
0										
	SIEVE						94			
5	SIEVE						105			
10	SIEVE						108			
15	SIEVE						97			
20	SIEVE						102			
25	SIEVE						122			
30		6000				13.6	125			
35	SIEVE					11.1	131			
40										
45									80	62
50										
55									90	78
60										
65									100	80
70										
75									98	73

BLOW COUNTS SAMPLES	ELEVATION (FEET)
3	600
7	
14	595
28	590
21	585
46	580
175	575
180	570
153/9"	565
	560
	555
	550
	545
	540
	535
	530

SYMBOLS	DESCRIPTIONS
OL	DARK BROWN SANDY SILT WITH ORGANICS - TOPSOIL
	EQUALITY FORMATION LACUSTRINE DEPOSITS YELLOWISH-BROWN SILTY SAND (VERY LOOSE)
SM SP	(LOOSE) GRADES WITH LESS SILT GRADES LIGHT BROWN (MEDIUM DENSE) GRADES MORE COARSE GRADES GRAY (DENSE)
ML	WEDRON FORMATION GLACIAL TILL GRAY CLAYEY SILT WITH FINE SAND AND OCCASIONAL FINE GRAVEL (HARD) GRADES WITH COBBLES
SP	GRAY FINE TO COARSE SAND AND GRAVEL WITH SOME SILT (VERY DENSE) GRADES WITH LESS SAND AND MORE FINE GRAVEL
	KEWANEE GROUP CARBONDALE FORMATION CHANNEL SANDSTONE DEPOSITS SILTSTONE: CALCAREOUS: GRAY: SANDY: MICACEOUS: LAMINATED TO THIN-BEDDED: WEATHERED. FRANCIS CREEK MEMBER SILTSTONE: SANDY: GRAY: MICACEOUS: CARBONACEOUS IN ZONES: LAMINATED TO THIN-BEDDED. INTERBEDDED WITH GRAY FINE-GRAINED SANDSTONE AND CROSS-BEDDED IN ZONES: WEATHERED. 1" SIDERITE NODULE AT 48.0' BASE OF WEATHERING AT 48.5' 80° TO VERTICAL FRACTURE FROM 50.7' TO 51.1' VERTICAL FRACTURE FROM 58.7' TO 59.2' VERTICAL FRACTURE FROM 67.9' TO 68.5' GRADES HORIZONTALLY LAMINATED BELOW 72.5'

BORING CONTINUED

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FIGURE 2.5-173

LOG OF BORING MP-7
(SHEET 1 OF 2)

BORING MP-7 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									98	3
90										
95									90	79
100									100	19
105									92	79
110										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		525
	30° FRACTURE AT 80.4'	520
		515
	70° FRACTURE FROM 87.3' TO 88.0'	510
	SHALE: SILTY: GRAY: FINELY MICACEOUS: THINLY LAMINATED.	505
	1/2" SIDERITE NODULES AT 99.2' AND 99.4' GRADES CARBONACEOUS BELOW 99.8' COLCHESTER (NO. 2 COAL) MEMBER COAL: BLACK: THIN BEDDED: NUMEROUS TIGHT VERTICAL FRACTURES AND SOME PYRITE AND CLAY.	500
	SPOON FORMATION SHALE: DARK GRAY TO BROWN: CARBONACEOUS, MICACEOUS IN ZONES: PASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. 1/2" COAL SEAM AT 104.7' 1" COAL SEAM AT 107.5' GRADES SILTY BELOW 108.1'	495

BORING COMPLETED AT 110.0 FEET ON 3-26-73
WATER LEVEL RECORDED AT 9.0 FEET ON 3-23-73

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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-173

LOG OF BORING MP-7
(SHEET 2 OF 2)

BORING MP-8

SURFACE ELEVATION 600.2

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD	BLOW COUNTS / SAMPLES
0											
							93				5
5											
											17
10											
							103				22
15											
							125				31
20											
							118				23
25											
		13680				8.5	136				150
30											
		9040				7.7	138				145
35											
		6800				14.1	119				170
40											
											86/2"
45											
									85	68	
50											
55									100	74	
60											
65									63	33	
70											
75									100	10	

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
OL	BROWN SANDY SILT WITH ORGANICS - TOPSOIL	600
SM, SP	EQUALITY FORMATION LACUSTRINE DEPOSITS YELLOWISH-BROWN SILTY SAND (LOOSE)	595
	GRADES BROWN GRADES WITH MORE SILT (MEDIUM DENSE)	590
	GRADES WITH LESS SILT GRADES MORE COARSE	585
	GRADES GRAY	580
ML	WEDRON FORMATION GLACIAL TILL GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL GRAVEL (HARD)	575
		570
		565
	GRADES WITH MORE FINE SAND	560
	KEWANEE GROUP CARBONDALE FORMATION FRANCIS CREEK MEMBER SILTSTONE; SANDY; GRAY; MICACEOUS; CARBONACEOUS IN ZONES; LAMINATED TO THIN-BEDDED; INTERBEDDED WITH GRAY FINE-GRAINED SANDSTONE AND CROSS-BEDDED IN ZONES; WEATHERED.	555
		550
	BASE OF WEATHERING AT 55.6'	545
		540
		535
	GRADES HORIZONTALLY LAMINATED BELOW 69.0'	530
	60° FRACTURE FROM 73.8' TO 74.0'	

BORING CONTINUED

BRAIDWOOD STATION
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FIGURE 2.5-174

LOG OF BORING MP-8
(SHEET 1 OF 2)

BORING MP-8 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75									100	10
80										
85									90	58
90										
95									100	70
100									50	17
105										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		525
	80° FRACTURE FROM 79.3' TO 78.7'	520
		515
		510
	SHALE: SILTY: GRAY: FINELY MICACEOUS: THINLY LAMINATED: FISSILE.	505
	COLCHESTER (NO. 2 COAL) MEMBER COAL: BLACK: THIN-BEDDED: NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	500
	SPOON FORMATION SHALE: GRAY TO BROWN: SILTY: CARBONACEOUS: MICACEOUS: MASSIVE: MODERATELY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	

BORING COMPLETED AT 102.5 FEET ON 3-21-73
WATER LEVEL RECORDED AT 6.0 FEET ON 3-20-73

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FIGURE 2.5-174

LOG OF BORING MP-8
(SHEET 2 OF 2)

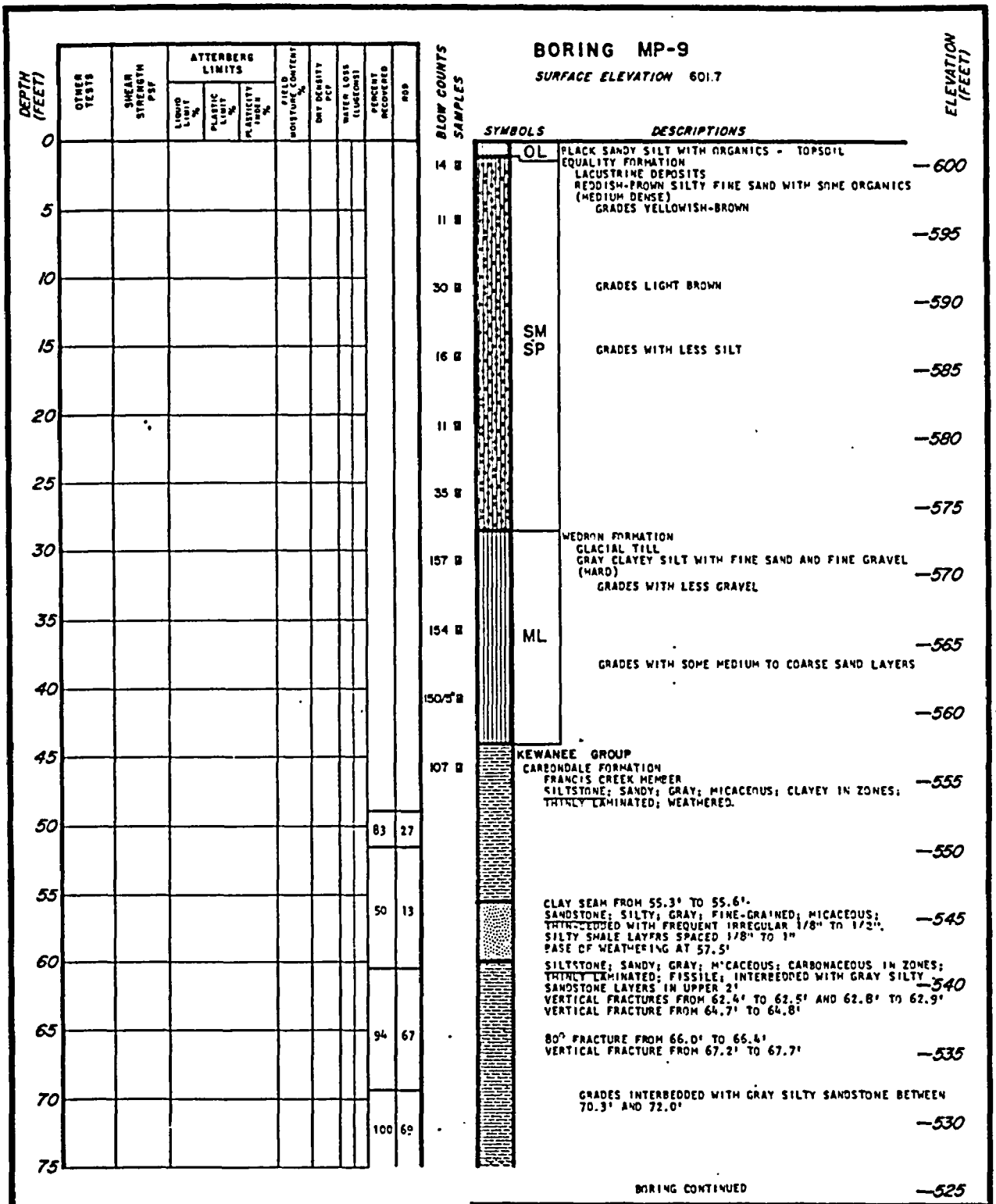

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FIGURE 2.5-175

LOG OF BORING MP-9
(SHEET 1 OF 2)

BORING MP-9 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									85	64
90										
95									85	83
100										
105									52	20
110										
115									64	51
120										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	VERTICAL FRACTURES FROM 74.8' TO 75.1' AND 75.2' TO 75.5'	—525
		—520
		—515
		—510
		—505
	SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.	
	GRADES HIGHLY CARBONACEOUS AT 103.1'	—500
	COLCHESTER (NO. 2 COAL) MEMBER COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	
	SPOON FORMATION SHALE; SILTY; CARBONACEOUS; BROWNISH-GRAY TO BROWN; FISSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES; GRADES HIGHLY SILTY IN BASAL 18".	—495
		—490
		—485
	BORING COMPLETED AT 119.5 FEET ON 2-22-73 WATER LEVEL NOT RECORDED	—480

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FIGURE 2.5-175

LOG OF BORING MP-9
(SHEET 2 OF 2)

BORING MP-10

SURFACE ELEVATION 602.3

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD	BLOW COUNTS	SAMPLES
0												
							96				4	S
5											10	S
10							109				18	S
15											27	D
20											15	S
25											24	S
30						17.3	114				74	S
35						17.7	113				175	S
40		[illegible]				7.7	138				100/6"	S
											100/6"	S
45											120/7"	S
50									100	63		
55												
60									100	79		
65												
70									93	30		
75												

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
OL	BROWN SILTY SAND WITH ORGANICS - TOPSOIL	
SM SP	EQUALITY FORMATION LACUSTRINE DEPOSITS YELLOWISH-BROWN SILTY SAND (VERY LOOSE)	600
	(LOOSE)	595
	GRADES LIGHT BROWN WITH LESS SILT (MEDIUM DENSE)	590
		585
		580
ML	WEDRON FORMATION GLACIAL TILL GRAY CLAYEY SILT WITH SOME SAND AND OCCASIONAL GRAVEL (VERY STIFF)	575
	SAND AND GRAVEL GRADE OUT (HARD) 6" SAND LAYER AT 31'	570
	GRADES WITH MORE FINE SAND	565
	GRADES TO REDDISH-GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL GRAVEL GRADES WITH LESS SAND AND GRAVEL GRADES GRAY	560
	KEWANEE GROUP CARBONDALE FORMATION FRANCIS CREEK MEMBER SILTSTONE; SANDY; GRAY; MICACEOUS; CARBONACEOUS IN ZONES; LAMINATED TO THIN-BEDDED; INTERBEDDED WITH GRAY FINE-GRAINED SANDSTONE AND CROSS-BEDDED IN ZONES; WEATHERED. CALCAREOUS FROM 45.0' TO 45.8'	555
	CALCAREOUS FROM 52.1' TO 53.2'	550
		545
	BASE OF WEATHERING AT 58.3' VERTICAL FRACTURE FROM 60.2' TO 60.7'	
		540
	GRADES HORIZONTALLY LAMINATED BELOW 68.2'	535
		530

BORING CONTINUED

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FIGURE 2.5-176

LOG OF BORING MP-10
(SHEET 1 OF 2)

BORING MP-10 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
									96	32
80										
									96	16
85										
									33	17
90										
									59	22
95										
									85	35
100										
105										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		525
	1" SIDERITE NODULE AT 80.6' 2" SIDERITE NODULE AT 81.5'	520
		515
	SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.	510
	COLCHESTER (NO. 2 COAL) MEMBER COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	505
	SPOON FORMATION SHALE; DARK GRAY TO BROWN; CARBONACEOUS; MASSIVE; HIGHLY FRACTURED WITH NUMEROUS RANDOM SLICKENSIDES.	500

BORING COMPLETED AT 102.0 FEET ON 3-22-73
WATER LEVEL RECORDED AT 7.0 FEET ON 3-22-73

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FIGURE 2.5-176

LOG OF BORING MP-10
(SHEET 2 OF 2)

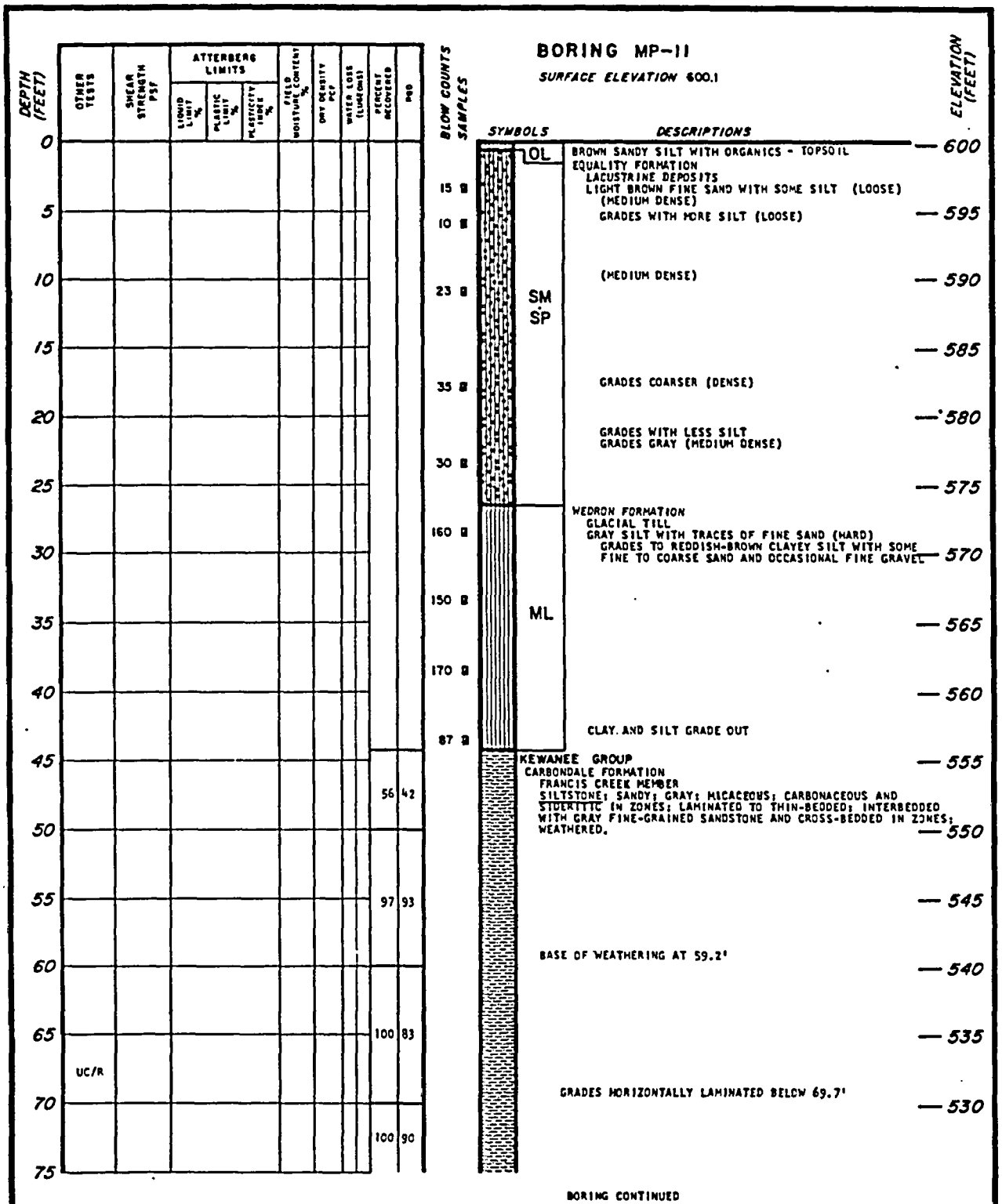

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FIGURE 2.5-177

LOG OF BORING MP-11
(SHEET 1 OF 2)

BORING MP-11 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									100	83
90										
95									100	48
100									100	35
105										
110										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		525
		520
	VERTICAL FRACTURE FROM 84.8' TO 85.6' VERTICAL FRACTURE FROM 86.1' TO 87.3'	515
		510
	SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.	505
	COLCHESTER (NO. 2 COAL) MEMBER COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	500
	SPOON FORMATION SHALE; GRAY TO BROWN; CARBONACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. GRADES SILTY BELOW 104.0'.	495

BORING COMPLETED AT 106.0 FEET ON 3-20-73
WATER LEVEL RECORDED AT 5.0 FEET ON 3-16-73

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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-177

LOG OF BORING MP-11
(SHEET 2 OF 2)

BORING MP-12

SURFACE ELEVATION 599.3

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD	BLOW COUNTS / SAMPLES
0											
	SIEVE										10
5	SIEVE										12
10	SIEVE						106				23
15	SIEVE						103				21
20	SIEVE						106				19
25						22.1	111				25
30		6980				7.1	140				76
35		11640				8.6	135				84
40											113
45											
50									100	48	
55											
60	RES.								100	59	
65											
70									98	95	
75											

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		600
OL	BLACK SANDY SILT WITH ORGANICS - TOPSOIL EQUALITY FORMATION LACUSTRINE DEPOSITS LIGHT BROWN SILTY FINE SAND (LOOSE)	
	GRADES YELLOWISH-BROWN	595
SM SP		590
	GRADES WITH LESS SILT (MEDIUM DENSE)	585
		580
	WEDRON FORMATION GLACIAL TILL GRAY SILT WITH TRACE OF FINE SAND (HARD)	575
ML	GRADES TO GRAY CLAYEY SILT WITH FINE SAND AND FINE GRAVEL (HARD)	570
	GRADES WITH SOME COBBLES AND COARSE GRAVEL	565
	GRADES WITH MORE FINE SAND AND SILT	560
	KEWANEE GROUP CARBONDALE FORMATION FRANCIS CREEK MEMBER SILTSTONE: SANDY; GRAY; MICACEOUS; CARBONACEOUS IN ZONES; LAMINATED TO THIN-BEDDED; INTERBEDDED WITH GRAY FINE-GRAINED SANDSTONE LAYERS AND CROSS-BEDDED IN ZONES; WEATHERED; VERY SANDY IN UPPER 2'.	555
		550
		545
	BASE OF WEATHERING AT 60.0'	540
	VERTICAL FRACTURE FROM 62.2' TO 62.8'	
		535
		530
	GRADES HORIZONTALLY LAMINATED AND FISSILE BELOW 70.8'	
		525

BORING CONTINUED.

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FIGURE 2.5-178

LOG OF BORING MP-12
(SHEET 1 OF 2)

BORING MP-12 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									100	93
85										
90									98	92
95										
100									100	63
105										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		525
		520
	VERTICAL FRACTURE FROM 84.2' TO 84.6'	515
	VERTICAL FRACTURE FROM 88.0' TO 88.4'	510
		505
	SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.	
	COLCHESTER (NO. 2 COAL) MEMBER COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES; WITH SOME PYRITE AND CLAY	500
	SPOON FORMATION SHALE; BROWNISH-GRAY TO GRAY; SILTY; CARBONACEOUS; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	495

BORING COMPLETED AT 104.0 FEET ON 2-28-73
CASING USED TO A DEPTH OF 44.0 FEET
WATER LEVEL RECORDED AT 5.5 FEET ON 2-27-73

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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-178

LOG OF BORING MP-12
(SHEET 2 OF 2)

BORING MP-13

SURFACE ELEVATION 599.5

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD	BLOW COUNTS SAMPLES
0											
5											7
10							102				6
15							106				19
20							105				18
25						9.4	131				12
30											67
35		6560				8.6	136				149
40											63
45											52
50									100	82	
55											
60									92	28	
65											
70									98	95	
75											

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
OL	BLACK SILTY SAND WITH ORGANICS - TOPSOIL	600
SM SP	EQUALITY FORMATION LACUSTRINE DEPOSITS BROWN SILTY FINE SAND (LOOSE) (LOOSE)	595
	(MEDIUM DENSE)	590
	GRADES GRAYISH-BROWN	585
	GRADES TO GRAY MEDIUM TO COARSE SAND	580
ML	WEDRON FORMATION GLACIAL TILL GRAY CLAYEY SILT WITH FINE SAND AND FINE GRAVEL (HARD)	575
		570
		565
		560
	KEWANEE GROUP CARBONDALE FORMATION CHANNEL SANDSTONE DEPOSITS SANDSTONE; GRAY; FINE TO-MEDIUM-GRAINED; MICACEOUS; FRIABLE; THIN-BEDDED FRANCIS CREEK MEMBER SILTSTONE; SANDY; GRAY; MICACEOUS; CARBONACEOUS IN ZONES; LAMINATED TO THIN-BEDDED; INTERBEDDED WITH GRAY FINE-GRAINED SANDSTONE LAYERS AND CROSS-BEDDED IN ZONES; WEATHERED. 1" SIDERITE NODULE AT 44.9' SIDERITE NODULE FROM 45.8' TO 45.9' BASE OF WEATHERING AT 48.5' 1" SIDERITE NODULE AT 51.8'	555
	GRADES CALCAREOUS BELOW 55.2'	550
	GRADES NON-CALCAREOUS BELOW 57.1'	545
		540
		535
	GRADES HORIZONTALLY LAMINATED AND FISSILE BELOW 72.0'	530
	VERTICAL FRACTURE FROM 74.0' TO 74.3'	525

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-179

LOG OF BORING MP-13
(SHEET 1 OF 2)

BORING MP-13 CONTINUED

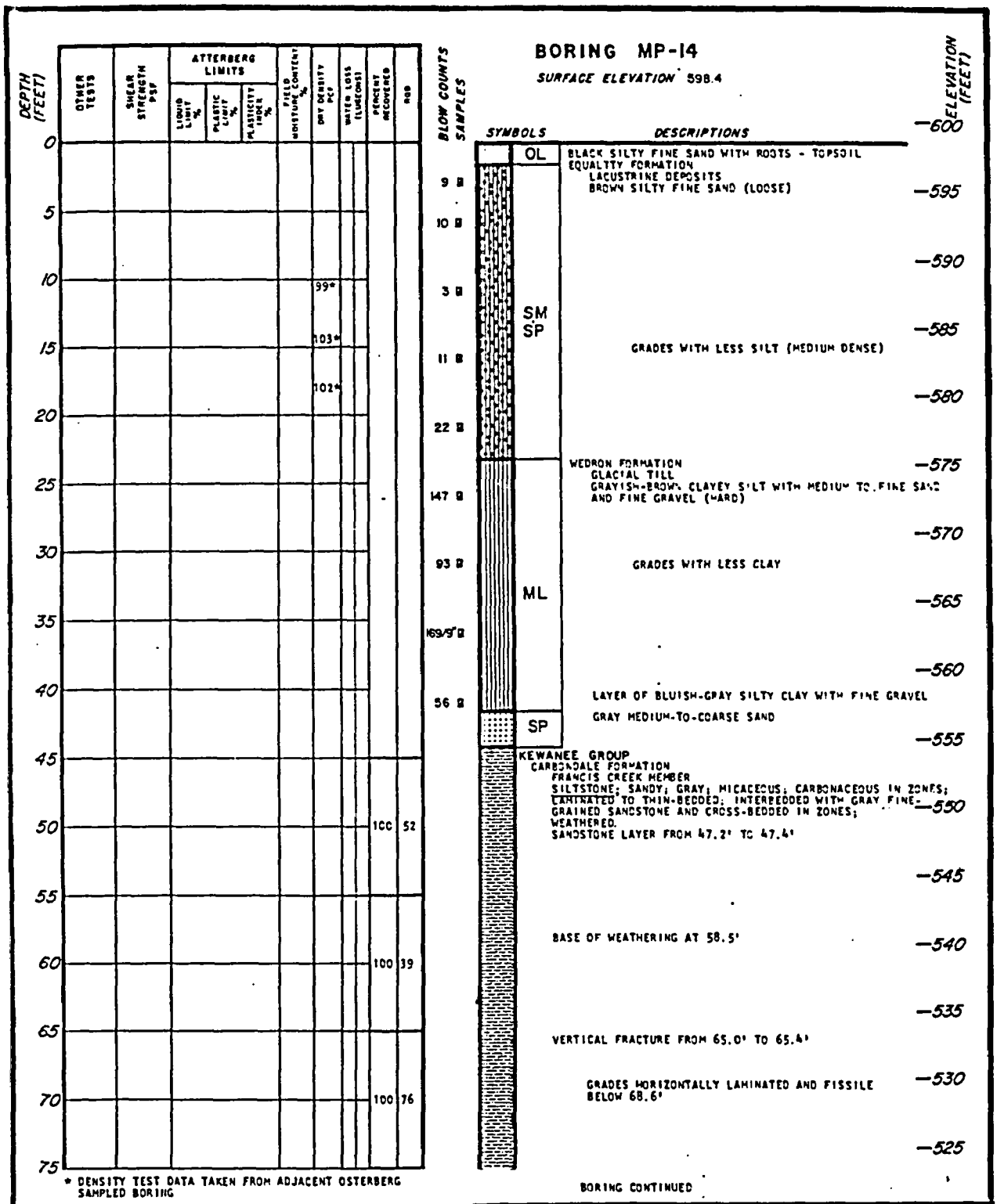
DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									100	97
85										
90									100	95
95										
100									100	54
105										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		—525
	VERTICAL FRACTURE FROM 78.3' TO 78.6'	—520
		—515
		—510
	SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.	—505
	GRADES CARBONACEOUS BELOW 99.0'	
	COLCHESTER (NO. 2 COAL) MEMBER COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	—500
	SPOON FORMATION SHALE; CARBONACEOUS; BROWN TO BLACK; MASSIVE; HIGHLY FRACTURED WITH NUMEROUS RANDOM SLICKENSIDES.	
	BORING COMPLETED AT 104.0 FEET ON 3-1-73 WATER LEVEL RECORDED AT 5.5 FEET ON 2-28-73	—495
		—490

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-179

LOG OF BORING MP-13
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-180

LOG OF BORING MP-14
(SHEET 1 OF 3)

BORING MP-14 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									100	88
85										
90									95	75
95										
100									100	45
105										
110									100	61
115										
120									100	72
125										
130									100	50
135										
140									100	69
145										
150									55	86

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		525
	1" VERTICAL FRACTURE AT 77.3'	
	1" VERTICAL FRACTURE AT 79.7'	520
		515
		510
		505
	SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.	
	GRADES CARBONACEOUS BELOW 98.0'	500
	COLCHESTER (NO. 2 COAL) MEMBER	
	COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	
	SPOON FORMATION	
	SHALE; CARBONACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	495
	SILTSTONE; SANDY; LIGHT GRAY; MICACEOUS; CARBONACEOUS; SIDERITIC; THIN-BEDDED; WELL INDURATED.	490
	SHALE; SILTY; GRAY; CARBONACEOUS; MICACEOUS; MASSIVE. HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	
	SILTSTONE; SANDY; LIGHT GREENISH-GRAY MICACEOUS; CARBONACEOUS; SIDERITIC; THIN-BEDDED; WELL INDURATED.	485
	SANDSTONE; SILTY; LIGHT GREENISH-GRAY; FINE-GRAINED; MICACEOUS; CARBONACEOUS; SIDERITIC; THIN-BEDDED; INTERBEDDED WITH GREEN SILTSTONE LAYERS WELL INDURATED.	480
	SHALE; SILTY; GRAY; CARBONACEOUS; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT FRACTURES WITH SOME PYRITE AND CLAY. GRADES TO HIGHLY CARBONACEOUS SHALE 1" BASAL 7".	475
	CLAY LAYER FROM 21.5' TO 22.1'	
	SHALE; SILTY; BROWN TO GRAY; CARBONACEOUS; MASSIVE. HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. SILTY LAYER FROM 54.0' TO 54.5'	
	SILTSTONE; SANDY; DARK GRAY; CARBONACEOUS; MICACEOUS; LAMINATED TO THIN-BEDDED.	470
	GRADES FISSILE WITH ABUNDANT CARBONIZED PLANT FOSSILS BELOW 133.0'	465
	GRADES CALCAREOUS BELOW 137.0'	
	MAQUOKETA GROUP	
	FORT ATKINSON FORMATION	460
	LIMESTONE; SILTY; GRAY; FINE-TO MEDIUM-GRAINED; FOSSILIFEROUS; THIN-BEDDED; WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 4" ZONES OF CALCAREOUS SHALE SPACED 1/4" TO 10". OIL-STAINED FROM 137.5' TO 138.0' 1" OPEN OIL-STAINED VUG AT 137.9'	455
		450

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-180

LOG OF BORING MP-14
(SHEET 2 OF 3)

BORING MP-14 CONTINUED

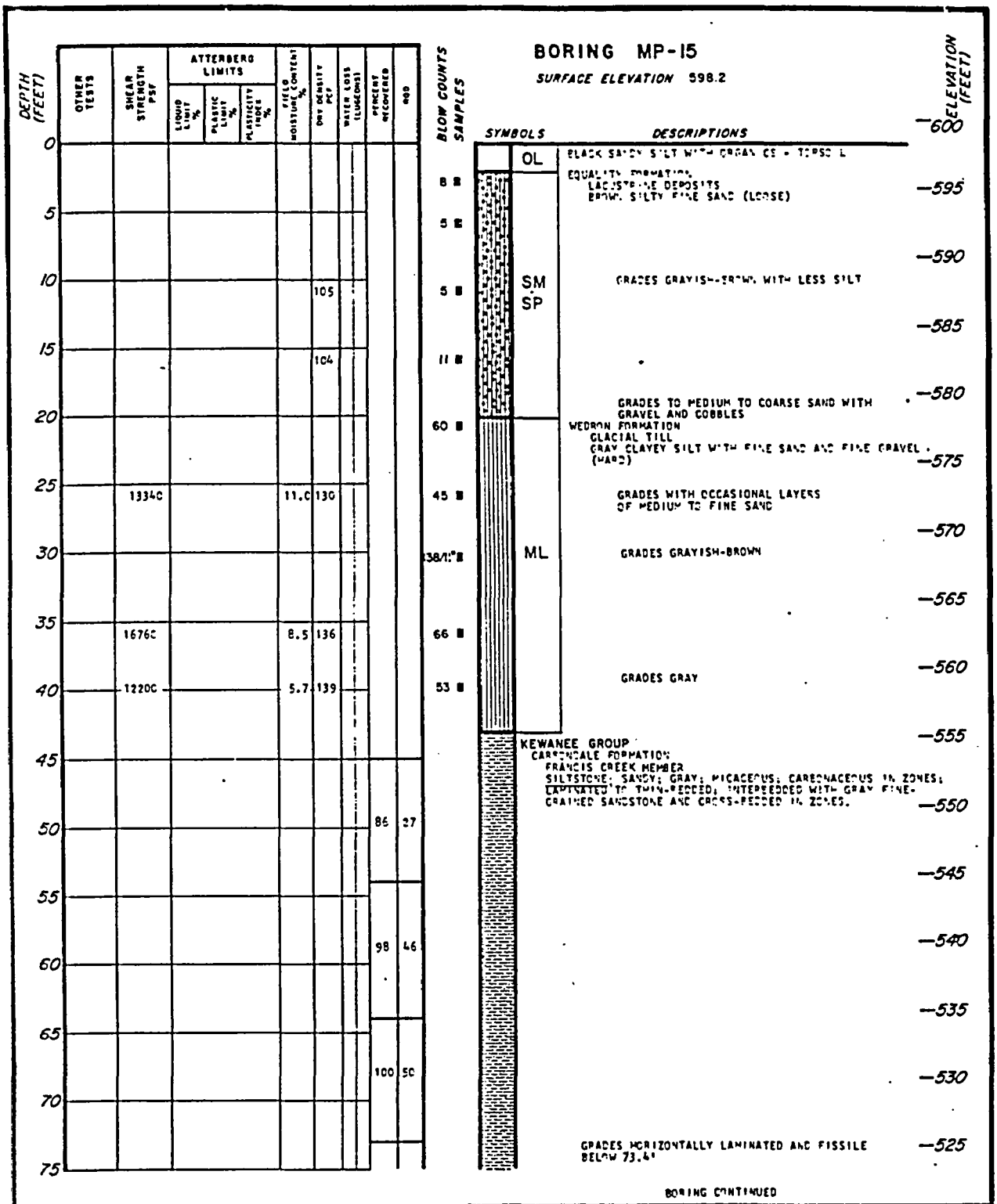
DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155										
160									98	98
165										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		450
		445
	LIMESTONE; LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED WITH IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1/4" TO 10". OIL-STAINED ZONE FROM 160.8' TO 161.1'	440
	BORING COMPLETED AT 164.0 FEET ON 3-3-73 CASING USED TO A DEPTH OF 44.0 FEET WATER LEVEL NOT RECORDED	435
		430

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-180

LOG OF BORING MP-14
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-181

LOG OF BORING MP-15
(SHEET 1 OF 3)

BORING MP-15 CONTINUED

SURFACE ELEVATION

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									100	45
85									98	47
90										
95									100	48
100										
105									80	22
110									100	82
115										
120									79	30
125									95	53
130										
135									100	49
140									50	21
145									98	71
150										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		525
	60° TO VERTICAL FRACTURE FROM 76.5' TO 76.8'	
		520
	30° FRACTURE AT 80.3' VERTICAL FRACTURE FROM 80.5' TO 80.7'	
		515
		510
		505
	SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.	
	COLCHESTER (NO. 2 COAL) MEMBER COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	500
	SPOON FORMATION SHALE; CARBONACEOUS; DARK GRAY; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	495
	SHALE; SILTY; TAN AND GRAY; CARBONACEOUS; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	
	SILTSTONE; SANDY; LIGHT GRAY; MICACEOUS; CARBONACEOUS; THIN-BEDDED; WELL INDURATED.	490
	SHALE; SILTY; BROWN TO BLACK; CARBONACEOUS; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS SLICKENSIDES.	
		485
	SILTSTONE; SANDY; LIGHT GREENISH-GRAY; MICACEOUS; CARBONACEOUS; SIDERITIC; THIN-BEDDED; WELL-INDURATED. SANDSTONE; SILTY; LIGHT GREENISH-GRAY; FINE-GRAINED; MICACEOUS; CARBONACEOUS; SIDERITIC; THIN-BEDDED; INTERBEDDED WITH GREEN SILTSTONE LAYERS; WELL INDURATED.	480
	SHALE; SILTY; GRAY; CARBONACEOUS; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY. SHALE; CARBONACEOUS; BROWN TO DARK GRAY; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES; GRADES SILTY BELOW 125.0'. SILTSTONE LAYER FROM 125.3' TO 125.8' 1" COAL SEAM AT 127.2'	475
	SILTSTONE; SANDY; BROWNISH-GRAY TO DARK GRAY; MICACEOUS; CARBONACEOUS; LAMINATED TO THIN-BEDDED.	470
	GRADES FISSILE WITH ABUNDANT CARBONIZED PLANT FOSSILS BELOW 132.2'	
		465
	GRADES CALCAREOUS BELOW 138.4'	
	MAQUOKETA GROUP FORT ATKINSON FORMATION LIMESTONE; SILTY; GRAY; FINE-TO MEDIUM-GRAINED; FOSSILIFEROUS; THIN-BEDDED WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4 TO 4" ZONES OF CALCAREOUS SHALE SPACED 1/4" TO 10".	460
		455
		450

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-181

LOG OF BORING MP-15
(SHEET 2 OF 3)

BORING MP-15 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150									100	33
155									90	84
160										
165										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		450
		445
	LIMESTONE: LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED WITH IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES. SPACED 1/4" TO 10". OIL-STAINED ZONE FROM 159.7' TO 160.0' OIL-STAINED ZONE FROM 161.0' TO 161.2' OIL-STAINED BELOW 162.4'	440
	BORING COMPLETE AT 163.0 FEET ON 3-6-73 CASING USED TO A DEPTH OF 44.0 FEET WATER LEVEL NOT RECORDED	435
		430

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-181

LOG OF BORING MP-15
(SHEET 3 OF 3)

BORING MP-16

SURFACE ELEVATION 598.8

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
0										
5										
10										
15										
20										
25										
30										
35										
40										
45									63	30
50									100	31
55										
60									100	8
65										
70									99	35
75										

BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
			600
	OL	BLACK SANDY SILT WITH ORGANICS - TOPSOIL	
10	SM SP	EQUALITY FORMATION LACUSTRINE DEPOSITS BROWN SILTY FINE SAND (LOOSE)	595
6			
9		GRADES GRAYISH-BROWN	590
9		GRADES WITH LESS SILT	585
20		GRADES WITH MEDIUM SAND	580
74	ML	WEDRON FORMATION GLACIAL TILL GRAY CLAYEY SILT WITH FINE SAND AND FINE GRAVEL (HARD)	575
92			570
91		GRADES WITH GRAY SILTY FINE SAND LAYERS AND OCCASIONAL GRAY CLAY STRINGERS	565
			560
		KEWANEE GROUP CARBONDALE FORMATION FRANCIS CREEK MEMBER SILTSTONE; SANDY; GRAY; MICACEOUS; CARBONACEOUS IN ZONES; LAMINATED TO THIN-BEDDED; INTERBEDDED WITH GRAY FINE-GRAINED SANDSTONE AND CROSS-BEDDED IN ZONES; WEATHERED.	555
			550
			545
		BASE OF WEATHERING AT 60.5' 80° FRACTURE FROM 61.8' TO 62.5'	540
			535
		GRADES HORIZONTALLY LAMINATED AND FISSILE BELOW 68.7'	530
			525

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-182

LOG OF BORING MP-16
(SHEET 1 OF 2)

BORING MP-16 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									100	78
85										
90									100	29
95										
100									100	64
105										

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

—525

—520

—515

—510

SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.

—505

COLCHESTER (NO. 2 COAL) MEMBER
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.

—500

SPOON FORMATION
SHALE; CARBONACEOUS; BROWNISH-GRAY TO DARK GRAY; MASSIVE; STRONGLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

—495

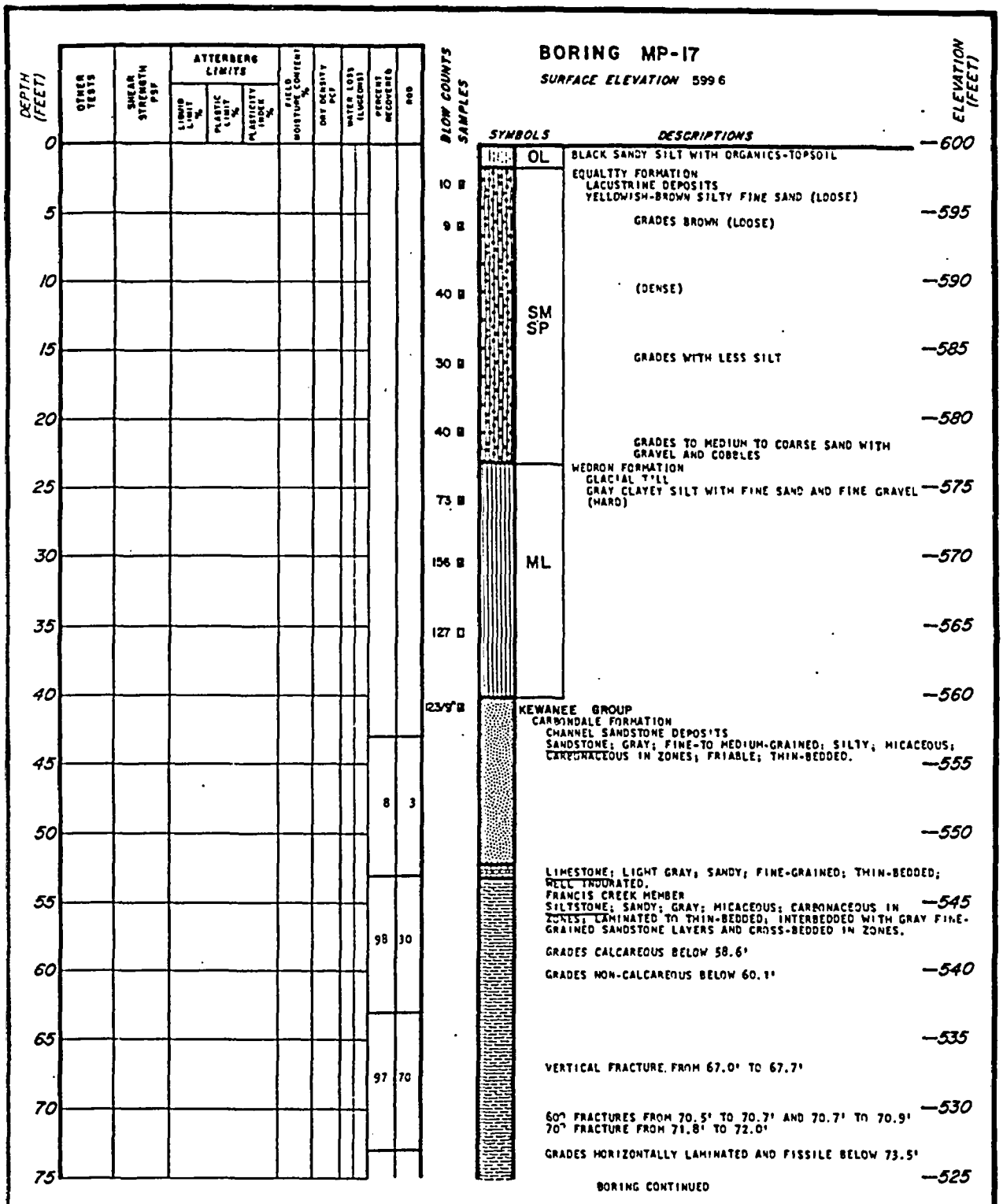
BORING COMPLETED AT 105.0 FEET ON 3-7-73
WATER LEVEL RECORDED AT 5.5 FEET ON 3-7-73

—490

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-182

LOG OF BORING MP-16
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-183

LOG OF BORING MP-17
(SHEET 1 OF 3)

BORING MP-17 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									120	63
85									100	100
90										
95									100	90
100										
105									100	70
110										
115									100	98
120										
125									56	24
130										
135									100	68
140									100	69
145	RES.								100	98
150										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		—525
	30° FRACTURE AT 79.2'	—520
		—515
	VERTICAL FRACTURE FROM 87.6' TO 88.4'	
		—510
		—505
	SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.	
	COLCHESTER (NO. 2 COAL) MEMBER COAL; BLACK, THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	—500
	SPOON FORMATION SHALE; CARBONACEOUS; BROWNISH-GRAY TO GRAY; SILTY IN ZONES; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	—495
	SILTSTONE; SANDY; LIGHT GRAY ; MICACEOUS; CARBONACEOUS; THIN-BEDDED. SANDSTONE; SILTY; LIGHT GRAY; FINE-GRAINED; MICACEOUS; CARBONACEOUS; THIN-BEDDED; WELL INDURATED. SHALE; SILTY; BROWN TO GRAY; CARBONACEOUS; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	—490
		—485
	SILTSTONE; SANDY; LIGHT GREENISH-GRAY; MICACEOUS; SIDERITIC; CARBONACEOUS; THIN-BEDDED; WELL INDURATED. SANDSTONE; SILTY; LIGHT-GREENISH GRAY; FINE-GRAINED; MICACEOUS; SIDERITIC; CARBONACEOUS; THIN-BEDDED; INTERBEDDED WITH GREEN SILTSTONE LAYERS; WELL INDURATED. 60° FRACTURE FROM 118.8' TO 119.1' SHALE; HIGHLY CARBONACEOUS; GRAY TO BLACK; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	—480
		—475
	SILTSTONE; SANDY; BROWNISH-GRAY TO DARK GRAY; MICACEOUS; CARBONACEOUS; LAMINATED TO THIN-BEDDED.	—470
	GRADES FISSILE WITH ABUNDANT CARBONIZED PLANT FOSSILS BELOW 134.9'	—465
	CARBONACEOUS AND PYRITIC SHALE LAYER FROM 136.8' TO 137.7' GRADES CALCAREOUS BELOW 138.7'	
	MAQUOKETA GROUP FORT ATKINSON FORMATION LIMESTONE; SILTY; GRAY; FINE TO MEDIUM-GRAINED; FOSSILIFEROUS; THIN-BEDDED WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 4" ZONES OF CALCAREOUS SHALE SPACED 1/4" TO 10". 2" DOLOMITE LINED OPEN VUG AT 141.6' VERTICAL FRACTURE FROM 141.6' TO 141.8' OIL-STAINED ZONE FROM 141.8' TO 142.0' 1/4" OPEN OIL-STAINED VUG AT 143.8'	—460 —455
		—450

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-183

LOG OF BORING MP-17
(SHEET 2 OF 3)

BORING MP-17 CONTINUED

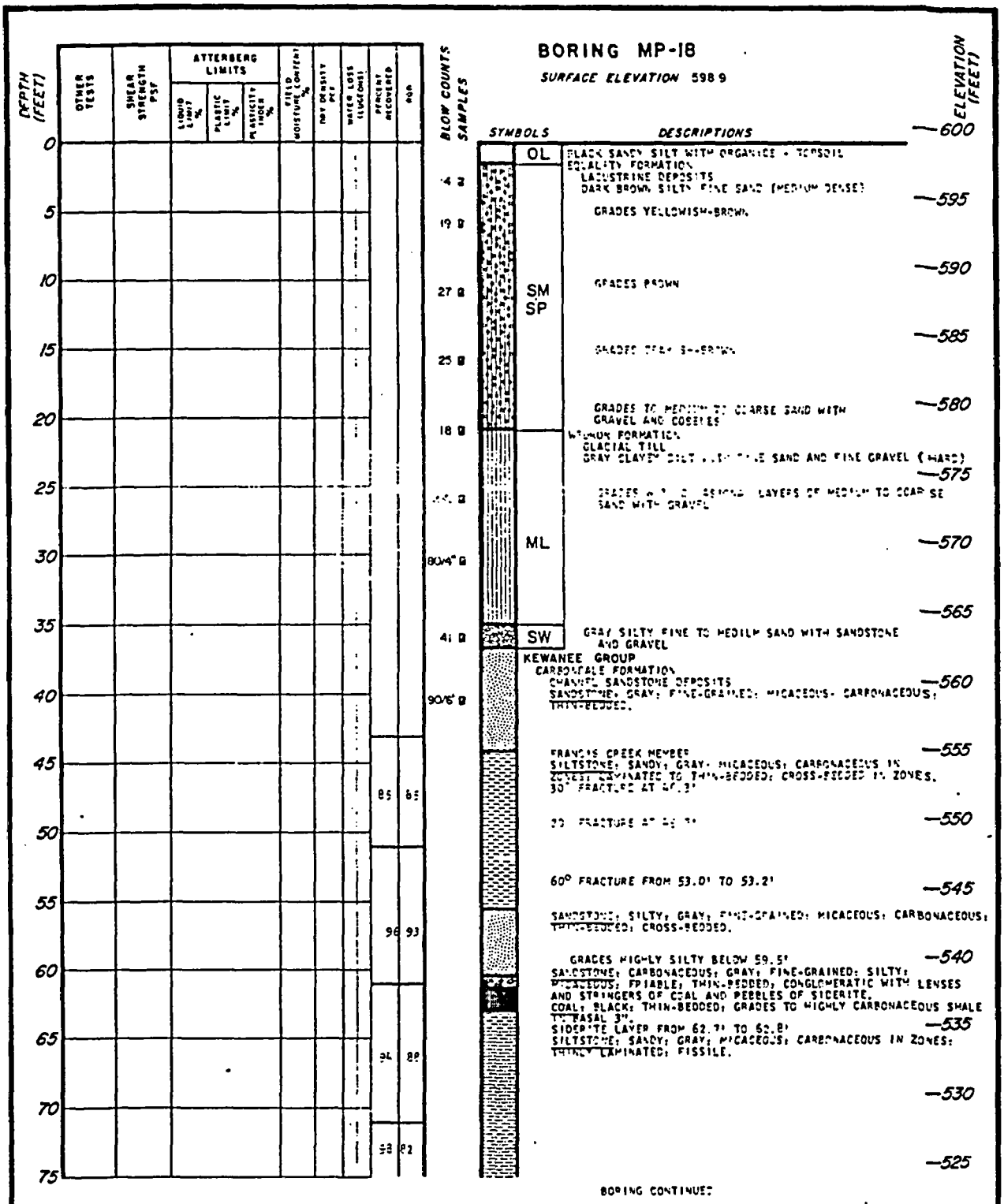
DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155									100	97
160										
165									98	88
170										
175										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		450
		445
	OIL-STAINED ZONE FROM 159.6' TO 159.2' OIL-STAINED ZONE FROM 159.9' TO 160.0'	440
	LIMESTONE; LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED WITH IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1/4" TO 10"; OIL-STAINED THROUGHOUT.	435
		430
	BORING COMPLETED AT 172.0 FEET ON 2-24-73 CASING USED TO A DEPTH OF 43.0 FEET WATER LEVEL RECORDED AT 5.5 FEET ON 2-23-73	425

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-183

LOG OF BORING MP-17
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-184

LOG OF BORING MP-18
(SHEET 1 OF 3)

BORING MP-18 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									100	93
90										
95									100	75
100										
105									60	4
110										
115									96	60
120										
125									78	24
130										
135									100	94
140	RES.									
145									100	71
150										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	80° FRACTURE FROM 76.2' TO 76.5' VERTICAL FRACTURE FROM 76.7' TO 77.2'	525
	VERTICAL FRACTURE FROM 80.1' TO 80.3'	520
		515
		510
	SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE. 80° FRACTURE FROM 94.7' TO 95.6'	505
	COLCHESTER (NO. 2 COAL) MEMBER COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY. SPOON FORMATION SHALE; CARBONACEOUS; BROWNISH-GRAY TO BLACK; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES; GRADES SILTY IN ZONES.	500
		495
		490
	LIGHT GRAY SANDY SILTSTONE LAYER FROM 110.9' TO 111.5' LIGHT GRAY SANDY SILTSTONE LAYER FROM 114.9' TO 115.1'	485
	SILTSTONE; SANDY; LIGHT GREENISH-GRAY; MICACEOUS; SIDERITIC; CARBONACEOUS; THIN-BEDDED; WELL INDURATED. SANDSTONE; SILTY; LIGHT GREENISH-GRAY; FINE-GRAINED; MICACEOUS; SIDERITIC; CARBONACEOUS; THIN-BEDDED; WELL INDURATED.	480
	SHALE; CARBONACEOUS; DARK GRAY; THIN-BEDDED TO MASSIVE; HIGHLY FRACTURED; HIGHLY SIDERITIC IN ZONES.	475
	COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE, CLAY AND SIDERITE. SHALE; SILTY; BROWNISH-GRAY; CARBONACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. SILTSTONE; BROWNISH-GRAY; MICACEOUS; CARBONACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. SILTSTONE; SANDY; DARK GRAY; MICACEOUS; CARBONACEOUS; LAMINATED TO THIN-BEDDED WITH ABUNDANT CARBONIZED PLANT FOSSILS; FISSILE.	470
		465
		460
	MAQUOKETA GROUP FORT ATKINSON FORMATION LIMESTONE; SILTY; GRAY; FINE-TO MEDIUM-GRAINED; FOSSILIFEROUS; PYRITIC IN ZONES; THIN-BEDDED WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 5" ZONES OF CALCAREOUS SHALE SPACED 1/4" TO 8". 80° FRACTURE FROM 141.2' TO 141.4' 1" CALCITE LINED OPEN VUG AT 141.4' OIL-STAINED ZONE FROM 142.3' TO 142.5'	455
		450

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-184

LOG OF BORING MP-18
(SHEET 2 OF 3)

BORING MP-18 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155									93	93
160	UC/R									
165									98	98
170										
175									100	100
180										
185									97	97
190	UC/R									

SYMBOLS

DESCRIPTIONS

LIMESTONE; LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED WITH IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1/4" TO 10".
ZONE OF PINPOINT OPEN VUGS; OIL-STAINED FROM 165.3' TO 165.8'
PINPOINT OPEN OIL-STAINED VUGS AT 166.4', 166.6' TO 166.7', AND 166.8' TO 167.1'

1/2" DOLOMITE LINED OPEN VUG AT 173.1'
1/4" DOLOMITE LINED OPEN VUG AT 173.7'

SCALES FORMATION
SILTSTONE; CALCAREOUS; DARK GRAY; LAMINATED; EXTREMELY ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS; INTERBEDDED GRADATIONAL 1/2" TO 3" ZONES OF LIGHT GRAY SILTY LIMESTONE SPACE 1" TO 10".
FOSSILS GRADE OUT APPRECIABLY BELOW 182.5'

BORING COMPLETED AT 190 FEET ON 2-23-73
WATER LEVEL RECORDED AT 5.5 FEET ON 2-21-73

ELEVATION (FEET): 450, 445, 440, 435, 430, 425, 420, 415, 410, 405

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-184

LOG OF BORING MP-18
(SHEET 3 OF 3)

BORING MP-19

SURFACE ELEVATION 598.0

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WASHER LOSS (LUCEONS)	PERCENT RECOVERED	RQD	BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
0												OL	DARK BROWN SANDY SILT WITH ORGANICS - TOPSOIL	
													EQUALITY FORMATION LACUSTRINE DEPOSITS LIGHT BROWN FINE SAND (LOOSE)	595
											8 ■	SM SP		
5											19 ■		GRADES WITH MORE SILT (MEDIUM DENSE)	590
10							108				19 ■			585
15											21 ■		GRADES WITH MORE SAND GRADES WITH LESS SILT	580
20											77 D	ML	WEDRON FORMATION GLACIAL TILL GRAY CLAYEY SILT WITH SAND AND OCCASIONAL GRAVEL (HARD)	575
25		8920	NON PLASTIC			19.5	114				34 ■		GRADES WITH LESS SAND (VERY STIFF)	570
30		8780				5.6	135				62/9" ■		GRADES WITH MORE SAND (HARD)	565
35							108				60 ■	SP	BROWNISH-GRAY FINE TO MEDIUM SAND WITH SOME SILT (VERY DENSE)	560
40													KEWANEE GROUP CARBONDALE FORMATION CHANNEL SANDSTONE DEPOSITS SANDSTONE: GRAY: FINE-TO MEDIUM-GRAINED; MICACEOUS; FRIABLE; THIN-BEDDED; WEATHERED.	555
45									100	38			FRANCIS CREEK MEMBER SILTSTONE: SANDY; GRAY; MICACEOUS; CARBONACEOUS IN ZONES; LAMINATED TO THIN-BEDDED; INTERBEDDED WITH GRAY FINE-GRAINED SANDSTONE AND CROSS-BEDDED IN ZONES; WEATHERED.	550
50														545
55									100	32				540
60													BASE OF WEATHERING AT 62.3'	535
65									100	62			TWO INTERSECTING 45° FRACTURES FROM 64.7' TO 65.0'	530
70													80° FRACTURE FROM 67.0' TO 67.6' VERTICAL FRACTURE FROM 69.8' TO 67.6'	
75													GRADES HORIZONTALLY LAMINATED BELOW 72.6'	525

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-185

LOG OF BORING MP-19
(SHEET 1 OF 3)

BORING MP-19 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									97	75
85									100	39
90										
95									100	22
100										
105									98	63
110										
115									100	63
120										
125									100	57
130										
135									100	91
140										
145									100	92
150										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		520
		515
	VERTICAL FRACTURE FROM 85.5' TO 86.0'	
	2" SIDERITE NODULE AT 89.6'	510
	SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.	505
	GRADES CARBONACEOUS BELOW 98.4'	
	COLCHESTER (NO. 2 COAL) MEMBER COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURE WITH SOME PYRITE AND CLAY.	500
	SPOON FORMATION SHALE; DARK GRAY TO BROWN; CARBONACEOUS; MICACEOUS IN ZONES; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	495
		490
	SILTSTONE; LIGHT GRAY; MICACEOUS; CARBONACEOUS; SIDERITIC; THIN-BEDDED; WELL INDURATED..	
	SHALE; BROWN; SILTY; CARBONACEOUS; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. SILTSTONE; LIGHT GREENISH-GRAY; SANDY; MICACEOUS; SIDERITIC; THIN-BEDDED; WELL INDURATED.	485
		480
	SHALE; GRAY; FINELY MICACEOUS; CARBONACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. BLACK COAL BED FROM 123.0' TO 123.6'	475
	GRADES TAN IN COLOR AND SILTY BELOW 126.4'	
	BLACK COAL BED FROM 127.8' TO 128.0'	470
	SILTSTONE; BROWN TO DARK GRAY; MICACEOUS; CARBONACEOUS; LAMINATED TO THIN-BEDDED.	
	GRADES FISSILE WITH ABUNDANT CARBONIZED PLANT FOSSILS BELOW 132.5'	465
	GRADES CALCAREOUS BELOW 139.2'	460
	MAQUOKETA GROUP FORT ATKINSON FORMATION LIMESTONE; SILTY; GRAY; FINE-TO MEDIUM-GRAINED; FOSSILIFEROUS; THIN-BEDDED; WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 4" ZONES OF CALCAREOUS SHALE SPACED 1/4" TO 10".	455
		450

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-185

LOG OF BORING MP-19
(SHEET 2 OF 3)

BORING MP-19 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155									100	89
160										
165									100	98
170										
175									98	98
180										
185										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		445
	LIMESTONE; LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED; WITH IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1/4" TO 10"; OIL-STAINED IRREGULARLY THROUGHOUT WITH OCCASIONAL PINPOINT TO 1/8" VUGS.	440
		435
		430
		425
	SCALES FORMATION SILTSTONE; CALCAREOUS; DARK GRAY; LAMINATED; FISSILE; EXTREMELY ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS; INTERBEDDED GRADATIONAL; 1/2" TO 2" ZONES OF LIGHT GRAY SILTY LIMESTONE SPACED 1/2" TO 10".	420

BORING COMPLETED AT 182.0' ON 3-26-73
WATER LEVEL NOT RECORDED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-185

LOG OF BORING MP-19
(SHEET 3 OF 3)

BORING MP-20

SURFACE ELEVATION 597.6

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
0										
							100			
5										
10							104			
15							102			
20						7.2	132			
25							129			
30							127			
35						11.3	131			
40										
45										
									100	93
50										
55										
									100	48
60										
65										
									100	94
70										
75										

BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	OL	DARK BROWN SANDY SILT WITH ORGANICS - TOPSOIL	
		EQUALITY FORMATION: LACUSTRINE DEPOSITS	
6	SM SP	LIGHT BROWN SILTY FINE SAND (LOOSE)	595
4		GRADES WITH MORE SAND (VERY LOOSE)	590
15		(MEDIUM DENSE)	585
10		(LOOSE)	580
58	ML	WEDRON FORMATION: GLACIAL TILL; REDDISH-GRAY CLAYEY SILT WITH FINE SAND (HARD)	575
46	SP	LIGHT BROWN FINE TO COARSE SAND WITH GRAVEL (DENSE)	570
100/5"		GRADES GRAY; GRADES WITH TRACES OF SILT	565
32	ML	GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND OCCASIONAL GRAVEL (VERY STIFF)	560
60		KEWANEE GROUP; CARBONDALE FORMATION; FRANCIS CREEK MEMBER; SILTSTONE; SANDY; GRAY; MICACEOUS; CARBONACEOUS IN ZONES; LAMINATED TO THIN-BEDDED; INTERBEDDED WITH GRAY FINE-GRAINED SANDSTONE AND CROSS-BEDDED IN ZONES; WEATHERED.	555
		1" SIDERITE NODULES AT 49.4' AND 49.7'	550
			545
			540
		VERTICAL FRACTURE FROM 61.6' TO 61.8'; BASE OF WEATHERING AT 62.4'	535
			530
		GRADES HORIZONTALLY LAMINATED BELOW 72.0'	525

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-186

LOG OF BORING MP-20
(SHEET 1 OF 2)

BORING MP-20 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									100	68
85									98	98
90										
95									100	67
100										
105									80	60
110										

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

520

515

510

505

500

495

SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.

COLCHESTER (NO. 2 COAL) MEMBER
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.

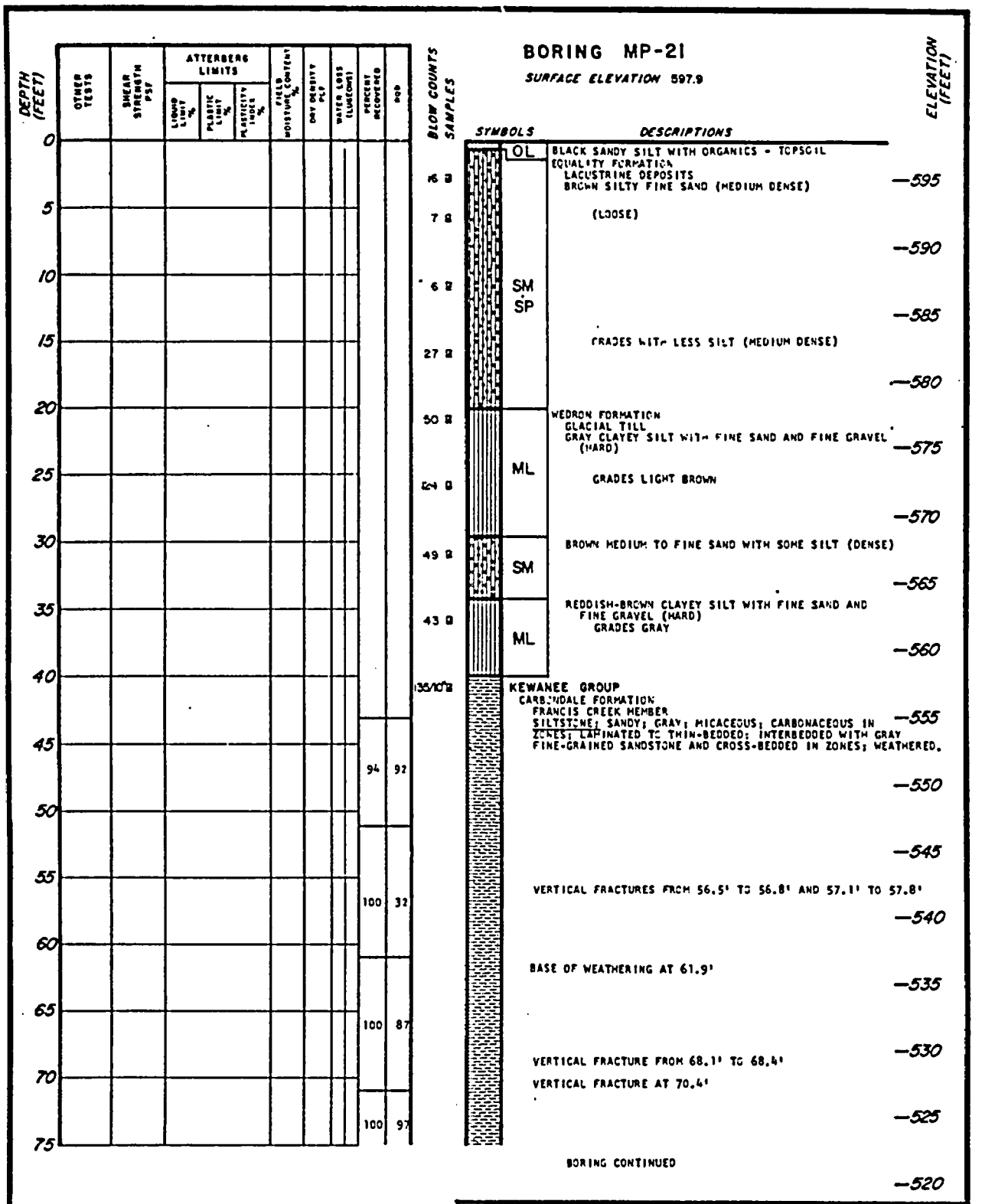
SPOON FORMATION
SHALE; GRAY; CARBONACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

BORING COMPLETED AT 107.0 FEET ON 3-27-73
WATER LEVEL RECORDED AT 3.5 FEET ON 3-27-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-186

LOG OF BORING MP-20
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-187

LOG OF BORING MP-21
(SHEET 1 OF 2)

BORING MP-21 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									100	100
90										
95									100	83
100										
105									100	67
110										

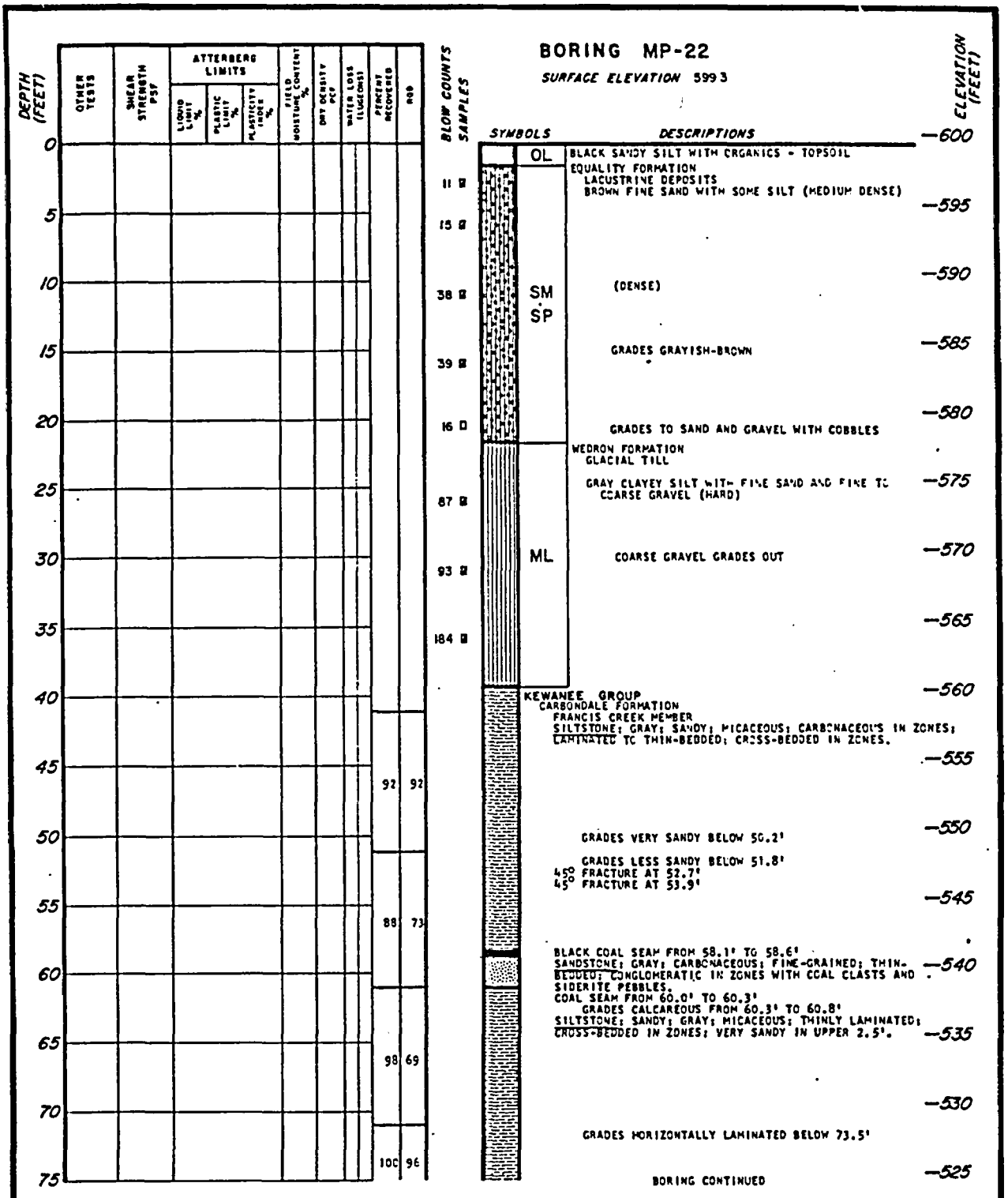
SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	30° FRACTURE AT 77.5' GRADES HORIZONTALLY LAMINATED BELOW 77.6'	—520
		—515
		—510
	SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.	—505
	COLCHESTER (NO. 2 COAL) MEMBER COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	—500
	SPOON FORMATION SHALE; CARBONACEOUS; BROWN TO GRAY; MASSIVE. HIGHLY FRACMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	—495
	GRADES SILTY BELOW 105.3'	—490

BORING COMPLETED AT 106.0 FEET ON 3-14-73
WATER LEVEL RECORDED AT 3.5 FEET ON 3-13-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-187

LOG OF BORING MP-21
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-188

LOG OF BORING MP-22
(SHEET 1 OF 2)

BORING MP-22 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									100	94
90										
95									100	97
100										
105									97	61
110										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		—525
		—520
	SHALE; SILTY; GRAY; FINELY MICACEOUS, THINLY LAMINATED; FISSILE.	—515
		—510
		—505
	GRADES CARBONACEOUS BELOW 100.6' COLCHESTER (NO. 2 COAL) MEMBER COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	—500
	SPOON FORMATION SHALE; CARBONACEOUS; BROWNISH-GRAY TO GRAY; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS TIGHT VERTICAL FRACTURES.	—495
	BORING COMPLETED AT 110.0 FEET ON 2-27-73 CASING USED TO A DEPTH OF 40.0 FEET WATER LEVEL NOT RECORDED	—490
		—485

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-188

LOG OF BORING MP-22
(SHEET 2 OF 2)

BORING MP-23

SURFACE ELEVATION 598.5

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD	BLOW COUNTS SAMPLES
0											
5											13
10											18
15											36
20											35
25											32
30											85
35											36
40											72
45											100/3"
50									80	40	
55											
60									90	56	
65											
70									93	66	
75											

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		600
OL	BLACK SANDY SILT WITH ORGANICS - TOPSOIL	
	EQUALITY FORMATION LACUSTRINE DEPOSITS LIGHT BROWN SILTY FINE SAND (MEDIUM DENSE) GRADES YELLOWISH-BROWN	595
		590
SM SP	(DENSE)	
		585
	GRADES BROWN MEDIUM TO FINE SAND WITH TRACE OF SILT	
	GRADES TO MEDIUM TO COARSE SAND WITH GRAVEL AND COBBLES	580
	WEDRON FORMATION GLACIAL TILL GRAYISH-BROWN CLAYEY SILT WITH FINE SAND AND FINE GRAVEL (HARD)	575
	LAYER OF REDDISH-BROWN SILT WITH SOME FINE SAND	
		570
ML	GRADES TO GRAYISH-BROWN CLAYEY SILT WITH FINE SAND AND GRAVEL GRADES WITH SOME GRAY MEDIUM TO FINE SILTY SAND LAYERS GRADES WITH SOME PIECES OF SANDSTONE	565
		560
	KEWANEE GROUP CARBONDALE FORMATION CHANNEL SANDSTONE DEPOSITS SANDSTONE; CARBONACEOUS; GRAY; FINE TO MEDIUM-GRAINED; SILTY; MICACEOUS; FRIABLE; THIN-BEDDED; CONGLOMERATIC IN ZONES WITH LENSES AND STRINGERS OF COAL.	555
		550
	FRANCIS CREEK MEMBER SILTSTONE; SANDY; GRAY; MICACEOUS; CARBONACEOUS; LAMINATED TO THIN-BEDDED. 30° FRACTURE AT 54.3' BLACK COAL BED FROM 55.0' TO 55.4' CLAY SEAM FROM 55.8' TO 56.0' SANDSTONE; CARBONACEOUS; GRAY; FINE TO MEDIUM-GRAINED; MICACEOUS; THIN-BEDDED; CONGLOMERATIC IN ZONES WITH CLASTS OF COAL AND PEBBLES OF SIDERITE. BLACK COAL BED FROM 56.8' TO 57.0 GRADES CALCAREOUS FROM 57.0' TO 57.3' BLACK COAL BED FROM 57.5' TO 57.8' BLACK COAL BED FROM 58.8' TO 59.4' BLACK COAL BEDS FROM 60.7' TO 60.9' AND 61.4' TO 61.6' 1" COAL SEAM AT 61.9' BLACK COAL BED FROM 63.5' TO 64.1' BLACK COAL BED FROM 64.7' TO 65.0' BLACK COAL BED FROM 66.6' TO 66.8'	545 540 535
	SILTSTONE; SANDY; GRAY; MICACEOUS; CARBONACEOUS IN ZONES; THINLY LAMINATED; WELL INDURATED; CROSS-BEDDED IN UPPER 2'. GRADES FISSILE BELOW 70.0'	530
		525

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-189

LOG OF BORING MP-23
(SHEET 1 OF 3)

BORING MP-23 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									100	87
85										
90									98	95
95										
100									100	66
105										
110									98	60
115									83	83
120										
125									95	70
130									94	63
135										
140									98	94
145										
150									100	98

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

525

VERTICAL FRACTURE FROM 76.4' TO 77.1'
VERTICAL FRACTURE FROM 77.2' TO 77.6'

520

VERTICAL FRACTURE FROM 84.7' TO 85.2'

515

510

505

SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE IN ZONES.

GRADES CARBONACEOUS BELOW 99.2'

500

COLCHESTER (NO. 2 COAL) MEMBER
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY; GRADES TO HIGHLY CARBONACEOUS SHALE IN BASAL 2".
SPOON FORMATION
SHALE; CARBONACEOUS; BROWNISH-GRAY TO BLACK; SILTY; PYRITIC; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES

495

490

SANDSTONE; SILTY; LIGHT GRAY; FINE-GRAINED; MICACEOUS; CARBONACEOUS; THIN-BEDDED; WELL INDURATED.

SHALE; SILTY; GRAY TO BROWNISH-GRAY; CARBONACEOUS; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

485

SILTSTONE; SANDY; LIGHT GREENISH-GRAY; MICACEOUS; SIDERITIC; CARBONACEOUS; THIN-BEDDED; WELL INDURATED.

SANDSTONE; SILTY; LIGHT GREENISH-GRAY; FINE-GRAINED; MICACEOUS; SIDERITIC; CARBONACEOUS; THIN-BEDDED; WELL INDURATED; GRADES INTERBEDDED WITH GREEN SILTSTONE LAYERS BELOW 118.7'.

480

SHALE; HIGHLY CARBONACEOUS; GRAY TO BLACK; MASSIVE; HIGHLY FRACTURED; PYRITIC IN ZONES.

475

GRADES WELL INDURATED AND SIDERITIC FROM 125.8' TO 127.0'

GRADES SIDERITIC FROM 127.7' TO 128.7'

470

SILTSTONE; BROWNISH-GRAY; MICACEOUS; CARBONACEOUS; THIN-BEDDED; HIGHLY FRACTURED.

GRADES TO DARK GRAY, SANDY, AND FISSILE, WITH ABUNDANT CARBONIZED PLANT FOSSILS BELOW 134.0'

465

460

GRADES CALCAREOUS BELOW 140.9'
MAQUOKETA GROUP
FORT ATKINSON FORMATION
LIMESTONE; SILTY; GRAY; FINE TO MEDIUM-GRAINED; FOSSILIFEROUS; THIN-BEDDED WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 4" ZONES OF CALCAREOUS SHALE SPACED 1/4" TO 10".
OIL-STAINED ZONE FROM 142.7' TO 142.8'

455

450

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-189

LOG OF BORING MP-23
(SHEET 2 OF 3)

BORING MP-23 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155										
160									100	52
165										
170										

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

450

445

OIL-STAINED FROM 157.0' TO 157.5'
VERTICAL FRACTURE FROM 159.7' TO 159.9'. OIL-STAINED ZONE OF HEAVEY OIL STAINING FROM 159.7' TO 160.6'
VERTICAL FRACTURE FROM 160.3' TO 161.1' OIL-STAINED
VERTICAL FRACTURE FROM 161.4' TO 162.4'

440

LIMESTONE; LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED; WITH IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1/4" TO 10"; OIL-STAINED THROUGHOUT.
VERTICAL FRACTURE FROM 163.6' TO 164.4'
VERTICAL FRACTURE FROM 164.8' TO 165.8'

435

430

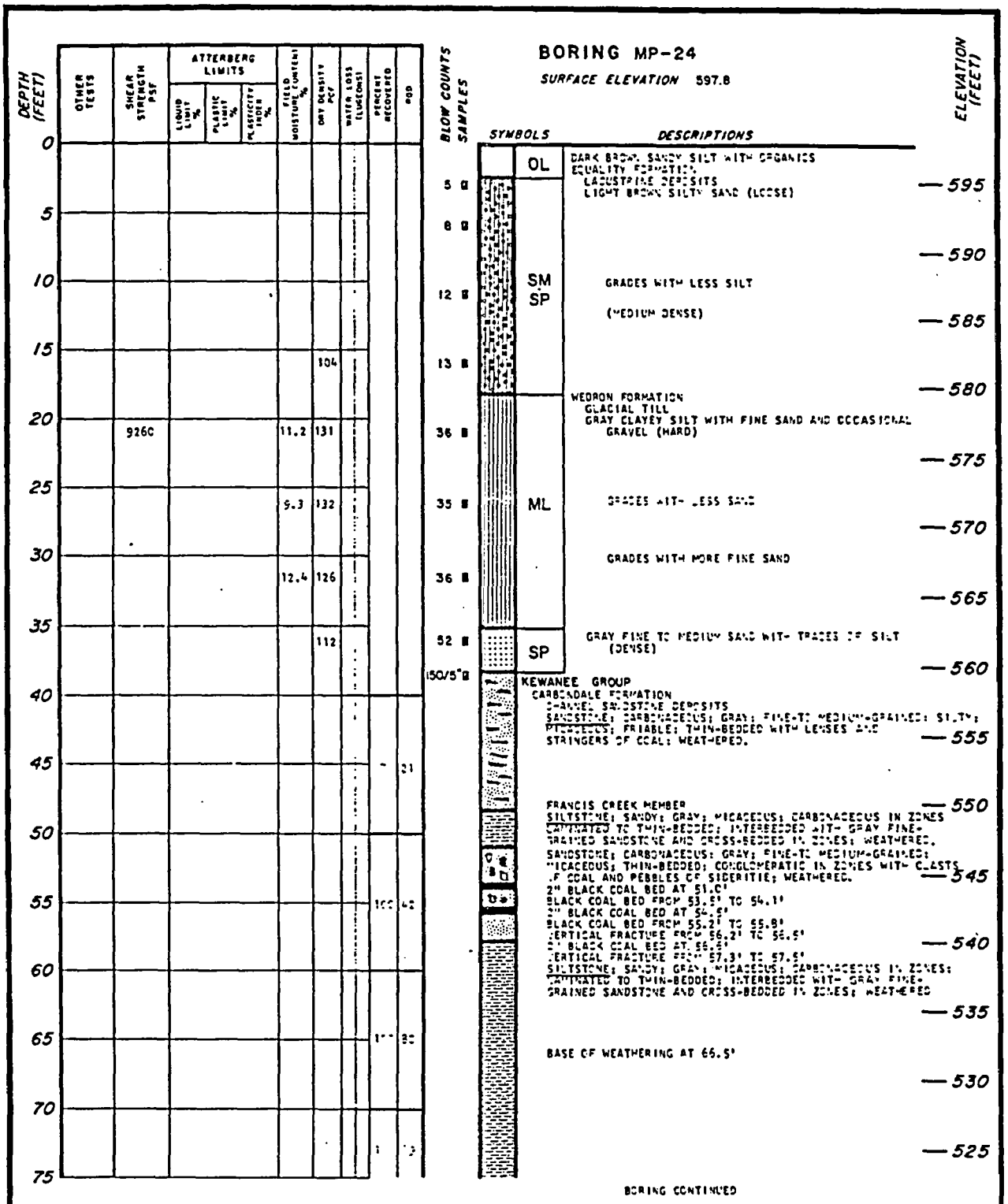
BORING COMPLETED AT 167.0 FEET ON 2-20-73
CASING USED TO A DEPTH OF 22.0 FEET
WATER LEVEL RECORDED AT 5.5 FEET ON 2-19-73

425

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-189

LOG OF BORING MP-23
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-190

LOG OF BORING MP-24
(SHEET 1 OF 3)

BORING MP-24 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									100	94
90										
95									100	72
100										
105									100	98
110									100	86
115										
120									100	73
125										
130									100	22
135										
140									100	71
145										
150										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	GRADES HORIZONTALLY LAMINATED BELOW 75.2' 80° FRACTURE FROM 76.1' TO 76.4' 45° FRACTURE FROM 78.8' TO 79.1'	520
		515
		510
	SHALE: SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSLE.	505
	GRADES CARBONACEOUS BELOW 96.7' COLCHESTER (NO. 2 COAL) MEMBER COAL: BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	500
	SPOON FORMATION SHALE: CARBONACEOUS; DARK GRAY TO LIGHT BROWN; SILTY AND MICACEOUS IN ZONES; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	495
		490
	SILTSTONE: LIGHT GRAY; MICACEOUS; CARBONACEOUS; THIN-BEDDED; WELL INDURATED.	
	SHALE: DARK GRAY TO BROWN; CARBONACEOUS; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	485
	SILTSTONE: SANDY; LIGHT GREENISH-GRAY; MICACEOUS; CARBONACEOUS; SIDERITIC; THIN-BEDDED.	480
	SHALE: BLACK TO BROWN; CARBONACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	475
	1" COAL BED AT 124.5'	
	SHALE: SILTY; BROWN; CARBONACEOUS; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	470
	SILTSTONE: DARK GRAY; CARBONACEOUS; MICACEOUS; LAMINATED TO THIN-BEDDED; FISSILE WITH ABUNDANT CARBONIZED PLANT FOSSILS.	465
	MAQUOKETA GROUP FORT ATKINSON FORMATION LIMESTONE: SILTY; GRAY; FINE-TO MEDIUM-GRAINED; FOSSILIFEROUS; THIN-BEDDED; WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 8" ZONES OF CALCAREOUS SHALE SPACED 1/4" TO 10"; OIL-STAINED IN UPPER 5". 1/2" OPEN VUG AT 140.0'	460
		455
		450

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-190

LOG OF BORING MP-24
(SHEET 2 OF 3)

BORING MP-24 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155										
160										

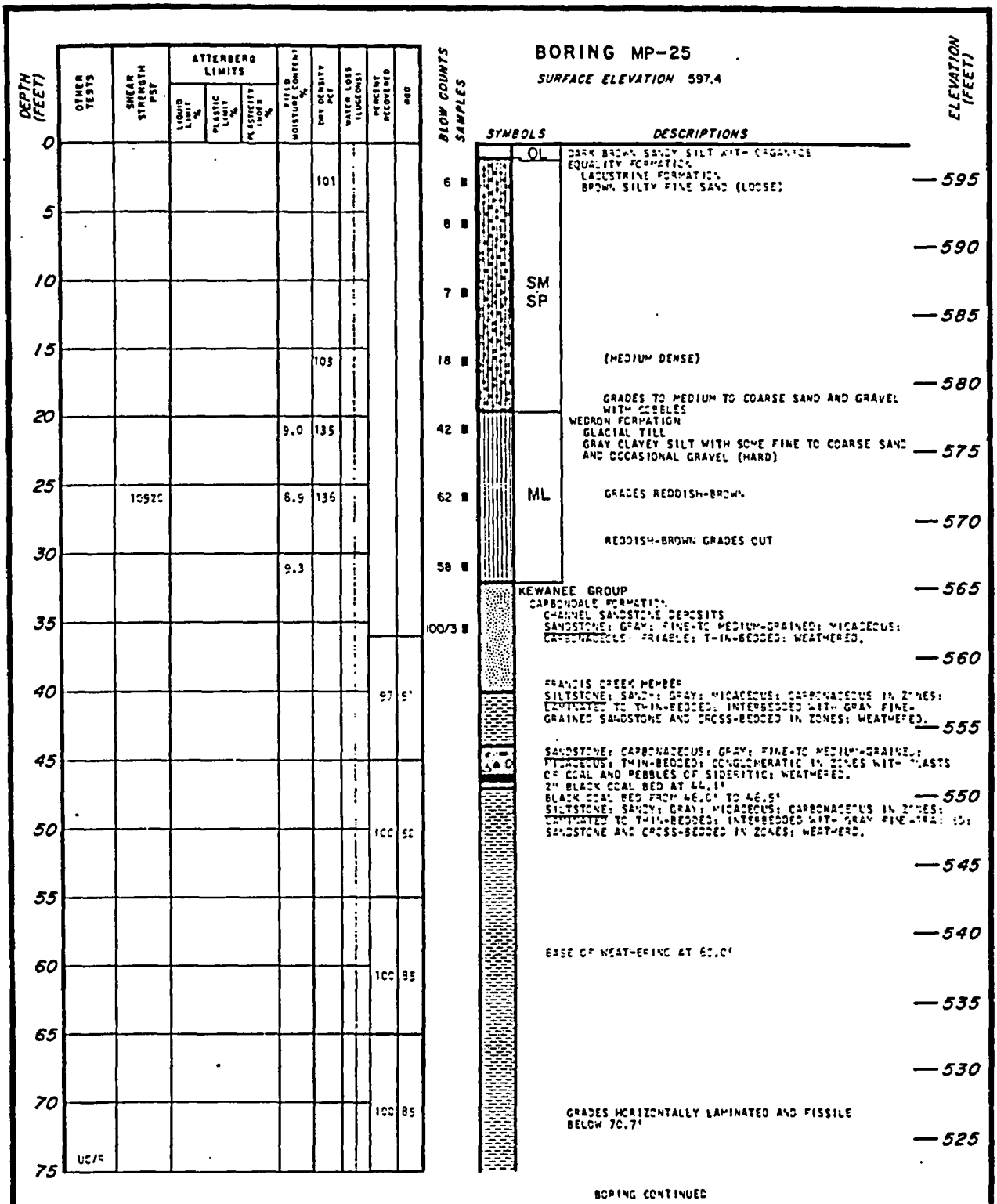
SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		445
	LIMESTONE: LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED; WITH IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1/4" TO 1CM; OIL-STAINED THROUGHOUT.	440

BORING COMPLETED AT 157.0 FEET ON 3-23-73
WATER LEVEL NOT RECORDED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-190

LOG OF BORING MP-24
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-191

LOG OF BORING MP-25
(SHEET 1 OF 3)

BORING MP-25 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									100	96
85										
90									100	98
95										
100									60	17
105										
110									100	80
115										
120									95	75
125										
130									100	80
135										
140									100	96
145										
150									100	96

SYMBOLS

DESCRIPTIONS

SHALE: SILTY: GRAY: FINELY MICACEOUS: THINLY LAMINATED: FISSILE.

COLCHESTER (NO. 2 COAL) MEMBER
COAL: BLACK: THIN-BEDDED: NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.

SPOON FORMATION
SHALE: DARK GRAY TO BROWN: CARBONACEOUS: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

GRADES VERY SILTY BELOW 106.3'

SILTSTONE: SANDY: LIGHT GRAY: MICACEOUS: SIDERITIC: THIN-BEDDED: WELL INDURATED.

SHALE: DARK GRAY TO LIGHT BROWN: SILTY: CARBONACEOUS: MICACEOUS: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

SILTSTONE: SANDY: LIGHT GREENISH-GRAY: MICACEOUS: CARBONACEOUS AND SIDERITIC IN ZONES: THIN-BEDDED: WELL INDURATED.
GRADES INTERBEDDED WITH LIGHT-GREEN FINE-GRAINED SANDSTONE LAYERS BELOW 116.6'
TOP FRACTURE FROM 118.3' TO 118.5'

SHALE: DARK GRAY TO BROWNISH-GRAY: CARBONACEOUS: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.
BLACK COAL BED FROM 120.8' TO 121.1'
1" BLACK COAL SEAM AT 121.6'
BLACK COAL BED FROM 122.0' TO 122.8'
SHALE: SILTY: BROWN: CARBONACEOUS: MICACEOUS: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

1" COAL SEAM AT 127.0'

SILTSTONE: SANDY: BROWN TO DARK GRAY: CARBONACEOUS: MICACEOUS: LAMINATED TO THIN-BEDDED.

GRADES FISSILE WITH ABUNDANT CARBONIZED PLANT FOSSILS BELOW 132.2'

MAQUOKETA GROUP
FORT ATKINSON FORMATION
LIMESTONE: SILTY: GRAY: FINE-TO MEDIUM-GRAINED: FOSSILIFEROUS: THIN-BEDDED: WITH NUMEROUS: GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 4" ZONES OF CALCAREOUS SHALE SPACE 1/4" TO 10".

OIL-STAINED FROM 145.6' TO 145.8'

ELEVATION (FEET): 520, 515, 510, 505, 500, 495, 490, 485, 480, 475, 470, 465, 460, 455, 450

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-191

LOG OF BORING MP-25
(SHEET 2 OF 3)

BORING MP-25 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LOG/CORE)	PERCENT RECOVERED	RQD
150										
155										
160									100	100
165										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		445
		440
	LIMESTONE: LIGHT BUFF: COARSE-GRAINED: CALCARENITIC: FOSSILIFEROUS: THIN-BEDDED: WITH IRREGULAR HAIRLINE: SHALE PARTINGS AND STYLOLITES SPACE 1/4" TO 10".	435

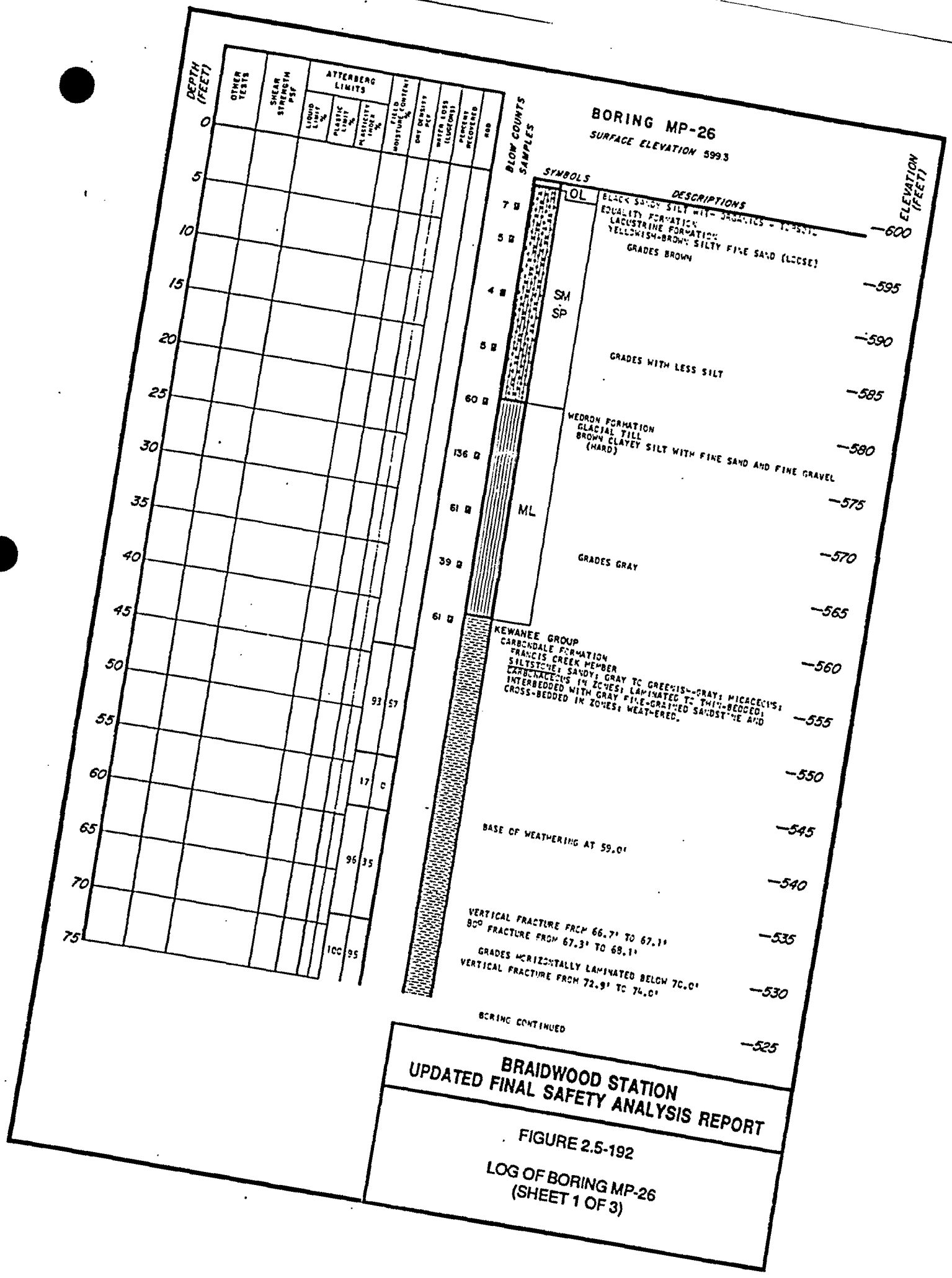
CIC-STAINED FROM 162.2' TO 163.0'

BORING COMPLETED AT 165.0 FEET ON 4-2-73
WATER LEVEL RECORDED AT 2.5 FEET ON 3-28-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-191

LOG OF BORING MP-25
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-192

LOG OF BORING MP-26
(SHEET 1 OF 3)

BORING MP-26 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									92	80
85										
90									100	95
95										
100									65	7
105									77	37
110										
115									100	85
120										
125									100	81
130										
135									98	71
140										
145									97	91
150										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		525
	70° TO VERTICAL FRACTURES FROM 79.0' TO 79.3'	520
	30° FRACTURE AT 83.6'	
		515
	80° FRACTURE FROM 87.2' TO 87.6'	
		510
	VERTICAL FRACTURE FROM 91.5' TO 91.6'	
	SHALE: SILTY: GRAY: FINELY MICACEOUS: THINLY LAMINATED FISSILE.	505
	30° FRACTURE AT 96.4' 70° TO VERTICAL FRACTURE FROM 96.6' TO 97.0'	
	COLCHESTER (NO 2 COAL) MEMBER	
	COAL: BLACK: THIN-BEDDED: NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	500
	SPOON FORMATION SHALE: CARBONACEOUS: DARK GRAY TO BROWN: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	495
	GRADES LIGHT GRAY AND SILTY BELOW 108.5'	490
	SILTSTONE: SANDY: LIGHT GRAY: MICACEOUS: CARBONACEOUS: SIDERITIC: THIN-BEDDED: WELL INDURATED. SHALE: CARBONACEOUS: DARK BROWN TO BROWNISH-GRAY: SILTY: MICACEOUS IN ZONES: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	485
	SILTSTONE: SANDY: LIGHT GREENISH-GRAY: MICACEOUS: CARBONACEOUS: SIDERITIC: THIN-BEDDED: WELL INDURATED.	480
	SANDSTONE: LIGHT GREENISH-GRAY: SILTY: FINE-GRAINED: MICACEOUS: CARBONACEOUS: SIDERITIC: THIN-BEDDED: INTERBEDDED WITH GREEN SILTSTONE LAYERS: WELL INDURATED.	
	SHALE: BROWN: SILTY: CARBONACEOUS: MICACEOUS: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. 1/2" COAL SEAM AT 123.7' 1" COAL SEAM AT 123.9'	475
	COAL: BLACK: THIN-BEDDED: NUMEROUS TIGHT VERTICAL FRACTURE WITH SOME PYRITE AND CLAY. SHALE: SILTY: BROWNISH-GRAY TO TAN: CARBONACEOUS: MICACEOUS: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. SILTSTONE LAYER FROM 127.8' TO 128.3'	470
	SILTSTONE: SANDY: DARK GRAY: MICACEOUS: CARBONACEOUS: LAMINATED TO THIN-BEDDED.	465
	GRADES FISSILE WITH ABUNDANT CARBONIZED PLANT FOSSILS BELOW 136.6'	
	MAQUOKETA GROUP FORT ATKINSON FORMATION LIMESTONE: SILTY: GRAY: FINE TO MEDIUM-GRAINED: FOSSILIFEROUS: THIN-BEDDED: WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 8" ZONES OF CALCAREOUS SHALE SPACED 1/4" TO 10". 1/4" DOLOMITE LINED OPEN VUG AT 141.0'	460 455
		450

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-192

LOG OF BORING MP-26
(SHEET 2 OF 3)

BORING MP-26 CONTINUED

SURFACE ELEVATION

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155									100	93
160										
165									100	98
170										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		—450
		—445
		—440
	LIMESTONE: LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED WITH NUMEROUS IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1/4" TO 10"; OIL-STAINED IN UPPER 3'.	—435
	70° TO 80° FRACTURE FROM 166.4' TO 167.3'	
	BORING COMPLETED AT 169.0 FEET ON 3-13-73 WATER LEVEL RECORDED AT 3.0 FEET ON 3-8-73	—430

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-192

LOG OF BORING MP-26
(SHEET 3 OF 3)

BORING MP-27

SURFACE ELEVATION 6030

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LOCCONS)	PERCENT RECOVERED	RQD	BLOW COUNTS SAMPLES
0							95*				
							99*				4
5							93*				7
							103*				
10							1 5*				21
							1 8*				
15							102*				23
							98*				
							101*				
20											13
25											34
30											80
35											100
40											152/10
45											
50									100	92	
55											
60									100	63	
65											
70									93	77	
75											

* DENSITY TEST DATA TAKEN FROM ADJACENT OSTERBERG SAMPLED BORING

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
OL	BLACK SANDY SILT WITH ORGANICS - TOPSOIL	
	EQUALITY FORMATION	
	LACUSTRINE DEPOSITS	600
	YELLOWISH-BROWN SILTY FINE SAND (LOOSE)	
	GRADING BROWN WITH LESS SILT	
		595
	(MEDIUM DENSE)	
SM SP		590
		585
	GRADES TO GRAYISH-BROWN FINE SAND WITH SOME SILT	
		580
	WEDRON FORMATION	
	GLACIAL TILL	
	GRAY SILT WITH FINE SAND	
		575
ML	GRADES TO GRAY CLAYEY SILT WITH FINE GRAVEL AND SAND (HARD)	
		570
	GRADES WITH MEDIUM TO COARSE SAND AND FINE GRAVEL LAYERS	565
	KEWANEE GROUP	
	CARBONDALE FORMATION	
	CHANNEL SANDSTONE DEPOSITS	560
	SANDSTONE: GRAY; FINE-TO MEDIUM-GRAINED, MICACEOUS; CARBONACEOUS IN ZONES; FRIABLE; THIN BEDDED.	
	FRANCIS CREEK MEMBER	
	SILTSTONE: SHALEY; GRAY; MISACEOUS; THIN BEDDED; CROSS-BEDDED IN ZONES.	555
	30° FRACTURE AT 49.5'	
	45° FRACTURES AT 49.9' AND 50.0'	
	30° FRACTURE AT 53.2'	550
		545
	GRADES SANDY BELOW 59.9'	
	60° FRACTURE FROM 61.7' TO 61.9'	
	SANDSTONE LAYER FROM 63.3' TO 68.3'	540
	SANDSTONE LAYER FROM 67.9' TO 68.3'	535
	SANDSTONE LAYER FROM 69.1' TO 69.3'	
	COAL LAYER FROM 69.8' TO 70.0'	
	SANDSTONE: CARBONACEOUS; GRAY; FINE-TO-MEDIUM-GRAINED; MICACEOUS; THIN-BEDDED; CONGLOMERATIC IN ZONES WITH LENSES AND STRINGERS OF COAL AND PEBBLES OF SIDERITE.	530

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-193

LOG OF BORING MP-27
(SHEET 1 OF 3)

BORING MP-27 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									100	50
85										
90									100	13
95										
100									100	27
105									33	0
110									100	100
115										
120									100	58
125										
130									100	63
135										
140									100	77
145										
150									100	92

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	GRADES HIGHLY CALCAREOUS BELOW 75.0'	
	CONGLOMERATIC NATURE GRADES OUT BELOW 77.0'	—525
	SILTSTONE: SANDY; GRAY; MICACEOUS; THINLY LAMINATED; FISSILE.	
	60° FRACTURE FROM 82.5' TO 82.8'	—520
	80° FRACTURE FROM 84.0' TO 84.3'	
		—515
	VERTICAL FRACTURE FROM 93.4' TO 93.7'	—510
	VERTICAL FRACTURE FROM 94.2' TO 94.5'	
	SHALE: SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.	—505
	30° FRACTURE AT 102.8'	—500
	GRADES HIGHLY CARBONACEOUS BELOW 105.0'	
	COLCHESTER (NO. 2 COAL) MEMBER	
	COAL: BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	—495
	SPOON FORMATION:	
	SHALE: CARBONACEOUS; BROWNISH-GRAY TO BLACK; MICACEOUS; MASSIVE HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	—490
	SILTSTONE: SANDY; LIGHT GRAY; MICACEOUS; CARBONACEOUS; THIN-BEDDED; WELL INDURATED. 60° FRACTURE FROM 116.5' TO 116.9'	
	SHALE: SILTY; BROWN TO GRAY; CARBONACEOUS; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	—485
	SILTSTONE: SANDY; LIGHT GREENISH-GRAY; MICACEOUS; SIDERITIC; CARBONACEOUS; THIN-BEDDED; WELL INDURATED.	—480
	SANDSTONE: SILTY; LIGHT GREENISH-GRAY; FINE-GRAINED; MICACEOUS; SIDERITIC; CARBONACEOUS; THIN BEDDED; WELL INDURATED.	
	GRADES INTERBEDDED WITH GREEN SILTSTONE LAYERS BELOW 124.3'	
	GRADES HIGHLY SILTY BELOW 126.5'	—475
	SHALE: HIGHLY CARBONACEOUS; GRAY TO BLACK; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	
	BLACK COAL BED FROM 130.0' TO 130.6'	
		—470
	SILTSTONE: SANDY; GRAY TO DARK GRAY; MICACEOUS; CARBONACEOUS; LAMINATED TO THIN-BEDDED; ABUNDANT CARBONIZED PLANT FOSSILS; FISSILE. 60° TO VERTICAL FRACTURE FROM 135.3' TO 135.7'	
		—465
		—460
	MAQUOKETA GROUP	
	FORT ATKINSON FORMATION	—455
	LIMESTONE: SILTY; GRAY; FINE- TO MEDIUM-GRAINED; FOSSILIFEROUS; THIN BEDDED WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 4" ZONES OF CALCAREOUS SHALE SPACED 1/4" TO 10".	

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-193

LOG OF BORING MP-27
(SHEET 2 OF 3)

BORING MP-27 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155										
160									100	98
165										
170									100	93
175										
180									98	98
185										

SYMBOLS

DESCRIPTIONS

OIL STAINED FROM 147.1' TO 147.2'
VERTICAL FRACTURE, OIL STAINED FROM 147.7' TO 148.6'

LIMESTONE; LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED WITH IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1/4" TO 10".

BORING COMPLETED AT 185.0 FEET ON 2-10-73
CASING USED TO A DEPTH OF 26.0 FEET
WATER LEVEL RECORDED AT 8.0 FEET ON 2-7-73

ELEVATION (FEET): 450, 445, 440, 435, 430, 425, 420, 415

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-193

LOG OF BORING MP-27
(SHEET 3 OF 3)

BORING MP-28

SURFACE ELEVATION 602.2

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD	BLOW COUNTS SAMPLES
0											
	SIEVE						96				4
5	SIEVE										10
10	SIEVE						109				16
15	SIEVE						105				22
20	SIEVE						108				83
25											58
30						13.9	118				151
35		9000	15.5	11.6	3.9	8.4	135				54
40											
45									93	60	
50											
55									100	100	
60											
65									100	92	
70											
75									100	54	

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
OL	DARK BROWN SANDY SILT WITH ORGANICS TOPSOIL	
	EQUALITY FORMATION LACUSTRINE DEPOSITS BROWN SILTY FINE SAND (LOOSE)	600
		595
SM SP	GRADES TO LIGHT BROWNISH-GRAY FINE SAND WITH SOME SILT (MEDIUM DENSE)	590
	GRADES WITH LESS SILT	585
	GRADES TO GRAY FINE TO MEDIUM SAND WITH SOME SILT AND OCCASIONAL GRAVEL	580
	WEDRON FORMATION GLACIAL TILL BROWNISH-GRAY CLAYEY SILT WITH FINE SAND AND FINE GRAVEL (HARD)	575
ML		570
		565
	KEWANEE GROUP CARBONDALE FORMATION CHANNEL SANDSTONE DEPOSITS SANDSTONE: GRAY; FINE-TO MEDIUM-GRAINED, MICACEOUS; THIN BEDDED; FRIABLE; CONGLOMERATIC IN ZONES WITH STRINGERS OF COAL.	560
	FRANCIS CREEK MEMBER SILTSTONE: SANDY; GRAY; MICACEOUS; LAMINATED; CROSS-BEDDED IN ZONES.	555
	45° FRACTURE AT 54.2' 30° FRACTURE AT 54.9'	550
	45° FRACTURE AT 55.6'	
	VERTICAL FRACTURE 58.4' TO 58.6'	545
	45° FRACTURE AT 61.8'	540
	GRADES LESS SANDY AND MORE CLAYEY BELOW 63.5'	
		535
	45° FRACTURE AT 69.6'	
	SANDSTONE: CONGLOMERATIC; GRAY; FINE TO MEDIUM-GRAINED; MICACEOUS; THIN-BEDDED; WITH STRINGERS OF COAL AND SIDERITE PEBBLES IN THE TOP 2".	530

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-194

LOG OF BORING MP-28
(SHEET 1 OF 3)

BORING MP-28 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									100	100
90										
95									100	100
100										
105									68	32
110										
115									92	83
120										
125									100	69
130										
135									100	76
140										
145									100	92
150										

SYMBOLS | DESCRIPTIONS | ELEVATION (FEET)

2" COAL SEAM AT 77.3' — 525

2" COAL SEAM AT 79.5'
SIDERITE PEBBLE CONGLOMERATE BED FROM 79.7' TO 80.1'
SHALE: SILTY: GRAY: MICACEOUS: CARBONACEOUS: THIN BEDDED
TWO 1" SIDERITE CONCRETIONS AT 81.0'.
SILTSTONE: SANDY: GRAY: MICACEOUS: THINLY LAMINATED — 520
30° FRACTURE AT 81.2'

— 515

50° FRACTURE AT 89.8'

— 510

SHALE: SILTY: GRAY: FINELY MICACEOUS: THINLY LAMINATED: FISSILE.

— 505

45° FRACTURE AT 106.4'
1" PEBBLE SEAM AT 101.7'
1" PEBBLE SEAM AT 104.3'
GRADES CARBONACEOUS AT 104.8' — 500

COLCHESTER (NO. 2 COAL) MEMBER
COAL: BLACK: THIN-BEDDED: NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY. — 495
SHALE: HIGHLY CARBONACEOUS: GREYISH-BLACK: MASSIVE: HIGHLY FRACTURED.

SHALE: SILTY: BROWNISH-GRAY: CARBONACEOUS: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.
1" COAL SEAM AT 113.0' — 490

SILTSTONE: SANDY: LIGHT BROWNISH-GRAY: CARBONACEOUS: MASSIVE: HIGHLY FRACTURED.
SANDSTONE: SILTY: LIGHT GREENISH-GRAY: FINE-GRAINED: MICACEOUS: THIN-BEDDED. — 485
SILTSTONE: BROWNISH-GRAY: CARBONACEOUS: MICACEOUS: MASSIVE.
1" COAL SEAM AT 119.7'
45° FRACTURE AT 121.6'
SANDSTONE: SILTY: LIGHT GREENISH-GRAY: MICACEOUS: THIN-BEDDED TO LAMINATED: OIL-STAINED IN ZONES. — 480

GRADES INTERLAMINATED WITH GREENISH-GRAY SILTSTONE BELOW 126.5'
— 475
GRADES SHALEY AND CARBONACEOUS BELOW 128.2'
SHALE: HIGHLY CARBONACEOUS: BROWNISH-BLACK: THIN BEDDED: HIGHLY FRACTURED.

SILTSTONE: SHALEY: DARK GRAY: CARBONACEOUS: THIN-BEDDED.
SHALE: HIGHLY CARBONACEOUS: BROWNISH-BLACK: THIN-BEDDED TO MASSIVE. — 470
SILTSTONE: SANDY: BROWN: CARBONACEOUS: MICACEOUS: THINLY LAMINATED TO LAMINATED.

GRADES DARK GRAY TO BLACK WITH ABUNDANT CARBONIZED PLANT FOSSILS BELOW 138.3' — 465

GRADES INTERBEDDED WITH SANDSTONE LAYERS BELOW 141.0'
— 460
1" PYRITE LINED OPEN VUGS AT 144.8' AND 145.0'

GRADES CONGLOMERATIC BELOW 146.6'
GRADES CALCAREOUS BELOW 147.1' — 455
MAQUOKETA GROUP
FORT ATKINSON FORMATION
LIMESTONE: SILTY: GRAY: FINE-TO MEDIUM-GRAINED: FOSSILIFEROUS:

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-194

LOG OF BORING MP-28
(SHEET 2 OF 3)

BORING MP-28 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155									99	81
160										
165									98	98
170										
175									99	97
180										
185									100	100
190										
195										

SYMBOLS

DESCRIPTIONS

THIN-BEDDED WITH NUMEROUS, GRADATIONAL, AND IRREGULAR [illegible] ZONES OF [illegible] SHALE SPACED [illegible]
[illegible] FRACTURES AT 145.2' AND 145.5'
[illegible] FRACTURE AT 145.7'
[illegible] FRACTURE AT 146.8'

1/2" DOLOMITE LINED OPEN VUG AT 175.[illegible]; STAINED
3" DOLOMITE AND PYRITE LINED OPEN VUG AT 177.2'

LIMESTONE: LIGHT BUFF; COARSE-GRAINED; [illegible]; THIN-BEDDED; [illegible] GREEN AND GRAY SHALE PARTINGS AND STYLOLITES SPACED [illegible] 175.3'
HIGH ANGLE FRACTURE ZONE FROM 176.8' TO 177.9'
[illegible] FRACTURE FROM 178.2' TO 178.6'
VERTICAL FRACTURE FROM 180.4' TO 181.0'
ZONE OF [illegible]IZED STYLOLITES FROM 181.4' TO [illegible]
1" DOLOMITE LINED OPEN VUG AT 181.5'

SCALES FORMATION
SILTSTONE: DARK GREY; [illegible]; LAMINATED; EXTREMELY [illegible] PARTINGS IN THE [illegible] OF EXTREMELY INTERBEDDED GRADATIONAL 1/2" TO [illegible] ZONES OF LIGHT GREY SILTY LIMESTONE SPACED [illegible] TO [illegible]

BORING COMPLETED AT 190.5 FEET ON 1-25-73
CASING USED TO A DEPTH OF 32.0 FEET
WATER LEVEL RECORDED AT 9.5 FEET ON 1-23-73

ELEVATION (FEET): 450, 445, 440, 435, 430, 425, 420, 415, 410

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-194

LOG OF BORING MP-28
(SHEET 3 OF 3)

BORING MP-29

SURFACE ELEVATION 601.0

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
0							94			
5										
10										
15							103			
20							122			
25		9400				9.6	133			
30	RES.					11.7	127			
35										
40										
45									99	39
50										
55									100	40
60										
65									100	66
70										
75									92	49

BLOW COUNTS / SAMPLES: 4, 10, 8 D, 29, 29, 44, 42, 27, 73

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
OL	DARK BROWN SANDY SILT WITH ORGANICS - TOPSOIL EQUALITY FORMATION LACUSTRINE DEPOSITS YELLOW-BROWN SILTY FINE SAND (LOOSE)	600
	GRADES BROWN	595
SM SP	(MEDIUM DENSE) GRADES WITH LESS SILT	590
		585
	GRADES TO MEDIUM SAND WITH FINE GRAVEL	580
	WEDRON FORMATION GLACIAL TILL GRAY CLAYEY SILT WITH FINE SAND AND FINE GRAVEL (HARD)	575
ML		570
	GRADES WITH PIECES OF SANDSTONE	565
	KEWANEE GROUP CARBONDALE FORMATION CHANNEL SANDSTONE DEPOSITS SANDSTONE: GRAY: FINE-TO-MEDIUM-GRAINED: MICACEOUS: THIN-BEDDED TO BEDDED: FRIABLE. GRADES INTERBEDDED WITH 1/2" TO 1" SILTSTONE LENSES SPACED 1/4" TO 4" BELOW 42.3'	560
	SANDSTONE: CARBONACEOUS: GRAY: FINE-TO-MEDIUM-GRAINED: MICACEOUS: FRIABLE: THIN-BEDDED WITH STRINGERS OF COAL. FRANCIS CREEK MEMBER SILTSTONE: SANDY: GRAY: MICACEOUS: CARBONACEOUS: LAMINATED: CROSS-BEDDED AND MICROFAULTED IN ZONES. 1" GRAVEL LAYER AT 50.6' 1" GRAVEL LAYER AT 50.9' 2" GRAVEL LAYER AT 51.2'	555 550
	80° FRACTURE FROM 55.6' TO 55.9' 60° FRACTURE AT 56.2'	545
		540
	2" SIDERITE NODULE AT 64.2' SANDSTONE LAYER FROM 64.3' TO 64.7' SANDSTONE: CONGLOMERATIC: GRAY: FINE-GRAINED: MICACEOUS: CALCAREOUS: THIN-BEDDED: WITH CLASTS OF COAL AND PEBBLES OF SIDERITE. SHALE: CARBONACEOUS: GRAY TO BLACK: MICACEOUS: THIN-BEDDED TO BEDDED. HIGHLY FRACTURED. COAL SEAM FROM 56.2' TO 56.4' SANDSTONE: CALCAREOUS: GRAY: FINE-GRAINED: MICACEOUS: THIN-BEDDED TO BEDDED WITH CLASTS AND STRINGERS OF COAL AND SIDERITE: CONGLOMERATIC IN UPPER 1.5'. GRADES NON-CALCAREOUS BELOW 71.2' COAL: BLACK: THIN-BEDDED: NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME CLAY.	535 530

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-195

LOG OF BORING MP-29
(SHEET 1 OF 3)

BORING MP-29 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									100	100
90										
95									100	93
100										
105									70	25
110										
115									100	100
120										
125									95	64
130										
135									100	42
140										
145									100	77
150										

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

SANDSTONE: CONGLOMERATIC; GRAY; FINE-GRAINED; [illegible] OF COAL AND PEBBLES OF SIDERITE; MASSIVE; THIN-BEDDED.
SHALE: SILTY; GRAY; MICACEOUS; LAMINATED TO THIN BEDDED
SILTSTONE: SANDY; GRAY; MICACEOUS; THINLY LAMINATED

—525

VERTICAL FRACTURE FROM 80.0' TO 80.2'

—520

—515

SHALE: SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED

—510

—505

VERTICAL FRACTURE FROM 99.9' TO 100.0'

—500

COLCHESTER (NO. 2 COAL) MEMBER
COAL: BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.
CLAY SEAM FROM 105.9' TO 106.2'
SPOON FORMATION
SHALE: CARBONACEOUS; BROWNISH-GRAY; SILTY; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

—495

2 1/2" HIGHLY CARBONACEOUS ZONE AT 110.0'

—490

1" COAL SEAM AT 115.9'
GRADES VERY SILTY BELOW 116.0'

—485

SILTSTONE: SANDY; LIGHT GREENISH-GRAY; MICACEOUS, THIN-BEDDED, WELL INDURATED.

—480

SANDSTONE: SILTY; LIGHT GREENISH-GRAY; MICACEOUS; THIN-BEDDED.

SHALE: CARBONACEOUS; BROWNISH-GRAY TO BLACK; SILTY; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES
1" COAL SEAM AT 126.1'
1" COAL SEAM AT 127.7'
4" COAL SEAM FROM 128.3' TO 128.6'
4" SILTSTONE SEAM FROM 129.9' TO 130.2'

—475

3" COAL SEAM FROM 132.3' TO 132.5'

—470

SILTSTONE: SANDY; BROWNISH-GRAY TO BLACK; CARBONACEOUS, MICACEOUS, THIN-BEDDED.
VERTICAL FRACTURE FROM 135.4' TO 135.5'

—465

GRADES HIGHLY CARBONACEOUS AND FISSIL WITH ABUNDANT CARBONIZED PLANT FOSSILS BELOW 138.5'

—460

MAQUOKETA GROUP
FORT ATKINSON FORMATION
LIMESTONE: SILTY; GRAY; FINE-TO-MEDIUM-GRAINED; FOSSILIFEROUS; THIN-BEDDED; WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 5" ZONES OF CARBONACEOUS SHALE SPACED 1/4" TO 6"

—455

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-195

LOG OF BORING MP-29
(SHEET 2 OF 3)

BORING MP-29 CONTINUED

SURFACE ELEVATION

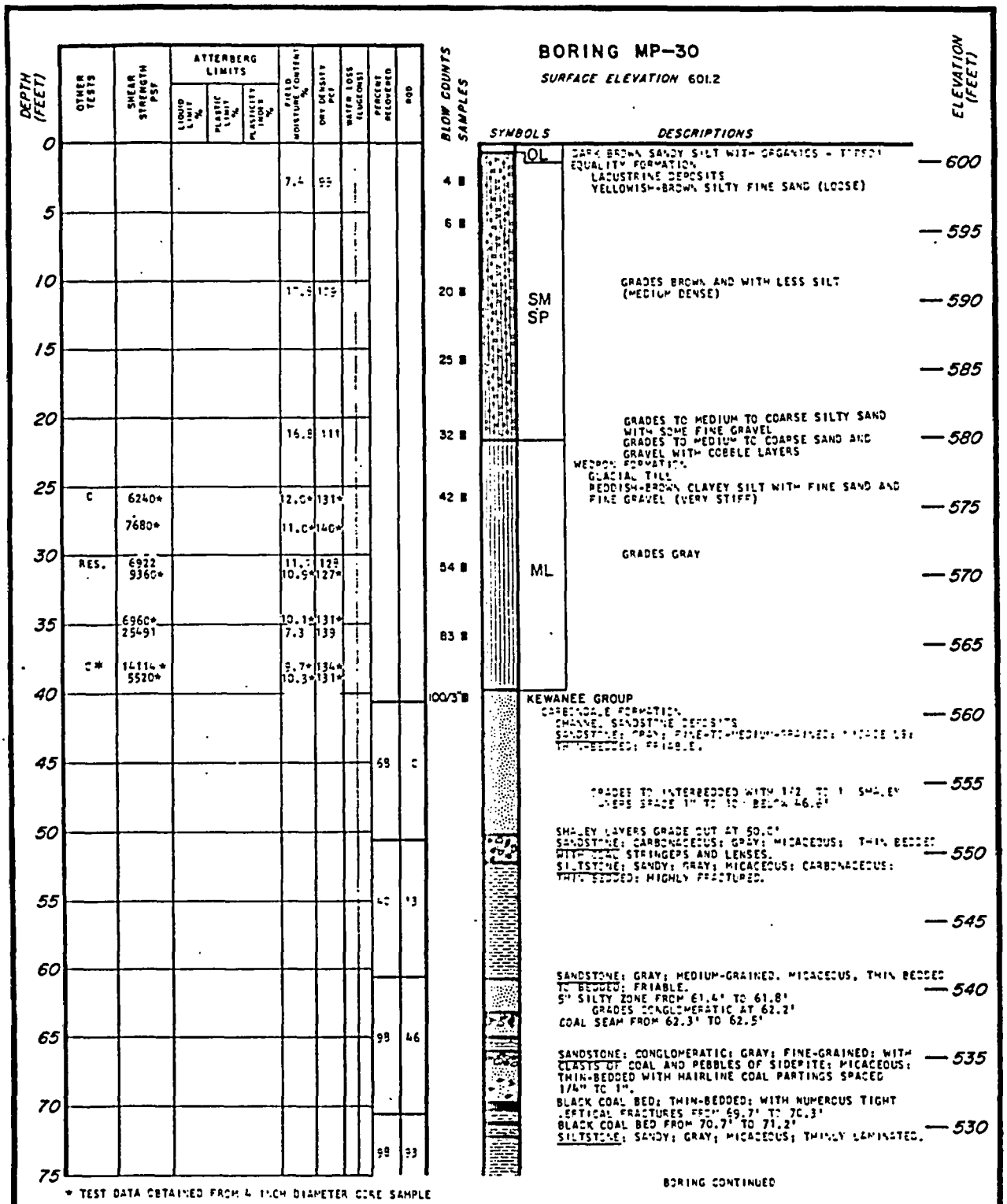
DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155									98	89
160										
165									100	98
170										
175									100	100
180										
185									98	98
190										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	30° FRACTURE AT 153.5' VERTICAL FRACTURE FROM 153.9' TO 154.1'	450
		445
	1" CLAY SEAM AT 160.8'	440
	GRADES LESS SILTY BELOW 166.2' PINPOINT TO 1/4" OIL STAINED VUGS AT 166.3', 166.6', 167.2' AND 167.3' LIMESTONE; LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED; IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1" TO 6". PINPOINT OIL STAINED VUGS AT 167.9' PINPOINT TO 1/4" OIL STAINED VUGS FROM 169.6' TO 170.2' 10° FRACTURE AT 174.7'	435 430
	20° FRACTURE AT 175.1 BEDDING FRACTURE AT 176.9' VERTICAL FRACTURE FROM 177.1' TO 177.4'	425
	SCALES FORMATION SILTSTONE; CALCAREOUS; DARK GRAY; LAMINATED; EXTREMELY ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS, INTERBEDDED GRADATIONAL 1/2" TO 4" ZONE OF LIGHT GRAY SILTY LIMESTONE SPACED 1" TO 12".	420 415
	BORING COMPLETED AT 190.0 FEET ON 1-30-73 WATER LEVEL NOT RECORDED	410

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-195

LOG OF BORING MP-29
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-196

LOG OF BORING MP-30
(SHEET 1 OF 3)

BORING MP-30 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									100	98
90										
95									100	93
100										
105									71	31
110										
115									100	53
120										
125									100	75
130										
135									100	95
140										
145									100	96
150										

SYMBOLS | DESCRIPTIONS | ELEVATION (FEET)

525

520

TWO INTERSECTING VERTICAL FRACTURES FROM 80.5' TO 81.9'
3 HIGH ZONAL FRACTURES AT 81.[illegible], 81.2' AND 81.3'

515

10° FRACTURE AT 88.0'
10° FRACTURE AT 88.6'

510

60° FRACTURE FROM 189.3' TO 190.3'

VERTICAL FRACTURES AT 93.2' AND 93.4'

505

VERTICAL FRACTURE FROM 95.7' TO 95.9'
80° FRACTURE FROM 96.0' TO 96.3'
SHALE: SILTY: GRAY: FINELY MICACEOUS: THIN [illegible] LAMINATED

500

[illegible]

SPOON FORMATION
SHALE: CARBONACEOUS: BLACK TO BROWN: SILTY: MICACEOUS: FISSILE: HIGHLY FRAGMENTED [illegible] SLICKENSIDES.

495

GRADES TO GRAYISH-BROWN AND SILTY BELOW [illegible]

VERTICAL FRACTURE FROM 113.2' TO 112.6'

490

SANDSTONE: SILTY: GRAY: FINE-GRAINED: CARBONACEOUS MICACEOUS: THIN BEDDED
SHALE: SILTY: GRAYISH-BROWN: CARBONACEOUS: MICACEOUS: FISSILE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.
SILTSTONE: SHALEY: DARK GRAY: [illegible] MICACEOUS: FISSILE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

485

GRADES SANDY BELOW [illegible]
SANDSTONE: SILTY: GRAY: FINE-GRAINED: [illegible] THIN-BEDDED: FISSILE: [illegible] STAINED IN ZONES.

480

SHALE: GREENISH-GRAY TO BLACK: FISSILE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES: HIGHLY CARBONACEOUS BELOW 124.6'.
COAL SEAM FROM 125.3' TO 125.5'
COAL SEAM FROM 126.8' TO 127.0'
COAL SEAM FROM 127.4' TO 127.9'
SILTSTONE BED FROM 129.1' TO 129.6'
SILTSTONE BED FROM 129.9' TO 130.2'

475

GRADES BROWN BELOW 129.5'

470

SILTSTONE: SANDY: GRAYISH-BROWN: CARBONACEOUS: THIN-BEDDED WITH ABUNDANT CARBONIZED PLANT FOSSILS

GRADES VERY SANDY AND GRAY IN COLOR BELOW 135.3'

465

GRADES SHALEY AND FISSILE BELOW 141.1'

460

GRADES CALCAREOUS BELOW 143.2'

MAQUOKETA GROUP
FORT ATKINSON FORMATION
LIMESTONE: SILTY: GRAY: FINE-TO-MEDIUM-GRAINED: FOSSILIFEROUS: THIN BEDDED WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 6" ZONES OF CALCAREOUS SHALE SPACED [illegible] FT. APART.
VERTICAL FRACTURE FROM 148.5' TO 149.0'

455

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-196

LOG OF BORING MP-30
(SHEET 2 OF 3)

BORING MP-30 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155									100	99
160										
165									100	100
170										
175	[illegible]								100	100
180										
185									99	96
190										

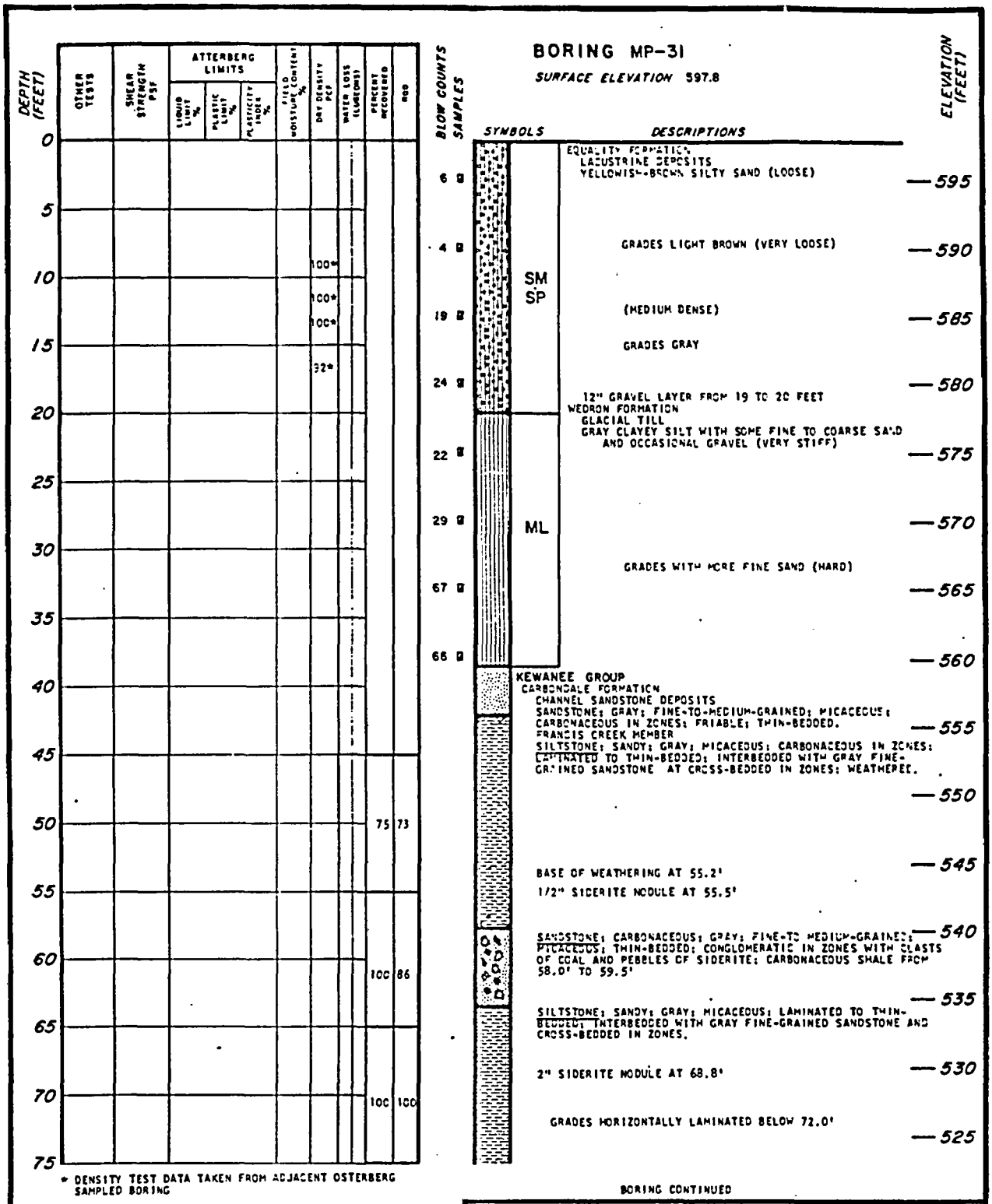
SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		450
	80° FRACTURE 155.5' TO 155.7'	445
	4" ZONE WITH PINPOINT VUGS AND OIL STAINING FROM 159.2' TO 159.5' 1/2" OIL STAINED ZONE AT 160.4'	440
	OIL STAINED FROM 162.5' TO 162.8' 1" ZONE OF PINPOINT VUGS, HIGHLY OIL STAINED AT 164.2'	
	2 1/2" ZONE OF PINPOINT VUGS, OIL STAINED FROM 165.4' TO 165.6' PINPOINT TO 1/2" OPEN VUGS WITH OIL STAINING FROM 166.0' TO 166.7' LIMESTONE: LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN BEDDED; IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES AND 1% TO 2% OIL STAINED VUGS IN UPPER 3 1/2'. 10° FRACTURES AT 169.3', 169.6' AND 169.8' 80° TO VERTICAL FRACTURE FROM 170.2' TO 170.7' TWO INTERSECTING VERTICAL FRACTURE FROM 174.8' TO 175.1'	435 430
		425
	SCALES FORMATION SILTSTONE: CALCAREOUS; DARK GRAY; LAMINATED; EXTREMELY ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS. INTER-BEDDED GRADATIONAL 1/2" TO 3" ZONES OF LIGHT GRAY SILTY LIMESTONE SPACED 1" TO 10'.	420
		415

BORING COMPLETED AT 190.0 FEET ON 1-27-73
CASING USED TO A DEPTH OF 23.5 FEET
WATER LEVEL RECORDED AT 5.5 FEET ON 1-25-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-196

LOG OF BORING MP-30
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-197

LOG OF BORING MP-31
(SHEET 1 OF 2)

BORING MP-31 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									100	95
85										
90									100	96
95										
100									100	100
105										
110									83	82
115										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	VERTICAL FRACTURE FROM 79.6' TO 79.9'	520
		515
	1" SIDERITE NODULE AT 86.1'	
		510
	1" SIDERITE NODULE AT 90.7'	
		505
	SHALE: SILTY: GRAY; FINELY MICACEOUS: THINLY LAMINATED.	500
	COLCHESTER (NO. 2 COAL) MEMBER COAL: BLACK: THIN-BEDDED: NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	495
	SPOON FORMATION SHALE: CARBONACEOUS: DARK GRAY TO BROWN: MICACEOUS IN ZONES: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	490
	1" COAL SEAM AT 110.7'	
	GRADES SILTY BELOW 114.4'	485

BORING COMPLETED AT 115.0 FEET ON 3-20-73
CASING USED TO A DEPTH OF 23.5 FEET
WATER LEVEL RECORDED AT 7.5 FEET ON 3-19-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-197

LOG OF BORING MP-31
(SHEET 2 OF 2)

BORING MP-32

SURFACE ELEVATION 603.3

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
0										
5										
10										
15										
20										
25										
30										
35										
40										
45									75	25
50										
55									93	42
60										
65									100	83
70										
75									100	65

BLOW COUNTS / SAMPLES: 4, 6, 16, 21, 27, 32, 104, 65

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
OL	DARK BROWN SANDY SILT WITH ORGANICS & TUFFEL. EQUALITY FORMATION. HOLOCENE DEPOSITS. YELLOWISH-BROWN FINE SAND WITH SOME SILT (LOOSE).	600
SM SP	GRADES BROWN AND WITH LESS SILT (MEDIUM DENSE)	595, 590, 585, 580
ML	WEDRON FORMATION. GLACIAL TILL. GRAY CLAYEY SILT WITH FINE SAND AND FINE GRAVEL (HARD)	575, 570, 565
	KEWANEE GROUP. CARBONDALE FORMATION. CHANNEL SANDSTONE DEPOSITS. SANDSTONE: CARBONACEOUS; GRAY; FINE-TO-MEDIUM-GRAINED; SILTY; MICACEOUS; FRIABLE; THIN BEDDED; CONGLOMERATIC IN ZONES WITH LENSES AND STRINGERS OF COAL AND PEBBLES OF SIDERITE. 1" SHALE LAYER AT 45.8'	560, 555
	SILTSTONE: SANDY; GRAY; MICACEOUS; CARBONACEOUS. LAMINATED TO THIN-BEDDED.	550
	SANDSTONE: GRAY; FINE-TO-MEDIUM-GRAINED; MICACEOUS; CARBONACEOUS; FRIABLE; THIN-BEDDED. FRANCIS CREEK MEMBER. SILTSTONE: SANDY; GRAY; MICACEOUS; CARBONACEOUS IN ZONES; LAMINATED TO THIN-BEDDED; CROSS-BEDDED IN ZONES; UPPER 10" CLAYEY. 20° FRACTURE AT 62.0'. 10° FRACTURE AT 64.3'. 30° FRACTURE AT 65.6'. 60° FRACTURE FROM 67.3' TO 67.4'. 10° FRACTURE AT 67.9'. 10° FRACTURE AT 69.2'	545, 540, 535
	30° FRACTURES AT 70.6' AND 70.8'. 70° FRACTURE FROM 72.9' TO 73.0'. LIMESTONE: SANDY; LIGHT GRAY; MICACEOUS; THIN BEDDED WITH NUMEROUS SHALEY PARTINGS AND 1/2" TO 2" SIDERITE CONCRETIONS; GRADES CARBONACEOUS IN BASAL 4".	530

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-198

LOG OF BORING MP-32
(SHEET 1 OF 2)

BORING MP-32 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80	UC/R									
85									100	95
90										
95									100	96
	RES.									
100										
105									100	18
110										
115									65	24
120										

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

SANDSTONE: CARBONACEOUS: GRAY: FINE-TO-MEDIUM-GRAINED: [illegible]: MICACEOUS: FRIABLE TO WEL[illegible] CEMENTED; THIN-BEDDED. — 525

LIMESTONE: SANDY: GRAY: MICACEOUS: THIN-BEDDED: CONCRETIONARY IN ZONES WITH [illegible] TO [illegible] SIDERITE NODULES AND COAL STRINGERS.
GRAY SILTSTONE LAYER FROM 81.2' TO 81.3' — 520
SILTSTONE: SANDY: GRAY: MICACEOUS: THINLY LAMINATED: FISSILE.

— 515

SHALE: SILTY: GRAY: FINELY MICACEOUS: THINLY LAMINATED: FISSILE.
VERTICAL FRACTURE FROM 92.9' TO 93.2' — 510

VERTICAL FRACTURES AT 95.5' AND 95.6'
VERTICAL FRACTURES AT 96.5' AND 96.9'

— 505

— 500

GRADES CARBONACEOUS BELOW 107.8'

COLCHESTER (NO. 2 COAL)
COAL: BLACK: THIN BEDDED: NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY. — 495

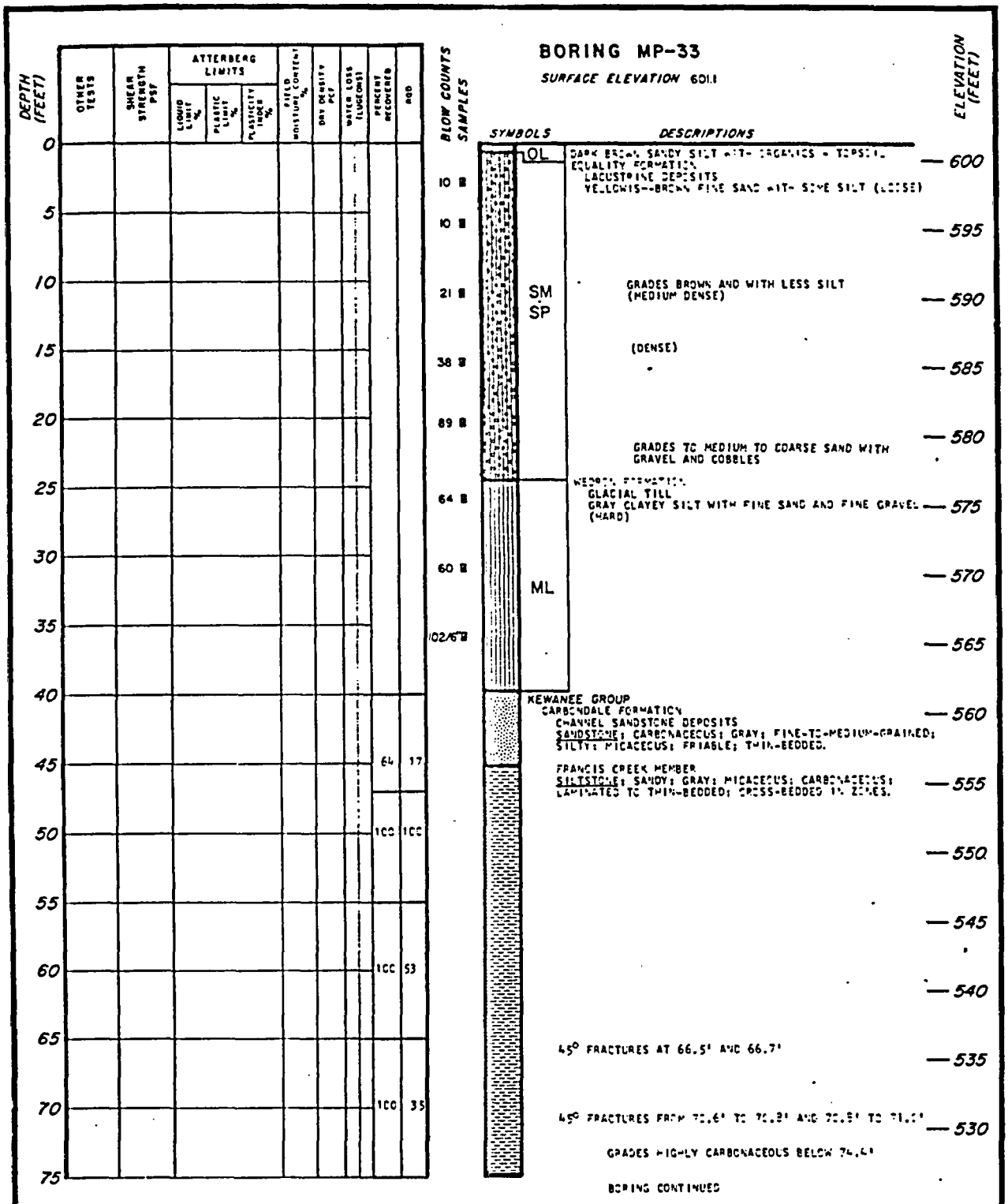
SPOON FORMATION
SHALE: CARBONACEOUS: BLACK TO GRAY: SILTY: MASSIVE: BROKEN FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. — 490

BORING COMPLETED AT 118.0 FEET ON 2-12-73
CASING USED TO A DEPTH OF 23.5 FEET
WATER LEVEL RECORDED AT 8.5 FEET ON 2-10-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-198

LOG OF BORING MP-32
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

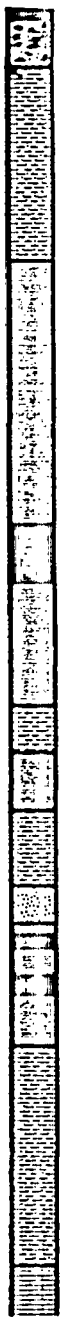
FIGURE 2.5-199

LOG OF BORING MP-33
(SHEET 1 OF 3)

BORING MP-33 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									100	36
85										
90									98	92
95										
100									100	83
105										
110									100	26
115										
120									100	25
125										
130									100	62
135										
140									100	5
145									98	98
150										

SYMBOLS



DESCRIPTIONS — ELEVATION (FEET)

COAL; BLACK; THIN-BEDDED; HIGHLY FRACTURED WITH SOME PYRITE AND CLAY. — 525
SANDSTONE; CARBONACEOUS; GRAY; FINE-GRAINED; SILTY; MICACEOUS; SIDERITIC; FRIABLE; THIN-BEDDED.
SILTSTONE; SANDY; GRAY; MICACEOUS; CARBONACEOUS IN ZONES; THINLY LAMINATED.

VERTICAL FRACTURE FROM 82.5' TO 82.7' — 520

VERTICAL FRACTURE FROM 85.0' TO 85.3'

— 515

SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE. — 510

VERTICAL FRACTURE FROM 94.1' TO 94.4'

— 505

— 500

COLCHESTER (NO. 2 COAL) MEMBER
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY; GRADES TO HIGHLY CARBONACEOUS SHALE IN BASAL 6". — 495

SPOON FORMATION
SHALE; SILTY; BROWNISH-GRAY TO DARK GRAY; CARBONACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

— 490

SILTSTONE; SANDY; LIGHT GRAY; MICACEOUS; CARBONACEOUS; THIN-BEDDED; WELL INDURATED. — 485

SHALE; SILTY; BROWN TO GRAY; CARBONACEOUS; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

SILTSTONE; SANDY; LIGHT GREENISH-GRAY; MICACEOUS; SIDERITIC; CARBONACEOUS; THIN-BEDDED; WELL INDURATED. — 480

SANDSTONE; SILTY; LIGHT GREENISH-GRAY; FINE-GRAINED; MICACEOUS; SIDERITIC; CARBONACEOUS; THIN-BEDDED; WITH INTERBEDDED GREEN SILTSTONE LAYERS; WELL INDURATED. — 475
SHALE; CARBONACEOUS; BROWNISH-GRAY TO BLACK; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.
BLACK CLAYEY COAL BED FROM 138.2' TO 138.9'
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY. — 470
SHALE; CARBONACEOUS; TAN TO BLACK; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.
SILTSTONE; BROWNISH-GRAY; MICACEOUS; CARBONACEOUS; THIN-BEDDED.

— 465

GRADES DARK GRAY, SANDY, AND FISSILE WITH ABUNDANT CARBONIZED PLANT FOSSILS BELOW 137.0'

— 460

— 455

MAQUOKETA GROUP
FORT ATKINSON FORMATION
LIMESTONE; SILTY; GRAY; FINE-TO-MEDIUM-GRAINED; FOSSILIFEROUS; THIN-BEDDED; WITH NUMEROUS GRADATIONAL AND IRREGULAR

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-199

LOG OF BORING MP-33
(SHEET 2 OF 3)

BORING MP-33 CONTINUED

SURFACE ELEVATION

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155										
160									100	93
165										

BLOW COUNTS SAMPLES

SYMBOLS

DESCRIPTIONS

PARTINGS AND 1/4" TO 4" ZONES OF CALCAREOUS SHALE SPACED 1/4" TO 10".

ELEVATION (FEET): 450, 445, 440

BORING COMPLETED AT 165.0 FEET ON 2-23-73
CASING USED TO A DEPTH OF 23.5 FEET
WATER LEVEL RECORDED AT 6.5 FEET ON 2-21-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-199

LOG OF BORING MP-33
(SHEET 3 OF 3)

BORING MP-34

SURFACE ELEVATION 600.0

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
0										
5										
10										
15										
20										
25										
30										
35										
40										
45									67	0
50										
55									100	92
60										
65									56	42
70									100	92
75										

BLOW COUNTS / SAMPLES: 6, 8, 14, 30, 26, 51, 47, 49

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
OL	DARK BROWN SANDY SILTY WITH ORGANICS-TOPSOIL	600
	EQUALITY FORMATION LACUSTRINE DEPOSITS BROWN SILTY FINE SAND (LOOSE)	
		595
SM SP	GRADES WITH LESS SILT	
	(MEDIUM DENSE)	590
		585
	WEDRON FORMATION GLACIAL TILL GRAY SILT WITH FINE SAND AND FINE GRAVEL GRADES WITH SOME GRAVELLY SILTY CLAY LAYERS	580
	GRADES REDDISH-BROWN CLAY SILT WITH FINE GRAVEL AND SAND (HARD)	575
ML	GRADES GRAY	570
	GRADES WITH SOME LAYERS OF COARSE SAND AND FINE GRAVEL	565
	KEWANEE GROUP CARBONDALE FORMATION CHANNEL SANDSTONE DEPOSITS SANDSTONE; CARBONACEOUS; GRAY; FINE-TO-MEDIUM-GRAINED; SILTY; MICACEOUS; FRIABLE; THIN-BEDDED; CONGLOMERATIC IN ZONES, WITH LENSES AND STRINGERS OF COAL. SANDY COAL BED FROM 44.5' TO 45.5' COAL STRINGERS AND LENSES GRADE OUT BELOW 46.3'	560
		555
	FRANCIS CREEK MEMBER SILTSTONE; SANDY; GRAY; MICACEOUS, LAMINATED; CROSS-BEDDED IN ZONES; HIGHLY FRACTURED.	550
		545
		540
	60° FRACTURE FROM 64.8' TO 65.1'	535
		530
	CLAY SEAM FROM 71.0' TO 71.2' HORIZONTALLY LAMINATED BELOW 71.2'	525

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-200

LOG OF BORING MP-34
(SHEET 1 OF 3)

BORING MP-34 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									95	95
90										
95									100	78
100										
105									100	25
110										
115									100	52
120										
125									100	83
130									100	47
135										
140									100	72
145									100	67
150										

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

525

CLAY SEAMS FROM 94.4' TO 94.6' AND 94.7' TO 94.9'

505

SHALE: SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED.

500

COLCHESTER (NO. 2 COAL) MEMBER
COAL: BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY; GRADES TO HIGHLY CARBONACEOUS SHALE IN BASAL 2".
CARBONACEOUS SHALE LAYER FROM 104.5' TO 105.0'

495

SPOON FORMATION
SHALE: SILTY; DARK GRAY TO BROWNISH-GRAY; CARBONACEOUS; PASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

490

SILTSTONE: SANDY; LIGHT GRAY; MICACEOUS, MASSIVE; HIGHLY FRACTURED.
SHALE: SILTY; BROWNISH-GRAY; MICACEOUS; CARBONACEOUS; THIN-BEDDED TO MASSIVE.
30° FRACTURE AT 114.8'

485

10° FRACTURE AT 116.0'
20° FRACTURE AT 116.1'
SILTSTONE: SANDY; LIGHT GREENISH-GRAY; MICACEOUS; CARBONACEOUS; THIN-BEDDED; WELL INDURATED.

480

SANDSTONE: SILTY; LIGHT GREENISH-GRAY; FINE-GRAINED; MICACEOUS, CARBONACEOUS IN ZONES; THIN-BEDDED.
SHALE: SILTY; GREEN; MICACEOUS; CARBONACEOUS; MASSIVE TO THIN-BEDDED; GRADES HIGHLY SILTY BELOW 124.9'.
SHALE: CARBONACEOUS; DARK GRAY TO BLACK; THIN-BEDDED.

475

COAL SEAM FROM 125.6' TO 125.8'
COAL: BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.
SHALE: CARBONACEOUS; BROWN TO BLACK; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

470

SILTSTONE: SANDY; BROWNISH-GRAY; MICACEOUS; CARBONACEOUS; MASSIVE; WELL INDURATED.
SHALE: SILTY; TANISH-GRAY; CARBONACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.
COAL SEAM FROM 132.3' TO 132.7'.
SILTSTONE: SANDY; GRAY; MICACEOUS; CARBONACEOUS; LAMINATED TO THIN-BEDDED WITH ABUNDANT CARBONIZED PLANT FOSSILS; FISSILE.

465

GRADES HIGHLY SANDY FROM 140.0' TO 141.4'

460

MAQUOKETA GROUP
FORT ATKINSON FORMATION
LIMESTONE: SILTY; GRAY; FINE-TO MEDIUM-GRAINED; FOSSILIFEROUS; THIN-BEDDED WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 4" ZONES OF CALCAREOUS SHALE SPACED 1/2" TO 6".
OIL-STAINED ZONE FROM 145.4' TO 145.6'

455

BORING CONTINUED

450

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-200

LOG OF BORING MP-34
(SHEET 2 OF 3)

BORING MP-34 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155										
160									100	92
165										
170									100	92
175										

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET): 450, 445, 440, 435, 430

2" OPEN CALCITE LINED OIL-STAINED VUG AT 161.5'
TWO 1/2" OPEN CALCITE LINED OIL-STAINED VUGS AT 154.2'

SEVERAL PINPOINT OPEN OIL-FILLED VUGS FROM 166.8' TO 167.1'

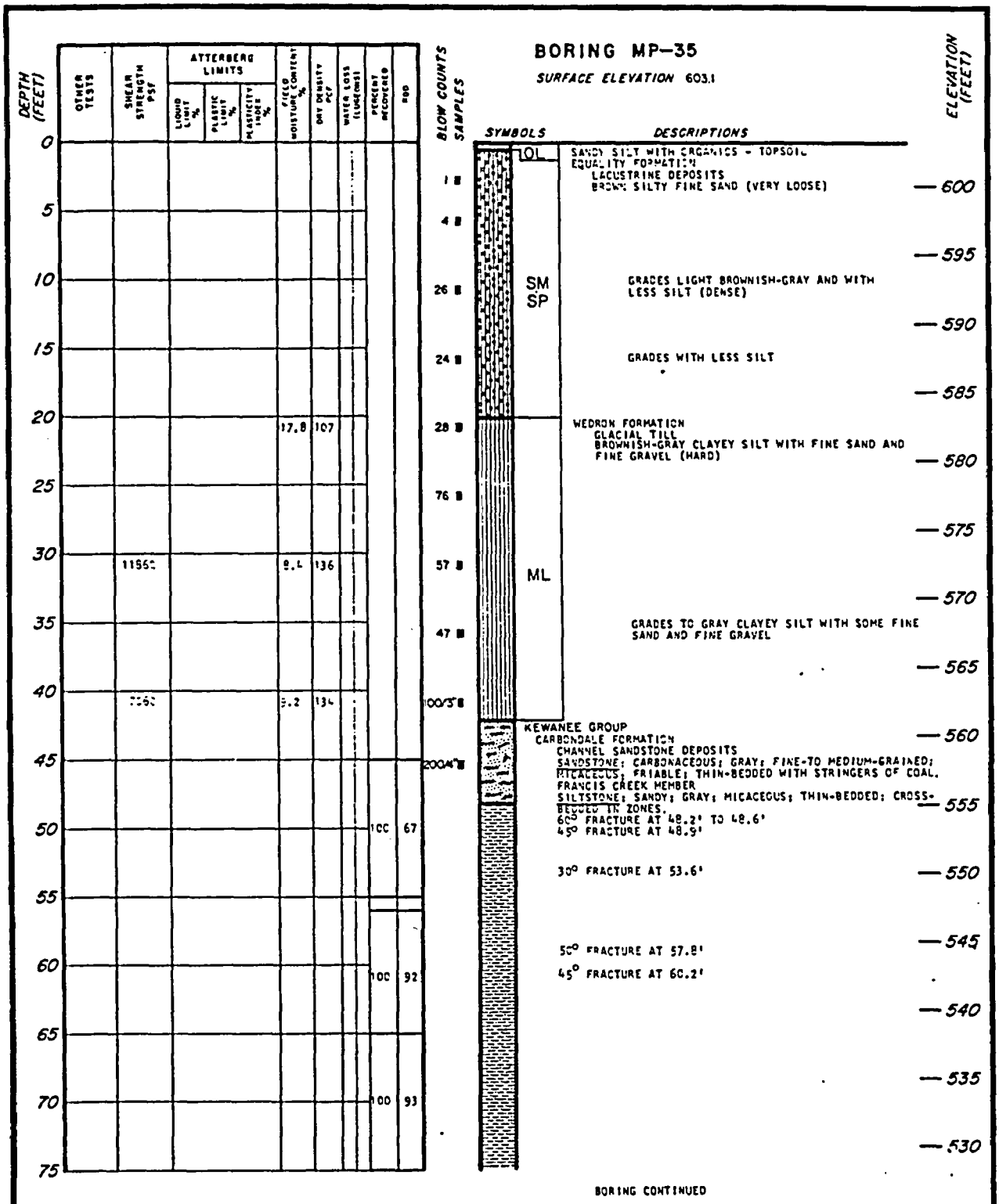
TWO 2" DOLOMITE LINED OPEN VUGS AT 167.2' AND 167.4'
LIMESTONE; LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED WITH IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1/2" TO 6".

BORING COMPLETED AT 174.0 FEET ON 2-7-73
CASING USED TO A DEPTH OF 21.0 FEET
WATER LEVEL RECORDED AT 4.5 FEET ON 2-6-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-200

LOG OF BORING MP-34
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-201

LOG OF BORING MP-35
(SHEET 1 OF 3)

BORING MP-35 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									100	75
85										
90									100	96
95										
100									100	96
105										
110									100	75
115										
120									100	67
125										
130									92	75
135										
140									100	92
145										
150									100	96

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

— 525

HORIZONTALLY LAMINATED BELOW 81.6'

VERTICAL FRACTURE FROM 83.3' TO 83.9'

— 520

— 515

SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED.

— 510

— 505

— 500

GRADES CARBONACEOUS AT 104.7'

COLCHESTER (NO. 2 COAL) MEMBER

COAL; BLACK; THIN-BEDDED, NUMEROUS TIGHT VERTICAL FRACTURES, WITH SOME PYRITE, CLAY AND SIDERITE; GRADES TO HIGHLY CARBONACEOUS SHALE IN BASAL 1.5".

SPOON FORMATION

— 495

SHALE; BROWNISH-GRAY; SILTY; HIGHLY CARBONACEOUS; MICACEOUS; MASSIVE, HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

COAL SEAM 113.1' TO 113.2'

— 490

SILTSTONE; GREENISH-GRAY; MICACEOUS; THIN-BEDDED.

— 485

SHALE; SILTY; GRAY; FINELY MICACEOUS CARBONACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICENSIDES.

SILTSTONE; SANDY; LIGHT GREENISH-GRAY; MICACEOUS; THIN-BEDDED.

— 480

SANDSTONE; SILTY; LIGHT GREENISH-GRAY; FINE-GRAINED; MICACEOUS; THIN-BEDDED; GRADES TO HIGHLY CARBONACEOUS SHALE IN BASAL 4".

COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES; GRADES TO A HIGHLY CARBONACEOUS SHALE IN BASAL 3".

— 475

SHALE; BROWNISH-GRAY; HIGHLY CARBONACEOUS, MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

SILTSTONE LAYER FROM 133.5' TO 134.1'

— 470

COAL SEAM FROM 135.0' TO 135.2'

SILTSTONE; SANDY; DARK GRAY; MICACEOUS; CARBONACEOUS; LAMINATED; FISSILE WITH ABUNDANT CARBONIZED PLANT FOSSILS.

— 465

— 460

MAQUOKETA GROUP

FORT ATKINSON FORMATION

LIMESTONE; SILTY; GRAY; FINE-TO MEDIUM-GRAINED; FOSSILIFEROUS THIN-BEDDED; WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 4" ZONES OF CALCAREOUS SHALE SPACED 1/4" TO 6".

— 455

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-201

LOG OF BORING MP-35
(SHEET 2 OF 3)

BORING MP-35 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155										
160									100	100
165										
170									100	100
175										
180									100	100
185										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		450
		445
	TWO 1/2" OPEN VUGS AT 163.1' AND 163.4'; OIL-STAINED	
	1/2" OPEN VUG AT 165.3'; OIL-STAINED	440
	VERTICAL FRACTURE FROM 167.3' TO 167.6' LIMESTONE; LIGHT BUFF; COARSE-GRAINED; CALCARANITIC; FOSSILIFEROUS; THIN-BEDDED; IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1" TO 6"; OIL-STAINED THROUGHOUT. 1/2" OPEN VUG AT 168.4'; OIL-STAINED PINPOINT OPEN VUGS FROM 168.8' TO 168.9'; OIL-STAINED PINPOINT OPEN VUGS FROM 170.3' TO 170.6'; OIL-STAINED INTERBEDDED CARBONACEOUS SHALES AND LIMESTONES WITH THIN WHITE FOSSILS ABUNDANT FROM 170.6' TO 171.6' VERTICAL FRACTURE FROM 175.0' TO 175.5'	435 430
	SCALES FORMATION SILTSTONE; CALCAREOUS; DARK GRAY; LAMINATED; EXTREMELY ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS, INTERBEDDED GRADATIONAL 1/2" TO 3" ZONES OF LIGHT GRAY SILTY LIMESTONE SPACED 1" TO 15".	425

BORING COMPLETED AT 185.0 FEET ON 1-16-73
CASING USED TO A DEPTH OF 23.5 FEET
WATER LEVEL RECORDED AT 7.3 FEET ON 1-16-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-201

LOG OF BORING MP-35
(SHEET 3 OF 3)

BORING MP-36

SURFACE ELEVATION 602.6

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
0										
5										
10										
15										
20										
25										
30										
35										
40										
45										
50										
55									100	68
60										
65									100	78
70										
75									98	95

BLOW COUNTS / SAMPLES: 7 8; 8 8; 31 8; 30 8; 26 8; 145 8; 143 8; 115 8; 110 8

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
OL	DARK BROWN SANDY SILT WITH ORGANICS (TOPSOIL)	
	EQUALITY FORMATION	
	LACUSTRINE DEPOSITS	
	YELLOWISH-BROWN FINE SAND WITH SOME SILT (LOOSE)	600
		595
SM SP	GRADES BROWN AND WITH LESS SILT (DENSE)	590
		585
	WEDRON FORMATION	
ML	GLACIAL TILL	
	GRAY CLAYEY SILT WITH FINE GRAVEL	580
SM	BROWN SILTY MEDIUM TO COARSE SAND WITH FINE GRAVEL	
	REDDISH-BROWN CLAYEY SILT WITH FINE GRAVEL AND FINE SAND (HARD)	575
ML	GRADES GRAY	570
		565
	GRADES TO GRAY SILT WITH FINE SAND	
	KEWANEE GROUP	560
	CARBONDALE FORMATION	
	CHANNEL SANDSTONE DEPOSITS	
	SANDSTONE; GRAY; FINE-TO MEDIUM-GRAINED; MICACEOUS; CARBONACEOUS IN ZONES; FRIABLE; THIN-BEDDED.	
	FRANCIS CREEK MEMBER	
	SILTSTONE; SANDY; GRAY; MICACEOUS; LAMINATED TO THIN-BEDDED; CROSS-BEDDED IN ZONES.	555
	5° FRACTURE AT 50.1'	
	20° FRACTURE AT 50.5'	
	30° FRACTURE AT 51.2'	
	60° FRACTURE FROM 53.5' TO 53.8'	550
	20° FRACTURE AT 54.4'	
	VERTICAL FRACTURE FROM 54.5' TO 55.5'	
	45° FRACTURE AT 55.9'	
	30° FRACTURE AT 56.5'	
		545
	VERTICAL FRACTURE FROM 59.6' TO 59.8'	
	20° FRACTURE AT 62.1'	540
	10° FRACTURE AT 68.5'	535
	30° FRACTURE AT 68.8'	
	50° FRACTURE FROM 68.9' TO 69.1'	
	VERTICAL FRACTURE FROM 69.0' TO 69.2'	
	SLIGHTLY CALCAREOUS ZONE FROM 68.8' TO 69.2'	
	CALCAREOUS CONGLOMERATIC ZONE WITH COAL AND SIDERITE PEBBLES FROM 74.7' TO 75.6'	530

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-202

LOG OF BORING MP-36
(SHEET 1 OF 3)

BORING MP-36 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									94	94
90										
95									100	95
100										
105									93	82
110										
115									90	31
120									100	1
125									78	45
130										
135									31	8
140									100	96
145										
150										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	GRADES HORIZONTALLY LAMINATED AND FISSILE BELOW 74.6'	525
		520
		515
		510
		505
	SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED. FISSILE.	
	1" SIDERITE NODULE AT 103.5'	500
	1" SIDERITE NODULE AT 104.8'	
	COLCHESTER (NO. 2 COAL) MEMBER	
	COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY; GRADES TO A HIGHLY CARBONACEOUS SHALE IN BASAL 3".	495
	SPOON FORMATION	
	SHALE; CARBONACEOUS; DARK GRAY; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	
		490
	45° FRACTURE FROM 116.4' TO 116.5'	
	SILTSTONE; SANDY; LIGHT GRAY; MICACEOUS; CARBONACEOUS; MASSIVE; HIGHLY FRACTURED.	485
	SHALE; CARBONACEOUS; DARK GRAY; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	
	SILTSTONE; SANDY; GRAY TO GREENISH-GRAY; MICACEOUS; CARBONACEOUS; THIN-BEDDED; WELL INDURATED IN UPPER 10".	480
	. GRADES SHALEY BELOW 124.1'	
	SHALE; CARBONACEOUS; GRAY TO BROWNISH-GRAY; MICACEOUS; MASSIVE, HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	475
	COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES. WITH SOME PYRITE AND CLAY.	
	SHALE; CARBONACEOUS; BROWNISH-GRAY TO BLACK; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	470
	COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	465
	SILTSTONE; SANDY; DARK GRAY; MICACEOUS; CARBONACEOUS; LAMINATED TO THIN-BEDDED; WITH ABUNDANT CARBONIZED PLANT FOSSILS; FISSILE.	
	GRADES CALCAREOUS BELOW 142.9'	
	MAQUOKETA GROUP	460
	FORT ATKINSON FORMATION	
	LIMESTONE; SILTY; GRAY; FINE-TO MEDIUM-GRAINED; FOSSILIFEROUS; THIN-BEDDED, WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 4" ZONES OF CALCAREOUS SHALE SPACED 1/4" TO 10".	
	2" DOLOMITE LINED OPEN VUG AT 144.4'	455

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-202

LOG OF BORING MP-36
(SHEET 2 OF 3)

BORING MP-36 CONTINUED

SURFACE ELEVATION

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155									100	98
160									100	88
165										
170										

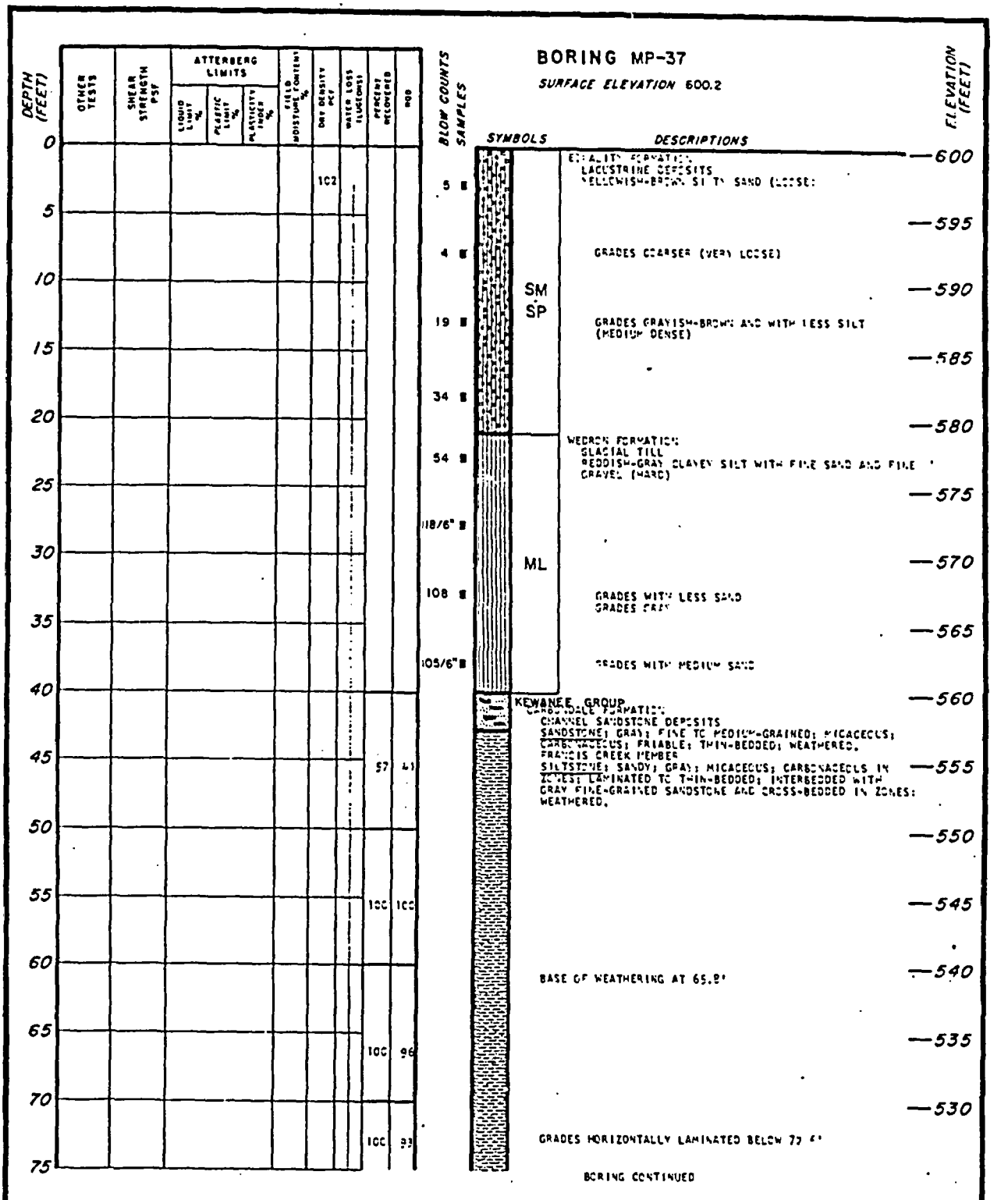
SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	20° SLICKENSIDED FRACTURE AT 151.4'	450
		445
	OIL-STAINED ZONE FROM 62.7' TO 63.1'	440
	1/2" OPEN VUG AT 165.2' VERTICAL FRACTURE FROM 166.0' TO 166.2' 80° FRACTURE FROM 166.4' TO 166.8' LIMESTONE; LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED; WITH IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1/4" TO 10"; OIL-STAINED THROUGHOUT. ZONES OF PINPOINT OPEN VUGS FROM 167.3' TO 167.5', 167.7' TO 167.9' AND 168.0' TO 168.4'	435

BORING COMPLETED AT 169.0 FEET ON 2-15-73
WATER LEVEL NOT RECORDED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-202

LOG OF BORING MP-36
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

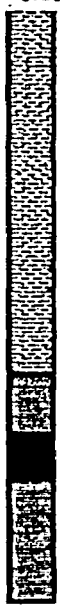
FIGURE 2.5-203

LOG OF BORING MP-37
(SHEET 1 OF 2)

BORING MP-37 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									99	99
90										
95									99	70
100										
105									88	56
110										

SYMBOLS



DESCRIPTIONS

ELEVATION (FEET)

525

520

515

510

505

SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.

COLCHESTER (NO. 2 COAL) MEMBER
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY. — 500

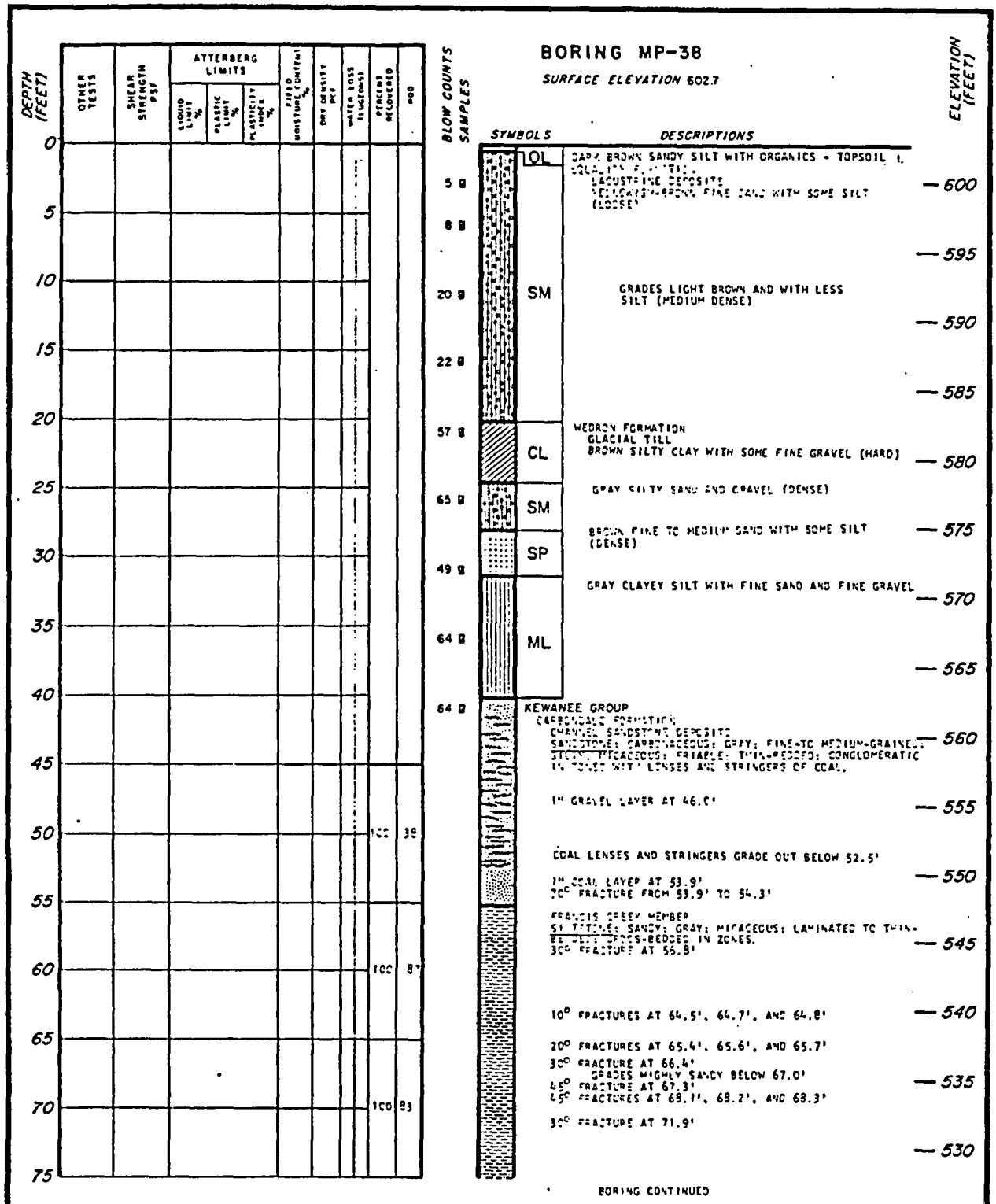
SPOON FORMATION
SHALE; DARK GRAY TO BROWN; CARBONACEOUS; MICACEOUS AND SILTY IN ZONES; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. — 495

BORING COMPLETED AT 109.0 FEET ON 3-21-73
WATER LEVEL RECORDED AT 4.0 FEET ON 3-20-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-203

LOG OF BORING MP-37
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-204

LOG OF BORING MP-38
(SHEET 1 OF 3)

BORING MP-38 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									98	77
85										
90									100	91
95										
100									100	70
105										
110									100	45
115										
120	UC/R								100	78
125										
130									79	79
135										
140									94	38
145										
150									91	80

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

— 525

SANDSTONE: CONGLOMERATIC: GRAY: FINE-GRAINED: WITH SIDERITE PEBBLES AND STRINGERS OF COAL: MICACEOUS: MEDIUM-BEDDED: FRIABLE: SHALEY IN ZONES.
SILTSTONE: SANDY: GRAY: MICACEOUS THINLY LAMINATED: FISSLE.

— 520

60° FRACTURE FROM 88.5' TO 88.7'

— 515

— 510

SHALE: SILTY: GRAY: FINELY MICACEOUS: THINLY LAMINATED: FISSTLE IN ZONES.

— 505

VERTICAL FRACTURE FROM 98.3' TO 98.6'
VERTICAL FRACTURE FROM 99.9' TO 100.0'

— 500

— 495

COLCHESTER (NO. 2 COAL) MEMBER
COAL: BLACK, THIN-BEDDED: NUMEROUS TIGHT VERTICAL FRACTURE WITH SOME PYRITE AND CLAY: GRADES TO HIGHLY CARBONACEOUS SHALE IN BASAL 9".

— 490

SPOON FORMATION
SHALE: CARBONACEOUS: BROWNISH-GRAY TO BLACK: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

— 485

SILTSTONE: SANDY: LIGHT GRAY: MICACEOUS: CARBONACEOUS: THIN-BEDDED: WELL INDURATED.

— 480

SHALE: SILTY: BROWN TO GRAY: CARBONACEOUS: MICACEOUS: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

— 475

SILTSTONE: SANDY: LIGHT GREENISH-GRAY: MICACEOUS: SIDERITIC: CARBONACEOUS: THIN-BEDDED:.WELL INDURATED.
SANDSTONE: SILTY: LIGHT GREENISH-GRAY: FINE-GRAINED: MICACEOUS: SIDERITIC: CARBONACEOUS: THIN-BEDDED: INTER-BEDDED WITH GREEN SILTSTONE LAYERS: WELL INDURATED.

— 470

SHALE: CARBONACEOUS: BROWNISH-GRAY TO GRAY: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.
COAL: BLACK: THIN-BEDDED: NUMEROUS TIGHT VERTICAL FRACTURES.
SHALE: CARBONACEOUS: BROWNISH-GRAY TO GRAY: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES: SIDERITIC IN ZONES.

— 465

BLACK COAL BED FROM 137.5' TO 139.0'

COAL: BLACK: THIN-BEDDED: NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY: GRADES TO HIGHLY CARBONACEOUS SHALE IN BASAL 3".
SILTSTONE: SANDY: DARK GRAY: MICACEOUS: CARBONACEOUS: LAMINATED TO THIN-BEDDED: WITH ABUNDANT CARBONIZED PLANT FOSSILS: FISSLE.

— 460

MAQUOKETA GROUP
FORT ATKINSON FORMATION
LIMESTONE: SILTY: GRAY: FINE-TO MEDIUM-GRAINED: FOSSILIFEROUS: THIN-BEDDED WITH NUMEROUS GRADATIONAL AND

— 455

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-204

LOG OF BORING MP-38
(SHEET 2 OF 3)

BORING MP-38 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155										
160									100	89
165										
170									100	71
175										
180									98	93
185										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	IRREGULAR PARTINGS AND 1/4" TO 4" ZONES OF CALCAREOUS SHALE, SPACED 1/4" TO 10". OIL-STAINED ZONES FROM 147.5' TO 147.8' AND 148.3' TO 148.5'	450
		445
		440
	VERTICAL FRACTURE FROM 166.4' TO 166.7' PINPOINT TO 1/2" CALCITE LINED OPEN VUGS. OIL-STAINED FROM 168.2' TO 168.4' ZONE OF PINPOINT TO 1/8" OPEN VUGS, OIL-STAINED FROM 169.4' TO 169.7' 1" CALCITE LINED OPEN VUG AT 171.1'	435
		430
	VERTICAL FRACTURE FROM 175.3' TO 176.7' VERTICAL FRACTURE FROM 177.3' TO 178.3'	425
	LIMESTONE; LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED WITH IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1/4" TO 10".	420

BORING COMPLETED AT 185.0 FEET ON 2-20-73
CASING USED TO A DEPTH OF 25.5 FEET
WATER LEVEL RECORDED AT 7.0 FEET ON 2-17-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-204

LOG OF BORING MP-38
(SHEET 3 OF 3)

BORING MP-39

SURFACE ELEVATION 600.8

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (GAL/FOOT)	PERCENT RECOVERED	RQD
0										
5										
10										
15										
20										
25										
30										
35										
40										
45									100	100
50										
55									100	100
60										
65									100	80
70										
75									100	74

BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	OL	DARK BROWN SANDY SILT WITH ORGANICS + TOPSOIL.	600
		EQUALITY FORMATION	
		LACUSTRINE DEPOSITS	
5		YELLOWISH-BROWN SILTY FINE SAND (LOOSE)	
16		GRADES BROWN (MEDIUM DENSE)	595
22	SM SP	GRADES WITH LESS SILT	590
50		(DENSE)	585
		GRADES TO MEDIUM TO COARSE SAND WITH GRAVEL AND COBBLES	
		WEIRON FORMATION	
50		GLACIAL TILL	580
		BROWN CLAYEY SILT WITH FINE SAND AND FINE GRAVEL	
		GRADES WITH SOME LAYERS OF SILTY FINE SAND	
60	ML		575
53		GRADES GRAY	570
107			565
		KEWANEE GROUP	
		CARBONDALE FORMATION	
		CHANNEL SANDSTONE DEPOSITS	
		SANDSTONE: GRAY; FINE-TO MEDIUM-GRAINED; MICACEOUS.	
		PITZELL: THIN-BEDDED.	
		FRANCIS CREEK MEMBER	560
		SILTSTONE: SANDY; GRAY; MICACEOUS; LAMINATED TO THIN-BEDDED; CROSS-BEDDED IN ZONES; WEATHERED.	
			555
		45° FRACTURE FROM 49.0' TO 49.2'	
		30° FRACTURES AT 49.6' AND 49.7'	
		60° FRACTURE FROM 50.8' TO 51.0'	550
		70° FRACTURE FROM 53.1' TO 53.6'	
		80° FRACTURE FROM 55.9' TO 56.1'	
		45° FRACTURE AT 58.5'	545
		60° FRACTURE FROM 58.6' TO 58.9'	
		60° FRACTURE FROM 59.2' TO 59.4'	
		45° FRACTURE FROM 59.8' TO 59.9'	
		30° FRACTURE AT 61.4'	540
		50° FRACTURE FROM 61.9' TO 62.1'	
		70° FRACTURE FROM 64.6' TO 64.9'	
		70° FRACTURE FROM 65.4' TO 65.6'	
		60° FRACTURES FROM 66.5' TO 66.7' AND 66.7' TO 66.9'	535
		30° FRACTURES AT 66.6' AND 66.8'	
		TWO INTERSECTING 45° FRACTURES FROM 66.9' TO 67.2'	
		70° FRACTURE FROM 69.6' TO 69.8'	
		70° FRACTURES FROM 70.0' TO 70.3', 70.3' TO 70.5' AND 70.5' TO 70.8'	530
		80° FRACTURE FROM 71.0' TO 71.4'	
		1/2" SIDERITE NODULES AT 72.7'	
		60° FRACTURE FROM 74.7' TO 75.0'	
		60° TO VERTICAL FRACTURE FROM 75.6' TO 76.3'	

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-205

LOG OF BORING MP-39
(SHEET 1 OF 3)

BORING MP-39 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									100	94
90										
95									98	93
100										
105									85	50
110										
115									100	96
120										
125									100	78
130										
135									100	68
140										
145									100	89
150										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		525
	45° FRACTURE FROM 78.7' TO 78.8' GRADES GREENISH-BROWN AND MORE SHALEY BELOW 79.0'	
	GRADES TO GRAY AND HORIZONTALLY LAMINATED BELOW 80.0' 60° FRACTURE FROM 82.3' TO 82.6'	520
	70° FRACTURE FROM 86.1' TO 86.5'	515
	50° FRACTURE FROM 87.4' TO 87.6'	
	80° FRACTURE FROM 89.5' TO 90.0' SHALE: SILTY: GRAY: FINELY MICACEOUS: THINLY LAMINATED: FISSIL. 50° FRACTURE FROM 94.2' TO 94.4'	510
	20° FRACTURE FROM 96.9' TO 97.0'	505
	10° FRACTURE AT 98.9'	
		500
	GRADES CARBONACEOUS AT 104.0' COLCHESTER (NO. 2 COAL) MEMBER COAL: BLACK: THIN-BEDDED: NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	495
	SHALE: CARBONACEOUS: BLACK: THIN-BEDDED. SHALE: SILTY: BROWNISH-BLACK: CARBONACEOUS: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	490
	GRADES HIGHLY SILTY BELOW 114.6' GRADES LESS SILTY BELOW 116.6'	485
	1/2" COAL SEAM AT 117.8'	
	SANDSTONE: SILTY: LIGHT GRAY: FINE-GRAINED: MICACEOUS: THIN-BEDDED TO BEDDED: WELL INDURATED.	480
	SHALE: SILTY: LIGHT GREENISH-GRAY: MICACEOUS: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. SHALE: CARBONACEOUS: DARK BROWNISH-BLACK: THIN-BEDDED: PYRITIC AND COALY IN ZONES.	475
	SHALE: BROWNISH-GRAY: SILTY: MICACEOUS: CARBONACEOUS: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	470
	SILTSTONE: SHALEY: TANISH-GRAY: MICACEOUS: CARBONACEOUS: THIN-BEDDED. GRADES DARK GRAY, MORE CARBONACEOUS AND FISSILE WITH ABUNDANT CARBONIZED PLANT FOSSILS BELOW 139.5'	465
		460
	GRADES CALCAREOUS BELOW 143.2'	
	MAQUOKETA GROUP FORT ATKINSON FORMATION LIMESTONE: SILTY: GRAY: FINE- TO MEDIUM-GRAINED: FOSSILIFEROUS: THIN-BEDDED WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 6" ZONES OF CALCAREOUS SHALE SPACED 1/2" TO 6". 1/2" ZONE OF 1/8" TO 1/4" OPEN VUGS AT 144.4' 1 1/2" DOLOMITE LINED OPEN VUGS AT 145.1'	455

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-205

LOG OF BORING MP-39
(SHEET 2 OF 3)

BORING MP-39 CONTINUED

SURFACE ELEVATION

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155									100	98
160										
165									100	94
170									100	100
175										
180									100	100
185										
190										

BLOW COUNTS
SAMPLES

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

450
445
440
435
430
425
420
415

OIL-STAINED ZONE FROM 164.3' TO 164.7'

VERTICAL FRACTURE FROM 169.3' TO 169.6'

GRADES LIGHT GRAY IN COLOR BELOW 170.3'
ZONE OF ABUNDANT FOSSILS IN 1/8" TO 1" WHITE IRREGULAR BANDS WITH INTERBEDDED THIN DARK GRAY CALCAREOUS SHALE FROM 171.6' TO 173.2'
LIMESTONE: LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED WITH IRREGULAR MARLINE SHALE PARTINGS AND STYLOLITES SPACED 1" TO 6".
1 1/2" DOLOMITE LINED OPEN VUG AT 173.7'

80° FRACTURE FROM 178.7' TO 178.9'

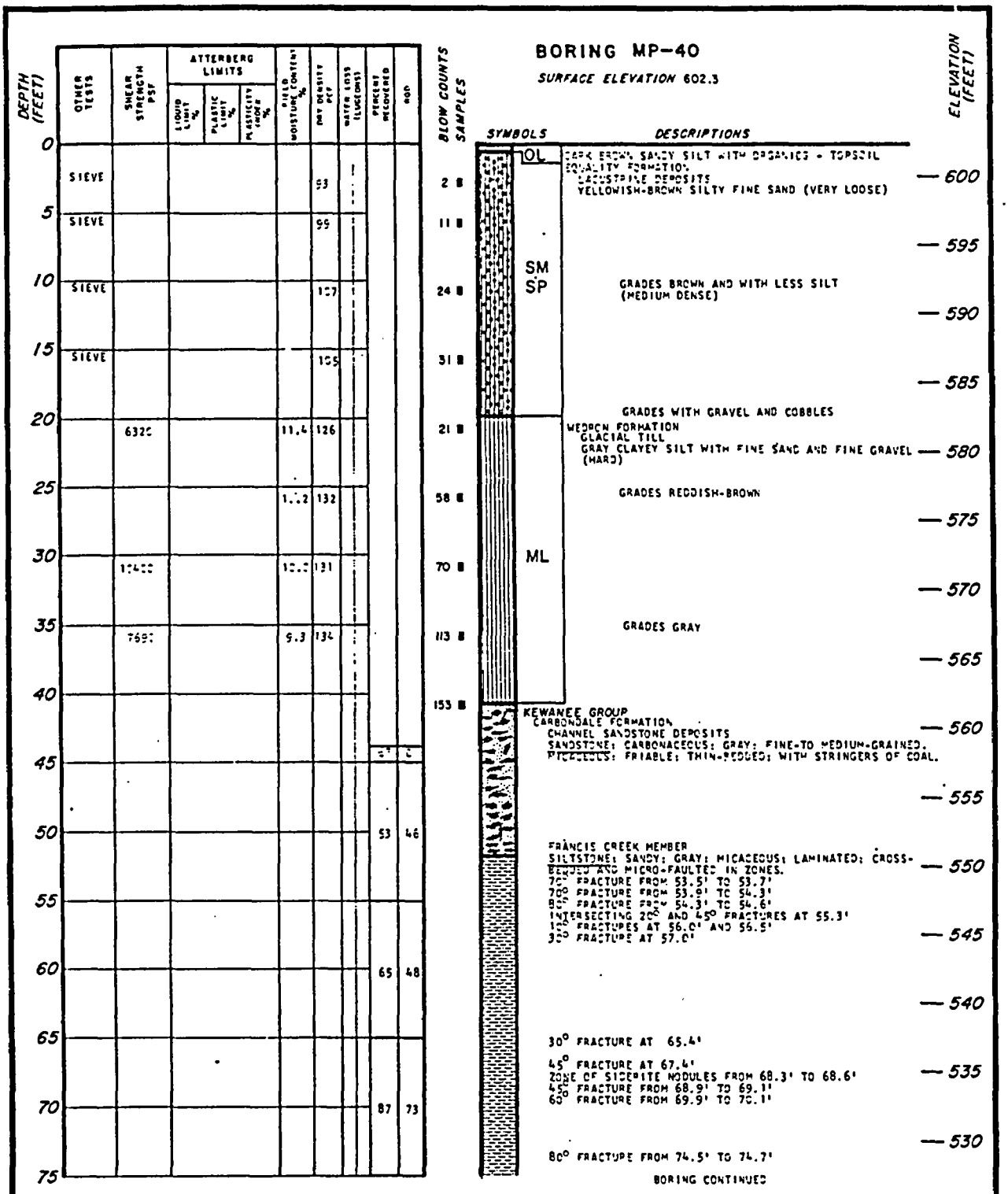
SCALES FORMATION
SILTSTONE: CALCAREOUS; DARK GRAY; LAMINATED; EXTREMELY ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS; INTERBEDDED GRADATIONAL 1/2" TO 3" ZONES OF LIGHT GRAY SILTY LIMESTONE SPACED 1/4" TO 6".

BORING COMPLETED AT 187.0 FEET ON 2-5-73
CASING USED TO A DEPTH OF 26.0 FEET
WATER LEVEL NOT RECORDED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-205

LOG OF BORING MP-39
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-206

LOG OF BORING MP-40
(SHEET 1 OF 3)

BORING MP-40 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									94	65
85										
90									77	66
95										
100									95	84
105										
110									67	29
115										
120									98	72
125										
130									89	75
135										
140									100	79
145										
150									100	100

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	45° FRACTURE FROM 76.0' TO 76.2'	
	SIDERITE NODULE AT 79.1' 80° FRACTURE FROM 79.1' TO 79.4'	525
	LIMESTONE: SANDY: LIGHT GRAY: THIN-BEDDED: WITH A SIDERITE PEBBLE CONGLOMERATE IN BASAL 5". SILTSTONE: SANDY: GRAY: MICACEOUS; THINLY LAMINATED. 80° FRACTURE FROM 83.5' TO 83.7' VERTICAL FRACTURE FROM 84.1' TO 84.5' 70° FRACTURE FROM 84.6' TO 84.8'	520
		515
		510
	SHALE: SILTY: GRAY: FINELY MICACEOUS: THINLY LAMINATED.	505
	VERTICAL FRACTURE FROM 103.1' TO 104.3'	500
	COLCHESTER (NO. 2 MEMBER) COAL: BLACK: THIN-BEDDED: NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	495
	SPOON FORMATION SHALE: SILTY: BROWNISH-GRAY: CARBONACEOUS: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. GRADES HIGHLY SILTY BELOW 114.7'	490
	SILTSTONE: SANDY: LIGHT GRAY: MICACEOUS: WELL INDURATED: THIN-BEDDED TO BEDDED. SHALE: SILTY GRAY: MICACEOUS: CARBONACEOUS: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES 30° FRACTURE AT 118.6'	485
	45° FRACTURE FROM 121.6' TO 121.7' 30° FRACTURE AT 121.9' GRADES SANDY BELOW 121.9' SILTSTONE: SANDY: LIGHT GREENISH-GRAY: MICACEOUS: THIN-BEDDED: WELL INDURATED.	480
	SANDSTONE: SILTY: LIGHT GREENISH-GRAY: FINE-GRAINED: MICACEOUS: LAMINATED TO THIN-BEDDED.	
	SHALE: BROWNISH-GRAY TO BLACK: CARBONACEOUS: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. 3" SIDERITE NODULE AT 127.9' COAL: BLACK: THIN-BEDDED: NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE: GRADES TO HIGHLY CARBONACEOUS SHALE IN BASAL 2".	475
	SHALE: CARBONACEOUS: BROWN TO BLACK: THIN-BEDDED. SILTSTONE: SILTY: TAN FINELY MICACEOUS: CARBONACEOUS: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. 6" COAL SEAM 134.5' TO 135.0'	470
	SILTSTONE: SANDY: BROWNISH-GRAY TO GRAY: MICACEOUS: CARBONACEOUS: LAMINATED TO THIN-BEDDED WITH ABUNDANT CARBONIZED PLANT FOSSILS. GRADES VERY SANDY BELOW 138.0'	465
	MAQUOKETA GROUP FORT ATKINSON FORMATION LIMESTONE: SILTY: GRAY: FINE-TO MEDIUM-GRAINED. FOSSILIFEROUS: THIN-BEDDED WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 4" ZONES OF CALCAREOUS SHALE SPACE 1/2" TO 10". 1/2" DOLOMITE LINED OPEN VUG AT 145.1'	460 455

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-206

LOG OF BORING MP-40
(SHEET 2 OF 3)

BORING MP—40 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155										
160									100	98
165										
170									100	88
175										
180									100	100
185										
190									98	98
195										

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

— 450

— 445

— 440

3 1/2" DOLOMITE LINED OIL-STAINED VUG FROM 164.5' TO 164.8'
VERTICAL FRACTURE FROM 165.0' TO 165.2'

— 435

GRADES LESS SILTY WITH FEWER SHALEY LAYERS BELOW 169.7'

ZONE OF ABUNDANT FOSSILS IN 1/8" TO 1/2" WHITE IRREGULAR BANDS WITH INTERBEDDED THIN DARK GRAY CALCAREOUS SHALES FROM 172.9' TO 174.4'

— 430

LIMESTONE; LIGHT BUFF; COARSE-GRAINED; CALCAREOUS; FOSSILIFEROUS; THIN-BEDDED; IRREGULAR WAVY-LIKE SHALE PARTINGS AND STYLOLITES SPACED 1" TO 10".

— 425

SCALES FORMATION
SILTSTONE; CALCAREOUS; DARK GRAY; LAMINATED; EXTREMELY ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS, WITH INTERBEDDED GRADATIONAL 1/2" TO 3" ZONES OF LIGHT GRAY SILTY LIMESTONE SPACED 1/2" TO 5'.

— 420

FOSSILS DECREASE BELOW 187.1'

— 415

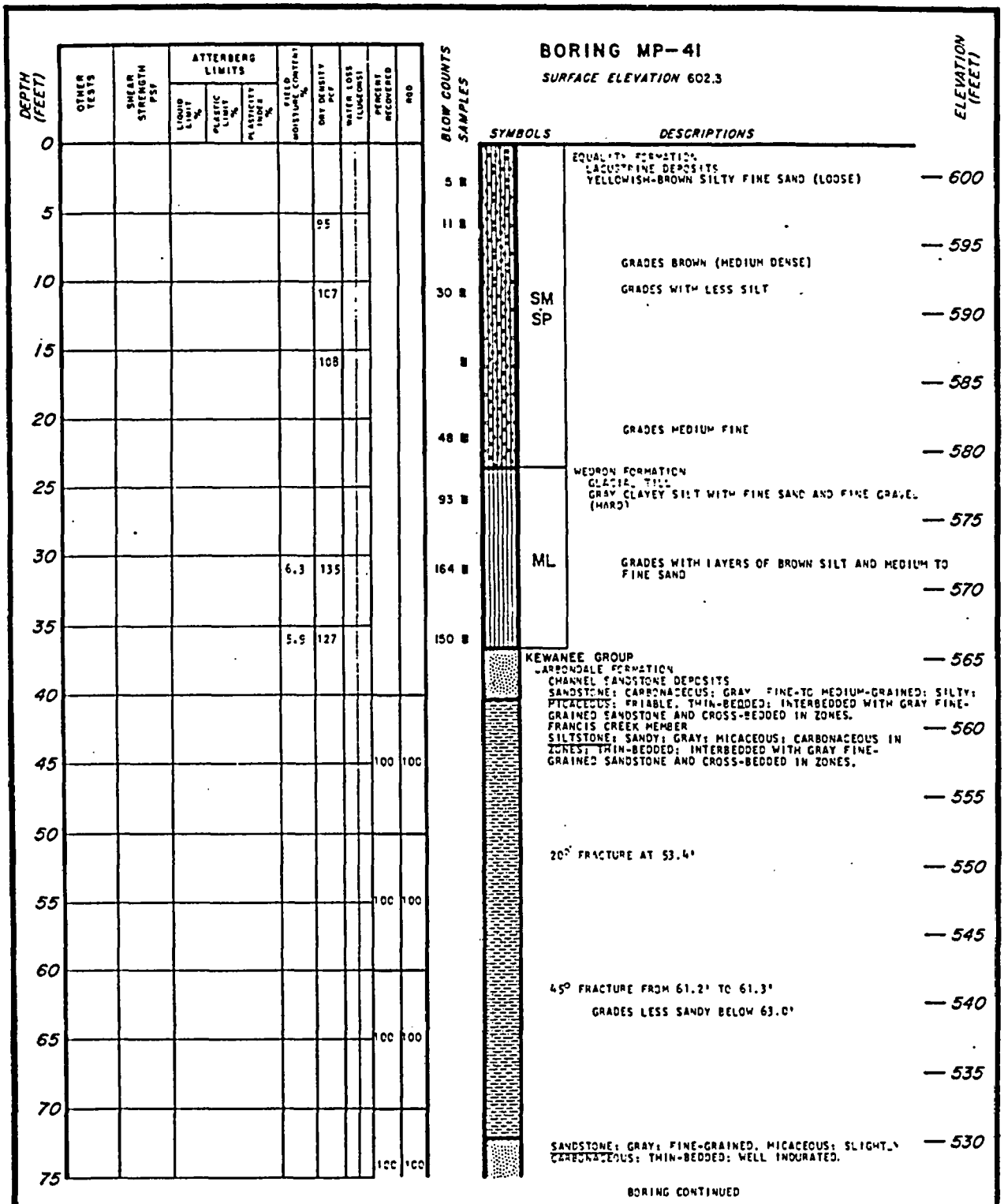
— 410

BORING COMPLETE AT 195.0 FEET ON 1-3-73
CASING USED TO A DEPTH OF 44.0 FEET
WATER LEVEL NOT RECORDED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-206

LOG OF BORING MP-40
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-207

LOG OF BORING MP-41
(SHEET 1 OF 2)

BORING MP-41 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									100	100
90										
95									99	98
100										
105									83	63
110										

SYMBOLS

DESCRIPTIONS

SILTSTONE; SANDY; GRAY; MICACEOUS; CARBONACEOUS; THIN-BEDDED.
SANDSTONE; CONGLOMERATIC; GRAY; FINE-GRAINED; WITH CLASTS OF COAL AND PEBBLES OF SIDERITE; CALCAREOUS; THIN-BEDDED; GRADES TO CALCAREOUS SILTSTONE BASAL 6".
SILTSTONE; SANDY; GRAY; MICACEOUS; THINLY LAMINATED. 30° FRACTURE FROM 81.7' TO 81.8'

VERTICAL FRACTURE FROM 92.5' TO 92.6'

SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE
SIDERITE NODULE AT 100.5'
SIDERITE NODULE FROM 103.0' TO 103.1'
COLCHESTER (NO. 2 COAL) MEMBER
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.
CLAY LAYER FROM 107.1' TO 107.3'
SPOON FORMATION
SHALE; CARBONACEOUS; DARK GRAY; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

ELEVATION (FEET): 525, 520, 515, 510, 505, 500, 495

BORING COMPLETED AT 110.0 FEET ON 3-5-73
CASING USED TO A DEPTH OF 23.5 FEET
WATER LEVEL RECORDED AT 5.8 FEET ON 3-3-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-207

LOG OF BORING MP-41
(SHEET 2 OF 2)

BORING MP-42

SURFACE ELEVATION 603.1

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	% PERCENT RECOVERED	RQD
0	SIEVE						90			
5	SIEVE						101			
10	SIEVE						114			
15	SIEVE						108			
20										
25						12.3	127			
30						10.2	133			
35						9.9	131			
40										
45									13	C
50										
55									100	95
60										
65									100	93
70										
75									94	92

BLOW COUNTS / SAMPLES: 2, 12, 28, 40, 52, 45, 55, 55

SYMBOLS: SM, SP, ML

DESCRIPTIONS

EQUALITY FORMATION
LACUSTRINE DEPOSITS
DARK GRAY SILTY SAND (VERY LOOSE)

GRADES WITH LESS SILT
GRADE YELLOWISH-BROWN (MEDIUM DENSE)

(DENSE)

GRADES WITH LAYER MEDIUM TO COARSE SAND AND GRAVEL WITH COBBLES

WEDRON FORMATION
GLACIAL TILL
GRAY CLAYEY SILT WITH FINE SAND (HARD)

GRADES WITH MEDIUM TO COARSE SAND AND GRAVEL

KEWANEE GROUP
CARBONDALE FORMATION
CHANNEL SANDSTONE DEPOSITS
SANDSTONE; GRAY; FINE-TO MEDIUM-GRAINED, MICACEOUS, CARBONACEOUS IN ZONES; FRIABLE; THIN-BEDDED.

FRANCIS CREEK MEMBER
SILTSTONE; SANDY; GRAY; MICACEOUS; CARBONACEOUS IN ZONES; LAMINATED TO THIN-BEDDED, INTERBEDDED WITH GRAY FINE-GRAINED SANDSTONE AND CROSS-BEDDED IN ZONES.
30° FRACTURE AT 53.6'
60° FRACTURE FROM 56.2' TO 56.4'
50° FRACTURE FROM 57.8' TO 58.0'
45° FRACTURE AT 59.9'
60° FRACTURE FROM 61.7' TO 61.9'
60° FRACTURE FROM 63.3' TO 63.6'
70° FRACTURE FROM 64.4' TO 64.7'
VERTICAL FRACTURE FROM 66.9' TO 67.5'
80° FRACTURE FROM 67.6' TO 67.9'
30° FRACTURES AT 71.1' AND 71.7'

ELEVATION (FEET): 600, 595, 590, 585, 580, 575, 570, 565, 555, 550, 545, 540, 535, 530, 525

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-208

LOG OF BORING MP-42
(SHEET 1 OF 3)

BORING MP-42 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									100	88
90										
95									98	98
100										
105									100	58
110										
115									100	93
120										
125									100	100
130										
135									98	74
140										
145									100	98
150										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		520
	SANDSTONE LENSE FROM 81.1' TO 81.2' GRADES HIGHLY CLAYEY BELOW 81.2. 1" COAL SEAM AT 82.0' GRADES HORIZONTALLY LAMINATED BELOW 82.1'	515
		510
		505
	45° FRACTURE AT 95.1'	
		500
	SHALE: SILTY; FINELY MICACEOUS; THINLY LAMINATED. 2" SIDERITE NODULE AT 103.3'	495
	COLCHESTER (NO. 2 COAL) MEMBER COAL: BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY; GRADES TO A CARBONACEOUS SHALE IN BASAL 6".	490
	SPOON FORMATION SHALE: CARBONACEOUS; DARK GRAY TO BROWN; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	485
	SILTSTONE: SANDY; LIGHT GRAY; MICACEOUS; CARBONACEOUS; SIDERITIC; THIN-BEDDED; WELL INDURATED. SHALE: BROWN TO GRAY; CARBONACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	480
		475
	SILTSTONE: COARSE SANDY; LIGHT GREENISH-GRAY; MICACEOUS; CARBONACEOUS; THIN-BEDDED; WELL INDURATED . SILTSTONE: SANDY; LIGHT GREENISH-GRAY; MICACEOUS; CARBONACEOUS; SIDERITIC; THIN-BEDDED; INTERBEDDED WITH LIGHT GREENISH-GRAY SANDSTONE LAYERS; WELL INDURATED.	470
	SHALE: CARBONACEOUS; DARK GRAY TO BROWN; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. BLACK COAL SEAM FROM 130.9' TO 131.1' COAL: BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY. SHALE: SILTY; BROWNISH-GRAY; CARBONACEOUS; MICACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	465
	SILTSTONE: SANDY; DARK GRAY; MICACEOUS; CARBONACEOUS; LAMINATED TO THIN-BEDDED.	460
	70° FRACTURE FROM 143.1' TO 143.4'	455
	GRADES FISSILE WITH ABUNDANT CARBONIZED PLANT FOSSILS BELOW 145.2'	
	MAQUOKETA GROUP FORT ATKINSON FORMATION LIMESTONE: SILTY; GRAY; FINE-TO MEDIUM-GRAINED; FOSSILIFEROUS;	450

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-208

LOG OF BORING MP-42
(SHEET 2 OF 3)

BORING MP-42 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155									97	76
160										
165									96	82
170										
175									97	71
180									100	60
185									100	10[illegible]
190										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	THIN-BEDDED; WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 10" ZONES OF CALCAREOUS SHALE SPACED 1/4" TO 10".	445
		440
		435
		430
		425
		420
	VERTICAL FRACTURE FROM 180.8' TO 181.5'	
	LIMESTONE; LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED WITH IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1/4" TO 10".	415
	SCALES FORMATION: SILTSTONE; CALCAREOUS; DARK GRAY; LAMINATED; EXTREMELY ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS; INTERBEDDED GRADATIONAL 1/2" TO 3" ZONES OF LIGHT GRAY SILTY LIMESTONE SPACED; 1" TO 15".	410

BORING COMPLETED AT 189.5' ON 3-16-73
CASING USED TO A DEPTH OF 23.5 FEET
WATER LEVEL NOT RECORDED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-208

LOG OF BORING MP-42
(SHEET 3 OF 3)

BORING MP-43

SURFACE ELEVATION 599.5

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE (CONTENT) %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD	BLOW COUNTS SAMPLES
0											
5											12
10											18
15											18
20											44
25											27
30											83
35											110
40											66
45									100	69	
50											
55									100	100	
60											
65									100	98	
70											
75									100	93	

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
OL	BLACK SANDY SILT WITH ORGANICS - TOPSOIL	
	EQUALITY FORMATION	
	LACUSTRINE DEPOSITS	
	YELLOWISH-BROWN SILTY FINE SAND (MEDIUM DENSE)	
	GRADES BROWN	595
SM SP	GRADES WITH LESS SILT	590
		585
	GRADES GRAY (DENSE)	580
		575
	WEDRON FORMATION	
	GLACIAL TILL	
	GRAY CLAYEY SILT WITH FINE SAND AND FINE GRAVEL (HARD)	
ML		570
	GRADES TO BROWN FINE SANDY SILT WITH PIECES OF GRAY SANDSTONE AND SOME FINE GRAVEL	565
	KEWANEE GROUP	560
	CARBONDALE FORMATION	
	CHANNEL SANDSTONE DEPOSITS	
	SANDSTONE: GRAY: FINE-TO MEDIUM-GRAINED: MICACEOUS: FRIABLE: THIN-BEDDED: GRADES CARBONACEOUS BELOW 40.7'	
	FRANCIS CREEK MEMBER	
	SILTSTONE: SANDY: GRAY: MICACEOUS: CARBONACEOUS IN ZONES: LAMINATED TO THIN-BEDDED: CROSS-BEDDED IN ZONES: UPPER 8' CLAYEY.	555
	VERTICAL FRACTURE FROM 45.9' TO 46.6'	
	45° FRACTURE AT 47.1'	550
	30° FRACTURES AT 52.7' AND 53.2'	
		545
	VERTICAL FRACTURE FROM 57.8' TO 58.2'	
	30° FRACTURES AT 59.2' AND 59.6'	540
	45° FRACTURE FROM 60.8' TO 60.9'	
	20° FRACTURE AT 61.3'	
	45° FRACTURE FROM 62.9' TO 63.1'	535
	30° FRACTURE AT 66.6'	
	45° FRACTURE FROM 67.7' TO 67.9'	
	45° FRACTURE FROM 68.4' TO 68.6'	
	45° FRACTURE FROM 69.2' TO 69.3'	
	GRADES VERY SANDY BELOW 69.5'	530
	50° FRACTURE FROM 70.9' TO 71.1'	
	30° FRACTURE FROM 71.6' TO 71.7'	
	30° FRACTURE AT 73.3'	
	GRADES LESS SANDY BELOW 74.0'	
	30° FRACTURE AT 74.4'	525
	BORING CONTINUED	

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-209

LOG OF BORING MP-43
(SHEET 1 OF 2)

BORING MP-43 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									100	97
90										
95									100	100
100										
105									100	83
110										
115									100	99
120										

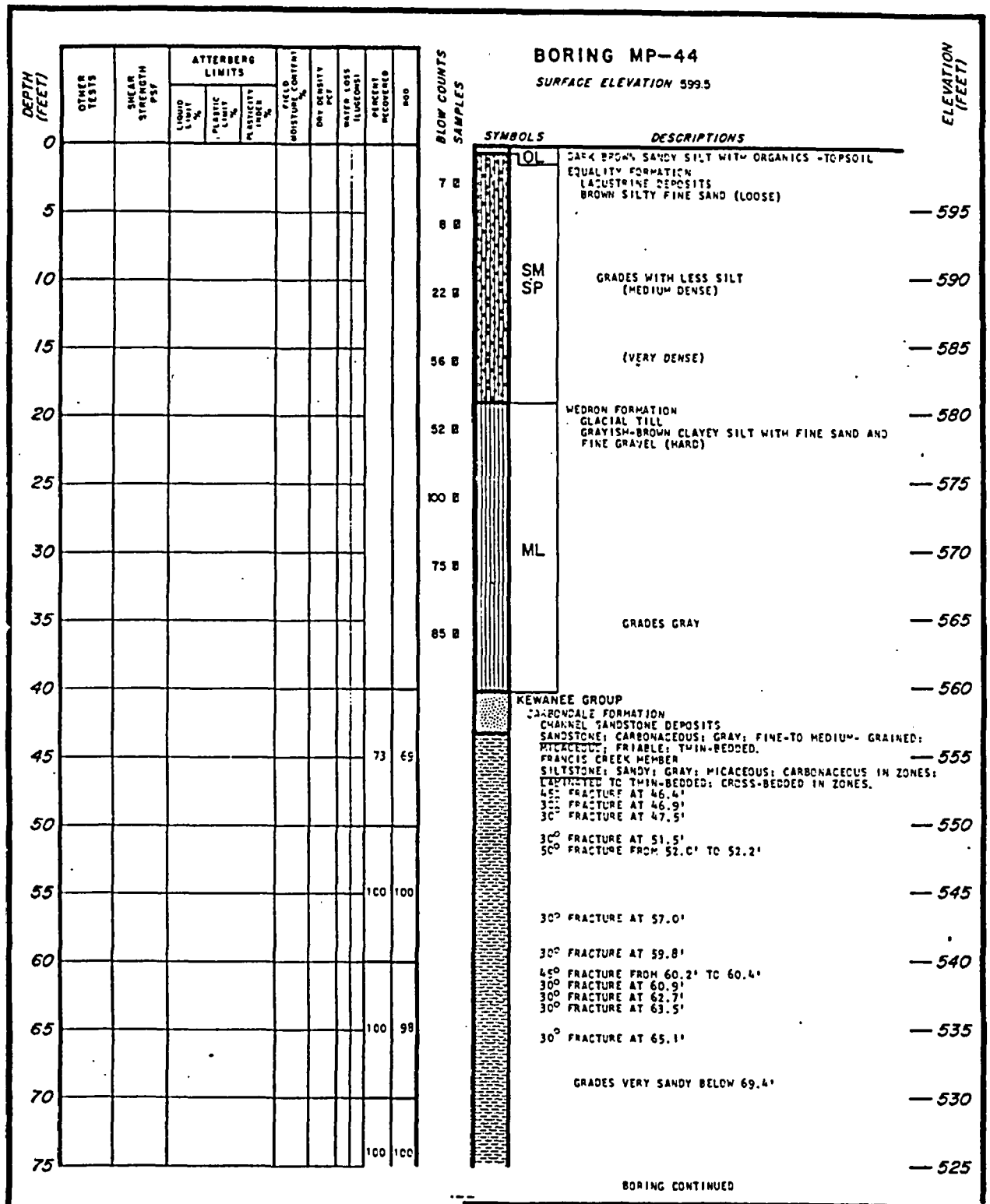
SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	60° FRACTURE FROM 75.6' TO 75.9' 30° FRACTURE AT 77.6' 45° FRACTURES FROM 77.3' TO 77.4' AND 77.5' TO 77.6'	
	CLAY SEAM FROM 80.0' TO 80.4' HORIZONTALLY LAMINATED BELOW 81.8'	520
		515
		510
	SHALE: SILTY: GRAY; FINELY MICACEOUS: THINLY LAMINATED; FISSILE.	505
		500
	COLCHESTER (NO. 2 COAL) MEMBER	495
	COAL: BLACK: THIN-BEDDED: NUMEROUS VERTICAL TIGHT FRACTURES WITH SOME PYRITE AND CLAY.	
	SPOON FORMATION SHALE: CARBONACEOUS: BROWNISH-GRAY TO DARK GRAY: MASSIVE: BADLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	490
		485
	SILTSTONE: SANDY: LIGHT GRAY: MICACEOUS: CARBONACEOUS: THIN-BEDDED: WELL INDURATED.	480

BORING COMPLETED AT 120.0 FEET ON 2-27-73
WATER LEVEL RECORDED AT 3.0 FEET ON 2-26-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-209

LOG OF BORING MP-43
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-210

LOG OF BORING MP-44
(SHEET 1 OF 2)

BORING MP-44 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									100	95
90										
95									100	100
100										
105									100	80
110										

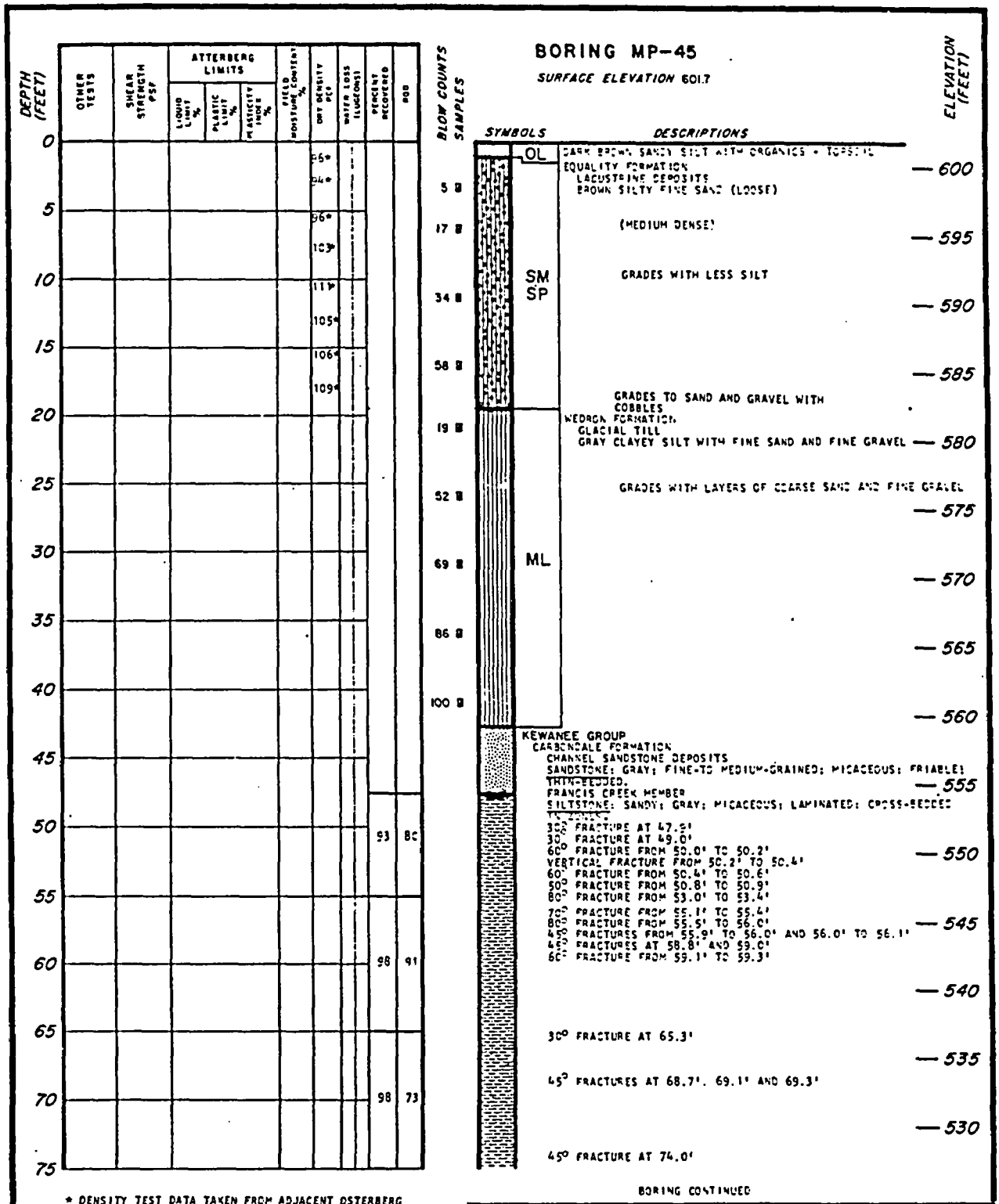
SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	TWO 1" SIDERITE NODULES AT 80.3' GRADES CALCAREOUS FROM 80.5' TO 80.7' AND 81.3' TO 81.5'	520
	SANDSTONE: CARBONACEOUS: GRAY: FINE-TO MEDIUM-GRAINED: MICACEOUS: THIN-BEDDED: CONGLOMERATIC IN UPPER AND BASAL INCHES WITH CLASTS AND STRINGERS OF COAL AND PEBBLES OF SIDERITE. 2" COAL SEAM AT 84.2' SILTSTONE: SANDY: GRAY: MICACEOUS: THINLY LAMINATED: FISSILE IN ZONES.	515
		510
	45° FRACTURE FROM 94.3' TO 94.5'	505
		500
	SHALE: SILTY: GRAY: FINELY MICACEOUS: THINLY LAMINATED: FISSILE 45° FRACTURE FROM 101.7' TO 101.9' 30° FRACTURE FROM 101.9' TO 102.0' COLCHESTER (NO. 2 COAL) MEMBER COAL: BLACK: THIN-BEDDED: NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	495
	SPOON FORMATION SHALE: CARBONACEOUS: BROWNISH-GRAY: MASSIVE, HIGHLY FRAGMENTED WITH NUMEROUS SLICKENSIDES.	490

BORING COMPLETED AT 110.0 FEET ON 2-26-73
CASING USED TO A DEPTH OF 21.5 FEET
WATER LEVEL RECORDED AT 3.5 FEET ON 2-24-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-210

LOG OF BORING MP-44
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-211

LOG OF BORING MP-45
(SHEET 1 OF 3)

BORING MP-45 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									98	71
85										
90									100	98
95										
100									100	94
105										
110									100	50
115										
120									100	58
125	UC/R									
130									93	63
135										
140									100	90
145										
150									100	97

SYMBOLS

DESCRIPTIONS

ELEVATION (FEET)

525

1/2" SIDERITE NODULE AT 78.2'
1/2" COAL SEAM AT 78.4'
SIDERITE NODULES FROM 81.3' TO 81.6'
1/2" SANDSTONE LAYER AT 81.7'
1" SANDSTONE LAYER AT 81.8'
1" SIDERITE NODULE AT 82.0'
SANDSTONE: CALCAREOUS: GRAY: FINE-GRAINED: MICACEOUS: CARBONACEOUS: SIDERITIC: THIN-BEDDED.
1/2" COAL SEAM AT 83.1'
2" SILTSTONE LAYER AT 83.2'
1/2" COAL SEAM AT 83.5'
SILTSTONE: SANDY: GRAY: MICACEOUS: THINLY LAMINATED.

520

515

510

505

500

SHALE: SILTY: GRAY: FINELY MICACEOUS: THINLY LAMINATED
1" SIDERITE NODULE AT 103.5'
GRADES CARBONACEOUS AT 104.9'
COLCHESTER (NO. 2 COAL) MEMBER
COAL: BLACK: THIN-BEDDED. NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY: GRADES TO HIGHLY CARBONACEOUS SHALE IN BASAL 2".
CARBONACEOUS SHALE LAYER FROM 108.2' TO 108.8'

495

SPOON FORMATION
SHALE: SILTY: BROWNISH-GRAY: CARBONACEOUS: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.
1" COAL SEAM AT 113.5'

490

SILTSTONE: SANDY: LIGHT BROWNISH-GRAY: MICACEOUS. CARBONACEOUS: MASSIVE: HIGHLY FRACTURED.
SANDSTONE: SILTY: LIGHT GRAY: FINE-GRAINED: MICACEOUS: CARBONACEOUS: THIN-BEDDED: WELL INDURATED.
SILTSTONE: LIGHT GRAY: MICACEOUS: CARBONACEOUS: THIN-BEDDED.
SHALE: SILTY: BROWN: HIGHLY CARBONACEOUS: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

485

SILTSTONE: SANDY: LIGHT GREENISH-GRAY: MICACEOUS: THIN-BEDDED: WELL INDURATED.

480

SANDSTONE: SILTY: LIGHT GREENISH-GRAY: FINE-GRAINED: MICACEOUS. LAMINATED TO THIN-BEDDED: GRADES TO INTERBEDDED SANDSTONE AND SILTSTONE LAYERS BELOW 125.3', GRADES TO SILTY SHALE IN BASAL 2".
COAL: BLACK: THIN-BEDDED. NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.
CARBONACEOUS CLAY LAYERS FROM 127.5' TO 127.7': 128.0' TO 128.2' AND 128.4' TO 128.5'
SHALE: CARBONACEOUS: BROWN TO BLACK: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.
SILTSTONE: SHALEY: BROWNISH-GRAY: MICACEOUS: CARBONACEOUS: MASSIVE: WELL INDURATED.
SHALE: SILTY: TANNISH-GRAY: CARBONACEOUS: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.
COAL SEAM FROM 133.9' TO 134.3'
SILTSTONE: SANDY: GRAY: MICACEOUS: CARBONACEOUS: LAMINATED TO THIN-BEDDED WITH ABUNDANT CARBONIZED PLANT FOSSILS: FISSILE.

475

70° FRACTURE FROM 142.1' TO 142.4'
GRADES CALCAREOUS BELOW 143.8'

470

465

460

MAQUOKETA GROUP
FORT ATKINSON FORMATION
LIMESTONE: SILTY GRAY: FINE-TO MEDIUM-GRAINED: FOSSILIFEROUS: THIN-BEDDED WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 4" ZONES OF CALCAREOUS SHALE SPACED 1/2" TO 10".
PYRITIC AND OIL-STAINED ZONE FROM 144.6' TO 145.8'

455

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-211

LOG OF BORING MP-45
(SHEET 2 OF 3)

BORING MP-45 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155										
160									100	100
165										
170									99	94
175										
180									100	98
185										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	THREE 1/2" DOLOMITE FILLED VUGS AT 145.8', 145.9' AND 146.2' 1/4" OPEN OIL-STAINED VUG AT 146.3'	450
		445
		440
	SEVERAL PINPOINT CALCITE LINED OPEN VUGS AT 167.0' 1/2" OPEN OIL-STAINED VUG AT 169.1' SEVERAL PINPOINT TO 1/8" OPEN OIL-STAINED VUGS FROM 169.3' TO 169.4'	435
	GRADES LIGHT GRAY IN COLOR BELOW 172.5' ZONE OF ABUNDANT FOSSILS IN 1/8" TO 1" WHITE IRREGULAR BANDS WITH INTERBEDDED THIN DARK GRAY CALCAREOUS SHALE FROM 173.5' TO 175.0'	430
	LIMESTONE; LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED WITH IRREGULAR HAIRLINE SHALE PARTINGS AND SYTLOLITES SPACED 1/2" TO 10".	425
	SCALES FORMATION SILTSTONE; CALCAREOUS; DARK GRAY; LAMINATED; EXTREMELY ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS; INTERBEDDED GRADATIONAL 1/2" TO 4" ZONES OF LIGHT GRAY SILTY LIMESTONE SPACE 1/4" TO 6".	420

BORING COMPLETED AT 185.0 FEET ON 2-7-73
CASING USED TO A DEPTH OF 47.5 FEET
WATER LEVEL NOT RECORDED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-211

LOG OF BORING MP-45
(SHEET 3 OF 3)

BORING MP-46

SURFACE ELEVATION 598.9

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
0										
5										
10										
15										
20										
25										
30										
35										
40										
45									100	93
50										
55									100	100
60										
65									100	100
70										
75									100	94

BLOW COUNTS / SAMPLES: 6, 13, 25, 62, 57, 79, 121, 104

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
SM SP	EQUALITY FORMATION - LACUSTRINE DEPOSITS YELLOWISH-BROWN SILT FINE SAND (LOOSE)	595
	GRADES BROWN (MEDIUM DENSE)	
	GRADES WITH LESS SILT	590
	GRADES GRAYISH-BROWN	585
ML	WEDRON FORMATION GLACIAL TILL REDDISH-BROWN CLAYEY SILT WITH FINE SAND AND FINE GRAVEL (HARD)	580
		575
	KEWANEE GROUP CARBONDALE FORMATION CHANNEL SANDSTONE DEPOSITS SANDSTONE GRAY; FINE-TO MEDIUM-GRAINED; MICACEOUS; CARBONACEOUS IN ZONES; FRIABLE; THIN-BEDDED.	570
		565
	FRANCIS CREEK MEMBER	560
	SILTSTONE; SANDY; GRAY; MICACEOUS; CARBONACEOUS IN ZONES; LAMINATED TO THIN-BEDDED; INTERBEDDED WITH GRAY FINE-GRAINED SANDSTONE AND CROSS-BEDDED IN ZONES. 70° FRACTURE FROM 41.7' TO 42.1' 30° FRACTURE AT 43.2' 60° FRACTURE FROM 43.9' TO 44.2'	555
	45° FRACTURE FROM 48.3' TO 48.4' 60° FRACTURE FROM 48.4' TO 48.7' 70° FRACTURES FROM 48.8' TO 49.8'	550
	45° FRACTURE FROM 51.6' TO 51.7'	545
		540
		535
		530
		525

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-212

LOG OF BORING MP-46
(SHEET 1 OF 2)

BORING MP-46 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									100	100
90										
95									100	96
100										
105									85	79
110										

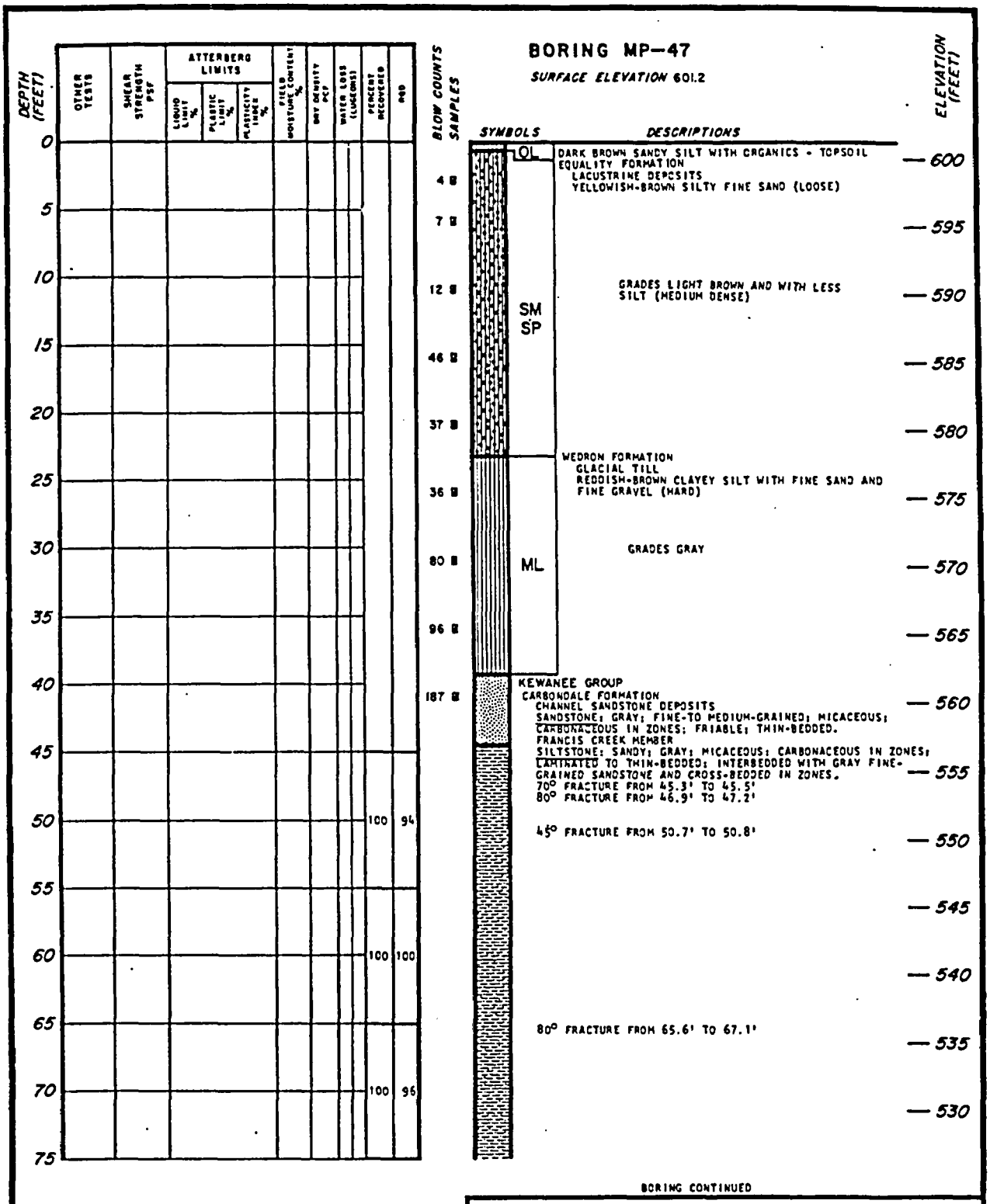
SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	SANDSTONE; CONGLOMERATIC; GRAY; FINE-GRAINED WITH CLASTS OF COAL AND PEBBLES OF SIDERITE; MICACEOUS; THIN-BEDDED. BLACK COAL FROM 75.6' TO 76.0'	
	GRADES CALCAREOUS BELOW 76.2'	
	SILTSTONE; SANDY; GRAY; MICACEOUS; THINLY LAMINATED; FISSILE.	520
		515
		510
		505
	SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.	
	GRADES CARBONACEOUS BELOW 99.4'	
	COLCHESTER (NO. 2 COAL) MEMBER	500
	COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	
	SPOON FORMATION	
	SHALE; CARBONACEOUS; BROWN TO DARK GRAY; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. BLACK COAL FROM 103.1' TO 103.5'	495
		490

BORING COMPLETED AT 110.0 FEET ON 3-7-73
CASING USED TO A DEPTH OF 18.5 FEET
WATER LEVEL NOT RECORDED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-212

LOG OF BORING MP-46
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-213

LOG OF BORING MP-47
(SHEET 1 OF 2)

BORING MP-47 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									100	55
85										
90									100	100
95										
100									95	95
105										
110									100	92
115										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	45° FRACTURES FROM 75.6' TO 75.7' AND 76.0' TO 76.2'	525
	30° FRACTURES FROM 79.2' TO 79.3' AND 79.4' TO 79.5'	
	70° FRACTURE FROM 79.9' TO 80.1'	520
	SANDSTONE: GRAY: FINE-TO MEDIUM-GRAINED: MICACEOUS: THIN-BEDDED: CONGLOMERATIC IN BASAL 4" WITH CLASTS OF COAL AND PEBBLES OF SIDERITE. SILTSTONE: SANDY: GRAY: MICACEOUS: THINLY LAMINATED: FISSILE IN ZONES.	515
		510
		505
	SHALE: SILTY: GRAY: FINELY MICACEOUS: THINLY LAMINATED: FISSILE	500
	COLCHESTER (NO. 2 COAL) MEMBER COAL: BLACK: THIN-BEDDED: NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY	495
	SPOON FORMATION SHALE: CARBONACEOUS- BROWNISH-GRAY TO DARK GRAY: MICACEOUS: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES	490

BORING COMPLETED AT 115.0 FEET ON 2-28-73
WATER LEVEL RECORDED AT 5.0 FEET AT 2-27-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-213

LOG OF BORING MP-47
(SHEET 2 OF 2)

BORING MP-48

SURFACE ELEVATION 599.5

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD	BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
0												OL	DARK BROWN SANDY SILT WITH ORGANICS + TOPSOIL. EQUALITY FORMATION LACUSTRINE DEPOSITS BROWN SILTY FINE SAND (LOOSE)	
5											6 / 9			595
10							114				25	SM SP	GRADES WITH LESS SILT (DENSE)	590
15							107				52			585
20											46		WEDRON FORMATION GLACIAL TILL BROWNISH-GRAY CLAYEY FINE SAND AND FINE GRAVEL	580
25											71		GRADES WITH LESS CLAY	575
30											100/2"	ML		570
35											100/6"			565
40											200/3"		KEWANEE GROUP CARBONDALE FORMATION CHANNEL SANDSTONE DEPOSITS SANDSTONE: GRAY; MEDIUM-GRAINED; MICACEOUS; CARBONACEOUS; THIN-BEDDED WITH THIN CARBONACEOUS PARTINGS SPACED 1/4" TO 2".	560
45									100	73			FRANCIS CREEK MEMBER SILTSTONE; SANDY; GRAY; MICACEOUS; CARBONACEOUS IN UPPER 4'; THIN-BEDDED; CROSS-BEDDED AND MICRO-FAULTED IN ZONES.	555
50													80° FRACTURE FROM 45.2' TO 45.7' 30° FRACTURE AT 46.7' VERTICAL FRACTURE FROM 47.6' TO 48.2' VERTICAL FRACTURE FROM 52.6' TO 52.9'	550
55									100	92				545
60													VERTICAL FRACTURE FROM 57.0' TO 57.8'	540
65									100	91			70° TO VERTICAL FRACTURE FROM 60.9' TO 61.3' 45° FRACTURE AT 61.5' 45° FRACTURE AT 61.7' 45° FRACTURE AT 61.9'	535
70									100	87			45° FRACTURE AT 68.8' 45° FRACTURE AT 69.0'	530
75														525

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-214

LOG OF BORING MP-48
(SHEET 1 OF 3)

BORING MP-48 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									100	100
90										
95									100	100
100										
105									100	51
110										
115									100	68
120										
125									100	54
130										
135									100	56
140										
145									100	83
150										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	45° FRACTURE AT 78.9'	520
	HORIZONTALLY LAMINATED BELOW 82.4'	
	30° FRACTURE AT 83.9'	515
	SHALE: SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED	510
		505
		500
	GRADES HIGHLY CARBONACEOUS AT 104.9'	
	COLCHESTER (NO. 2 COAL) MEMBER COAL: BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	495
	SPOON FORMATION SHALE: BLACK; HIGHLY CARBONACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	490
	SILTSTONE: SANDY; GREENISH-GRAY; MICACEOUS; THIN-BEDDED.	
	3" CLAY SEAM AT 112.6'	
	SHALE: SILTY; BROWNISH-GRAY; CARBONACEOUS; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	485
		480
	SILTSTONE: SANDY; GREENISH-GRAY MICACEOUS, THIN-BEDDED.	475
	SANDSTONE: SILTY; GREENISH-GRAY; FINE-GRAINED; MICACEOUS. THIN-BEDDED WITH SOME CARBONIZED PLANT FOSSILS; GRADES CARBONACEOUS IN BASAL 4".	
	SHALE: CARBONACEOUS; BLACK; SIDERITIC; THIN-BEDDED. COAL: BLACK; THIN-BEDDED; FRACTURED.	470
	SHALE: CARBONACEOUS; BROWNISH-GRAY; MASSIVE; FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	465
	6" HIGHLY CARBONACEOUS LAYER AT 136.8'	
	SILTSTONE: SANDY; DARK GRAY; MICACEOUS; LAMINATED; CROSS-BEDDED IN ZONES; ABUNDANT CARBONIZED PLANT FOSSILS.	460
	GRADES CALCAREOUS AT 143.4'	
	MAQUOKETA GROUP FORT ATKINSON FORMATION LIMESTONE: SILTY; GRAY; FINE-TO MEDIUM-GRAINED; FOSSILIFEROUS; THIN-BEDDED WITH NUMEROUS GRADATIONAL AND IRREGULAR PARTINGS AND 1/4" TO 9" ZONES OF CALCAREOUS SHALE SPACED 1/4" TO 4".	455
		450

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-214

LOG OF BORING MP-48
(SHEET 2 OF 3)

BORING MP-48 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150									96	96
155										
160									100	100
165										
170									100	100
175										
180									100	100
185										
190										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		445
		440
	GRADES OIL-STAINED BELOW 164.2'	
	1/2" OPEN VUG AT 144.5'	435
	SEVERAL 1/8" OPEN VUGS AT 165.8' 1/8" OPEN VUG AT 167.8'	
	TWO 1/8" OPEN VUGS AT 169.4'	430
	THREE 1/8" OPEN VUGS AT 174.8'	425
	LIMESTONE; LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED; IRREGULAR HAIRLINE SHALE PARTINGS AND STYLOLITES SPACED 1" TO 6". FOUR 1/2" OPEN VUGS FROM 176.1' TO 176.3'	
	1" DOLOMITE LINED OPEN VUG AT 182.1'	420
	SCALES FORMATION SILTSTONE; CALCAREOUS; DARK GRAY; LAMINATED EXTREMELY ABUNDANT FOSSILS IN THIN WHITE IRREGULAR BANDS, INTERBEDDED GRADATIONAL 1/2" TO 3" BANDS OF LIGHT GRAY SILTY LIMESTONE SPACED 1" TO 15".	415

BORING COMPLETED AT 186.0 FEET ON 1-20-73
WATER LEVEL NOT RECORDED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-214

LOG OF BORING MP-48
(SHEET 3 OF 3)

BORING MP-49

SURFACE ELEVATION 598.3

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
0										
5										
10										
15										
20										
25										
30										
35										
40										
45									88	68
50										
55									100	100
60										
65									88	81
70										
75									100	100

BLOW COUNTS / SAMPLES: 6 S, 17 S, 34 S, 125 S, 61 S, 58 S, 56 S, 122 S

SYMBOLS / DESCRIPTIONS / ELEVATION (FEET)

SM SP

EQUALITY FORMATION
LACUSTRINE DEPOSITS
BROWN SILTY FINE SAND (LOOSE) — 595

(MEDIUM DENSE)

— 590

GRADES WITH LESS SILT
(DENSE)

GRADES YELLOWISH-BROWN

— 585

— 580

ML

WEDRON FORMATION
GLACIAL TILL
LIGHT BROWN SILT WITH SOME FINE SAND AND GRAVEL

— 575

GRADES TO BROWN CLAYEY SILT WITH FINE SAND AND FINE GRAVEL

GRADES GRAY — 570

— 565

— 560

KEWANEE GROUP
CARBONDALE FORMATION
CHANNEL SANDSTONE DEPOSITS
SANDSTONE; GRAY; FINE-TO MEDIUM-GRAINED; MICACEOUS; CARBONACEOUS IN ZONES; FRIABLE; THIN-BEDDED.
FRANCIS CREEK MEMBER — 555
SILTSTONE; SANDY; GRAY; MICACEOUS; CARBONACEOUS IN ZONES; LAMINATED TO THIN-BEDDED; INTERBEDDED WITH GRAY FINE-GRAINED SANDSTONE AND CROSS-BEDDED IN ZONES.

70° FRACTURE FROM 47.5' TO 47.7'
30° FRACTURE AT 48.4' — 550
45° FRACTURE FROM 48.6' TO 48.8'

30° FRACTURE AT 52.0'
45° FRACTURE FROM 53.8' TO 53.9'
50° FRACTURE FROM 54.0' TO 54.2' — 545

20° FRACTURE AT 56.1'
45° FRACTURE FROM 56.4' TO 56.5'

45° FRACTURE FROM 69.3' TO 69.5' — 540
2" SIDERITE NODULE AT 60.0'

50° FRACTURE FROM 61.4' TO 61.6'

45° FRACTURES FROM 63.3' TO 63.5' AND 63.6' TO 63.8' — 535
45° FRACTURE FROM 64.2' TO 64.4'

— 530

45° FRACTURE FROM 70.7' TO 70.8'

30° FRACTURE AT 73.6' — 525

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-215

LOG OF BORING MP-49
(SHEET 1 OF 2)

BORING MP-49 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
									100	100
80										
85									98	98
90										
95									100	93
100										
105									88	53
110										

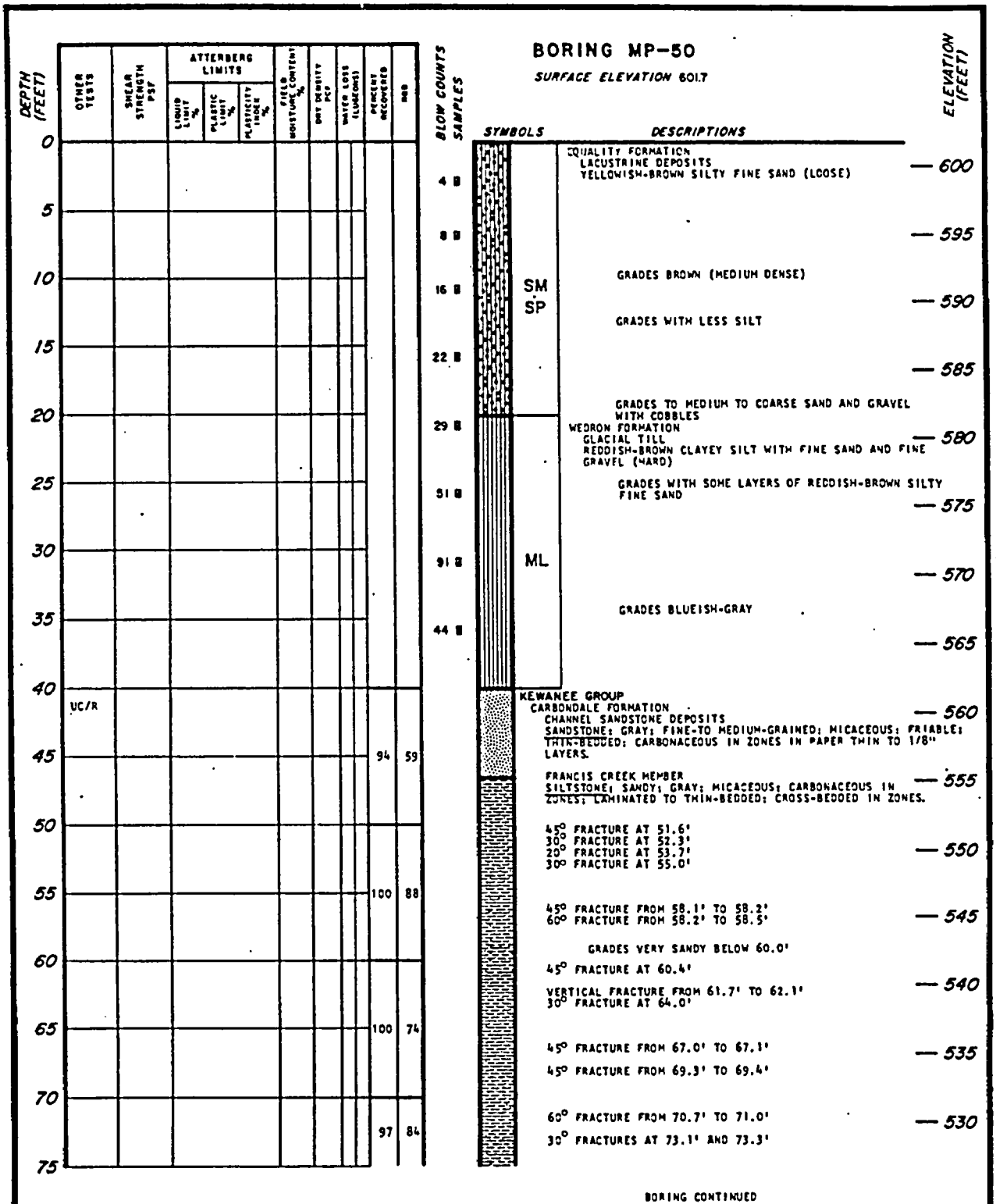
SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	60° FRACTURE FROM 75.9' TO 76.1'	
	30° FRACTURE AT 78.0'	520
	GRADES HORIZONTALLY LAMINATED BELOW 81.1' 30° FRACTURE AT 81.4'	515
	80° FRACTURE FROM 87.8' TO 88.0' 70° FRACTURE FROM 89.4' TO 89.6' 70° FRACTURE FROM 89.7' TO 90.0'	510
		505
		500
	1" SIDERITE NODULE AT 100.0' SHALE: SILTY: GRAY: FINELY MICACEOUS: THINLY LAMINATED: FISSILE. 70° TO 80° FRACTURES FROM 101.3' TO 102.5' FLUTED FROM 101.3' TO 102.5' COLCHESTER (NO. 2 COAL) MEMBER COAL: BLACK: THIN-BEDDED: NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	495
	SPOON FORMATION SHALE: CARBONACEOUS: BROWN TO GRAY; MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	490

BORING COMPLETED AT 110.0 FEET ON 3-8-73
WATER LEVEL RECORDED AT 10.0 FEET ON 3-7-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-215

LOG OF BORING MP-49
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-216

LOG OF BORING MP-50
(SHEET 1 OF 2)

BORING MP-50 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									100	84
90										
95									100	85
100										
105									95	60
110										
115									90	60
120										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		525
	60° FRACTURE FROM 82.6' TO 82.9'	520
	45° FRACTURE FROM 84.0' TO 84.2' 45° FRACTURE FROM 85.2' TO 85.4'	515
	45° FRACTURES AT 89.4' AND 89.5'	
	60° FRACTURE FROM 61.5' TO 61.7'	510
	GRAY FINE-GRAINED SANDSTONE LAYER FROM 94.3' TO 95.6' GRADES HORIZONTALLY LAMINATED BELOW 95.6'	
	60° FRACTURE FROM 96.0' TO 96.2'	505
	SHALE: SILTY: GRAY: FINELY MICACEOUS: THINLY LAMINATED: FISSILE.	
	30° FRACTURE AT 102.6' 60° FRACTURE FROM 103.6' TO 103.8'	500
	30° FRACTURE AT 105.7'	
	COLCHESTER (NO. 2 COAL) MEMBER COAL: BLACK: THIN-BEDDED: NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	495
	SPOON FORMATION SHALE: CARBONACEOUS: BROWNISH-GRAY TO GRAY: MICACEOUS: FISSILE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. BLACK COAL SEAM FROM 113.3' TO 113.6'	490
		485

BORING COMPLETED AT 120.0 FEET ON 3-1-73
CASING USED TO A DEPTH OF 23.5 FEET
WATER LEVEL RECORDED AT 5.5 FEET ON 2-8-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-216

LOG OF BORING MP-50
(SHEET 2 OF 2)

BORING MP-51

SURFACE ELEVATION 602.2

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
0										
5										
10										
15										
20										
25										
30										
35										
40										
45									98	95
50										
55									97	97
60										
65									100	98
70									100	100
75										

BLOW COUNTS / SAMPLES: 2, 6, 15, 35, 69, 30, 250, 33

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
SM SP	EQUALITY FORMATION LACUSTRINE DEPOSITS YELLOWISH-BROWN SILTY SAND (VERY LOOSE)	600
	(LOOSE)	595
	GRADES LIGHT BROWN GRADES WITH LESS SILT (MEDIUM DENSE)	590
	(DENSE)	585
	GRADES TO GRAY	580
ML	WEDRON FORMATION GLACIAL TILL REDDISH-BROWN CLAYEY SILT WITH SOME FINE SAND (VERY STIFF)	575
	GRADES GRAY GRADES WITH COARSE SAND AND FINE GRAVEL	570
		565
	KEWANEE GROUP CARBONDALE FORMATION CHANNEL SANDSTONE DEPOSITS SANDSTONE; GRAY; FINE-TO MEDIUM-GRAINED; MICACEOUS; CARBONACEOUS IN ZONES; FRIABLE; THIN-BEDDED 70° FRACTURE FROM 45.1' TO 45.5' FRANCIS CREEK MEMBER SILTSTONE; SANDY; GRAY; MICACEOUS; CARBONACEOUS IN ZONES; LAMINATED TO THIN-BEDDED; INTERBEDDED WITH GRAY FINE-GRAINED SANDSTONE AND CROSS-BEDDED IN ZONES.	560
		555
	60° FRACTURES FROM 51.4' TO 51.6' AND 51.7' TO 51.9'	550
		545
	10° FRACTURE AT 61.9' 30° FRACTURE AT 63.1'	540
	30° FRACTURE AT 66.7'	535
	10° FRACTURE AT 73.1'	530
	30° FRACTURE AT 74.6'	

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

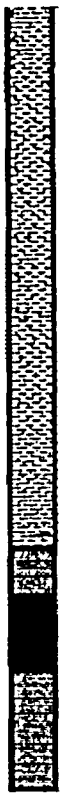
FIGURE 2.5-217

LOG OF BORING MP-51
(SHEET 1 OF 2)

BORING MP-51 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									97	97
90										
95									97	89
100										
105									95	87
110										
115									97	51
120										

SYMBOLS



DESCRIPTIONS

30° FRACTURE AT 77.2'
45° FRACTURE FROM 77.1' TO 77.2'
30° FRACTURE AT 77.5'
20° FRACTURE AT 79.1'

30° FRACTURE AT 81.4'
30° FRACTURE AT 83.4'

CLAY SEAM FROM 91.7' TO 91.8'
GRAY SANDSTONE LAYER FROM 92.6' TO 93.1'
GRADES HORIZONTALLY LAMINATED BELOW 93.1'

70° FRACTURE FROM 94.7' TO 95.2'

SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED; FISSILE.
COLCHESTER (NO. 2 COAL) MEMBER
COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SUPE PYRITE AND CLAY.

CLAY LAYER FROM 112.0' TO 112.7'

SPOON FORMATION
SHALE; CARBONACEOUS; BROWN TO DARK GRAY; MICACEOUS IN ZONES; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.

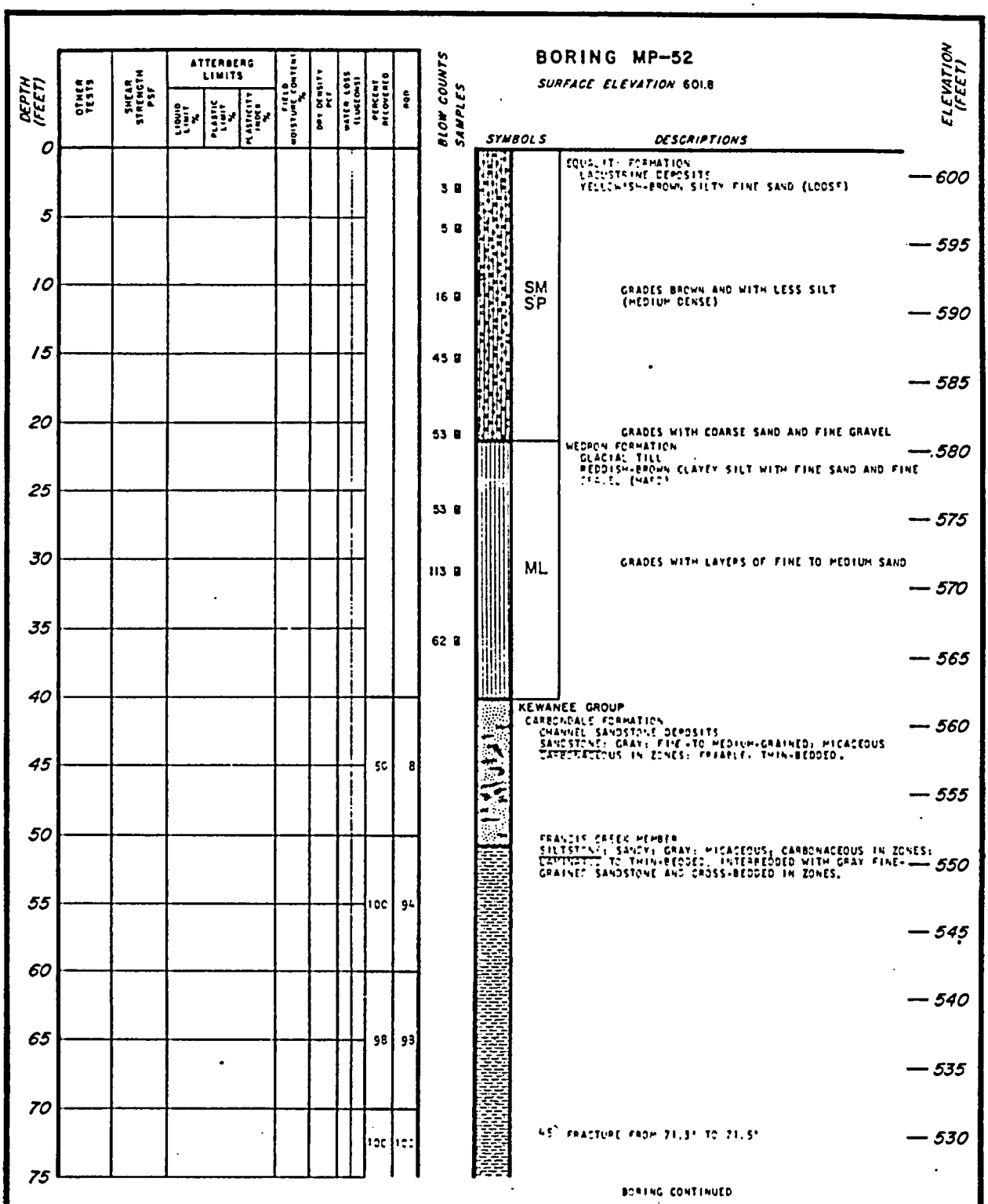
ELEVATION (FEET): 525, 520, 515, 510, 505, 500, 495, 490, 485

BORING COMPLETED AT 120.0' ON 3-3-73
CASING USED TO A DEPTH OF 23.5 FEET
WATER LEVEL RECORDED AT 5.5 FEET ON 3-2-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-217

LOG OF BORING MP-51
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-218

LOG OF BORING MP-52
(SHEET 1 OF 3)

BORING MP-52 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									100	93
90										
95									100	98
100										
105									100	70
110										
115									71	62
120										
125									100	85
130										
135									77	56
140									100	97
145										
150										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		525
	VERTICAL FRACTURE FROM 81.1' TO 81.7'	520
		515
	70° FRACTURE FROM 92.9' TO 93.1'	510
	SANDSTONE: CONGLOMERATIC: GRAY: FINE-GRAINED: WITH CLASTS OF COAL AND PEBBLES OF SIDERITE: CALCAREOUS: THIN-BEDDED. SILTSTONE: SANDY: GRAY: MICACEOUS: THINLY LAMINATED: FISSILE IN ZONES.	505
		500
	SHALE: SILTY· GRAY: FINELY MICACEOUS: THINLY LAMINATED: FISSILE.	
	COLCHESTER (NO. 2 COAL) MEMBER	
	COAL: BLACK: THIN-BEDDED: NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	495
	SHALE: CARBONACEOUS: DARK GRAY: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. COAL BED FROM 110.2' TO 110.9'.	490
	COAL SEAM FROM 116.0' TO 116.1' SHALE: SILTY: BROWN TO GRAY: CARBONACEOUS: MICACEOUS: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	485
	SILTSTONE: SANDY: GRAY: MICACEOUS: CARBONACEOUS: SIDERITIC: THIN-BEDDED WELL INDURATED. SHALE: SILTY GREENISH-GRAY TO DARK GRAY: CARBONACEOUS: MICACEOUS: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	480
	SILTSTONE: COARSE SANDY: LIGHT GREENISH-GRAY: MICACEOUS: CARBONACEOUS: SIDERITIC: THIN-BEDDED, WELL INDURATED. SILTSTONE: SANDY: LIGHT GREENISH-GRAY: MICACEOUS: CARBONACEOUS: SIDERITIC: THIN-BEDDED: INTERBEDDED WITH GREENISH-GRAY SANDSTONE LAYERS: WELL INDURATED.	475
	SHALE: CARBONACEOUS: DARK GRAY TO BROWN: SILTY: MICACEOUS: MASSIVE: HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	470
		465
	COAL: BLACK: THIN-BEDDED: NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY: GRADES TO A CARBONACEOUS SHALE IN BASAL 3". SILTSTONE: SANDY: DARK GRAY: MICACEOUS: CARBONACEOUS: LAMINATED TO THIN-BEDDED: WITH ABUNDANT CARBONIZED PLANT FOSSILS.	460
	GRADES CALCAREOUS BELOW 145.2'	
	MAQUOKETA GROUP	
	FORT ATKINSON FORMATION	455
	LIMESTONE: SILTY: GRAY: FINE-TO MEDIUM-GRAINED: FOSSILIFEROUS: THIN-BEDDED WITH NUMEROUS GRADATIONAL IRREGULAR PARTINGS AND 1/4" TO 4" ZONES OF CALCAREOUS SHALE	

BORING CONTINUED

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-218

LOG OF BORING MP-52
(SHEET 2 OF 3)

BORING MP-52 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
150										
155									98	98
160									97	97
165										
170									98	88
175									95	94
180										
185										

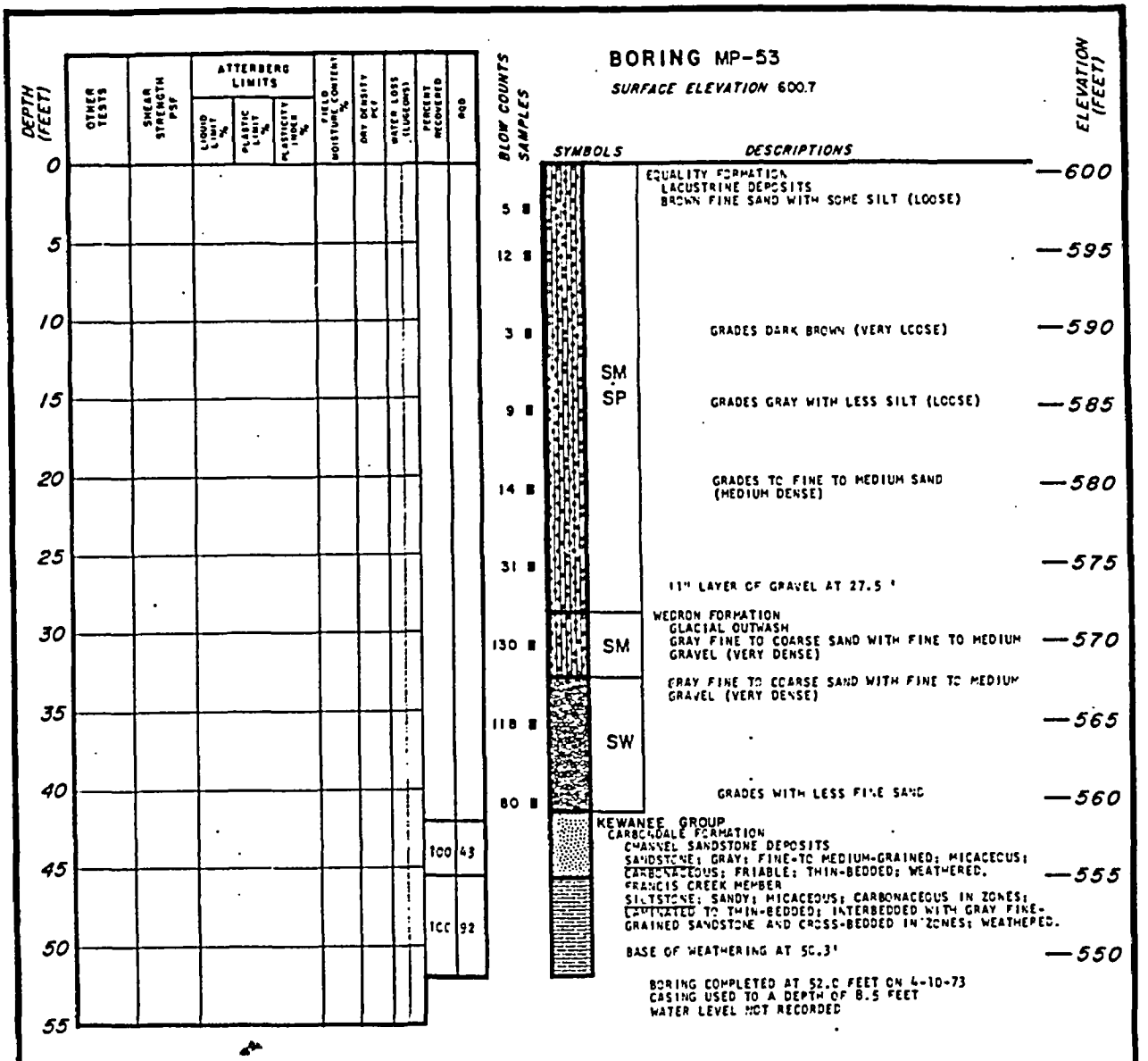
SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	SPACED 1/4" TO 10". 1" DOLOMITE LINED OPEN VUG AT 147.5' 1/2" DOLOMITE LINED OPEN VUG AT 147.7'	450
		445
		440
	OIL-STAINED FROM 167.1' TO 167.2'	435
		430
	LIMESTONE; LIGHT BUFF; COARSE-GRAINED; CALCARENITIC; FOSSILIFEROUS; THIN-BEDDED WITH IRREGULAR HAIRLINE SHALE PARTING AND STYLOLITES SPACED 1/4" TO 10".	425

BORING COMPLETED AT 181.0 FEET ON 3-13-73
CASING USED TO A DEPTH OF 23.5 FEET
WATER LEVEL RECORDED AT 5.5 FEET ON 3-8-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-218

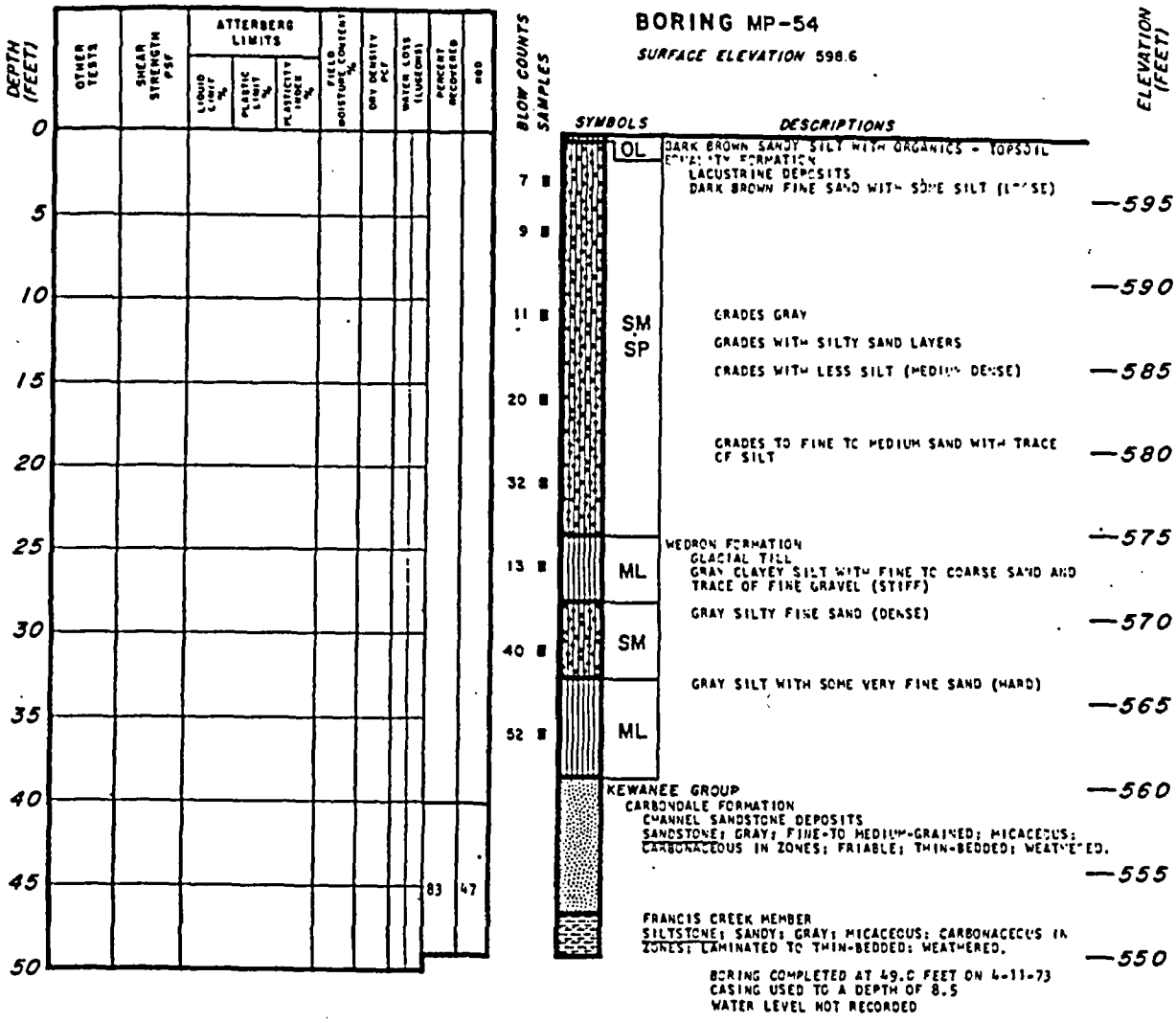
LOG OF BORING MP-52
(SHEET 3 OF 3)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-219

LOG OF BORING MP-53



BRAIDWOOD STATION
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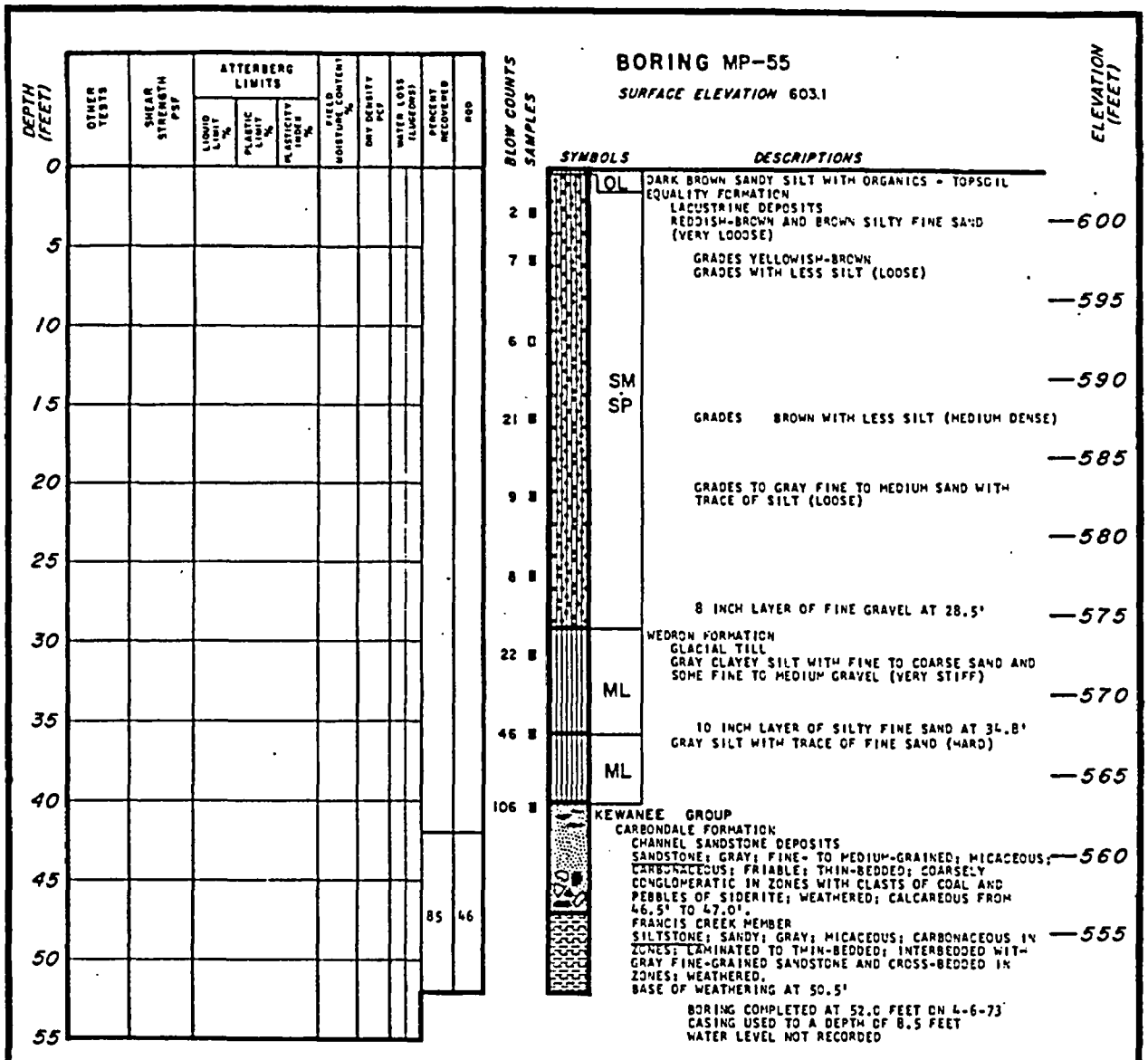
FIGURE 2.5-220

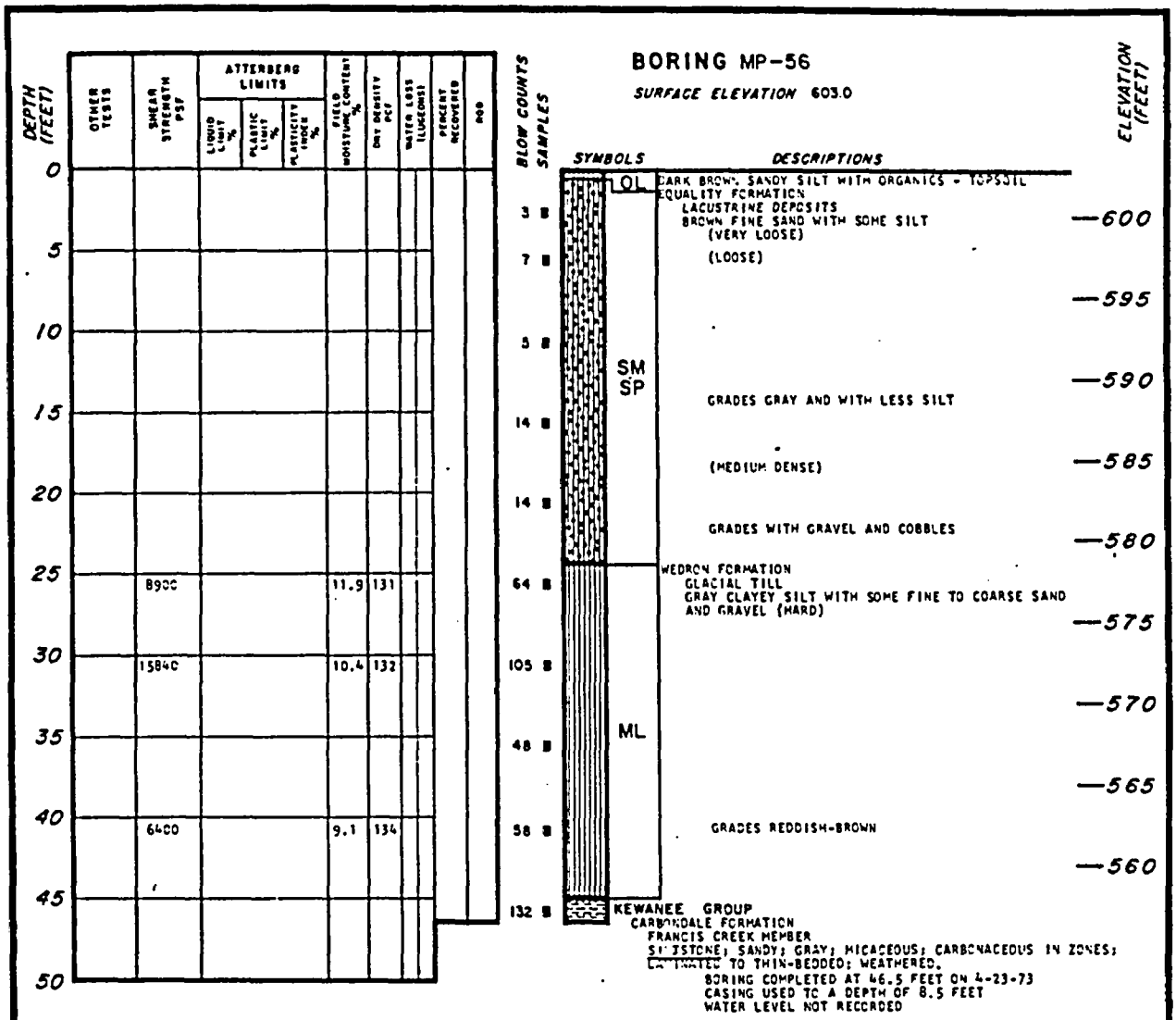
LOG OF BORING MP-54



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-221

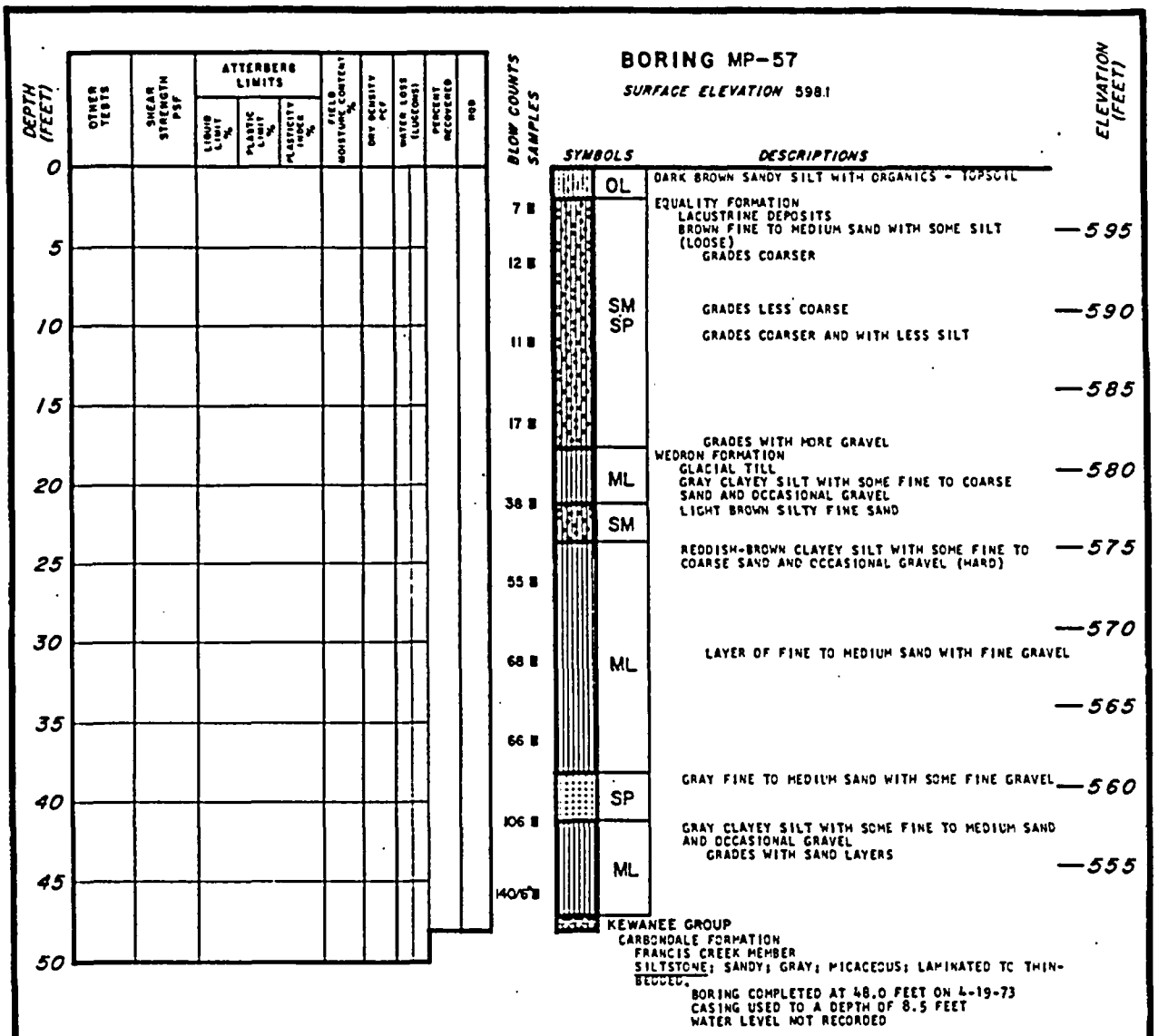
LOG OF BORING MP-55



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-222

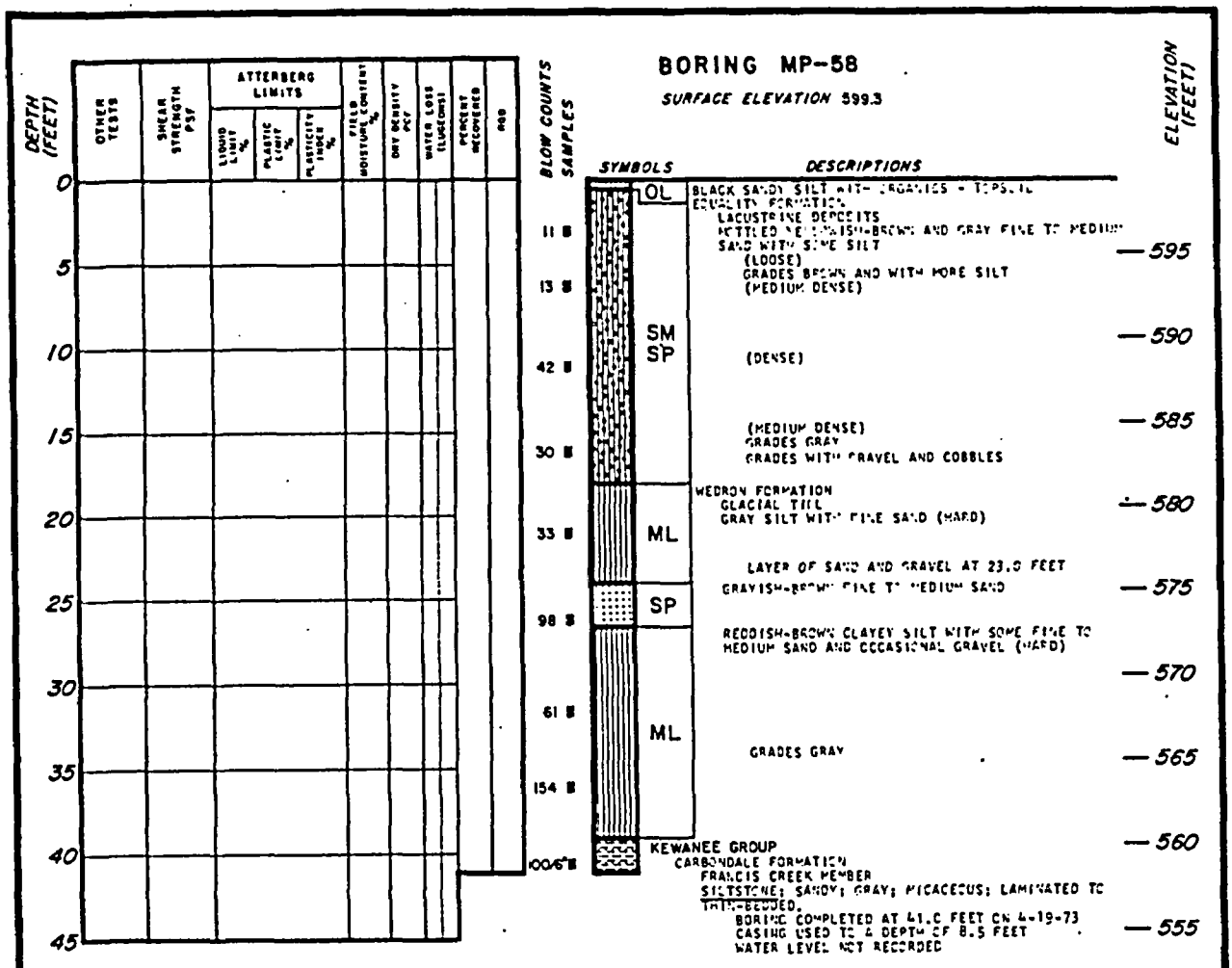
LOG OF BORING MP-56



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-223

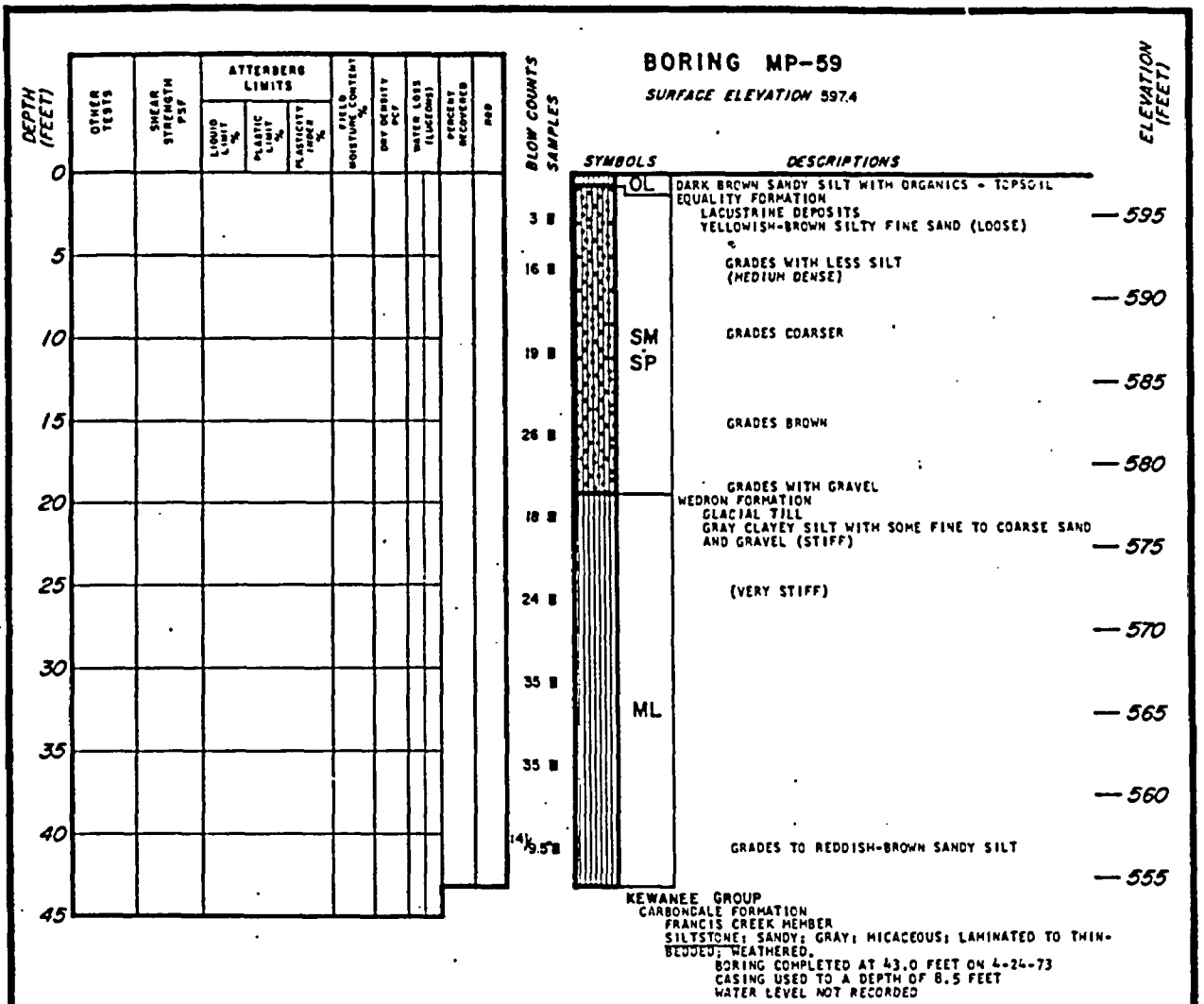
LOG OF BORING MP-57



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-224

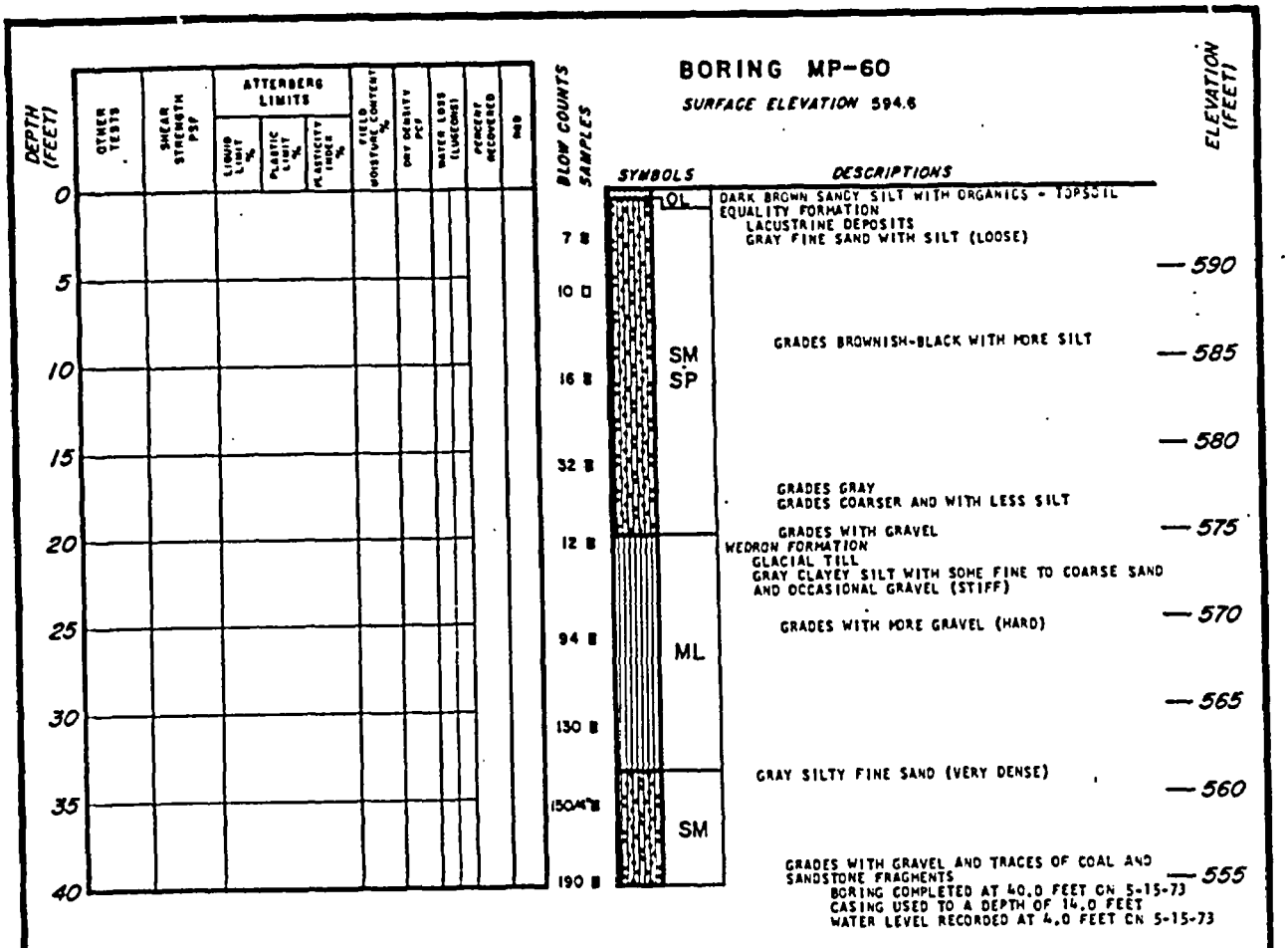
LOG OF BORING MP-58



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-225

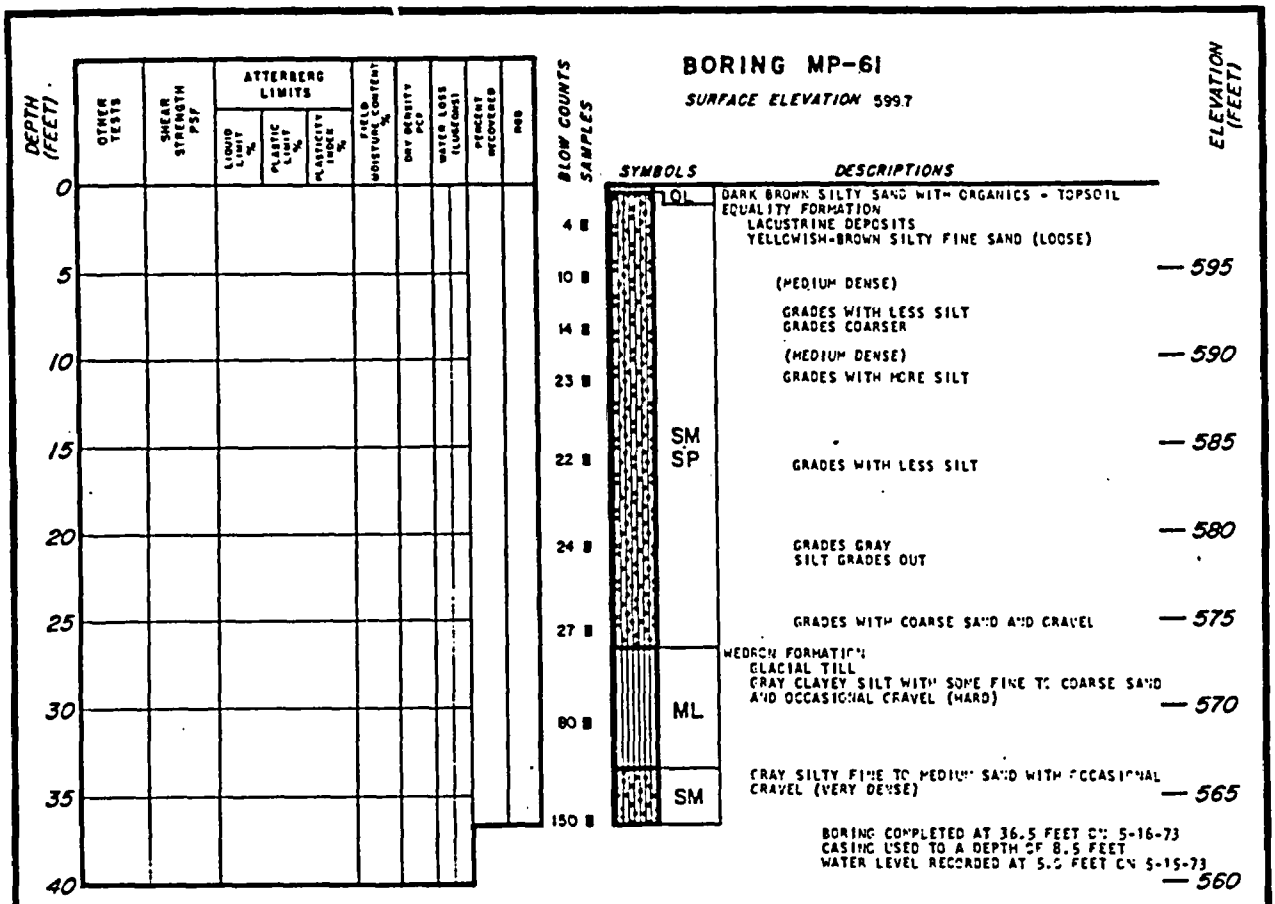
LOG OF BORING MP-59



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-226

LOG OF BORING MP-60



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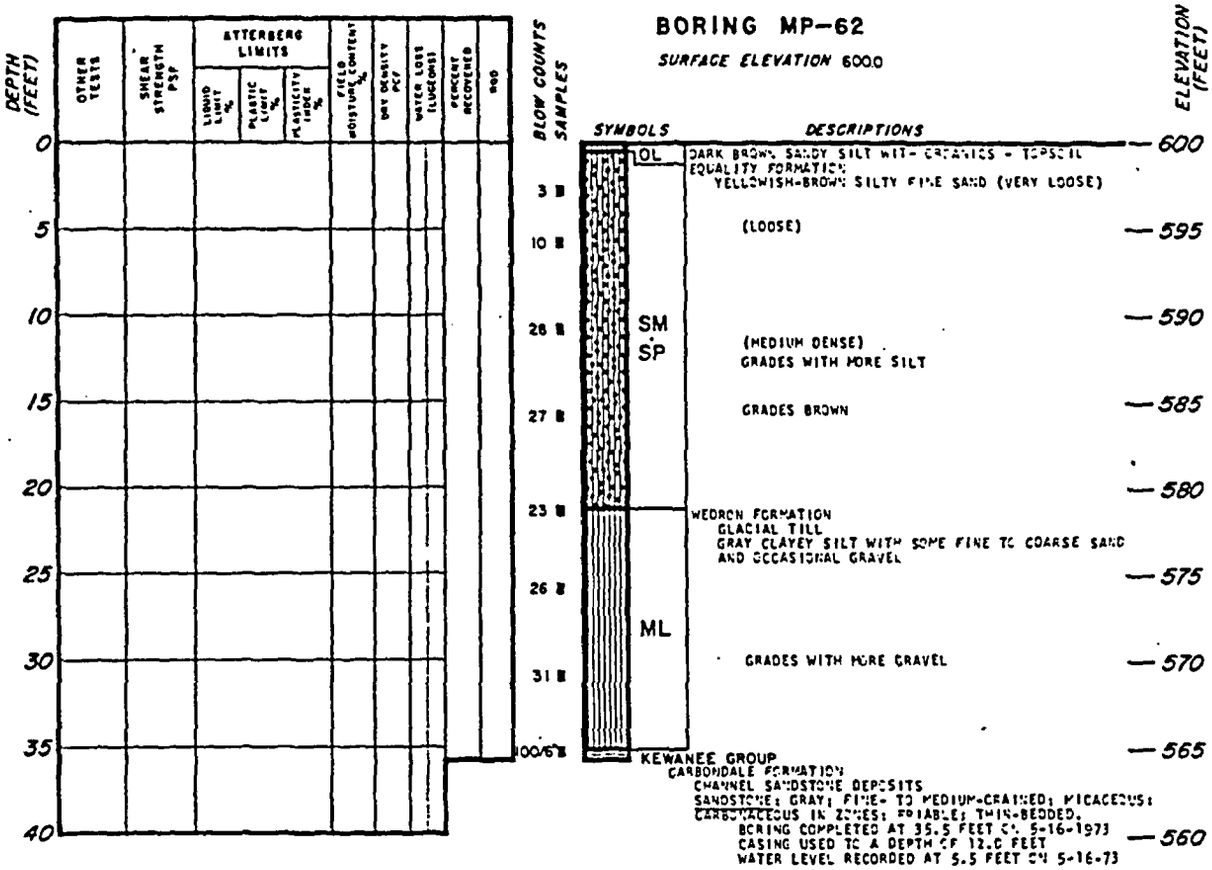
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-227

LOG OF BORING MP-61



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-228

LOG OF BORING MP-62

BORING MP-63

SURFACE ELEVATION 603.6

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (GAL/HOUR)	PERCENT RECOVERED	RQD
0										
5										
10										
15										
20										
25										
30										
35										
40										
45									94	53
50										
55									100	92
60										
65									100	90
70										
75									95	82

BLOW COUNTS / SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
2	OL	DARK BROWN SANDY SILT WITH ORGANICS - TOPSOIL	
		EQUALITY FORMATION	
		LACUSTRINE DEPOSITS	
		YELLOWISH-BROWN SILTY FINE SAND (VERY LOOSE)	600
3		GRADES BROWN AND WITH LESS SILT	
		GRADES COARSER	
			595
8		GRADES WITH MORE SILT	
			590
23	SM SP	GRADES GRAY AND WITH LESS SILT (MEDIUM DENSE)	
			585
22		GRADES COARSER	
			580
35		GRADES WITH GRAVEL	
		WEDRON FORMATION	575
		GLACIAL TILL	
75		GRAY CLAYEY SILT WITH SOME FINE TO COARSE SAND AND GRAVEL (HARD)	
	ML		570
92		GRAY SILTY SAND LAYER AT 35.5'	
			565
174/8"		KEWANEE GROUP	
		CARBONDALE FORMATION	
		CHANNEL SANDSTONE DEPOSITS	
		SANDSTONE; GRAY; FINE- TO MEDIUM-GRAINED; MICACEOUS; CARBONACEOUS IN ZONES; FRIABLE; THIN-BEDDED; WEATHERED.	560
		CLAY SEAM FROM 46.4' TO 46.6'	
		CLAY SEAM FROM 48.0' TO 48.2'	
		FRANCIS CREEK MEMBER	555
		SILTSTONE; SANDY; GRAY; MICACEOUS; CARBONACEOUS IN ZONES; LAMINATED TO THIN-BEDDED; INTERBEDDED WITH GRAY FINE-GRAINED SANDSTONE AND CROSS-BEDDED IN ZONES; WEATHERED.	
			550
		BASE OF WEATHERING AT 55.0'	
			545
			540
			535
		GRADES HORIZONTALLY LAMINATED AT 70.2'	
			530
		BORING CONTINUED	

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-229

LOG OF BORING MP-63
(SHEET 1 OF 2)

BORING MP-63 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									96	84
90										
95									100	83
100										
105									100	—
110										
115										

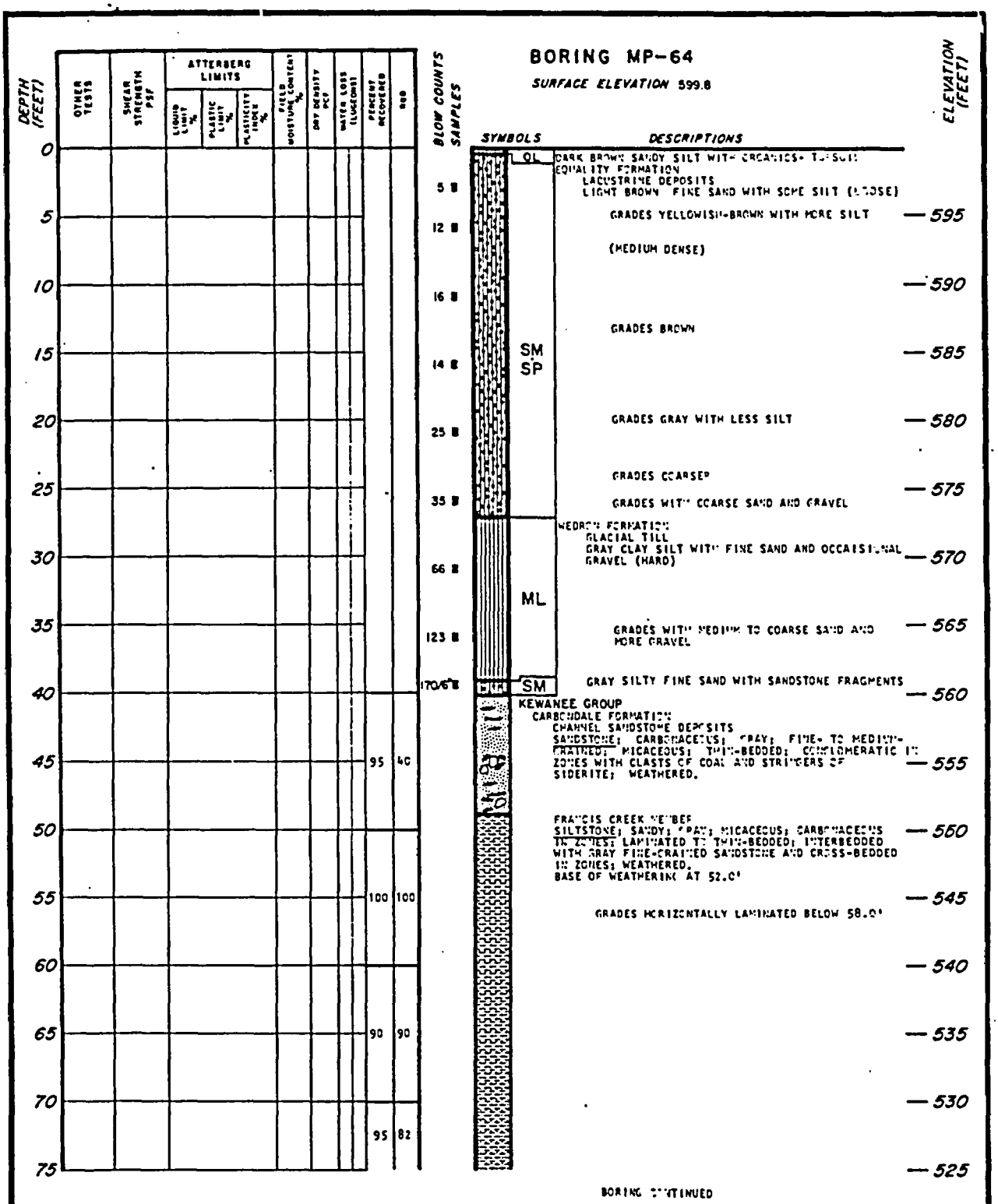
SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		525
		520
		515
	VERTICAL FRACTURE FROM 90.5' TO 90.9'	510
	SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED.	505
	COLCHESTER (NO. 2 COAL) MEMBER COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	500
	SPOON FORMATION SHALE; CARBONACEOUS; DARK BROWN TO BLACK; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	495
	GRADES GRAY AND SILTY BELOW 109.5'	490

BORING COMPLETED AT 110.5 FEET ON 5-9-73
CASING USED TO DEPTH OF 41.0 FEET
WATER LEVEL RECORDED AT 9.5 FEET ON 5-4-73

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-229

LOG OF BORING MP-63
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-230

LOG OF BORING MP-64
(SHEET 1 OF 2)

BORING MP-64 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									93	80
90										
95									76	47
100										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	VERTICAL FRACTURE FROM 80.9' TO 81.1'	520
	SHALE: SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED. 1" SIDERITE CONCRETION AT 87.1'	515
	COLCHESTER (NO.2 COAL) MEMBER COAL: BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	510
SPOON FORMATION	SHALE: CARBONACEOUS; DARK GRAY; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	505
	BORING COMPLETED AT 98.5 FEET ON 5-12-73 CASING USED TO A DEPTH OF 40.0 FEET WATER LEVEL RECORDED AT 6.0 FEET ON 5-11-73	500

BRAIDWOOD STATION
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FIGURE 2.5-230

LOG OF BORING MP-64
(SHEET 2 OF 2)

BORING MP-65

SURFACE ELEVATION 597.1

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
0										
5										
10										
15										
20										
25										
30										
35		8860				10.9	123			
40									100	40
45									100	71
50										
55									100	88
60										
65									100	100
70									100	100
75										

BLOW COUNTS / SAMPLES: 4, 10, 22, 36, 31, 55, 100, 110, 150/2"

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
OL	DARK BROWN SANDY SILT WITH ORGANICS- TOPSOIL	
SM SP	EQUALITY FORMATION LACUATRINE DEPOSITS YELLOWISH-BROWN SILTY FINE SAND (LOOSE)	595
	(LOOSE)	590
	GRADES WITH LESS SILT	585
	GRADES GRAY SILT GRADES OUT (DENSE)	580
	(MEDIUM DENSE)	575
ML	WEDRON FORMATION GLACIAL TILL GRADES WITH GRAVEL GRAY SILT WITH FINE SAND (HARD)	570
SP	GRAY FINE TO COARSE SAND WITH TRACES OF SILT AND SOME GRAVEL (VERY DENSE)	565
ML	GRAY SILT WITH FINE SAND AND OCCASIONAL GRAVEL (HARD)	560
	KEWANEE GROUP CARBONDALE FORMATION CHANNEL SANDSTONE DEPOSITS SANDSTONE: GRAY; FINE-TO MEDIUM-GRAINED; MICACEOUS; FRIABLE IN ZONES; THIN BEDDED; GRADES CARBONACEOUS BELOW 40.9'; WEATHERED. CALCAREOUS ZONE FROM 39.5' TO 40.2'	555
	FRANCIS CREEK MEMBER SILTSTONE: SANDY; GRAY; MICACEOUS; CARBONACEOUS IN ZONES; LAMINATED TO THIN-BEDDED; INTERBEDDED WITH GRAY FINE-GRAINED SANDSTONE AND CROSS-BEDDED IN ZONES; WEATHERED. BASE OF WEATHERING AT 49.5'	550
		545
		540
	GRADES HORIZONTALLY LAMINATED BELOW 61.5' 45° FRACTURE FROM 62.0' TO 62.2'	535
	45° FRACTURE FROM 65.6' TO 65.8'	530
	VERTICAL FRACTURE FROM 70.1' TO 70.3'	525

BORING CONTINUED

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FIGURE 2.5-231

LOG OF BORING MP-65
(SHEET 1 OF 2)

BORING MP-65 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80										
85									100	80
90										
95									89	—
100										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
		520
	SHALE: SILTY; FINELY MICACEOUS; THINLY LAMINATED.	515
	VERTICAL FRACTURE FROM 86.4' TO 86.8'.	510
	COLCHESTER (NO.2 COAL) MEMBER COAL: BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	
	SPOON FORMATION SHALE: CARBONACEOUS; DARK BROWN TO BLACK; SILTY; MASSIVE; HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES.	505
	GRADES GRAY TO LIGHT BROWN BELOW 96.5'.	500
	BORING COMPLETED AT 98.3 FEET ON 5-11-73 CASING USED TO A DEPTH OF 38.0 FEET WATER LEVEL RECORDED AT 3.8 FEET ON 5-10-73	495

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FIGURE 2.5-231

LOG OF BORING MP-65
(SHEET 2 OF 2)

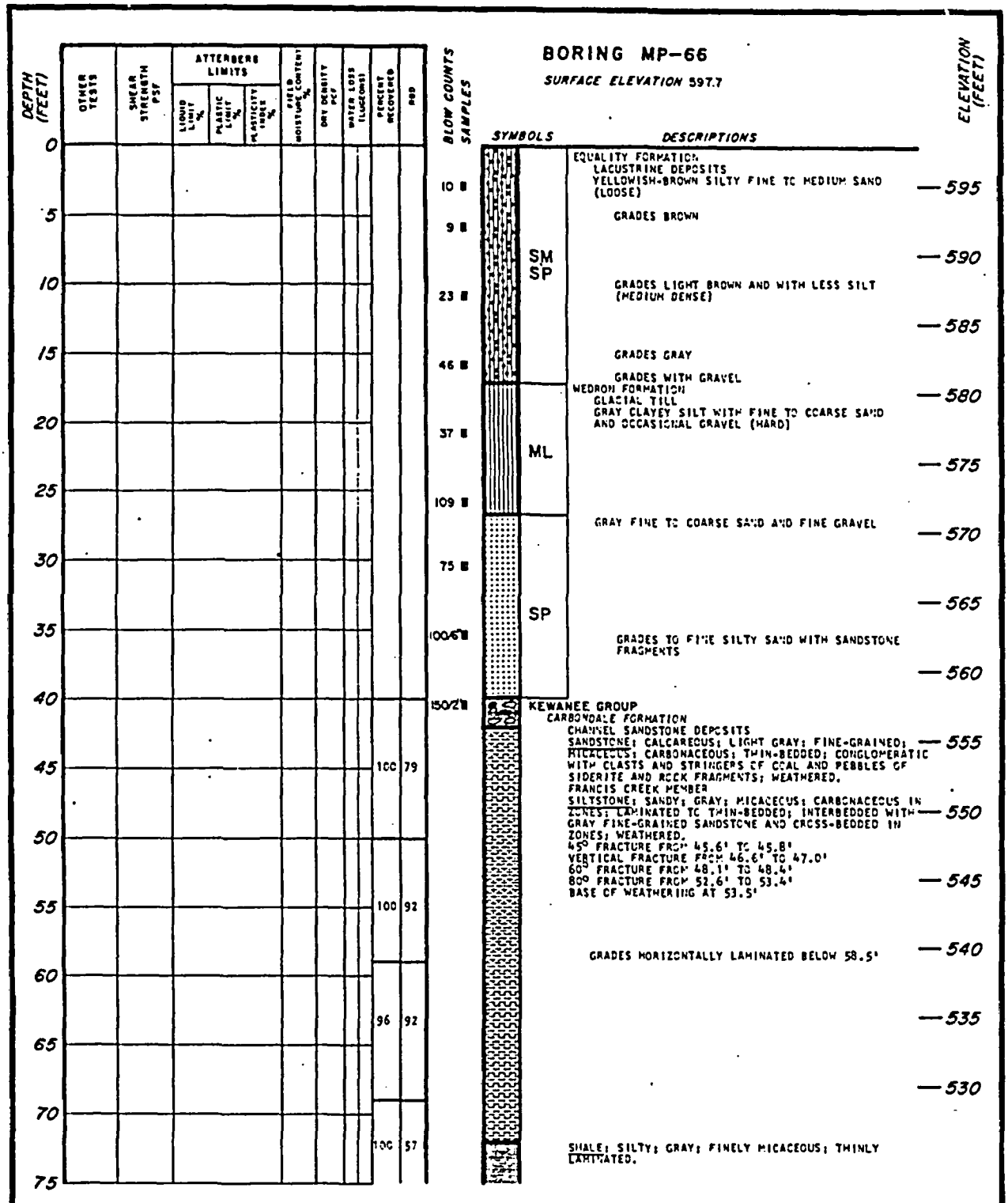

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FIGURE 2.5-232

LOG OF BORING MP-66
(SHEET 1 OF 2)

BORING MP-66 CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (LUGEONS)	PERCENT RECOVERED	RQD
75										
80									100	61
85										
90										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	70° TO VERTICAL FRACTURE FROM 76.2' TO 77.2'	
		525
	COLCHESTER (NO. 2 COAL) MEMBER COAL: BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	
	SPOON FORMATION SHALE: DARK GRAY TO BROWN; CARBONACEOUS; MASSIVE HIGHLY FRAGMENTED WITH NUMEROUS RANDOM SLICKENSIDES. BLACK COAL BED FROM 84.2' TO 84.5' GRADES SILTY AND FINELY MICACEOUS BELOW 85.7'	520
		515
	BORING COMPLETED AT 87.5 FEET ON 5-15-73 CASING USED TO A DEPTH OF 40.0 FEET WATER LEVEL NOT RECORDED	
		510

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FIGURE 2.5-232

LOG OF BORING MP-66
(SHEET 2 OF 2)

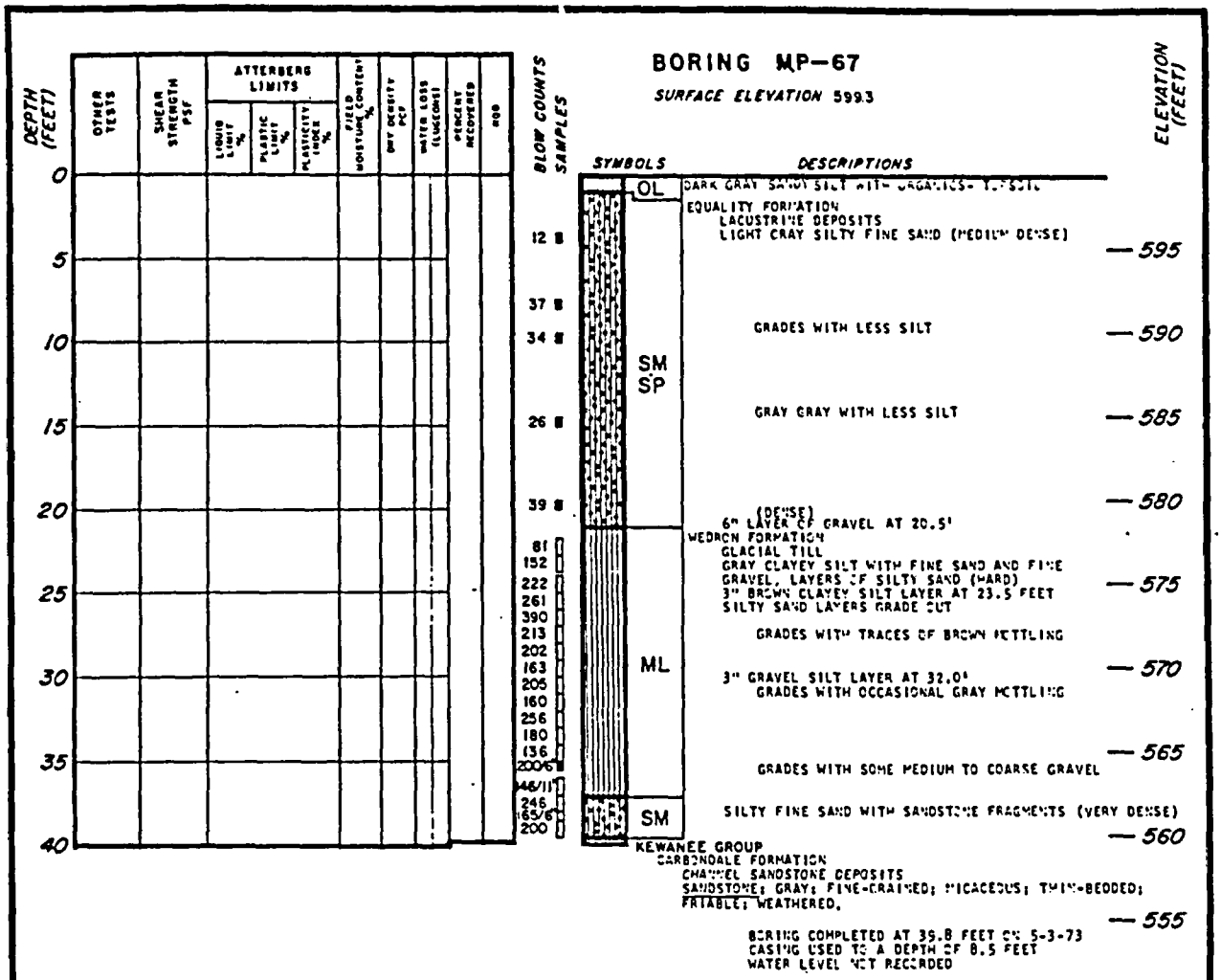

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FIGURE 2.5-233

LOG OF BORING MP-67

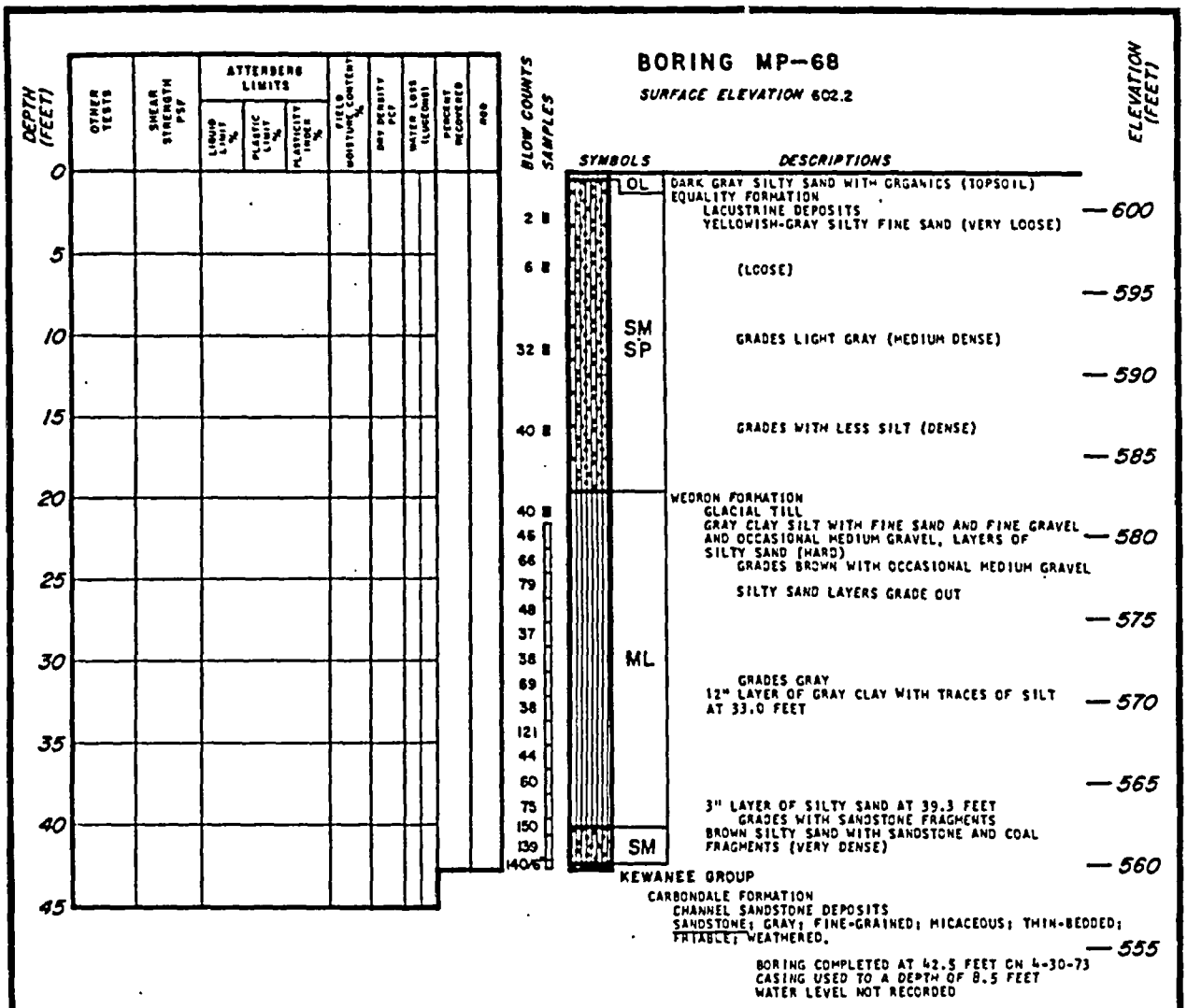

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FIGURE 2.5-234

LOG OF BORING MP-68

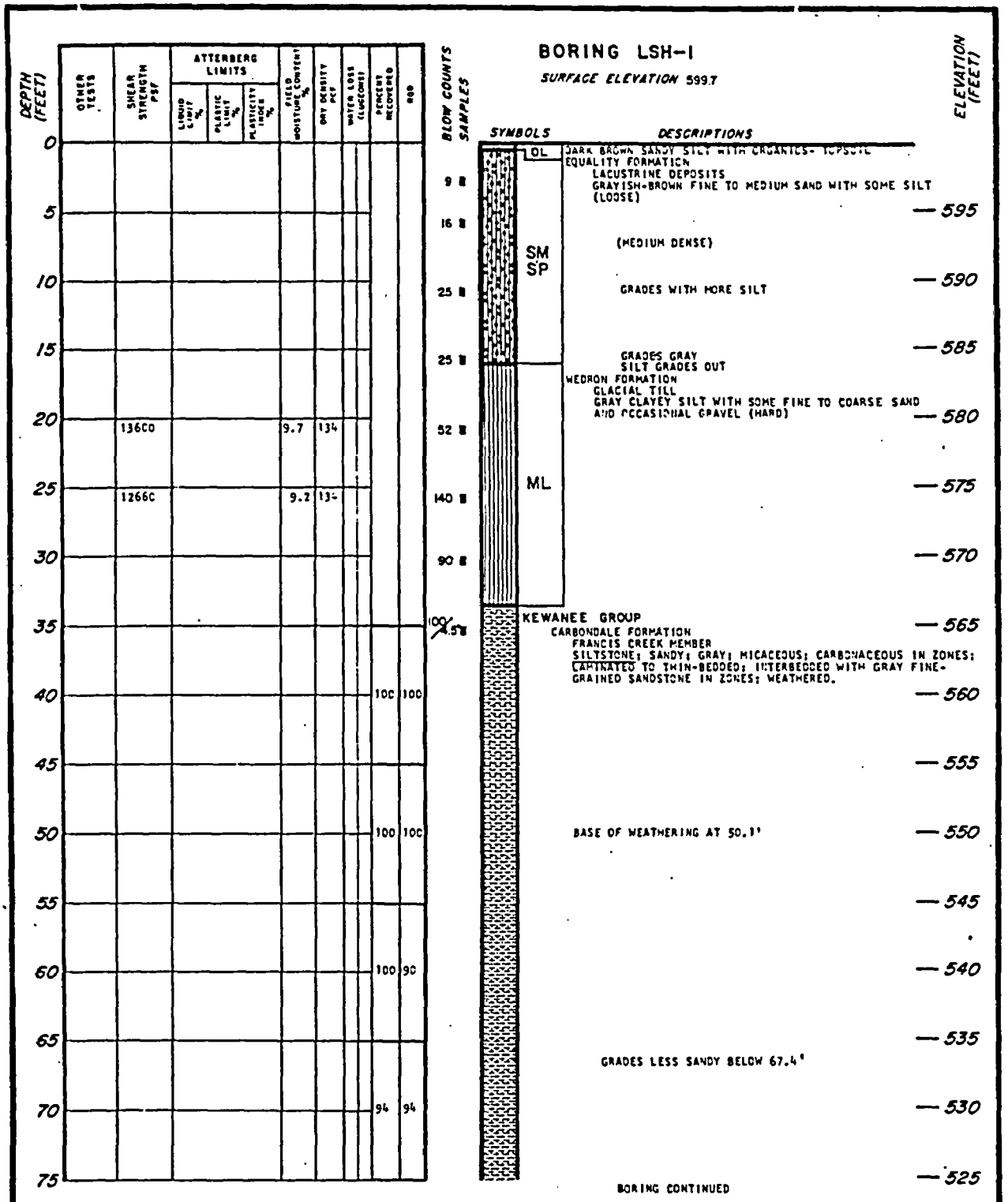

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FIGURE 2.5-235

LOG OF BORING LSH-1
(SHEET 1 OF 2)

BORING LSH-I CONTINUED

DEPTH (FEET)	OTHER TESTS	SHEAR STRENGTH PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	WATER LOSS (GAL/HOUR)	PERCENT RECOVERED	RQD
75										
80									100	52
85										
90									97	90
95										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
	SHALE; SILTY; GRAY; FINELY MICACEOUS; THINLY LAMINATED.	
	GRADES CARBONEOUS BELOW 82.0'	520
	COLCHESTER (NO.2 COAL) MEMBER COAL; BLACK; THIN-BEDDED; NUMEROUS TIGHT VERTICAL FRACTURES WITH SOME PYRITE AND CLAY.	515
	SPOON FORMATION SHALE; CARBONACEOUS; DARK TO LIGHT GRAY; MASSIVE; HIGHLY FRACTURED WITH NUMEROUS RANDOM SLICKENSIDES. GRADES MICACEOUS AND SILTY BELOW 89.5'	510
	SILTSTONE; SANDY; LIGHT GRAY; MICACEOUS; SIDERITIC; THIN BEDDED; WELL INDURATED. SILTSTONE; GREENISH-GRAY; SANDY; MICACEOUS; THIN BEDDED; INTERBEDDED WITH LIGHT GREEN SANDSTONE LAYERS; WELL INDURATED.	505
	BORING COMPELTED AT 95.0 FEET ON 5-14-73 CASING USED TO A DEPTH OF 35.0 FEET WATER LEVEL NOT RECORDED	500

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FIGURE 2.5-235

LOG OF BORING LSH-1
(SHEET 2 OF 2)

BORING HS-1

SURFACE ELEVATION 597.2

DEPTH (FEET)	Sample No.	SHEAR STRENGHTS PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT RECOVERED	R.Q.D.	BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
0													
5	1SS									10	SP	Medium, Gr Br f SAND, little to trace Silt	
10	2SS					23.0				20	SP		
						19.7							
15	3SS					23.5				16	CL	Stiff to Very Stiff, Gr, Clayey SILT, tract to some c-f Sand, trace m-f Gravel	
20	4SS					16.8				18	CL		
25	5SS					13.8				25	CL		
30	6SS					10.5				67	SC-SM		
35	7SS					9.2				91-100/4"		Very Dense to Extremely Dense, Gr, c-f SAND and SILT, trace Clay, trace to little m-f Gravel	
40	8SS					8.0				159	SM		
45	9SS					14.2				90-100/5"	ML	Extremely Dense, Gr SILT; Shale layers noted	
									36 / 17.0			*2" Core Diam 46'-55' Medium grey sandy silty shale, micaceous, calcarious, moderately weathered.	
50													
55												*55'-56' Medium grey sandy siltstone, micaceous, calcarous, slightly weathered, fairly compact.	
60												*Structure: 53'10"-55' 70° fracture, weathered surfaces	
65													
70												Bottom of Hole	
75													

Driller's Note: Lost Water in Sample #2
Used 10' of 4" and 45' of NX Casing
Waterlevel not shown on Driller's log
SS = Split Spoon

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FIGURE 2.5-236

LOG OF BORING HS-1

BORING HS-2

SURFACE ELEVATION 598.1

DEPTH (FEET)	Sample No.	SHEAR STRENGHTS PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT RECOVERED	RQD	BLOW COUNTS SAMPLES
0										
	1OT					17.2	105			
5										
	2OT					17.4	95			
10										
	3OT					24.0	102			
15										
	4OT					21.5	105			
20										
	5SS					10.5				
	6SS					11.4				19
25						14.7				
	7SS					13.5				16
30										51
	8SS					14.4				46
35										
	9SS					13.4				53
40										
45								100	100	
50										
55										
60										
65										
70										
75										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
ML-SM	Reddish Dark Brown to Light Grey Silt, little to some fine Sand seams and hair roots noted.	
SP	Brown and Reddish Brown fine Sand, some Silt, roots noted.	▽ 1/4 hr.
SP	Grey Brown, Fine Sand, little to trace Silt.	
SC	Medium, Grey, Clayey coarse-fine Sand, trace Medium-fine Gravel.	
CL	Very Stiff, Grey, Silty Clay, fine Sand and thin silt seams noted.	
ML	Dense to Very Dense, Grey Silt Trace Clay.	
	2" Core Diameter 44'0" - 49'0" Grey, Clayey Shale, moderately to highly weathered, thin bedded to laminated, friable and soft, finely micaceous. 60° Fracture @ 49'0"	
	49'0" - 54'0" Same as above. Thin bedded to laminated. Vertical Fracture @ 51'5".	
	Bottom Of Hole	

Driller's Note:
Used 23-5' of 4" casing.

OT - Osterberg Tube
SS - Split Spoon

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FIGURE 2.5-237

LOG OF BORING HS-2

BORING HS - 3

SURFACE ELEVATION 599.5

DEPTH (FEET)	Sample No.	SHEAR STRENGHTS PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT RECOVERED	RQD	BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
0													
	10T					8.8	100				SP	Reddish Br to Br m-f SAND little Silt, Dk Br Silty Sand seams & roots noted	
5													
	20T					20.3	105						
10											ML-SM	Br SILT, some f sand	← 1 & 24 hr.
	30T					21.2	94						
15													
	40T					20.7	100				SP	Br to Gr Br to Gr, m-f SAND, trace Silt	
20													
	50T					20.3	98						
25	60T	1.8	.5	7.3		11.5	131						
				6.6		8.2	135						
	7PT	4.2	.5								CL-ML	Gr SILT, trace Clay, some c-f Sand, trace f Gravel; c Gravel and Coal piecceorated	
30	8PT					9.3							
	9SS					10.0				191	ML	Extremely Dense, Gr SILT, trace clay, little c-f Sand, trace f Gravel	
35													
	10SS					15.0				132-100/2			
40													
	11SS					14.0				92			
45												Gr SHALE	
	12PT					8.8							
	13SS					12.7				138	ML	Extremely Dense Gr SILT	
50													
								100				*2" Core Diam 52'0"-62'0" Gray, Silty Shale; grading to fine Siltstone moderately weathered, thin to medium bedded, finely mecaceous; hard in some places, friable in others.	
55													
60													
												Fractured & Broken-53'4"-53'8" Broken: 56'10"-57'2"	
65													
70												Bottom of Hole	
75													

Driller's Note: Used 10' of 4" and 52' of NX Casing

Notes: OT=3" Osterberg Tube
PT=3" Pitcher Tube
SS=Split Spoon

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FIGURE 2.5-238

LOG OF BORING HS-3

BORING HS - 4

SURFACE ELEVATION 598.3

DEPTH (FEET)	Sample No.	SHEAR STRENGHTS PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT RECOVERED	RQD	BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
0													
5	1SS									11	SP	Medium Red Br, f SAND, trace to little Silt	
10	2SS					9.2				15	SP		▽ 48 hr.
15	3SS					21.7				20	SP	Medium, Br Gr, m-f SAND, trace Silt	▽ ½ hr.
20	4SS					20.7				20	SP		
25	5SS					25.9				9	CL	Stiff, Gr, Silty CLAY	
30	6SS					11.8				15	CL	Very Stiff, Gr, SILTY CLAY, some c-f Sand, trace m-f Gravel, Silt & Sand seams noted	
35	7SS					16.8				32	CL	Very Stiff, Blue Gr, Silty CLAY trace c-f Sand, Thin silt seams noted	
40	8SS					12.8				51	ML		
45	9SS					15.3				64	ML	Very Dense to Extremely Dense, Blue Gr, SILT	
50	10SS					14.3					ML		
55								96				*2" Core Diam 50'0"-59'0" Gray, Silty Shale and fine Shaly Siltstone, finely micaceous, Slightly to moderately weathered, hard & compact, thin bedded. Vertical Fracture 53'4" - 54'5" (Som 60° Fractures)	
60													
65												*59'0"-60'0" Dk. Gray Silty Shale Highly weathered, friable and soft.	
70													
75												Bottom of Hole	

Driller's Note:. 25' of 4" Casing used
SS = Split Spoon

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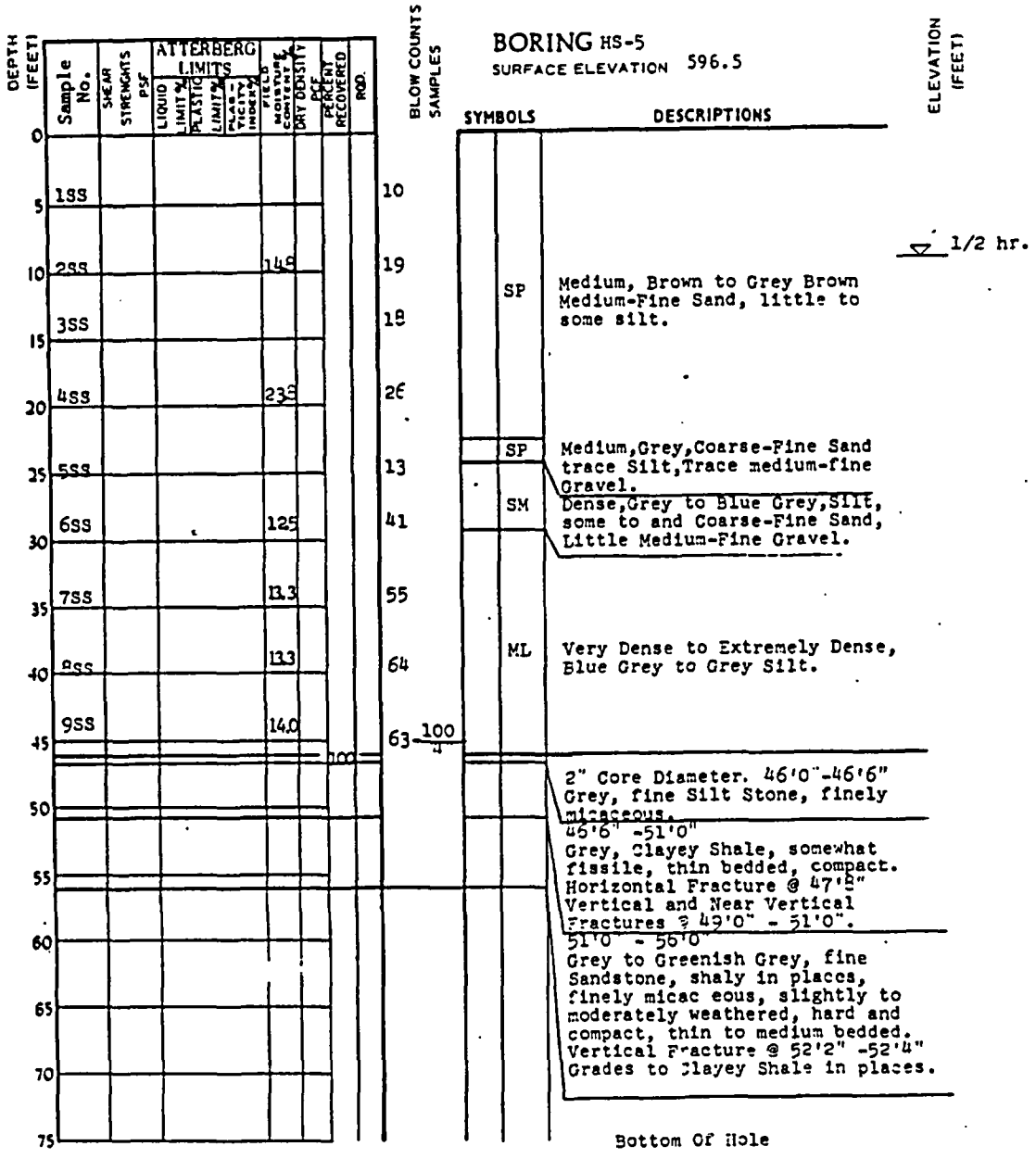
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-239

LOG OF BORING HS-4



Driller's Note:
Lost Water in Sample #2
Used 10' of ¼ " and 45' of N X Casing.
SS - Split Spoon

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FIGURE 2.5-240

LOG OF BORING HS-5

BORING HS-6

SURFACE ELEVATION 597.7

DEPTH (FEET)	Sample No.	SHEAR STRENGTHS PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT RECOVERED	RQD	BLOW COUNTS SAMPLES
0										
5	1SS									17
10	2OT					20.7	103			
15	3SS					21.8				12
20	4PT		21.9		8.8	106				
25	5SS					12.7				45
30	6SS					11.3				116
35	7SS					12.7				66
40	8SS									135
45									47	
50										
55										
60										
65										
70										
75										

SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
SP	Medium, Brown to Reddish Brown Fine Sand, some to little Silt. ▽ 1/4 hr.	
CL	Very Stiff to Hard, Grey, Silty Clay, some Coarse-Fine Sand, trace Medium-Fine Gravel.	
SM	Extremely Dense, Grey Silt, trace clay and coarse-fine Sand, trace medium-fine Gravel.	
ML	Very Dense to Extremely Dense, Grey Silt.	
	2" Core Diameter 42'-52' Alternating laminae of dark grey silty shale and brownish grey clayey shale, silty shale is micaceous, clayey shale is carbonaceous, siderite concretions near base, moderatly weathered. 43'6" Clasic dike 4" in length ½" in width, 60° angle, composed of dark grey sandstone, sub-greywacke, micaceous, poorly sorted and angular to sub-rounded grains.	
	Bottom Of Hole	

Driller's Note:
Used 10' of 5" and 40' of N X Casing.
Notes:
OT=3" osterberg tube
PT=3" pitcher tube
SS=Split Spoon

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FIGURE 2.5-241

LOG OF BORING HS-6

BORING HS-7

SURFACE ELEVATION 599.7

DEPTH (FEET)	Sample No.	SHEAR STRENGTHS PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT RECOVERED	RQD	BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS
0												
5	1SS									8	SP	Loose, Reddish Brown, Fine Sand, Little Silt.
10	2SS					17.4				14	SM	Medium, Brown, Silt and Fine Sand. ▽ 1/4 hr.
15	3SS									15	SP	Medium Brown Fine Sand Little Silt.
20	4SS					10.8				31		
25	5SS					12.1				29	CL-ML	Dense to Very Dense, Grey, Silt, trace Clay, and coarse-fine Sand, trace medium-fine Gravel.
30	6SS					9.9				81		
35	7SS					9.0				49-100/3	SM	Extremely Dense Grey, Silt and medium-fine Sand.
40	8SS					13.4				87-100/4"	ML	Extremely Dense, Grey Silt; Sand-stone noted.
45								100				2" Core Diameter 44'0" - 54'0" Grey, Clayey Shale, moderately to highly weathered, friable, somewhat fissile. Grades to finely micaceous Silty Clayey Shale, moderately to highly weathered.
50												
55												Bottom of Hole
60												
65												
70												
75												

ELEVATION (FEET)

Driller's Note:
Silty Sand in Sample #7. Used 10' of 4" and 43' of N X Casing.
SS=Split Spoon

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FIGURE 2.5-242

LOG OF BORING HS-7

BORING HS-8

SURFACE ELEVATION 599.3

DEPTH (FEET)	Sample No.	SHEAR STRENGHTS PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT RECOVERED	RQD.	BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
0													
5	1SS									11			
10	2SS					206				10	SP	Medium, Brown, Fine Sand, trace to little silt	▽ 1/2 hr.
15	3SS					237				21			
20	4SS					230 / 147				17	ML	Medium, Grey, Silt	
25	5SS					109				35	SL-ML	Dense, to Very Dense, Grey Silt, to Clay and Coarse-Fine Sand, trace Medium-Fine Gravel	
30	6SS					97				68			
35	7SS									80-100/5	SP	Extremely Dense, Brown Grey, Coarse-Fine Sand	
40	8SS					133				160	ML	Extremely Dense Grey Silt	
45								100				2" Core Diameter 43'5"- 53'6" Grey, Clayey Shale, moderately to highly weathered, friable, somewhat fissile. Grades to finely micaceous Silty Clayey Shale, moderately to highly weathered.	
50													
55												Bottom of Hole	
60													
65													
70													
75													

Driller's Note:
Used 10' of 4" and
43' of N X Casing
SS=Split Spoon

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FIGURE 2.5-243

LOG OF BORING HS-8

BORING HS-9

SURFACE ELEVATION 596.2

DEPTH (FEET)	Sample No.	SHEAR STRENGHTS PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT RECOVERED	RQD	BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS
0												
5	1SS									13		
10	2SS					19.8				23	SP	Medium, Br. to Br Gr, m-f SAND, trace Silt
15	3SS									19		
20	4SS					12.4				16	CL	Very Stiff, Gr Clayey SILT, some c-f Sand, trace m-f Gravel
25	5SS					10.8				50	CL-ML	Very Dense to Extremely Dense, Gr, SILT, trace Clay, and c-f SAND, trace m-f Gravel
30	6SS					11.8				32 100/2"		
35	7SS					11.8				80 100/3"	SM	Extremely Dense, Gr SILT, some c-f Sand, trace f Gravel
40	8SS					16.1				109	ML	Extremely Dense, Lt yel & Gr SILT
45	9SS					14.5				82 100/4"		
50								108/120	100/120			*2" Core Diam 46'-46'3" Medium grey silty shale, carbonaceous, micaceous, slightly weathered, fairly compact, thin bedded.
55												*46'3"-56' Alternating laminae of medium gray and light gray silty shale, calcareous, micaceous, some siderite concretions, cross laminated, moderately weathered.
60												
65												Bottom of Hole
70												
75												

ELEVATION (FEET)

Driller's Note: Used 10' of 4" and 45' of NX Casing

Note: Water level not shown in Driller's log
SS = Split Spoon

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FIGURE 2.5-244

LOG OF BORING HS-9

BORING HS-10

SURFACE ELEVATION 598.8

DEPTH (FEET)	Sample No.	SHEAR STRENGTHS PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT RECOVERED	RQD	BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
0													
5	1SS									10	SP	Medium, Reddish Br, f SAND, little Silt	
10	2SS					9.2				29			
15	3SS					23.5				20	SP	Medium, Gr Br, m-f SAND, trace Silt	
20	4SS					18.4				20	CL	Very Stiff, Gr, Silty Clay, little c-f Sand, trace m-f Gravel; Sand seams noted	
25	5SS					15.9				26	ML	Medium, Gr SILT, trace f Sand; f Gravel noted	
30	6SS					11.4				35	CL-ML	Dense, Gr, SILT, trace Clay, some c-f Sand, trace m-f Gravel	
35	7SS					12.4				37			
40	8SS					14.1				74	ML	Very Dense to Extremely Dense, Gr, SILT, trace f Sand	
45	9SS									114			
50								114 / 120	88 / 120			*2" Core Diam 49'-58' Grayish black shaly sandy siltstone, micaceous, moderately weathered, thin bedded.	
55													
60												*58'-58'6" Grayish black shaly claystone, calcareous, moderately weathered, thin bedded.	
65												*58'6"-59' Grayish black clayey shale, moderately weathered, thin bedded.	
70												Bottom of Hole	
75													

Driller's Note: Used 10' of 4" and 50' of NX Casing.

Note: Water level not shown on driller's log.
Pushing Stone in Sample No. 4.
SS = Split Spoon

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FIGURE 2.5-245

LOG OF BORING HS-10

BORING HS-11

SURFACE ELEVATION 599.5

DEPTH (FEET)	Sample No.	SHEAR STRENGTHS PSF	ATTERBERG LIMITS: LIQUID LIMIT %	PLASTIC LIMIT %	PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT RECOVERED	RQD	BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
0													
5	1SS									6	SP	Loose to Medium, Red Br to Br, f SAND, little to trace Silt	▽ ½ hr.
10	2SS									15			
15	3SS						21.2			24	SP	Medium, Gr Br, m-f SAND, trace Silt	
20	4SS						22.6			31	SM	Dense, Gr SILT, some f sand, odor noted	
25	5SS						15.5			30	CL-ML	Dense to Extremely Dense, Gr, SILT, trace Clay, some c-f Sand, trace m-f Gravel	
30	6SS						11.0			130			
35	7SS						15.8			100	ML	Extremely Dense, Gr, SILT	
40	8SS						14.5			49 100/5"			
45												*2" Core Diam 44'0"-47'9" Gray to Dk Gray, alternating laminae of Silty Shale, finely micaceous, moderately weathered, compact, moderately fissile, thin bedded.	
50													
55												* 47'9"-54'0" Grades to Gray, Sandy Silty Shale, compact, hard, slightly to moderately weathered, micaceous, thin to medium bedded.	
60													
65												Bottom of Hole	
70													
75													

Driller's Note: Used 10' of 4" and 45' of NX Casing.
SS = Split Spoon

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FIGURE 2.5-246

LOG OF BORING HS-11

BORING HS-12

SURFACE ELEVATION 598.2

DEPTH (FEET)	Sample No.	SHEAR STRENGHTS PSF	ATTERBERG LIMITS: LIQUID LIMIT %	ATTERBERG LIMITS: PLASTIC LIMIT %	ATTERBERG LIMITS: PLASTICITY INDEX %	FIELD MOISTURE CONTENT %	DRY DENSITY PCF	PERCENT RECOVERED	RQD	BLOW COUNTS SAMPLES	SYMBOLS	DESCRIPTIONS	ELEVATION (FEET)
0													
5	1SS									13	SP	Medium, Reddish Br to Br, f. SAND, little Silt	
10	2SS									17			
15	3SS									24			▽ ½ hr.
20	4SS					24.8				24	SP	Medium, Gr, m-f SAND trace Silt	
25	5SS					17.5				14		Medium to Very Dense, Gr, SILT, trace Clay, some c-f Sand, trace to little m-f Gravel	
30	6SS					12.2				43	CL-ML		
35	7SS					9.8				57 100/4"	SM	Extremely Dense, Gr, SILT, some c-f SAND trace f Gravel	
40	8SS					15.0				42	ML	Very Dense, Gr SILT	
45								100				2" Core Diam 43'6"-53'6" Gray, Shaley Sandy Siltstone, Slightly to moderately weathered hard & compact, thin bedded, micaceous.	
50													
55												Bottom of Hole	
60													
65													
70													
75													

Driller's Note: Used 10' of 4" and 44' of NX Casing

Thin silt seams noted in Sample 6-SS
SS = Split Spoon

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FIGURE 2.5-247

LOG OF BORING HS-12

BORING HS-13

Depth, ft	Elev, ft	Sample	Symbol	Soil Classification	N bl/ft	Dr %	Fine Content %
0	599.8						
2							
4	595				8	64	12
6				SM, red brown to brown fine SAND grading to medium to fine at 13', some silt.			
8					16	80	18
10	590				25	90	19
12							
14				GWL (18 Feb 75)	34	>90	18
	585						
16					35	>90	11
18				SP-SM gray fine SAND, grading medium to fine at 25 ft, trace silt.			
20	580				37	>90	8
22					39	>90	7
24							
	575				37	>90	7
26							
28				CL, gray stiff silty CLAY, trace sand and gravel.	42		
30	570			CL, greenish gray sand SHALE.			
32					67		
				Bottom of boring at 31.5 ft			
34							
	565						

*D_r determined by interpretation of N-data using relationship between, N, $\bar{\sigma}_c$ and D_r, developed by Gibbs and Holtz.

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FIGURE 2.5-248

LOG OF BORING HS-13

BORING HS-14

Depth, ft	Elev, ft	Sample	Symbol	Soil Classification	N bl/ft	Dr * %	Fine Content %
0	597.9			SM, Top soil, brown, silty fine SAND trace organic material.			
2	595						
4							
6				SM, Brown fine SAND, some silt.	17	86	15
8	590			GWL (17 Feb 75)	28	>90	17
10							
12					34	>90	21
	585						
14					41	>90	11
16				SM, Gray fine SAND, some silt.			
18	580				32	>90	13
20				SM-ML, Gray silty fine SAND.	34	>90	45
22	575			SM, Gray medium to fine SAND, trace silt and fine gravel.	26	>90	8
24				Gravel layer			
26				CL, Gray silty CLAY, trace sand and gravel.	12		
28	570			Bottom of boring at 27 ft.			
30				*D_r determined by interpretation of N data using relationship between $\bar{\sigma}_c$ and D_r, developed by Gibbs and Holtz.			
32	565						
34							

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FIGURE 2.5-249

LOG OF BORING HS-14

BORING HS-15

Depth, ft	Elev, ft	Sample	Symbol	Soil Classification	N bl/ft	Dr * %	Fine Content %
0	593.7			ML, top soil, clayey SILT, trace organic and fine sand.			
2				SM, reddish brown silty fine SAND.			
4	590						
6		■		SP, gray fine SAND, some silt.	21	90	4
8	585	■			36	> 90	4
10				GWL (18 Feb 75)			
12		■			27	> 90	5
	580						
14		■		SM, gray medium to fine SAND, some silt.	40	> 90	4
16							
18		■		CL, gray silty CLAY, trace sand and gravel (till).	33		
	575						
20				Bottom of boring at 18.5 ft			
22							
24	570						
26							
28				* D_r determined by interpretation of N-data using relationship between N, $\bar{\sigma}_v$ and D_r, developed by Gibbs and Holtz.			
	565						
30							
32							
34	560						

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FIGURE 2.5-250

LOG OF BORING HS-15

BORING HS-16

Depth, ft	Elev, ft	Sample	Symbol	Soil Classification	N bl/ft	Dr* %	Fine Content %
0	598						
2							
	595						
4				SM, reddish brown fine SAND, some silt	19	87	13
6							
8	590				15	76	30
10				G.W.L. (17 Feb 75)			
				SM, gray brown silty fine SAND			
12					21	83	35
	585						
14					22	84	4
16				SP, gray fine SAND, grading medium to fine at 21 ft, trace silt			
18	580				23	82	5
20					36	>90	5
22				CL, gray stiff silty CLAY, trace sand and gravel			
24	575				39		
26				Bottom of boring at 24.5 ft.			
28	570						
30				*D_r determined by interpretation of N. data using relationship between N, $\bar{\sigma}_c$ and D_r developed by Gibbs and Holtz			
32	565						
34							

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FIGURE 2.5-251

LOG OF BORING HS-16

BORING HS-17

Depth, ft	Elev, ft	Sample	Symbol	Soil Classification	N bl/ft	Dr * %	Fine Content %
0	598.4			SM, Top soil, brown silty fine SAND trace organic material			
2							
	595			SP-SM, Brown fine SAND, some silt			
4					14	80	12
6							
8	590			GWL (17 Feb 75)	12	68	28
10				SM, brown fine SAND, grading medium to fine at 14 ft, some silt	40	> 90	25
12							
	585						
14					35	> 90	15
16				ML, gray fine sandy SILT			
				ML, gray SILT, trace sand	18	75	59 / 91
18	580						
20				SM, gray fine SAND grading medium to fine, trace silt	42	> 90	9
22							
	575				33	> 90	7
24				CL, gray stiff silty CLAY, trace sand and gravel			
26					37		
				Bottom of boring at 26.5 ft			
28	570						
30				*D_r determined by interpretation of N-data using relationship between N, $\bar{\sigma}_c$ and D_r, developed by Gibbs and Holtz.			
32							
	565						
34							

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FIGURE 2.5-252

LOG OF BORING HS-17

BORING HS-18

Depth, ft	Elev, ft	Sample	Symbol	Soil Classification	N bl/ft	Dr * %	Fine Content %
0	590.1						
2				SM, dark brown fine SAND, some silt and organic material	18	90	23,36
4	585						
6				GWL (17 Feb 75)	21	90	5
8				SP, gray medium to fine SAND, trace silt	31	>90	5
10	580						
12					42	>90	4
14	575			Bottom of boring at 14 ft			
16							
18							
20	570						
22							
24	565						
26							
28							
30	560						
32							
34	555						

*D_r determined by interpretation of N-data using relationship betwenn N, $\bar{\sigma}_c$ and D_r developed by Gibbs and Holtz

**Result of two tests on sample

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FIGURE 2.5-253

LOG OF BORING HS-18

Depth ft	El ft	SAMPLE No.	SAMPLE Loc	PROPERTIES γ_d Dry Density lb/ft^3	PROPERTIES Fines Content %	PROPERTIES D_r Relative Density %	Symbol	SOIL CLASSIFICATION
0	590.1							ML, dark gray sandy SILT, trace organic material (Topsoil)
1	589							ML, red to brown sandy SILT
2	588							
3	587	29		102.9	25	81		SM, gray to buff silty fine SAND
								SM, gray to buff fine SAND, some silt, with 1/2 inch to 1 inch silt seams
4	586	2		109.5	15	77		
		1		111.2	13	87		
5	585							SP, gray to buff fine SAND, trace silt
		30		101.9	2	87		
6	584							▼ GWL
7	583							Bottom of Test Pit at 6.4 ft (el 583.6)
8								Note: Soil classification based on visual observation of a portion of the wall of the test pit.
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								

Date excavated 27 Feb 75

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FIGURE 2.5-254

LOG OF TEST PIT HTP-1

Depth ft	El ft	SAMPLE No.	SAMPLE Loc	PROPERTIES γ_d Dry Density lb/ft³	PROPERTIES Fines Content %	PROPERTIES D_r Relative Density %	Symbol	SOIL CLASSIFICATION
0	596.7							ML, dark gray SILT, some sand, trace organic material (Topsoil)
1	596							
2	595	6			14			SM, light brown SAND, some silt
3	594							SM, reddish brown, fine SAND, some silt
4	593	7			16			
5	592	8			14			SM, light brown fine SAND, some silt
6	591	12			13			SM, light gray fine SAND, some silt
7	590	9			49			
8	589	10		108.3	21	100		SM, light gray to buff fine SAND, some silt with silt nodules below el 588.
9	588	11		103.6	21	94		
10	587							
11	586	15		108.2	3	84		
12	585	14		107.3	4	84		
13	584	13		107.0	4	77		SP, light gray to buff, fine to medium SAND, trace silt ▼ GWL
14	583							Bottom of Test Pit at 13.4 ft (el 583.3)
15								Note: Soil classification based on visual observation of a portion of the wall of the test pit.
16								
17								
18								

Date excavated 1 Mar 75

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FIGURE 2.5-255

LOG OF TEST PIT HTP-2

Depth ft	El ft	SAMPLE No.	SAMPLE Loc	PROPERTIES γ_d Dry Density lb/ft^3	PROPERTIES Fines Content %	PROPERTIES D_r Relative Density %	Symbol	SOIL CLASSIFICATION
0	591.2							ML, dark gray SILT, some sand, trace organic material (Topsoil)
	591							
1	590							
2	589							SM, dark gray mottled red SAND, some silt
3	588							
4	587	31			22			SM, light gray to buff fine SAND, some silt
5	586	35		106.6	21	84		SM, brown fine SAND, some silt
		32		104.0	13	99		
6	585							SP, light brown to buff, fine to medium SAND, trace silt, with 1/2 inch silt layers at 6.0, 6.4, and 7.5 ft
7	584	38		105.9	1	99		
		34		103.2	1	80		
8	583	33		103.7	1	83		▽ GWL
9	582	36		106.2	2	98		
		40		106.8	1	97		SP, light gray to buff fine SAND, trace silt
10	581	37		105.4	1	99		
11	580	39						
		42		107.1	1	83		
12	579							
		41		104.8	3	83		
13	578							
14	577							Bottom of Test Pit at 13.4 ft (el 577.8)
15								Note: 1. Soil classification based on visual observation of a portion of the wall of the test pit
16								2. Test pit dewatered using perimeter well point dewatering system. Ground water level determined before dewatering.
17								
18								

Date excavated 11 Mar 75

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FIGURE 2.5-256

LOG OF TEST PIT HTP-3

Depth ft	El ft	SAMPLE No.	SAMPLE Loc	PROPERTIES γ_d Dry Density lb/ft³	PROPERTIES Fines Content %	PROPERTIES D_r Relative Density %	Symbol	SOIL CLASSIFICATION
0	594.0							ML, dark gray sandy SILT, trace clay and organic material (Topsoil)
1	593							
2	592							ML, dark brown sandy SILT, trace organic matter
3	591							SM, red to brown fine SAND, some silt
		27			29			
4	590	1		105.7	8	85		
5	589	4		103.0	2	69		SP, gray to buff fine SAND, trace silt with sandy silt nodules below el 588.5
6	588	2		99.4	4	56		
7	587	5		100.8	1	60		SP, gray to buff fine SAND, trace silt
8	586	3		99.9	0	61		
		28			1			
9	585							GWL
10	584							Bottom of Test Pit. at 9.6 ft (el 584.4)
11								Note: Soil classification based on visual observation of a portion of the wall of the test pit.
12								
13								
14								
15								
16								
17								
18								

Date excavated 28 Feb 75

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FIGURE 2.5-257

LOG OF TEST PIT HTP-4

Depth ft	El ft	SAMPLE No.	SAMPLE Loc	PROPERTIES γ_d Dry Density lb/ft³	PROPERTIES Fines Content %	PROPERTIES D_r Relative Density %	Symbol	SOIL CLASSIFICATION
0	596.6							ML, dark gray SILT, some sand, trace organic material (Topsoil)
1	596							
2	595							SM, brown silty SAND
3	594							ML, dark brown sandy SILT
4	593							
5	592							SP, buff to brown fine to medium SAND, trace silt
6	591							SM, brown silty fine SAND
								ML, gray SILT, trace fine sand
	590	18			38			SM, reddish brown fine to medium SAND, some silt
7								ML, gray sandy SILT with silt nodules
	589	48		100.5	12	51		SP, reddish brown fine SAND, trace silt
8								SP-SM, gray fine SAND, trace silt
	588	49		101.9	17	52		
9		23		102.5	8	60		SM, reddish brown fine SAND, some silt
	587	21		106.6	21	78		
10								
	586							
11		20		104.7	6	66		
	585							SP-SM, brown to gray fine SAND, trace silt
12		22		108.0	11	79		SP-SM, gray fine SAND, trace silt
	584							▽ GWL
13								Bottom of Test Pit at 13.0 ft (el 583.6)
	583							
14								Note: Soil classification based on visual observation of a portion of the wall of the test pit.
15								
16								
17								
18								

Date excavated 4 Mar 75

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FIGURE 2.5-258

LOG OF TEST PIT HTP-5

Depth ft	El ft	SAMPLE No.	SAMPLE Loc	PROPERTIES γ_d Dry Density lb/ft³	PROPERTIES Fines Content %	PROPERTIES D_r Relative Density %	Symbol	SOIL CLASSIFICATION
0	595.4							ML, dark gray SILT, some fine sand, trace organic material (Topsoil)
	595							
1	594							ML, brown sandy SILT, trace organic material
2	593							
3	592							ML, light brown mottled reddish brown sandy SILT with numerous light gray silty sand inclusions
4	591							
5	590							
6	589							
7	588							SM, light brown to buff SAND, some silt with silt nodules
8	587	46		109.5	44	94		
9	586	44		106.2	10	69		SP-SM, light gray to light brown SAND, trace silt
10	585	45		104.6	11	100		SP-SM, brown fine SAND, trace silt
11	584							
12	583	43		106.5	2	100		SP, brown fine SAND, trace silt ▽ GWL
13	582							Bottom of Test Pit at 12.9 ft (el 582.5) Note: Soil classification based on visual observation of a portion of the wall of the test pit
14								
15								
16								
17								
18								

Date excavated 3 Mar 75

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FIGURE 2.5-259

LOG OF TEST PIT HTP-6

Depth ft	El ft	SAMPLE No.	SAMPLE Loc	PROPERTIES γ_d Dry Density lb/ft³	PROPERTIES Fines Content %	PROPERTIES D_r Relative Density %	Symbol	SOIL CLASSIFICATION
0	596.8							ML, dark gray SILT, some fine sand, trace organic material (Topsoil)
1	596							SM, light brown silty fine SAND
2	595							
3	594							ML, dark brown sandy SILT
4	593							SM, brown silty fine SAND
5	592							SP, reddish brown fine SAND
6	591							SM, brown silty fine SAND
		51			37			
7	590	54			62			ML, brown sandy SILT
8	589							
		52		104.7	2	95		SP, light brown to buff fine SAND, trace silt, with silt strata from 10.6 to 10.7 ft
9	588							
10	587	63		104.9	14	80		
11	586	55		102.0	35	78		
12	585							SM, gray silty SAND
		62		103.5	4	74		SP, gray medium to fine SAND, trace silt
13	584	50		104.4	1	94		
14	583	61		101.3	2	76		
15	582	59		104.1	3	79		
		60		103.6	2	76		
16	581	58		104.7	1	100		
17	580	57		103.2	2	85		
18	579	56		103.6	1	94		
	578							Bottom of Test Pit at 18.2 ft (el 578.6)

Date excavated 13 Mar 75

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FIGURE 2.5-260

LOG OF TEST PIT HTP-7
(SHEET 1 OF 2)

Depth ft	El ft	SAMPLE No.	SAMPLE Loc	PROPERTIES γ_d Dry Density lb/ft³	PROPERTIES Fines Content %	PROPERTIES D_r Relative Density %	Symbol	SOIL CLASSIFICATION
								Notes: 1. Soil classification based on visual observation of a portion of the wall of the test pit. 2. Test pit dewatered using perimeter well point dewatering system. Ground water level not determined before dewatering.

Date excavated 13 Mar 75

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FIGURE 2.5-260

LOG OF TEST PIT HTP-7
(SHEET 2 OF 2)

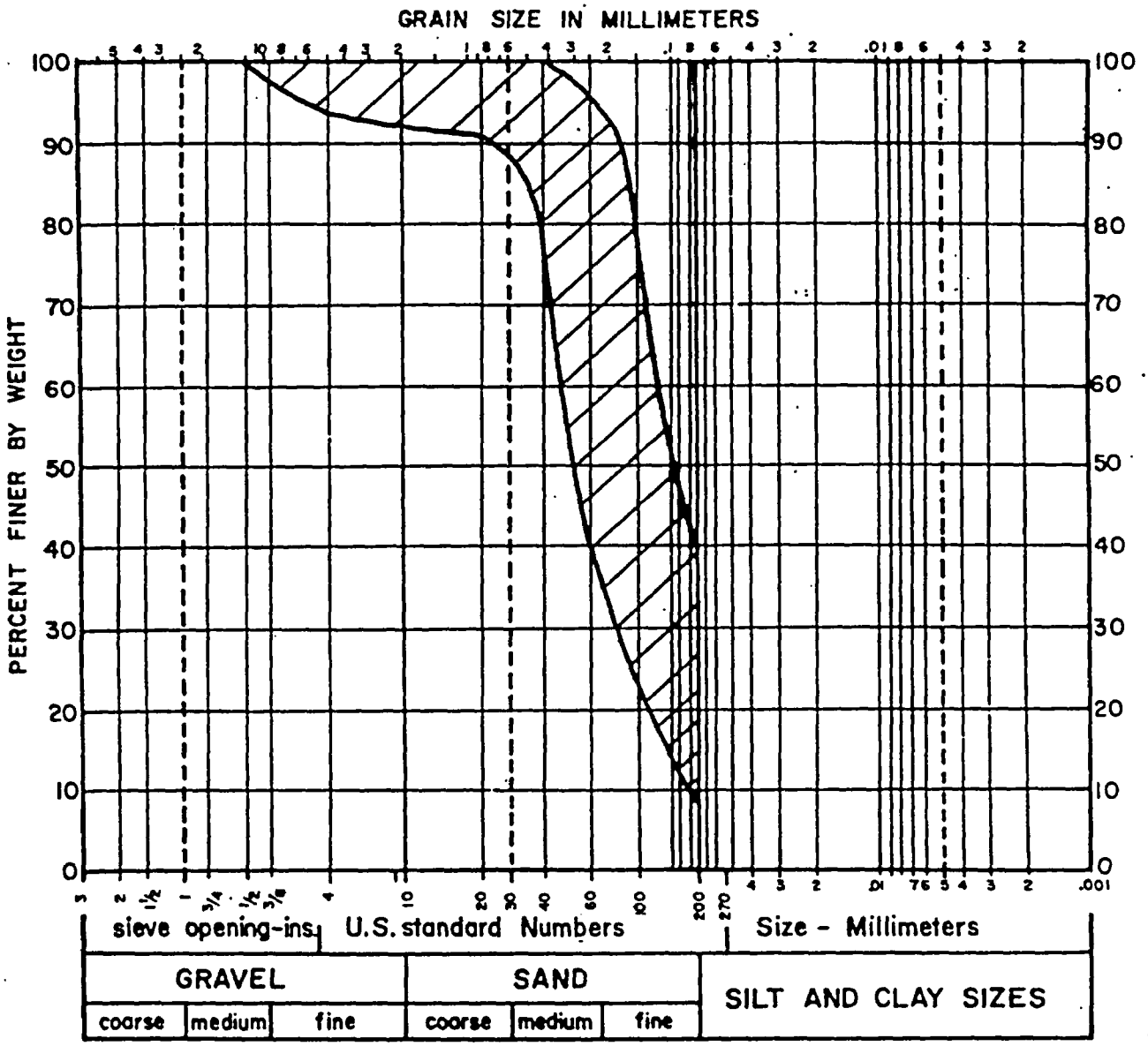

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FIGURE 2.5-261

GRAIN-SIZE ENVELOPE, SAND BACKFILL, MAIN PLANT

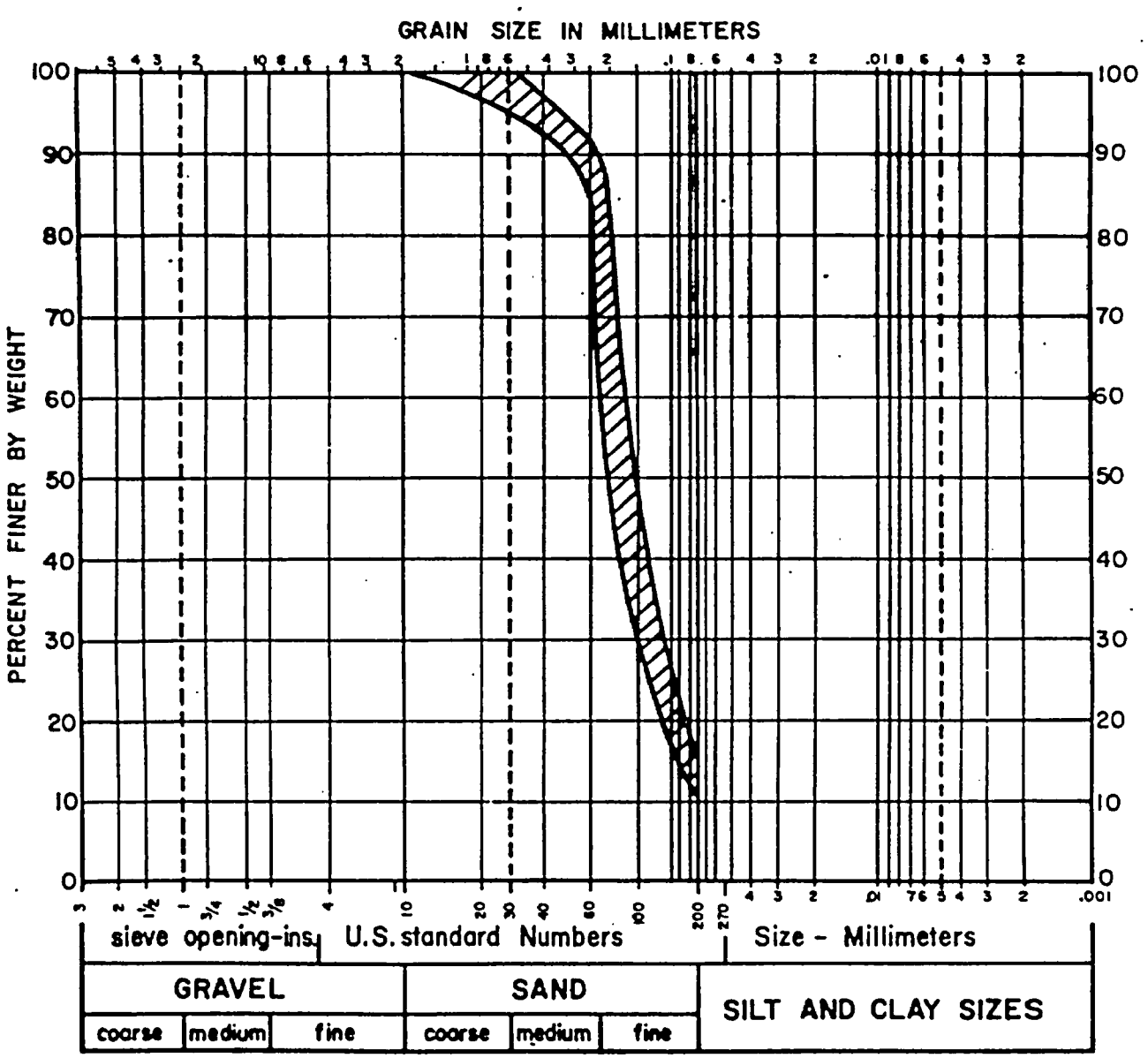

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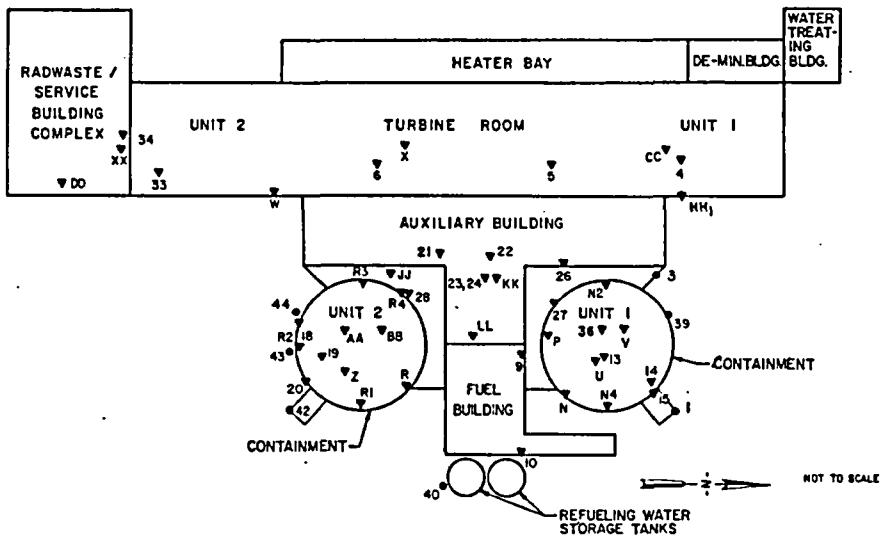
FIGURE 2.5-262

GRAIN-SIZE ENVELOPE, SAND BACKFILL, ESWP



LEGEND

- ● EXTERIOR SETTLEMENT MONUMENT
- ▼ INTERIOR SETTLEMENT MONUMENT

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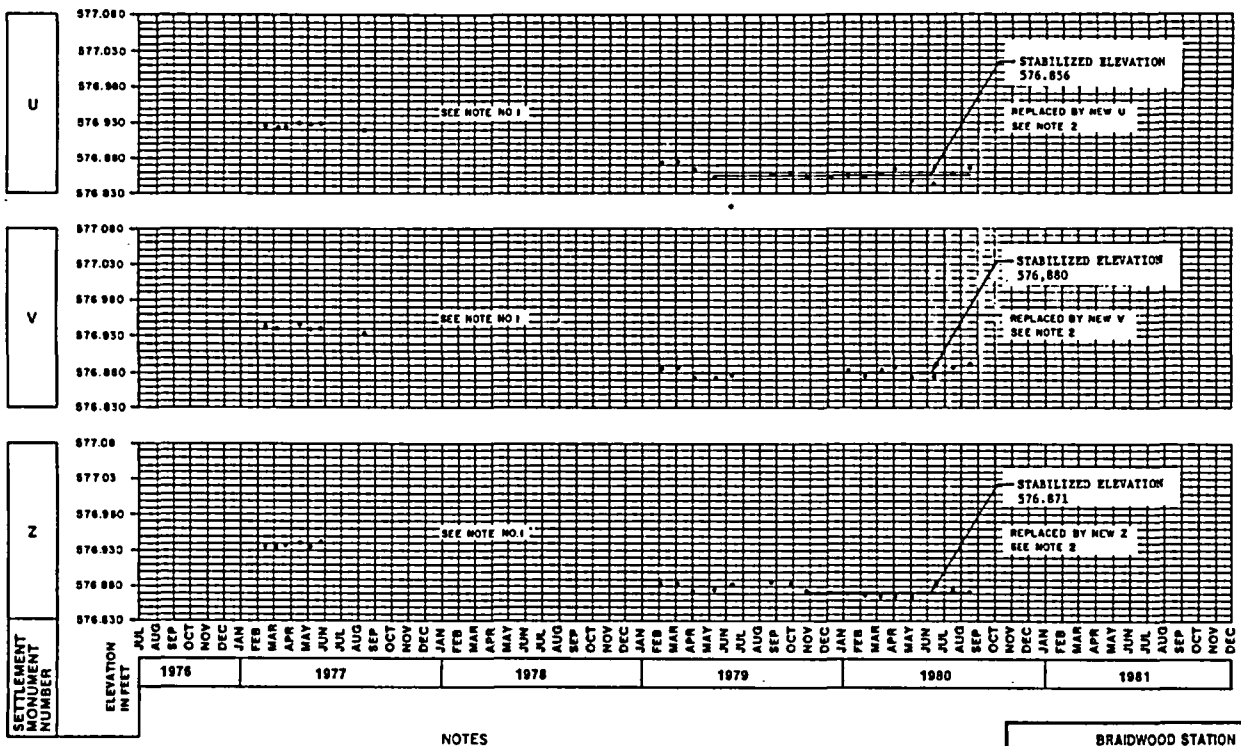
FIGURE 2.5-263

LOCATIONS OF CONSTRUCTION SETTLEMENT MONUMENTS



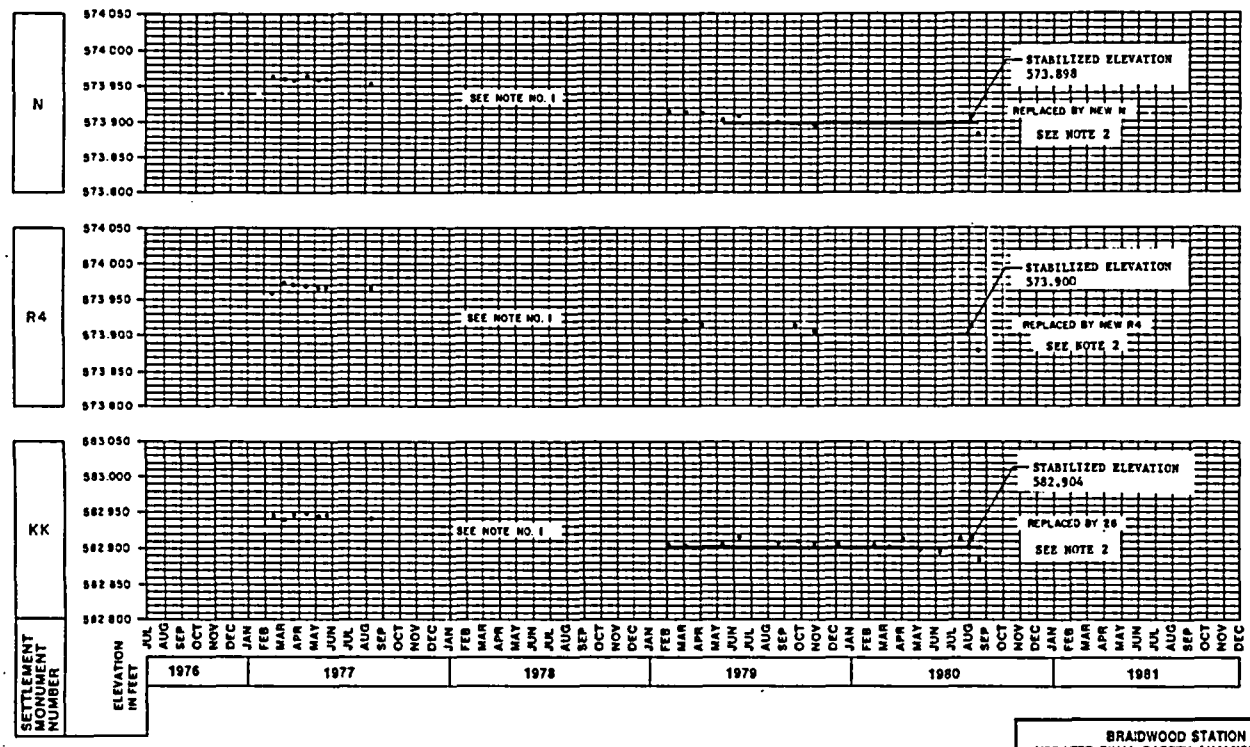
NOTES

1. SURVEYS DURING THIS PERIOD WERE DISCONTINUED DUE TO CONSTRUCTION INTERFERENCES.
2. SURVEYS WERE INTERUPTED TO ESTABLISH PERMANENT OPERATIONAL MONUMENTS.
3. NOTES 1 AND 2 APPLY FOR FIGURES Q362.1-2 THROUGH FIGURE Q362.1-9

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-264

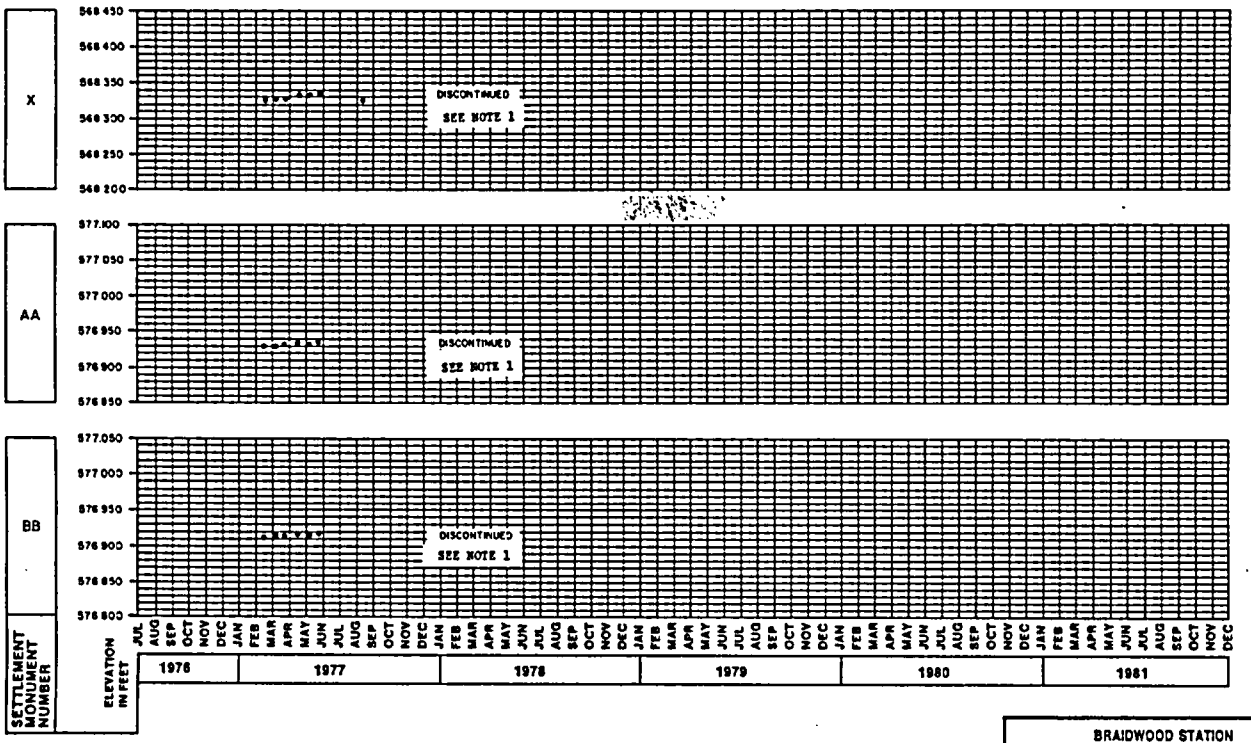
SETTLEMENT PLOTS FOR MONUMENTS U, V, Z



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-265

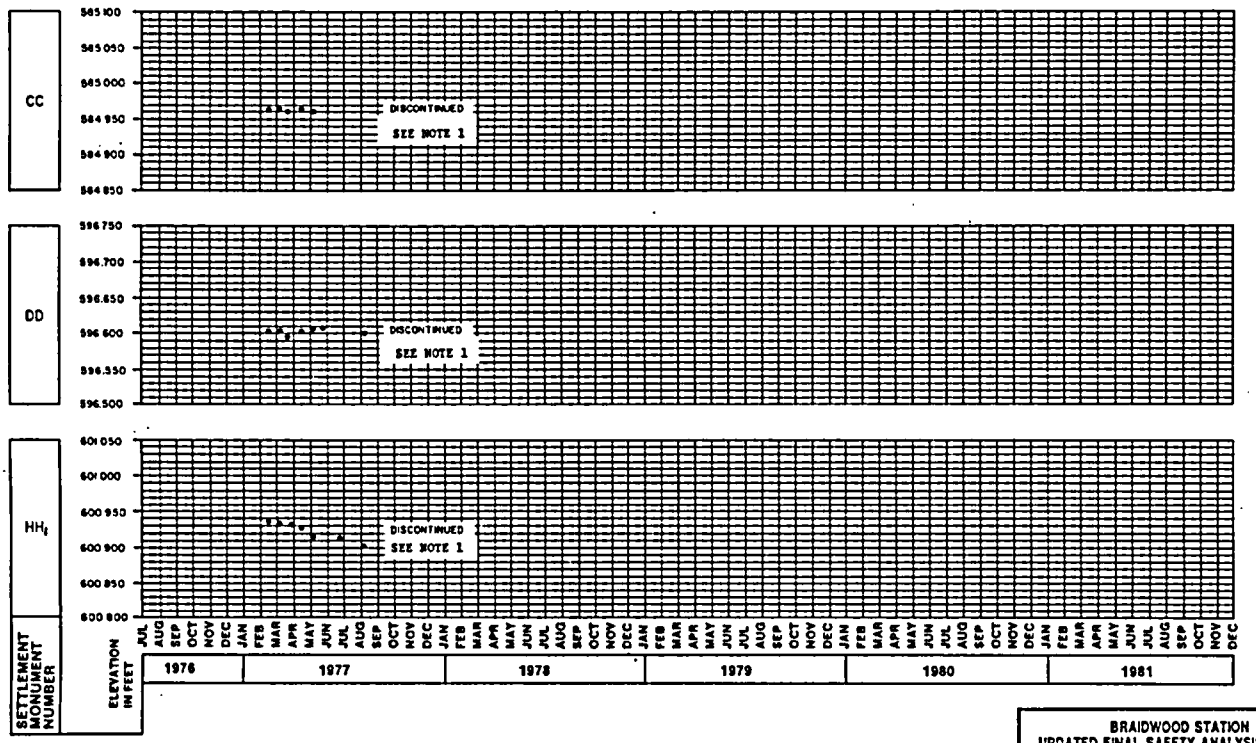
SETTLEMENT PLOTS FOR MONUMENTS N, R4, KK



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-266

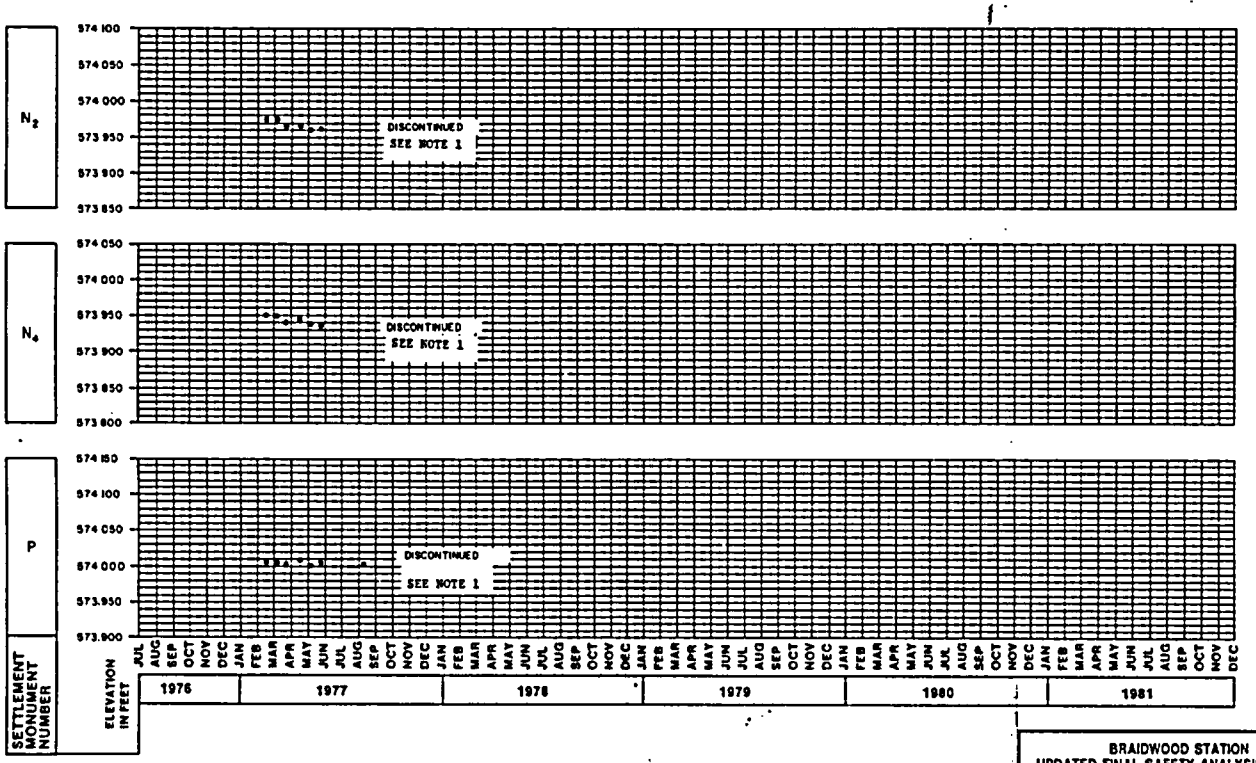
SETTLEMENT PLOTS FOR MONUMENTS X, AA, BB



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-267

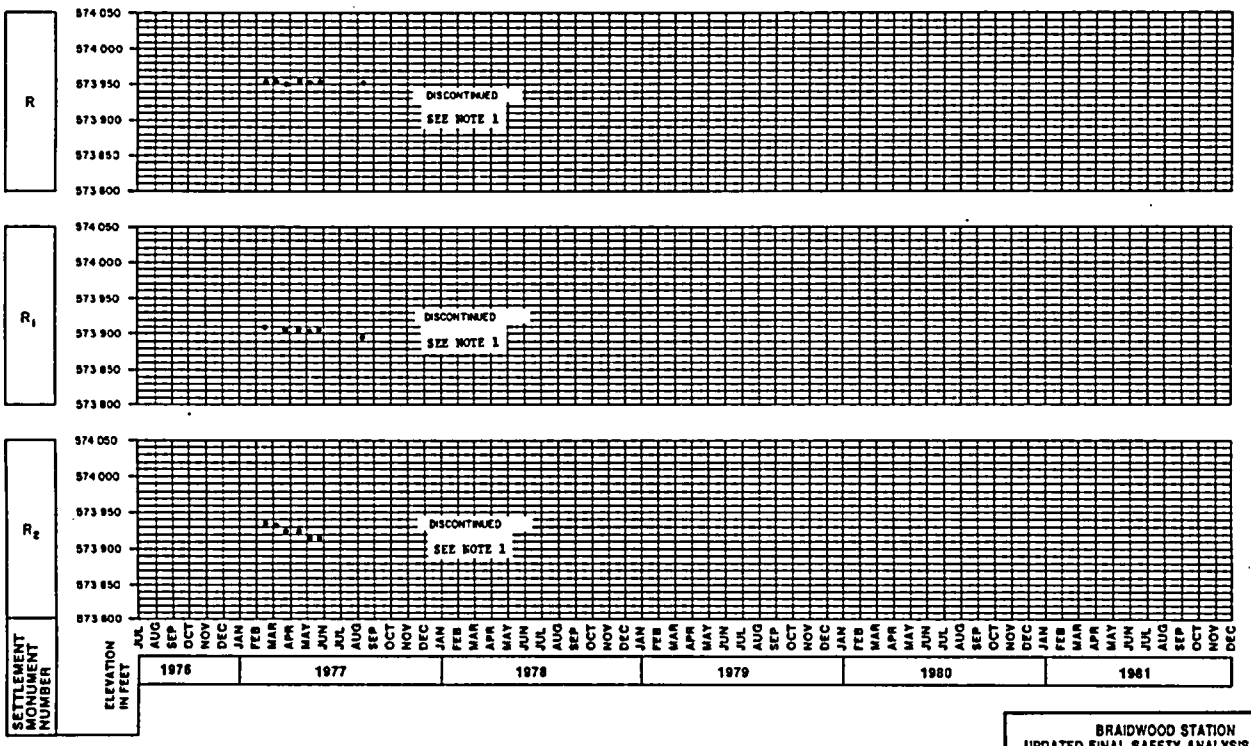
SETTLEMENT PLOTS FOR MONUMENTS CC, DD, HH_1



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-268

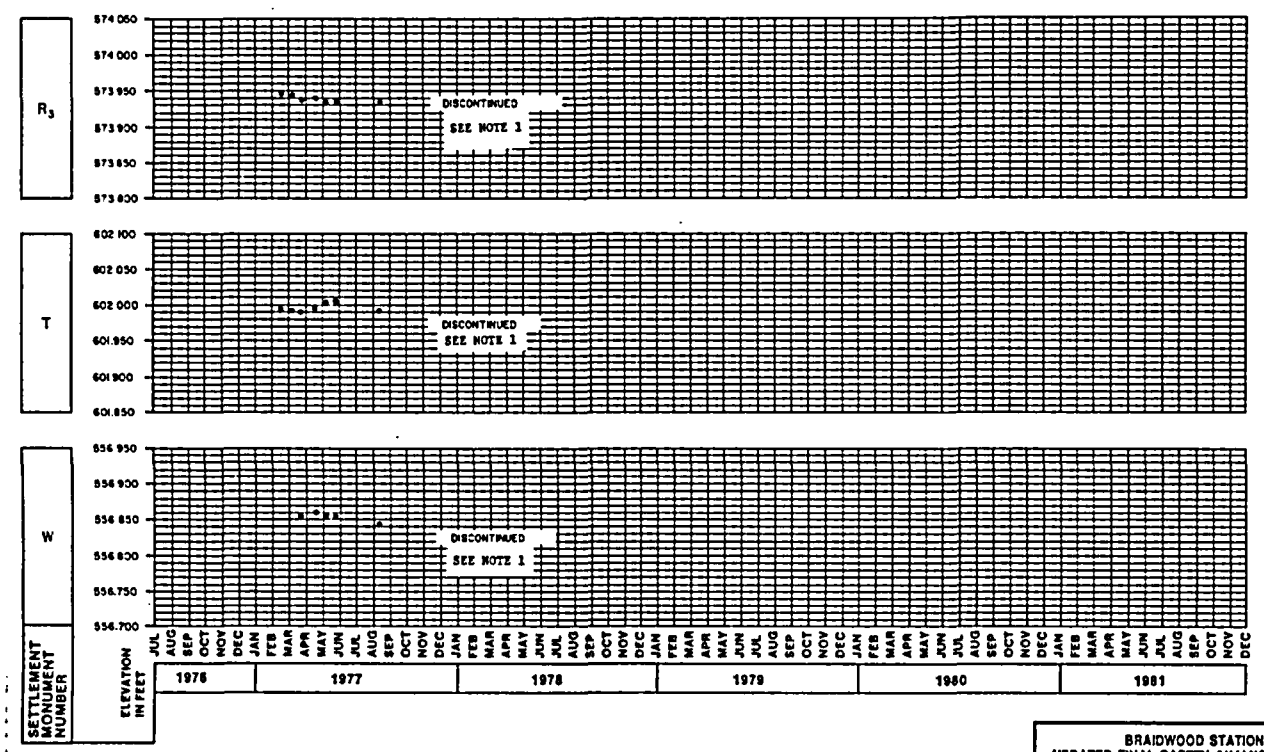
SETTLEMENT PLOTS FOR MONUMENTS N2, N4, P



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-269

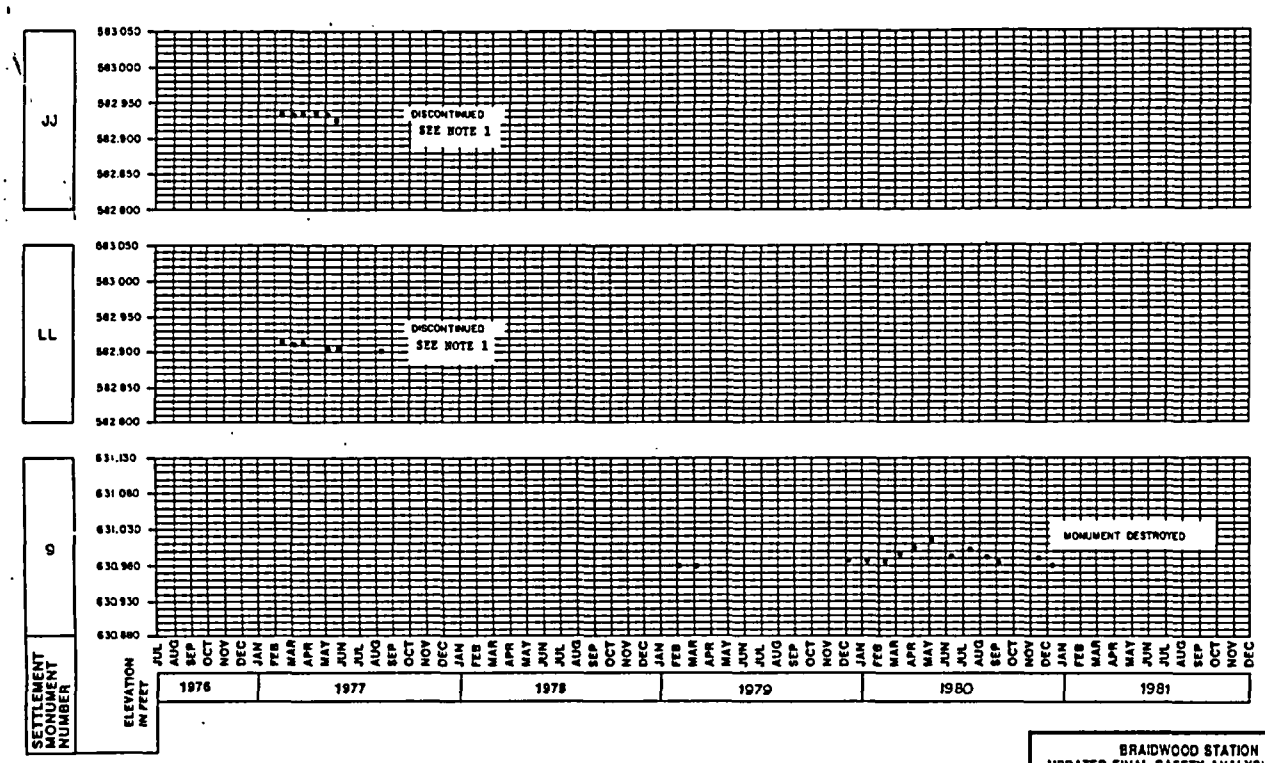
SETTLEMENT PLOTS FOR MONUMENTS R, R1, R2



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-270

SETTLEMENT PLOTS FOR MONUMENTS R3, T, W



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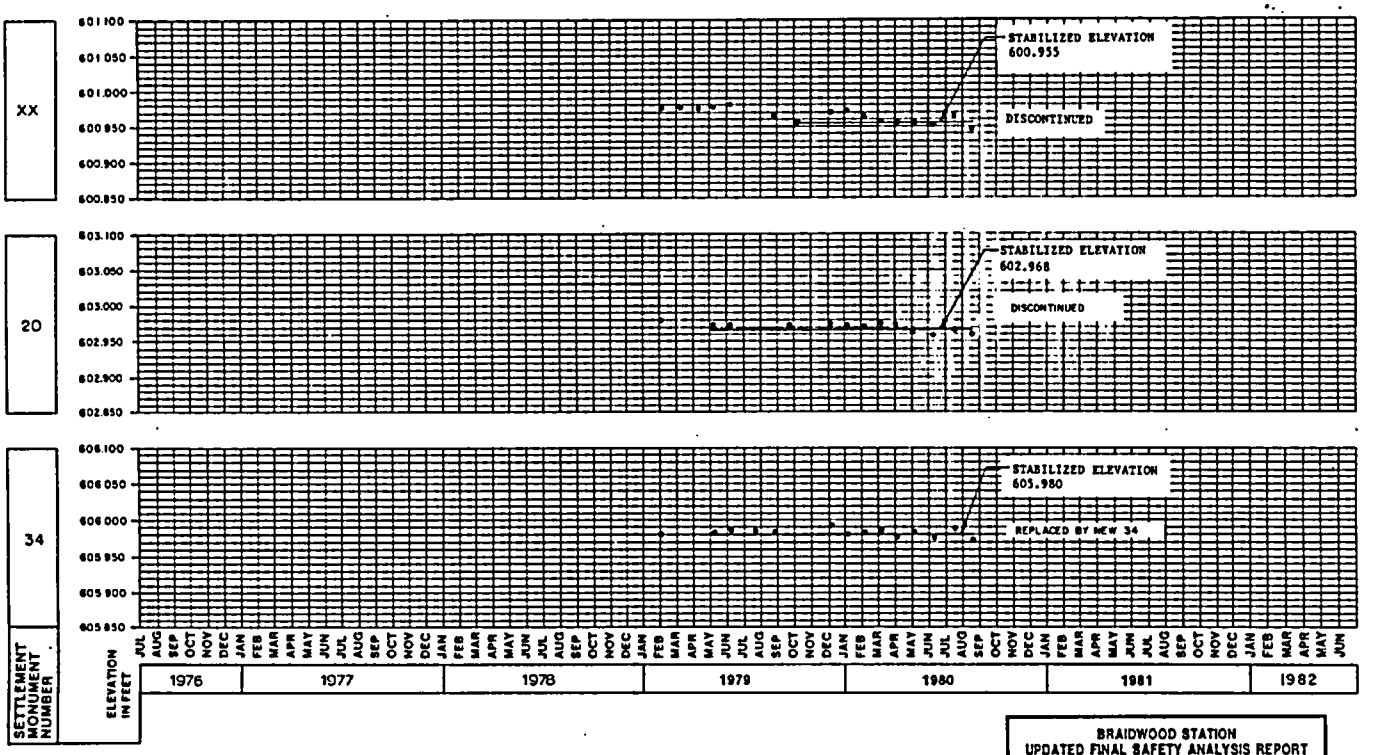
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-271

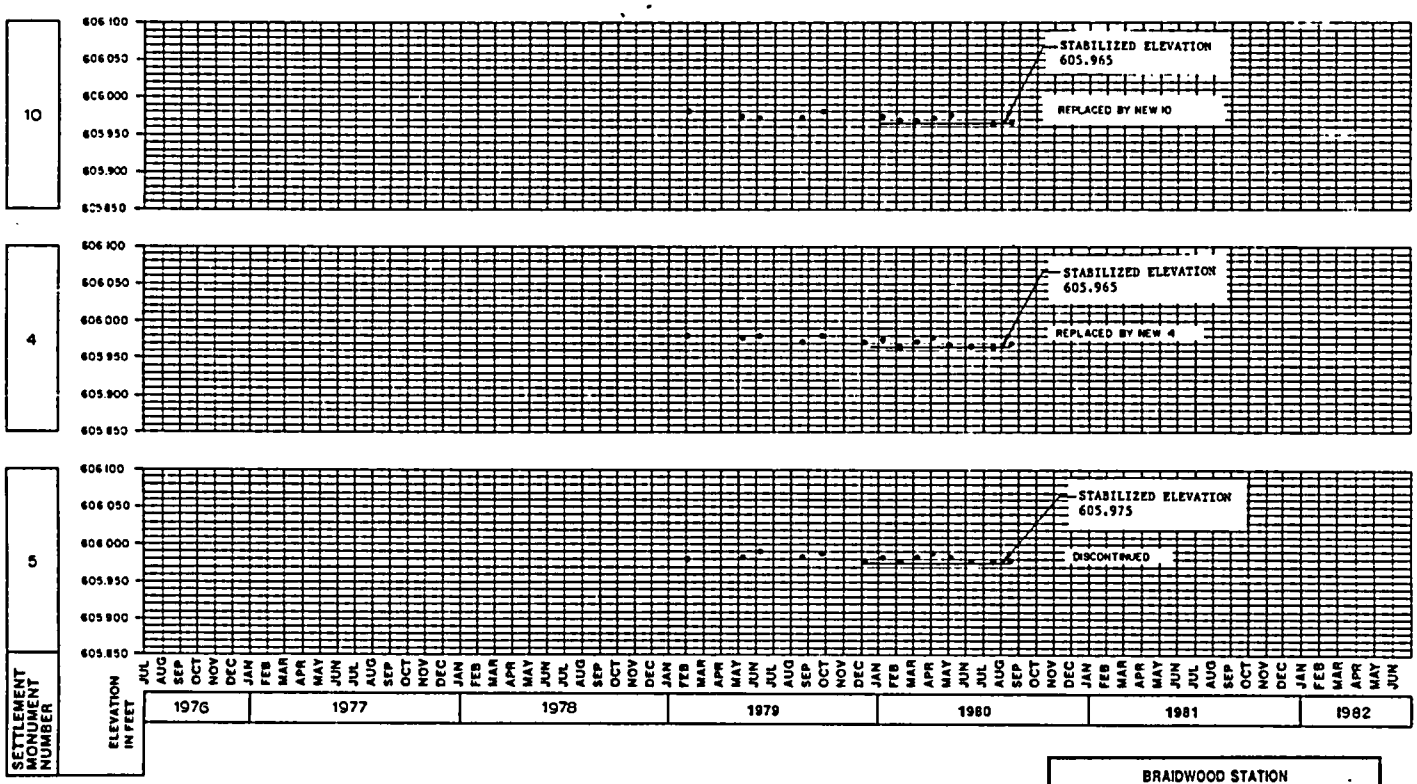
SETTLEMENT PLOTS FOR MONUMENTS JJ, LL, 9



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-272

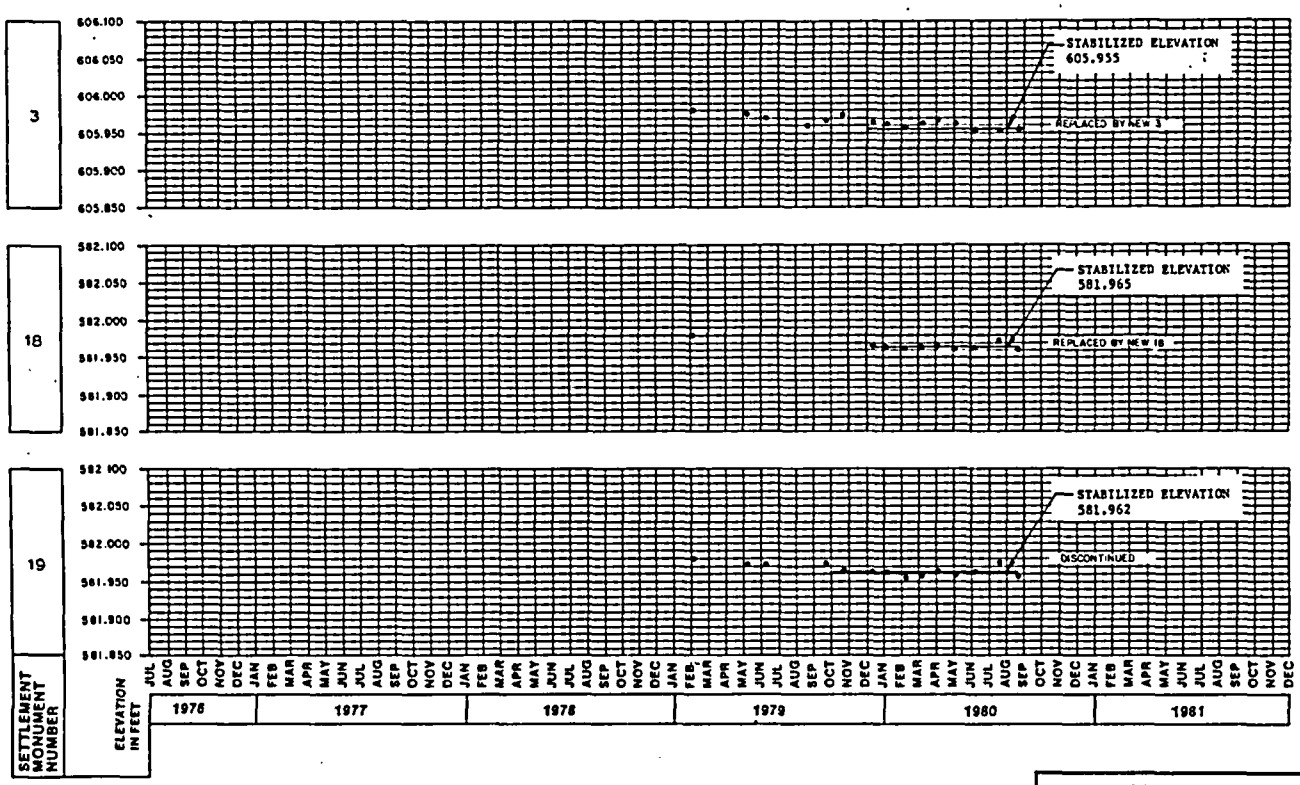
SETTLEMENT PLOTS FOR MONUMENTS XX, 20, 34



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-273

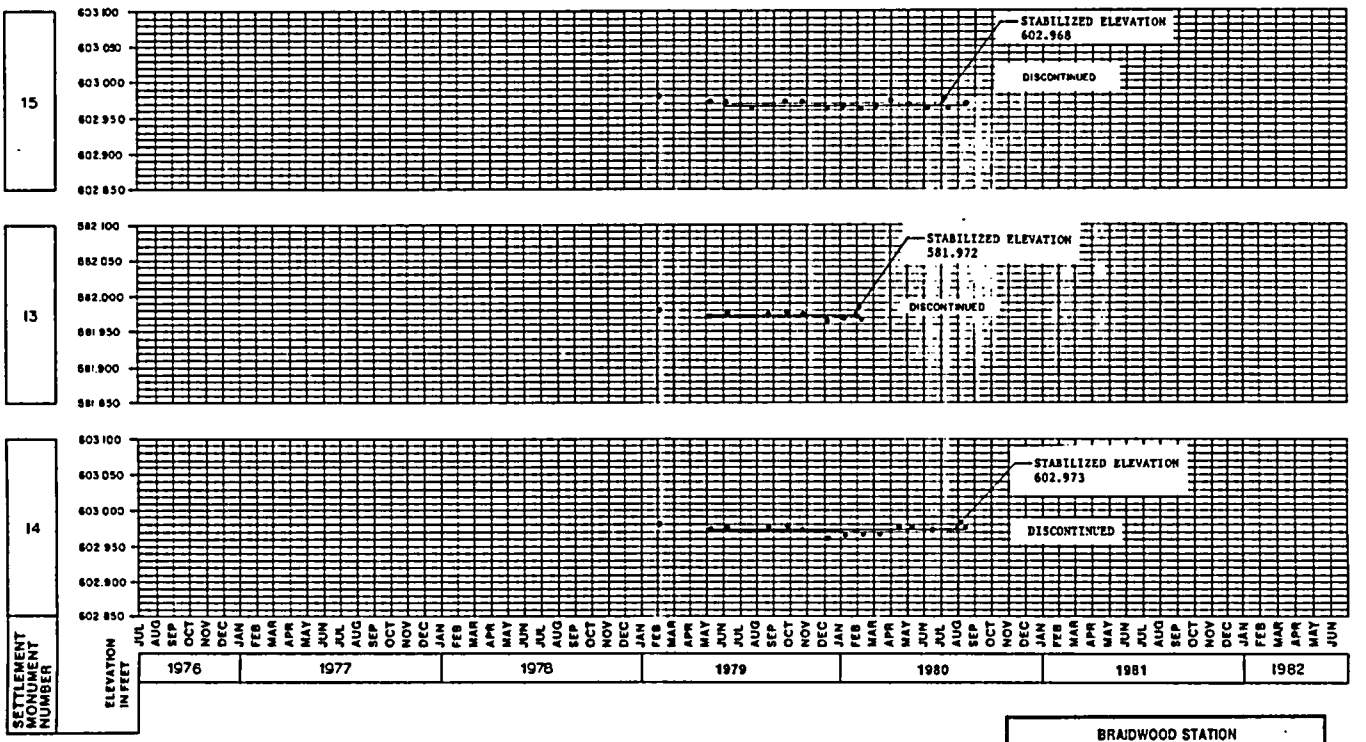
SETTLEMENT PLOTS FOR MONUMENTS 10, 4, 5



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-274

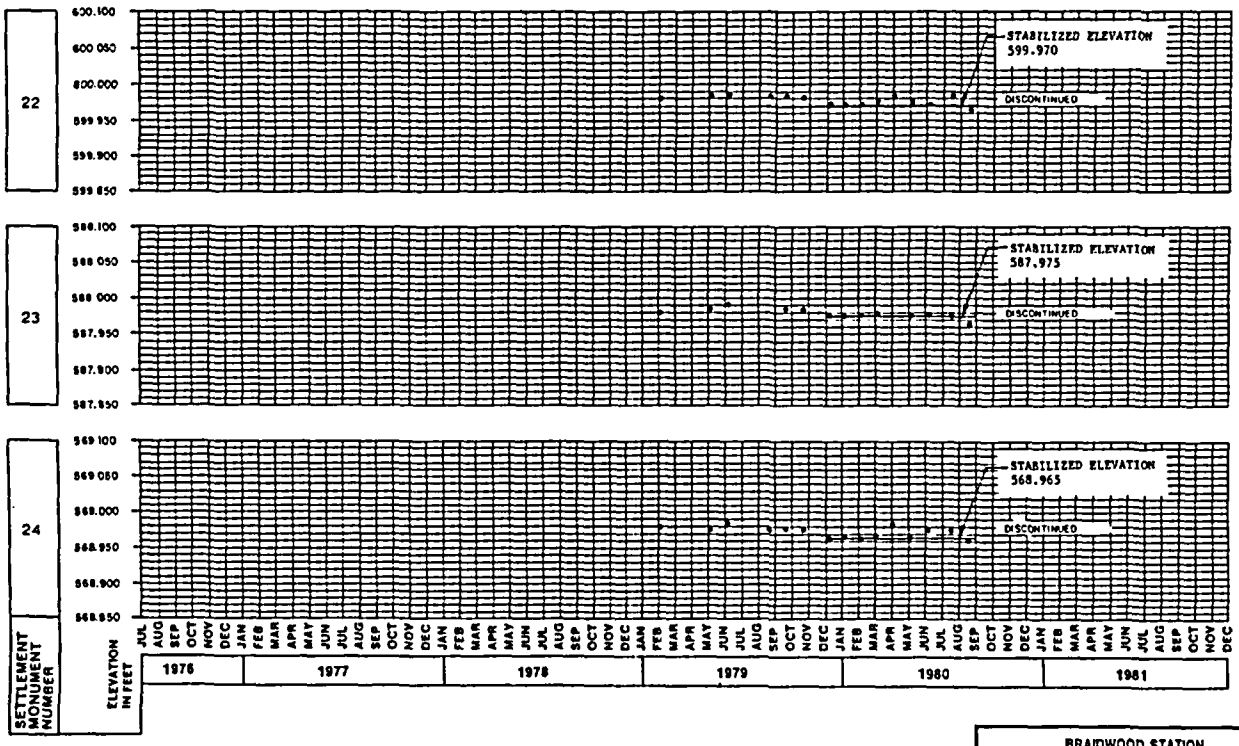
SETTLEMENT PLOTS FOR
MONUMENTS 3, 18, 19



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-275

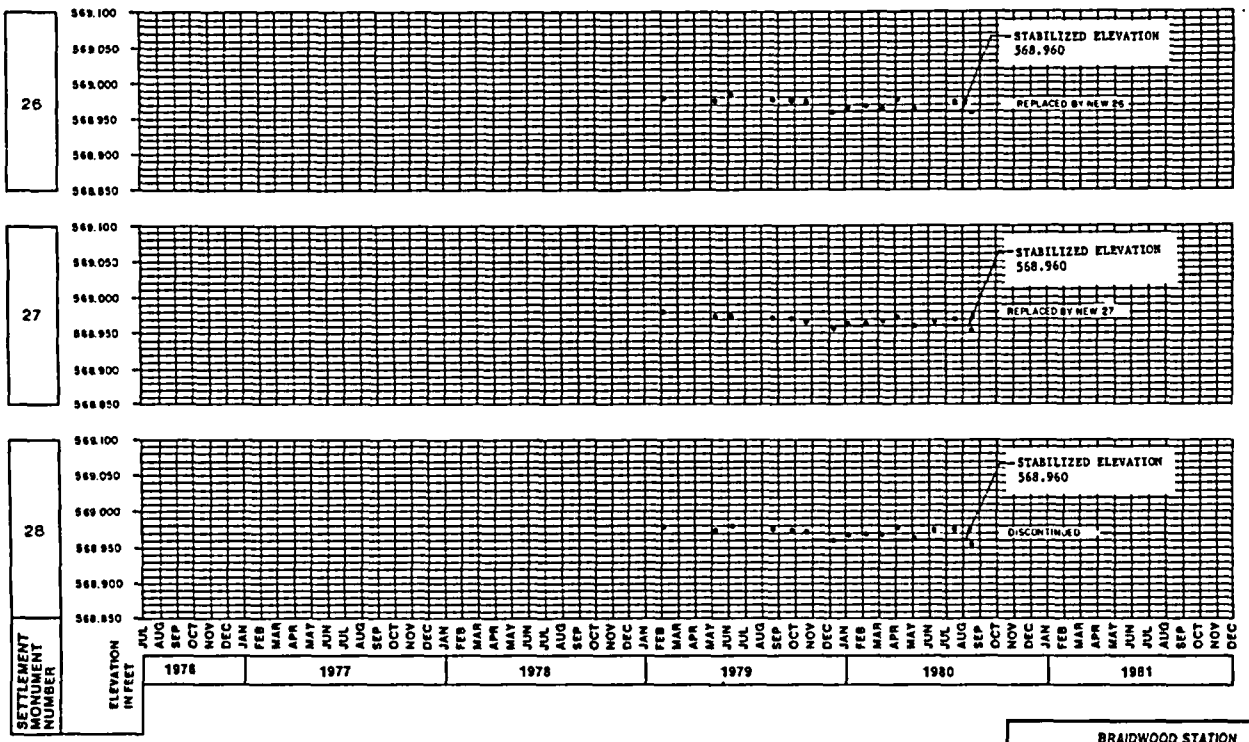
SETTLEMENT PLOTS FOR MONUMENTS 15, 13, 14



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-276

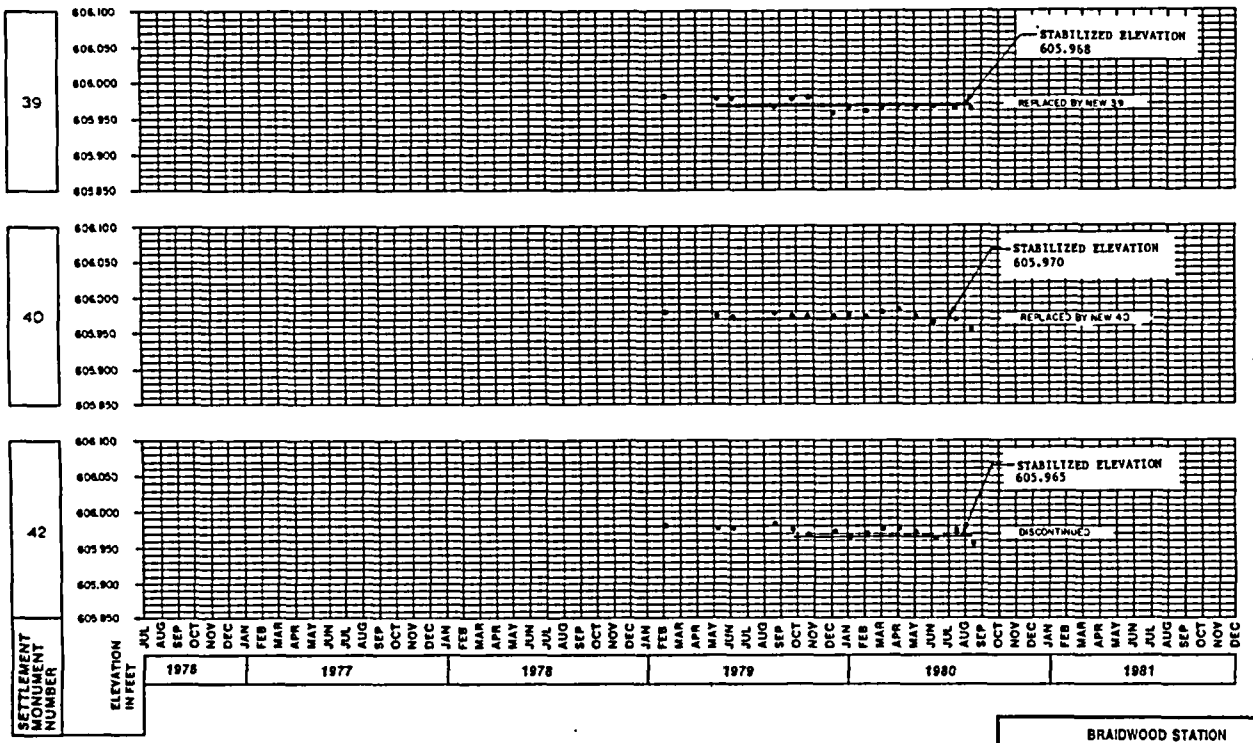
SETTLEMENT PLOTS FOR MONUMENTS 22, 23, 24



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-277

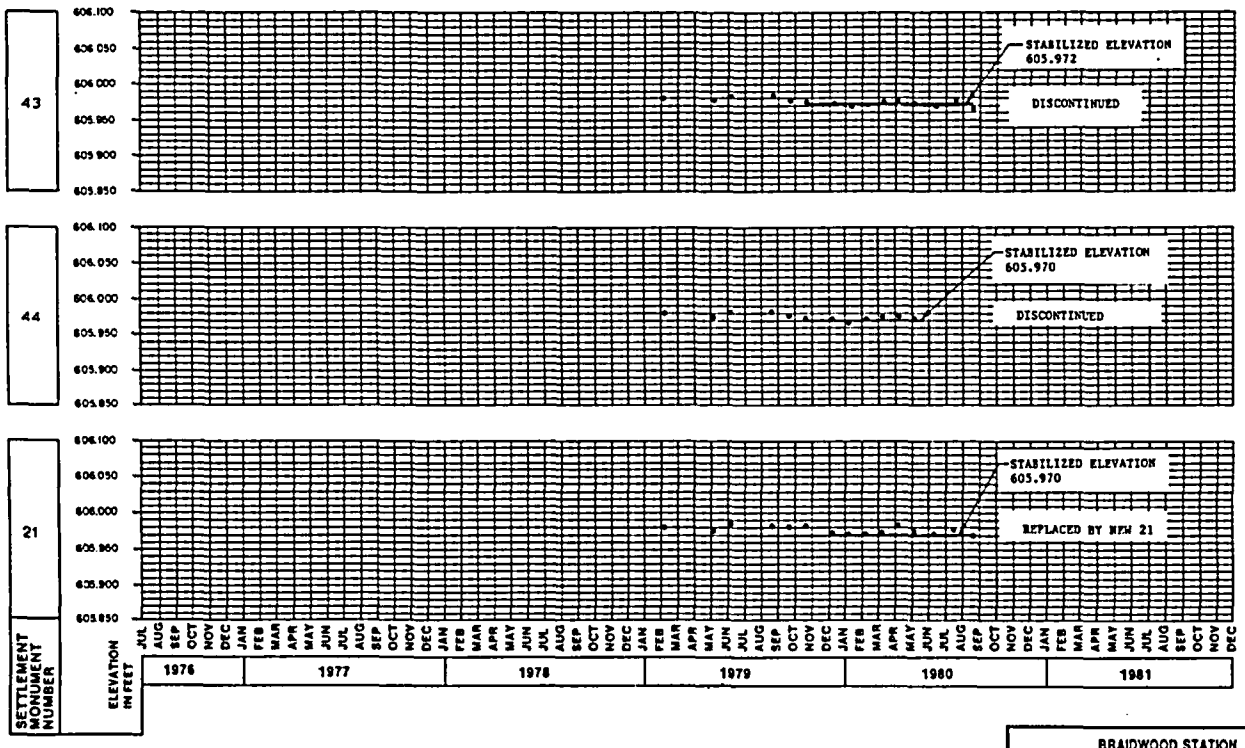
SETTLEMENT PLOTS FOR MONUMENTS 26, 27, 28



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-27B

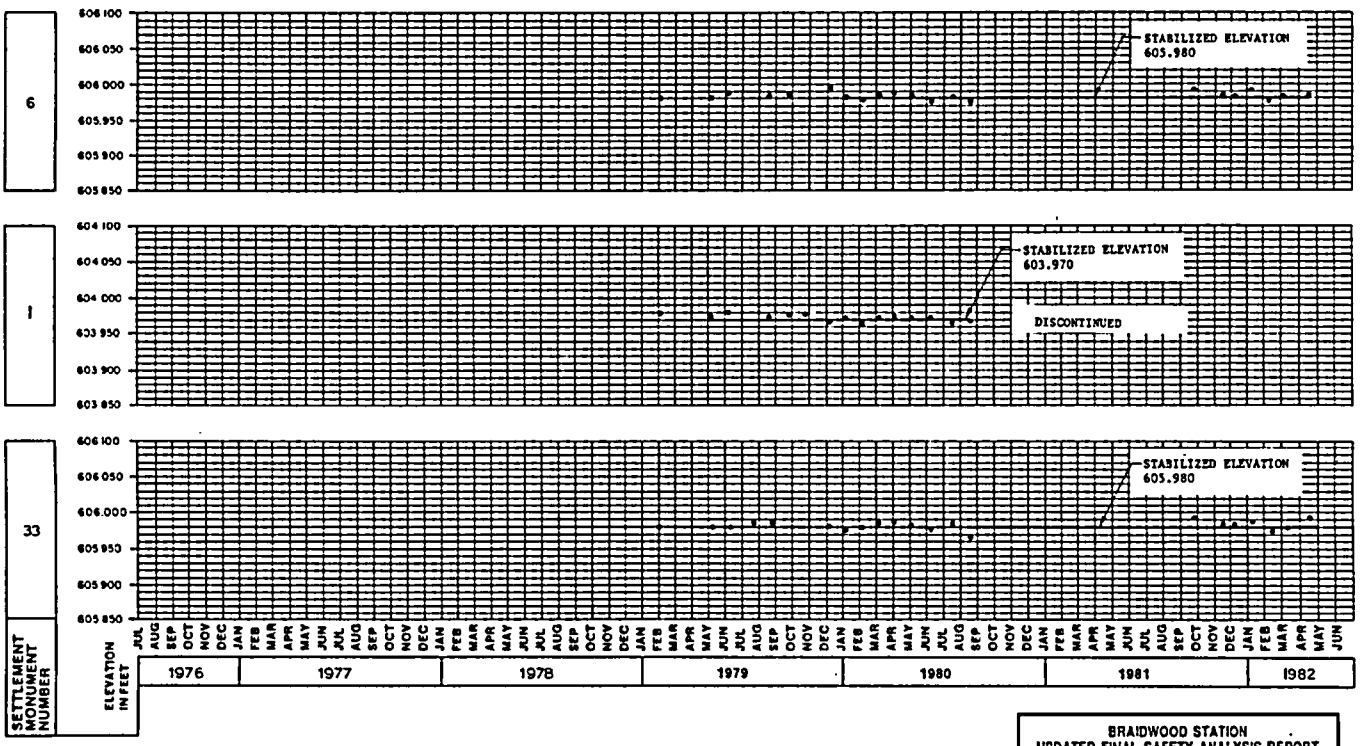
SETTLEMENT PLOTS FOR MONUMENTS 39, 40, 42



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-279

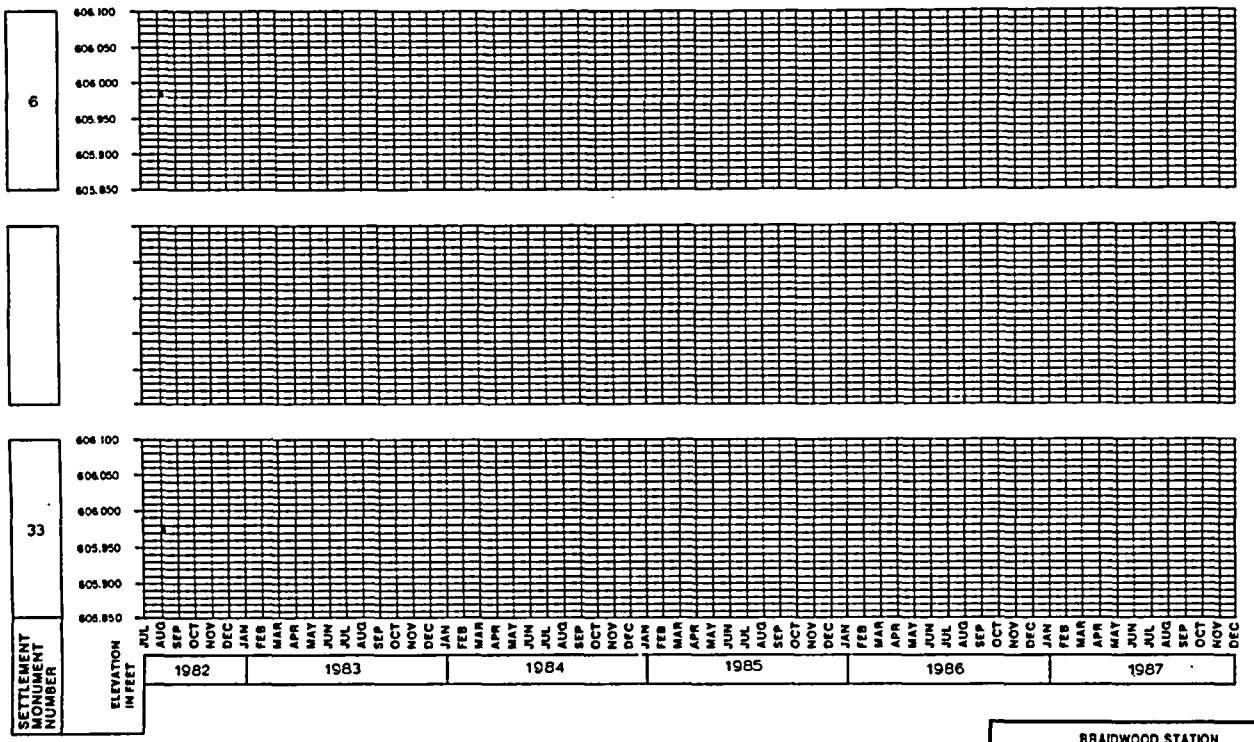
SETTLEMENT PLOTS FOR MONUMENTS 43, 44, 21



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-280

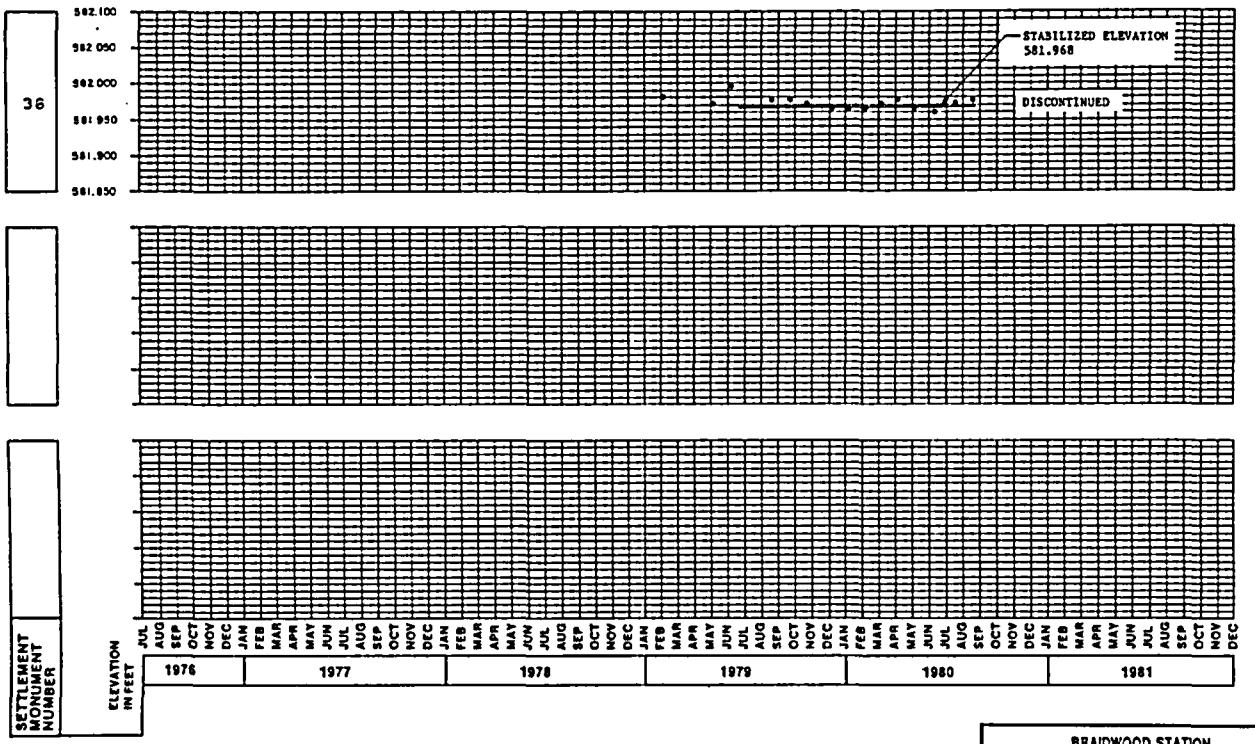
SETTLEMENT PLOTS FOR
MONUMENTS 6, 1, 33
(SHEET 1 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-280

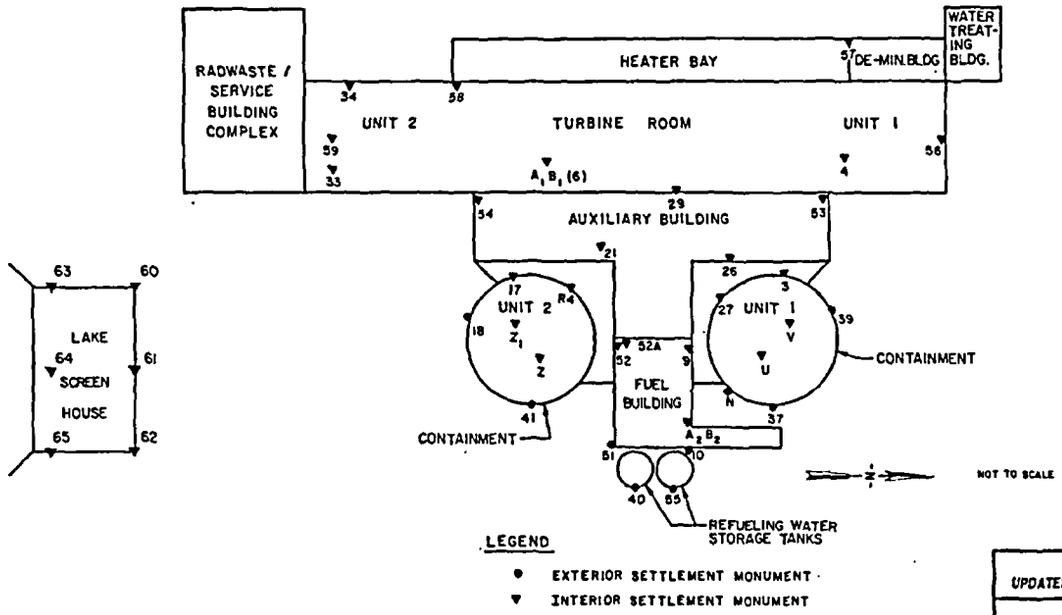
SETTLEMENT PLOTS FOR MONUMENTS 6, 1, 33
(SHEET 2 OF 2)



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-281

SETTLEMENT PLOT FOR MONUMENT 36



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-282

LOCATIONS OF OPERATIONAL SETTLEMENT MONUMENTS

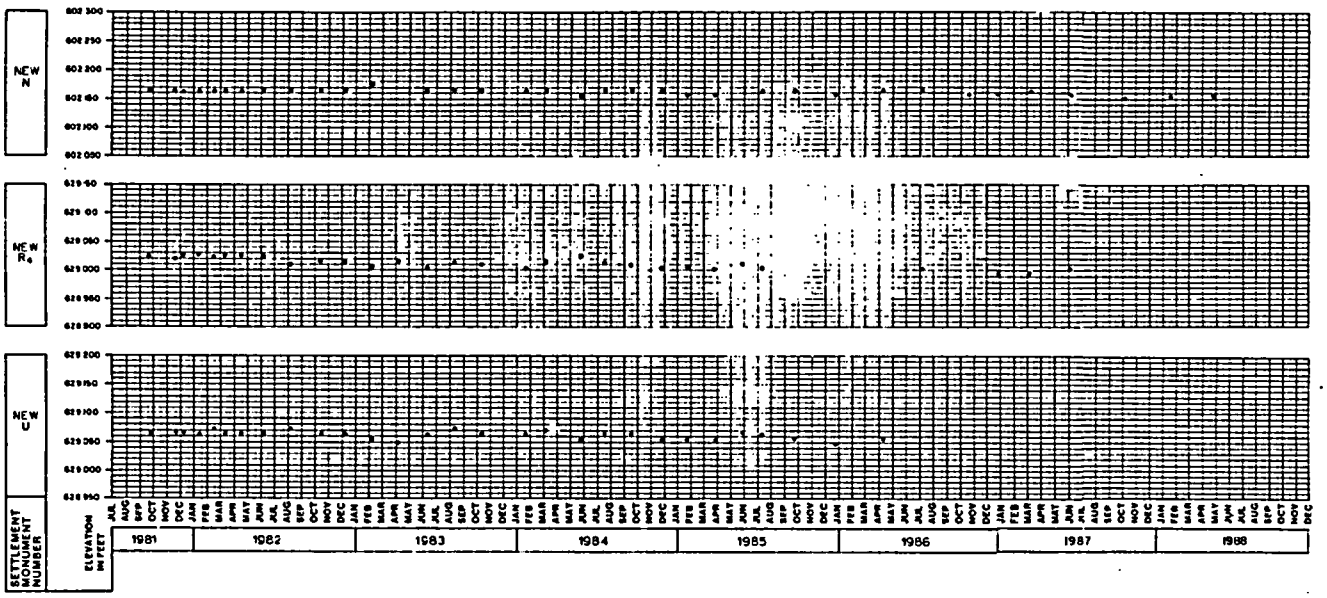


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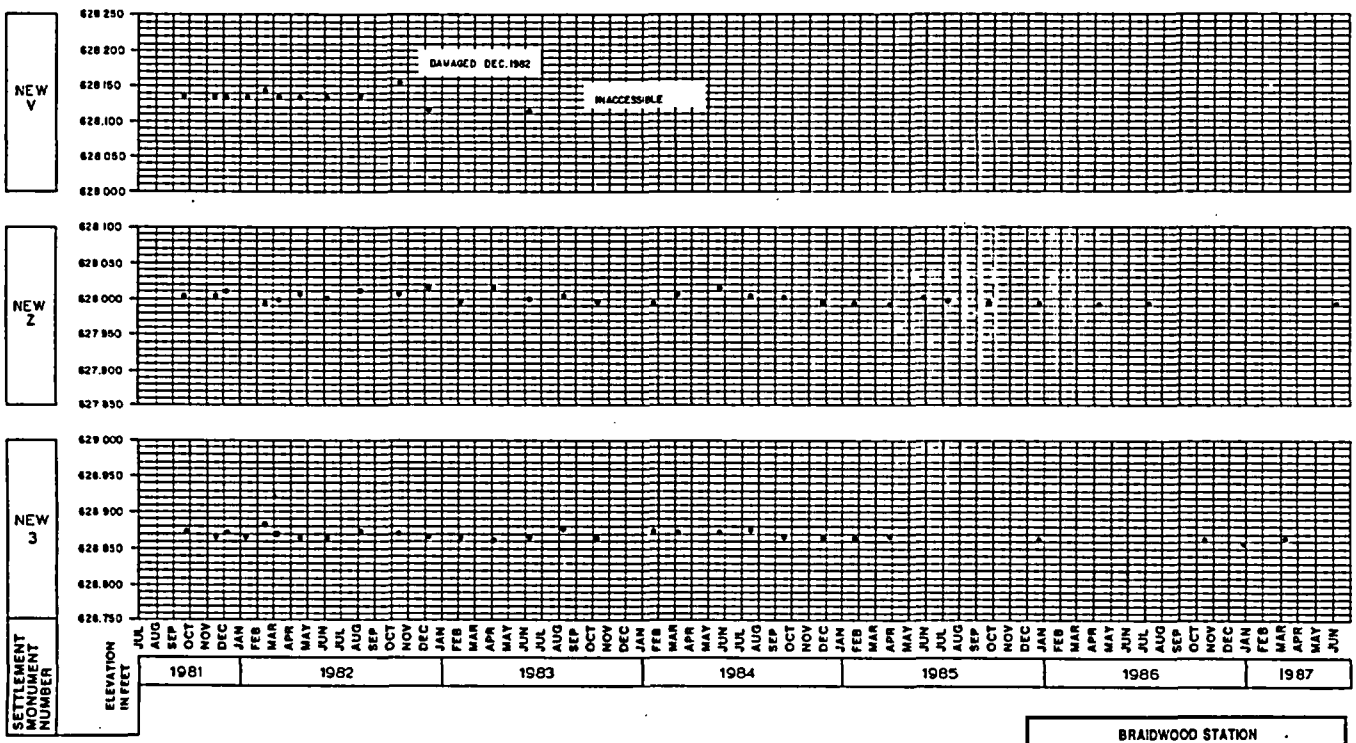
FIGURE 2.5-283

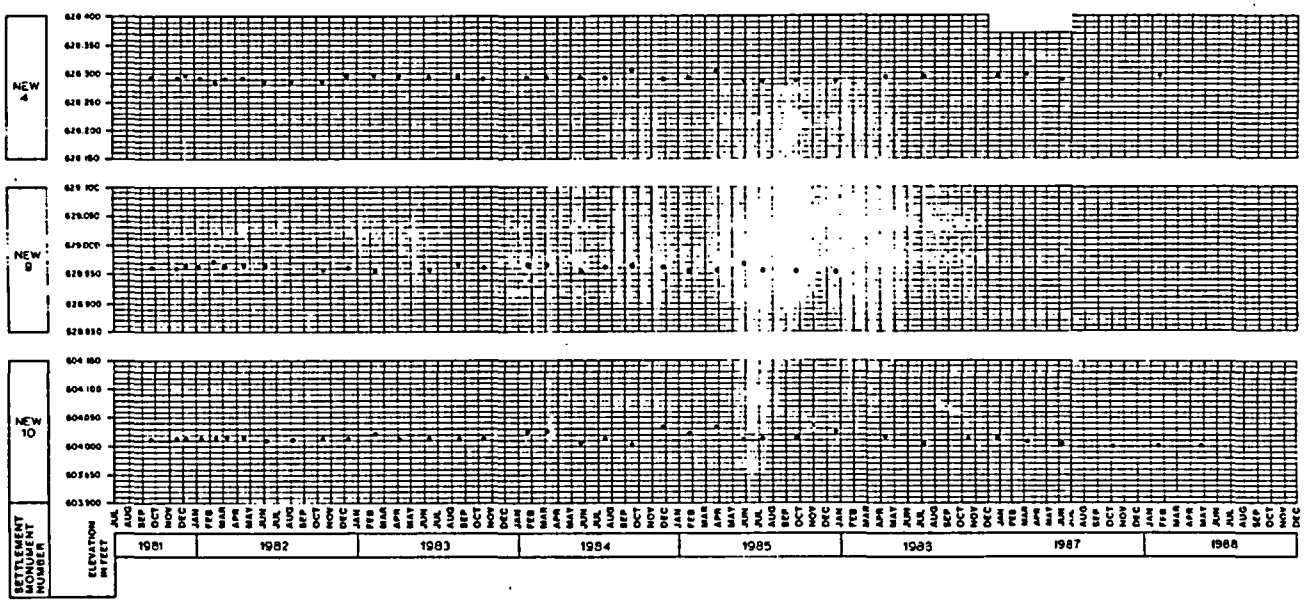
SETTLEMENT PLOTS FOR
NEW MONUMENTS N, R4, U



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-284

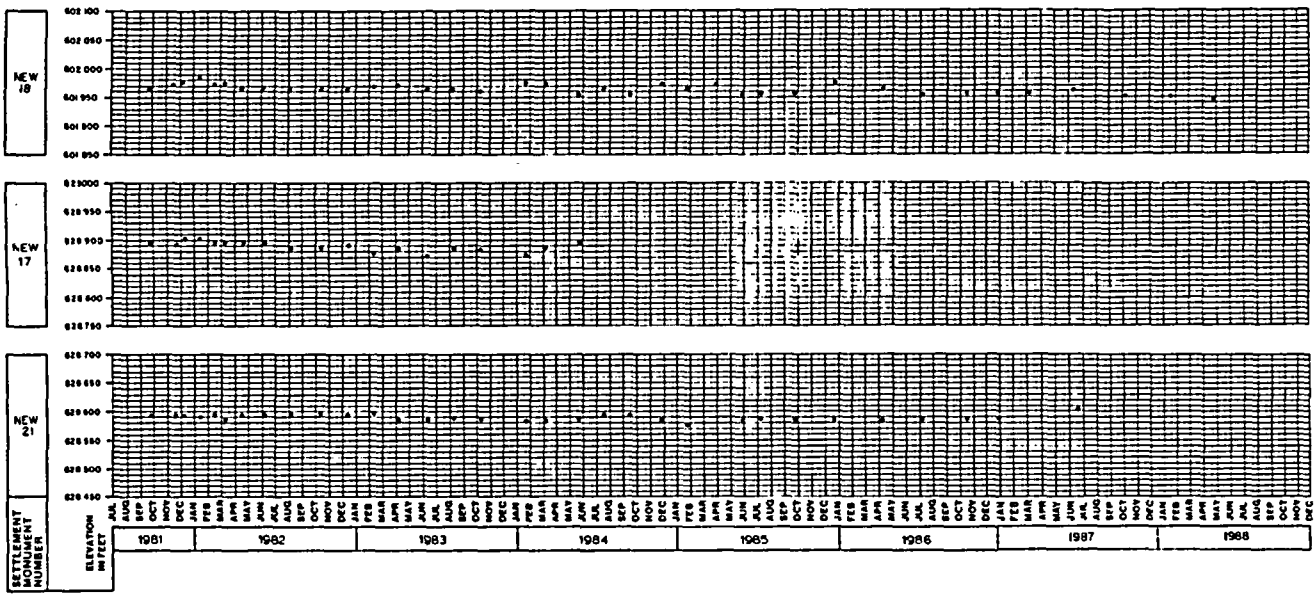
SETTLEMENT PLOTS FOR NEW MONUMENTS V, Z, 3



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-285

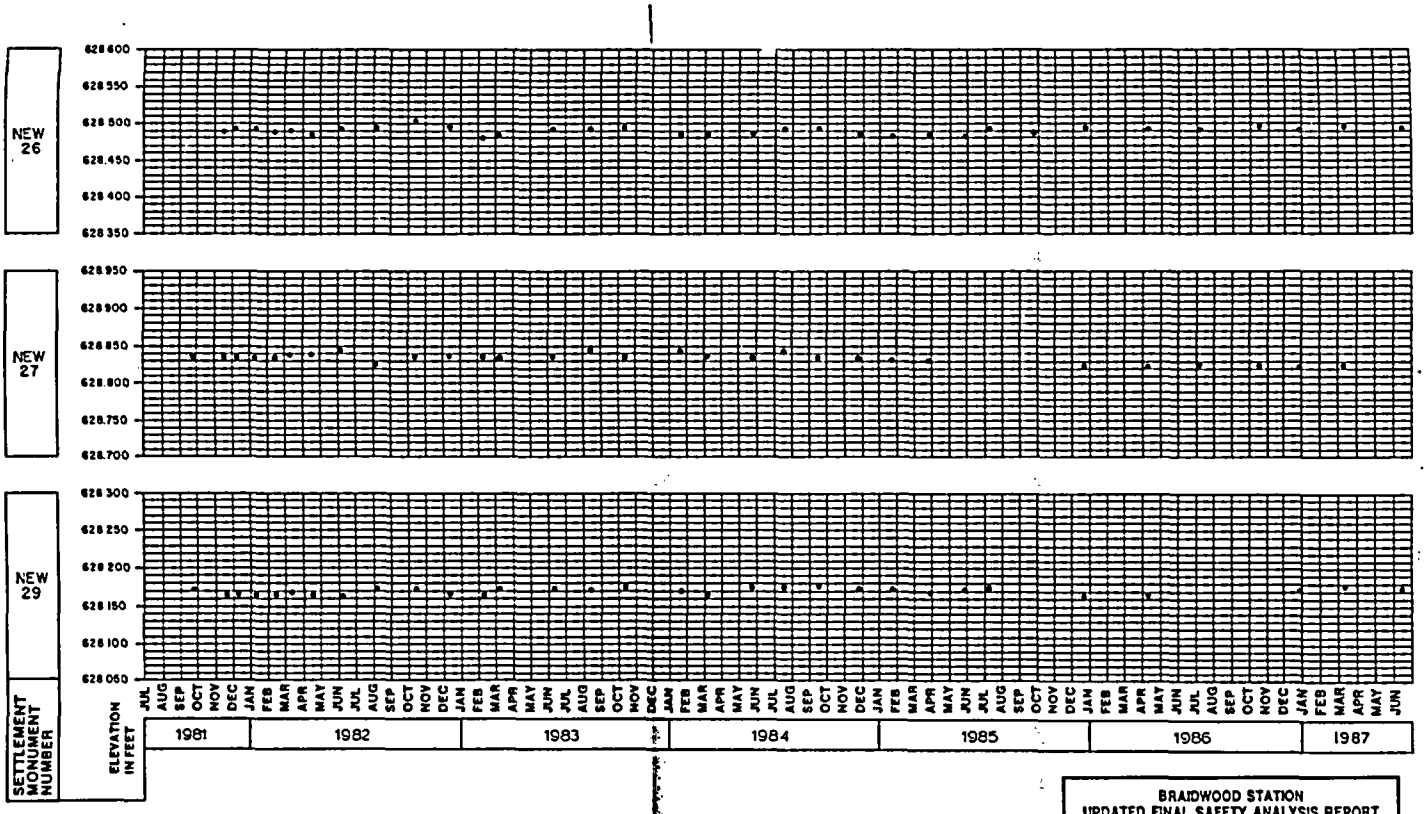
SETTLEMENT PLOTS FOR
NEW MONUMENTS 4, 9, 10



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-286

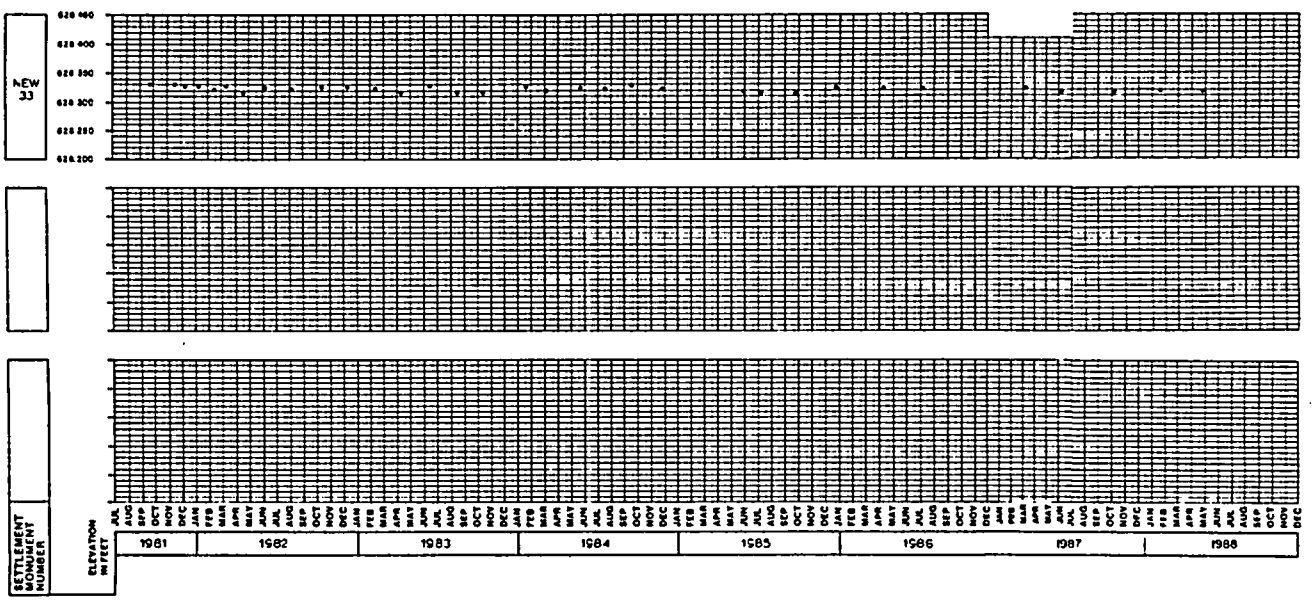
SETTLEMENT PLOTS FOR
NEW MONUMENTS 18, 17, 21



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-287

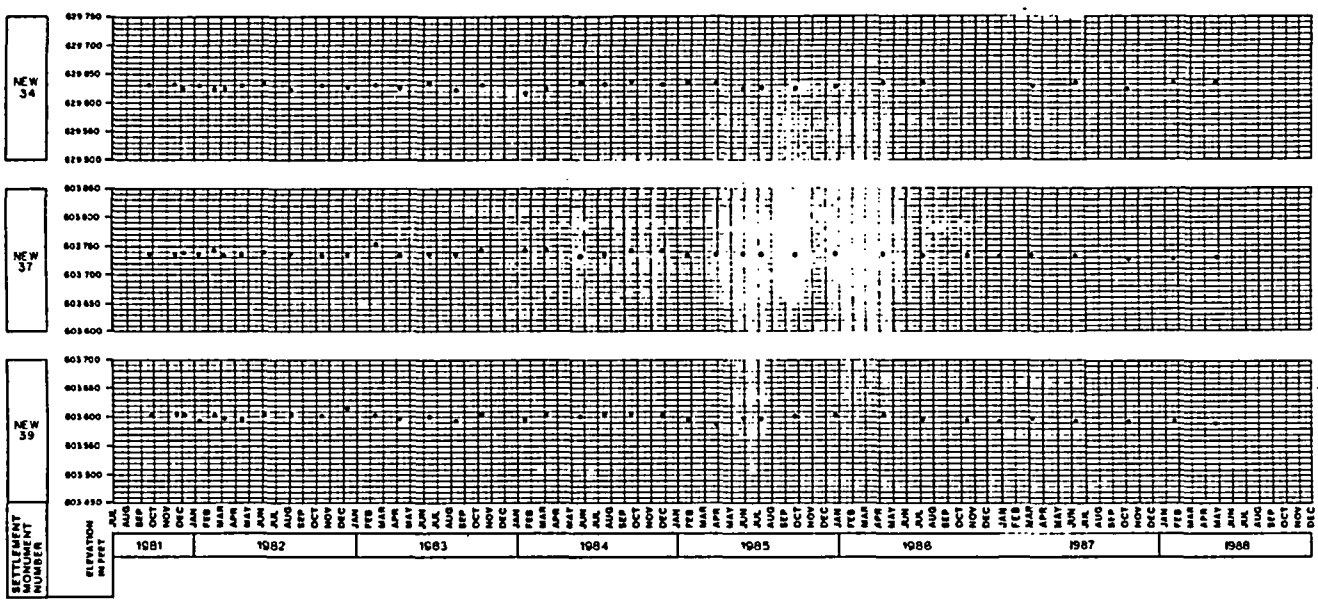
SETTLEMENT PLOTS FOR
NEW MONUMENTS 26, 27, 29



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-288

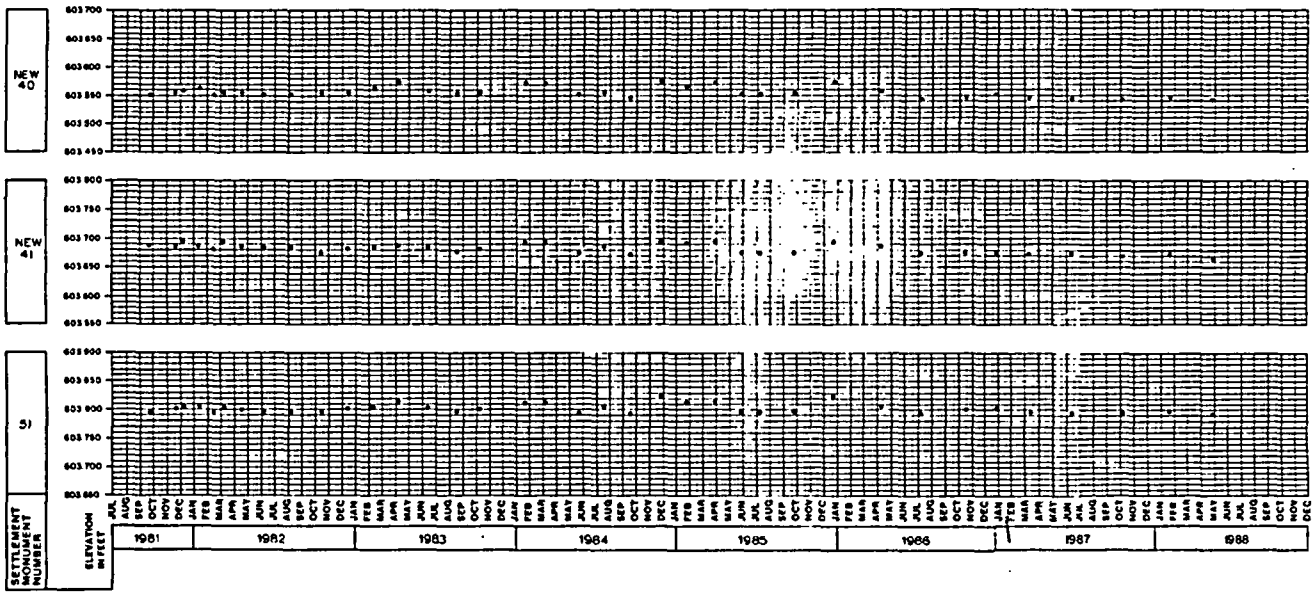
SETTLEMENT PLOT FOR
NEW MONUMENT 33



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-289

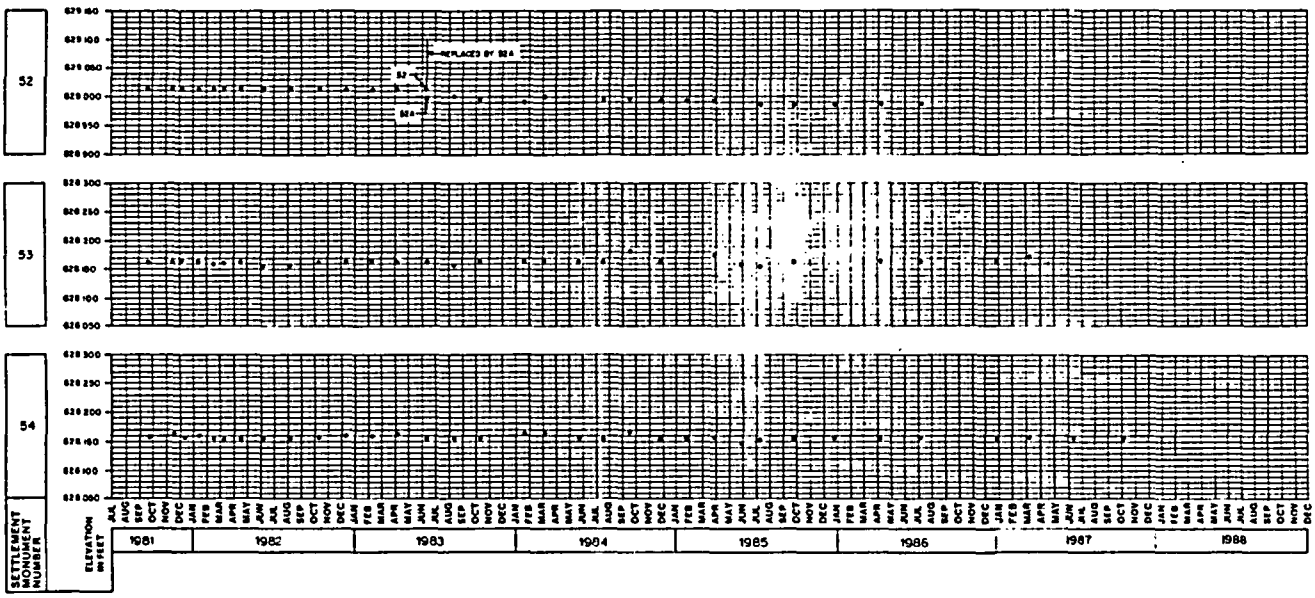
SETTLEMENT PLOTS FOR
NEW MONUMENTS 34, 37, 39



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-290

SETTLEMENT PLOTS FOR MONUMENT 51 AND NEW MONUMENTS 40, 41



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-291

SETTLEMENT PLOTS FOR MONUMENTS 52, 53, 54

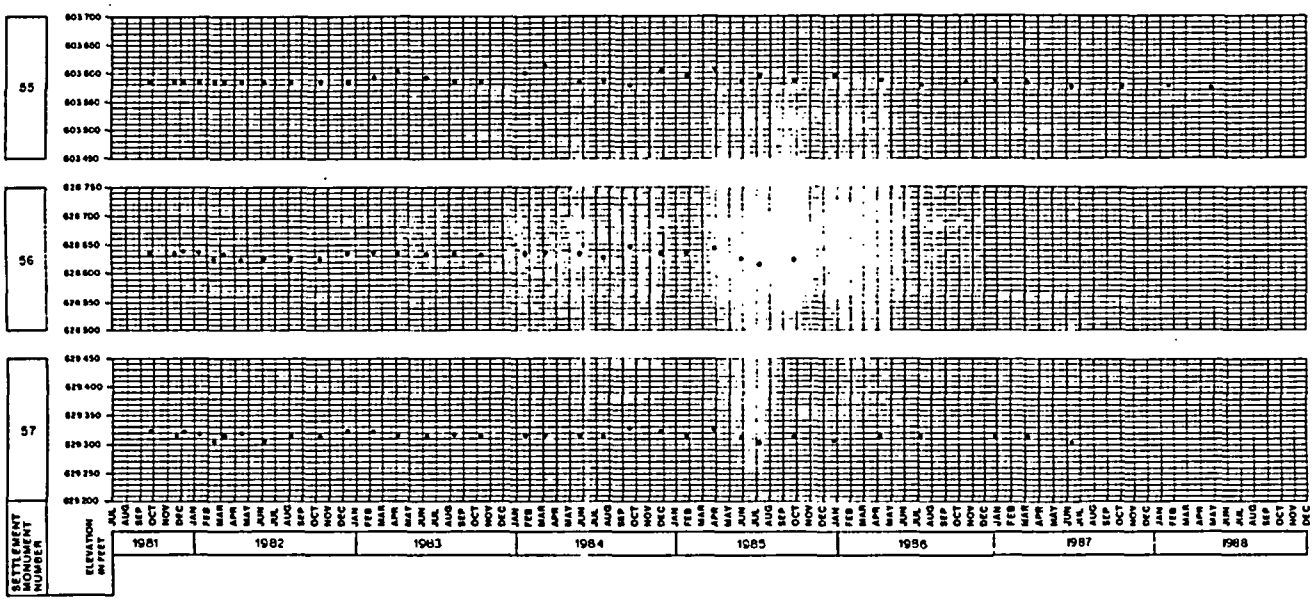


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FIGURE 2.5-292

SETTLEMENT PLOTS FOR MONUMENTS 55, 56, 57

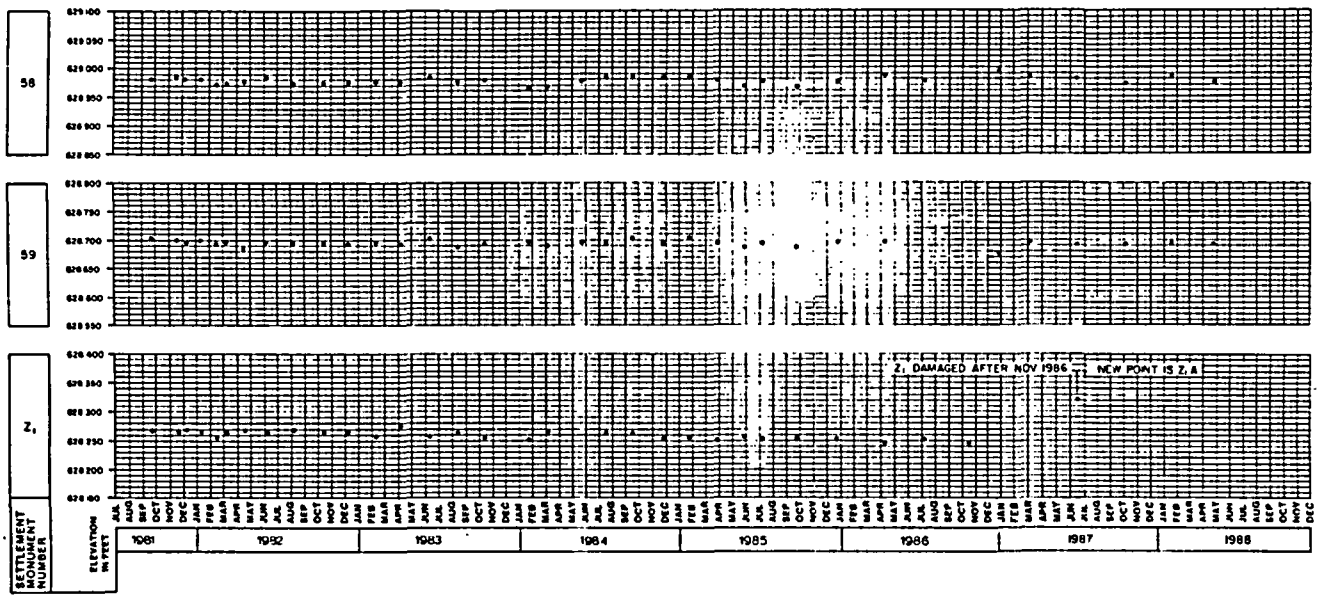

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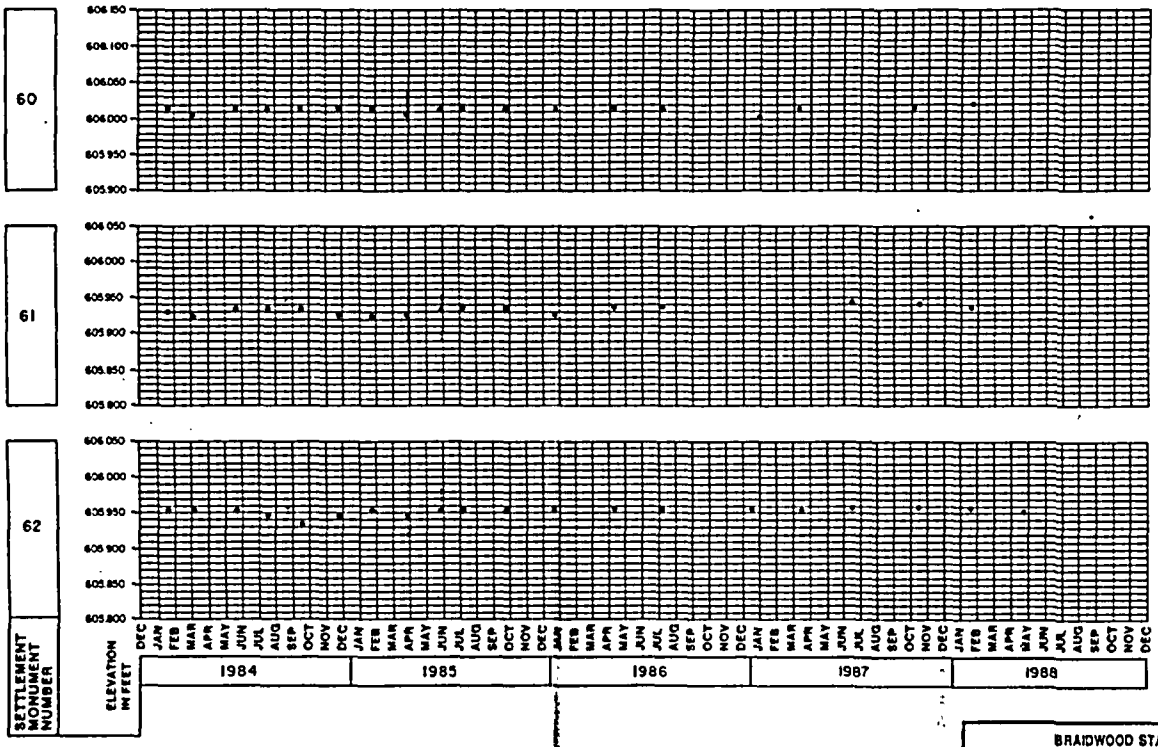
FIGURE 2.5-293

SETTLEMENT PLOTS FOR MONUMENTS 58, 59, Z_1



BRAIDWOOD STATION
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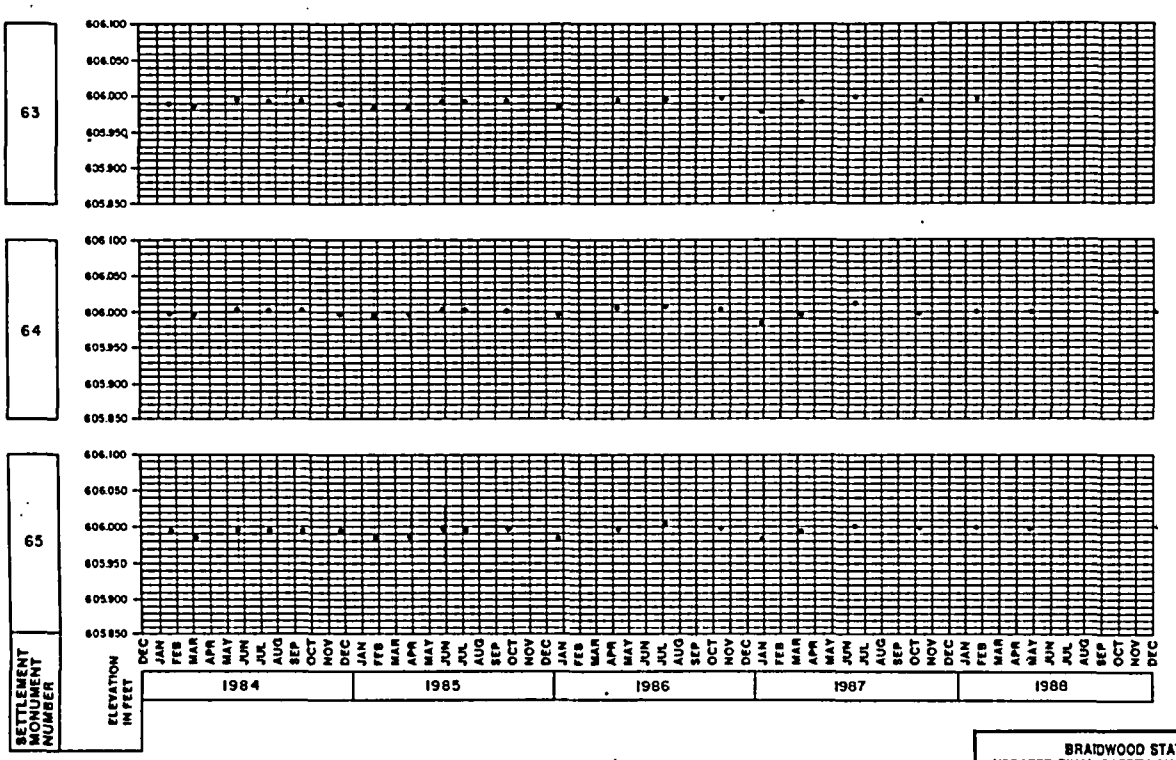
FIGURE 2.5-294

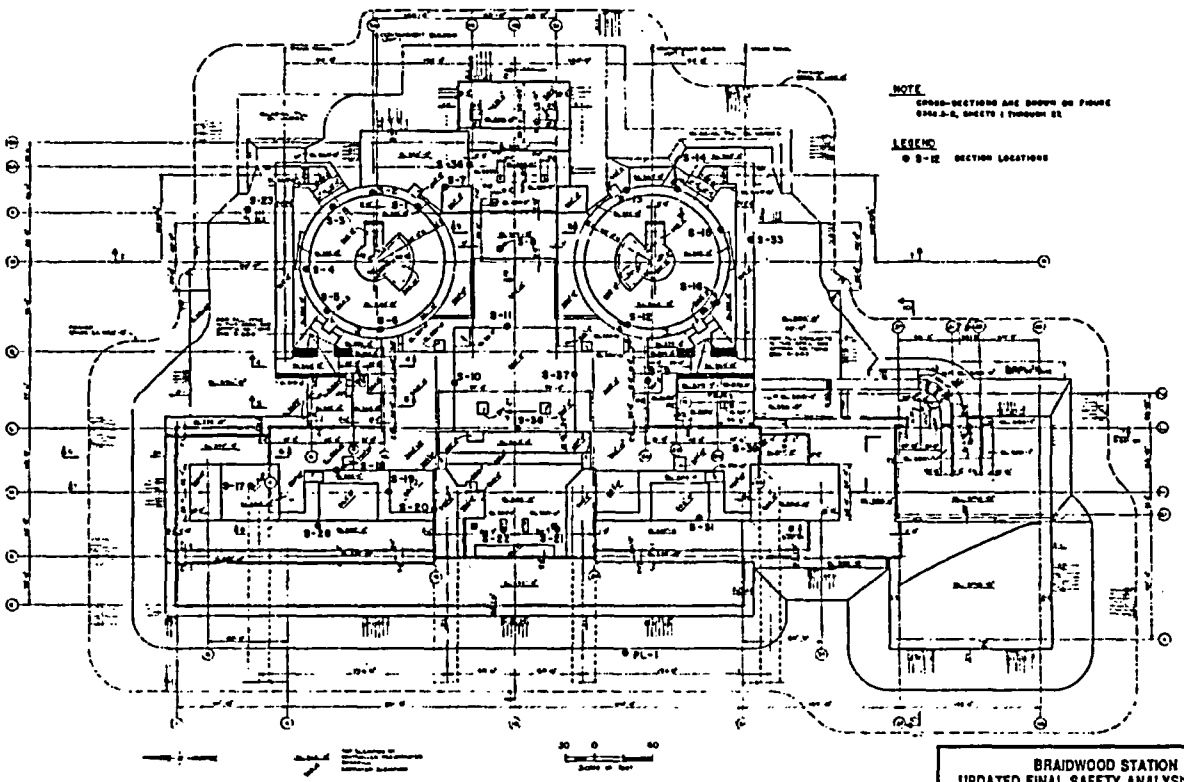
SETTLEMENT PLOTS FOR MONUMENTS 60, 61, 62



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-295

SETTLEMENT PLOTS FOR MONUMENTS 63, 64, 65

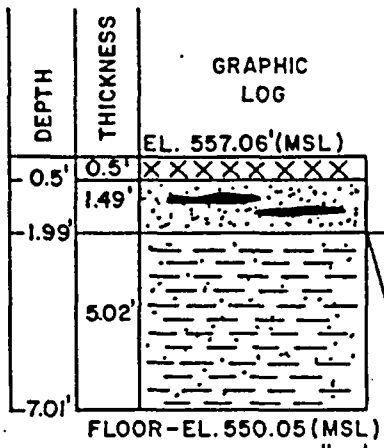


BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-296

LOCATIONS OF
MAPPED GEOLOGIC SECTIONS

SECTION 1
UNIT 1, EAST PORTION OF REACTOR PERIMETER WALL



DESCRIPTION

MUD MAT

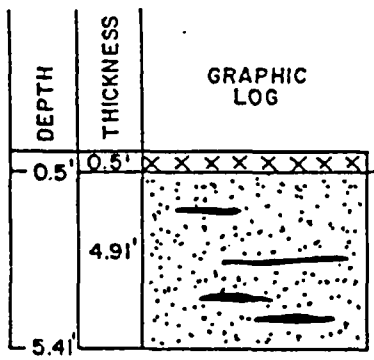
CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Gray to grayish-brown, fine to medium grained, loosely cemented, micaceous, sandstone; thin to medium bedded, some cross-bedding, jointed, slightly calcareous, scattered coal seams up to 1-inch thick.

CONTROL POINT: S-1
COORDINATES: 66 R, 4's of 45°
ELEVATION: 555.07' (MSL)

SILTSTONE - Gray to light gray, slightly sandy, shaley, micaceous, finely laminated, blocky siltstone.

NOTES: LOCATION OF SECTION 1 IS SHOWN ON FIGURE 2.5-296

SECTION 2
UNIT 1, NE PORTION OF REACTOR PERIMETER WALL



VERTICAL SCALE 1"=5'

DESCRIPTION

MUD MAT

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Gray to grayish-brown, fine to medium grained, loosely cemented, micaceous sandstone; thin to medium bedded, some cross-bedding, jointed, scattered coal seams up to 1/2-inch thick

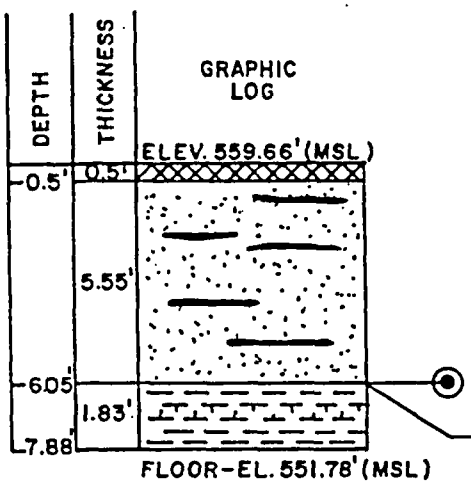
NOTES:
1) NO CONTROL POINT WAS USED IN THIS SECTION AS IT WAS ALL CHANNEL SANDSTONE.
2) LOCATION OF SECTION 2 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 1 OF 27)

SECTION 3
UNIT I, REACTOR PERIMETER NE WALL



VERTICAL SCALE 1" = 5'

MUD MAT
CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE
Gray to gray-brown, fine to medium grained, slightly calcareous sandstone; loosely cemented, a few scattered clay layers up to 1/2" thick, coal seams to 1-inch thick, clay-filled joints, some cross-bedding.

CONTROL POINT S-3
COORDINATES: 67' R, 12' NW of 319°
EL. 553.61' (MSL)

SILTSTONE -
Gray to light gray, slightly sandy, shaley, micaceous, blocky, siltstone: finely laminated, some coal slivers, calcareous in places.

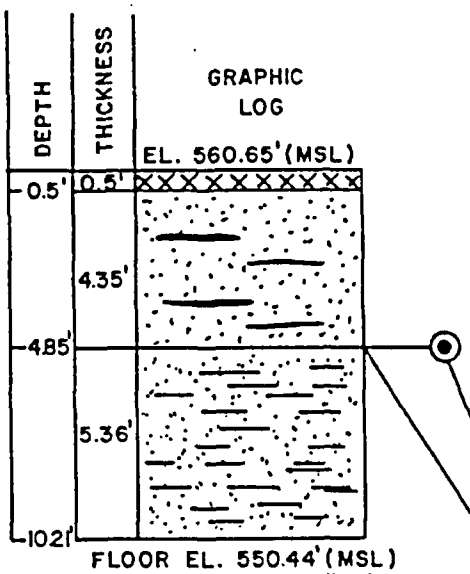
NOTE: LOCATION OF SECTION 3 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 2 OF 27)

SECTION 4
UNIT I, NORTH PORTION OF REACTOR PERIMETER WALL



DESCRIPTION

MUD MAT
CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Gray to gray-brown, fine to medium grained, slightly cross-bedding, a few clay filled joints, clay layers up to ½" thick, coal seams up to 1" thick.

CONTROL POINT: S-4
COORDINATES: 66'R, 2-6' WEST of 270°
ELEVATION: 555.80' (MSL)

SILTSTONE - Gray to light gray, slightly sandy, shaley, micaceous, blocky siltstone; finely laminated, some coal slivers, calcareous in places.

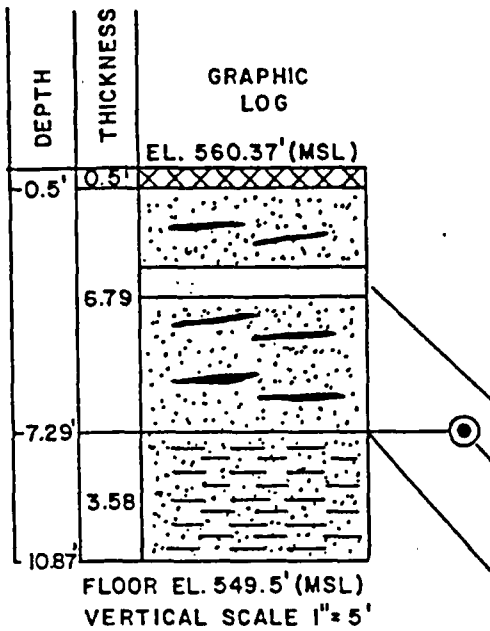
NOTE: LOCATION OF SECTION 4 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 3 OF 27)

SECTION 5
UNIT I, NORTHWEST PORTION OF REACTOR PERIMETER WALL



DESCRIPTION

MUDMAT
CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Gray, fine to medium grained, fairly well cemented sandstone; occasional cross-bedding, scattered joints; coal seams up to 1.5 inches thick.
Petrified log; 0.8 ft. thick, brown, crumbly composed of lignite.

CONTROL POINT: S-5
COORDINATES: 67' R, 11' N of 216°
ELEVATION: 553.08'

SILTSTONE - Gray to lt. gray, slightly sandy, micaceous, shaley, siltstone; some laminations

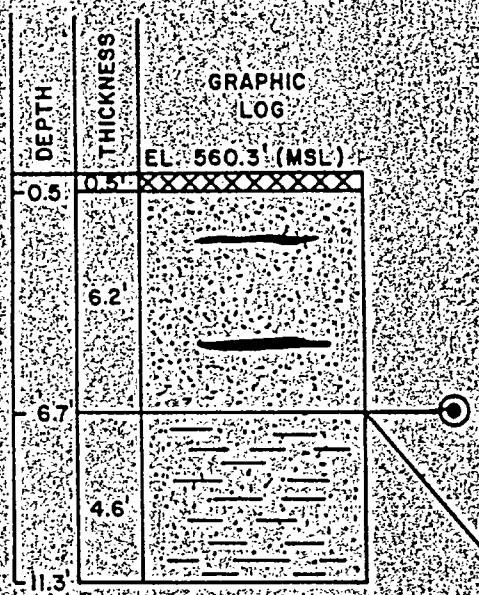
NOTE: LOCATION OF SECTION 5 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 4 OF 27)

SECTION 6
UNIT 1, WEST PORTION OF REACTOR PERIMETER WALL



FLOOR-EL. 549.0' (MSL)
VERTICAL SCALE 1" = 5'

DESCRIPTION

MUD MAT

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Gray, fine to medium grained, well-cemented sandstone; medium- to thickly-bedded, a few coal seams to 1/2" thick, scattered joints.

CONTROL POINT: S-6
COORDINATES: 68' R, 20' S of 199°
ELEVATION: 553.60' (MSL)

SILTSTONE - Gray to lt. gray, slightly sandy, micaceous, shaley siltstone; somewhat blocky.

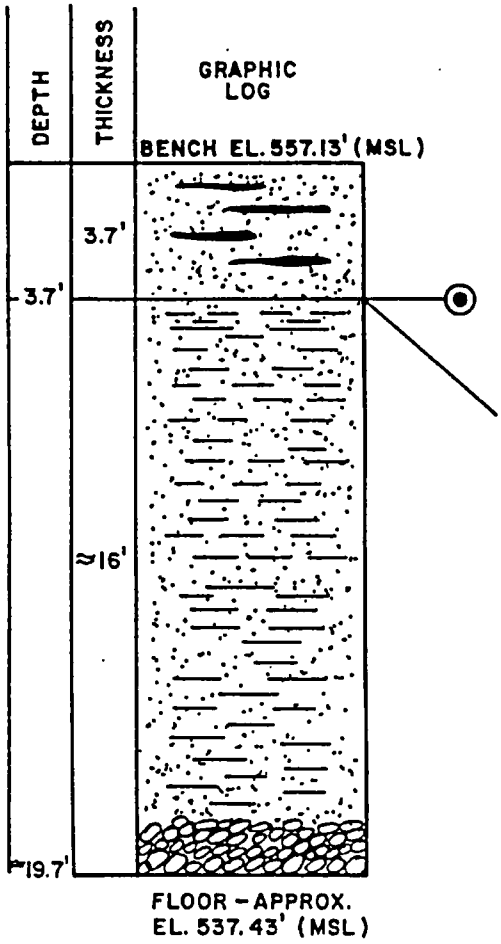
NOTE: LOCATION OF SECTION 6 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 5 OF 27)

SECTION 7
UNIT I, CIRCULATING COOLING WATER
EAST WALL



VERTICAL SCALE 1" = 5'

DESCRIPTION

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER

CHANNEL SANDSTONE - Gray, fine-grained, micaceous, somewhat friable, thin-bedded sandstone: abundant coal seams up to 1-inch thick; sandstone beds have an apparent dip of 4° to the south.

CONTROL POINT S-7
COORDINATES: 85'R, 4'S of 45°
EL. 553.43' (MSL)

SILTSTONE - Light gray, slightly sandy, shaley, micaceous siltstone; blocky, calcareous in some places, widely scattered thin coal seams, badly slaked in some areas.

RUBBLE COVERING FLOOR

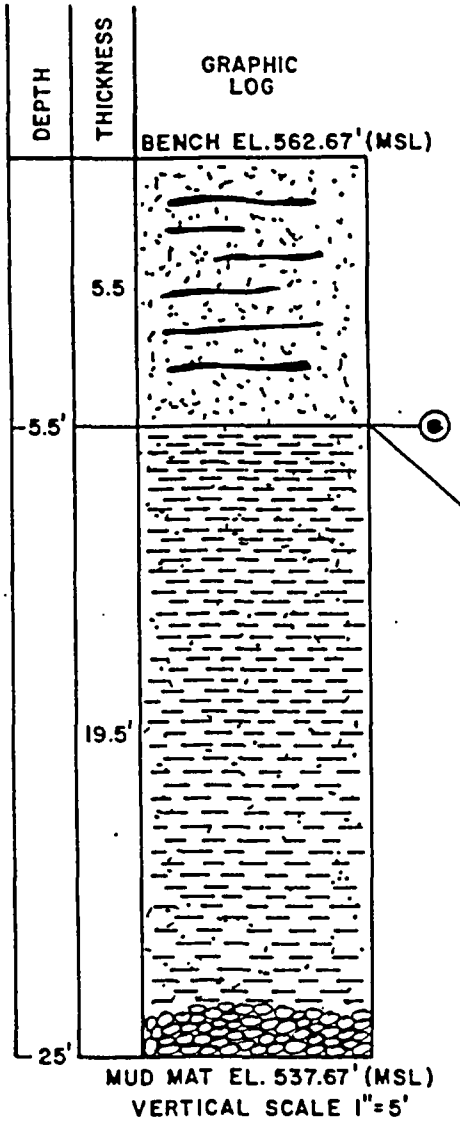
NOTE: LOCATION OF SECTION 7 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 6 OF 27)

SECTION 8
EAST WALL OF AUXILIARY BUILDING



DESCRIPTION

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Gray, fine- to medium-grained, micaceous, thin-bedded sandstone; numerous coal seams to 1" thick. Channel sandstone pinches out to south of measured section.

CONTROL POINT S-8
COORDINATES: S 30+72, E 47+52
EL. 557.17' (MSL)

SILTSTONE - Light gray, sandy, shaley, micaceous, siltstone; calcareous in places, scattered thin coal seams, same slaking.

RUBBLE COVERING LOWER PORTION

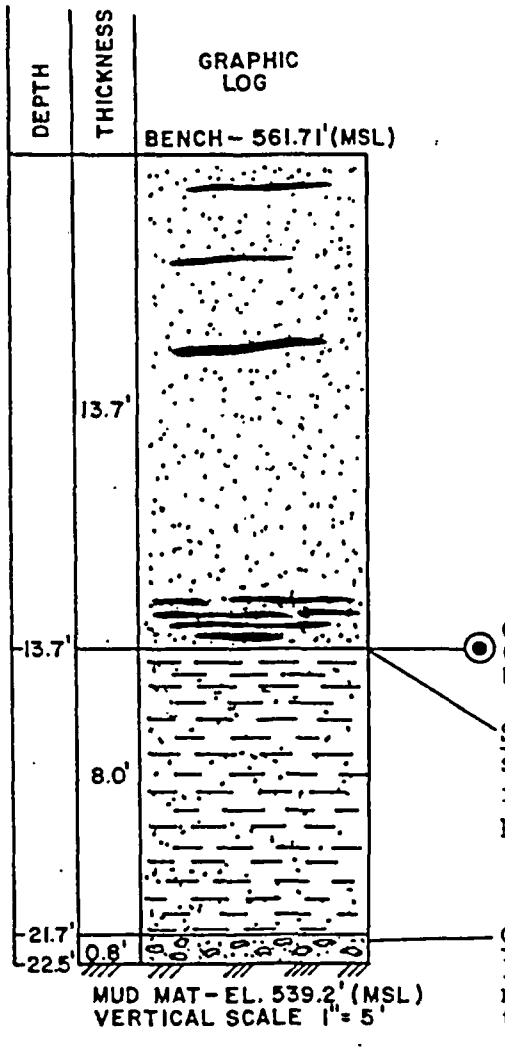
NOTE: LOCATION OF SECTION 8 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 7 OF 27)

SECTION 9
SOUTH WALL OF AUXILIARY BUILDING



DESCRIPTION

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER

CHANNEL SANDSTONE - Gray, fine to medium grained, micaceous, well cemented, thinly to thickly bedded sandstone; jointed, scattered coal seams to 2" thick, occasional cross-bedding.

Bottom 1-2' thin bedded with abundant coal seams

CONTROL POINT: S-9
COORDINATES: S 32+18, E 46+30.5
ELEVATION: 548.01'

SILTSTONE - Gray to light gray, slightly sandy, shaley, micaceous siltstone; blocky, finely laminated, jointed, calcareous in places.

CONGLOMERATE - Siderite conglomerate, pebbles 1/4" to 3", some chunks of coal, sandstone matrix. The siderite clasts are sub-angular to angular, indurated.

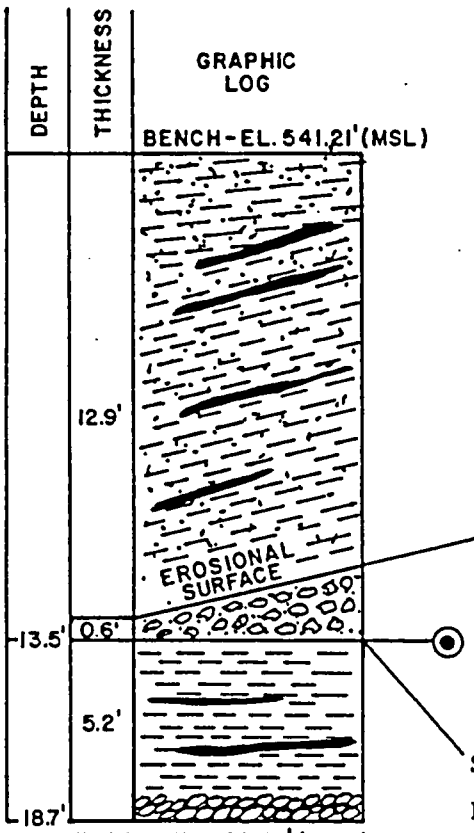
NOTE: LOCATION OF SECTION 9 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 8 OF 27)

SECTION 10
NORTH WALL OF AUXILIARY BUILDING



DESCRIPTION

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
SILTSTONE - Gray to light gray, shaley, micaceous siltstone, blocky, some portions calcareous, some areas laminated, scattered sand lenses 1 to 2 inches in thickness, coal seams to 1/2-inch. Bedding has an apparent dip of 15° to west.

CONGLOMERATE + COAL LENS - 0.4' coal lens; pebble conglomerate, pebbles 1/4 to 2-inches in diameter in sandstone matrix.

CONTROL POINT S-10
COORDINATES: S 30+24.33, E 46+23
ELEVATION: 527.71'

SILTSTONE, as above flat bedded.

RUBBLE

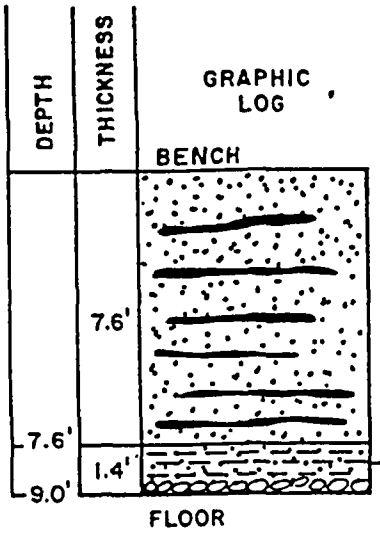
NOTE: LOCATION OF SECTION 10 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 9 OF 27)

SECTION 13
UNIT 2, EAST PORTION OF REACTOR PERIMETER WALL



VERTICAL SCALE 1"=5'

DESCRIPTION

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Gray, fine to medium grained, micaceous, well cemented sandstone; top 4 ft. medium bedded, thinly bedded in bottom 3 ft., abundant coal seams to 1½-inch thick, sandstone friable in bottom 3 ft.

SILTSTONE - Gray, slightly sandy, shaley, micaceous siltstone; occasionally laminated, calcareous in places, scattered coal stringers, badly slaked, bottom portion rubble covered.

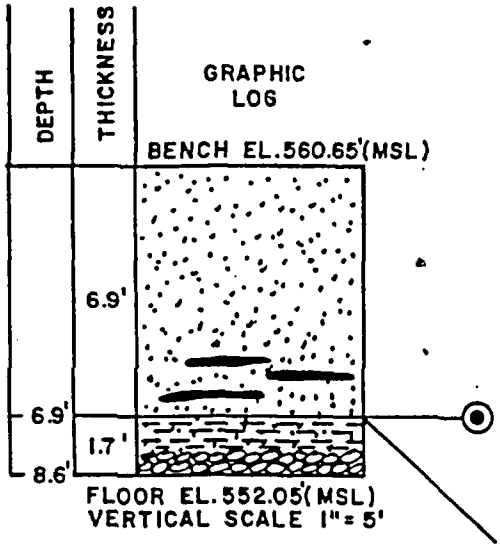
NOTES: 1) LOCATION OF SECTION 13 SHOWN ON FIGURE 2.5-296
2) CONTROL POINT COULD NOT BE LOCATED AFTER MAPPING BY SURVEYORS AND COULD NOT BE RESET AS WALLS WERE COVERED WITH PLASTIC SHEETING AND WIRE MESH.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 10 OF 27)

SECTION 14
UNIT 2, EAST PORTION OF REACTOR PERIMETER WALL



DESCRIPTION

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Gray, fine to medium-grained, micaceous, well cemented sandstone; medium to thinly bedded with thin shale lenses.

Bottom 1 to 2 ft. thinly bedded with abundant coal seams up to 1-inch thick.

CONTROL POINT: S-14
COORDINATES: 84'3" R, 19'N of 216°
ELEVATION: 553.75' (MSL)

SILTSTONE - Gray, slightly sandy, micaceous, shaley siltstone; occasionaly laminated, calcareous in places, scattered coal stringers, jointed, badly slaked, rubble covering bottom portion.

NOTE: LOCATION OF SECTION 14 IS SHOWN ON FIGURE 2.5-296

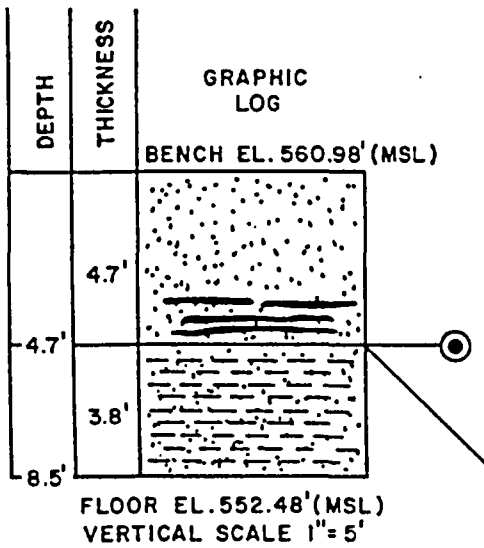
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 11 OF 27)

SECTION 15

UNIT 2, SOUTHEAST PORTION OF REACTOR PERIMETER WALL (OUTSIDE)



DESCRIPTION

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER

CHANNEL SANDSTONE - Gray, fine to medium-grained, micaceous, well cemented sandstone; top 3 ft. thickly bedded, bottom 1 to 1.5 ft. thinly bedded with abundant coal seams, some cross-bedding

CONTROL POINT: S-15
COORDINATES: 85' 3" R, 13' SW of 234°
ELEVATION: 556.28' (MSL)

SILTSTONE - Gray, slightly sandy, micaceous, very shaley siltstone; occasionally laminated, calcareous in places, badly slaked, rubble covering bottom portion.

NOTE: LOCATION OF SECTION 15 IS SHOWN ON FIGURE 2.5-296

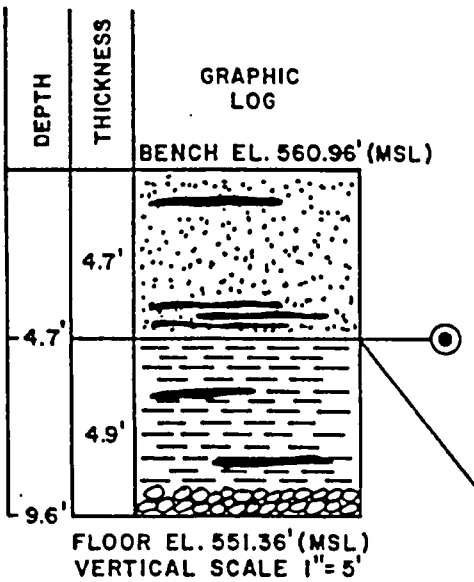
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 12 OF 27)

SECTION 16

UNIT 2, SOUTHWEST PORTION OF REACTOR PERIMETER WALL (OUTSIDE)



DESCRIPTION

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER

CHANNEL SANDSTONE - Gray, fine to medium grained, micaceous, friable sandstone; top 3' thinly to medium bedded, jointed, scattered concretions and coal seams.

Bottom 1' thinly bedded with abundant coal seams to 1" thick, apparent dip of sandstone beds is 12° N

CONTROL POINT: S-16
COORDINATES: 83'3"R, 28'WEST of 272°
ELEVATION: 556.26' (MSL)

SILTSTONE - Gray, micaceous, blocky, jointed, shaley, slightly sandy siltstone; badly slaked, some laminations are calcareous in places, scattered coal stringers. Rubble covering bottom of section.

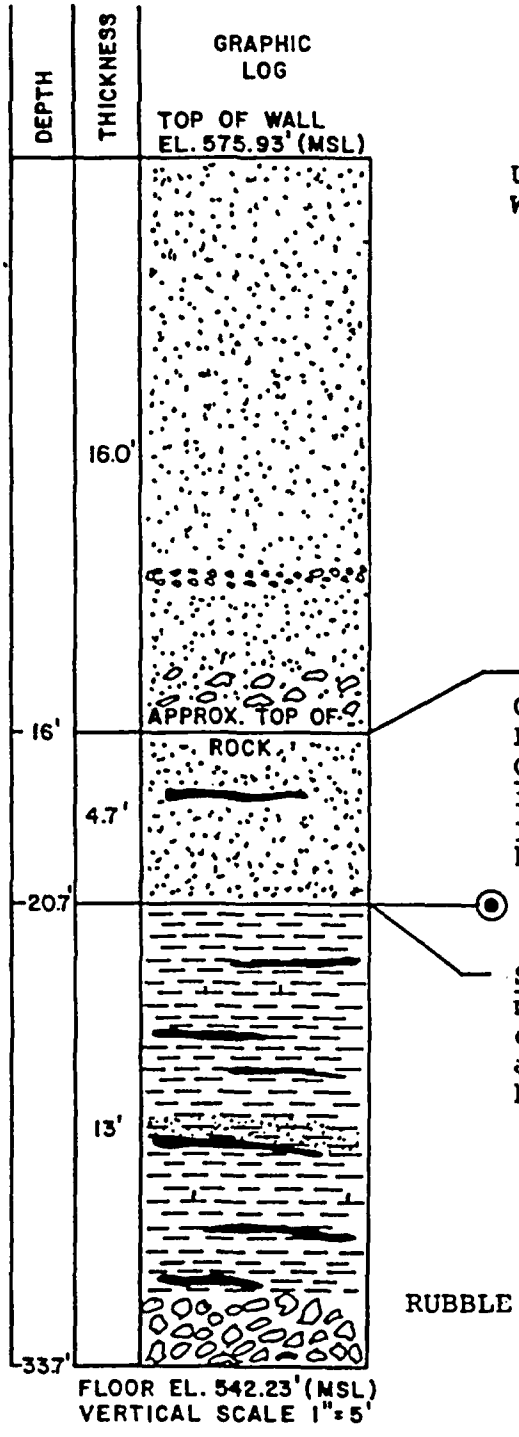
NOTE: LOCATION OF SECTION 16 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 13 OF 27)

SECTION 17
UNIT I, NORTH WALL OF TURBINE BUILDING
(CIRCULATING WATER PIPE TRENCH)



DESCRIPTION

UNDIFFERENTIATED OVERBURDEN (2)
WEDRON FORMATION

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Gray, fine to medium grained, micaceous, well cemented, jointed sandstone; medium-to thickly-bedded, sparse to scattered coal seams.

CONTROL POINT: S-17
COORDINATES: S 28+05.5, E 44+87
ELEVATION: 555.23' (MSL)

SILTSTONE - Gray, slightly sandy, micaceous, shaley, blocky siltstone; calcareous in places; top 4' contains abundant coal seams up to 1/2" thick, badly slaked and weathered.

RUBBLE

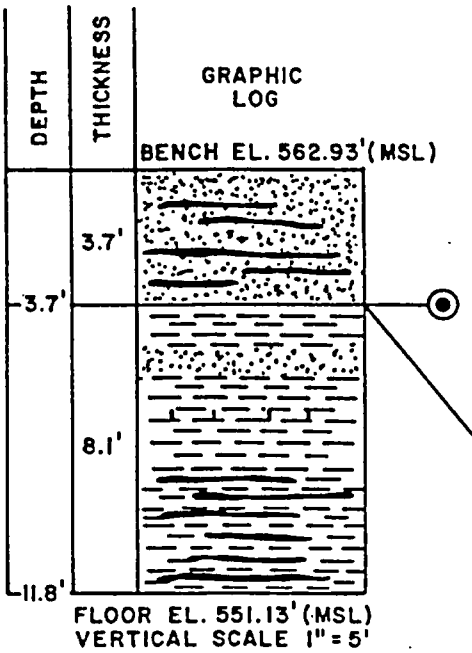
NOTES: 1) LOCATION OF SECTION 17 IS SHOWN ON FIGURE 2.5-296
2) OVERBURDEN COULD NOT BE MAPPED DUE TO STEEPNESS OF WALL.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 14 OF 27)

SECTION 18
UNIT 1, WEST WALL OF TURBINE BUILDING
(NORTH PORTION)



DESCRIPTION

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Gray, fine-to medium-grained, micaceous, well cemented, jointed sandstone; medium to thickly-bedded, scattered to abundant coal seams to 1" thick.

CONTROL POINT: S-18
COORDINATES: S 29+10, E 45+33
ELEVATION: 559.23'(MSL)

SILTSTONE - Gray, slightly sandy, micaceous, shaley, blocky siltstone; calcareous in places, badly slaked and weathered, abundant coal seams to 1/2" thick in bottom portion of section.

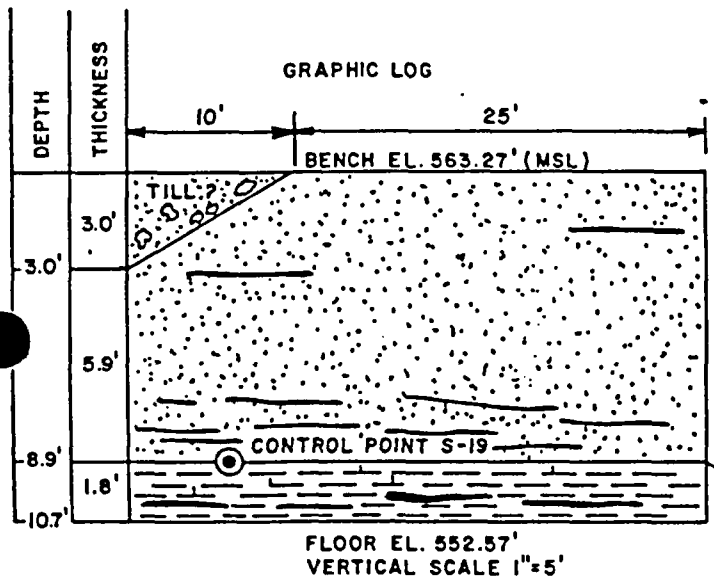
NOTE: LOCATION OF SECTION 18 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 15 OF 27)

SECTION 19
UNIT 1, NORTH WALL OF TURBINE BUILDING



CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Gray, fine to medium-grained, micaceous, well-cemented, jointed sandstone; medium to thickly-bedded, coal seams abundant near base.

COORDINATES: S 29+61, E 45+09
ELEVATION: 554.37' (MSL)

SILTSTONE - Gray, slightly sandy, micaceous, shaley, blocky siltstone; calcareous in places, badly slaked and weathered, coal seams to 1/2" thick in bottom portion of section.

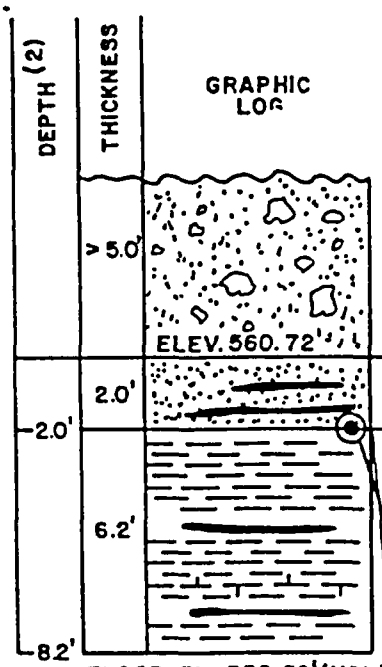
NOTE: LOCATION OF SECTION 19 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 16 OF 27)

SECTION 20
UNIT 1, NORTH WALL OF TURBINE BUILDING



DESCRIPTION

WEDRON FORMATION
TILL - Gray, silty, sandy clay till; mottled pink and brown. (Thickness not recorded)

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Gray, fine to medium-grained, micaceous, well cemented, medium bedded sandstone; scattered joints, scattered thin coal seams.

CONTROL POINT: S-20
COORDINATES: S 29+98, E 44+62
ELEVATION: 558.72' (MSL)

SILTSTONE - Light gray, slightly sandy, micaceous, shaley, blocky, laminated siltstone; calcareous in places, scattered coal stringers

NOTES: 1) LOCATION OF SECTION 20 IS SHOWN ON FIGURE 2.5-296
2) DEPTH SHOWN IS DEPTH BELOW WEDRON - CARBONDALE, CONTACT AS THICKNESS OF WEDRON WAS NOT RECORDED.

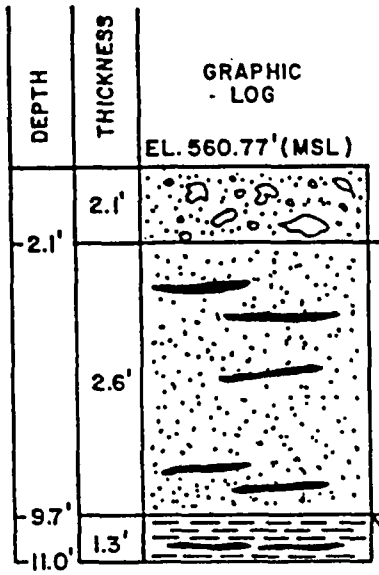
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 17 OF 27)

SECTION 21

UNIT 2, WEST WALL OF TURBINE BUILDING



DESCRIPTION

WEDRON FORMATION

TILL - Gray, silty, sandy clay with pink and brown mottling

CARBONDALE FORMATION

FRANCIS CREEK SHALE MEMBER

CHANNEL SANDSTONE- Gray, fine-to medium-grained, micaceous, well cemented, thin-to medium-bedded sandstone; scattered joints, scattered thin coal seams.

CONTROL POINT S-21
COORDINATES: S 31 + 41, E 44+65
ELEVATION: 551.07'

SILTSTONE- Light gray, slightly sandy, micaceous, shaley, blocky, laminated siltstone; calcareous in places, scattered coal stringers. The contact with the overlying channel sandstone has an apparent dip of 10° E.

NOTE: LOCATION OF SECTION 21 IS SHOWN ON FIGURE 2.5-296

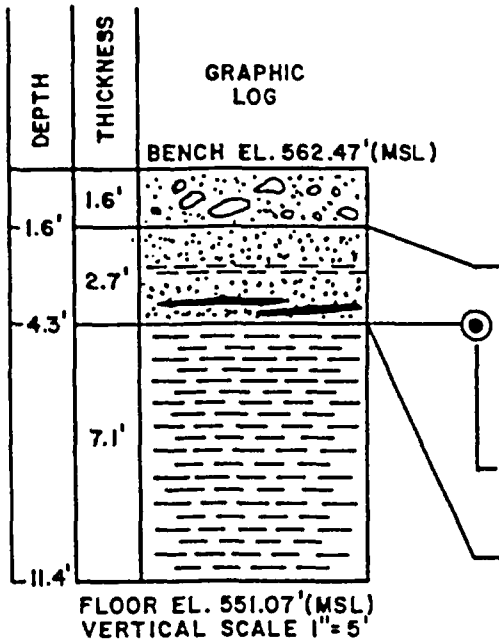
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 18 OF 27)

SECTION 22

UNITS 1&2 WEST WALL OF TURBINE BUILDING
(BETWEEN UNITS 1 & 2)



DESCRIPTION

WEDRON FORMATION
TILL- Gray, silty, sandy, stiff, slightly gravelly clay; fine-to coarse sand, coarse gravel, pink and brown clasts.

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE- Gray, micaceous, fine-to medium-grained, poorly cemented sandstone; scattered shale lenses to 1", scattered coal lenses to 1" thick, siltstone thinly bedded.

CONTROL POINT: S-22
COORDINATES: S 30+82, E 44+59
ELEVATION: 558.17' (MSL)

SILTSTONE- Gray, slightly sandy, micaceous, shaley, blocky siltstone; some laminations.

NOTE: LOCATION OF SECTION 22 IS SHOWN ON FIGURE 2.5-296

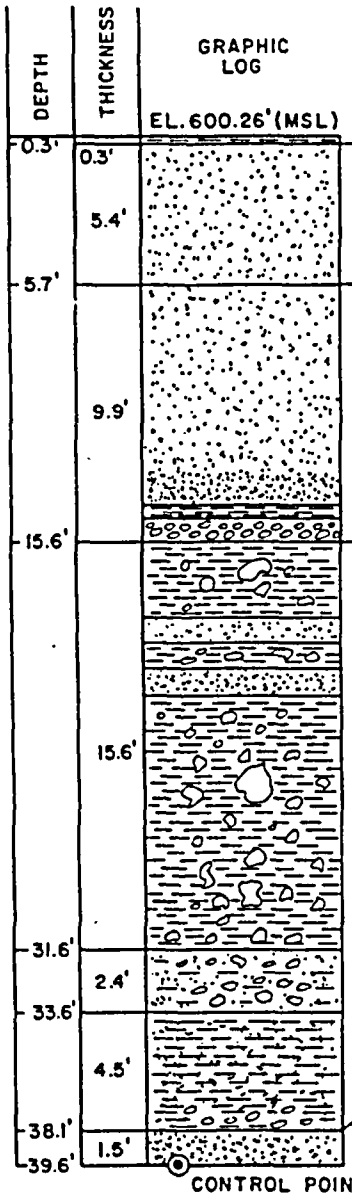
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 19 OF 27)

SECTION 28

NORTH PORTION OF WEST WALL OF EXCAVATION



DESCRIPTION

TOPSOIL - Black, silty, very sandy, organic clay.

PARKLAND SAND - Orangish-brown, very silty, very fine- to to fine-grained sand; slightly clayey in places, horizontal bedding.

EQUALITY FORMATION - Tan to brown, fine to medium grained, slightly silty sand; cross-bedded near base.

sandy clay

lag gravel - fine to coarse grained gravel (EL. 584.6')

WEDRON FORMATION

TILL - Brownish gray to gray, silty, slightly sandy, slightly gravelly clay, with occasional cobbles and boulders; till is blocky and jointed, scattered 1- to 2-inch lenses of sand and gravel, two 1-foot thick beds of silty fine-to-coarse-grained sand near top.

OUTWASH (?) - Reddish brown to gray and tan silty, gravelly, very sandy clay to slightly clayey sand; sand is fine to coarse grained; fine to coarse grained gravel, scattered cobbles.

TILL - Reddish brown to pink and gray, silty, sandy, slightly gravelly clay; occasional 1-2 inch sand pockets, gravelly towards base.

CARBONDALE FORMATION

FRANCIS CREEK SHALE MEMBER

CHANNEL SANDSTONE - Weathered sandstone, unweathered below control point.

CONTROL POINT: S-28

COORDINATES: S 28 + 83.5

E 44 + 43

ELEVATION: 560.66'(MSL)

NOTE: LOCATION OF SECTION 28 IS SHOWN ON FIGURE 2.5-296

VERTICAL SCALE 1" = 5'

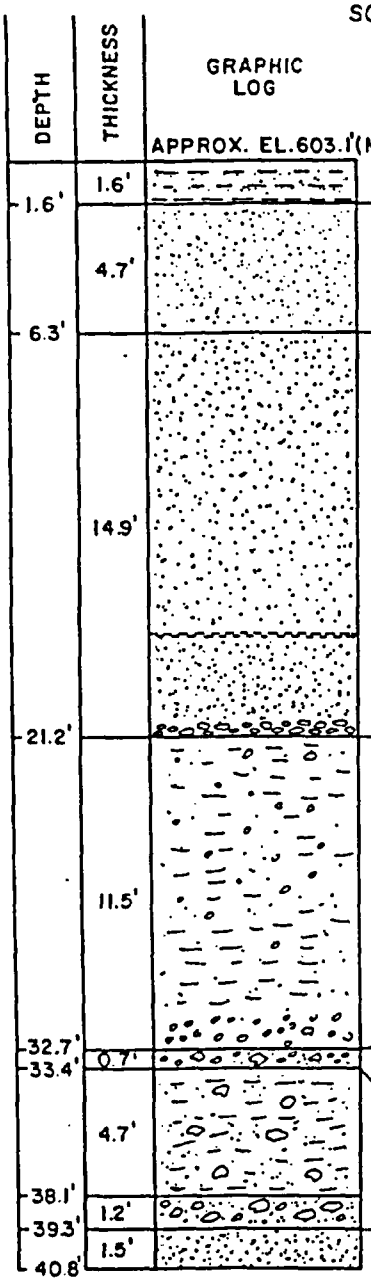
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 20 OF 27)

SECTION 31

SOUTH PORTION OF WEST WALL OF EXCAVATION



DESCRIPTION

TOPSOIL - Black, very sandy, silty clay with organics

PARKLAND SAND - Orange to orange-brown, loose, very silty, very fine to fine sand; some root fragments

EQUALITY FORMATION - Gray to light brown, loose, fine- to medium grained sand; cross-bedded in places.

cross-bedding

clay-layer approximately 4 feet from base

basal lag gravel, abundant cobbles and boulders (EL. 581.9')

WEDRON FORMATION

TILL - Pinkish to brownish gray, somewhat soft to loose, very sandy and silty clay; some gravel, top 1 to 2' very gravelly with abundant cobbles. Gravel most abundant near top and bottom.

OUTWASH - Grayish brown to light brown, loose, silty sand and gravel; sand mostly fine- to medium-grained, gravel fine to coarse grained.

TILL - Gray to brownish gray, hard, silty clay with some sand and gravel; scattered cobbles.

basal outwash of gravelly, fine to coarse sand with abundant cobbles and scattered boulders.

CARBONDALE FORMATION

FRANCIS CREEK SHALE MEMBER

CHANNEL SANDSTONE - weathered sandstone

NOTES: 1) APPROXIMATE LOCATION OF SECTION 31 IS SHOWN ON FIGURE 2.5-296

2) CONTROL POINT WAS DESTROYED BEFORE SURVEYING COULD BE PERFORMED; THE ELEVATION OF THE TOP OF THE WEDRON FORMATION WAS TAKEN FROM FSAR FIGURE 2.5-29.

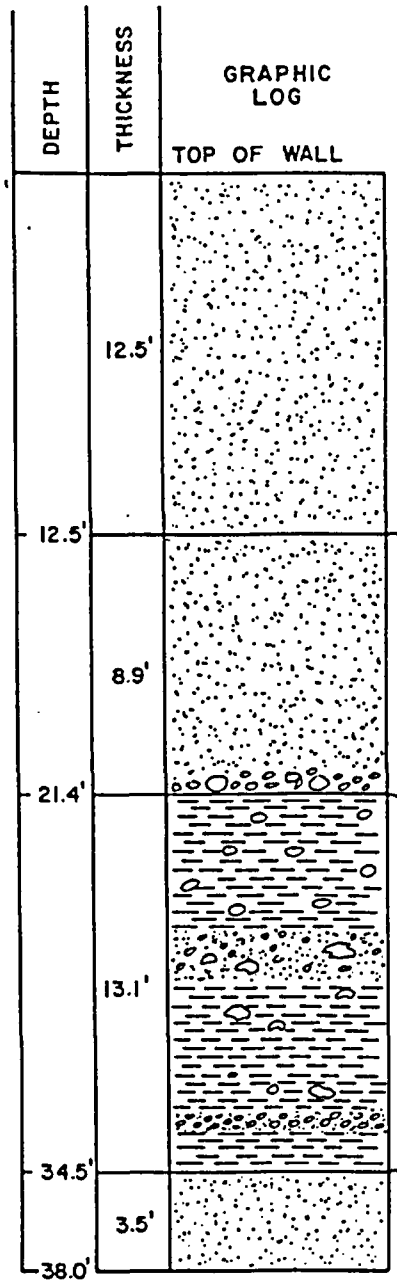
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 21 OF 27)

SECTION 33

UNIT 2, SOUTH EXCAVATION WALL
(SOUTH OF UNIT 2 REACTOR)



DESCRIPTION

PARKLAND SAND - Orange to light brown, slightly silty to to silty, poorly graded very fine to fine sand; horizontal bedding.

EQUALITY FORMATION - Gray-brown to light brown, poorly graded, fine-to-medium-grained sand.

cross-bedded from 2 to 7 feet above bottom

scattered gravel and cobbles near base (approximate el. 577.0' (MSL)

WEDRON FORMATION
TILL - Gray to brownish gray, hard, silty, clayey, slightly gravelly sand and sandy silt to clayey silt.

OUTWASH - Light brown, loose, fine to coarse sand and fine gravel; scattered cobbles
TILL - Gray, pinkish gray, and brownish gray, hard, sandy, gravelly clayey silt to silty clay; very sandy in places

OUTWASH - Fine to coarse sand with gravel.

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Upper 2-feet weathered, gray, friable, fine-to-medium grained sandstone; weathered to about 36.5'. Floor covered with rubble.

VERTICAL SCALE 1"=5'

NOTES:
1) CONTROL POINT WAS DESTROYED PRIOR TO SURVEYING. ELEVATION OF TOP OF WEDRON FORMATION IS FROM FSAR FIGURE 2.5-29.
2) APPROXIMATE LOCATION OF SECTION 33 IS SHOWN ON FIGURE 2.5-296

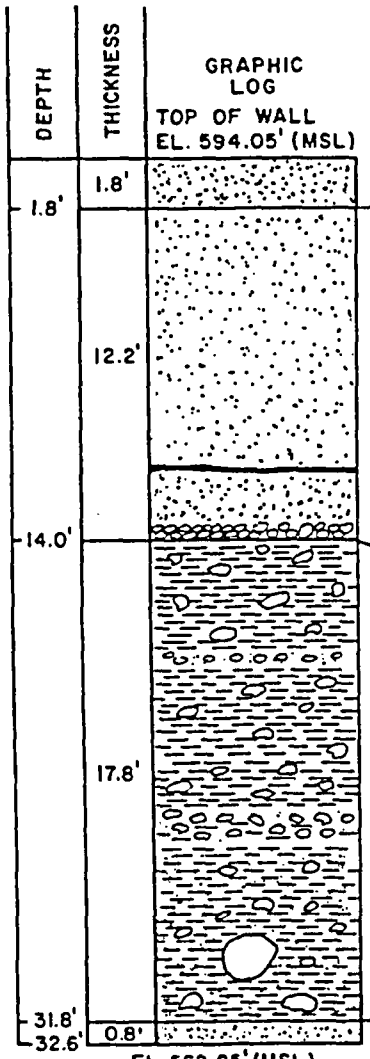
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 22 OF 27)

SECTION 36

UNIT I, EAST WALL OF EXCAVATION



DESCRIPTION

PARKLAND SAND - Orange to light orangish-brown, loose, slightly silty, very fine- to fine-grained sand; horizontally bedded.

EQUALITY FORMATION - Light brown to gray, loose, poorly graded, fine- to medium-grained sand; cross-bedded in some areas.

clay layer approximately 1 inch thick

lag gravel - sand and gravel with cobbles, layer approximately 0.5 feet thick (EL.580.85')

WEDRON FORMATION

TILL - Gray to brownish gray, hard, sandy, gravelly, silty clay to clayey silt with scattered cobbles; very sandy in places

OUTWASH - sand and gravel; approximately 0.5' thick

OUTWASH- gray to light brown, loose, soft, silty, clayey, gravelly sand with scattered cobbles, sand is fine to coarse grained, gravel predominatably fine grained.

TILL - Gray to brownish gray, hard, gravelly, sandy, silt clay to clayey silt; scattered cobbles and boulders with glacial striations, a few joints.

CONTROL POINT: S-36
COORDINATES: S 30+59, E 48+37
ELEVATION: 563.05' (MSL)

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
CHANNEL SANDSTONE - Weathered sandstone; unweathered below elevation 562.25' (MSL)

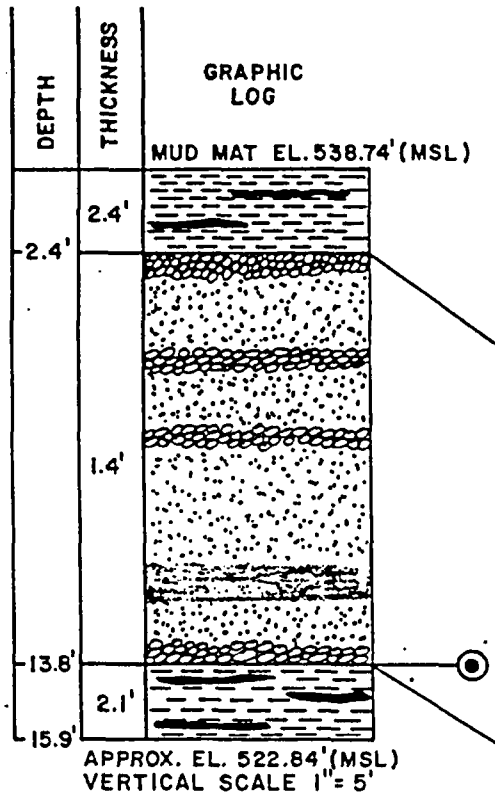
NOTE: LOCATION OF SECTION 36 IS SHOWN OF FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 23 OF 27)

SECTION 37
UNIT 2 SOUTH WALL OF AUXILIARY BUILDING



DESCRIPTION

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER

SILTSTONE- Gray, slightly sandy, micaceous, shaley, blocky, laminated siltstone; calcareous in places, scattered lenses of coal, sandstone, and siderite pebbles.

SANDSTONE- Gray, well cemented, thin to thick bedded, fine-to medium-grained sandstone alternating with coal beds to 1.5 feet thick and conglomerate beds with gravel and cobble sized siderite concretions in sandstone matrix; a few thin siltstone beds.

CONTROL POINT: S-37
COORDINATES: S 31+53.75, E 46+03.58
ELEVATION: 529.94' (MSL)

SILTSTONE - As above siltstone

NOTE: LOCATION OF SECTION 37 IS SHOWN ON FIGURE 2.5-296

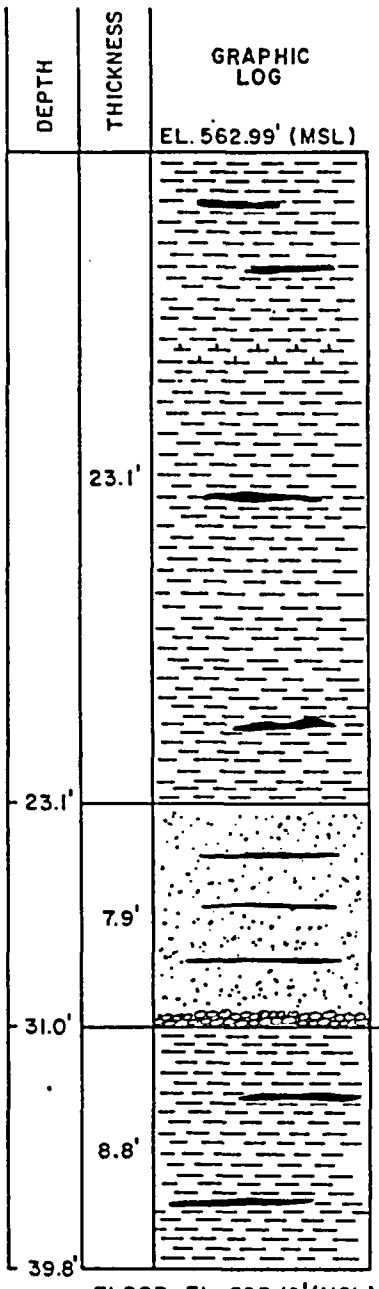
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 24 OF 27)

SECTION 38

UNITS 1 & 2-WEST WALL OF AUXILIARY BUILDING



FLOOR EL. 523.19'(MSL)
VERTICAL SCALE 1"=5'

DESCRIPTION

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER
SILTSTONE - Gray, slightly sandy, micaceous, shaley, blocky, laminated siltstone; calcareous in places, scattered lenses of coal, sandstone and siderite pebbles

SANDSTONE - Gray, thin to thick bedded, fine to medium sandstone; some coal beds to 0.5' thick, thin siltstone layers, basal conglomerate composed of siderite pebbles ranging in size from 0.25 to 3 inches, conglomerate is well cemented. This sandstone pinches out to the north of the measured section.

SILTSTONE - as upper siltstone

CONTROL POINT: S-38
COORDINATES: S 31+02.17, E 45+60.17
ELEVATION: 531.99' (MSL)

NOTE: LOCATION OF SECTION SHOWN ON FIGURE 2.5-296

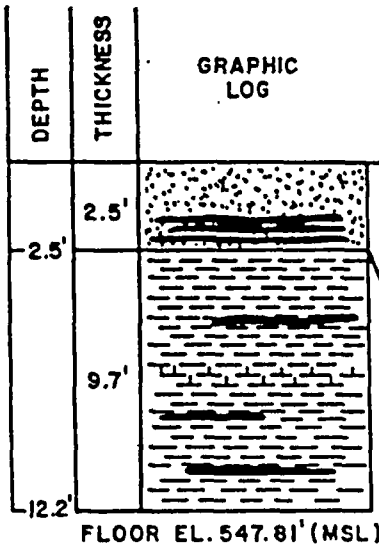
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 25 OF 27)

SECTION 39

UNIT 2 SOUTH END OF TURBINE ROOM



DESCRIPTION

CONTROL POINT: S-39
COORDINATES: S 33+65, E 45+53
ELEVATION: 560.01'

CARBONDALE FORMATION
FRANCIS CREEK SHALE MEMBER

CHANNEL SANDSTONE- Brownish-gray, fine- to medium-grained, loosely cemented, micaceous, slightly silty, thin-to medium bedded sandstone; occasional cross-beds, abundant coal seams to 4-inches thick, thickly bedded near top.

SILTSTONE - Greenish-gray, slightly sandy, micaceous, laminated, shaley, blocky siltstone; slightly calcareous in places, widely scattered coal stringers.

NOTE: LOCATION OF SECTION 39 IS SHOWN ON FIGURE 2.5-296

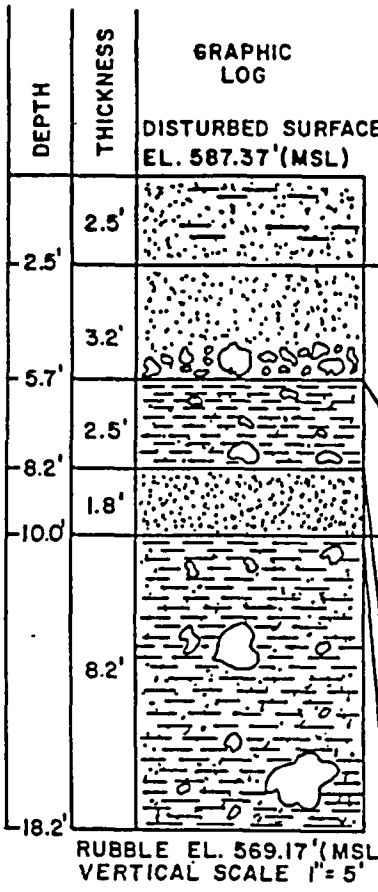
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 26 OF 27)

SECTION PL-I

PIPELINE SECTION – EAST WALL OF TRENCH



DESCRIPTION

PARKLAND SAND- Orangish-brown to orange, silty to very silty, very fine-to medium-grained sand.

EQUALITY FORMATION

SAND- Brown to gray-brown, slightly silty, fine-to medium-grained sand; cross-bedded, sand coarser toward base.

LAG GRAVEL-Clayey sand and gravel; boulders to 1' in diameter (581.67')

WEDRON FORMATION

TILL - Brown to gray-brown, silty, clayey sand; scattered gravel, cobble-to pea-sized clasts of reddish brown clay, less clay near top.

CONTROL POINT: PL-I
COORDINATES: 20' N COLUMN LINE 26
15' W COLUMN LINE A
ELEVATION: 577.37' (MSL)

OUTWASH - Orange brown to brown, slightly silty, medium- to fine-grained sand.

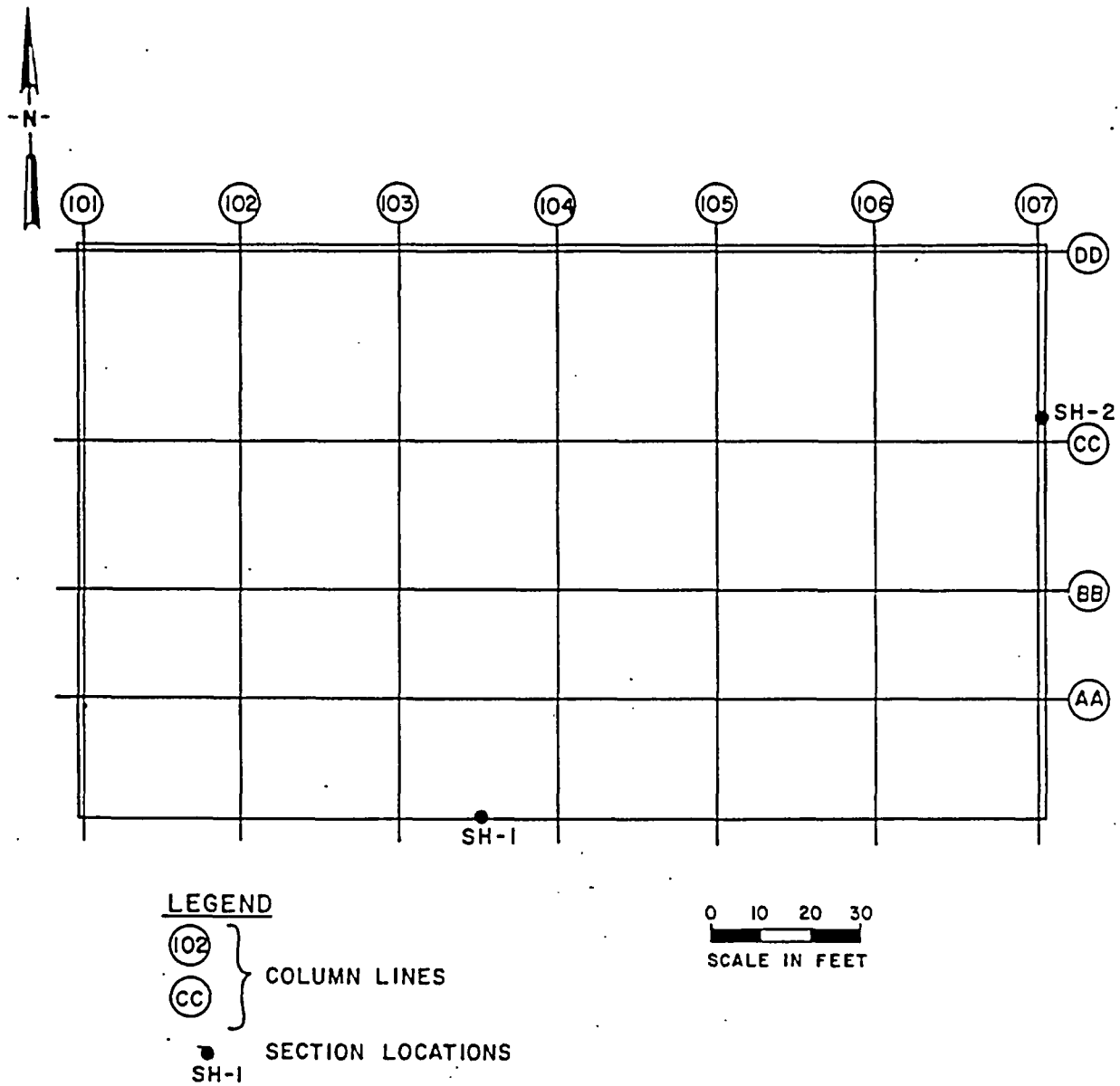
TILL - Gray to gray-brown, hard, slightly sandy, silty clay; scattered gravel, cobbles, and boulders up to 1' in diameter.

NOTE: LOCATION OF SECTION PL-1 IS SHOWN ON FIGURE 2.5-296

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-297

GEOLOGIC SECTIONS
(SHEET 27 OF 27)



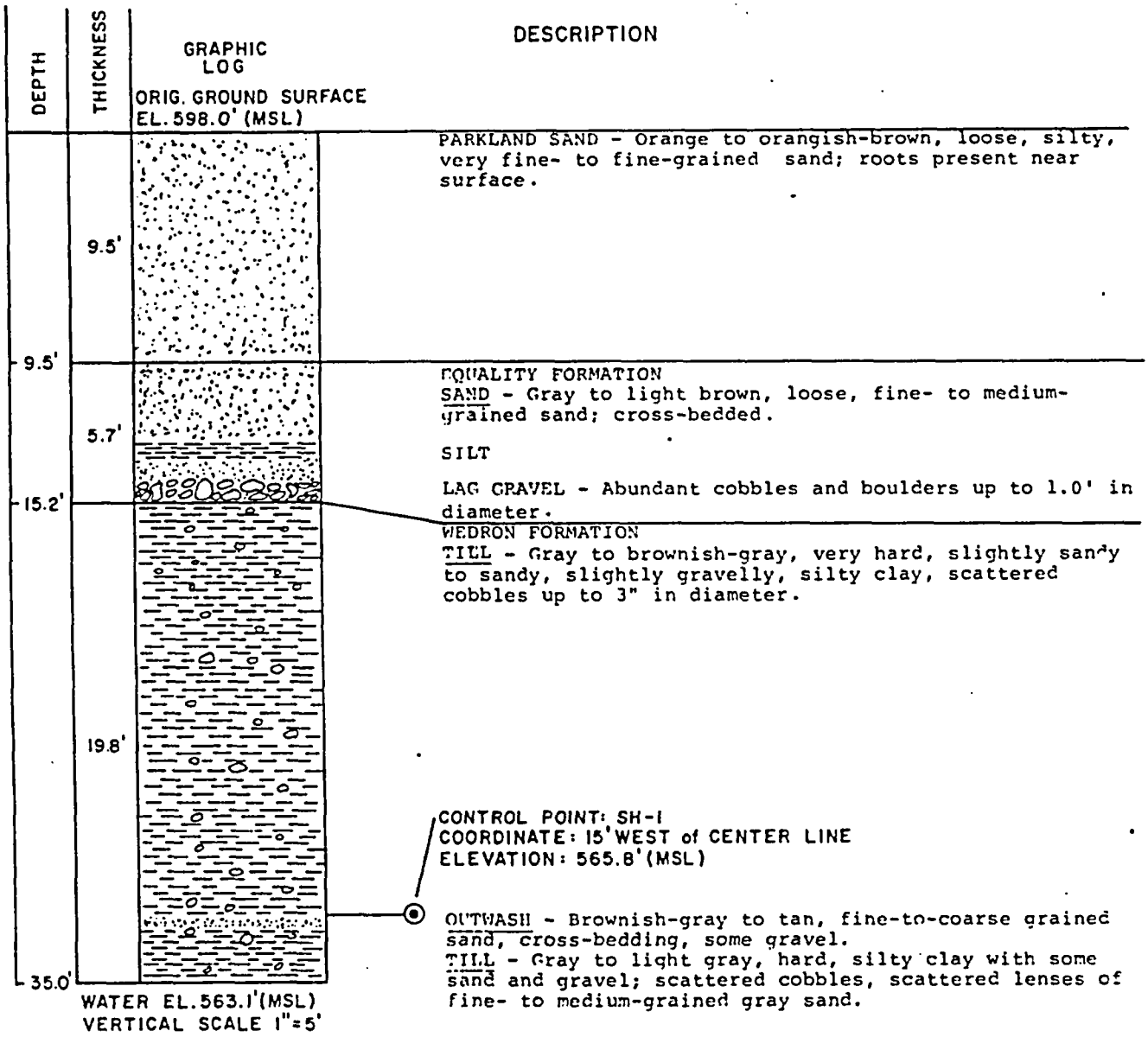
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-298

SKETCH MAP OF SCREEN HOUSE
SHOWING SECTION LOCATIONS

SECTION SH-I

SCREENHOUSE – SOUTH WALL OF EXCAVATION



NOTE: LOCATION OF SECTION SH-1 IS SHOWN ON FIGURE 2.5-298

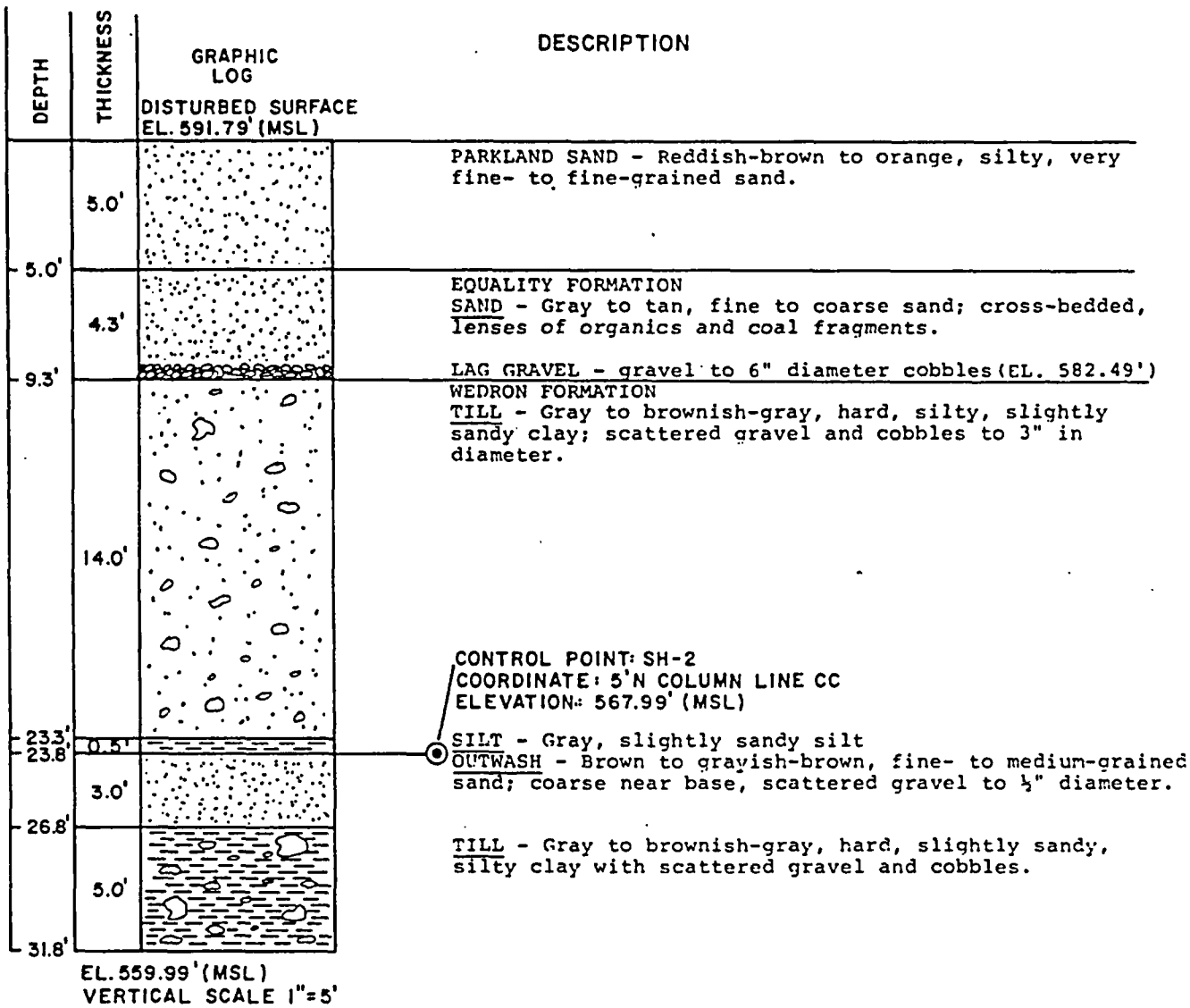
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-299

SCREEN HOUSE GEOLOGIC SECTIONS
(SHEET 1 OF 2)

SECTION SH-2

SCREENHOUSE – EAST WALL OF EXCAVATION

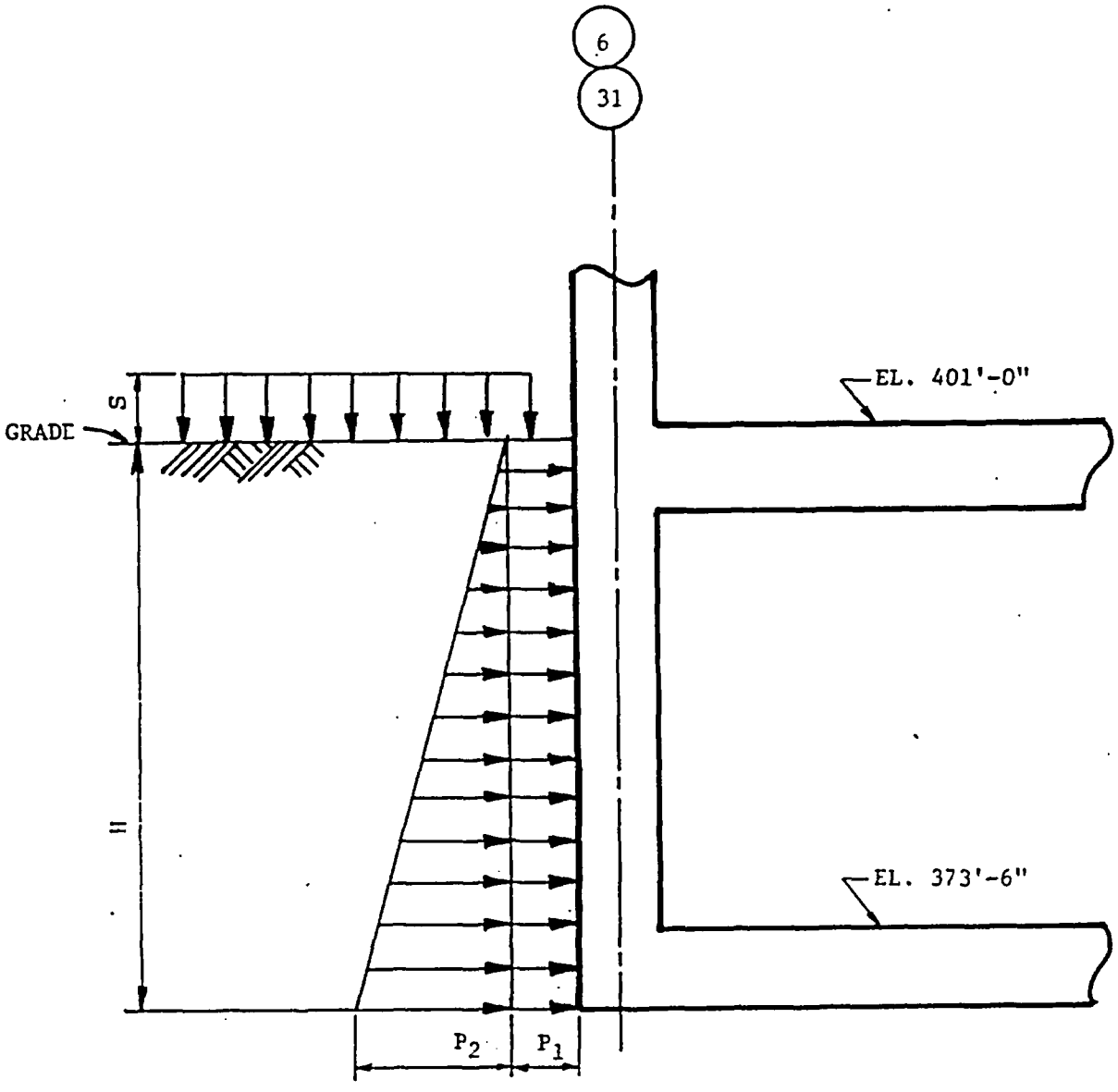


NOTE: LOCATION OF SECTION SH-2 IS SHOWN ON FIGURE 2.5-298

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-299

SCREEN HOUSE GEOLOGIC SECTIONS
(SHEET 2 OF 2)



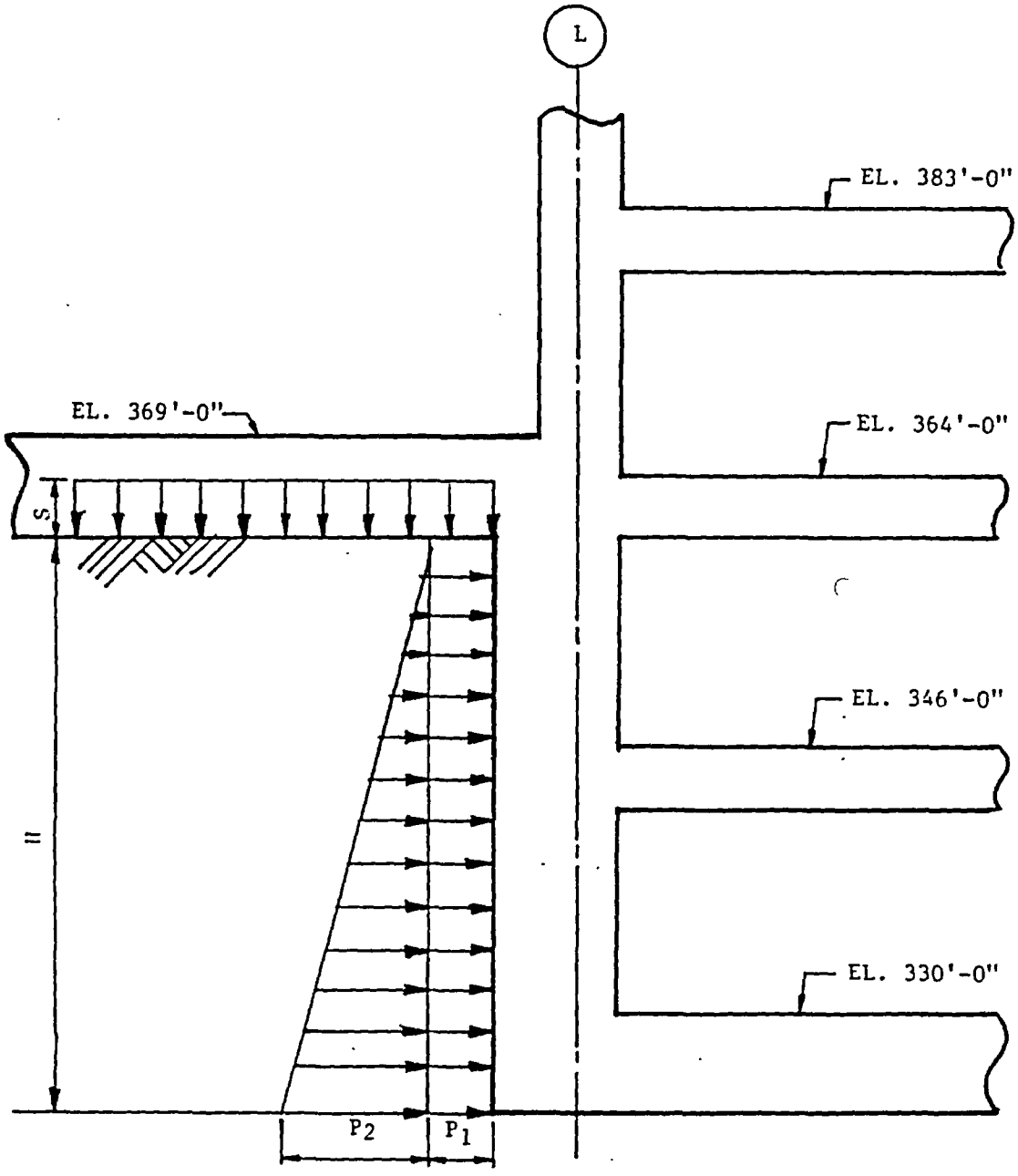
AUXILIARY BUILDING

P_1 = (ko) S
P_2 = (ko) γ_s (H)
ko = Coefficient of Lateral Earth Pressure (0.88)
S = Surcharge
H = Depth Below Grade
γ_s = Submerged Soil Density (68 pcf)
Water Table Assumed at Grade

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-300

AUXILIARY BUILDING LATERAL EARTH PRESSURE (SHEET 1 OF 2)



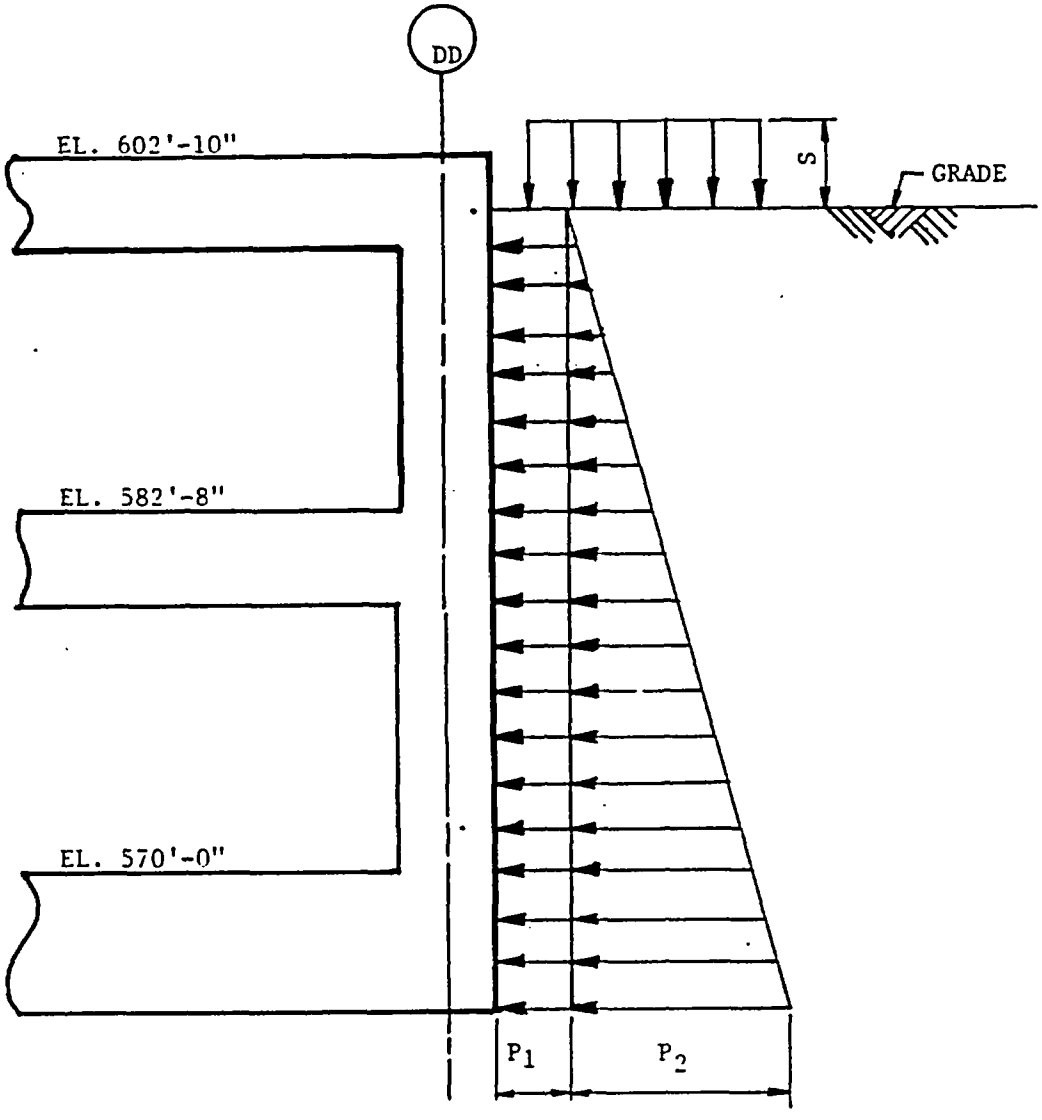
AUXILIARY BUILDING

P_1 = (ko) S
P_2 = (ko) γ_s (H)
ko = Coefficient of Lateral Earth Pressure (0.88)
S = Surcharge
H = Depth Below Grade
γ_s = Submerged Soil Density (68 pcf)
Water Table Assumed at Grade

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-300

AUXILIARY BUILDING LATERAL EARTH PRESSURE (SHEET 2 OF 2)



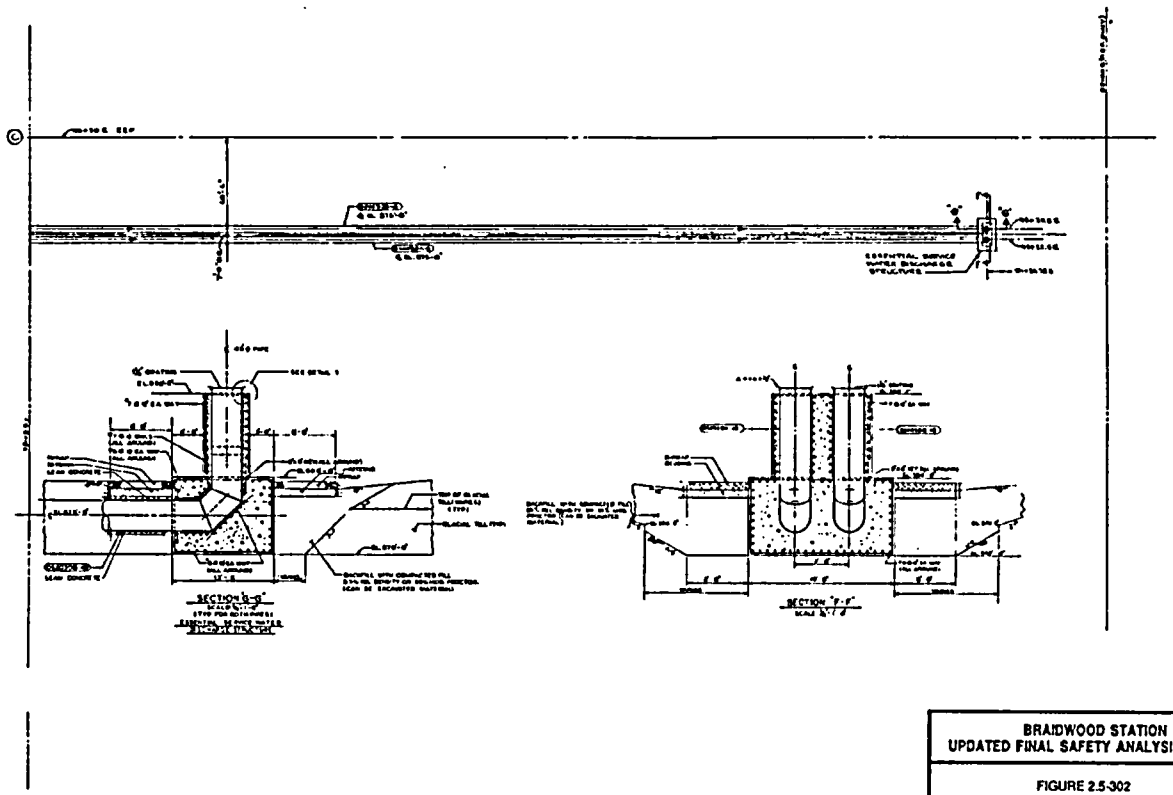
LAKE SCREEN HOUSE

P_1 = (ko) S
P_2 = (ko) γ_s (H)
ko = Coefficient of Lateral Earth Pressure (0.88)
S = Surcharge
H = Depth Below Grade
γ_s = Submerged Soil Density (68 pcf)
Water Table Assumed at Grade

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-301

LAKE SCREEN HOUSE LATERAL EARTH PRESSURE



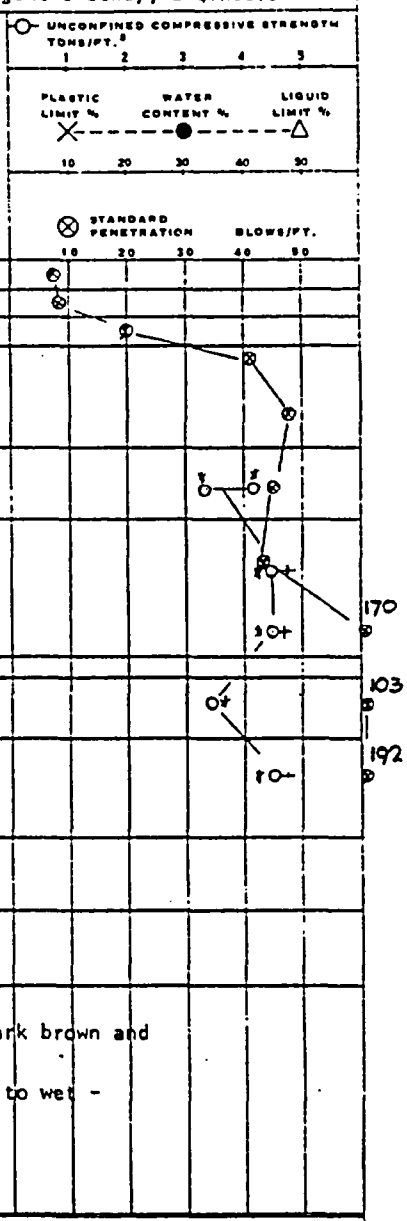
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-302

ESSENTIAL SERVICE WATER
DISCHARGE STRUCTURE

Commonwealth Edison Co.	LOG OF BORING NUMBER DSS-1
Braidwood Power Station	ARCHITECT-ENGINEER Sargent & Lundy, Engineers
SITE LOCATION Braidwood, Illinois	

ELEVATION (FT.)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL / SURFACE ELEVATION	UNIT DRY WT. LBS./FT.³
	1	SS			"A"	
	2	SS			"B"	
	3	SS			Silty sand, trace clay & roots - light gray & brown - medium dense - moist to wet (SM)	
	4	SS				
10.0	5	SS			Fine sand, trace silt - gray and brown - dense - wet - saturated (SP)	
	6	SS			Silty clay, trace sand and gravel - gray - very tough (CL)	
20.0	7	SS			Silty clay, trace to some sand, trace gravel - gray to gray & brown - hard (CL-ML)	
	8	SS			Boulders & cobbles, trace silt and clay - very dense (GP)	
30.0	9	SS			Silty clay, trace sand and gravel - brown & gray - very tough (CL)	
	10	SS			Clayey silt (loose siltstone) - gray - very dense - moist (ML-CL)	
40.0	Run 1	DB			Dark gray micaceous shale - weathered Recovery = 100%	
	Run 2	DB			Dark gray micaceous shale - weathered Recovery = 88%	
50.0					End of Boring "A": Fine sand, trace clay and silt - dark brown and gray - loose - moist (SP) "B": Sand and silt - gray brown - moist to wet - medium dense (SP-SM) 40' of 4" casing used.	



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES; IN-SITU, THE TRANSITION MAY BE GRADUAL.

WL 5.9' WS or WD	BORING STARTED 2-27-73	SOIL TESTING SERVICES, INC. 117 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062	
WL 3.5' BCR 5' ACR	BORING COMPLETED 2-27073		
WL Cave-in @ 6' W.D. Cave-in @ 36' A.B.	RIG 10-A FOREMAN DVB	APPROVED BY CHC	STS JOB NO. 15069-B

BL:1

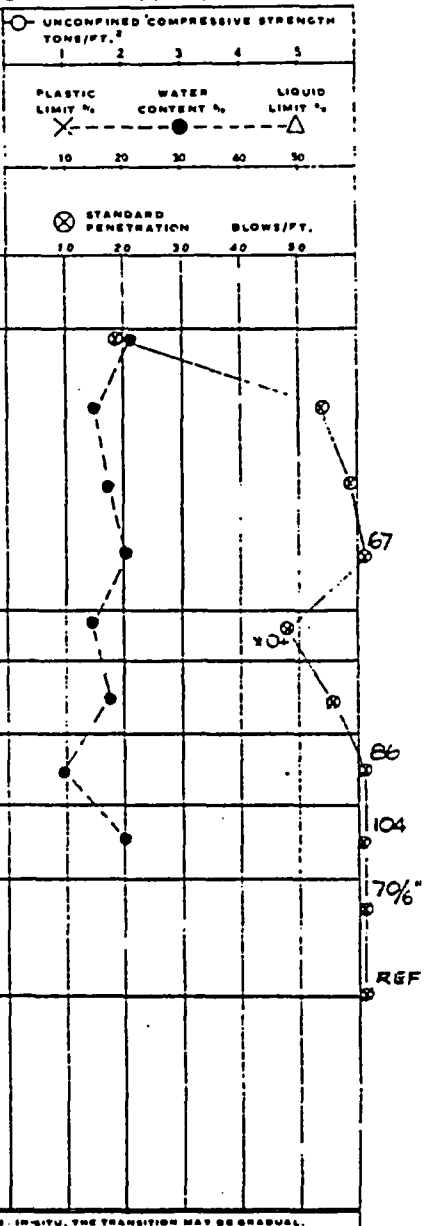
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-303

LOG OF BORING DSS-1

OWNER: Commonwealth Edison Co.	LOG OF BORING NUMBER: DSS-66 (Offset 10' S)
PROJECT NAME: Braidwood Power Station	ARCHITECT-ENGINEER: Sargent & Lundy, Engineers
SITE LOCATION: Braidwood, Illinois	

ELEVATION	DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL / SURFACE ELEVATION	UNIT DRY WT. LBS./FT.³
			RB			Silty fine sand (No Sample)	
		1	SS			Fine sand, trace silt - light brown and gray - wet - dense to very dense (SP)	
	10.0	2	SS				
		3	SS				
	20.0	4	SS				
		5	SS			Silty clay, trace to some gravel, trace sand - gray - hard (CL)	
	30.0	6	SS			Silty fine sand, trace clay - gray - wet - dense (SM)	
		7	SS			Silty, sandy & gravelly clay - gray - hard (SM-SC)	
	40.0	8	SS			Fine sand, trace silt and clay - gray - wet - very dense (SP)	
		9	SS			Gray clayey shale	
	50.0					No Sample	
	51.0	10	SS			End of Boring	
						5' of 4" casing used.	
						Bore hole grouted.	



THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU, THE TRANSITION MAY BE GRADUAL.

WL	WS or WD	BORING STARTED 3-4-73	SOIL TESTING SERVICES, INC. 111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL BCR	ACR	BORING COMPLETED 3-4-73	
WL		RIG B-12 FOREMAN JF	APPROVED BY CHC STS JOB NO. 15069-B

BL:1

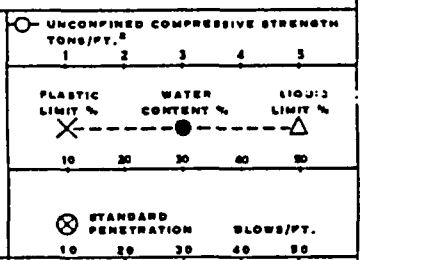
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-304

LOG OF BORING DSS-66

OWNER	Commonwealth Edison Co.	LOG OF BORING NUMBER	DSS-67
PROJECT NAME	Braidwood Power Station	ARCHITECT-ENGINEER	Sargent & Lundy
SITE LOCATION	Braidwood, Illinois		

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL / SURFACE ELEVATION	UNIT DRY WT. LBS./FT.³
		RB			No Sample	
	1	SS			Sand, trace silt - boulder at 18' - light brown and gray - dense to very dense - moist to wet (SP)	
	2	SS				
	3	SS				
10.0	4	SS				
	5	SS				
20.0	6	SS			Clayey silt, trace sand & gravel - gray - dense (ML-CL)	
	7	SS			Silty & sandy clay, trace gravel (CL-SC)	
30.0	8	SS			Fine to medium sand, trace gravel - gray - very dense - wet (SP)	
	9	SS				
40.0	10	SS			Silty sand, trace clay - gray - very dense - wet (SM)	
		RB			Dark gray shale	
50.0	Run 1	DB			Dark gray shale with thin lamination of light gray fine grained sandstone. Recovery = 95%, RQD = 45%	
60.0	Run 2	DB			Same as above Recovery = 88%, RQD = 57%	
65.0					(Contd. on Sheet 2)	



Sheet 1 of 2

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU, THE TRANSITION MAY BE GRADUAL.

BL:2

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-305

LOG OF BORING DSS-67
(SHEET 1 OF 2)

OWNER	LOG OF BORING NUMBER
Commonwealth Edison Co.	DSS-67 (Contd.)
PROJECT NAME: Braidwood Power Station	ARCHITECT-ENGINEER: Sargent & Lundy
SITE LOCATION: Braidwood, Illinois	

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL / SURFACE ELEVATION	UNIT DRY WT. LBS./FT.³	UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5) / PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % (10 20 30 40 50) / STANDARD PENETRATION BLOWS/FT. (10 20 30 40 50)
					(Contd. from Sheet 1)		
65.0							
79.0	Run 3	DB			Dark gray shale with thin lamination of light gray fine grained sandstone. Recovery = 100%, RQD = 86%		
75.0					End of Boring		*Calibrated Penetrometer

Casing used: 47' of NX
17' of 4"

Bore hole grouted.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES; IN-SITU, THE TRANSITION MAY BE GRADUAL.

WL	WS or WD	BORING STARTED 2-3-73	SOIL TESTING SERVICES, INC. 111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL 18' BCR	ACR	BORING COMPLETED 2-3-73	
WL		RIG 12A FOREMAN CB	APPROVED BY CHC STS JOB NO. 15069-B

BL:1

Sheet 2 of 2.

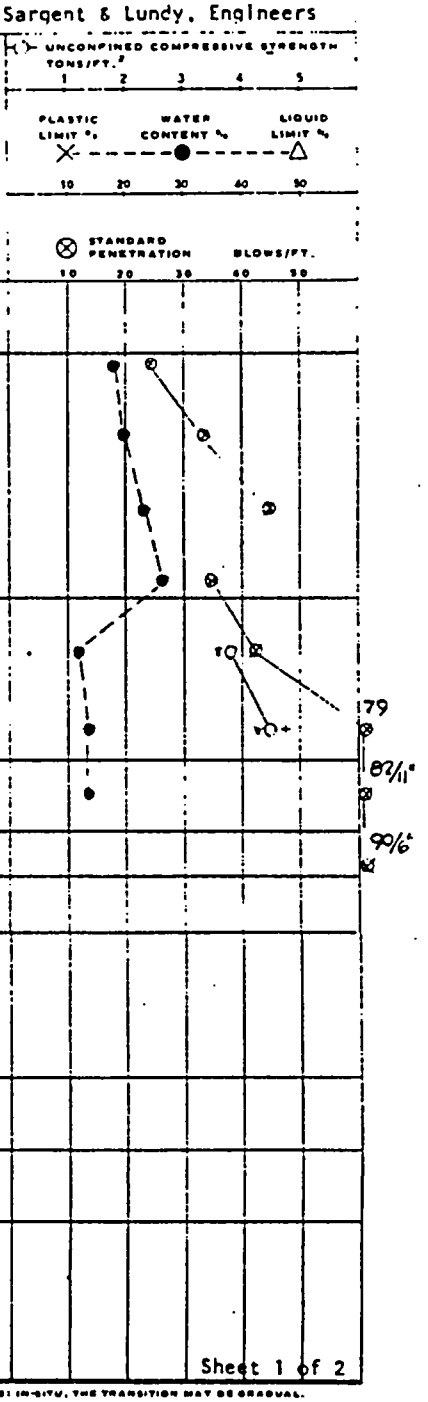
BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-305

LOG OF BORING DSS-67
(SHEET 2 OF 2)

Commonwealth Edison Co.	LOG OF BORING NUMBER DSS-68
PROJECT NAME Braidwood Power Station	ARCHITECT-ENGINEER Sargent & Lundy, Engineers
SITE LOCATION Braidwood, Illinois	

ELEVATION	DEPTH	SAMPLE NO	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL / SURFACE ELEVATION	UNIT DRY WT. LBS/FT.³
			RB			No Sample	
		1	SS			Fine sand, trace silt - lt.brown to lt.gray - wet to saturated - dense (SP)	
	10.0	2	SS				
		3	SS				
	20.0	4	SS				
		5	SS			Silty, sandy, gravelly clay - gray - very tough to hard (CL)	
	30.0	6	SS				
		7	SS			Silty fine sand, trace to some clay and gravel - gray - wet - very dense (SM-SC)	
	40.0	8	SS			Fine sand, trace silt & gravel - gray - wet - very dense (SP)	
			PC			Gray clayey shale	
	50.0	Run 1	DB			Light gray fine grained sandstone interbedded with thin lamination of dark gray clayey shale. Recovery = 100%, RQD = 10%	
	60.0	Run 2	DB			Light gray fine grained sandstone interbedded with thin lamination of dark gray clayey shale. Recovery = 92%, RQD = 52%	
	65.0	Run 3	DB			Lt.gray fine grained sandstone interbedded with thin lamination of dark gray clayey shale. Recovery = 100%, RQD = 90%	
						(Contd. on Sheet 2)	



Sheet 1 of 2

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES; IN-SITU, THE TRANSITION MAY BE GRADUAL.

RI - 2

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-306

LOG OF BORING DSS-68
(SHEET 1 OF 2)

CLIENT	Commonwealth Edison Co.	LOG OF BORING NUMBER	DSS-68 (Contd.)
PROJECT NAME	Braidwood Power Station	ARCHITECT-ENGINEER	Sargent & Lundy, Engineers
SITE LOCATION	Braidwood, Illinois		

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % 10 20 30 40 50

STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50

ELEVATION	DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL / SURFACE ELEVATION	UNIT DRY WT LBS/FT.³	
	65.0					(Contd. from Sheet 1)		
	70.0	Run 4	DB			Dark gray shale interbedded with thin lamination of lt.gray fine grained sandstone. Recovery = 100%, RQD = 90%		
	75.0	Run 5	DB			Light gray fine grained sandstone interbedded with thin lamination of dark gray shale. Recovery = 100%, RQD = 92%		
						End of Boring		*Calibrated Penetrometer
						Casinn used: 5' of 4" 45' of NX		
						Bore hole grouted.		

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES; IN-SITU, THE TRANSITION MAY BE GRADUAL.

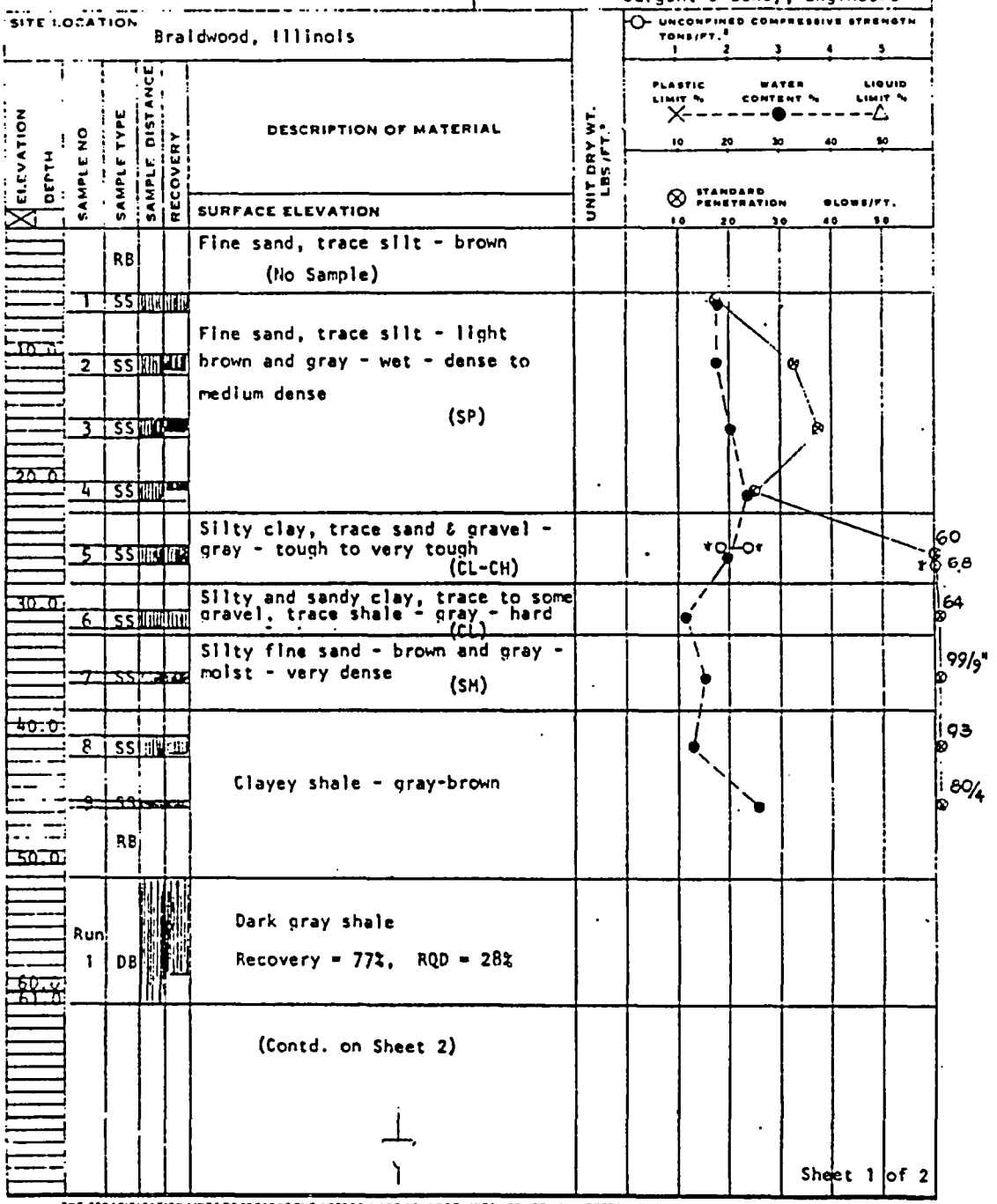
WL	WS or WD	BORING STARTED 3-3-73	SOIL TESTING SERVICES, INC. 111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL	BCR ACR	BORING COMPLETED 3-3-73	
WL		RIG B-12 FOREMAN JF	APPROVED BY CRC — STS JOB NO. 15069-B

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-306

LOG OF BORING DSS-68
(SHEET 2 OF 2)

Commonwealth Edison Co.	LOG OF BORING NUMBER DSS-69 (Offset 20' South)
PROJECT NAME Braidwood Power Station	ARCHITECT-ENGINEER Sargent & Lundy, Engineers
SITE LOCATION Braidwood, Illinois	



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-307

LOG OF BORING DSS-69
(SHEET 1 OF 2)

OWNER: Commonwealth Edison Co.	LOG OF BORING NUMBER: DSS-69 (Contd.)
PROJECT NAME: Braidwood Power Station	ARCHITECT-ENGINEER: Sargent & Lundy, Engineers
SITE LOCATION: Braidwood, Illinois	

UNCONFINED COMPRESSIVE STRENGTH TONS/FT² 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

10 20 30 40 50

STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50

ELEVATION	DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
						SURFACE ELEVATION	
	61.0					(Contd. from Sheet 1)	
		Run 2	DB			Dark gray shale interbedded with thin lamination of lt.gray fine grained sandstone. Recovery = 97%, RQD = 76%	
	70.0						
		Run 3	DB			Light gray, fine grained sandstone interbedded with thin lamination of dark gray shale. Recovery = 87%, RQD = 63%	
	80.0						
		Run 4	DB			Light gray, fine grained sandstone interbedded with thin lamination of dark gray shale. Recovery = 94%, RQD = 84%	
	90.0						
		Run 5	DB			Light gray fine grained sandstone interbedded with thin lamination of dark gray shale, with black coal from 92'10" to 93'8" Recovery = 37%, RQD = 14%	
	100.0						
						End of Boring	
						Casing used: 10' of 4" 45' of NX	
						Bore hole grouted.	
						Pressure Tests taken: 51' to 61' 80' to 90'	

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES; IN-SITU, THE TRANSITION MAY BE GRADUAL.

WL	WS or WD	BORING STARTED 3-5-73	SOIL TESTING SERVICES, INC. 111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL BCR	ACR	BORING COMPLETED 3-6-73	
WL 5.9' on 3/6/73, 7:30 AM		RIG B-12 FOREMAN JF	APPROVED BY CHC — STS JOB NO. 15069-B

BL:1

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-307

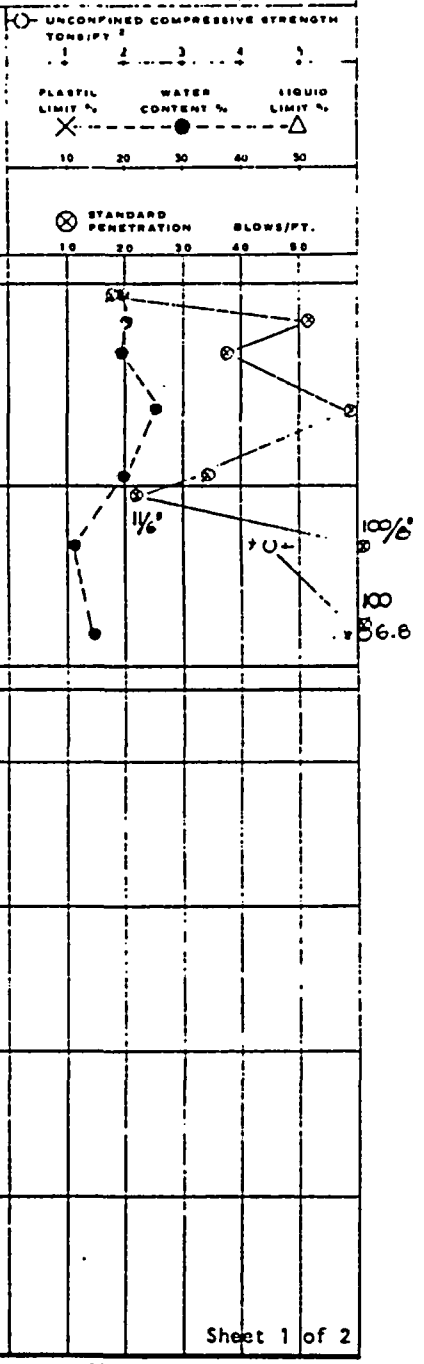
LOG OF BORING DSS-69
(SHEET 2 OF 2)

Commonwealth Edison Co. | LOG OF BORING NUMBER DSS-70

PROJECT NAME: Braidwood Power Station | ARCHITECT-ENGINEER: Sargent & Lundy, Engineers

SITE LOCATION: Braidwood, Illinois

ELEVATION / DEPTH	SAMPLE NO	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL / SURFACE ELEVATION	UNIT DRY WT LBS./FT.³
		RB			No Sample	
	1	SS			Fine sand, trace silt - brown to light gray - moist to wet - dense (SP)	
	2	SS				
	3	SS				
10.0	4	SS				
	5	SS				
	5A				Silty, sandy & gravelly clay - gray - hard (CL)	
20.0	6	SS				
	7	SS				
30.0					Greenish gray limestone	
	Run 1	DB			Greenish gray soft clayey shale with limestone from 30' to 31'2" Recovery = 93%, RQD = 78%	
40.0	Run 2	DB			Greenish gray soft shale Recovery = 100%, RQD = 88%	
50.0	Run 3	DB			Light gray fine grained sandstone interbedded with laminations of dark gray shale becoming dark gray shale @ 45' Recovery = 100%, RQD = 10%	
60.0	Run 4	DB			Light gray fine grained sandstone interbedded with thin laminations of dark gray shale. Recovery = 95%, RQD = 50%	
65.0					(Contd. on Sheet 2)	



Sheet 1 of 2

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES; IN-SITU, THE TRANSITION MAY BE GRADUAL.

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-308

LOG OF BORING DSS-70
(SHEET 1 OF 2)

OWNER	Commonwealth Edison Co.	LOG OF BORING NUMBER	DSS-70 (Contd.)
PROJECT NAME	Braidwood Power Station	ARCHITECT-ENGINEER	Sargent & Lundy, Engineers
SITE LOCATION	Braidwood, Illinois		

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1, 2, 3, 4, 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % (10, 20, 30, 40, 50)

STANDARD PENETRATION BLOWS/FT. (10, 20, 30, 40, 50)

ELEVATION	DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL / SURFACE ELEVATION	UNIT DRY WT. LBS./FT.³
						(Contd. from Sheet 1)	
						...it gray fine grained sandstone ...rbedded with thin laminations ...or dark gray shale Recovery = 100%, RQD = 51%	
						End of Boring Casing used: 29' of NX 12' of 4"	

*Calibrated Penetrometer

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES; IN-SITU, THE TRANSITION MAY BE GRADUAL.

WL	WS or WD	BORING STARTED 3-2-73	SOIL TESTING SERVICES, INC. 111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL	BCR Surface ACR	BORING COMPLETED 3-2-73	
WL		RIG 12A FOREMAN CB	APPROVED RHC STS JOB NO. 15069-B

BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-308

LOG OF BORING DSS-70
(SHEET 2 OF 2)

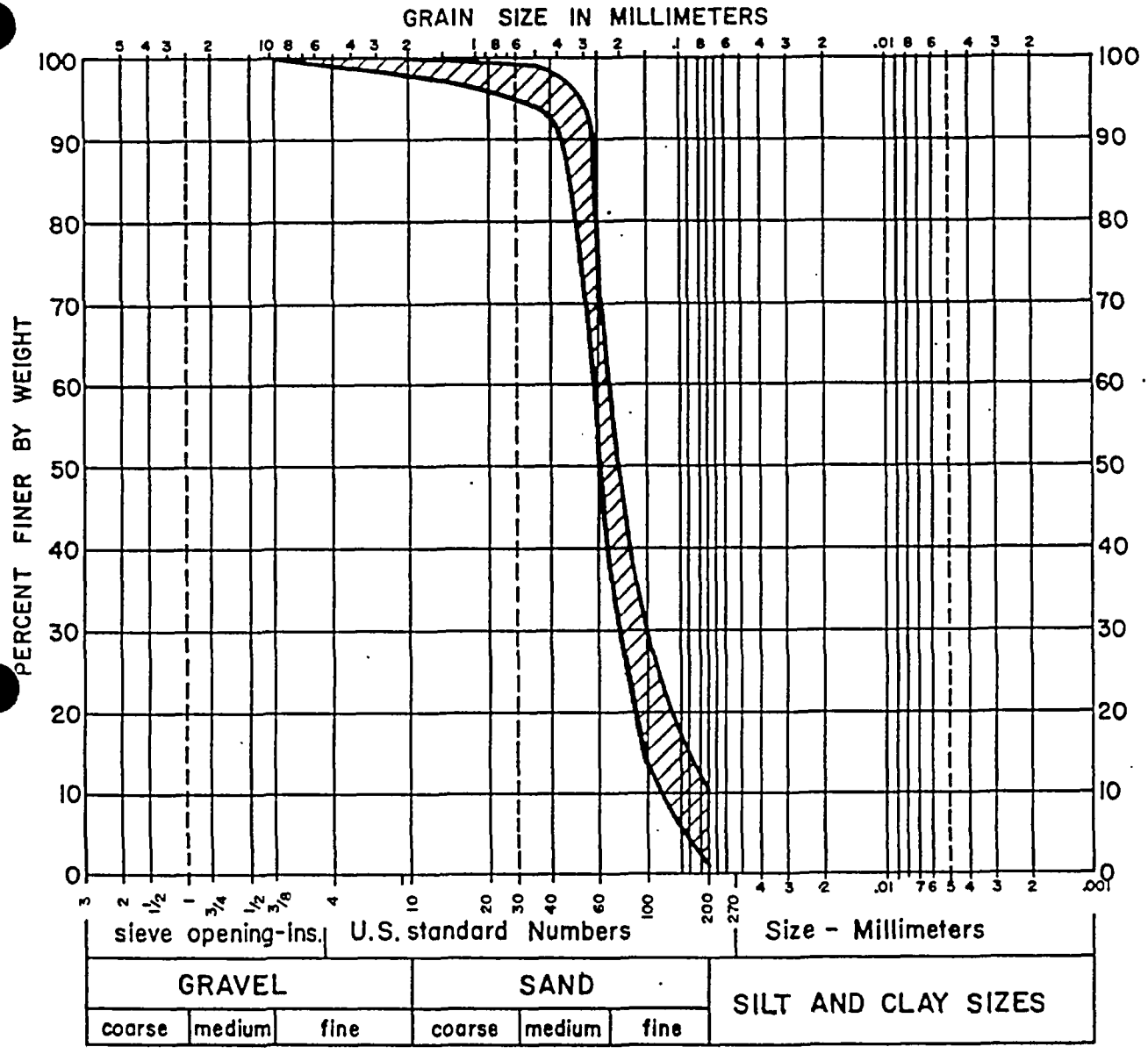


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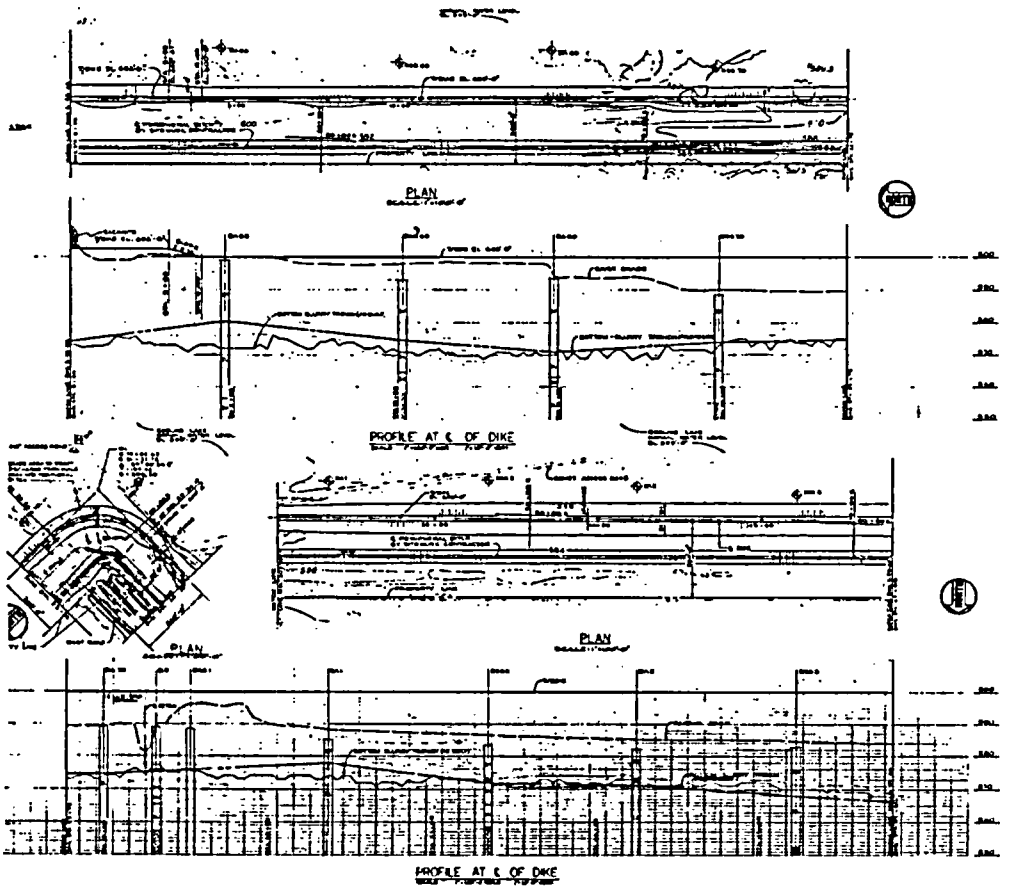
FIGURE 2.5-309

GRAIN SIZE ENVELOPE,
SAND BACKFILL, ESWP WITHIN ESCP



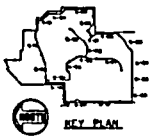


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FIGURE 2.5-310

EXTERIOR DIKE PROFILE
STA 0+00 TO STA 49+00

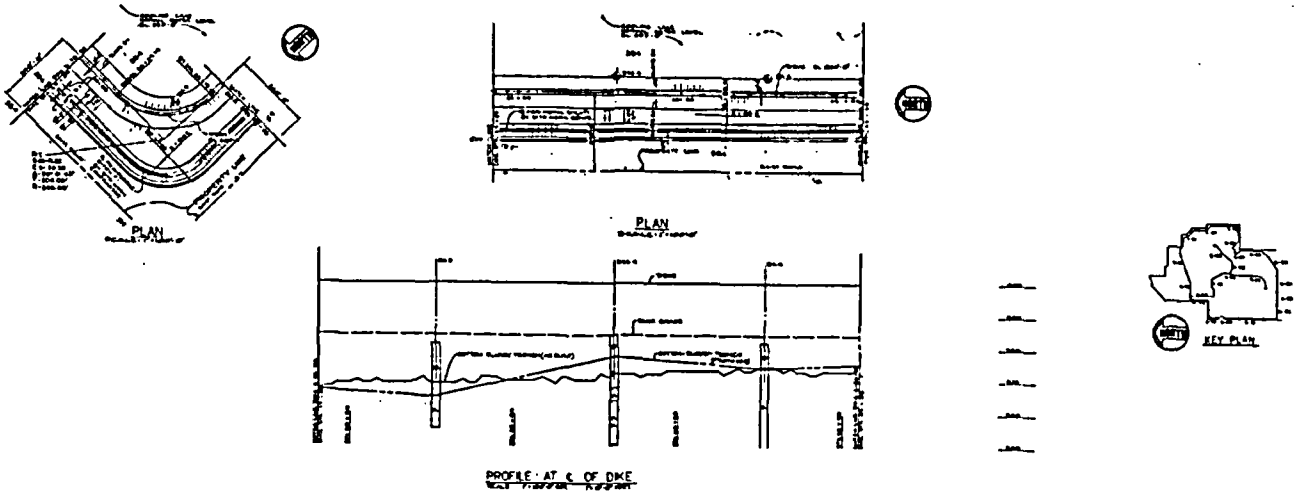

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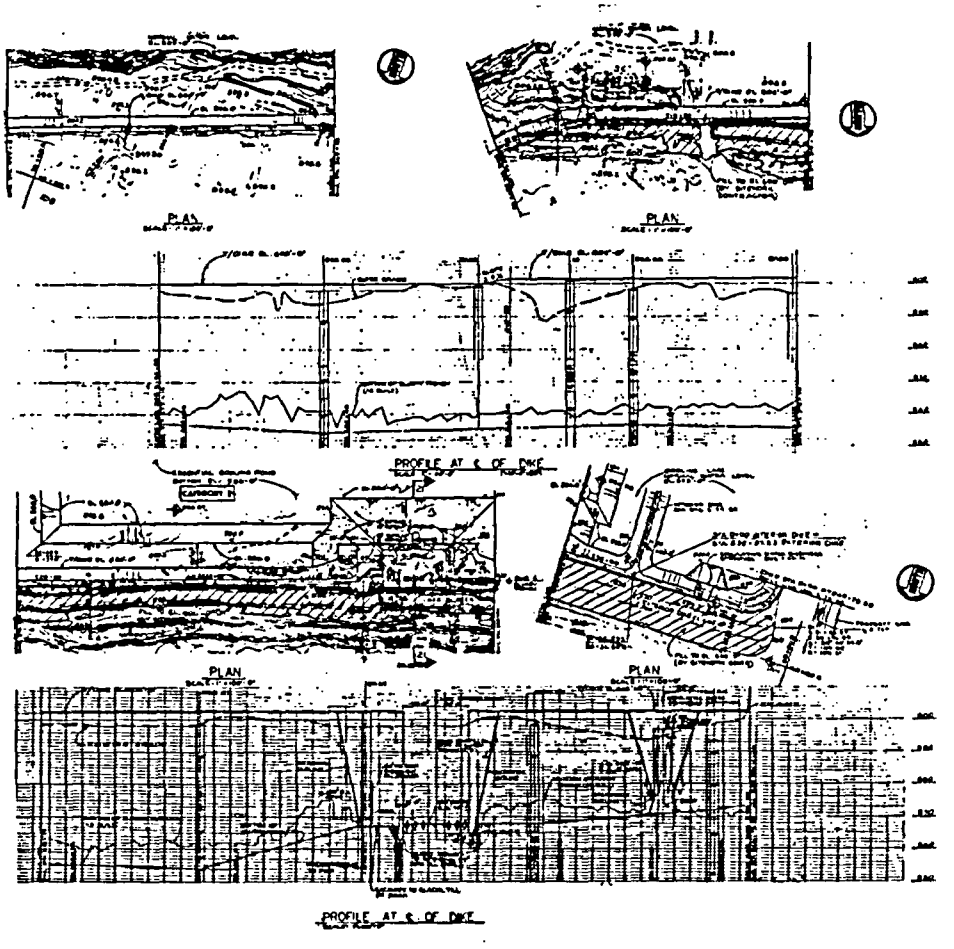
FIGURE 2.5-311

EXTERIOR DIKE PROFILE
STA 49+00 TO STA 65+50



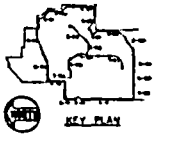


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FIGURE 2.5-312

EXTERIOR DIKE PROFILE
STA 499+15 TO STA 540+79.6

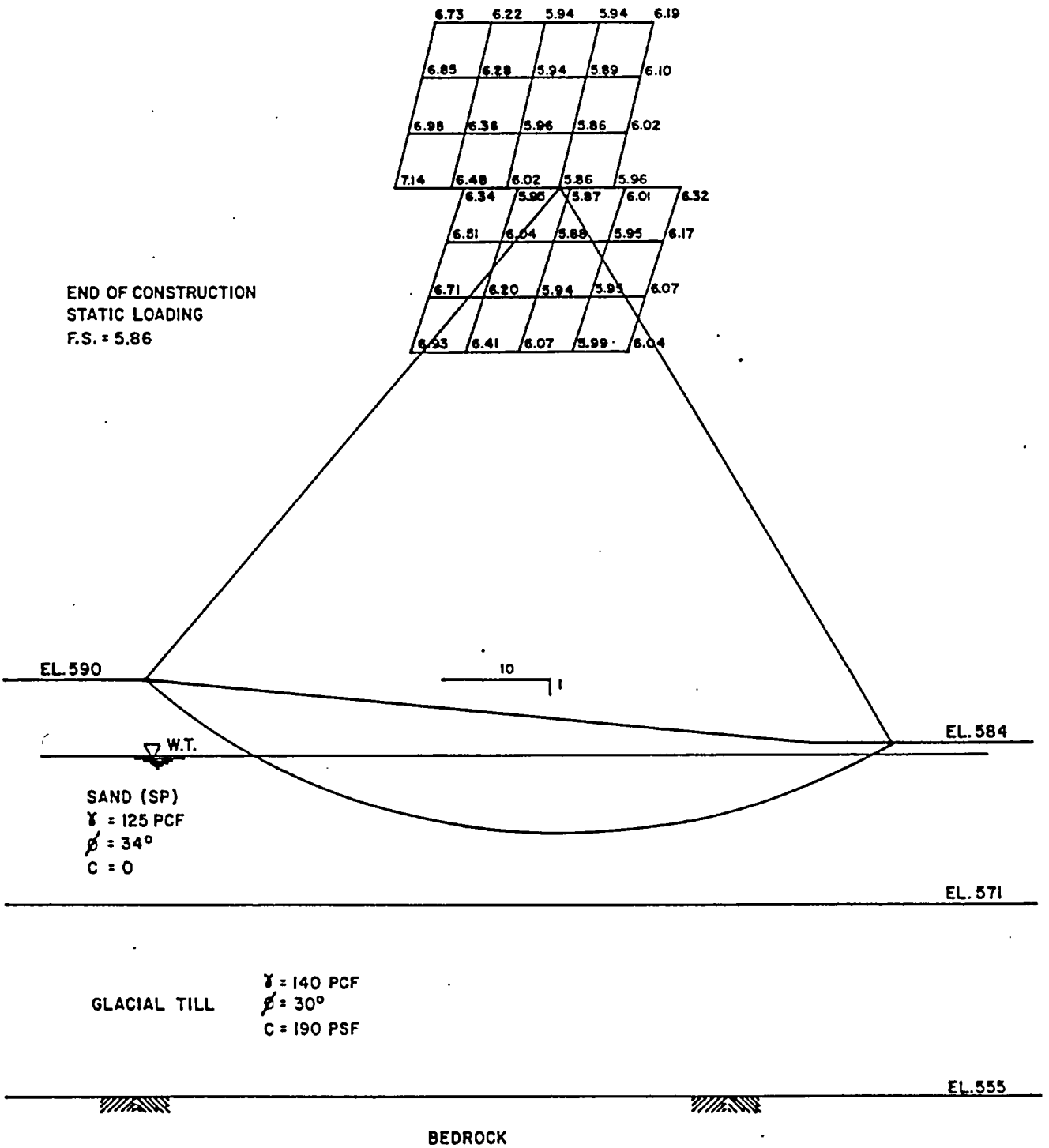

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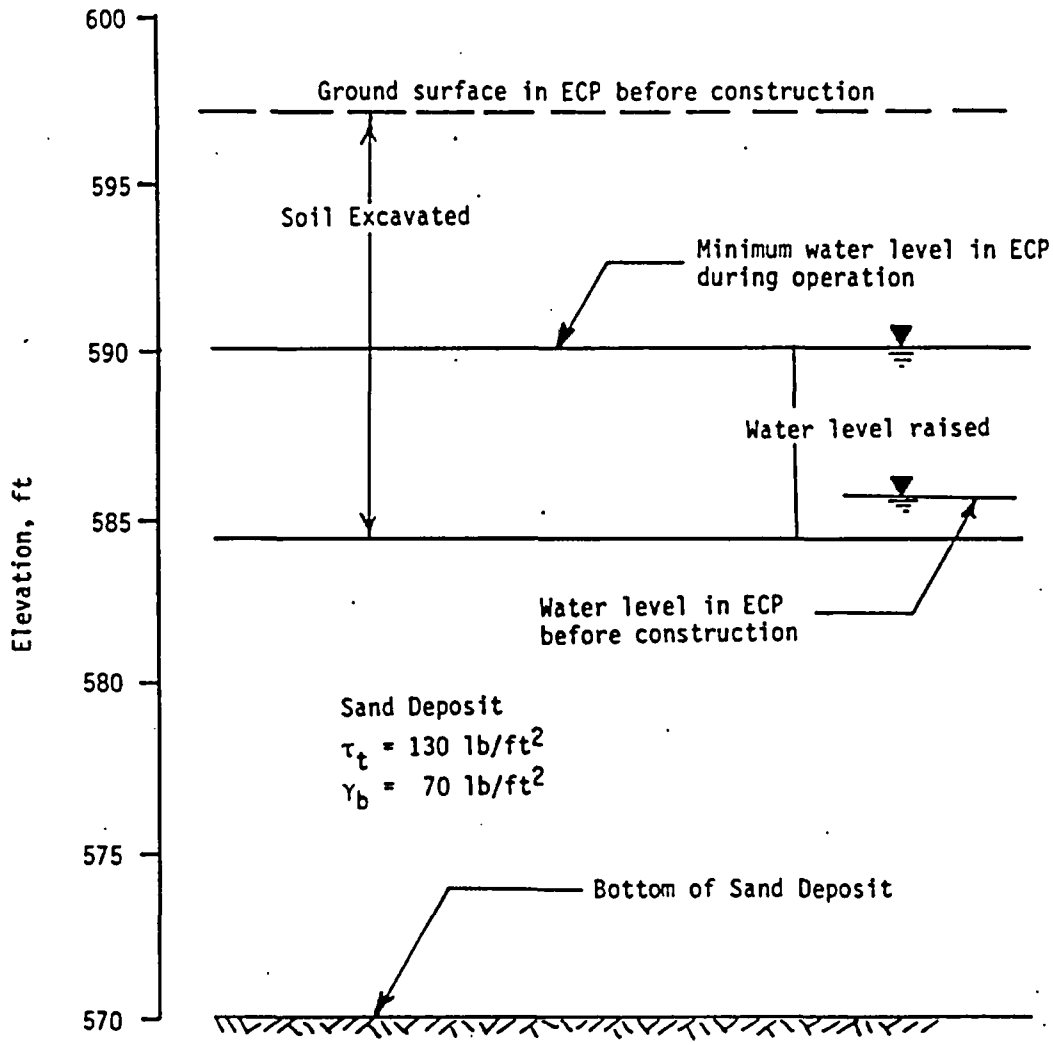
FIGURE 2.5-313

CRITICAL SECTION FOR STATIC ESCP
SLOPE STABILITY ANALYSIS



Before Construction

el.ft	$\bar{\sigma}_b$ lb/ft^2	K_o	$\bar{\sigma}_h$ lb/ft^2
577.5	2085	0.40	834
575.0	2260	0.40	900
570.0	2610	0.40	1040

During Construction

$\bar{\sigma}_a$ lb/ft^2	OCR*	K_o
455	4.5	0.88
630	3.6	0.78
980	2.7	0.70

$$* \text{ OCR} = \text{Overconsolidation Ratio} = \frac{\bar{\sigma}_b}{\bar{\sigma}_a} = \frac{\text{Effective Overburden Pressure Before Construction}}{\text{Effective Overburden Pressure After Construction}}$$

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UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-314

MINIMUM PRINCIPLE STRESS RATIO WITHIN SAND DEPOSIT DURING OPERATION AT EL 584 FT

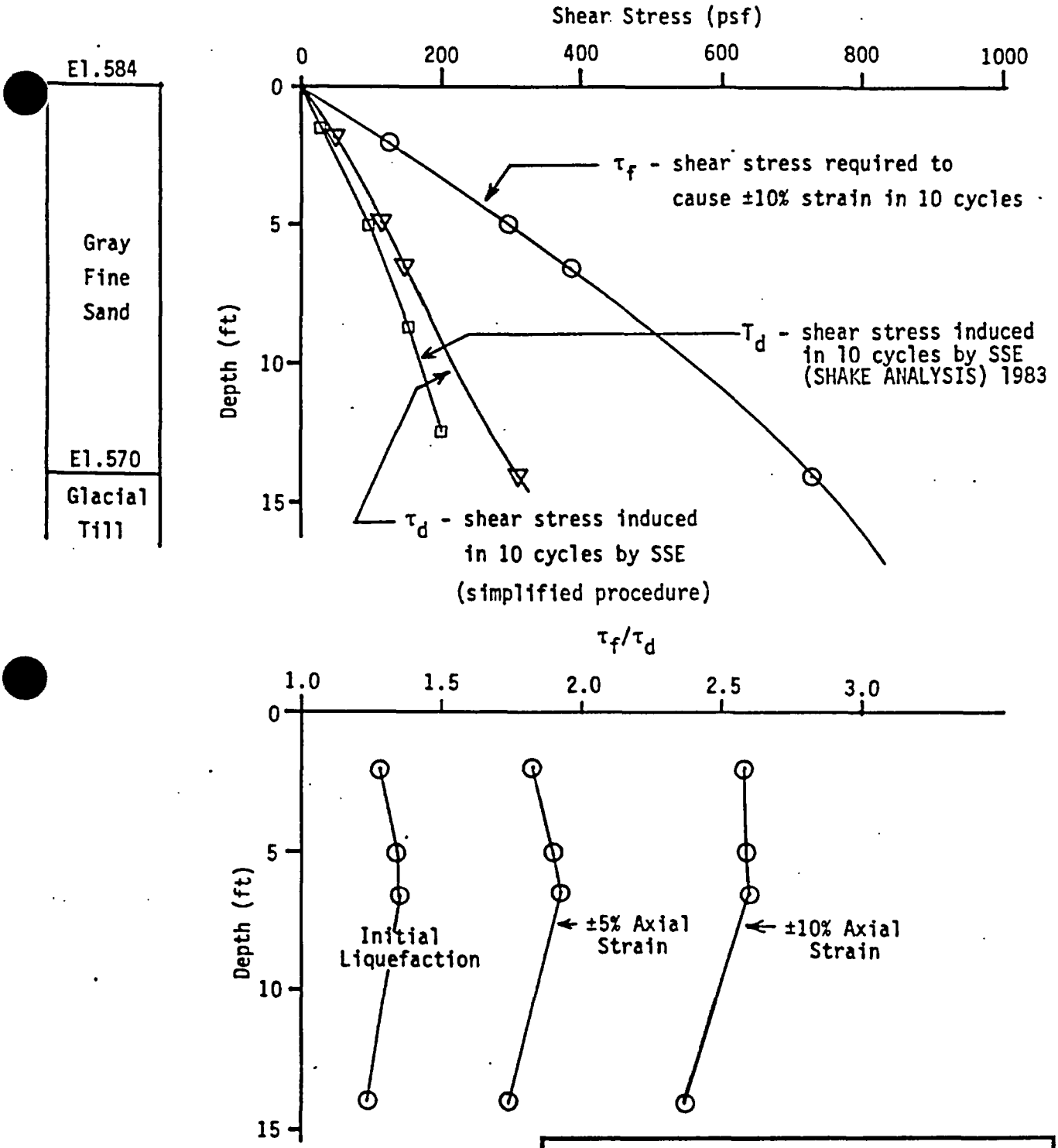

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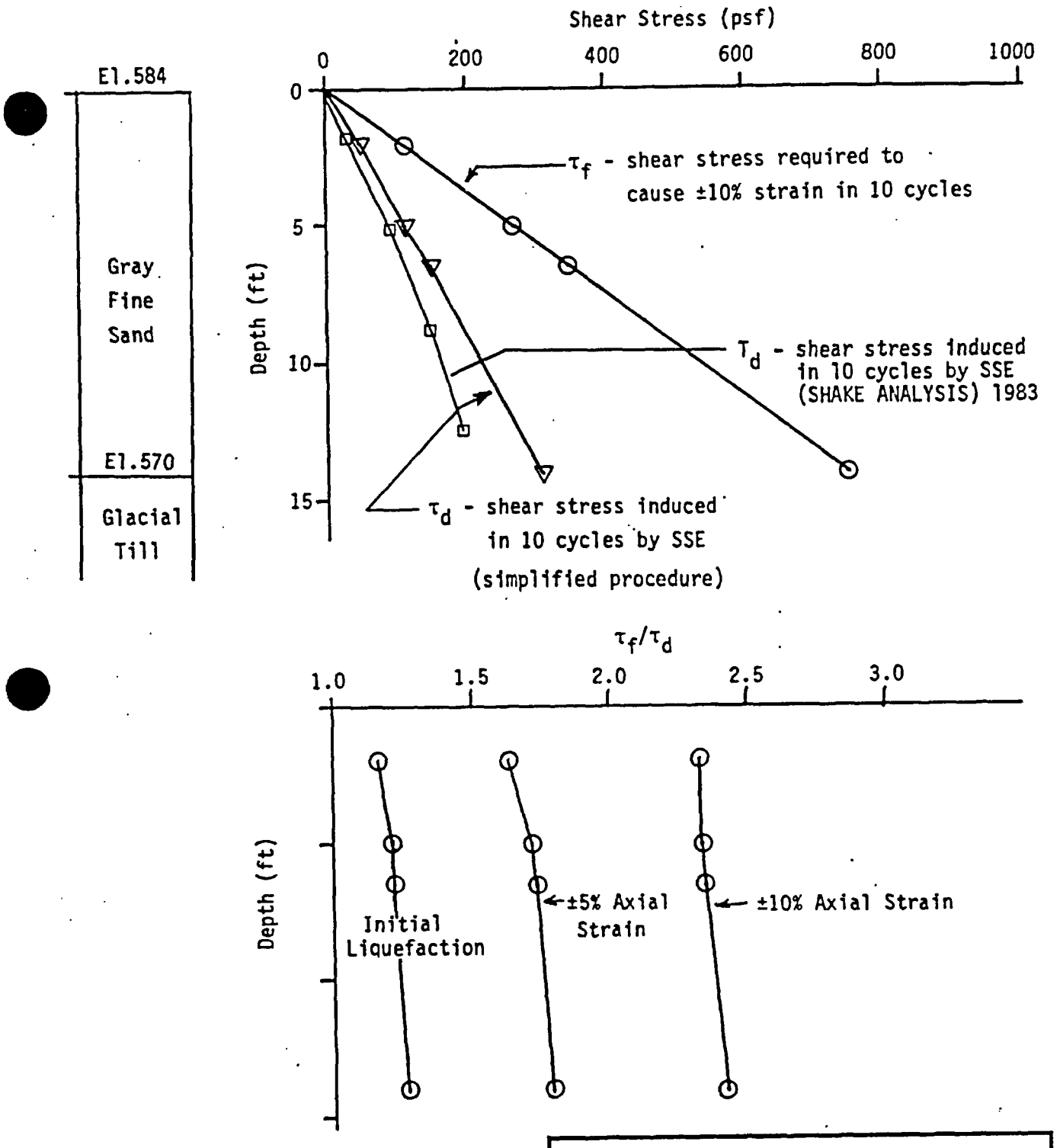
FIGURE 2.5-315

EVALUATION OF LIQUEFACTION POTENTIAL—
LEVEL GROUND AT EL 584 FT—
C_r BASED ON D_r



BRAIDWOOD STATION
UPDATED FINAL SAFETY ANALYSIS REPORT

FIGURE 2.5-316

EVALUATON OF LIQUEFACTION POTENTIAL—
LEVEL GROUND AT EL 584 FT—
C_r BASED ON Ko

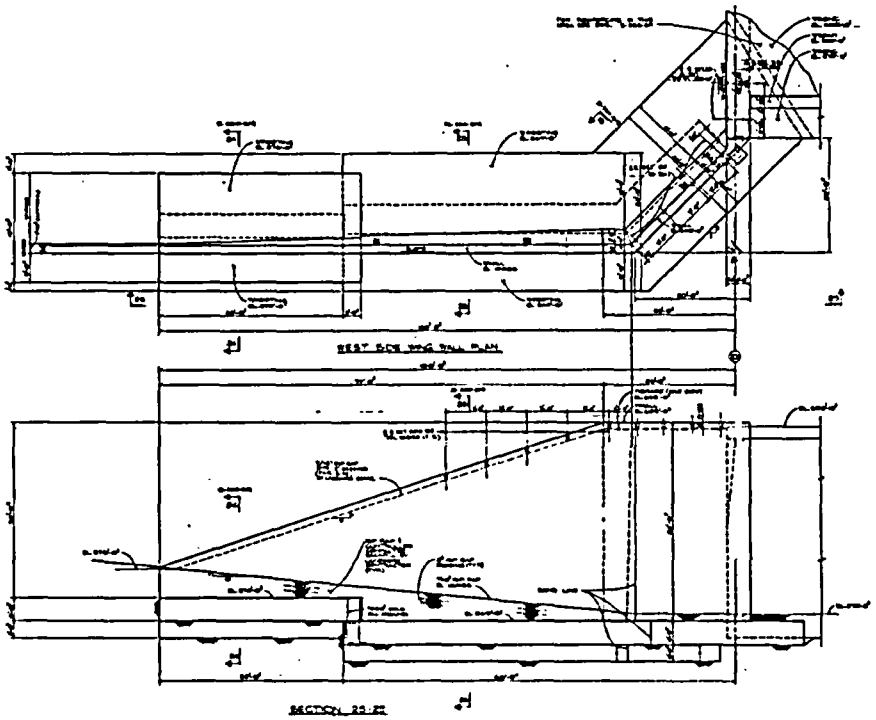


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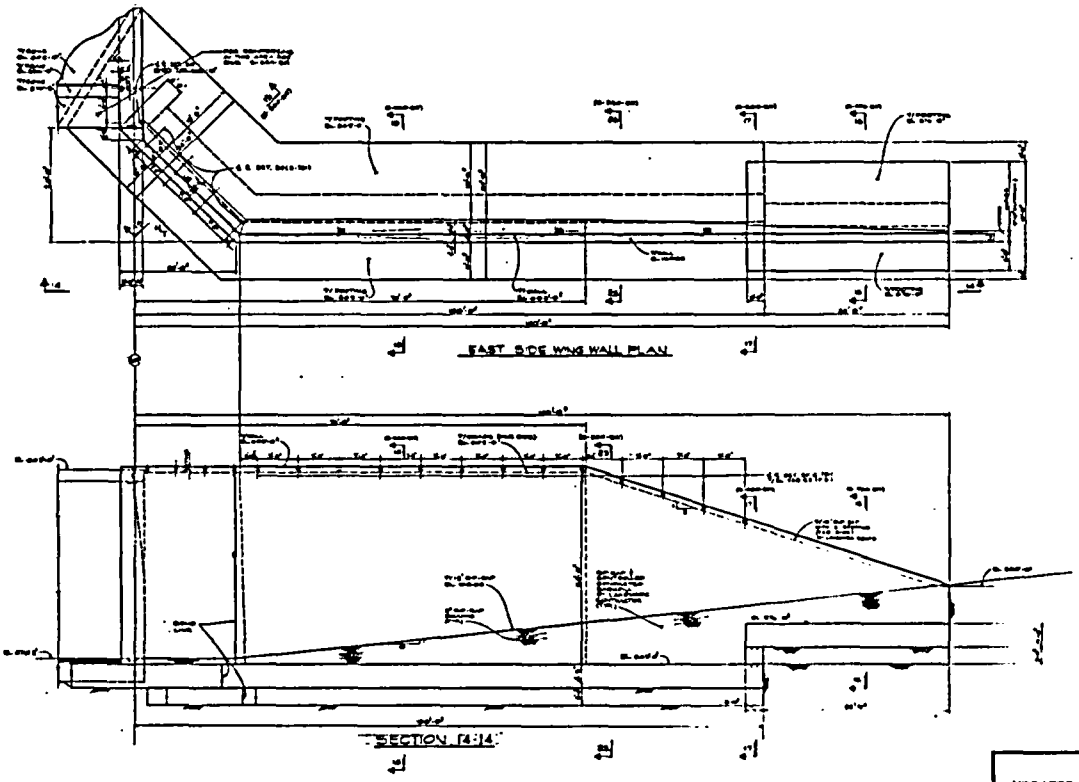
FIGURE 2.5-317

LAKE SCREEN HOUSE WEST WING WALL



BRAIDWOOD STATION
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FIGURE 2.5-318

LAKE SCREEN HOUSE EAST WING WALL

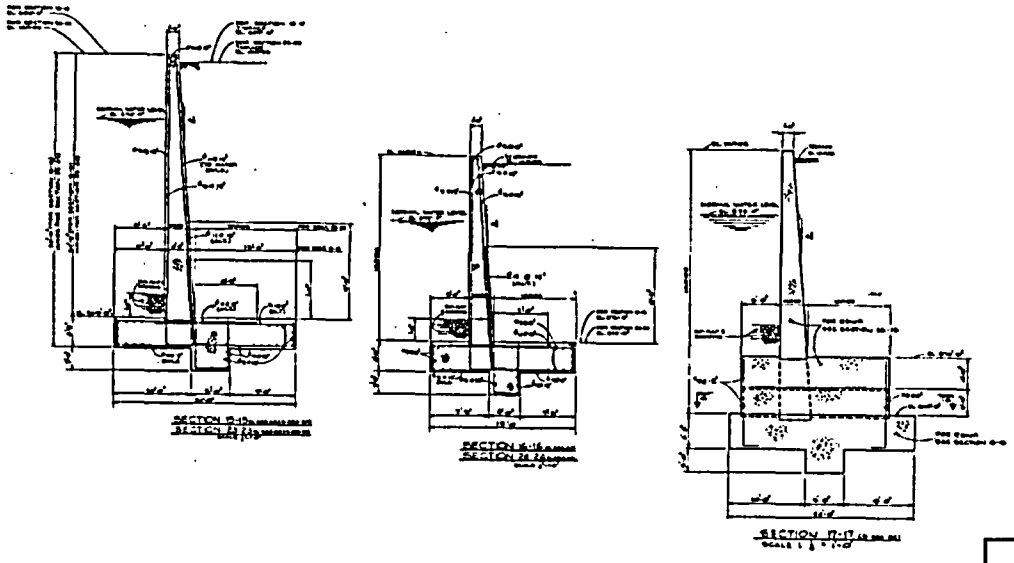

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FIGURE 2.5-319

LAKE SCREEN HOUSE WINGWALL SECTIONS