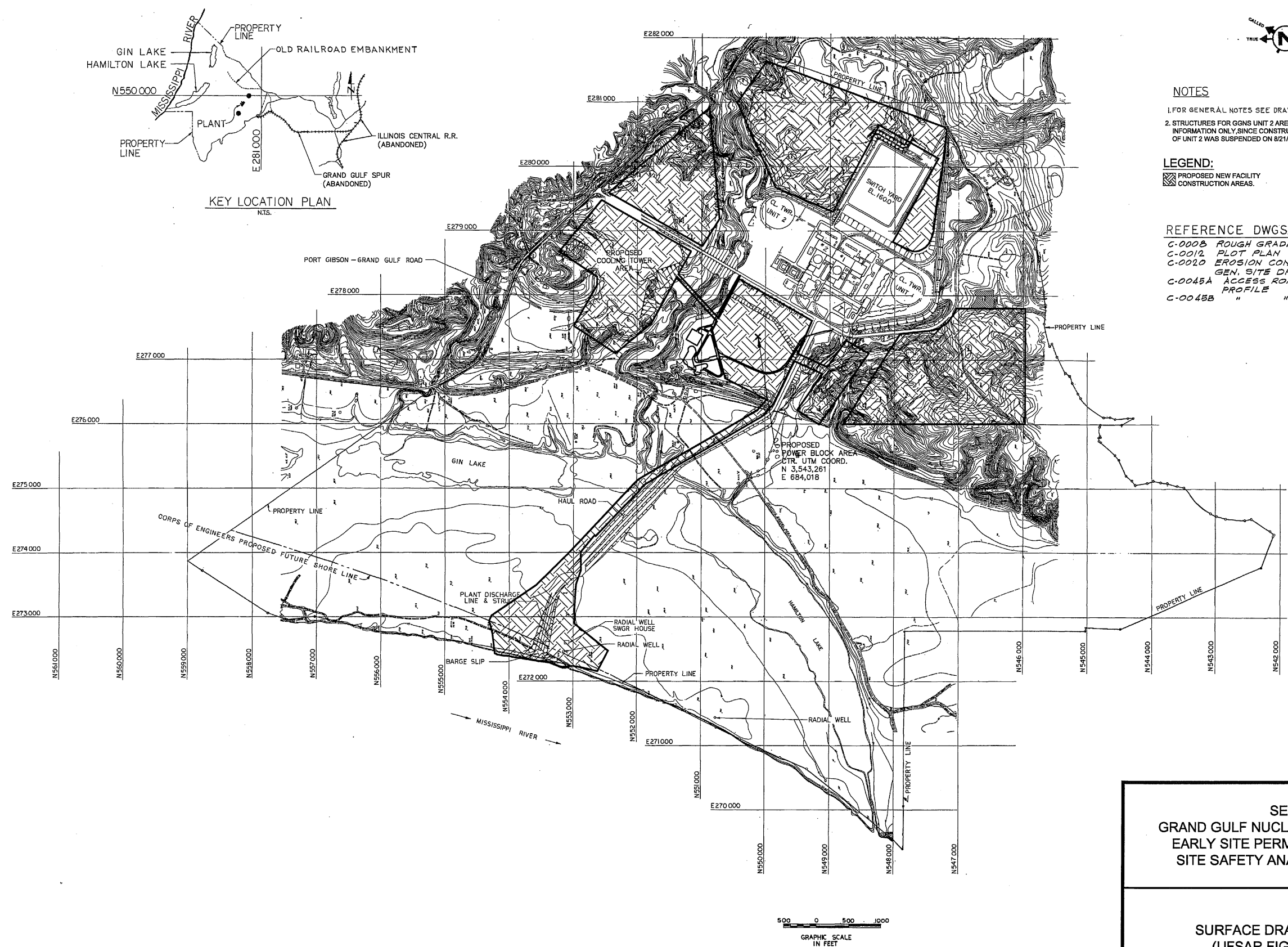
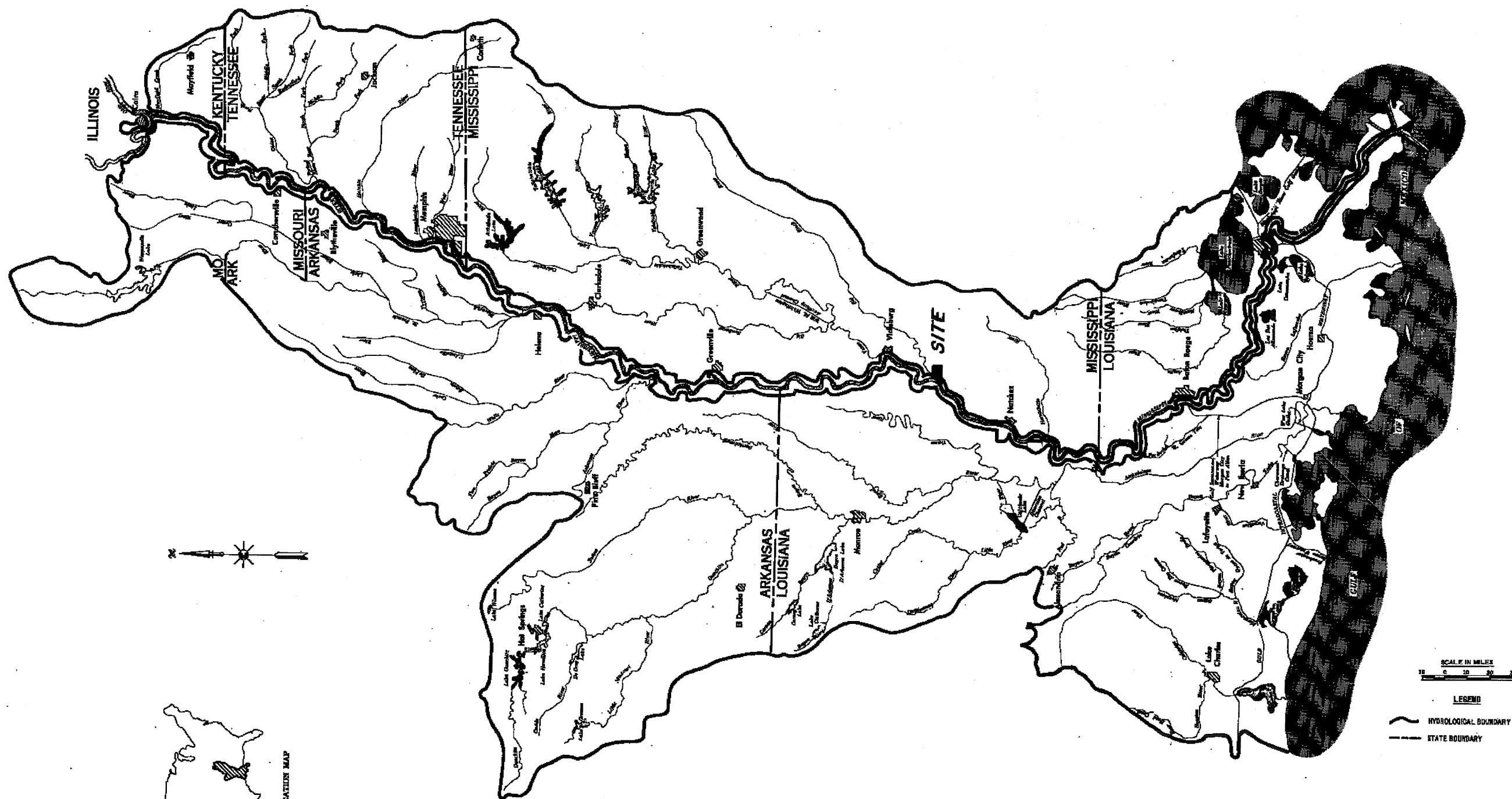






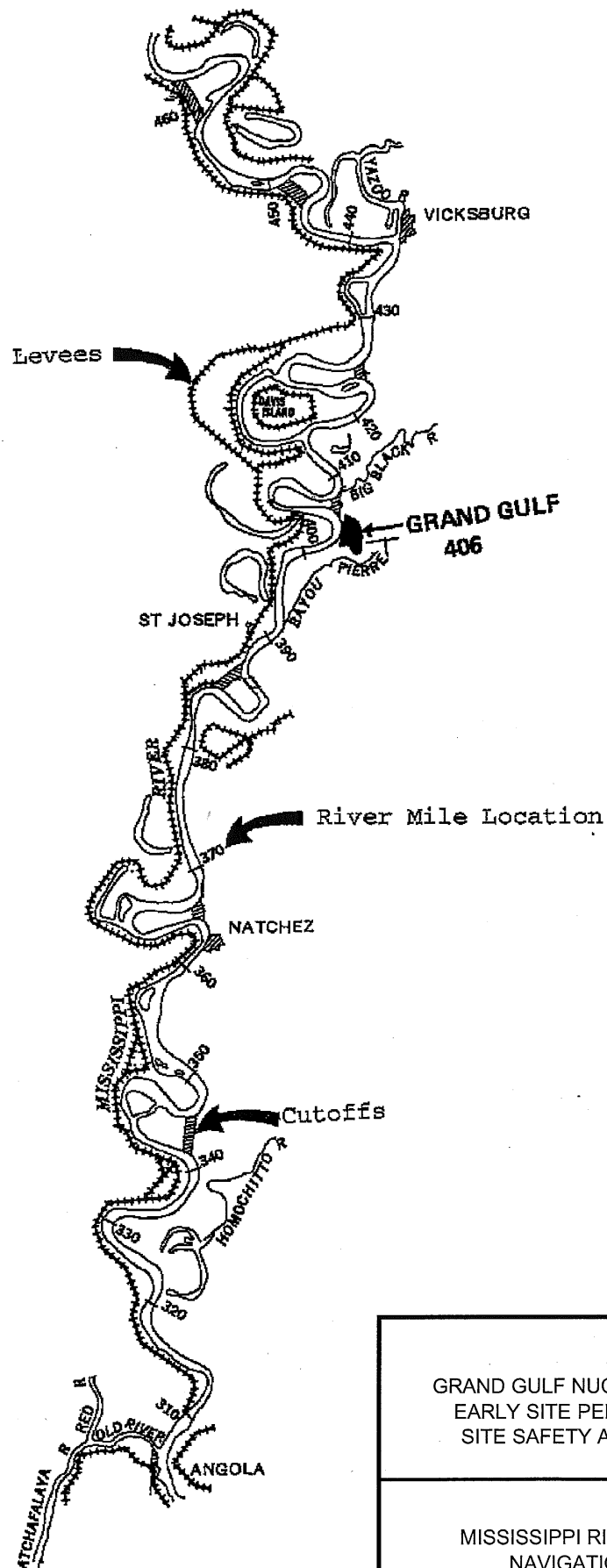
Source: Mississippi River Commission,
 "Lower Mississippi Region
 Comprehensive Study,"
 Appendix C, Figure-1, 1974

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 SITE SAFETY ANALYSIS REPORT

LOWER MISSISSIPPI REGION
 HYDROLOGIC BOUNDARY
 (UFSAR FIGURE 2.4-3)

FIGURE 2.4-3

REV. 1



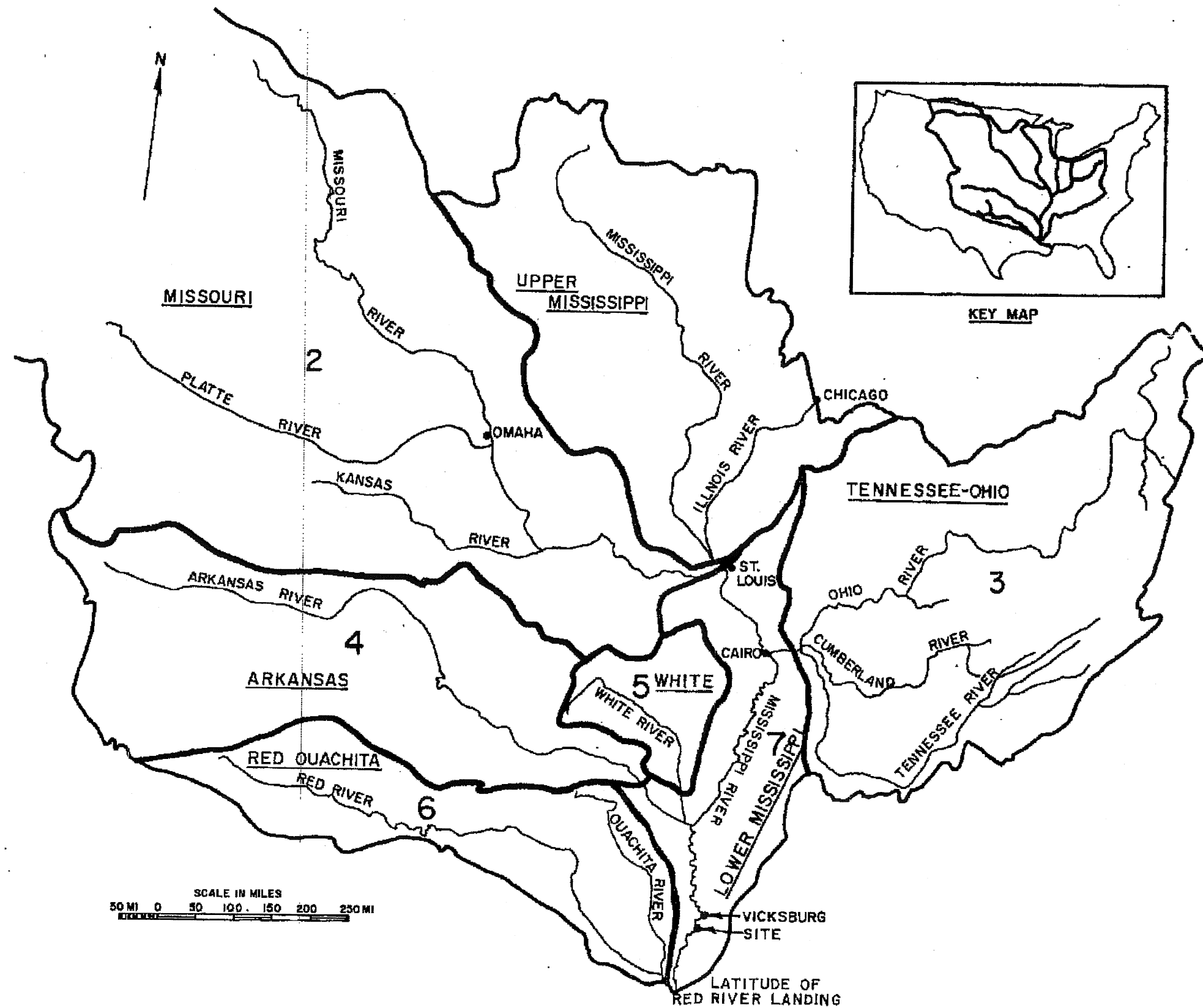
SOURCE: ADAPTED FROM U.S. ARMY CORPS OF ENGINEERS

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SITE SAFETY ANALYSIS REPORT

MISSISSIPPI RIVER LEVEES AND
NAVIGATION CUTOFFS

FIGURE 2.4-3a

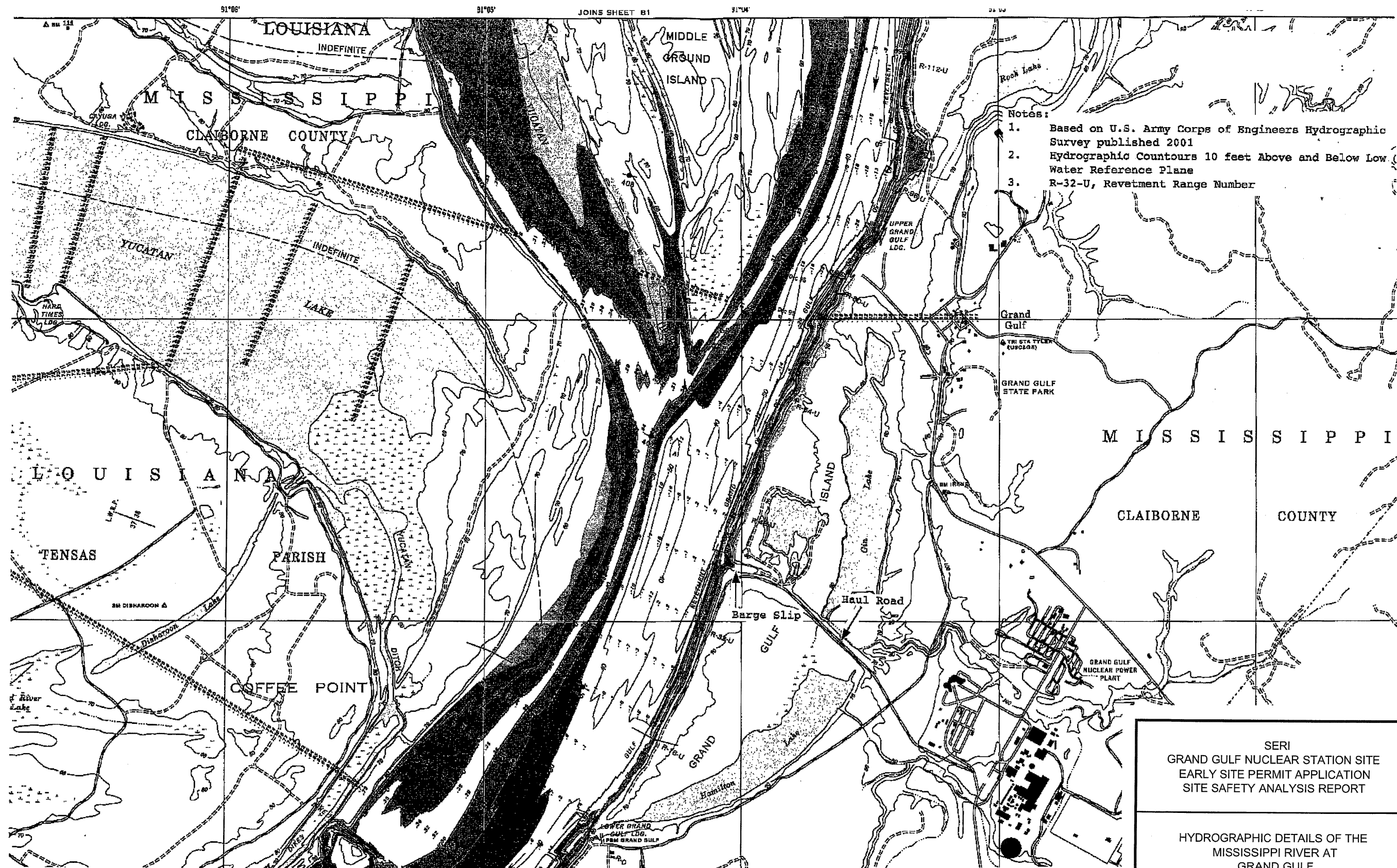
REV. 1



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DRAINAGE AREAS OF THE
 MISSISSIPPI BASIN
 (UFSAR FIGURE 2.4-4)

FIGURE 2.4-4 REV. 1

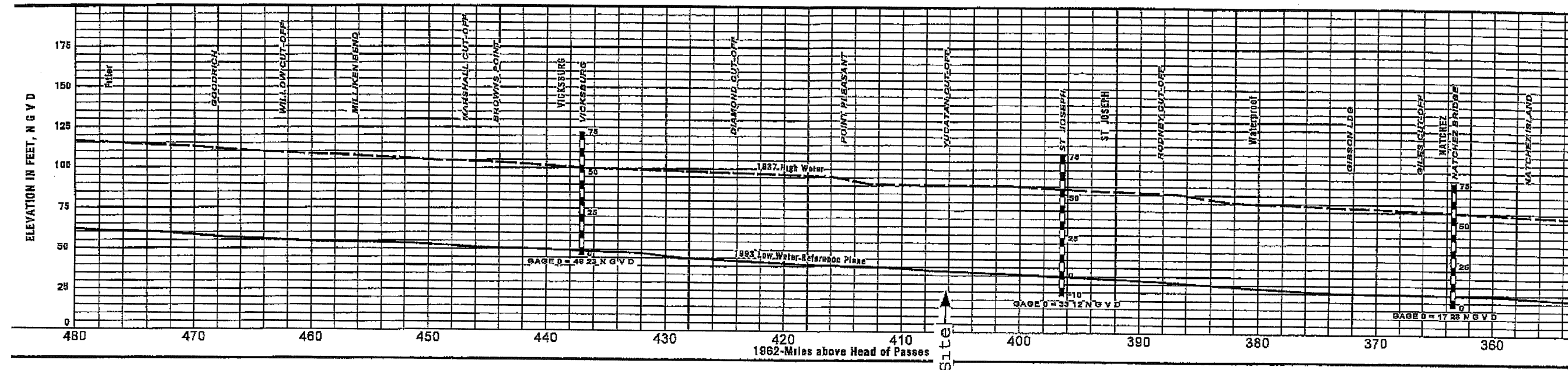


- Notes:
1. Based on U.S. Army Corps of Engineers Hydrographic Survey published 2001
 2. Hydrographic Countours 10 feet Above and Below Low Water Reference Plane
 3. R-32-U, Revetment Range Number

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HYDROGRAPHIC DETAILS OF THE
 MISSISSIPPI RIVER AT
 GRAND GULF

FIGURE 2.4-5 REV. 1



LEGEND

- 430 1962 Mileage above Head of Passes
- Low Water Reference Plane*
- 1937 High Water

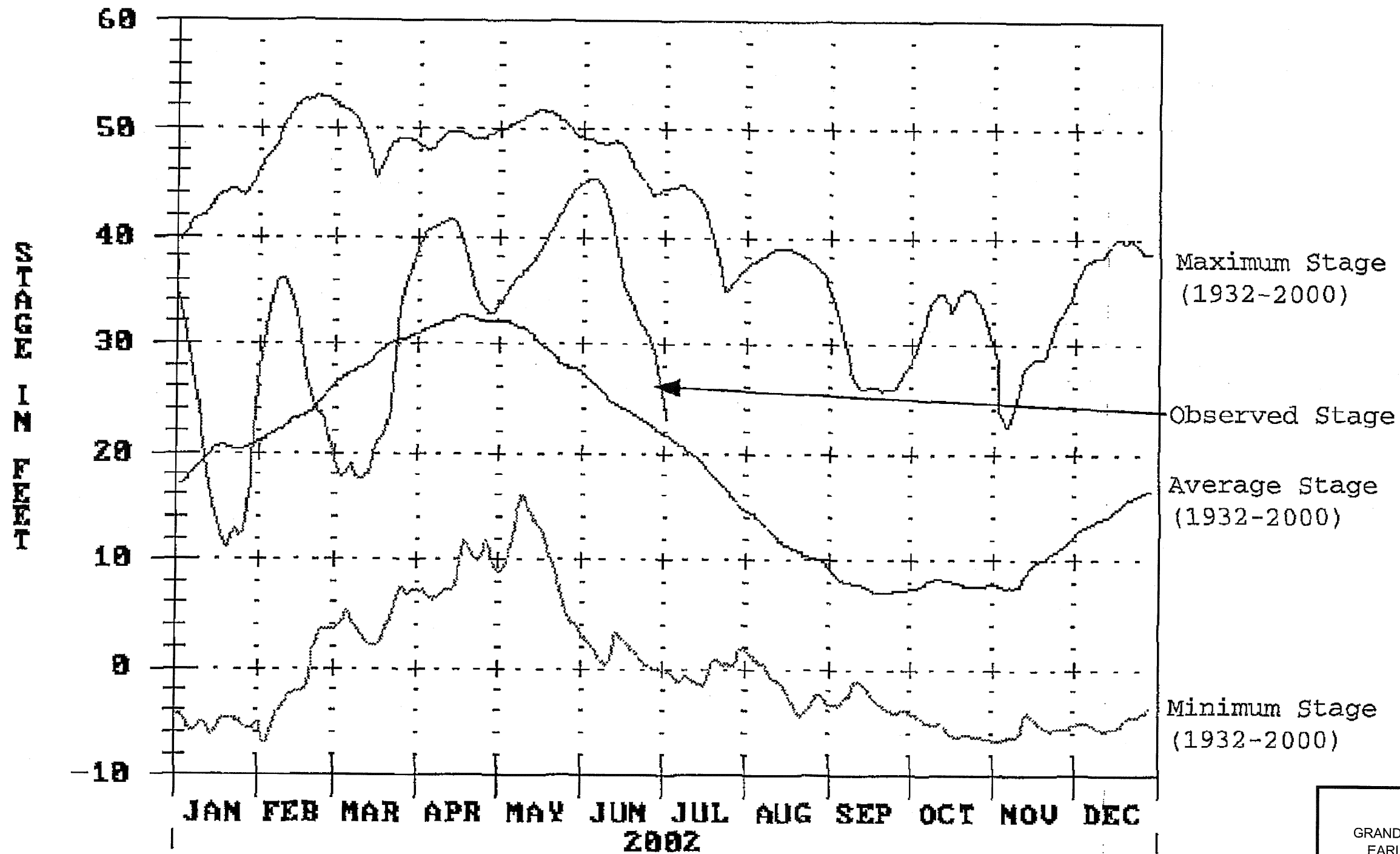
Source: Adapted from USACE, 2001

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WATER SURFACE PROFILES FOR 1937 HIGH
FLOW AND 1993 LOW WATER REFERENCE
PLANE

FIGURE 2.4-6

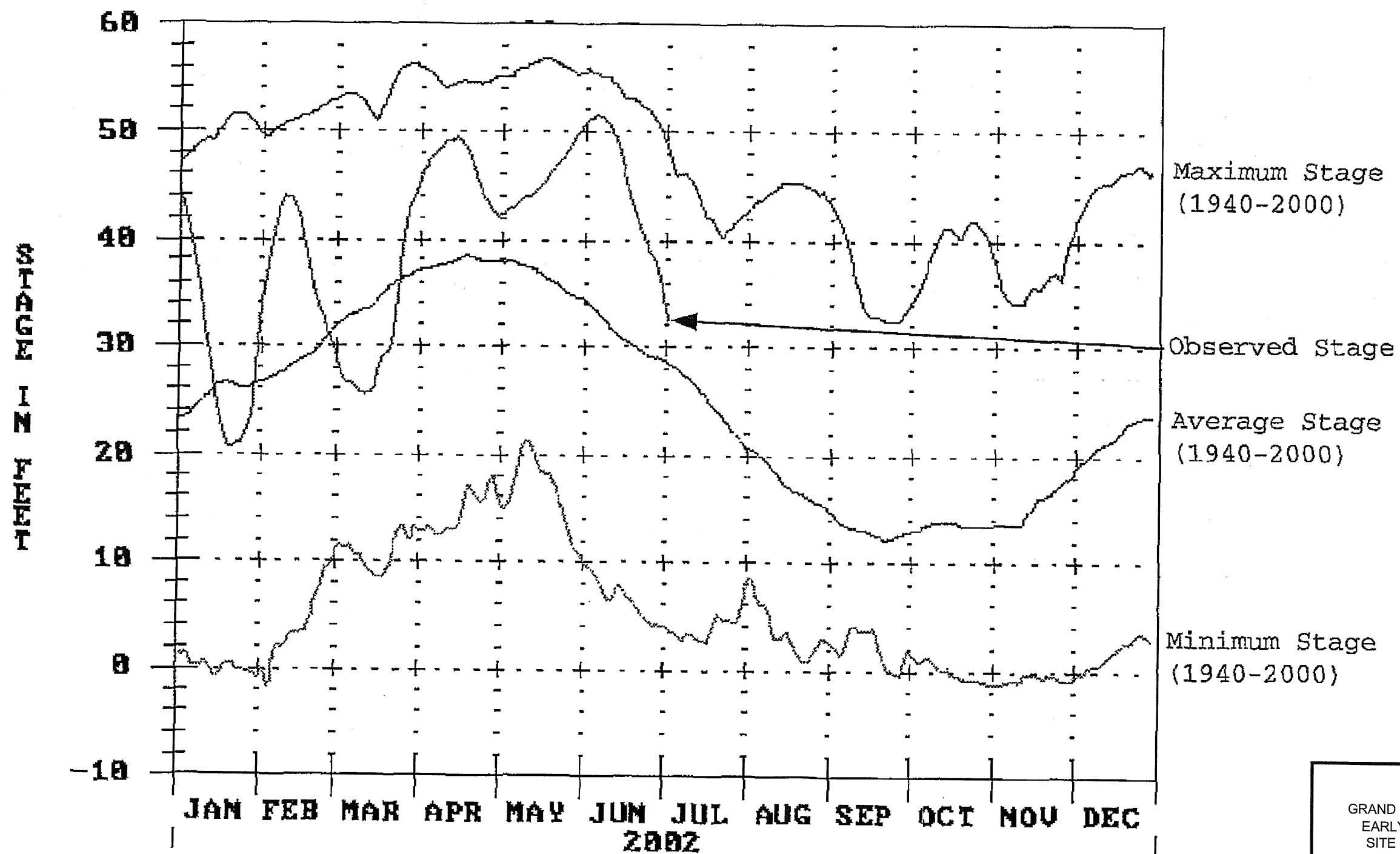
REV. 1



Source: Adapted from U.S. Army Corps of Engineers

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HYDROGRAPH FOR THE MISSISSIPPI
RIVER AT VICKSBURG, MS

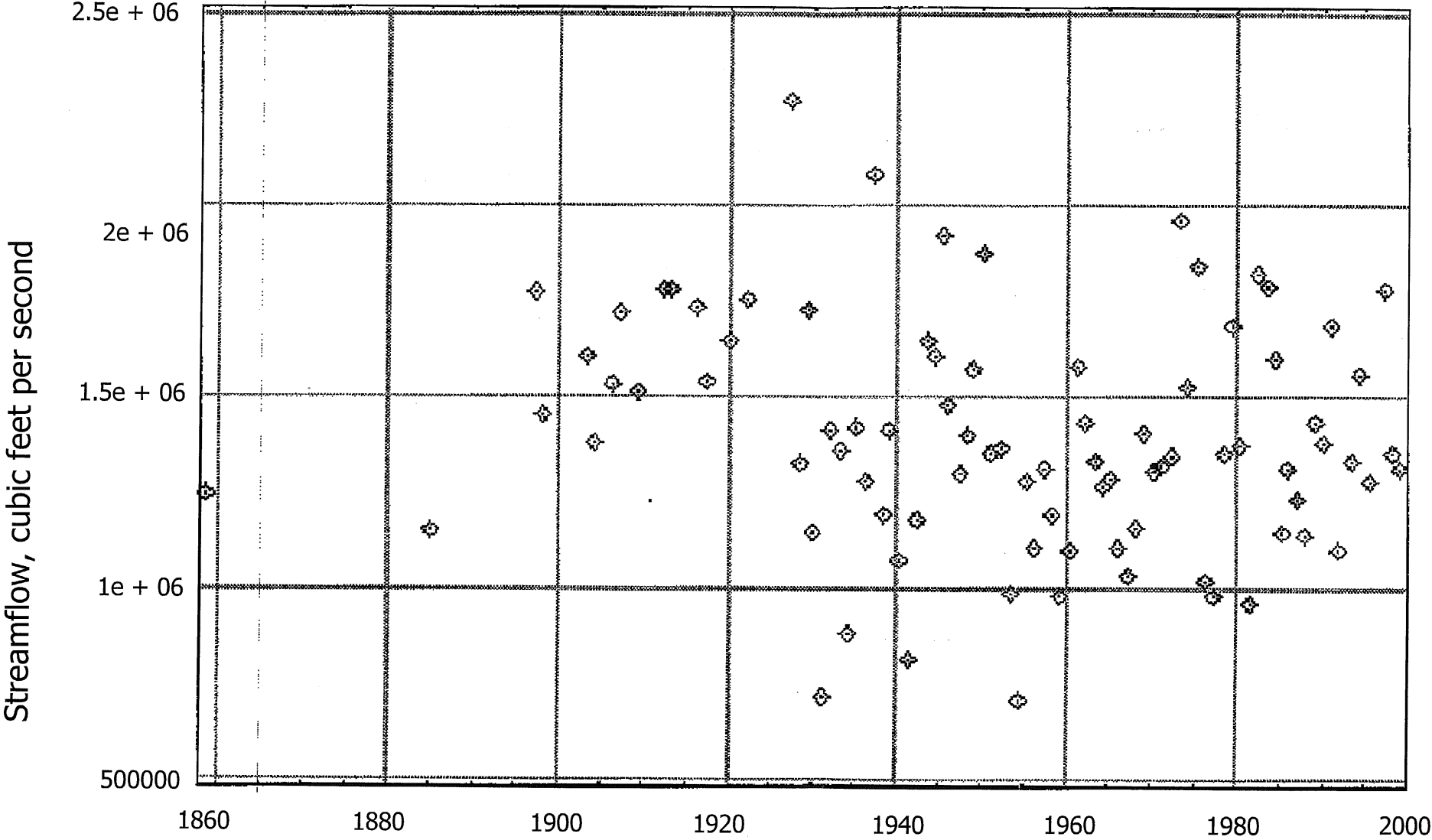


Source: Adapted from U.S. Army Corps of Engineers

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HYDROGRAPH FOR MISSISSIPPI RIVER
AT NATCHEZ, MS

USGS 07289000 MISSISSIPPI RIVER AT VICKSBURG, MS

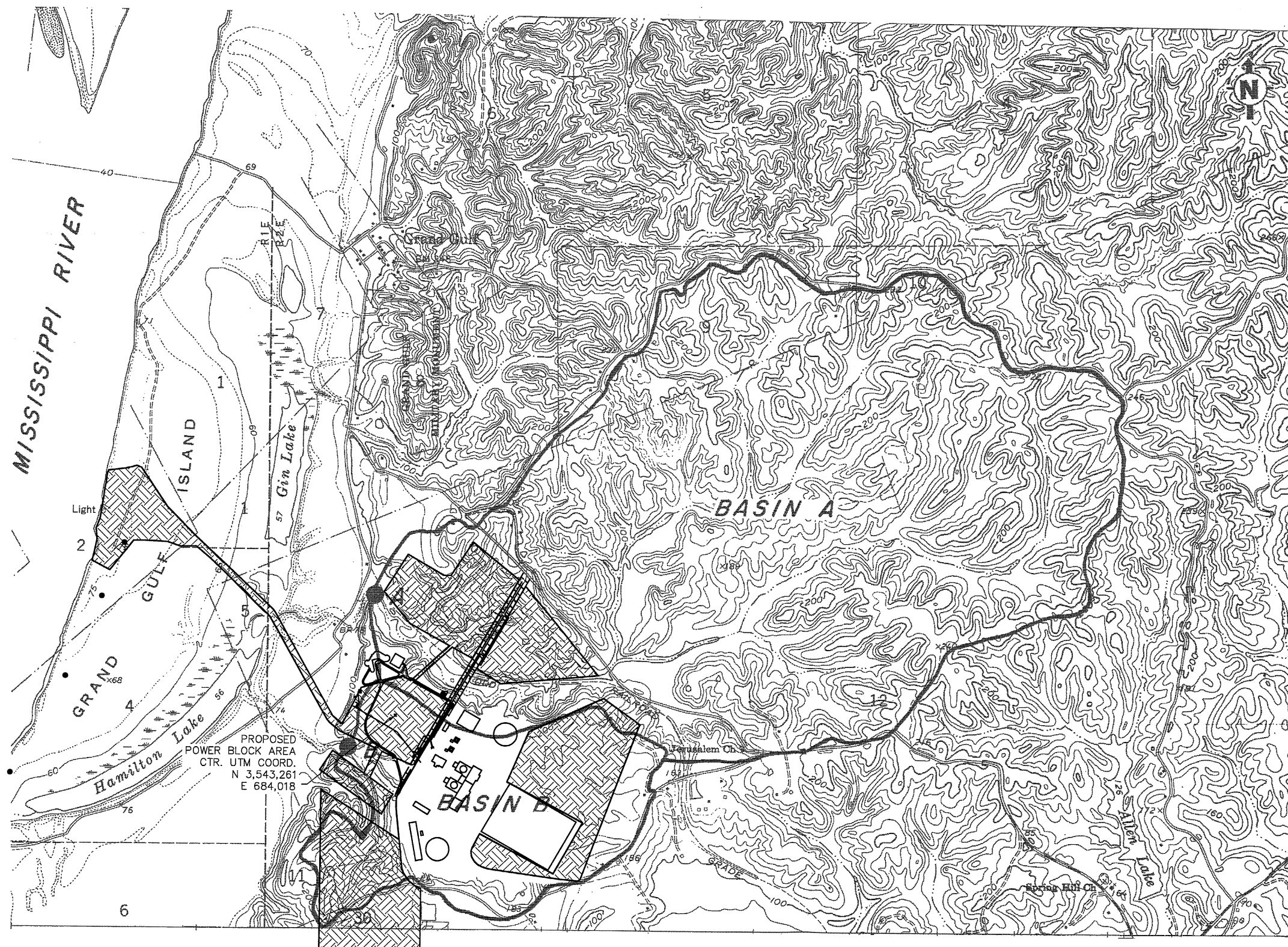


DATES: 06/24/1858 to 02/13/1999

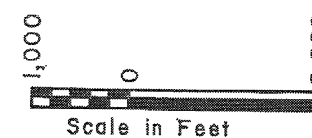
Source: U.S.G.S.

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ANNUAL MAXIMUM INSTANTANEOUS PEAK
STREAMFLOW - MISSISSIPPI RIVER
USGS STATION, VICKSBURG, MS



Adapted from U.S.G.S. 7.5 Minute
Topographic Sheet 1963 Series



NOTES:

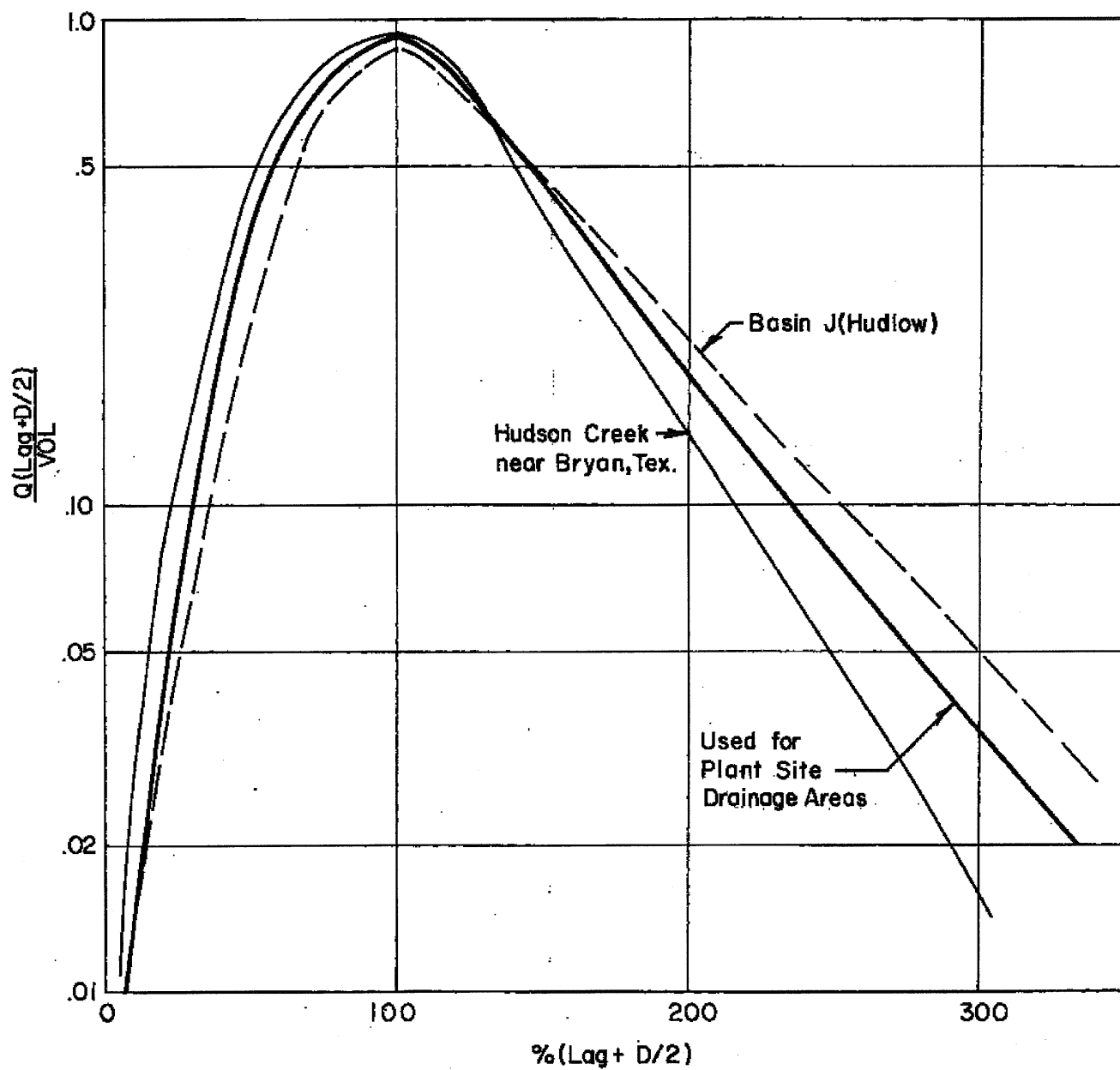
1. GGNS UNIT 1 FACILITIES ADDED FOR REFERENCE.

LEGEND:

- PROPOSED NEW FACILITY CONSTRUCTION AREAS

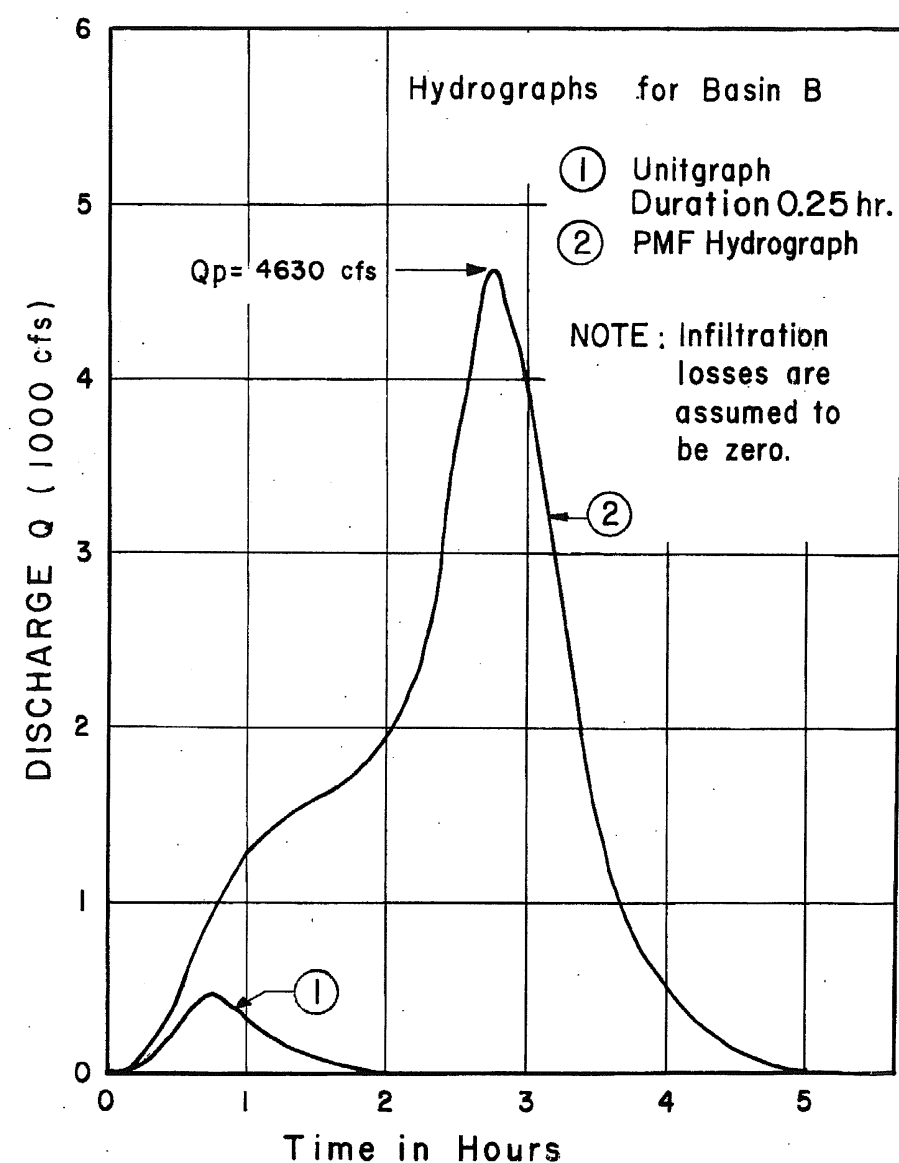
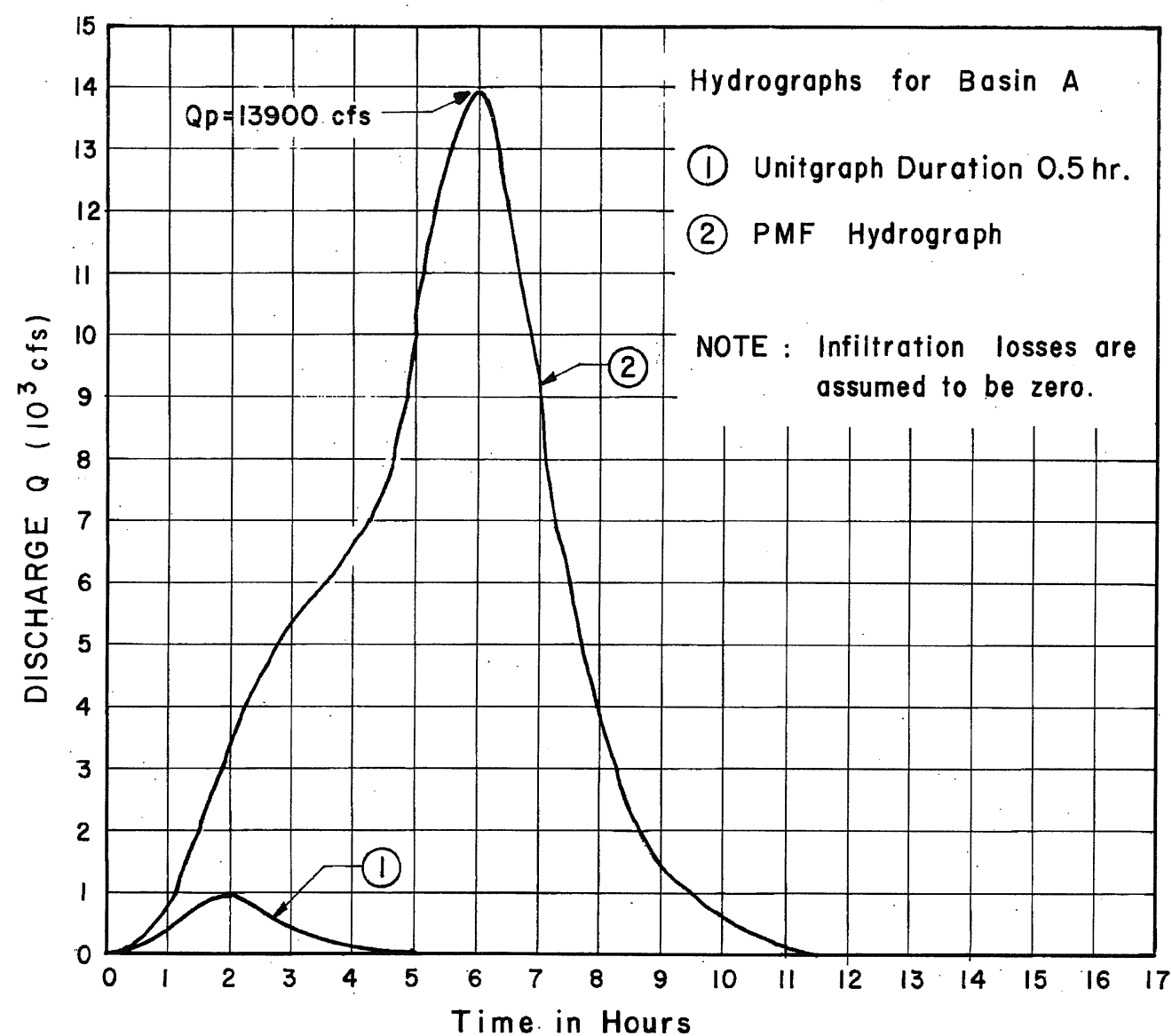
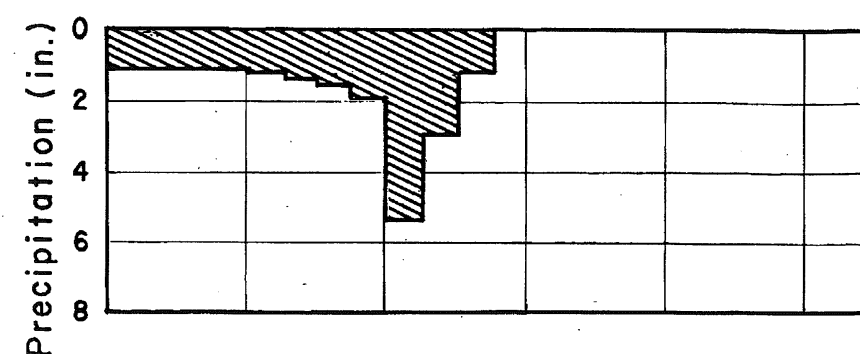
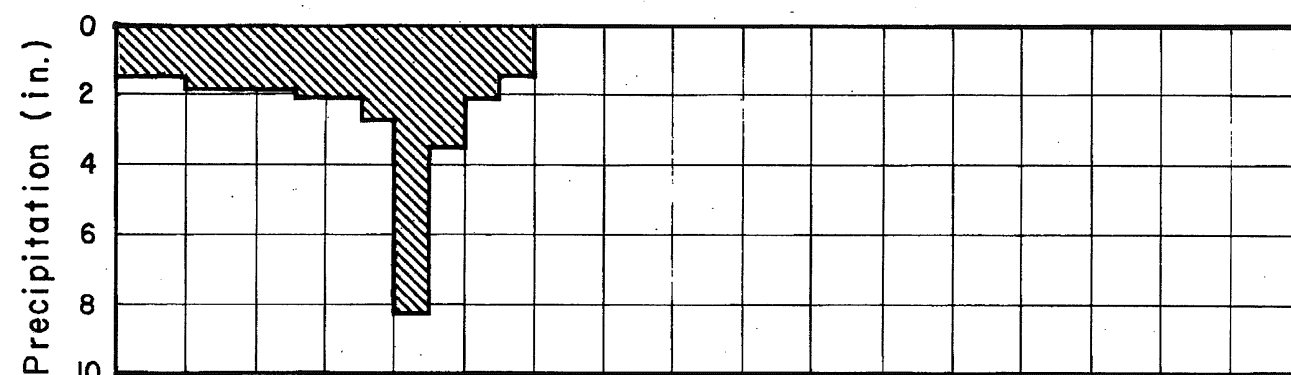
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LOCAL DRAINAGE BASINS
(UFSAR FIGURE 2.4-8)



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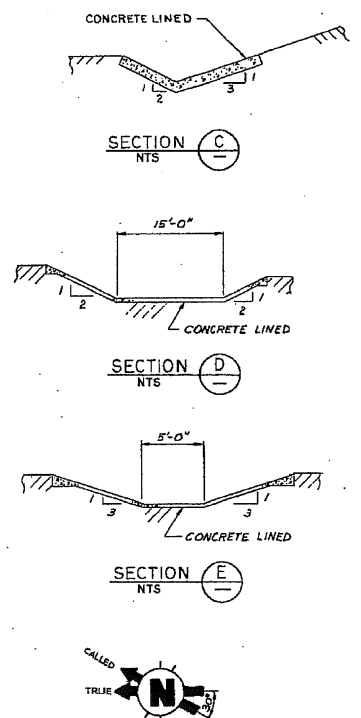
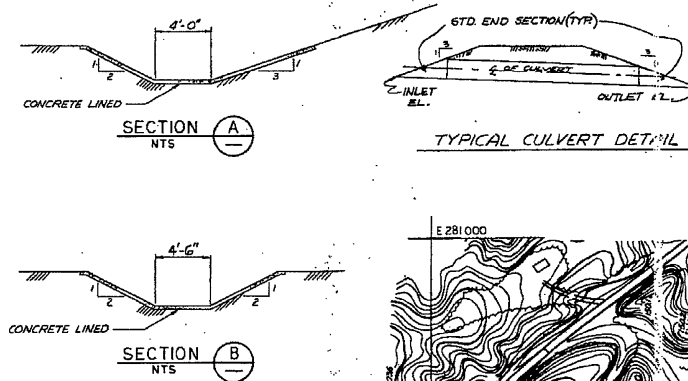
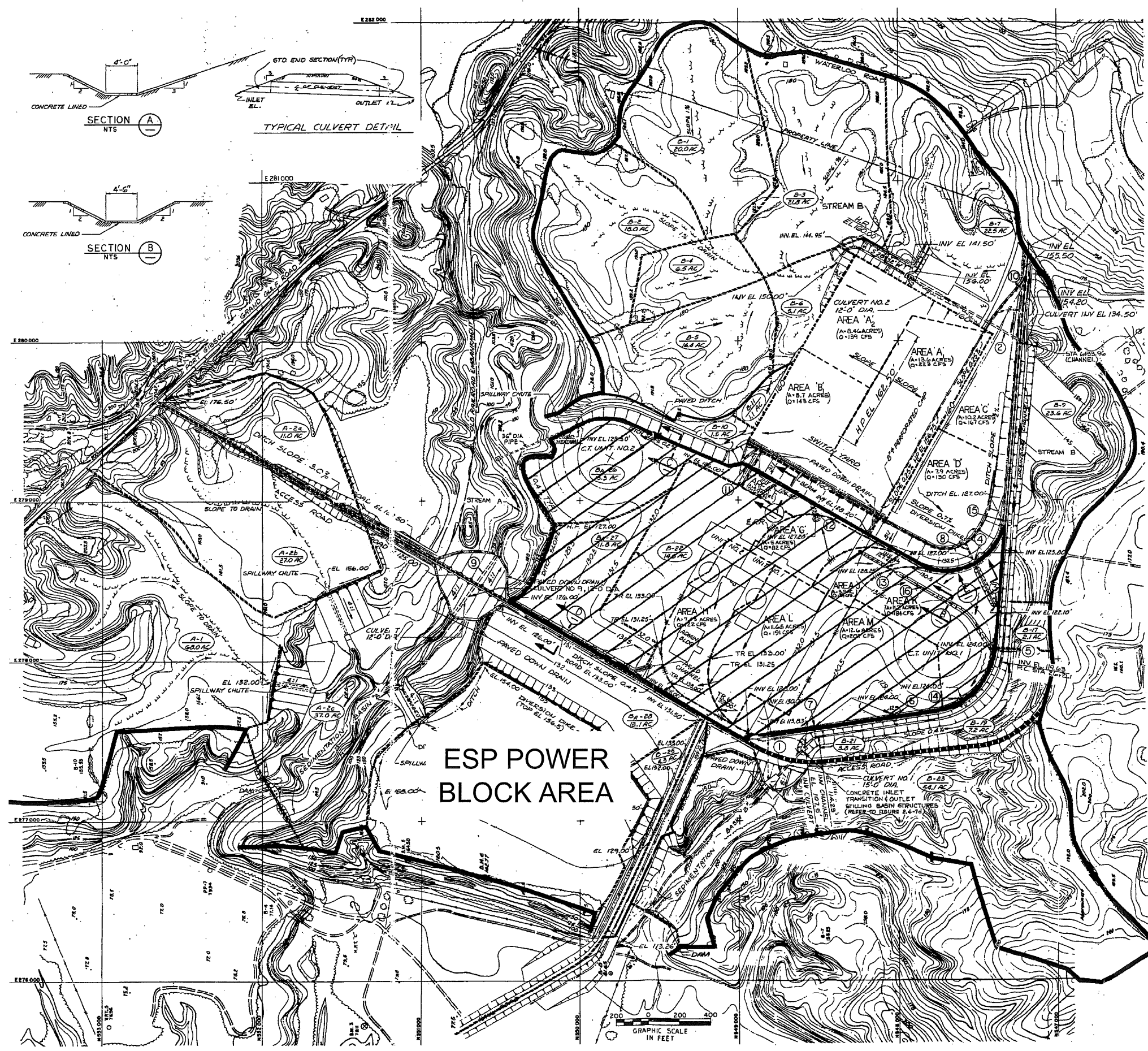
DIMENSIONLESS HYDROGRAPH FOR
THE PLANT SITE DRAINAGE BASINS
(UFSAR FIGURE 2.4-9)



NOTE:
THESE HYDROGRAPHS WERE DEVELOPED
FOR GGNS UNIT 1 USING RAINFALL RATES
FROM HMR 33 AND USACE EM-1110-2-1411
AND ARE PRESENTED FOR INFORMATION
ONLY.

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BASIN A & B
HYDROGRAPHS
(UFSAR FIGURE 2.4-10)



LEGEND:

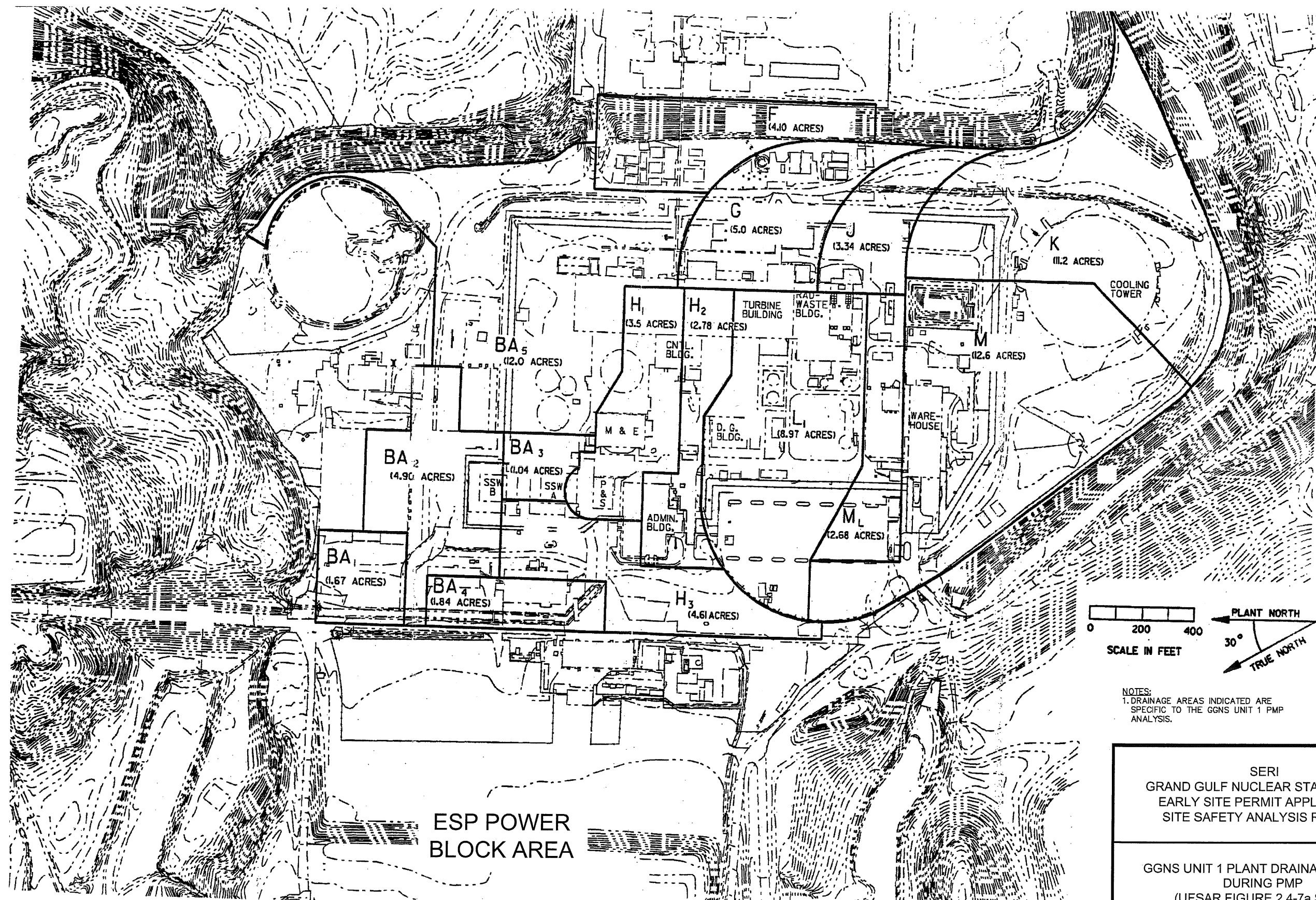
- GRASS LINED DITCHES
- GRASS LINED WATERWAYS
- PAVED DITCHES
- 3' GUNNITE OR 4' CONCRETE SPILLWAY CHUTES (CMP WITH BASIN)
- PAVED DOWN DRAIN
- CULVERTS
- RAILROAD
- CULVERT NUMBER
- SUB AREAS BOUNDARY
- MAIN DRAINAGE AREA BOUNDARY

NOTES:

- FOR DETAILS OF CULVERTS REFER TO TABLE 2.4-12 (UFSAR TABLE 2.4-28).
- FOR DRAINAGE AREA BOUNDARIES IN SHADY AREA, SEE SHEET 2.
- STRUCTURES FOR UNIT 2 ARE FOR INFORMATION ONLY, SINCE CONSTRUCTION OF UNIT 2 WAS SUSPENDED ON 8/21/81.
- RAILROAD DATA AND LOCATIONS ARE FOR INFORMATION ONLY TO IDENTIFY LOCATION OF ORIGINAL RR BED. MOST OF THE RR HAS BEEN REMOVED.
- DRAINAGE AREAS & FLOW RATES (Q) INDICATED ARE SPECIFIC TO GONS UNIT 1 PMP ANALYSIS.

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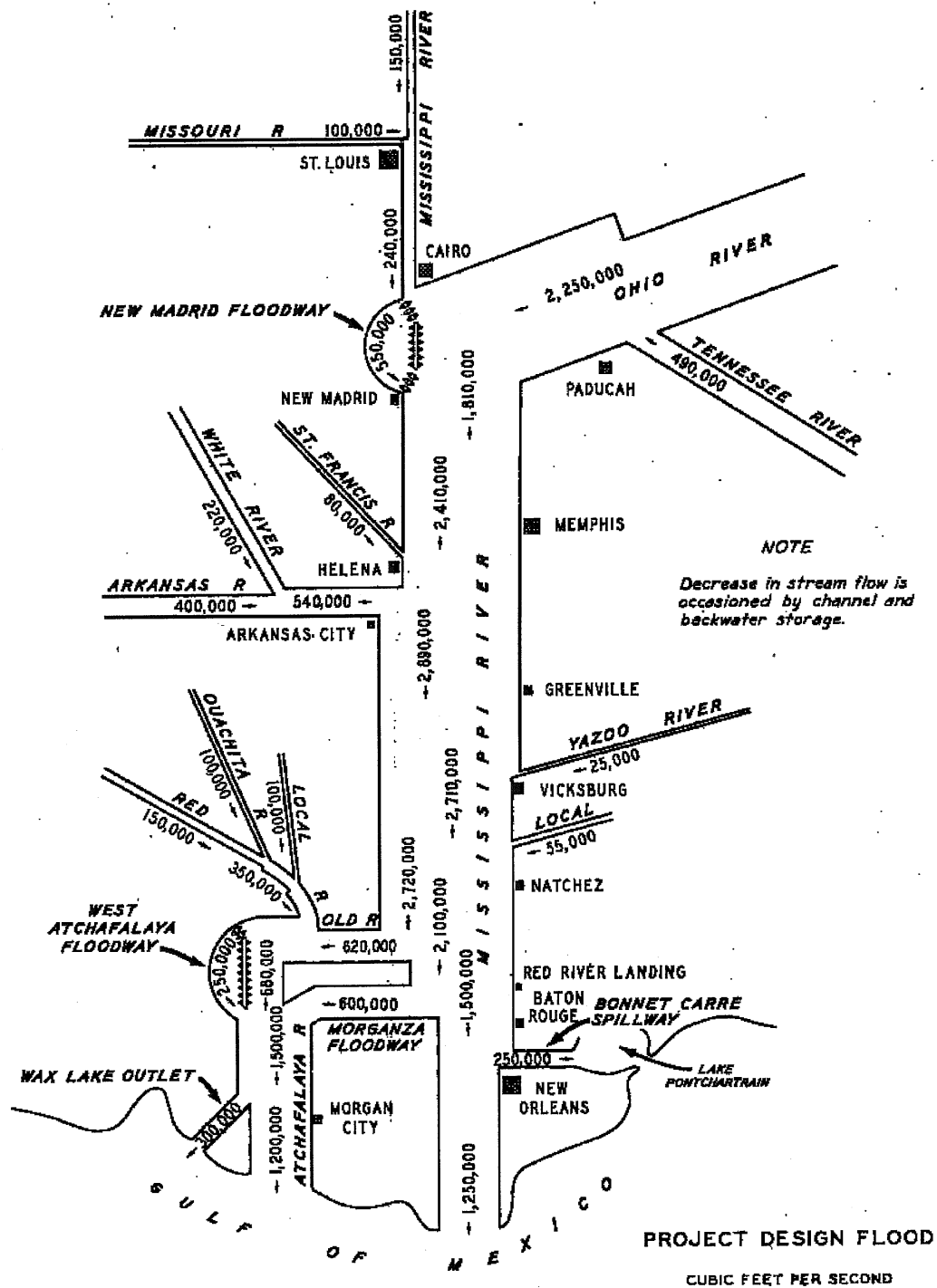
GGNS UNIT 1 PLANT DRAINAGE AREAS
DURING PMP
(UFSAR FIGURE 2.4-7a SH. 1)



NOTES:
1. DRAINAGE AREAS INDICATED ARE
SPECIFIC TO THE GGNS UNIT 1 PMP
ANALYSIS.

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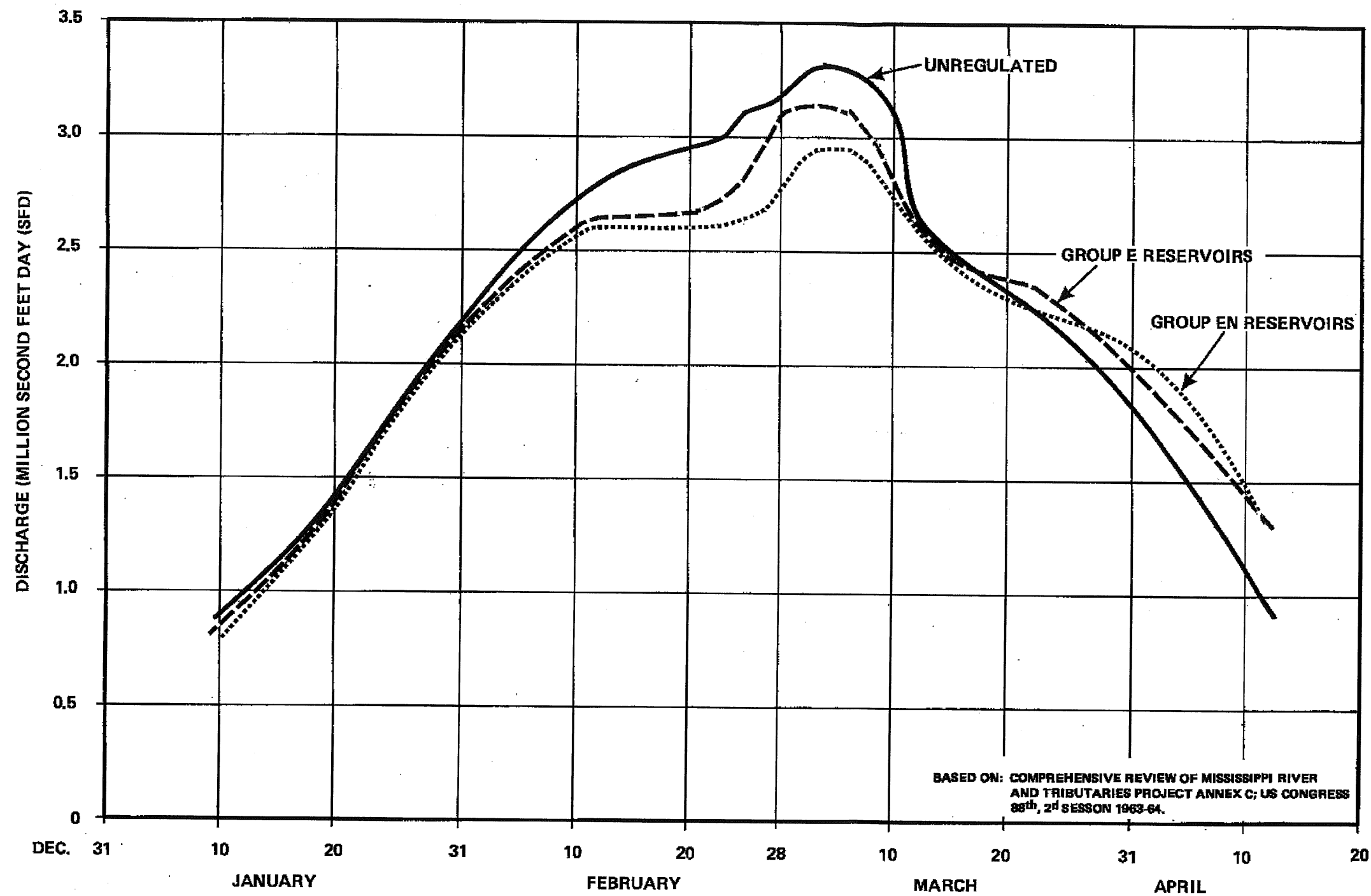
GGNS UNIT 1 PLANT DRAINAGE AREAS
DURING PMP
(UFSAR FIGURE 2.4-7a SH. 2)



SOURCE: MISSISSIPPI RIVER COMMISSION,
"LOWER MISSISSIPPI REGION
COMPREHENSIVE STUDY," APPENDIX C,
FIGURE-69, 1974

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DESIGN-PROJECT FLOOD FOR THE
LOWER MISSISSIPPI RIVER
U.S. CORPS OF ENGINEERS 1958
(UFSAR FIGURE 2.4-11)

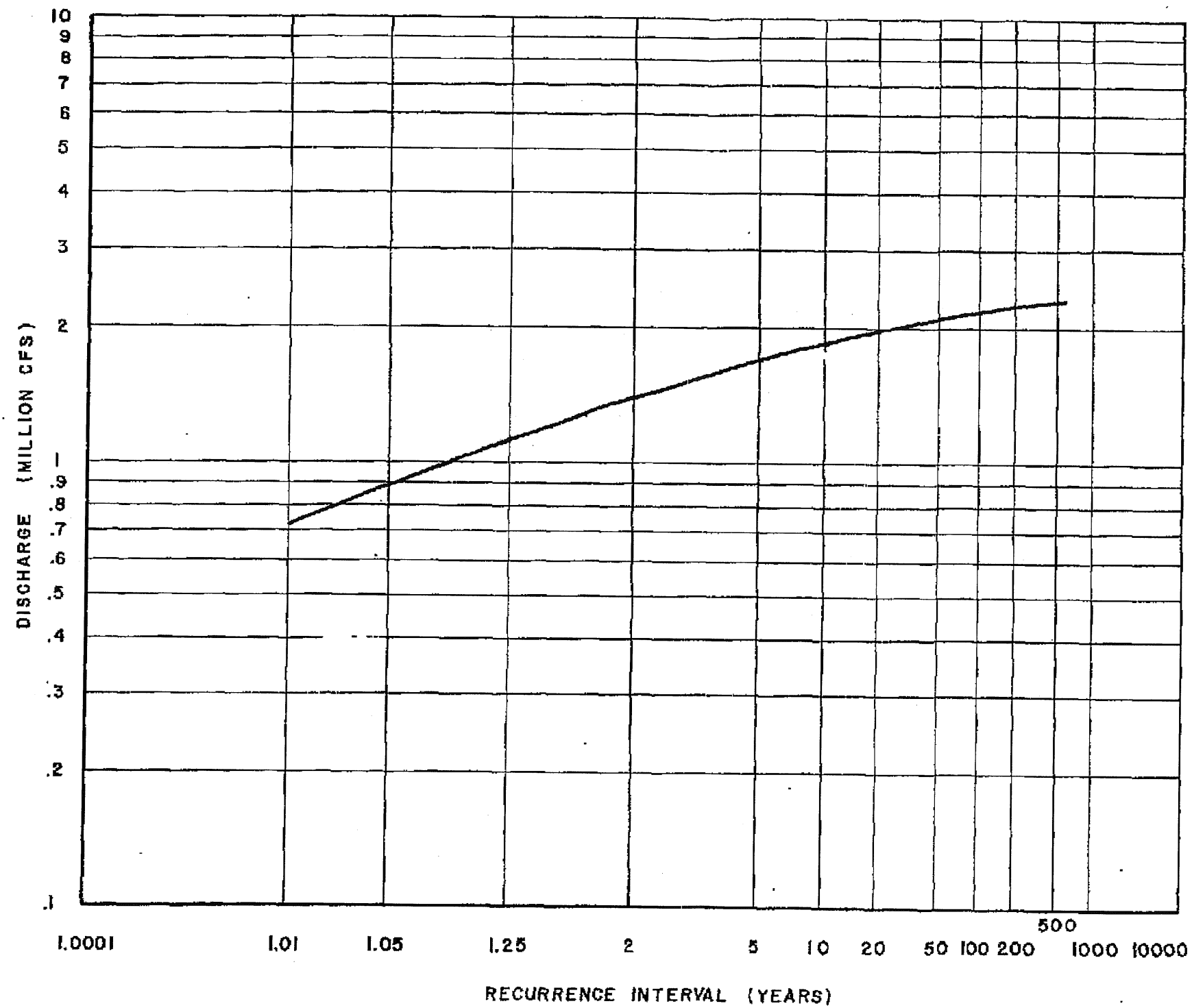


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DPF HYDROGRAPHS FOR
MISSISSIPPI RIVER
(UFSAR FIGURE 2.4-12)

FIGURE 2.4-15

REV. 1



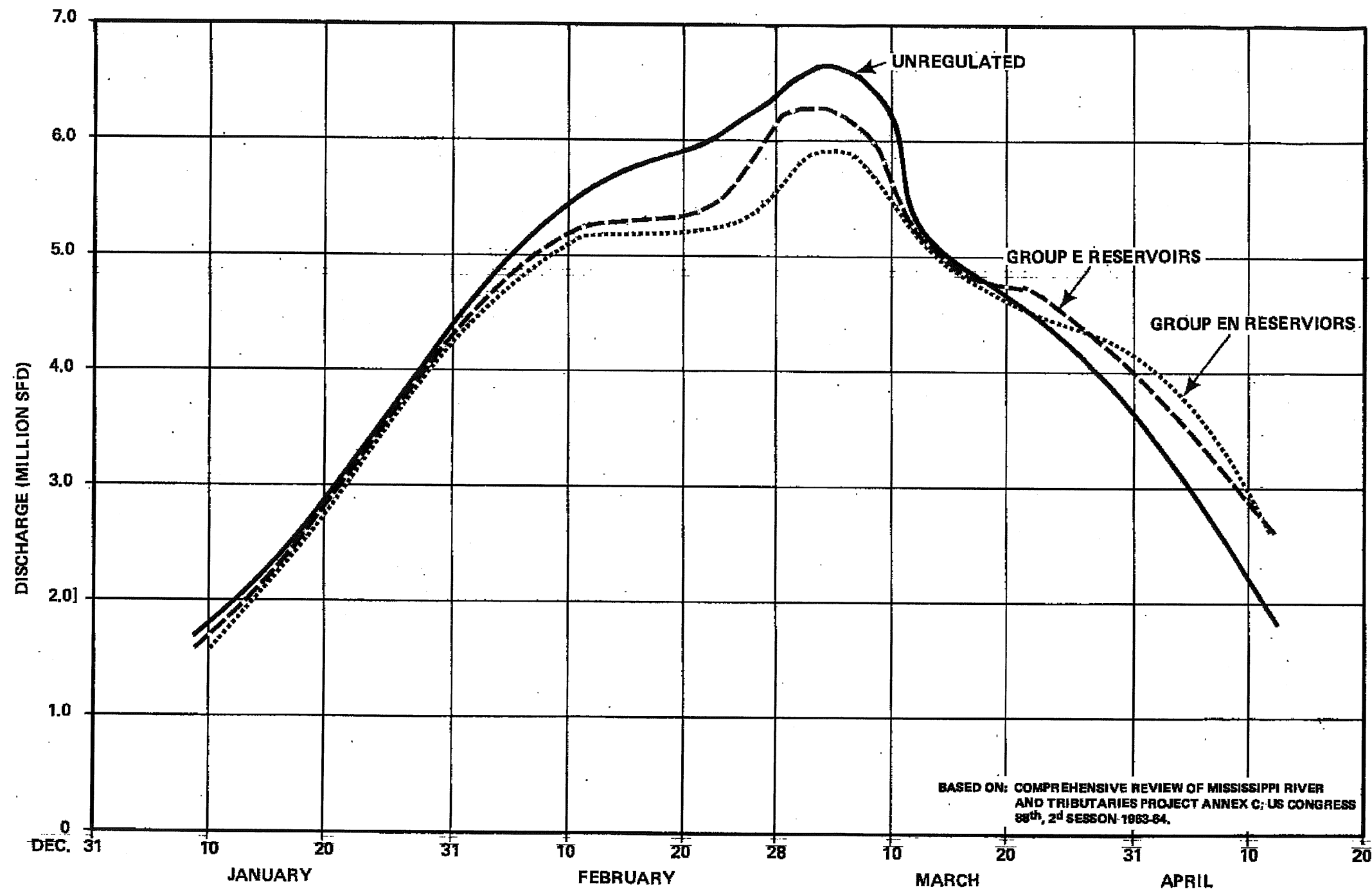
SOURCE: U.S.G.S.
PERIOD OF RECORD: 1858 - 1973

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SITE SAFETY ANALYSIS REPORT

DISCHARGE-FREQUENCY RELATIONSHIP
FOR MISSISSIPPI RIVER FLOODS AT
VICKSBURG
(UFSAR FIGURE 2.4-13)

FIGURE 2.4-16

REV. 1

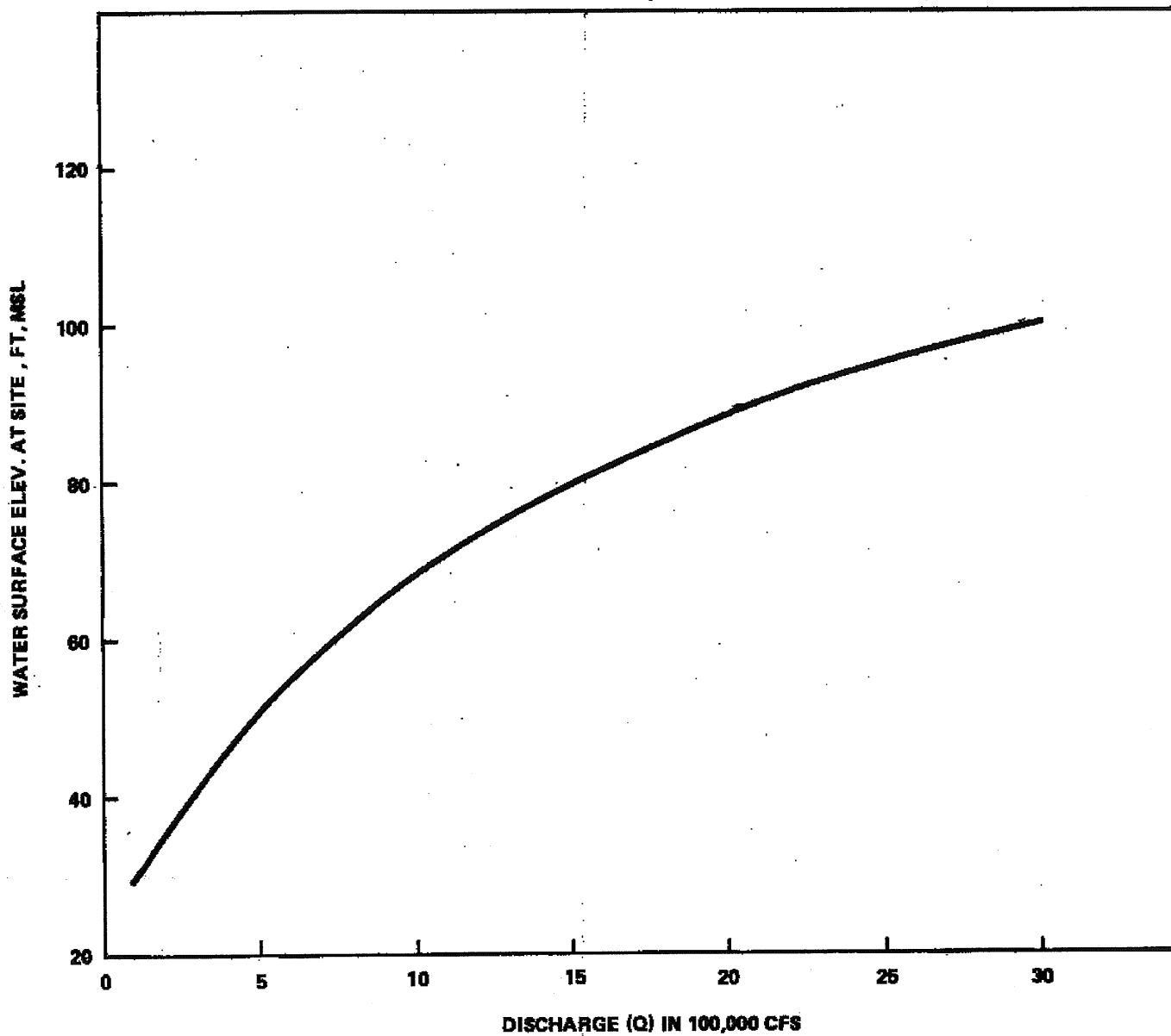


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PMF HYDROGRAPHS FOR
MISSISSIPPI RIVER
(UFSAR FIGURE 2.4-14)

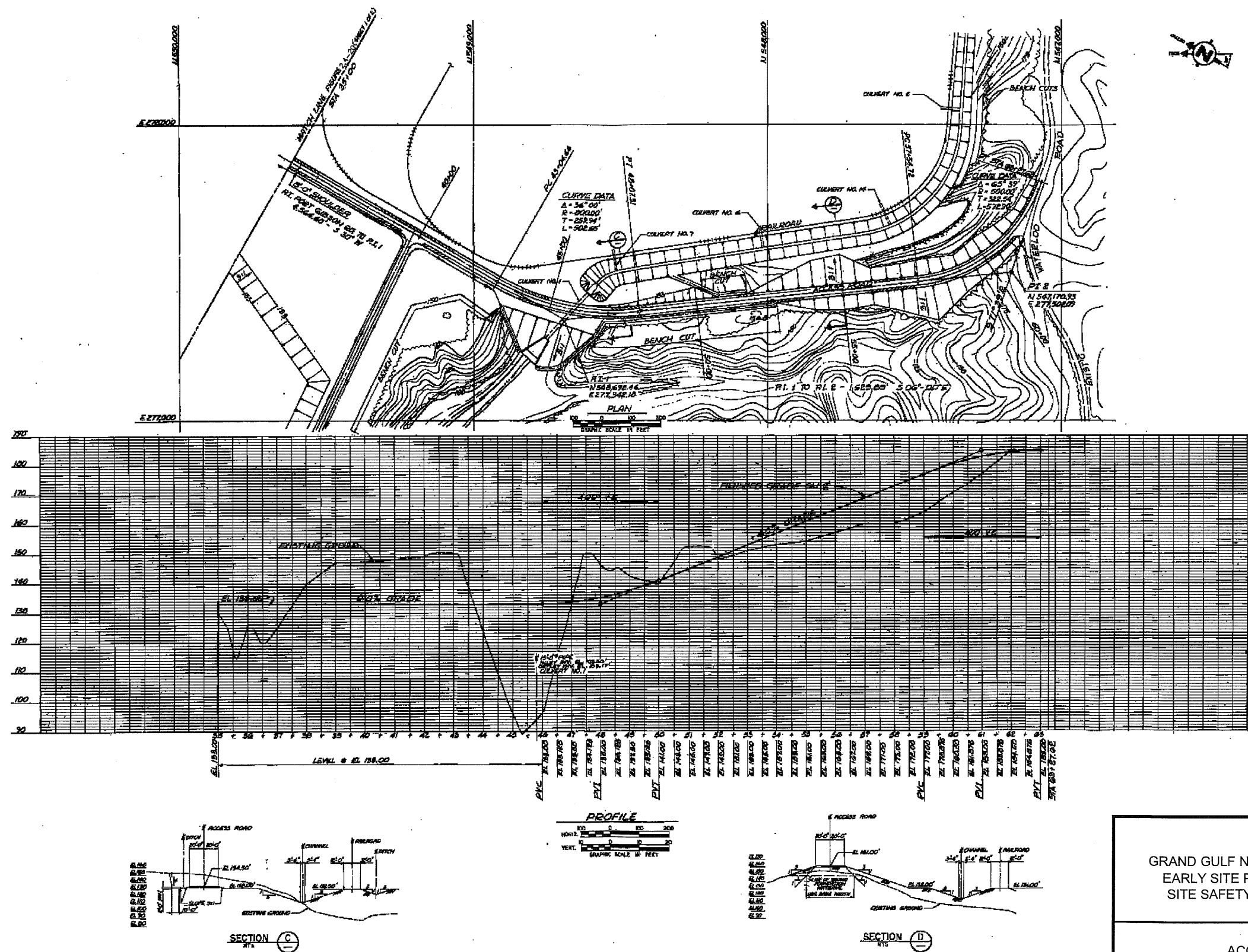
FIGURE 2.4-17

REV. 1



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EARLY SITE PERMIT APPLICATION
SITE SAFETY ANALYSIS REPORT

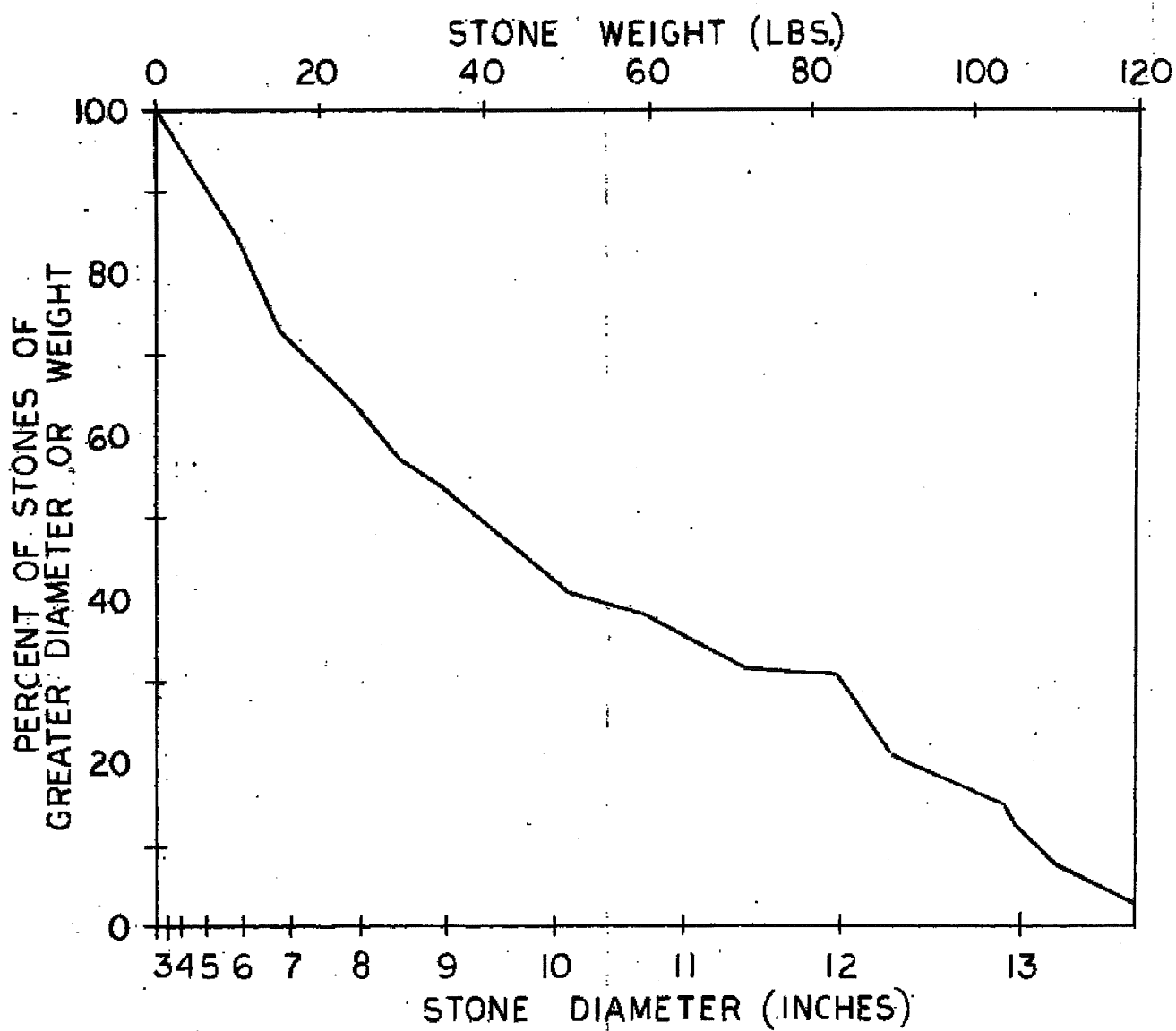
RATING CURVE FOR THE MISSISSIPPI
RIVER AT GRAND GULF SITE
(UFSAR FIGURE 2.4-15)



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GRAND GULF NUCLEAR STATION SITE
EARLY SITE PERMIT APPLICATION
SITE SAFETY ANALYSIS REPORT

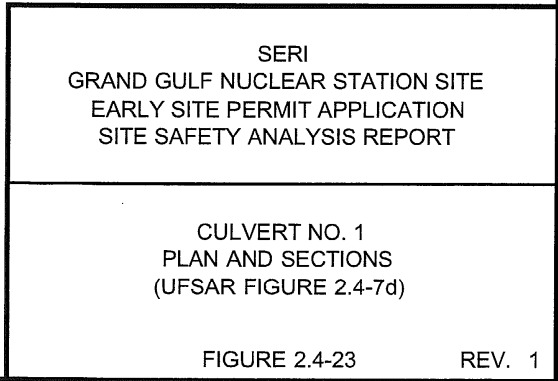
ACCESS ROAD
PLAN AND PROFILE
(UFSAR FIGURE 2.4-7b SH. 2)

FIGURE 2.4-20 SHEET 2 OF 2 REV. 1

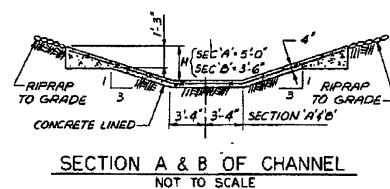
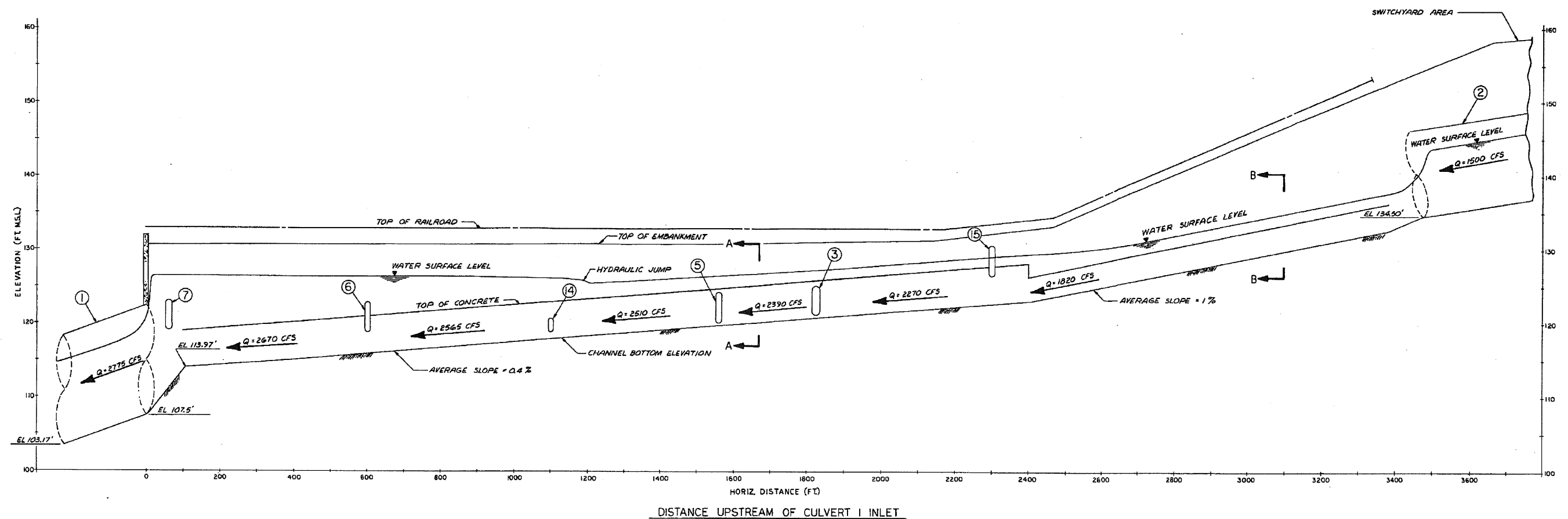


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RIPRAP GRADATION CURVE
(USAR FIGURE 2.4-16a)



CULVERT NO. 1
PLAN AND SECTIONS
(UFSAR FIGURE 2.4-7d)



5
REPRESENTS CULVERT LOCATION

NOTES:

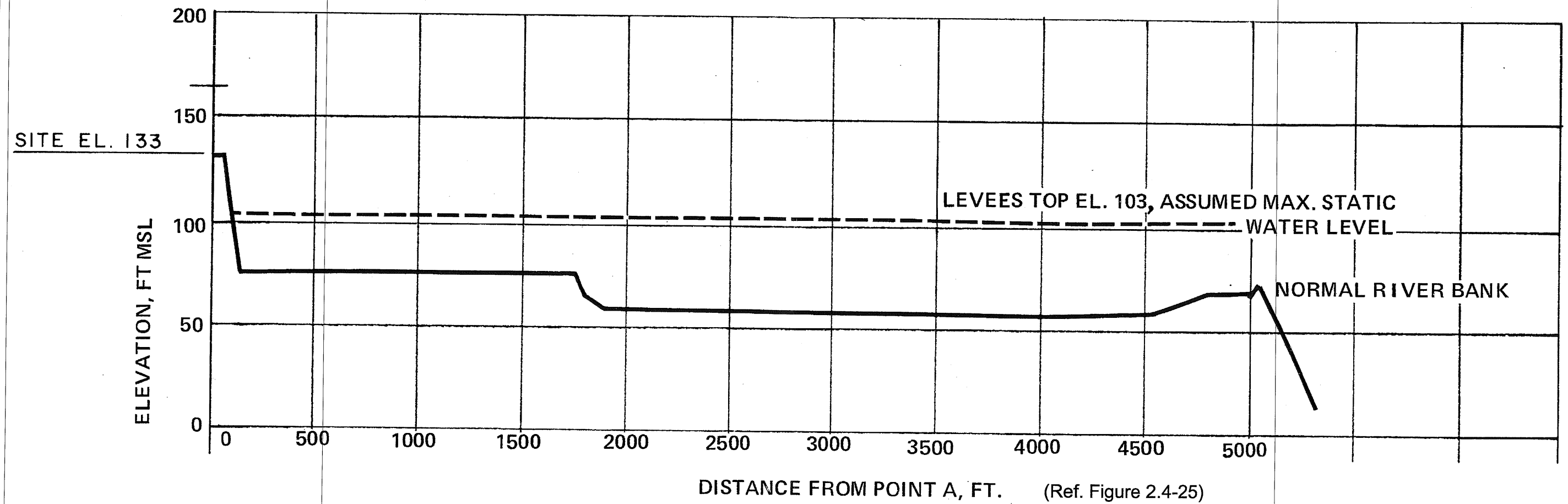
1. FOR DETAIL OF CULVERTS REFER TO TABLE 2.4-12 (GGNS UFSAR TABLE 2.4-28).
2. FOR PLAN OF PERIPHERAL DRAINAGE DITCH OF BASIN B REFER TO FIGURES 2.4-13 & 2.4-18 (GGNS UFSAR FIGURE 2.4-7 & 2.4-7A).
3. FLOW RATES (Q) SHOWN ARE FOR GGNS UNIT 1 PMP ANALYSIS ONLY.

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SITE SAFETY ANALYSIS REPORT

PROFILE AND SECTIONS
OF PERIPHERAL DRAINAGE
FOR BASIN B
(UFSAR FIGURE 2.4-16)

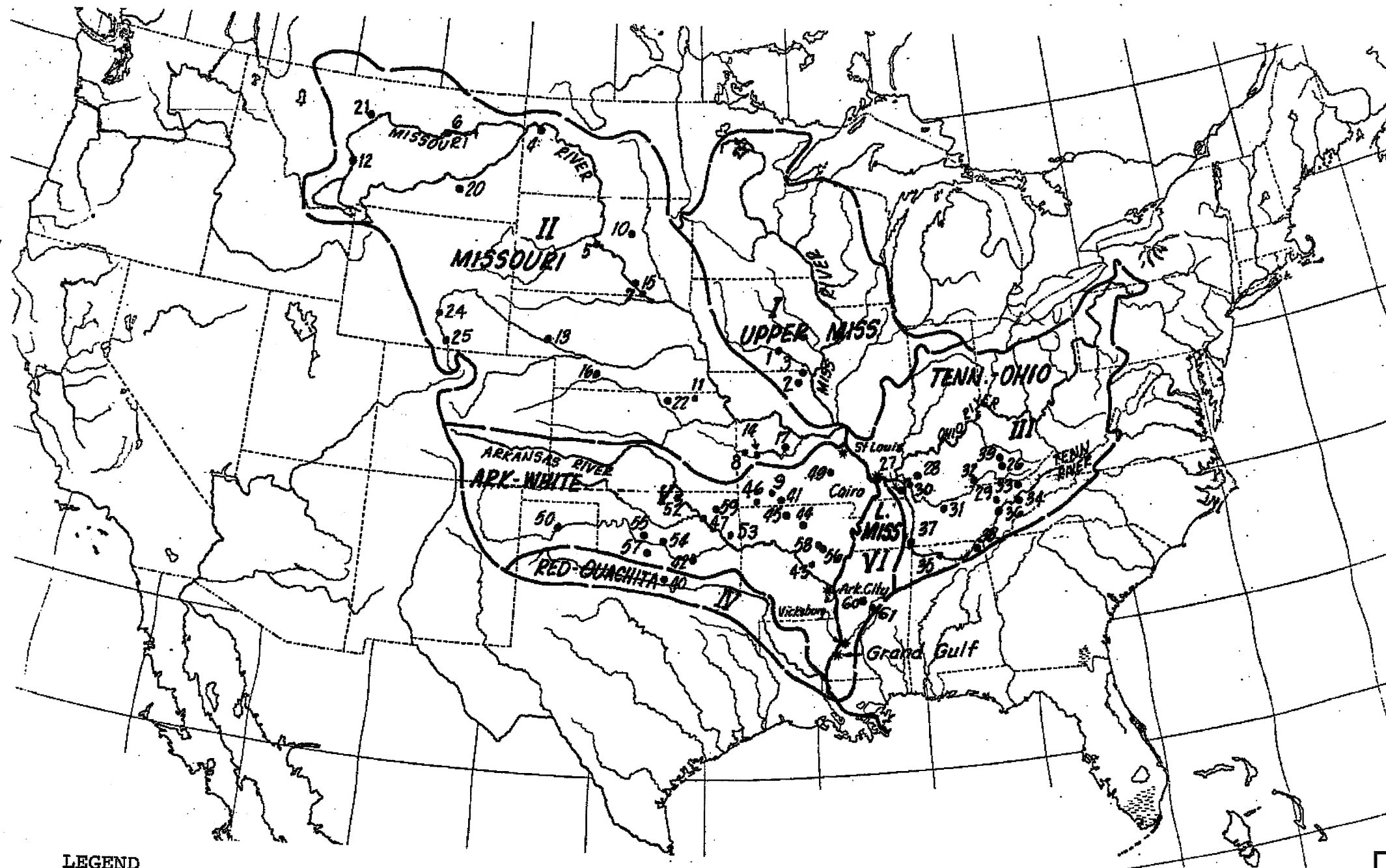
FIGURE 2.4-24

REV. 1



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 SITE SAFETY ANALYSIS REPORT

GROUND SURFACE PROFILE OF
 MISSISSIPPI RIVER FLOOD PLAIN
 (UFSAR FIGURE 2.4-18)

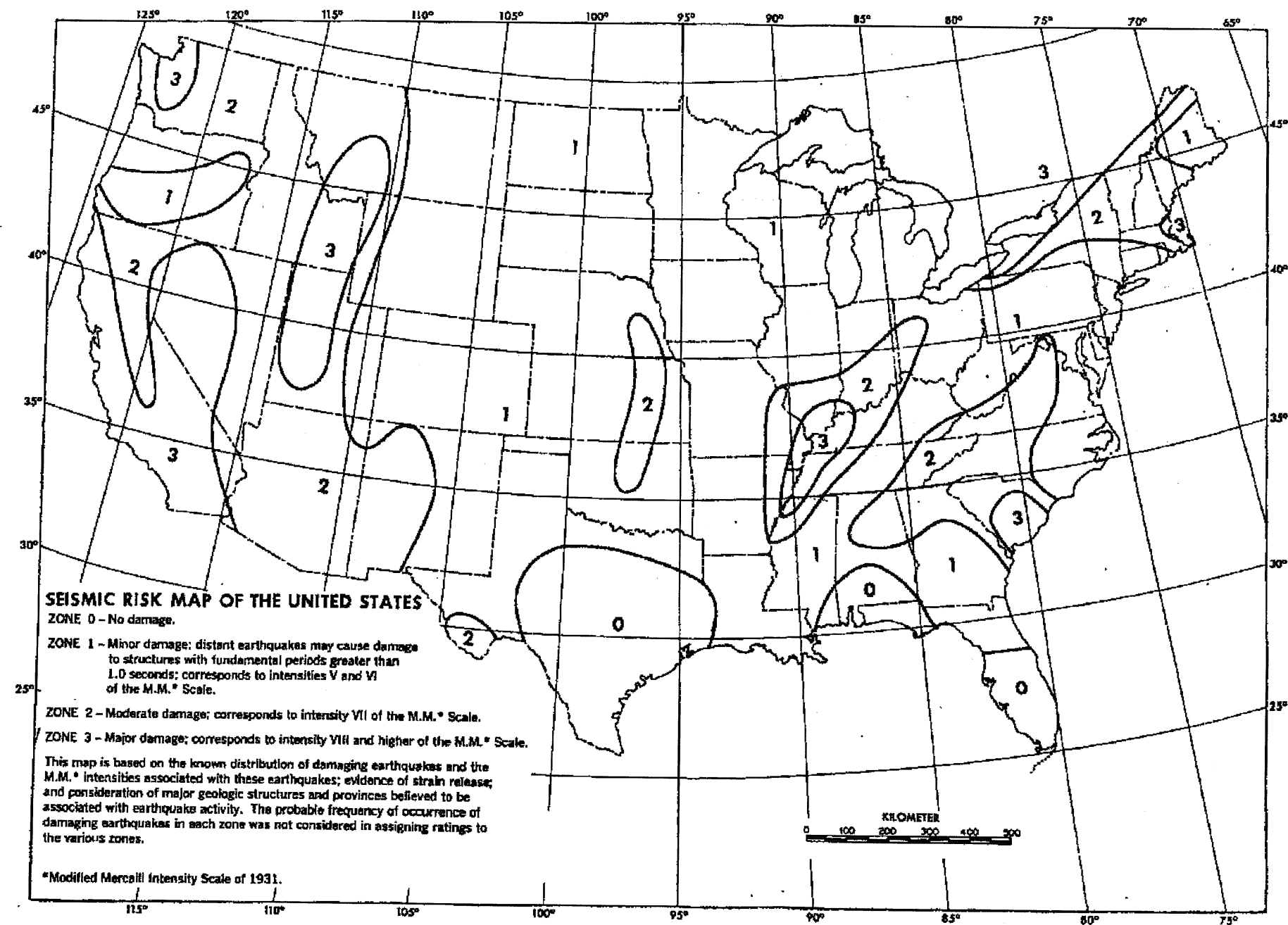


LEGEND

- 20 NUMBERS REFER TO RESERVOIRS LISTED IN TABLE 2.4-15 (UFSAR TABLE 2.4-14)

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MAJOR RESERVOIRS IN
THE MISSISSIPPI BASIN
(UFSAR FIGURE 2.4-19)

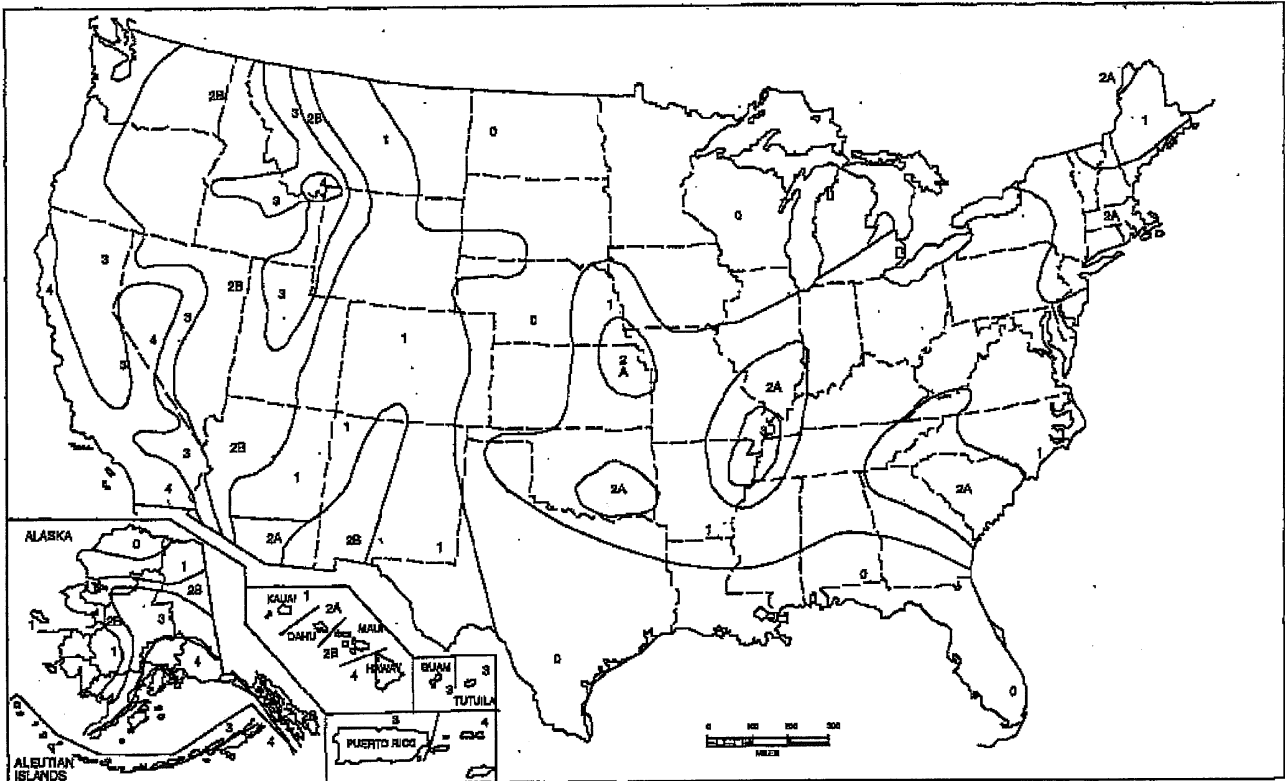


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SEISMIC RISK MAP
FOR THE UNITED STATES
(UFSAR FIGURE 2.4-20)

FIGURE 2.4-28

REV. 1

**SEISMIC ZONE FACTOR Z**

ZONE	1	2A	2B	3	4
Z	0.075	0.15	0.20	0.30	0.40

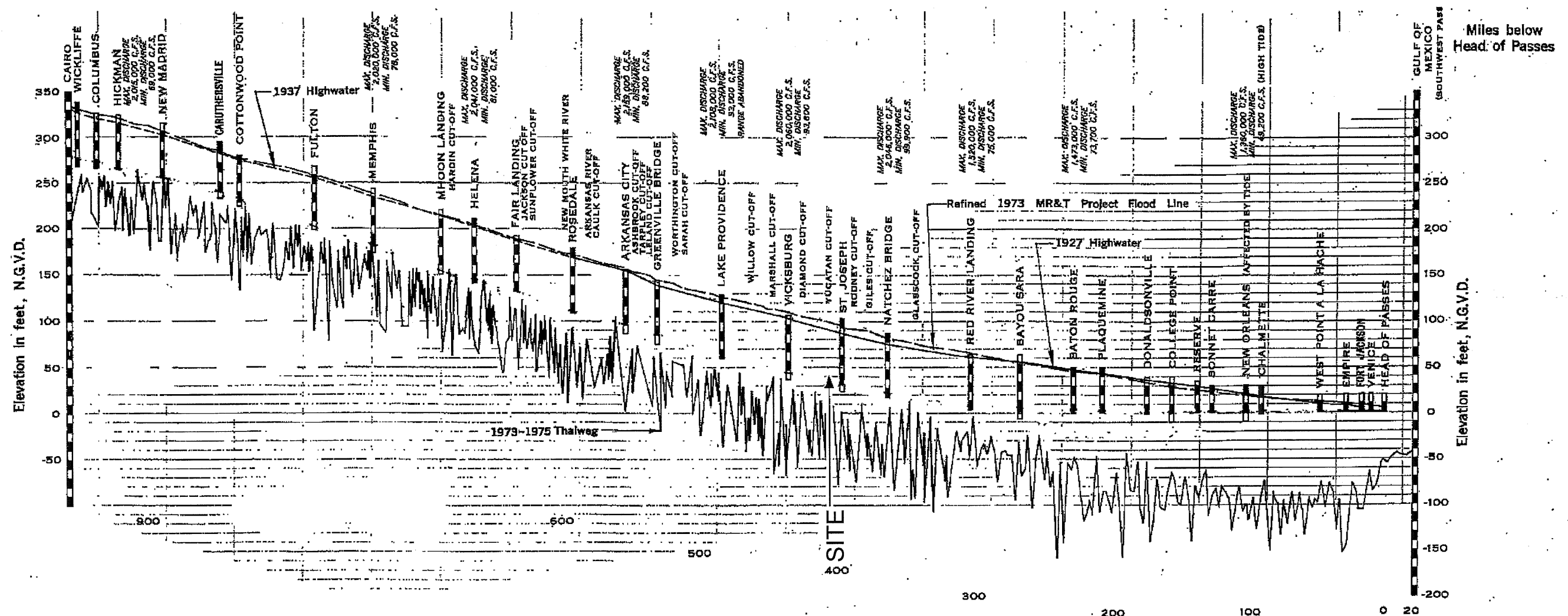
SOURCE: 1997 UNIFORM BUILDING CODE

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SEISMIC ZONE MAP
OF THE UNITED STATES

FIGURE 2.4-28a

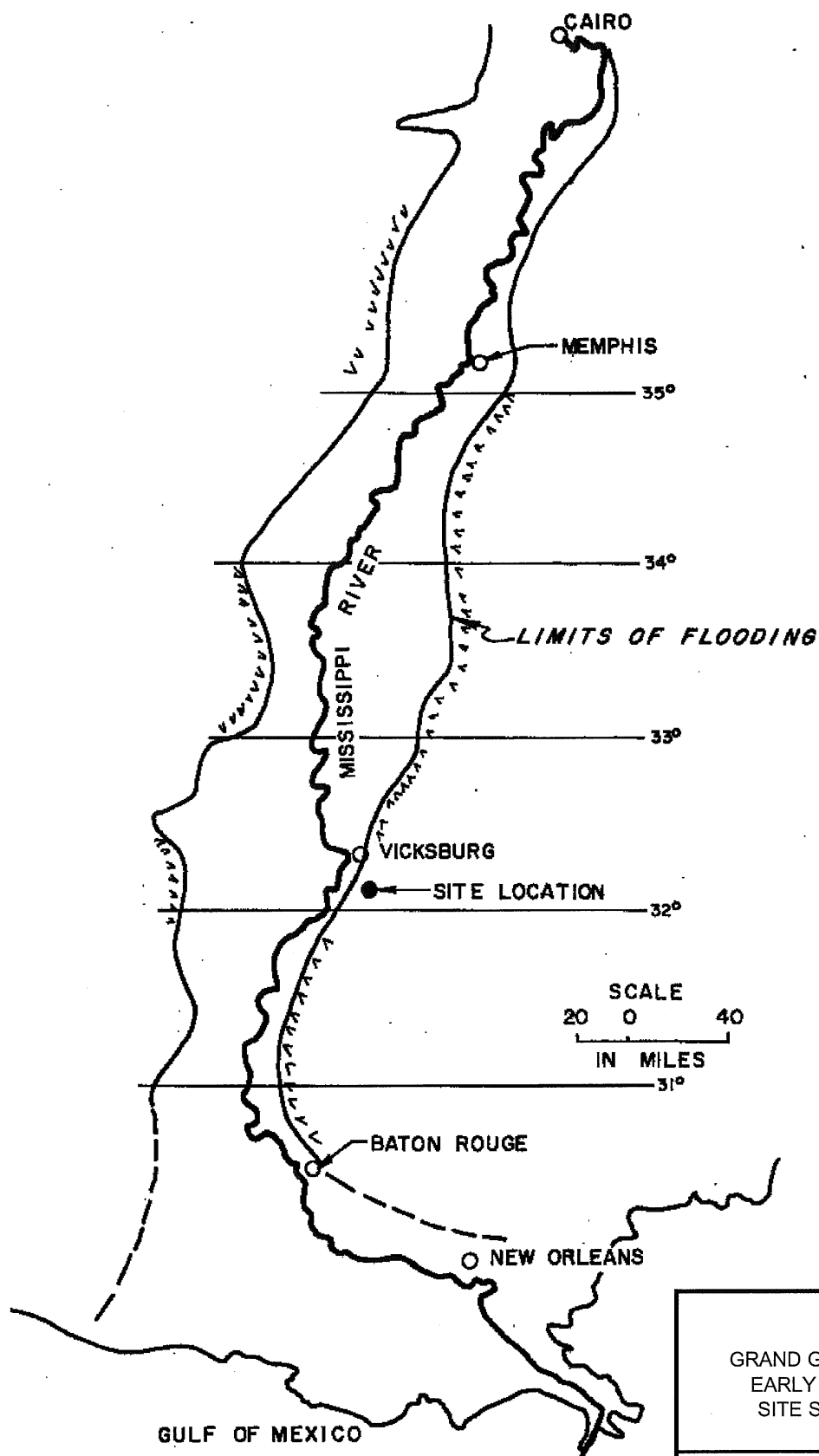
REV. 1



Source: Adapted from USACE

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EARLY SITE PERMIT APPLICATION
SITE SAFETY ANALYSIS REPORT

DESIGN PROJECT FLOOD ELEVATIONS FROM
CAIRO, ILLINOIS TO HEAD OF PASSES

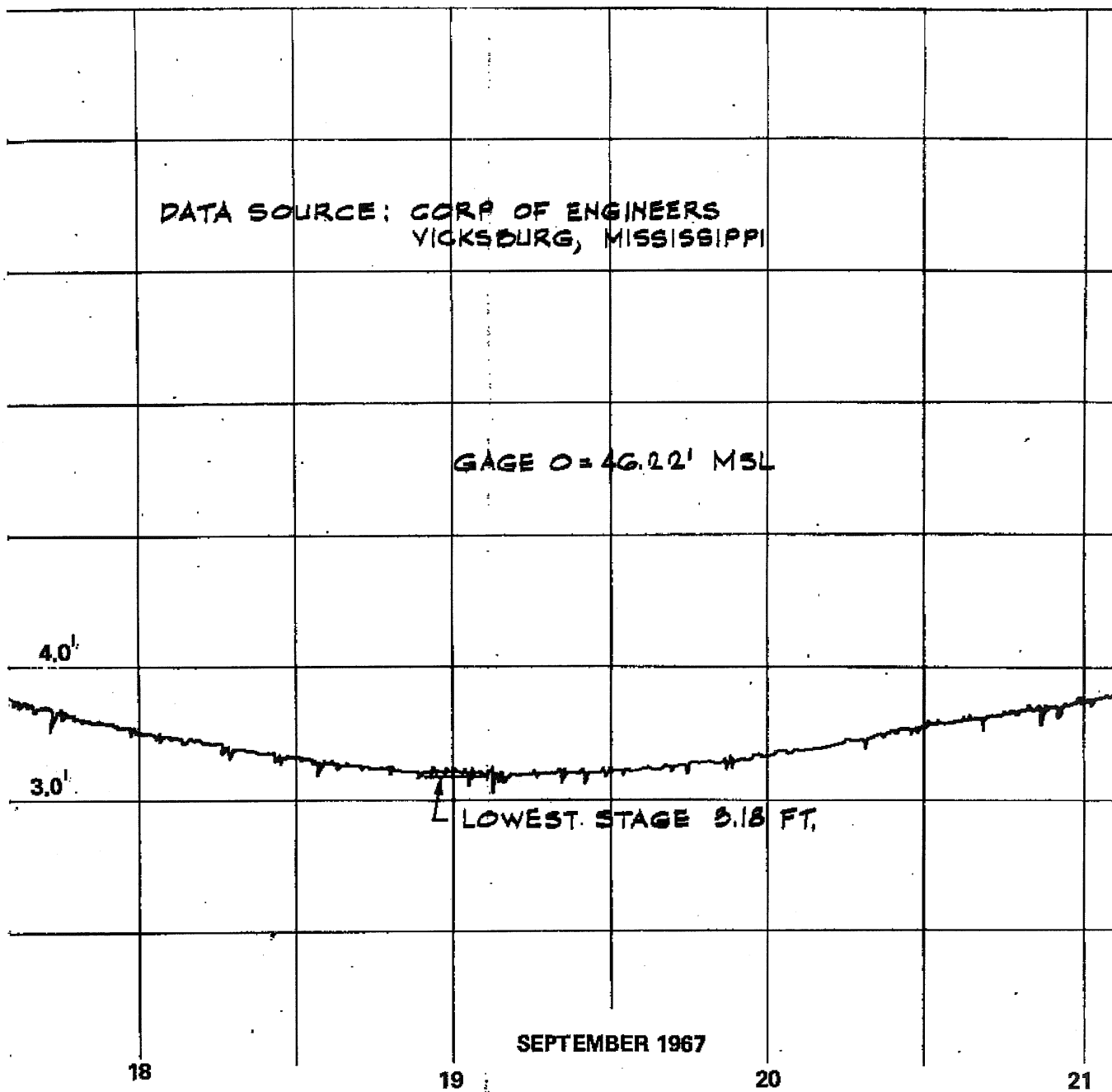


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PLAN SHOWING AREAS THAT MAY BE
 SUBMERGED DUE TO A FLOOD RISING TO
 EL. 103 MSL AT THE SITE
 (UFSAR FIGURE 2.4-22)

FIGURE 2.4-30

REV. 1

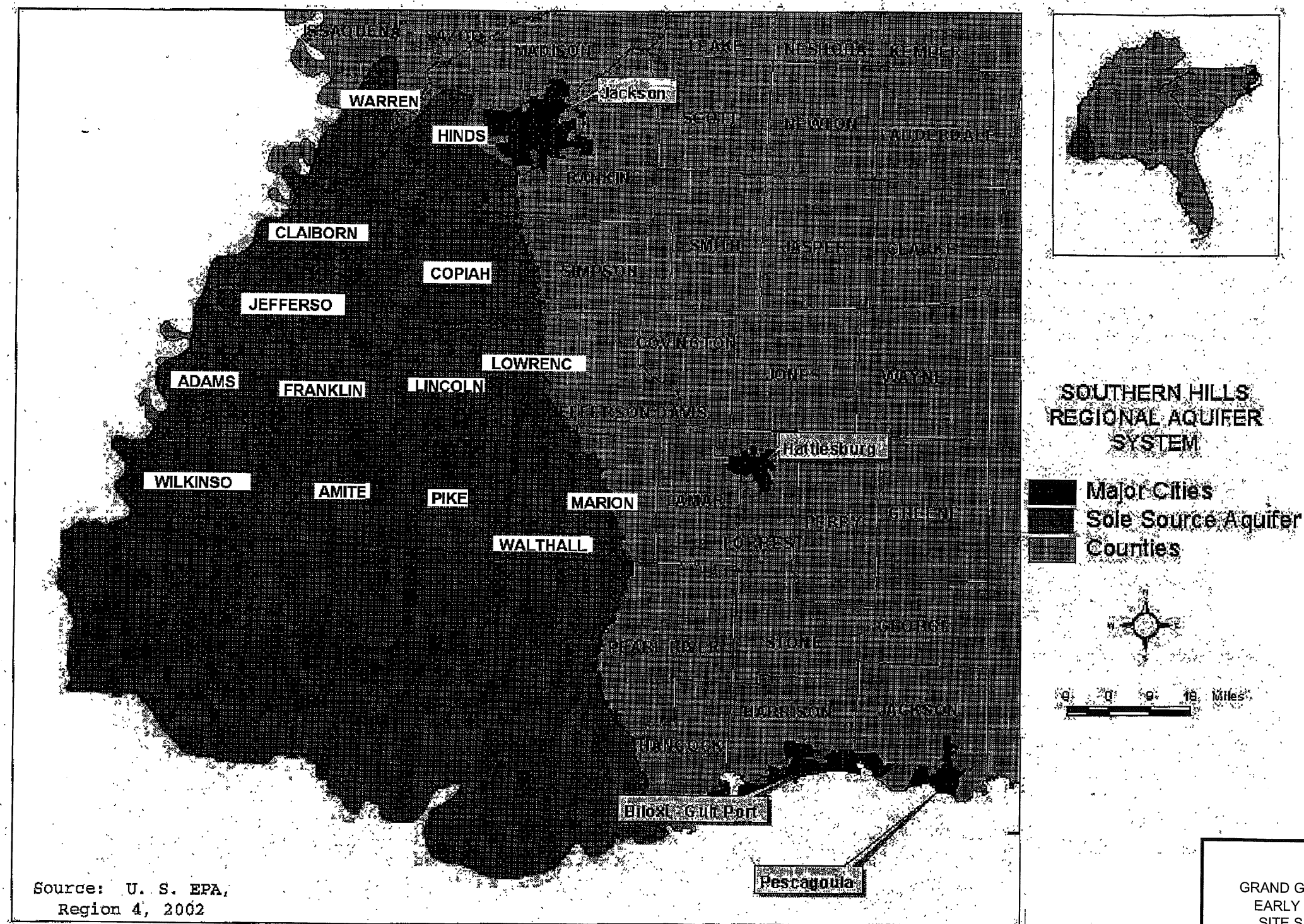


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INSTANTANEOUS LOW FLOW IN
MISSISSIPPI RIVER-TYPICAL GAUGE
RECORD AT VICKSBURG, MISS.
SEPTEMBER 18, 19, 20 & 21, 1967
(UFSAR FIGURE 2.4-25)

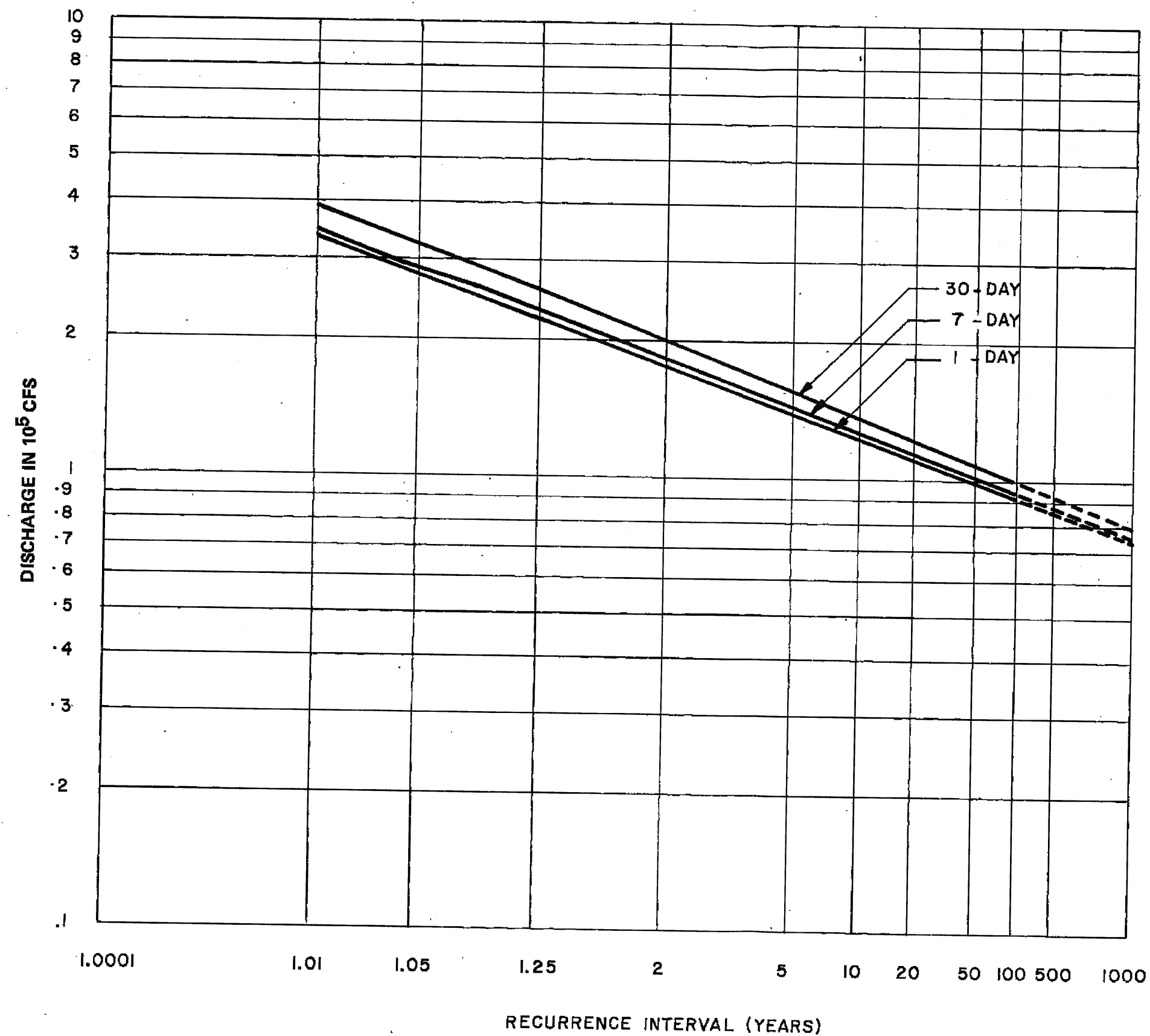
FIGURE 2.4-31

REV. 1



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SOLE SOURCE AQUIFER MAP



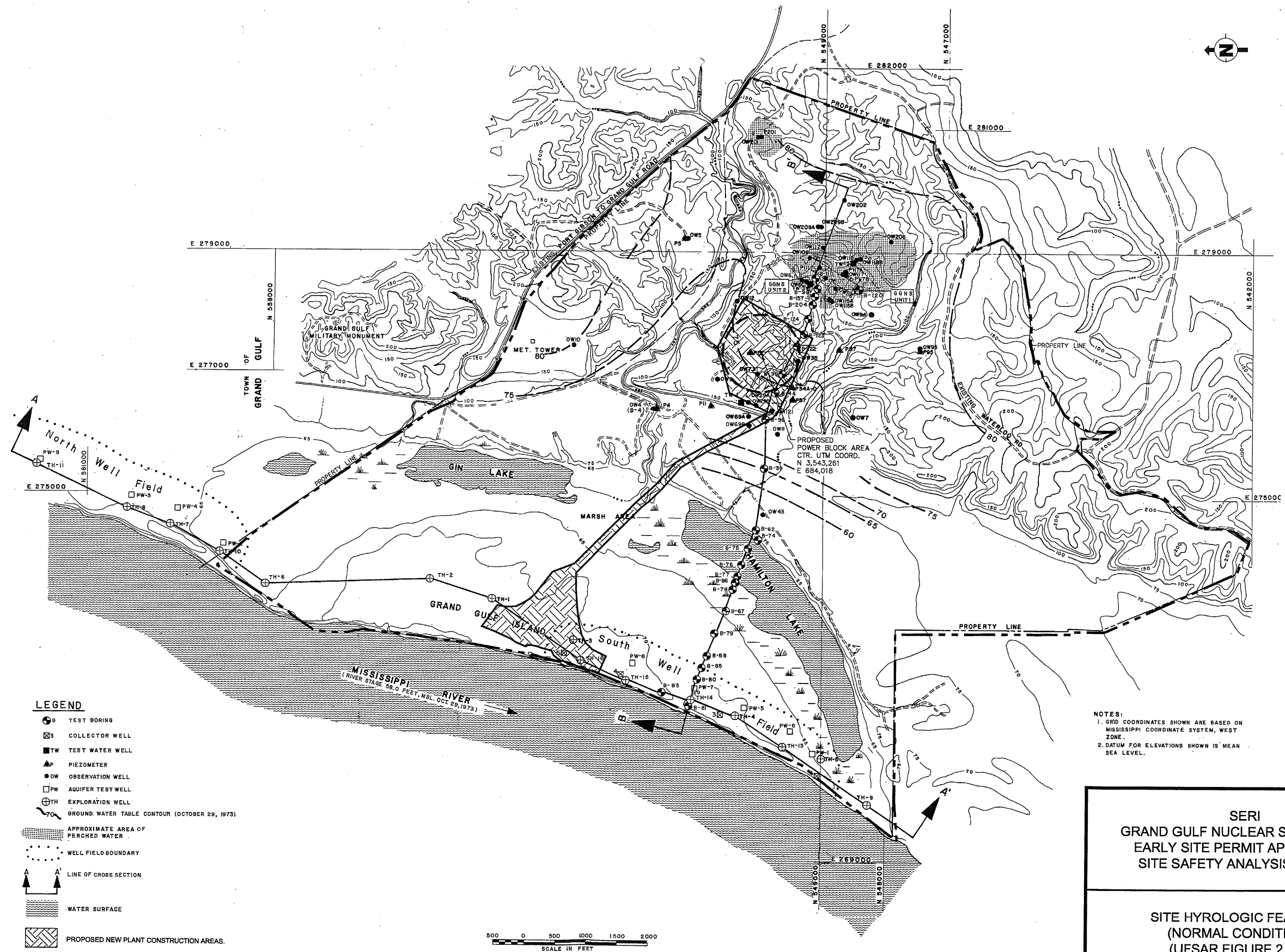
SOURCE: U.S.G.S.
PERIOD OF RECORD: 1933-79

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LOW FLOWS IN THE MISSISSIPPI
RIVER AT VICKSBURG
(UFSAR FIGURE 2.4-26)

FIGURE 2.4-32

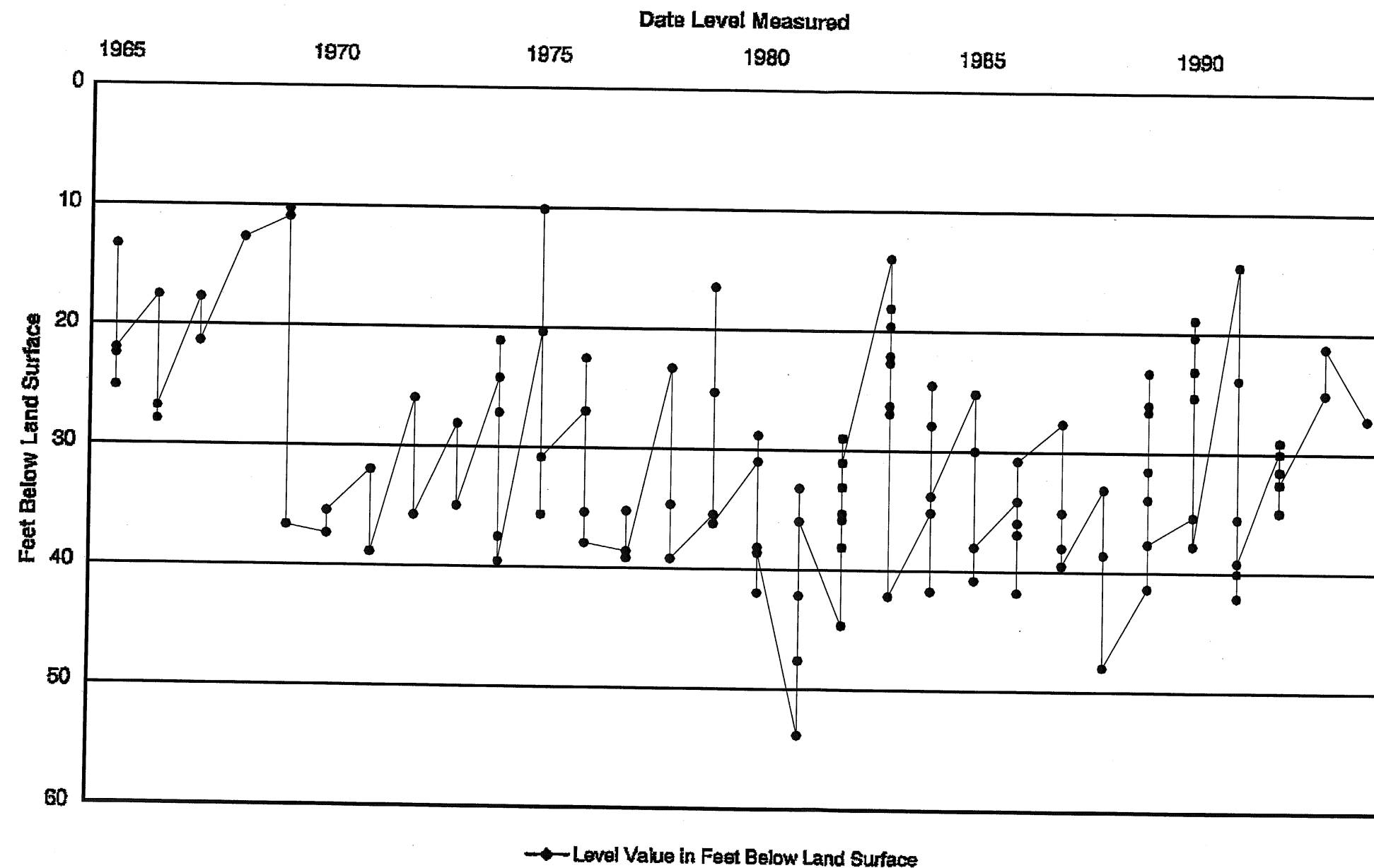
REV. 1



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SITE HYDROLOGIC FEATURES
(NORMAL CONDITIONS)
(UFSAR FIGURE 2.4-27)

Ground Water Levels Vicksburg Well Completed in the Mississippi River Alluvial Aquifer



SOURCE: USGS

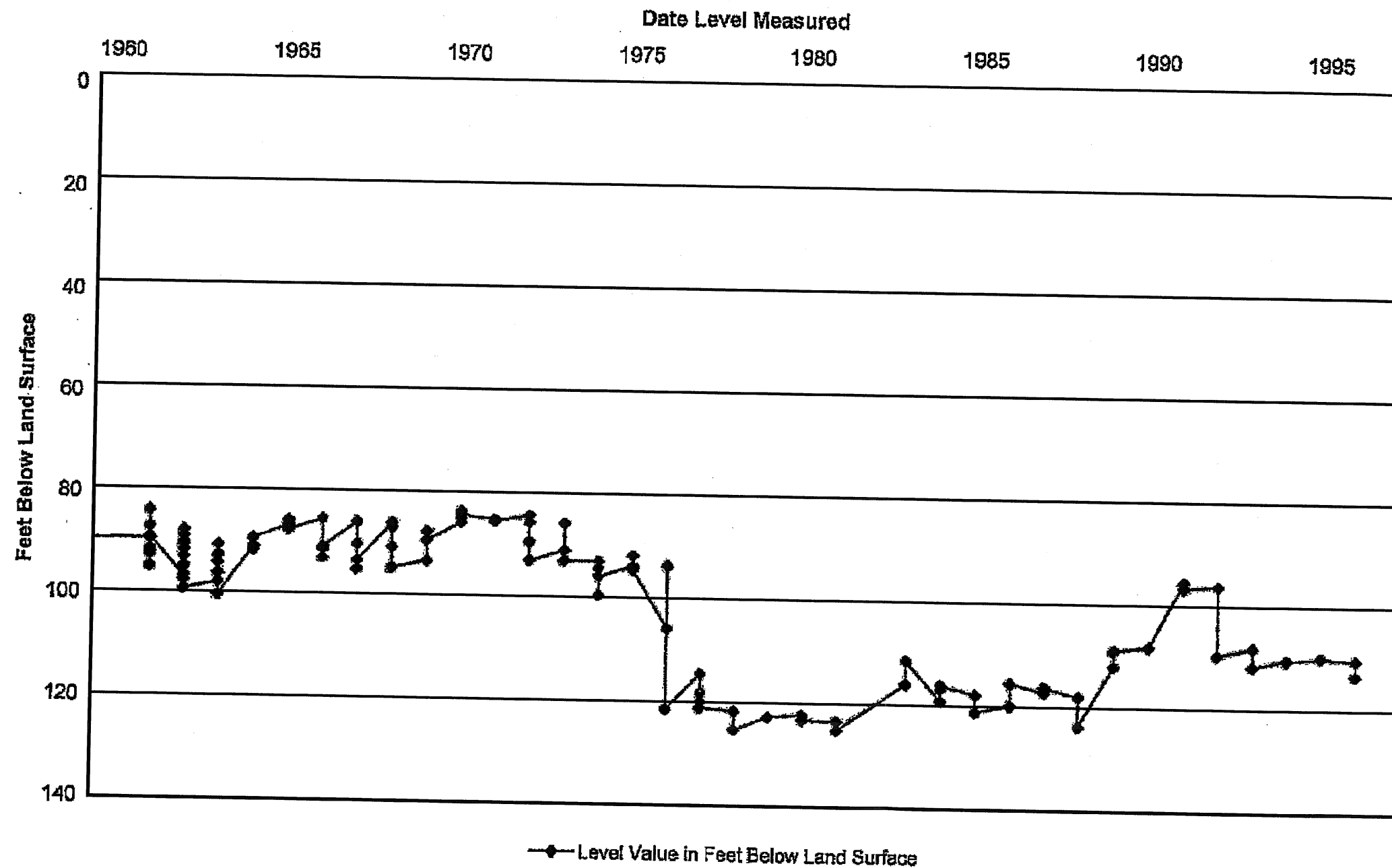
SERI
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HYDROGRAPH OF A WELL COMPLETED
IN THE MS RIVER ALLUVIAL AQUIFER,
VICKSBURG, MS

FIGURE 2.4-34

REV. 1

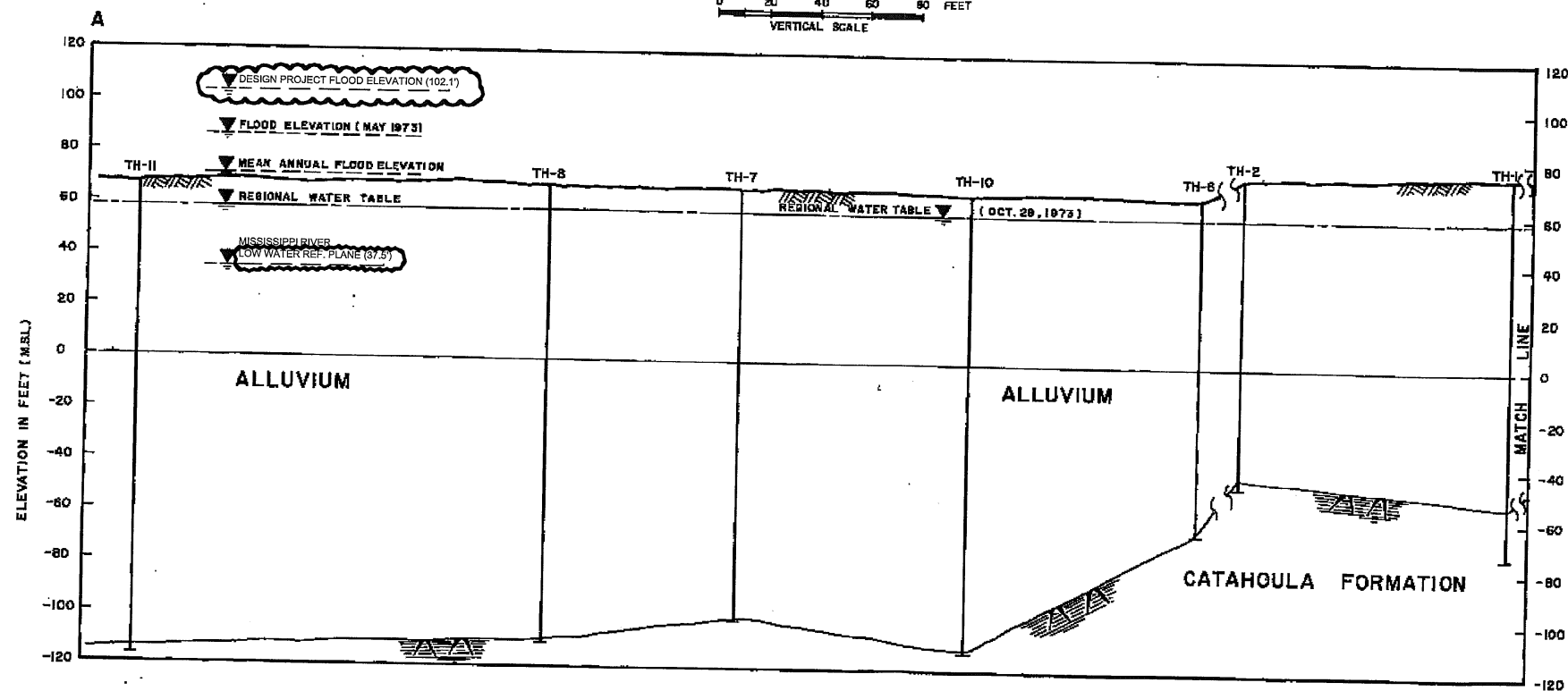
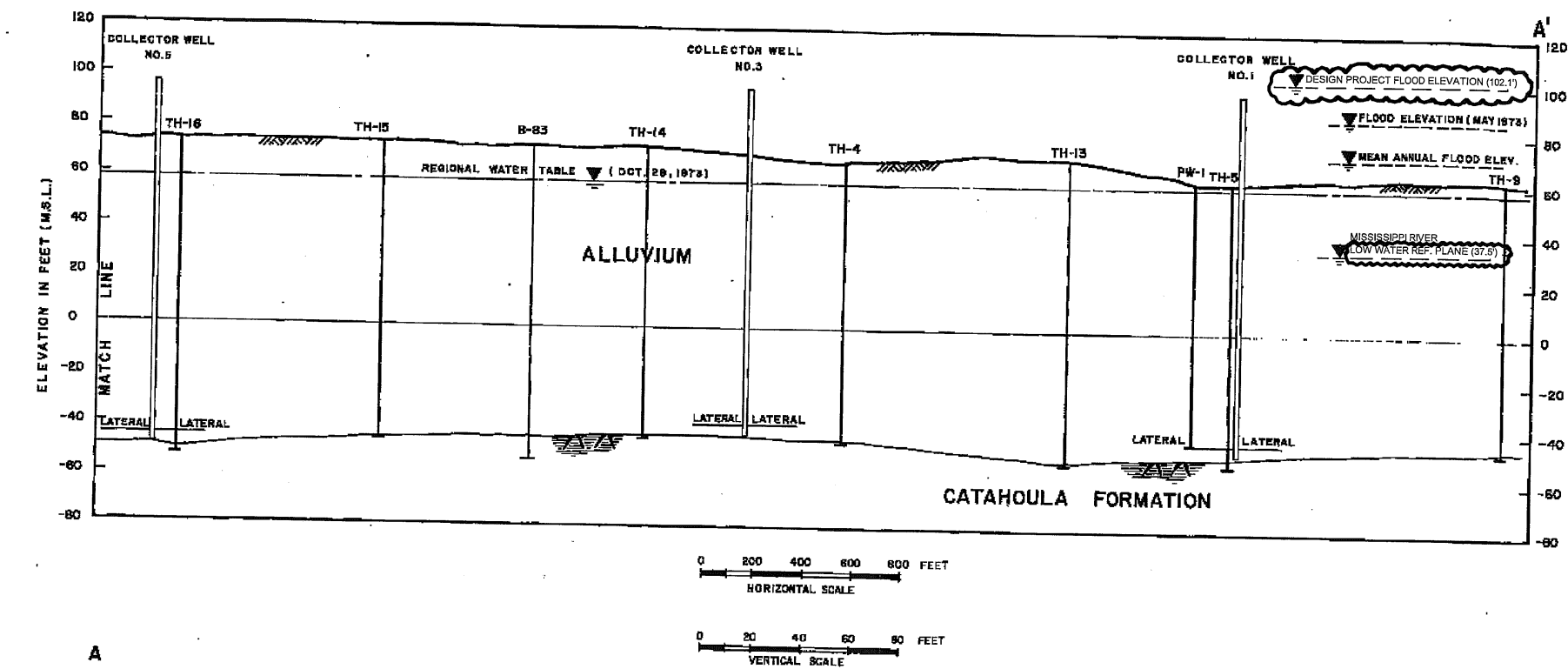
Ground Water Levels - Port Gibson, Well Completed in the Lower Catahoula Formation



SOURCE: USGS

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HYDROGRAPH OF A WELL COMPLETED IN THE
LOWER CATAHOULA FORMATION,
PORT GIBSON, MS

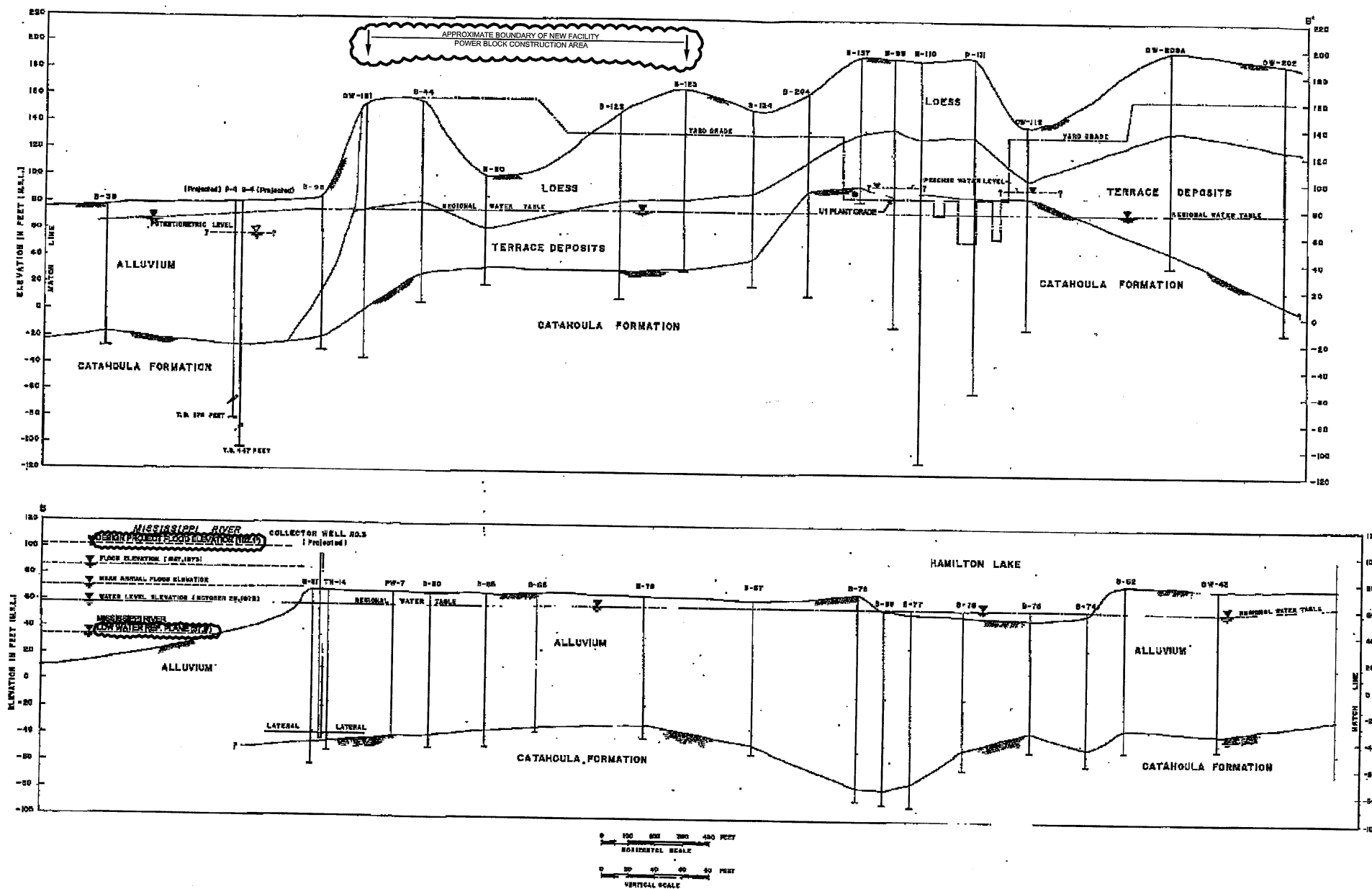


- NOTES:
1. SEE REF. 1 AND 8 FOR SOURCE DATA & GGNS UFSAR FIGURE 2.4-28.
 2. CLOUDS INDICATE ESP APPLICATION DATA.

SECTION LOCATION IS SHOWN IN (UFSAR FIGURE 2.4-27) FIGURE 2.4-33

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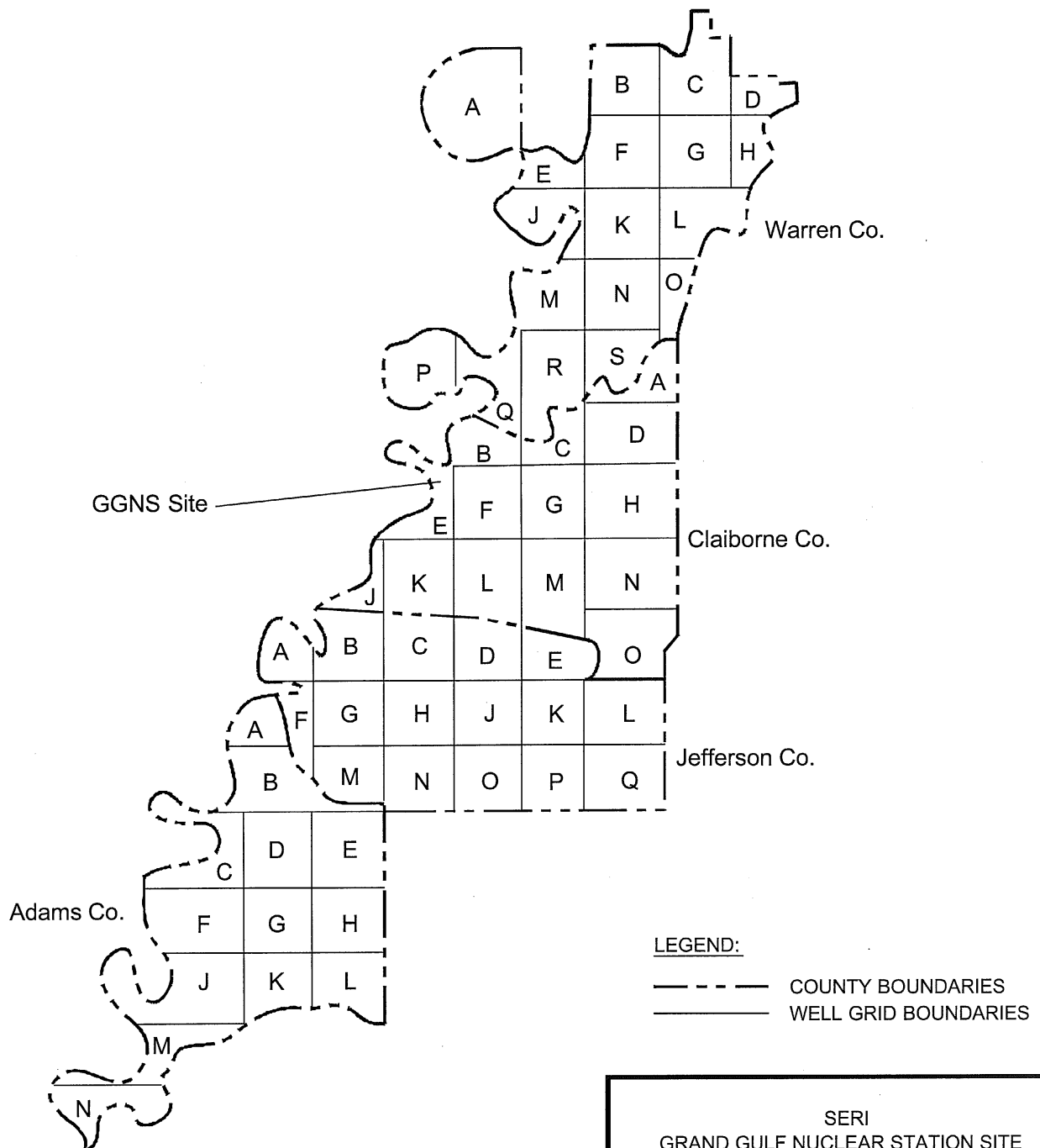
HYDROGEOLOGIC
CROSS SECTION A-A'
(UFSAR FIGURE 2.4-28)

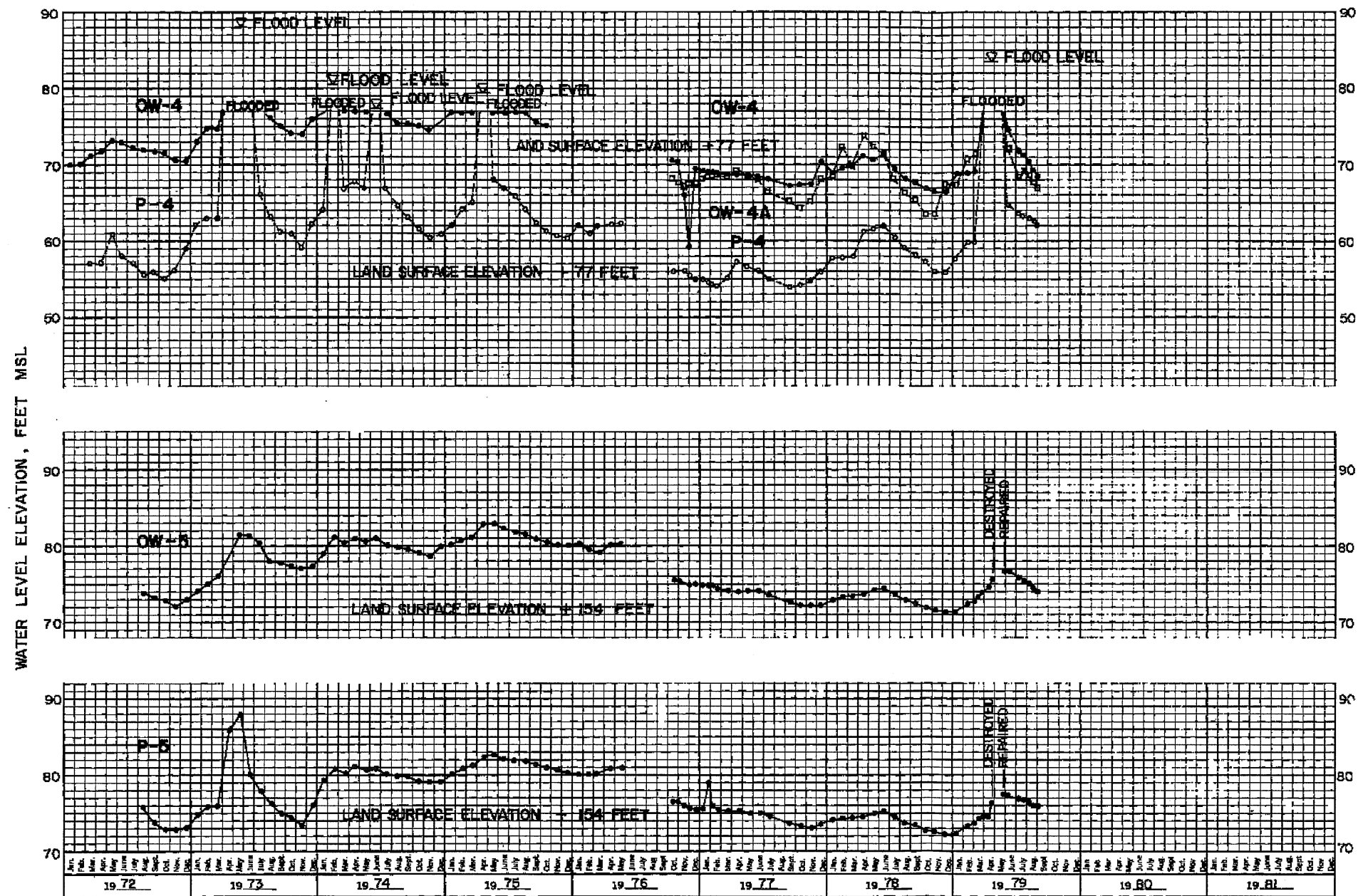


NOTES:
 1. SEE REF. 1 AND 3 FOR SOURCE DATA.
 2. CLOUDS INDICATE ESP APPLICATION CHANGES.

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HYDROGEOLOGIC
 CROSS SECTION B-B'
 (UFSAR FIGURE 2.4-29)



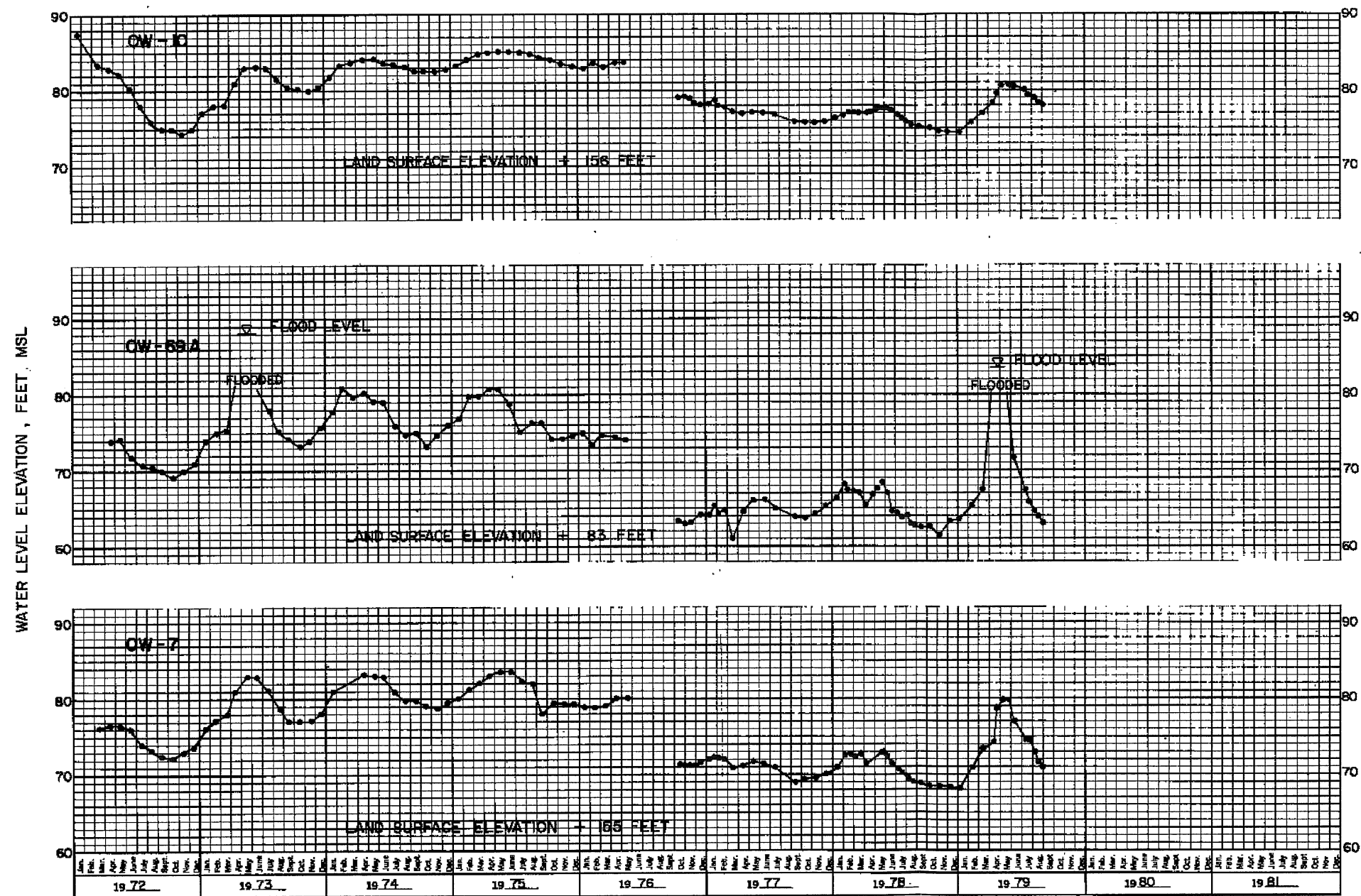


NOTES:
1. OBSERVATION WELL AND PIEZOMETER LOCATIONS
ARE SHOWN IN FIGURE 2.4-33 (UFSAR FIGURE 2.4-27).

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HYDROGRAPHS OF WELLS AND
PIEZOMETERS
(UFSAR FIGURE 2.4-32, SH.1)

FIGURE 2.4-39 SHEET 1 OF 5 REV. 1

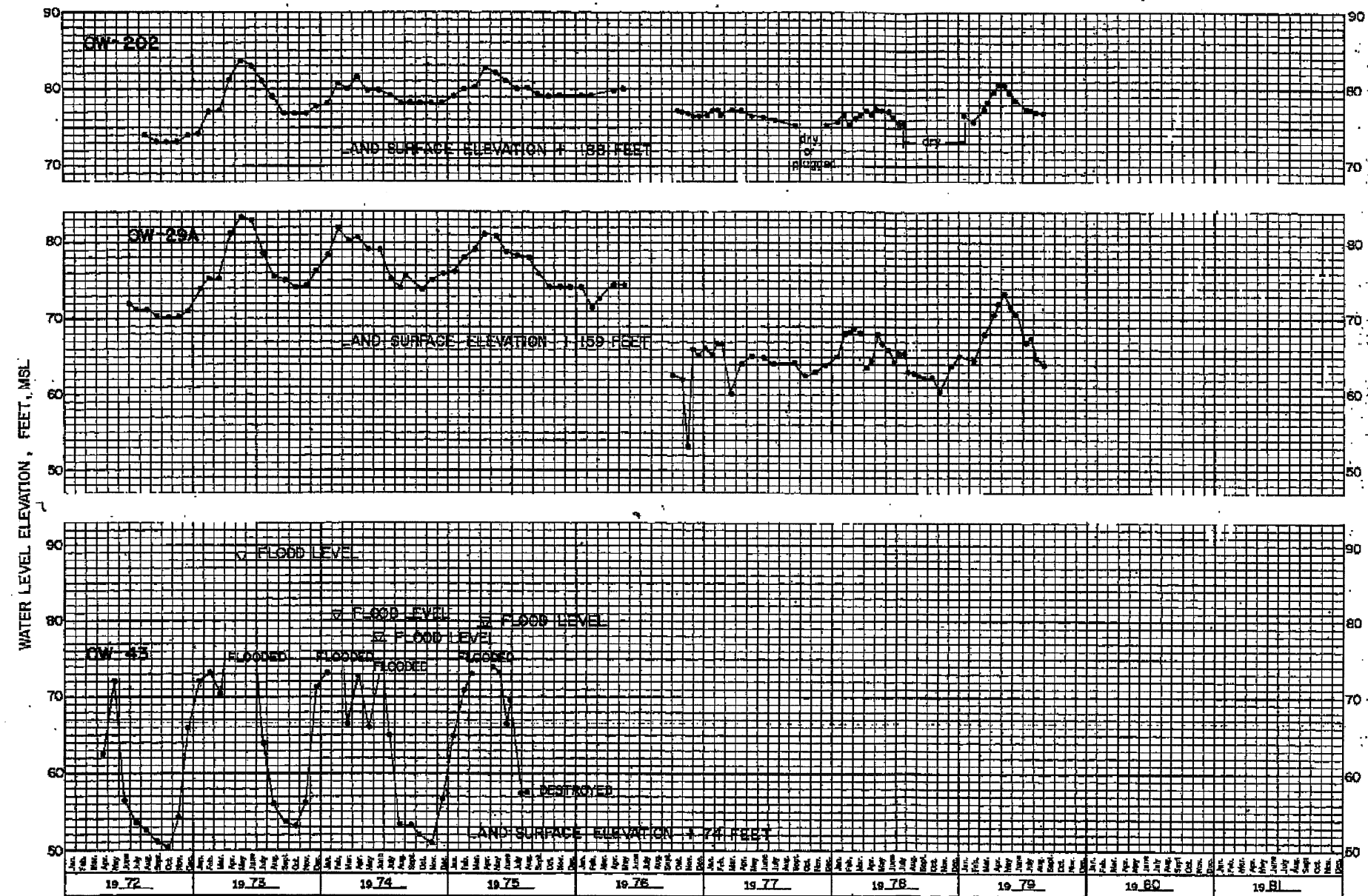


NOTES:
1. OBSERVATION WELL AND PIEZOMETER LOCATIONS
ARE SHOWN IN FIGURE 2.4-33 (UFSAR FIGURE 2.4-27).

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HYDROGRAPHS OF WELLS AND
PIEZOMETERS
(UFSAR FIGURE 2.4-32, SH.2)

FIGURE 2.4-39 SHEET 2 OF 5 REV. 1

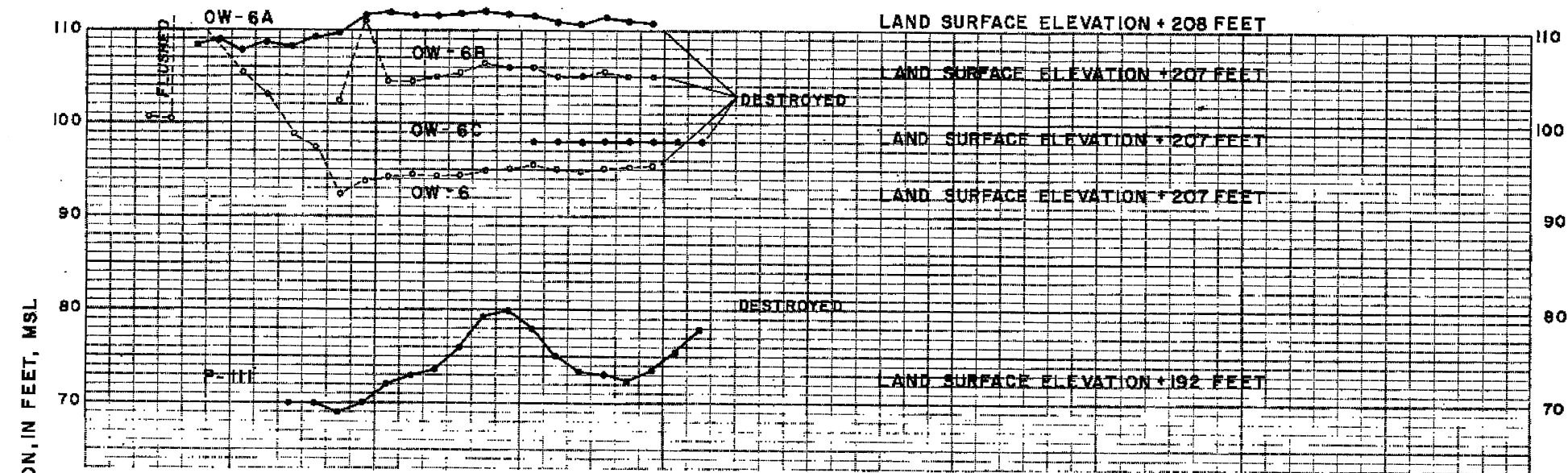


NOTES:
1. OBSERVATION WELL AND PIEZOMETER LOCATIONS
ARE SHOWN IN FIGURE 2.4-33 (UFSAR FIGURE 2.4-27).

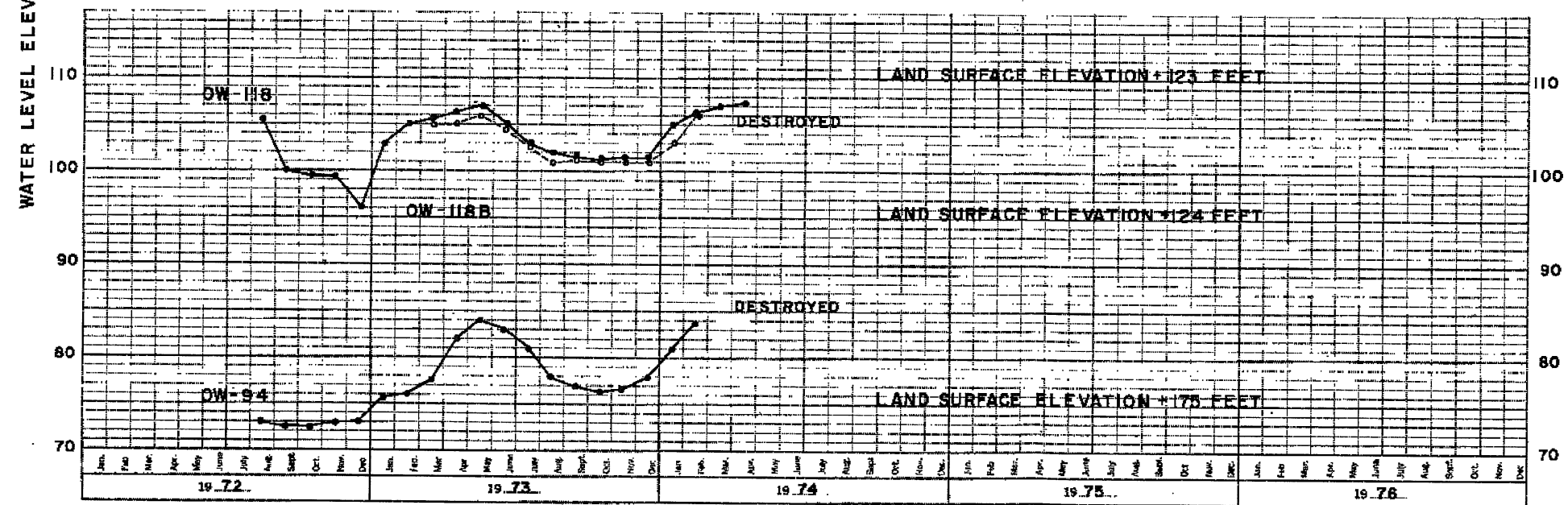
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HYDROGRAPHS OF REPLACEMENT
PIEZOMETERS
(UFSAR FIGURE 2.4-32, SH.3)

FIGURE 2.4-39 SHEET 3 OF 5 REV. 1



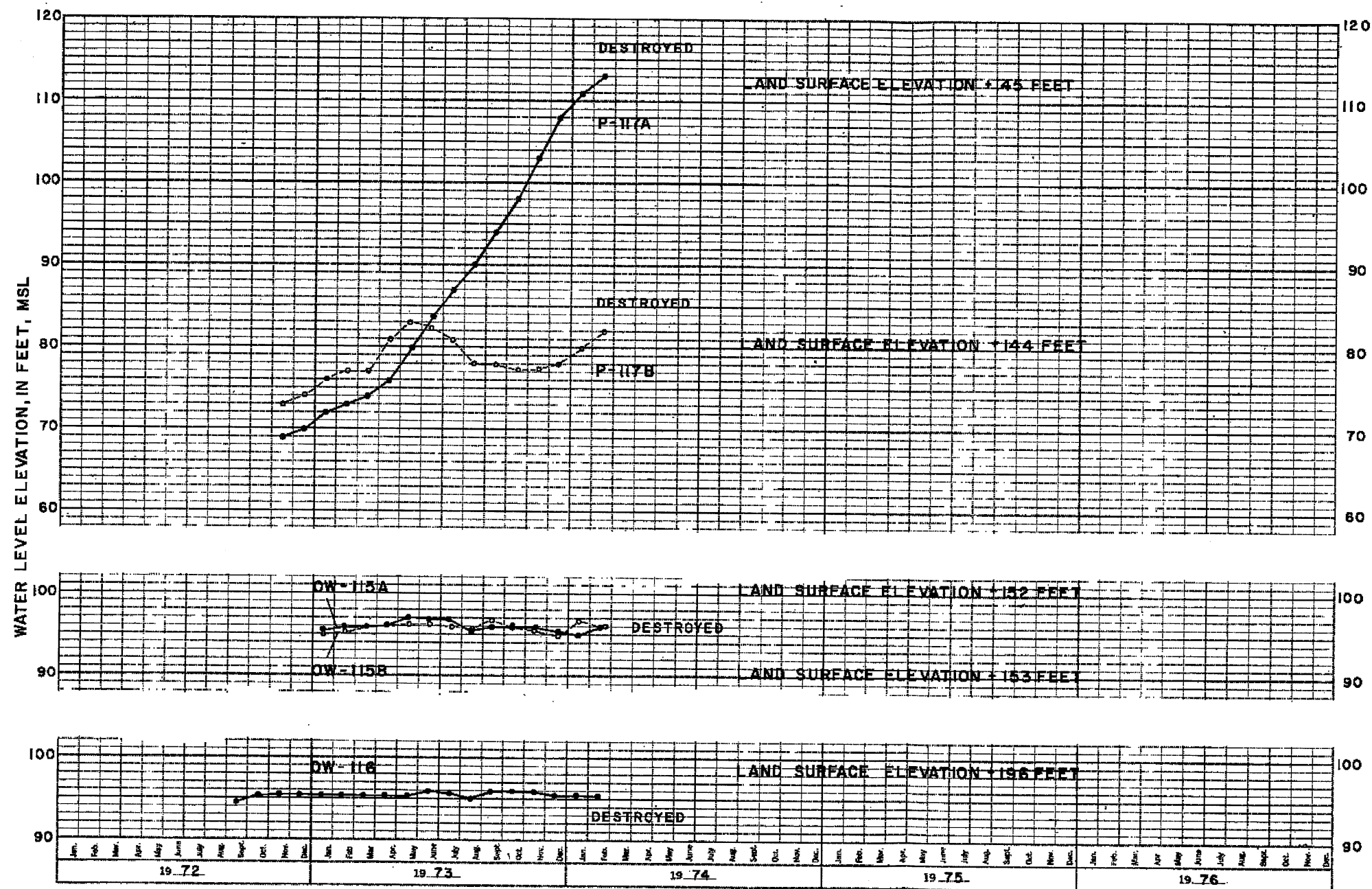
NOTES:
1. OBSERVATION WELL AND PIEZOMETER LOCATIONS
ARE SHOWN IN FIGURE 2.4-33 (UFSAR FIGURE 2.4-27).



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HYDROGRAPHS OF WELLS AND
PIEZOMETERS
(UFSAR FIGURE 2.4-32, SH.4)

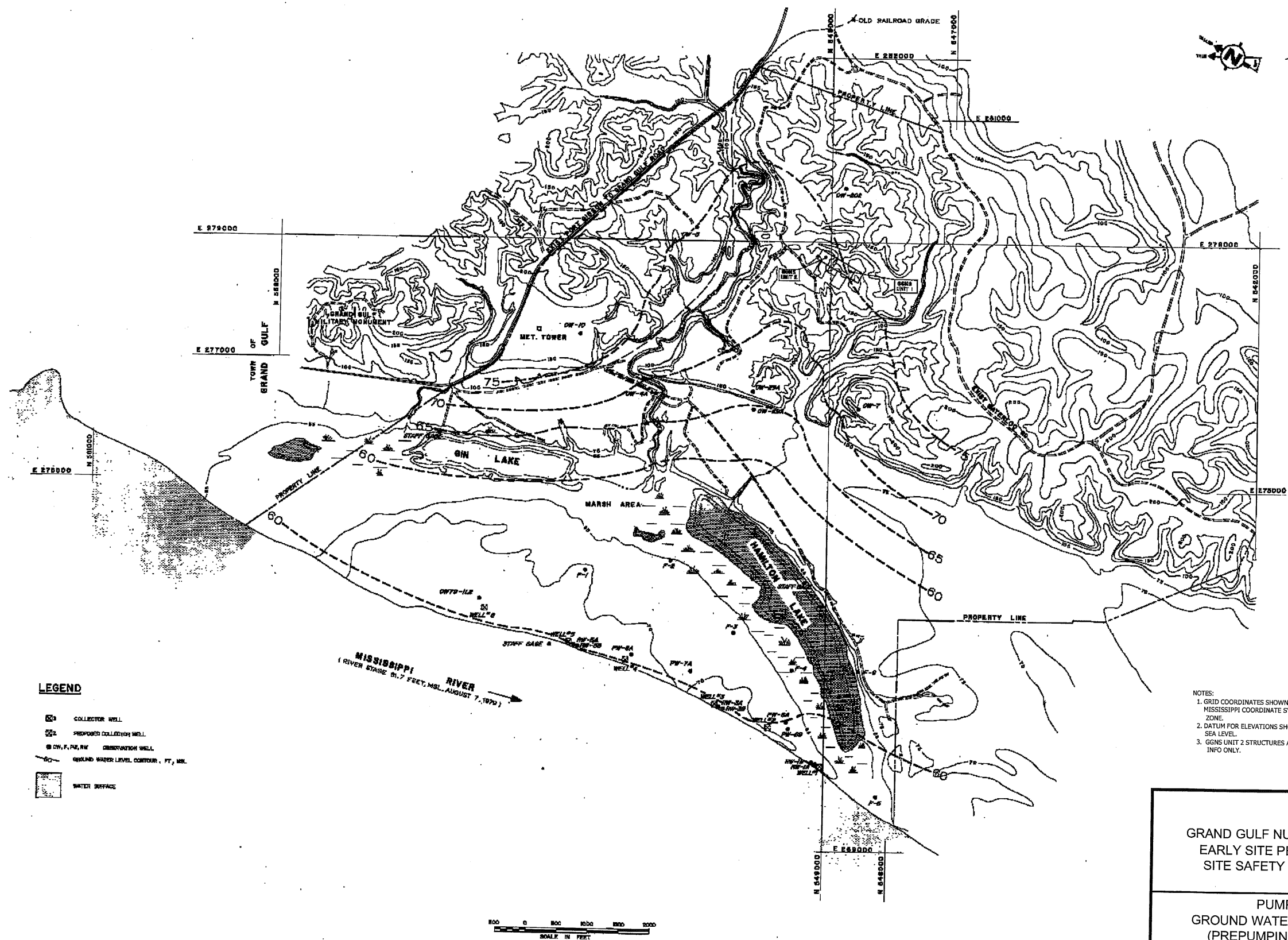
FIGURE 2.4-39 SHEET 4 OF 5 REV. 1



NOTES:
1. OBSERVATION WELL AND PIEZOMETER LOCATIONS
ARE SHOWN IN FIGURE 2.4-33 (UFSAR FIGURE 2.4-27).

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HYDROGRAPHS OF WELLS AND
PIEZOMETERS
(UFSAR FIGURE 2.4-32, SH.5)

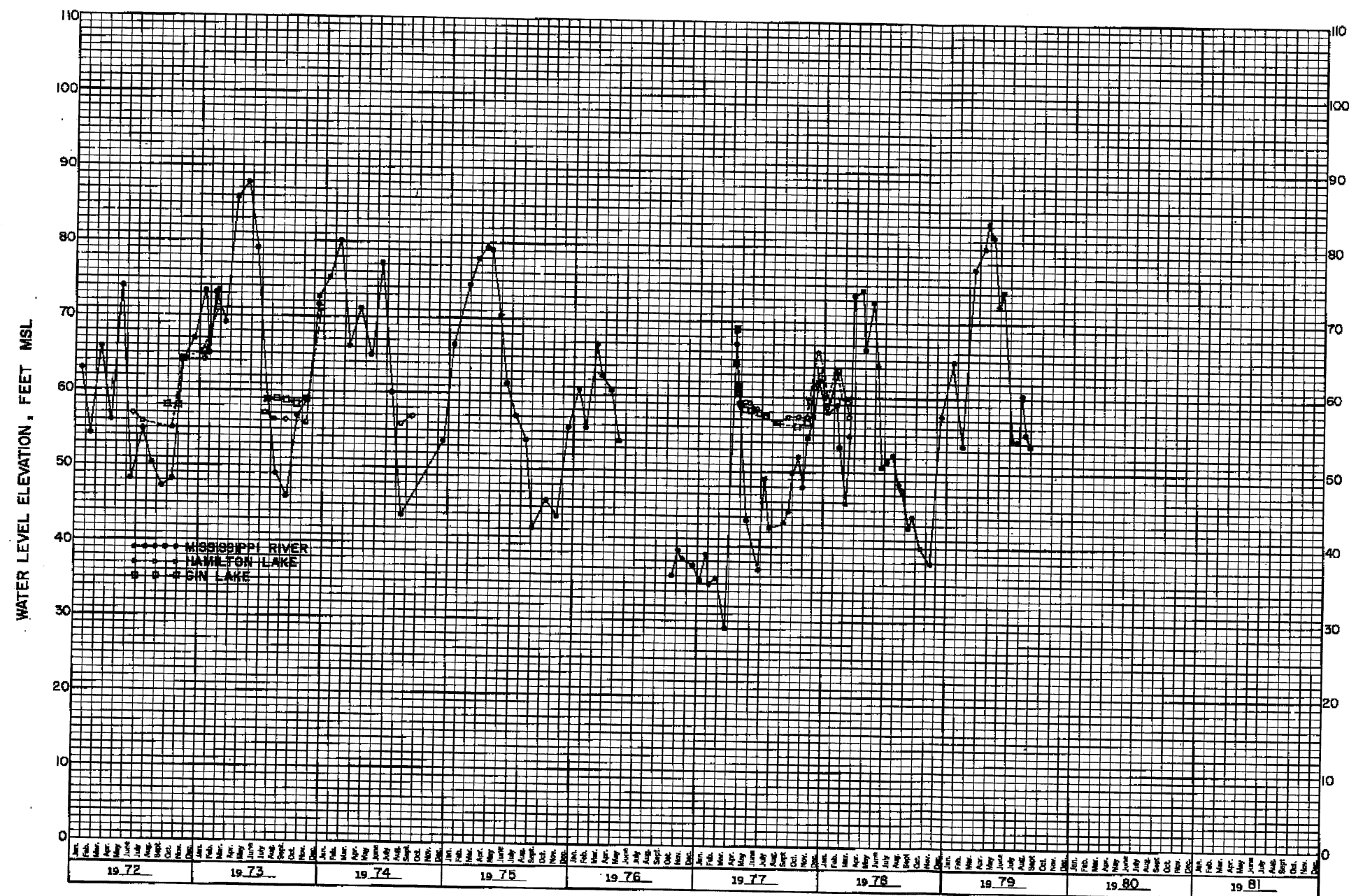


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PUMPOUT TEST
GROUND WATER LEVEL CONTOURS
(PREPUMPING STATIC LEVELS)
AUGUST 7, 1979
(UFSAR FIGURE 2.4-38)

FIGURE 2.4-40

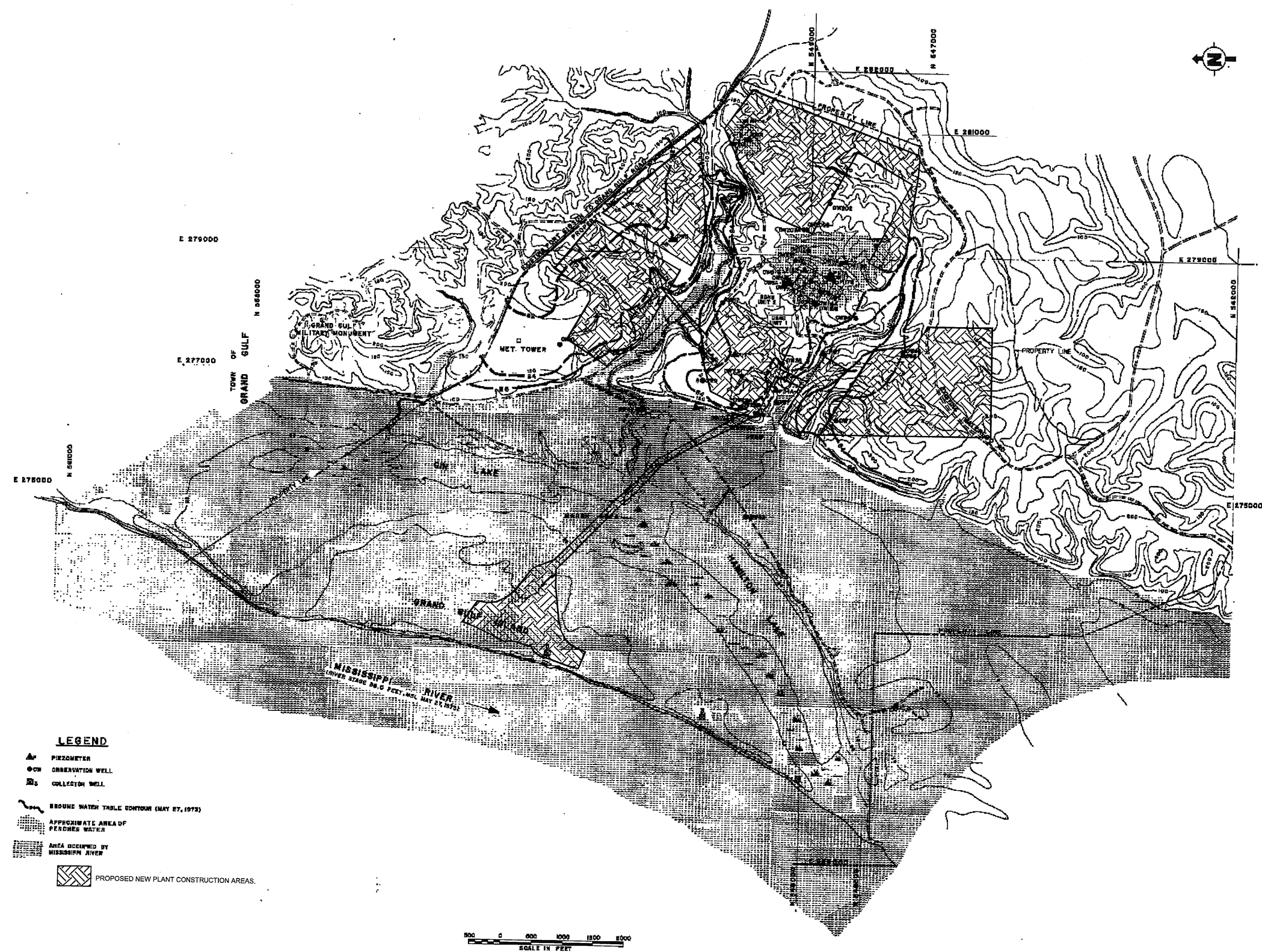
REV. 1



NOTES:
1. LOCATIONS OF MISSISSIPPI RIVER, HAMILTON & GIN LAKES
ARE SHOWN IN FIGURE 2.4-33 (UFSAR FIGURE 2.4-27).

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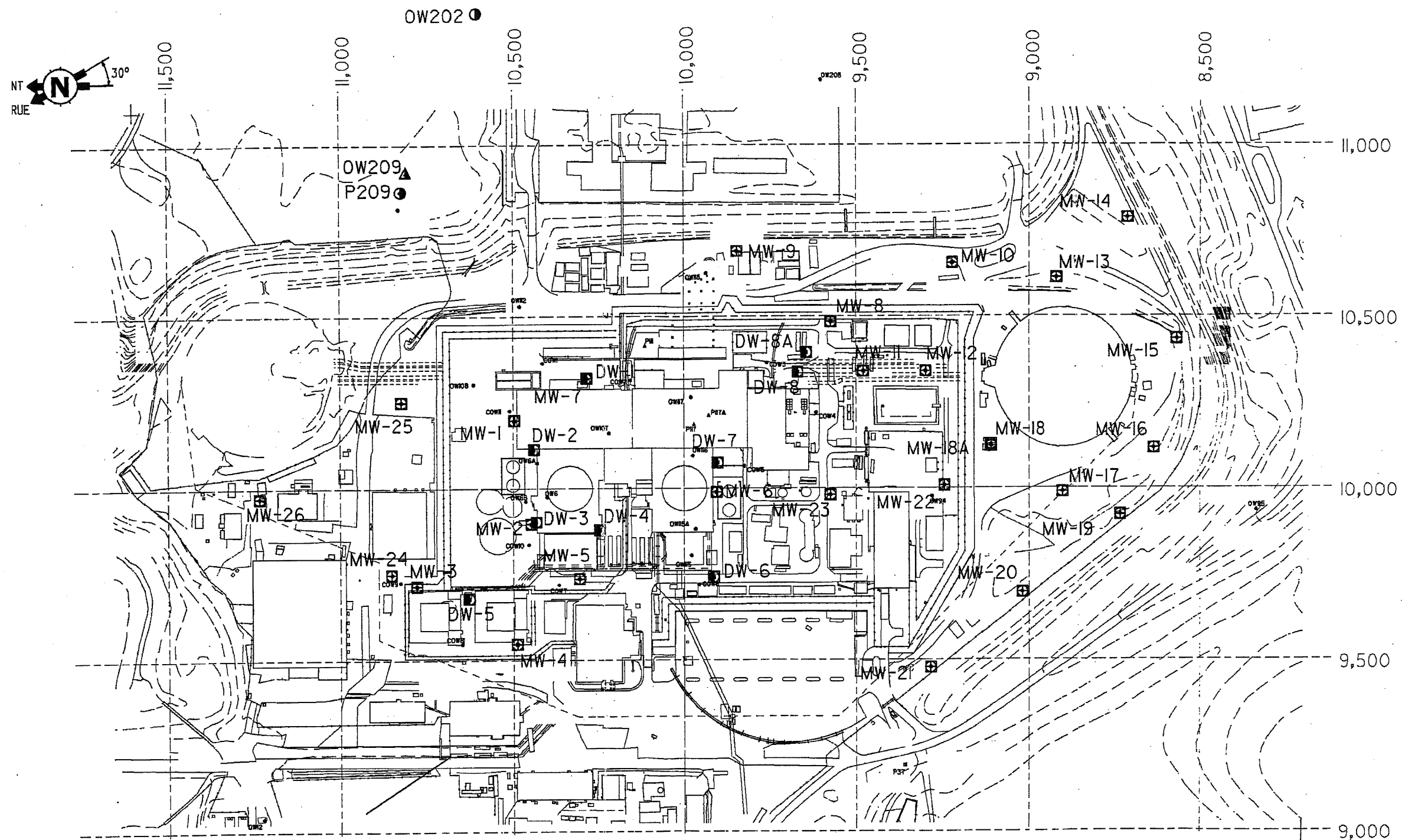
HYDROGRAPHS OF MISSISSIPPI RIVER,
GIN LAKE, AND HAMILTON LAKE
(UFSAR FIGURE 2.4-33)



- NOTES:
1. GRID COORDINATES SHOWN ARE BASED ON MISSISSIPPI COORDINATE SYSTEM, WEST ZONE.
 2. DATUM FOR ELEVATIONS SHOWN IS MEAN SEA LEVEL.
 3. GGNS UNIT 2 STRUCTURES ARE SHOWN FOR INFO ONLY.

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SITE HYDROLOGIC FEATURES
 FLOOD CONDITIONS MAY 1973
 (UFSAR FIGURE 2.4-34)



LEGEND

- ▲ HISTORICAL MONITORING WELL - CATAHOULA FORMATION
- HISTORICAL MONITORING WELL - TERRACE DEPOSITS
- ⊕ MONITORING WELL
- DEWATERING WELL
- TIE-BACK WALL PROJECTION

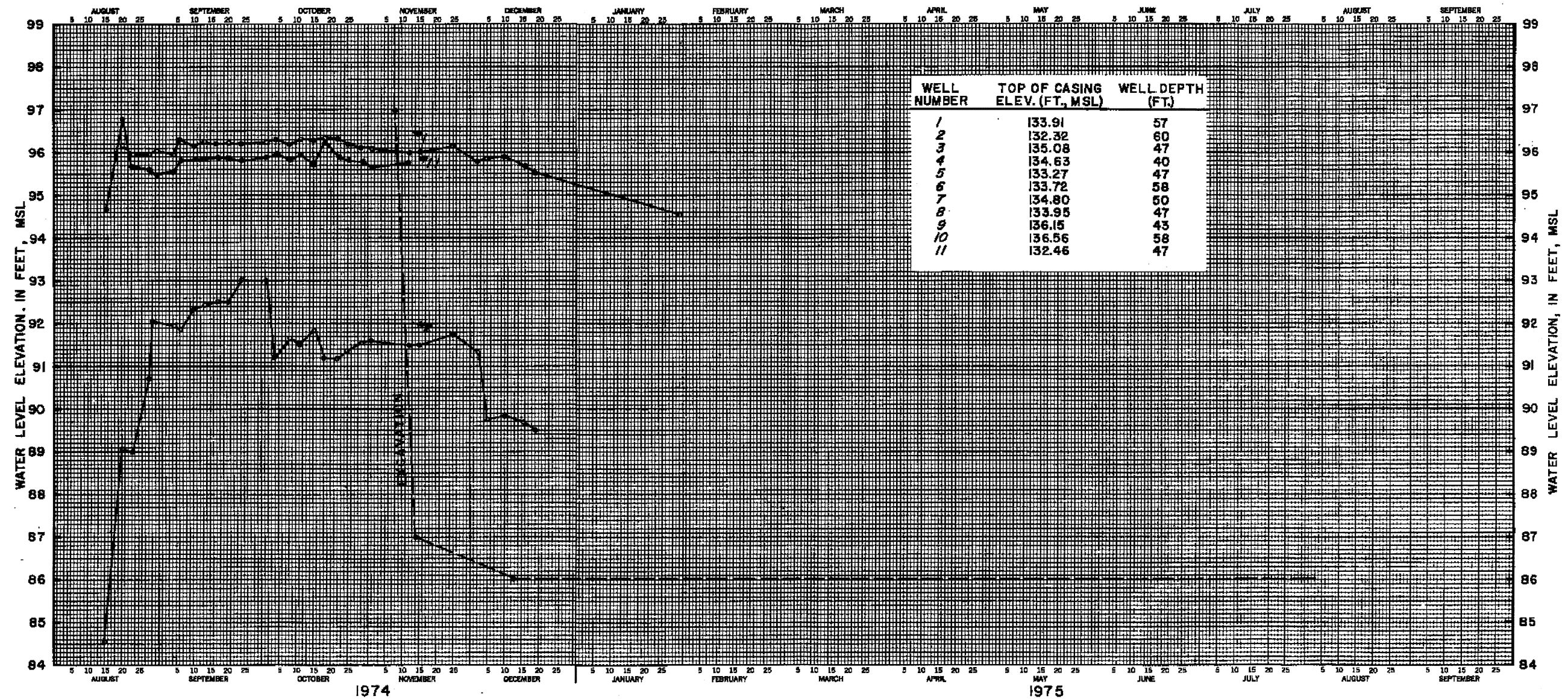
0 100 200 300
SCALE IN FEET

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GGNS UNIT 1 PLANT SITE
WELL PLAN
(UFSAR FIGURE 2.4-35c)

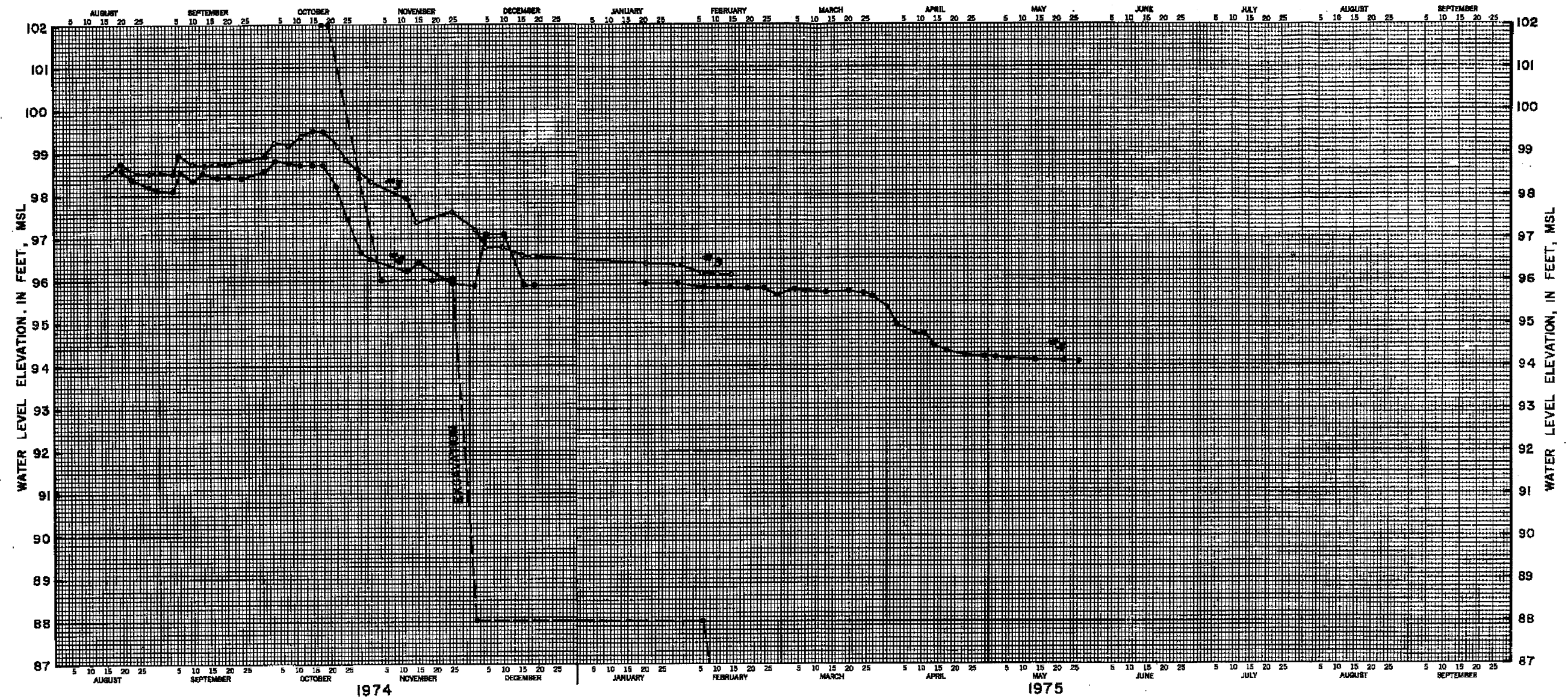
FIGURE 2.4-43

REV. 1



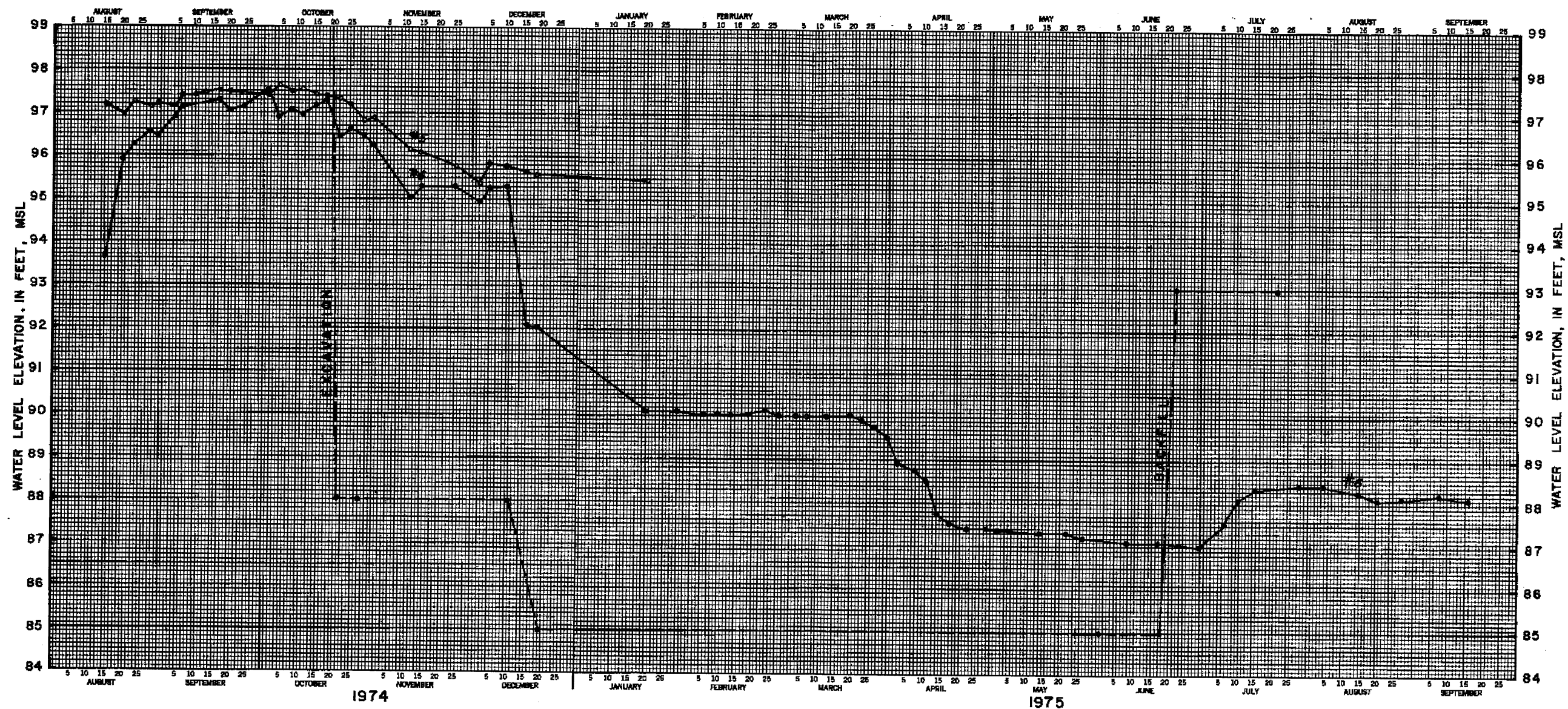
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HYDROGRAPHS OF
CONSTRUCTION OBSERVATION WELLS
(UFSAR FIGURE 2.4-36, SH.1)



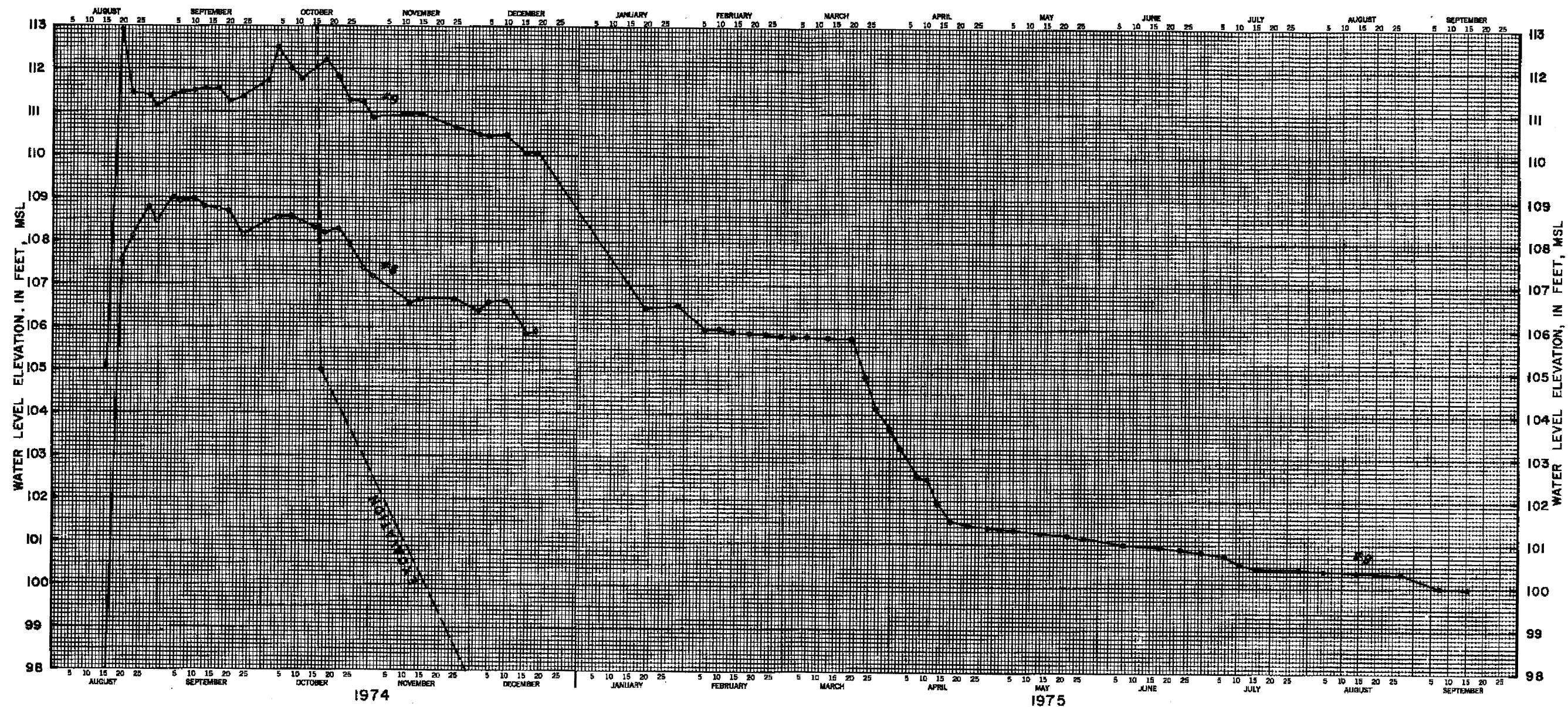
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HYDROGRAPHS OF
 CONSTRUCTION OBSERVATION WELLS
 (UFSAR FIGURE 2.4-36, SH.2)



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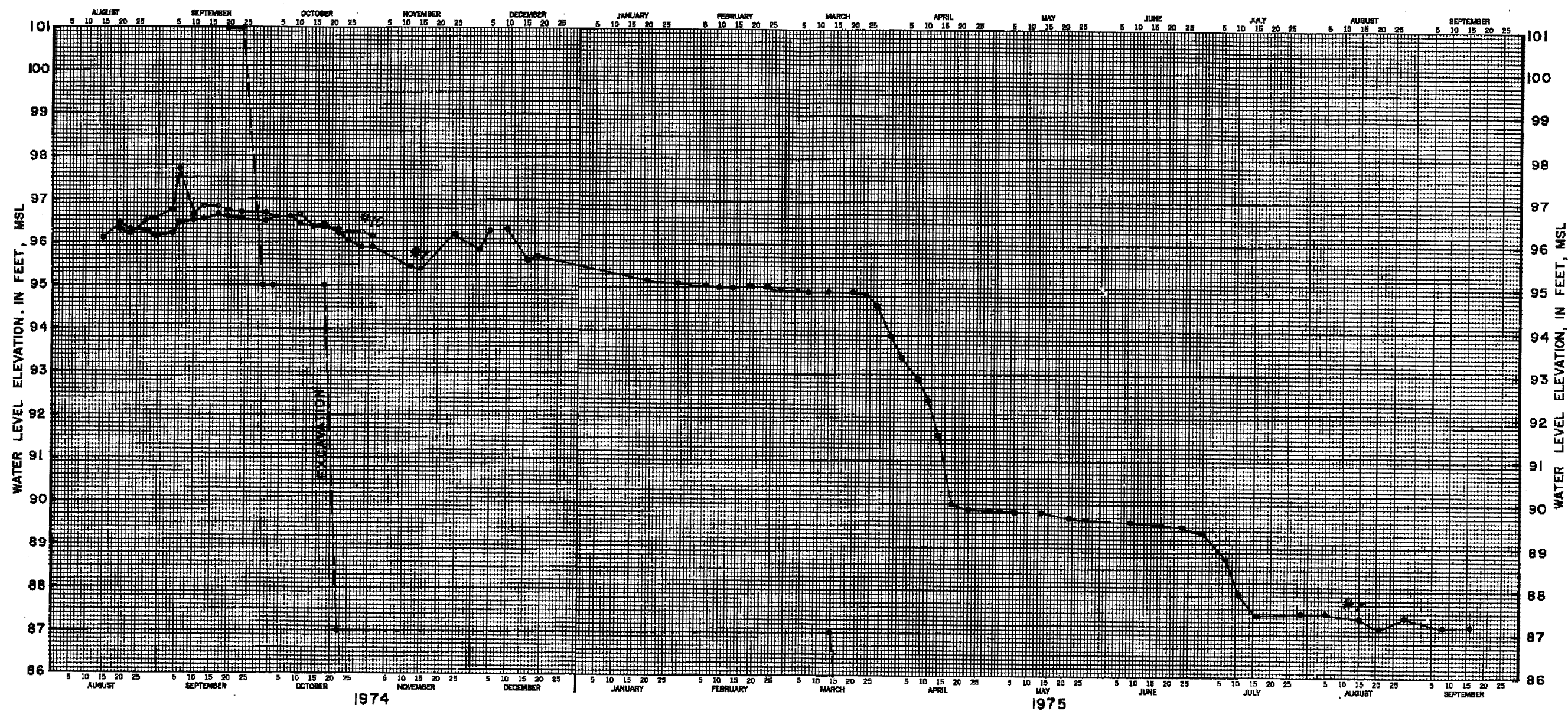
HYDROGRAPHS OF
 CONSTRUCTION OBSERVATION WELLS
 (UFSAR FIGURE 2.4-36, SH.3)



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SITE SAFETY ANALYSIS REPORT

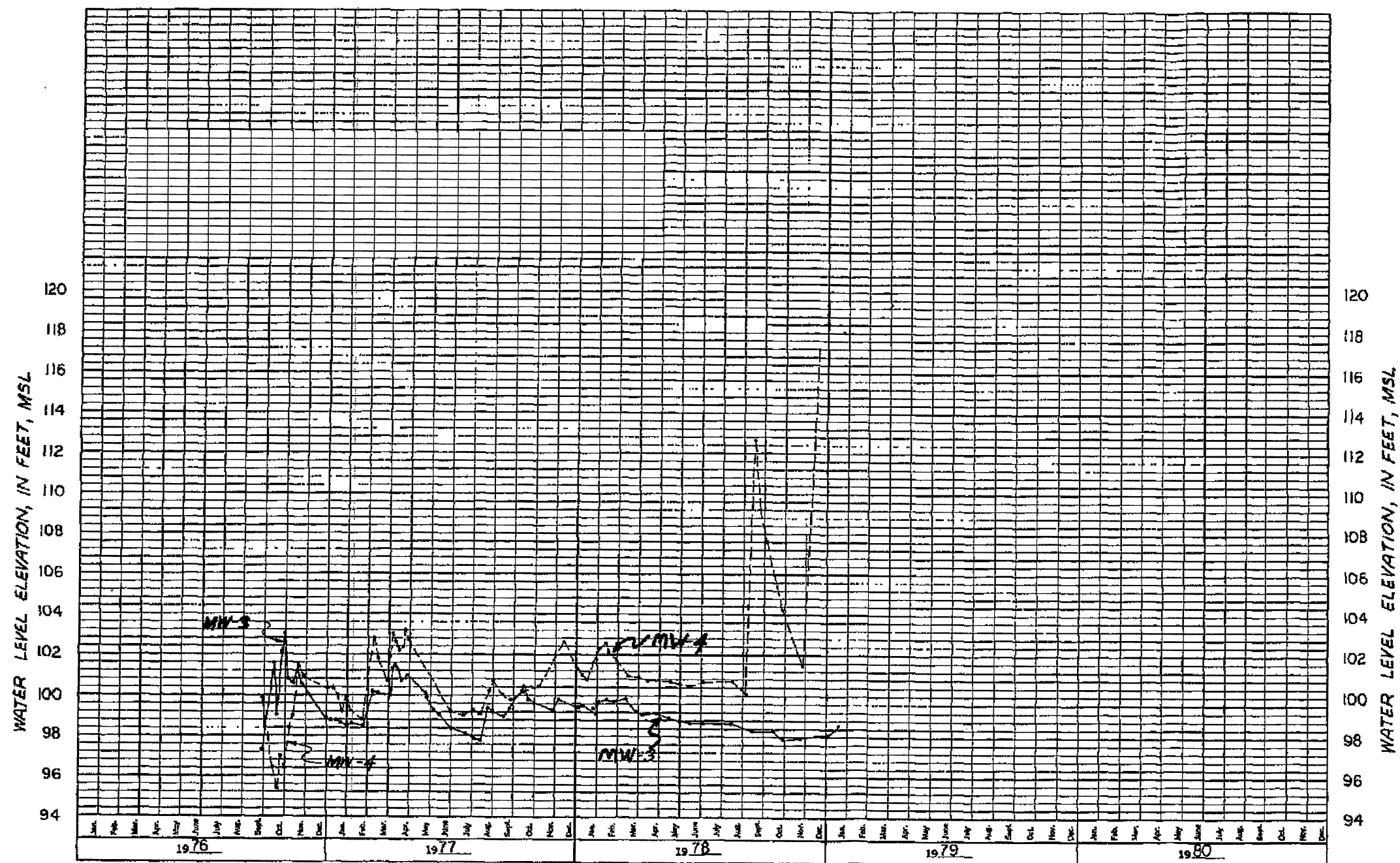
HYDROGRAPHS OF
CONSTRUCTION OBSERVATION WELLS
(UFSAR FIGURE 2.4-36, SH.4)

FIGURE 2.4-44 SHEET 4 OF 5 REV. 1



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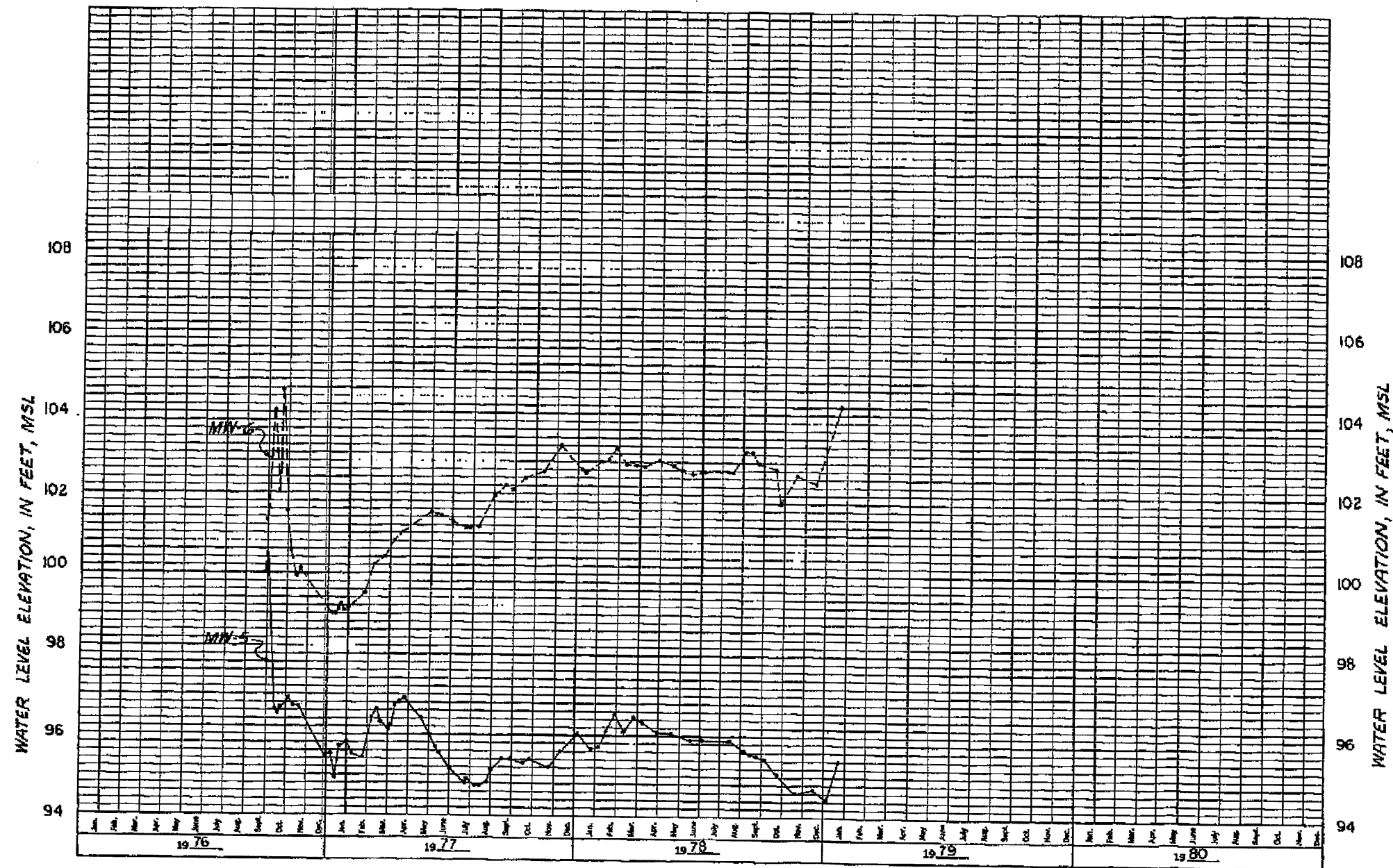
HYDROGRAPHS OF
 CONSTRUCTION OBSERVATION WELLS
 (UFSAR FIGURE 2.4-36, SH.5)



- NOTES:
1. OBSERVATION WELLS MW-1 AND MW-2 WERE DRY FROM SEPT., 1976 TO JAN., 1979.
 2. OBSERVATION WELL LOCATIONS SHOWN ON FIGURE 2.4-43 (UFSAR FIGURE 2.4-35c).
 3. TEMPORARY SITE DRAINAGE CAUSES RECHARGE INTO FILL NEAR MW-4. AREA TO BE REGRADED NEAR MW-4 FEB., 1979.

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HYDROGRAPHS OF REPLACEMENT
OBSERVATION WELLS
MW-3 AND MW-4
(UFSAR FIGURE 2.4-36a, SH.1)

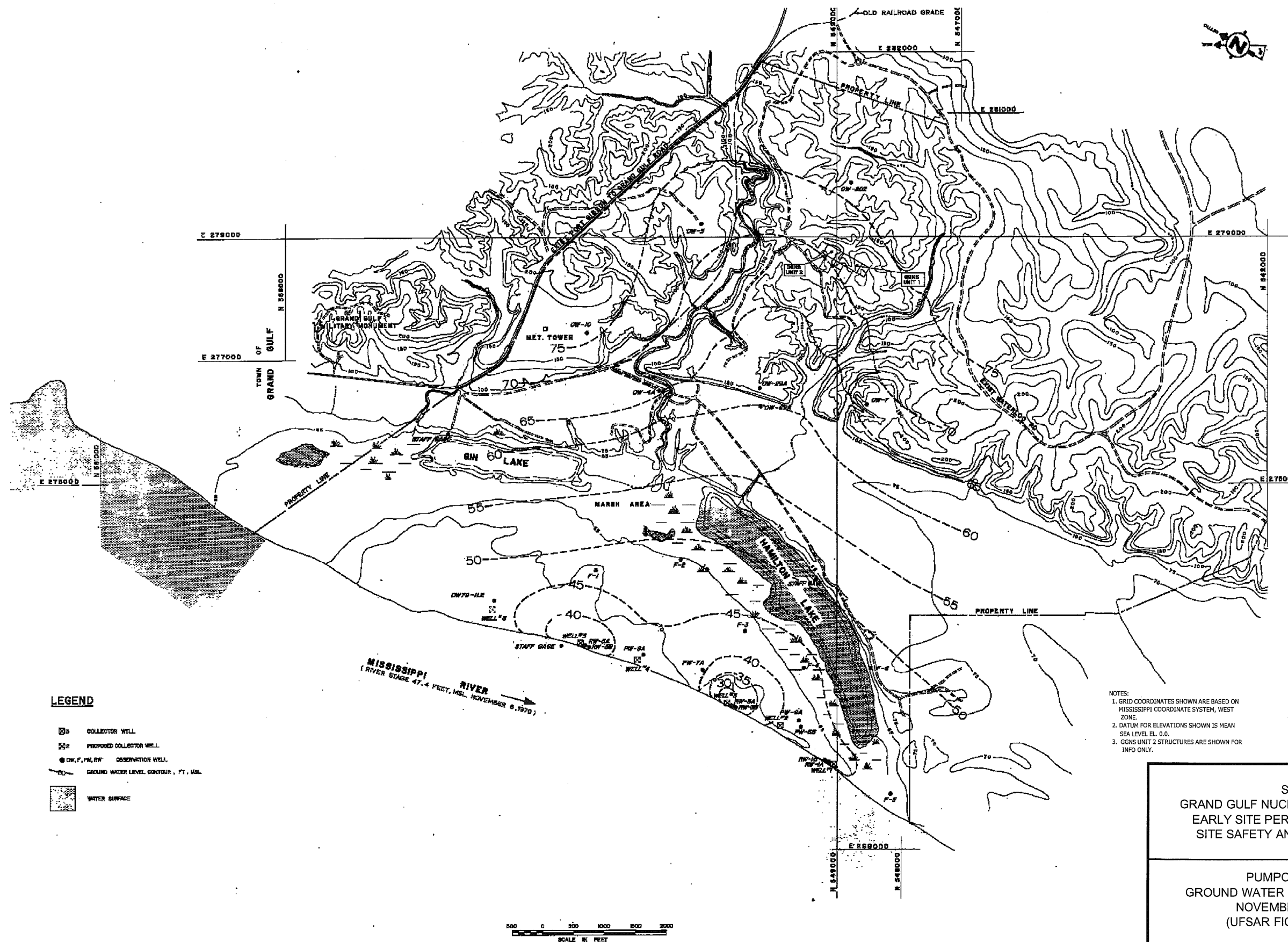


NOTES:
1. OBSERVATION WELL LOCATIONS SHOWN
ON FIGURE 2.4-43 (UFSAR FIGURE 2.4-35c).

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HYDROGRAPHS OF REPLACEMENT
OBSERVATION WELLS
MW-5 AND MW-6
(UFSAR FIGURE 2.4-36a, SH.2)

FIGURE 2.4-45 SHEET 2 OF 2 REV. 1

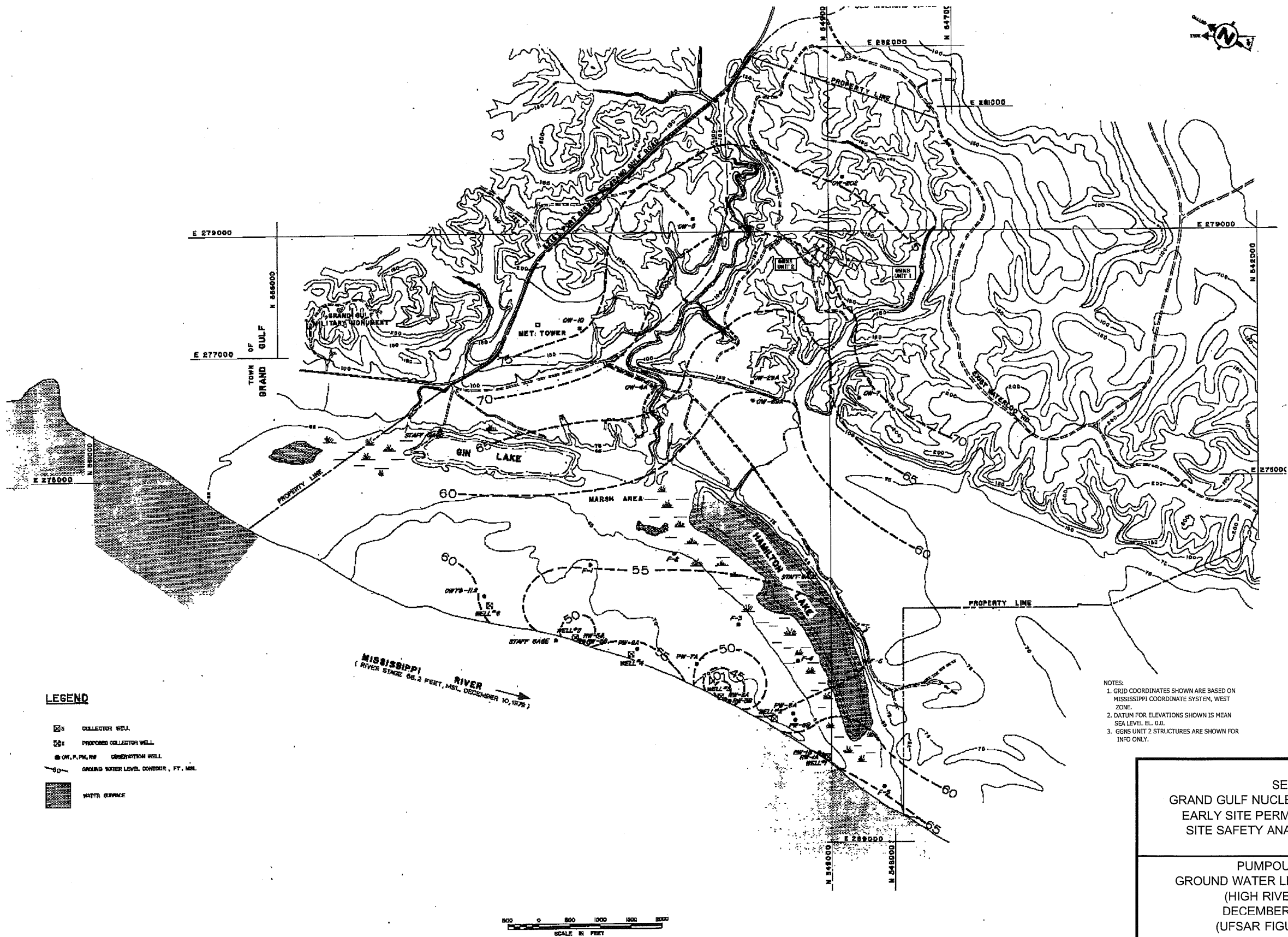


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PUMPOUT TEST
GROUND WATER LEVEL CONTOURS
NOVEMBER 6, 1979
(UFSAR FIGURE 2.4-39)

FIGURE 2.4-46

REV. 1

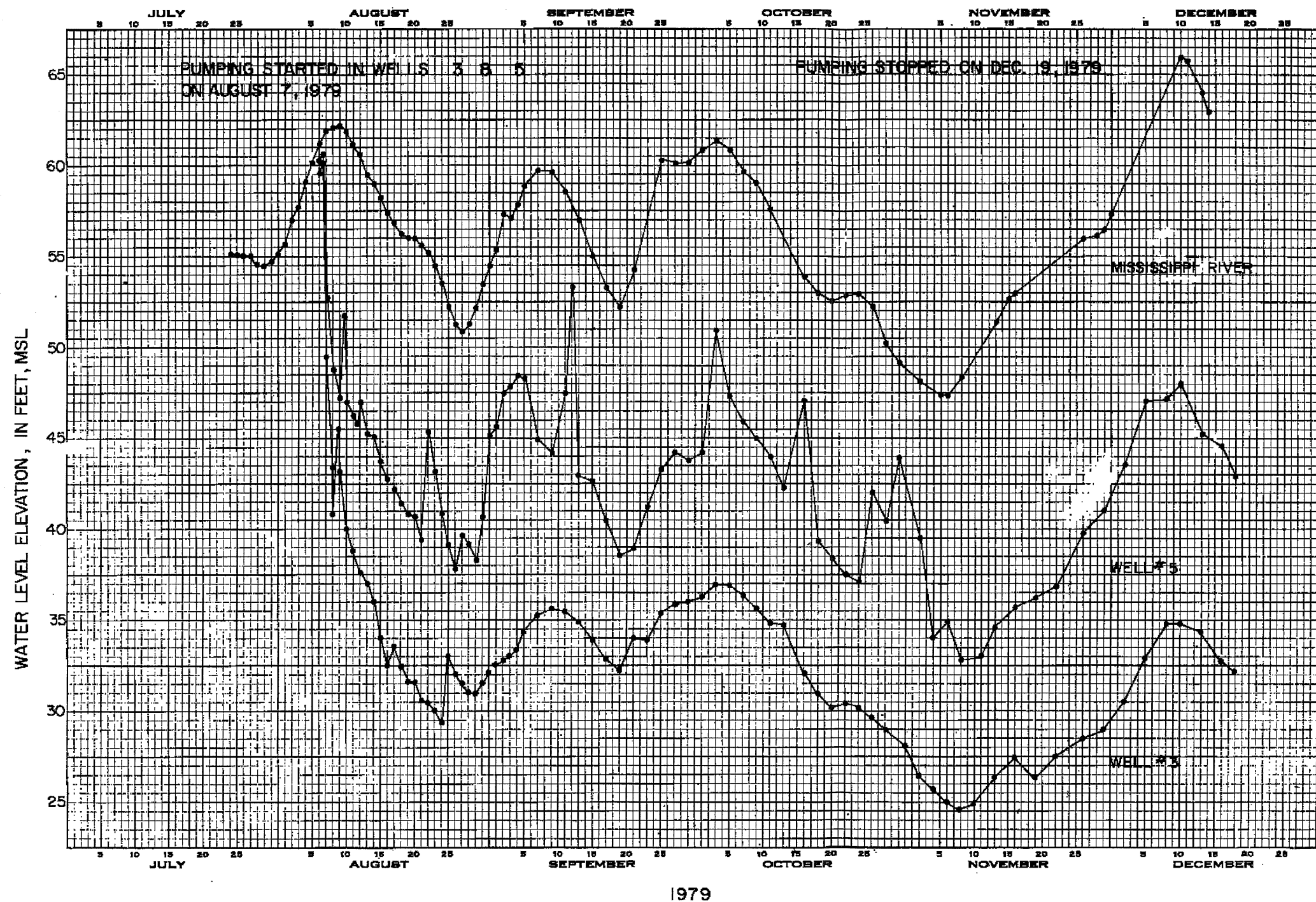


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PUMPOUT TEST
GROUND WATER LEVEL CONTOURS
(HIGH RIVER LEVEL)
DECEMBER 10, 1979
(UFSAR FIGURE 2.4-40)

FIGURE 2.4-47

REV. 1

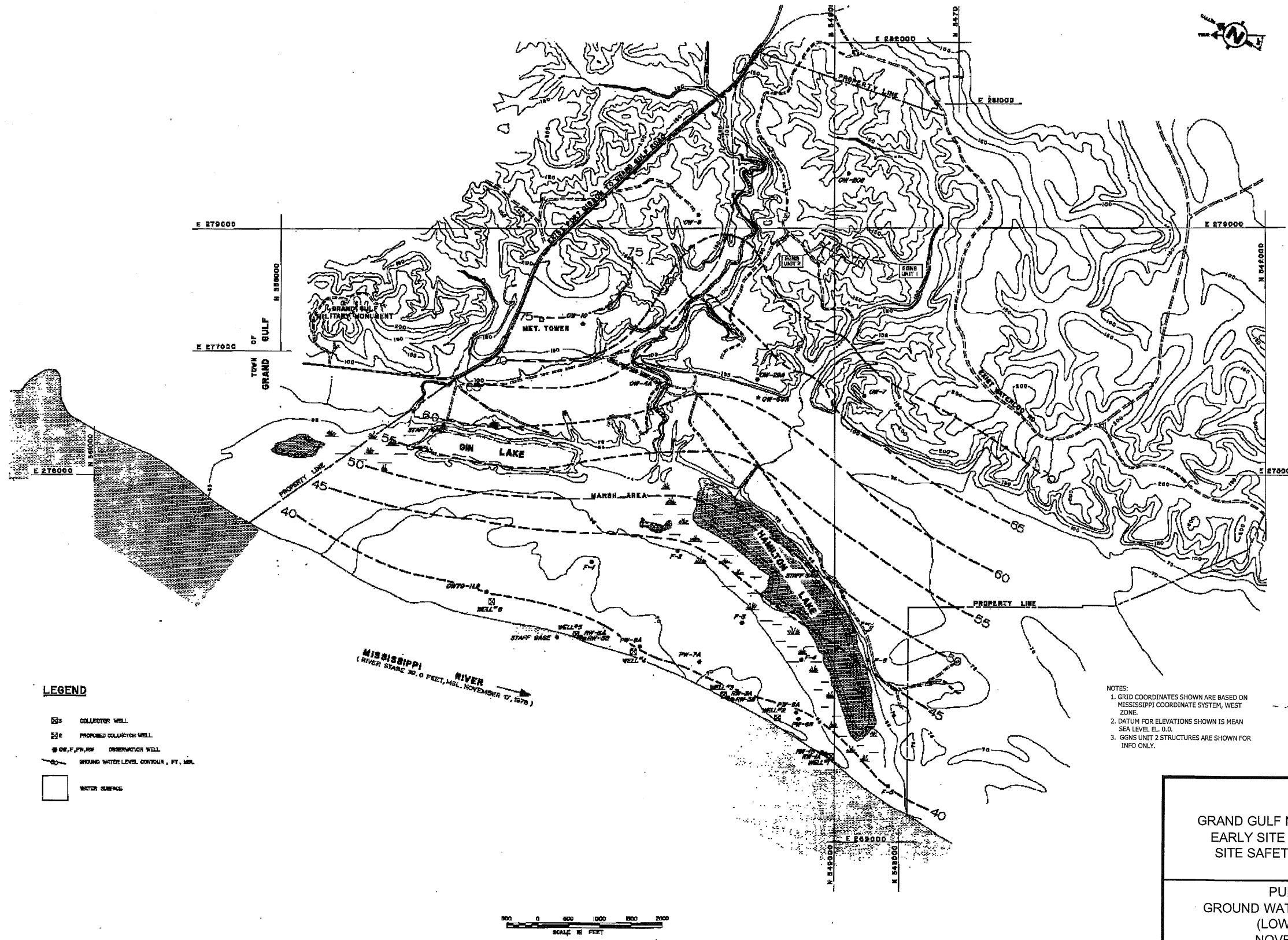


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HYDROGRAPHS OF MISSISSIPPI
RIVER WELLS 3 AND 5
DURING PUMP TEST
(UFSAR FIGURE 2.4-41)

FIGURE 2.4-48

REV. 1

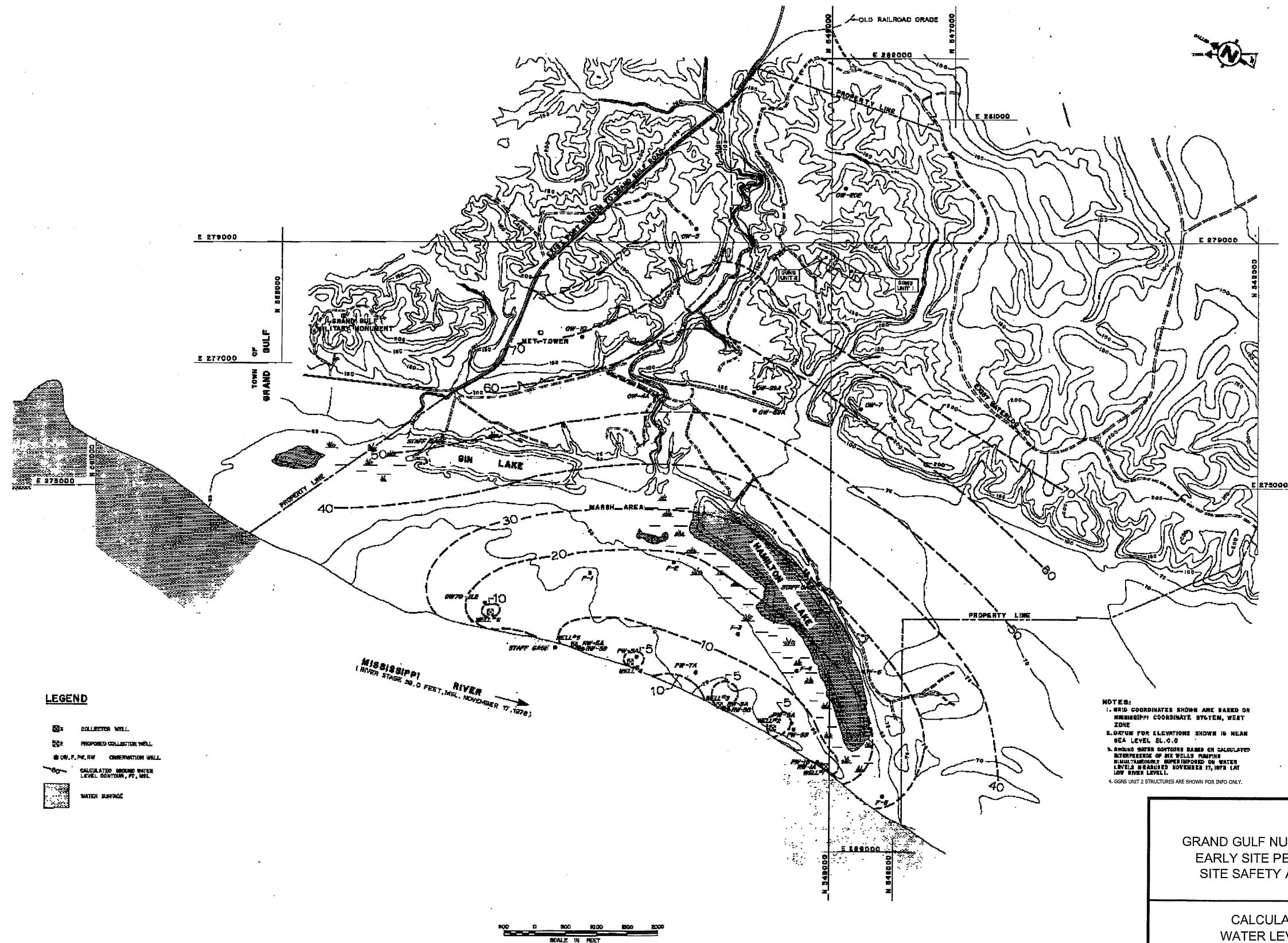


- LEGEND**
- COLLECTOR WELL
 - PROPOSED COLLECTOR WELL
 - OW, F, PW, RW OBSERVATION WELL
 - GROUND WATER LEVEL CONTOUR, FT., MSL.
 - WATER SURFACE

- NOTES:**
1. GRID COORDINATES SHOWN ARE BASED ON MISSISSIPPI COORDINATE SYSTEM, WEST ZONE.
 2. DATUM FOR ELEVATIONS SHOWN IS MEAN SEA LEVEL EL. 0.0.
 3. GGNS UNIT 2 STRUCTURES ARE SHOWN FOR INFO ONLY.

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PUMPOUT TEST
 GROUND WATER LEVEL CONTOURS
 (LOW RIVER LEVEL)
 NOVEMBER 17, 1978
 (UFSAR FIGURE 2.4-42)

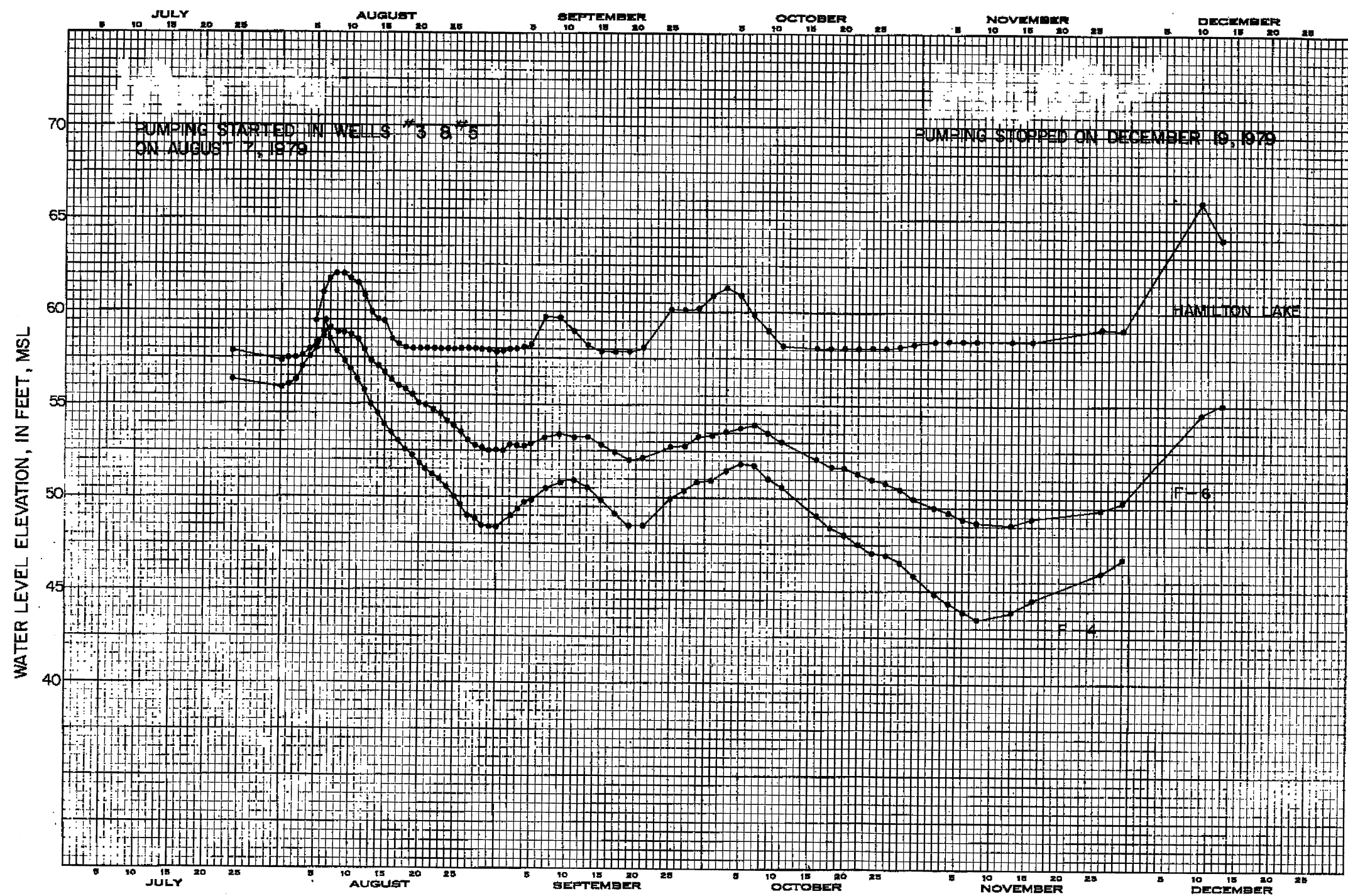


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CALCULATED GROUND
WATER LEVEL CONTOURS
(LOW RIVER LEVEL)
(UFSAR FIGURE 2.4-43)

FIGURE 2.4-50

REV. 1

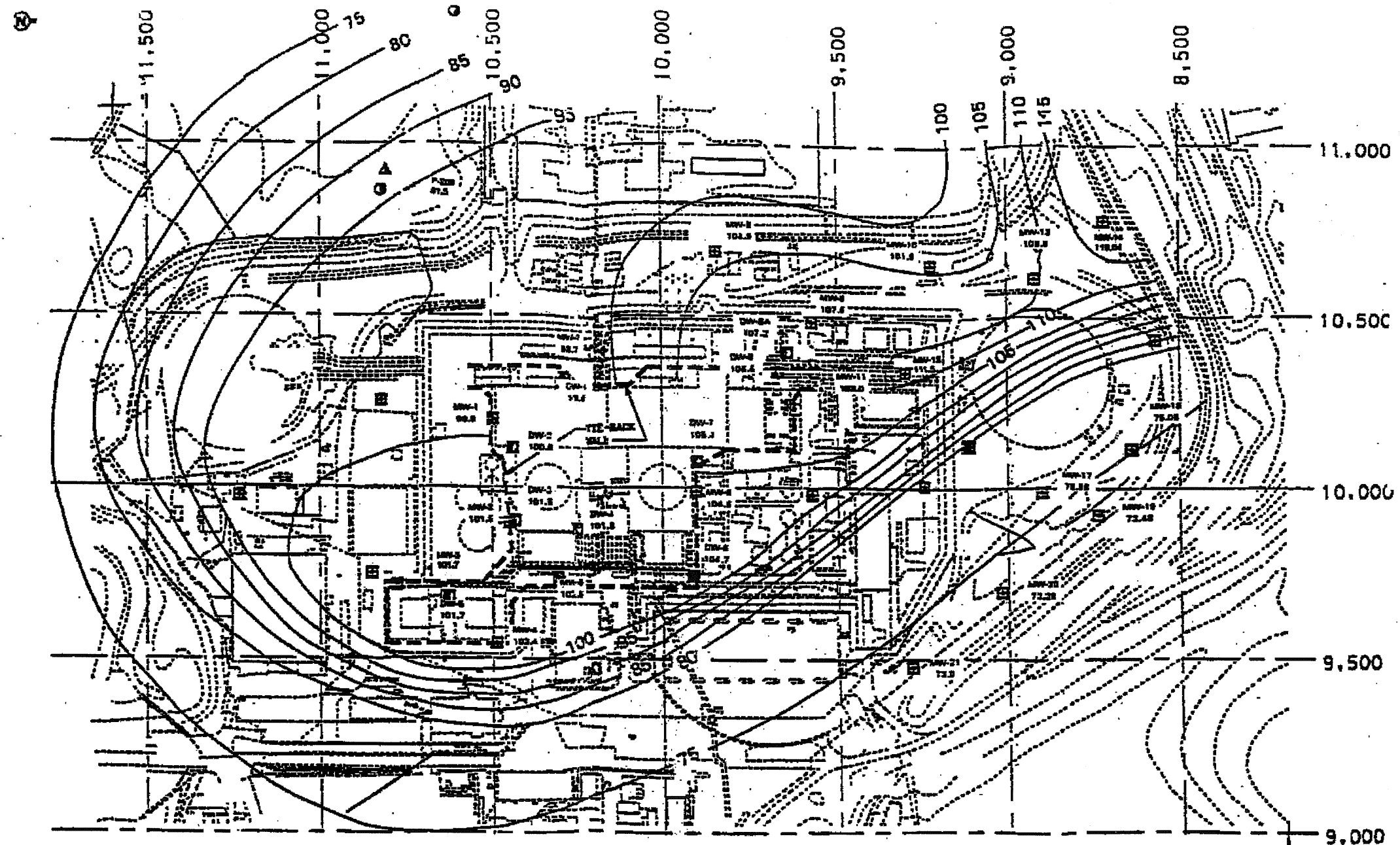


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HYDROGRAPHS OF HAMILTON LAKE
AND OBSERVATION WELLS
F-4 AND F-6 DURING PUMP TESTS
(UFSAR FIGURE 2.4-45)

FIGURE 2.4-51

REV. 1



LEGEND:

- Ground water dewatering wells, monitoring wells, observation wells and estimated average post-construction ground water elevations based on measurements taken on 11/08/90
- Ground water elevation contour, contour interval is 5 feet
- Tieback Wall Project

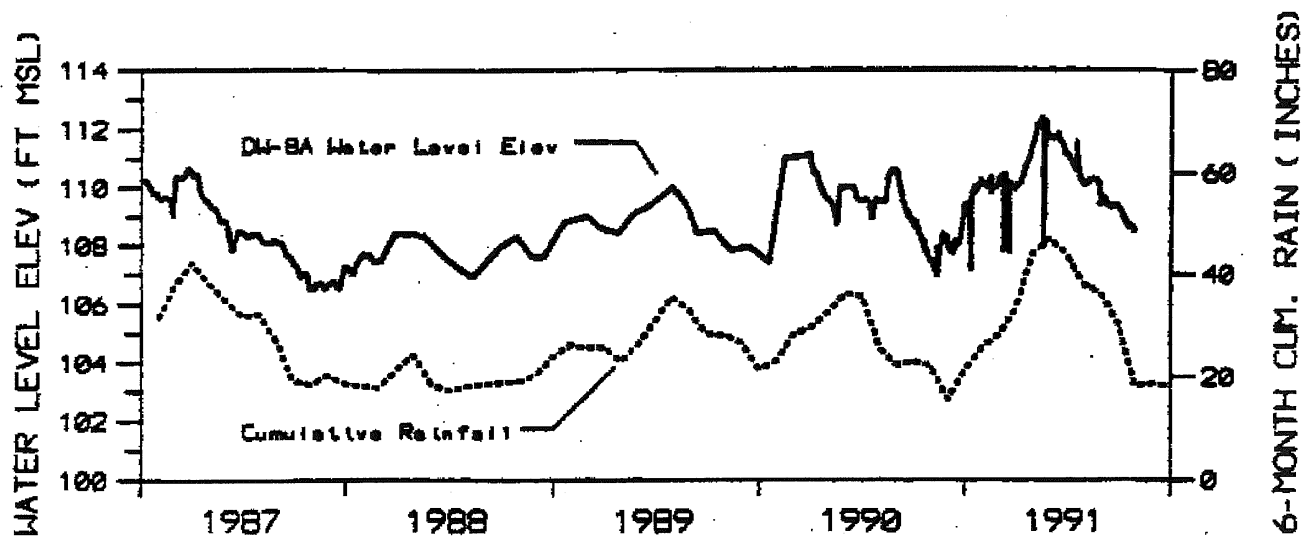
0 100 200 300
SCALE IN FEET

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AVERAGE
POST-CONSTRUCTION
GROUND WATER ELEVATIONS
(UFSAR FIGURE 2.4-48)

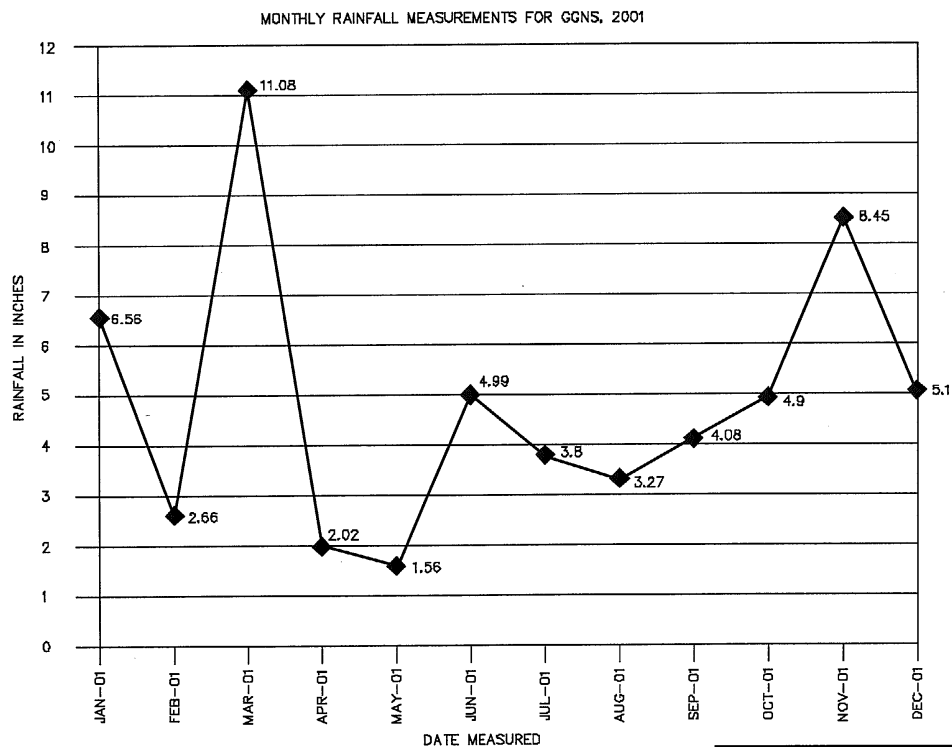
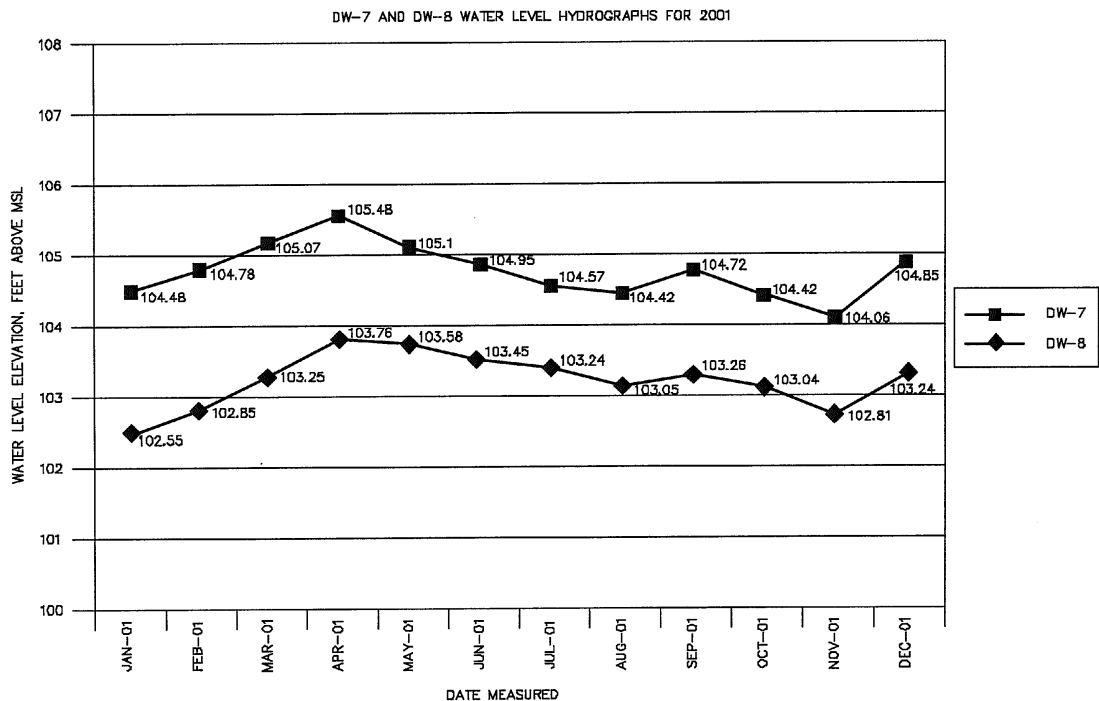
FIGURE 2.4-52

REV. 1



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DW-8A WATER-LEVEL HYDROGRAPH
 AND 6-MONTH CUMULATIVE PRECIPITATION
 1987-1991
 (UFSAR FIGURE 2.4-50)



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GGNS GROUNDWATER LEVEL AND
RAINFALL HYDROGRAPHS - 2001

