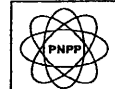


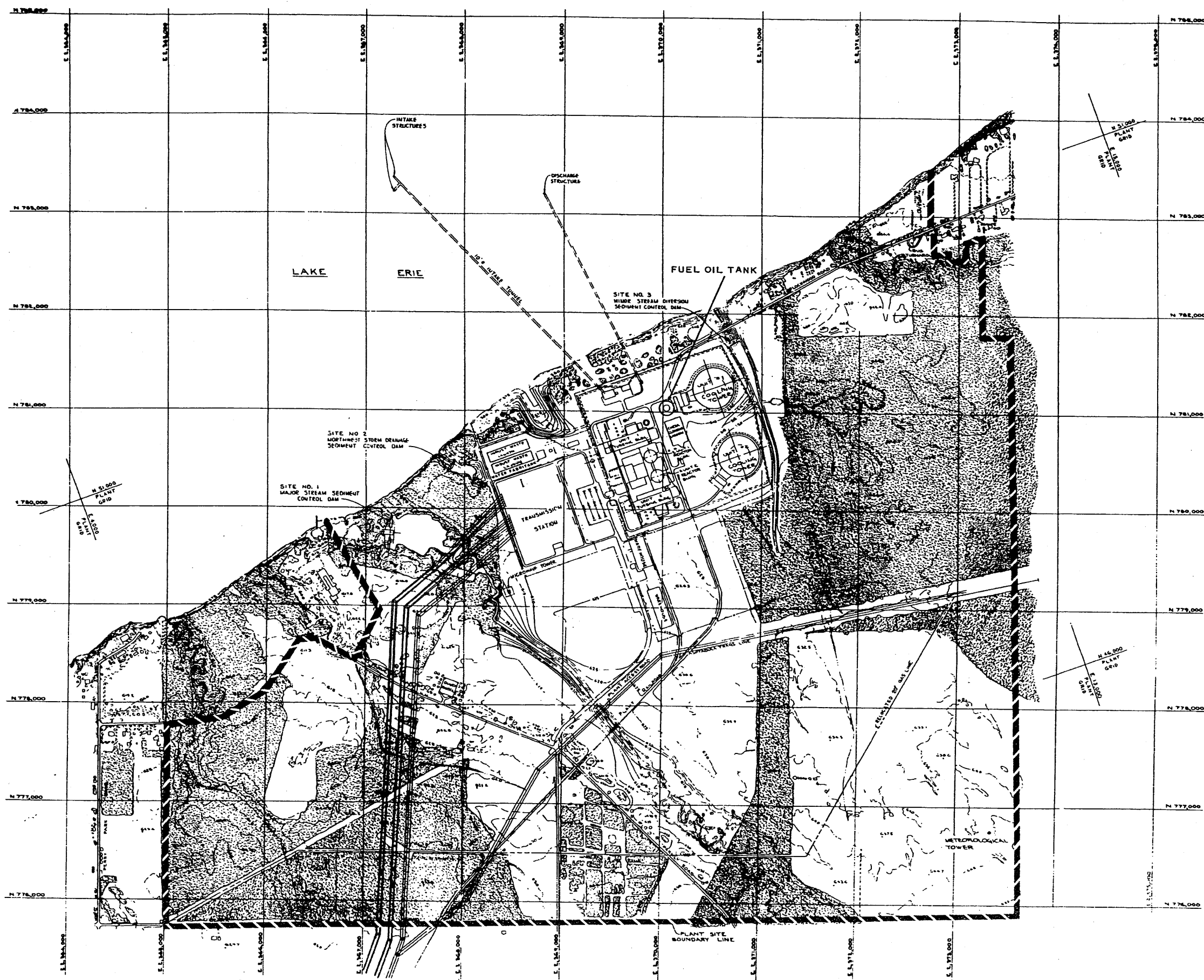
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Area Topography Within
5 Mile Radius

Figure 2.1-2



TOPOGRAPHIC CONTOURS ARE IN FEET

NOTES

1. COORDINATES SHOWN ON THIS MAP ARE BASED ON THE OHIO STATE COORDINATE SYSTEM.
2. REACTOR COORDINATES

	REACTOR	PLANT
UNIT 1	8726 540	880 400
	87 304 875	88 810
UNIT 2	8730 540 725	880 250
	87 304 847 106	88 810

NOTE:
ALL BACKGROUND CONTOURS
SUPPLIED BY AERIAL SURVEYS INC.

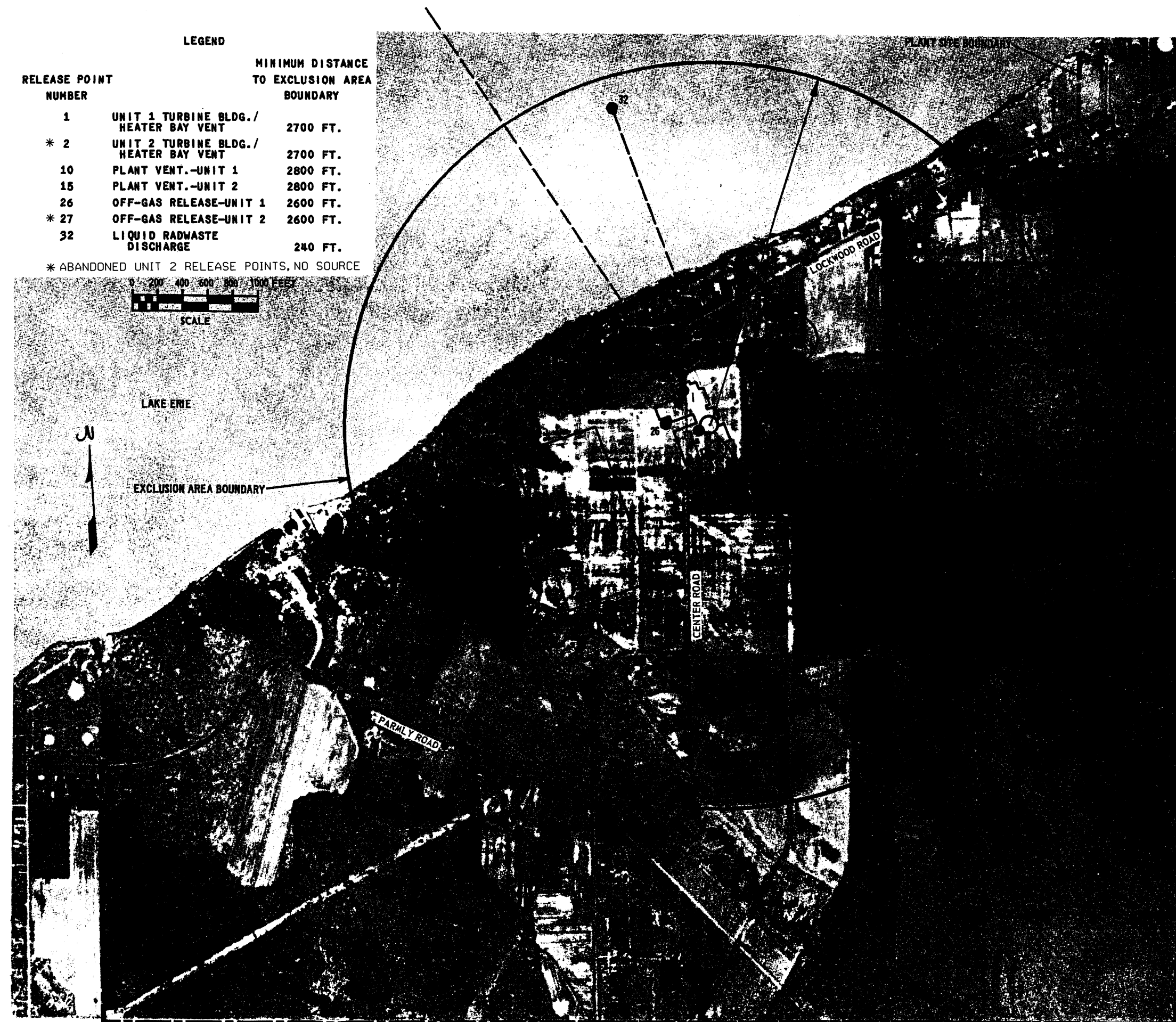
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Topograph Within the Plant
Site Boundary

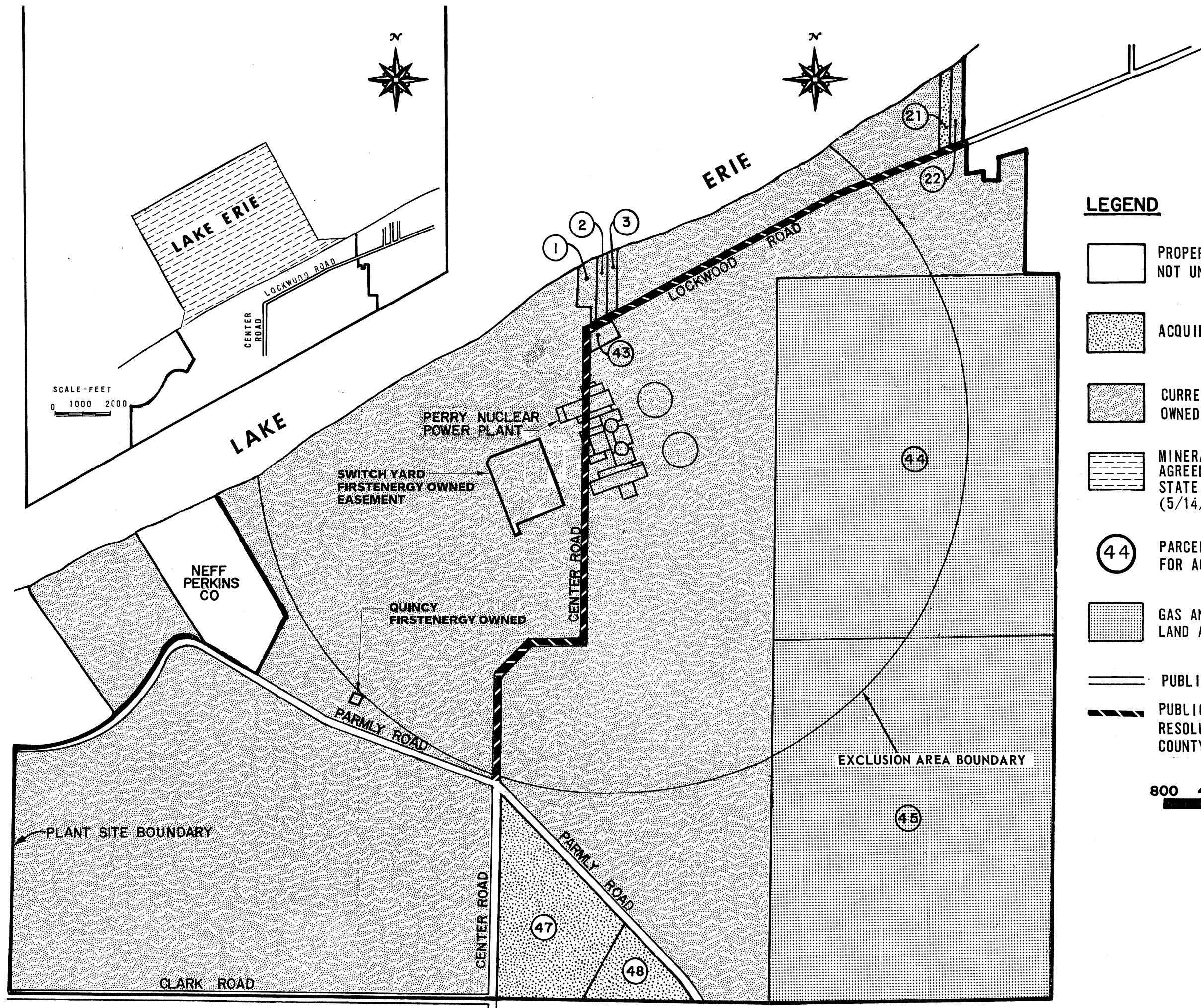
Figure 2.1-3



(REV. 19 10/2015)

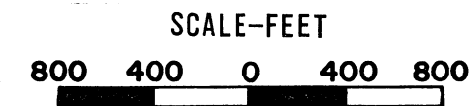
PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

PLANT SITE
AERIAL PHOTOGRAPH
FIGURE 2.1-4



LEGEND

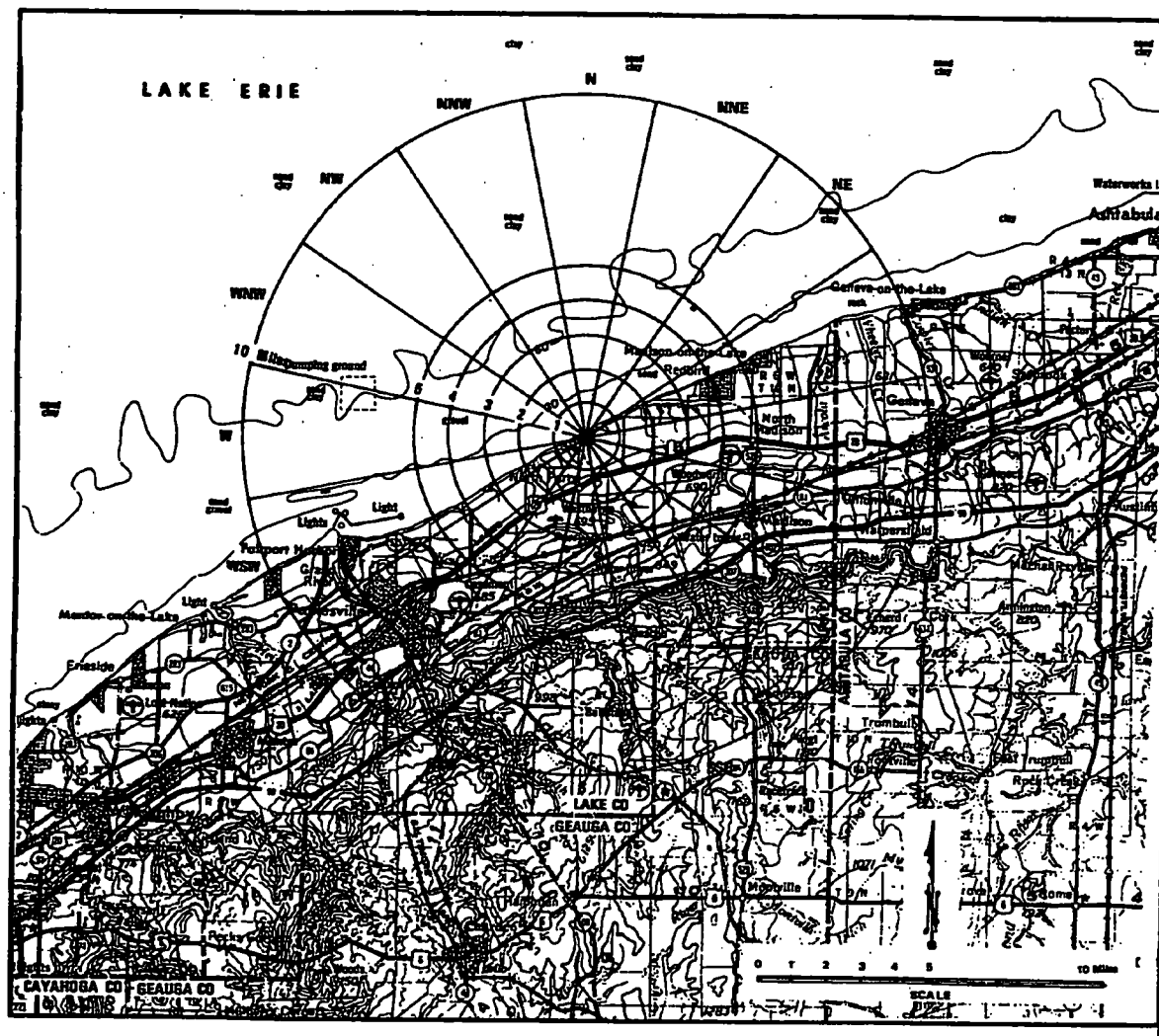
- PROPERTY OUTSIDE EXCLUSION BOUNDARY
NOT UNDER CEI CONTROL
- ACQUIRED 11/74
- CURRENT LAND AND MINERAL RIGHTS
OWNED BY CEI 1/1/75
- MINERAL RIGHTS ACQUIRED BY FORMAL LEASE
AGREEMENT COMPLETED BETWEEN CEI AND THE
STATE OF OHIO FOR A 46 YEAR PERIOD
(5/14/1976 TO 5/14/2022) DATED 6/8/76
- 44 PARCEL NO.; REFER TO TABLE 2.1-9
FOR ACQUISITION CHRONOLOGY
- GAS AND OIL RIGHTS ACQUIRED 10/25/76
LAND AND MINERAL RIGHTS ACQUIRED IN 1972
- PUBLIC RIGHT OF WAY
- PUBLIC RIGHT OF WAY VACATED BY A
RESOLUTION ADOPTED BY THE BOARD OF LAKE
COUNTY COMMISSIONERS ON 6/16/75



(REV. 22 10/2021)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

STATUS OF LAND
AND MINERAL RIGHTS
FIGURE 2.1-5



AREA WITHIN 10 MILES OF PNPP

(Rev. 12 1/03)

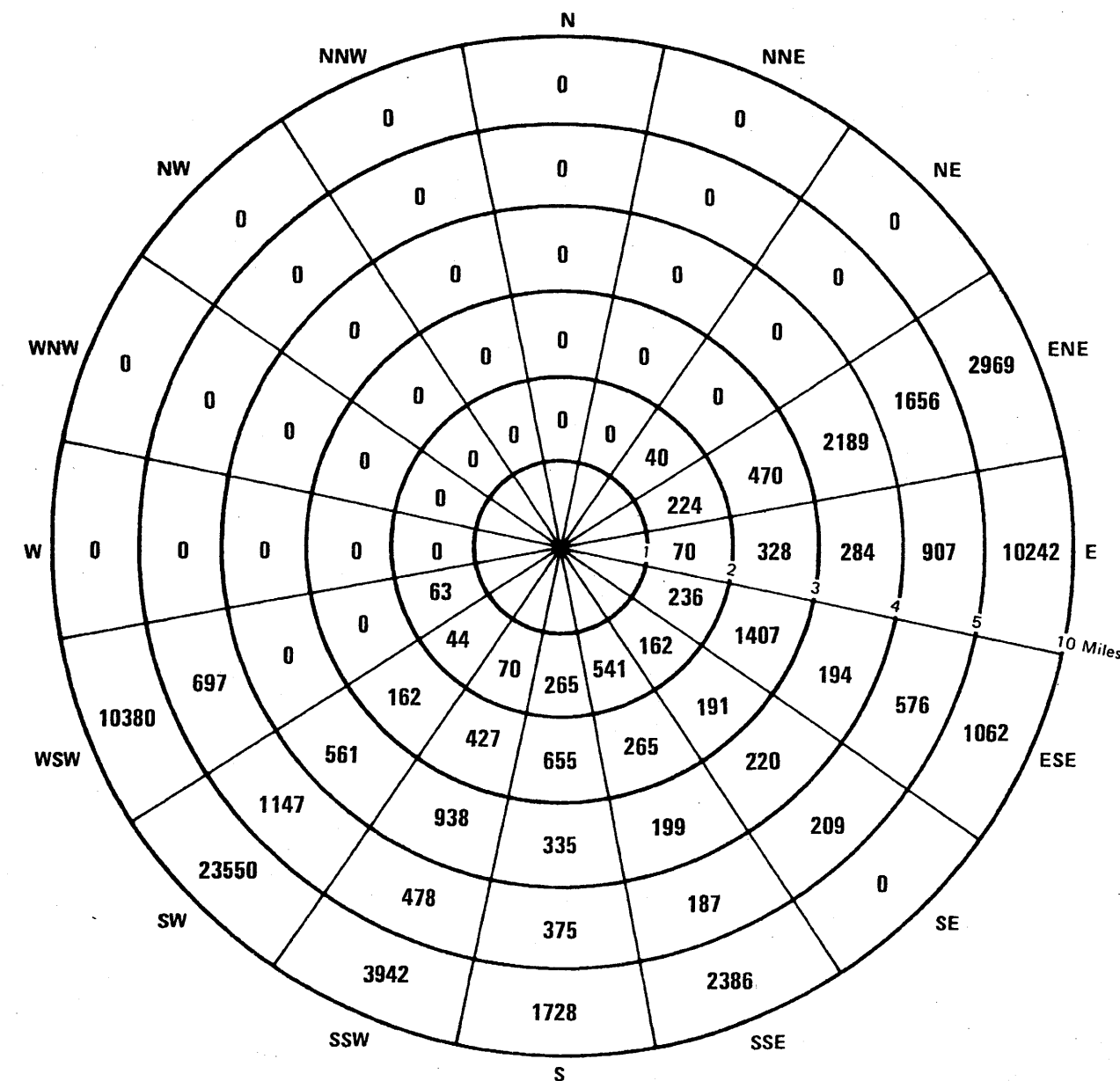


PERRY NUCLEAR POWER PLANT

Area Within 10 Miles of PNPP

Figure 2.1-6

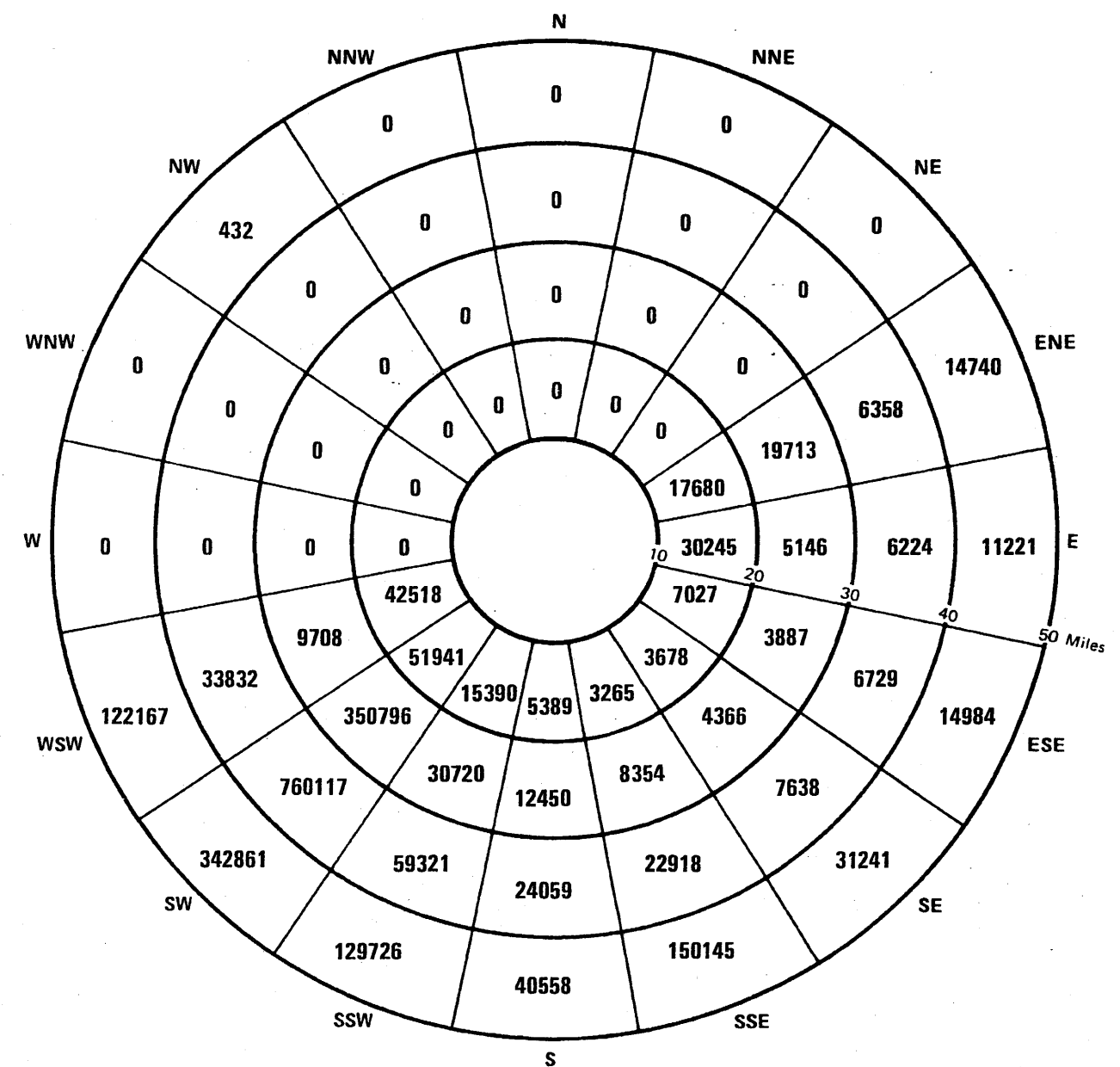
TOTALS							
ANNULUS	0-1 Mile	1-2 Miles	2-3 Miles	3-4 Miles	4-5 Miles	0-5 Miles	5-10 Miles
POPULATION	103	1715	3905	4920	6232	16875	56259




Values For 0 - 1 Mile Annulus

N	NNE	NE	ENE	E	ESE	SE	SSE
0	0	37	11	0	0	0	7
18	26	0	4	0	0	0	0
S	SSW	SW	WSW	W	WNW	NW	NNW

TOTALS						
ANNULUS	10-20 Miles	20-30 Miles	30-40 Miles	40-50 Miles	10-50 Miles	0-50 Miles
POPULATION	177133	445140	927196	858075	2407544	2480678

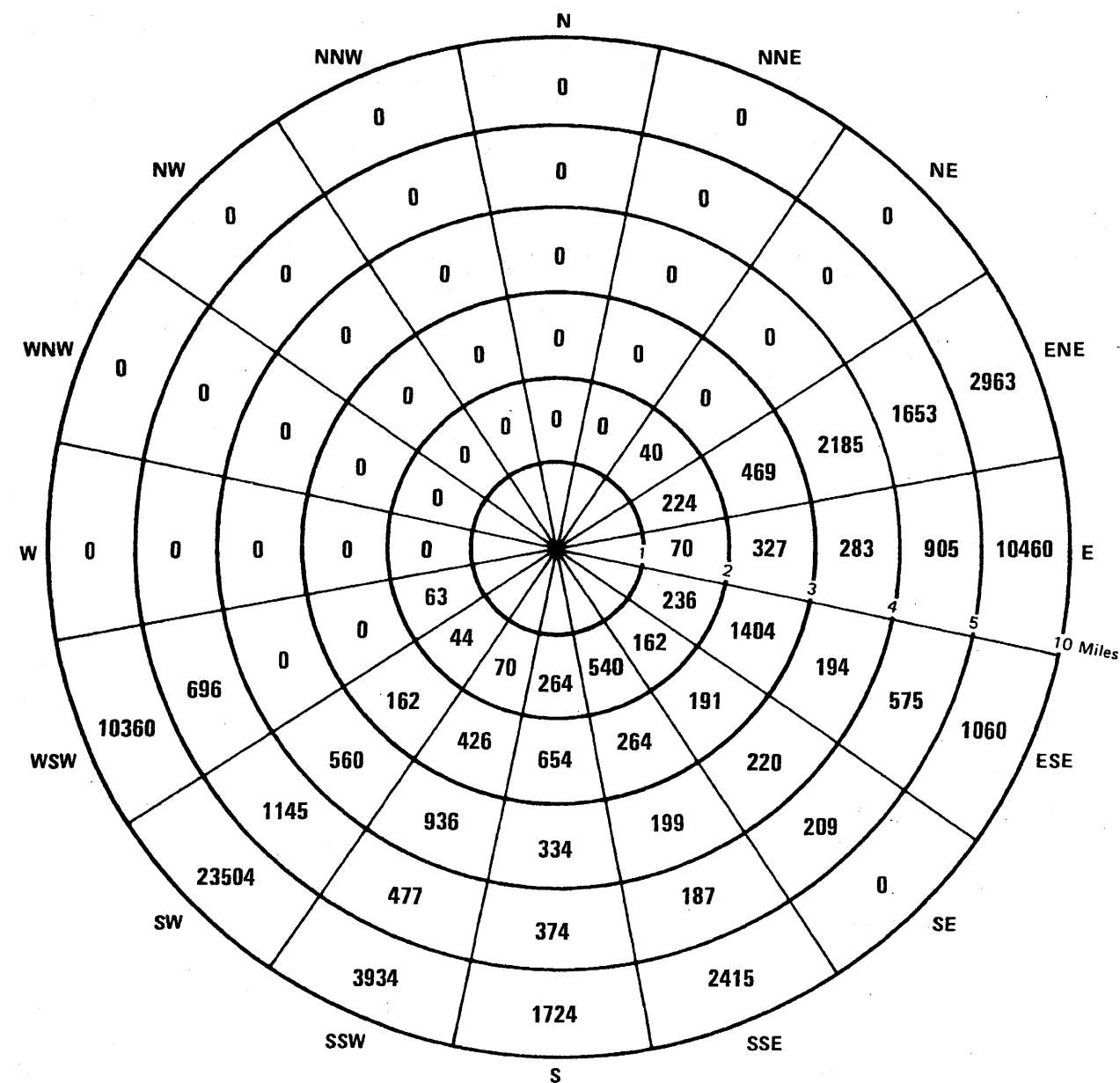


(Rev. 12 1/03)


PERRY NUCLEAR POWER PLANT

1978 Permanent Resident Population
Figure 2.1-7

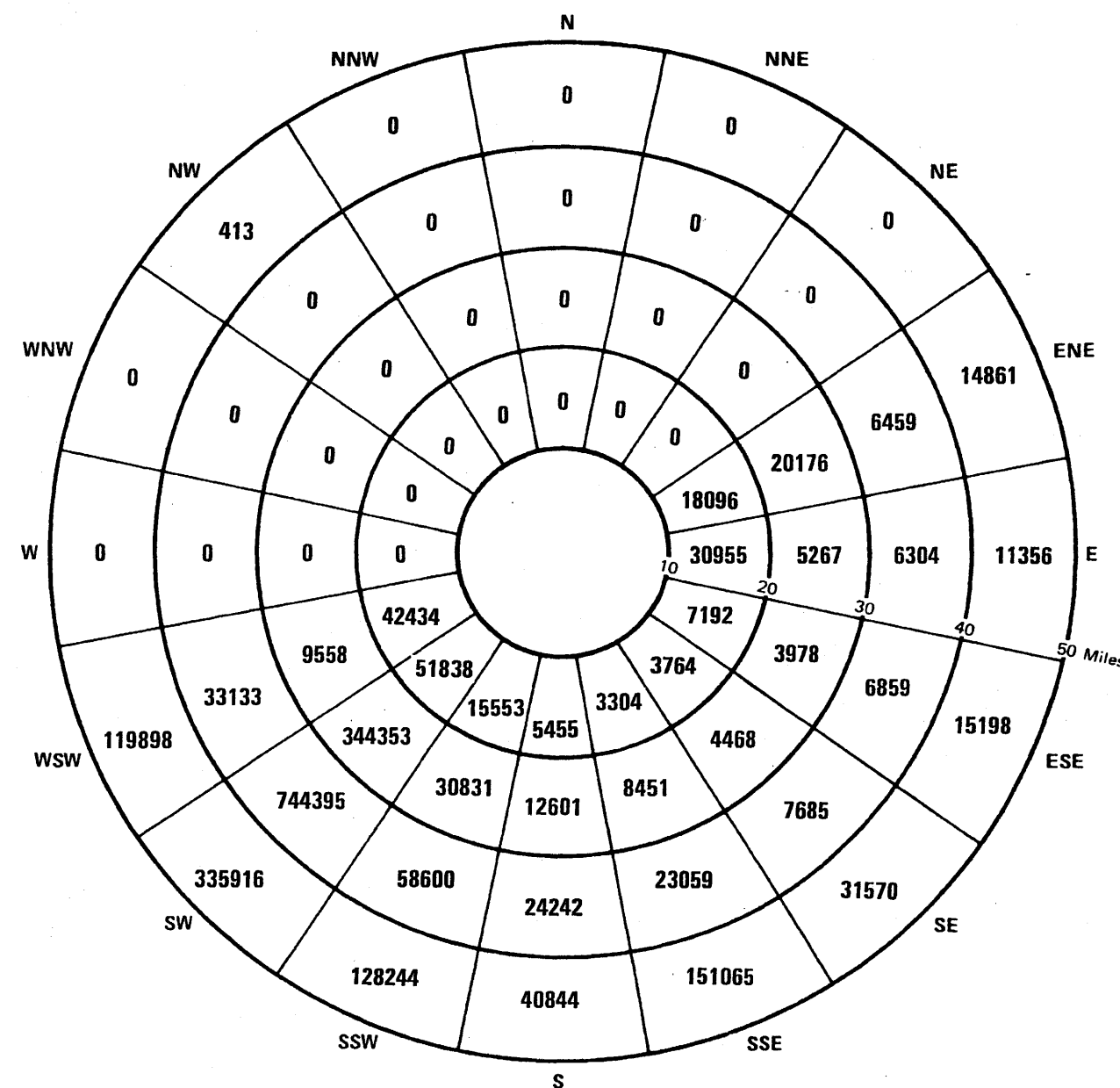
TOTALS							
ANNULUS	0-1 Mile	1-2 Miles	2-3 Miles	3-4 Miles	4-5 Miles	0-5 Miles	5-10 Miles
POPULATION	103	1713	3897	4911	6221	16845	56420




Values For 0 - 1 Mile Annulus

N	NNE	NE	ENE	E	ESE	SE	SSE
0	0	37	11	0	0	0	7
18	26	0	4	0	0	0	0
S	SSW	SW	WSW	W	WNW	NW	NNW

TOTALS						
ANNULUS	10-20 Miles	20-30 Miles	30-40 Miles	40-50 Miles	10-50 Miles	0-50 Miles
POPULATION	178591	439683	910736	849365	2378375	2451640



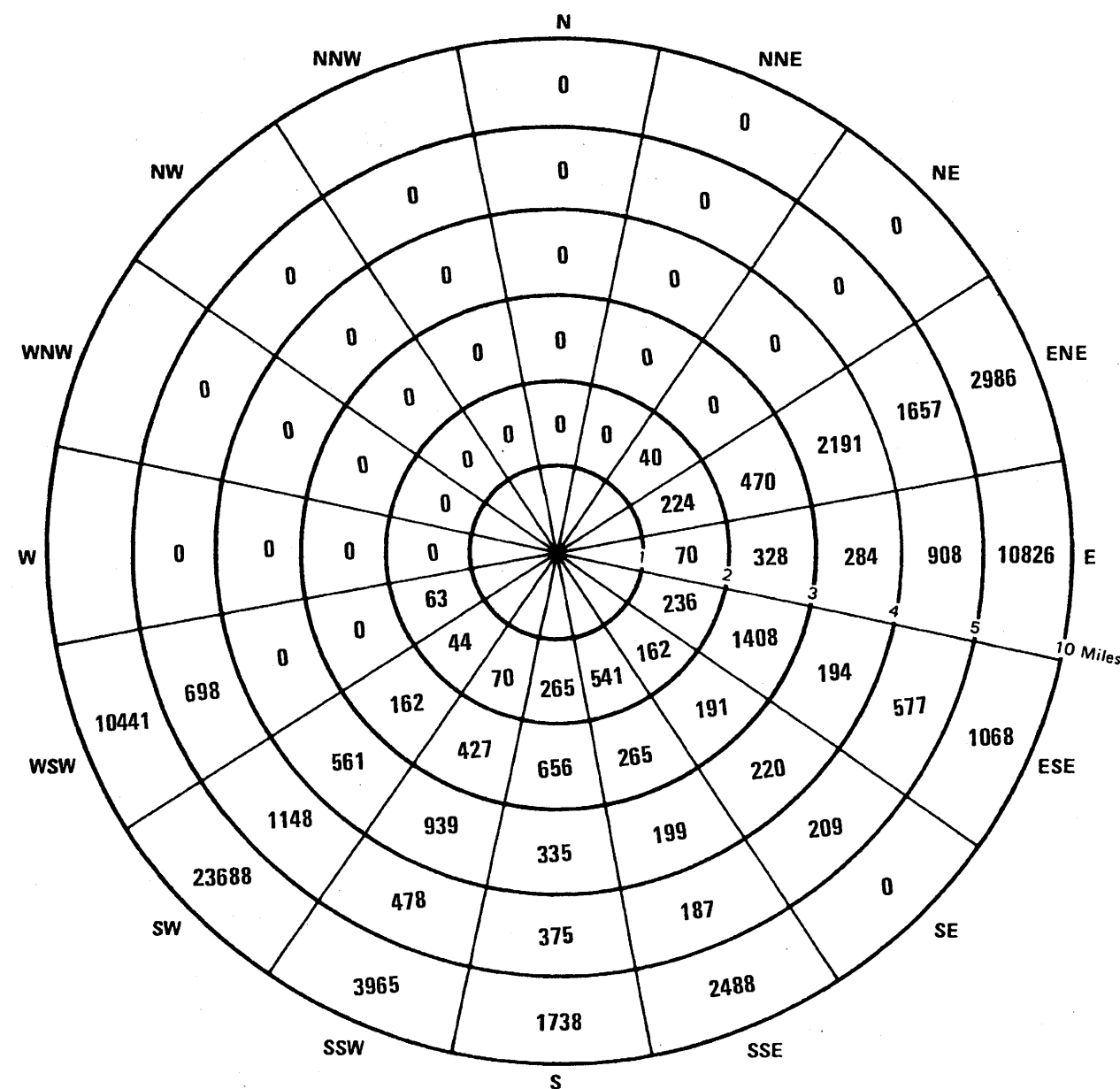
(Rev. 12 1/03)


PERRY NUCLEAR POWER PLANT

1980 Permanent Resident Population
Figure 2.1-8

TOTALS

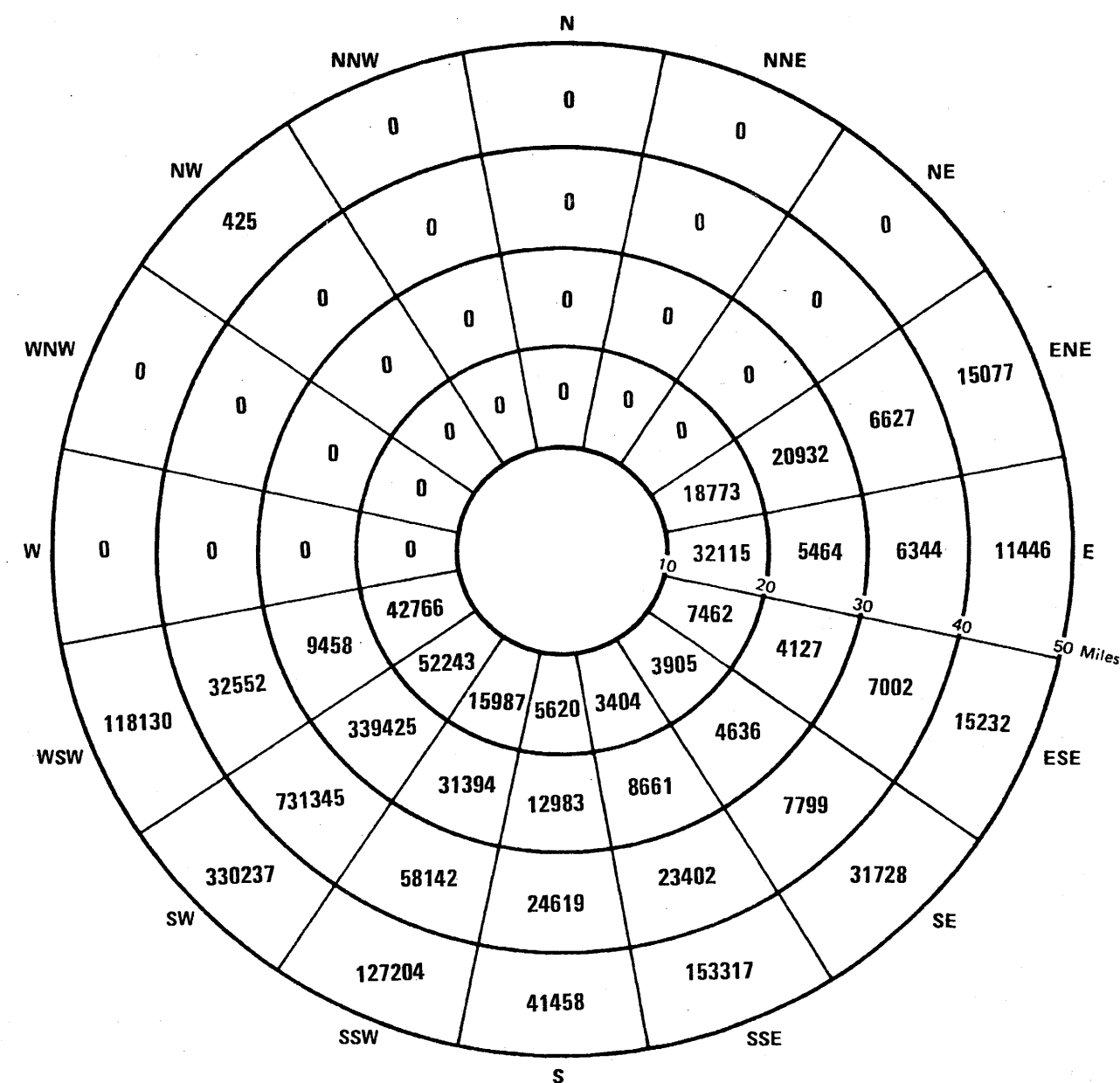
ANNULUS	0-1 Mile	1-2 Miles	2-3 Miles	3-4 Miles	4-5 Miles	0-5 Miles	5-10 Miles
POPULATION	103	1715	3907	4923	6237	16885	57200



N	NNE	NE	ENE	E	ESE	SE	SSE
0	0	37	11	0	0	0	7
18	26	0	4	0	0	0	0
S	SSW	SW	WSW	W	WNW	NW	NNW

TOTALS

ANNULUS	10-20 Miles	20-30 Miles	30-40 Miles	40-50 Miles	10-50 Miles	0-50 Miles
POPULATION	182275	437080	897832	844254	2361441	2435526



(Rev. 12 1/03)

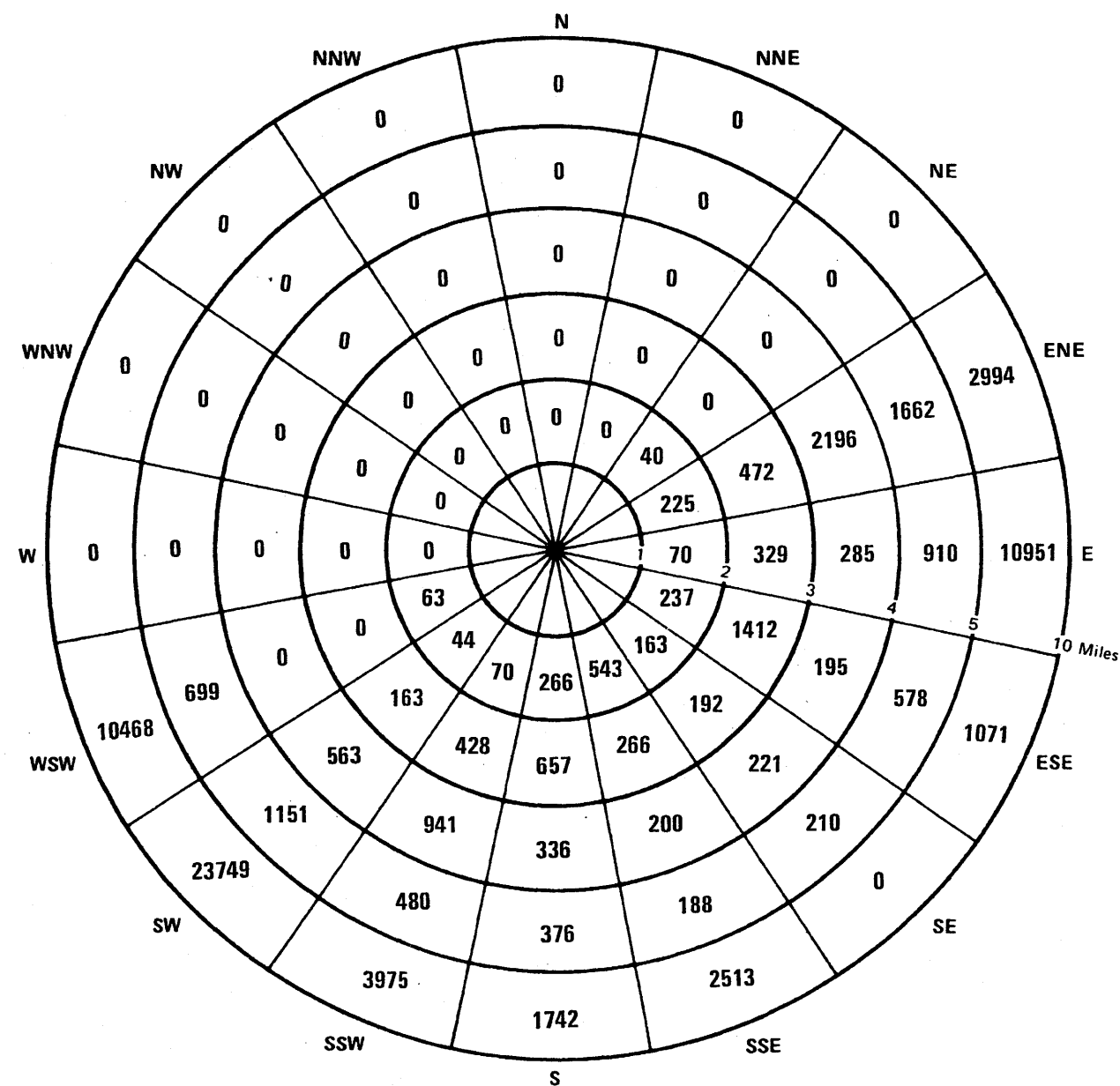


PERRY NUCLEAR POWER PLANT

1983 Permanent Resident Population

Figure 2.1-9

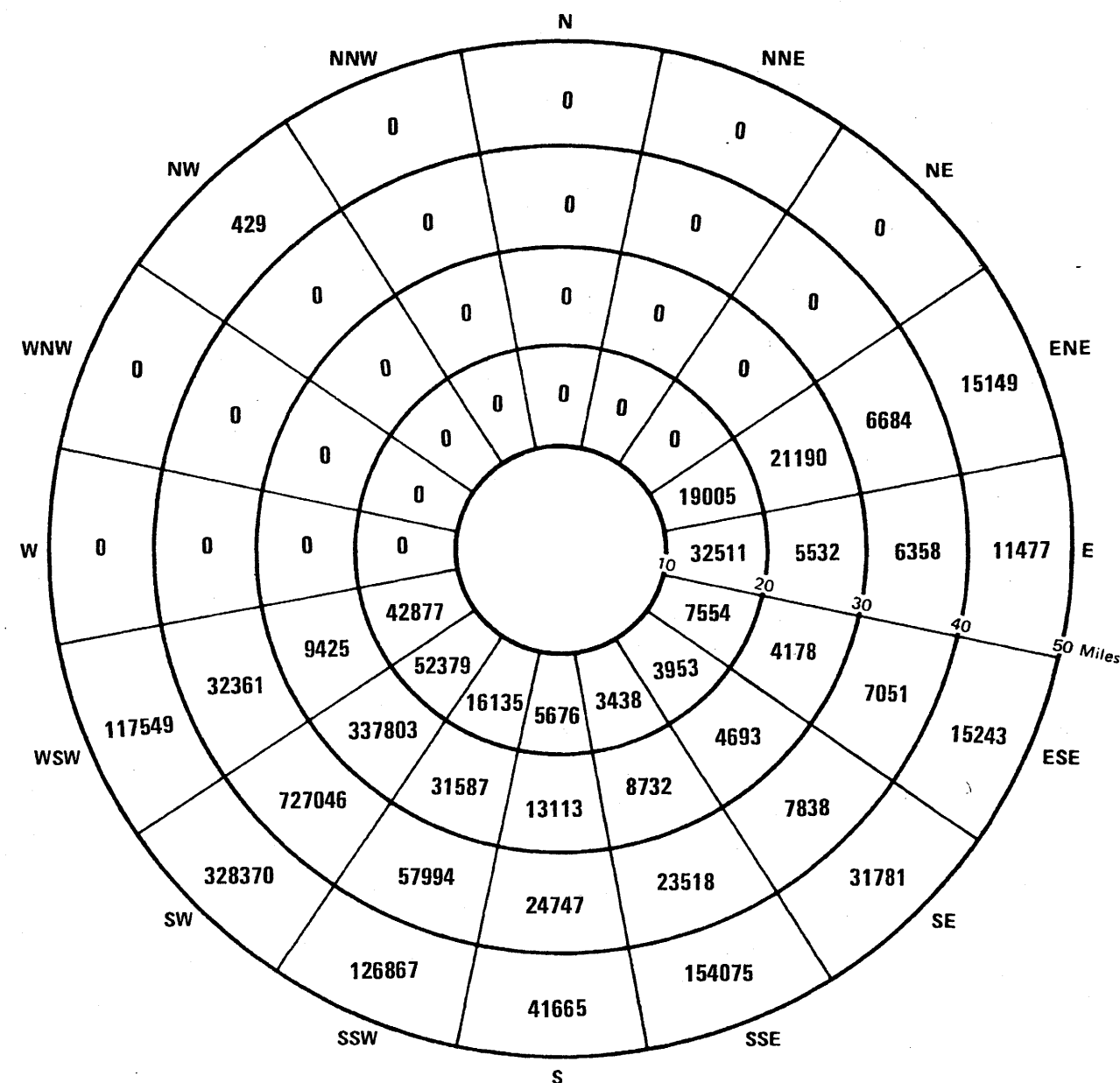
TOTALS							
ANNULUS	0-1 Mile	1-2 Miles	2-3 Miles	3-4 Miles	4-5 Miles	0-5 Miles	5-10 Miles
POPULATION	103	1721	3919	4937	6254	16934	57463



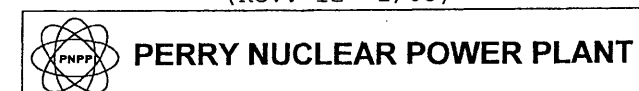
Values For 0 - 1 Mile Annulus

N	NNE	NE	ENE	E	ESE	SE	SSE
0	0	37	11	0	0	0	7
18	26	0	4	0	0	0	0
S	SSW	SW	WSW	W	WNW	NW	NNW

TOTALS						
ANNULUS	10-20 Miles	20-30 Miles	30-40 Miles	40-50 Miles	10-50 Miles	0-50 Miles
POPULATION	183528	436253	893579	842425	2355983	2430380



(Rev. 12 1/03)

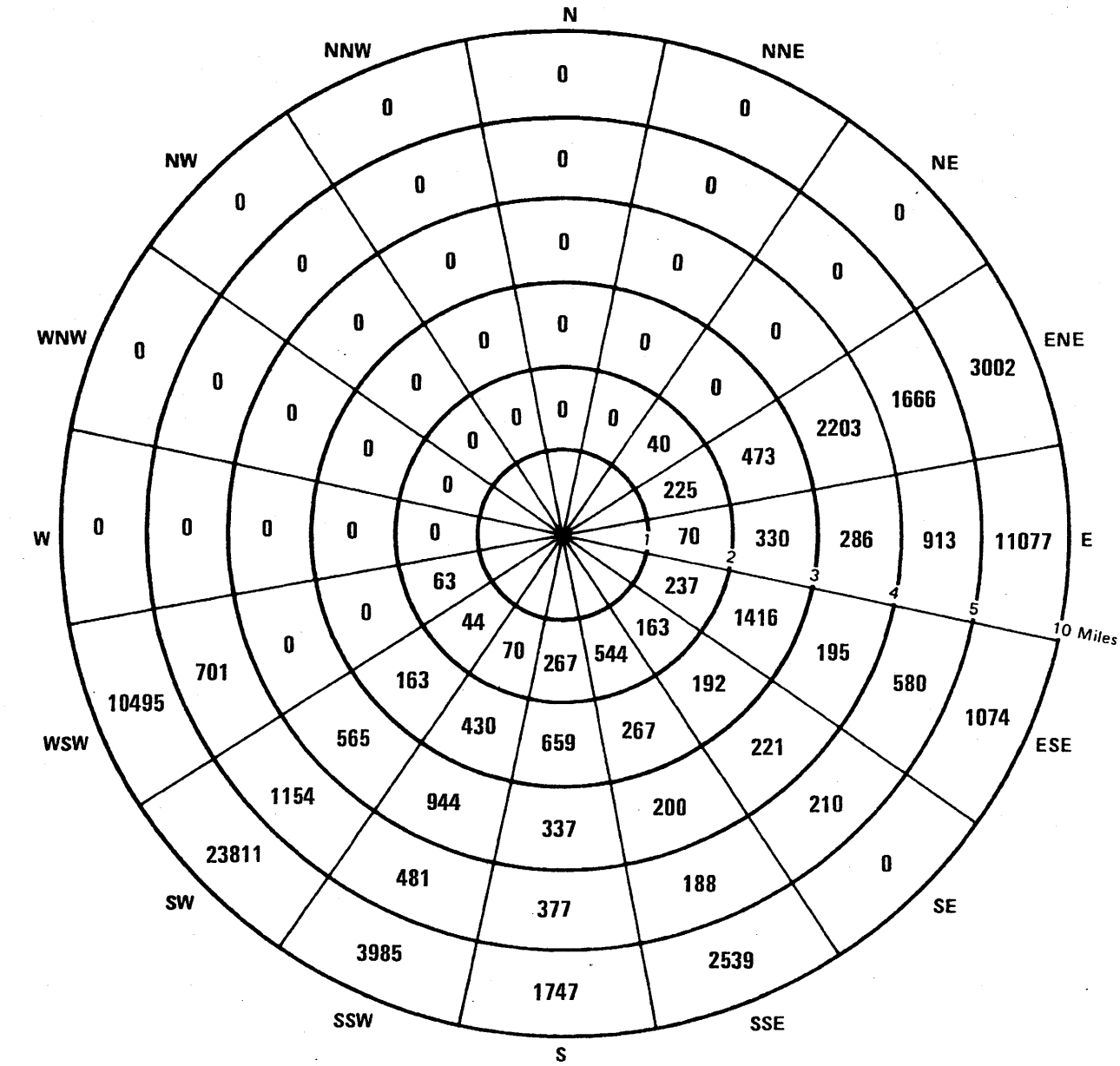


PERRY NUCLEAR POWER PLANT

1984 Permanent Resident Population

Figure 2.1-10

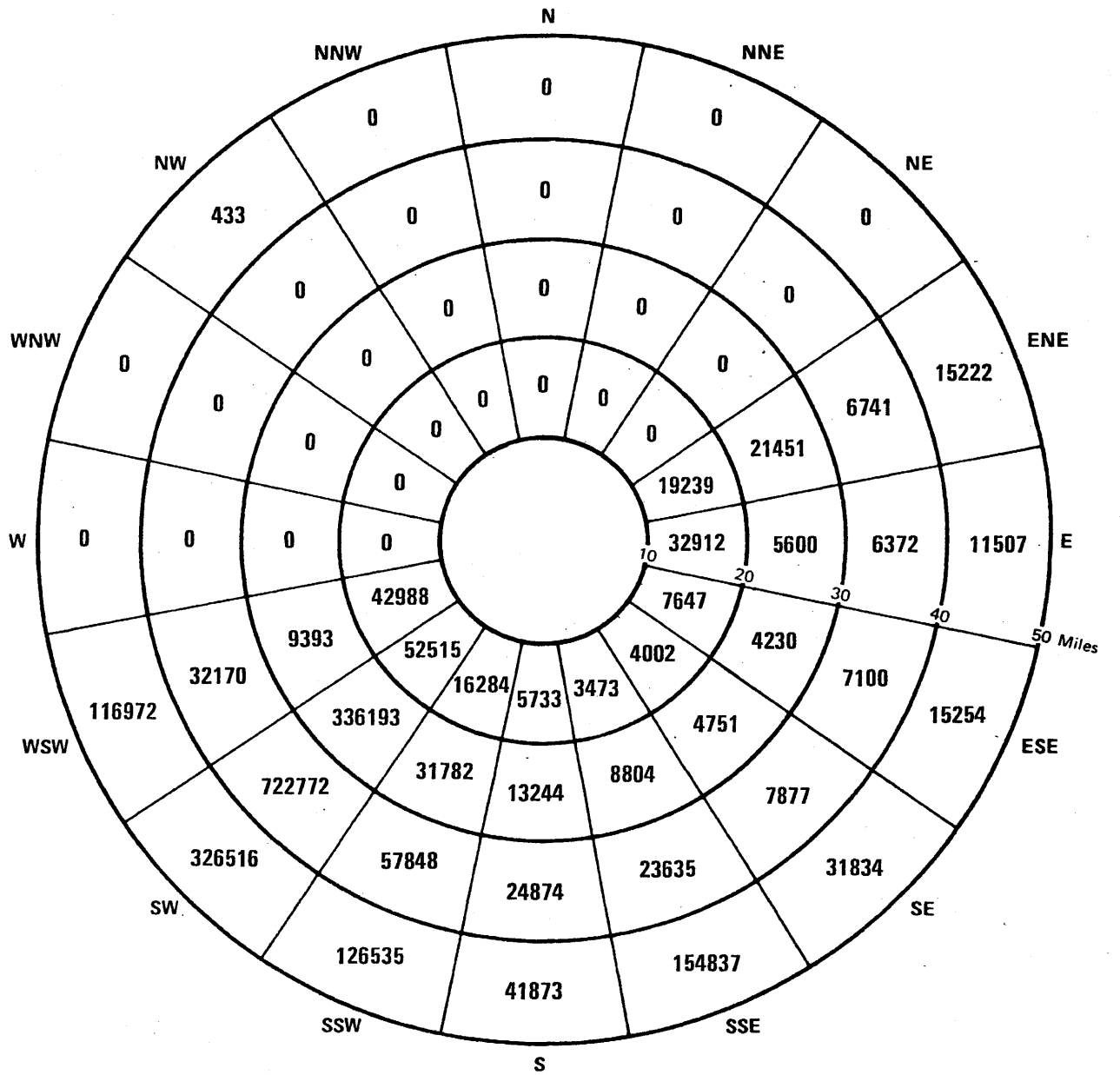
TOTALS							
ANNULUS	0-1 Mile	1-2 Miles	2-3 Miles	3-4 Miles	4-5 Miles	0-5 Miles	5-10 Miles
POPULATION	103	1723	3930	4951	6270	16977	57730




Values For 0 - 1 Mile Annulus

N	NNE	NE	ENE	E	ESE	SE	SSE
0	0	37	11	0	0	0	7
18	26	0	4	0	0	0	0
S	SSW	SW	WSW	W	WNW	NW	NNW

TOTALS						
ANNULUS	10-20 Miles	20-30 Miles	30-40 Miles	40-50 Miles	10-50 Miles	0-50 Miles
POPULATION	184793	435448	889389	840983	2350613	2425320

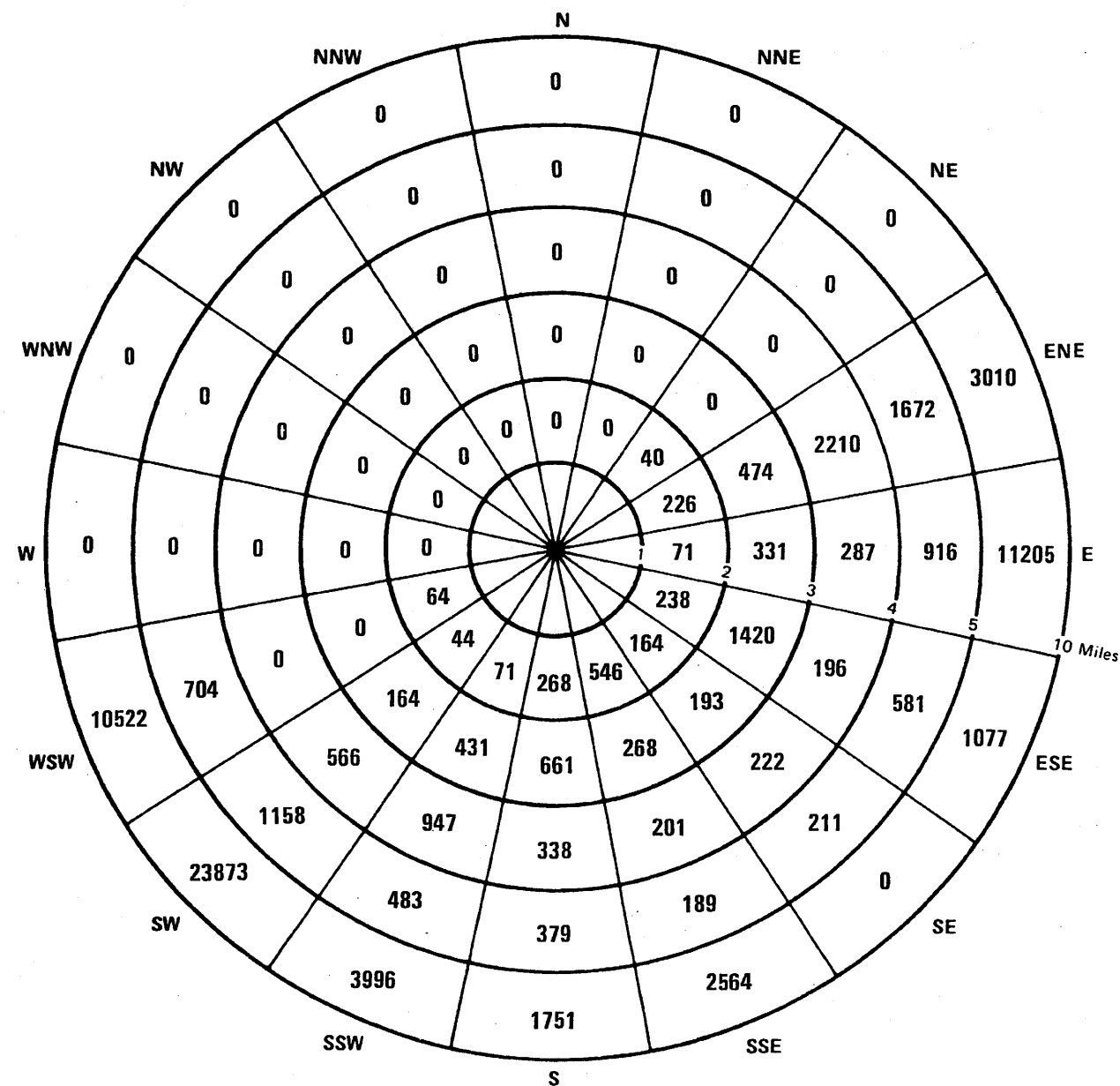


(Rev. 12 1/03)


PERRY NUCLEAR POWER PLANT

1985 Permanent Resident Population
Figure 2.1-11

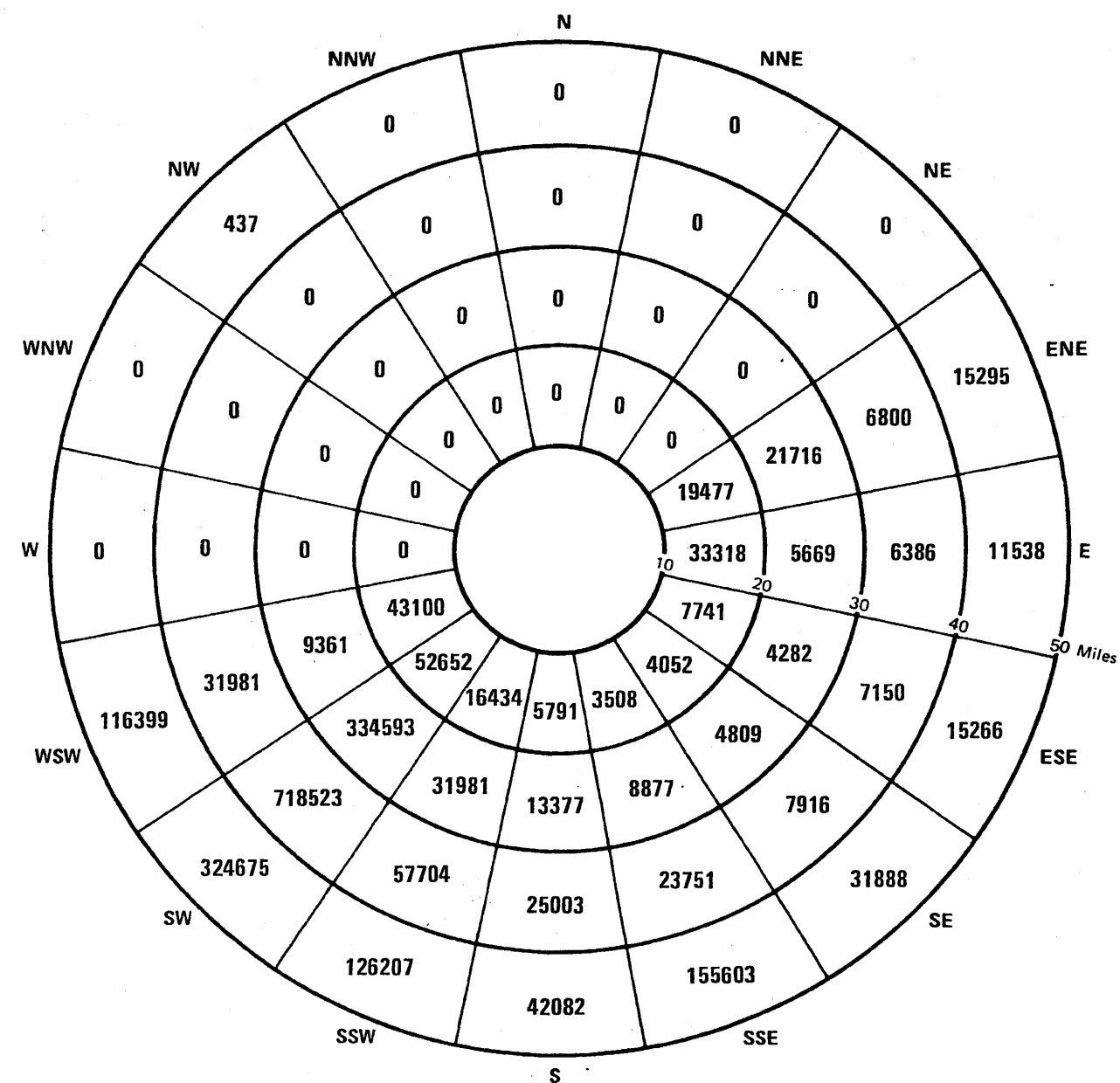
TOTALS							
ANNULUS	0-1 Mile	1-2 Miles	2-3 Miles	3-4 Miles	4-5 Miles	0-5 Miles	5-10 Miles
POPULATION	103	1732	3942	4967	6293	17037	57998



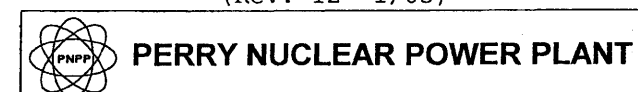
Values For 0 - 1 Mile Annulus

N	NNE	NE	ENE	E	ESE	SE	SSE
0	0	37	11	0	0	0	7
18	26	0	4	0	0	0	0
S	SSW	SW	WSW	W	WNW	NW	NNW

TOTALS						
ANNULUS	10-20 Miles	20-30 Miles	30-40 Miles	40-50 Miles	10-50 Miles	0-50 Miles
POPULATION	186073	434665	885214	839390	2345342	2420377



(Rev. 12 1/03)

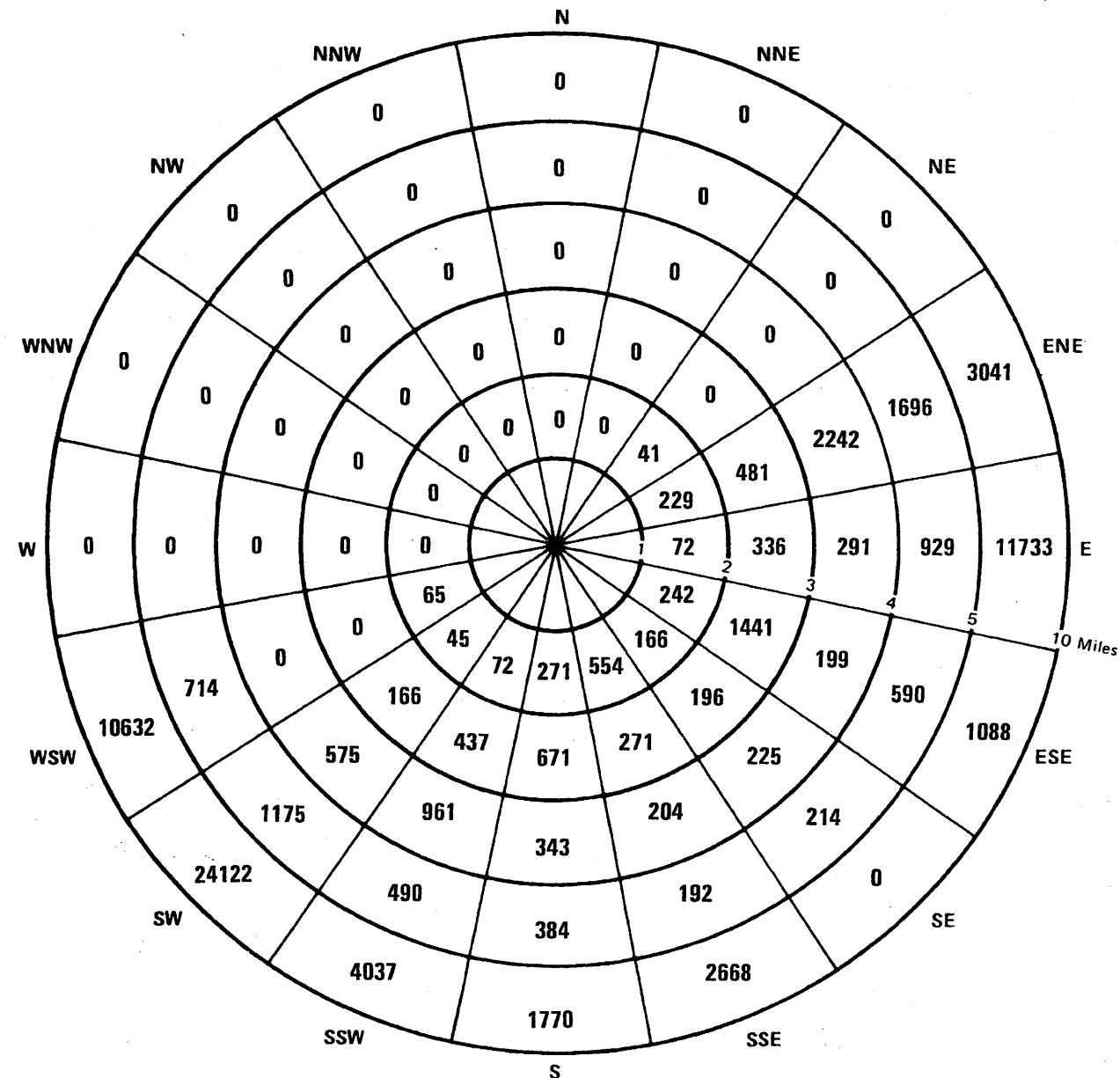


PERRY NUCLEAR POWER PLANT

1986 Permanent Resident Population

Figure 2.1-12

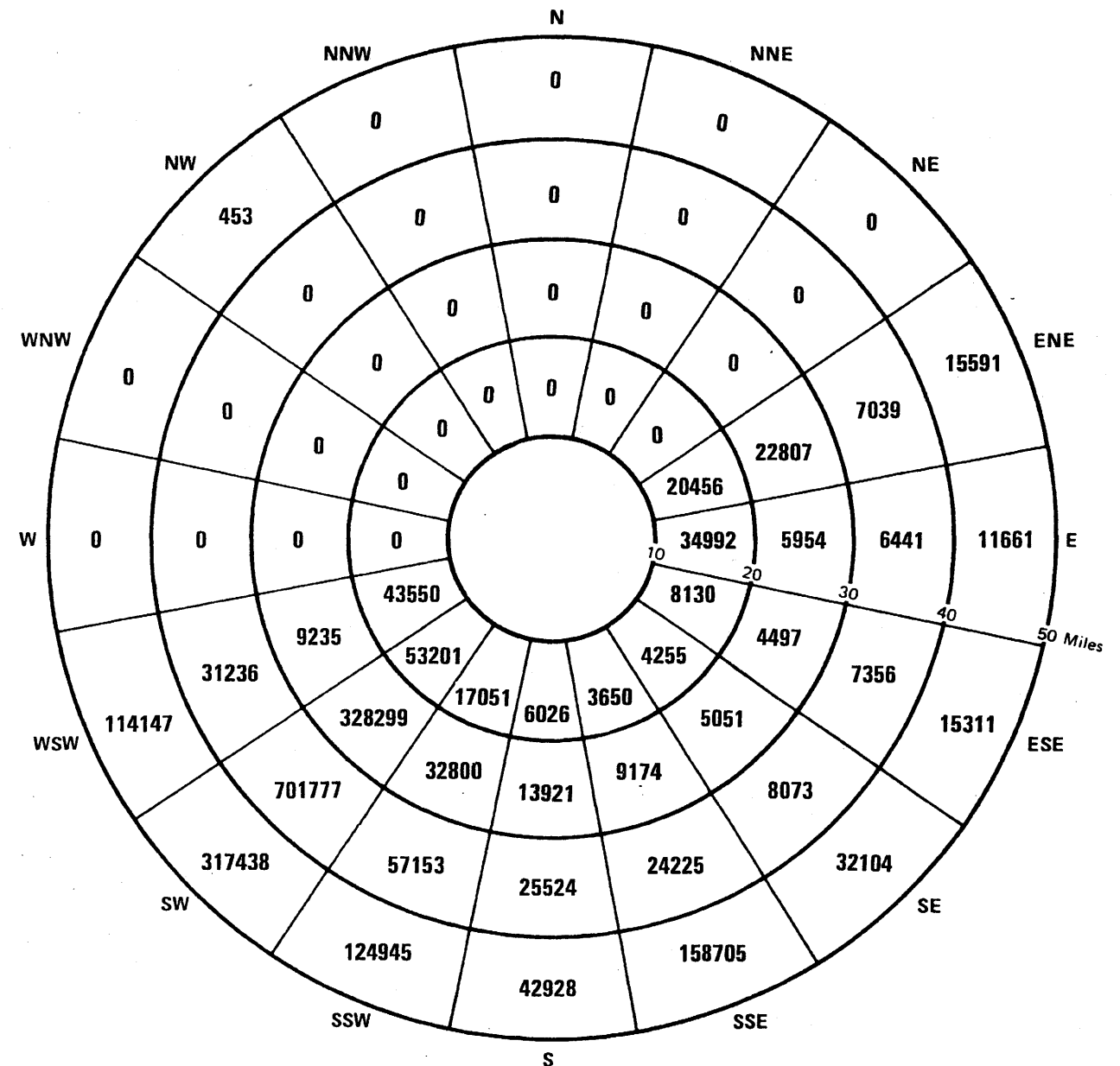
TOTALS							
ANNULUS	0-1 Mile	1-2 Miles	2-3 Miles	3-4 Miles	4-5 Miles	0-5 Miles	5-10 Miles
POPULATION	103	1757	3999	5040	6384	17279	59091



Values For 0 - 1 Mile Annulus

N	NNE	NE	ENE	E	ESE	SE	SSE
0	0	37	11	0	0	0	7
18	26	0	4	0	0	0	0
S	SSW	SW	WSW	W	WNW	NW	NNW

TOTALS						
ANNULUS	10-20 Miles	20-30 Miles	30-40 Miles	40-50 Miles	10-50 Miles	0-50 Miles
POPULATION	191311	431738	868824	833283	2325156	2401526



(Rev. 12 1/03)

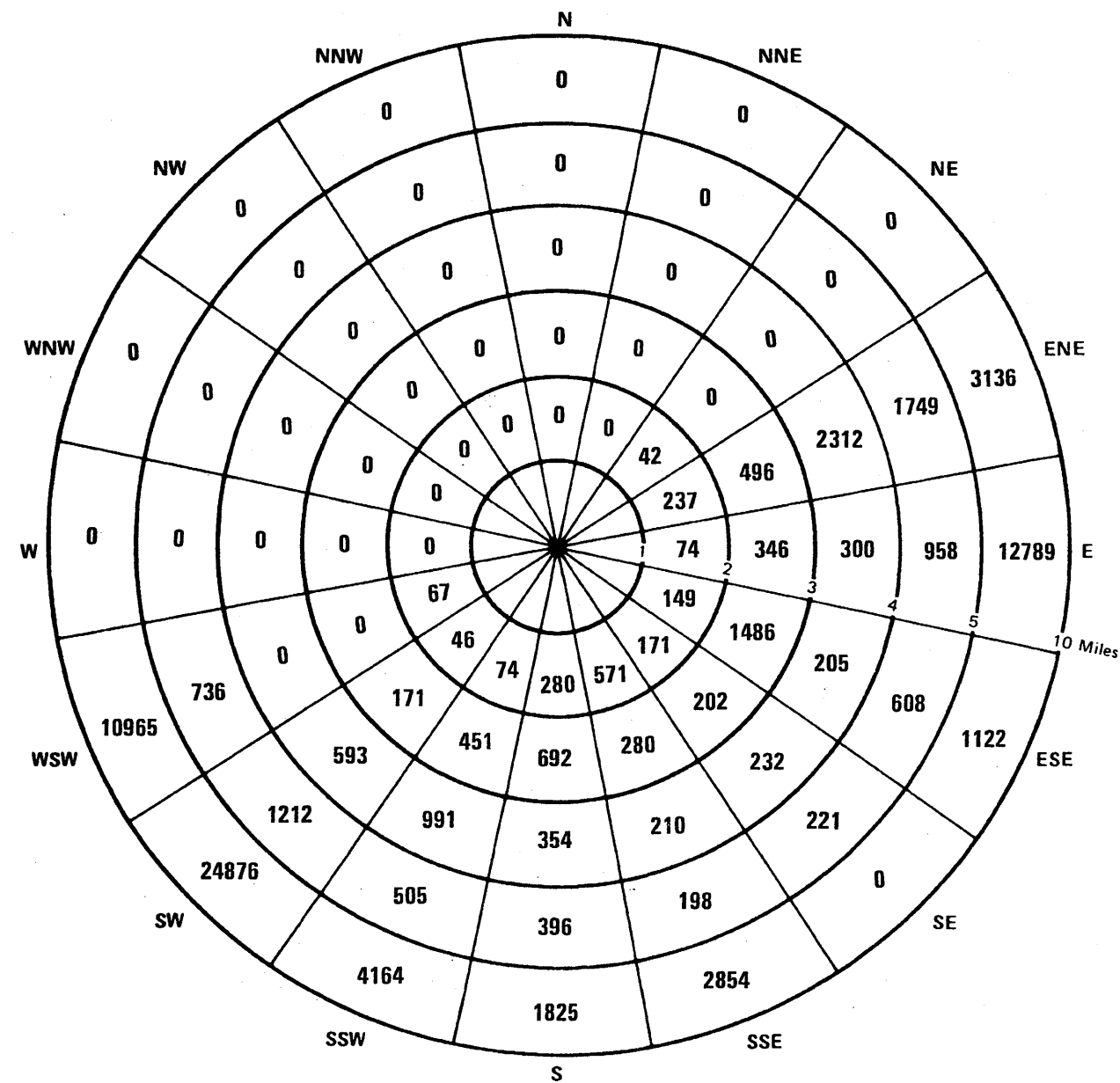


PERRY NUCLEAR POWER PLANT

1990 Permanent Resident Population

Figure 2.1-13

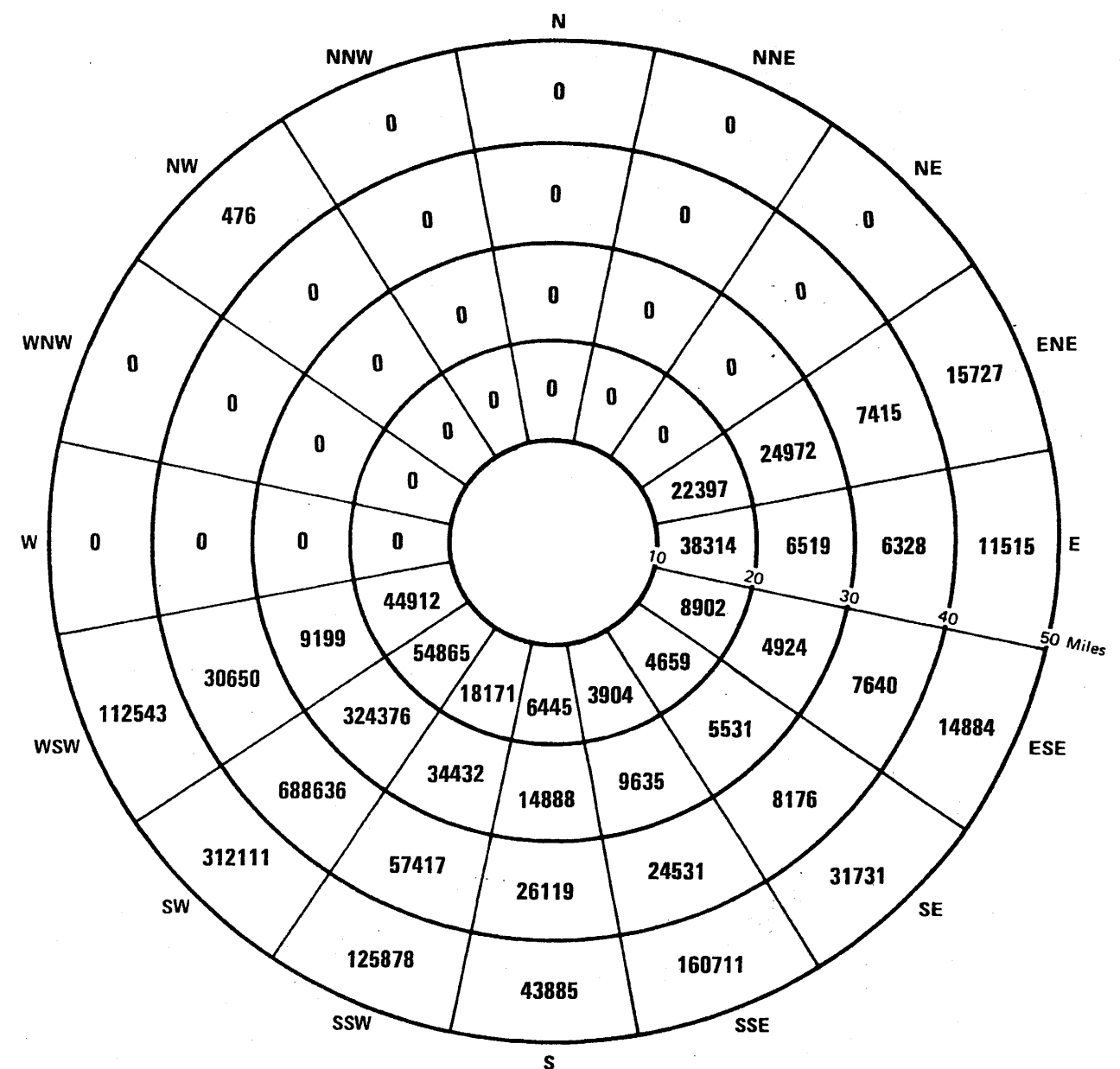
TOTALS							
ANNULUS	0-1 Mile	1-2 Miles	2-3 Miles	3-4 Miles	4-5 Miles	0-5 Miles	5-10 Miles
POPULATION	108	1711	4124	5197	6583	17823	61731



Values For 0 - 1 Mile Annulus

N	NNE	NE	ENE	E	ESE	SE	SSE
0	0	39	12	0	0	0	7
19	27	0	4	0	0	0	0
S	SSW	SW	WSW	W	WNW	NW	NNW

TOTALS						
ANNULUS	10-20 Miles	20-30 Miles	30-40 Miles	40-50 Miles	10-50 Miles	0-50 Miles
POPULATION	202569	434476	856912	829461	2323418	2402972



(Rev. 12 1/03)

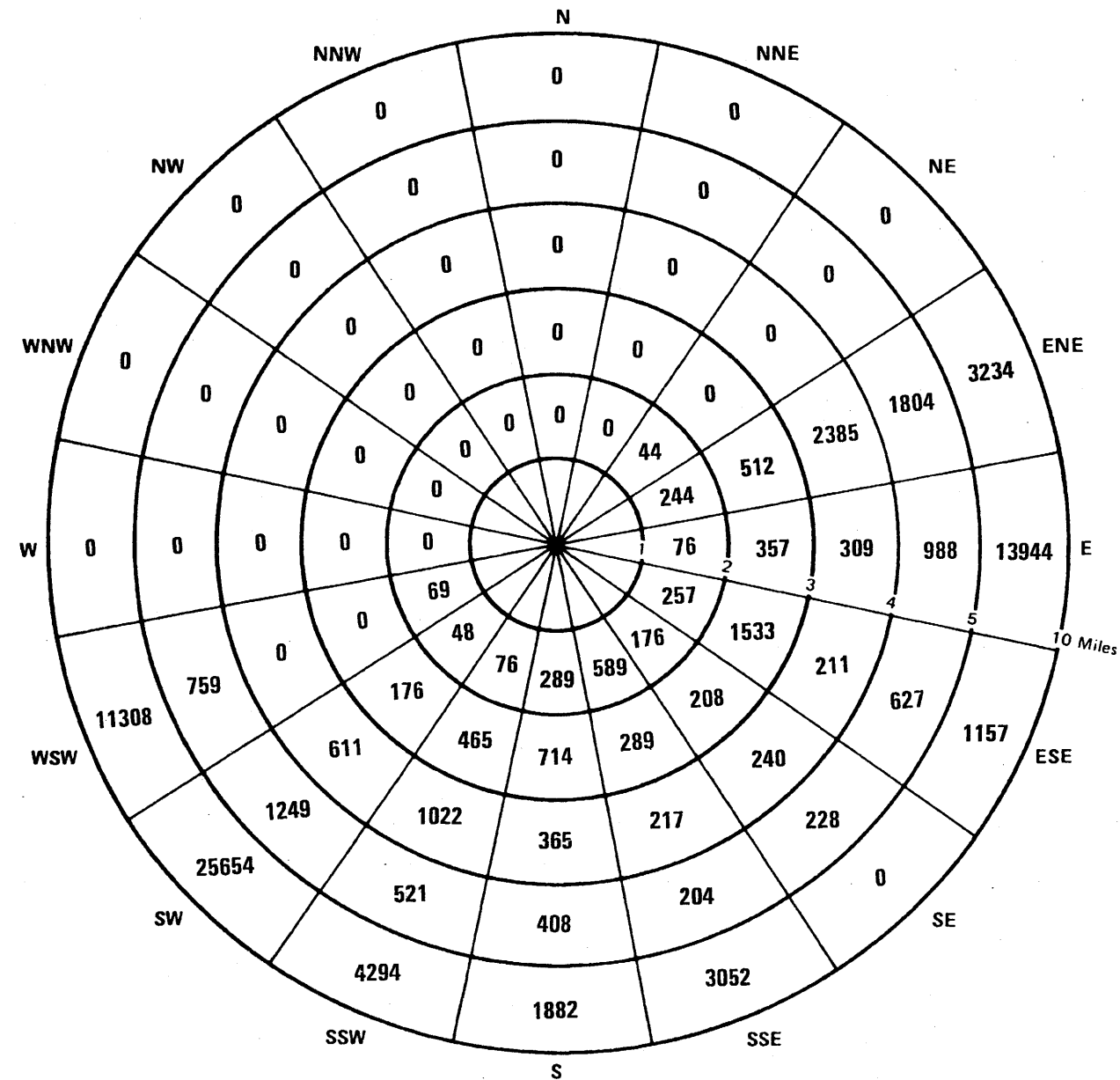


PERRY NUCLEAR POWER PLANT

2000 Permanent Resident Population

Figure 2.1-14

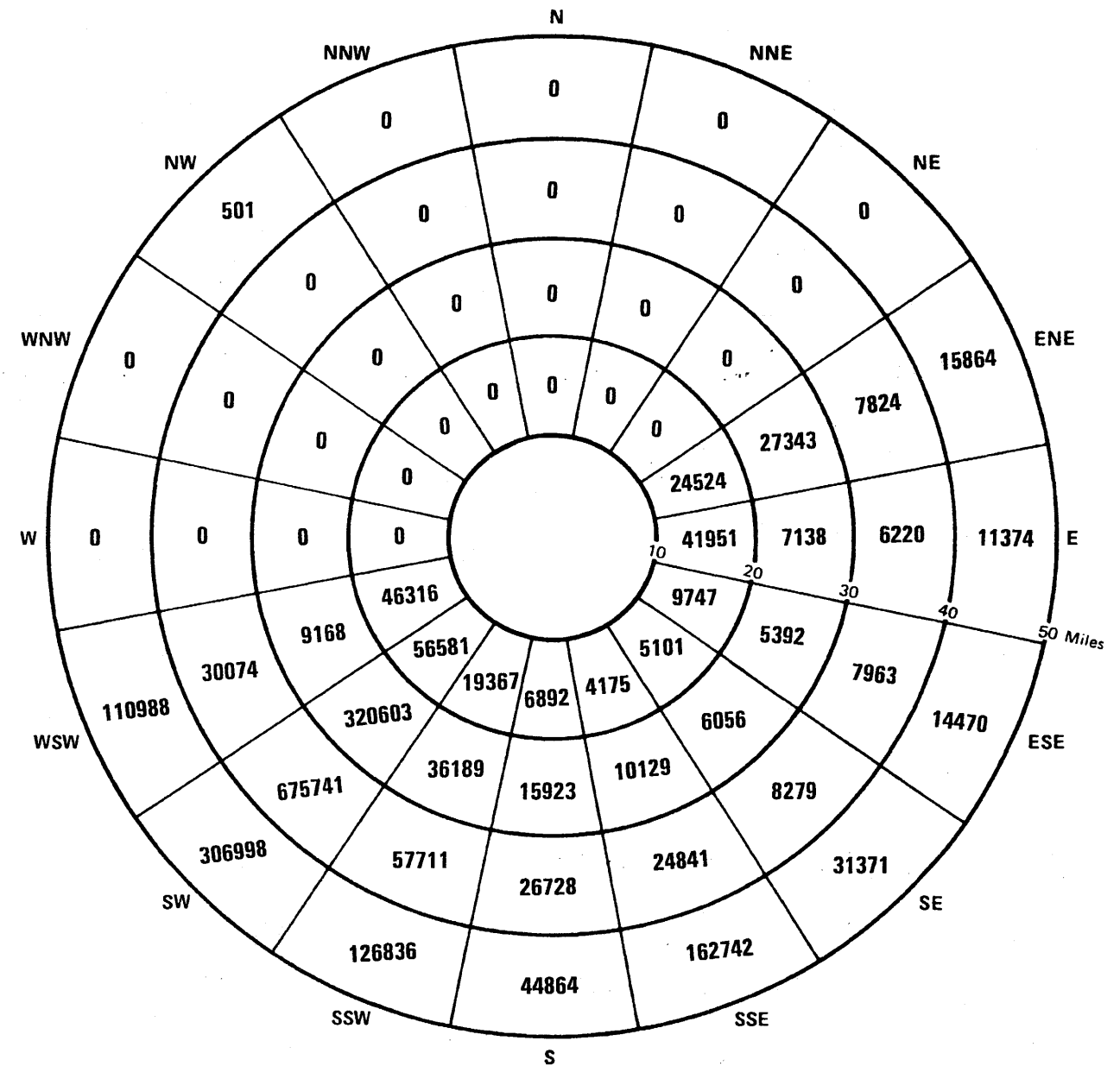
TOTALS							
ANNULUS	0-1 Mile	1-2 Miles	2-3 Miles	3-4 Miles	4-5 Miles	0-5 Miles	5-10 Miles
POPULATION	112	1868	4254	5360	6788	18382	64525



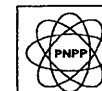
Values For 0 - 1 Mile Annulus

N	NNE	NE	ENE	E	ESE	SE	SSE
0	0	40	12	0	0	0	8
20	28	0	4	0	0	0	0
S	SSW	SW	WSW	W	WNW	NW	NNW

TOTALS						
ANNULUS	10-20 Miles	20-30 Miles	30-40 Miles	40-50 Miles	10-50 Miles	0-50 Miles
POPULATION	214654	437941	845381	826008	2323984	2406891



(Rev. 12 1/03)



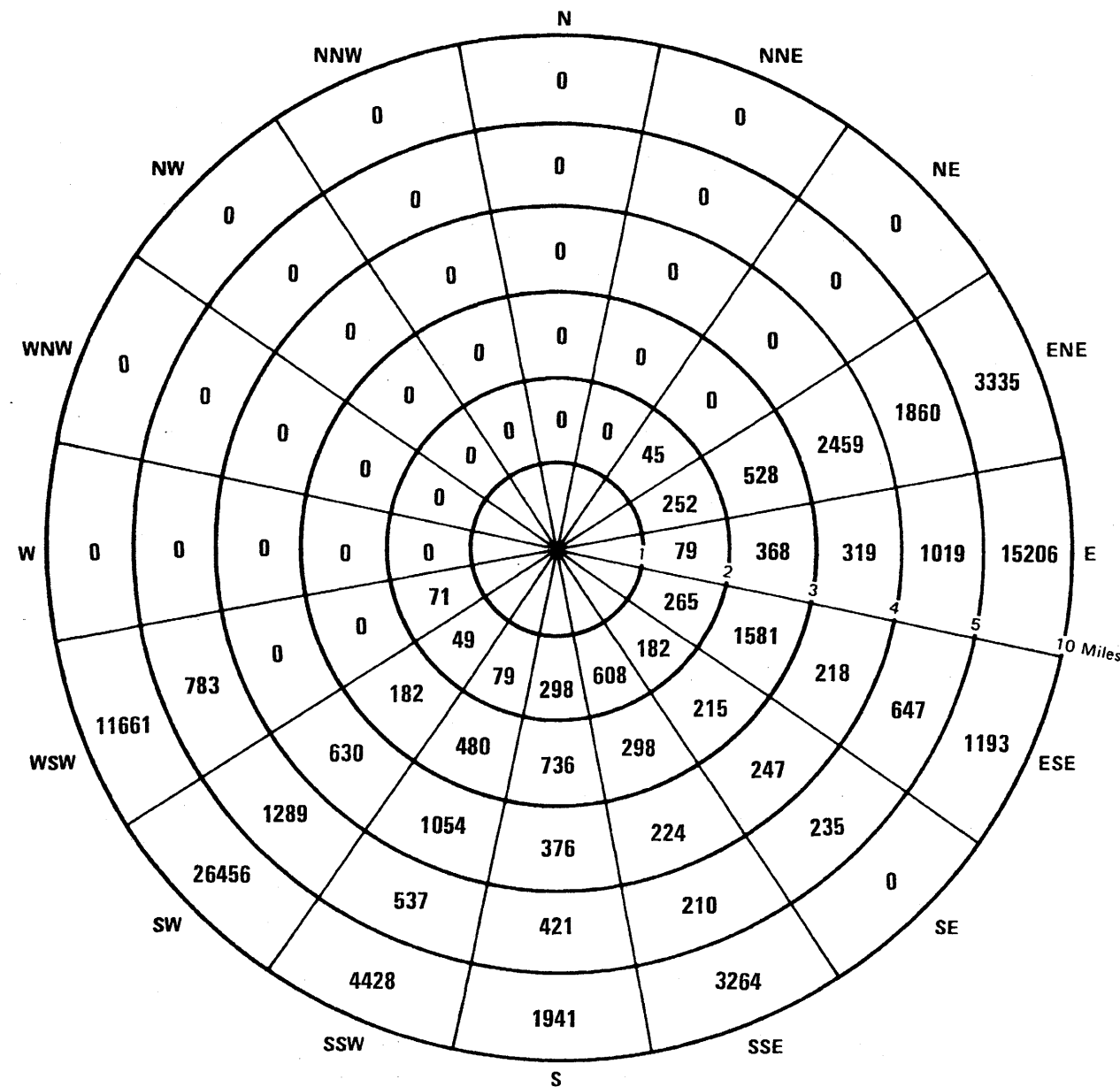
PERRY NUCLEAR POWER PLANT

2010 Permanent Resident Population

Figure 2.1-15

TOTALS

ANNULUS	0-1 Mile	1-2 Miles	2-3 Miles	3-4 Miles	4-5 Miles	0-5 Miles	5-10 Miles
POPULATION	115	1928	4388	5527	7001	18959	67484

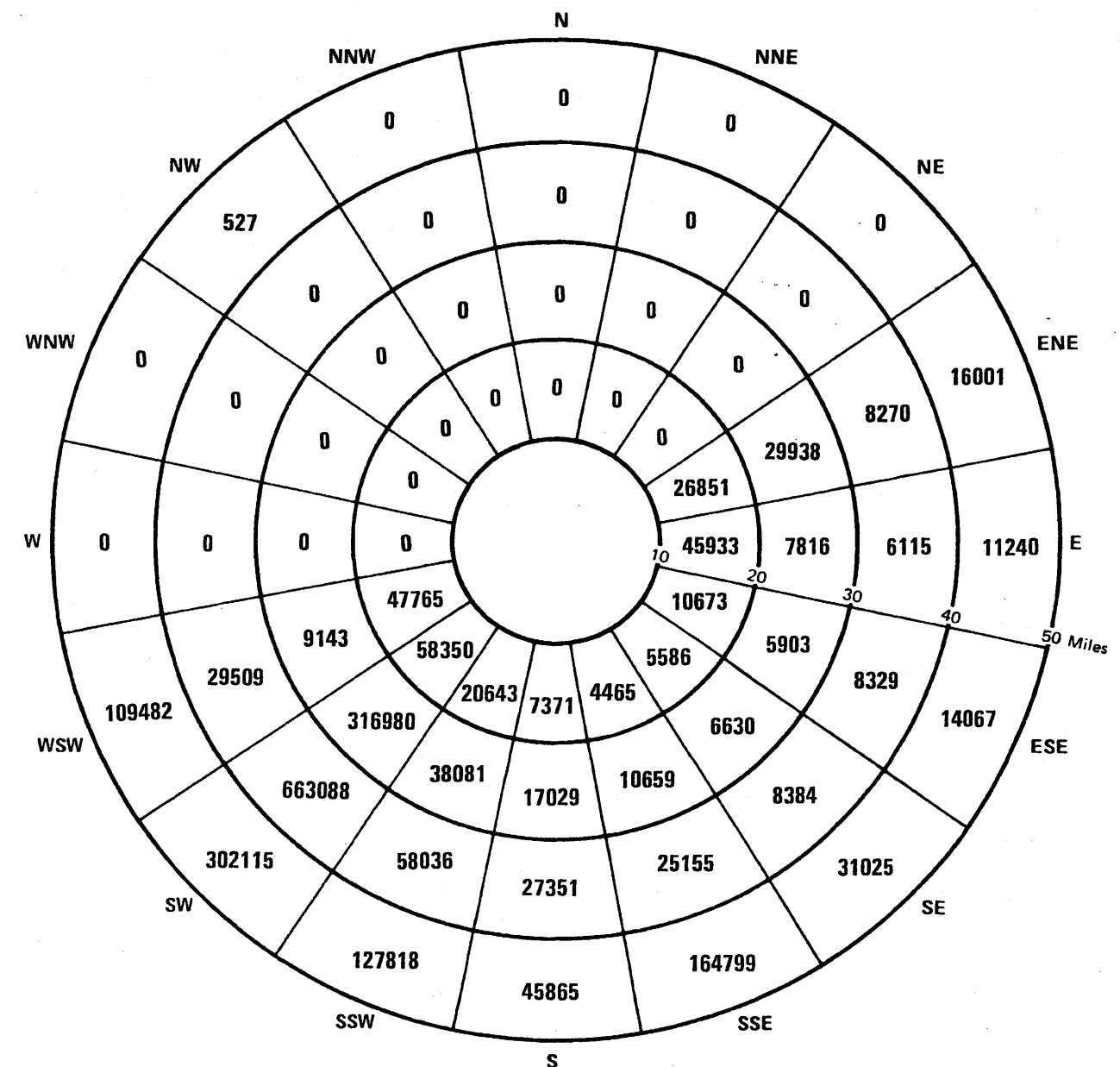


Values For 0 - 1 Mile Annulus

N	NNE	NE	ENE	E	ESE	SE	SSE
0	0	42	12	0	0	0	8
20	29	0	4	0	0	0	0
S	SSW	SW	WSW	W	WNW	NW	NNW

TOTALS

ANNULUS	10-20 Miles	20-30 Miles	30-40 Miles	40-50 Miles	10-50 Miles	0-50 Miles
POPULATION	227637	442179	834237	822939	2326992	2413435



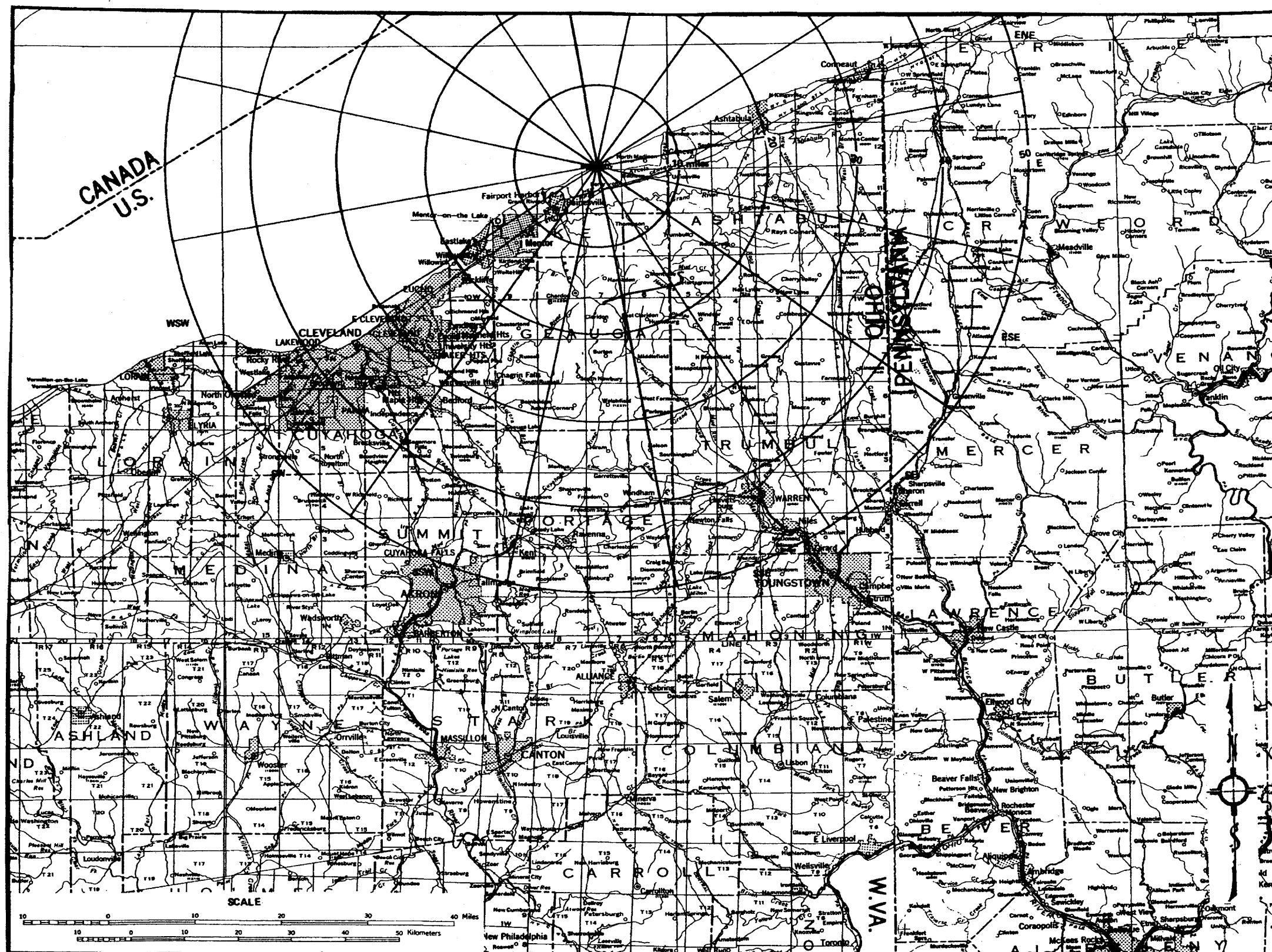
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

2020 Permanent Resident Population

Figure 2.1-16



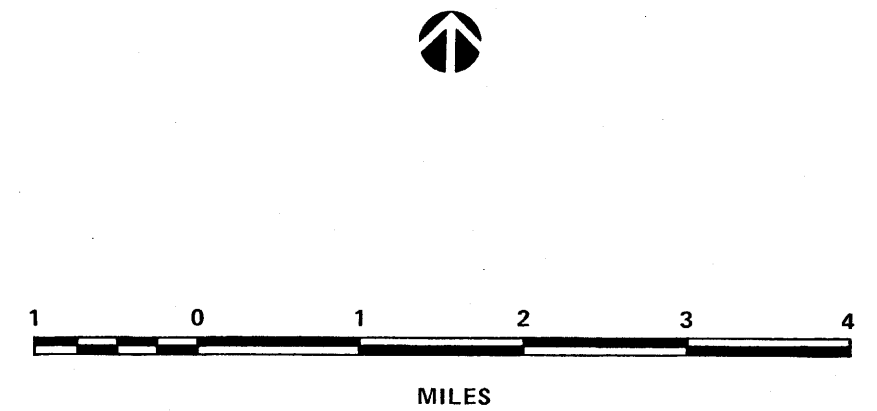
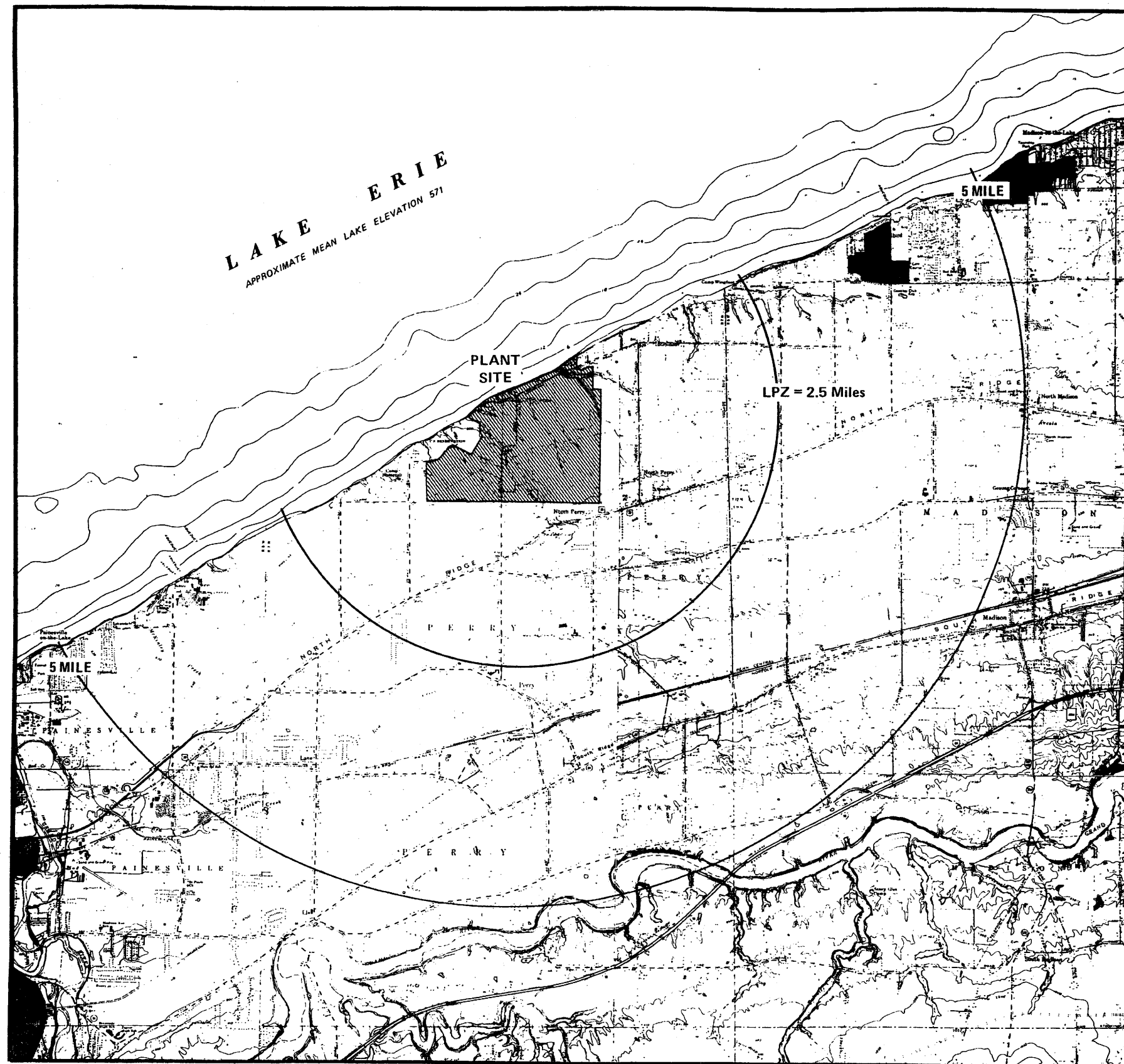
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Area Within 50 Miles of PNPP

Figure 2.1-17



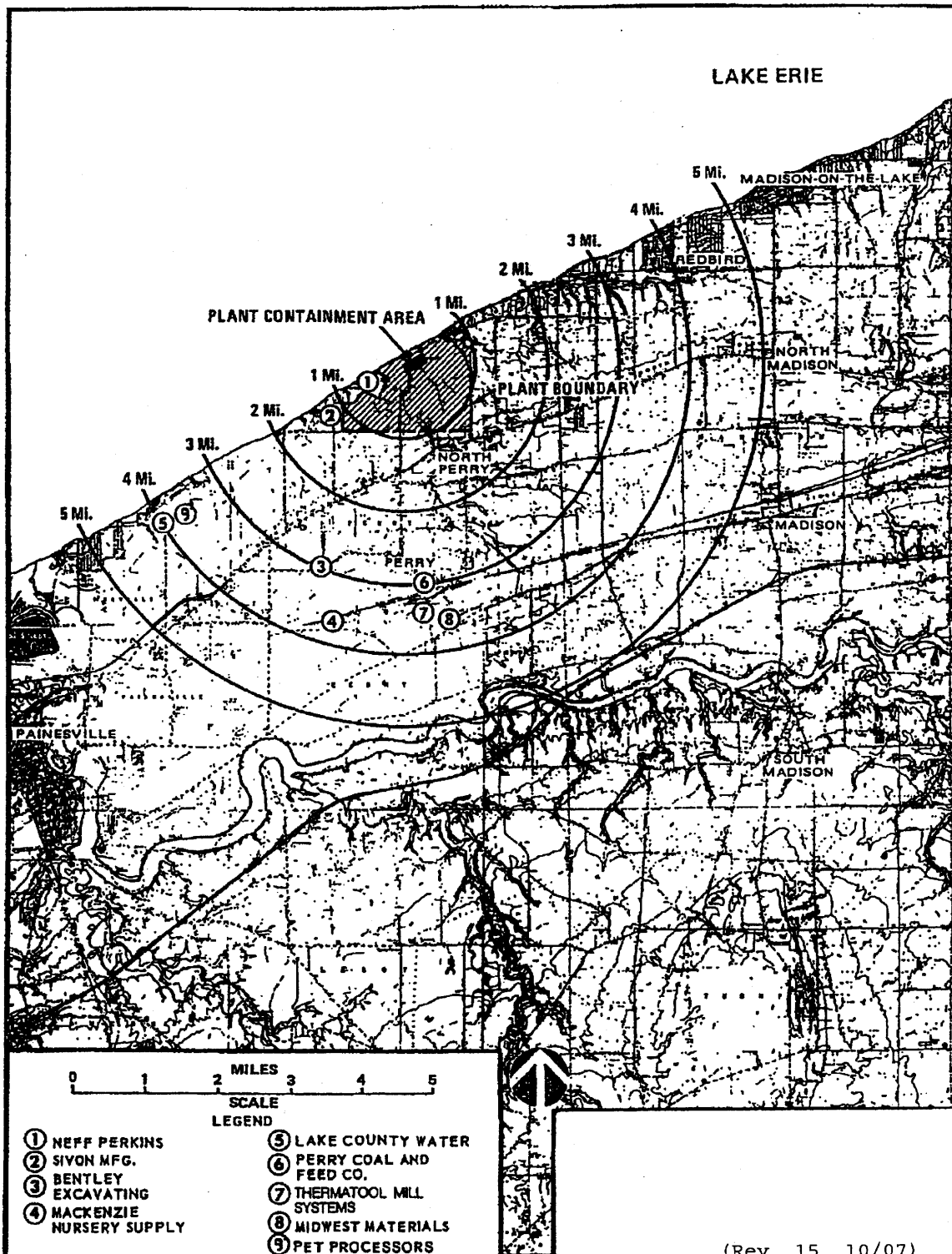
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Low Population Zone

Figure 2.1-18



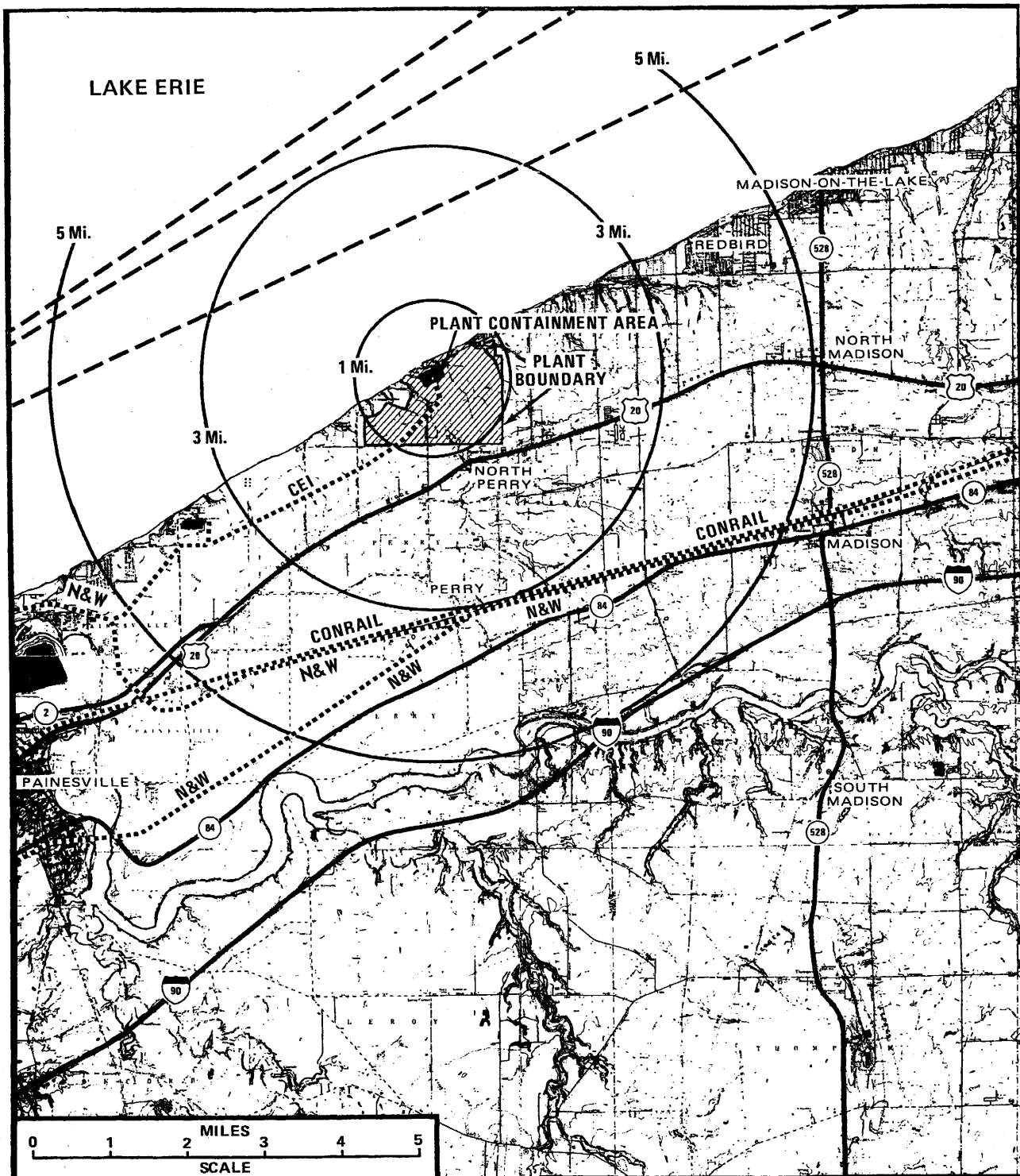
(Rev. 15 10/07)



PERRY NUCLEAR POWER PLANT

Manufacturing and Storage
Facilities Within Five Miles
of the Plant

Figure 2.2-1



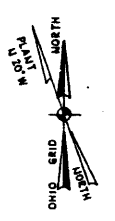
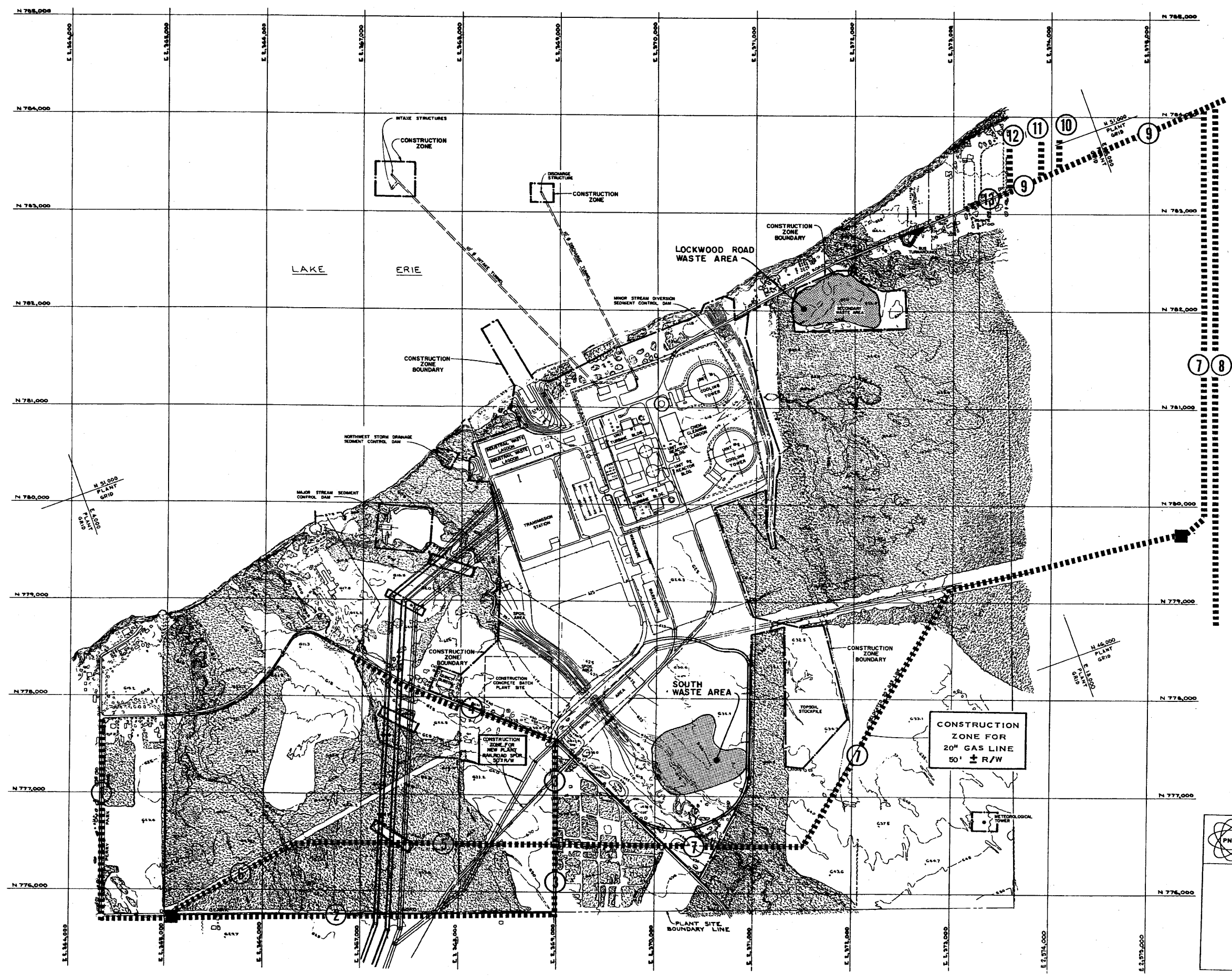
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Land and Water Transportation
Routes Within the Vicinity
of the Plant

Figure 2.2-2

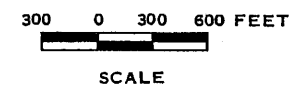


- LEGEND**
- 5 ----- PIPELINE
(SEE TABLE 2.2-3)
 - BLOCK TYPE ISOLATION VALVE

- NOTES:**
- COORDINATES SHOWN ON THIS DRAWING ARE BASED ON THE OHIO STATE COORDINATE SYSTEM.
 - REACTOR COORDINATES:

	OHIO GRID	PLANT GRID
UNIT 1	N780,545 E2,369,875	N49,466 E9,570
UNIT 2	N780,346,725 E2,369,947,166	N49,255 E9,570

NOTE:
ALL BACKGROUND CONTOURS
SUPPLIED BY AERIAL SURVEYS INC.

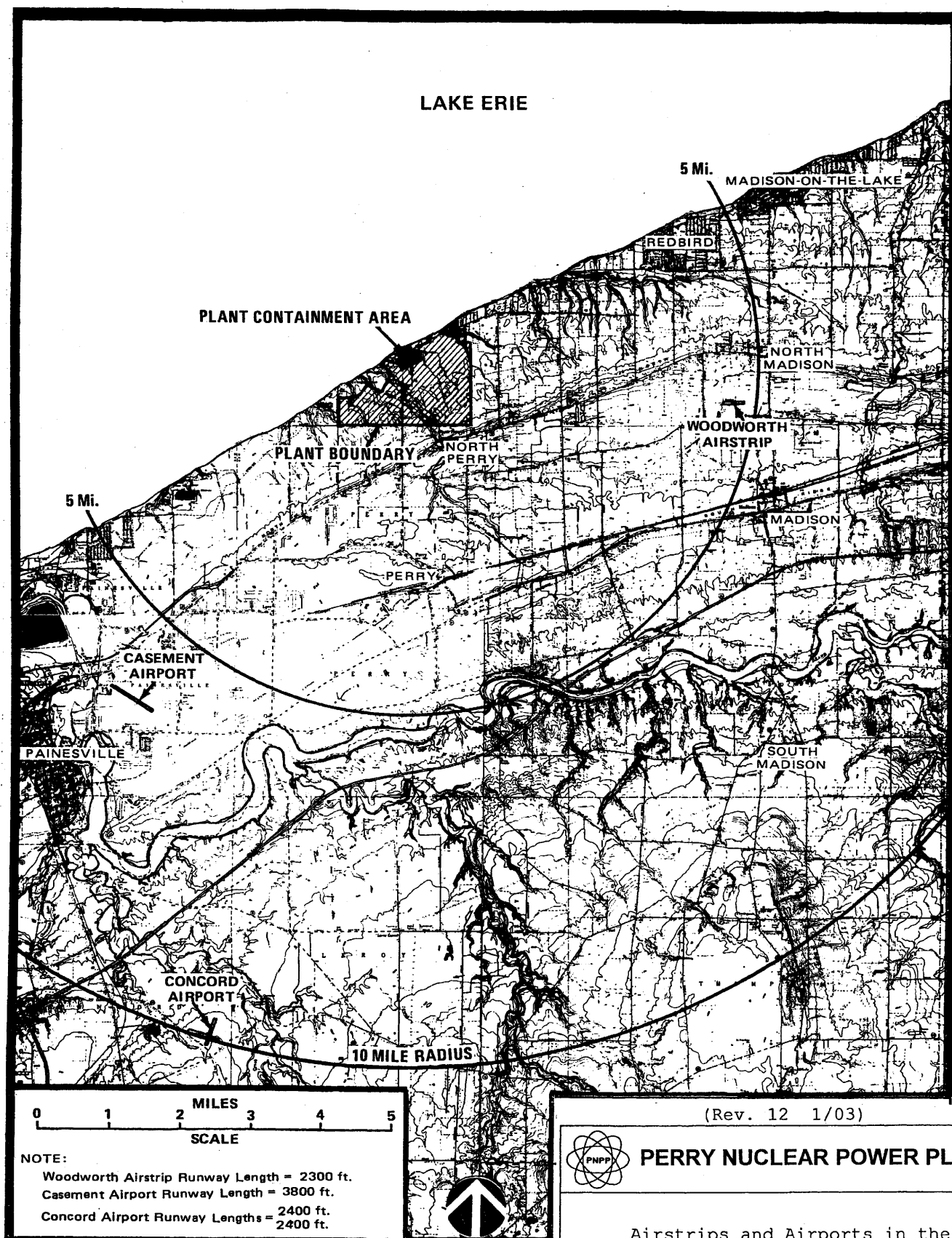


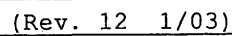
(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Natural Gas Pipelines Within the
Immediate Environs of the Plant

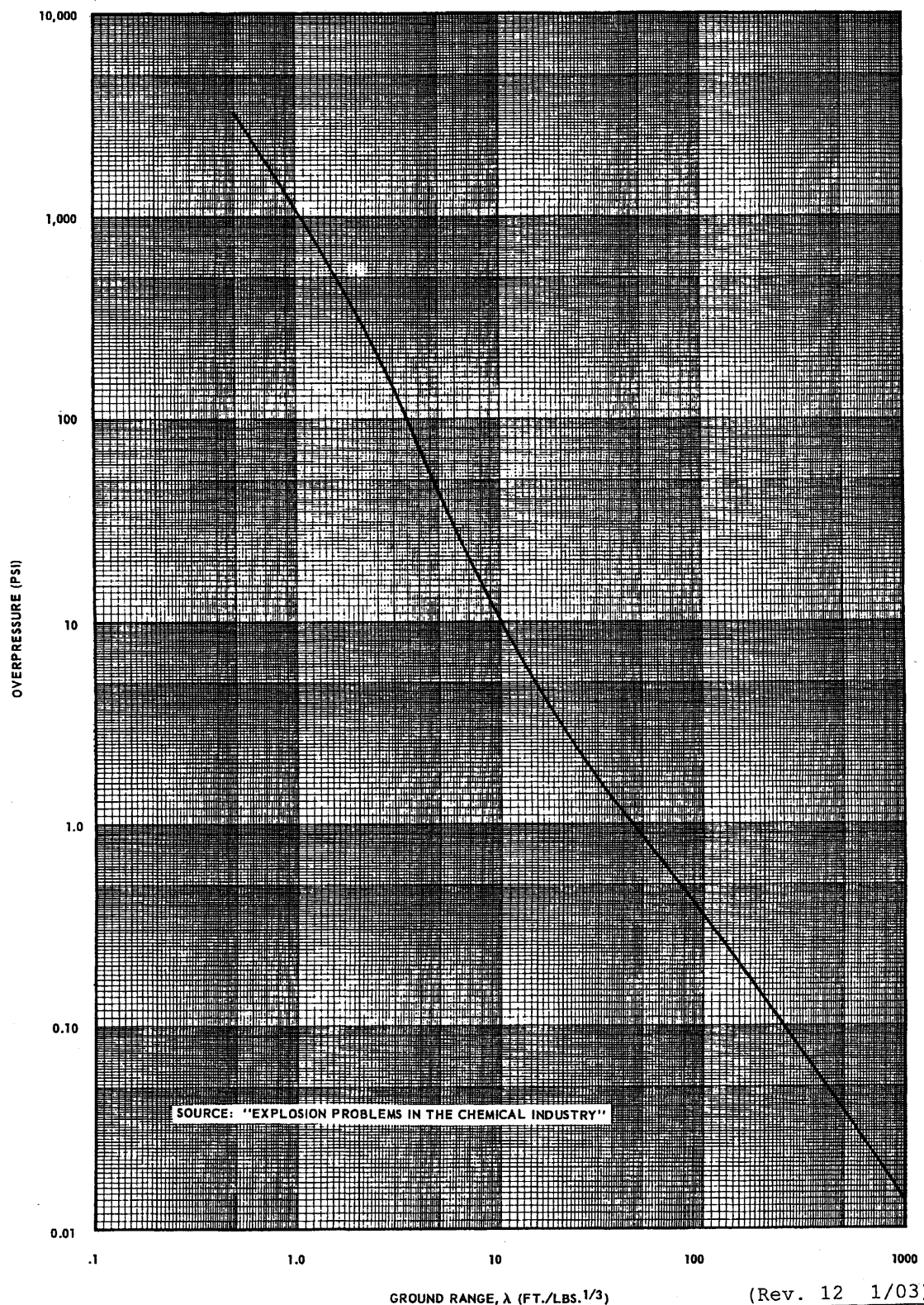
Figure 2.2-3





Selected Air Facilities and Airways in the Region

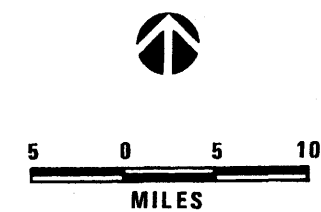
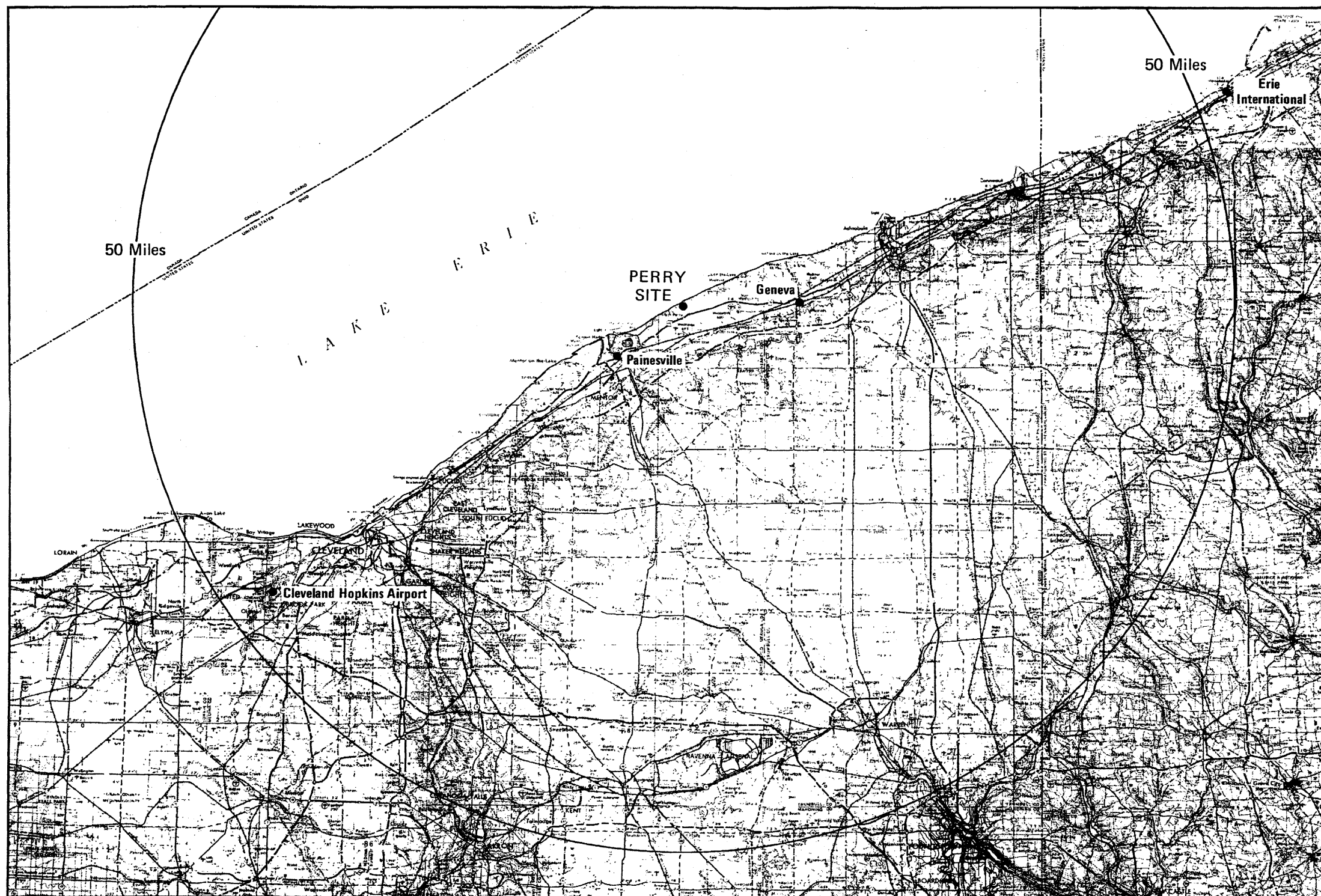
Figure 2.2-6



PERRY NUCLEAR POWER PLANT

Peak Overpressure Versus Scaled
Distance for TNT Surface Bursts

Figure 2.2-7



CONTOUR INTERVAL 50 FEET

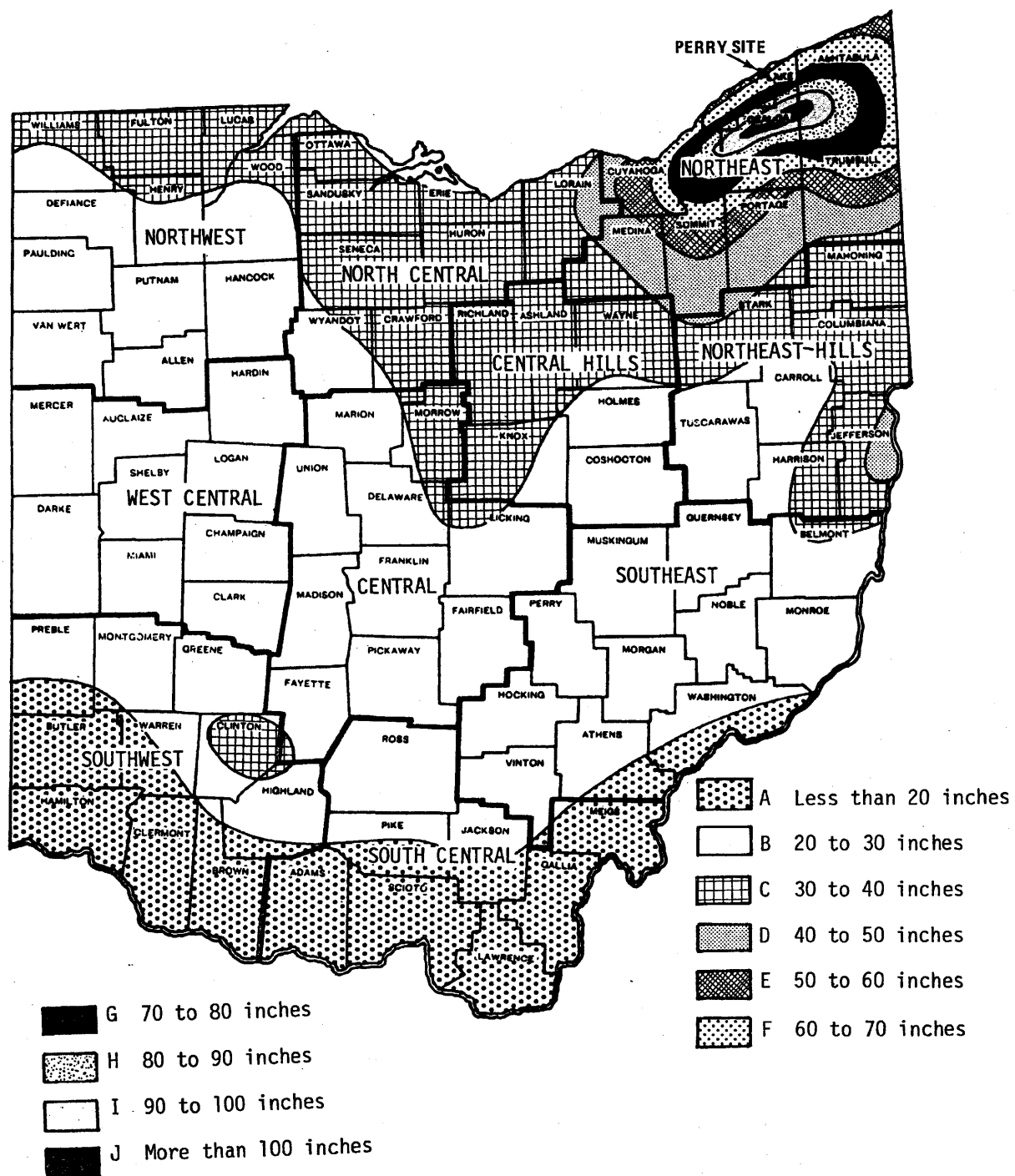
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Location of Meteorological Data
Monitoring Stations and Regional
Topography Within 50 Miles of the
Perry Site

Figure 2.3-1



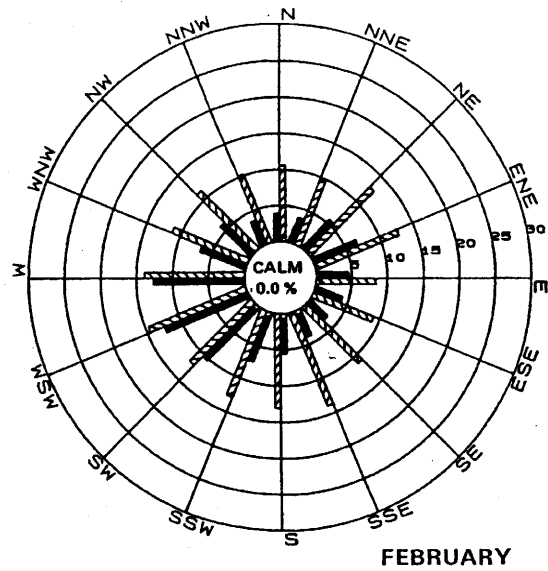
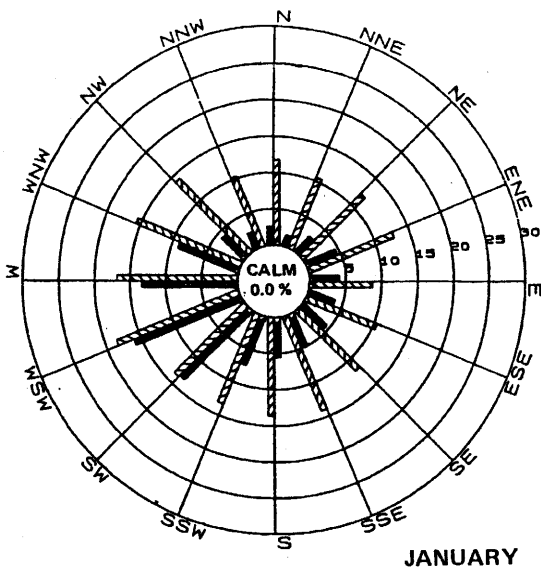
(Rev. 12 1/03)



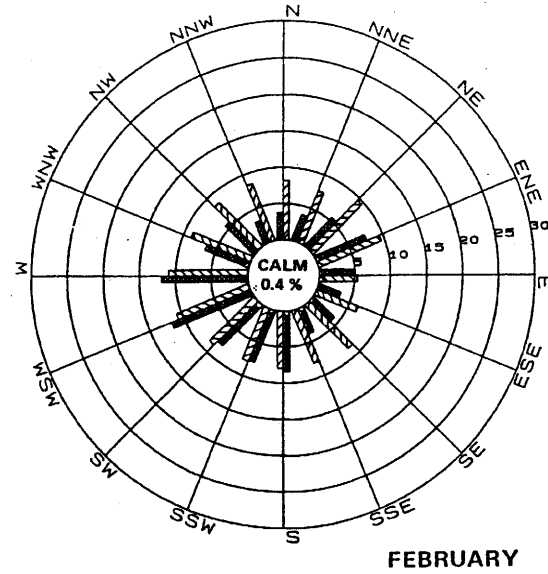
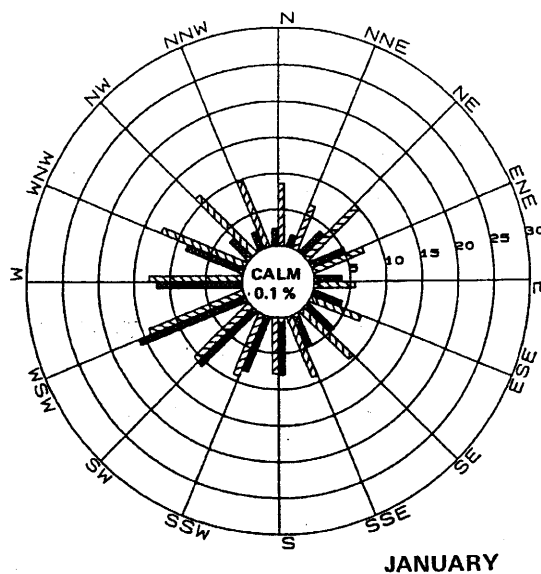
PERRY NUCLEAR POWER PLANT

Mean Snowfall for Winter
Season - Ohio

Figure 2.3-2



60 METER



10 METER

 WIND DIRECTION (%)
 WIND SPEED (MPH)

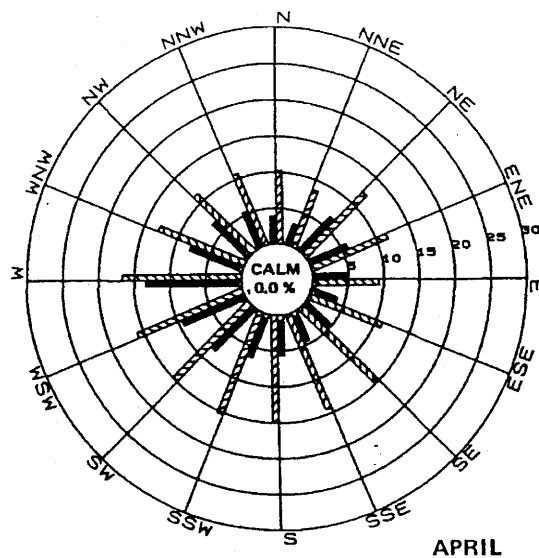
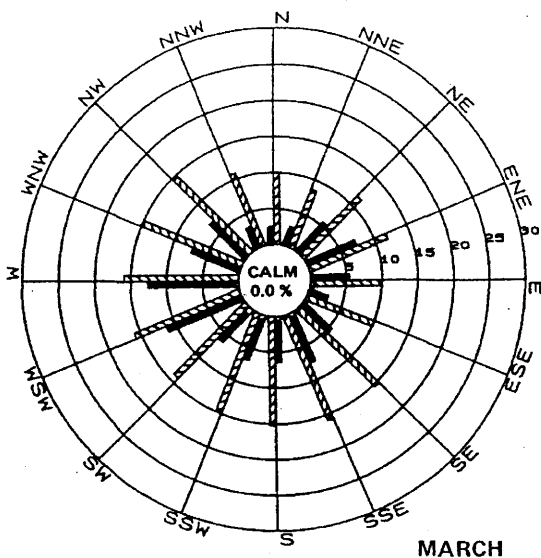
(Rev. 12 1/03)



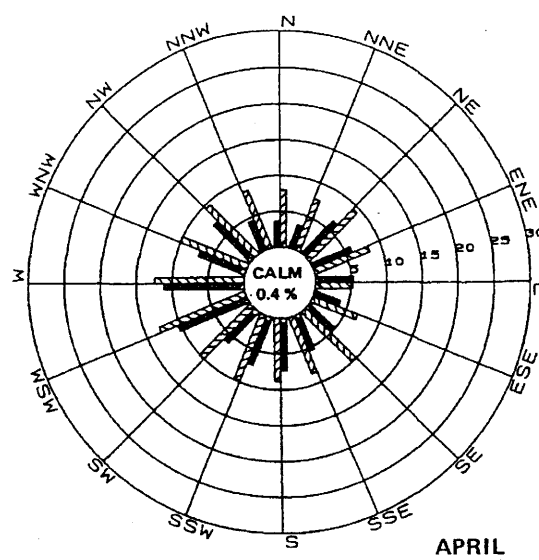
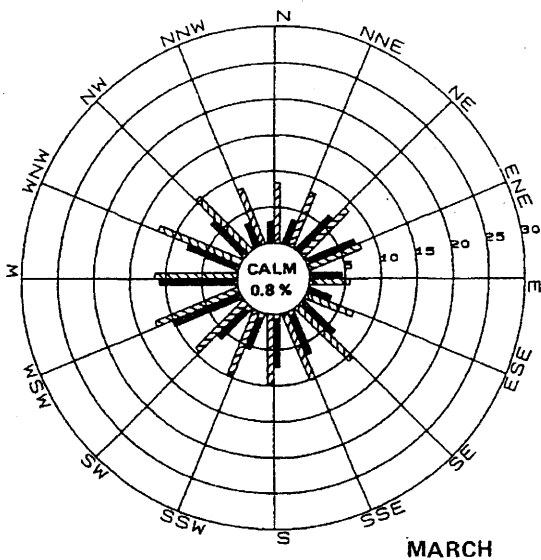
PERRY NUCLEAR POWER PLANT

January to April Monthly Wind Roses
for the Perry Site - 10 m and 60 m
Levels (5/1/72-4/30/74;
9/1/77-8/31/82)

Figure 2.3-3 (Sheet 1 of 2)



60 METER



10 METER

 WIND DIRECTION (%)
 WIND SPEED (MPH)

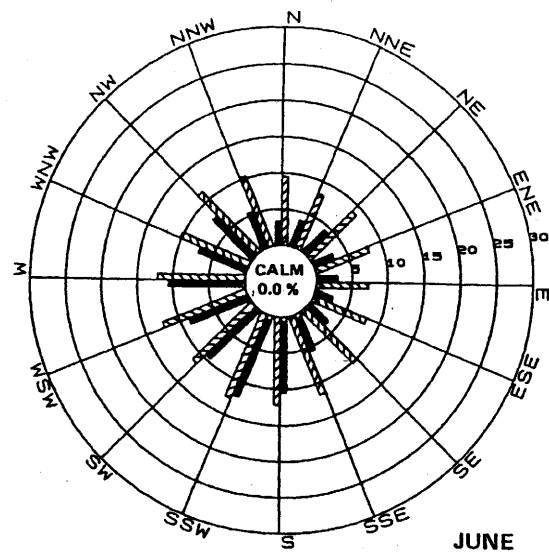
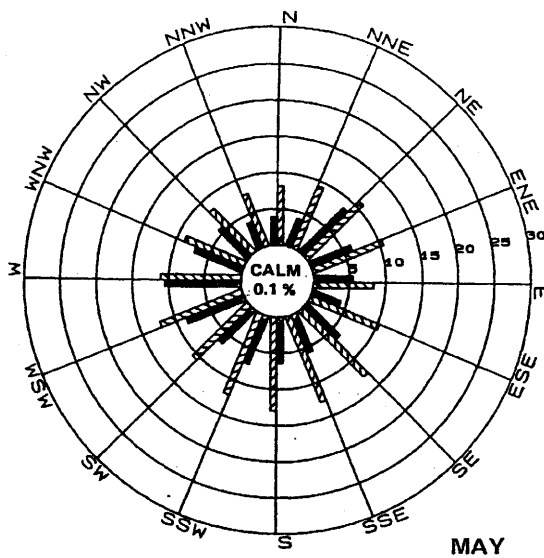
(Rev. 12 1/03)



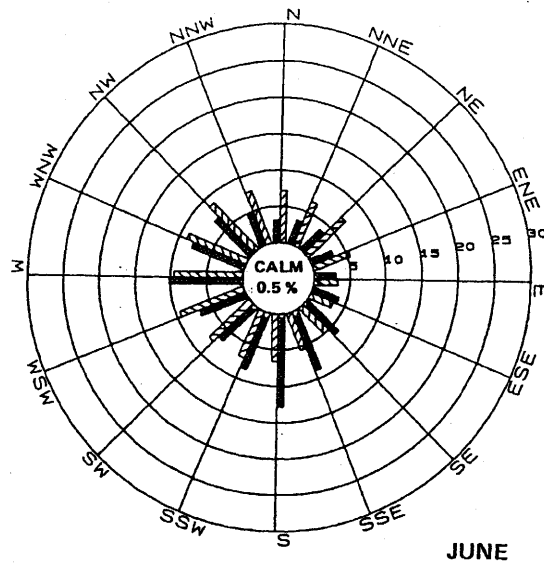
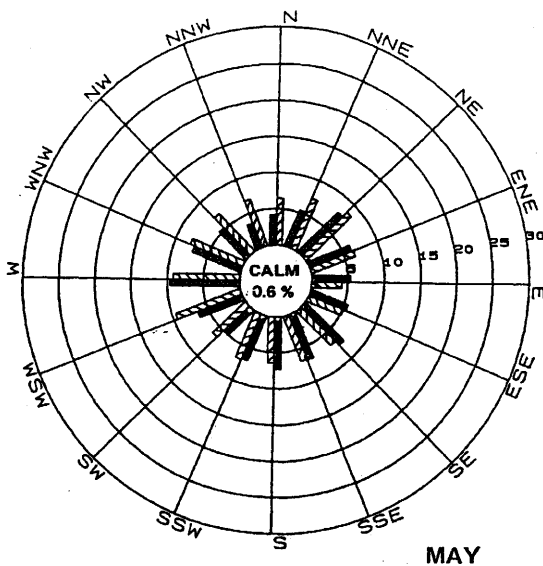
PERRY NUCLEAR POWER PLANT

January to April Monthly Wind Roses
 for the Perry Site - 10 m and 60 m
 Levels (5/1/72-4/30/74;
 9/1/77-8/31/82)

Figure 2.3-3 (Sheet 2 of 2)



60 METER



10 METER

 WIND DIRECTION (%)
 WIND SPEED (MPH)

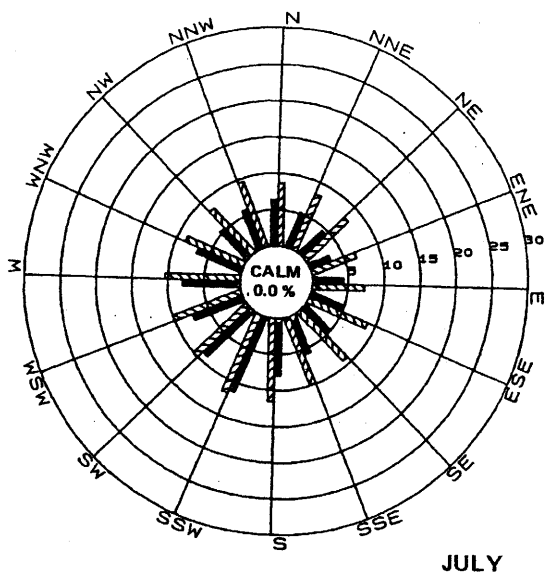
(Rev. 12 1/03)



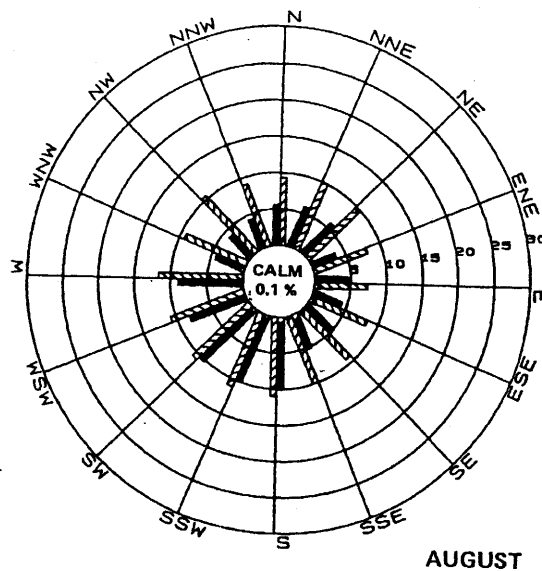
PERRY NUCLEAR POWER PLANT

May to August Monthly Wind Roses
 for the Perry Site - 10 m and 60 m
 Levels (5/1/72-4/30/74;
 9/1/77-8/31/82)

Figure 2.3-4 (Sheet 1 of 2)

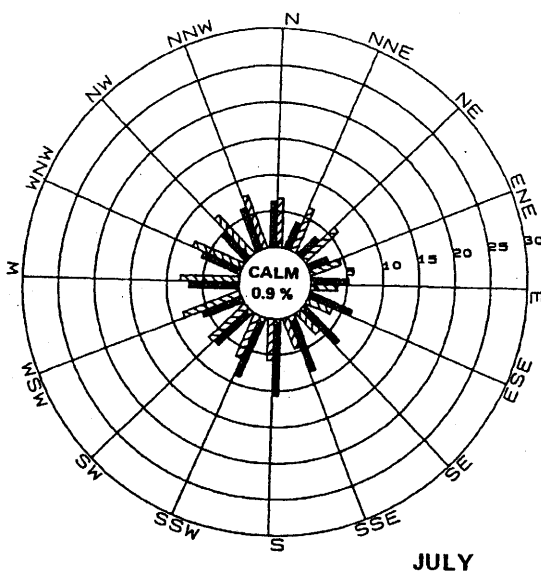


JULY

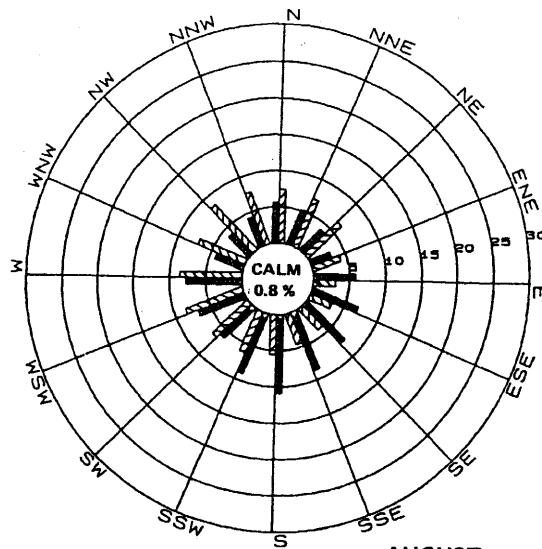


AUGUST

60 METER



JULY



AUGUST

10 METER

 WIND DIRECTION (%)
 WIND SPEED (MPH)

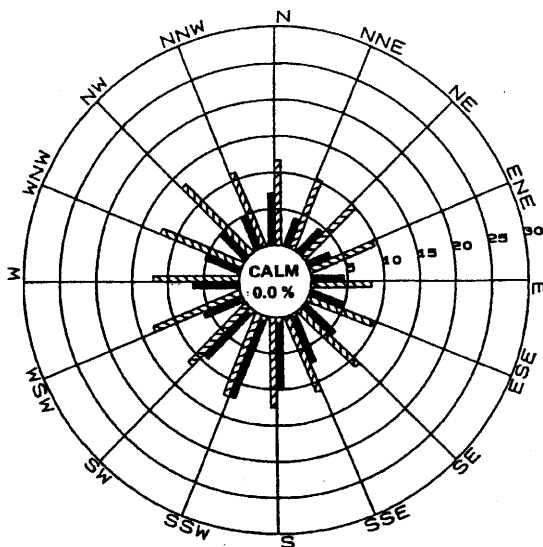
(Rev. 12 1/03)



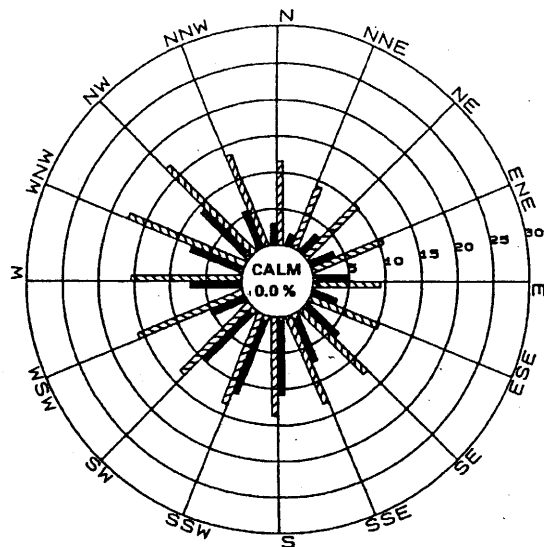
PERRY NUCLEAR POWER PLANT

May to August Monthly Wind Roses
for the Perry Site - 10 m and 60 m
Levels (5/1/72-4/30/74;
9/1/77-8/31/82)

Figure 2.3-4 (Sheet 2 of 2)

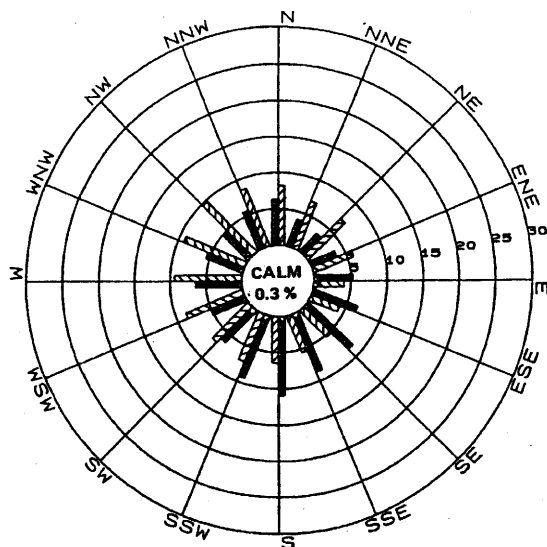


SEPTEMBER

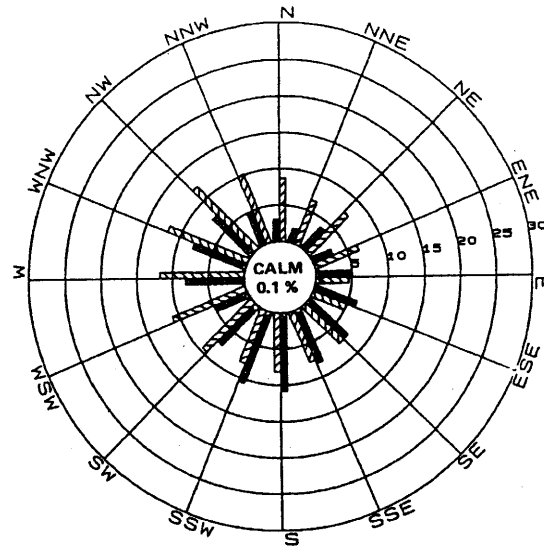


OCTOBER

60 METER



SEPTEMBER



OCTOBER

10 METER

 WIND DIRECTION (%)
 WIND SPEED (MPH)

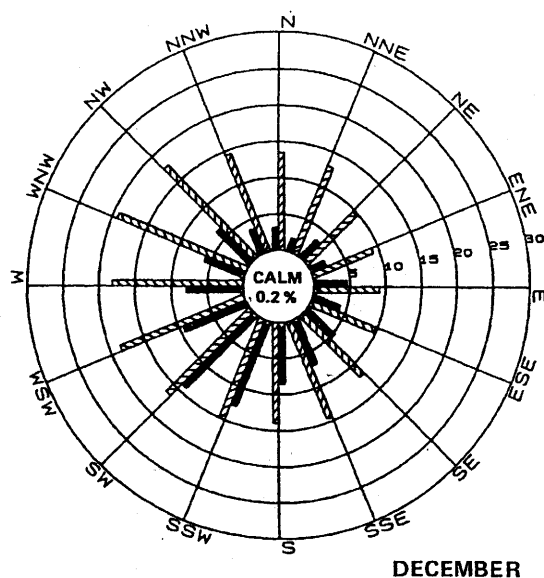
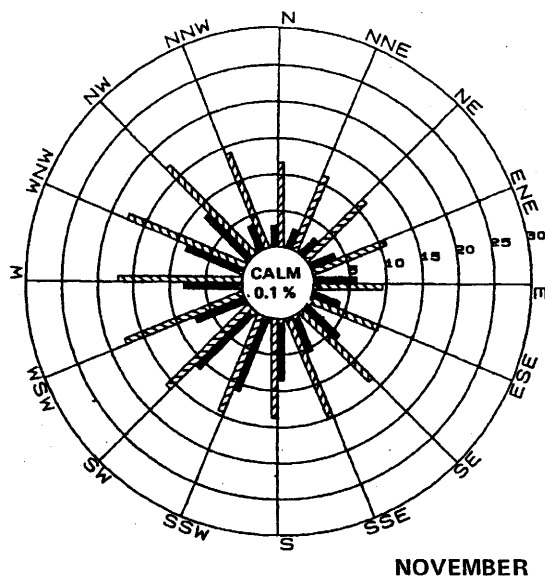
(Rev. 12 1/03)



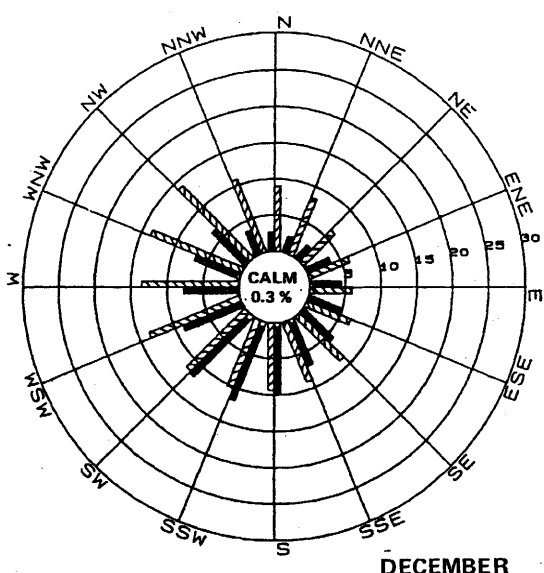
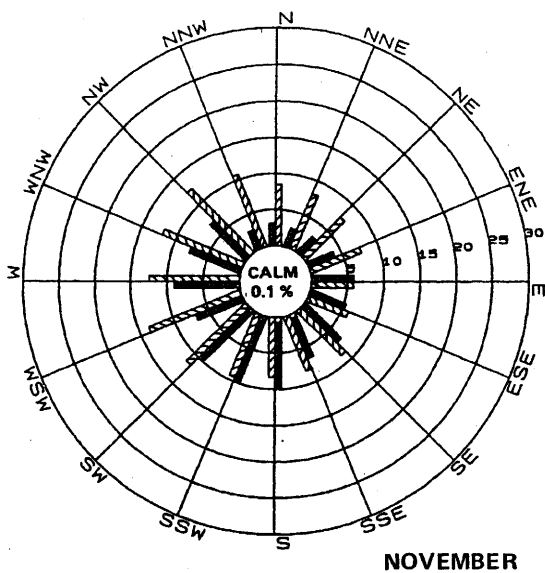
PERRY NUCLEAR POWER PLANT

Sept. to Dec. Monthly Wind Roses
for the Perry Site - 10 m and 60 m
Levels (5/1/72-4/30/74;
9/1/77-8/31/82)

Figure 2.3-5 (Sheet 1 of 2)



60 METER



10 METER

 WIND DIRECTION (%)
 WIND SPEED (MPH)

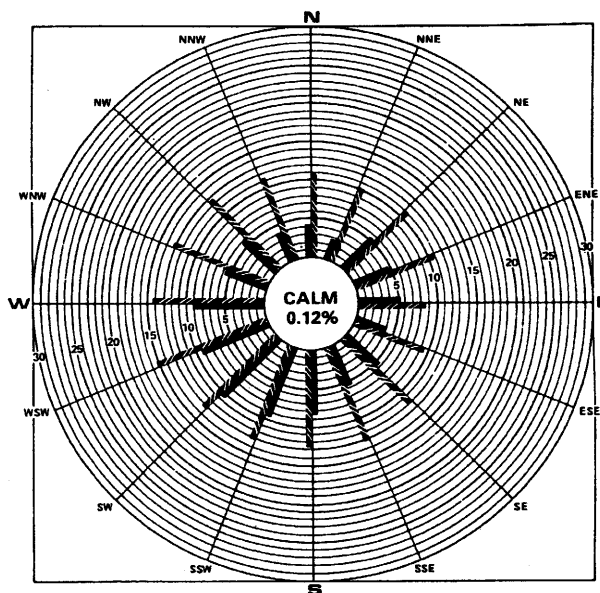
(Rev. 12 1/03)



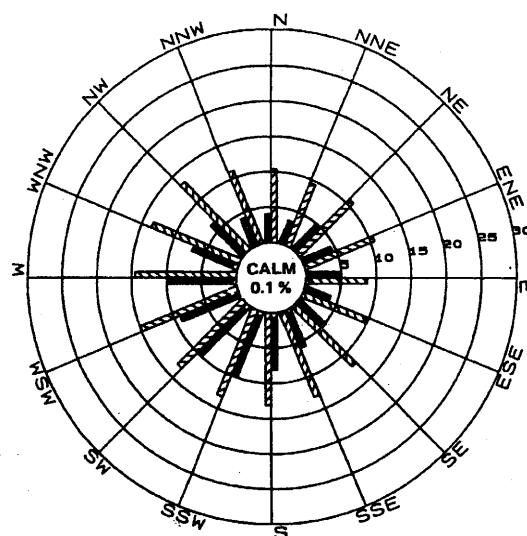
PERRY NUCLEAR POWER PLANT

Sept. to Dec. Monthly Wind Roses
 for the Perry Site - 10 m and 60 m
 Levels (5/1/72-4/30/74;
 9/1/77-8/31/82)

Figure 2.3-5 (Sheet 2 of 2)

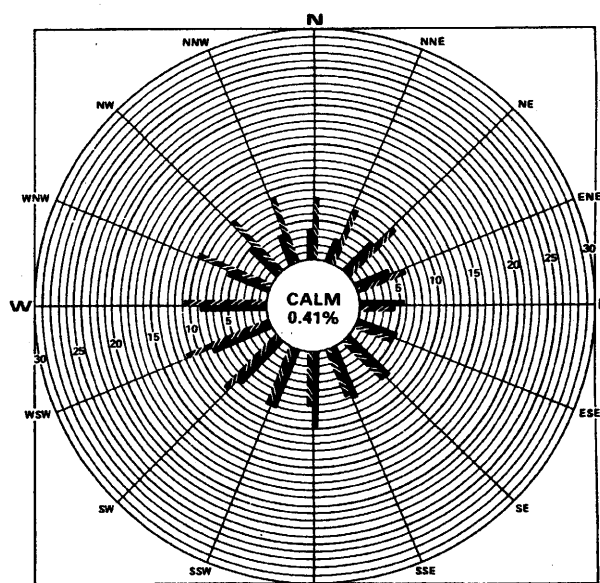


5/1/72-4/30/74; 9/1/77-8/31/78

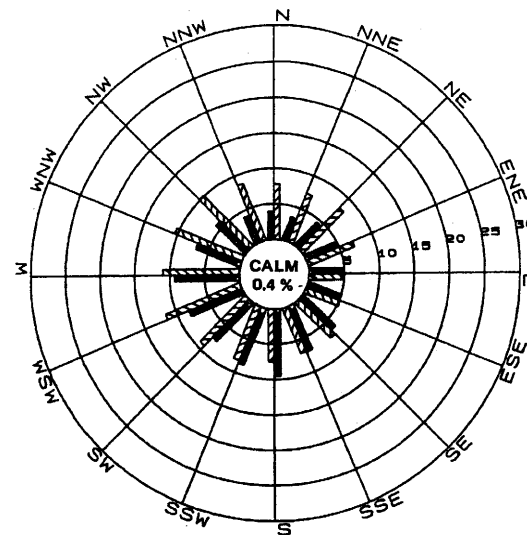


5/1/72-4/30/74; 9/1/77-8/31/82

60 METER



5/1/72-4/30/74; 9/1/77-8/31/78



5/1/72-4/30/74; 9/1/77-8/31/82

10 METER



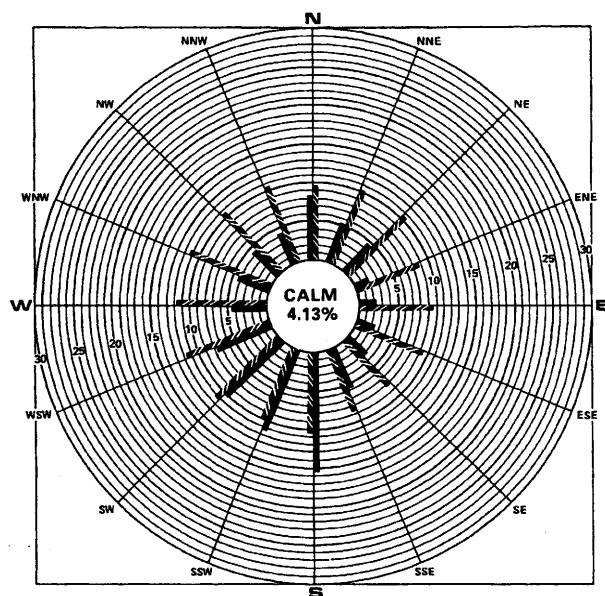
(Rev. 12 1/03)



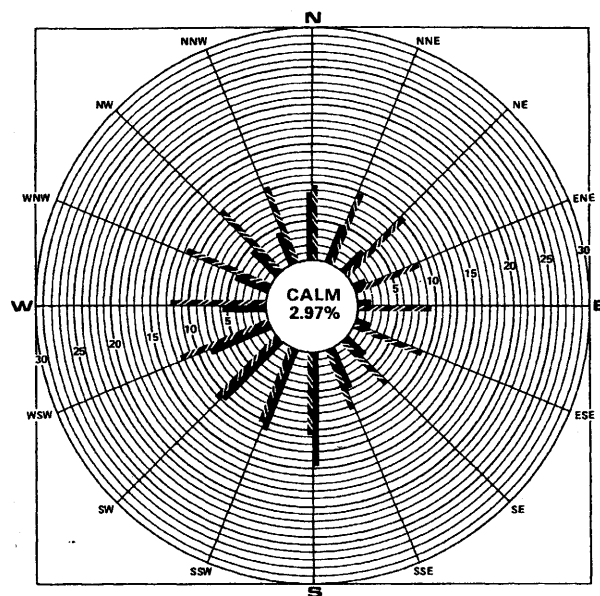
PERRY NUCLEAR POWER PLANT

Annual Wind Roses for the Perry Site
10 m and 60 m Levels for
Three-Concurrent and Seven-Site
Years

Figure 2.3-6

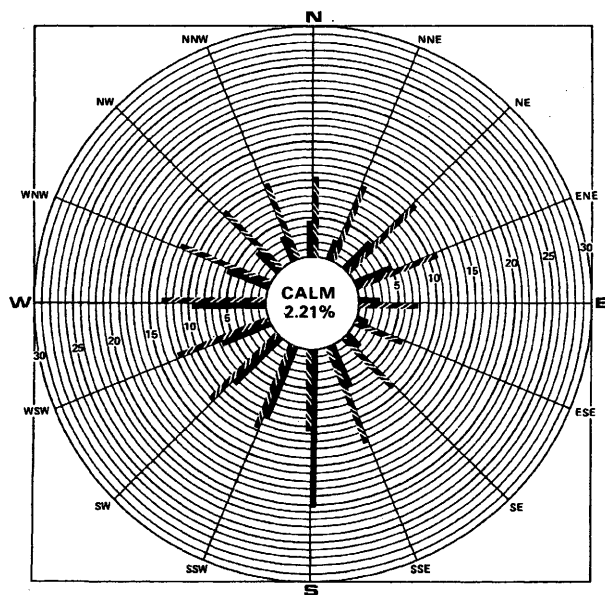


5/1/72-4/30/74; 9/1/77-8/31/78

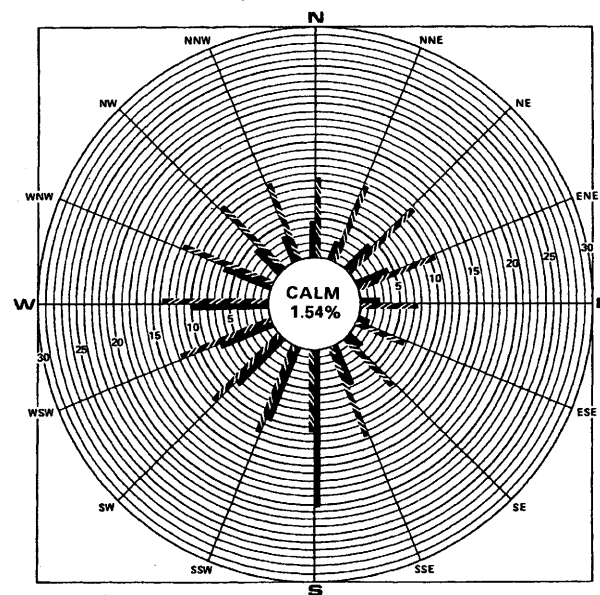


9/1/68-8/31/78

CLEVELAND - 6.1 METERS



5/1/72-4/30/74; 9/1/77-8/31/78



9/1/68-8/31/78

ERIE - 6.1 METERS

— WIND DIRECTION (%)
 --- WIND SPEED (MPH)

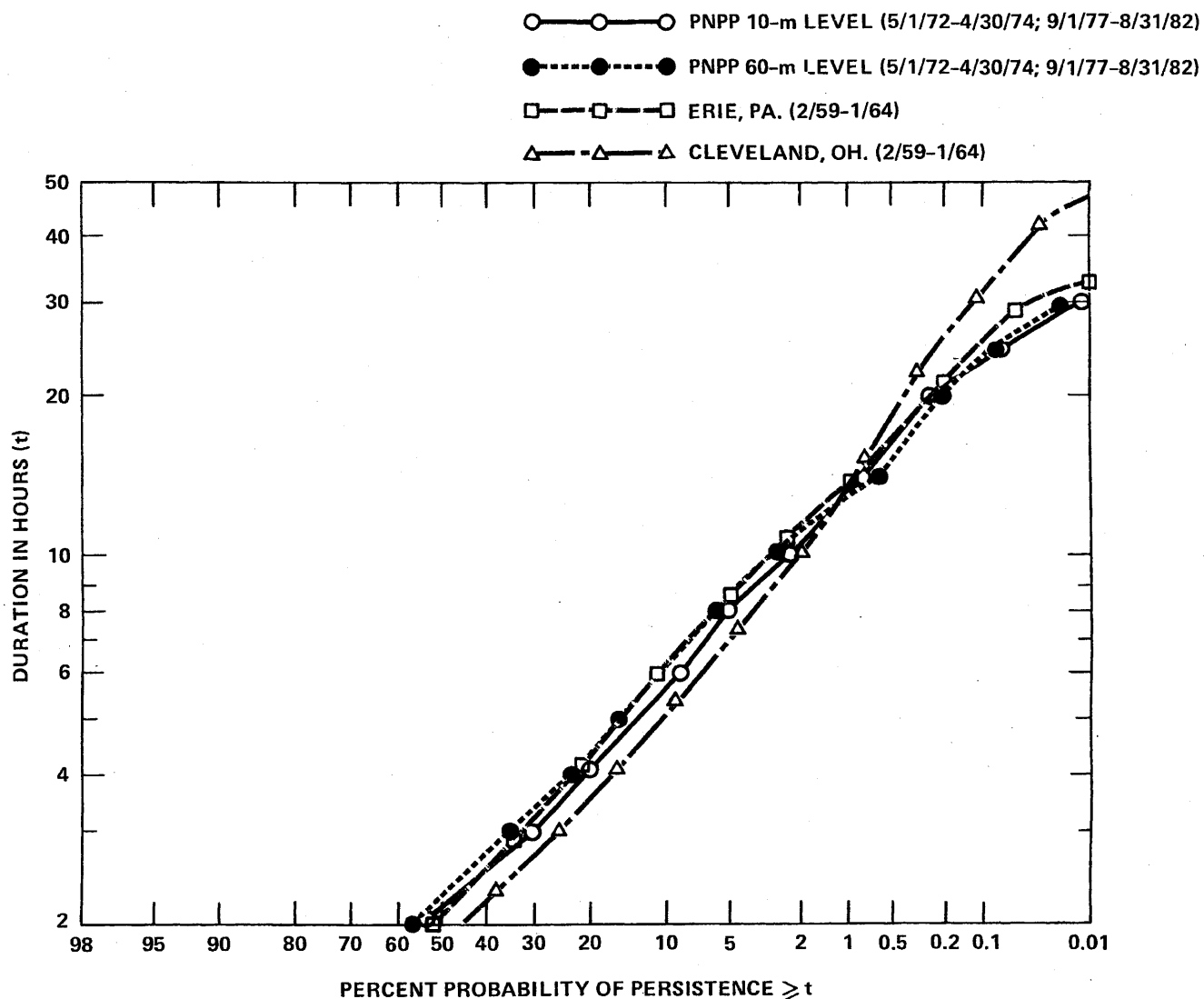
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Cleveland and Erie Annual
 Wind Roses

Figure 2.3-7



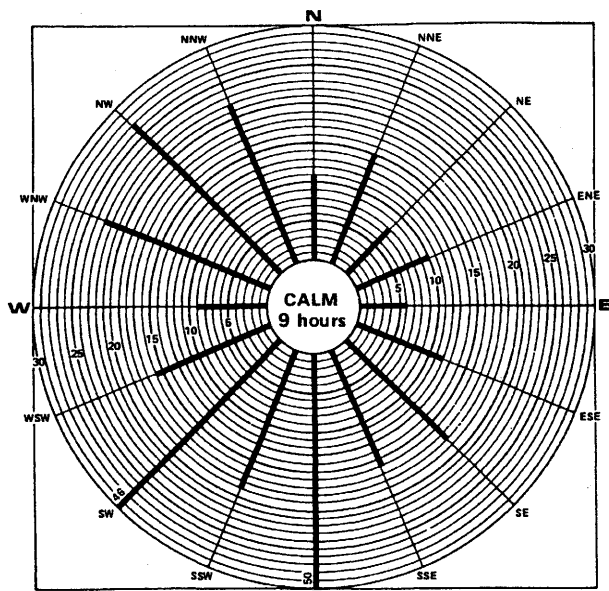
(Rev. 12 1/03)



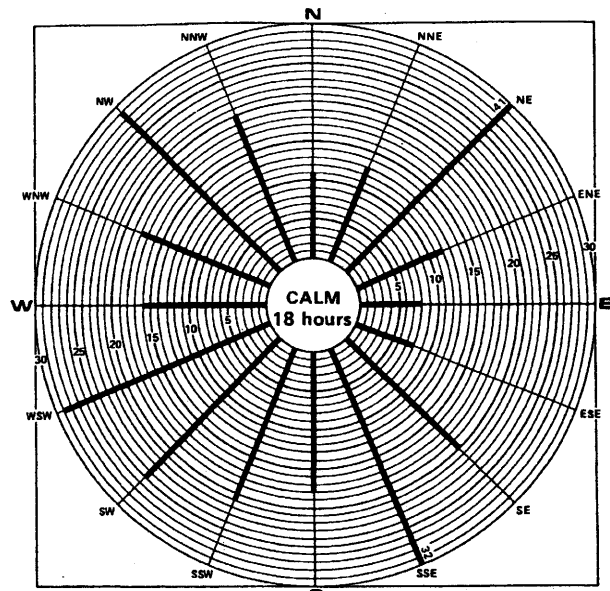
PERRY NUCLEAR POWER PLANT

Wind Direction Persistence
 Probability for One $22\frac{1}{2}^\circ$ Sector
 for PNPP Region

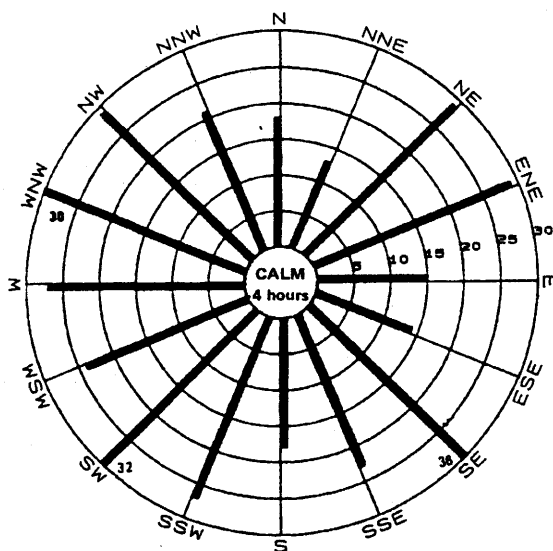
Figure 2.3-8



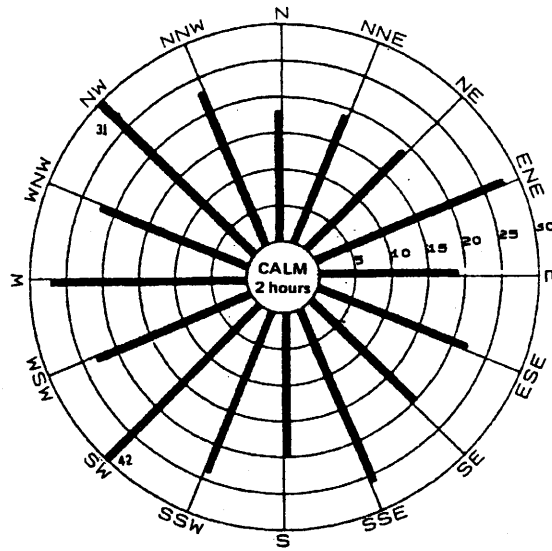
CLEVELAND OH.
(2/59 - 1/64)



ERIE, PA.
(2/59 - 1/64)



PNPP 10 m LEVEL
(5/72-4/74; 9/77-8/82)



PNPP 60 m LEVEL
(5/72-4/74; 9/77-8/82)

————— MAXIMUM WIND DIRECTION PERSISTENCE (HOURS)

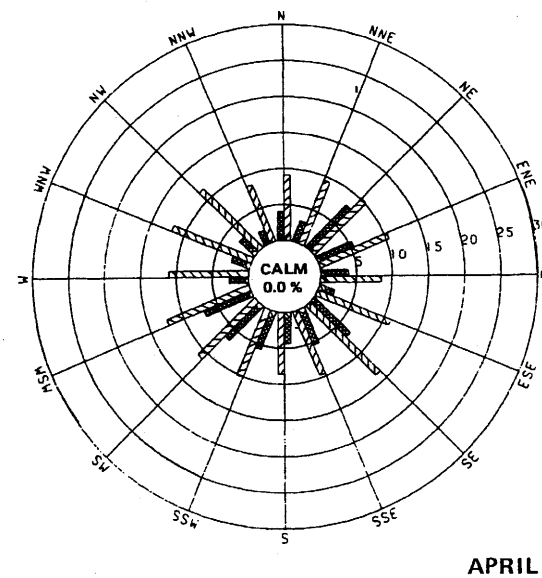
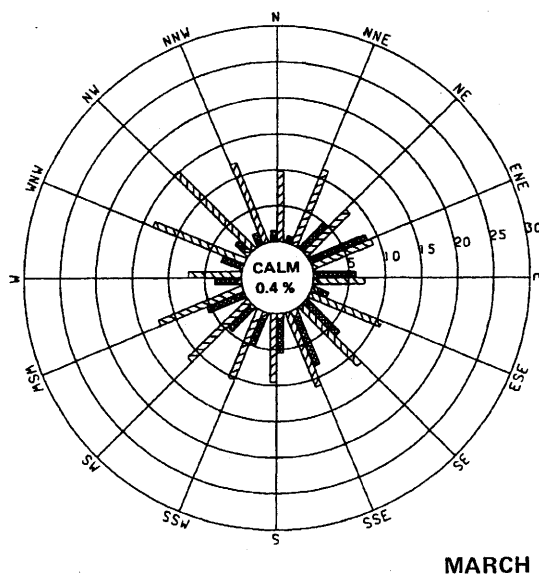
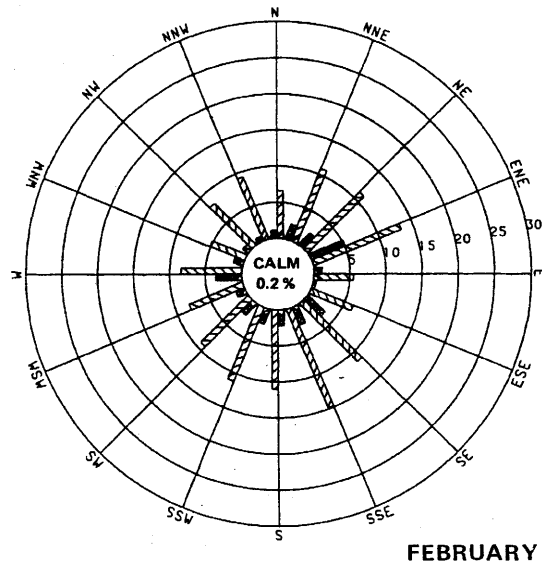
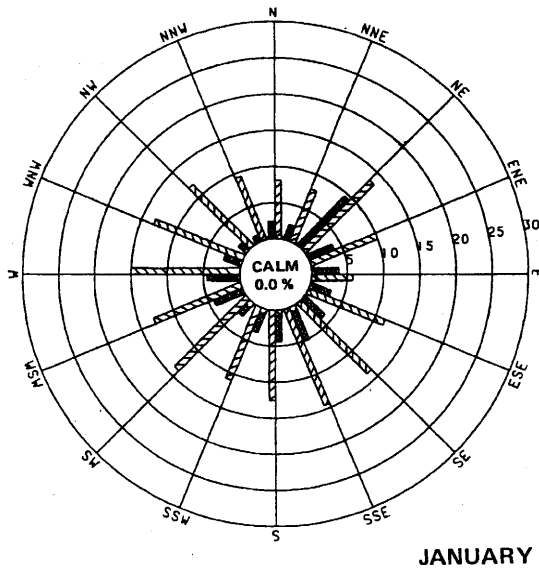
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Offsite and Onsite Maximum
Directional Wind Persistence Roses

Figure 2.3-9



PRECIPITATION FREQUENCY (PERCENT TIMES 10^{-1})
WIND SPEED (MPH)

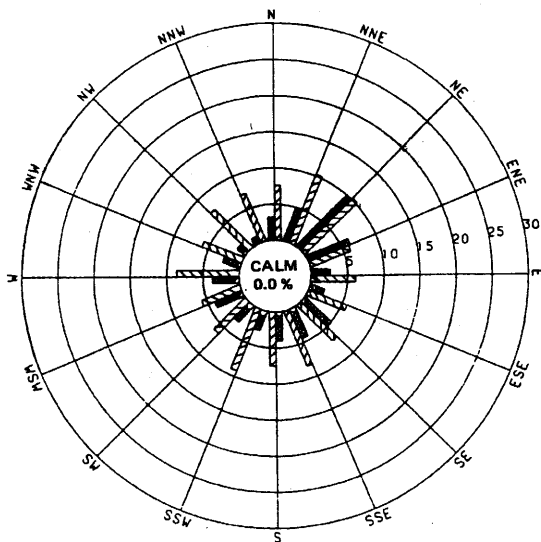
(Rev. 12 1/03)



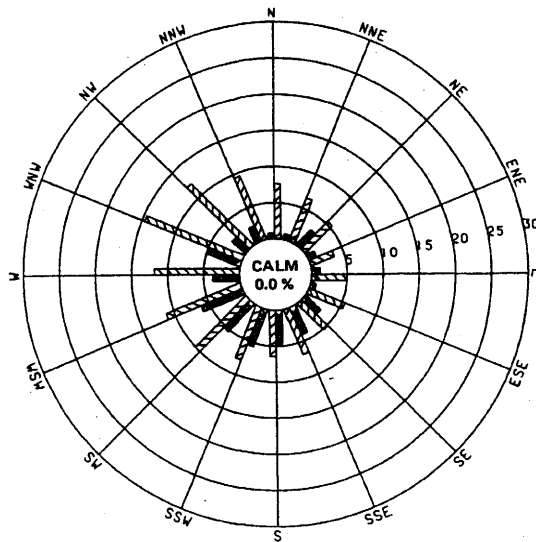
PERRY NUCLEAR POWER PLANT

Jan. to April Monthly Precipitation
 Wind Roses for the Perry Site (10 m)
 (5/1/72-4/30/74;
 9/1/77-8/31/82)

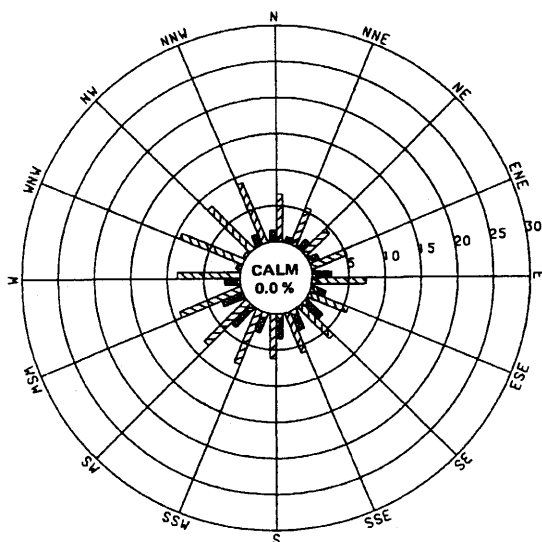
Figure 2.3-10



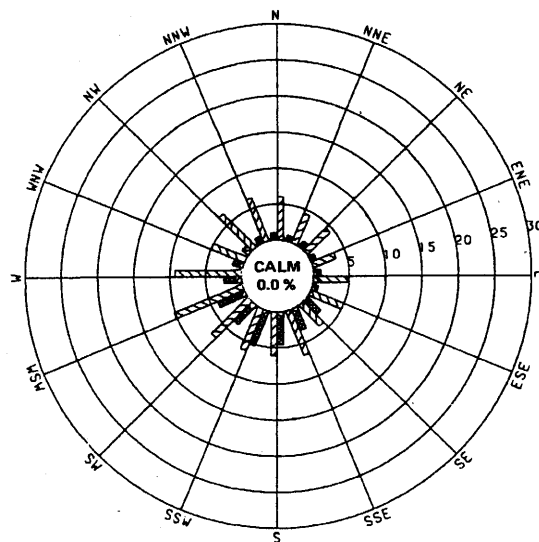
MAY



JUNE



JULY



AUGUST

— PRECIPITATION FREQUENCY (PERCENT TIMES 10^{-1})
 /// WIND SPEED (MPH)

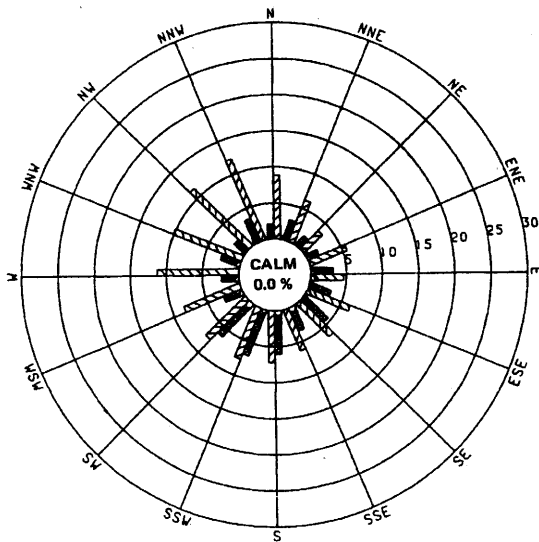
(Rev. 12 1/03)



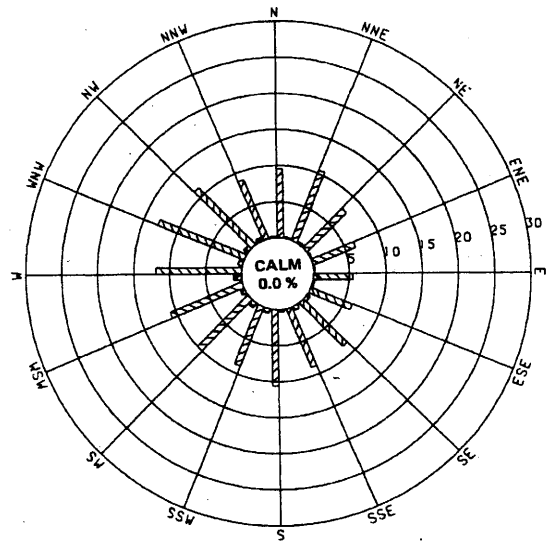
PERRY NUCLEAR POWER PLANT

May to Aug. Monthly Precipitation
 Wind Roses for the Perry Site (10 m)
 (5/1/72-4/30/74;
 9/1/77-8/31/82)

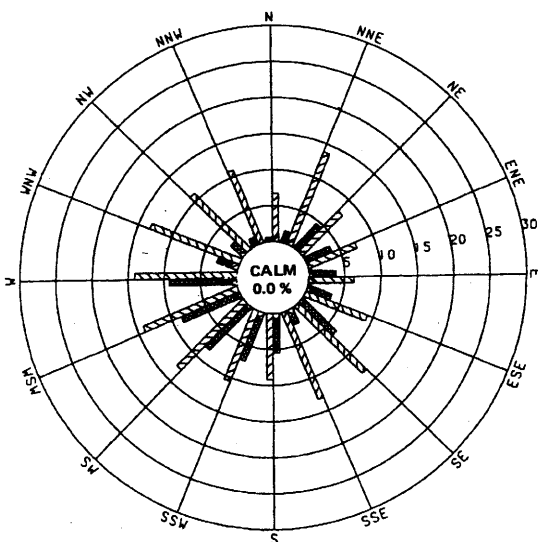
Figure 2.3-11



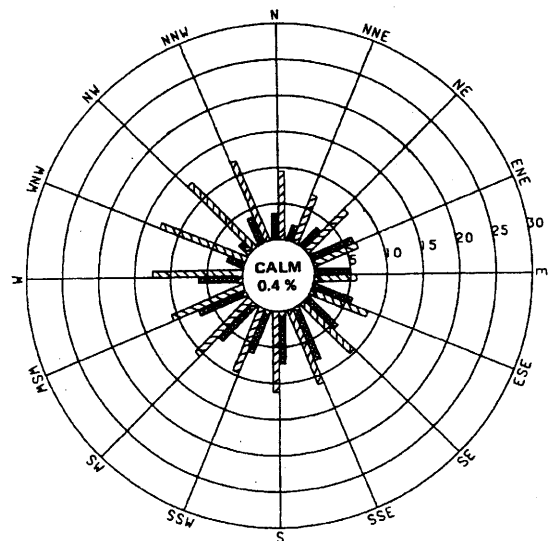
SEPTEMBER



OCTOBER



NOVEMBER



DECEMBER

— PRECIPITATION FREQUENCY (PERCENT TIMES 10^{-1})
 // WIND SPEED (MPH)

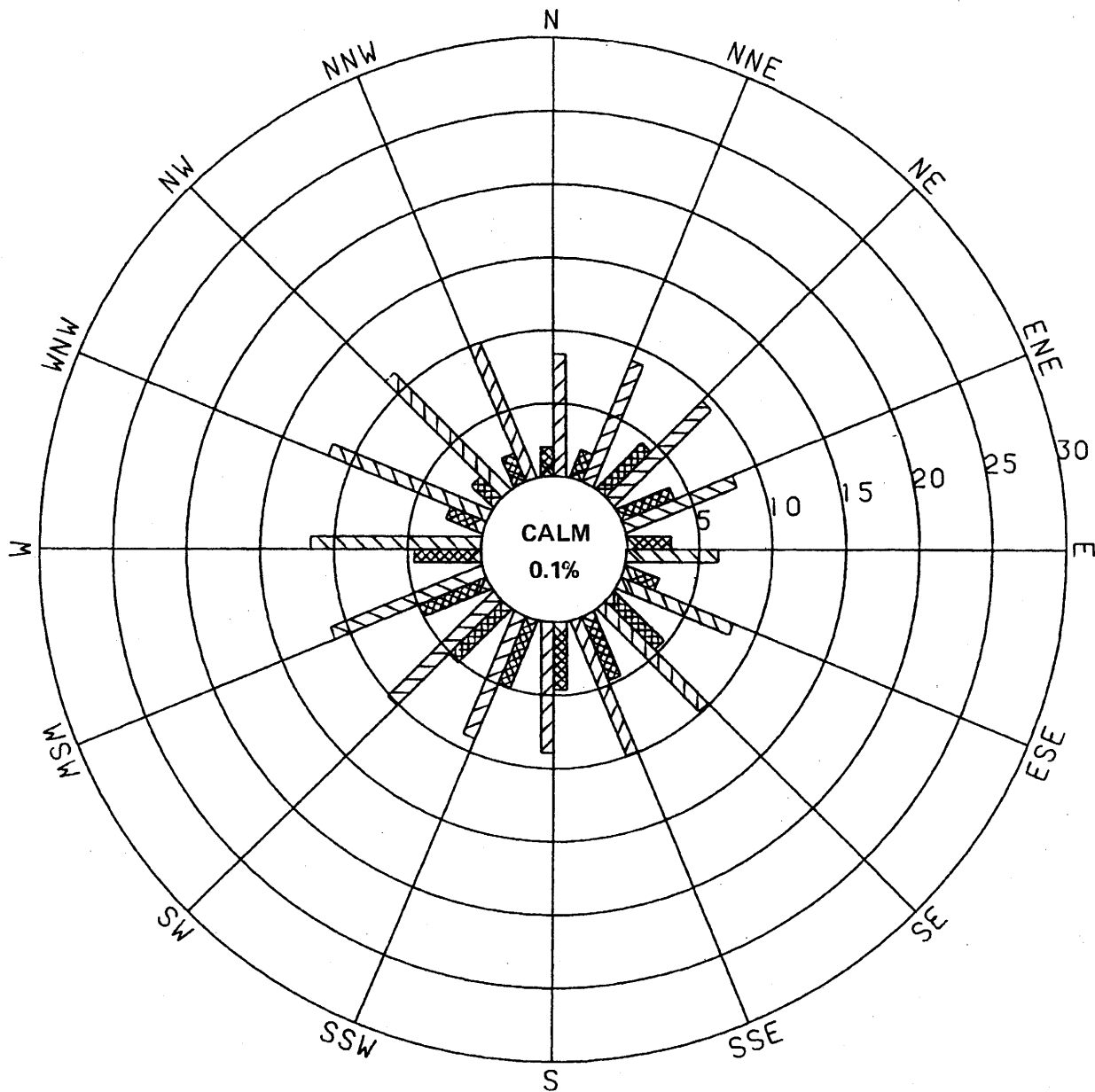
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Sept. to Dec. Monthly Precipitation
 Wind Roses for the Perry Site (10 m)
 (5/1/72-4/30/74; 9/1/77-8/31/82)

Figure 2.3-12



 PRECIPITATION FREQUENCY (PERCENT TIMES 10^{-1})
 WIND SPEED (MPH)

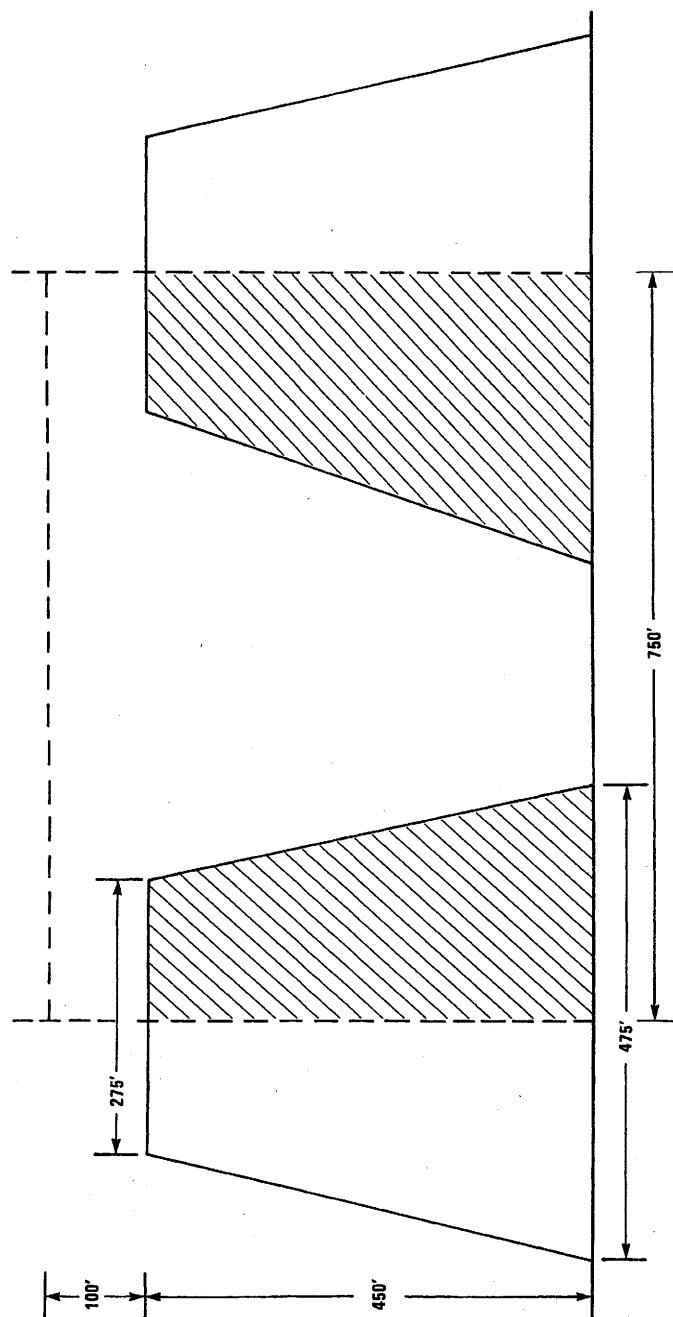
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Annual Precipitation Wind Roses for
 the Perry Site (10 m)
 (5/1/72-4/30/74; 9/1/77-8/31/82)

Figure 2.3-13



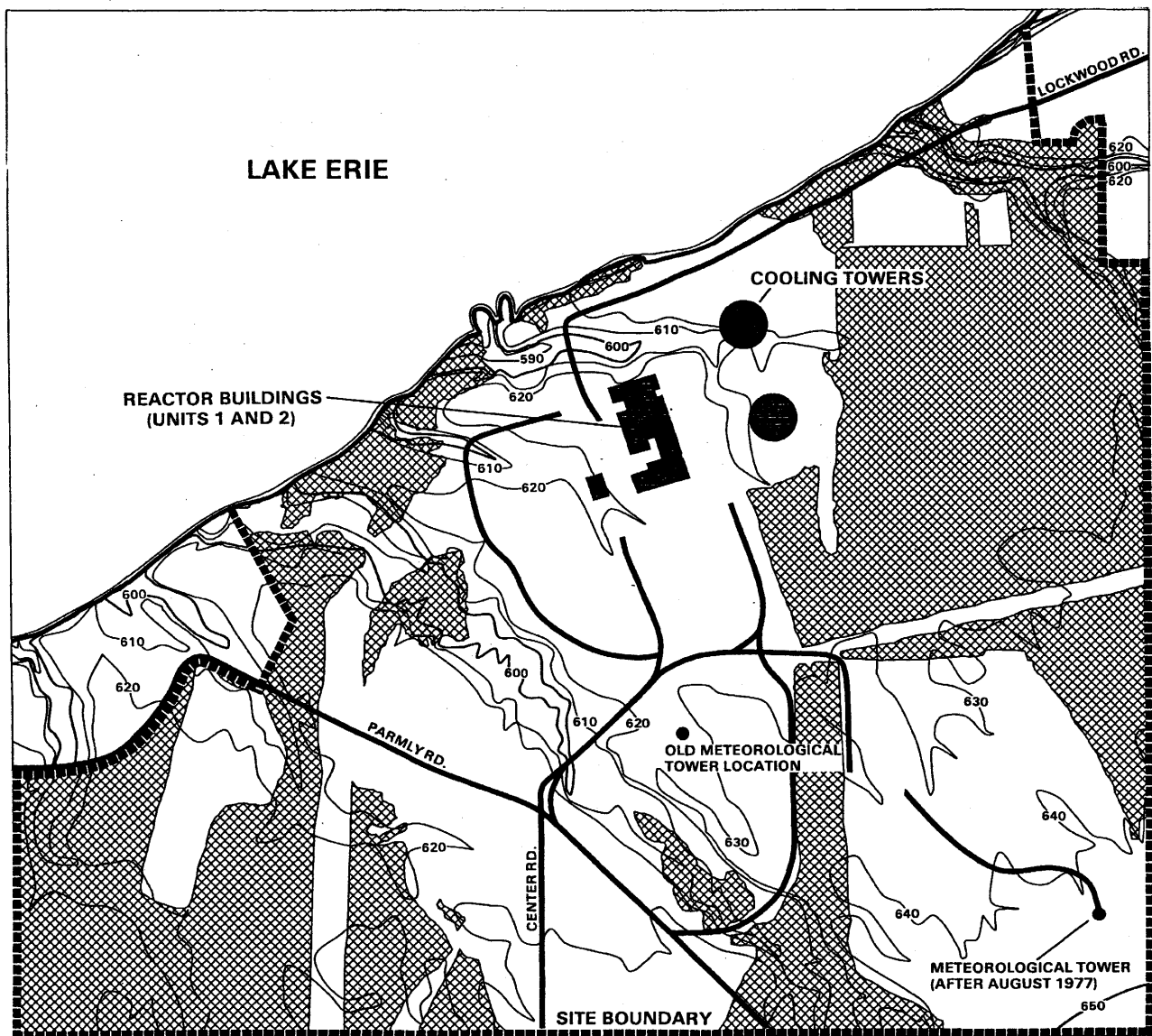
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Model With Trapezoids Representing
Cooling Towers

Figure 2.3-14



LEGEND



DECIDUOUS FOREST

500 0 500 1000



FEET



CONTOUR INTERVAL 10 FEET

DATUM IS MEAN SEA LEVEL

Source: Compiled from Facilities Maintenance Key Plan Rev. 17, 5-1-87; USGS 1:24,000 Quadrangle Maps of Madison, Mentor, Painesville, Perry and Thompson, Ohio; NUS, 1986; and PNPP FSAR.

Note: Contours do not necessarily reflect regrading from construction.

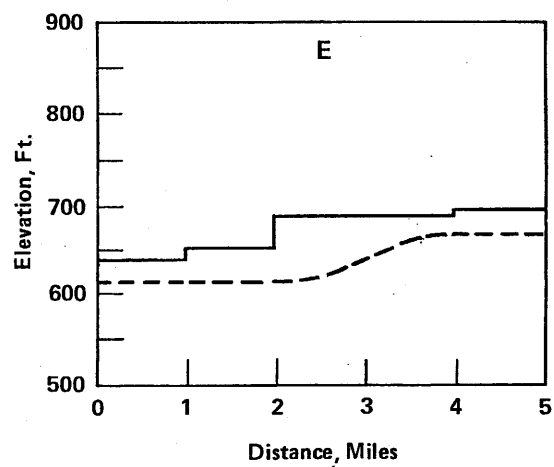
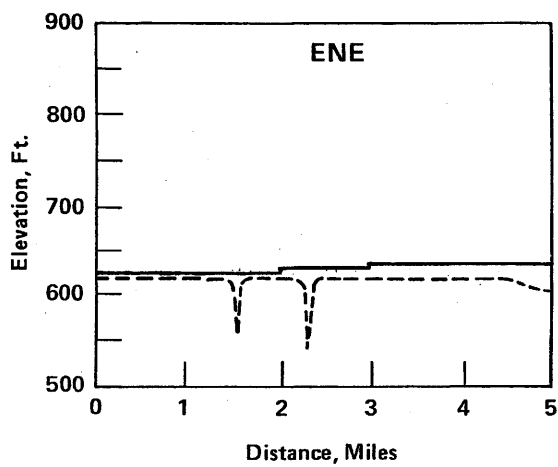
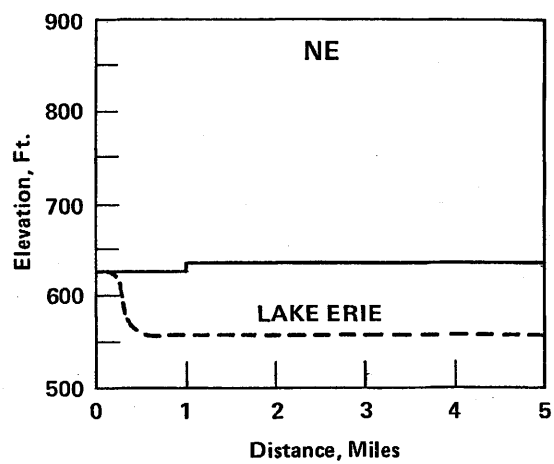
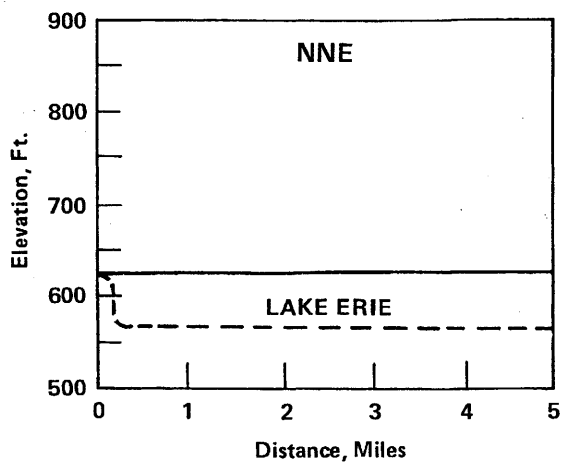
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Plant Site and Meteorological
Tower Location

Figure 2.3-15



Maximum (non-decreasing) terrain elevation within each $22\frac{1}{2}^\circ$ sector radiating from the plant in one mile increments is given by a solid line. Dashed line represents approximate terrain profile down the centerline of each sector.

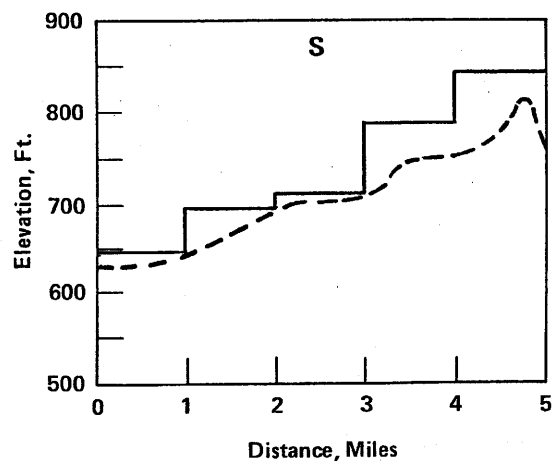
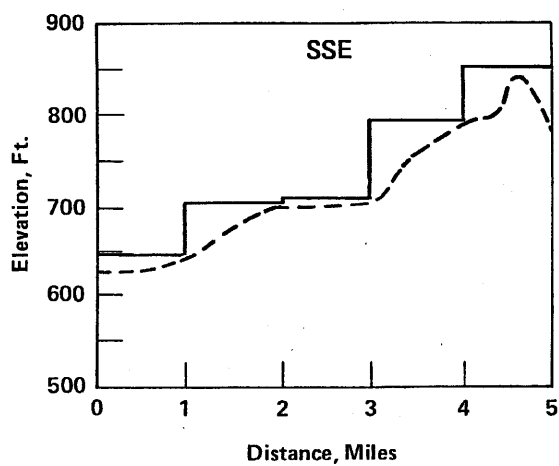
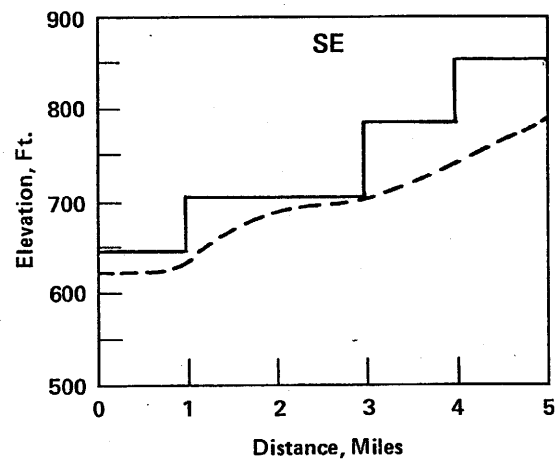
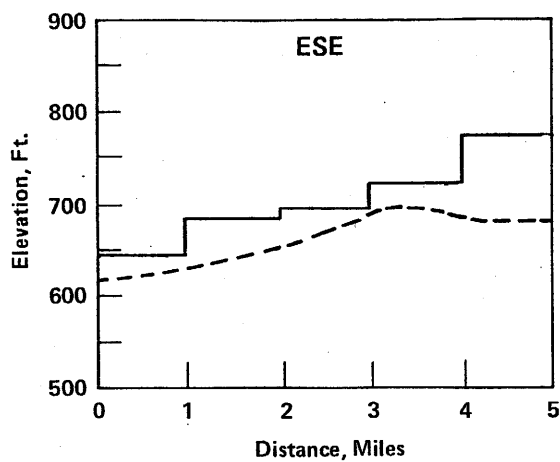
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Terrain Elevations Out to 5 Miles
from Center of Units 1 and 2

Figure 2.3-16 (Sheet 1 of 4)



Maximum (non-decreasing) terrain elevation within each $22\frac{1}{2}^\circ$ sector radiating from the plant in one mile increments is given by a solid line. Dashed line represents approximate terrain profile down the centerline of each sector.

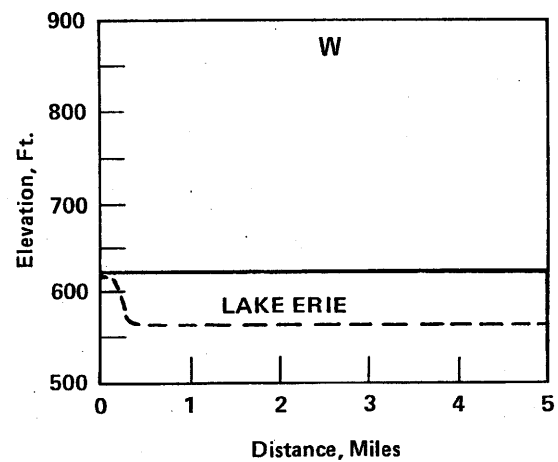
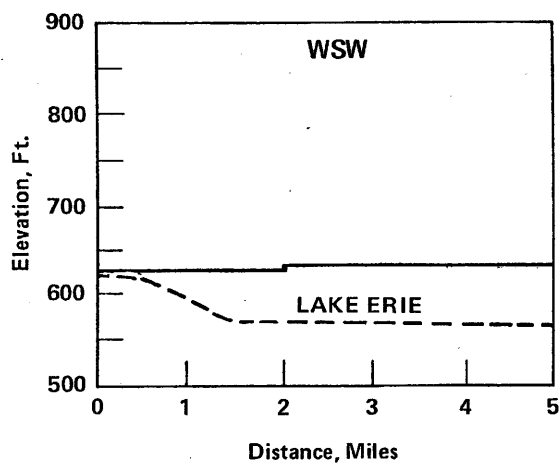
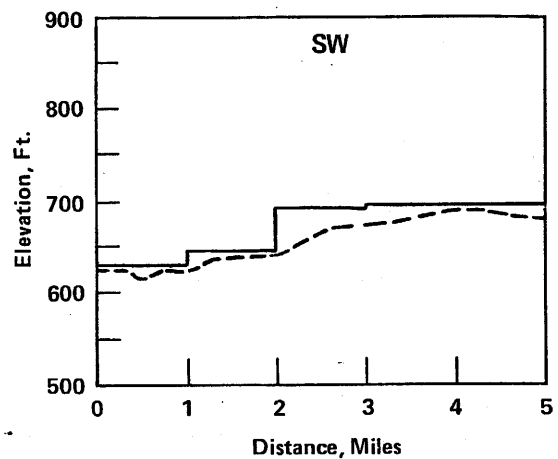
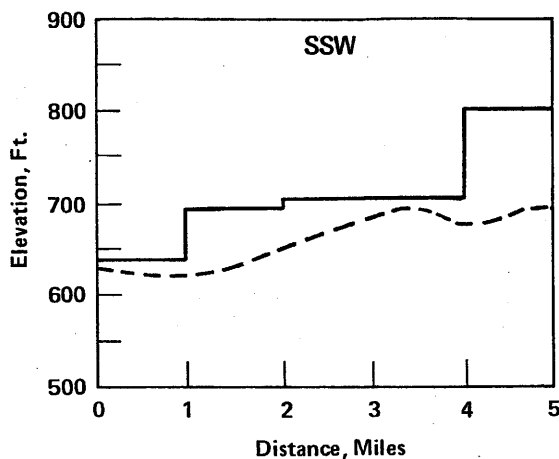
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Terrain Elevations Out to 5 Miles
from Center of Units 1 and 2

Figure 2.3-16 (Sheet 2 of 4)



Maximum (non-decreasing) terrain elevation within each $22\frac{1}{2}^\circ$ sector radiating from the plant in one mile increments is given by a solid line. Dashed line represents approximate terrain profile down the centerline of each sector.

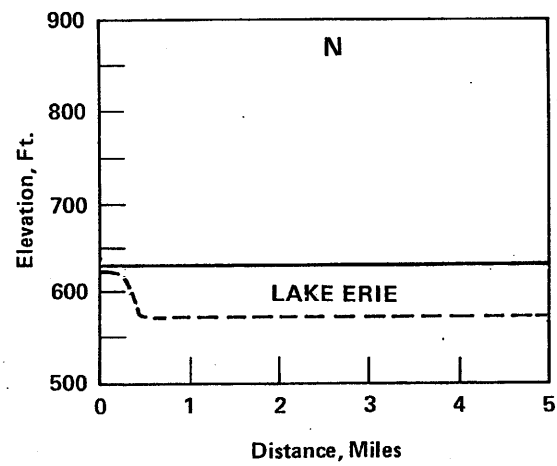
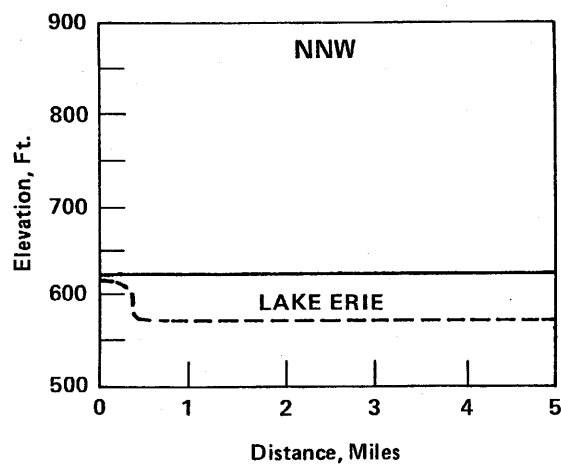
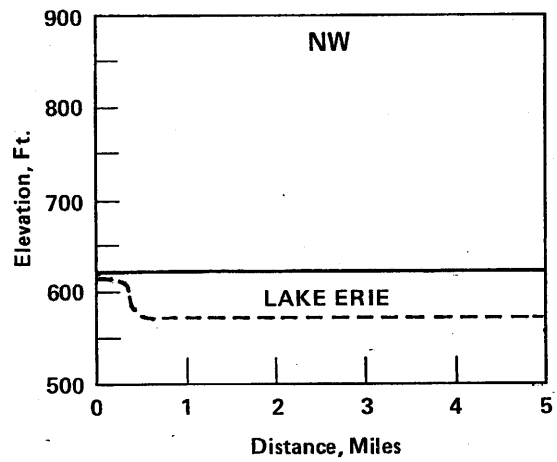
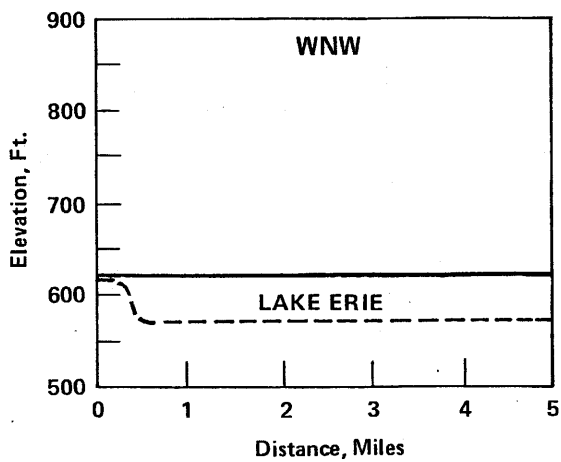
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Terrain Elevations Out to 5 Miles
from Center of Units 1 and 2

Figure 2.3-16 (Sheet 3 of 4)



Maximum (non-decreasing) terrain elevation within each $22\frac{1}{2}^\circ$ sector radiating from the plant in one mile increments is given by a solid line. Dashed line represents approximate terrain profile down the centerline of each sector.

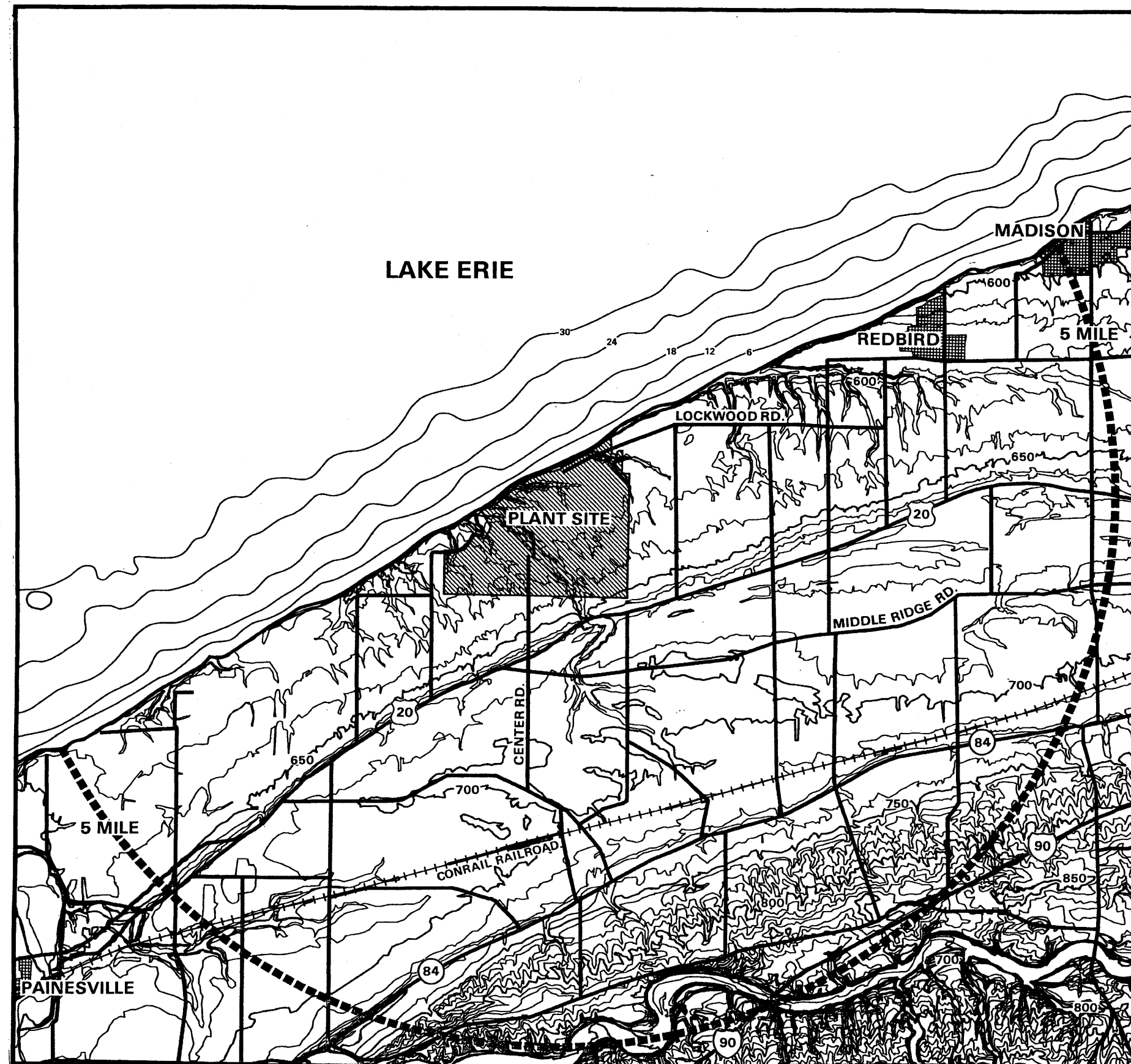
(Rev. 12 1/03)



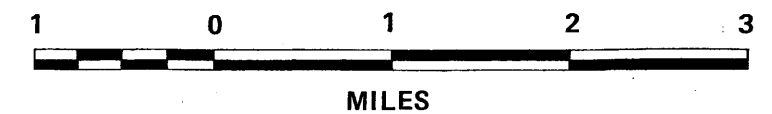
PERRY NUCLEAR POWER PLANT

Terrain Elevations Out to 5 Miles
from Center of Units 1 and 2

Figure 2.3-16 (Sheet 4 of 4)



DATUM IS MEAN SEA LEVEL (FEET)



Source: Compiled from USGS 1:24,000 Quadrangle Maps of Madison, Mentor, Painesville, Perry and Thompson, Ohio; and NUS, 1986.

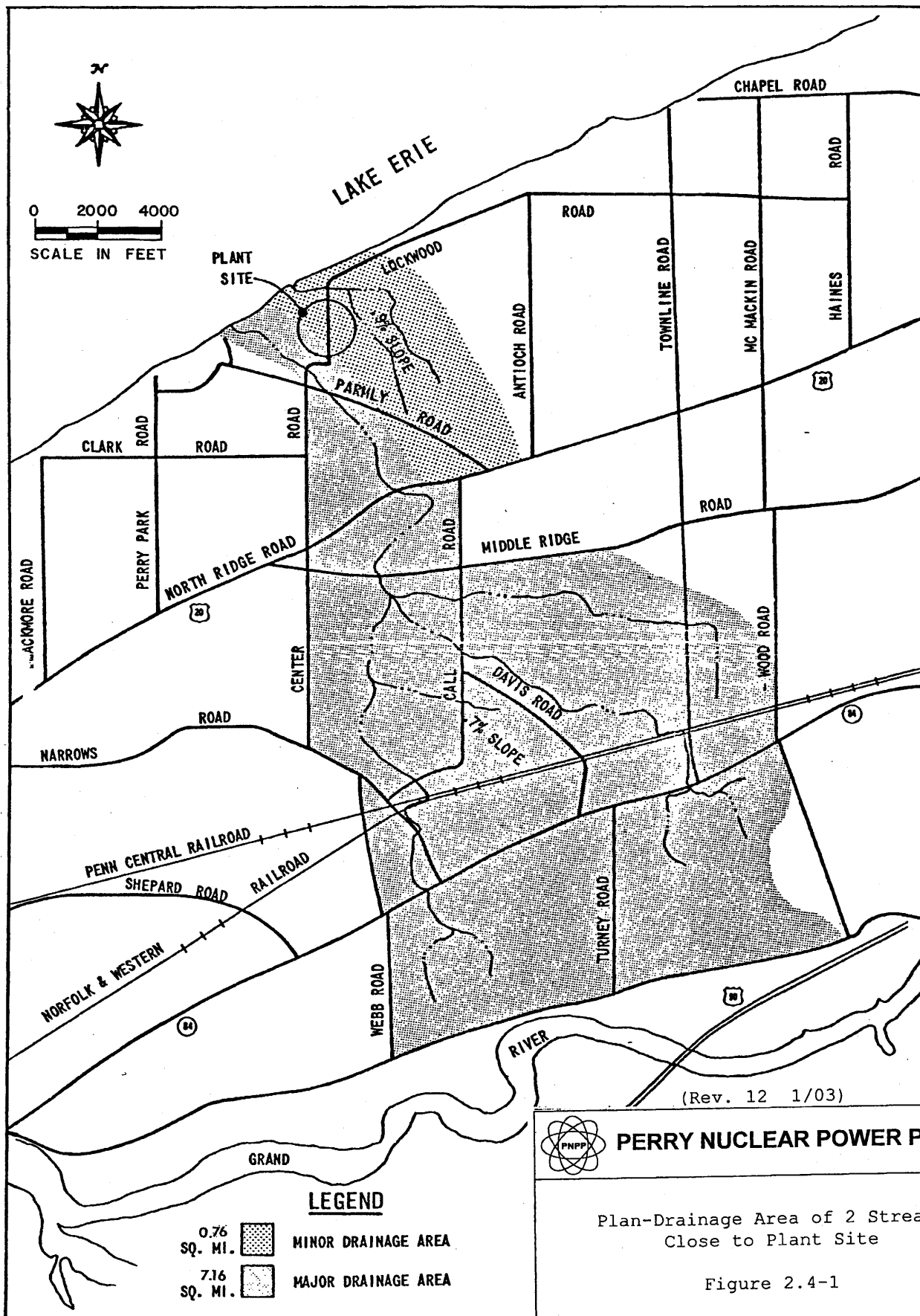
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Region Topographic Map
5 Mile Radius

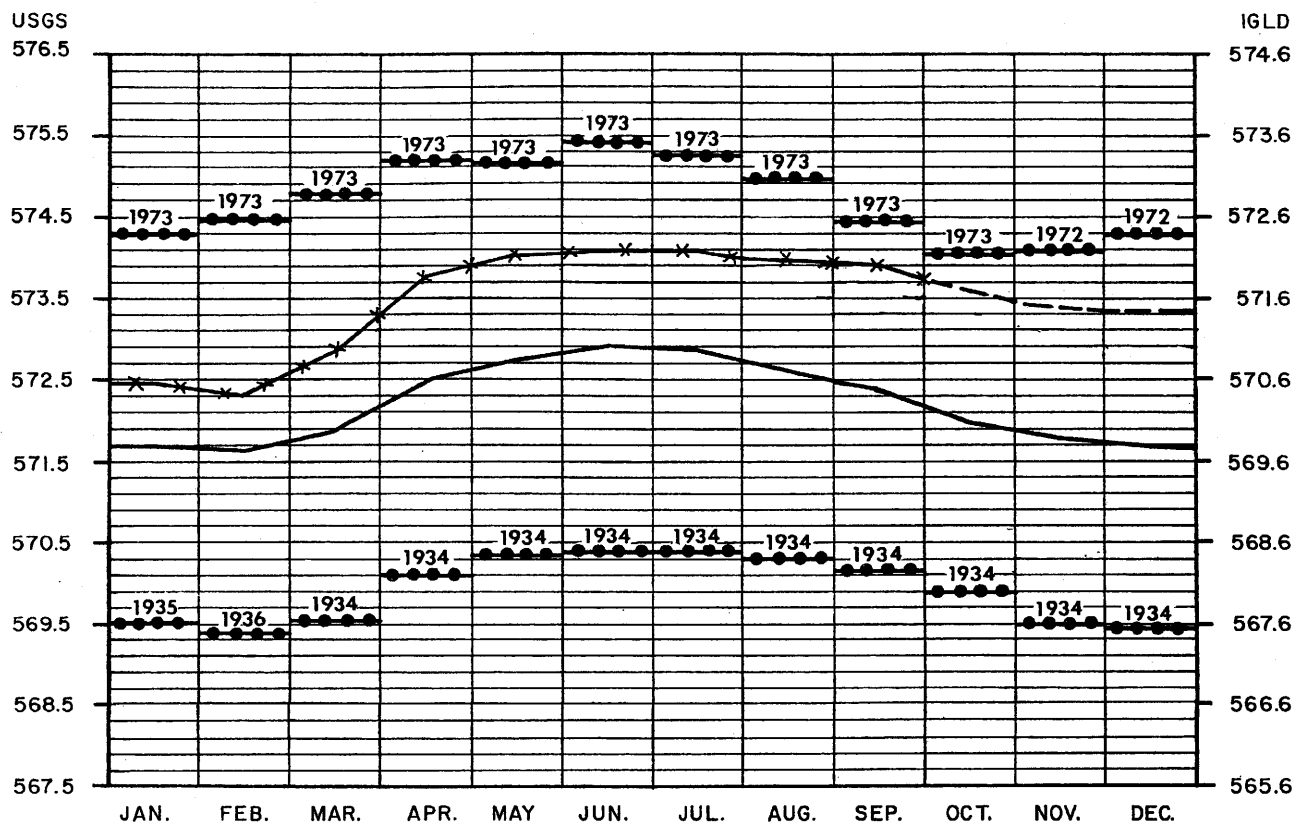
Figure 2.3-17



PERRY NUCLEAR POWER PLANT

Plan-Drainage Area of 2 Streams
Close to Plant Site

Figure 2.4-1



REFERENCE: LAKE SURVEY CENTER, NOAA

LEGEND

- × × × 1979 (ACTUAL)
- 1979 (PROJECTION)
- AVERAGE LEVELS
(PERIOD OF RECORD
1860 TO 1973)
- ● ● MAXIMUM OR MINIMUM
MONTHLY MEAN LEVEL
(PERIOD OF RECORD
1860 TO 1973)

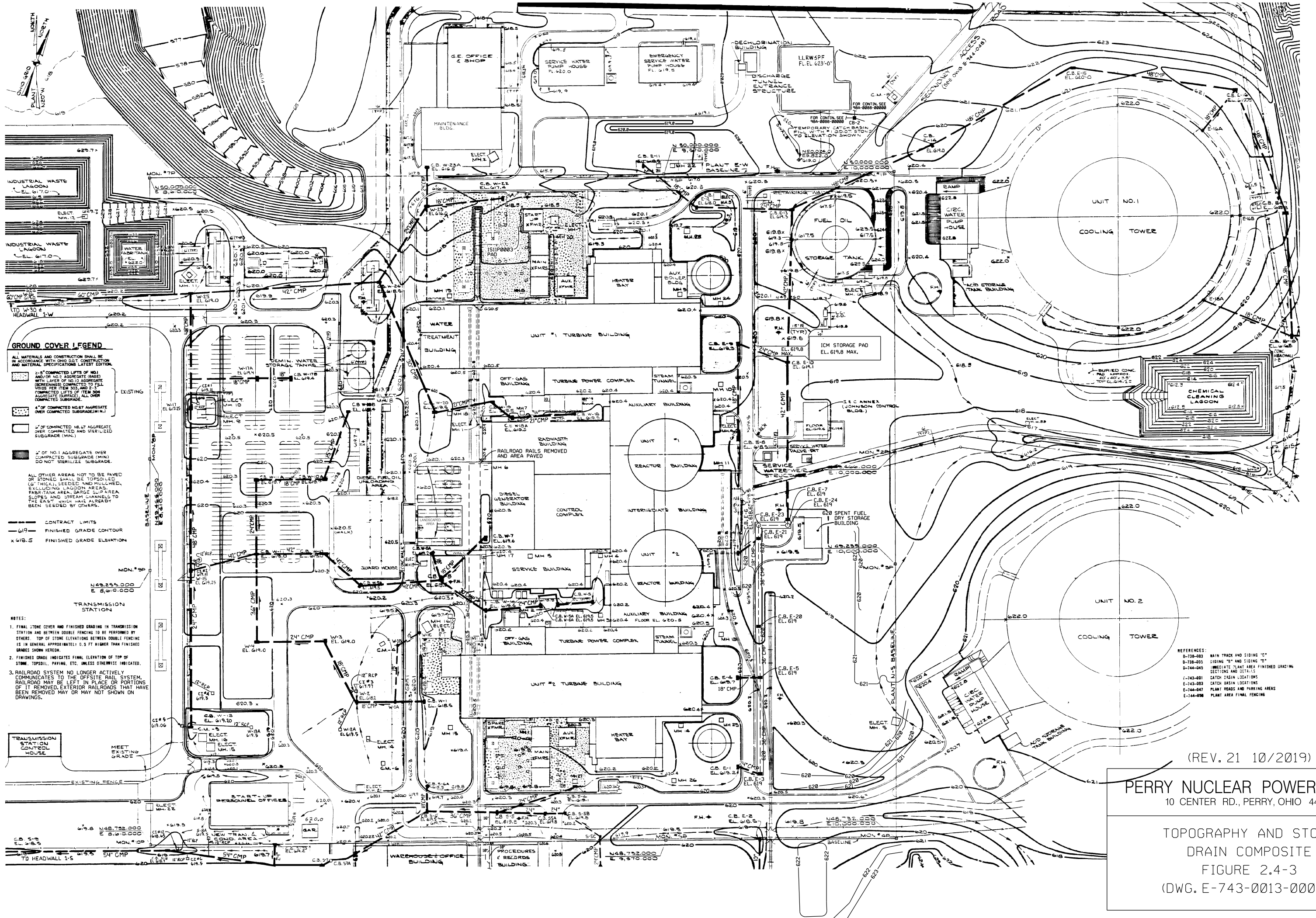
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Lake Erie Water Levels

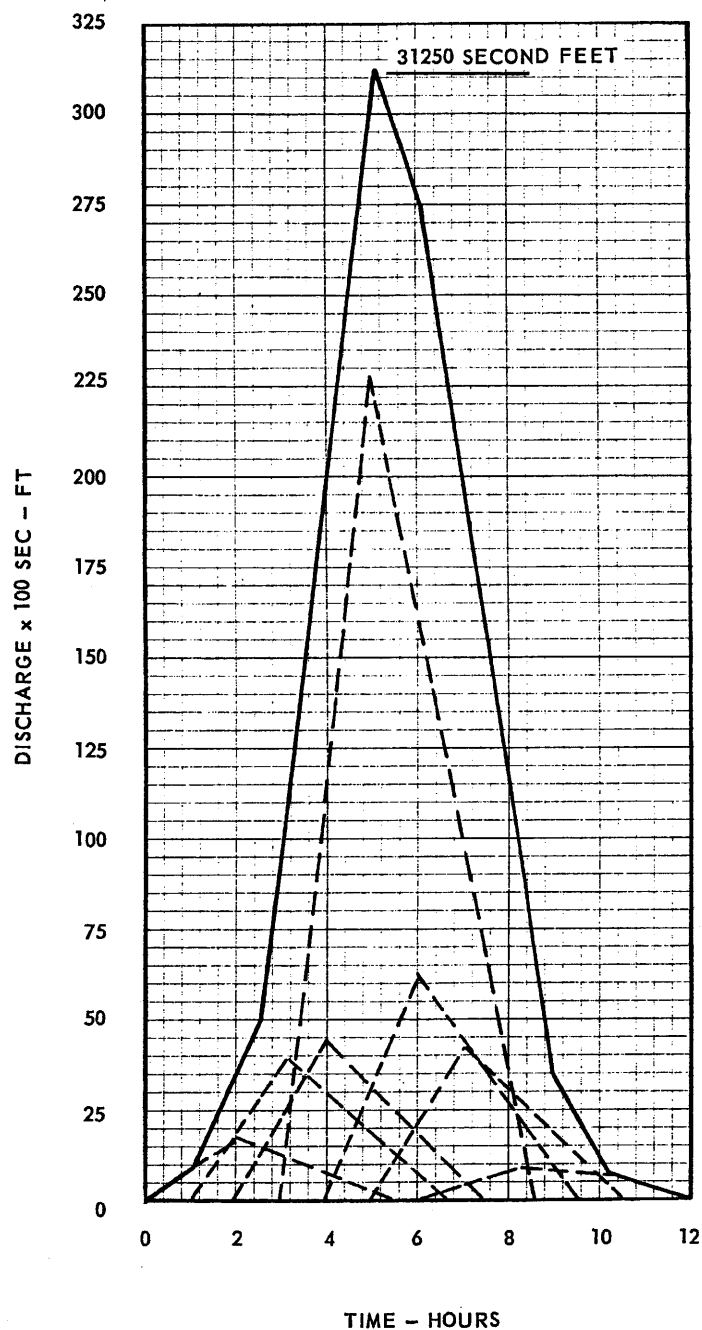
Figure 2.4-2



(REV. 21 10/2019)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

TOPOGRAPHY AND STORM
DRAIN COMPOSITE
FIGURE 2.4-3
(DWG. E-743-0013-00000)



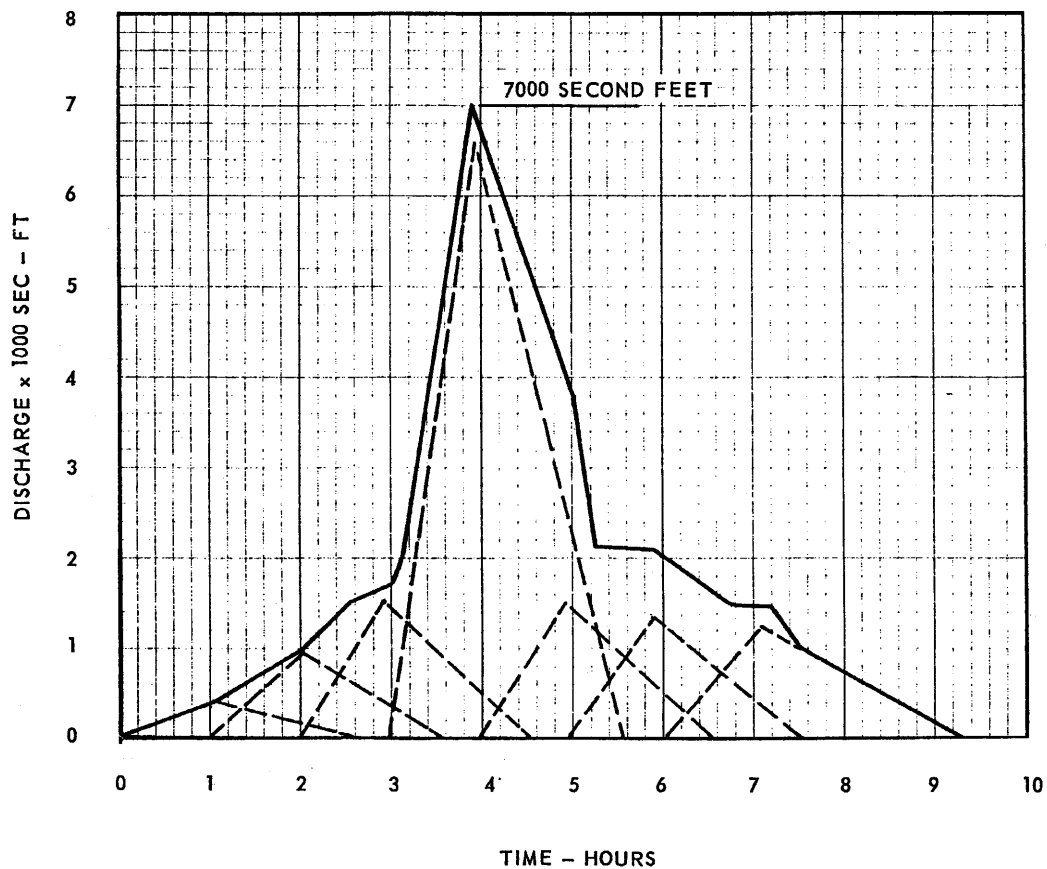
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Hydrograph of PMF Discharge Into
Lake Erie-Major Stream

Figure 2.4-4



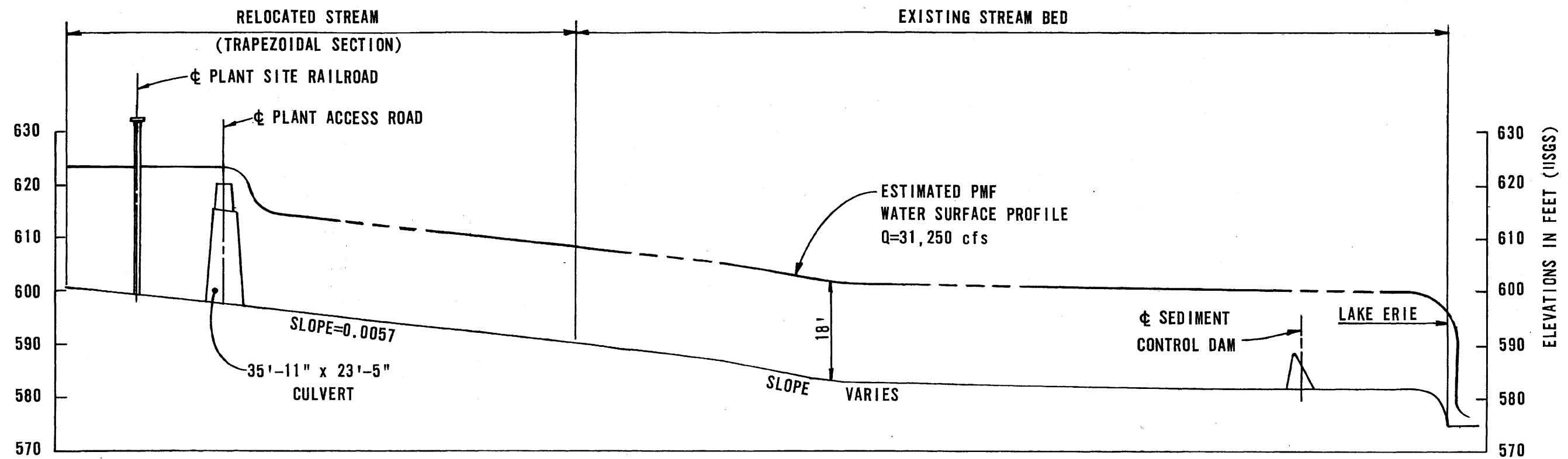
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Hydrograph of PMF Discharge Into
Lake Erie-Minor Stream

Figure 2.4-5



STREAM PROFILE
SCALE: HORIZ. 1"=400'
VERT. 1"=20'

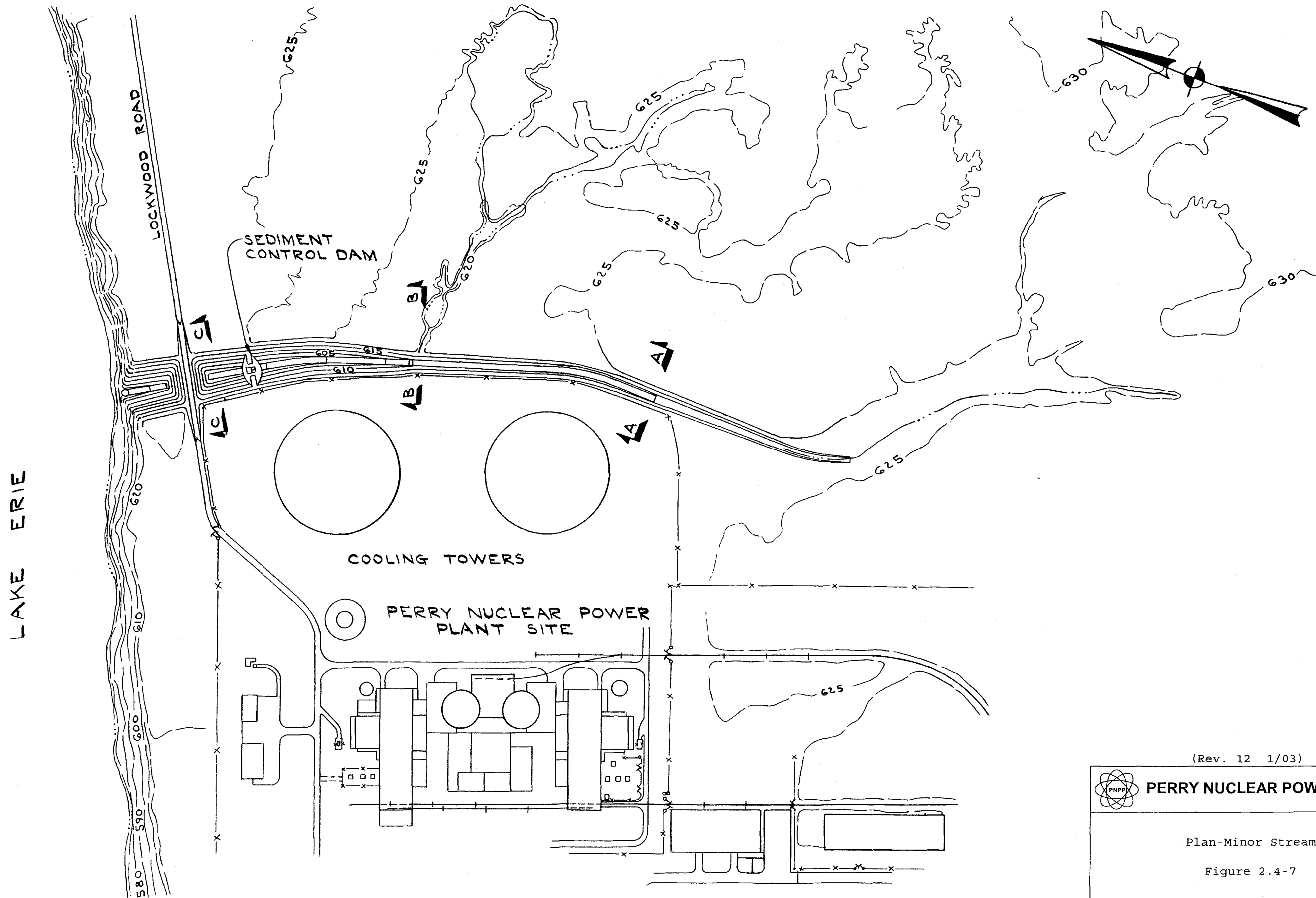
(Rev. 12-1/03)



PERRY NUCLEAR POWER PLANT

Probable Maximum Flood Profiles-
Major Stream

Figure 2.4-6



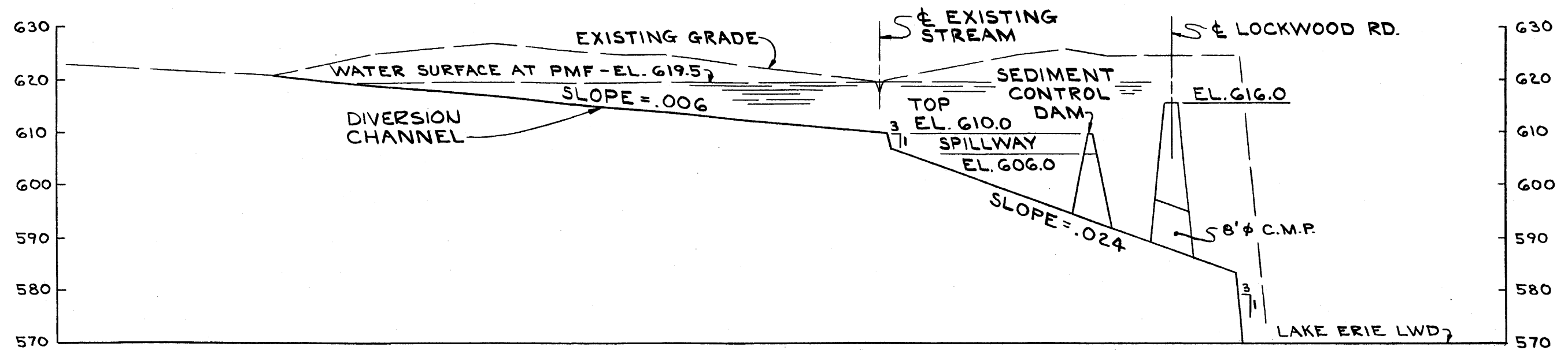
(Rev. 12 1/03)



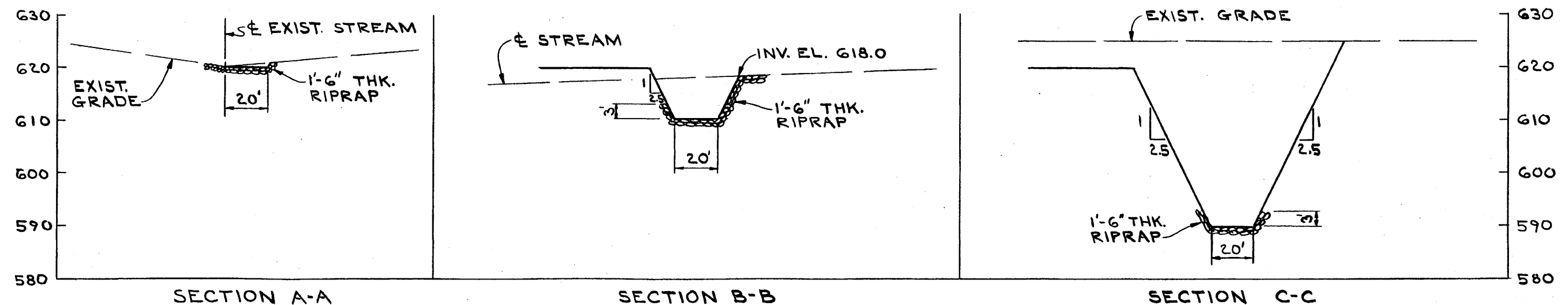
PERRY NUCLEAR POWER PLANT

Plan-Minor Stream

Figure 2.4-7




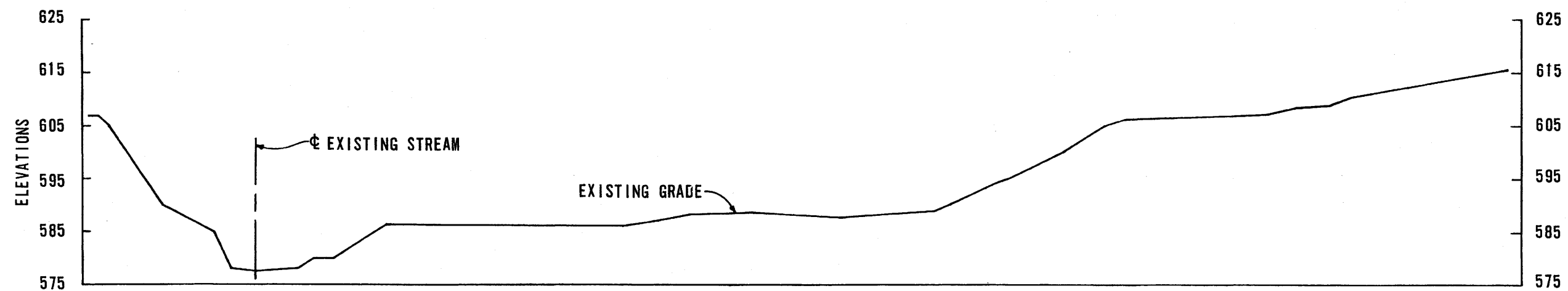
PROFILE OF DIVERSION CHANNEL
SCALE: HORIZ. 1" = 300'-0"
VERT. 1" = 20'-0"



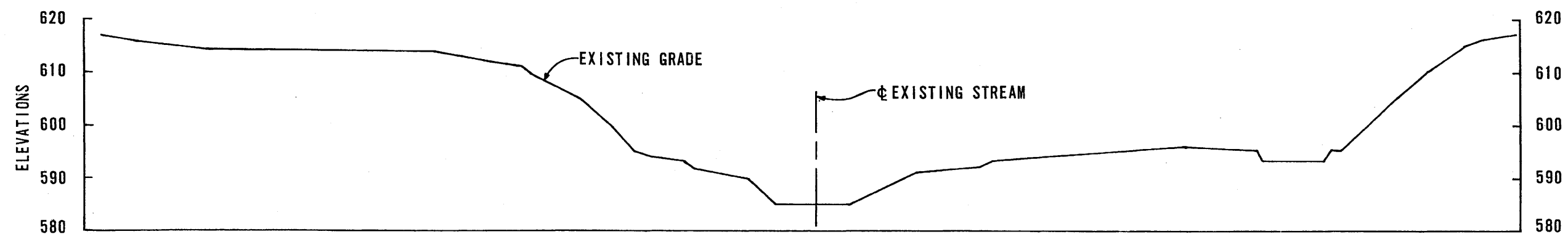
SCALE: HORIZ. 1" = 50'-0"
VERT. 1" = 20'-0"

(Rev. 12 1/03)

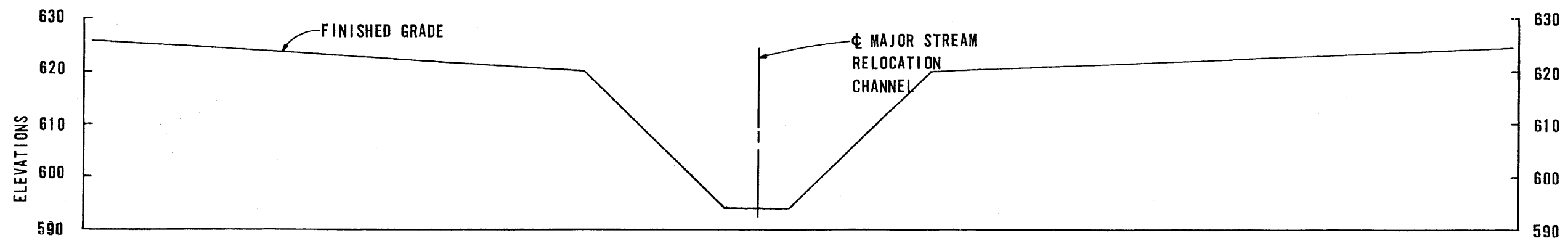
	PERRY NUCLEAR POWER PLANT
	Profile and Typical Cross Sections-Minor Stream
	Figure 2.4-8



SECTION A-A
SCALE: HORIZ. 1"=50'
VERT. 1"=20'



SECTION B-B
SCALE: HORIZ. 1"=50'
VERT. 1"=20'



SECTION C-C
SCALE: HORIZ. 1"=50'
VERT. 1"=20'

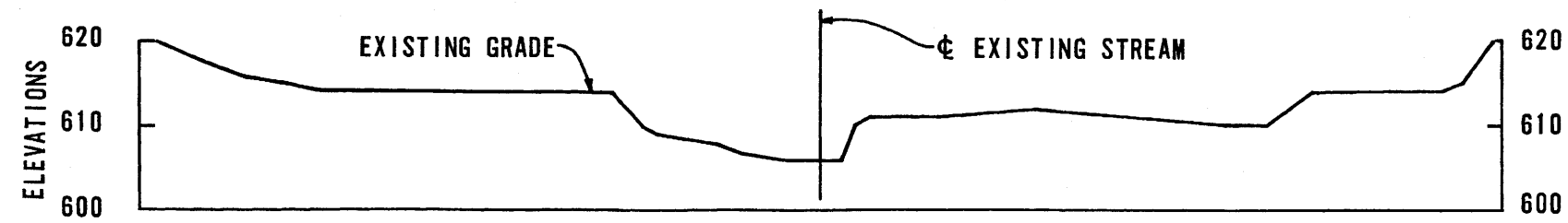
(Rev. 12 1/03)



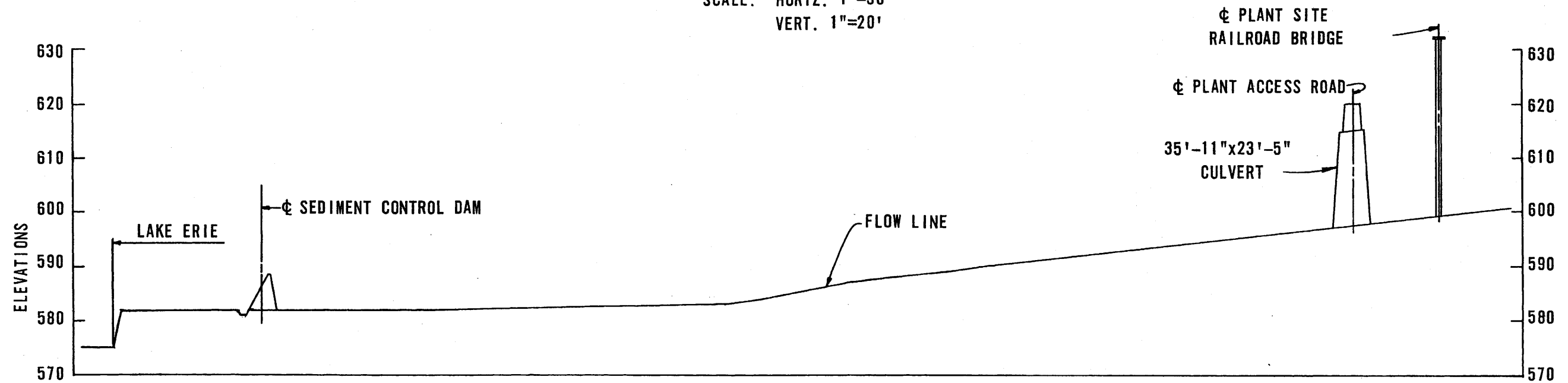
PERRY NUCLEAR POWER PLANT

Cross Sections-Major Stream

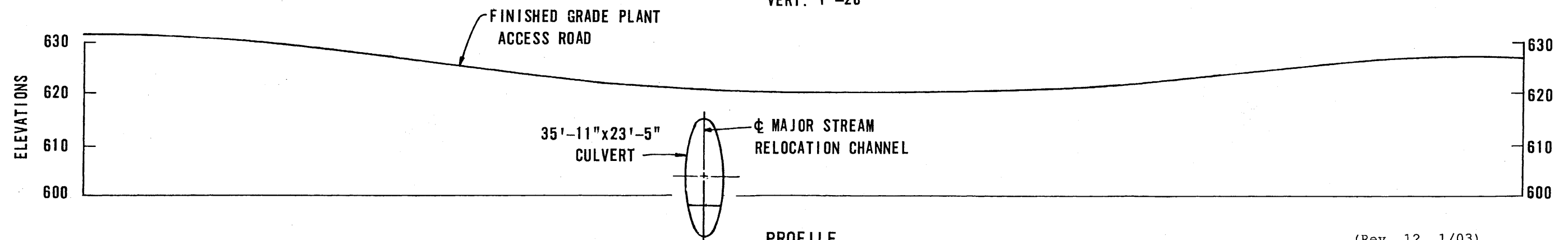
Figure 2.4-10



SECTION D-D
SCALE: HORIZ. 1"=50'
VERT. 1"=20'

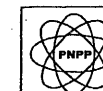


STREAM PROFILE
SCALE: HORIZ. 1"=400'
VERT. 1"=20'



PROFILE
PLANT ACCESS ROAD
SCALE: HORIZ. 1"=100'
VERT. 1"=20'

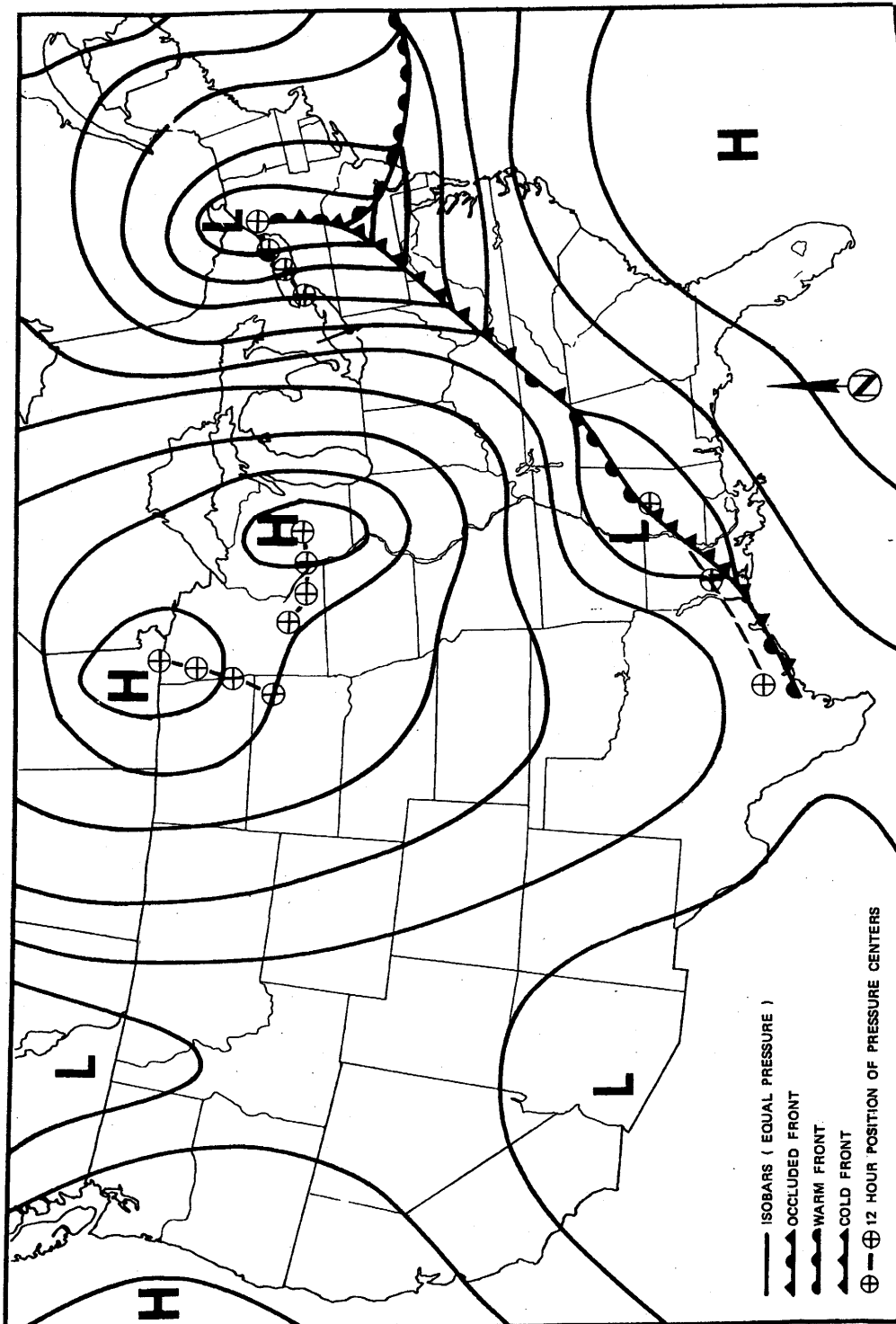
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Cross Sections and Profiles-
Major Stream

Figure 2.4-11



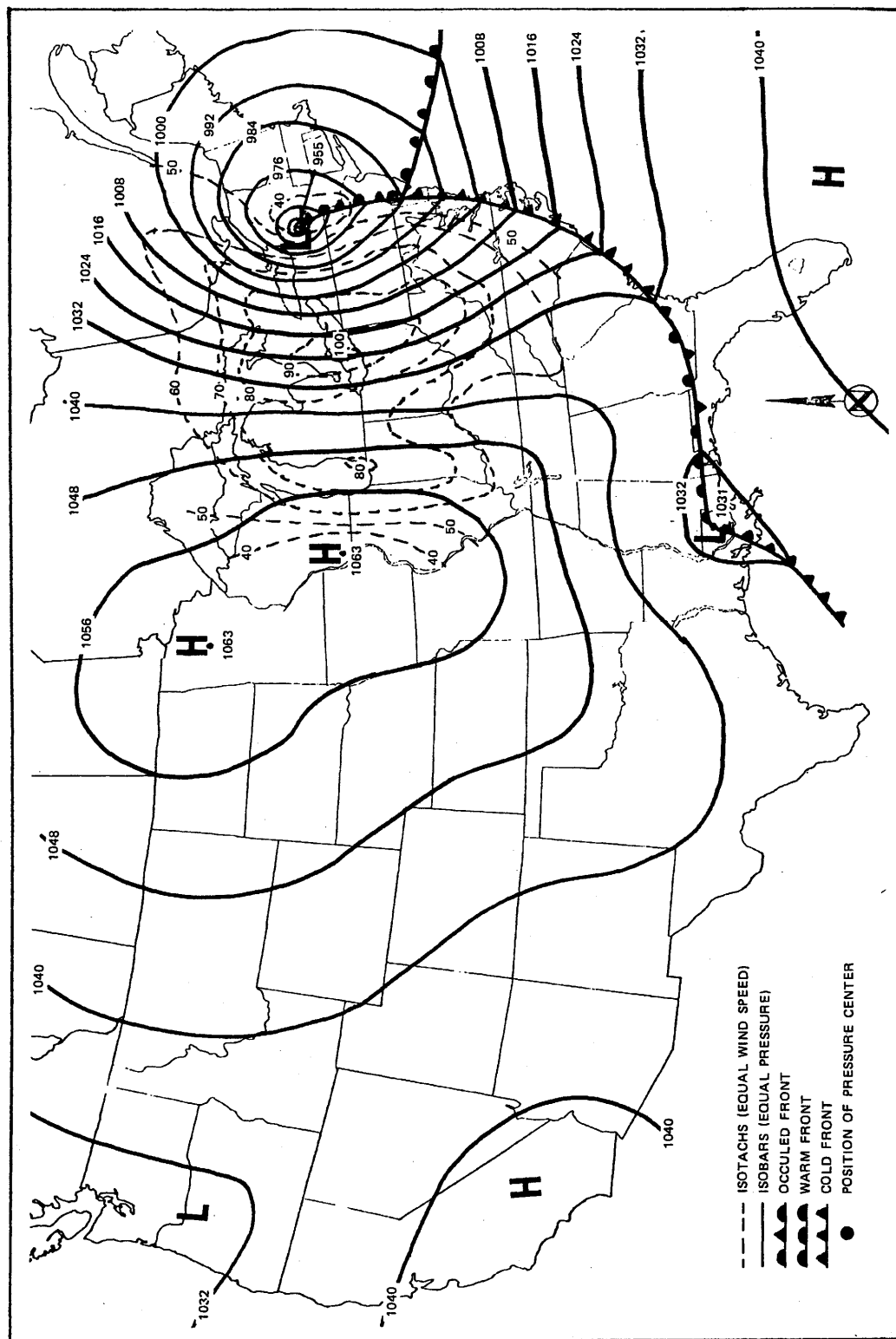
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Meteorological Situation for
 Probable Maximum Lake Level
 Setup at Perry, Ohio

Figure 2.4-12



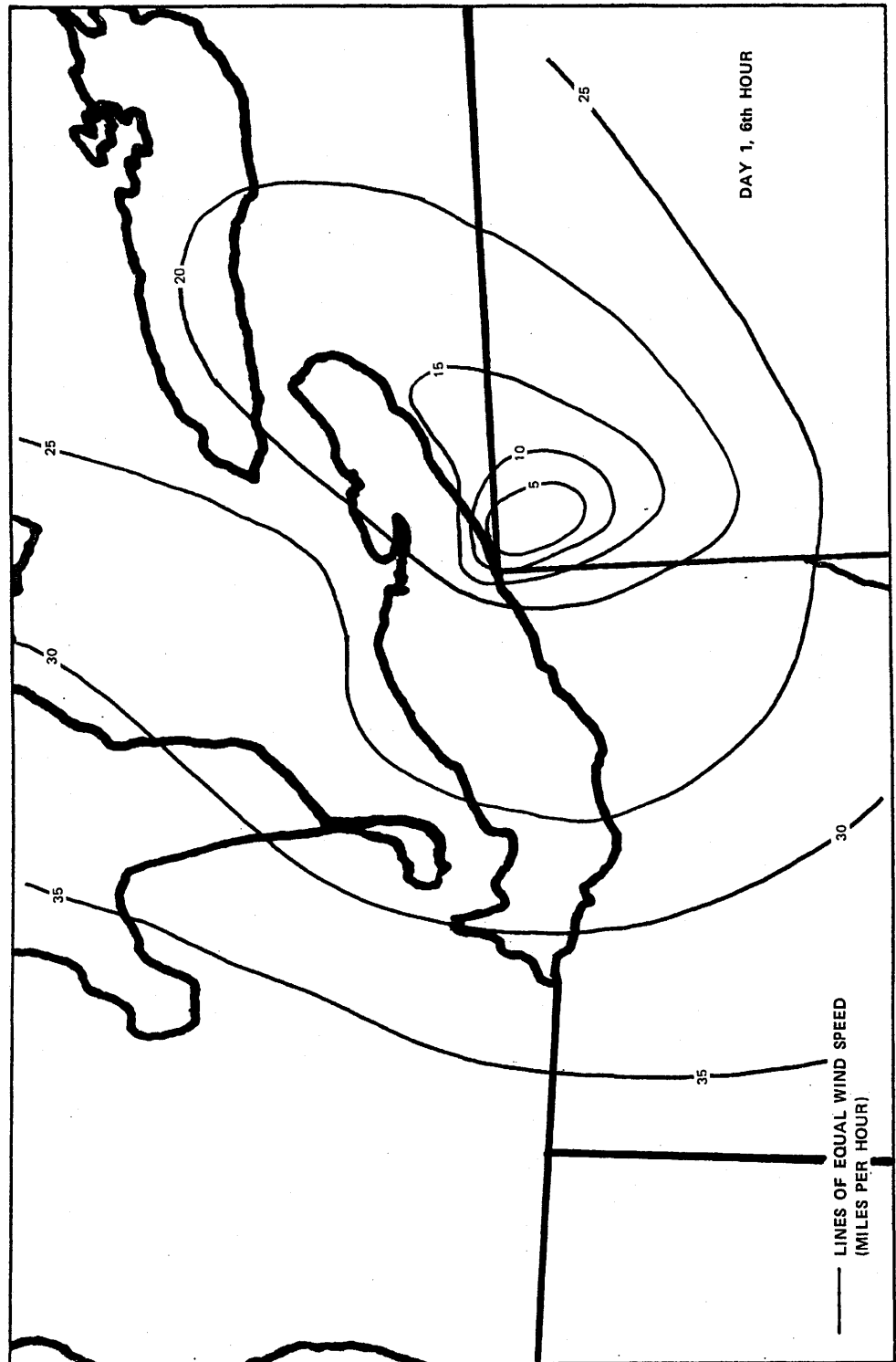
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Isobar and Isotach Fields for
Probable Maximum Lake Level Setup
at Perry, Ohio

Figure 2.4-13



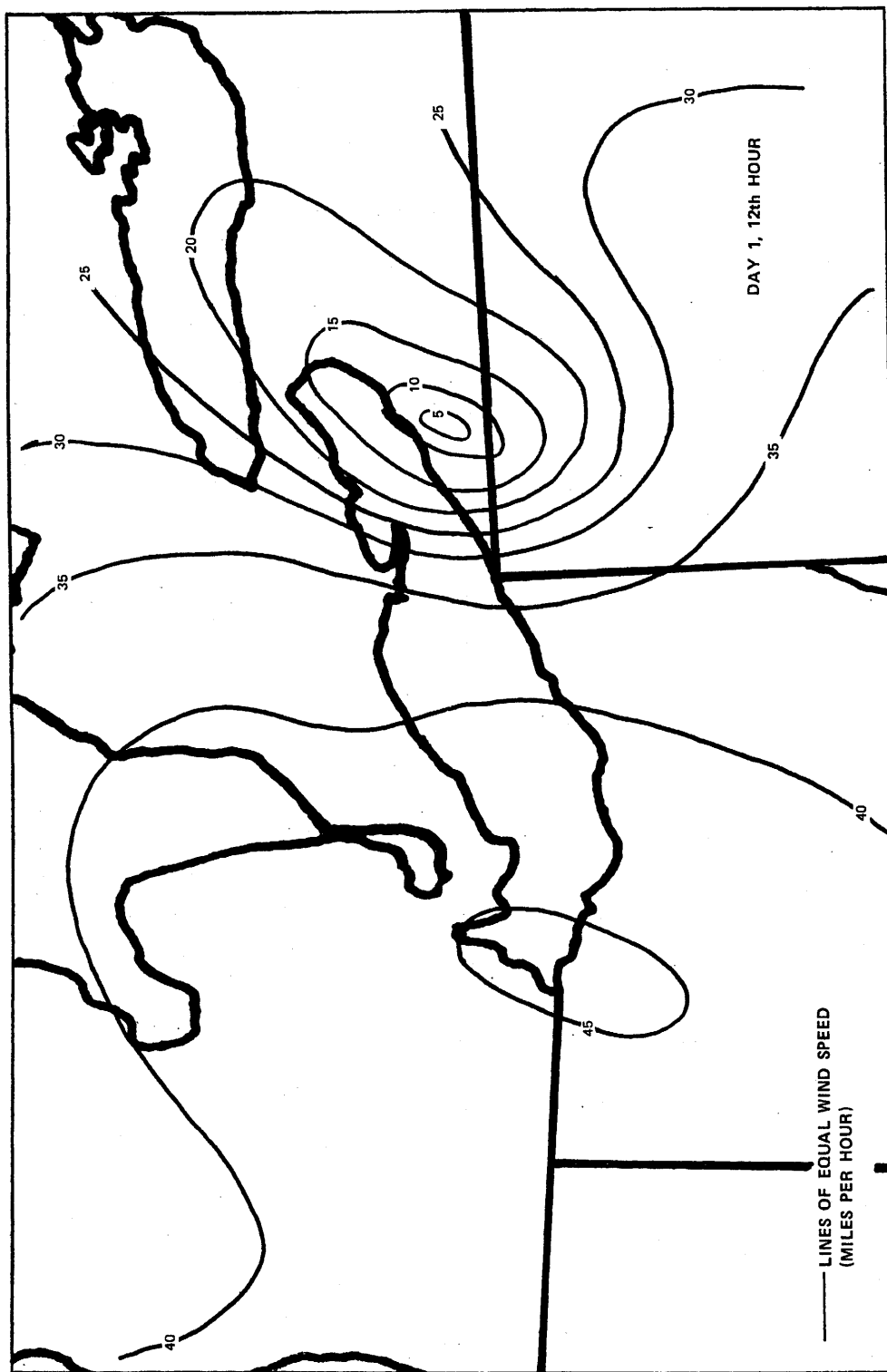
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

PMS Isotach Patterns For Maximum
Lake Setup at Perry, Ohio

Figure 2.4-14



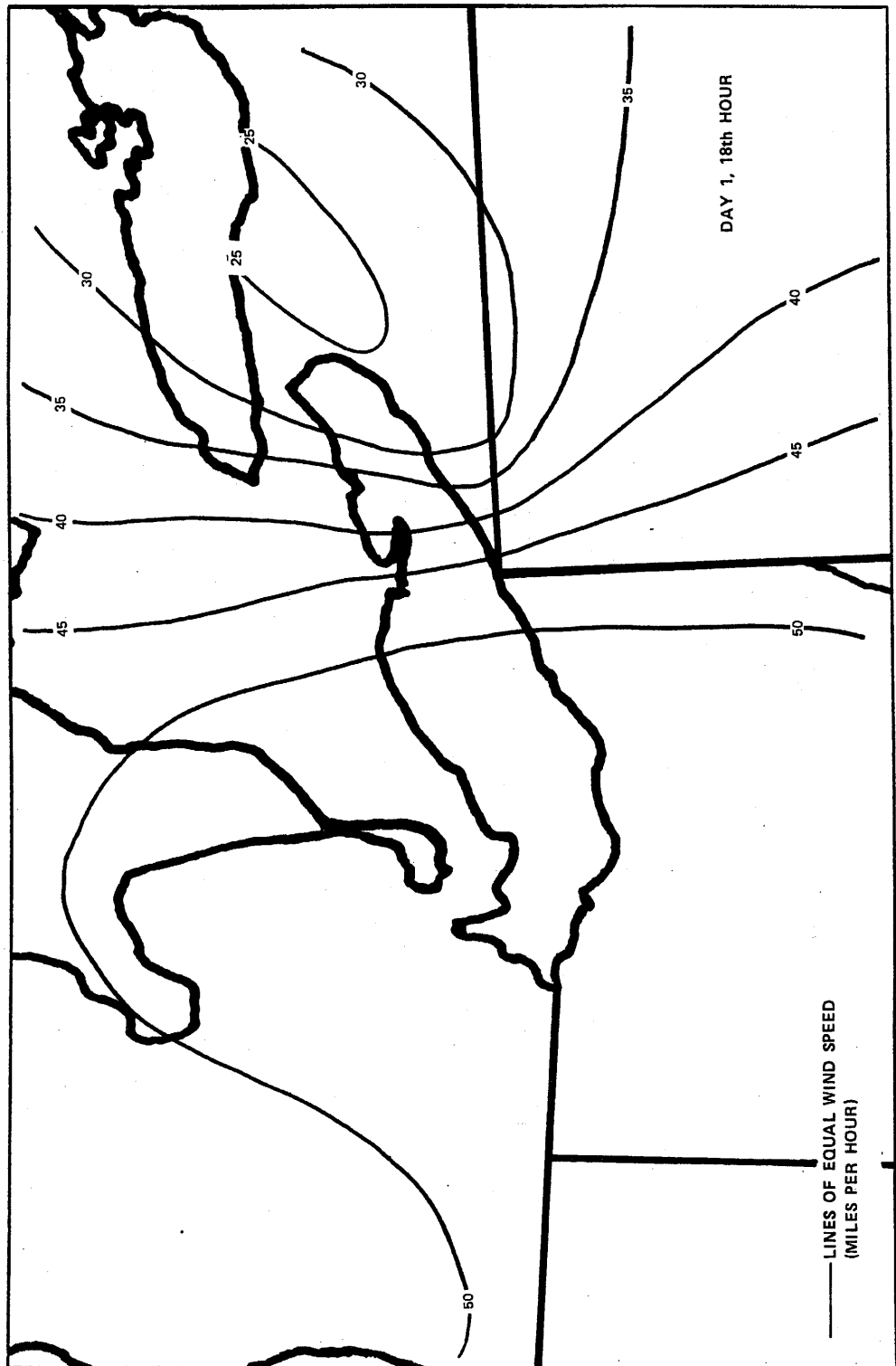
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

PMS Isotach Patterns For Maximum
Lake Setup at Perry, Ohio

Figure 2.4-15



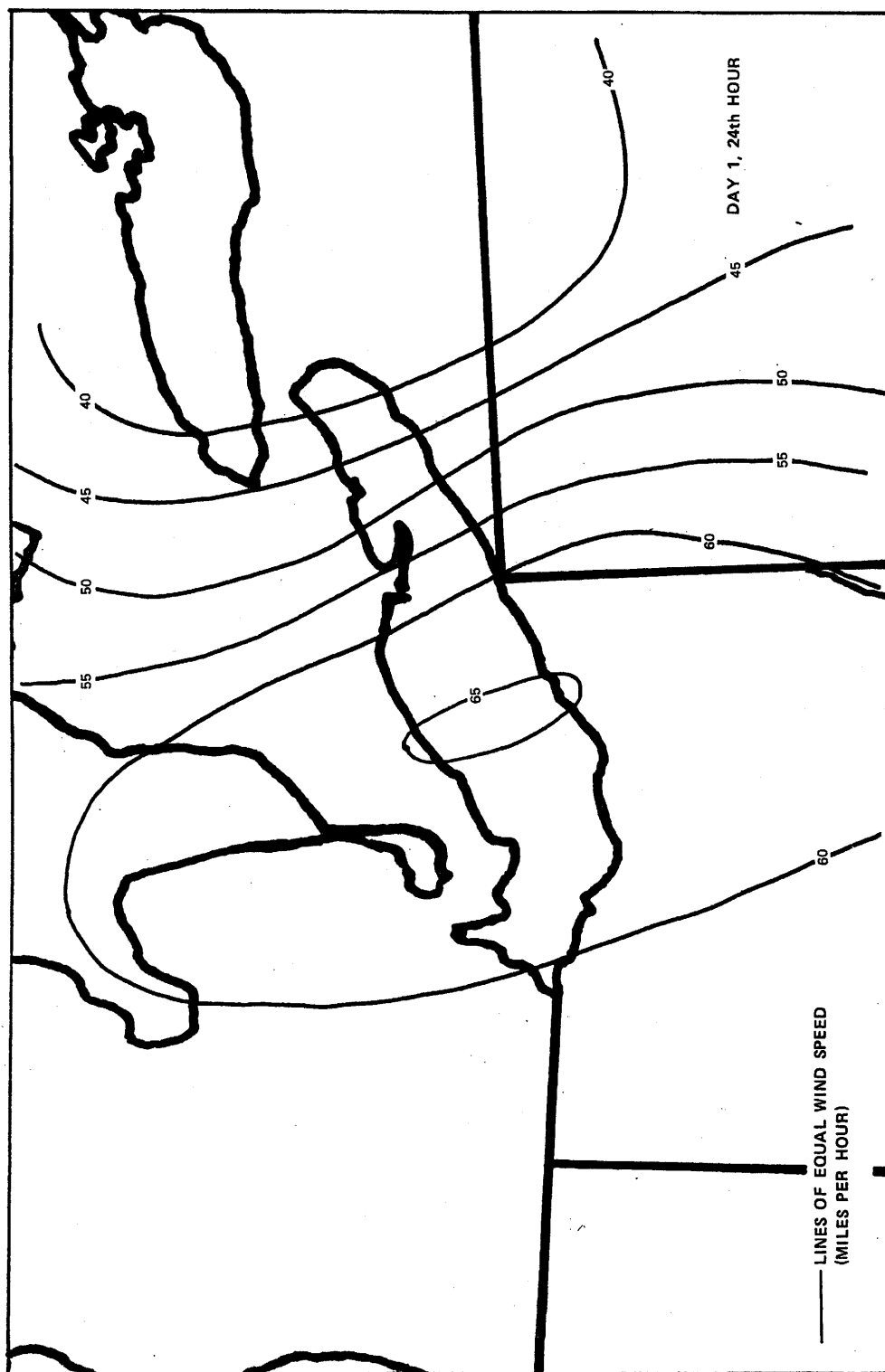
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

PMS Isotach Patterns for Maximum
Lake Setup at Perry, Ohio

Figure 2.4-16



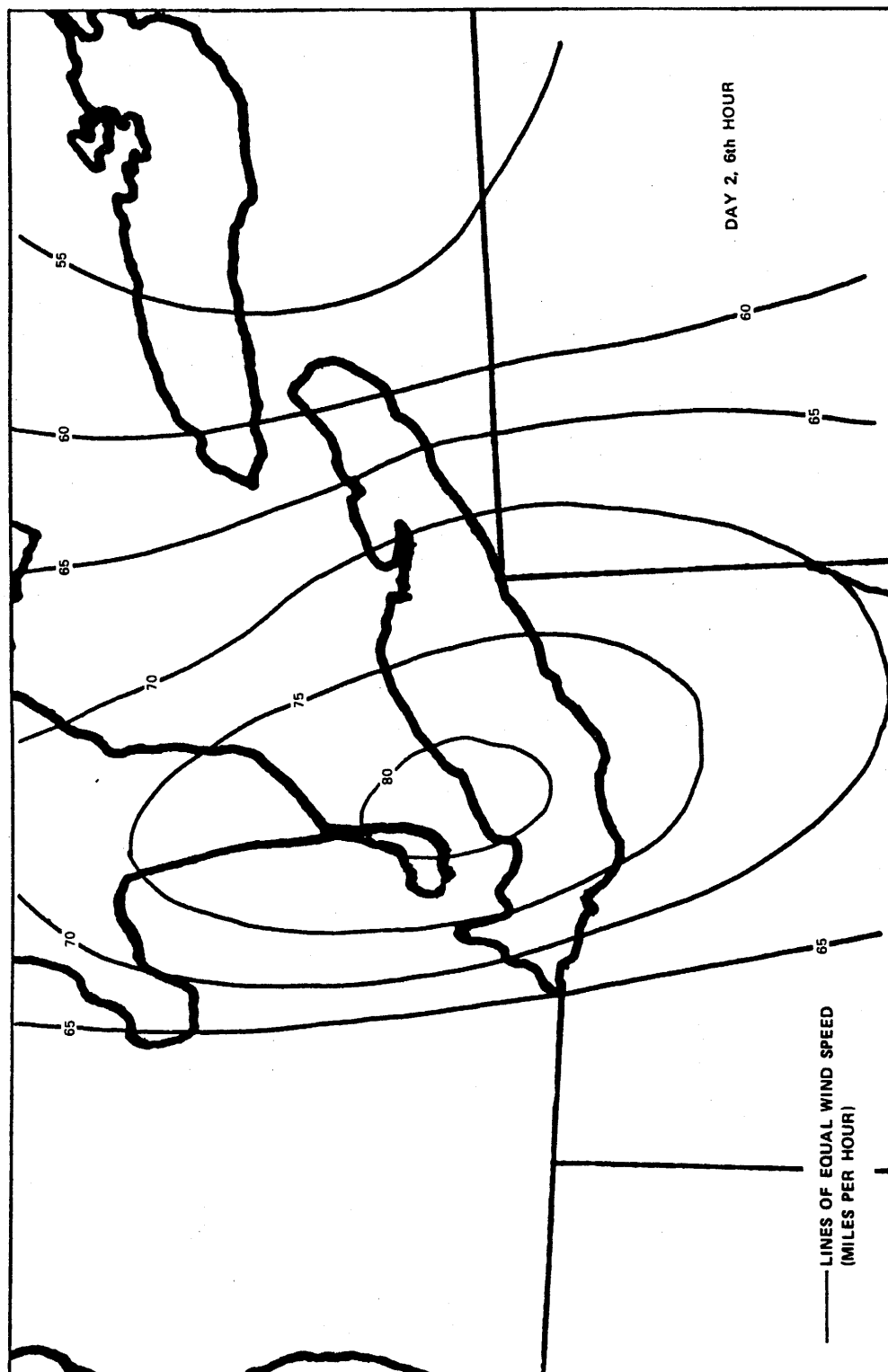
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

PMS Isotach Patterns for Maximum
Lake Setup at Perry, Ohio

Figure 2.4-17



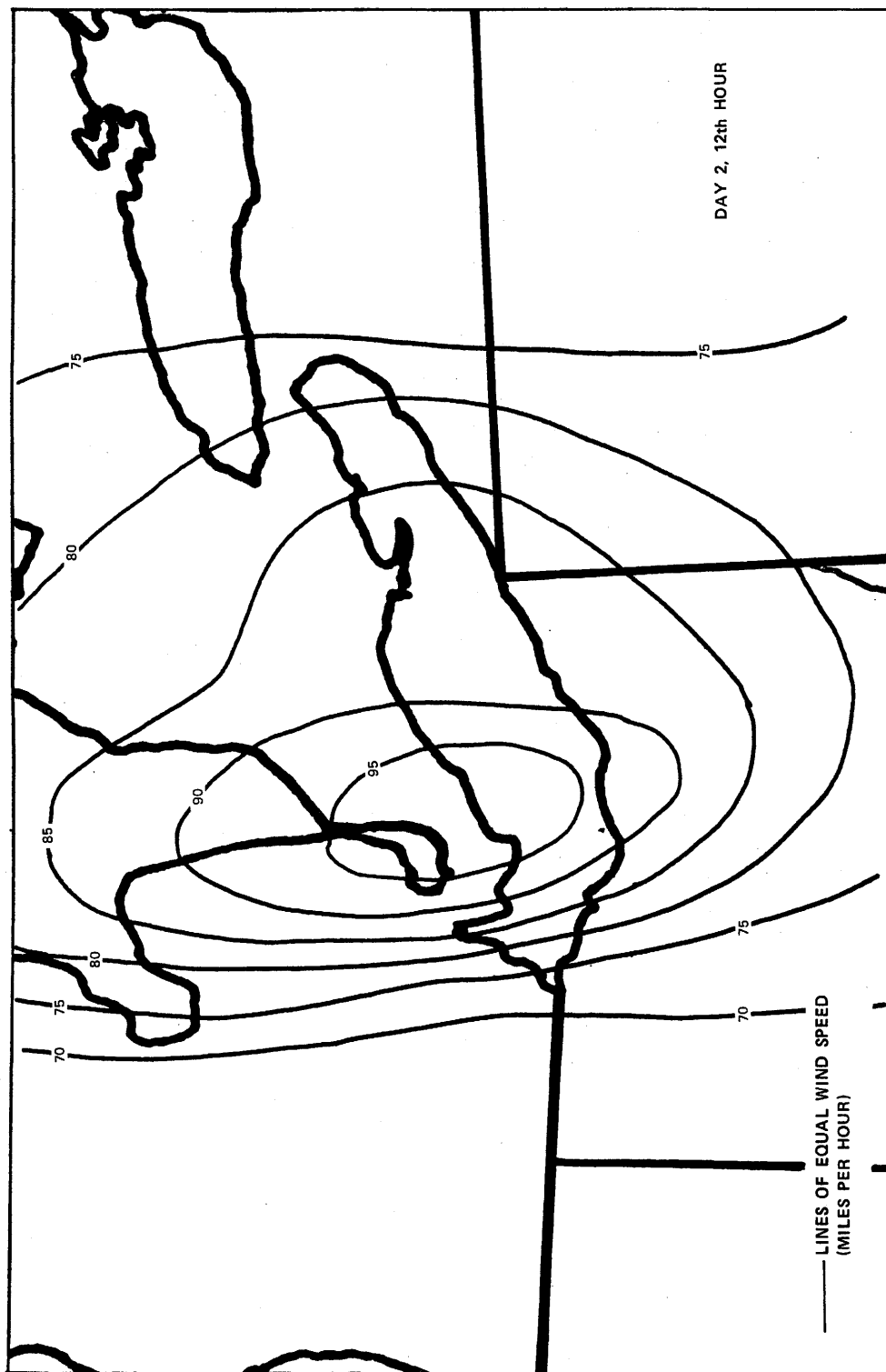
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

PMS Isotach Patterns for Maximum
Lake Setup at Perry, Ohio

Figure 2.4-18



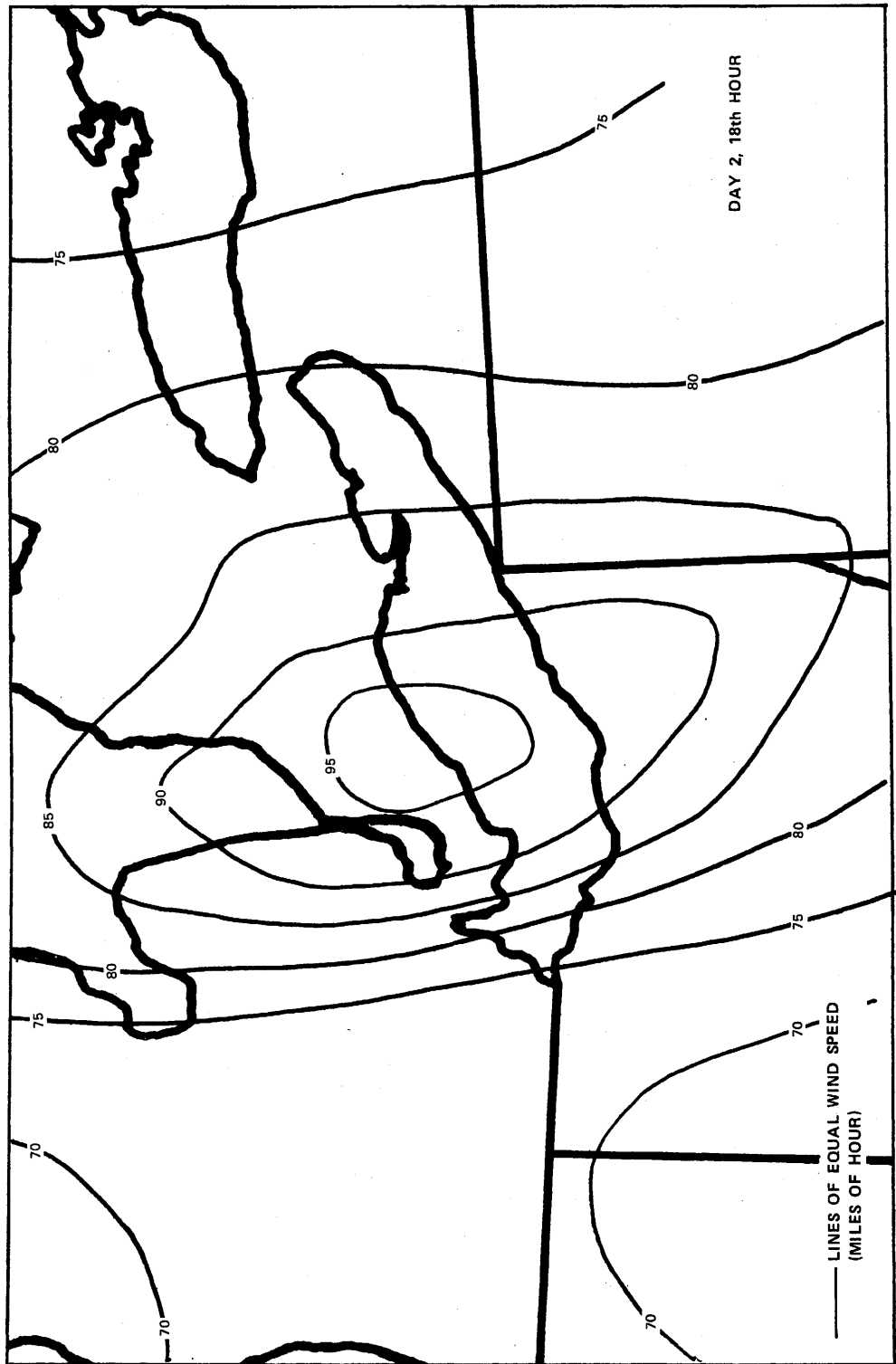
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

PMS Isotach Patterns for Maximum
Lake Setup at Perry, Ohio

Figure 2.4-19



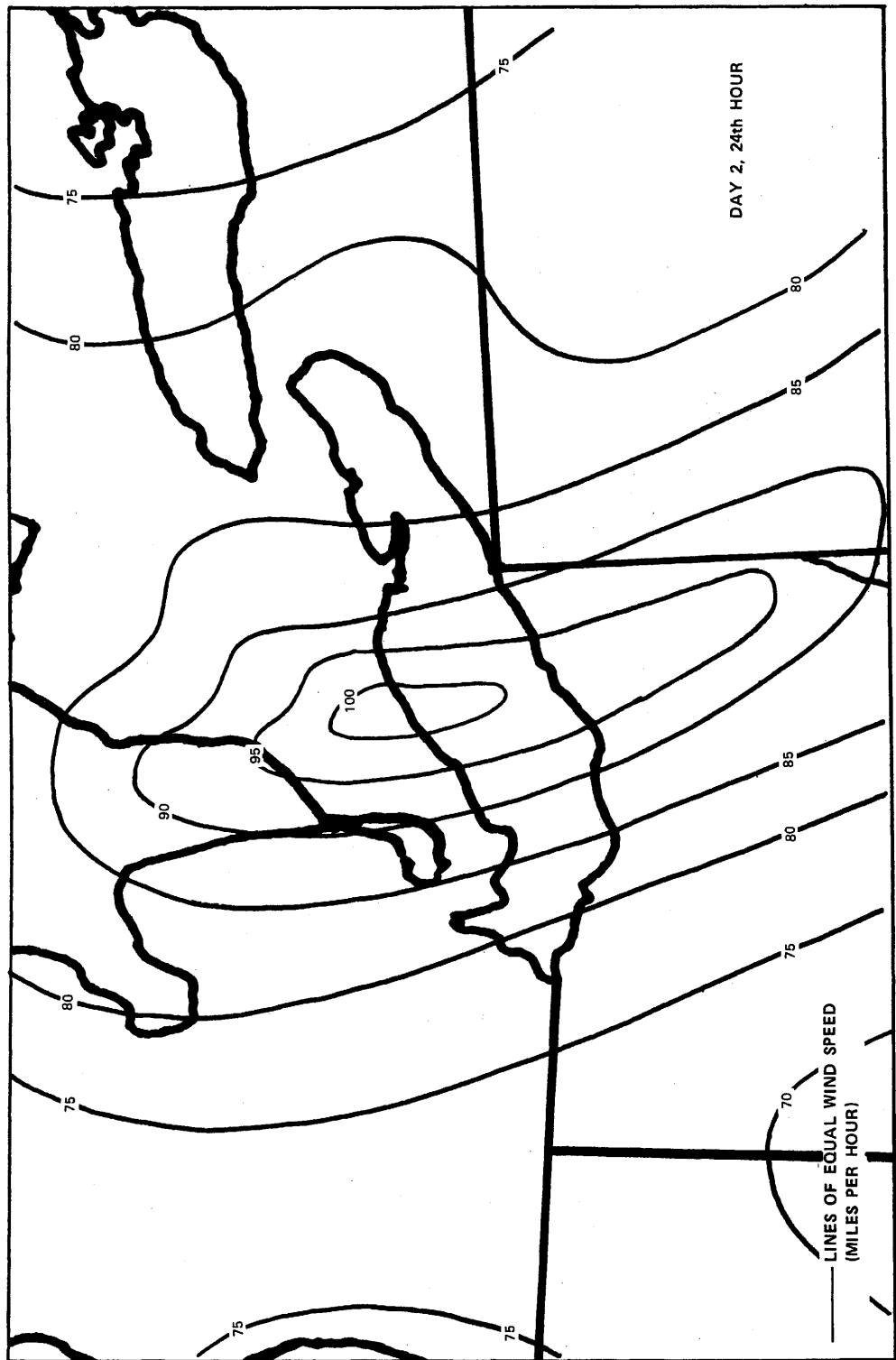
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

PMS Isotach Patterns for Maximum
Lake Setup at Perry, Ohio

Figure 2.4-20



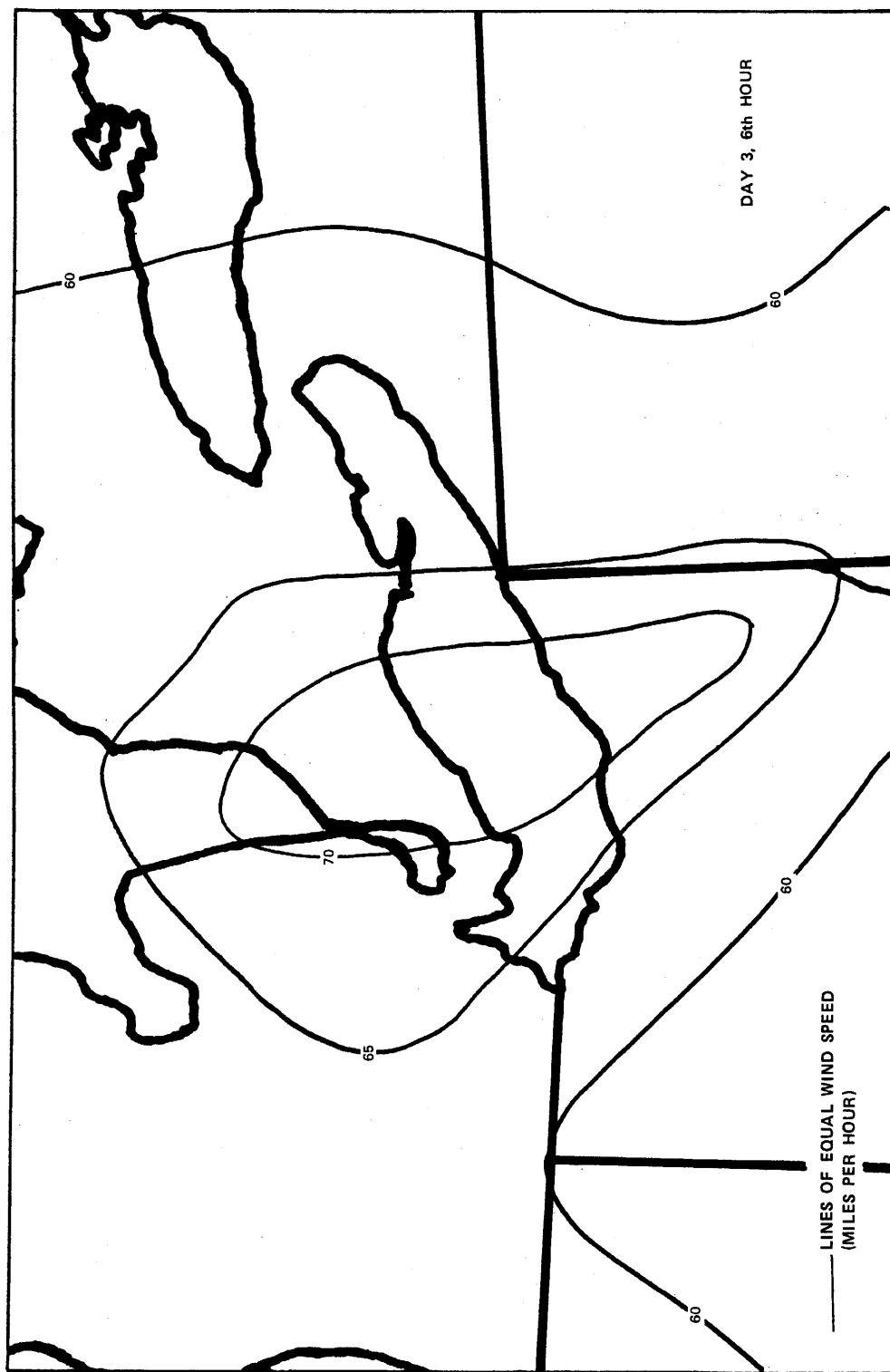
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

PMS Isotach Patterns for Maximum
Lake Setup at Perry, Ohio

Figure 2.4-21



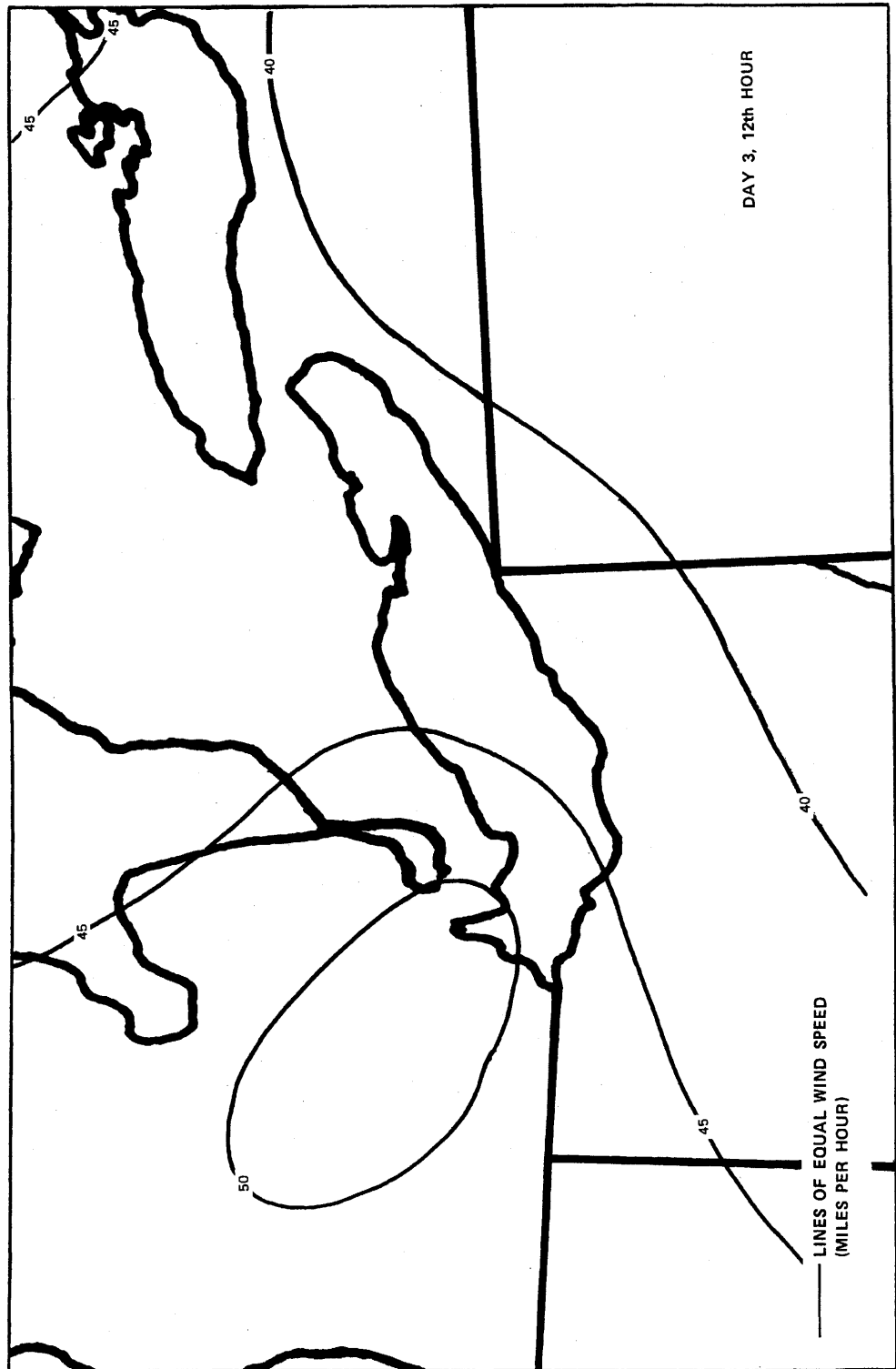
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

PMS Isotach Patterns for Maximum
Lake Setup at Perry, Ohio

Figure 2.4-22



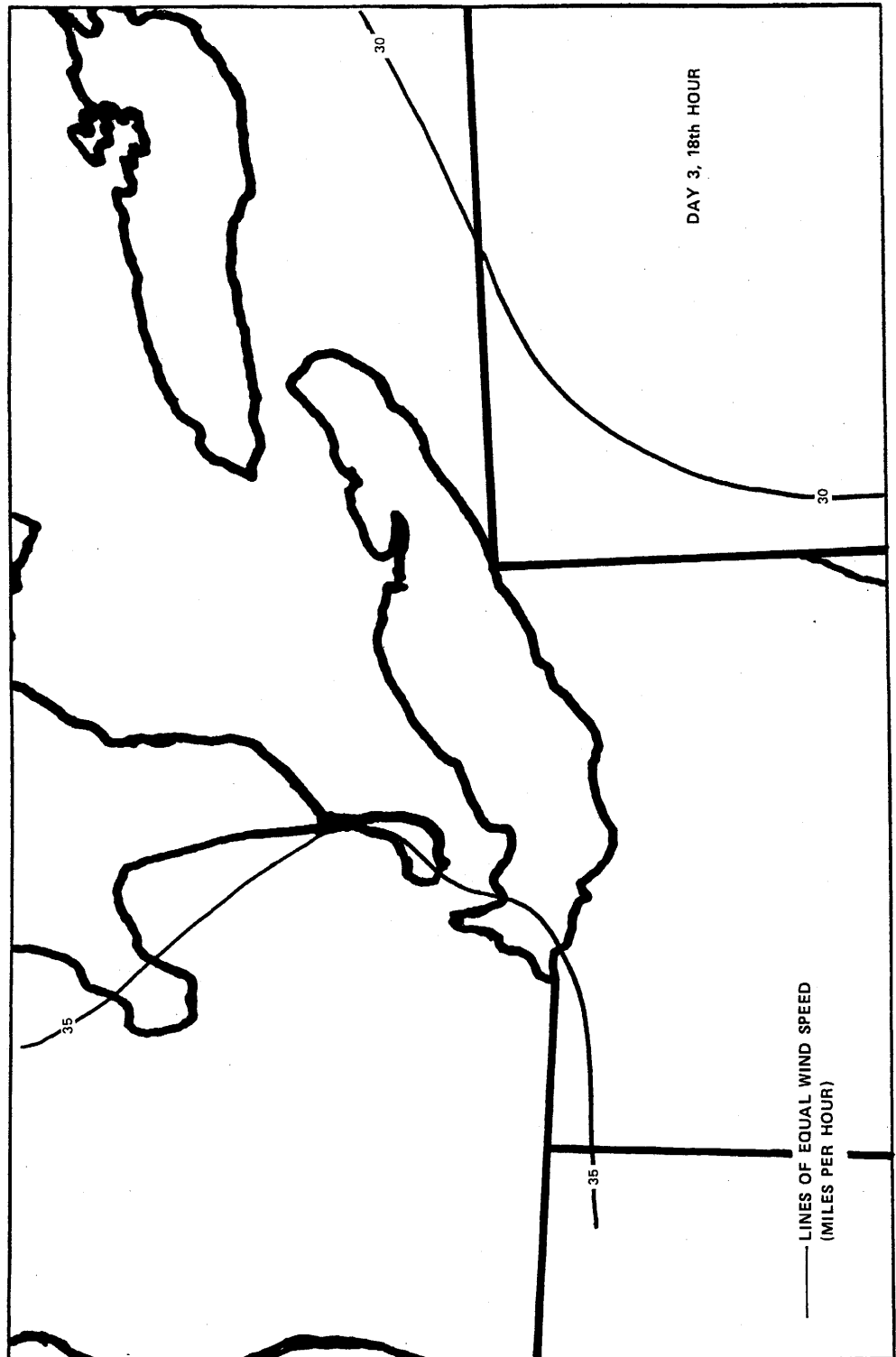
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

PMS Isotach Patterns for
Maximum Lake Setup at
Perry, Ohio

Figure 2.4-23



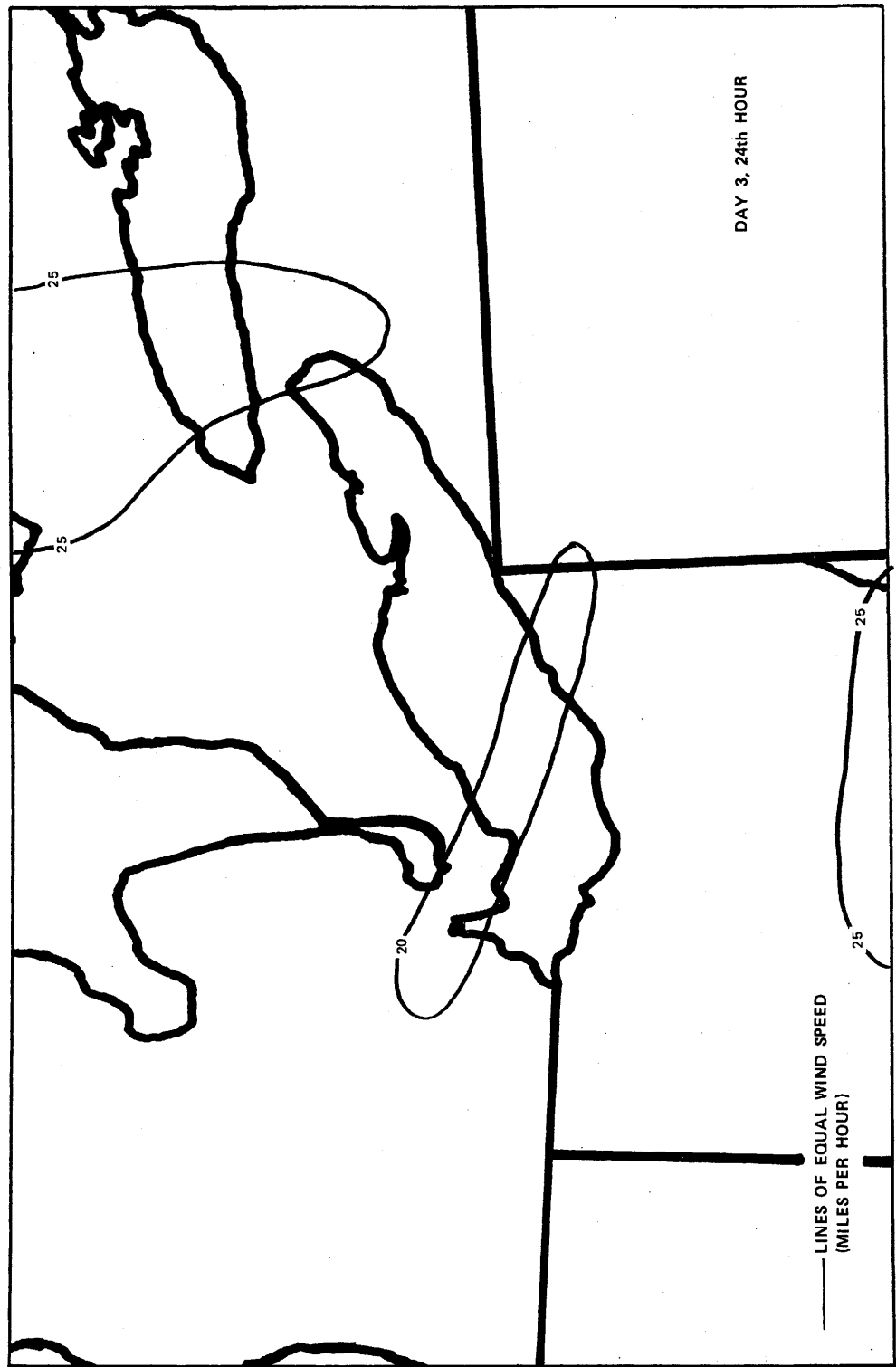
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

PMS Isotach Patterns for Maximum
Lake Setup at Perry, Ohio

Figure 2.4-24



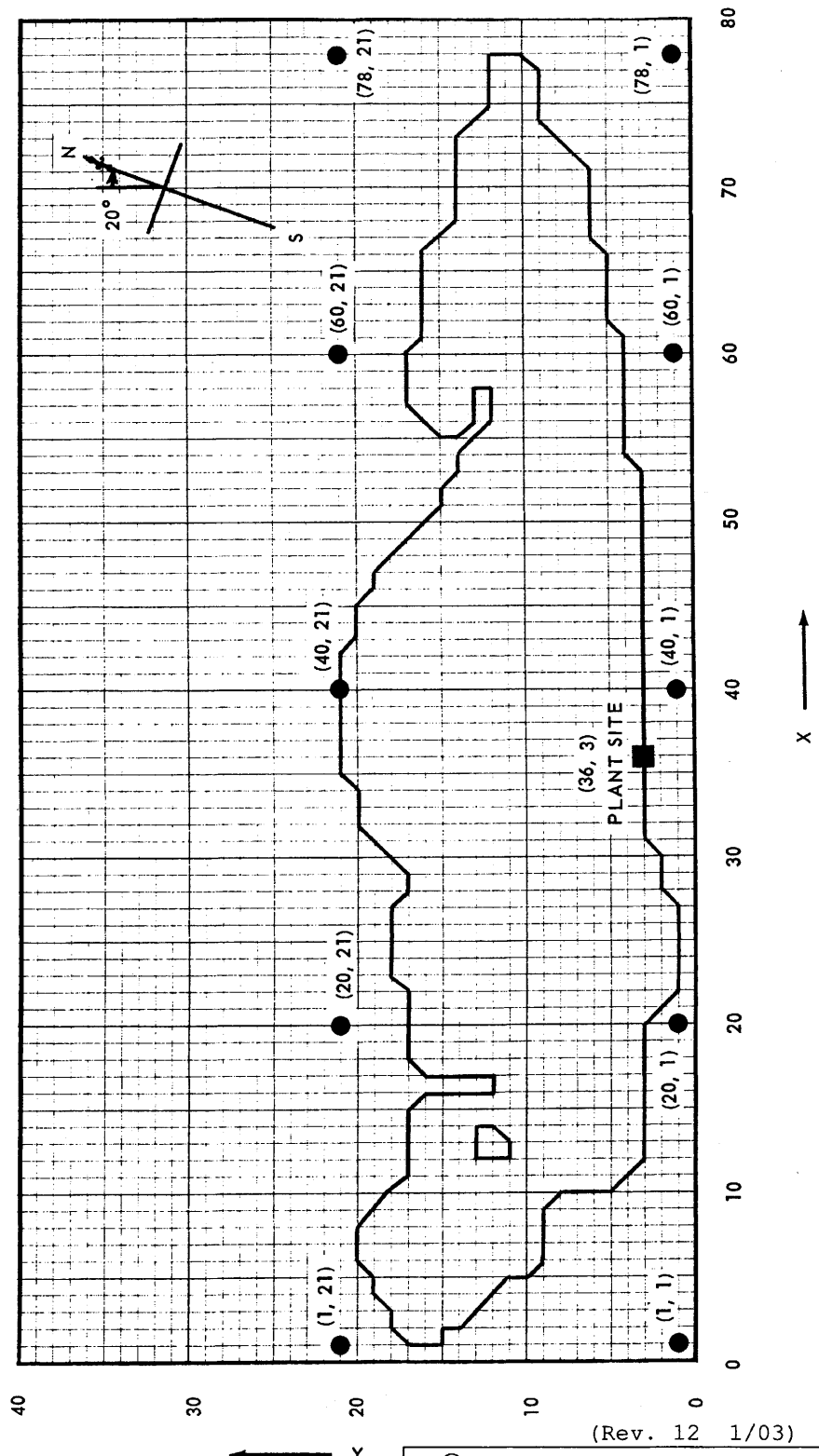
(Rev. 12 1/03)




PERRY NUCLEAR POWER PLANT

PMS Isotach Patterns for Maximum
Lake Setup at Perry, Ohio

Figure 2.4-25

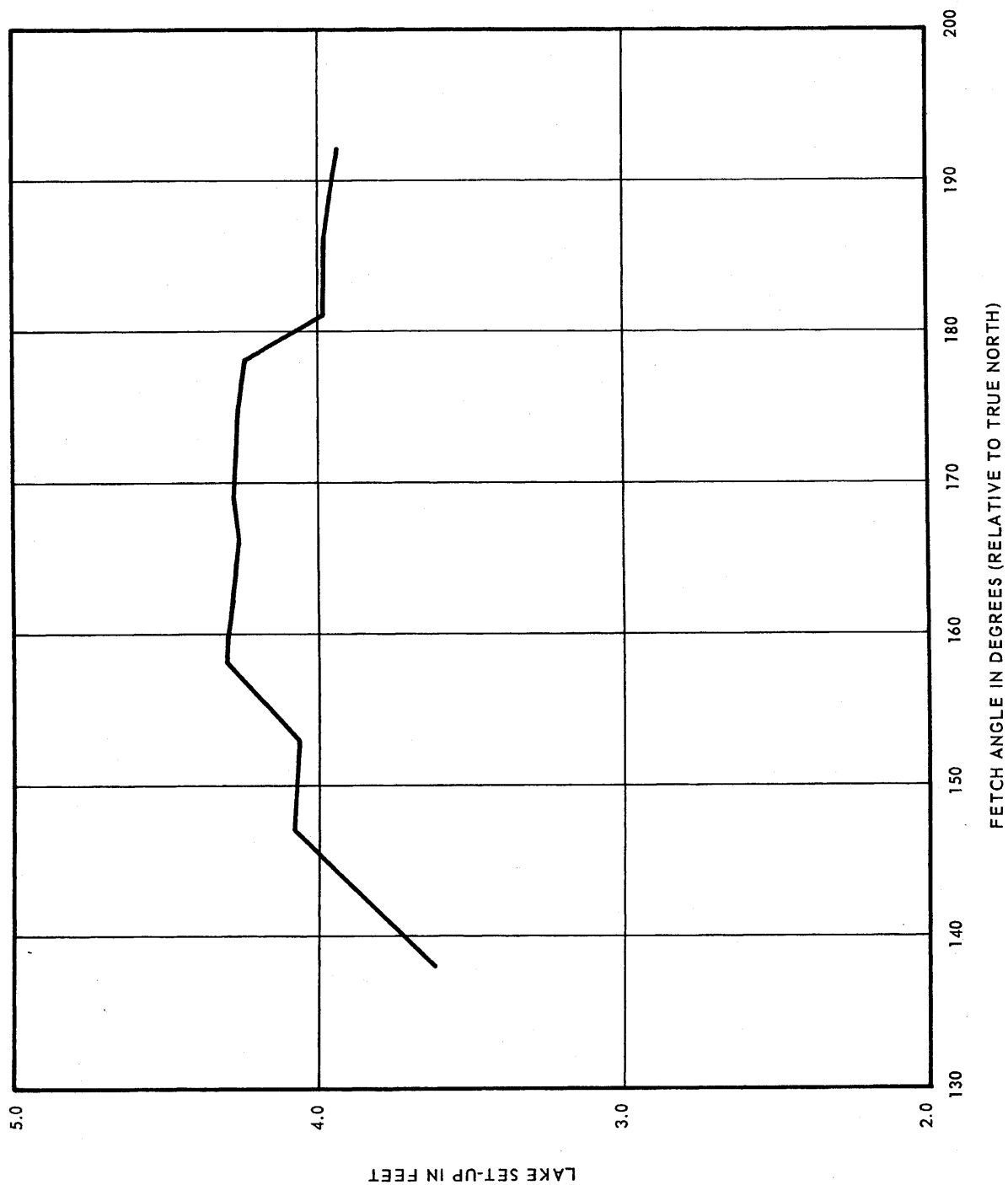




PERRY NUCLEAR POWER PLANT

Lake Erie Outline With PMS
Station Locations

Figure 2.4-26



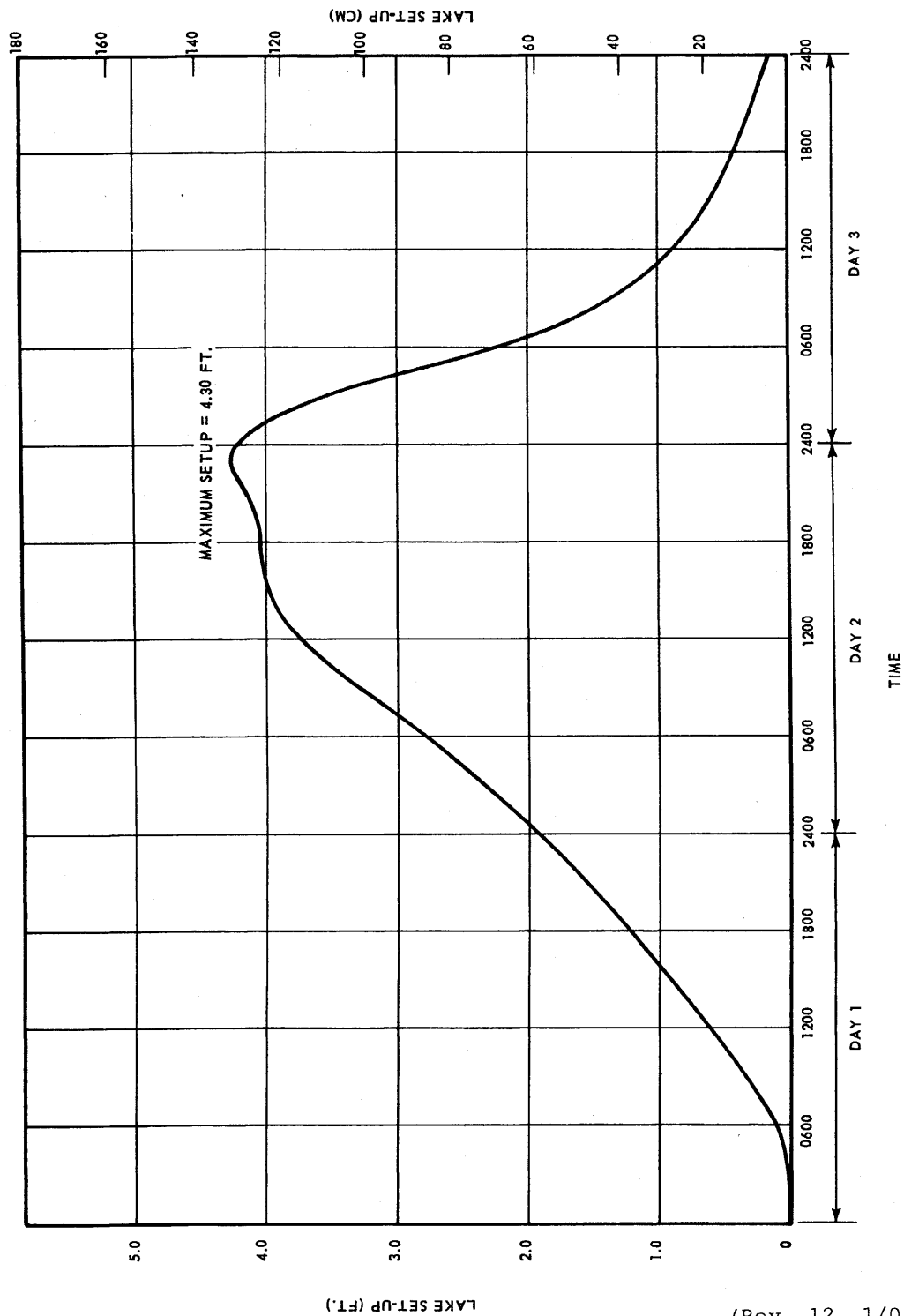
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PERRY NUCLEAR POWER PLANT

Maximization of Setup With
Direction of Fetch Axis

Figure 2.4-27



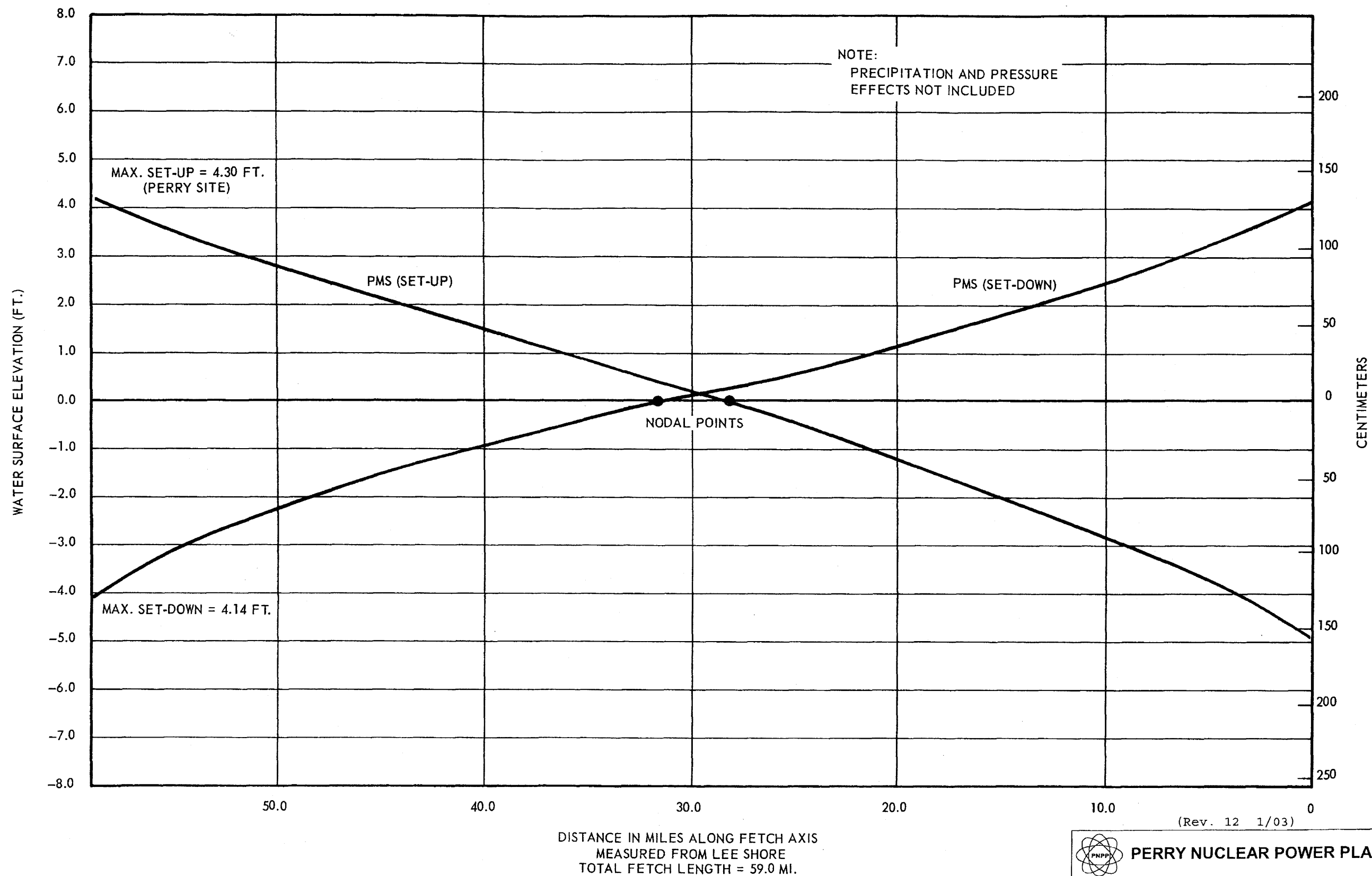
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PERRY NUCLEAR POWER PLANT

Hydrographs of One Dimensional PMS
Setup and Setdown

Figure 2.4-28



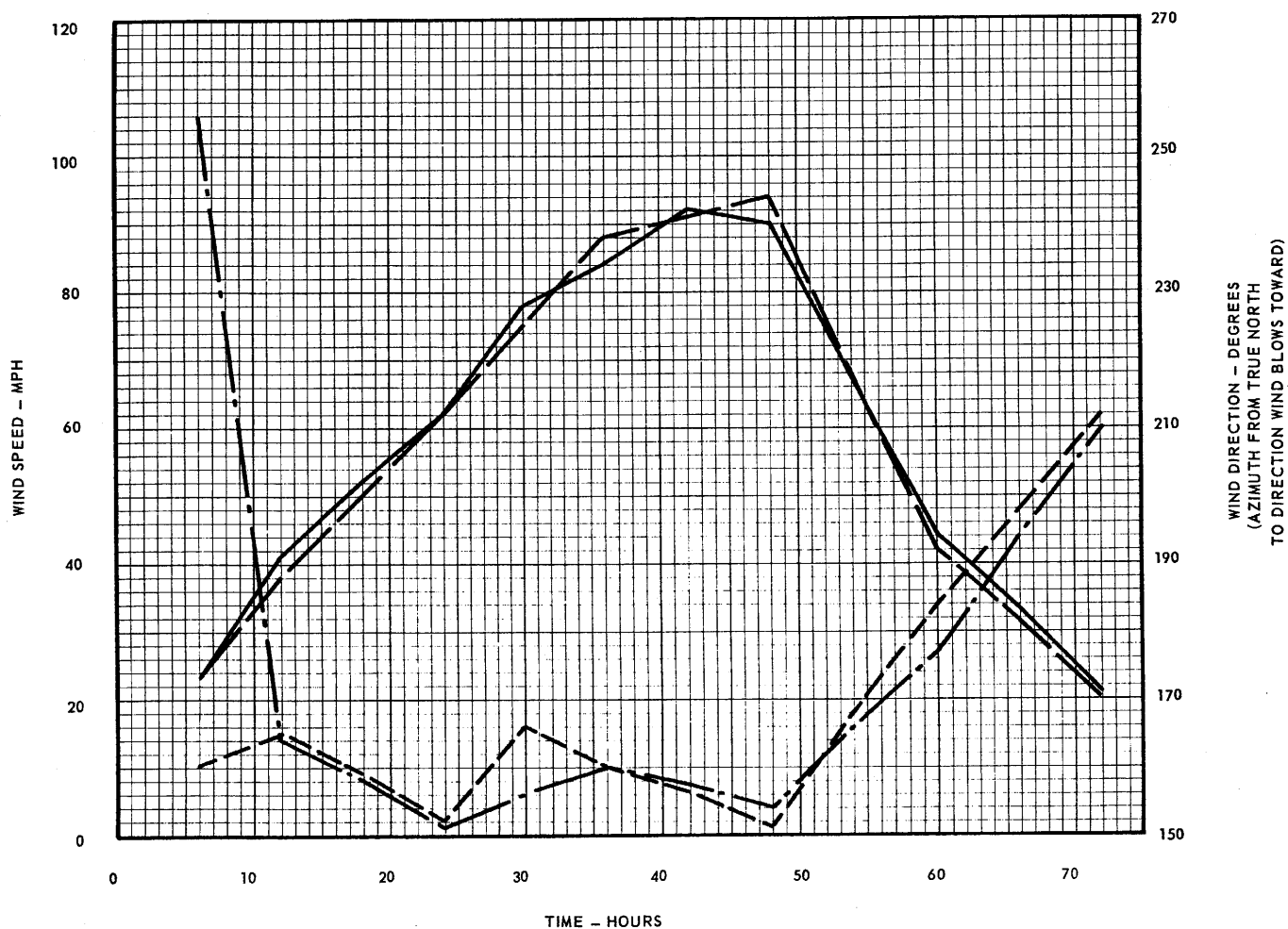
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PERRY NUCLEAR POWER PLANT

One-Dimensional PMS Setup and
Setdown Along Fetch

Figure 2.4-29



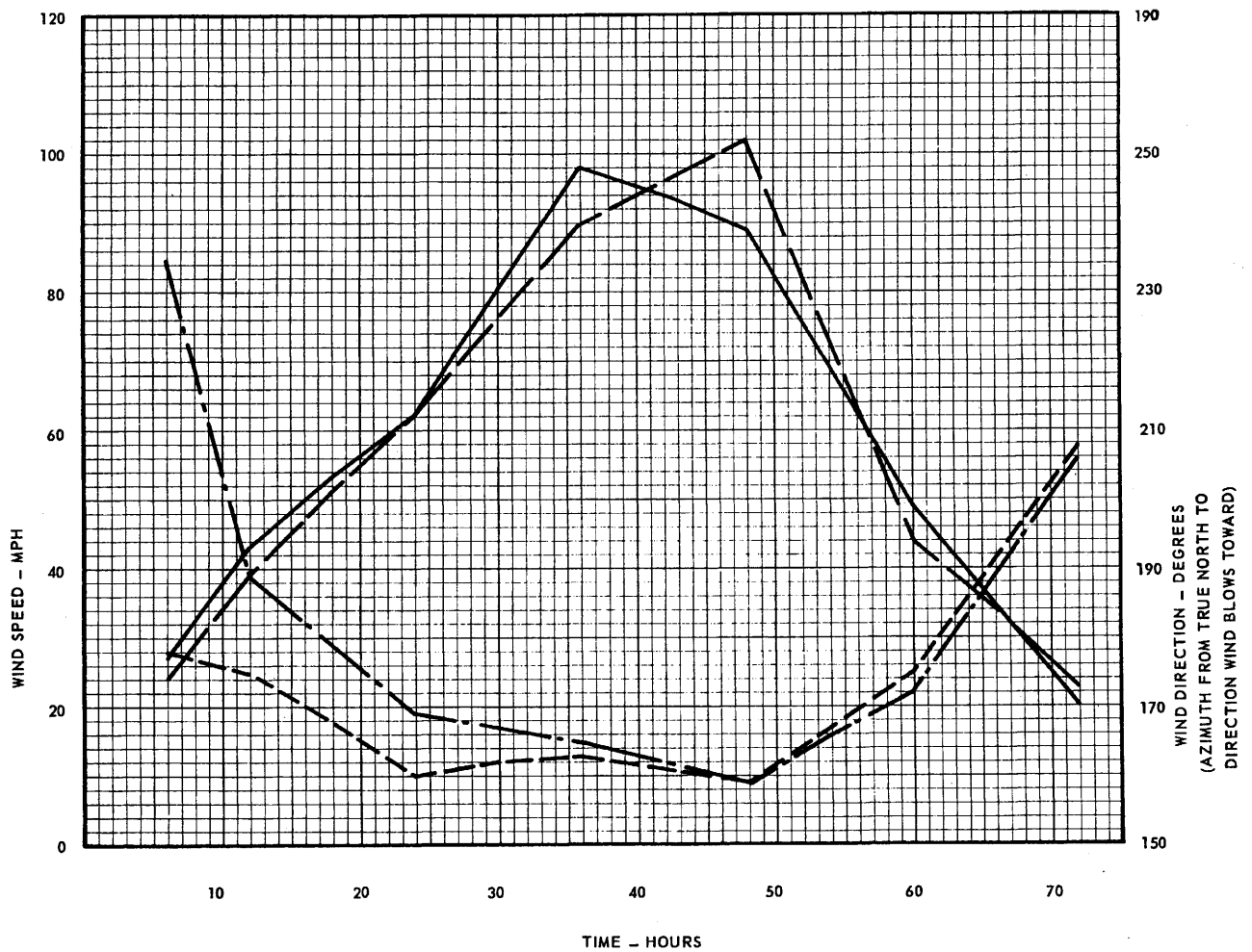
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PERRY NUCLEAR POWER PLANT

Winds at Stations (20, 1) and
(40, 1) for Probable Maximum
Lake Level Setup

Figure 2.4-30



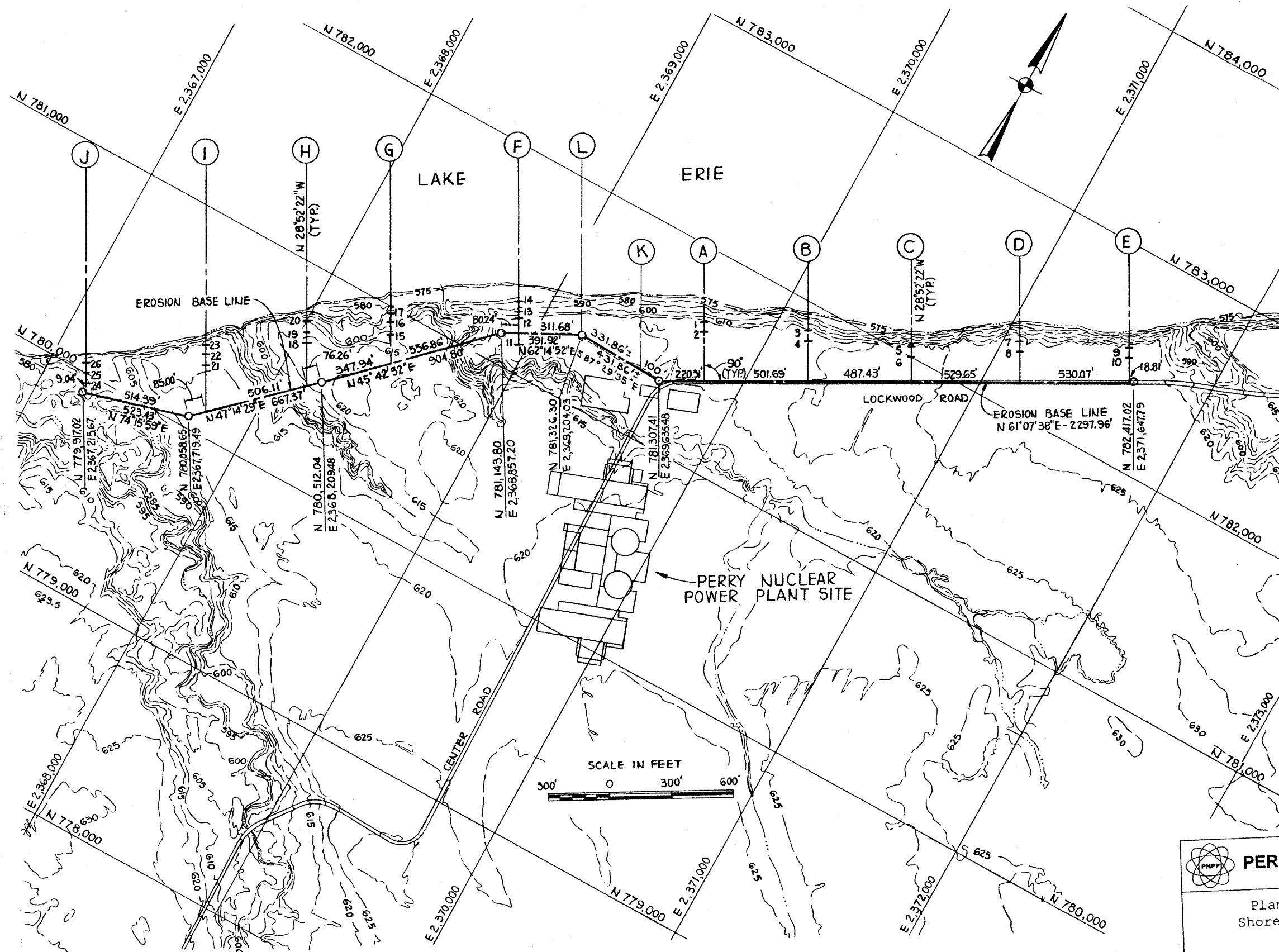
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PERRY NUCLEAR POWER PLANT

Winds at Stations (20, 21) and
(40, 21) for Probable Maximum
Lake Level Setup

Figure 2.4-31

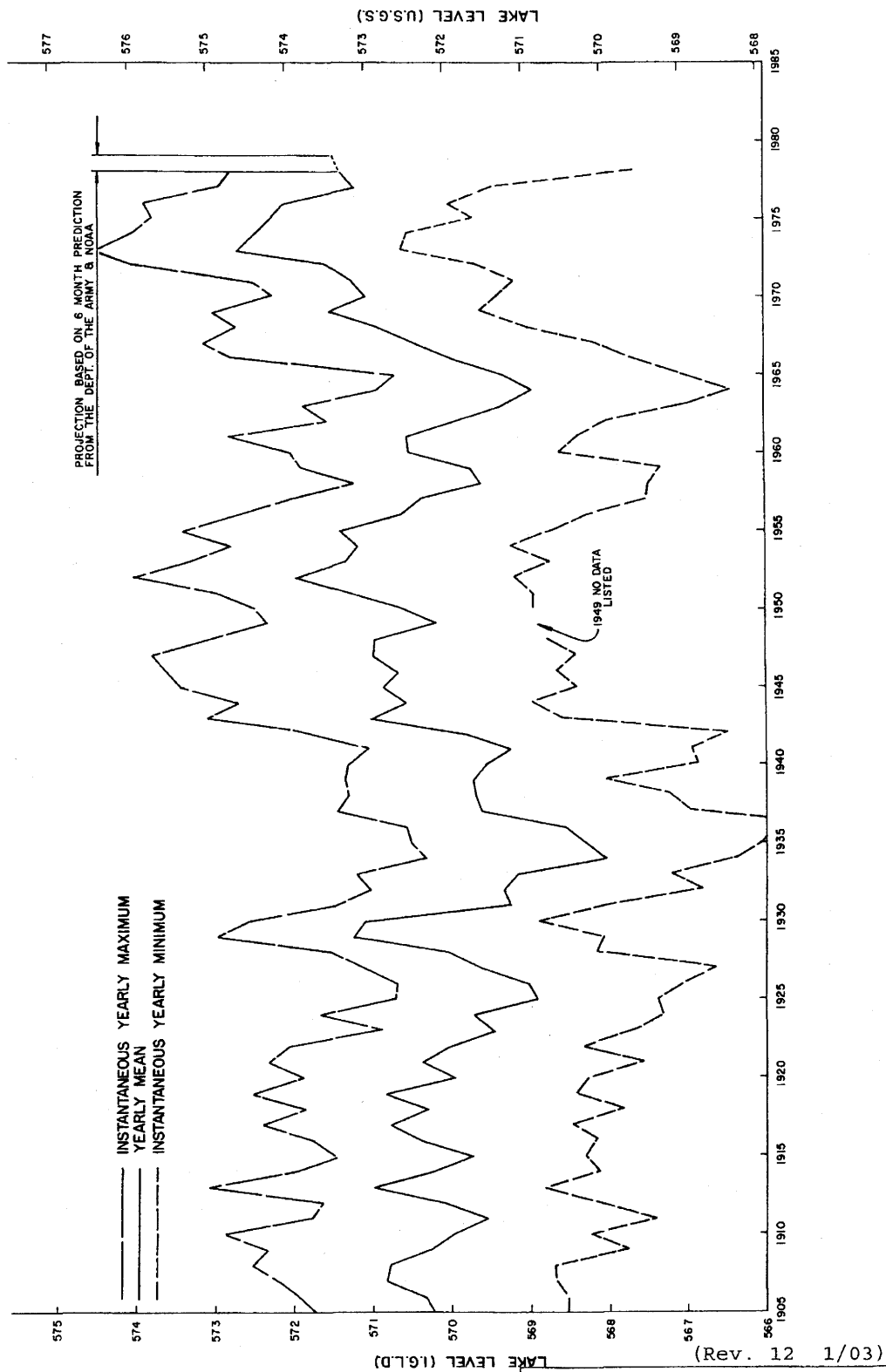


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PERRY NUCLEAR POWER PLANT

Plan-Location of Lake Erie
Shoreline and Bluff Recession
Survey Lines

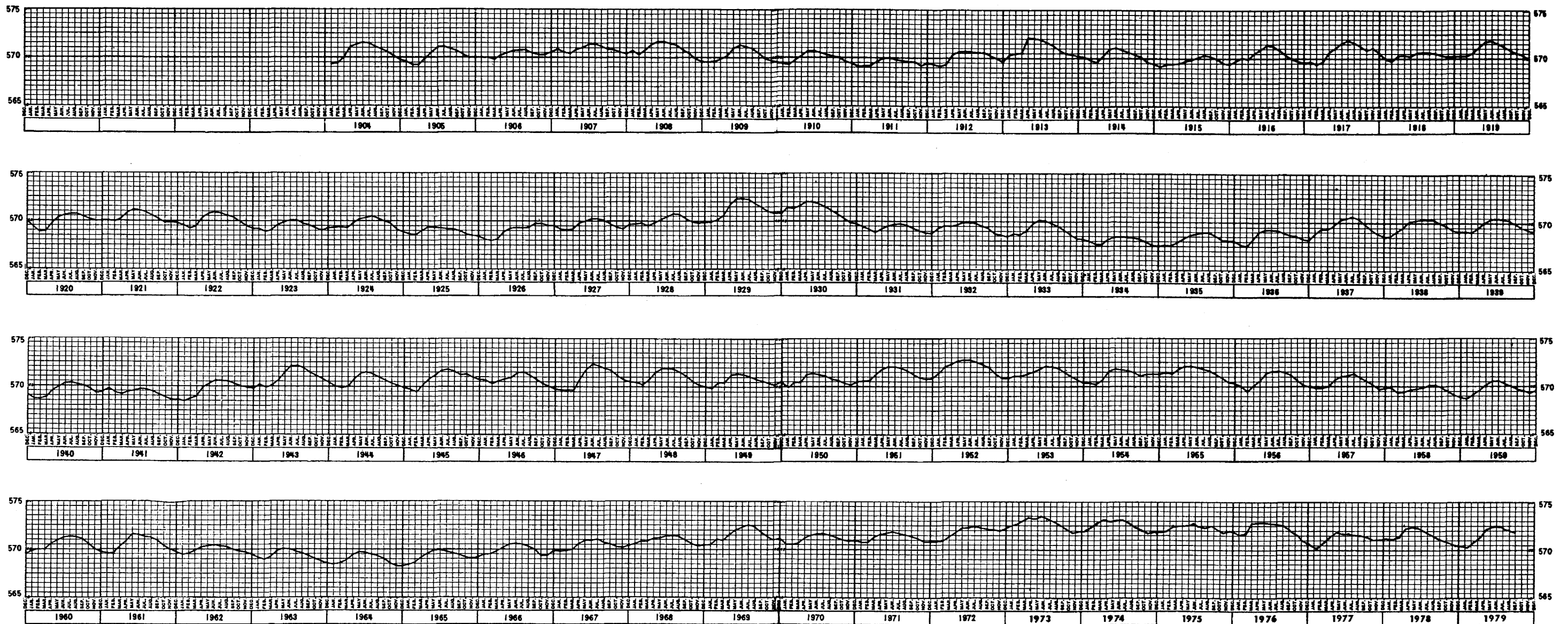
Figure 2.4-32



PERRY NUCLEAR POWER PLANT

Cleveland Hydrograph
Annual Mean Lake Levels

Figure 2.4-33



ELEVATIONS ARE IN FEET ABOVE MEAN WATER LEVEL AT FATHER POINT, QUEBEC,
INTERNATIONAL GREAT LAKES DATUM (1955)

(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Monthly Mean Lake Levels Lake Erie
at Cleveland, Ohio

Figure 2.4-34



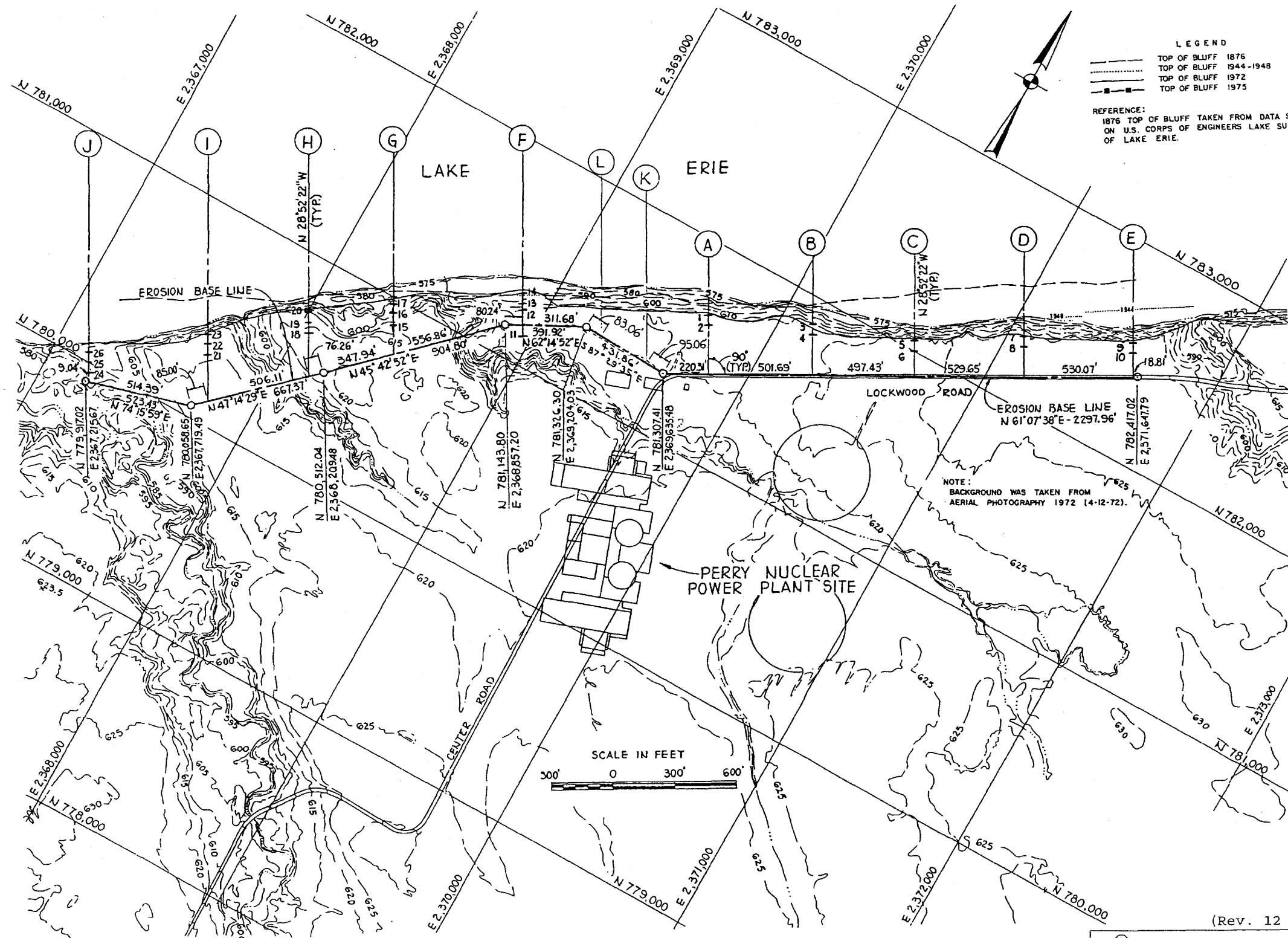
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PERRY NUCLEAR POWER PLANT

1937, 1957, 1964, 1972

Top of Bluff Lines

Figure 2.4-35





PERRY NUCLEAR POWER PLANT

1876 Top of Bluff

Figure 2.4-36



LEGEND

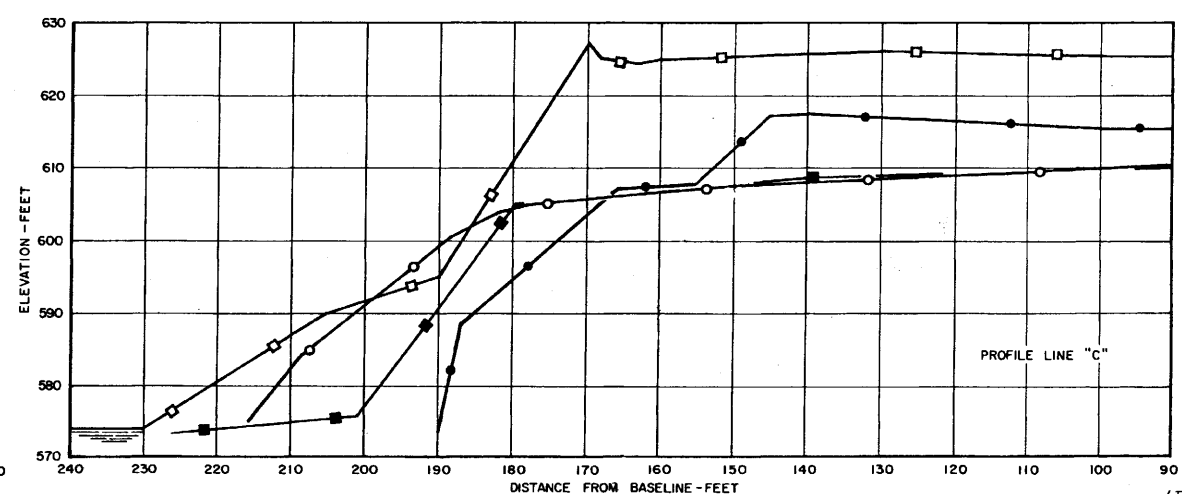
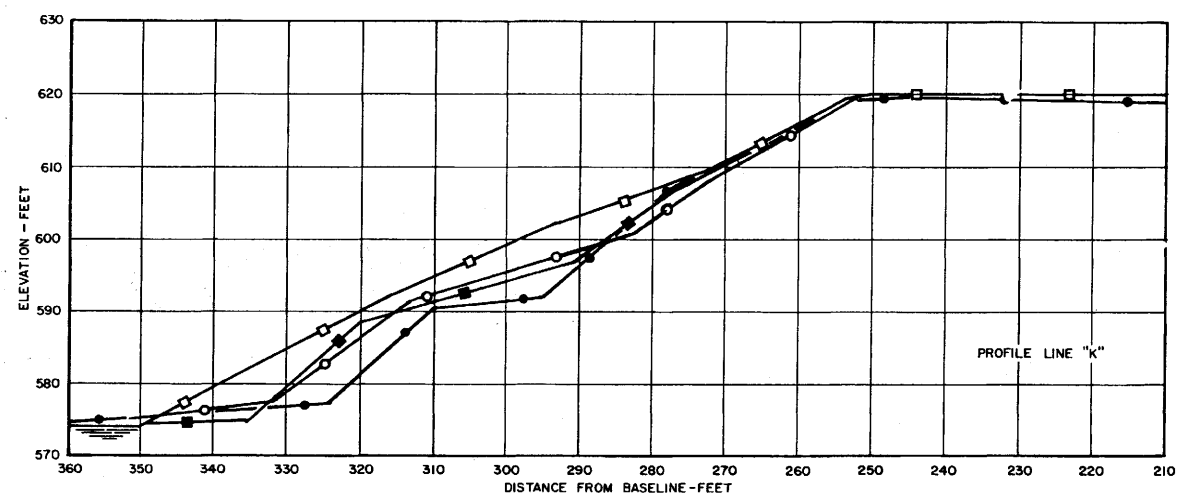
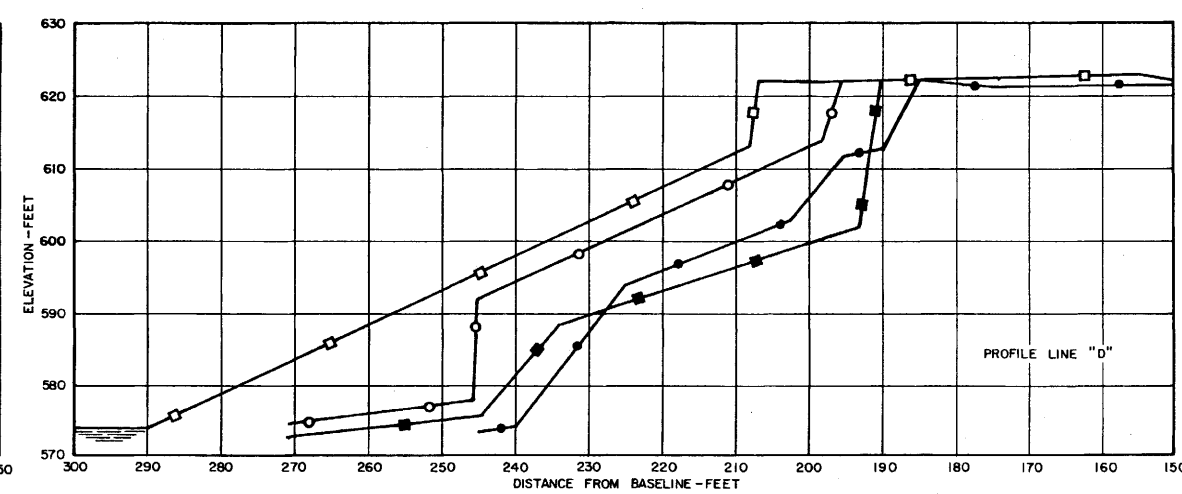
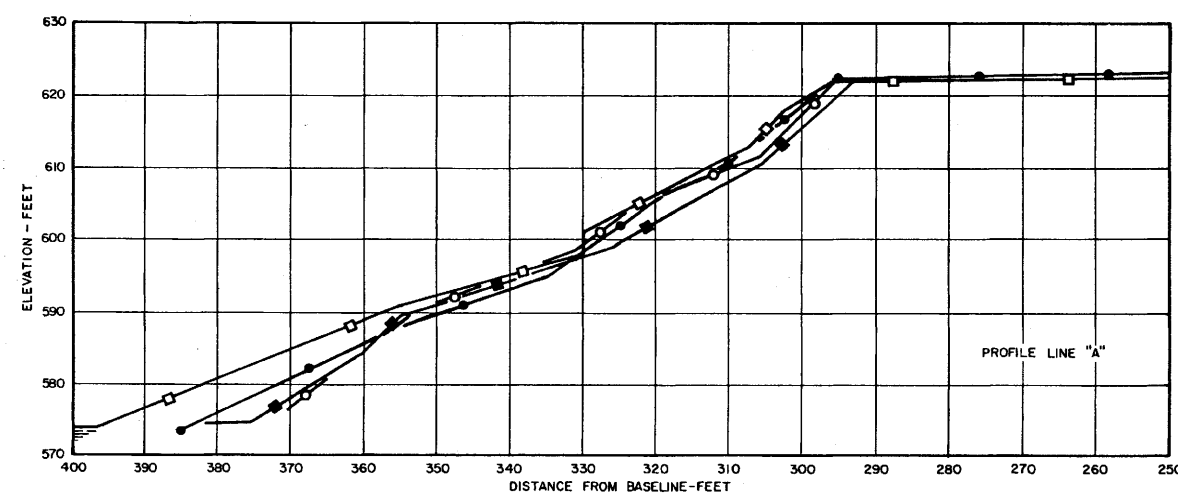
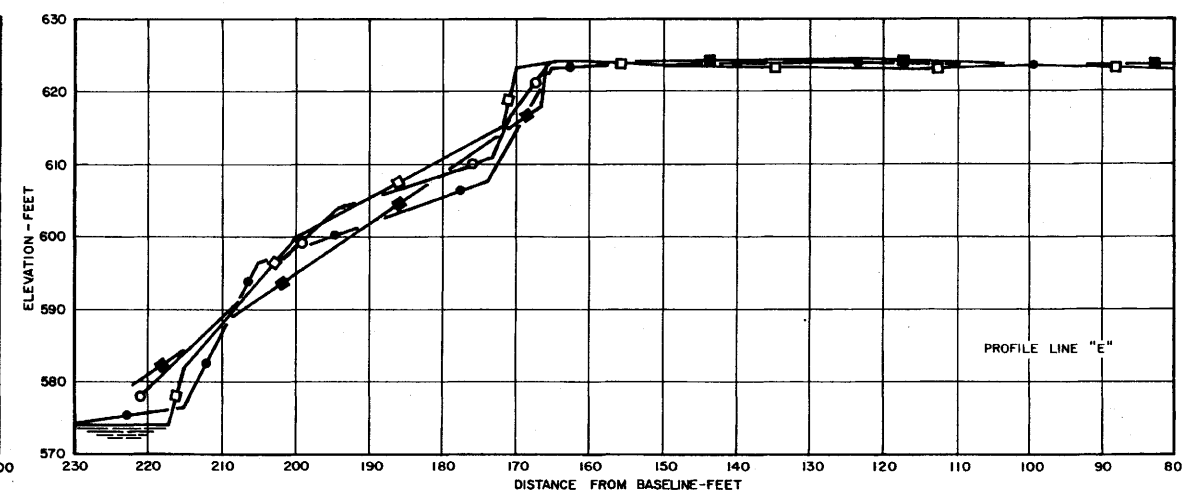
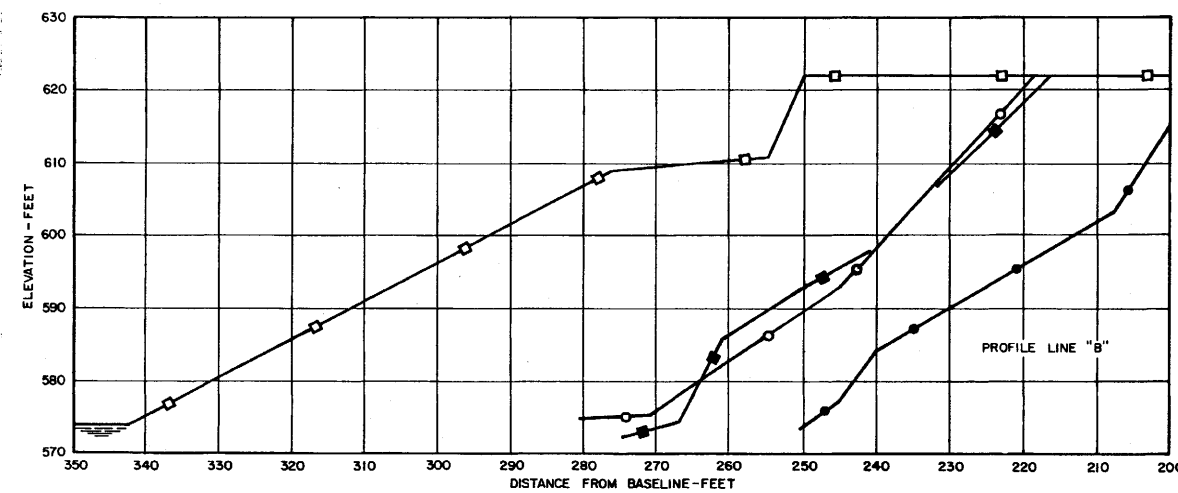
- TOP OF BLUFF 1937
- TOP OF BLUFF 1967
- TOP OF BLUFF 1964
- TOP OF BLUFF 1972
- TOP OF BLUFF 1975

(Rev. 13 12/03)

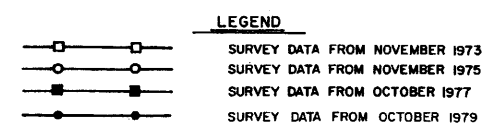
PERRY NUCLEAR POWER PLANT

1798, 1829-30, 1852-1858, 1965-67,
1876, 1917, 1975 Shorelines

Figure 2.4-37



ELEVATIONS BASED ON U.S.G.S. DATUM



FOR LOCATION OF PROFILE LINE
SEE FIGURE 2.4-32

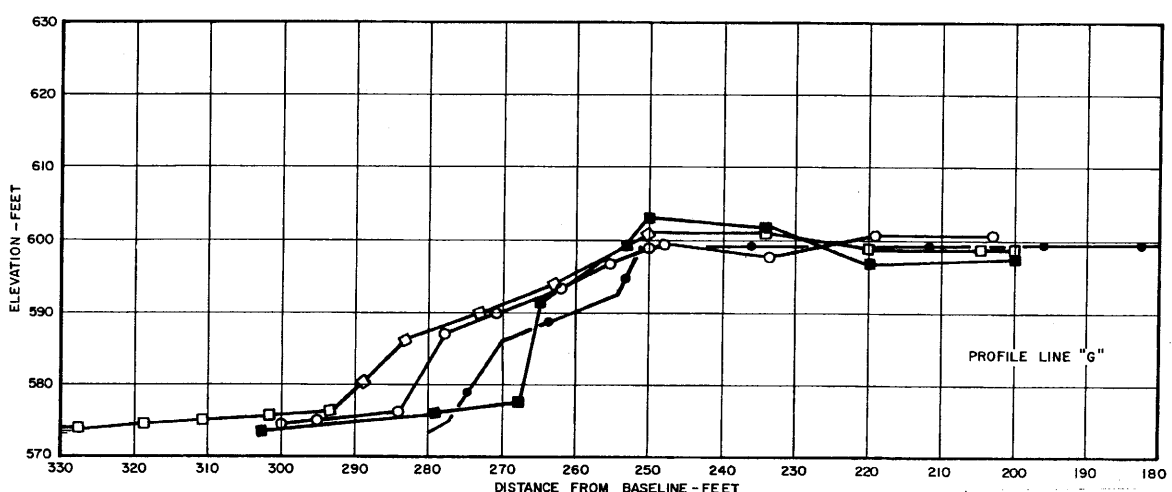
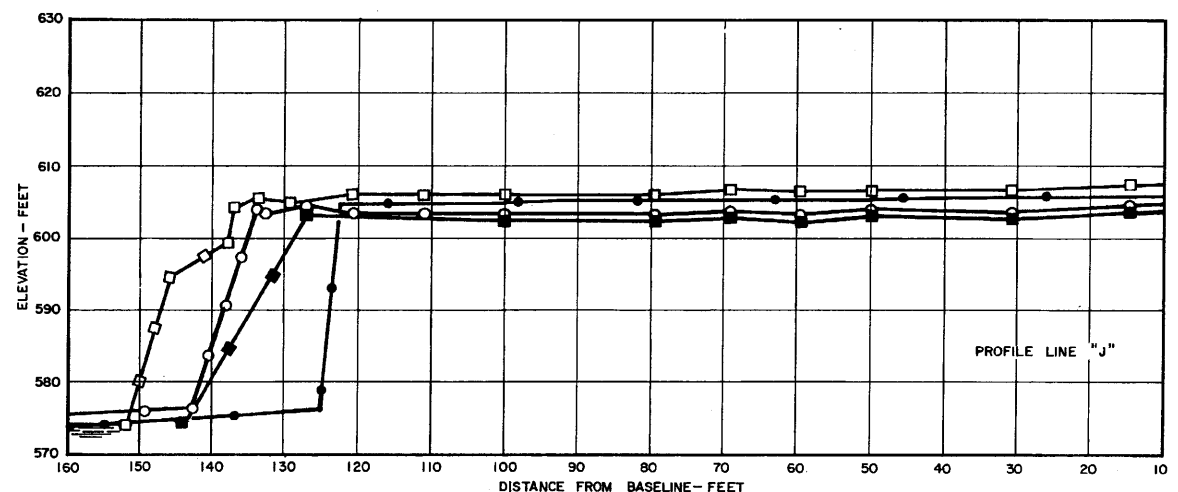
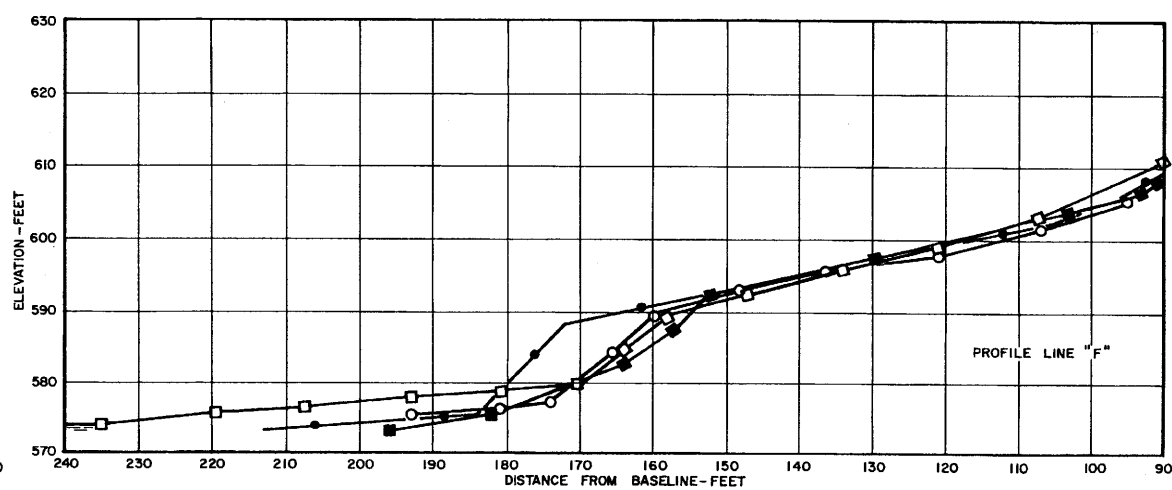
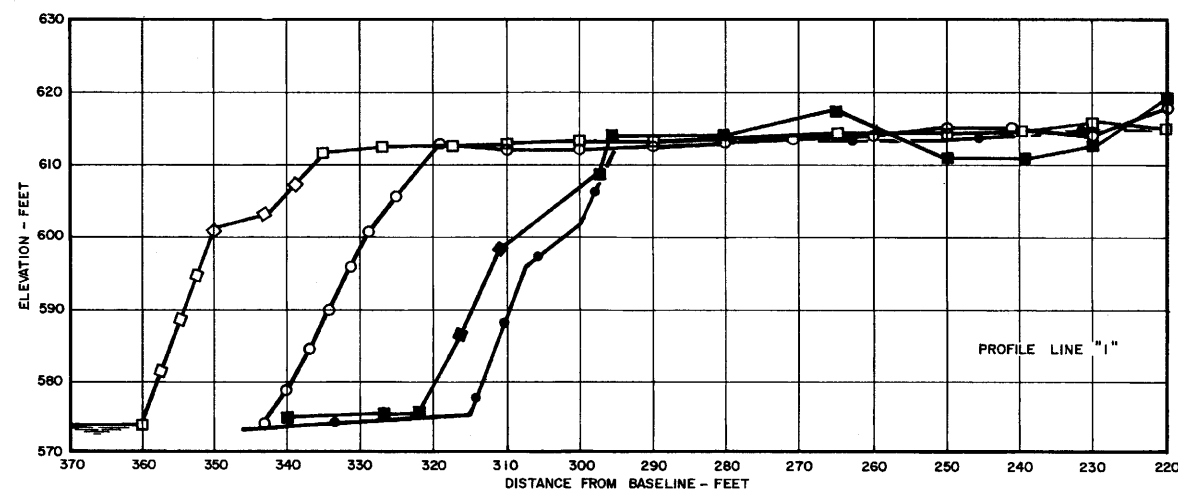
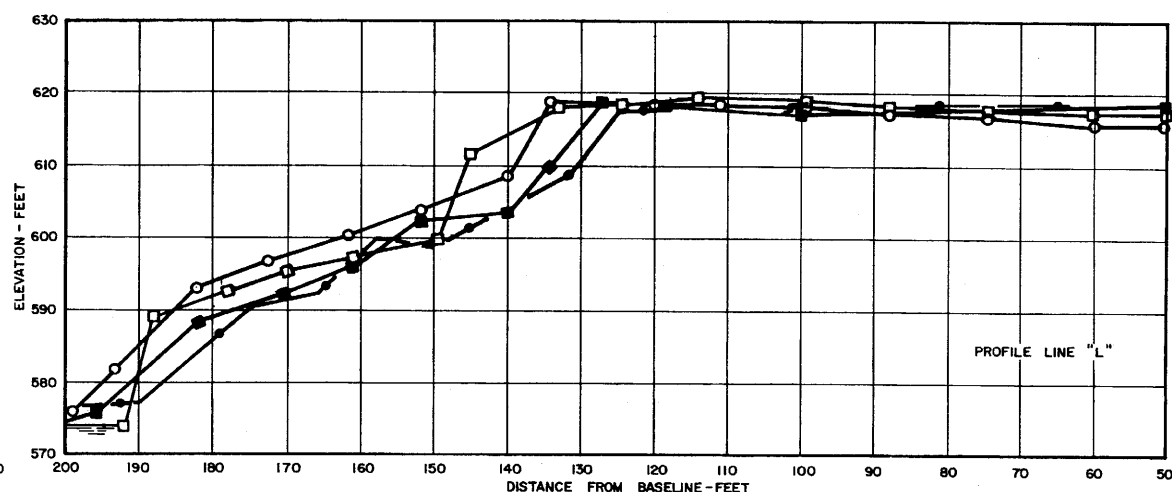
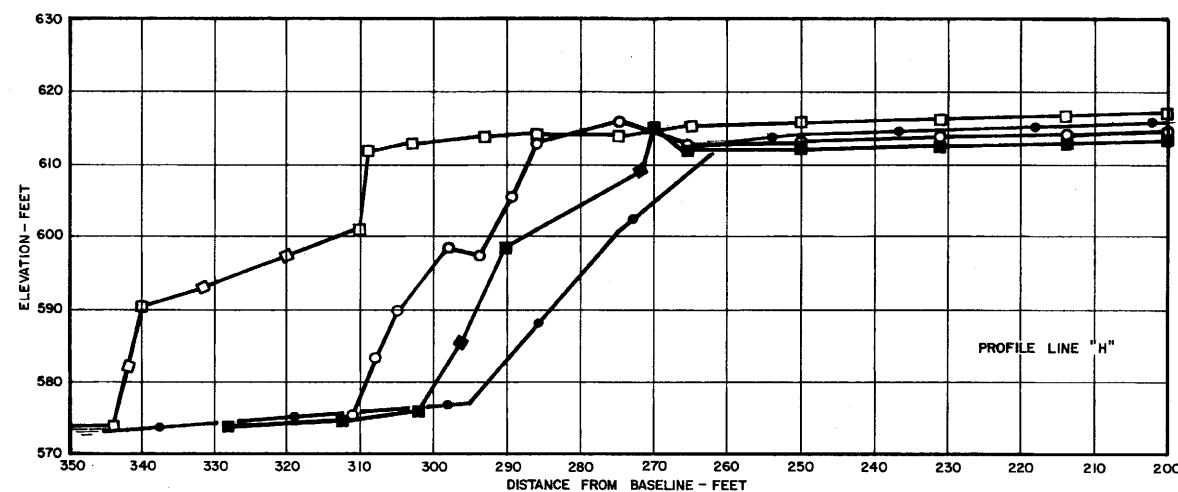


PERRY NUCLEAR POWER PLANT

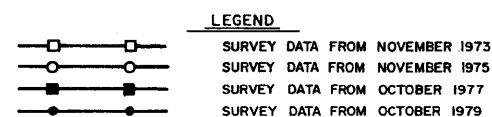
Bluff Recession Survey Line
Profiles

Figure 2.4-38 (Sheet 1 of 2)

(Rev. 12 1/03)



ELEVATIONS BASED ON U.S.G.S. DATUM



FOR LOCATION OF PROFILE LINE
SEE FIGURE 2.4-32

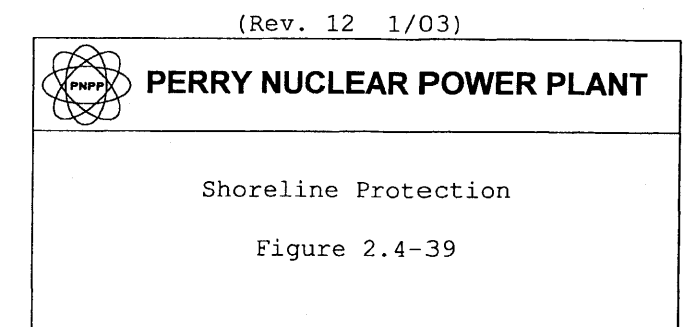
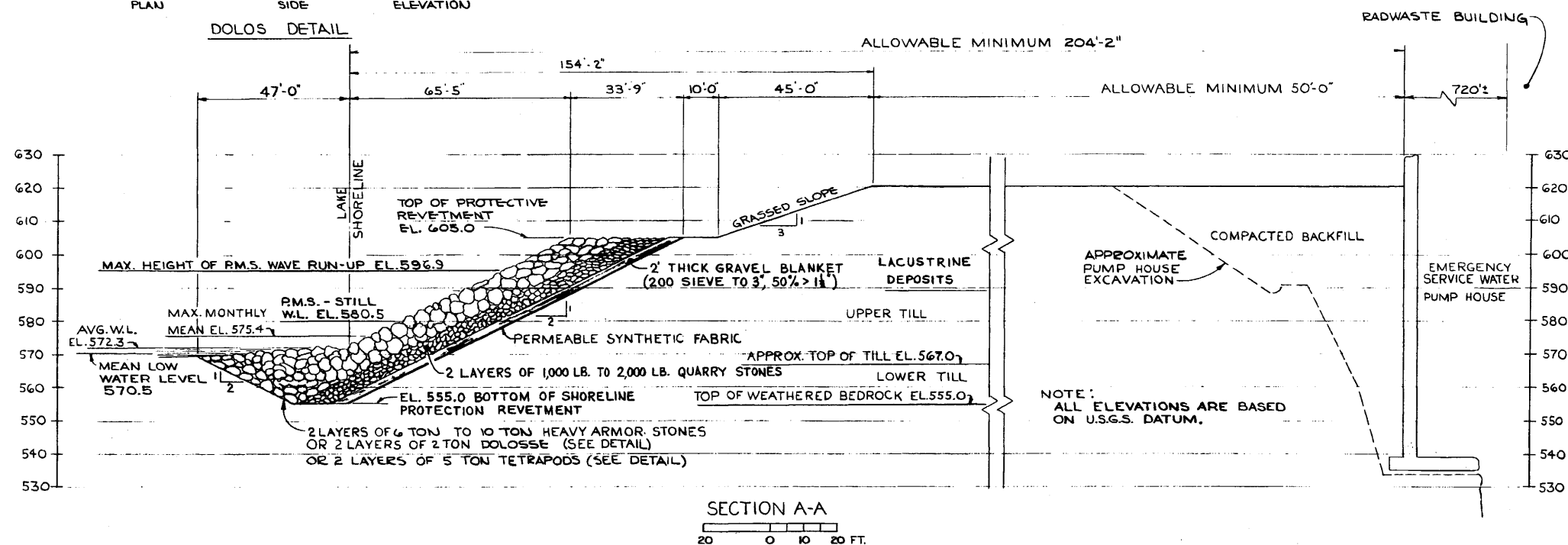
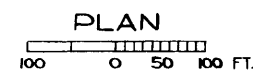
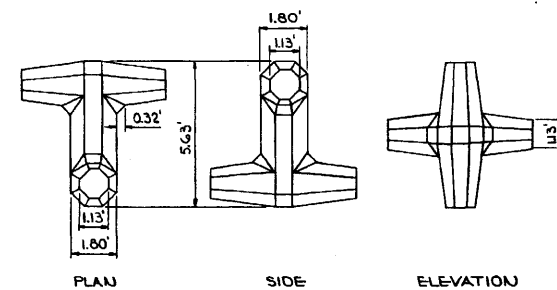
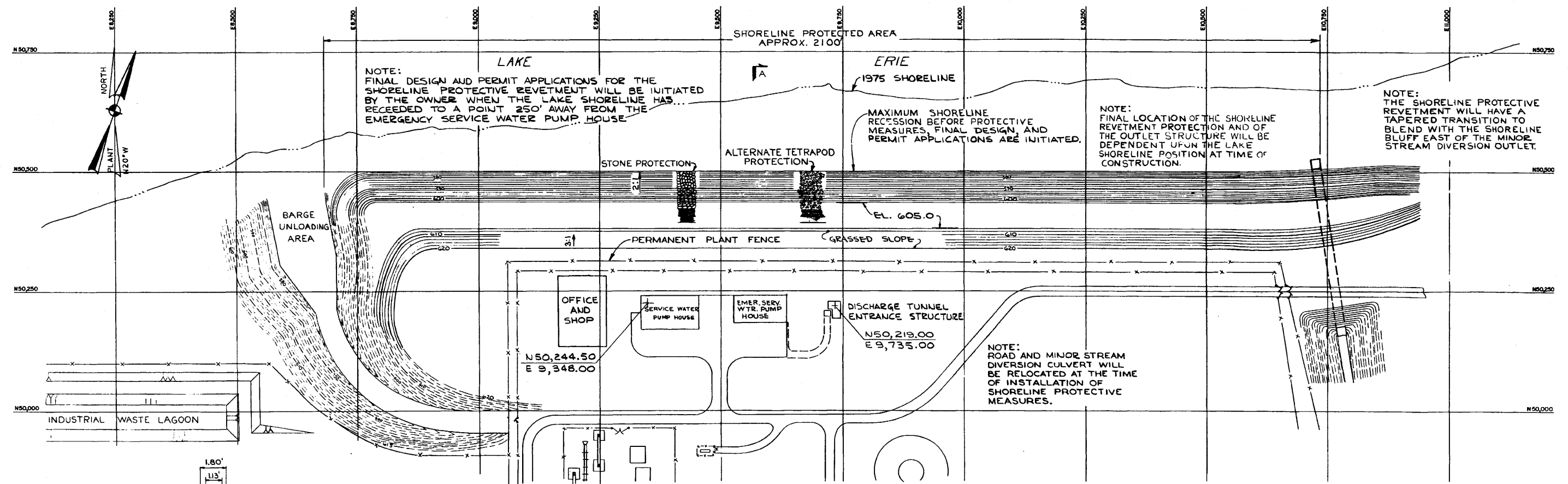
(Rev. 12 1/03)

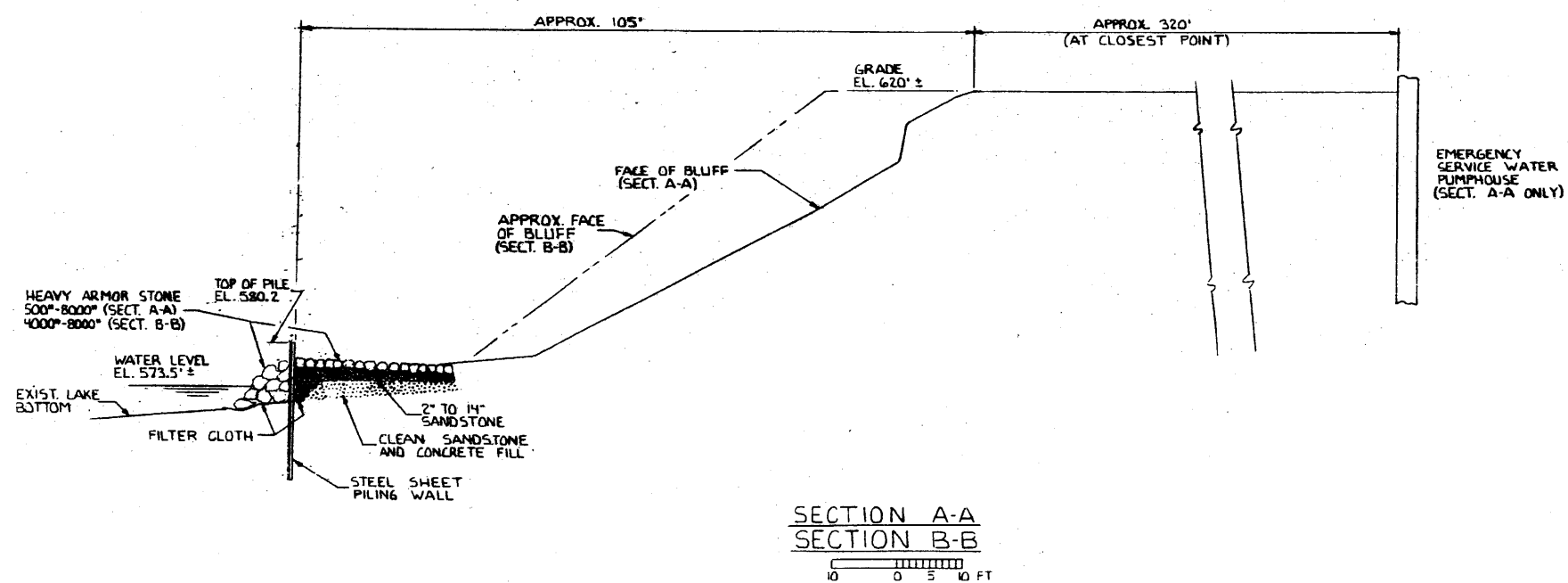
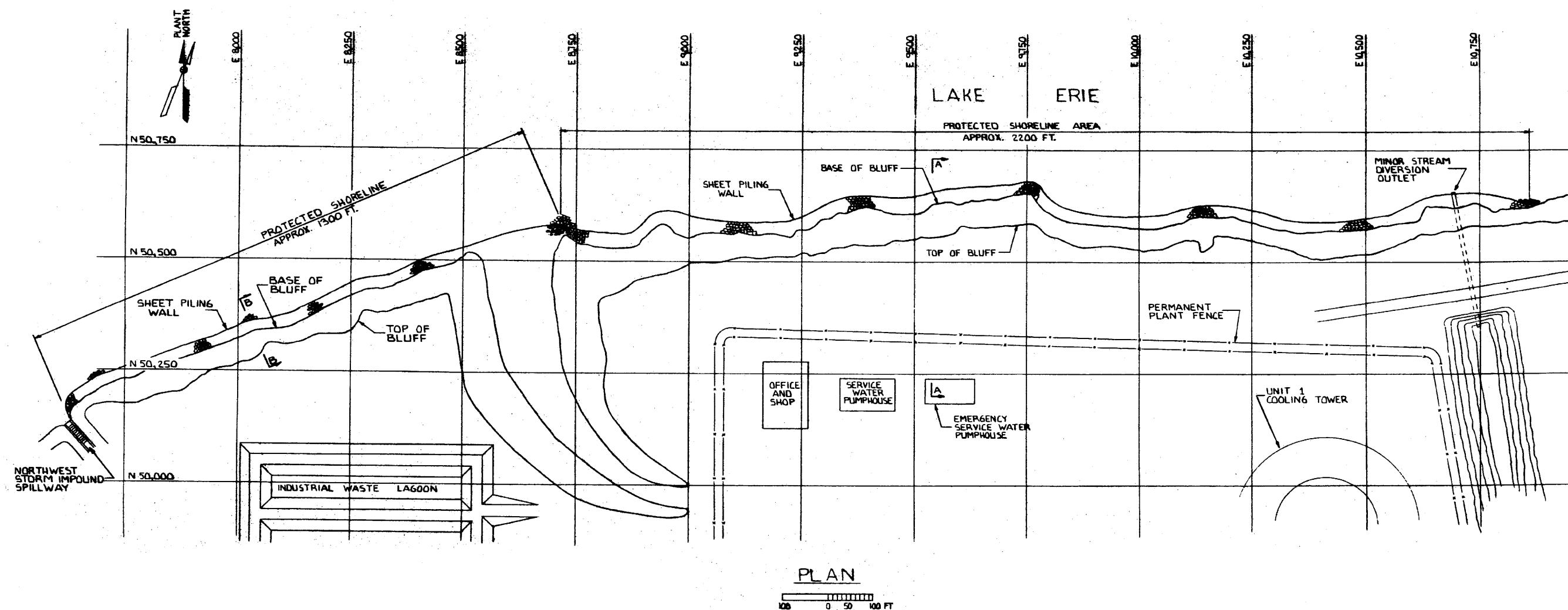


PERRY NUCLEAR POWER PLANT

Bluff Recession Survey Line
Profiles

Figure 2.4-38 (Sheet 2 of 2)





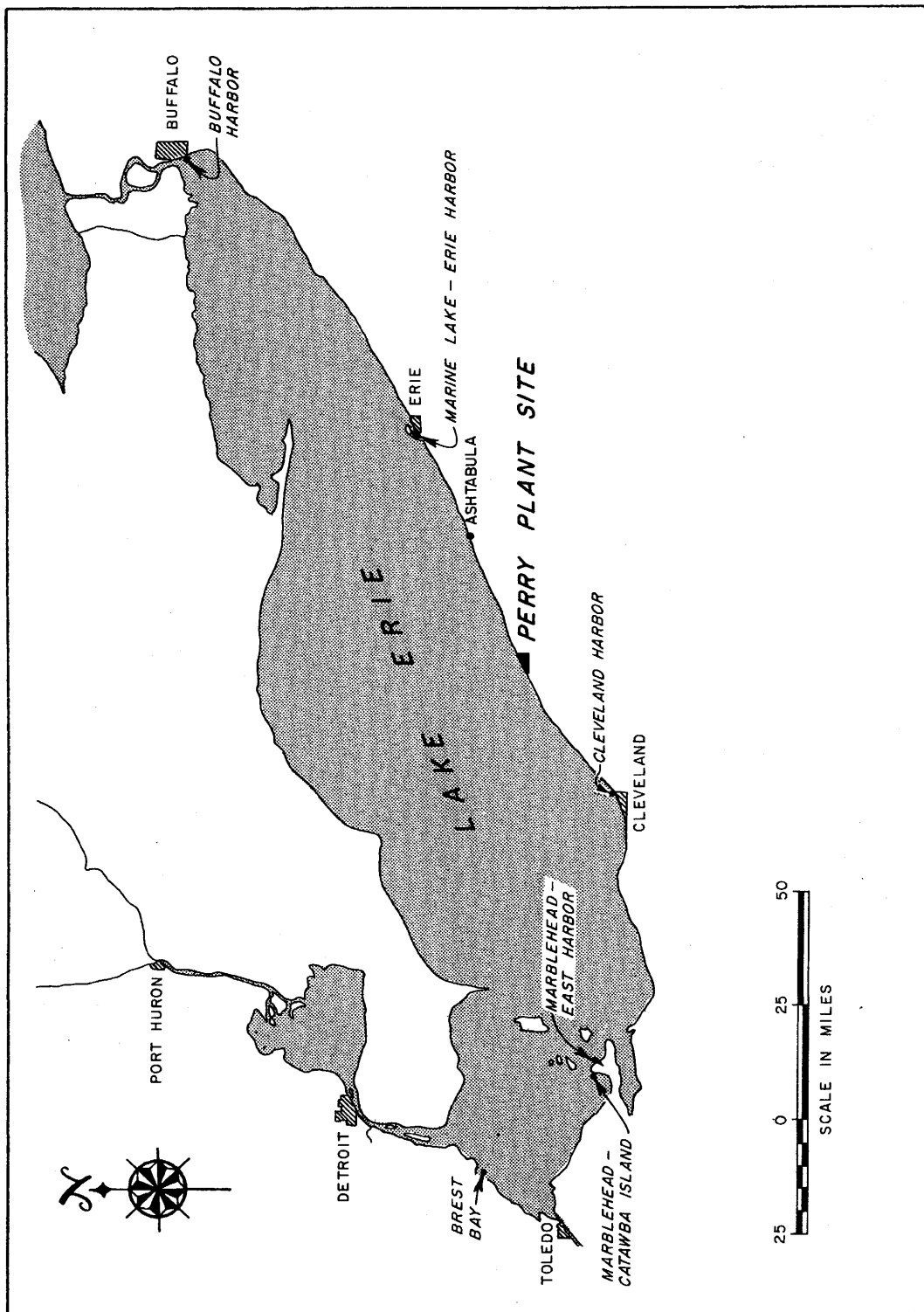
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Shore Protection Breakwall

Figure 2.4-39A



(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Ice Thickness Observation Locations

Figure 2.4-40

- MEASURED JANUARY 19, 1976 BY GARRETT & ASSOCIATES, INC.
- WATER LEVEL (W.L.) ELEVATION = 574.8' ± — DRAWING NOT TO SCALE
- WEATHER CONDITIONS: TEMP. = 12° F. AND WIND = 10 ~ 15 M.P.H. FROM SOUTH
- OBSERVATIONS WERE READ AT EROSION BASELINE "K"

ICE FLOW
NO MEASUREMENTS AVAILABLE

PACKED CRUSHED ICE
4' HIGH AVERAGE (ABOVE W.L.)
8' HIGH: HIGHEST (ABOVE W.L.)
SECONDARY PACKED ICE SLABS
6" TO 2' ABOVE W.L.
THICKNESS VARIES

SHORE LINE

BLUFF

96' ±
1,552' ±

13,600' ±

EXTENDS TO BEYOND VISIBLE HORIZON

(Rev. 12 1/03)

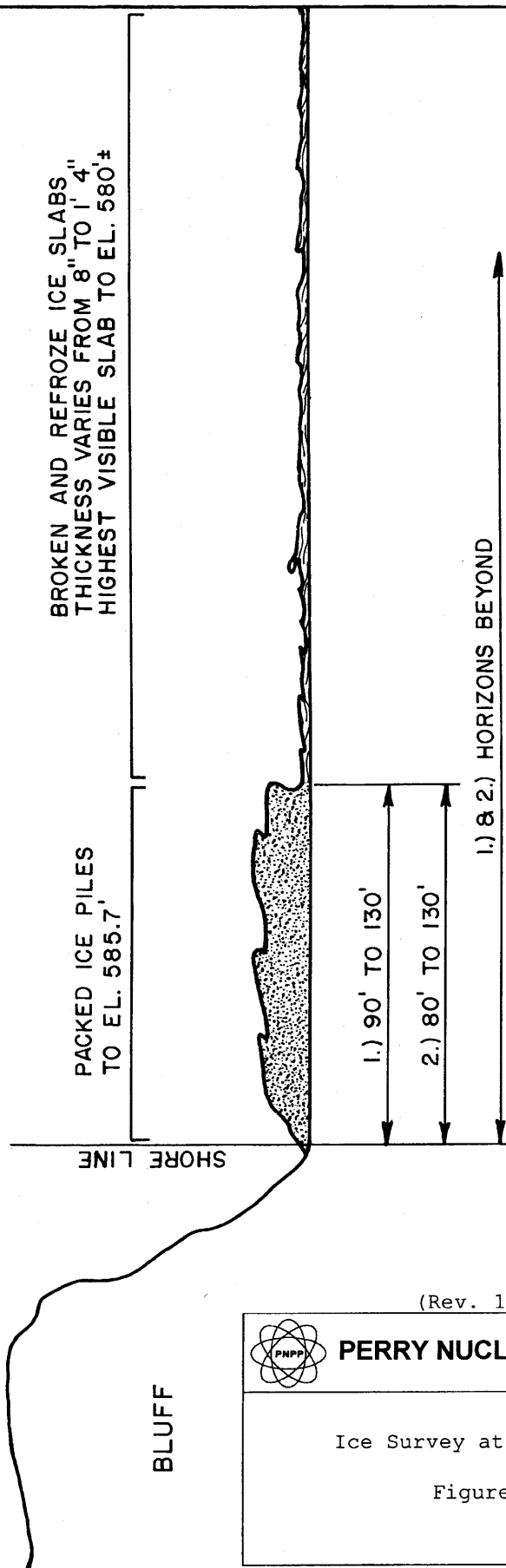


PERRY NUCLEAR POWER PLANT

Ice Survey at Site Shoreline

Figure 2.4-41

- MEASURED FEBRUARY 9, 1976 BY GARRETT & ASSOCIATES, INC.
- OBSERVATIONS MADE 1.) OPPOSITE PLANT BARGE SLIP
2.) OPPOSITE MINOR STREAM RELOCATION
- WATER LEVEL ELEVATION = 573.5' ± — DRAWING NOT TO SCALE



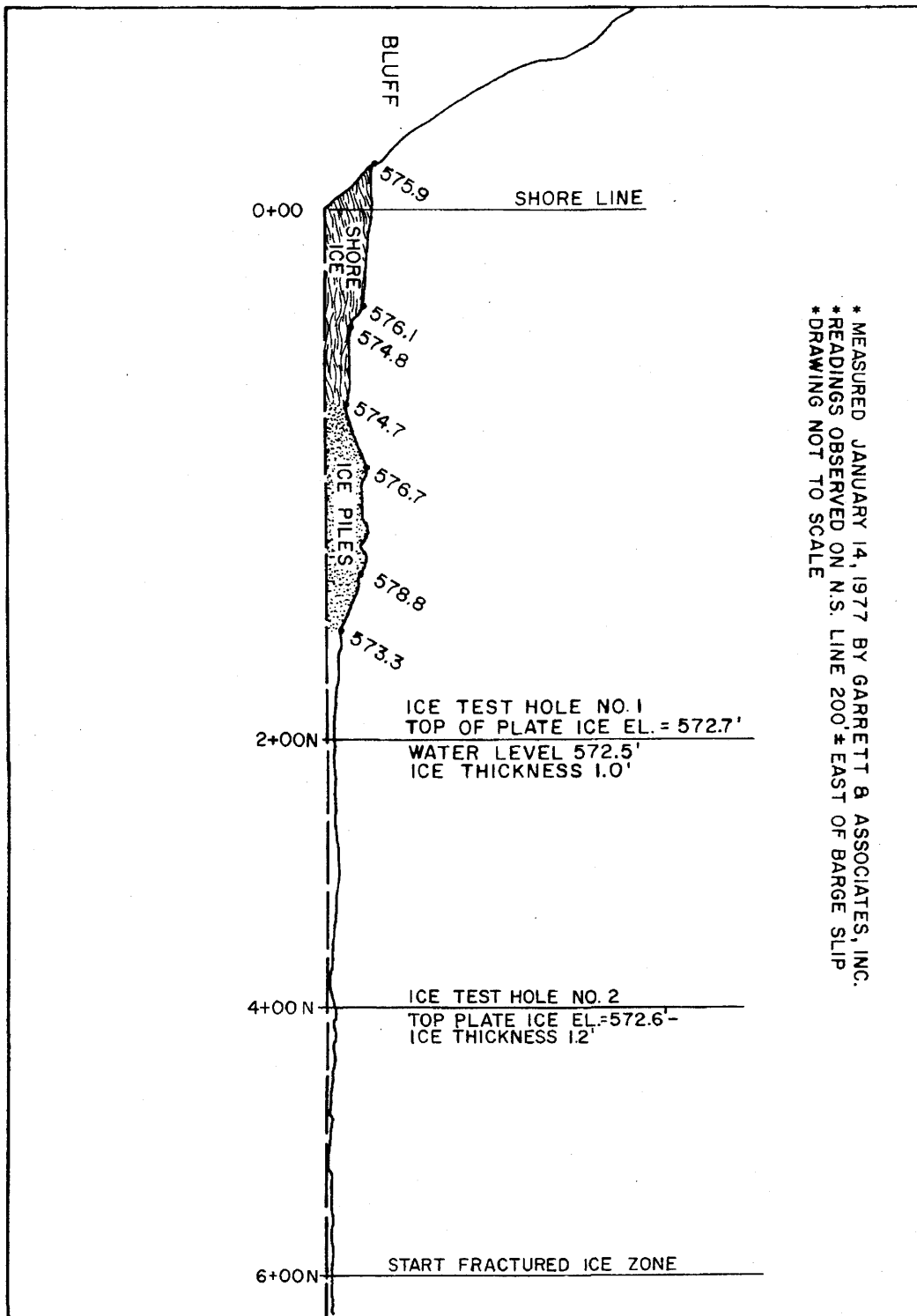
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Ice Survey at Site Shoreline

Figure 2.4-42



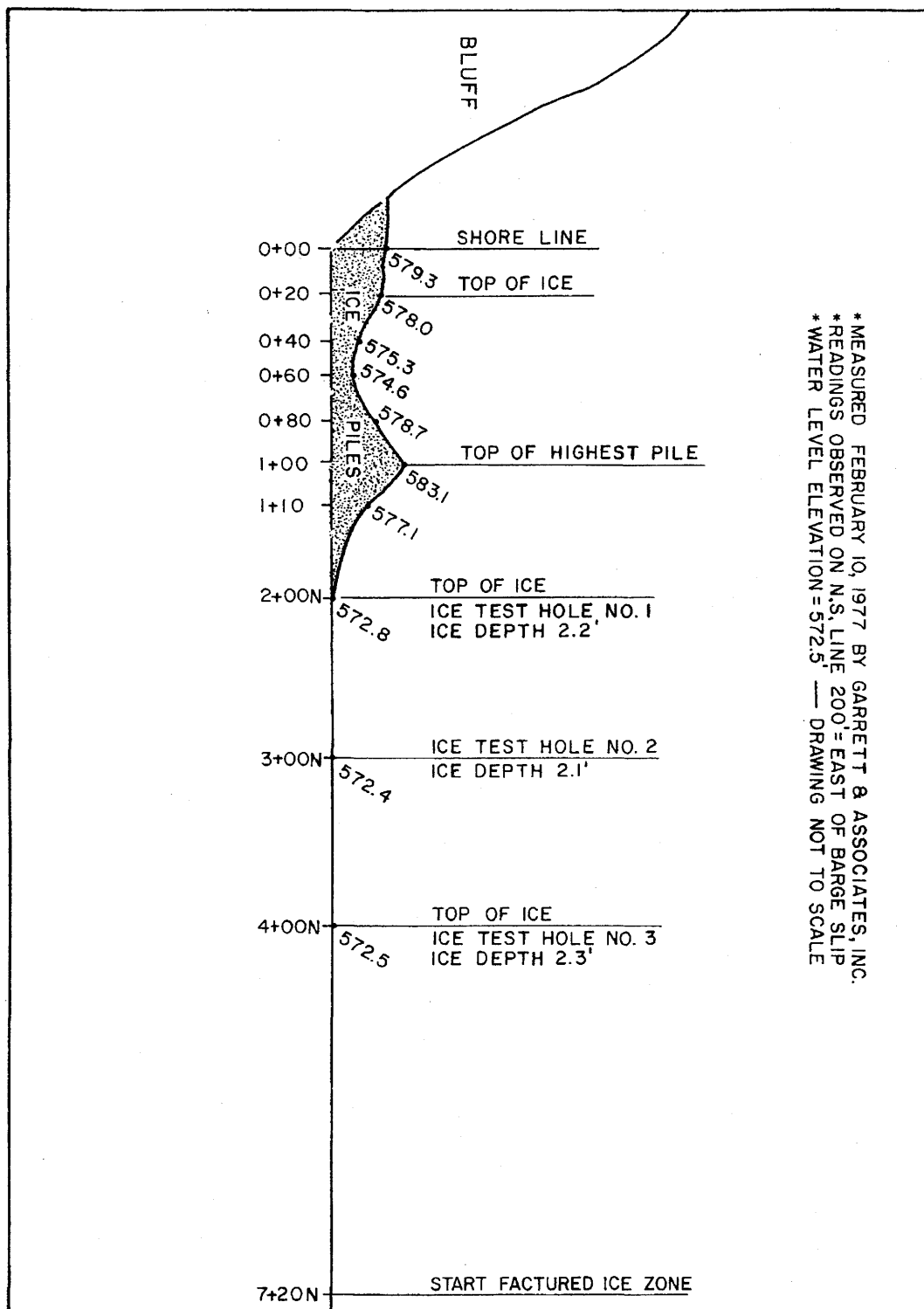
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Ice Survey at Site Shoreline

Figure 2.4-43



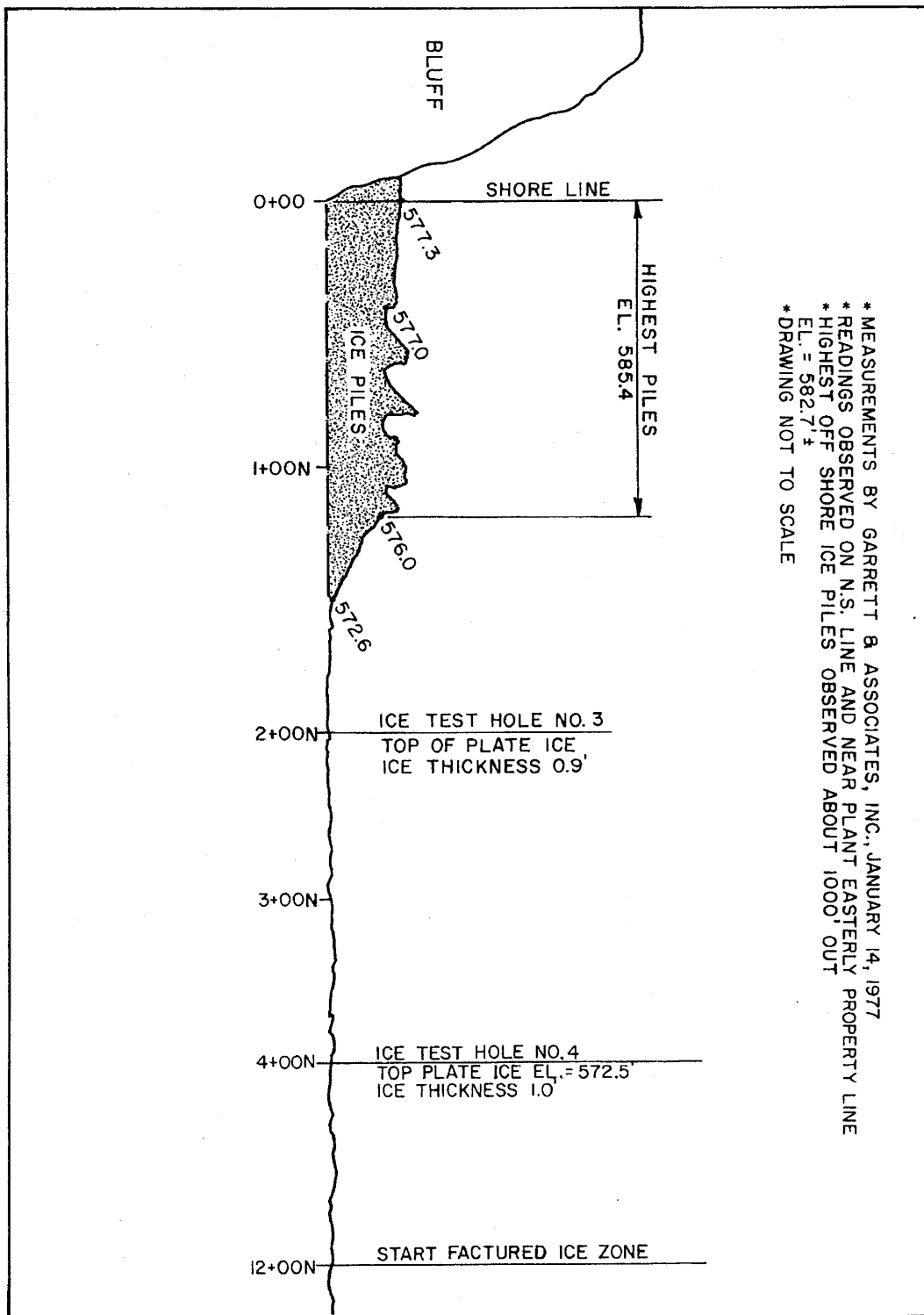
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Ice Survey at Site Shoreline

Figure 2.4-44



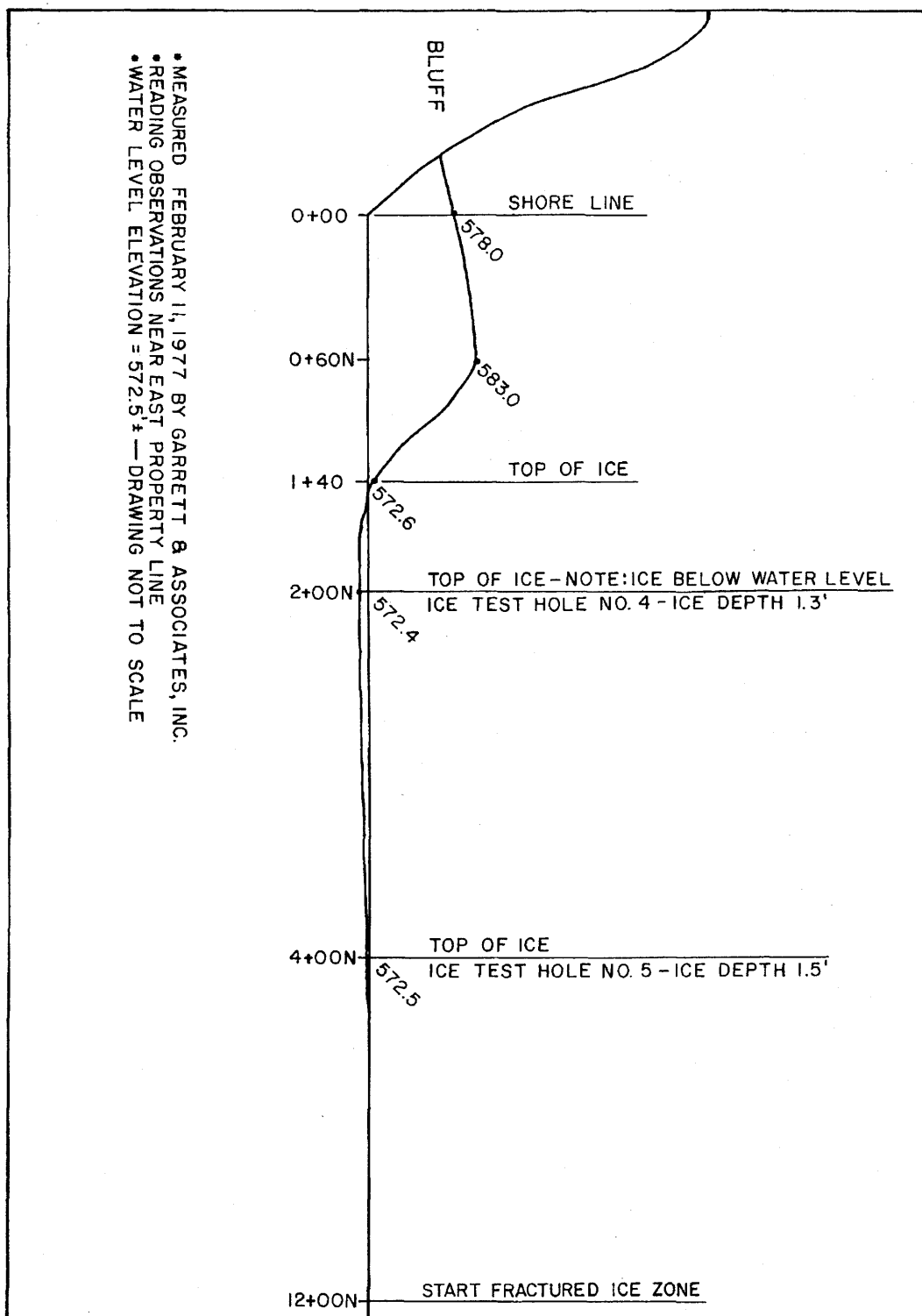
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Ice Survey at Site Shoreline

Figure 2.4-45



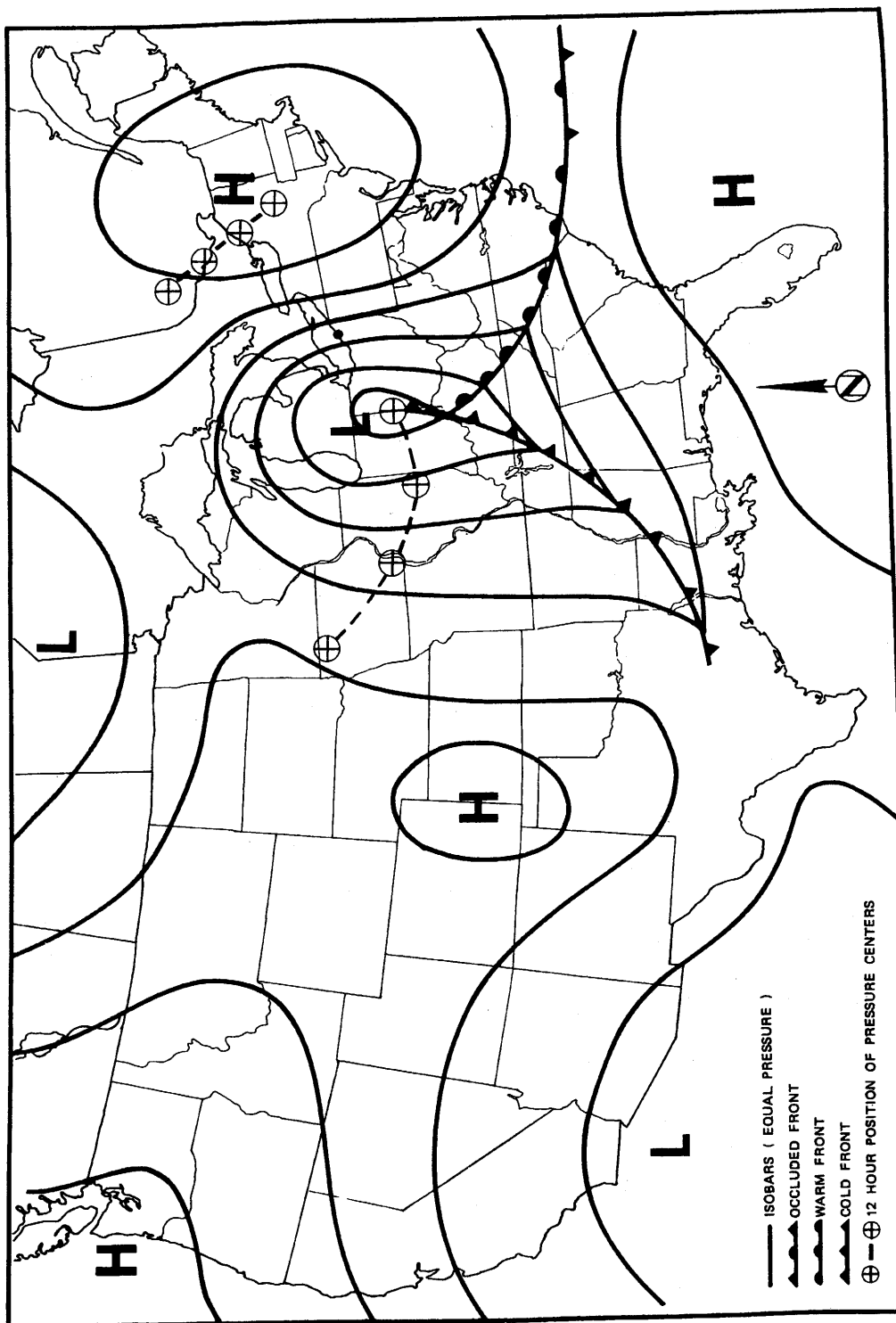
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Ice Survey at Site Shoreline

Figure 2.4-46



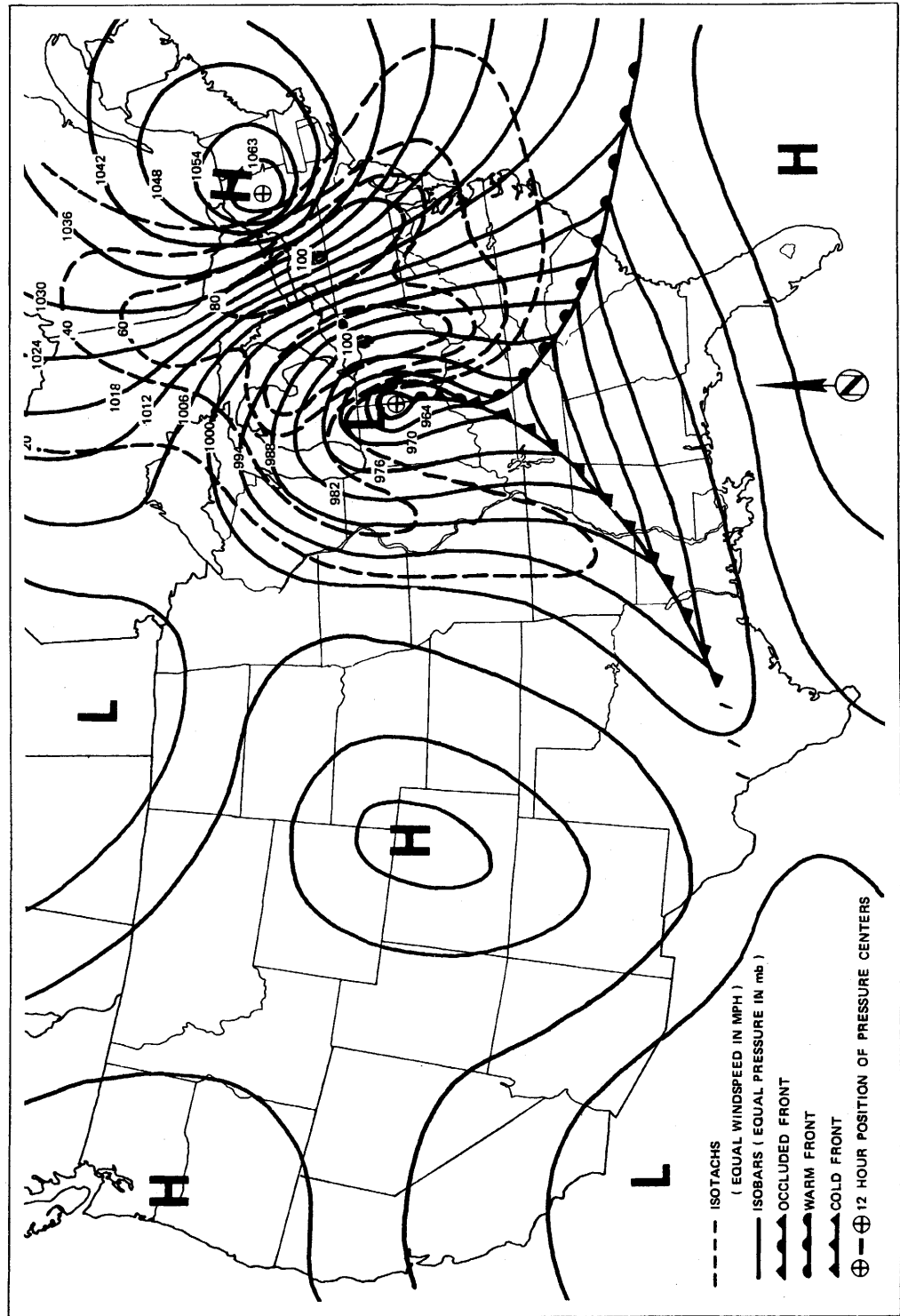
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Meteorological Situation for
Probable Maximum Lake Setdown at
Perry, Ohio

Figure 2.4-47



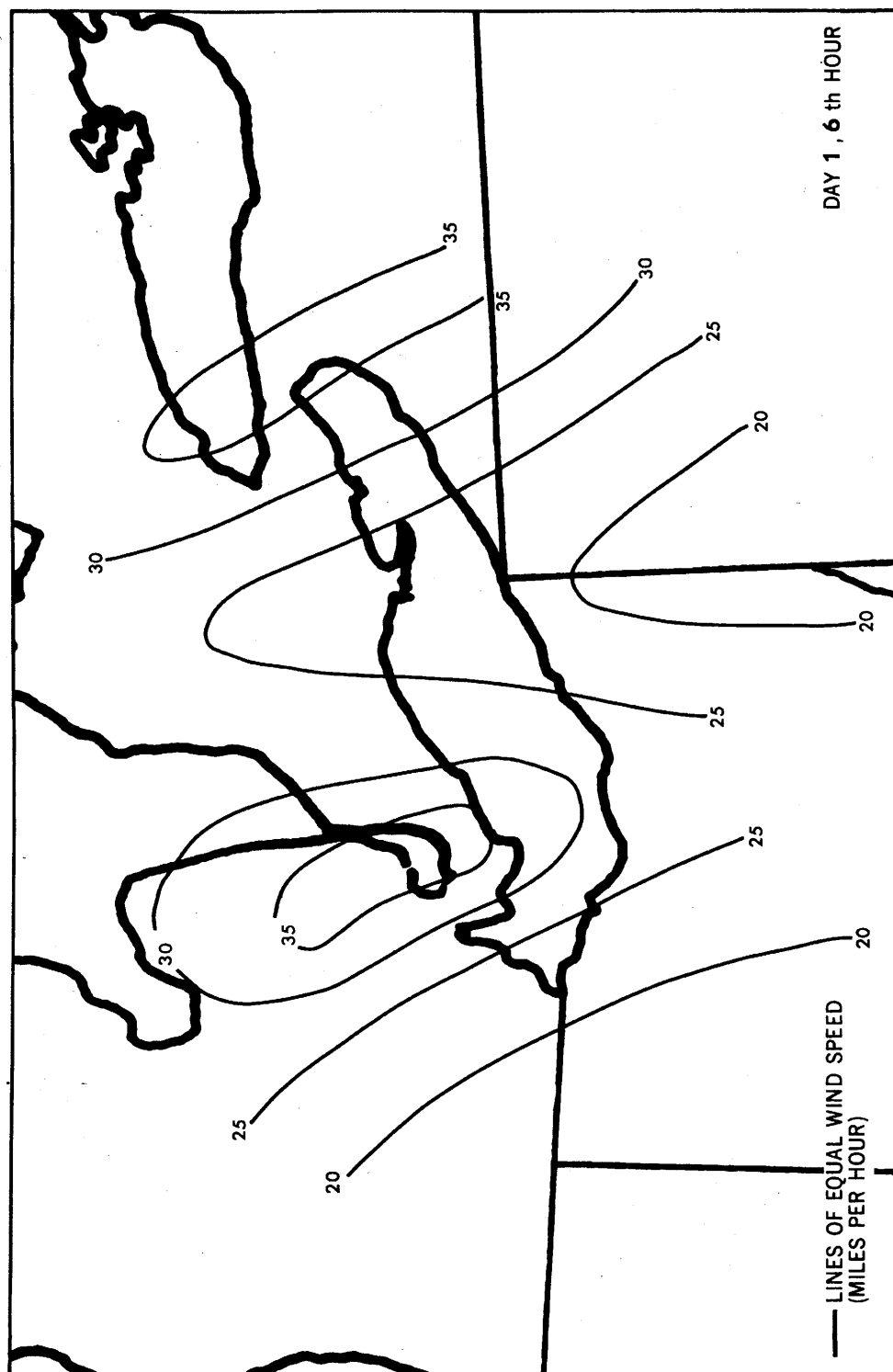
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PERRY NUCLEAR POWER PLANT

Isobar and Isotach Fields for
Probable Maximum Lake Level
Setdown at Perry, Ohio

Figure 2.4-48



(Rev. 12 1/03)

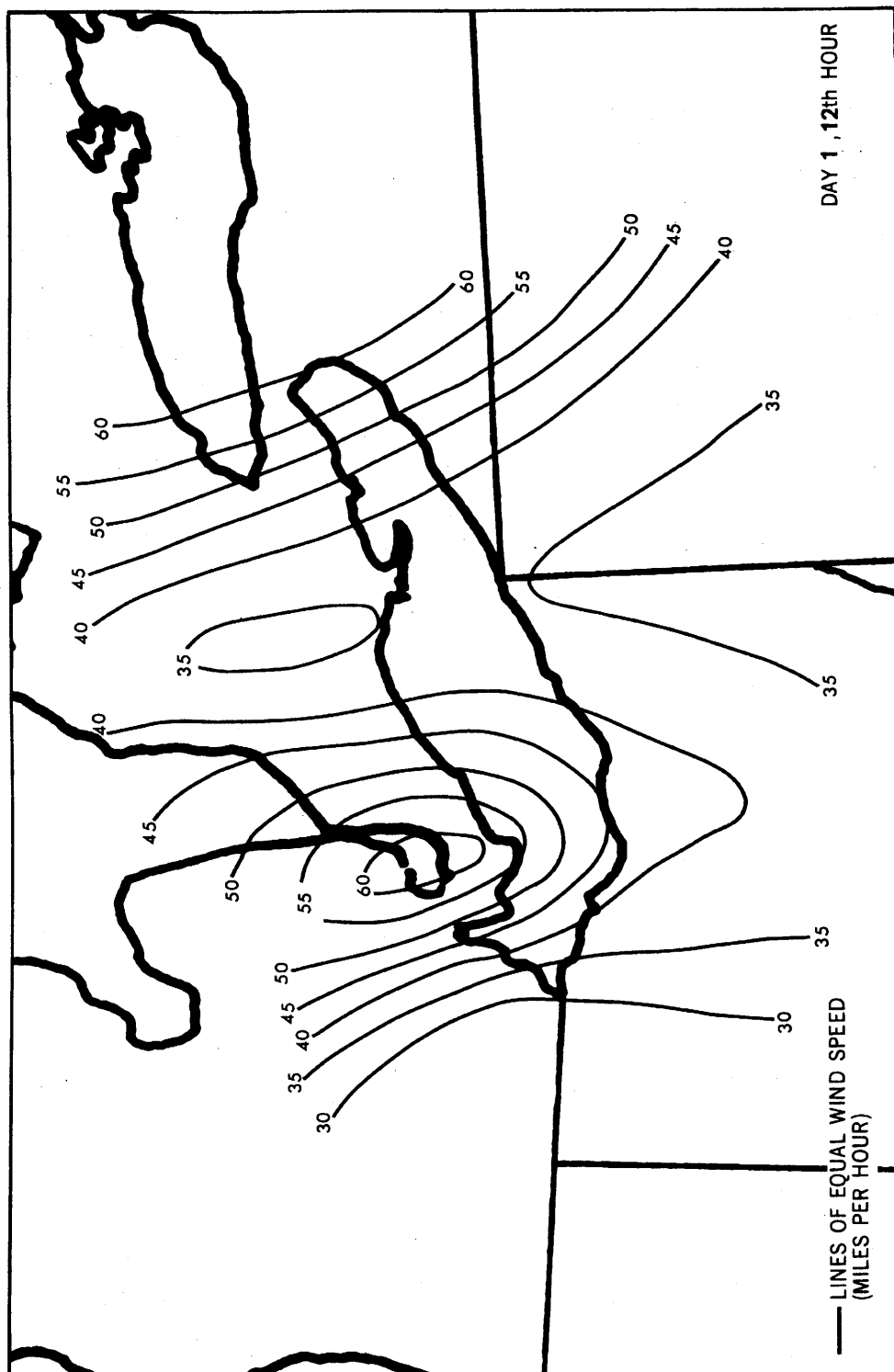
6-1-73



PERRY NUCLEAR POWER PLANT

PMS Isotach Patterns for Maximum
Lake Setdown at Perry, Ohio

Figure 2.4-49



6-1-73

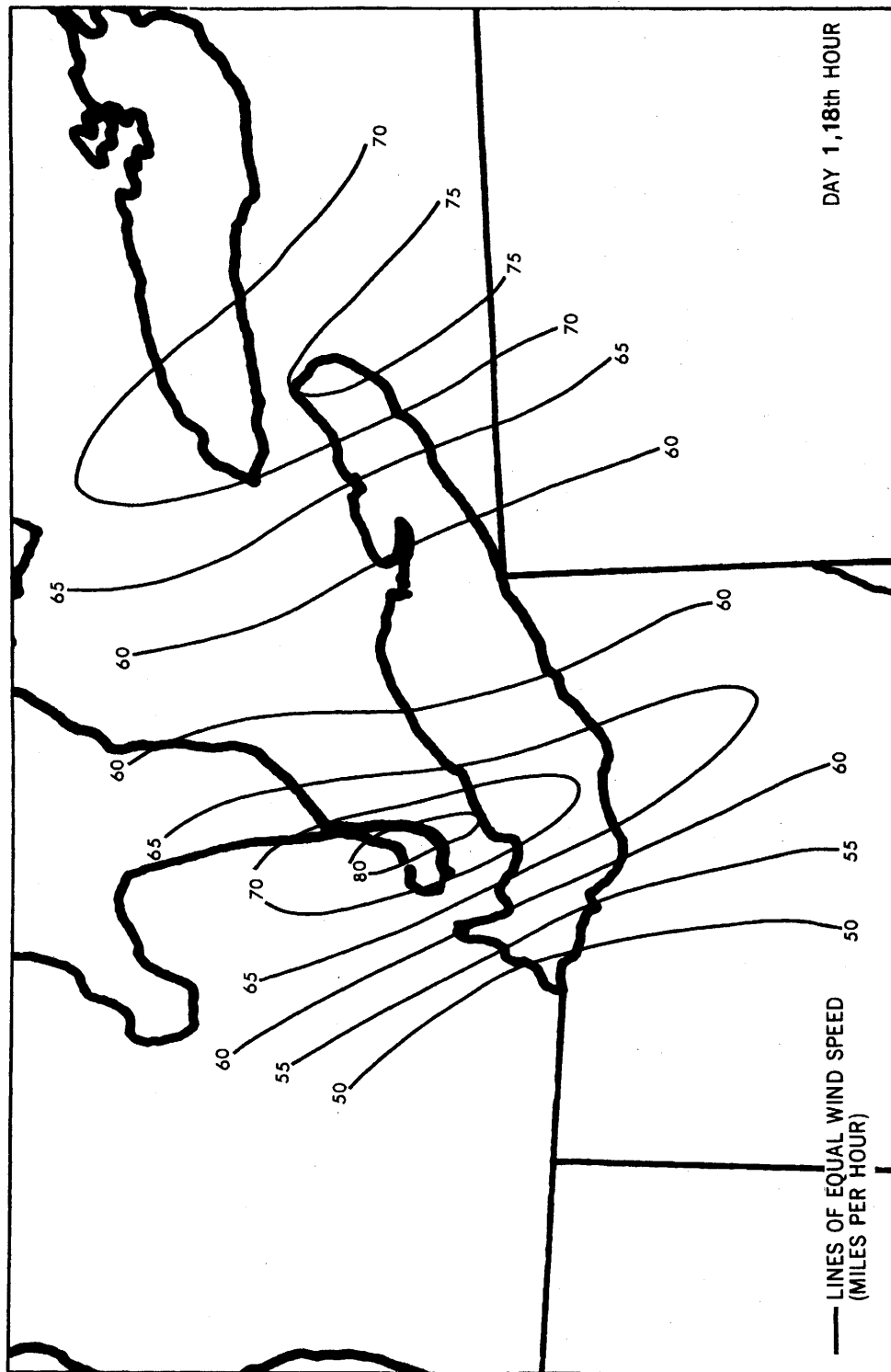
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

PMS Isotach Patterns for Maximum
Lake Setdown at Perry, Ohio

Figure 2.4-50



(Rev. 12 1/03)

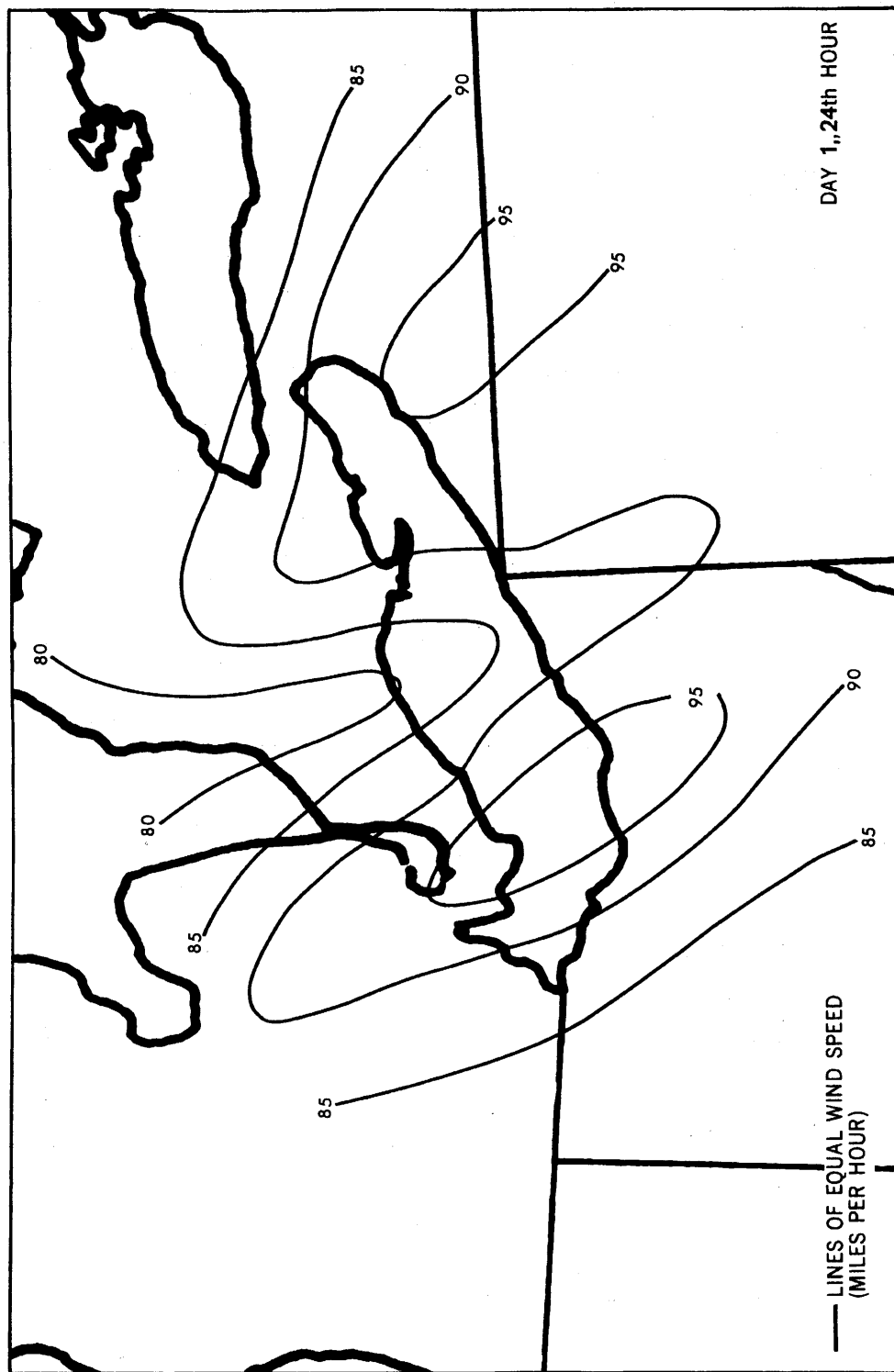
6-1-73



PERRY NUCLEAR POWER PLANT

PMS Isotach Patterns for Maximum
Lake Setdown at Perry, Ohio

Figure 2.4-51



(Rev. 12 1/03)

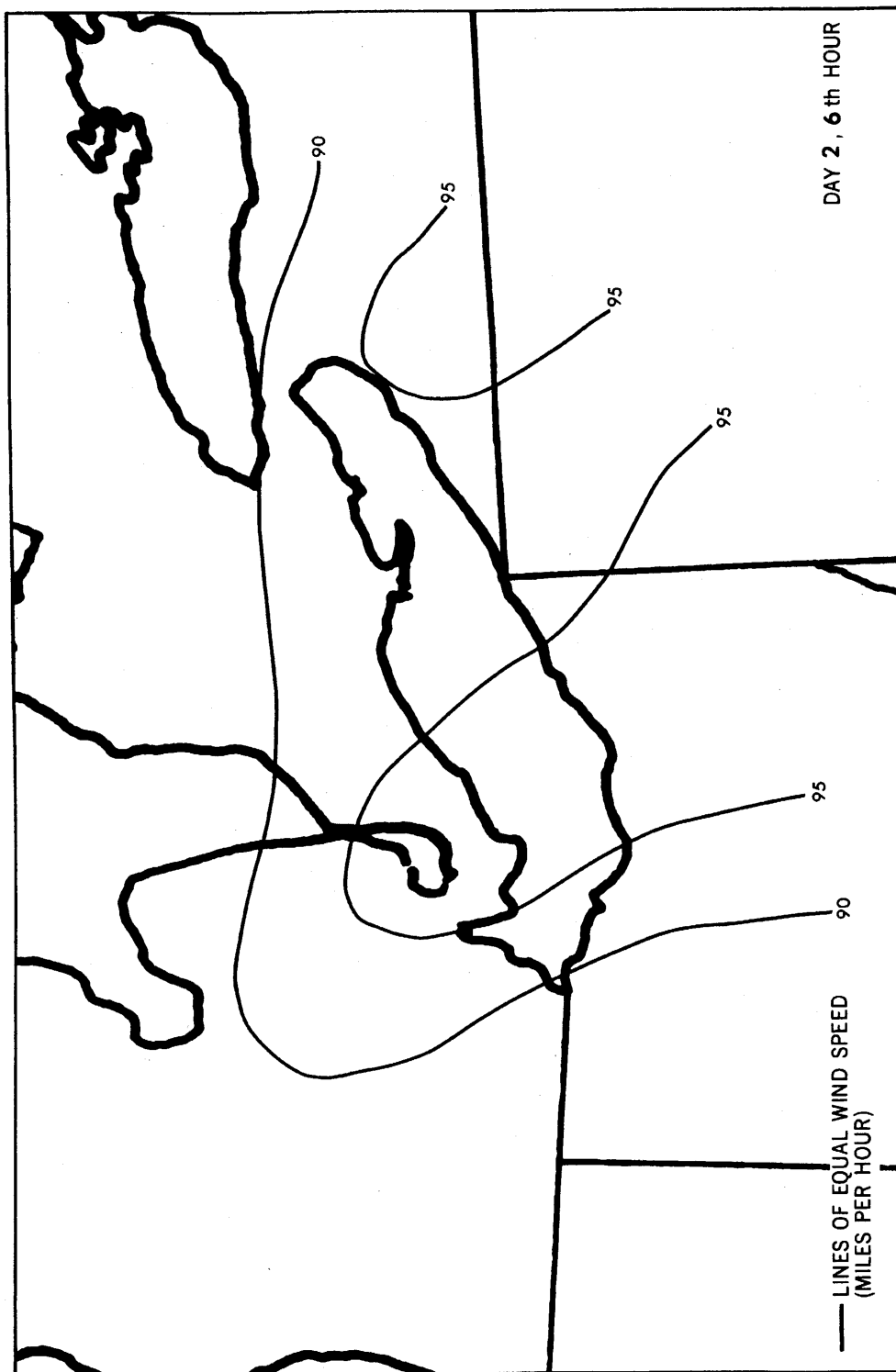
6-1-73



PERRY NUCLEAR POWER PLANT

PMS Isotach Patterns for
Maximum Lake Setdown at Perry, Ohio

Figure 2.4-52



(Rev. 12 1/03)

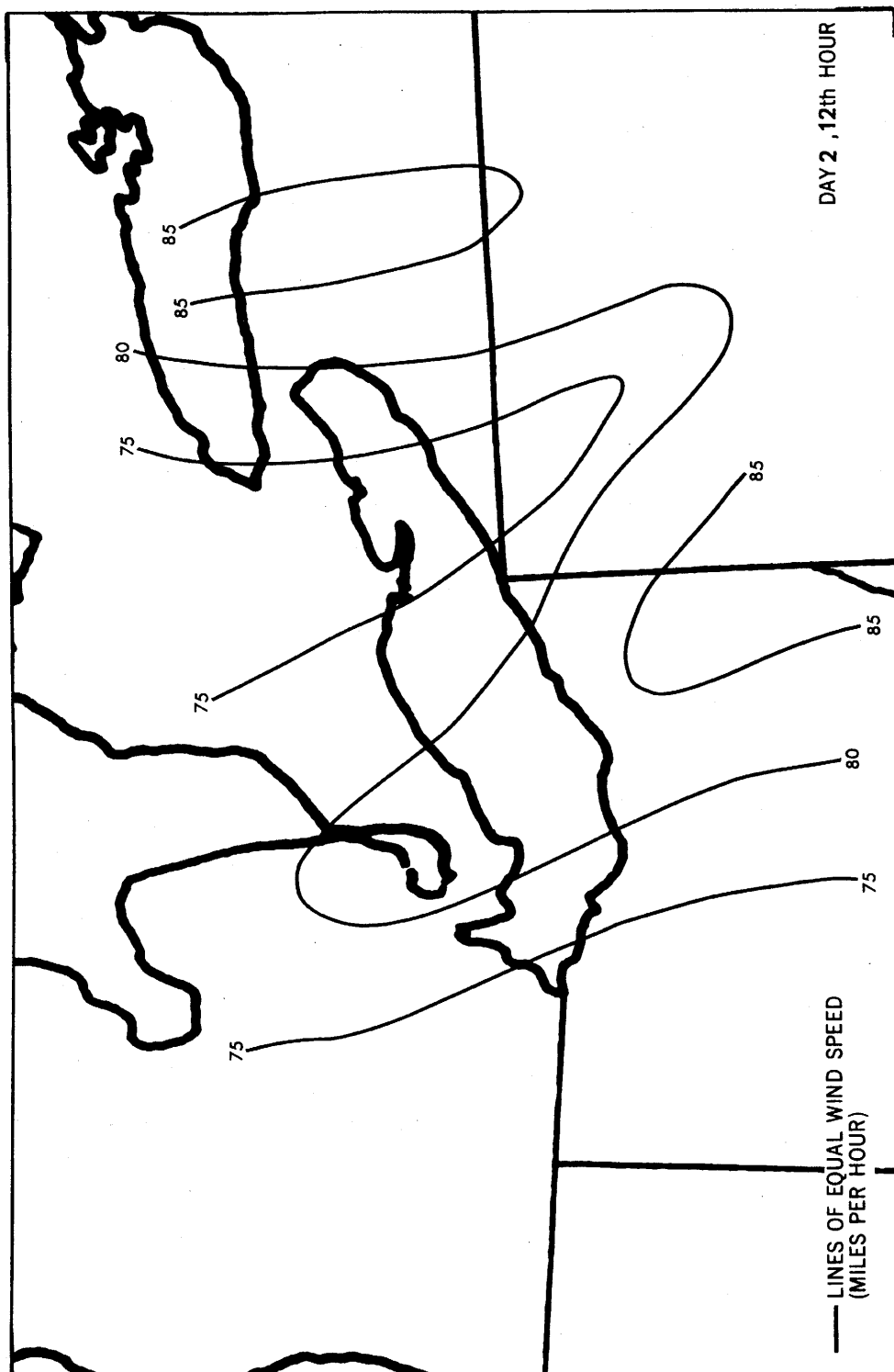
6-1-73



PERRY NUCLEAR POWER PLANT

PMS Isotach Patterns for
Maximum Lake Setdown at Perry, Ohio

Figure 2.4-53



(Rev. 12 1/03)

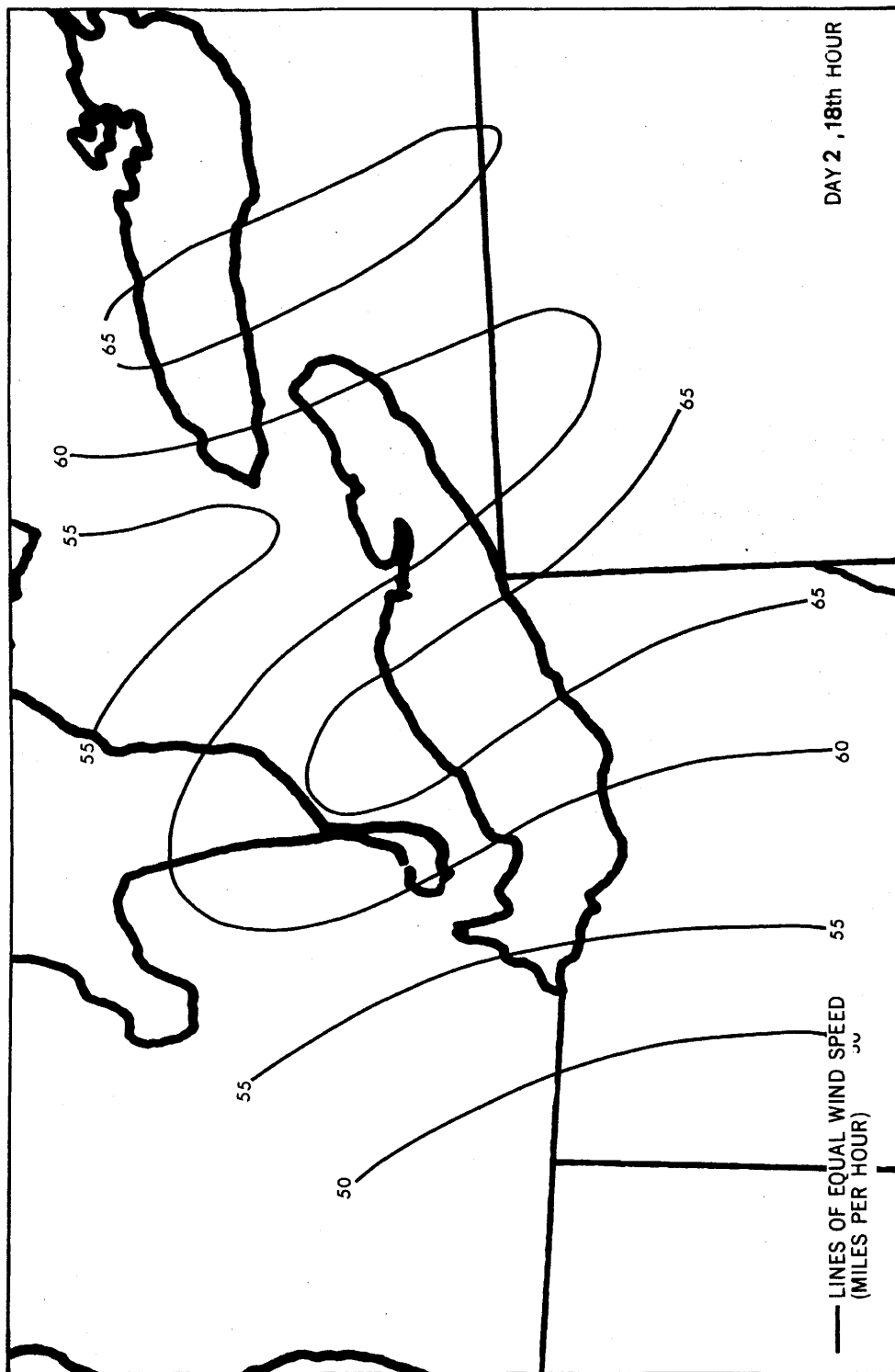
6-1-73



PERRY NUCLEAR POWER PLANT

PMS Isotach Patterns for
Maximum Lake Setdown at Perry, Ohio

Figure 2.4-54



(Rev. 12 1/03)

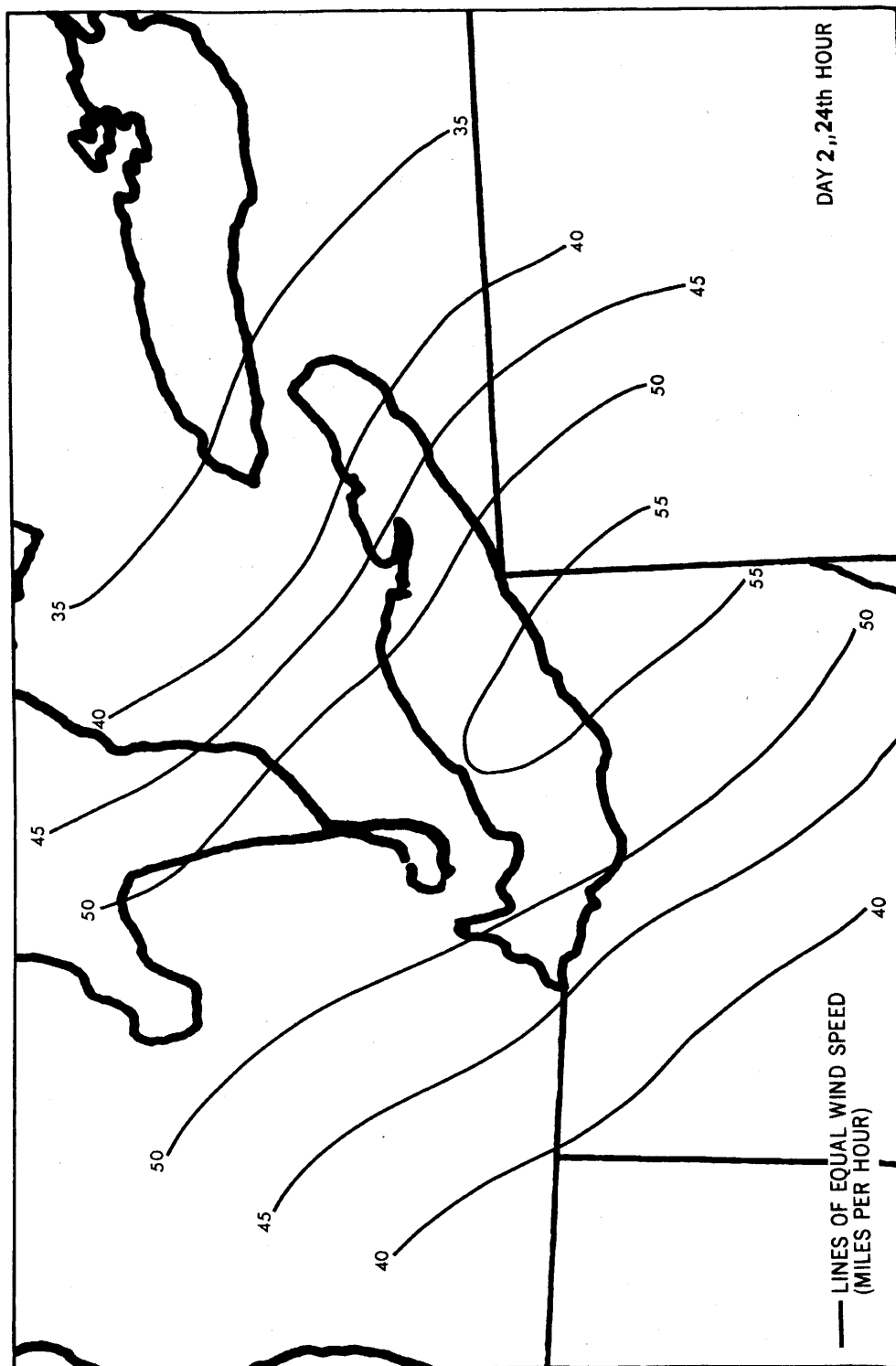
6-1-73



PERRY NUCLEAR POWER PLANT

PMS Isotach Patterns for
Maximum Lake Setdown at Perry, Ohio

Figure 2.4-55



(Rev. 12 1/03)

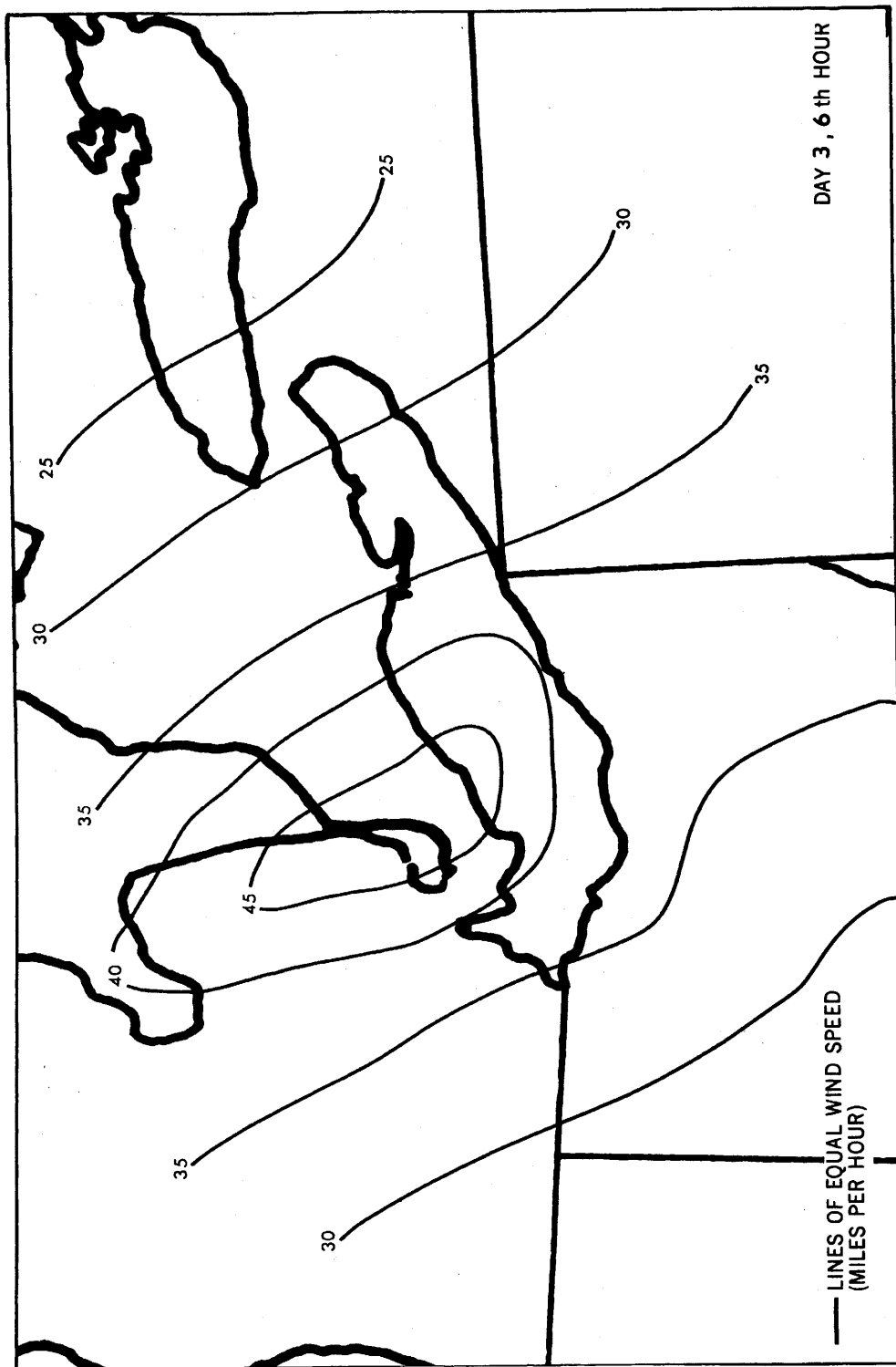
6-1-73



PERRY NUCLEAR POWER PLANT

PMS Isotach Patterns for
Maximum Lake Setdown at Perry, Ohio

Figure 2.4-56



(Rev. 12 1/03)

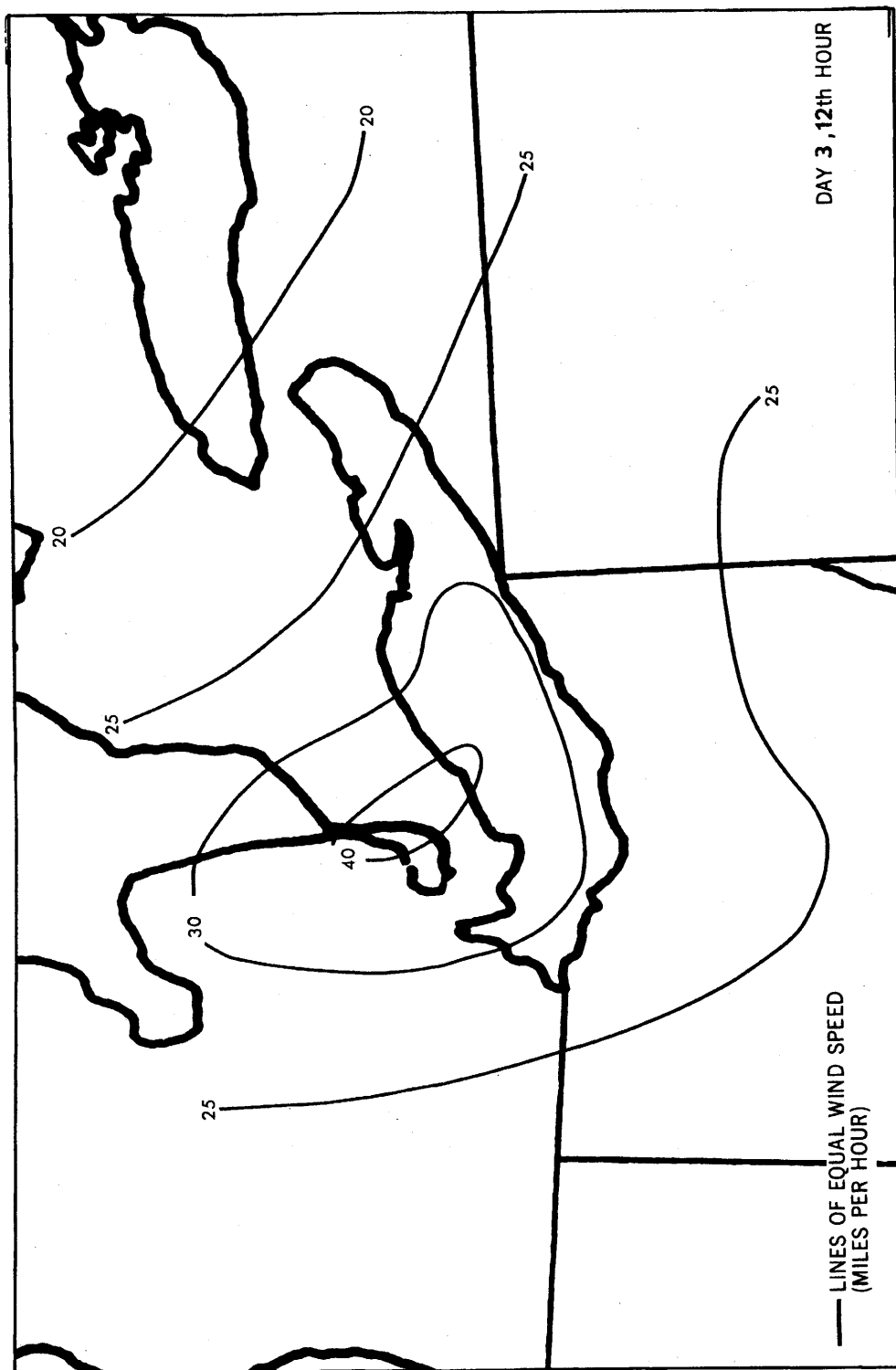
6-1-73



PERRY NUCLEAR POWER PLANT

PMS Isotach Patterns for
Maximum Lake Setdown at Perry, Ohio

Figure 2.4-57



(Rev. 12 1/03)

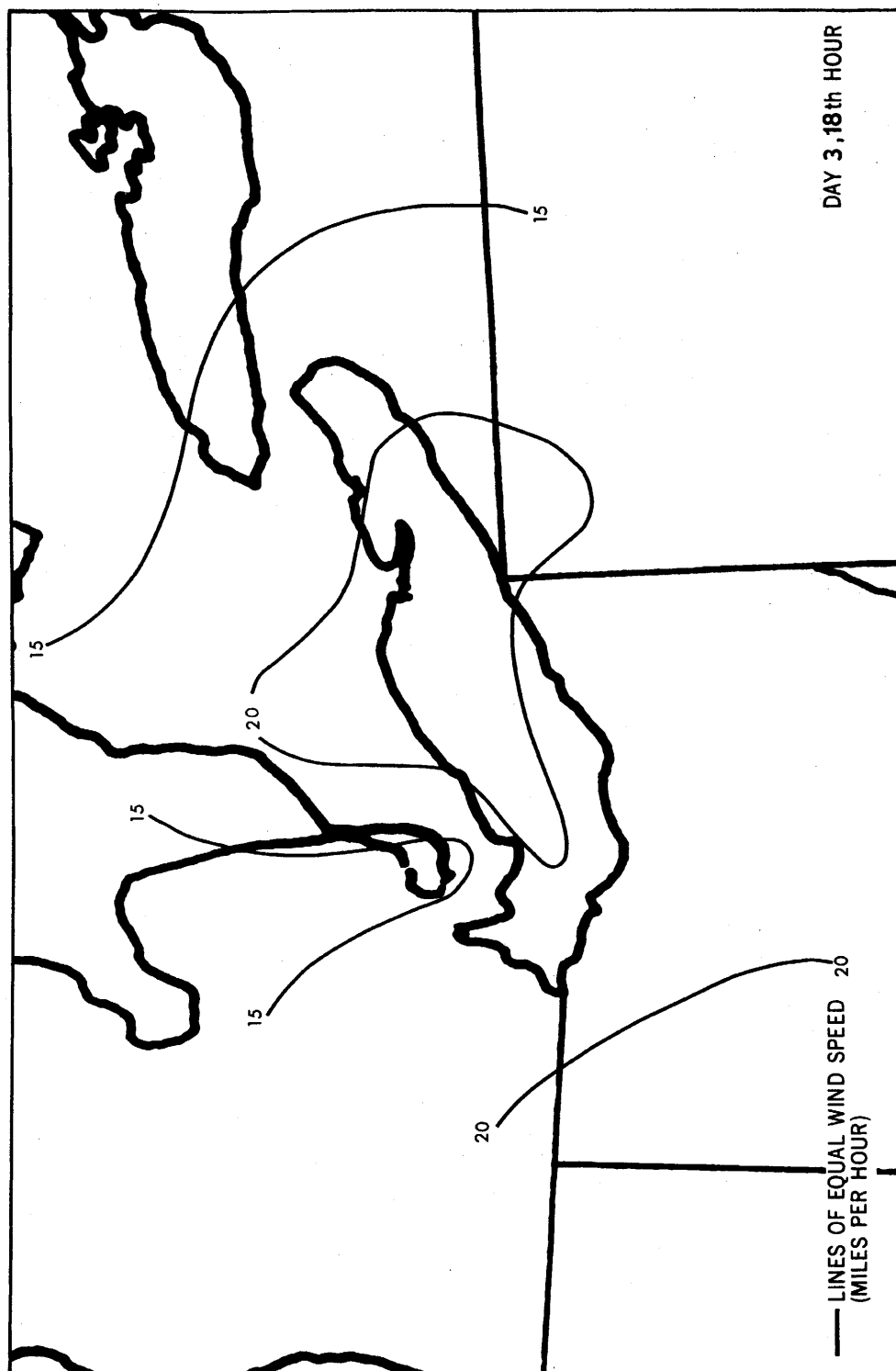
6-1-73



PERRY NUCLEAR POWER PLANT

PMS Isotach Patterns for
Maximum Lake Setdown at Perry, Ohio

Figure 2.4-58



(Rev. 12 1/03)

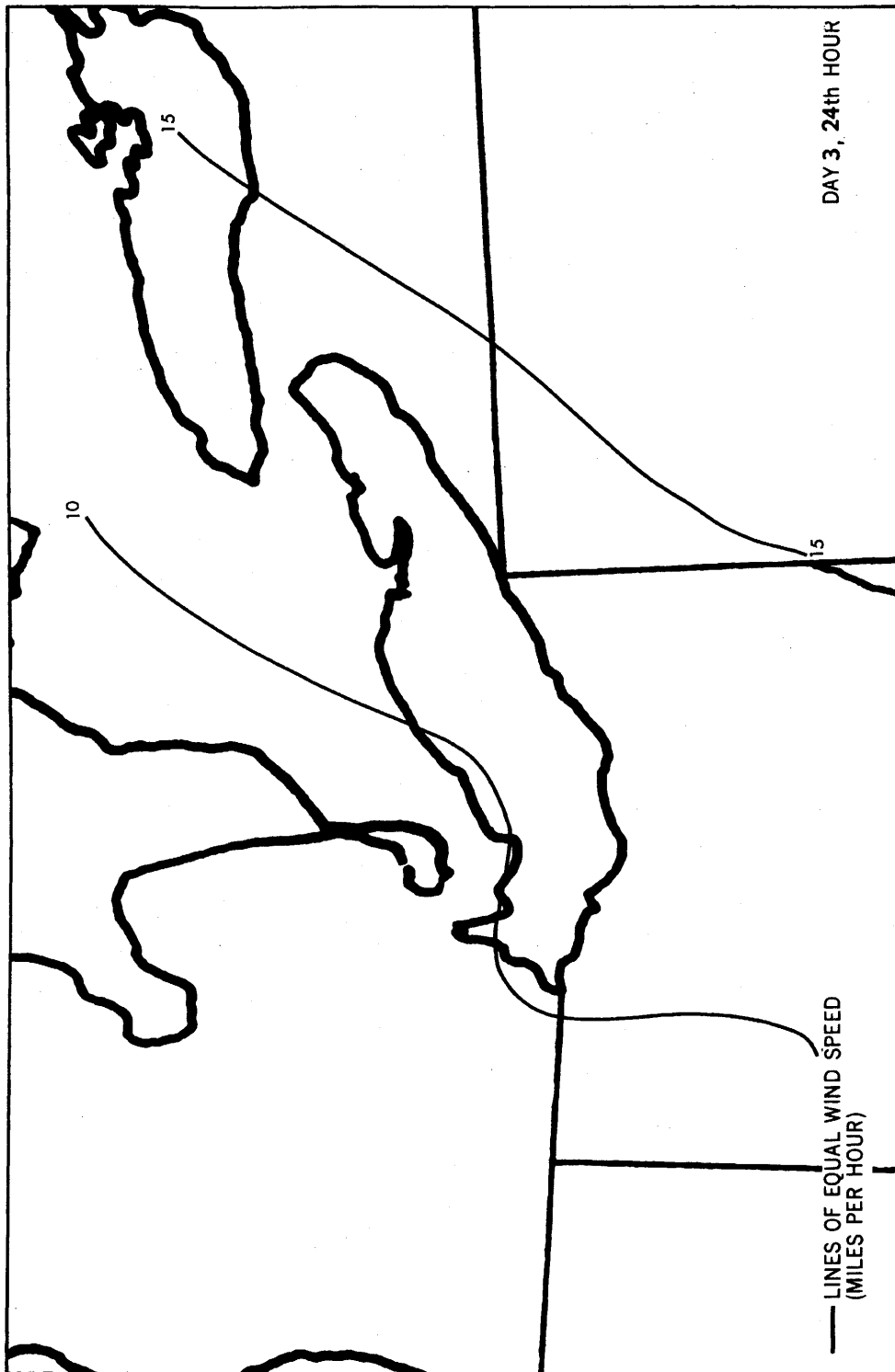
6-1-73



PERRY NUCLEAR POWER PLANT

PMS Isotach Patterns for
Maximum Lake Setdown at Perry, Ohio

Figure 2.4-59



(Rev. 12 1/03)

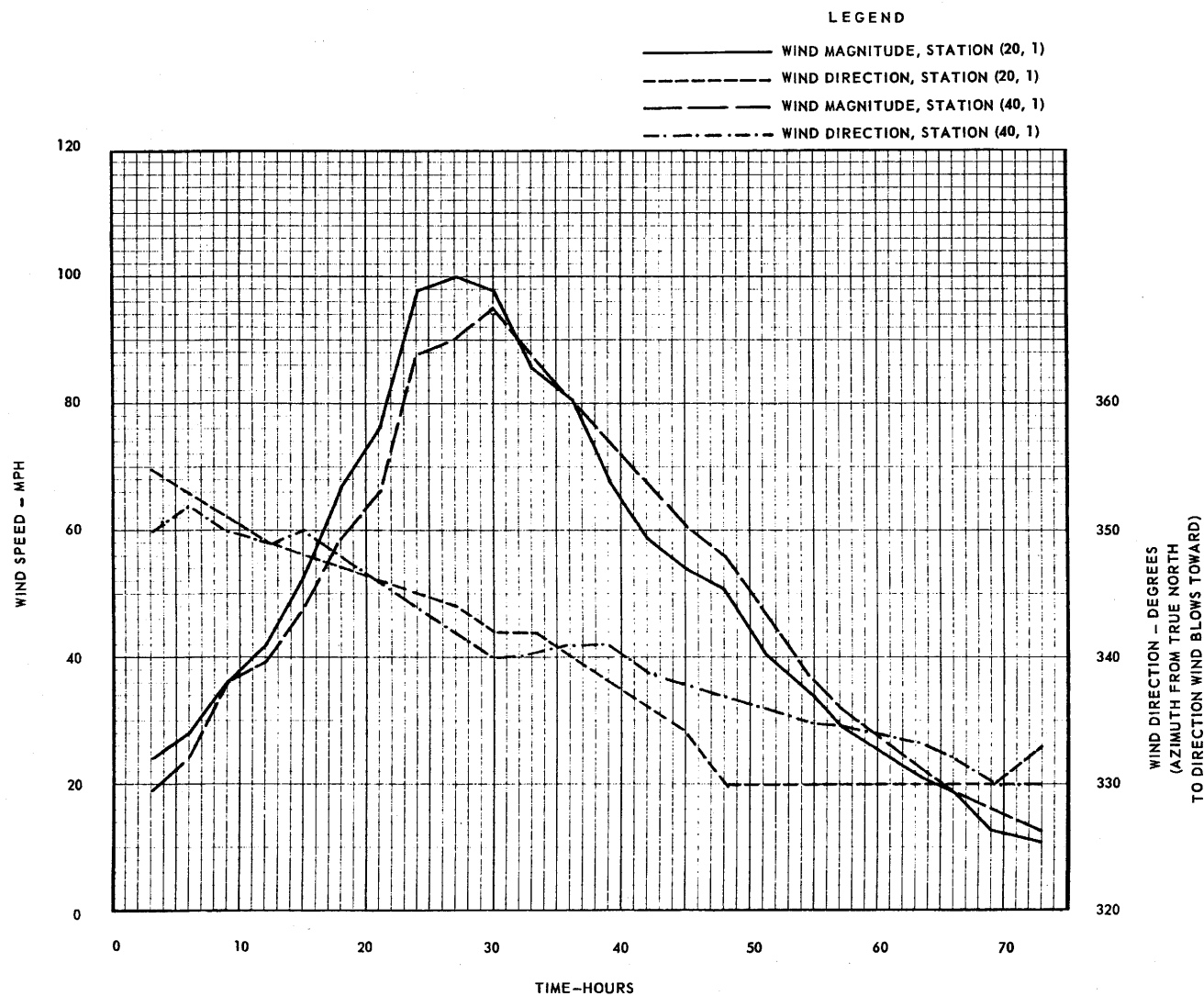
6-1-73



PERRY NUCLEAR POWER PLANT

PMS Isotach Patterns for
Maximum Lake Setdown at Perry, Ohio

Figure 2.4-60



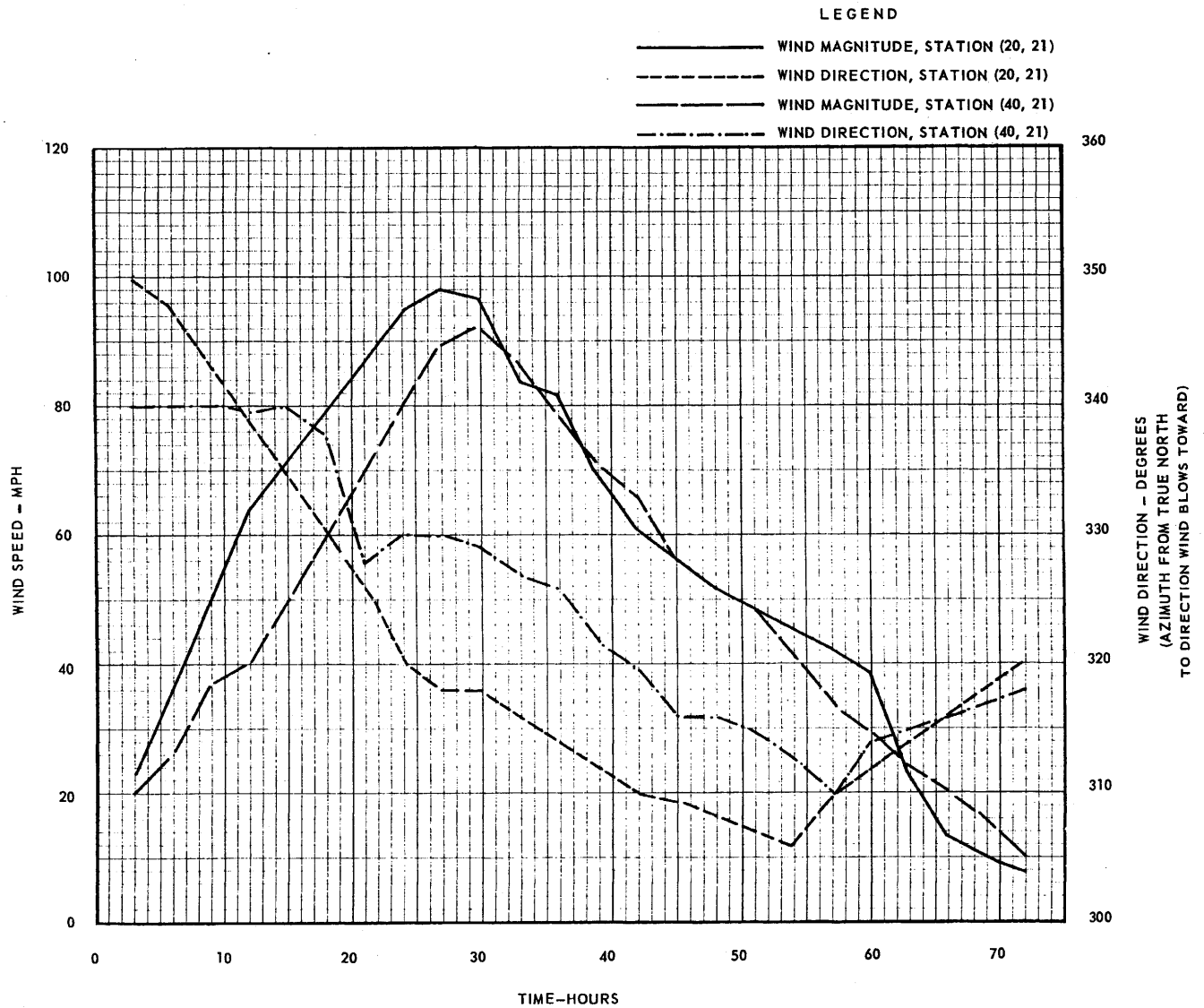
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Winds at Stations (20, 1) and
(40, 1) for Probable Maximum Lake
Level Setdown

Figure 2.4-61



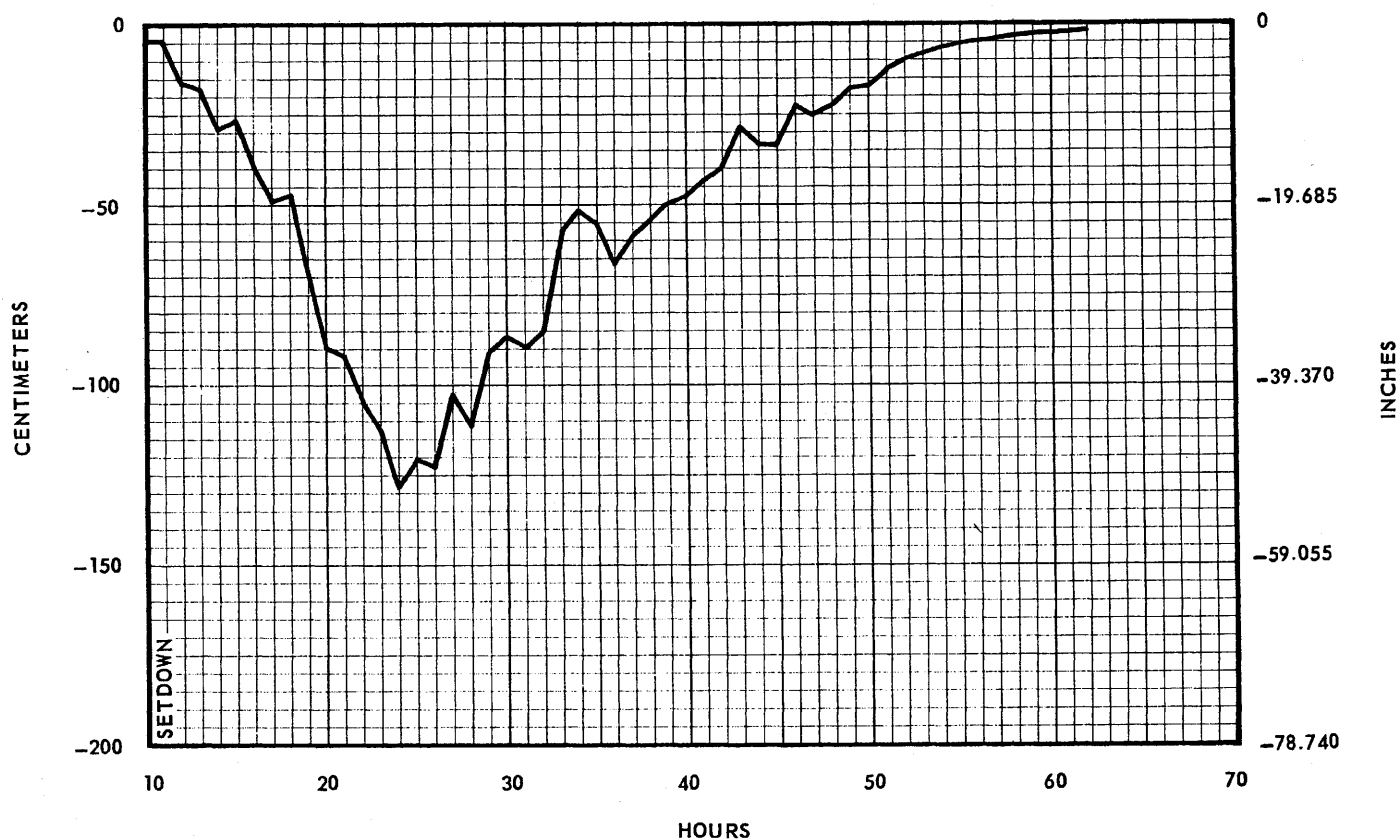
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Winds at Stations (20, 21) and
(40, 21) for Probable Maximum
Lake Level Setdown

Figure 2.4-62



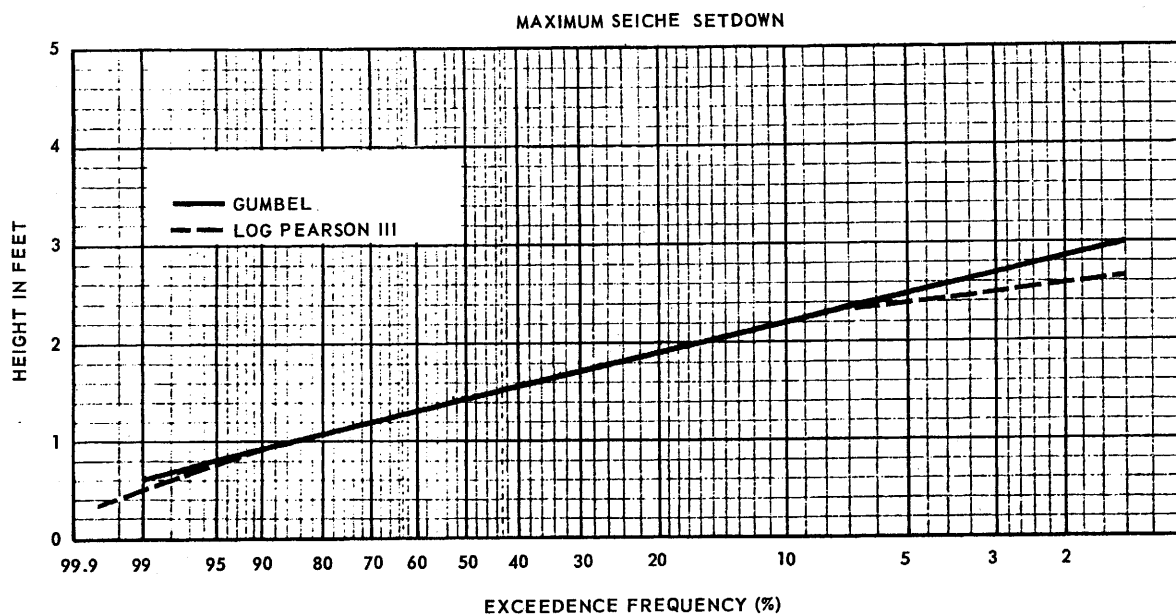
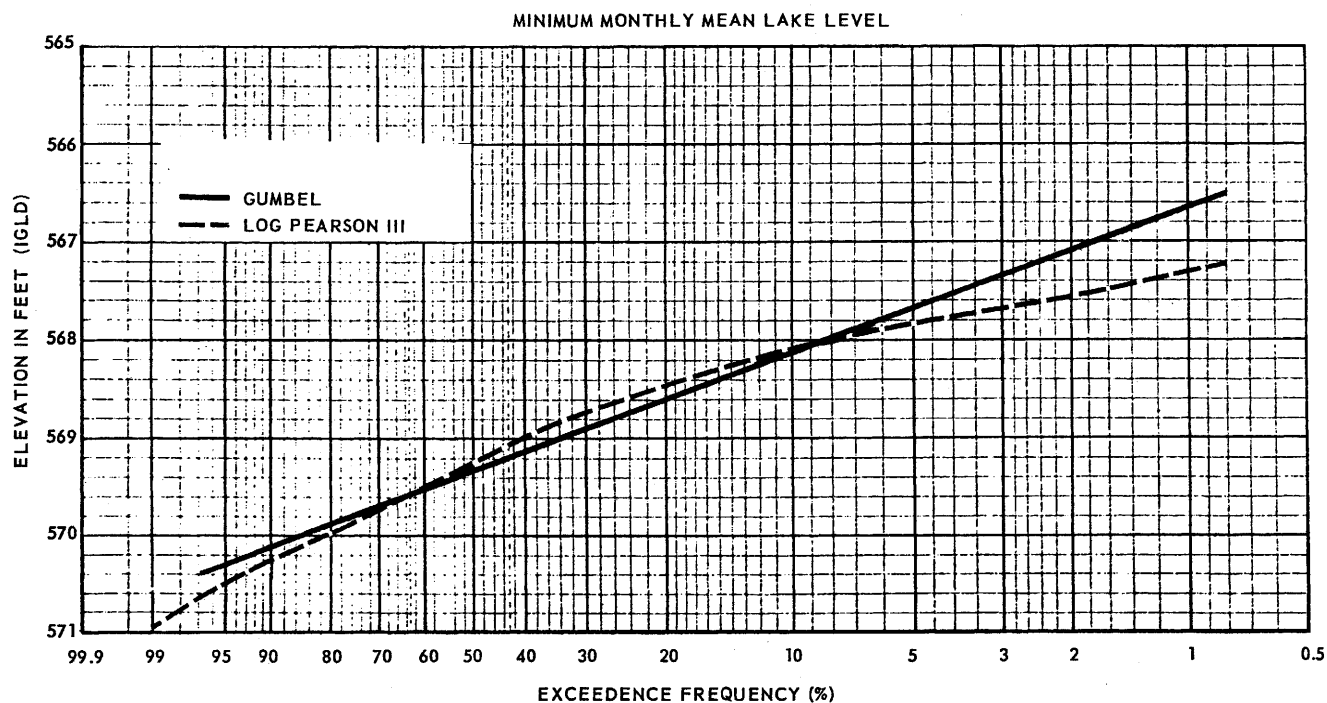
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Hydrograph for Probable Maximum
Setdown at Perry, Ohio

Figure 2.4-63



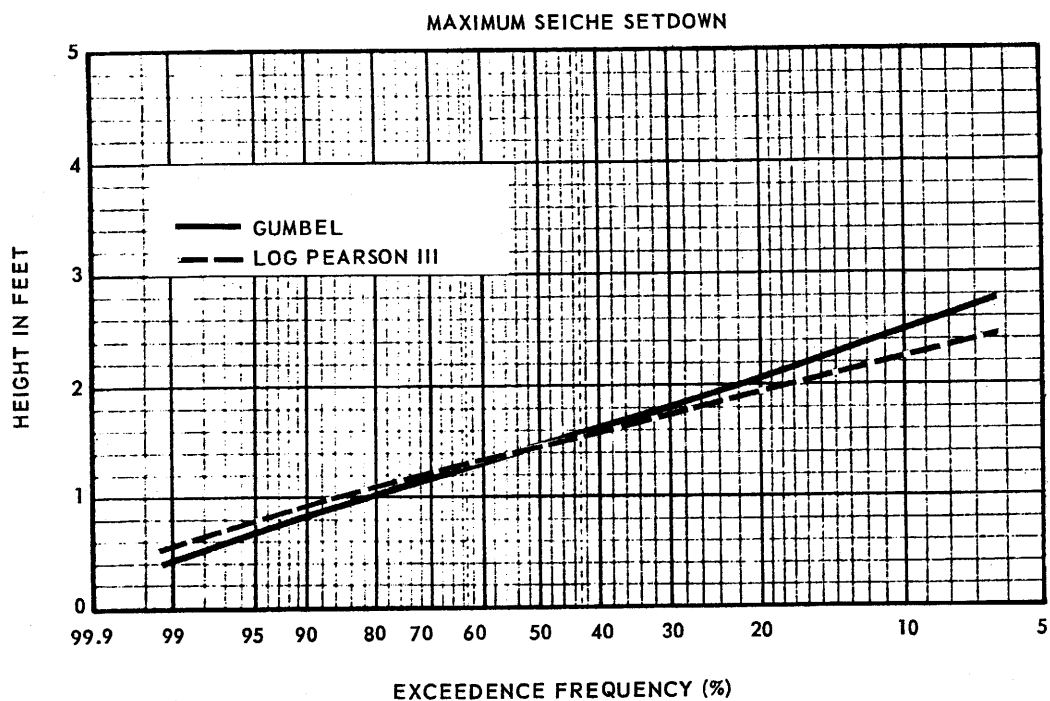
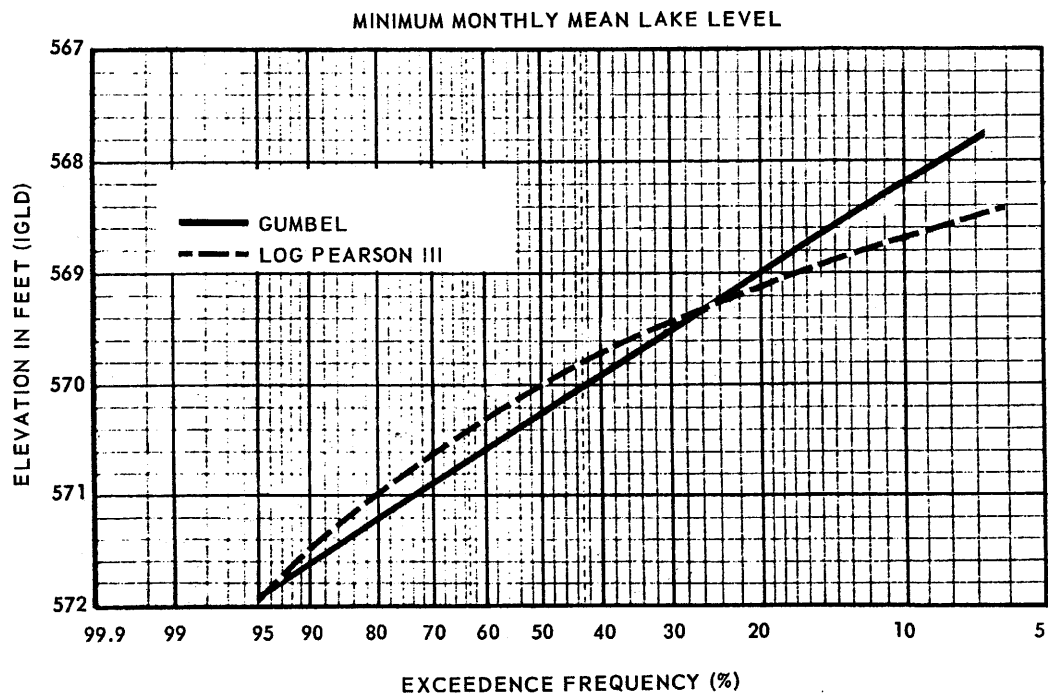
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Frequency Analysis of Minimum Lake
Levels at Cleveland, Ohio

Figure 2.4-64



(Rev. 12 1/03)



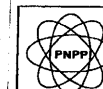
PERRY NUCLEAR POWER PLANT

Frequency Analysis of Minimum Lake
Levels at Erie, Pennsylvania

Figure 2.4-65



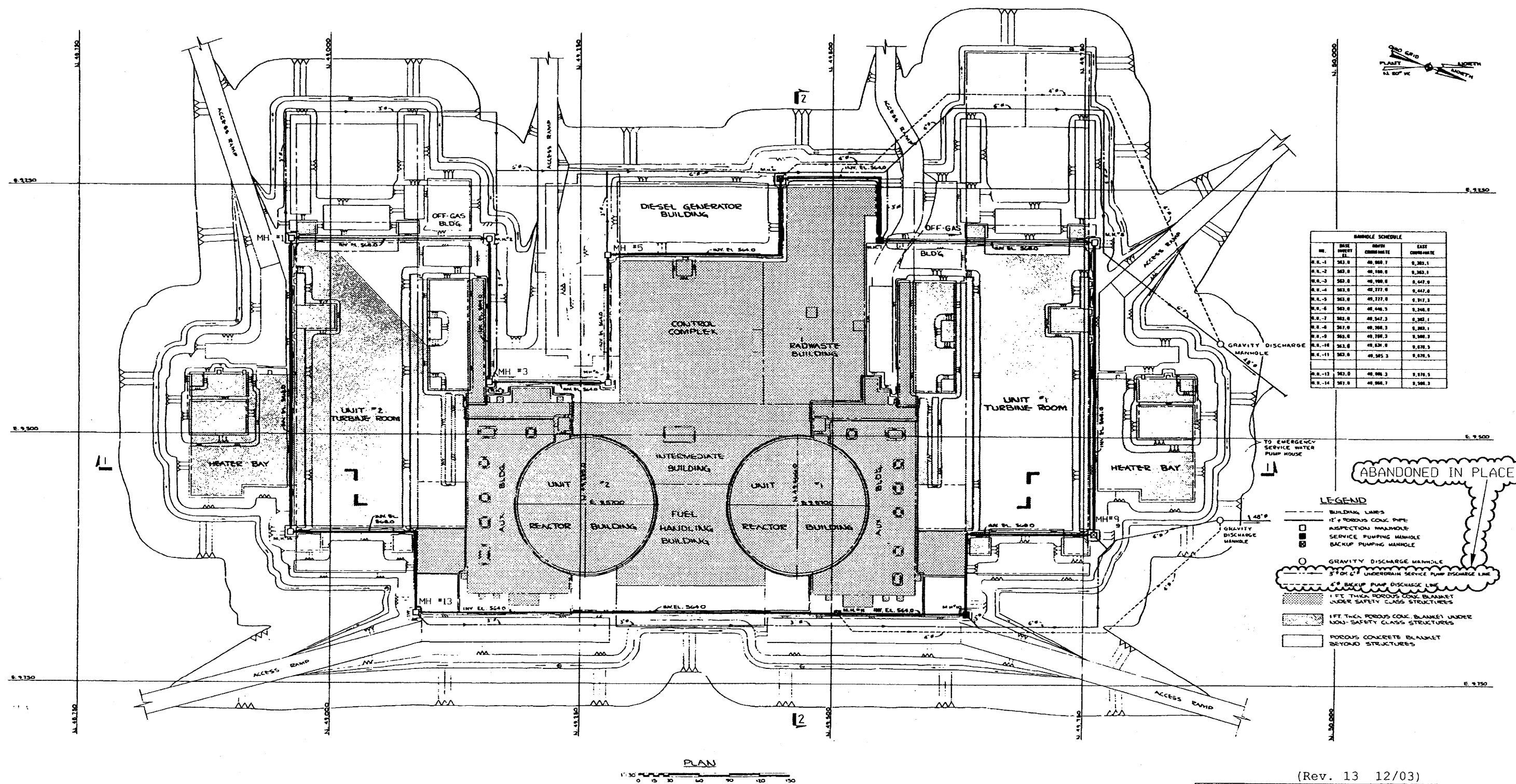
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Preconstruction Static Groundwater
Level Contour Map

Figure 2.4-67



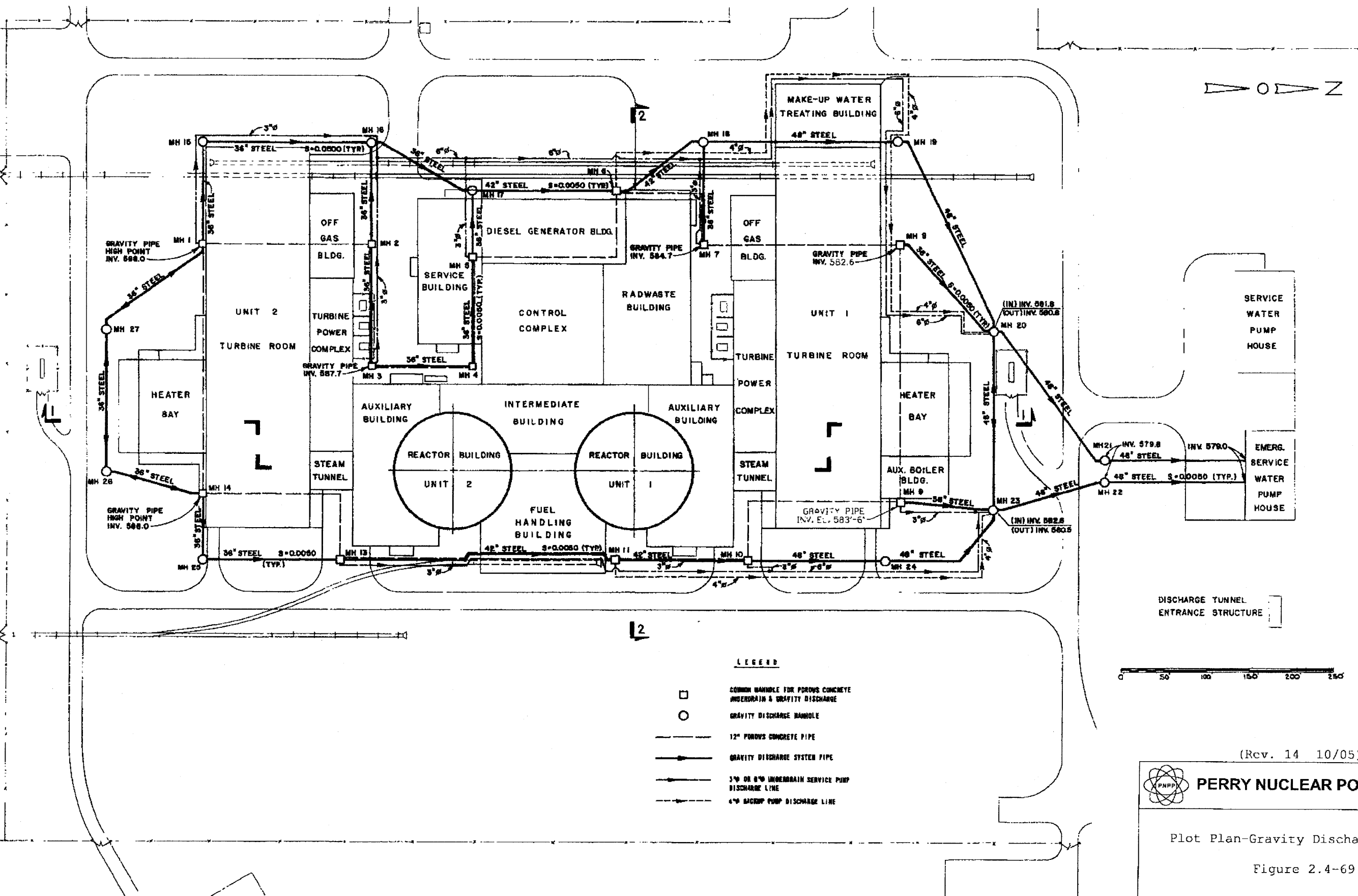
(Rev. 13 12/03)



PERRY NUCLEAR POWER PLANT

Plot Plan-Porous Concrete
Underdrain System

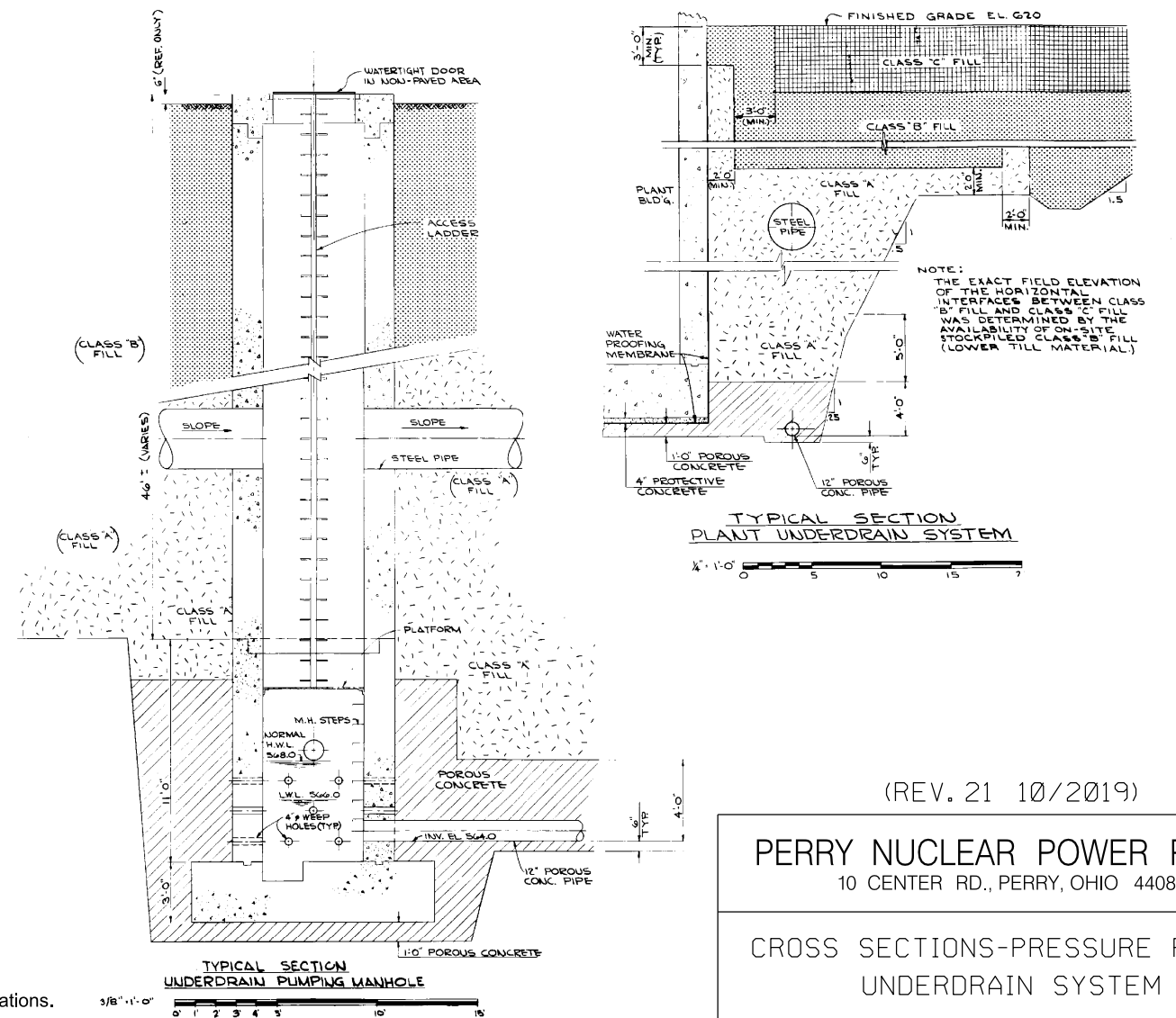
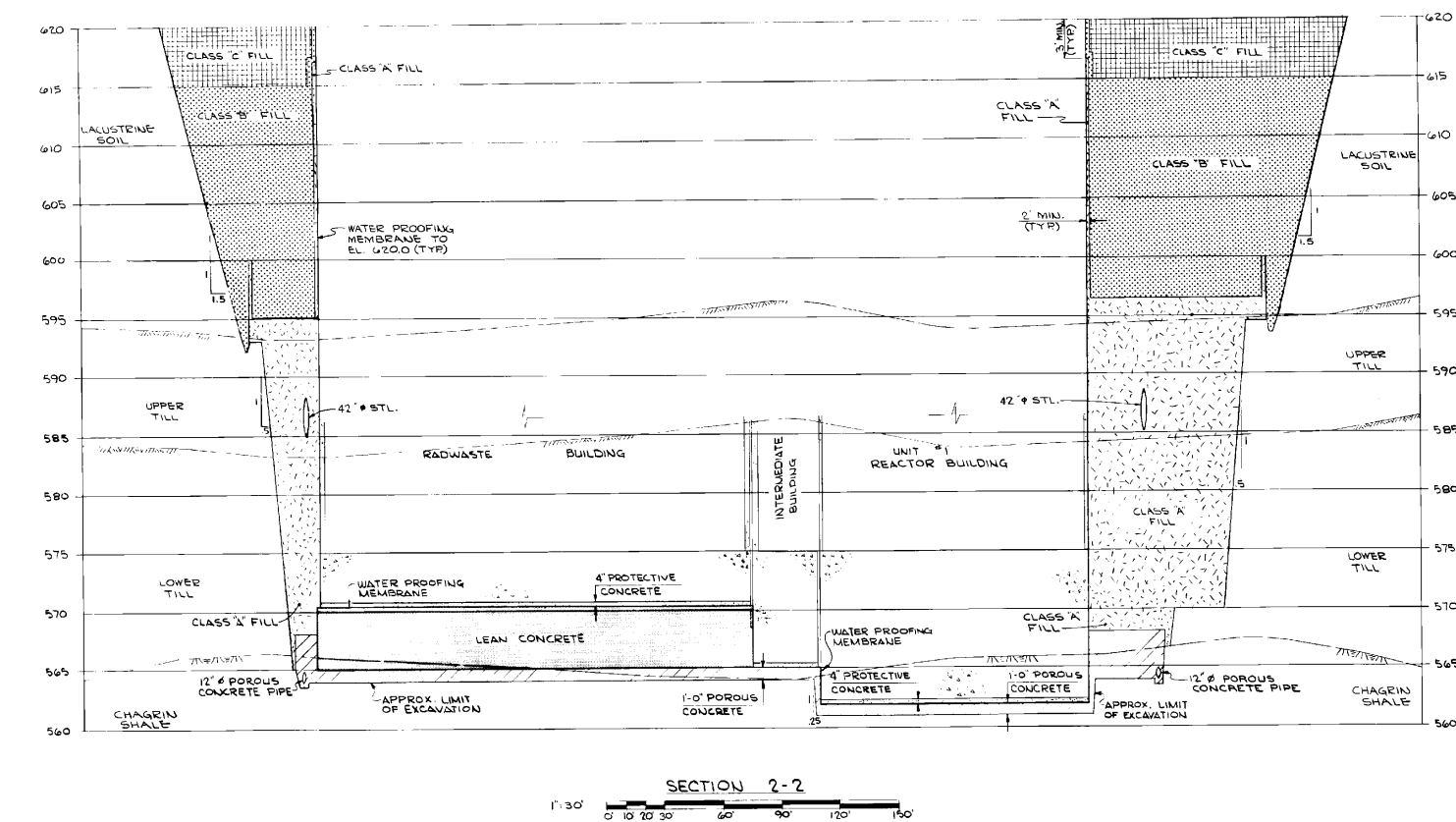
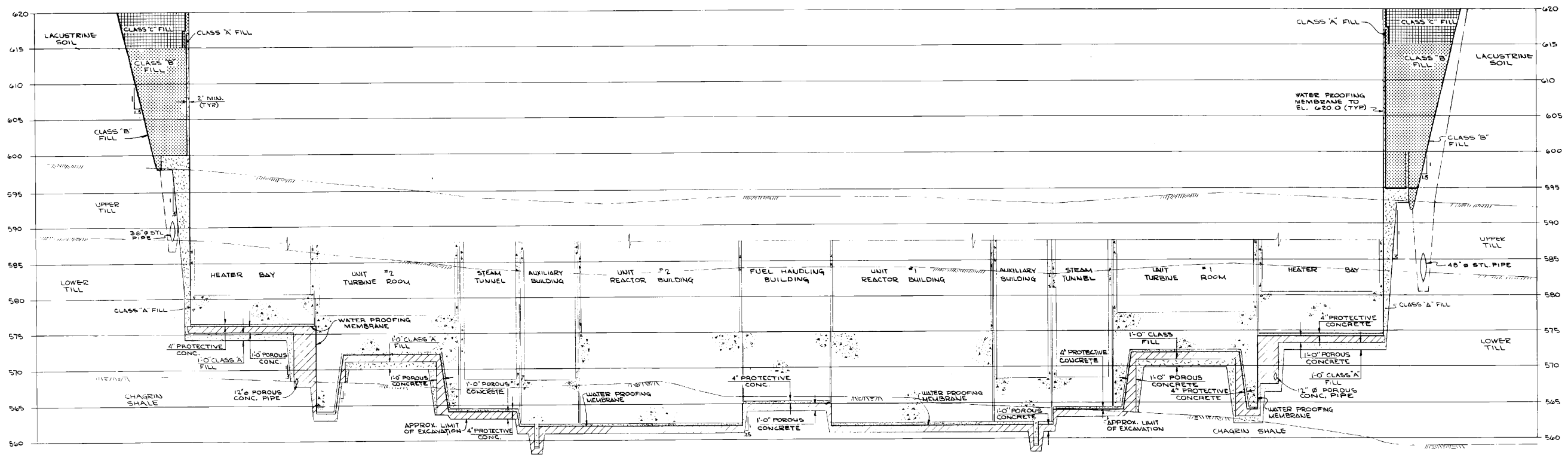
Figure 2.4-68



PERRY NUCLEAR POWER PLANT

Plot Plan-Gravity Discharge System

Figure 2.4-69



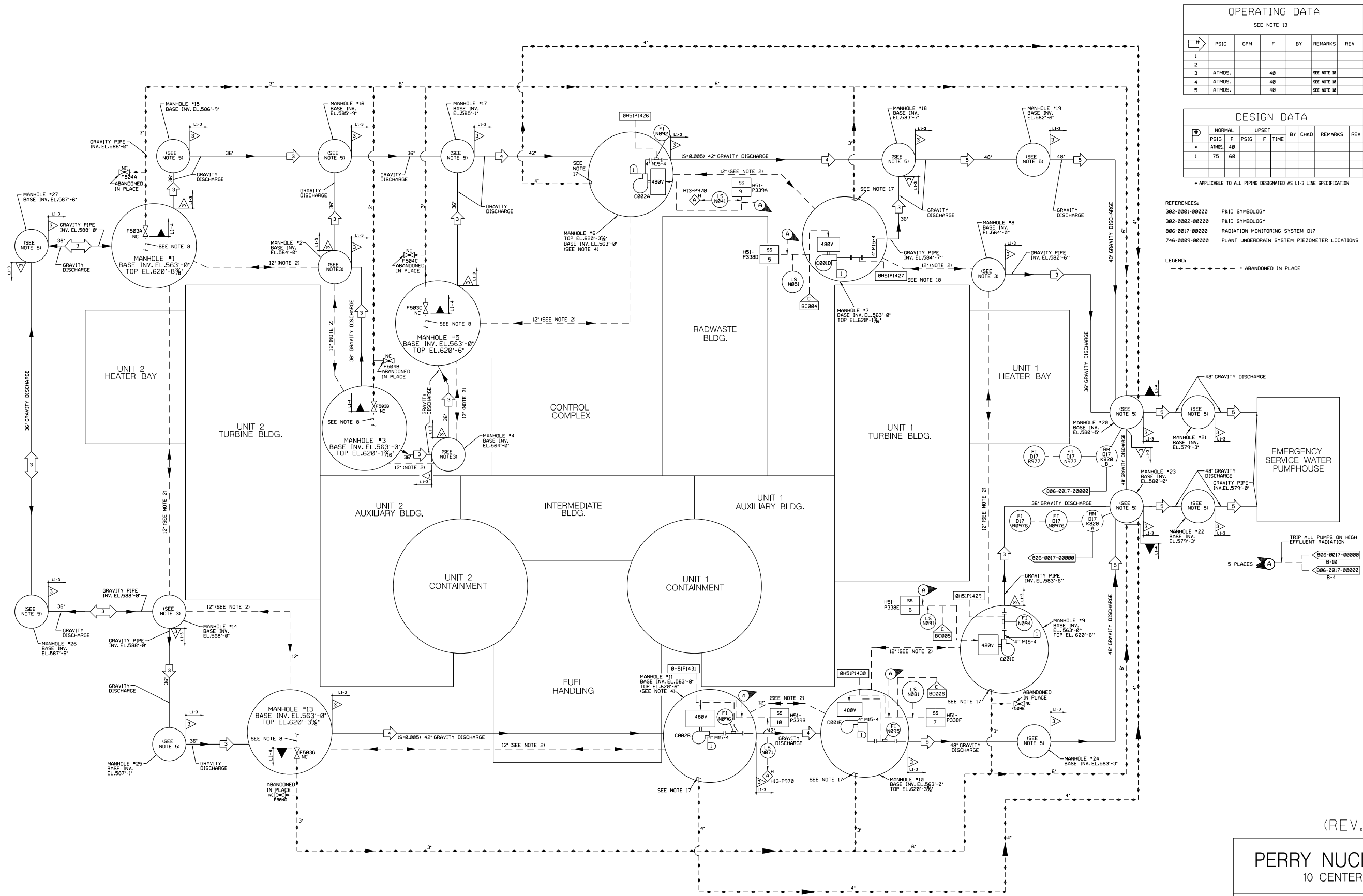
Note: As per Section 2.4.13.5.6 the backfill materials shown in this figure may be replaced with Controlled Low Strength Material (CLSM).
 - Alternate watertight covers are approved for manholes in exterior applications.

(REV. 21 10/2019)

PERRY NUCLEAR POWER PLANT
 10 CENTER RD., PERRY, OHIO 44081

CROSS SECTIONS-PRESSURE RELIEF
 UNDERDRAIN SYSTEM

FIGURE 2.4-70



OPERATING DATA						
SEE NOTE 13						
#	PSIG	GPM	F	BY	REMARKS	REV
1						
2						
3	ATMOS.		40		SEE NOTE 10	
4	ATMOS.		40		SEE NOTE 10	
5	ATMOS.		40		SEE NOTE 10	

DESIGN DATA						
#	NORMAL	UPSET	PSIG	F	TIME	BY
1	75	60				

REFERENCES:
 302-0001-00000 P&ID SYMBOLOLOGY
 302-0002-00000 P&ID SYMBOLOLOGY
 806-0017-00000 RADIATION MONITORING SYSTEM D17
 746-0009-00000 PLANT UNDERDRAIN SYSTEM PIEZOMETER LOCATIONS

LEGEND:
 - - - - - ABANDONED IN PLACE

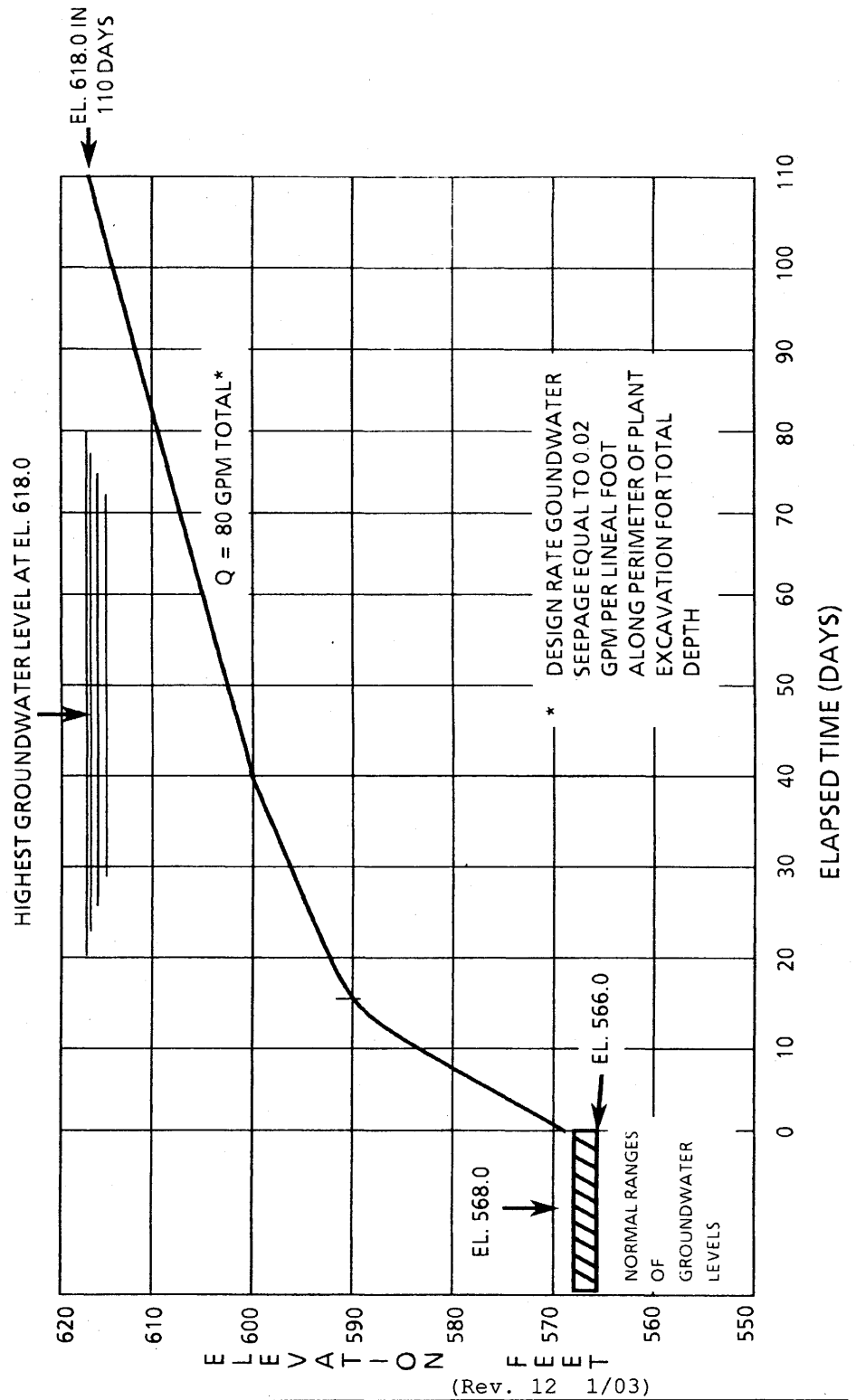
- NOTES:
- DRAINAGE FROM UNDER PLANT AREA IS THROUGH A 12" LAYER OF POROUS CONCRETE BELOW THE MAT.
 - POROUS CONCRETE PIPE, EXTRA STRENGTH, ENCASED IN PERIPHERY OF POROUS CONCRETE AREA TO COLLECT DRAINAGE.
 - INSPECTION MANHOLES.
 - BACKUP PUMP MANHOLE.
 - GRAVITY DISCHARGE SYSTEM INSPECTION MANHOLE.
 - HIGH WATER LEVEL IN EITHER BACKUP UNDERDRAIN MANHOLE IS ANNUNCIATED IN THE CONTROL ROOM.
 - GRAVITY DISCHARGE SYSTEM TO BE NUCLEAR SAFETY CLASS 3.
 - PUMPS, VALVES, INSTRUMENTATION, CONTROLS AND ASSOCIATED PIPING THIS SIDE OF VALVE ARE ABANDONED IN PLACE. VALVES ARE FOR ISOLATION ONLY. UNDERDRAIN PUMPS ARE ELECTRICALLY SPARED IN PLACE.
 - THE OVERALL NOMINAL SYSTEM FLOW CAPABILITY OF A SINGLE SIDE OF THE GRAVITY DISCHARGE SYSTEM (i.e., LINES 3, 4 AND 5) IS 18,000 GPM, HOWEVER, THE 18" SLUDGE ALLOWANCE IN THE 48" LINES BETWEEN MANHOLE NUMBER 20 AND THE EMERGENCY SERVICE WATER PUMPHOUSE AND/OR MANHOLE NUMBER 23 AND THE EMERGENCY SERVICE WATER PUMPHOUSE LIMITS THE OVERALL SYSTEM FLOW CAPABILITY TO 15,000 GPM.
 - THE FLOWS AT NODES (MANHOLES) ARE NOT ADDITIVE. ASSUMING A GROUNDWATER ELEVATION OF 580.0 FT, THE LINES ARE CAPABLE OF THE FOLLOWING NOMINAL FLOWS: LINE 3 = 12,000 GPM, LINE 4 = 24,000 GPM AND LINE 5 = 44,000 GPM (BECAUSE OF AN ALLOWABLE 18" SLUDGE BUILDUP IN THE 48" LINES, LINE 5 IS LIMITED TO 15,000 GPM).
 - MAXIMUM CALCULATED EXPECTED FLOW IN ANY GRAVITY DISCHARGE SYSTEM LINE AS A RESULT OF A DESIGN BASIS CIRCULATING WATER SYSTEM LINE BREAK (UNIT 1 ONLY, UNIT 2 IS NOT OPERATIONAL) OUTSIDE THE PLANT NEAR THE STEAM TUNNEL AND AUXILIARY BUILDING IS LESS THAN 2,000 GPM WHICH INCLUDES 80 GPM MAXIMUM NORMAL GROUNDWATER INFLOW INTO THE UNDERDRAIN SYSTEM.
 - FOR TABLE 1 - PIEZOMETER LOCATIONS SEE DWG. 746-0009-00000
 - PROCESS DATA SHOWN IN THE OPERATING DATA TABLE ON THIS SYSTEM DIAGRAM SHALL BE USED IN CONJUNCTION WITH THE DESIGN BASIS INFORMATION AND SHALL BE USED WITH CAUTION. IN GENERAL, THE OPERATING DATA (PRESSURES, TEMPERATURES, AND FLOWS) PROVIDED ON THIS DRAWING REPRESENTS THE MOST COMMON OPERATING CONDITION, AND/OR SYSTEM MODE OF OPERATION AND/OR LINEUP, TO DETERMINE THE REQUIRED VALUES FOR A SPECIFIC OPERATING CONFIGURATION, THE APPROPRIATE DESIGN DOCUMENTS NEED TO BE REVIEWED.
 - CLEAN-OUT PORTS MAY BE PROVIDED IN VARIOUS LOCATIONS TO ALLOW FOR THE CLEANING OF PUMP DISCHARGE PIPING AS NEEDED. REFER TO YARD PIPING PLANS AND/OR MANHOLE ISOMETRIC DRAWINGS FOR SPECIFIC LOCATIONS AND DETAILS.
 - MANHOLES 6, 7, 9, 10 HAVE OPEN PUMP DISCHARGE INTO GRAVITY DRAIN DISCHARGE.
 - IF PUMP 0P72C0002B IN MANHOLE #11 IS REQUIRED TO RUN, A HOSE SHALL BE CONNECTED TO THE PUMP DISCHARGE & ROUTED TO THE OUT FLOW OF GRAVITY DRAIN IN MANHOLE #10.
 - PIPING, VALVE & INSTRUMENTS BEING REMOVED TO A LOCATION DETERMINED IN THE FIELD TO PROVIDE CLEARANCE FOR NEW INSTALLATION.
 - DISCHARGE FLOW DISPLAY 0H5IP1427 IS ABANDONED IN PLACE.

(REV. 20 10/2017)

PERRY NUCLEAR POWER PLANT
 10 CENTER RD., PERRY, OHIO 44081

PLANT FOUNDATION UNDERDRAIN
 SYSTEM

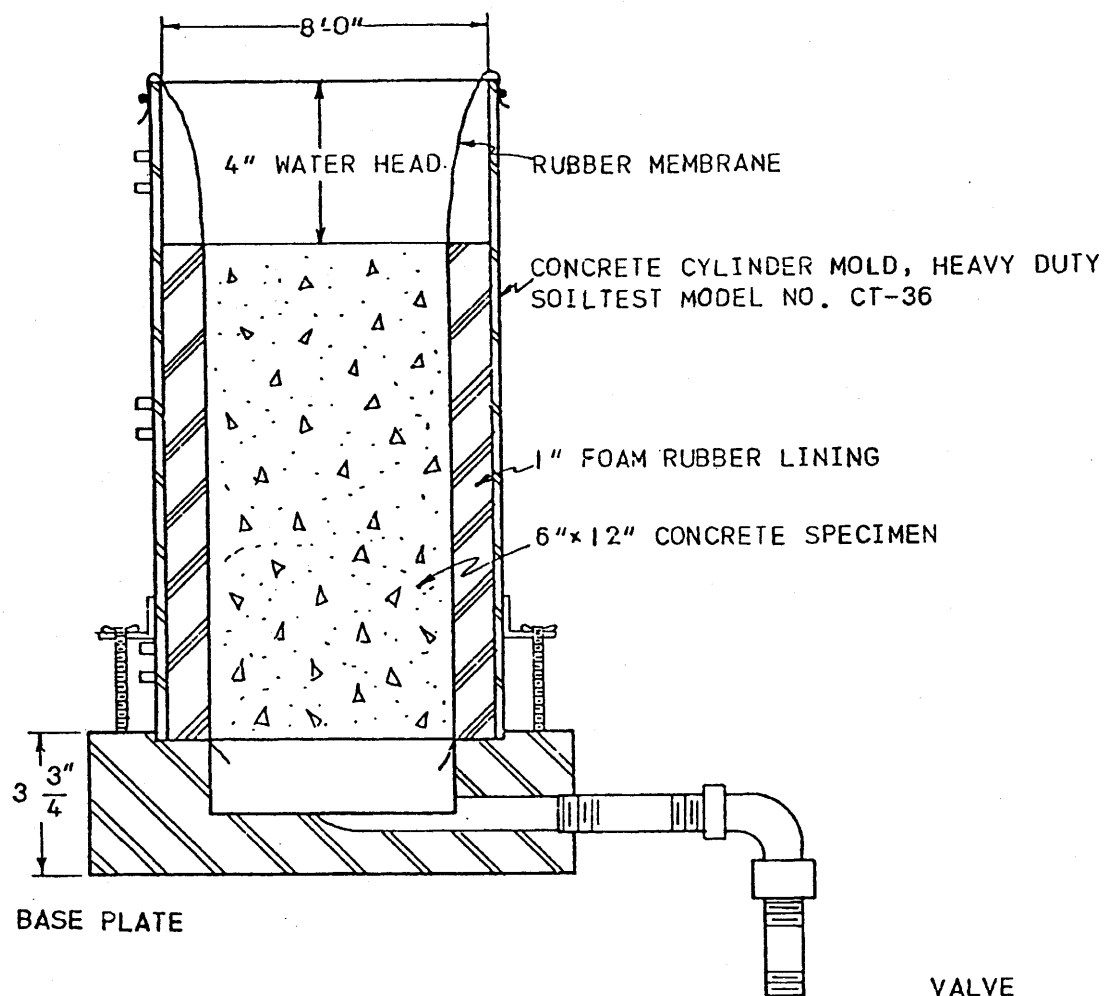
FIGURE 2.4-71
 (DWG. D-302-0861-00000)



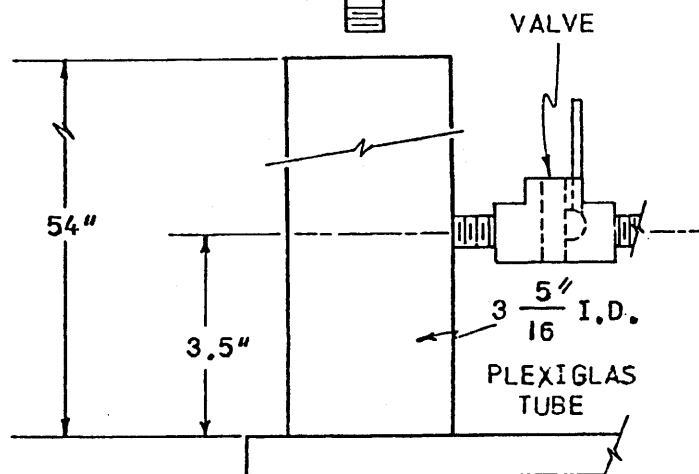
PERRY NUCLEAR POWER PLANT

Groundwater Built-up as a
Result of No Pumping

Figure 2.4-73



NOTE: HOLD DOWN CLAMPS
SHOWN 90° OUT OF
POSITION



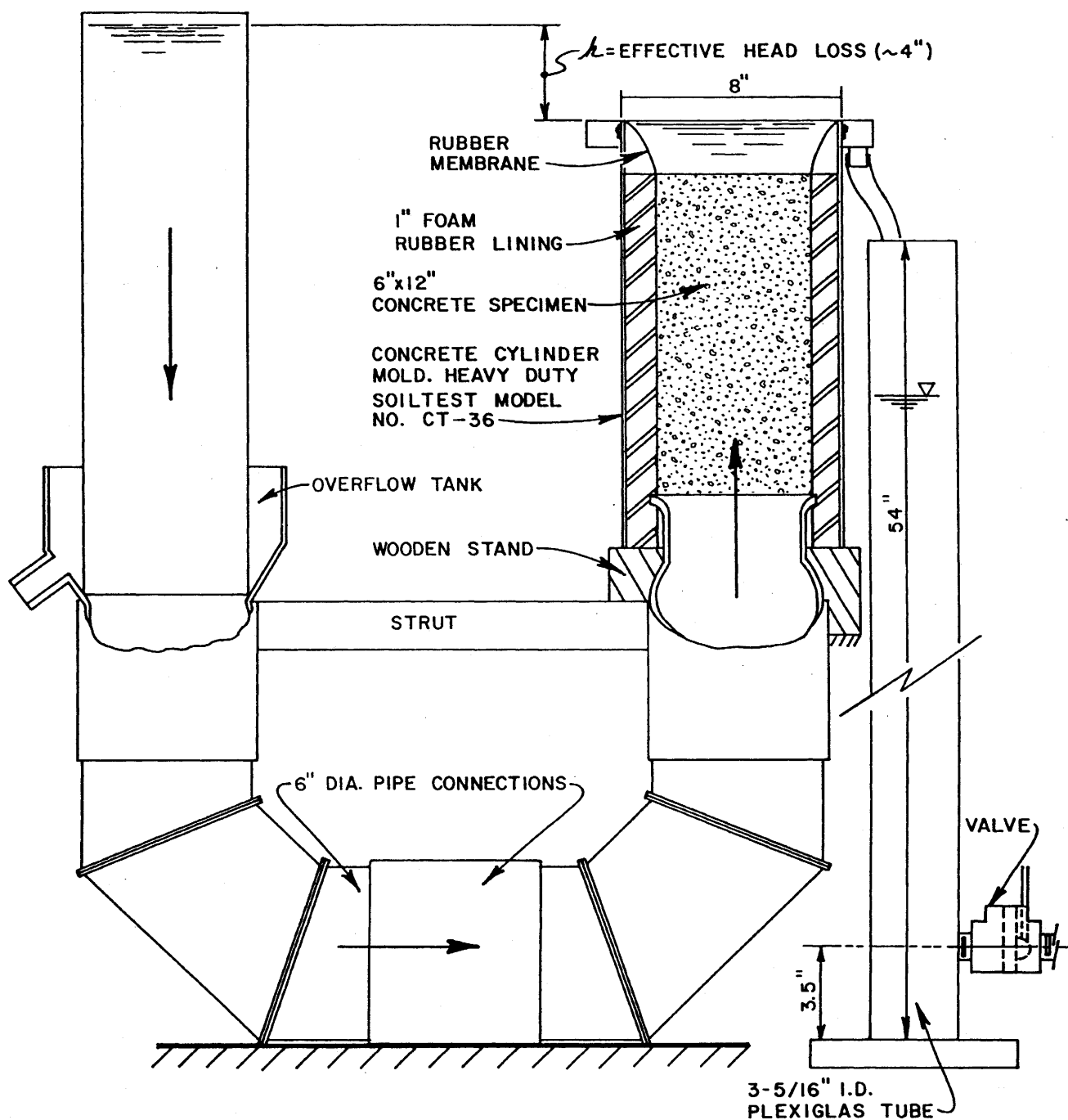
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Permeability Test Setup for
Porous Concrete Cylinders

Figure 2.4-74



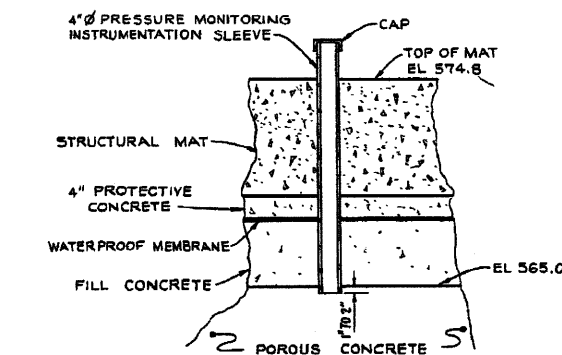
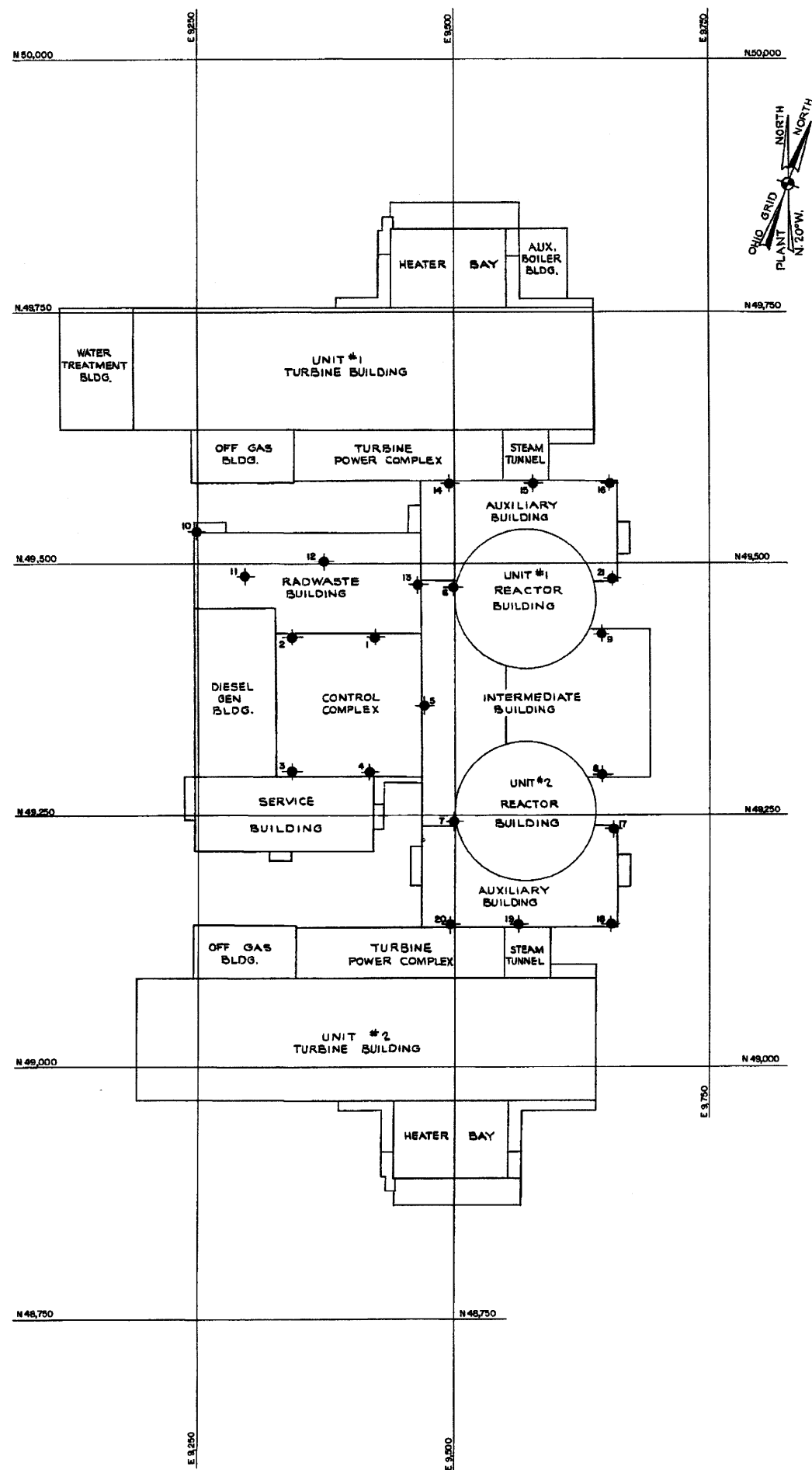
(Rev. 12 1/03)



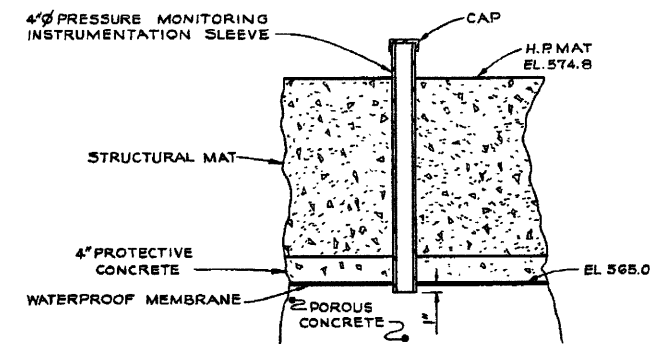
PERRY NUCLEAR POWER PLANT

Reverse Flow Permeameter for
Porous Concrete

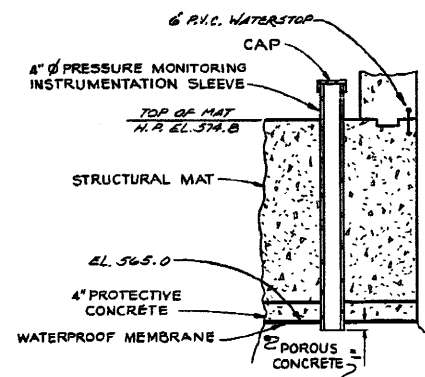
Figure 2.4-75



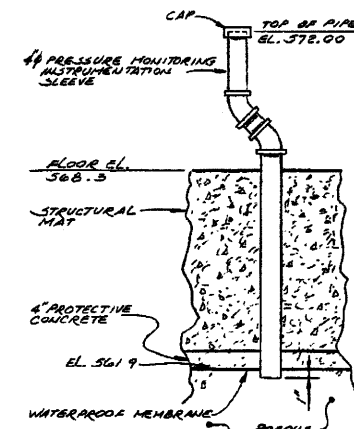
TYPICAL SECTION
MONITORING INSTRUMENTATION
SLEEVES-1, 2, 3, 4, 11, 12 & 13
NO SCALE



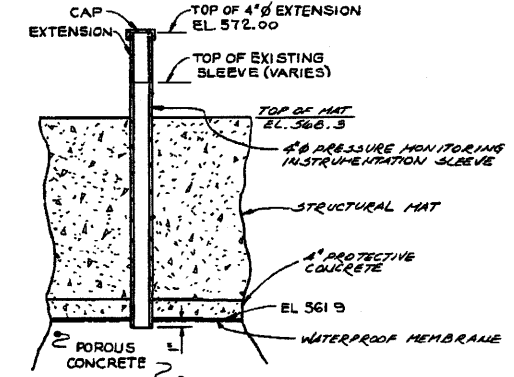
TYPICAL SECTION
MONITORING INSTRUMENTATION
SLEEVES-5, 8 & 9
NO SCALE



TYPICAL SECTION
MONITORING INSTRUMENTATION
SLEEVES-6 & 7
NO SCALE



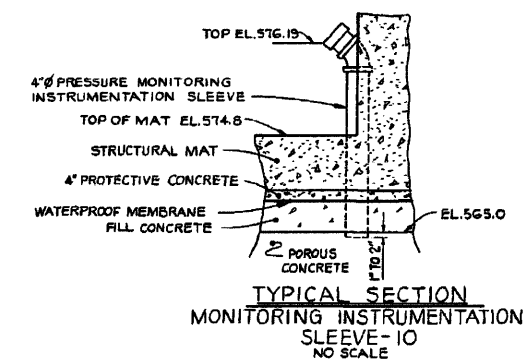
TYPICAL SECTION
MONITORING INSTRUMENTATION
SLEEVE-15
NO SCALE



TYPICAL SECTION
MONITORING INSTRUMENTATION
SLEEVES-14, 16, 17, 18, 19, 20 & 21
NO SCALE

PIEZOMETER NUMBER	LENGTH OF SLEEVE	TOP ELEV. OF EXIST. SLEEVE	TOP BASEMENT FLOOR ELEV.	NORTH COORDINATE	EAST COORDINATE	BUILDING
1	11'-0"	575.87	574.8	90427.88	9432.8	CONTROL COMPLEX
2	11'-0"	575.88	574.8	90427.90	9411.5	CONTROL COMPLEX
3	11'-0"	576.91	574.8	90293.06	9411.4	CONTROL COMPLEX
4	11'-0"	576.87	574.8	90292.94	9410.3	CONTROL COMPLEX
5	11'-0"	575.86	574.8	90659.4	9471.0	INTERMEDIATE BUILDING
6	11'-0"	575.86	574.8	90476.7	9469.8	INTERMEDIATE BUILDING
7	11'-0"	575.85	574.8	90269.2	9469.5	INTERMEDIATE BUILDING
8	11'-0"	575.88	574.8	90290.5	9444.4	INTERMEDIATE BUILDING
9	11'-0"	575.90	574.8	90350.5	9444.2	INTERMEDIATE BUILDING
10	11'-0"	576.19 *	574.8	90331.7	9229.5	RADWASTE BUILDING
11	11'-0"	575.80	574.8	90487.3	9236.8	RADWASTE BUILDING
12	11'-0"	575.87	574.8	90502.4	9279.3	RADWASTE BUILDING
13	11'-0"	575.87	574.8	90479.7	9444.8	RADWASTE BUILDING
14	11'-0"	572.02	568.3	90579.4	9405.8	AUXILIARY BLDG. #1
15	11'-0"	571.95	568.3	90579.5	9377.7	AUXILIARY BLDG. #1
16	11'-0"	571.98	568.3	90579.4	9352.9	AUXILIARY BLDG. #1
17	11'-0"	572.02	568.3	90296.0	9466.0	AUXILIARY BLDG. #2
18	11'-0"	572.00	568.3	90141.5	9465.2	AUXILIARY BLDG. #2
19	11'-0"	572.00	568.3	90141.5	9462.2	AUXILIARY BLDG. #2
20	11'-0"	572.13	568.3	90141.5	9465.8	AUXILIARY BLDG. #2
21	11'-0"	572.05	568.3	90465.2	9465.8	AUXILIARY BLDG. #1

- NOTES
- ELEVATION FOR THE TOP OF SLEEVES ARE TO THE TOP OF SLEEVE WITHOUT THE CAP.
 - THE STANDPIPE AT PIEZOMETER NO. 10 WAS CONSTRUCTED INSIDE THE RADWASTE BUILDING WALL, AND PENETRATED THE WALL WITH A SLIGHT FLUSH. THE ELEVATION GIVEN IS THE LOWER LIP OF THE SLANTING SLEEVE OPENING.
 - ALL TOP OF SLEEVE ELEVATIONS AND COORDINATE LOCATIONS WERE RECEIVED FROM THE FIELD AS CONSTRUCTED.
 - ABANDONED, RETIRED-IN-PLACE.

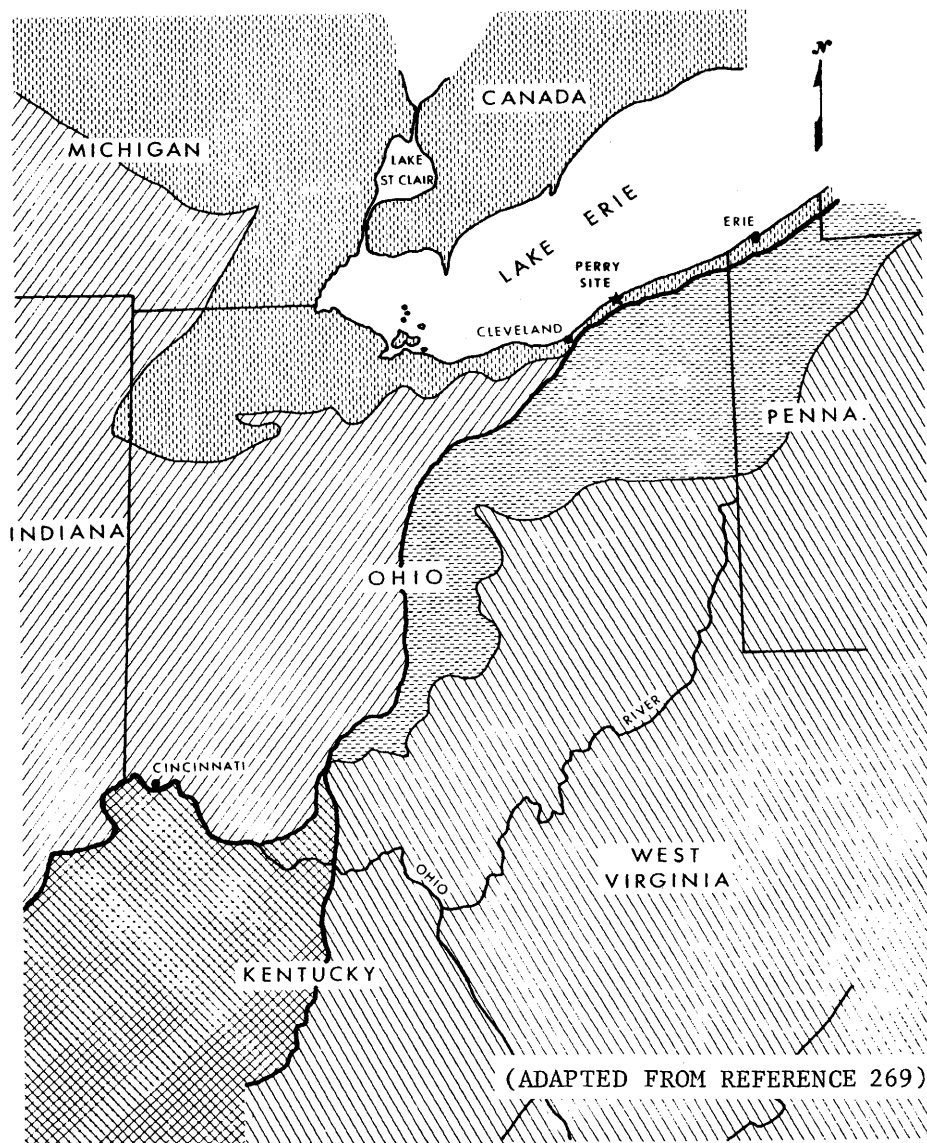


TYPICAL SECTION
MONITORING INSTRUMENTATION
SLEEVE-10
NO SCALE

(REV. 19 10/2015)

PERRY NUCLEAR POWER PLANT
10 CENTER RD., PERRY, OHIO 44081

PLANT UNDERDRAIN SYSTEM
NUCLEAR ISLAND PIEZOMETER LOCATIONS
FIGURE 2.4-76
(DWG. D-746-0009-00000)



LEGEND

CENTRAL LOWLAND PROVINCE	APPALACHIAN PLATEAU PROVINCE
LAKE PLAINS SUB-PROVINCE	GLACIATED PLATEAU SUB-PROVINCE
TILL PLAINS SUB-PROVINCE	UNGLACIATED PLATEAU SUB-PROVINCE
INTERIOR LOW PLATEAU PROVINCE	
LEXINGTON PLATEAU	

0 20 40 60
SCALE IN
MILES

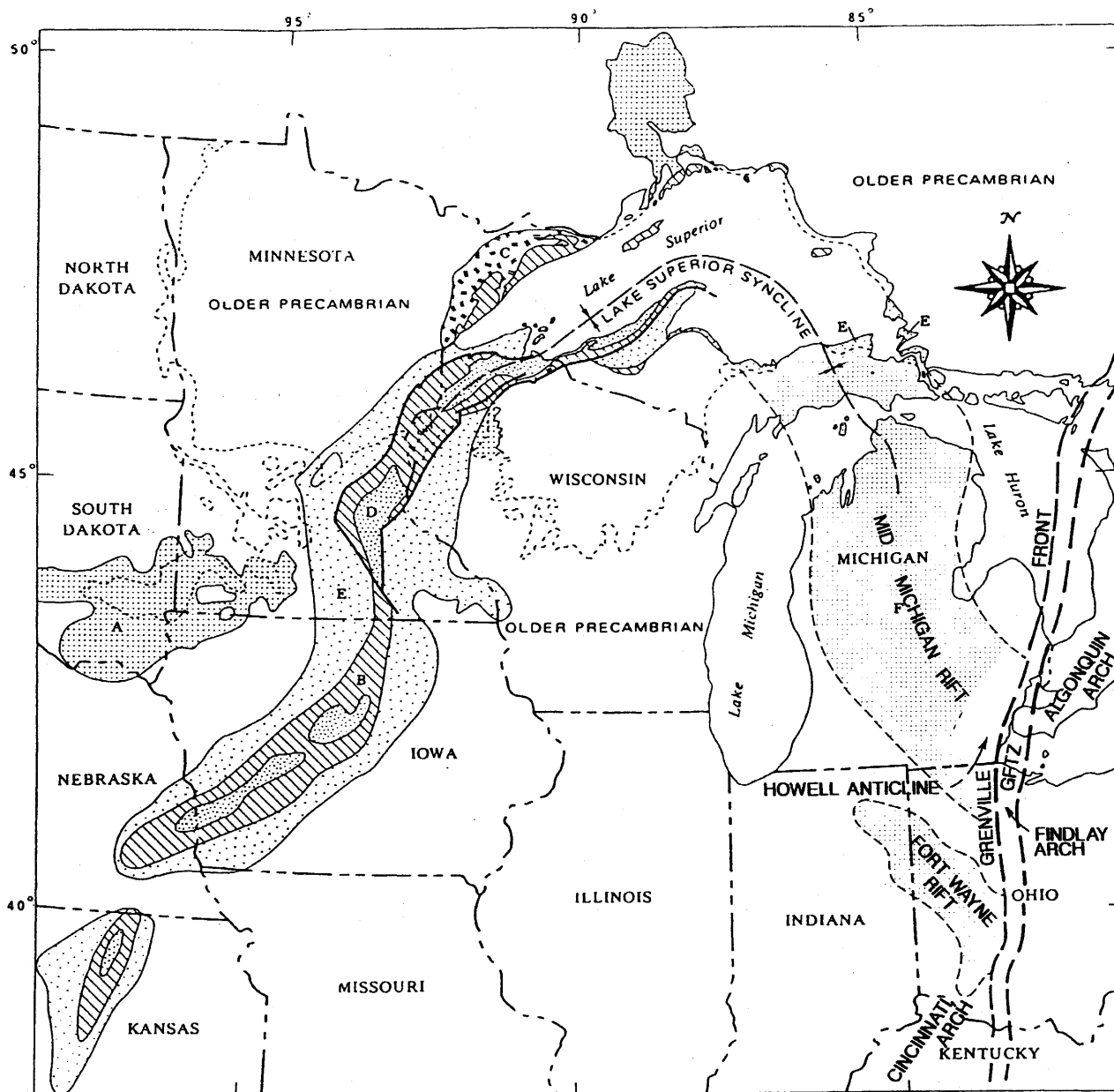
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

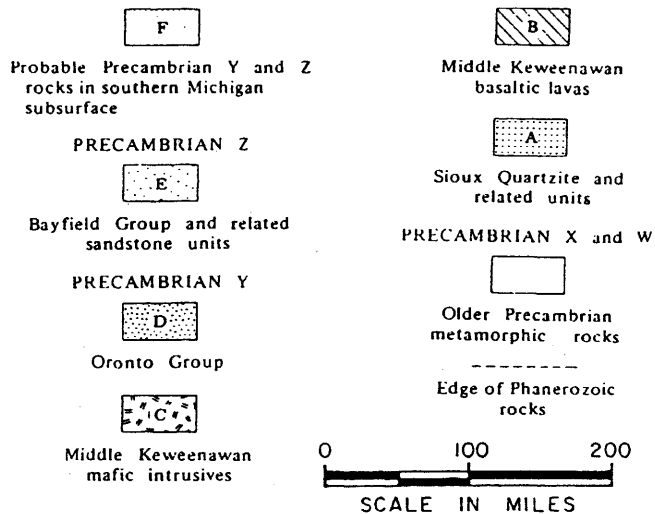
Regional Physiographic Map

Figure 2.5-1



EXPLANATION

(FROM REFERENCE 73)



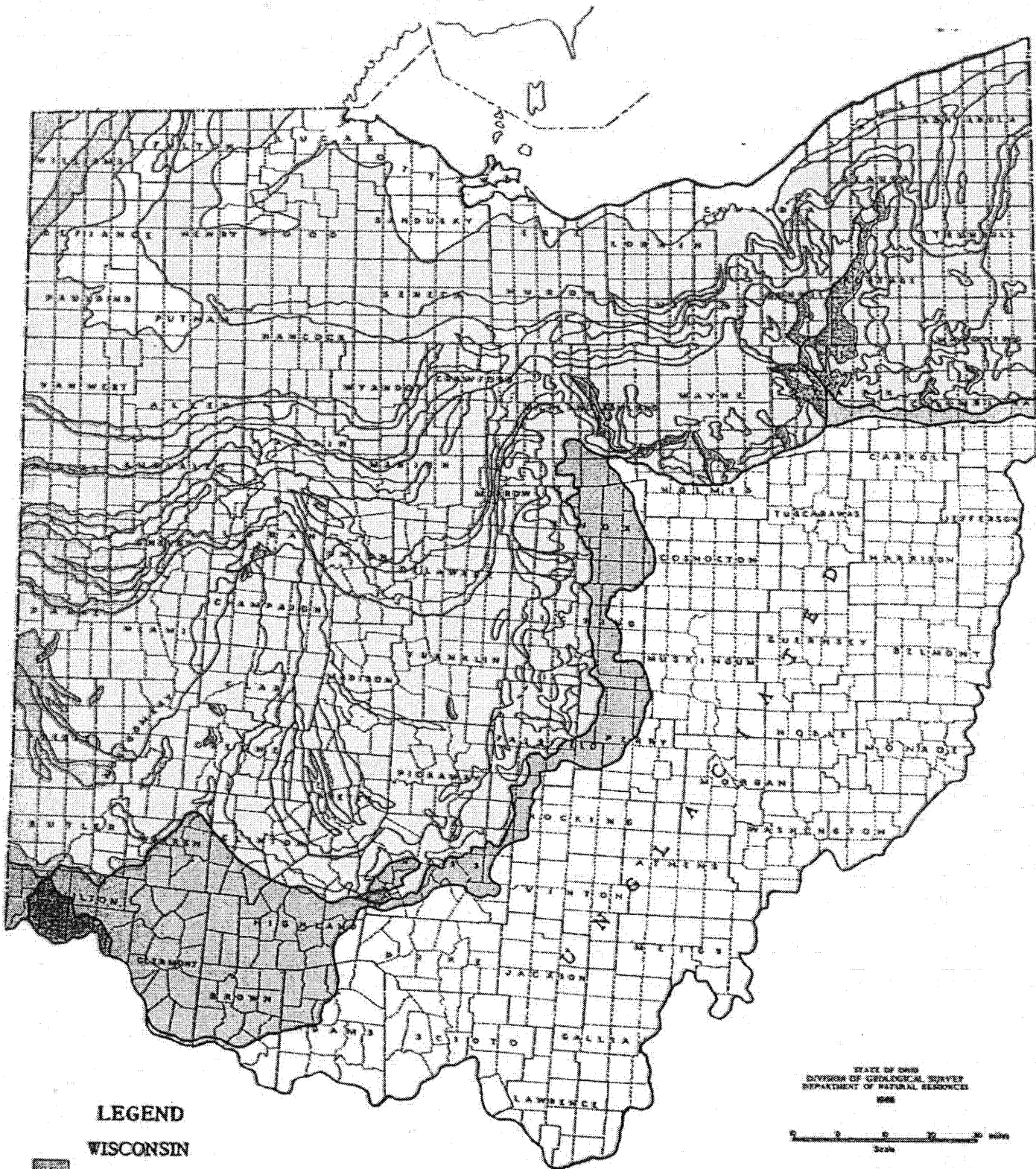
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Precambrian Basement
Structures Map

Figure 2.5-2



LEGEND

WISCONSIN

Kames and eskers

Lake deposits

Ground moraine

End moraine

ILLINOIAN

Undifferentiated

KANSAN

Ground moraine

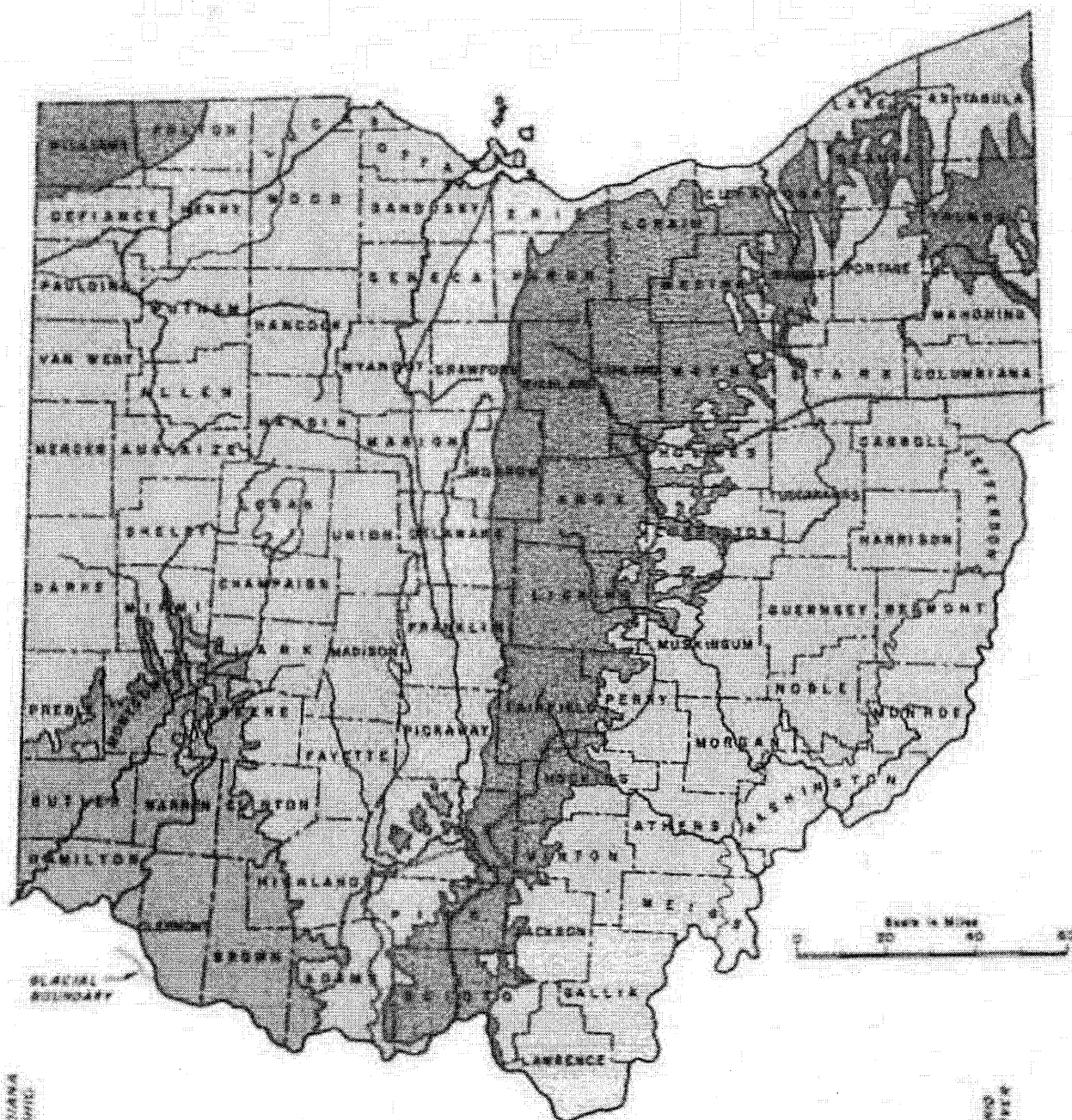
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Glacial Map of Ohio

Figure 2.5-3



OHIO DIVISION OF GEOLOGICAL SURVEY

GEOLOGIC SYSTEM

- Permian
- Pennsylvanian
- Mississippian
- Devonian
- Silurian
- Ordovician

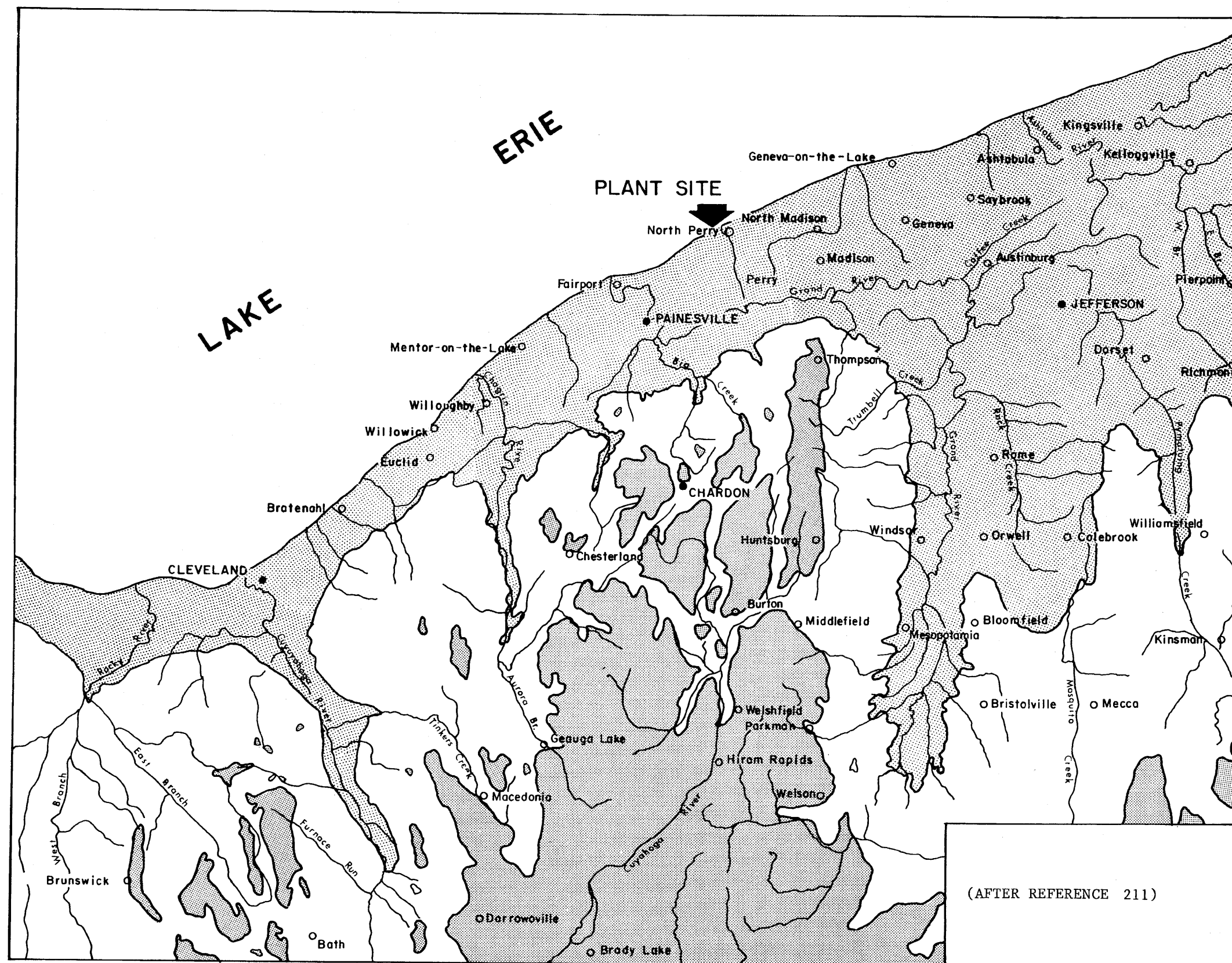
(Rev. 12/1/03)



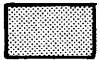


PERRY NUCLEAR POWER PLANT

Bedrock Geologic Map of Ohio

Figure 2.5-4



LEGEND

-  POTTSVILLE & ALLEGHENY
(COAL, S.S., SH, L.S.)
PENNSYLVANIAN
-  WAVERLY & MAXVILLE
(SH, S.S., L.S.)
MISSISSIPPI
-  OLENTANGY & OHIO (SHALES)
DEVONIAN

(AFTER REFERENCE 211)

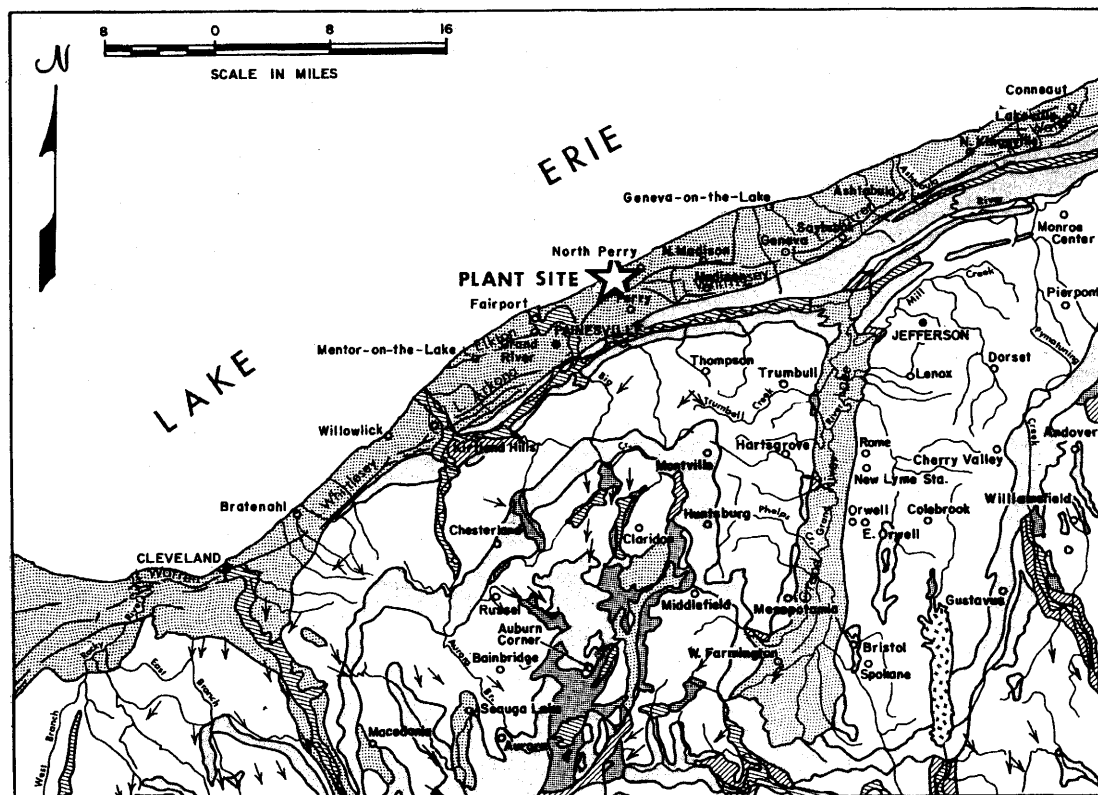
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT












Generalized Bedrock Geologic Map
of Northeastern Ohio

Figure 2.5-6



(AFTER REFERENCE 91)

LEGEND

-  GROUND MORaine - ILLINOIS
-  LACUSTRINE DEPOSITS - WISCONSIN
-  LACUSTRINE DEPOSITS - PRE-WISCONSIN
-  ALLUVIUM - WISCONSIN
-  OUTWASH - WISCONSIN
-  KAMES AND ESKERS - WISCONSIN
-  GROUND MORaine - WISCONSIN
-  END MORaine - WISCONSIN
-  LElkon BEACH DEPOSITS - WISCONSIN
-  STRIATIONS
-  PLANT SITE

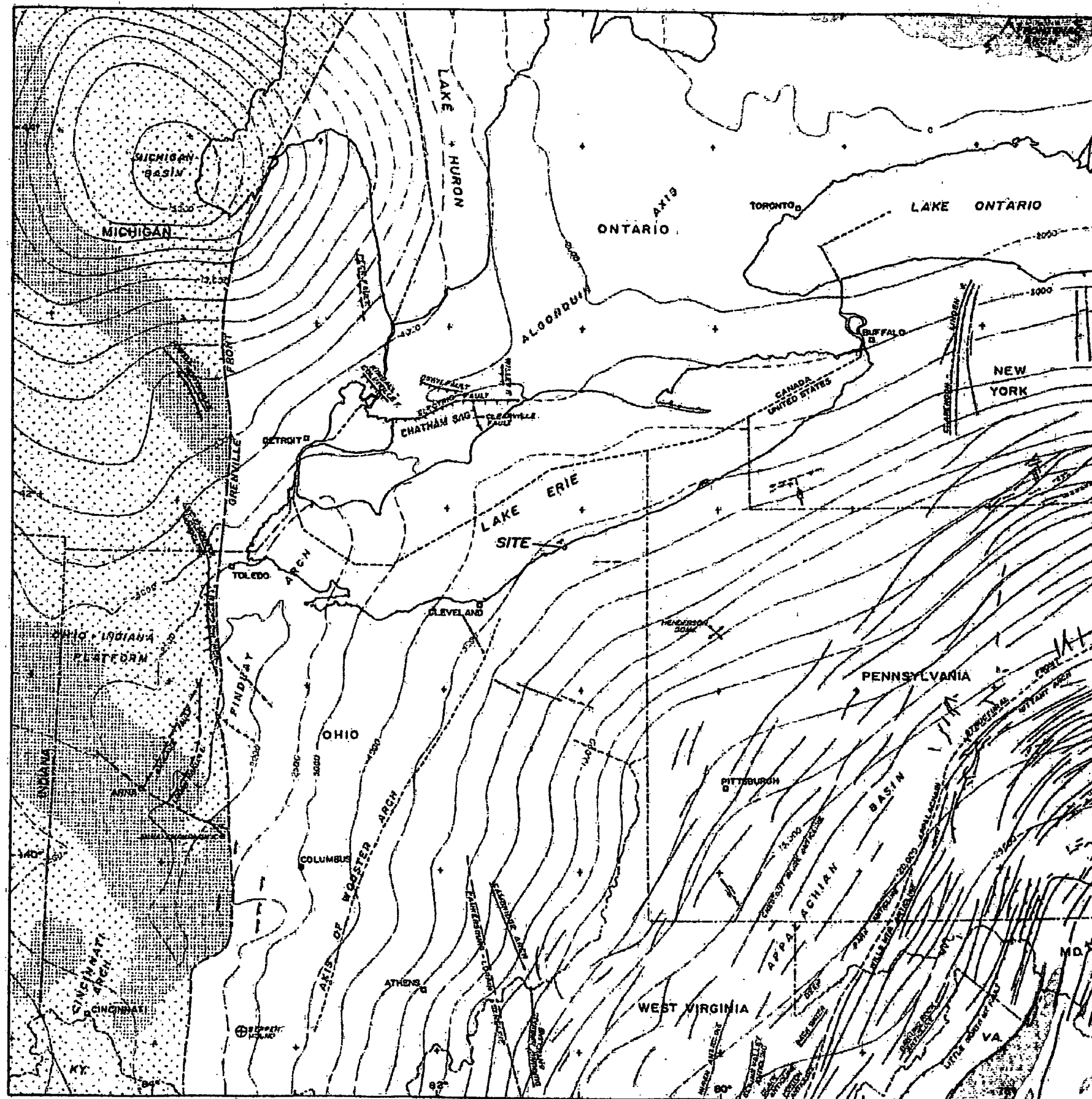
(Rev. 12 1/03)













PERRY NUCLEAR POWER PLANT

Glacial Map of Northeastern Ohio

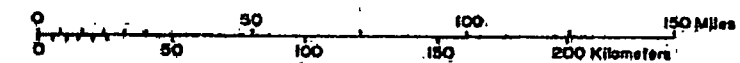
Figure 2.5-7



REGIONAL TECTONIC ELEMENTS

-  Grenville Basement - Ages around 950 million years
(Shaded: Exposed, Non-patterned: Buried)
-  Keweenaw Basement - Ages around 1100 million years
-  Elsonian Basement - Ages around 1450 million years
-  Structure contours in feet drawn on the top of Precambrian basement surface.
-  Thrust fault - teeth on upper plate.
-  Normal fault - half-circles on downthrown side.
-  High angle fault.
-  Anticlinal axis
-  Synclinal axis
-  Intensely disturbed "Cryptoexplosive" structure.

(Primary basement-structure sources: Bayley & Muenberger, 1966; Hine et al, 1979; Owens, 1987)



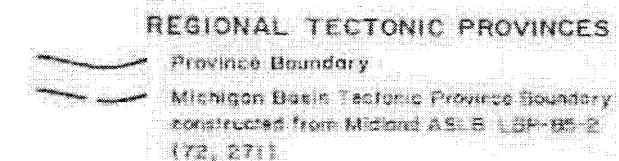
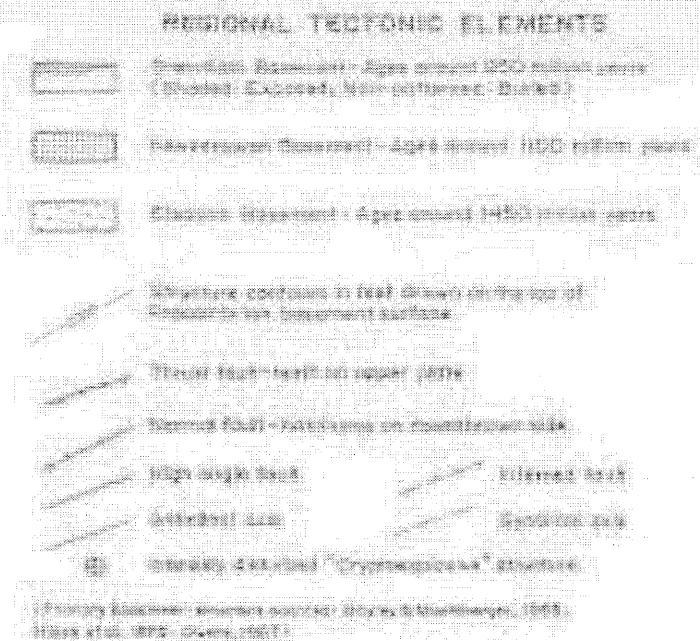
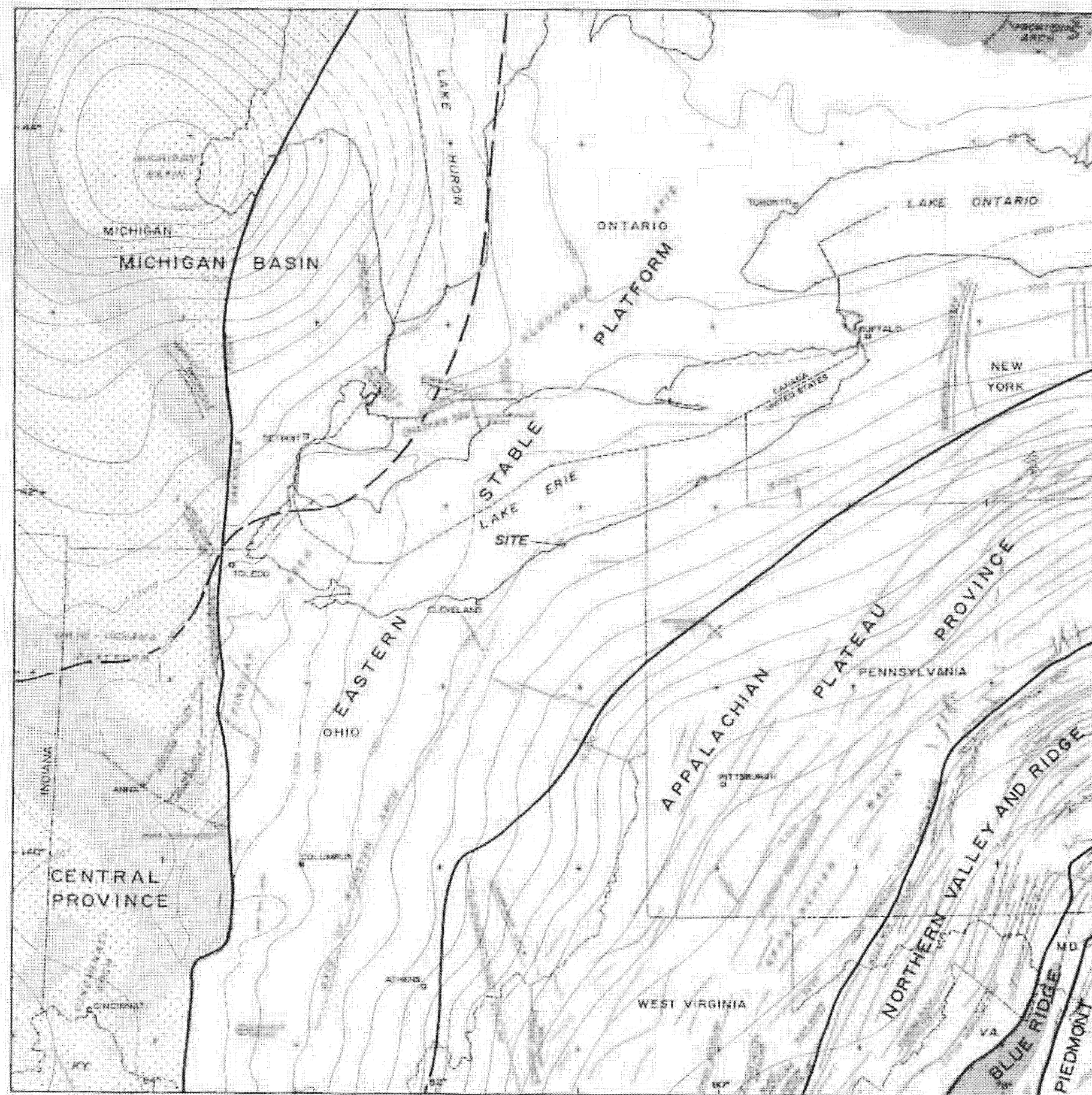
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Regional Tectonic Map

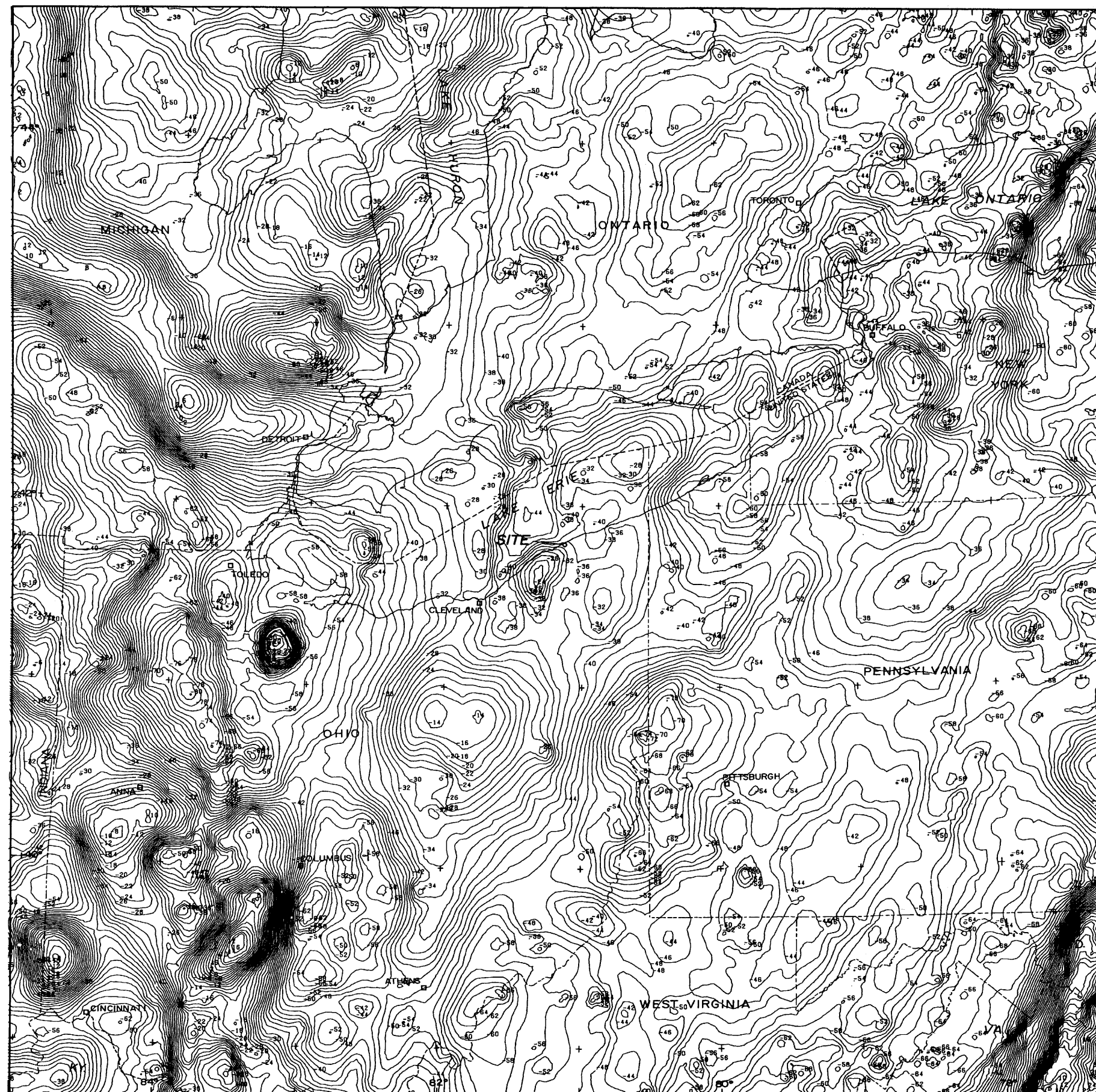
Figure 2.5-8



(Rev. 12/1/83)

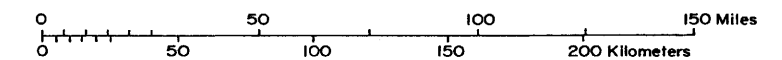
PERRY NUCLEAR POWER PLANT

Regional Tectonic Provinces
 Figure 2.3-9



THE TOTAL BOUGUER GRAVITY ANOMALY HAS BEEN CORRECTED FOR THE EFFECTS OF ELEVATION, LATITUDE, AND INSTRUMENTAL DRIFT. IN GENERAL, THE DATA HAVE NOT BEEN CORRECTED FOR TOPOGRAPHY, BUT THE TOPOGRAPHIC EFFECTS ARE LESS THAN 2 MGAL AT 99% OF THE STATIONS IN THE MAP AREA.

CONTOUR INTERVAL IS 2 mgals



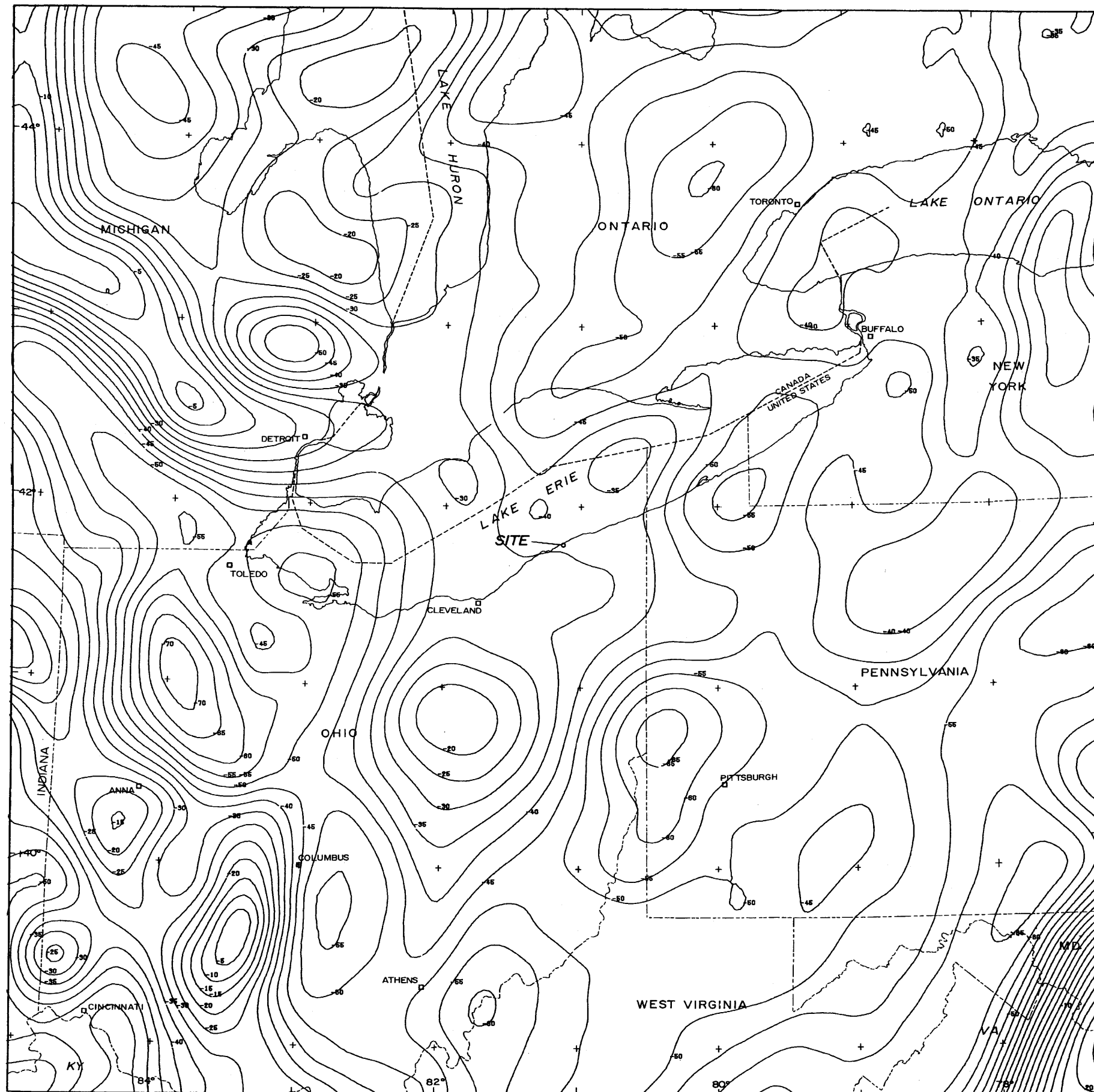
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

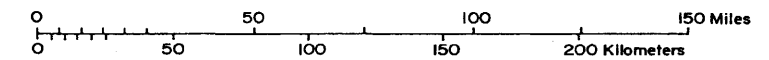
Total Bouguer Anomaly Map

Figure 2.5-10



THE REGIONAL BOUGER GRAVITY ANOMALY WAS OBTAINED BY AVERAGING THE TOTAL BOUGER ANOMALY OVER A RECTANGLE 40 X 40 KM. IT IS PROBABLY CAUSED BY LATERAL DENSITY VARIATIONS AT DEPTHS GREATER THAN 10 TO 20 KM. IT MAY BE DUE, IN PART, TO VARIATIONS IN THICKNESS OF THE CRUST.

CONTOUR INTERVAL IS 5 mgals



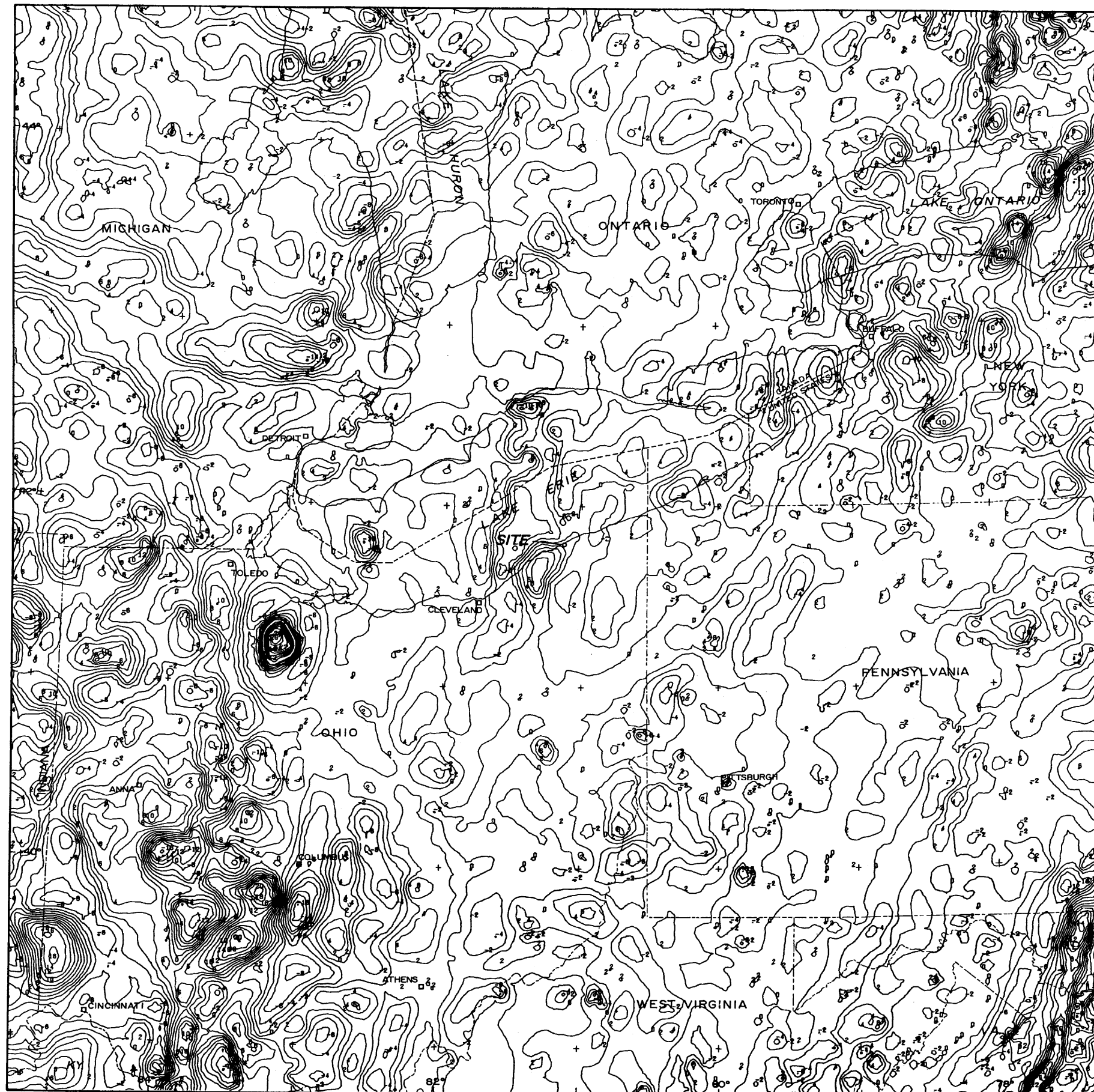
(Rev. 12 1/03)



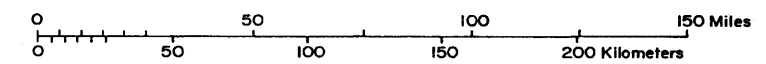
PERRY NUCLEAR POWER PLANT

Regional Bouguer Anomaly Map

Figure 2.5-11



THE RESIDUAL BOUGUER GRAVITY ANOMALY WAS OBTAINED BY SUBTRACTING THE REGIONAL BOUGUER GRAVITY ANOMALY (FIG. 2.5-11) FROM THE TOTAL BOUGUER GRAVITY ANOMALY (FIG. 2.5-10) AT EACH POINT OF THE MAP. IT IS CAUSED BY LATERAL VARIATIONS OF DENSITY IN THE SHALLOW CRUST, MOSTLY WITHIN THE UPPER FEW KILOMETERS.



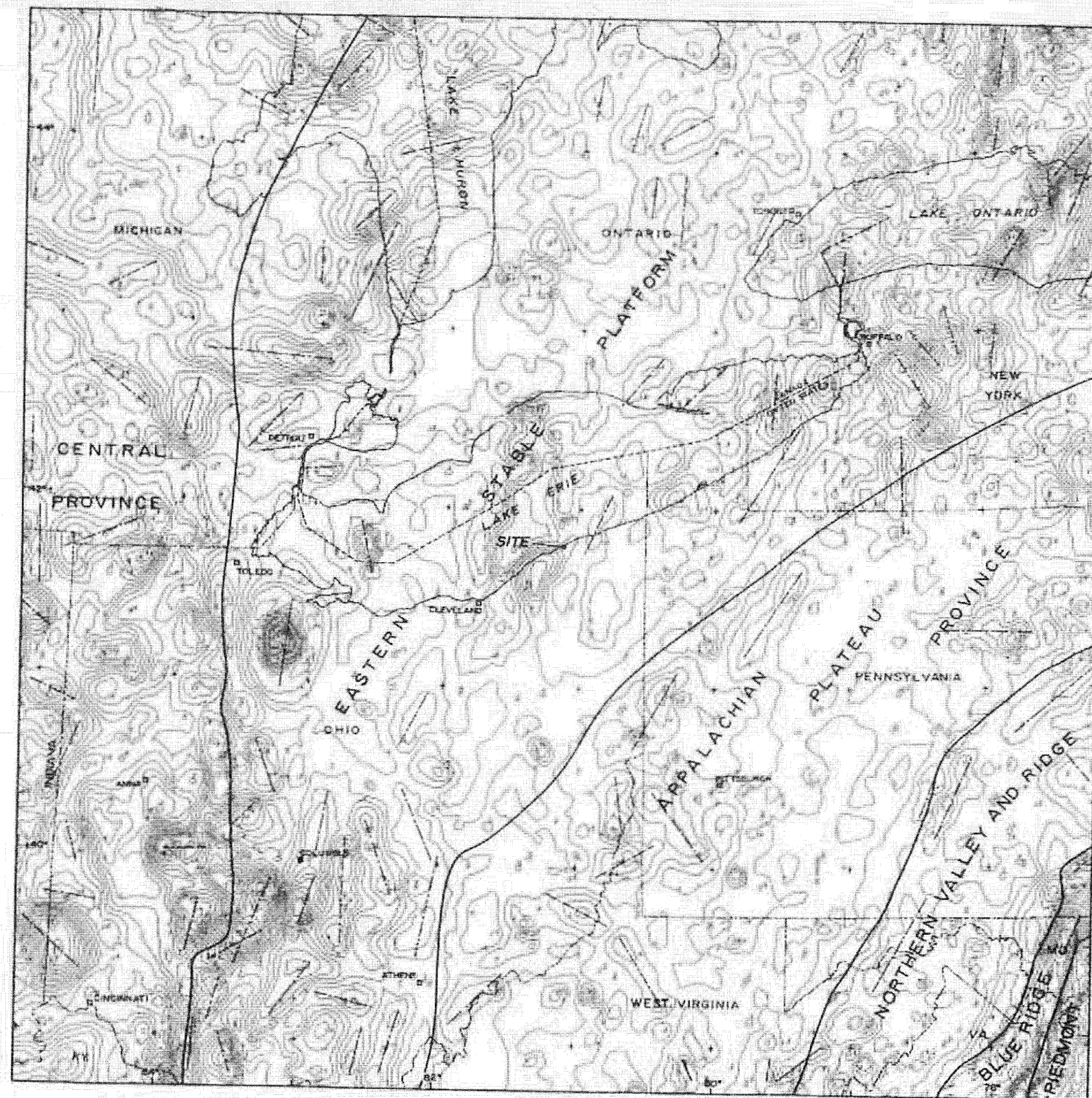
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Residual Bouguer Anomaly Map

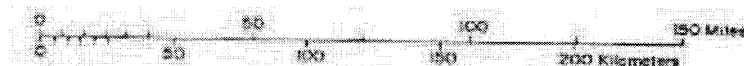
Figure 2.5-12



THE RESIDUAL BOUGUER GRAVITY ANOMALY WAS OBTAINED BY SUBTRACTING THE REGIONAL BOUGUER GRAVITY ANOMALY (FIG. 2.5-11) FROM THE TOTAL BOUGUER GRAVITY ANOMALY (FIG. 2.5-10) AT EACH POINT OF THE MAP. IT IS CAUSED BY LATERAL VARIATIONS OF DENSITY IN THE SHALLOW CRUST, MOSTLY WITHIN THE UPPER FEW KILOMETERS.

CONTOUR INTERVAL IS 2 mgals

— TRENDS OF INDIVIDUAL ANOMALIES



REGIONAL TECTONIC PROVINCES

— PROVINCE BOUNDARY

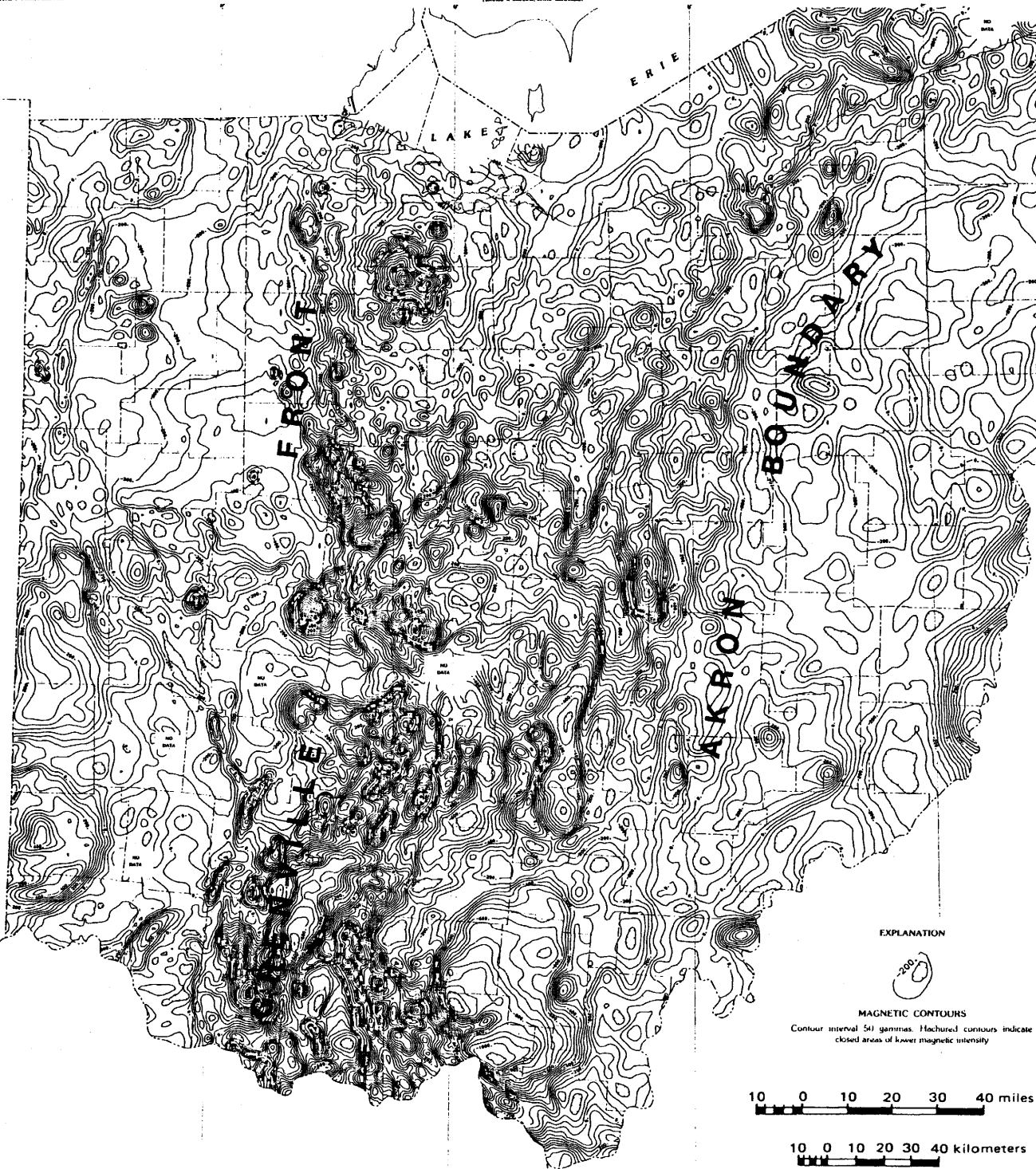
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Residual Bouguer Anomaly Map
Trends of Anomalies
Tectonic Provinces


Figure 2.5-13



RESIDUAL TOTAL INTENSITY MAGNETIC MAP OF OHIO

By
T. G. Hildenbrand and R. P. Kuchs
1964

(82)



PNPP

PERRY NUCLEAR POWER PLANT

Residual Total Intensity
Magnetic Map of Ohio

Figure 2.5-14

ERA	PERIOD	EPOCH	GLACIAL STAGE	APPROXIMATE AGE OF BEGINNING OF PERIOD, 10 ⁶ YEARS
CENOZOIC	QUATERNARY	RECENT		0.011
		PLEISTOCENE	WISCONSIN	
			ILLINOIAN	
			KANSAN	
			NEBRASKAN	1.5*
	TERTIARY	PLIOCENE		12
		MIOCENE		20
		OLIGOCENE		35
		EOCENE		55
		PALEOCENE		65
MESOZOIC	CRETACEOUS			130
	JURASSIC			185
	TRIASSIC			230
PALEOZOIC	PERMIAN			265
	PENNSYLVANIAN			310
	MISSISSIPPIAN			355
	DEVONIAN			413
	SILURIAN			425
	ORDOVICIAN			475
	CAMBRIAN			570
PRE-CAMBRIAN	LATE PRE-CAMBRIAN	OLDEST RADIOGENIC DATE REPORTED - 1958		3500
	EARLY PRE-CAMBRIAN			

NOTES:

1. ACCORDING TO REFERENCE 270), THIS DATE IS THE CORRECTED AGE OF THE PLIOCENE-PLEISTOCENE BOUNDARY.
2. SOURCE: REFERENCE 272)

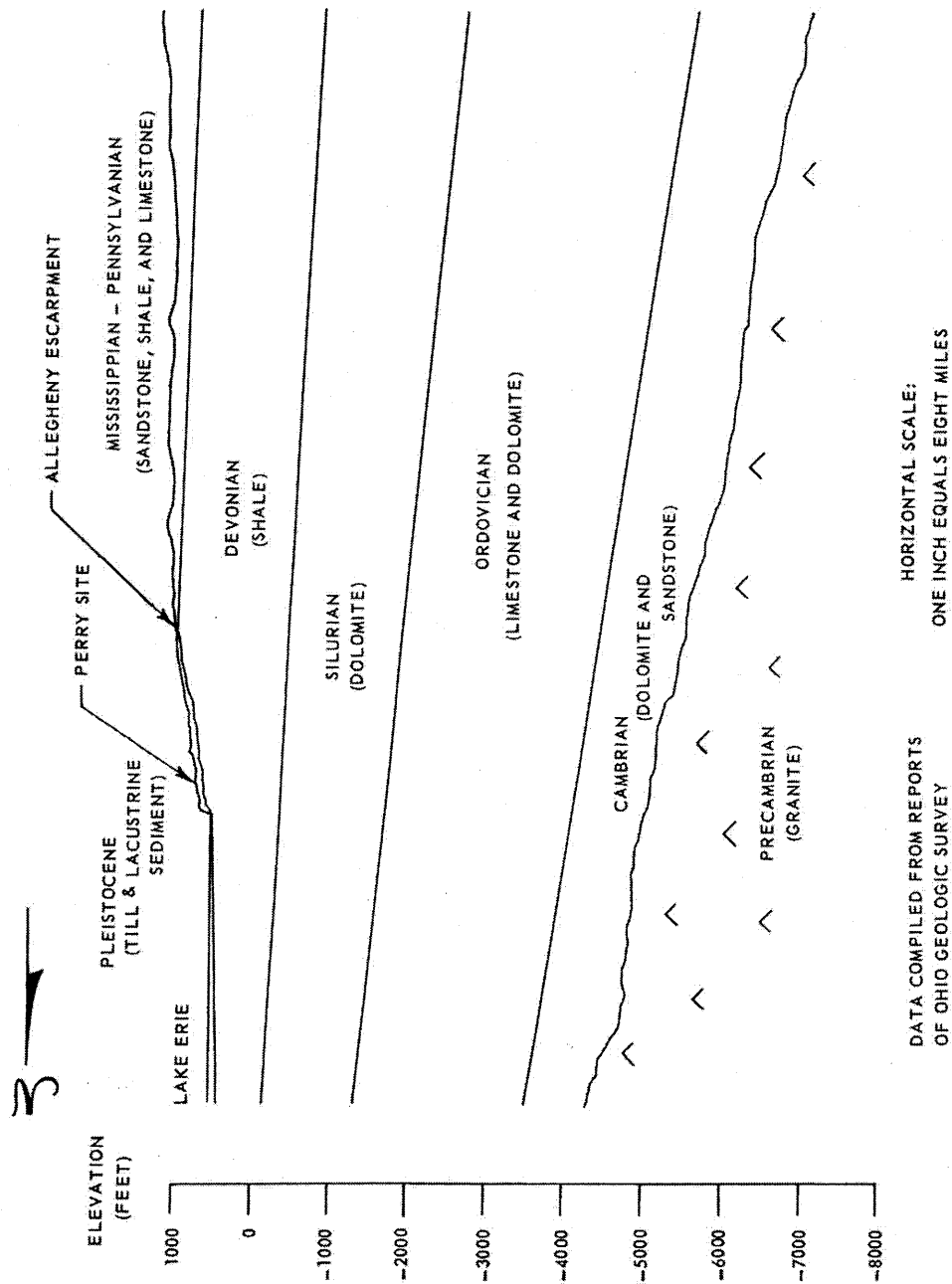
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Geologic Time Scale

Figure 2.5-15



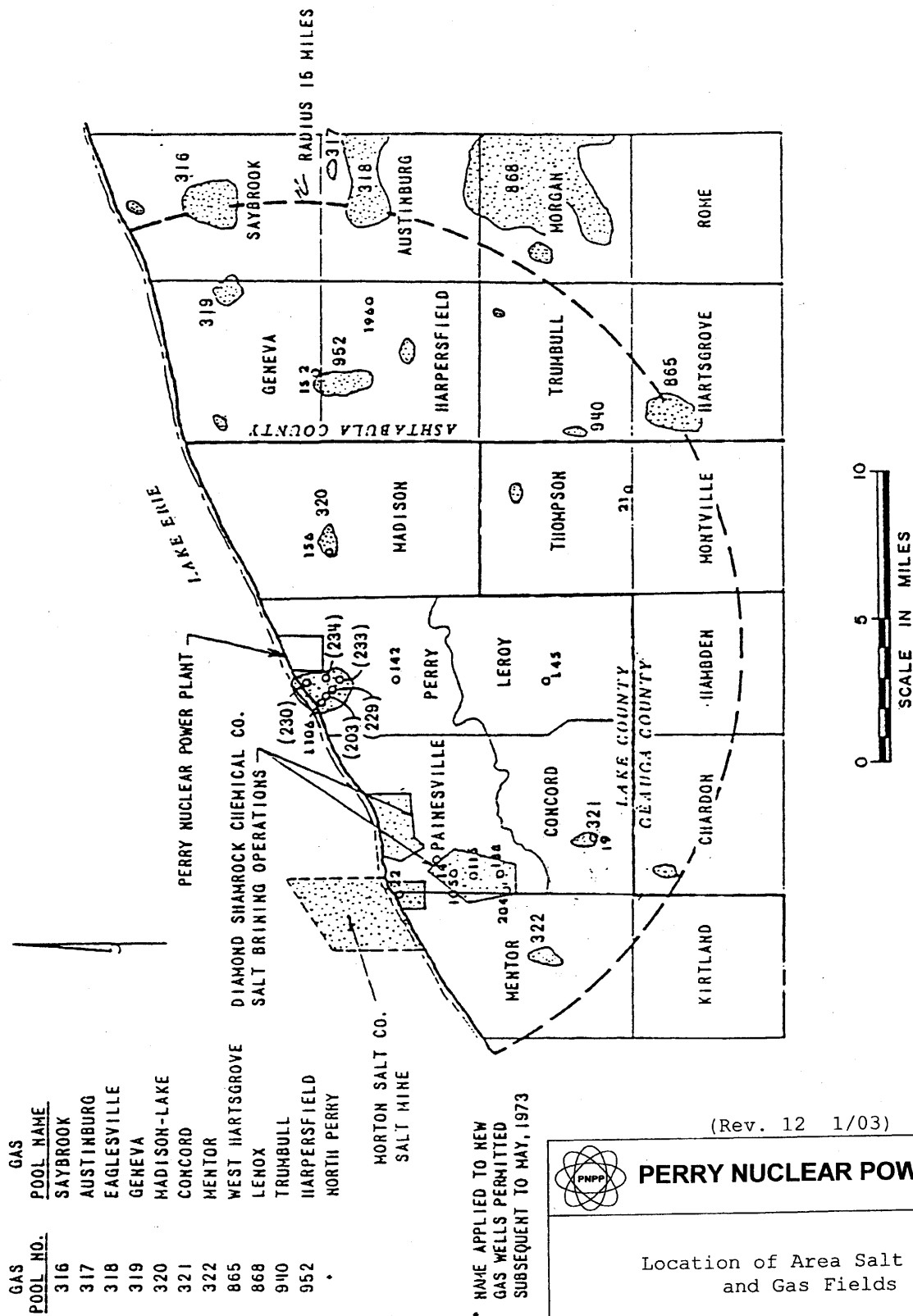
(Rev. 12 1/03)

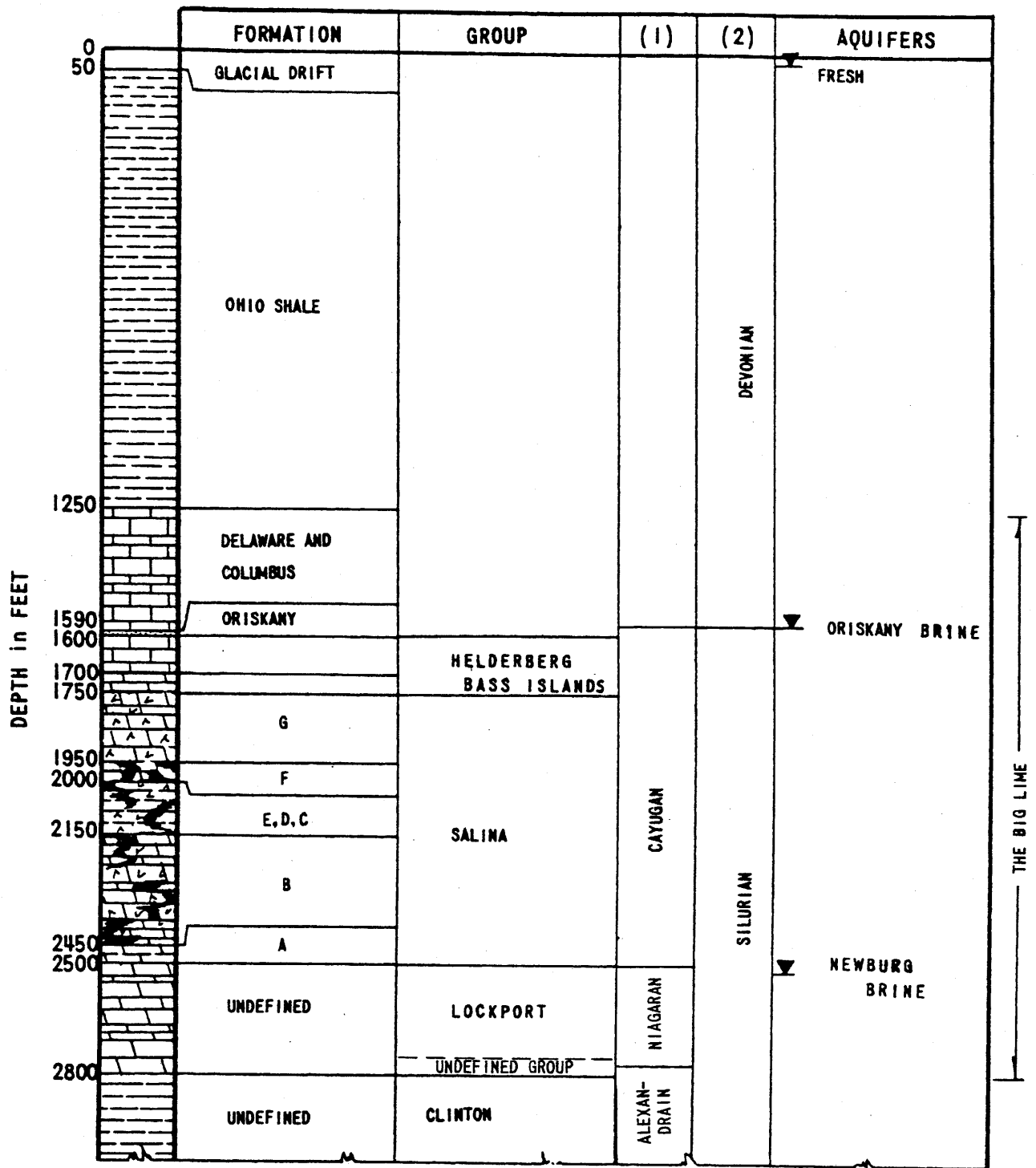


PERRY NUCLEAR POWER PLANT

Generalized Geologic Cross Section
of Northeastern Ohio

Figure 2.5-16





(1) SERIES; (2) SYSTEM

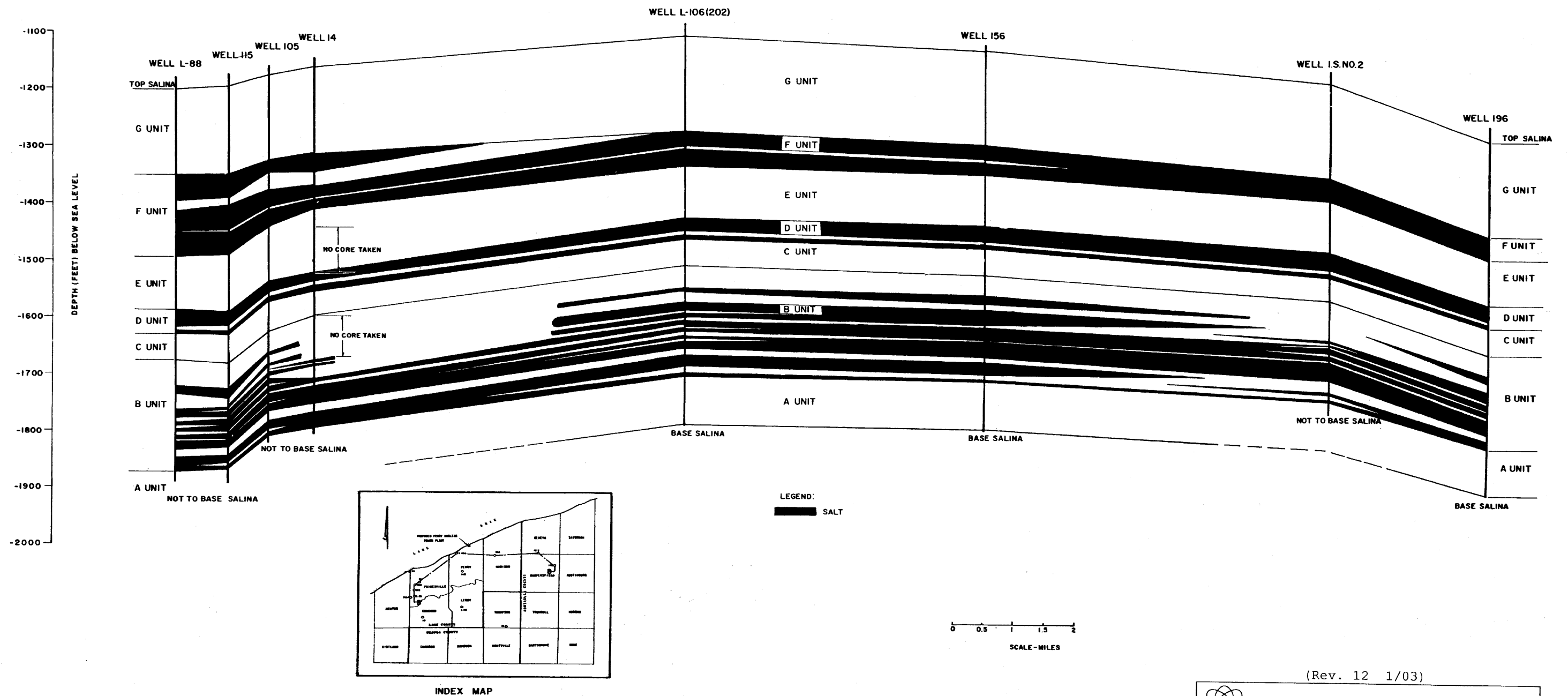
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Near-Site "Big Lime"
Stratigraphic Column

Figure 2.5-19



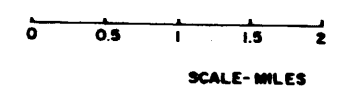
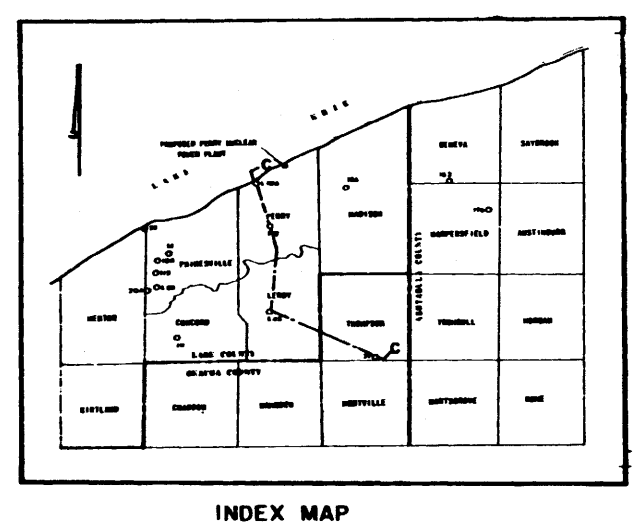
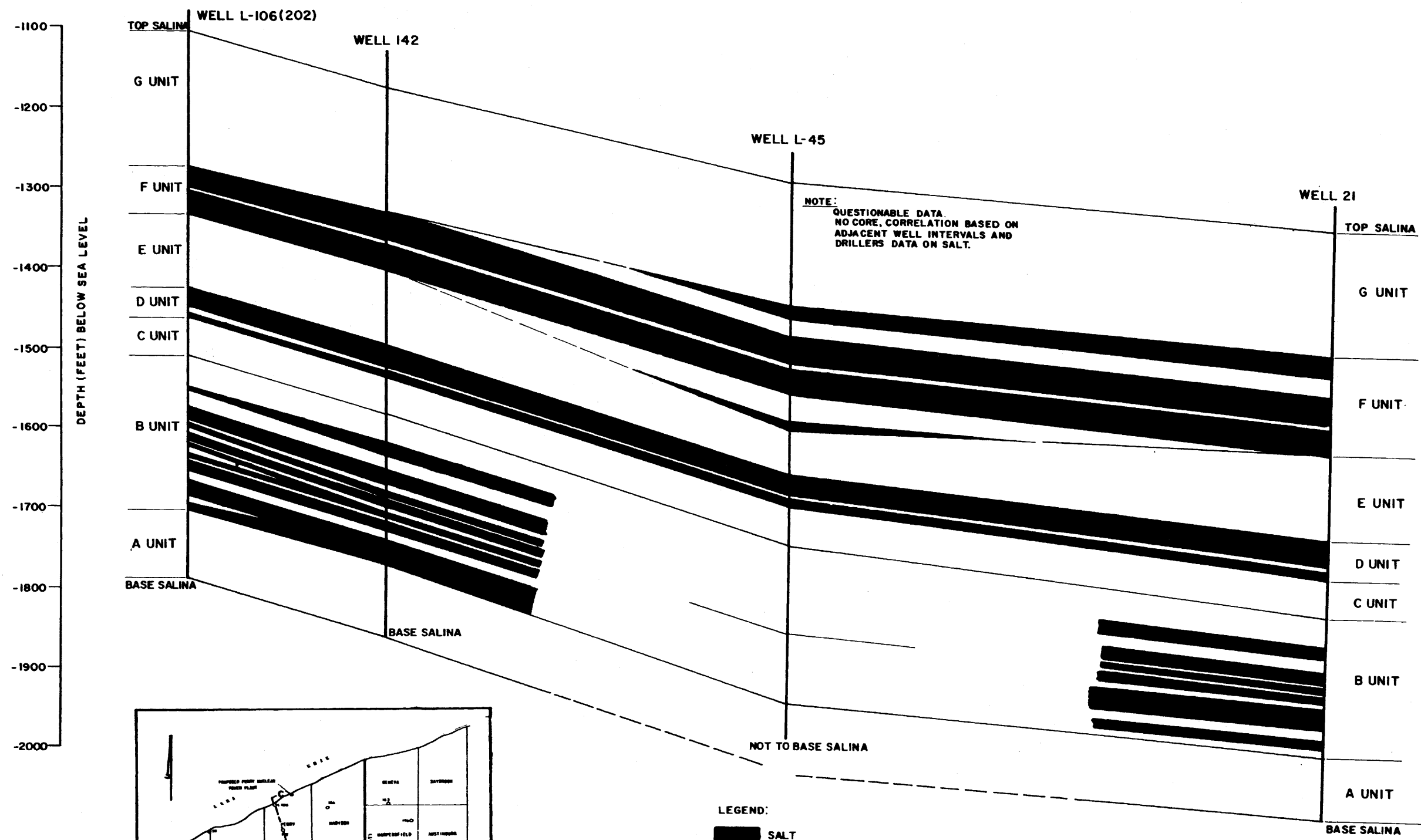
(Rev. 12 1/03)




PERRY NUCLEAR POWER PLANT

East-West "Big Lime"
Stratigraphic Section

Figure 2.5-20

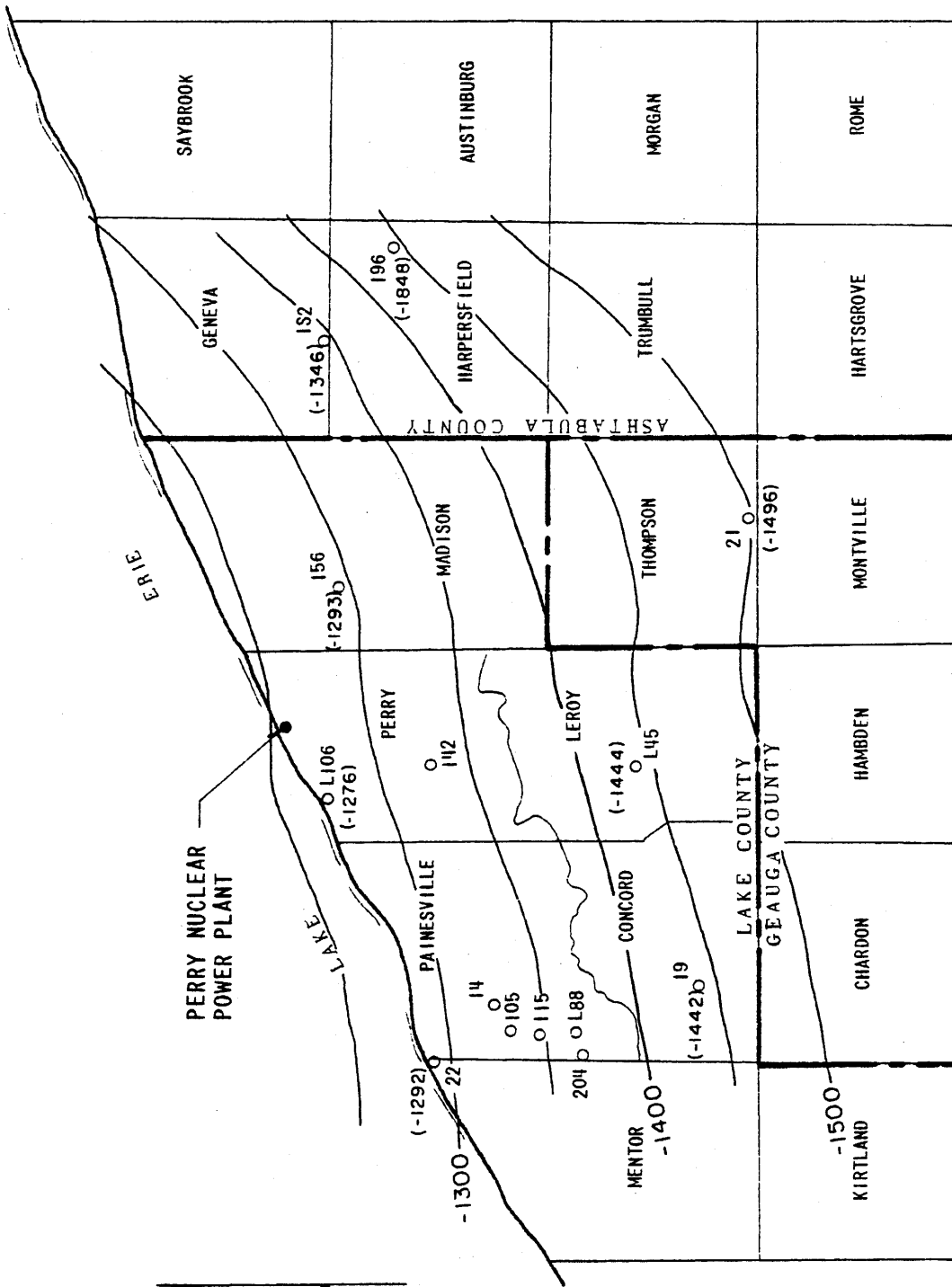


(Rev. 12 1/03)

 **PERRY NUCLEAR POWER PLANT**

North-South "Big Lime"
Stratigraphic Section

Figure 2.5-21



CONTOUR INTERVAL = 50 FEET
DATUM = SEA LEVEL

SCALE IN MILES
0 2 4

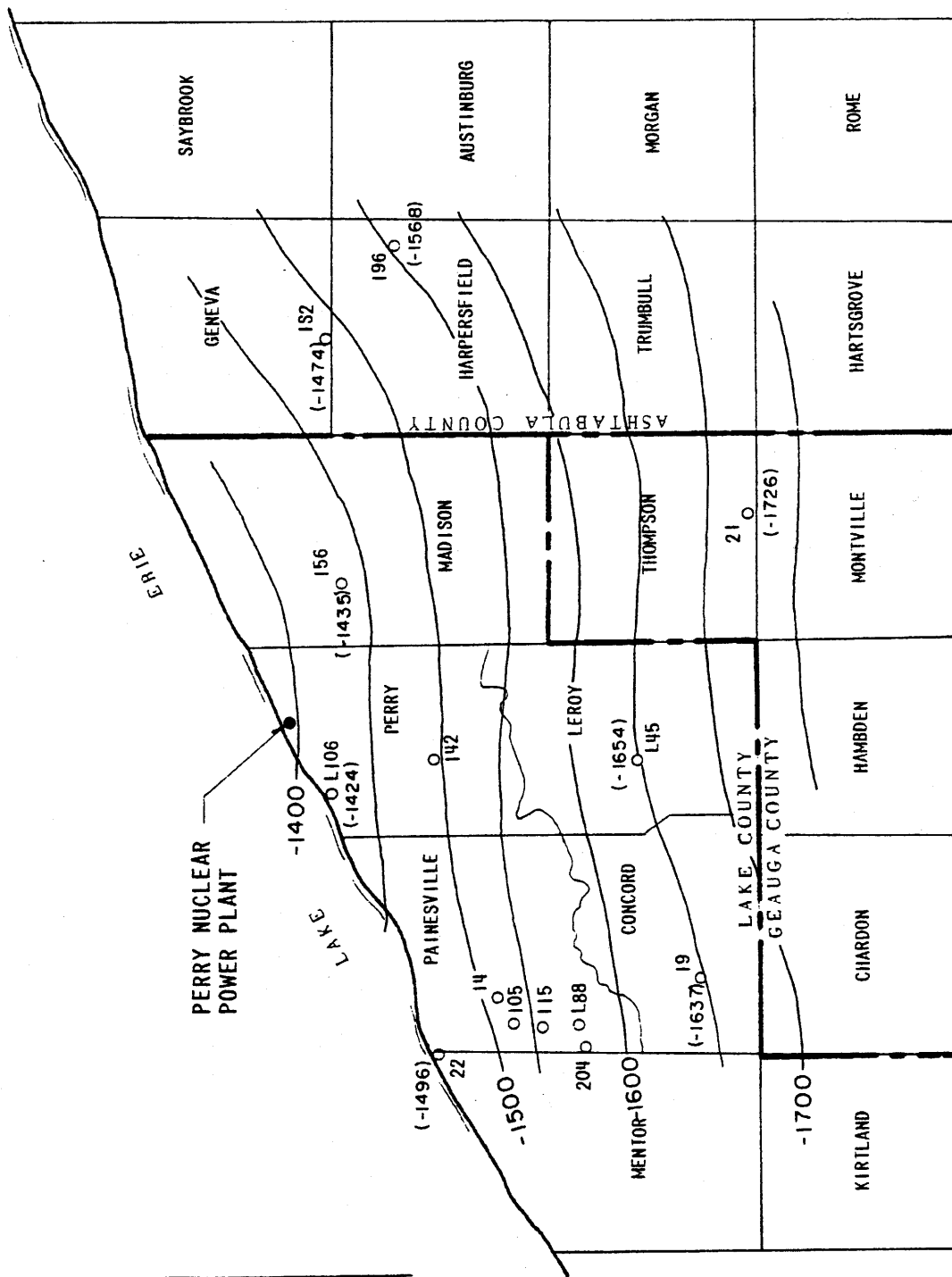
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Structural Contour Map of F Unit

Figure 2.5-22



CONTOUR INTERVAL = 50 FEET
DATUM = SEA LEVEL

SCALE IN MILES
0 2 4

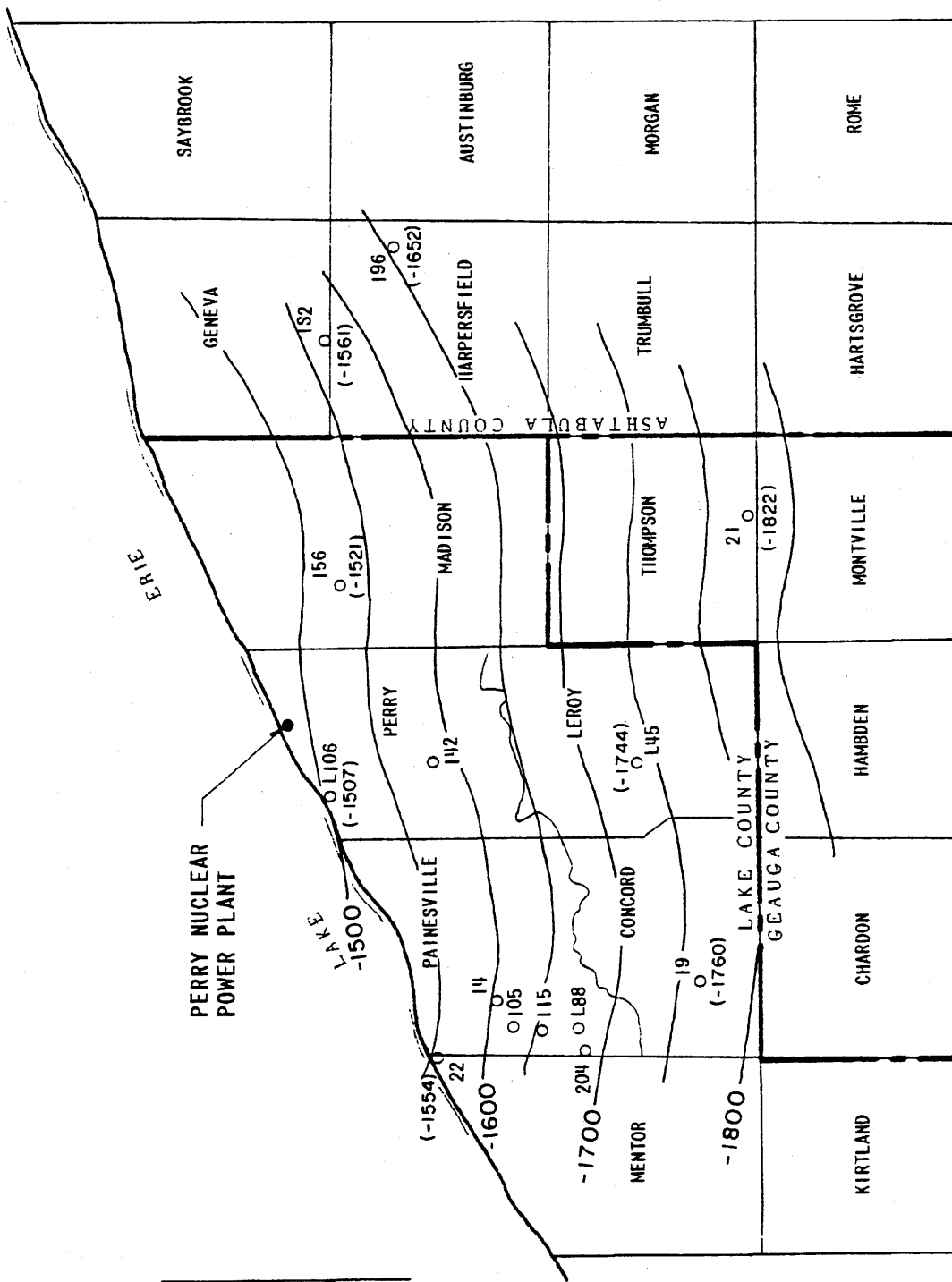
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Structural Contour Map of D Unit

Figure 2.5-23



CONTOUR INTERVAL = 50 FEET
DATUM = SEA LEVEL

SCALE IN MILES
0 2 4

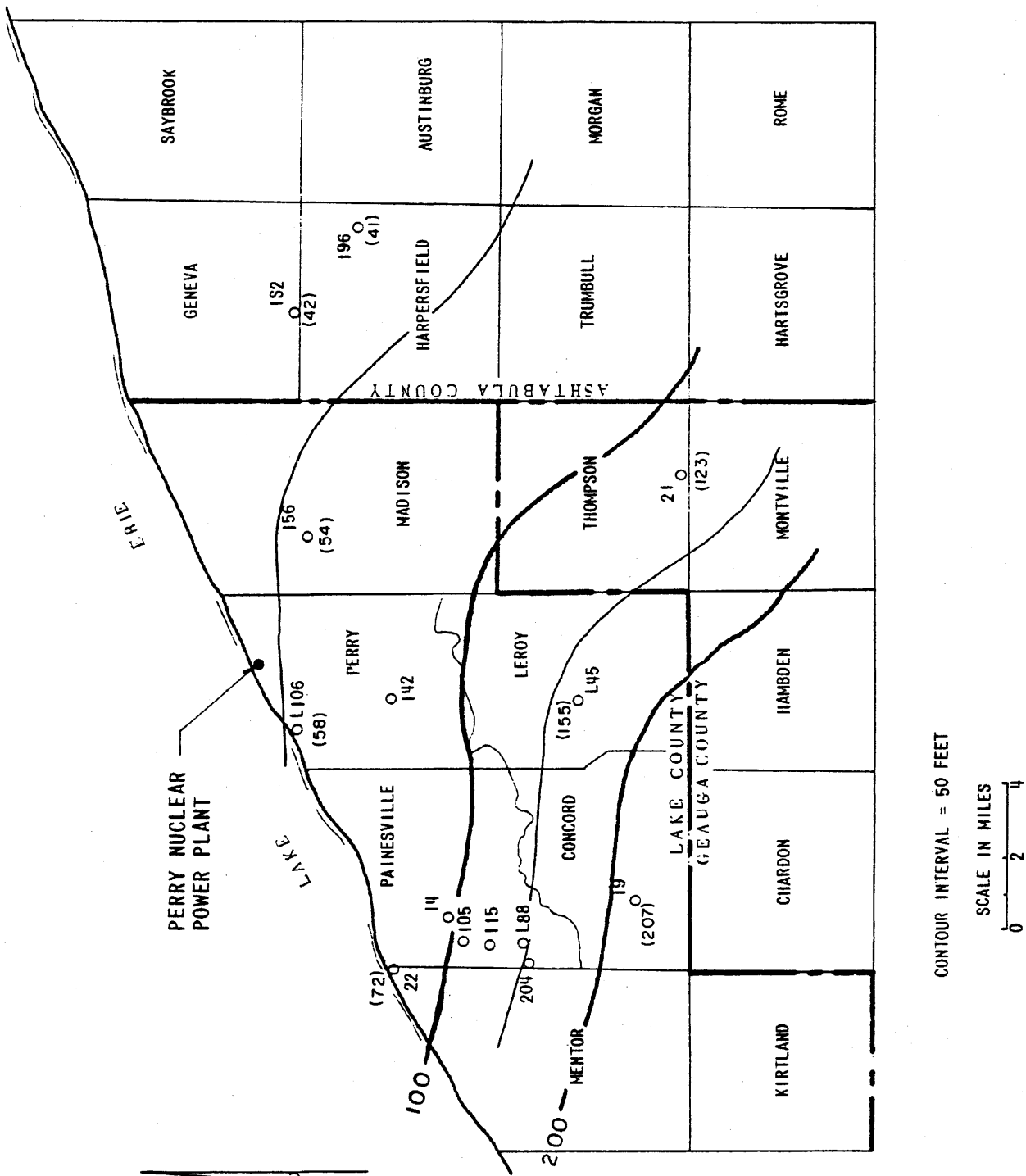
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Structural Contour Map of B Unit

Figure 2.5-24



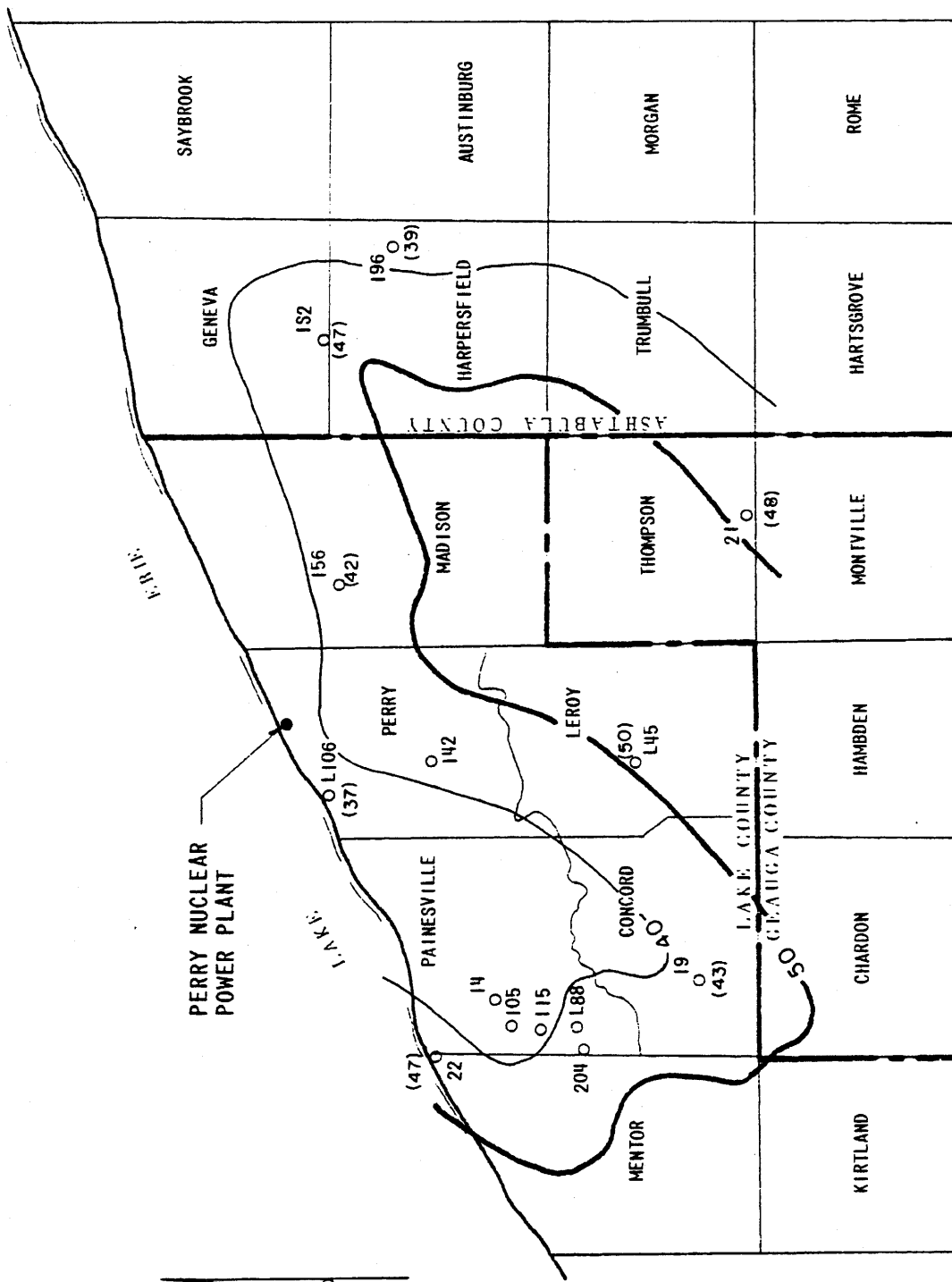
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Isopach Map of E Unit

Figure 2.5-25



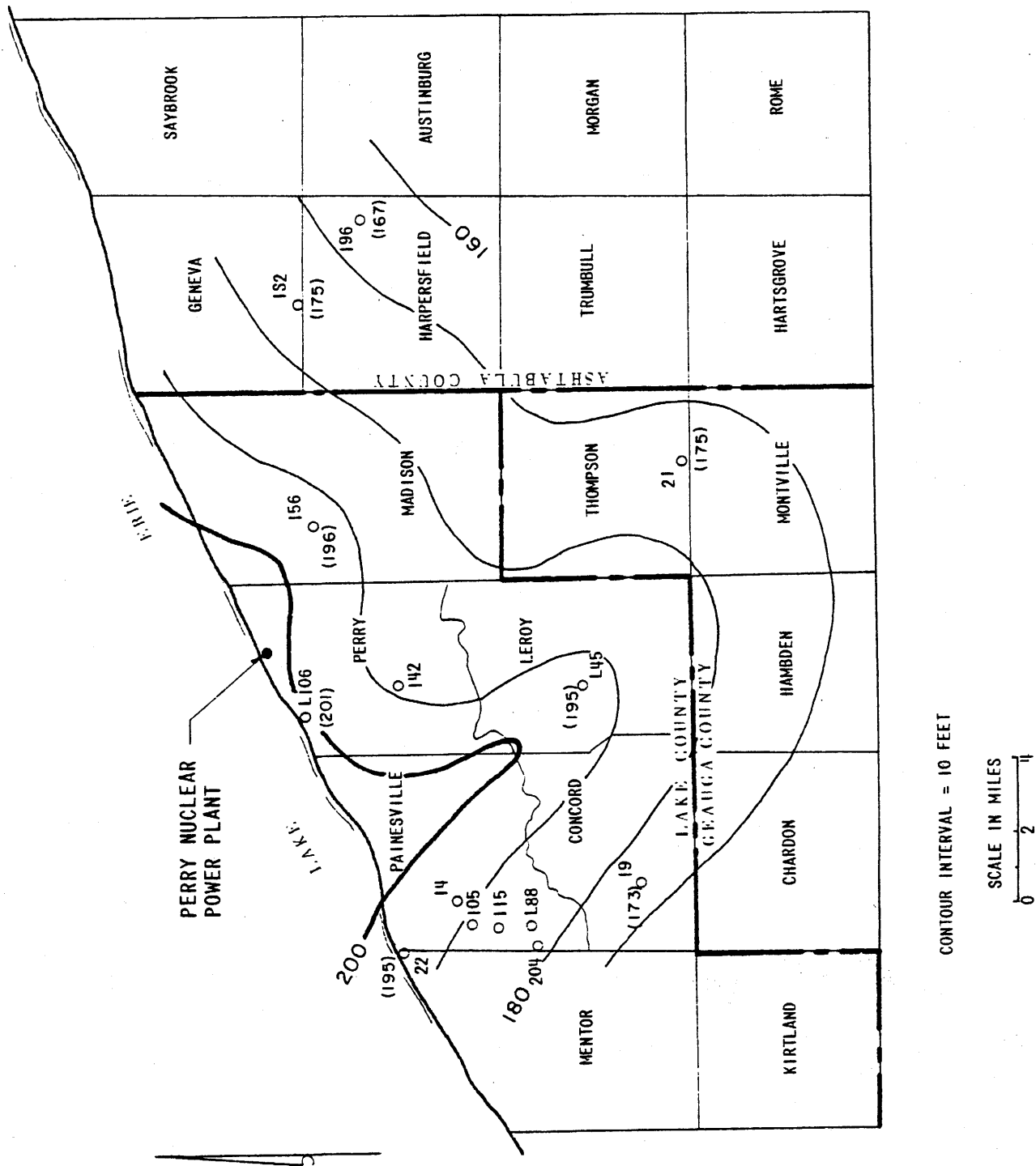
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Isopach Map of D Unit

Figure 2.5-26



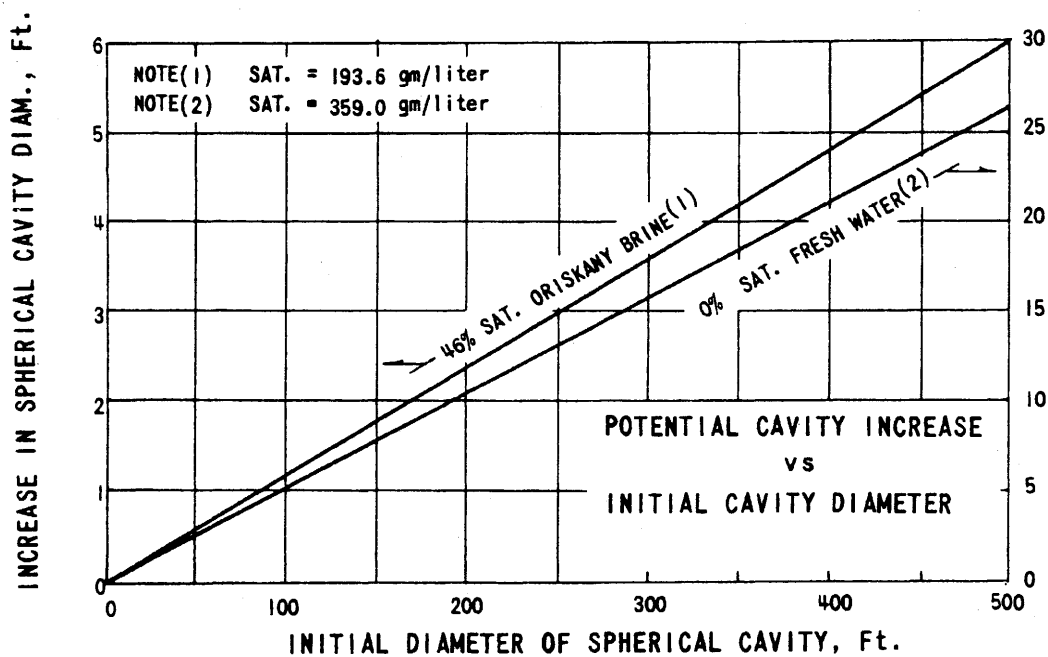
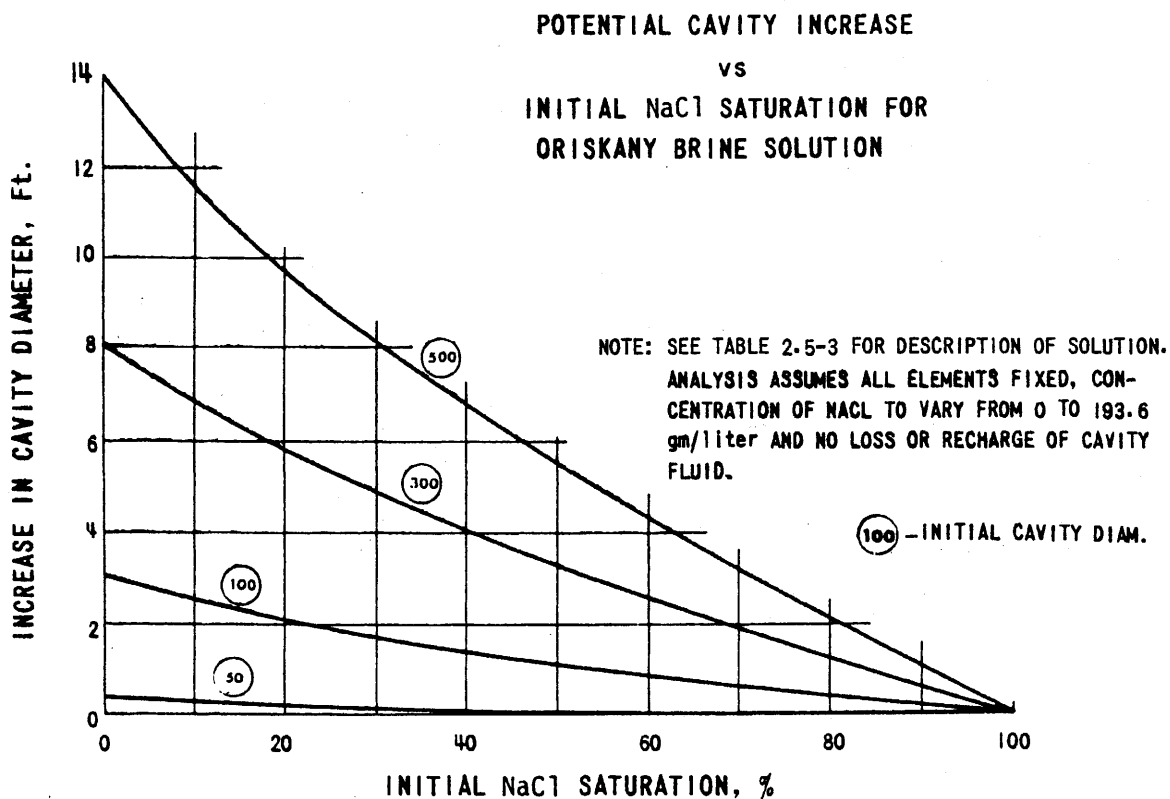
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Isopach Map of B Unit

Figure 2.5-27



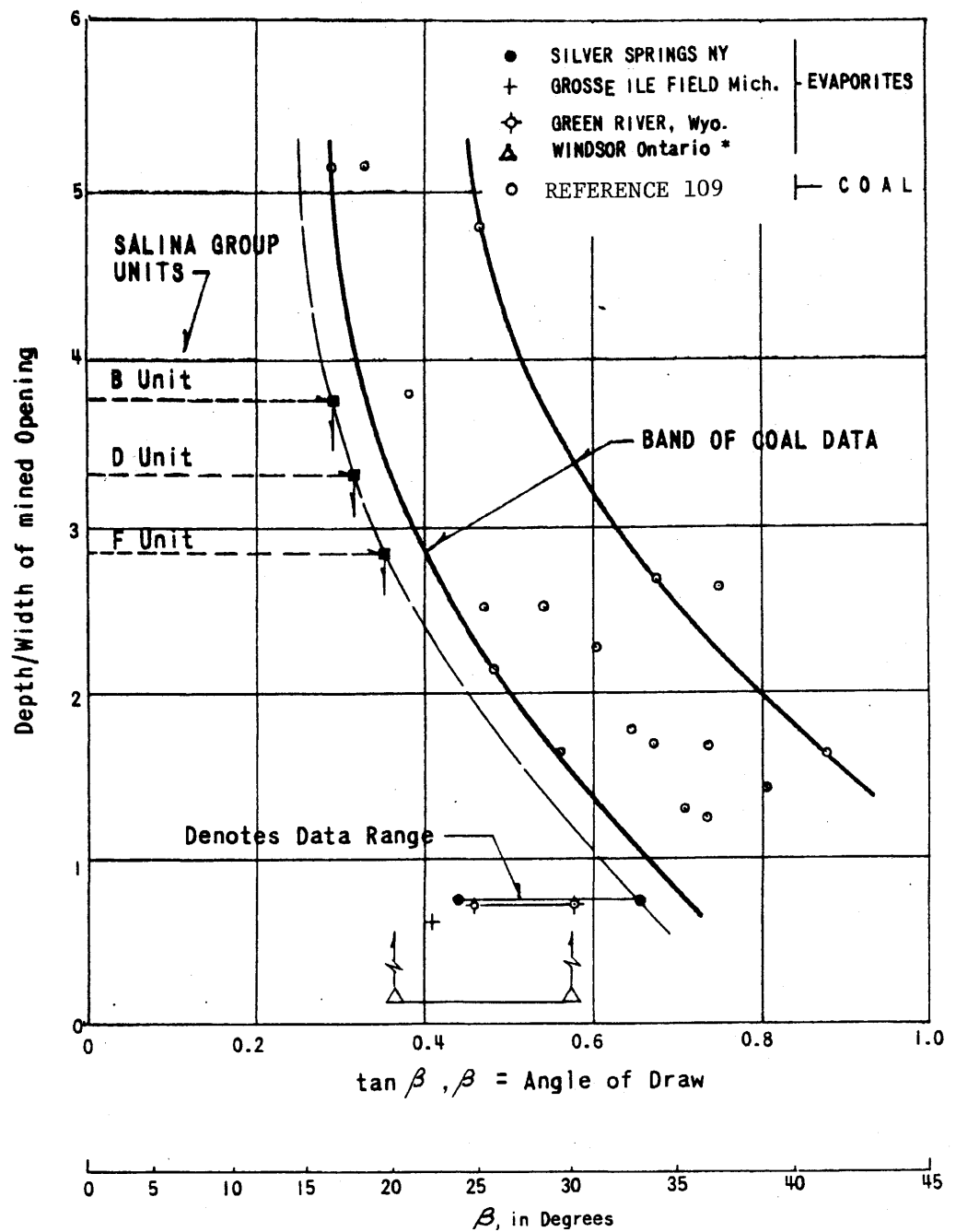
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Potential Cavity Increase vs.
Initial NaCl Saturation for
Oriskany Brine Solution

Figure 2.5-28



* Estimate β for solution salt mining at Windsor, Ontario (101) to be between 25 and 30 degrees before fracture of Cap Rock. Cavity depth/width unknown.

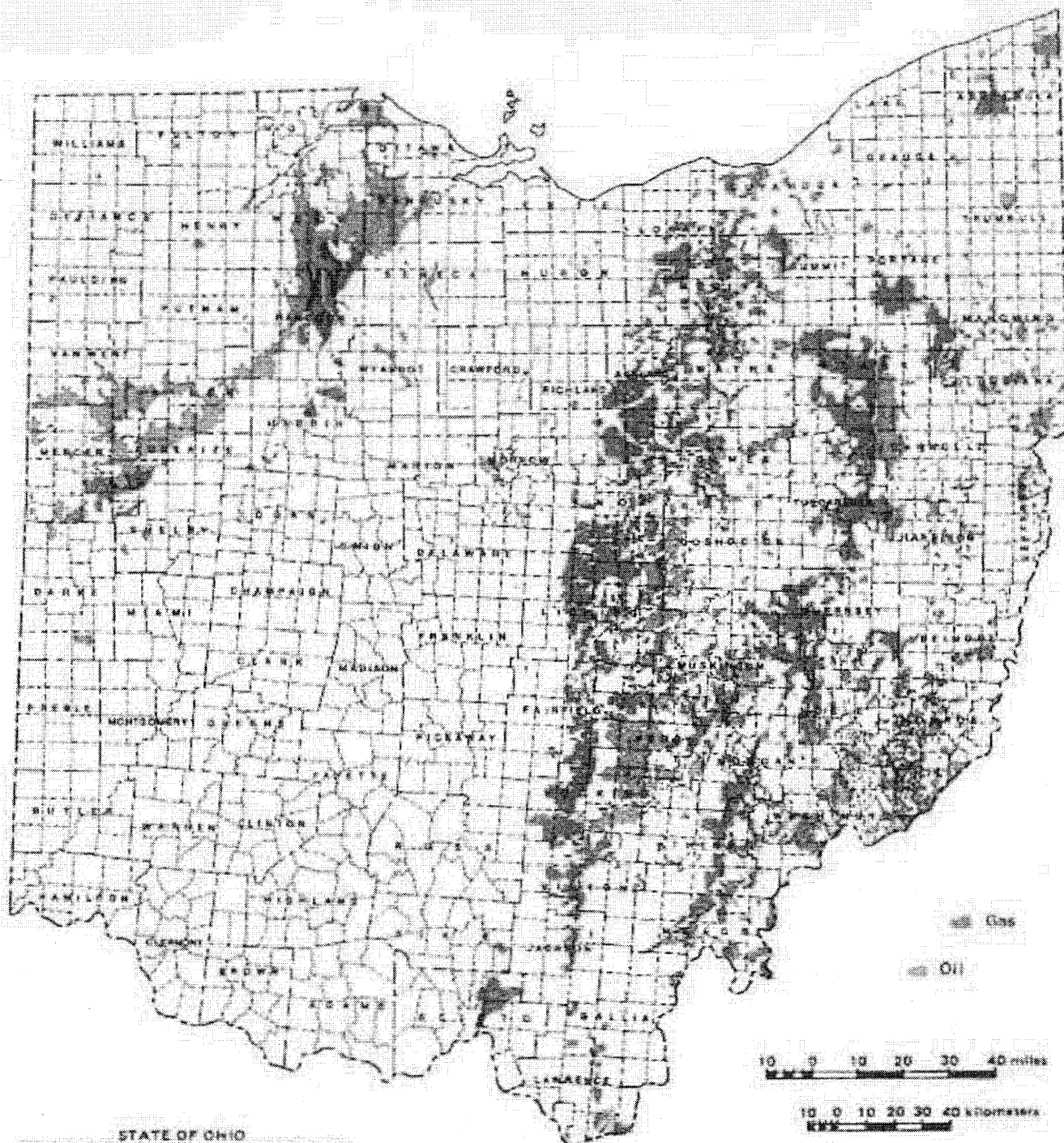
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Angle of Draw vs. Depth/Width
of Mining Operation

Figure 2.5-29



STATE OF OHIO
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGICAL SURVEY

Areas in which oil or gas is
being produced or has been pro-
duced commercially since 1860.

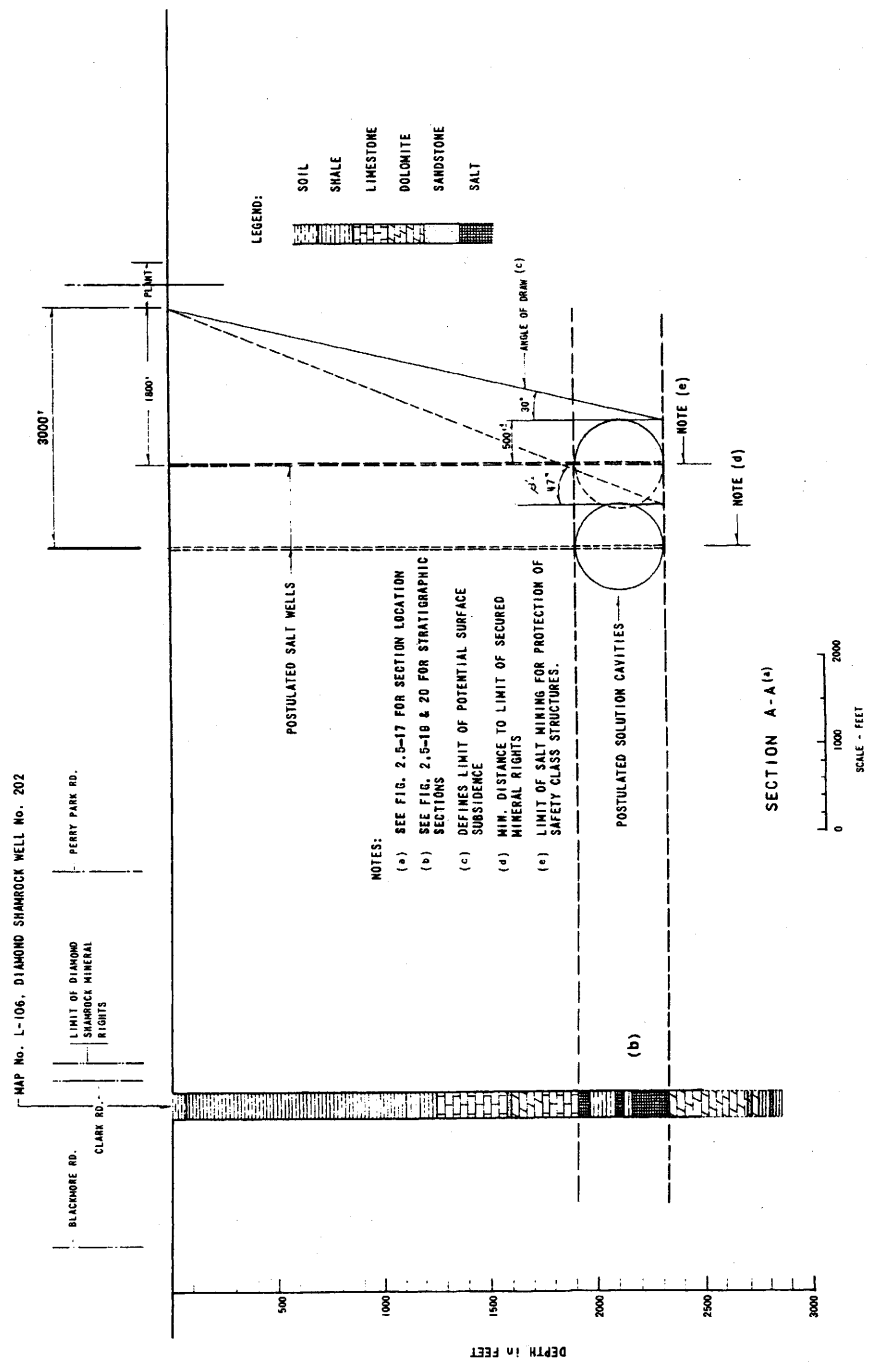
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Oil and Gas Fields in Ohio

Figure 2.5-30



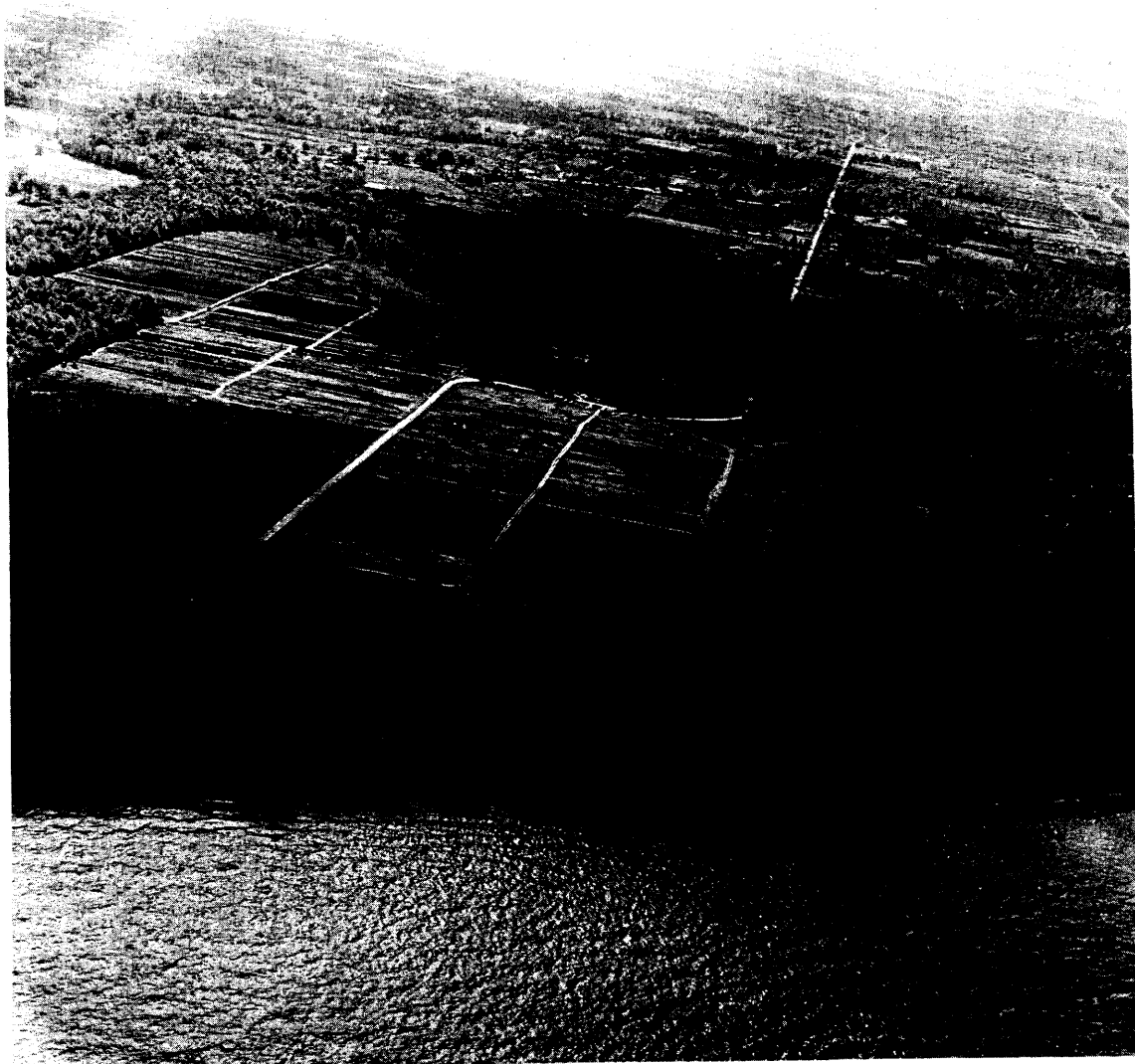
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Potential Mining Influence Based
on Postulated Solution Cavities

Figure 2.5-31



PRE-CONSTRUCTION VIEW ... PRIOR TO 1974

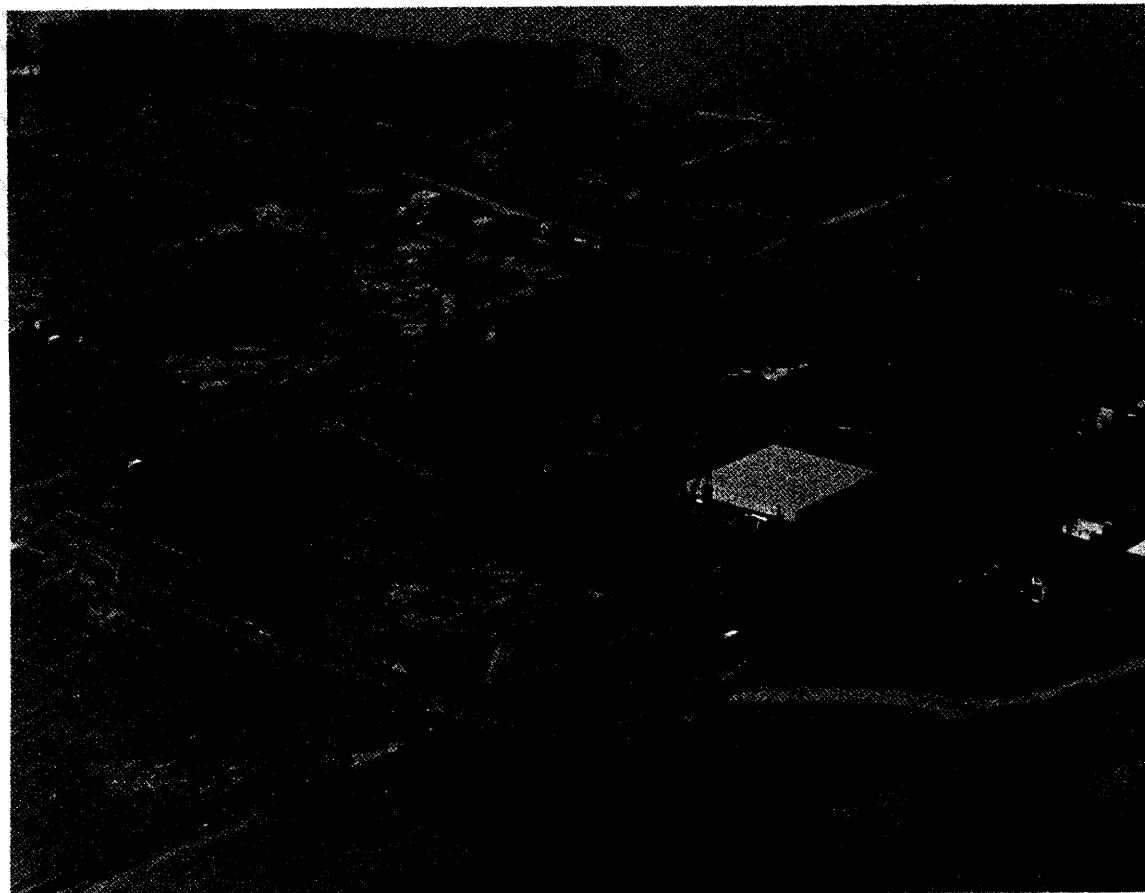
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Comparative Aerial Photographs of
the Perry Nuclear Power
Plant Site

Figure 2.5-32 (Sheet 1 of 3)



EXCAVATED DEPOSITS ... 1976

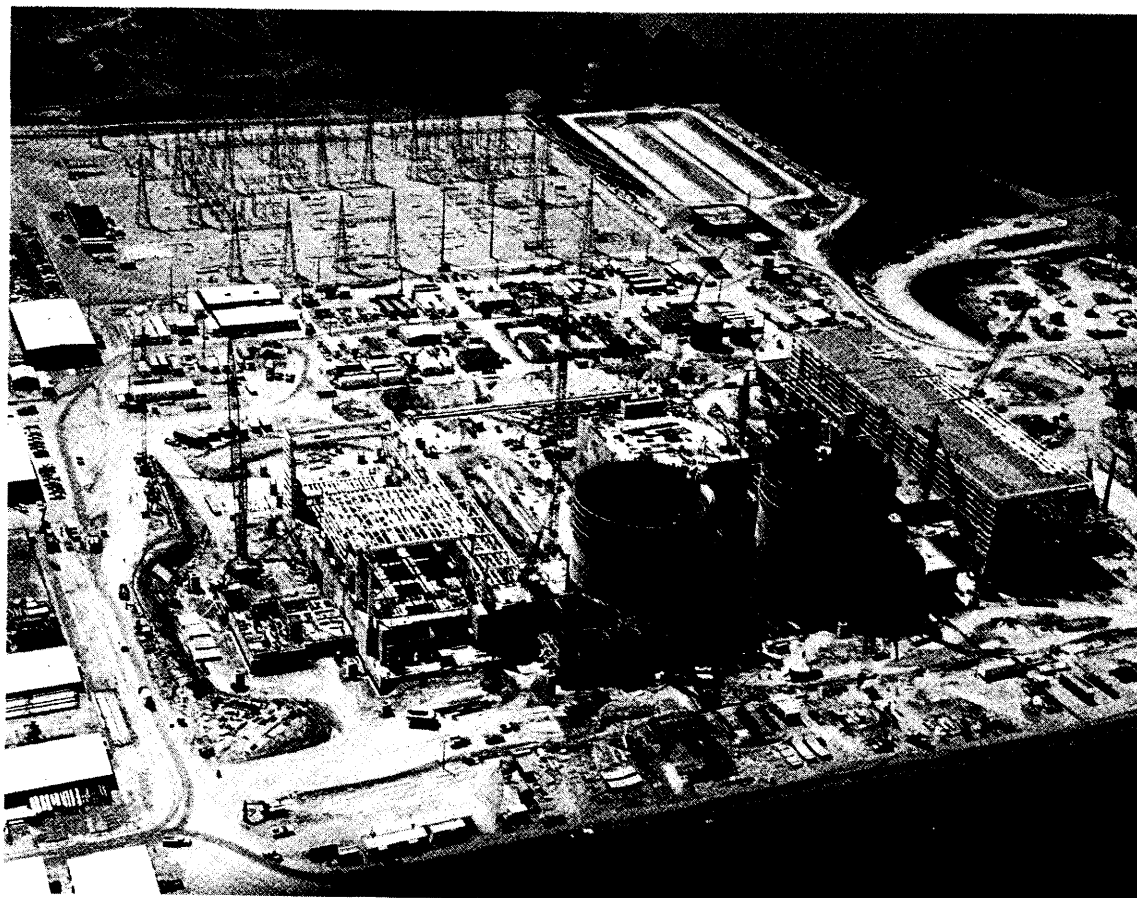
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PERRY NUCLEAR POWER PLANT

Comparative Aerial Photographs of
the Perry Nuclear Power
Plant Site

Figure 2.5-32 (Sheet 2 of 3)



STATE OF CONSTRUCTION ... 1979

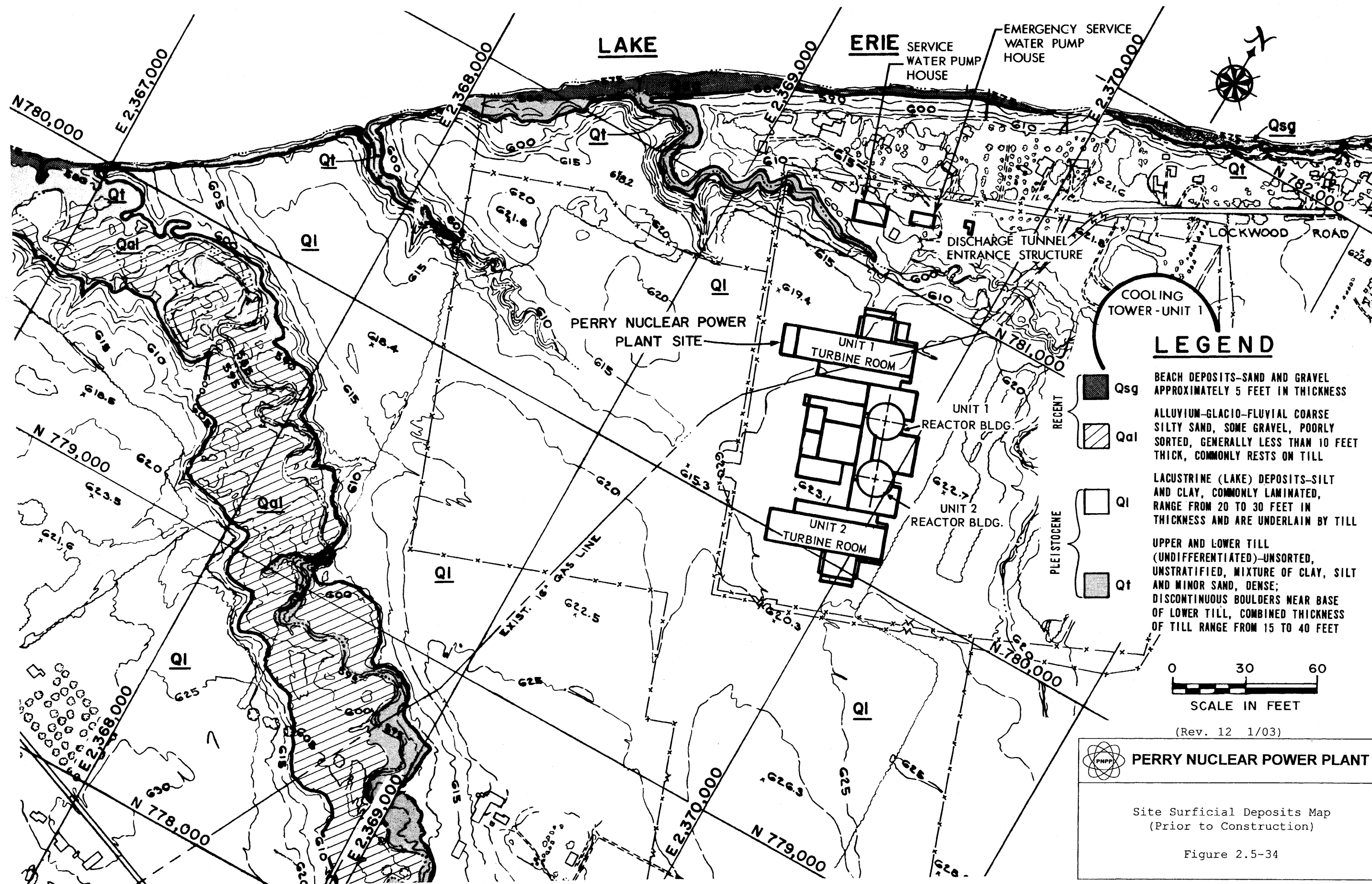
(Rev. 12 1/03)

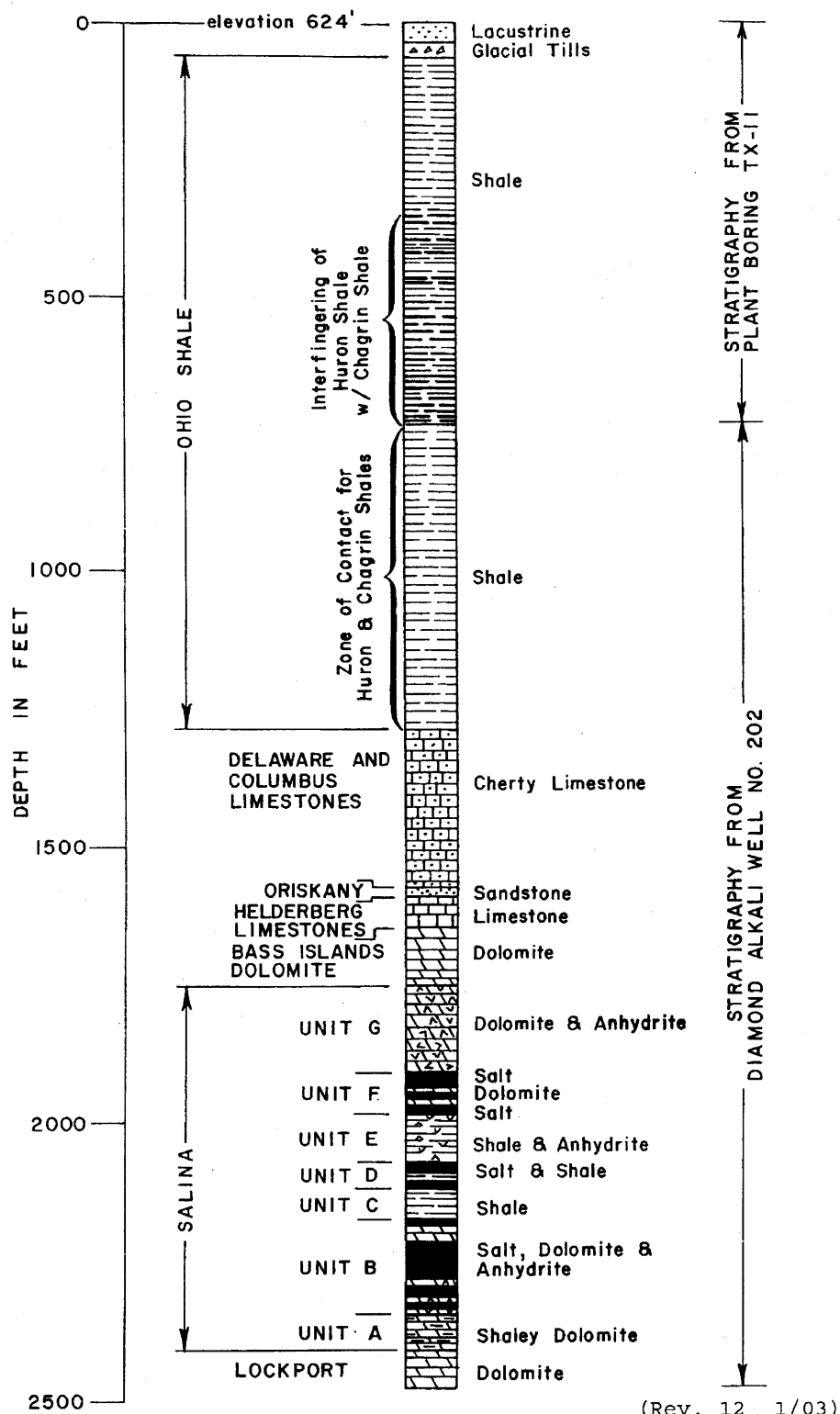


PERRY NUCLEAR POWER PLANT

Comparative Aerial Photographs of
the Perry Nuclear Power
Plant Site

Figure 2.5-32 (Sheet 3 of 3)





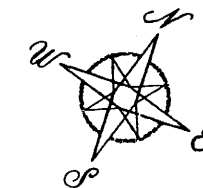
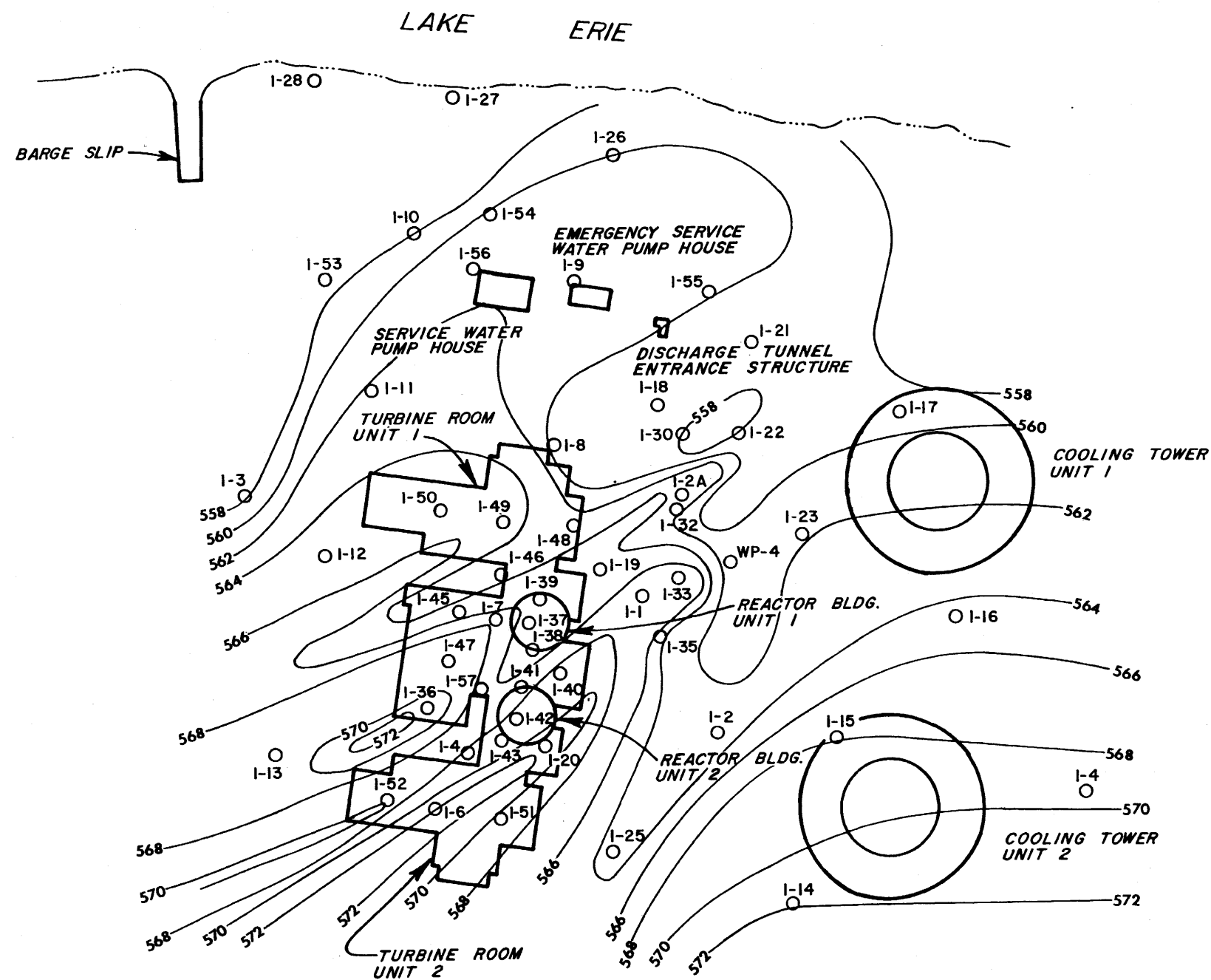
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Site Stratigraphic Column

Figure 2.5-35



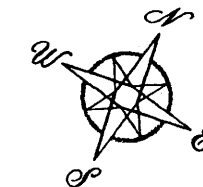
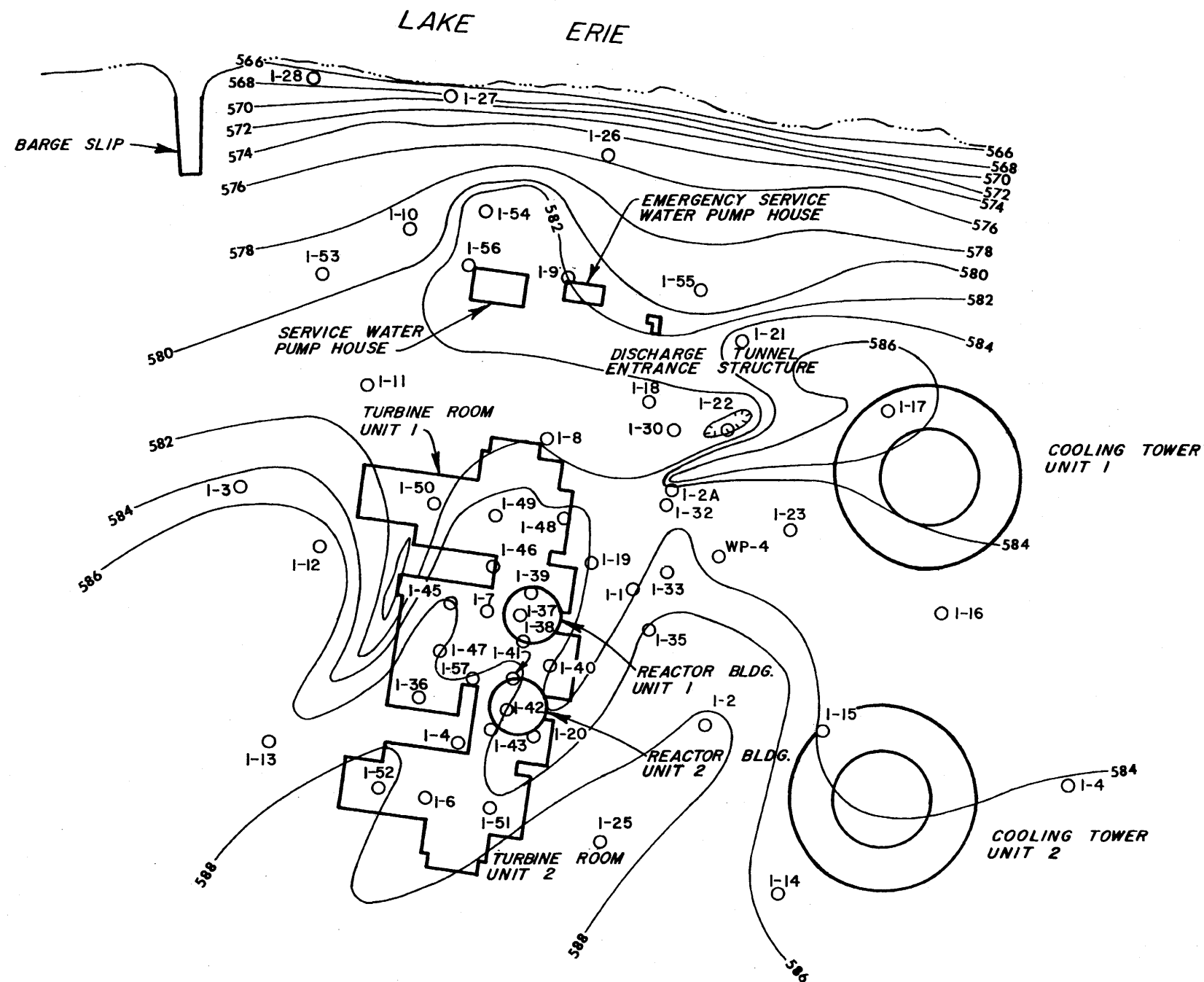
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Structural Contour Map -
Top of Chagrin Shale

Figure 2.5-36



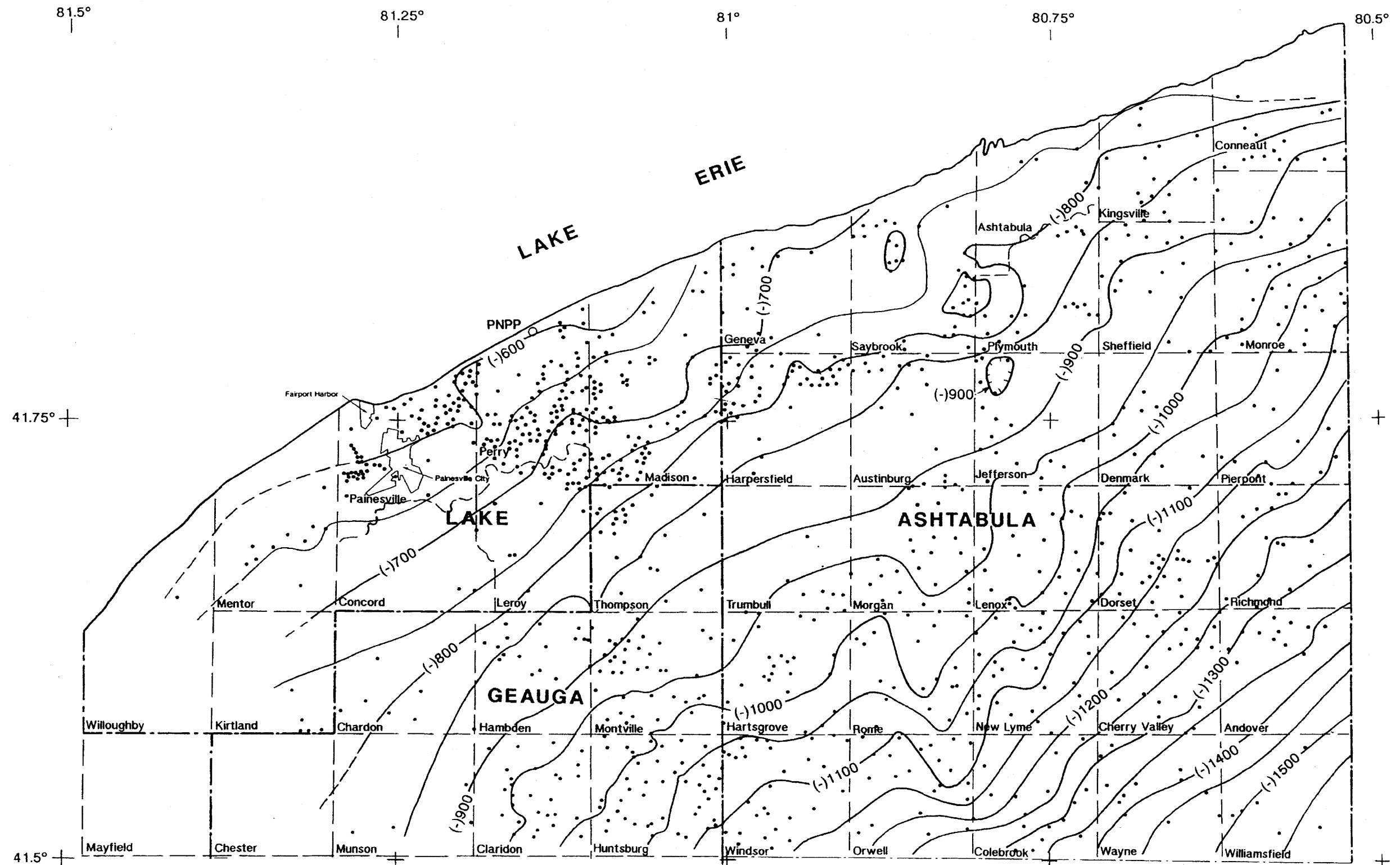
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Structural Contour Map -
Top of Lower Till

Figure 2.5-37

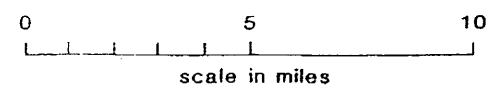


EXPLANATION

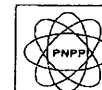
- Location of wells evaluated for contour data
- Contour line
- Contour in area of inferred data

Datum elevation is mean sea level.

Datum provided by Ohio Division of Geological Survey.



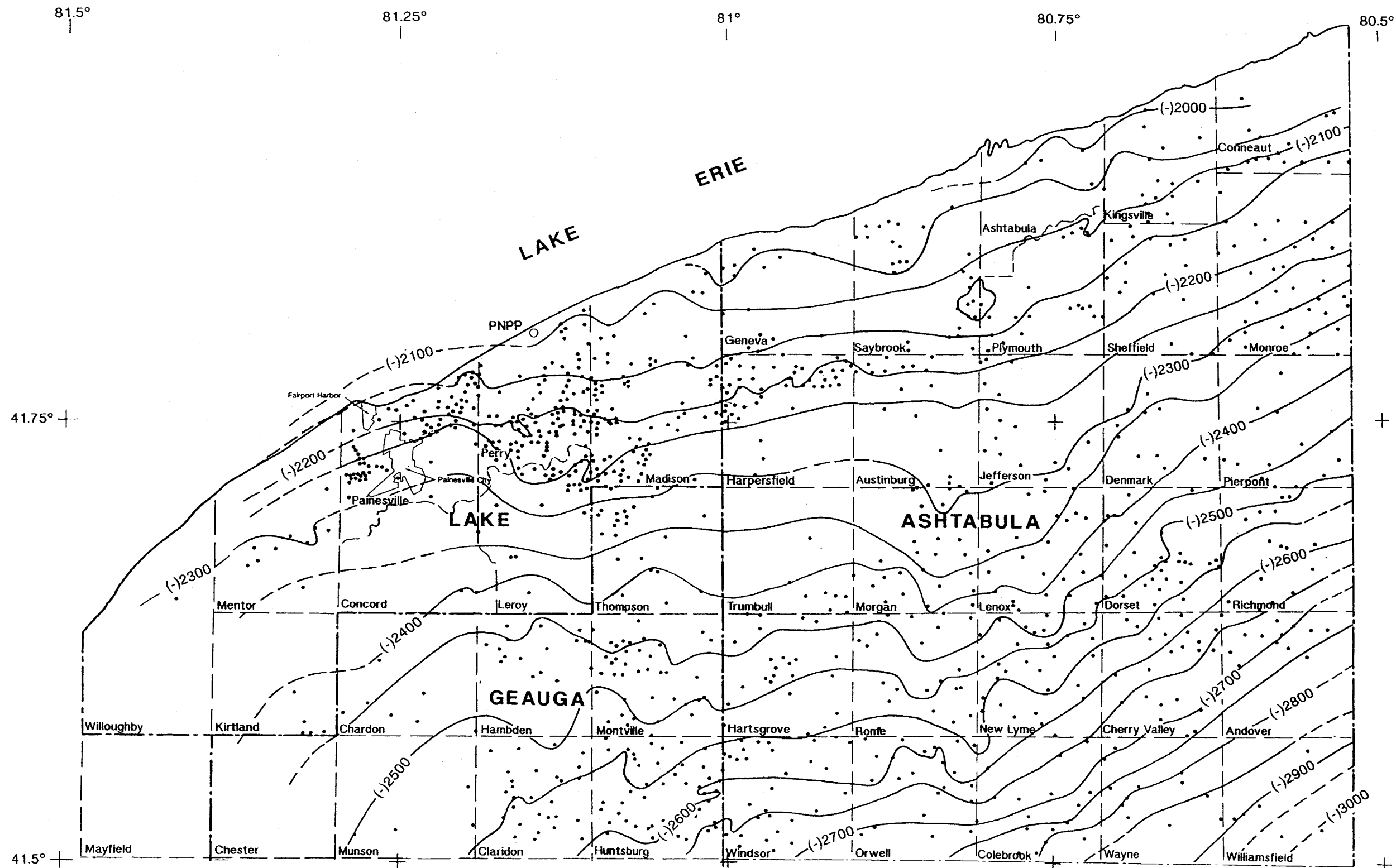
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Structural Contour Map -
Top of "Big Lime"

Figure 2.5-38



EXPLANATION

- Location of wells evaluated for contour data
- Contour line
- Contour in area of inferred data

Datum elevation is mean sea level.
Datum provided by Ohio Division of Geological Survey.

0 5 10
scale in miles



(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Structural Contour Map -
Top of Packer Shell

Figure 2.5-39



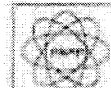
EXPLANATION

- OBSERVED OUTCROPS
- APPROXIMATE CONTACT OF
CHAGRIN SHALE - BEDFORD SHALE
- APPROXIMATE CONTACT OF
BEDFORD SHALE - BEREA SANDSTONE

6000 0 6000 12,000
scale in feet



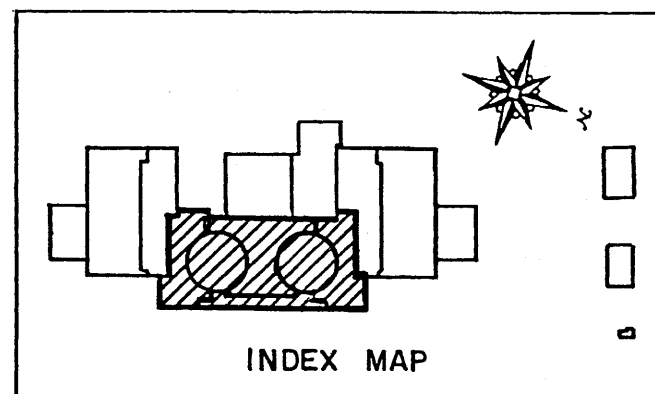
(Rev. 12 1/83)



PERRY NUCLEAR POWER PLANT

Fault and Outcrop Location Map

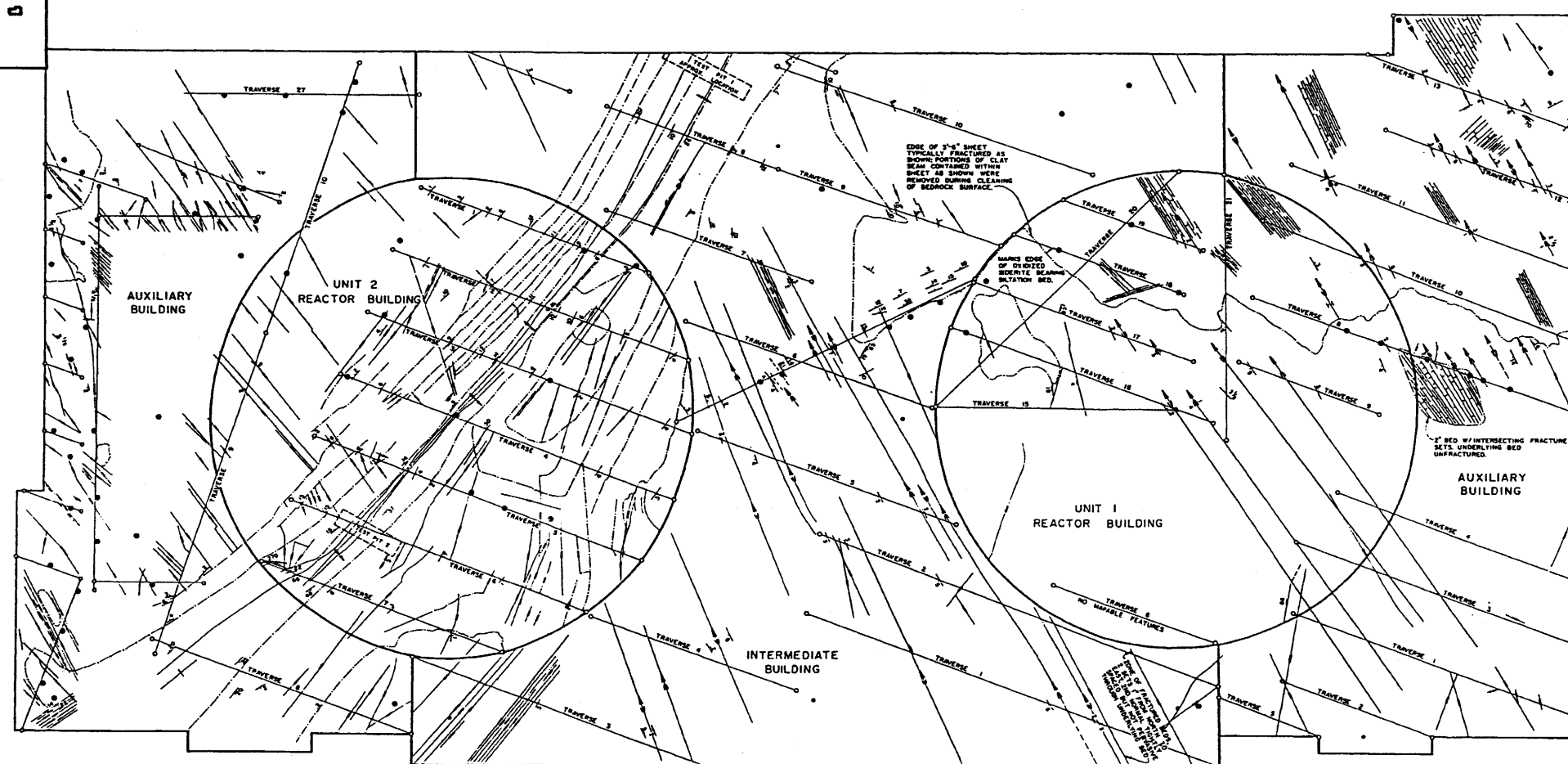
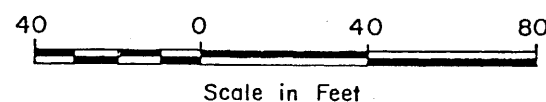
Figure 2.3-40



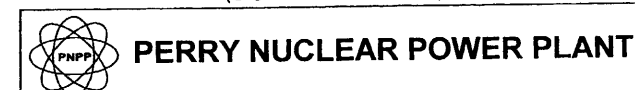
- SYMBOLS**
- Strike and dip of bedding
Note: In all cases, the strike and dip of bedding is on the exact location where obtained.
- Inclined Horizontal
- Folds and bedrock surface undulations
Gentle swell, showing plunge Gentle swell, showing plunge
Minor anticline, showing crestline
- Strike, dip and lateral extent of joints
Closed and inclined Closed and vertical or near vertical
Vertical or inclined, clay-filled and dry; separation < 2 ins. and vertical extent < 2 ft.
- Schematic portrayals
Edge of beds² Localized weathering³
- Excavation slopes
- Others
Data traverse lines and terminal control locations
Reactor building center pins
Contacts⁴ Major building boundary

Explanatory Notes

1. See southwest quadrant Unit 1 Reactor, south edge Control Complex and vicinity south edge Unit 1 Turbine Room.
2. Spacing between parallel symbols is inversely related to bedding inclination. Erratic and splaying patterns shown in areas of horizontal strata are attributable to bedrock surface relief, less than 0.25 ft., caused by excavation.
3. Weathering habit is characterized by mutually perpendicular fracture sets, individual fractures are tight, closely spaced, non-pervasive and dry. Dominant set is shown in oriented position. Secondary set is only shown where space permits.
4. Contacts are used as a convenience to delineate: (1) bedrock from overlying fill or backfill (2) edge of excavated rock and (3) approximate location of fractures connecting manholes.

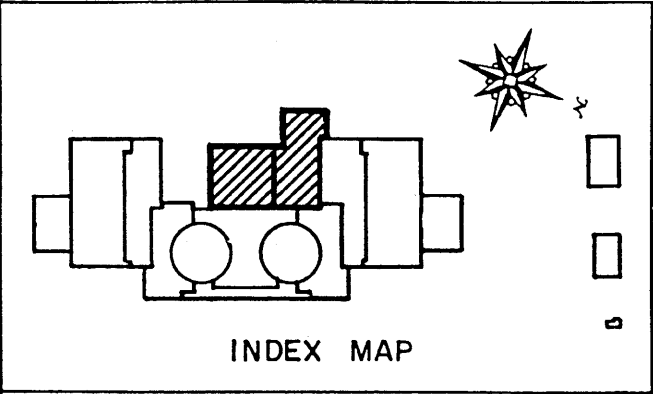


(Rev. 12 1/03)



Foundation Bedrock Geologic Map

Figure 2.5-41 (Sheet 1 of 5)



- SYMBOLS**
- Strike and dip of bedding
Note: In all cases, the strike and dip of bedding is on the exact location where obtained.
- Inclined Horizontal
- Folds and bedrock surface undulations
- Gentle swell, showing plunge Gentle swell, showing plunge
- Minor anticline, showing crestline
- Strike, dip and lateral extent of joints
- Closed and inclined Closed and vertical or near vertical
- Vertical or inclined, clay-filled and dry; separation < 2 ins. and vertical extent < 2 ft.¹
- Schematic portrayals
- Edges of beds² Localized weathering³
- Excavation slopes
- Others
- Data traverse lines and terminal control locations
- Reactor building center pins
- Contacts⁴ Major building boundary

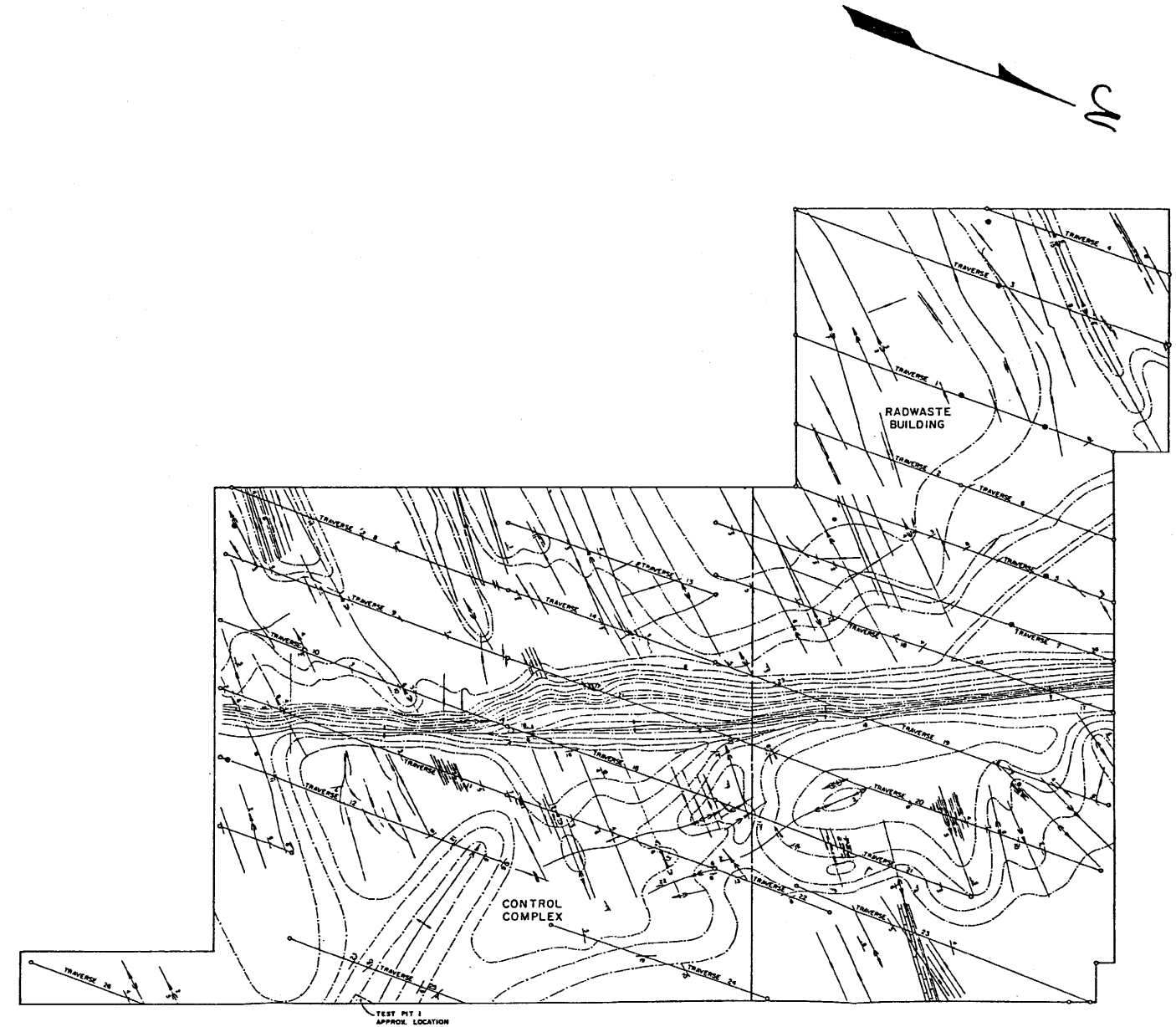
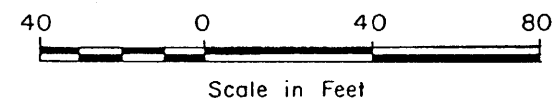
Explanatory Notes

1. See southwest quadrant Unit 1 Reactor, south edge Control Complex and vicinity south edge Unit 1 Turbine Room.

2. Spacing between parallel symbols is inversely related to bedding inclination. Erratic and splaying patterns shown in areas of horizontal strata are attributable to bedrock surface relief, less than 0.25 ft., caused by excavation.

3. Weathering habit is characterized by mutually perpendicular fracture sets, individual fractures are tight, closely spaced, non pervasive and dry. Dominant set is shown in oriented position. Secondary set is only shown where space permits.

4. Contacts are used as a convenience to delineate: (1) bedrock from overlying fill or backfill; (2) edge of excavated rock and (3) approximate location of trenches connecting manholes.

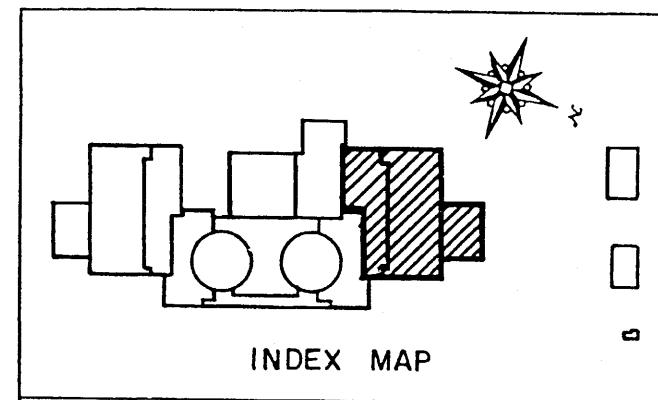


(Rev. 12 1/03)

PERRY NUCLEAR POWER PLANT

Foundation Bedrock Geologic Map

Figure 2.5-41 (Sheet 2 of 5)



SYMBOLS

Strike and dip of bedding
Note: In all cases, the strike and dip of bedding is on the exact location where obtained.

Inclined Horizontal

Folds and bedrock surface undulations

Gentle swell, showing plunge Gentle swell, showing plunge

Minor anticline, showing crestline

Strike, dip and lateral extent of joints

Closed and inclined Closed and vertical or near vertical

Vertical or inclined, clay-filled and dry; separation < 2 ins. and vertical extent < 2 ft.¹

Schematic portrayals

Edge of beds² Localized weathering³

Excavation slopes

Others

Data traverse lines and terminal control locations

Reactor building center pins

Contacts⁴ Major building boundary

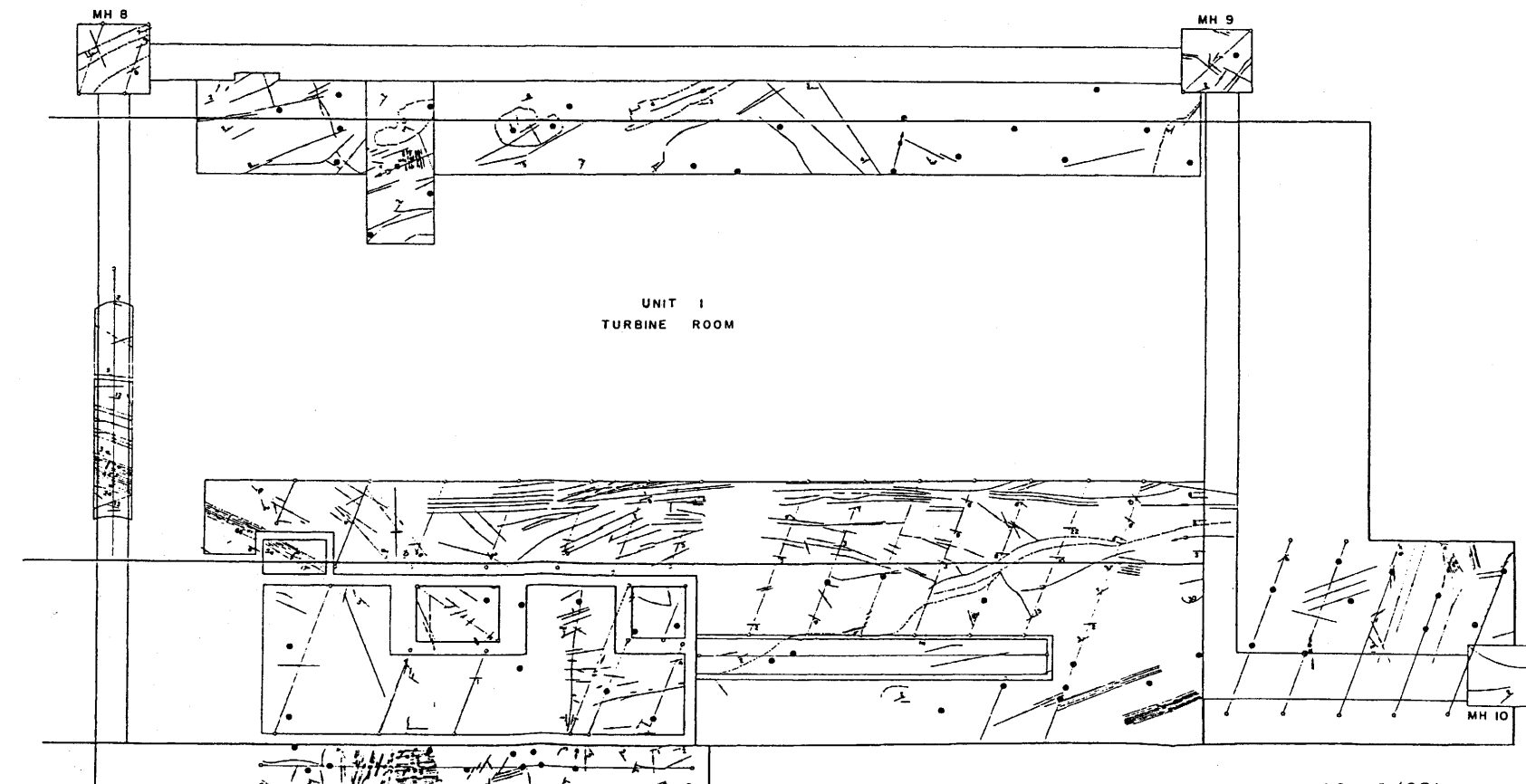
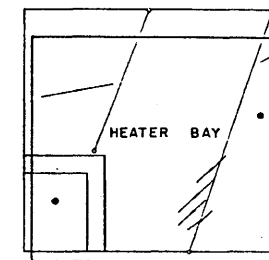
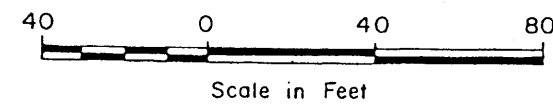
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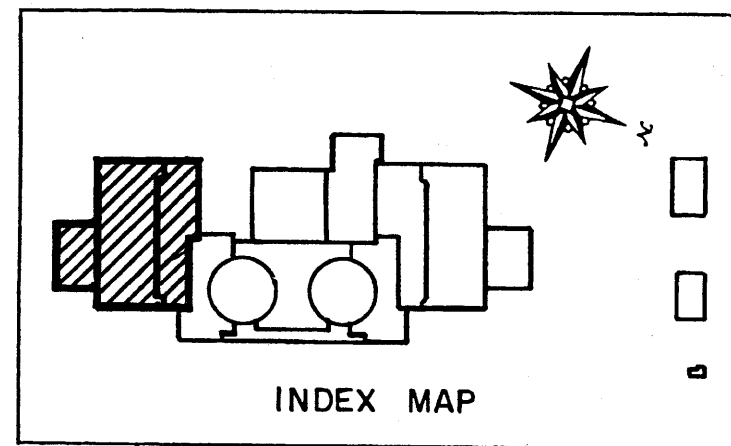
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Foundation Bedrock Geologic Map

Figure 2.5-41 (Sheet 3 of 5)



INDEX MAP

SYMBOLS

Strike and dip of bedding

Note: In all cases, the strike and dip of bedding is on the exact location where obtained.

▲ Inclined ● Horizontal

Folds and bedrock surface undulations

▲ Gentle swell, showing plunge ▲ Gentle swale, showing plunge

▲ Minor anticline, showing crestline

Strike, dip and lateral extent of joints

▲ Closed and inclined ▲ Closed and vertical or near vertical

▲ Vertical or inclined, clay-filled and dry; separation < 2 ins. and vertical extent < 2 ft.

Schematic portrayals

▲ Edge of beds² ▲ Localized weathering³

Excavation slopes

Others

○ Data traverse lines and terminal control locations

● Reactor building center pins

▲ Contacts⁴ ▲ Major building boundary

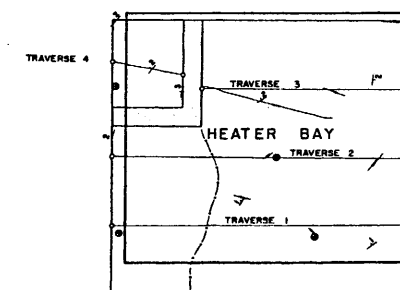
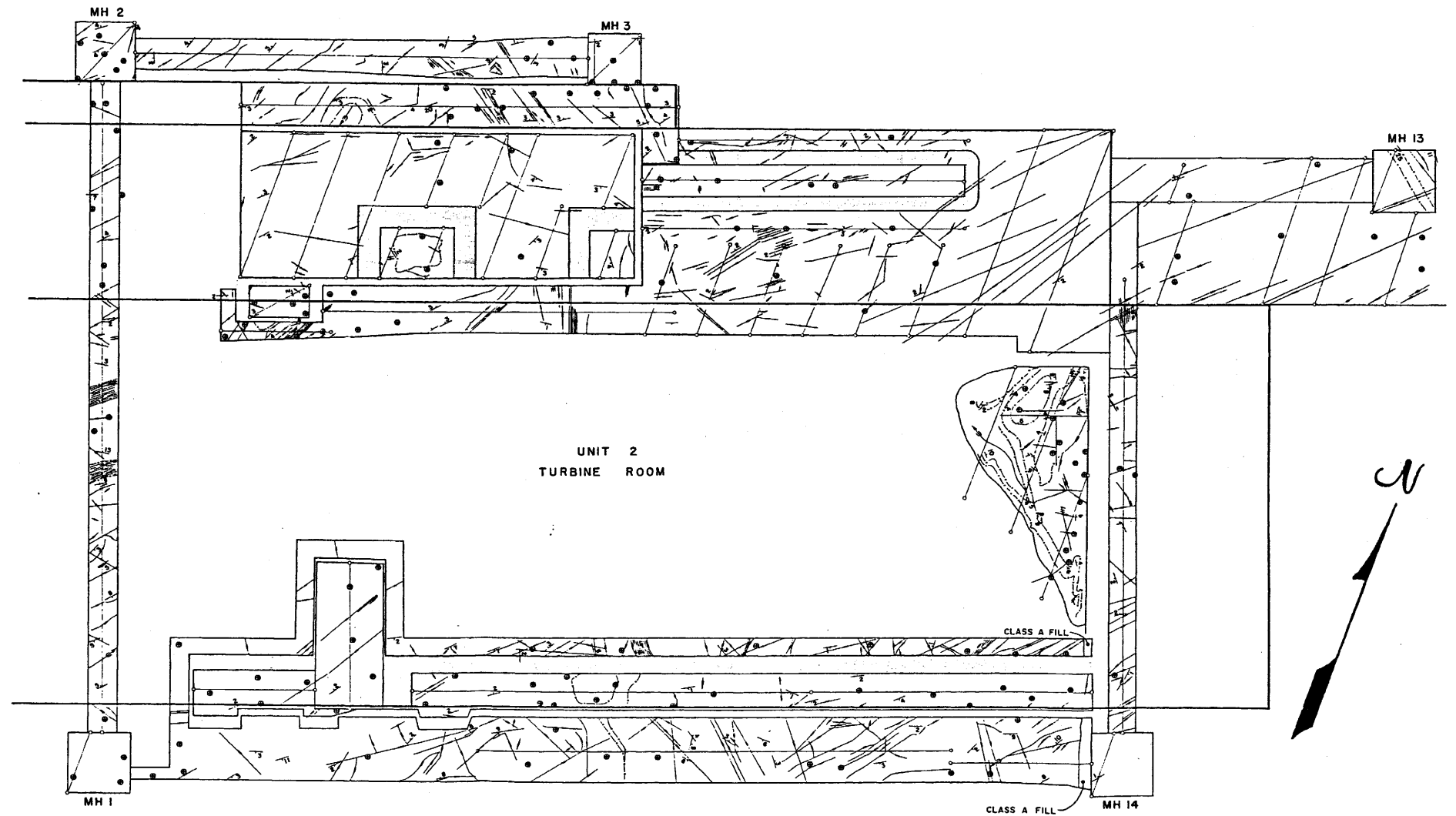
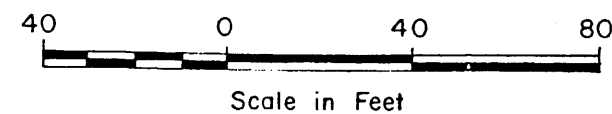
Explanatory Notes

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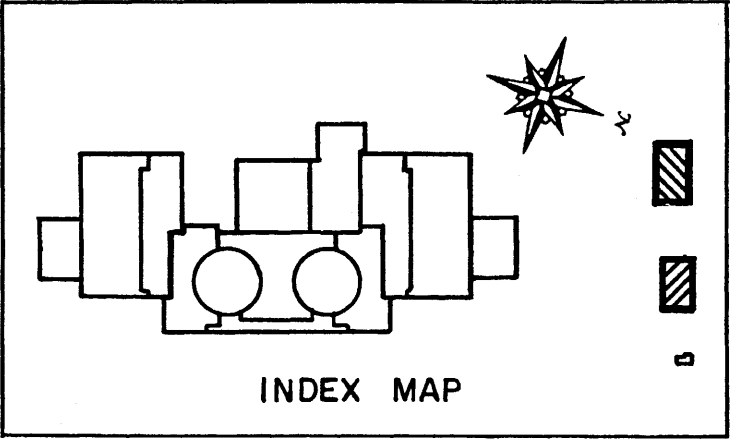
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Foundation Bedrock Geologic Map

Figure 2.5-41 (Sheet 4 of 5)



- SYMBOLS**
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Note: In all cases, the strike and dip of bedding is on the exact location where obtained.
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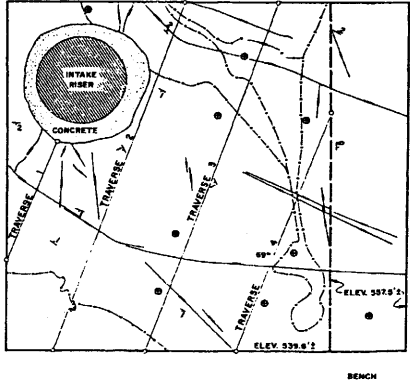
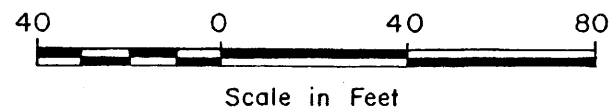
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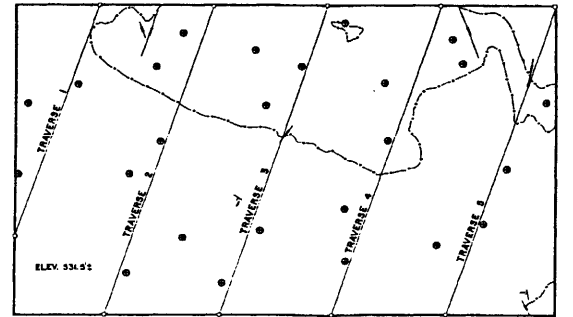
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SERVICE WATER PUMPHOUSE



EMERGENCY SERVICE WATER PUMPHOUSE

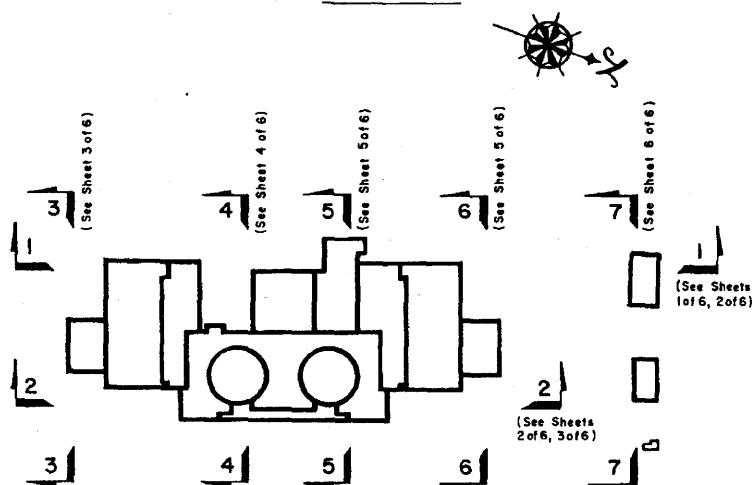
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**PERRY NUCLEAR POWER PLANT**

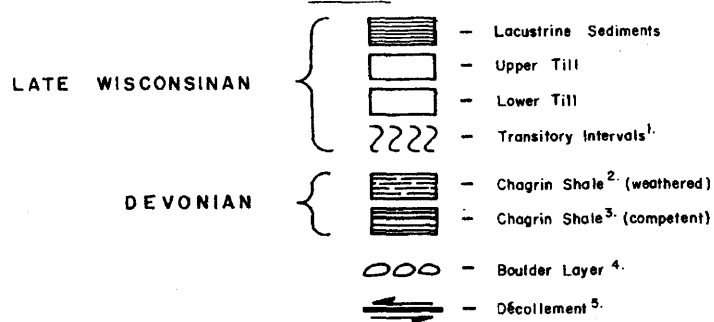
Foundation Bedrock Geologic Map

Figure 2.5-41 (Sheet 5 of 5)

INDEX MAP



LEGEND



EXPLANATORY NOTES

1. A transition extending from the undeformed boulder layer to definable bedrock consists of Lower Till incorporated within contorted, blocky and weathered shale. The Transitory Interval was formed as a consequence of glaciation during late Wisconsinan time.
2. Weathered Chagrin shale includes bedrock substantially deformed by late Wisconsinan glacially-induced, shallow deformation. Weathered and substantially deformed shale underlying and adjacent to foundation grade has been removed.
3. Shale bedding is schematically portrayed by light weight lines and less abundant siltstone interbeds by heavier weight lines.
4. Boulder sizes and spacing intervals are variable and portrayed schematically. Constituent rock types include granite, gneiss, quartzite, sandstone, siltstone and shale.
5. Décollements are detachment bedding-planes along which overlying beds, the active fault component, were shoved southerly in response to glaciation for an indeterminable distance during late Wisconsin time. Relative sense of shove is depicted by arrows. Displacement may be accompanied by genetically related folding and imbrication of comparable scale. Slight upward shearing or downward buckling is also present along leading edge of some detached blocks, evidence of upward shearing occasionally can be traced into Transitory Interval where it terminates. This deformation is not pervasive through Boulder Layer into Lower.

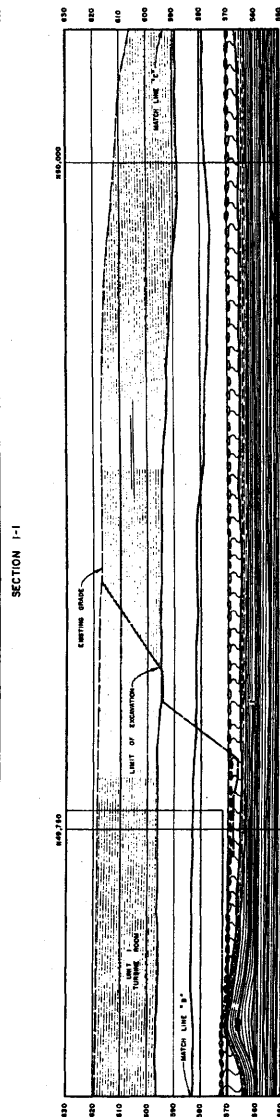
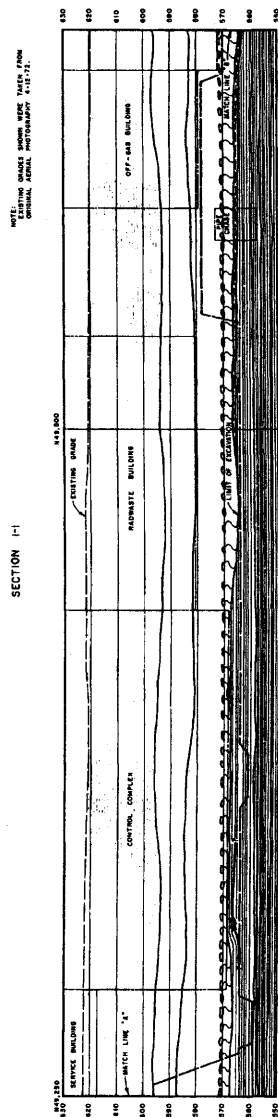
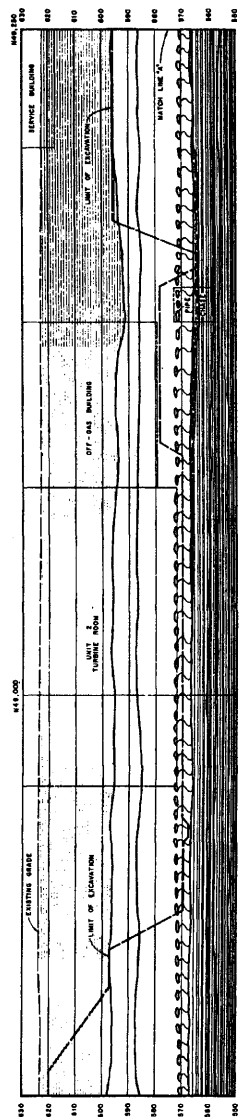
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PERRY NUCLEAR POWER PLANT

Geologic Cross Sections

Figure 2.5-42 Index



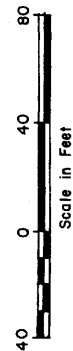
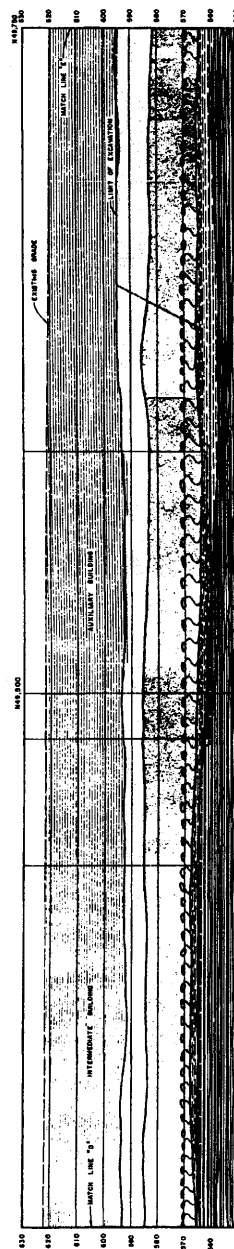
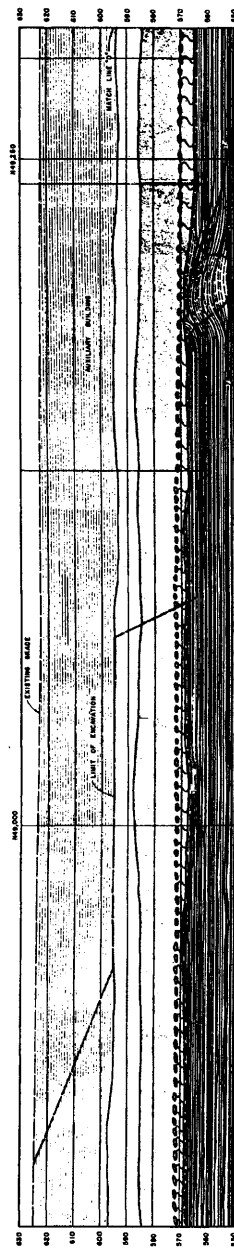
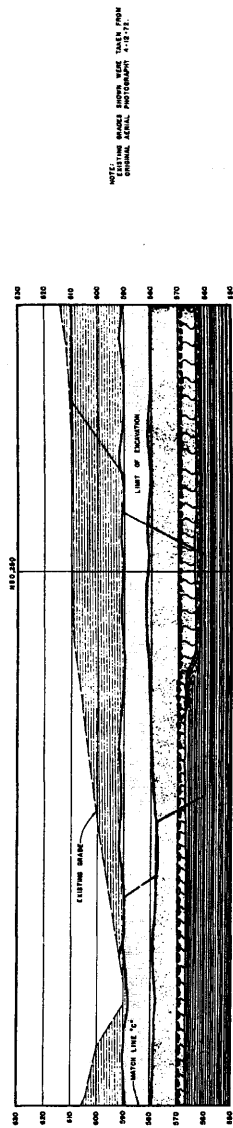
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Geologic Cross Sections

Figure 2.5-42 (Sheet 1 of 6)



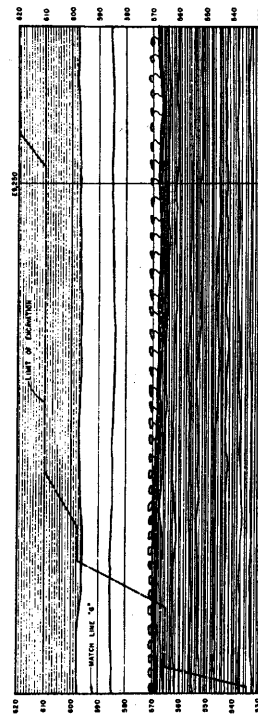
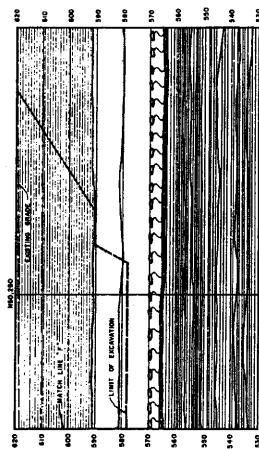
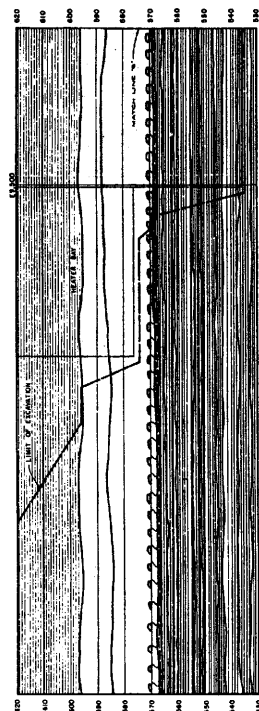
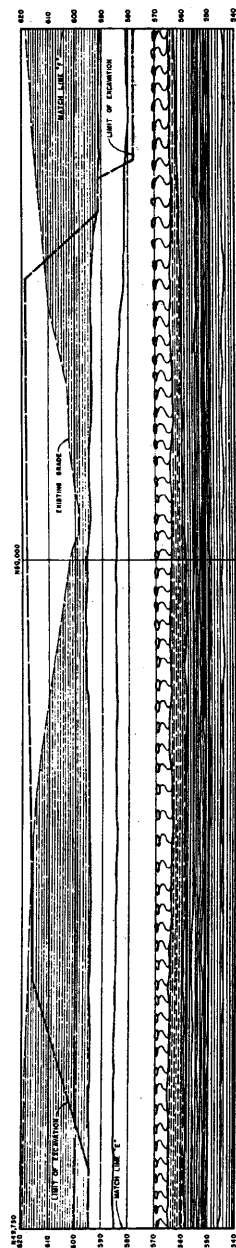
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Geologic Cross Sections

Figure 2.5-42 (Sheet 2 of 6)



NOTE:
ELEVATION MARKS SHOWN WERE TAKEN FROM
ORIGINAL AERIAL PHOTOGRAPH 4-12-72



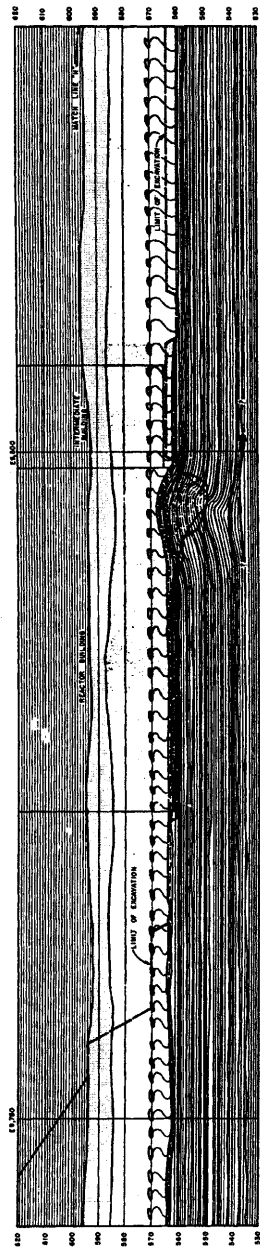
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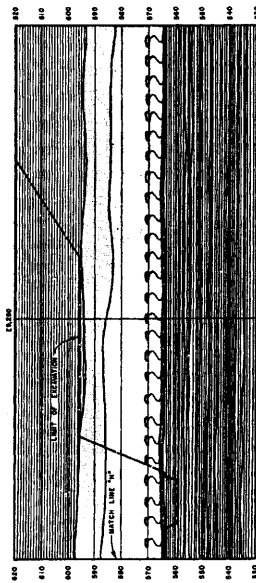
PERRY NUCLEAR POWER PLANT

Geologic Cross Sections

Figure 2.5-42 (Sheet 3 of 6)

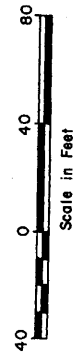


SECTION 4-4



SECTION 4-4

NOTE: THIS CROSS SECTION WAS PREPARED BY THE
 GEOL. DIV. OF THE U.S. GEOLOGICAL SURVEY
 IN COOPERATION WITH THE PERRY NUCLEAR POWER PLANT



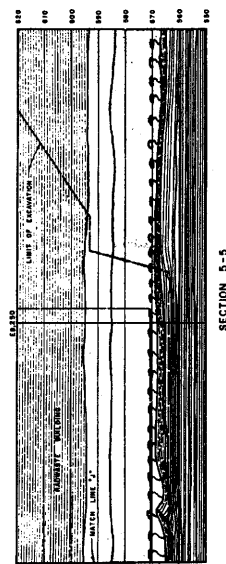
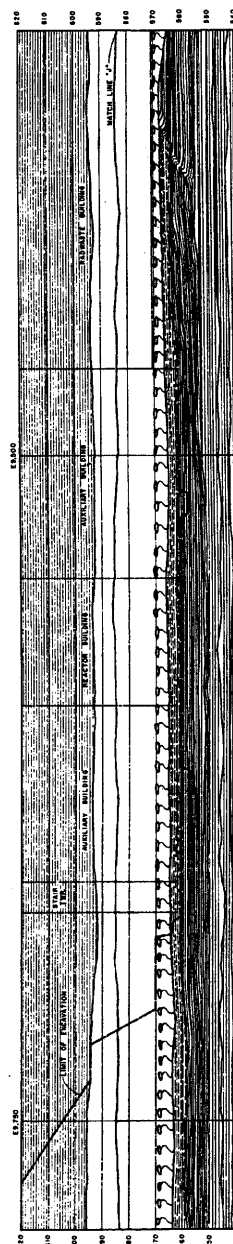
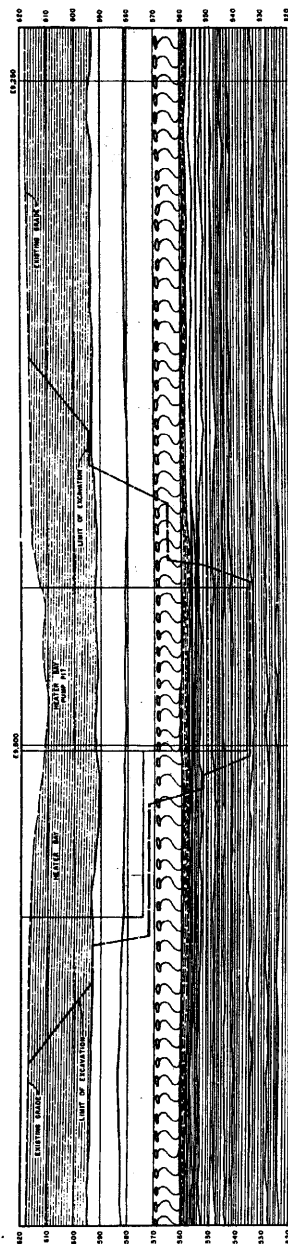
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Geologic Cross Sections

Figure 2.5-42 (Sheet 4 of 6)



NOTE: EXISTING GRADES SHOWN WERE TAKEN FROM ORIGINAL AERIAL PHOTOGRAPHY 4-12-72.

(Rev. 12 1/03)

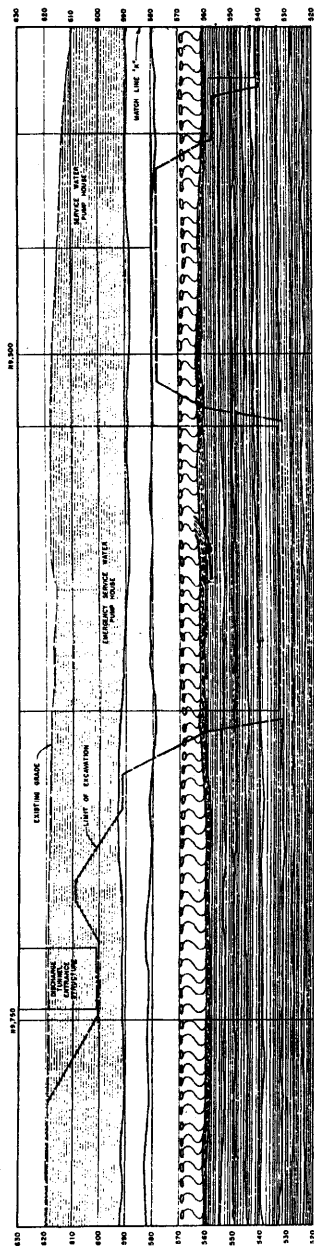


PERRY NUCLEAR POWER PLANT

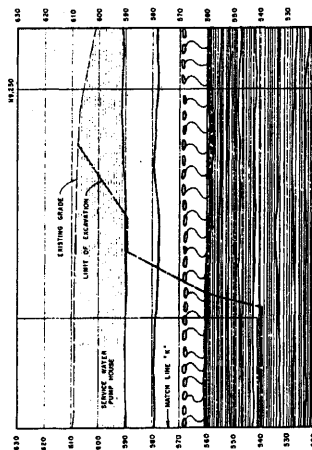
Geologic Cross Sections

Figure 2.5-42 (Sheet 5 of 6)





SECTION 7-7



SECTION 7-7

NOTE:
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ORIGINAL AERIAL PHOTOGRAPHY 4-15-72.



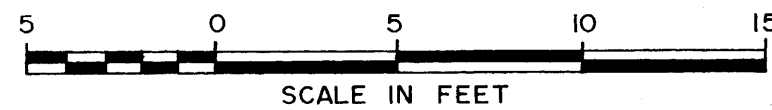
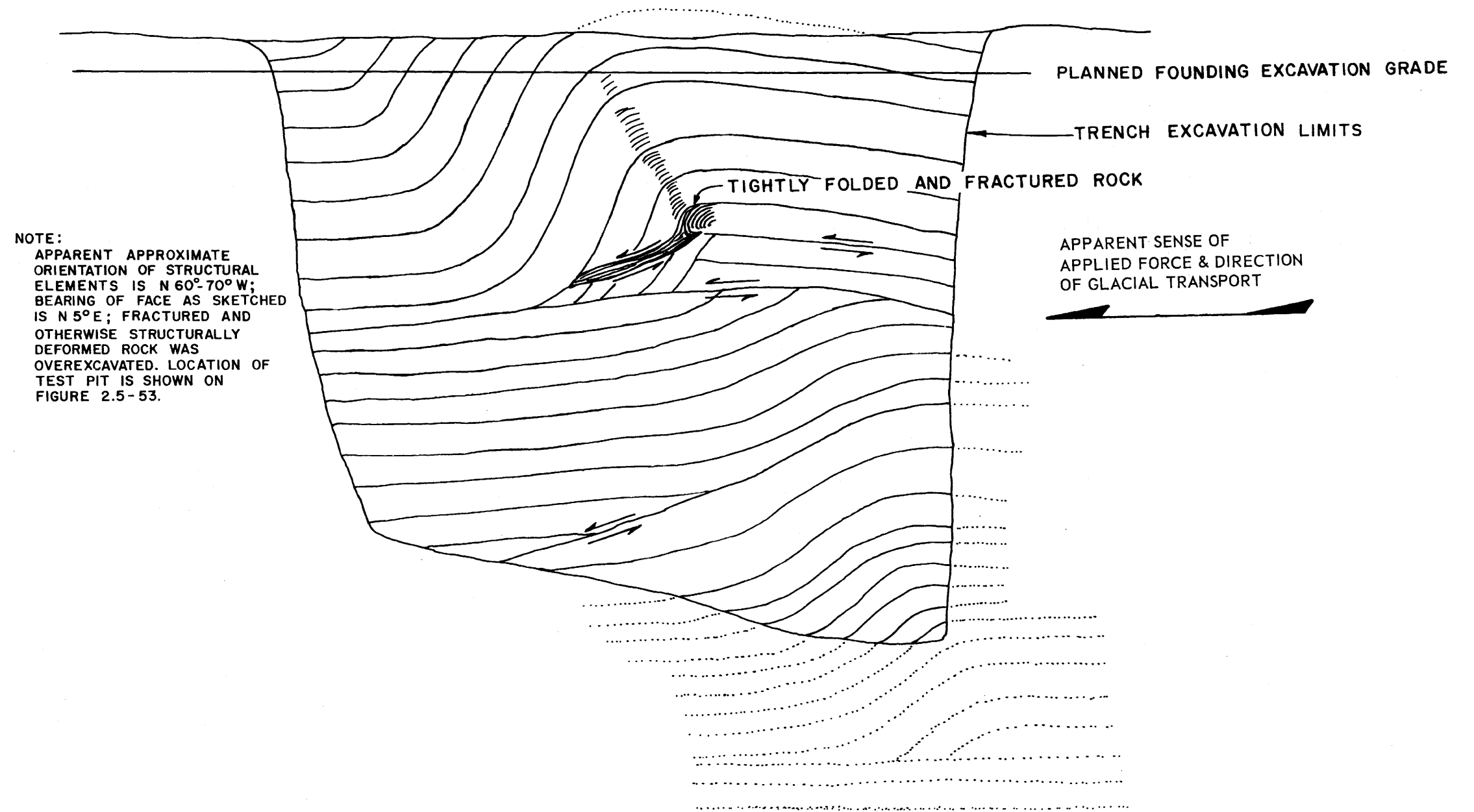
(Rev. 12 1/03)



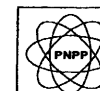
PERRY NUCLEAR POWER PLANT

Geologic Cross Sections

Figure 2.5-42 (Sheet 6 of 6)



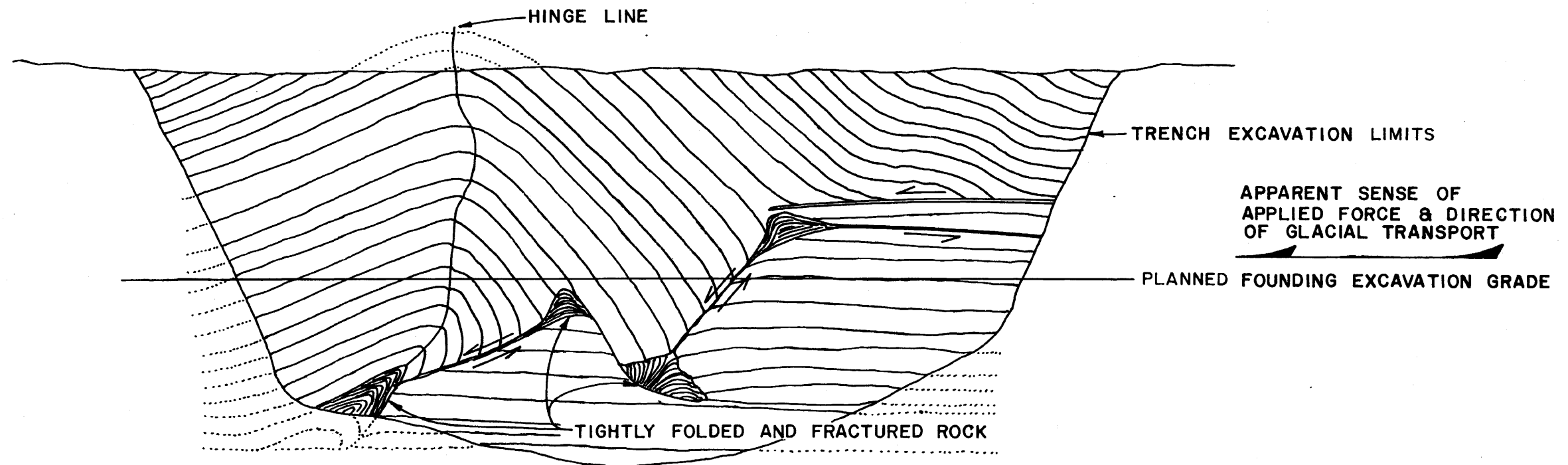
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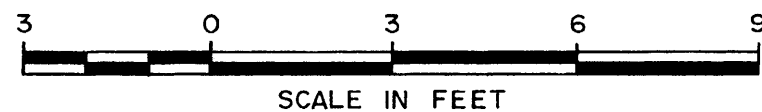
PERRY NUCLEAR POWER PLANT

Sketch of West Wall Test Pit

Figure 2.5-43



- NOTES:
1. APPARENT APPROXIMATE ORIENTATION OF STRUCTURAL ELEMENTS IS $N60^{\circ}-70^{\circ}W$; FOLDS IN EAST FACE APPEAR TO BE SLIGHTLY MORE SYMMETRICAL THAN WEST WALL, BEARING OF FACE AS SKETCHED IS $N10^{\circ}E$.
 2. FRACTURED AND OTHERWISE STRUCTURALLY DEFORMED ROCK WAS OVEREXCAVATED. LOCATION OF TEST PIT IS SHOWN ON FIGURE 2.5-53.



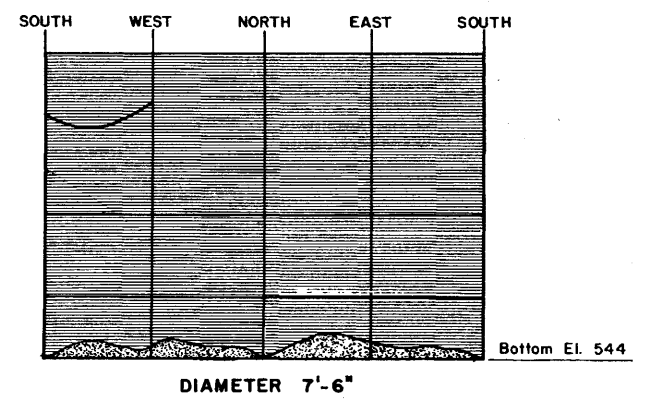
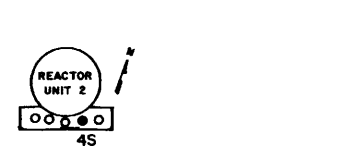
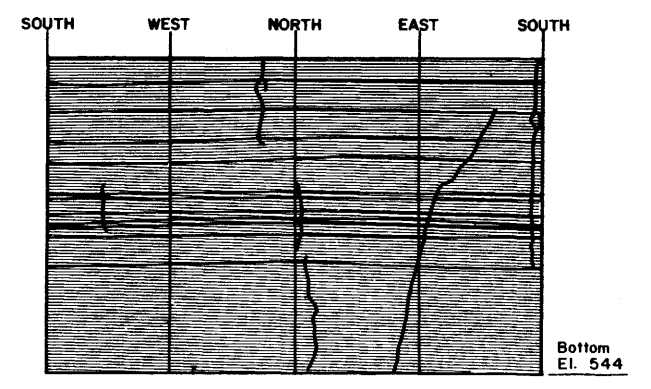
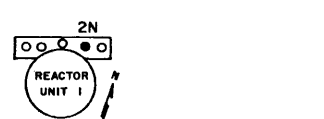
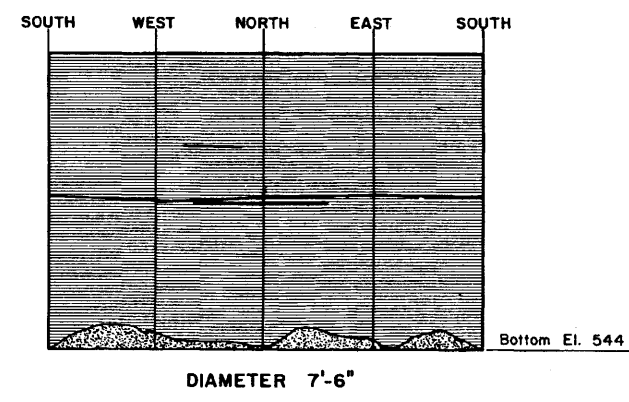
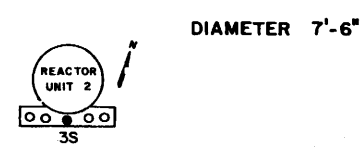
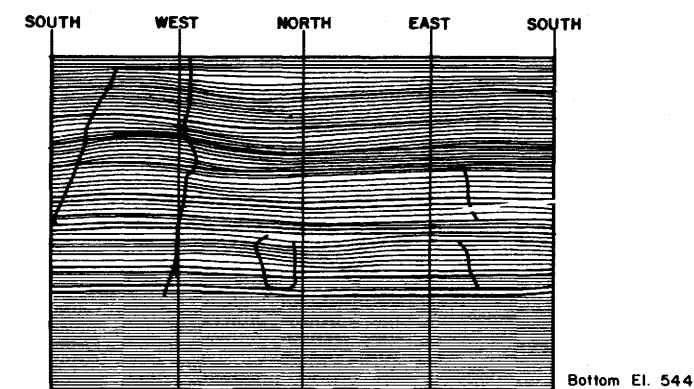
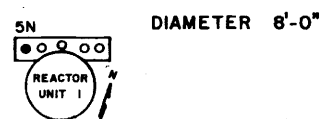
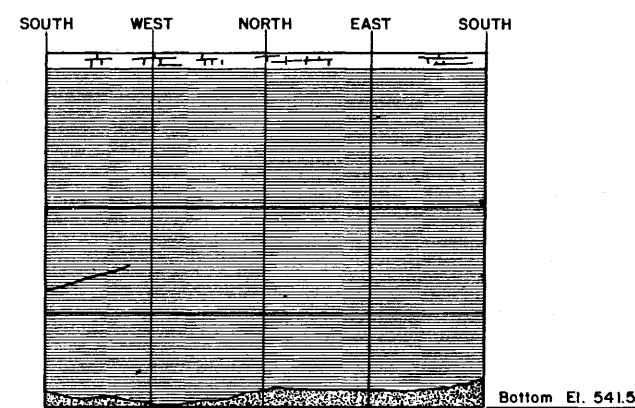
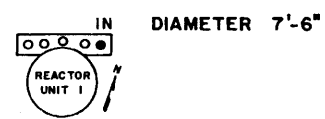
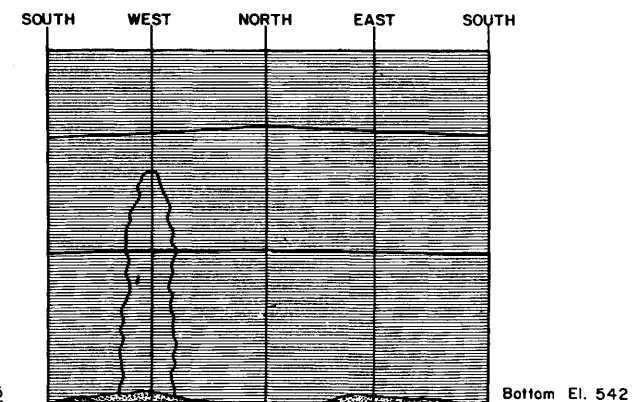
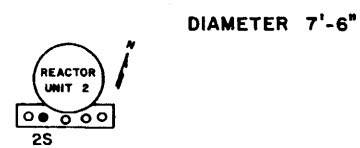
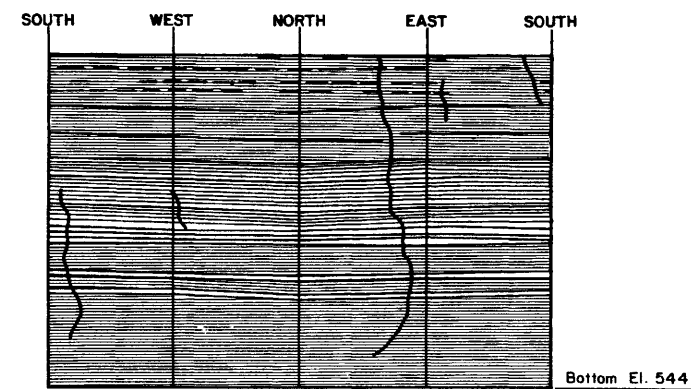
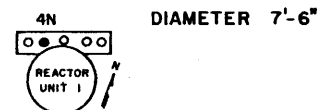
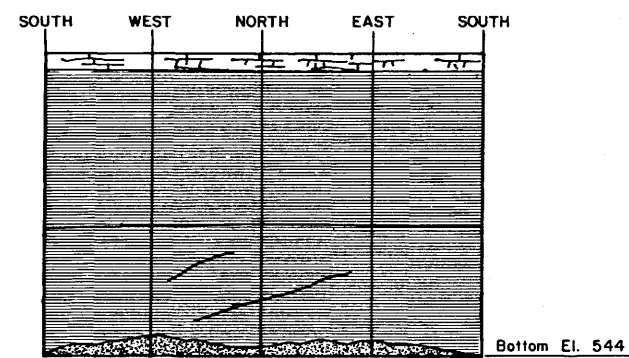
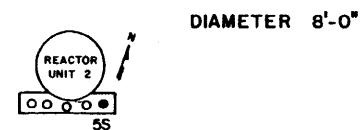
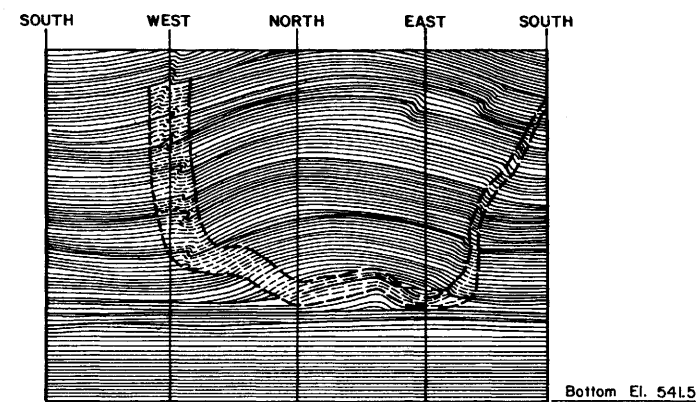
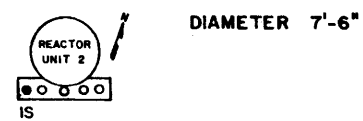
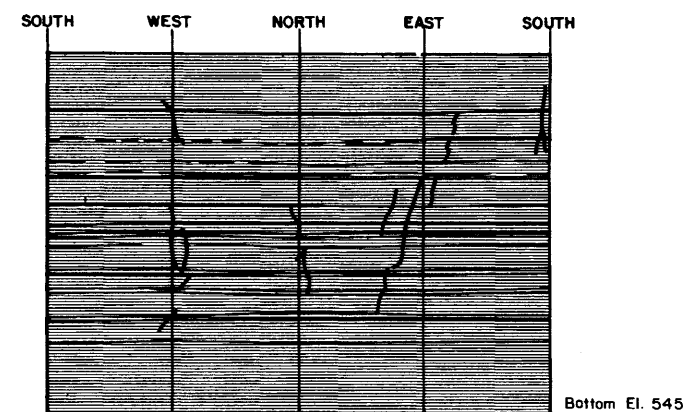
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PERRY NUCLEAR POWER PLANT

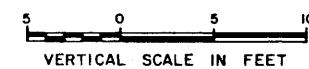
Sketch of West Wall Pit 2

Figure 2.5-44



LEGEND

- PINCHING IRON BAND
- IRON BAND
- SHALE LAYERS
- { } FRACTURES
- DEBRIS
- HIGHLY FRACTURED
- BROKEN ROCK



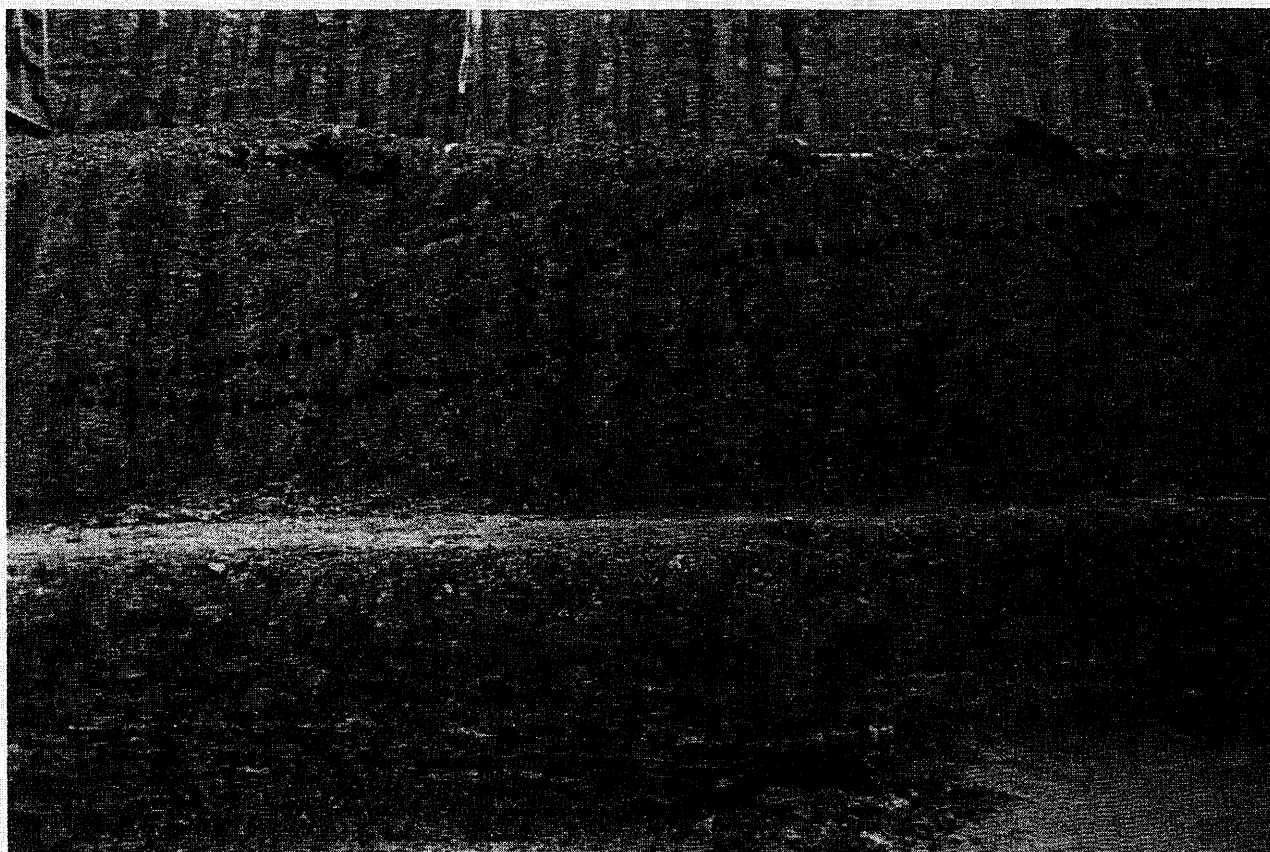
(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Geologic Mapping
Caisson Excavations

Figure 2.5-45



LENS OF LOWER TILL INCORPORATED WITHIN BEDROCK DURING GLACIATION, AS SEEN IN EAST WALL OF AUXILIARY BUILDING, NORTH OF REACTOR BUILDING I, APPROXIMATE ELEVATION 566 FEET; NOTE FLAT LYING BEDS AT BOTTOM OF PHOTO.

(Rev. 12 1/03)



PERRY NUCLEAR POWER PLANT

Lens Of Lower Till
Incorporated Within Bedrock

Figure 2.5-46