REPORT OF SEDIMENTATION
1984 RESURVEY
LAKE SHELBYVILLE
UPPER MISSISSIPPI RIVER BASIN
KASKASKIA RIVER, ILLINOIS

Submitted to

U.S. Army Corps of Engineers
St. Louis District
210 Tucker Blvd., North
St. Louis, Missouri 63101

Submitted by

Simons, Li & Associates, Inc.
3555 Stanford Road
P.O. Box 1816
Fort Collins, Colorado 80522

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U.S. customary units of measurement used in this report can be converted to metric (SI) units as follows:

Multiply	By	To Obtain
inches	25.4	millimeters
feet	0.3048	meters
miles (U.S. statute)	1.609344	kilometers
square miles	2.589988	square kilometers
cubic yards	0.7645549	cubic meters
acre-feet	1233.482	cubic meters
feet per second	0.3048	meters per second
cubic feet per second	0.02831685	cubic meters per second

PERTINENT DATA SUMMARY

LAKE SHELBYVILLE

Item	Unit	
DRAINAGE AREA	sq. mi.	1,054
INACTIVE STORAGE POOL		
Elevation	N.G.V.D.	573.0
Area at Top of Pool	acres	2,947*
Storage	acre-feet	27,690
Storage (runoff)	inches	0.49
JOINT-USE POOL		
Elevation	N.G.V.D.	573.0-599.7
Area at Top of Pool	acres	10,829
Storage	acre-feet	169,945
Storage (runoff)	inches	3.02
Regulated Outflow (min.)	cfs	10
Regulated Outflow (max.)	cfs	1,800
FLOOD-CONTROL POOL		
Elevation	N.G.V.D.	599.7-626.5
Area at Top of Pool	acres	24,800
Storage	acre-feet	466,396
Storage (runoff)	inches	8.30
Regulated Outflow (max.)	cfs	4,500
INDUCED SURCHARGE POOL		
Elevation	N.G.V.D.	626.5-630.5
Area at Top of Pool	acres	28,300
Storage	acre-feet	107,100
Storage (runoff)	inches	1.95
Outflow (max.)	cfs	116,300
SURCHARGE POOL (TOTAL)		
Elevation	N.G.V.D.	626.5-638.2
Area at Top of Pool	acres	35,800
Storage	acre-feet	351,900
Storage (runoff)	inches	6.41
Outflow (max.)	cfs	162,500

* All values given for reservoir area and storage are based on the 1984 sedimentation resurvey results.

PERTINENT DATA SUMMARY (Continued)

LAKE SHELBYVILLE

Item	Unit	
FREEBOARD		
Elevation	N.G.V.D.	638.2-643.0
Area at Top of Dam	acres	42,700
Storage	acre-feet	191,100
Storage (runoff)	inches	3.48
Height	feet	4.8
STANDARD PROJECT FLOOD		
Peak (natural condition)	cfs	77,040
Peak Inflow (reservoir)	cfs	164,490
Peak Outflow (reservoir)	cfs	4,500
Design Storm	inches	13.16
Runoff (includes base flow)	acre-feet	541,160
Runoff (includes base flow)	inches	9.85
SPILLWAY		
Width		
Gross	feet	156
Net	feet	136
Elevation of Crest	N.G.V.D.	593
Number of Tainter Gates	each	3
Size	feet	45.33'W x 36.92'H
Top Elevation (closed)	N.G.V.D.	627.5
DAM		
Elevation, Top of Dam	N.G.V.D.	643.0
Height Above Streambed	feet	108
Length of Crest	feet	3,025
OUTLET STRUCTURE		
Number of Sluices	each	2
Size	feet	5.5'W x 11.0'H
Minimum Opening	feet	10.8
Intake Invert Elevation	N.G.V.D.	550.0
Outlet Invert Elevation	N.G.V.D.	549.0

1 inch runoff = 56,210 acre feet

REPORT ON RESURVEY OF SEDIMENTATION

LAKE SHELBYVILLE

KASKASKIA RIVER, ILLINOIS

1. INTRODUCTION

This report is prepared according to instructions in EM 1110-2-4000, dated November 15, 1961, and compares the original 1970 survey with the 1974, 1980, and 1984 resurveys of the upstream sediment ranges and downstream retrogression ranges for Lake Shelbyville.

The purpose of the investigation was to analyze the 1974, 1980, and 1984 resurvey data to determine the distribution of sediment in the lake, and also the trap efficiency of the lake. Initial operation of the reservoir began on August 1, 1970.

2. LOCATION OF RESERVOIR

Lake Shelbyville is a multi-purpose reservoir located on the Kaskaskia River, one-half mile east and one-fourth mile north of the Town of Shelbyville, Illinois. The reservoir extends from the main dam at River Mile 221.8[1/] to River Mile 280. The watershed for the reservoir is 1,054 square miles. Plate 1 shows the relationship of the reservoir to the entire basin.

3. PURPOSE OF RESERVOIR

The purpose of this project is to provide flood protection, create recreational opportunities, provide fish and wildlife conservation, augment water supplies, enhance water quality, and augment flows for navigation.

4. RESERVOIR PERTINENT DATA - DAM AND APPURTENANT STRUCTURES

The Pertinent Data Summary, shown on page vi, contains data concerning the dam, outlet, and spillway structures; and the elevations, areas and capacities of the inactive, joint-use, flood-control, and surcharge pools.

5. WATERSHED CHARACTERISTICS

The watershed has a total area of 1,054 square miles. The lake occupies approximately 39.5 square miles of this area at the top of flood-control pool (el. 626.5).[2/] The watershed has a length of 58 miles, an extreme width of 35 miles, and an average width of 18 miles (Plate 1).

1/ A table of factors for converting U.S. customary units of measurement to metric (SI) units is presented on page v.

2/ All elevations (el) cited herein are in feet referred to National Geodetic Vertical Datum.

6. CLIMATE

The climate of the area is relatively moderate. The summers are usually mild with occasional temperatures of 100°F or slightly higher. The winters are usually short and moderate, although temperatures below zero are occasionally experienced. The average annual temperature in this area is about 55°F and the average monthly temperature varies from a maximum of 78°F during July to a minimum of 30°F during January.

7. RESERVOIR OPERATION

The objective is to regulate the project to provide flood control to downstream interests and to maintain the pool at seasonal pool elevation as set forth by the Schedule of Release, thus providing water storage for water supply, pollution abatement, fish and wildlife conservation, recreation, and navigation on the lower Kaskaskia River. A minimum release of 10 cfs is required at all times to maintain good downstream water quality. The downstream channel restricts non-damaging releases to 1,800 cfs or less during the growing season (May 1 through harvest).

8. RESERVOIR INFLOW

Summaries of the monthly and annual precipitation and runoff data for the watershed are given in Tables 1 and 2. One inch of runoff equals 56,210 acre-feet. Average annual precipitation and inflow for the sediment survey period are tabulated in Items 34 and 35 of Plate 54, a data summary of reservoir sediment, ENG Form 1787. The average monthly inflow hydrograph for the period 1970 through 1983 is shown on Plate 2. The average monthly pool stage for the same period is shown on Plate 3.

9. ORIGINAL RESERVOIR SURVEY

A tabulation of the original capacity for 5-foot intervals is shown in Table 3. Item 46 of Plate 55, ENG Form 1787, gives an area and storage (capacity) tabulation at 10-foot intervals for the original survey. Elevation versus capacity curves are shown on Plate 4.

10. TYPE AND SCOPE OF INITIAL SEDIMENT SURVEY

There were 40 sediment ranges established and surveyed by direct leveling during the period March 1969 - June 1971 for the purpose of observing sediment distribution and the approximate rate of reservoir storage depletion. Plate 5 shows the location of the pool sediment ranges. The cross sections of the ranges for the original survey and the 1974, 1980, and 1984 resurveys are shown on Plates 6 through 45. Appendix A shows detailed location of the 40 sediment ranges.

11. TYPE AND SCOPE OF SEDIMENT RESURVEYS

Detailed sediment resurveys were made during 1974, 1980, and 1984. The dry land portions of the resurveys were conducted by direct leveling. The soundings were performed with a Raytheon, Model 719B, depth recorder which was used in conjunction with a Motorola Miniranger distance measuring unit that constantly updates the distance from the shore station. The depth recorder

was placed in an 18-foot flat-bottomed boat with a 20 horsepower outboard motor. Horizontal alignment was maintained by communication with walkie-talkies between the boat operator and a person on shore. The person on shore was located at one end of the sedimentation range with a transit sighted on the other end of the range for alignment purposes. Thus, if the boat making the soundings varied off the range, the person on shore manning the transit could communicate with the boat operator by walkie-talkie as to what corrective measures to take.

The 1974 resurvey was conducted from February to April 1974. The average pool elevation during the measurements was 603.1. The 1980 sediment resurvey was conducted during November and December 1980. The average pool elevation during the measurements was 596.3. The capacities based on the results of both resurveys are shown in Table 3. The 1984 resurvey was made in May 1984, with the exception of the five ranges most upstream from the dam, which were resurveyed in February 1984. The average pool elevation during the measurements was 608.0.

12. METHOD OF SEDIMENT COMPUTATIONS

The procedure based on the prismoidal formula developed by the U.S. Soil Conservation Service for computing reservoir capacities was used in this study. The procedure was published by H.M. Eakin of the SCS as USDA Technical Bulletin No. 524, "Silting of Reservoirs," July 1936 (rev. C.B. Brown, August 1939). It is illustrated in Figure 1 with a reservoir segment that includes two tributary arms, and is thus bounded by four ranges. This range end formula is given by

$$V = \frac{A'}{3}\left(\frac{E_1 + E_2}{W_1 + W_2}\right) + \frac{A}{3}\left(\frac{E_1}{W_1} + \frac{E_2}{W_2}\right) + \frac{h_3E_3 + h_4E_4}{3(43{,}560)}$$

where: V = capacity, in acre-feet
A' = area of the quadrilateral formed by connecting the points of intersection of the ranges with a given contour (quadrilateral abcd in Figure 1), in acres
E = range cross-sectional area, in square feet
W = width of the main stream range at a given elevation, in feet
A = total surface area of the segment bounded by the ranges, in acres
h = perpendicular distance from the range on a tributary to the junction of the tributary with the main stream, or if this junction is outside the segment, to the intersection of the thalweg of the tributary with the downstream range, in feet.

This formula holds for all of the reservoir segments except for the one between the most downstream range and the dam which is given by

$$V = A\frac{E}{W} - \frac{L\left(2B - \frac{E}{W}S\right)\frac{E}{W}}{3(43{,}560)}$$

where: V, A, E and W are the same as given above, and
L = length of the dam, in feet
B = base width of the dam, in feet
S = slope of the upstream face of the dam

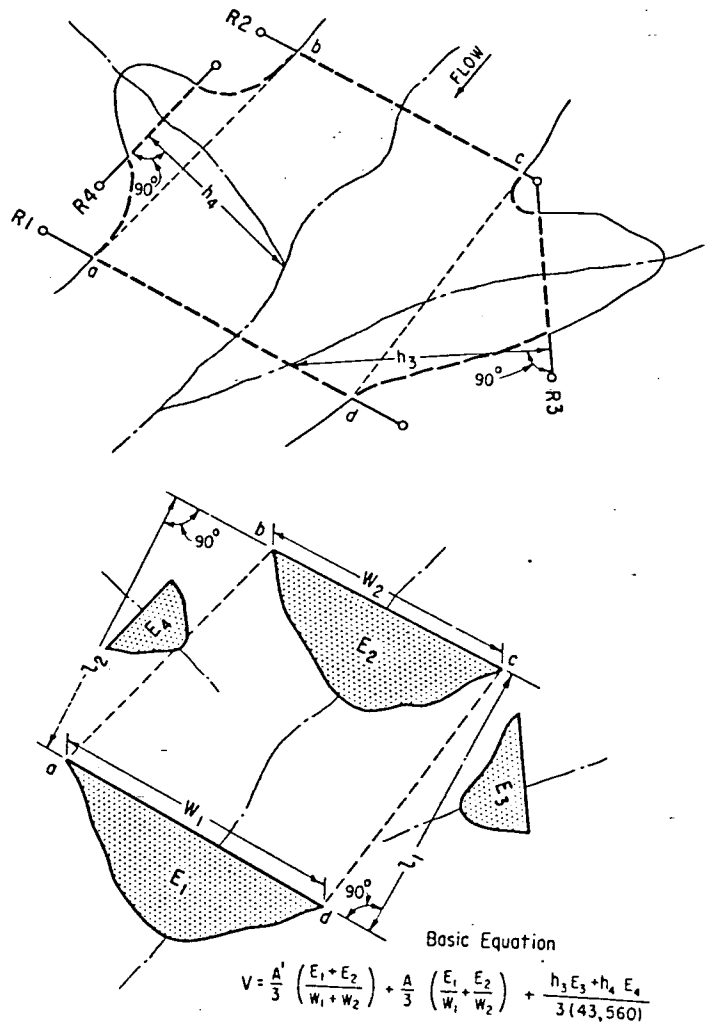


Figure 1. Terms of range-end formula for determining capacity of a reservoir. (Taken from ASCE M&R NO. 54, "Sedimentation Engineering," V.A. Vanoni, Editor, 1975, pp. 378-379).

The length, L, and base width, B, refer to distances on the dam describing that volume of water displaced by the upstream face of the dam. Therefore, L and B almost always vary with reservoir stage.

In the study, A', or quadrilateral area, was found from USGS topographic maps of the reservoir by summing the areas of the opposing triangles composing the quadrilateral. The surface area, A, was computed through the application of planimetry. The values for E and W were computed based on the surveyed cross-sectional data. Values for A', A, E, and W were computed at three reservoir elevations: 575 feet, 600 feet, and 625 feet. These elevations correspond closely to the tops of the inactive pool (573.0 feet), the joint-use pool (559.7 feet), and the flood-control pool (626.5 feet); and are also contour elevations on the USGS topographic maps.

In applying the procedure described above to the 1984 resurvey data, results showed a very significant decrease in reservoir volume since 1980. In order to find out why this was so, the procedure was applied to the original survey data and to the 1980 resurvey data. Original volumes and 1980 volumes were obtained which were noticeably lower than those published in the previous report, "Report of Sedimentation, 1980 resurvey, Lake Shelbyville," published by the U.S. Army Corps of Engineers, St. Louis District. This is most likely due to the fact that the surface areas and quadrilateral areas which were used were not identical to those used in the previous publication. Since the original values were unavailable, this resurvey analysis included calculation of quadrilateral areas and planimetering of surface areas at the three reservoir elevations. Using these new values, reservoir volumes were calculated using the same methodology as used for the original conditions and the 1980 resurveys. These volumes were then consistent with each other. In order to calculate 1984 capacities which would be consistent with the originally published capacities, the following relationship was used:

$$V = V_0 + (V' - V_0')$$

where V = reservoir volume, consistent with original published volume

V_0 = original published volume

V' = reservoir volume based on resurvey, calculated with above methodology

V_0' = original reservoir volume, calculated with above methodology

The term, $V' - V_0'$, describes the change in volume over time. This change is then added to the original volume. This relationship was applied at the three reservoir stages which were planimetered, and other reservoir volumes were interpolated from these results. Table 3 lists the original, the 1974, and the 1980 capacities as given in the 1980 report. The changes in volume for 1970 to 1980, 1970 to 1984, and 1980 to 1984, at the three elevations, are listed in Table 3A. Table 3B displays the original capacity, the adjusted 1980 capacity, and the 1984 capacity at 5-foot intervals.

In reporting reservoir volumes, or sediment volumes, values were given to the nearest acre-foot. Due to some inescapable inaccuracies in the survey data and in the application of the prismoidal formula, computed volumes are

accurate to only three significant digits. However, in order to be precise relative to previous work and in comparison of one value to another within this analysis, precision to the nearest acre-foot was maintained.

Table 4 lists quadrilateral and surface areas between ranges and approximate distances between ranges. The quadrilateral areas were smaller than the surface areas because the quadrilateral areas do not reflect inlets and coves along the reservoir shore line which are included in the surface area. The areas given are those at elevation 625 feet. Tables 5A, 5B, and 5C list the original range cross-sectional areas and the changes in cross-sectional areas during the periods 1970 to 1974, 1970 to 1980, and 1970 to 1984. These data are given at elevations 575, 600, and 625 feet.

Item 46 of Plate 35, ENG Form 1787, also lists elevation versus reservoir surface area for original conditions and for 1984. In solving for 1984 reservoir areas, the reservoir volumes computed from the 1984 resurvey were used, taking advantage of the average end area method to relate volume with surface areas. The average end area formula is given by

$$V = \frac{h}{2}(A_1 + A_2)$$

where V = volume between given reservoir elevations, acre-feet
h = distance between reservoir elevations, feet
A = surface area of the reservoir at a given elevation, acres

A normalized form of this relationship was derived to provide an expression for 1984 reservoir areas as a function of the original reservoir volumes and areas and the 1984 reservoir volumes computed with the prismoidal method. This relationship is given by

$$\frac{V_{orig} - V_{84}}{V_{orig}} = \frac{h}{2} \cdot \frac{(A_1 + A_2)_{orig} - (A_1 + A_2)_{84}}{(A_1 + A_2)_{orig}}$$

It may be assumed that the surface area, as seen with the reservoir volume, does not change over time at elevations above the maximum pool elevation. Therefore, using the above expression and starting the calculations at the maximum pool elevation, the 1984 area at the lower end of the elevation interval $A_{2_{84}}$ is computed. The calculation proceeds step-wise toward the reservoir bottom in this manner. Area-elevation computations were performed at 10-foot intervals and are listed in Item 46 of Plate 55 and plotted on Plate 4.

13. SEDIMENT QUANTITIES

A summary of the volume of sediment deposited between each range in the reservoir for the periods 1970 to 1980, 1970 to 1984, and 1980 to 1984 is presented in Tables 6A, 6B, and 6C for elevations 575 feet, 600 feet, and 625 feet, respectively. Calculations using data of the 1980 resurvey indicated a decrease of about 1.1 percent in the total storage between the date of initial operation and November 1980. The results of the 1984 resurvey indicate that about 1.5 percent of the original capacity of the entire reservoir was lost from 1970 to 1984.

The survey data show that of the 10,087 acre-feet of sediment deposited, about 1,870 acre-feet was deposited within the inactive pool (below elevation 573.0). This decreased the storage capacity of the inactive pool by 6.2 percent. In the joint-use pool (elevation 573.0 to 599.7), about 8,480 acre-feet of sediment was deposited. This reduced the joint-use pool storage by 4.8 percent. The flood-control pool (above elevation 599.7) experienced a storage gain of about 263 acre-feet; however, an increase of less than 0.1 percent. This change is insignificant and indicates that almost all of the sediment accumulation occurs below the joint-use pool crest.

The 1984 resurvey also showed that almost three-fourths (74 percent) of the sediment was deposited above Range 14A. Range 14A is approximately 8 miles upstream of the dam. Ranges 40B and 33A are approximately 19 miles and 22 miles above the dam, respectively. This distribution of sediment is consistent with what occurs in most reservoirs. When a sediment-carrying river reaches a reservoir, its velocities suddenly decrease, and thus its sediment-carrying capacity. Therefore, most of the sediment is deposited in a delta at the upstream end of the reservoir. Some fine sediment is carried in the very slow-moving flow through the reservoir to further downstream sections before settling to the bottom. In addition, downstream tributaries bring in additional sediments to downstream reaches of the reservoir.

The following table summarizes the sediment deposition for Lake Shelbyville based on the 1980 and 1984 resurveys.

Summary of Lake Shelbyville Sedimentation

Reservoir Portion	Amount of Sediment Deposited 1970-1980 (acre-feet)	Amount of Sediment Deposited 1970-1984 (acre-feet)	Annual Rate of Deposition, 1970-1984 (acre-feet/year)*
Entire Reservoir	7,205	10,087	715
Inactive Storage	2,610	1,870	133
Joint-Use Storage	3,610	8,480	601
Flood-Control Storage	985	-263	-19
Range 14A-Upstream (Flood-Control Pool)	2,681	7,454	529

*Based on 14.1 years, Plate 54, Item 27.

14. TRAP EFFICIENCY OF THE RESERVOIR

For the period of operation, Lake Shelbyville has a trap efficiency of 97 percent. This computation was based on the method of Gunnar M. Brune, using the capacity-inflow ratio (Item 33, Plate 54), presented in transaction of the American Geophysical Union, Volume 34, Number 3, June 1953, pages 407-414.

Sediment samples were taken in 1984 and sieve analyses were performed. Plates 56 and 91 are the sediment-size distributions based on the sieve analysis results.

15. DOWNSTREAM CHANNEL AND RESERVOIR OPERATION

A series of six retrogression ranges are spaced from Mile 220.9 to 216.8 on the Kaskaskia River downstream of Shelbyville Dam (Plate 46). A thalweg profile, including the initial survey, the 1974 resurvey, the 1980 resurvey and the 1984 resurvey, is shown on Plate 47. The plotted cross sections of the retrogression ranges are shown as Plates 48 to 53. Plate 47A compares the 1972 tailwater rating curve with the latest available curve, 1977. Table 7 shows a tabulation of volume change in the Kaskaskia River downstream of the dam. There has been an increase in volume due to erosion of the bed since initial operation. From 1970 to 1980, volume at bankfull discharge increased by 8.2 percent. From 1980 to 1984, volume at bankfull discharge increased further by 2.4 percent to a total of 10.6 percent since operation began. Retrogression Range 1C was destroyed when Highway 16 was relocated downstream of Shelbyville Dam. It has not been re-established.

16. SUMMARY

Based upon the results of the 1984 resurvey, in 50 more years of operation (year 2034) the inactive pool will have lost 8,520 acre-feet of capacity, or 28 percent; the joint-use pool will have lost 38,530 acre-feet of capacity, or 22 percent; the flood-control pool will have essentially no change. The entire reservoir, at 715 acre-feet per year will have lost 45,800 acre-feet of capacity, or 6.8 percent in 50 years. The 715 acre-feet per year deposition rate is 2.5 times higher than the predicted rate of 288 acre-feet per year. The predicted rate was based on samples taken with a U.S. Geological Survey bucket-type sampler at the Shelbyville gaging station. Moreover, the deposition rate from 1970 to 1984 is slightly higher than the deposition rate from 1970 to 1980 (680 acre-feet per year).

17. RECOMMENDATION

Current budgeting guidance limits potential funding for further sediment surveys. Funding will be requested to conduct another resurvey in the next five to ten years. However, until the sediment deposition is anticipated to have a significant impact on project operations, funding will be unlikely. At the current rate of sedimentation , in 15 to 20 years the level of funding could justifiably be raised. The decision to do so should be based on an evaluation of the flood events that have occurred and their estimated contribution to loss of available storage. In the future, if sediment distribution decreases the amount of joint-use storage to the extent that any project purpose is affected, the District Engineer shall make an equitable redistribution of the storage allocations served by the project. Information concerning future sedimentation and any redistribution of storage allocations shall be made available to the Illinois Department of Transportation, Division of Water Resources.

Table 1. Monthly Precipitation and Runoff for Drainage Area Above Lake Shelbyville Gage (1970-1983).

Month	Maximum Rainfall (inches)	Minimum Rainfall (inches)	Average Rainfall (inches)	Average Runoff (inches)	Runoff (percent)
January	5.44	0.51	1.85	1.29	69.7
February	4.79	0.48	1.79	1.23	68.7
March	6.51	0.85	3.54	1.75	49.4
April	7.15	0.76	3.76	2.12	56.4
May	8.88	1.59	4.21	1.48	35.2
June	7.82	1.97	4.26	1.39	32.6
July	10.28	1.23	4.99	0.75	15.0
August	8.32	0.67	4.34	0.43	9.9
September	7.27	0.23	3.21	0.33	10.3
October	6.83	1.10	2.70	0.27	10.0
November	5.79	0.49	2.63	0.48	18.3
December	7.40	0.26	3.09	1.36	44.0

Table 2. Annual Precipitation and Runoff for Drainage Area Above Lake Shelbyville Gage (1970-1983).

Year	Rainfall (inches)	Runoff (inches)	Runoff (percent)	Average Daily Runoff (cfs)
1970	34.52	10.10	29.3	767
1971	40.24	9.25	23.0	702
1972	41.27	11.45	27.7	923
1973	48.68	18.61	38.2	1,633
1974	47.65	23.63	49.6	1,793
1975	45.26	14.61	32.3	1,099
1976	27.16	5.65	20.8	421
1977	41.52	8.84	21.3	664
1978	38.60	13.77	35.7	893
1979	37.93	14.86	39.2	1,128
1980	30.54	5.44	17.8	413
1981	44.07	10.63	24.1	825
1982	45.35	17.90	39.5	1,389
1983	42.11	14.72	35.0	1,142
Maximum	48.68	23.63	49.6	1,793
Minimum	27.16	5.44	17.8	413
Average	40.35	12.82	31.0	985

Table 3. Tabulation of Capacity for Lake Shelbyville.*

Elevation (feet, NGVD)	Original Capacity (acre-feet)	1974 Capacity (acre-feet)	1980 Capacity (acre-feet)
535	0	0	0
540	99	76	0
545	421	366	183
550	1,105	1,163	470
555	2,818	2,892	1,468
560	6,305	6,660	4,479
565	12,428	12,869	8,855
570	22,238	22,786	16,618
575	36,721	37,419	30,210
580	56,906	58,116	49,594
585	83,796	85,478	76,375
590	118,383	120,655	110,446
595	161,329	164,320	153,330
600	212,980	216,329	204,921
605	274,565	278,526	266,471
610	347,959	352,205	339,829
615	433,927	438,303	425,768
620	532,310	536,770	524,096
625	644,969	649,249	636,755
630	775,118	779,578	766,904
635	914,370	918,830	906,156
640	1,056,120	1,065,358	1,047,906

*As reported in Report on Sedimentation, 1980 Resurvey.

Table 3A. Change in Capacity for Lake Shelbyville.

Elevation (feet, NGVD)	Change in Volume 1970-1980 (acre-feet)	Change in Volume 1970-1984 (acre-feet)	Change in Volume 1980-1984 (acre-feet)
575	-2,810	- 2,078	732
600	-6,217	-10,371	-4,154
625	-7,205	-10,087	-2,882

Table 3B. Capacity for Lake Shelbyville.

Elevation (feet, NGVD)	Original Capacity (acre-feet)	Adjusted 1980 Capacity[1] (acre-feet)	1984 Capacity[1] (acre-feet)
540	99	60	50
545	421	200	100
550	1,105	700	500
555	2,818	1,500	1,500
560	6,305	4,700	5,100
565	12,428	10,300	10,600
570	22,238	19,900	20,300
575	36,721[2]	33,911[2]	34,643[2]
580	56,906	52,800	53,700
585	83,796	80,000	79,100
590	118,383	115,500	113,000
595	161,329	156,100	154,200
600	212,980[2]	206,763[2]	202,609[2]
605	274,565	266,200	260,400
610	347,959	339,700	333,900
615	433,927	425,500	420,600
620	532,310	524,000	518,200
625	644,969[2]	637,764[2]	634,882[2]
630	775,118	767,900	765,100

[1]Estimated from water surface elevation - capacity curves (Plate 4).

[2]Computed values.

Table 4. Area Data by Reach for Lake Shelbyville, Elevation 625 feet.

Reach	Distance Between Ranges (feet)	Quadrilateral Area (acres)	Surface Area (acres)
Dam-1A	2,900	-	209
1A-3A	4,900	386	824
2B	12,500	402	418
3A-4A	4,100	271	512
4A-5A	4,000	285	662
5A-6A	5,600	365	504
6A-7A	3,800	190	524
7A-11A	4,200	232	473
8B-9B	3,900	188	445
9B-10B	7,900	358	494
10B	11,700	76	357
11A-12A	5,500	371	522
12A-14A	5,600	318	441
13B	9,600	139	284
14A-15A	6,500	281	556
15A-17A	4,800	355	473
16B	13,700	149	354
17A-18A	5,800	411	700
18A-19A	7,300	597	949
19A-20A	6,000	422	604
20A-21A	8,700	729	855

Table 4. Area Data by Reach for Lake Shelbyville, Elevation 625 feet (continued).

Reach	Distance Between Ranges (feet)	Quadrilateral Area (acres)	Surface Area (acres)
21A-23A	10,200	835	914
22B	5,000	112	221
23A-24A	2,600	89	213
24A-40B	7,500	336	752
39B	10,800	121	304
40B	17,800	314	821
25A-26A	3,100	143	345
26A-27A	5,500	215	351
27A-28A	4,300	354	566
28A-29A	5,000	446	890
29A-30A	3,700	267	487
30A-31A	5,600	348	484
31A-33A	4,300	346	650
32B	17,000	299	551
33A-34A	4,200	288	365
34A-36A	9,400	587	1,009
35B	9,100	39	120
36A-38A	8,800	517	1,099
37B	11,800	133	370
38A	8,500	161	488

22,160

Table 5A. Range Cross-Sectional Data for Lake Shelbyville, Elevation 575 feet.

Range	Original Cross-Section Area (sq. ft)	Change in Cross-Sectional Area, 1970-1974 (sq. ft)	Change in Cross-Sectional Area, 1970-1980 (sq. ft)	Change in Cross-Sectional Area, 1970-1984 (sq. ft)
1A	35,839	250	-3,493	-964
2B	28,356	1,047	-2,179	-1,146
3A	38,483	-12	-2,073	-414
4A	26,881	423	-2,654	-1,852
5A	23,768	907	-1,833	-62
6A	28,478	624	-2,106	-1,189
7A	16,569	861	-1,471	-68
8B	7,486	330	-833	-1,422
9B	167	-79	-113	-166
10B	0	0	0	0
11A	17,949	90	-1,959	-2,431
12A	22,180	-665	-4,007	-2,211
13B	5,832	-111	-1,065	-821
14A	10,885	-262	-1,016	-926
15A	20,570	-126	-4,502	-5,159
16B	131	-2	-131	-131
17A	9,439	256	-1,582	-1,890
18A	5,564	467	-1,226	-1,426
19A	904	590	-744	-565
20A	134	-29	-134	-134
21A	0	0	0	0
22B	0	0	0	0

Table 5A. Range Cross-Sectional Data for Lake Shelbyville, Elevation 575 feet (continued).

Range	Original Cross-Sectional Area (sq. ft)	Change in Cross-Sectional Area, 1970-1974 (sq. ft)	Change in Cross-Sectional Area, 1970-1980 (sq. ft)	Change in Cross-Sectional Area, 1970-1984 (sq. ft)
23A	0	0	0	0
24A	0	0	0	0
25A	1,865	695	-216	-756
26A	1,336	702	-163	-359
27A	1,208	-90	-746	-803
28A	464	-38	-254	-326
29A	118	-37	-118	-118
30A	0	0	0	0
31A	0	0	0	0
32B	0	0	0	0
33A	0	0	0	0
34A	0	0	0	0
35B	0	0	0	0
36A	0	0	0	0
37B	0	0	0	0
38A	0	0	0	0
39B	0	0	0	0
40B	0	0	0	0

Table 5B. Range Cross-Sectional Data for Lake Shelbyville, Elevation 600 feet.

Range	Original Cross-Sectional Area (sq. ft)	Change in Cross-Sectional Area, 1970-1974 (sq. ft)	Change in Cross-Sectional Area, 1970-1980 (sq. ft)	Change in Cross-Sectional Area, 1970-1984 (sq. ft)
1A	85,813	-869	-4,454	-1,167
2B	88,177	1,008	-2,032	-1,415
3A	95,531	-264	-1,418	335
4A	87,744	-177	-3,933	-1,909
5A	75,248	1,375	-2,205	-1,624
6A	88,152	813	1,878	-1,848
7A	45,631	966	-1,249	700
8B	36,368	477	-47	-2,701
9B	44,919	683	-1,017	-2,591
10B	2,715	77	-727	-864
11A	72,424	346	-1,624	-2,885
12A	77,798	-477	-4,054	-2,057
13B	25,037	-121	-1,420	-315
14A	50,989	-941	-1,533	-1,987
15A	83,877	-214	-5,431	-6,404
16B	16,881	123	-1,606	-2,765
17A	54,778	947	-44	-1,688
18A	40,183	1,407	-576	-1,606
19A	46,351	3,400	-1,208	-967
20A	19,160	421	-833	-1,643
21A	54,238	110	-1,343	-7,762
22B	7,778	-132	-818	-1,985

Table 5B. Range Cross-Sectional Data for Lake Shelbyville, Elevation 600 feet (continued).

Range	Original Cross-Sectional Area (sq. ft)	Change in Cross-Sectional Area, 1970-1974 (sq. ft)	Change in Cross-Sectional Area, 1970-1980 (sq. ft)	Change in Cross-Sectional Area, 1970-1984 (sq. ft)
23A	1,829	-134	-159	-648
24A	443	-59	97	-27
25A	34,683	2,265	325	-232
26A	44,786	1,683	672	-65
27A	26,944	-164	-1,508	-2,174
28A	97,454	5,964	3,503	-5,055
29A	27,865	593	-303	-2,301
30A	27,852	856	-120	-3,072
31A	13,184	-485	-917	-2,426
32B	2,799	354	-317	-1,208
33A	10,572	-10	-871	-2,161
34A	5,601	-277	-384	-1,449
35B	45	-42	-25	-41
36A	1,146	71	-159	-323
37B	1	8	-1	-1
38A	0	2	22	11
39B	2	14	39	48
40B	101	-21	-10	-39

Table 5C. Range Cross-Sectional Data for Lake Shelbyville, Elevation 625 feet.

Range	Original Cross-Sectional Area (sq. ft)	Change in Cross-Sectional Area, 1970-1974 (sq. ft)	Change in Cross-Sectional Area, 1970-1980 (sq. ft)	Change in Cross-Sectional Area, 1970-1984 (sq. ft)
1A	157,943	-54	-3,317	319
2B	154,800	948	-1,937	-1,467
3A	166,188	-187	-890	641
4A	162,528	-138	-3,723	-1,589
5A	140,997	1,649	-1,878	-1,072
6A	162,615	1,125	-1,876	-1,799
7A	80,077	1,161	-913	1,041
8B	81,525	398	-62	-2,401
9B	120,005	777	-1,086	-2,559
10B	22,203	133	-968	-1,052
11A	143,097	326	-1,368	-2,713
12A	143,397	-452	-4,032	-2,327
13B	47,387	-129	-1,387	-223
14A	108,345	-1,019	-1,876	-2,343
15A	159,368	-186	-5,360	-6,346
16B	44,261	786	-1,764	-2,705
17A	132,895	1,130	268	-910
18A	121,861	1,998	-209	-1,195
19A	126,937	3,582	-1,245	-396
20A	70,812	518	-735	-2,066
21A	218,234	191	-1,030	-7,672
22B	51,670	-9	-959	-2,385

Table 5C. Range Cross-Sectional Data for Lake Shelbyville, Elevation 625 feet (continued).

Range	Original Cross-Sectional Area (sq. ft)	Change in Cross-Sectional Area, 1970-1974 (sq. ft)	Change in Cross-Sectional Area, 1970-1980 (sq. ft)	Change in Cross-Sectional Area, 1970-1984 (sq. ft)
23A	35,801	143	-58	-830
24A	19,420	-195	24	-75
25A	83,172	2,359	431	11
26A	98,997	1,595	792	115
27A	67,527	-502	-1,732	-2,271
28A	229,889	7,975	3,735	-4,926
29A	92,841	1,706	792	-1,061
30A	100,142	1,167	137	-2,757
31A	69,488	163	-648	-1,745
32B	33,278	224	-415	-1,336
33A	46,941	43	-734	-1,831
34A	45,245	-159	-433	-1,451
35B	10,586	-74	-154	-113
36A	65,721	569	-1,384	-1,392
37B	12,791	152	-46	-209
38A	19,013	313	12	301
39B	13,301	-151	339	577
40B	27,156	173	232	-271

Table 6A. Sediment Deposition by Reach for Lake Shelbyville, Elevation 575 Feet.

Reach	Sediment Deposited 1970 - 1980 (acre-feet)	Sediment Deposited 1970 - 1984 (acre-feet)	Sediment Deposited 1980 - 1984 (acre-feet)
Dam - 1A	131	11	-120*
1A - 3A	418	147	-271
2B	39	17	- 22
3A - 4A	167	185	18
4A - 5A	81	100	19
5A - 6A	87	29	- 58
6A - 7A	152	75	- 77
7A - 11A	246	206	- 40
8B - 9B	104	140	36
9B - 10B	--	--	--
10B	--	--	--
11A - 12A	272	183	- 89
12A - 14A	228	160	- 68
13B	25	24	- 1
14A - 15A	261	258	- 3
15A - 17A	248	257	9
16B	--	--	--
17A - 18A	237	280	43
18A - 19A	216	57	-159
19A - 20A	24	1	- 23
20A - 21A	--	--	--
21A - 23A	--	--	--

Table 6A. Sediment Deposition by Reach for Lake Shelbyville, Elevation 575 Feet (Continued).

Reach	Sediment Deposited 1970 - 1980 (acre-feet)	Sediment Deposited 1970 - 1984 (acre-feet)	Sediment Deposited 1980 - 1984 (acre-feet)
22B	--	--	--
23A - 24A	--	--	--
24A - 40B	--	--	--
39B	--	--	--
40B	--	--	--
25A - 26A	14	22	8
26A - 27A	- 86*	- 70*	16
27A - 28A	- 61	- 15	46
28A - 29A	7	11	4
29A - 30A	--	--	--
30A - 31A	--	--	--
31A - 33A	--	--	--
32B	--	--	--
33A - 34A	--	--	--
34A - 36A	--	--	--
35B	--	--	--
36A - 38A	--	--	--
37B	--	--	--
38A	--	--	--
TOTALS	2,810	2,078	-732

*Negative sign indicates an increase in storage.

Table 6B. Sediment Deposition by Reach for Lake Shelbyville, Elevation 600 Feet.

Reach	Sediment Deposited 1970 - 1980 (acre-feet)	Sediment Deposited 1970 - 1984 (acre-feet)	Sediment Deposited 1980 - 1984 (acre-feet)
Dam - 1A	105	204	99
1A - 3A	467	468	1
2B	167	150	- 17*
3A - 4A	408	233	-175
4A - 5A	426	315	-111
5A - 6A	202	218	16
6A - 7A	232	148	- 84
7A - 11A	370	391	21
8B - 9B	44	234	190
9B - 10B	181	291	110
10B	23	27	4
11A - 12A	493	480	- 13
12A - 14A	299	161	-138
13B	120	53	- 67
14A - 15A	356	303	- 53
15A - 17A	384	541	157
16B	52	65	13
17A - 18A	163	421	258
18A - 19A	286	364	78
19A - 20A	343	351	8
20A - 21A	453	914	461
21A - 23A	130	649	519

Table 6B. Sediment Deposition by Reach for Lake Shelbyville, Elevation 600 Feet (Continued).

Reach	Sediment Deposited 1970 - 1980 (acre-feet)	Sediment Deposited 1970 - 1984 (acre-feet)	Sediment Deposited 1980 - 1984 (acre-feet)
22B	16	41	25
23A - 24A	4	38	34
24A - 40B	0	23	23
39B	--	--	--
40B	--	--	--
25A - 26A	6	63	57
26A - 27A	44	237	193
27A - 28A	- 73*	503	576
28A - 29A	- 74	548	622
29A - 30A	79	415	336
30A - 31A	102	381	279
31A - 33A	241	565	324
32B	2	9	7
33A - 34A	128	332	204
34A - 36A	38	235	197
35B	--	--	--
36A - 38A	--	--	--
37B	--	--	--
38A	--	--	--
TOTALS	6,217	10,371	4,154

*Negative sign indicates an increase in storage.

Table 6C. Sediment Deposition by Reach for Lake Shelbyville, Elevation 625 feet.

Reach	Sediment Deposited 1970-1980 (acre-feet)	Sediment Deposited 1970-1984 (acre-feet)	Sediment Deposited 1980-1984 (acre-feet)
Dam - 1A	206	-2*	-208*
1A-3A	507	-5	-512
2B	269	172	-97
3A-4A	326	98	-228
4A-5A	648	395	-253
5A-6A	449	364	-85
6A-7A	280	48	-232
7A-11A	233	158	-75
8B-9B	76	425	349
9B-10B	283	469	186
10B	147	189	42
11A-12A	454	174	-280
12A-14A	455	144	-311
13B	191	4	-187
14A-15A	595	719	124
15A-17A	423	608	185
16B	173	183	10
17A-18A	9	207	198
18A-19A	150	144	-6
19A-20A	163	238	75
20A-21A	183	858	675
21A-23A	165	785	620

Table 6C. Sediment Deposition by Reach for Lake Shelbyville, Elevation 625 feet (continued).

Reach	Sediment Deposited 1970-1980 (acre-feet)	Sediment Deposited 1970-1984 (acre-feet)	Sediment Deposited 1980-1984 (acre-feet)
22B	51	126	75
23A-24A	17	54	37
24A-40B	-54*	59	113
39B	-56	34	90
40B	-52	-65	-13
25A-26A	-80	-8	72
26A-27A	91	161	70
27A-28A	37	498	461
28A-29A	-290	588	878
29A-30A	8	230	222
30A-31A	80	229	149
31A-33A	211	534	323
32B	79	213	134
33A-34A	109	276	167
34A-36A	247	384	137
35B	8	15	7

Table 6C. Sediment Deposition by Reach for Lake Shelbyville, Elevation 625 feet (continued).

Reach	Sediment Deposited 1970-1980 (acre-feet)	Sediment Deposited 1970-1984 (acre-feet)	Sediment Deposited 1980-1984 (acre-feet)
36A-38A	313	296	-17
37B	37	52	15
38A	64	36	-28
	7,205	10,087	2,882

*Negative sign indicates an increase in shortage.

Percent of storage loss:

1970-1980: $\frac{7,205}{676,203} \times 100 = 1.07$ percent

1980-1984: $\frac{2,882}{668,998} \times 100 = 0.43$ percent

1970-1984: $\frac{10,087}{676,203} \times 100 = 1.49$ percent

Table 7. Tabulation of Volume Changes Downstream of Lake Shelbyville Dam, Kaskaskia River.

Section	(1970-1980) Volume Change* (acre-feet)	(1970-1984) Volume Change* (acre-feet)
2C - 3C	5.1	5.5
3C - 4C	5.2	10.7
4C - 5C	8.8	12.7
5C - 6C	23.7	26.9
6C - 7C	5.7	6.9
TOTAL	48.5	62.7

Percent Changes:

1970-1980: $\frac{48.5}{594} \times 100 = 8.2$ increase in volume.

1970-1984: $\frac{62.7}{594} \times 100 = 10.6$ increase in volume.

(594 = river volume at bankfull discharge between Ranges 2C and 7C.

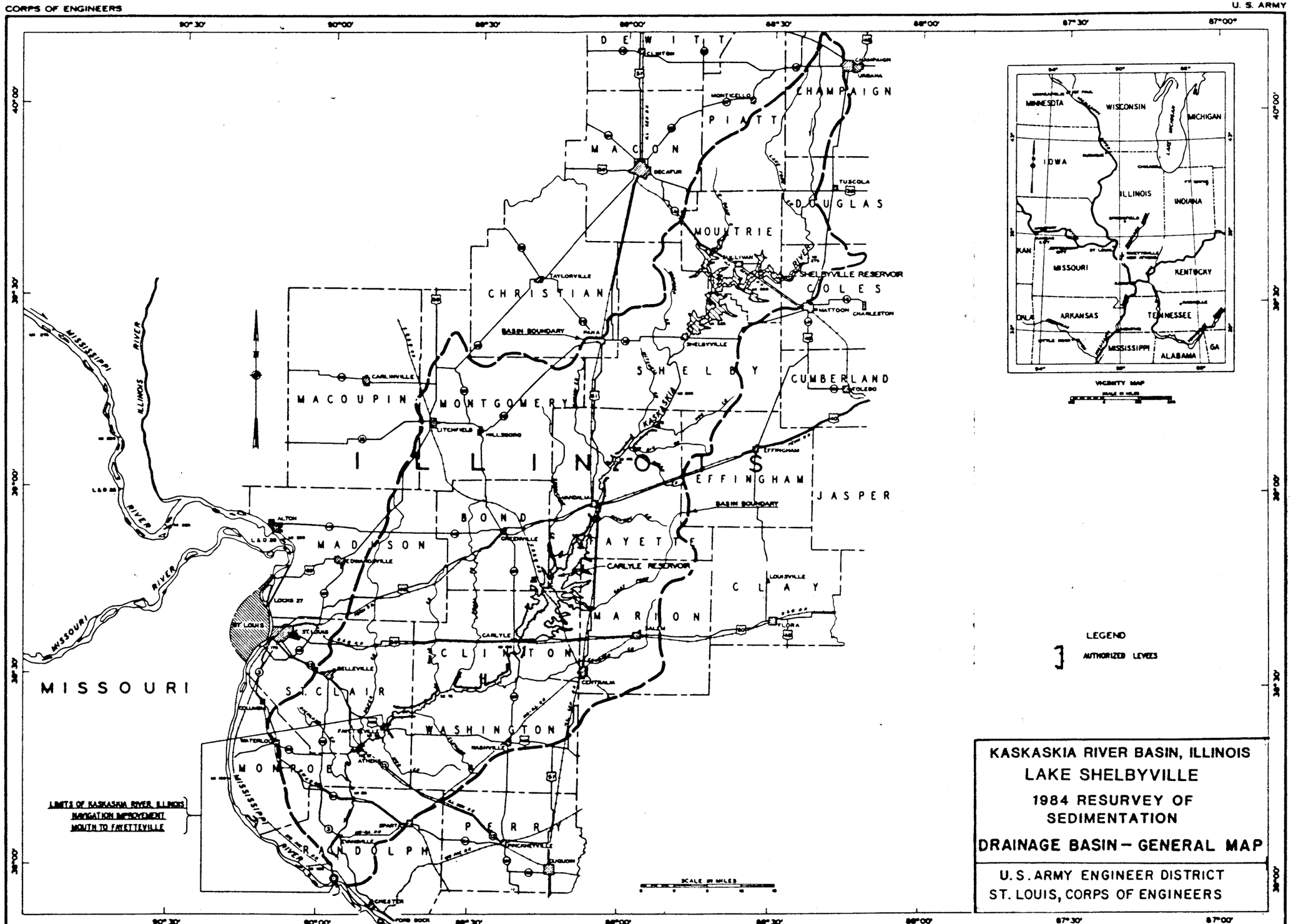
*Calculated using Average End Area Method.

APPENDIX A

SEDIMENT RANGE CONTROL

CORPS OF ENGINEERS

U. S. ARMY



KASKASKIA RIVER BASIN, ILLINOIS

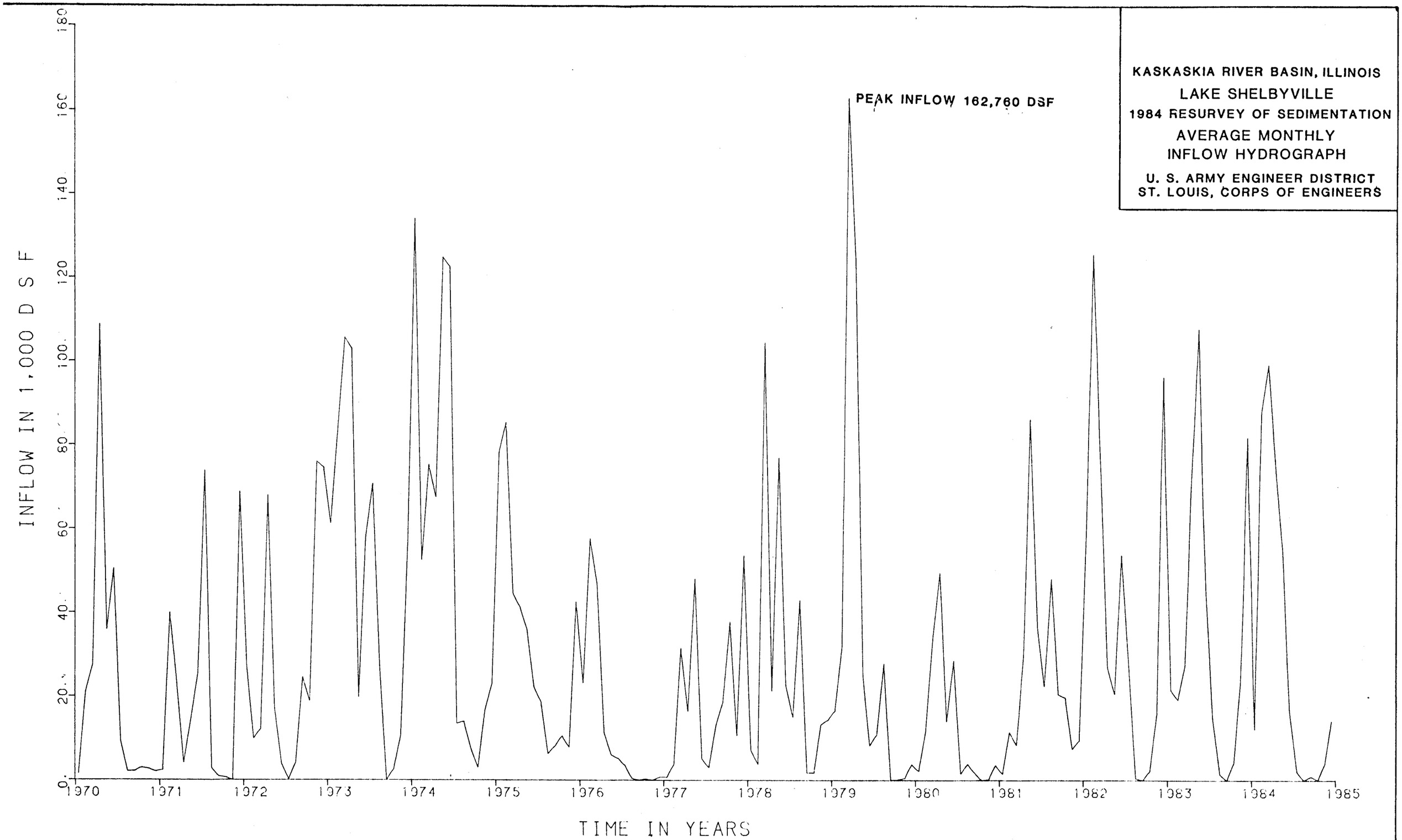
LAKE SHELBYVILLE

1984 RESURVEY OF SEDIMENTATION

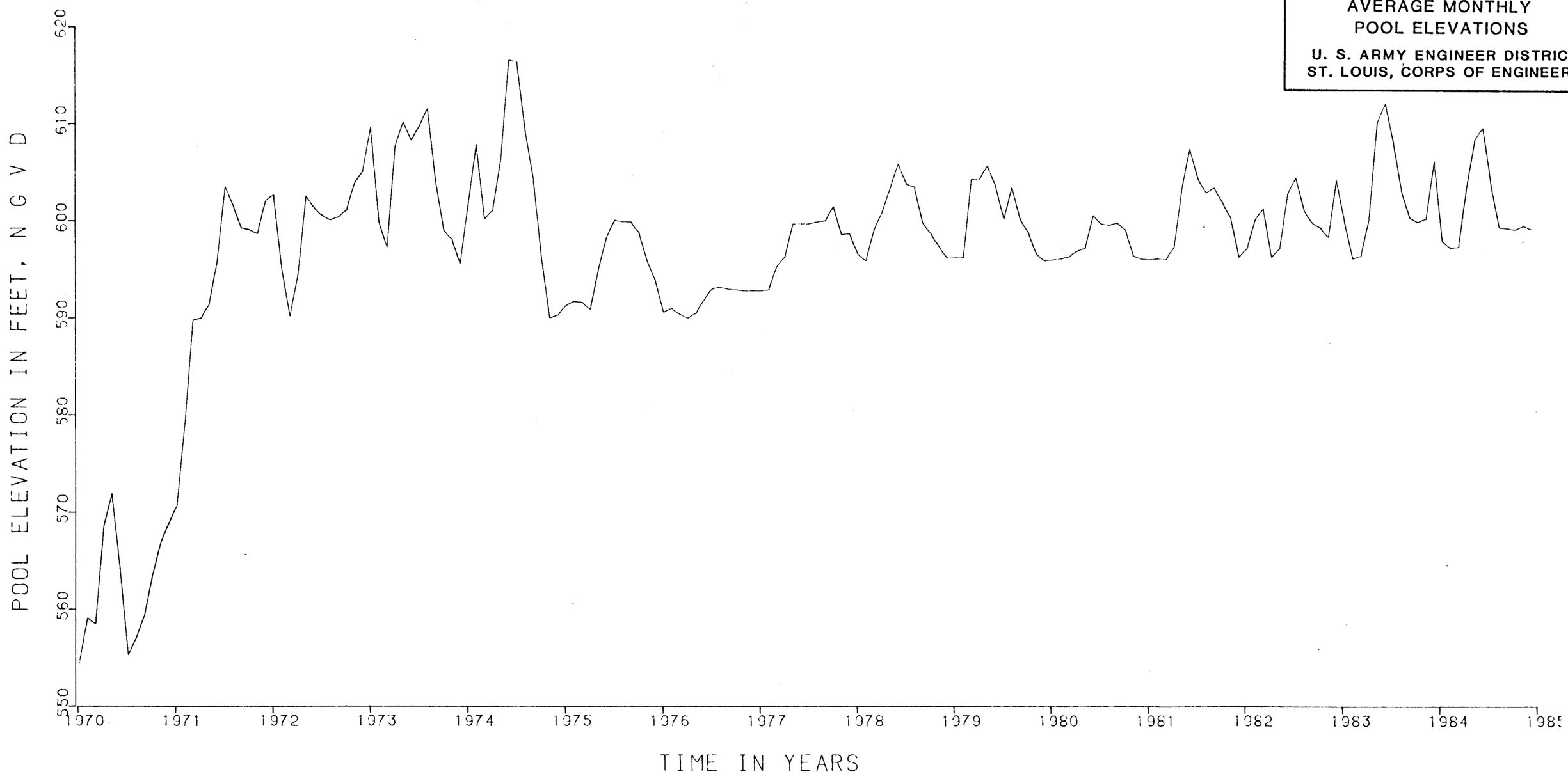
DRAINAGE BASIN – GENERAL MAP

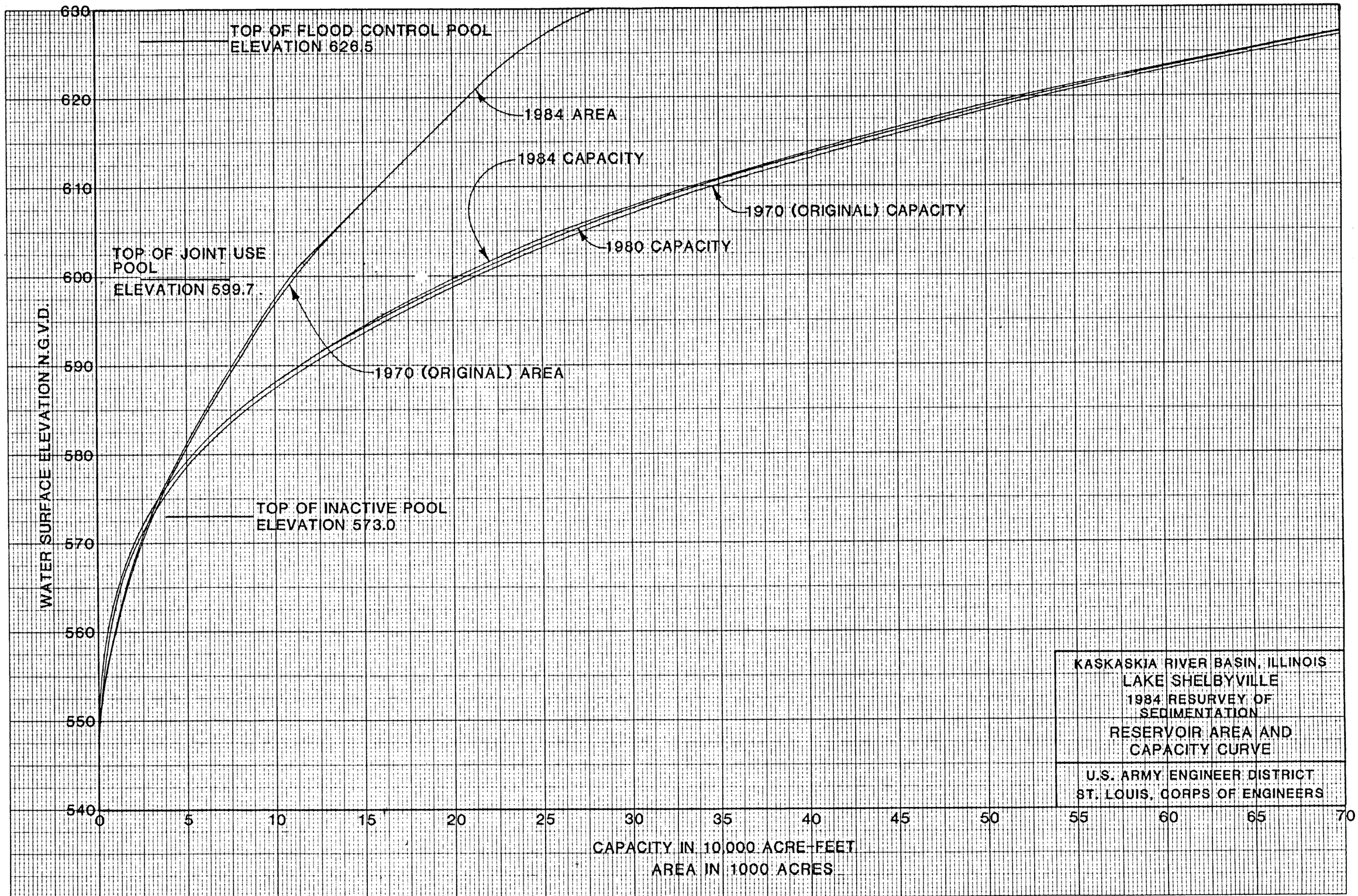
U.S. ARMY ENGINEER DISTRICT
ST. LOUIS, CORPS OF ENGINEERS

PLATE 1


KASKASKIA RIVER BASIN, ILLINOIS
LAKE SHELBYVILLE
1984 RESURVEY OF SEDIMENTATION
AVERAGE MONTHLY
INFLOW HYDROGRAPH
U. S. ARMY ENGINEER DISTRICT
ST. LOUIS, CORPS OF ENGINEERS
PEAK INFLOW 162,760 DSF
INFLOW IN 1,000 D S F
0.
20.
40.
60.
80.
100.
120.
140.
160.
180.
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
TIME IN YEARS

KASKASKIA RIVER BASIN, ILLINOIS
LAKE SHELBYVILLE
1984 RESURVEY OF SEDIMENTATION
AVERAGE MONTHLY
POOL ELEVATIONS
U. S. ARMY ENGINEER DISTRICT
ST. LOUIS, CORPS OF ENGINEERS





EUGENE DIETZGEN CO.
MADE IN U. S. A.
NO. 340DR-20 DIETZGEN GRAPH PAPER
20 X 20 PER INCH

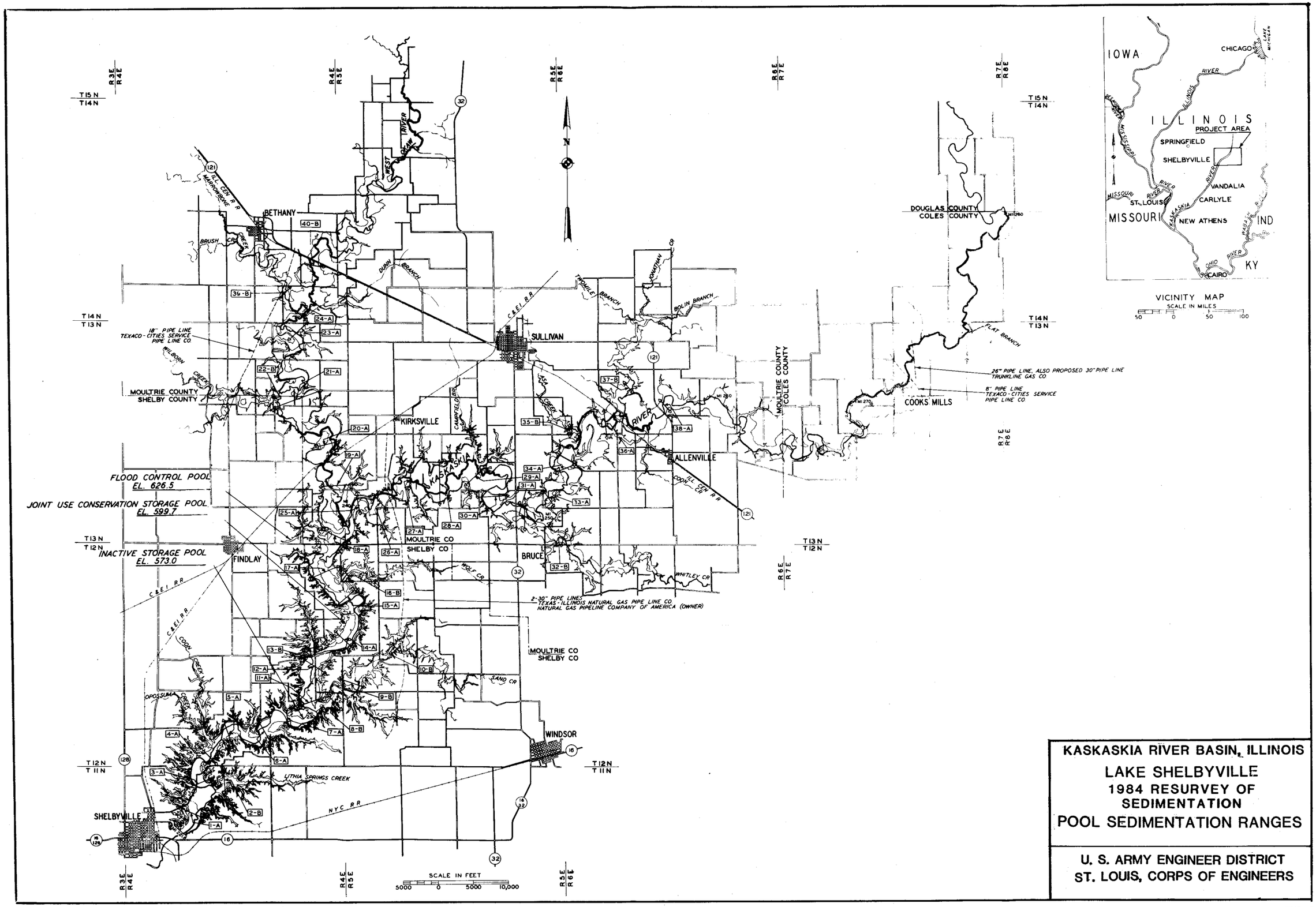

KASKASKIA RIVER BASIN, ILLINOIS
LAKE SHELBYVILLE
1984 RESURVEY OF SEDIMENTATION
POOL SEDIMENTATION RANGES
U. S. ARMY ENGINEER DISTRICT
ST. LOUIS, CORPS OF ENGINEERS
VICINITY MAP
SCALE IN MILES
50 0 50 100
IOWA
CHICAGO
LAKE MICHIGAN
ILLINOIS RIVER
MISSISSIPPI RIVER
ILLINOIS
PROJECT AREA
SPRINGFIELD
SHELBYVILLE
VANDALIA
CARLYLE
NEW ATHENS
MISSOURI
ST. LOUIS
KASKASKIA RIVER
OHIO RIVER
CAIRO
KY
IND
SCALE IN FEET
5000 0 5000 10,000
BETHANY
SULLIVAN
KIRKSVILLE
ALLENVILLE
FINDLAY
BRUCE
WINDSOR
SHELBYVILLE
COOKS MILLS
DOUGLAS COUNTY
COLES COUNTY
MOULTRIE COUNTY
SHELBY COUNTY
MOULTRIE CO
SHELBY CO
FLOOD CONTROL POOL
EL. 626.5
JOINT USE CONSERVATION STORAGE POOL
EL. 599.7
INACTIVE STORAGE POOL
EL. 573.0
18" PIPE LINE
TEXACO-CITIES SERVICE PIPE LINE CO
26" PIPE LINE, ALSO PROPOSED 30" PIPE LINE
TRUNKLINE GAS CO
8" PIPE LINE
TEXACO-CITIES SERVICE PIPE LINE CO
2-30" PIPE LINES
TEXAS-ILLINOIS NATURAL GAS PIPE LINE CO.
NATURAL GAS PIPELINE COMPANY OF AMERICA (OWNER)
ILL. CEN. R.R.
C&E.I. R.R.
NYC RR
BRUSH CREEK
DUNN BRANCH
TRIMILE BRANCH
JONATHAN CR
BOLIN BRANCH
FLAT BRANCH
KASKASKIA RIVER
CAMPFIELD BR
WOLF CR
WHITLEY CR
SAND CR
COOL CREEK
OPOSSUM CREEK
LITHIA SPRINGS CREEK
WILBORN CREEK
MARROWBONE
WEST OKAW RIVER
T15N T14N
T14N T13N
T13N T12N
T12N T11N
R3E R4E
R4E R5E
R5E R6E
R6E R7E
R7E R8E
40-B
36-B
24-A
23-A
22-B
21-A
20-A
19-A
18-A
17-A
16-B
15-A
14-A
13-B
12-A
11-A
10-B
9-B
8-B
7-A
6-A
5-A
4-A
3-A
2-B
1-A
25-A
26-A
27-A
28-A
30-A
31-A
29-A
34-A
33-A
32-B
35-B
37-B
36-A
38-A
MI 260
MI 270
121
32
16
126

PLATE 5

LAKE SHELBYVILLE

SEDIMENTATION RANGE : 1A

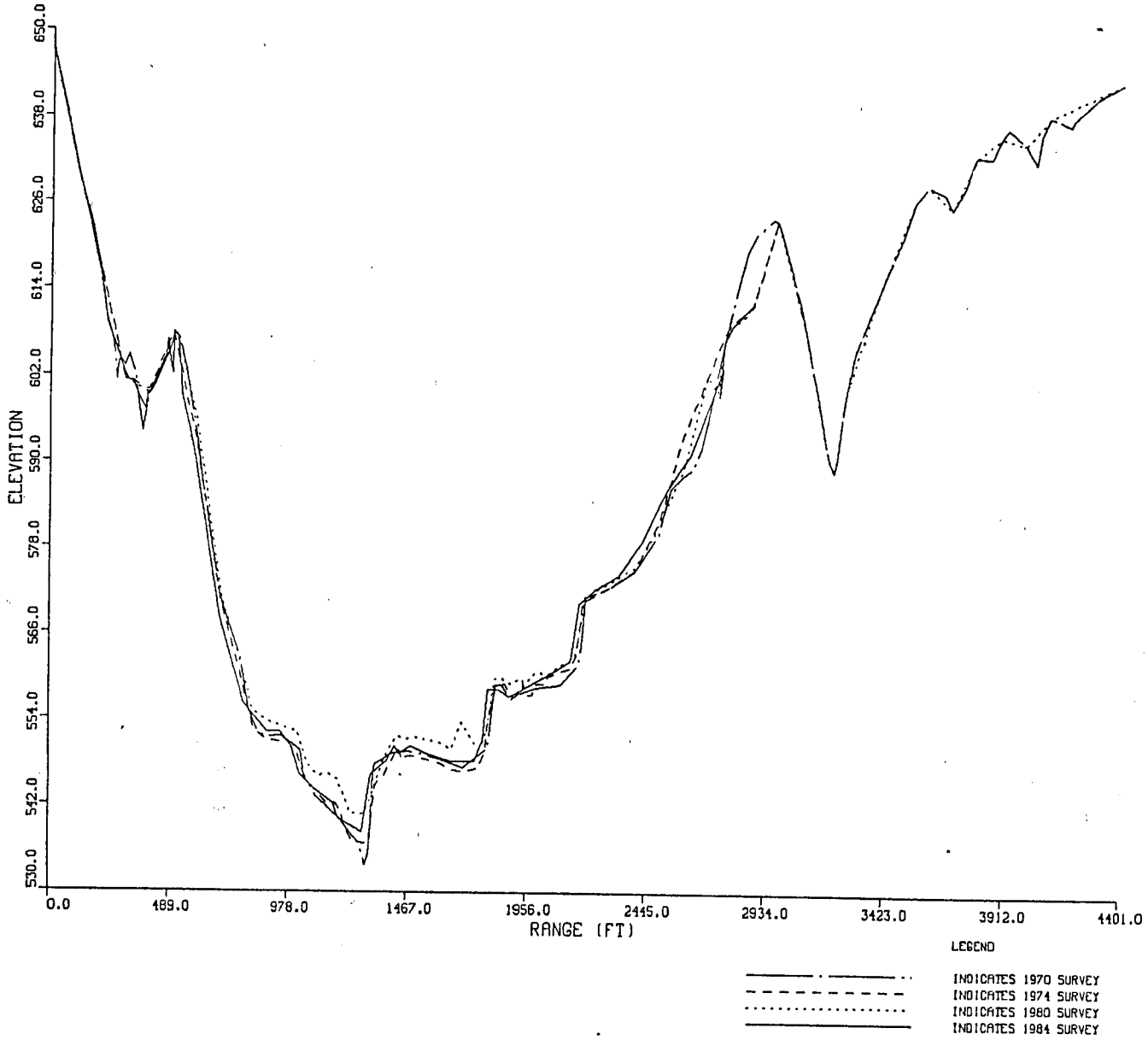


PLATE 6

LAKE SHELBYVILLE

SEDIMENTATION RANGE : 2B

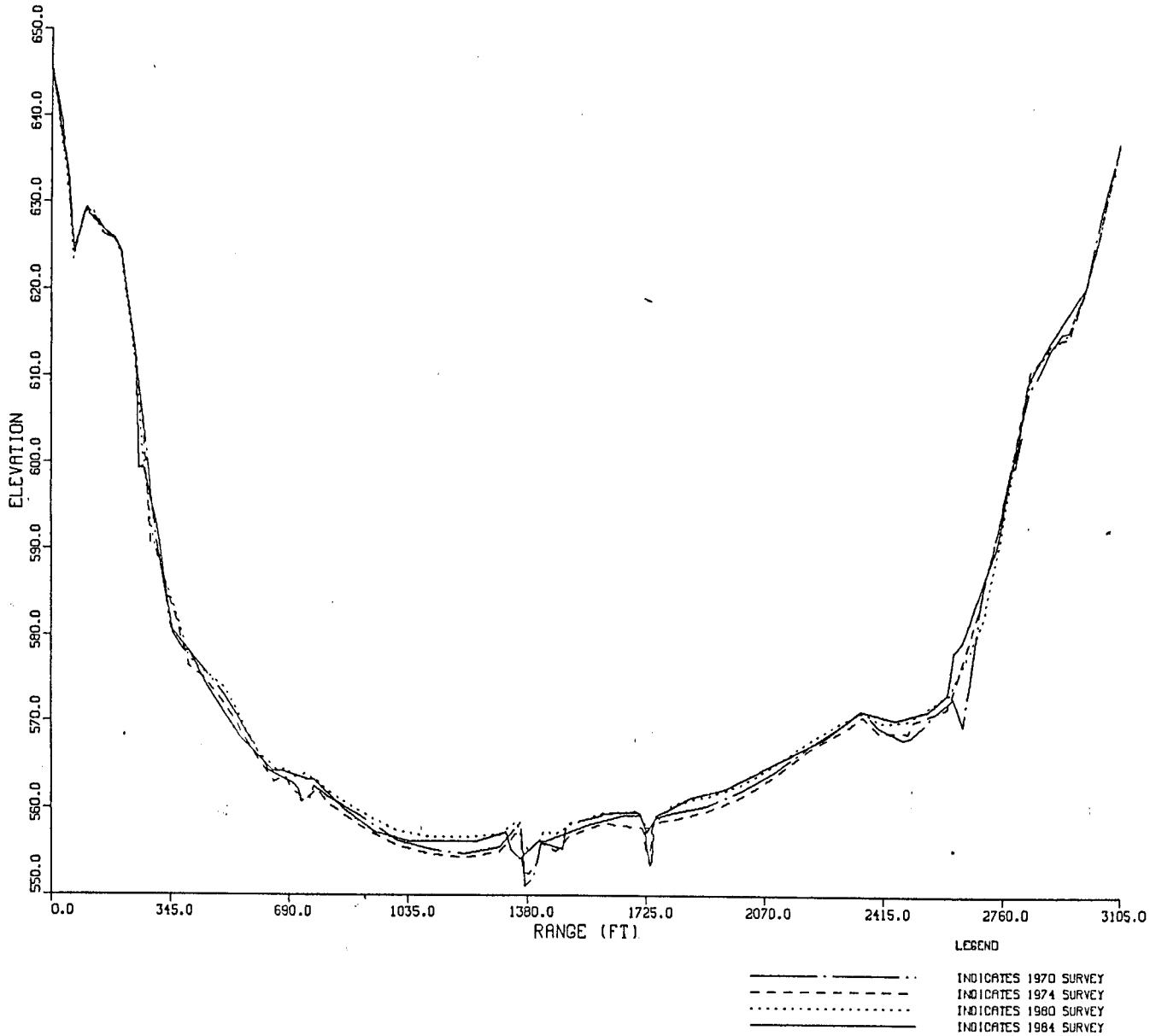


PLATE 7

LAKE SHELBYVILLE

SEDIMENTATION RANGE : 3A

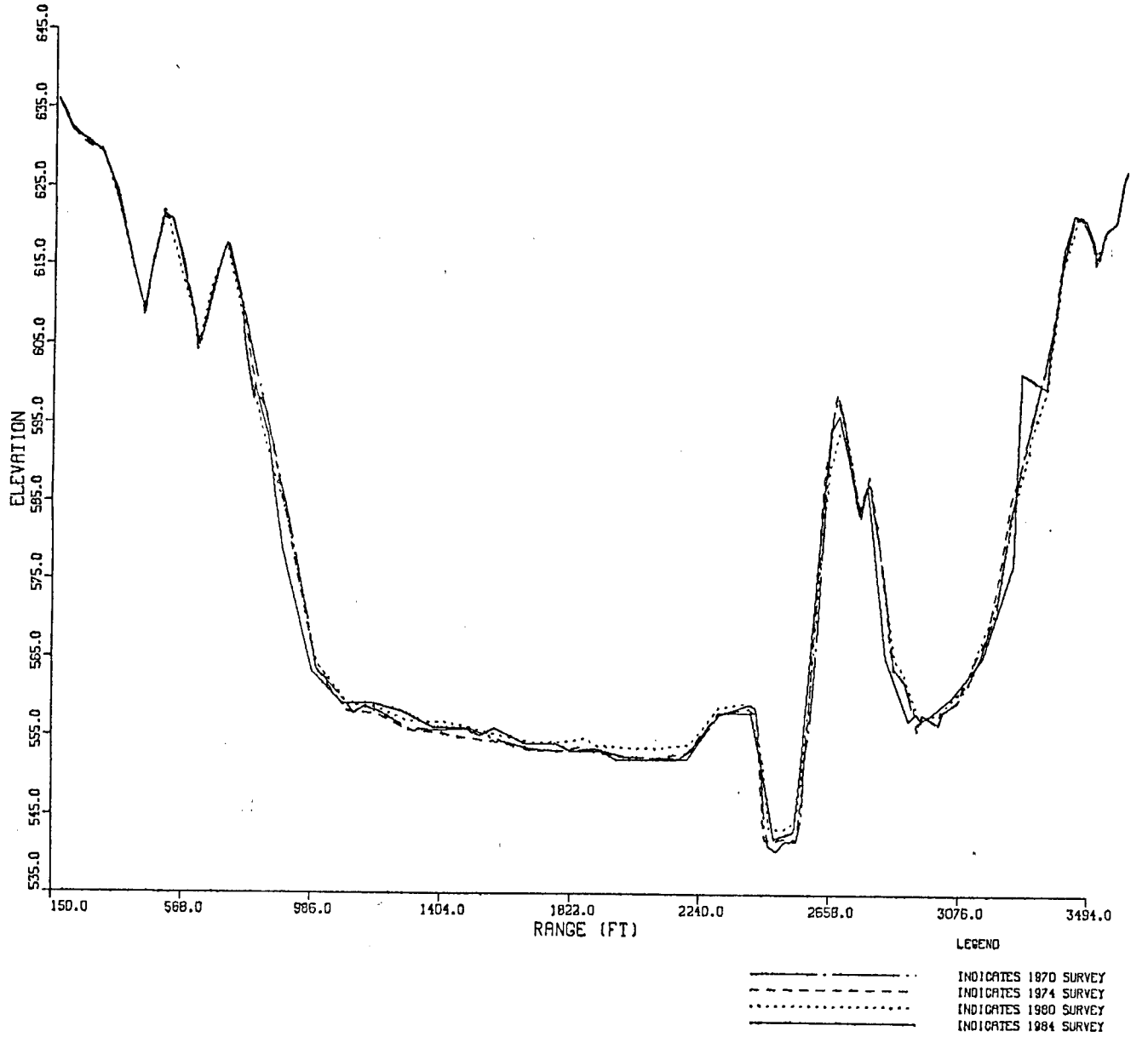


PLATE 8

LAKE SHELBYVILLE

SEDIMENTATION RANGE : 4A

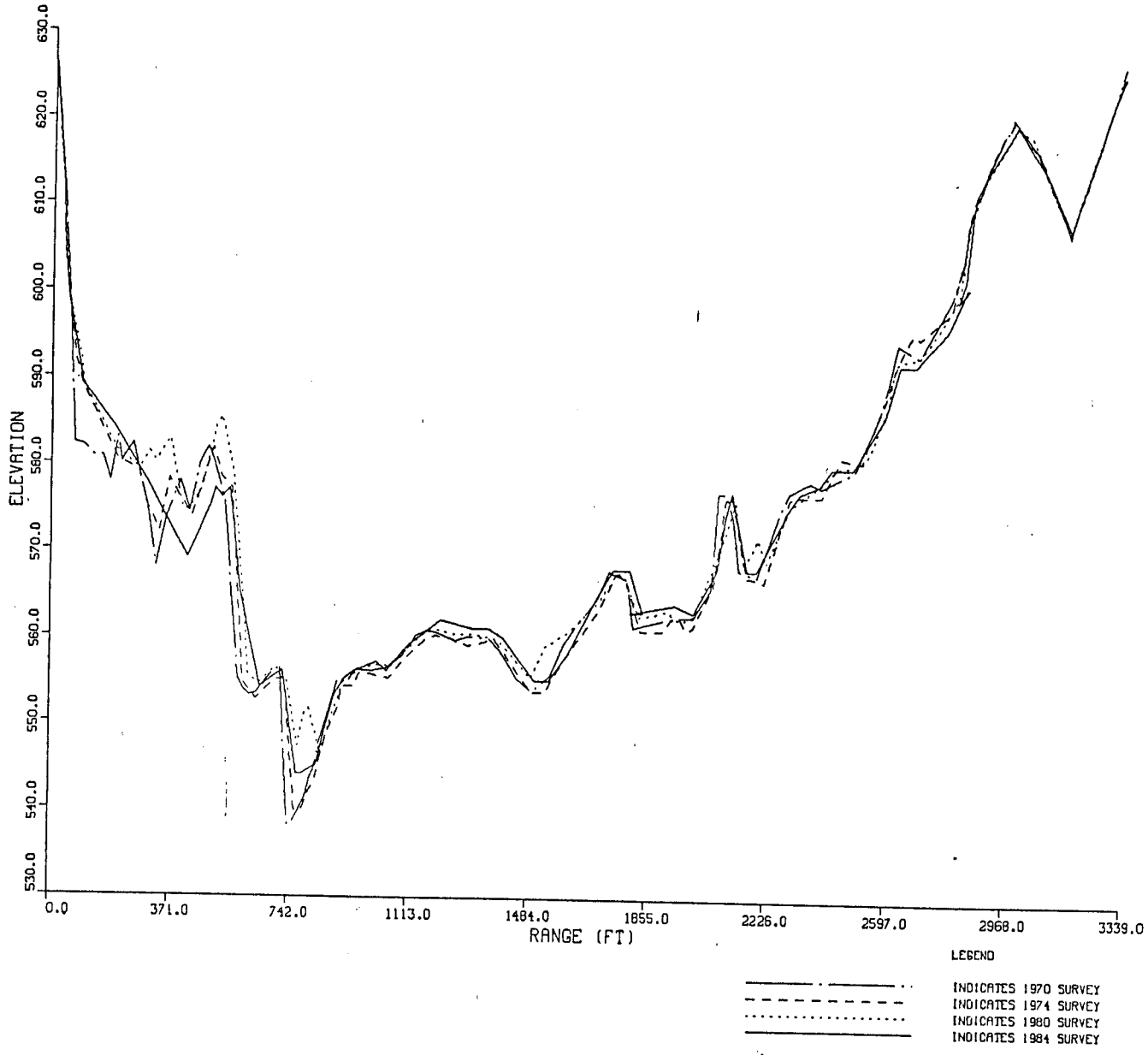
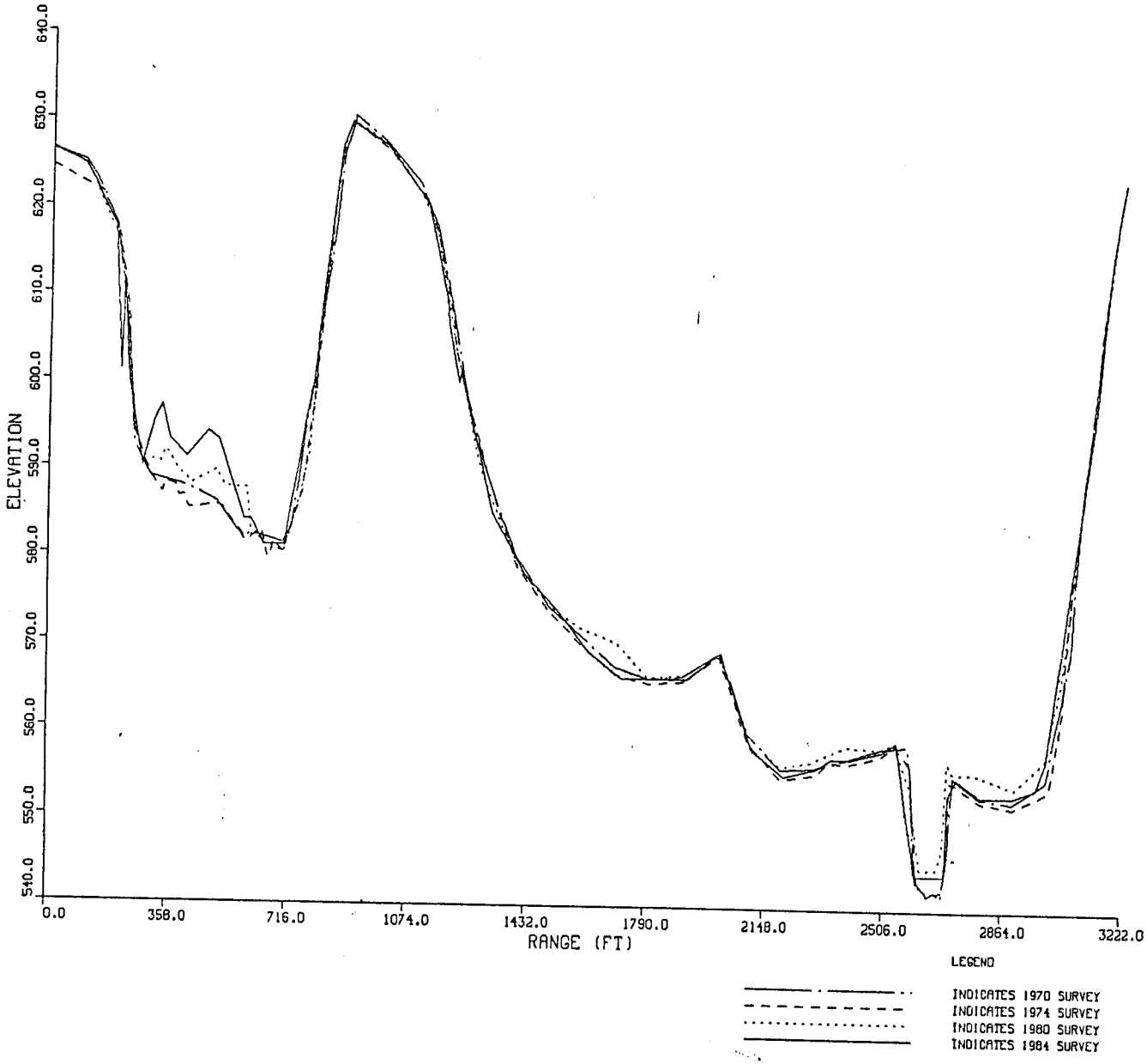


PLATE 9

LAKE SHELBYVILLE

SEDIMENTATION RANGE : 5A



LAKE SHELBYVILLE

SEDIMENTATION RANGE : 6A

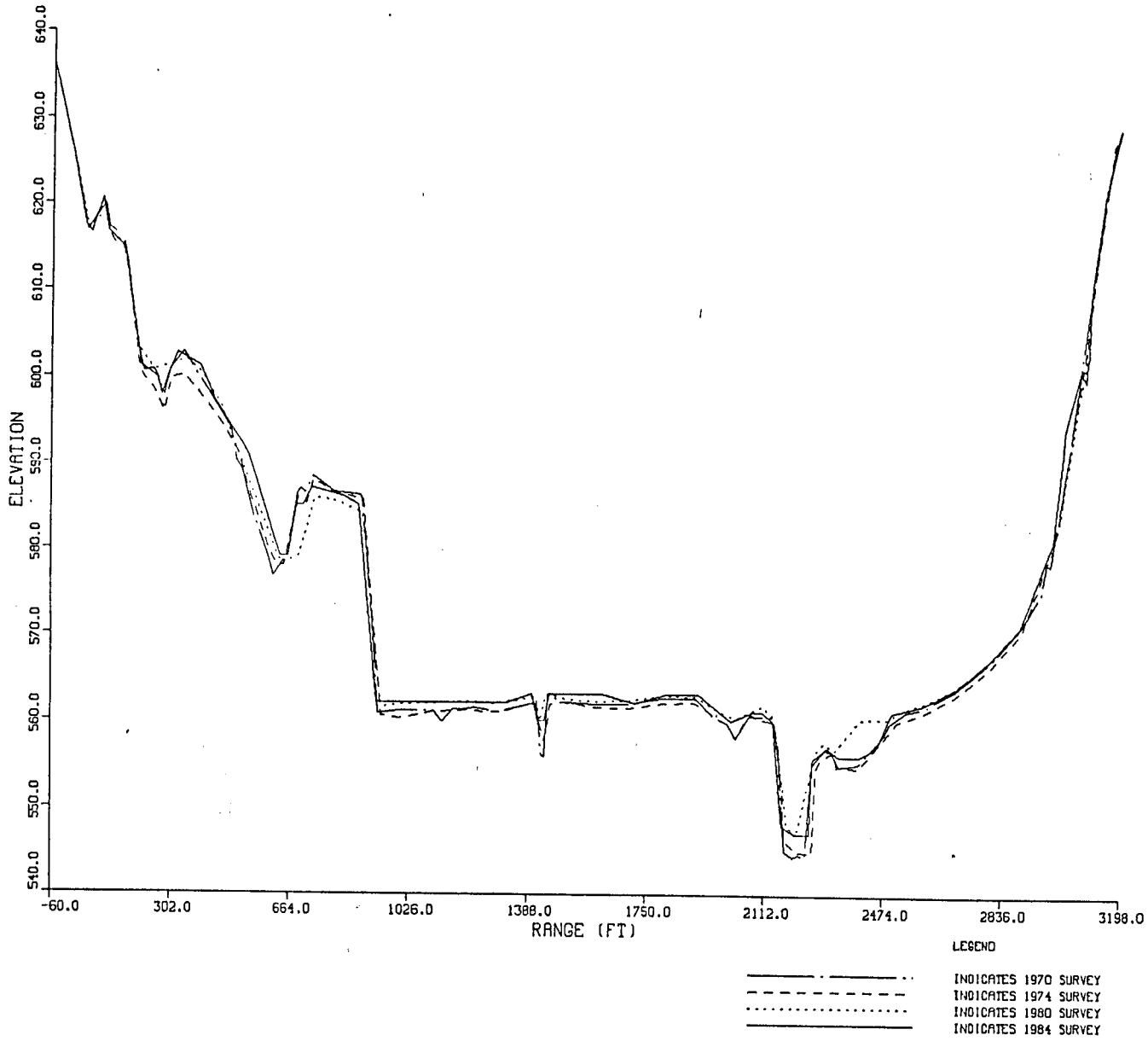


PLATE 11

LAKE SHELBYVILLE

SEDIMENTATION RANGE : 7A

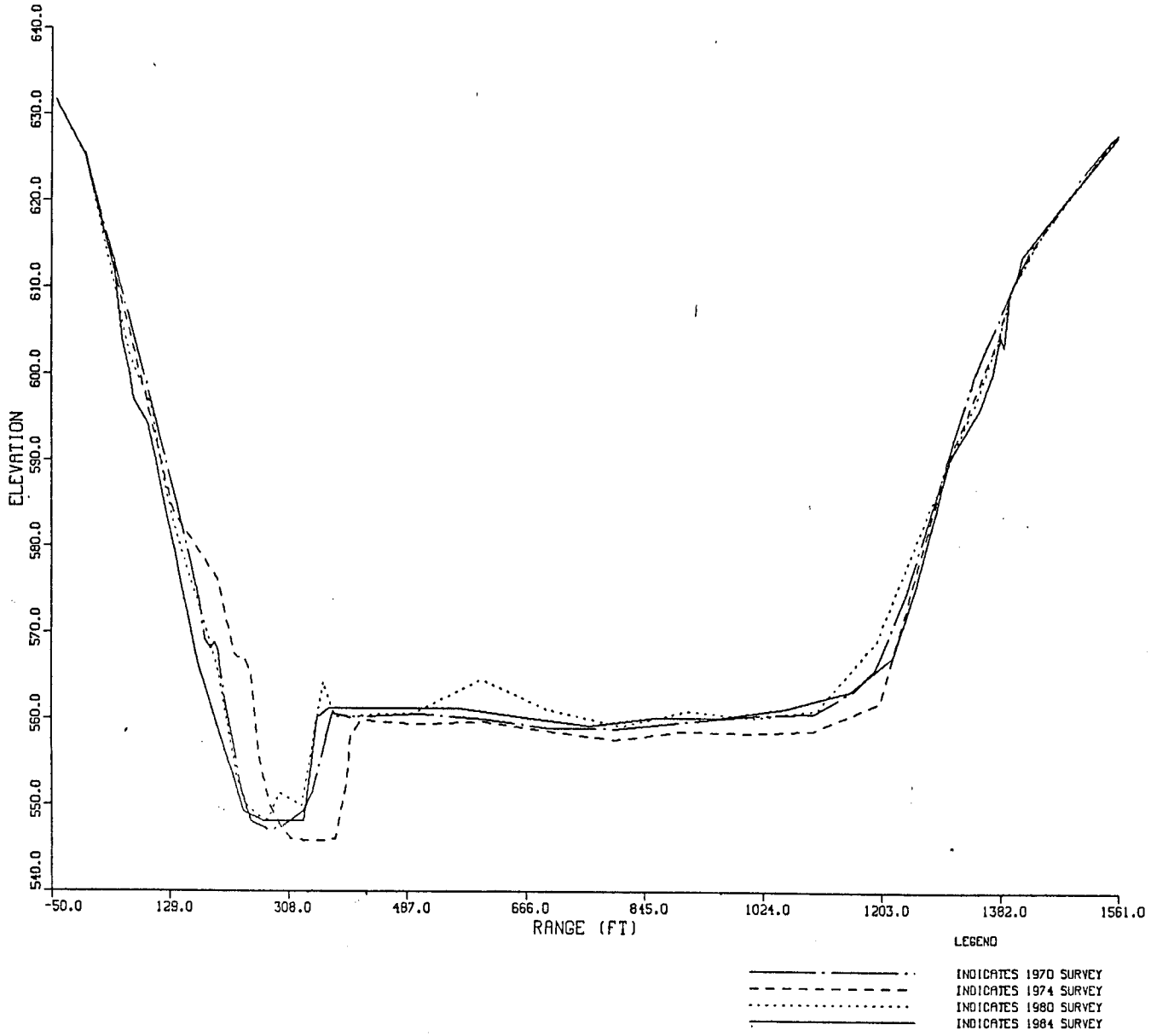


PLATE 12

LAKE SHELBYVILLE

SEDIMENTATION RANGE : 8B

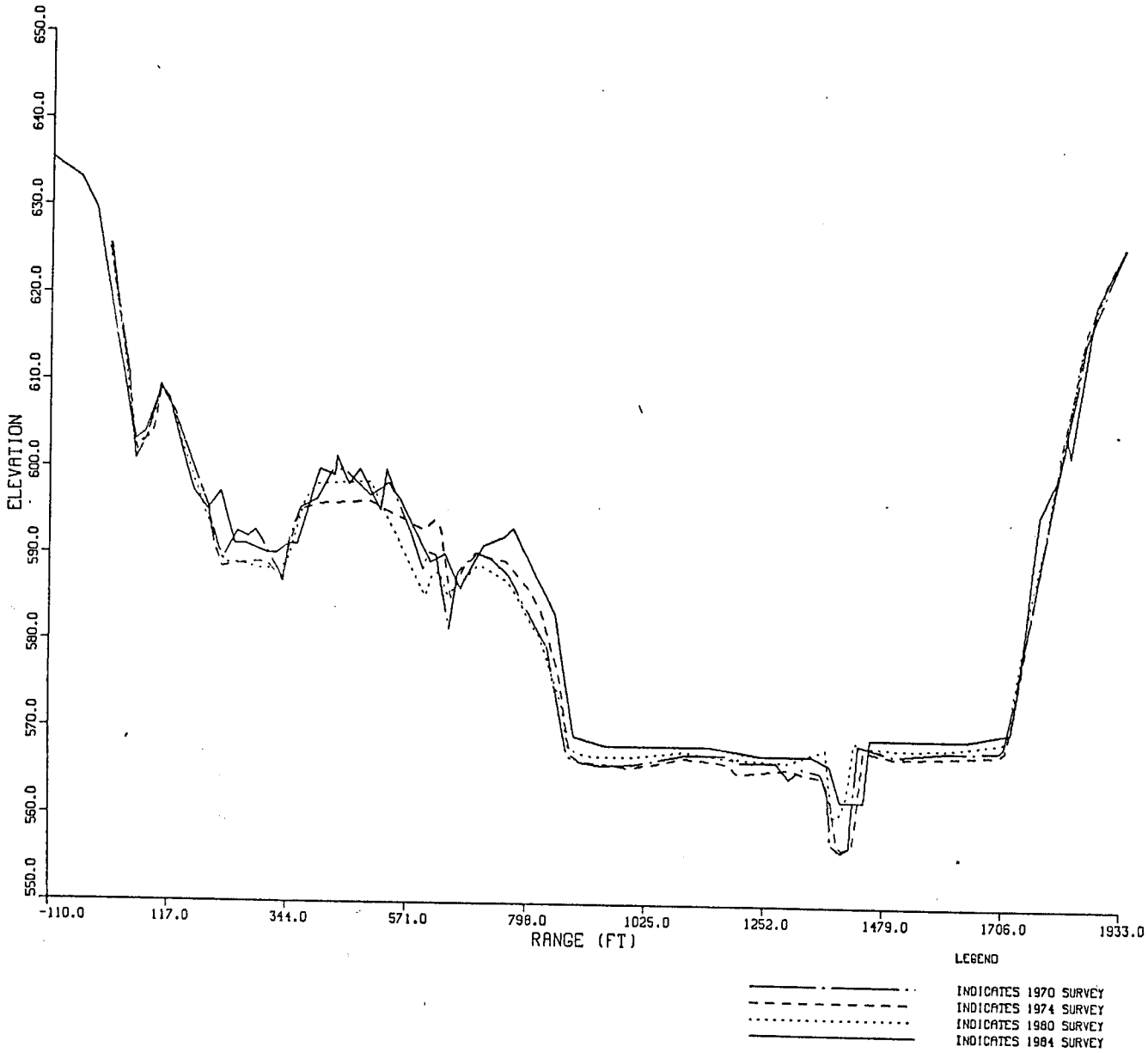


PLATE 13

LAKE SHELBYVILLE

SEDIMENTATION RANGE : 913

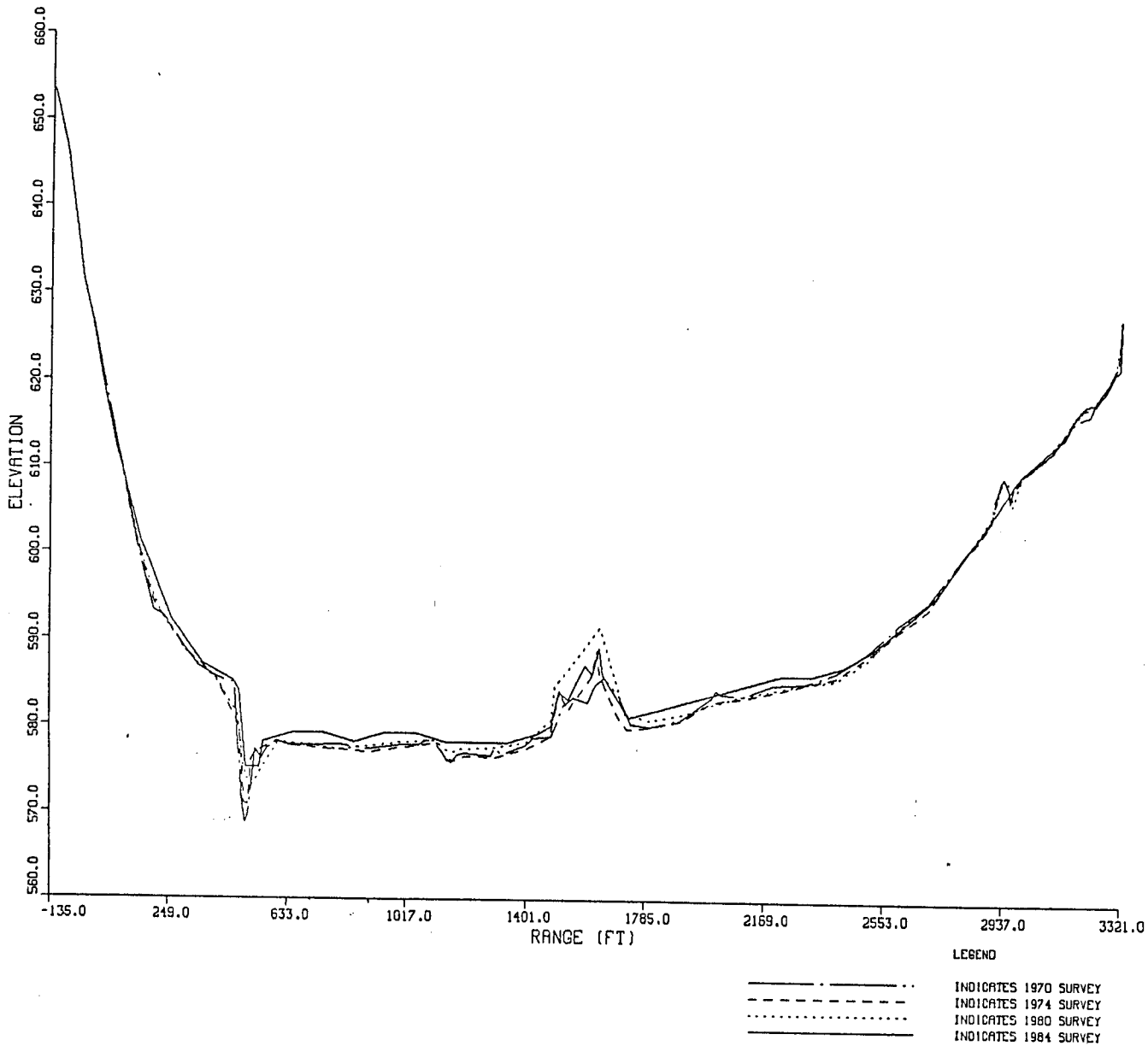


PLATE 14

LAKE SHELBYVILLE

SEDIMENTATION RANGE : 10B

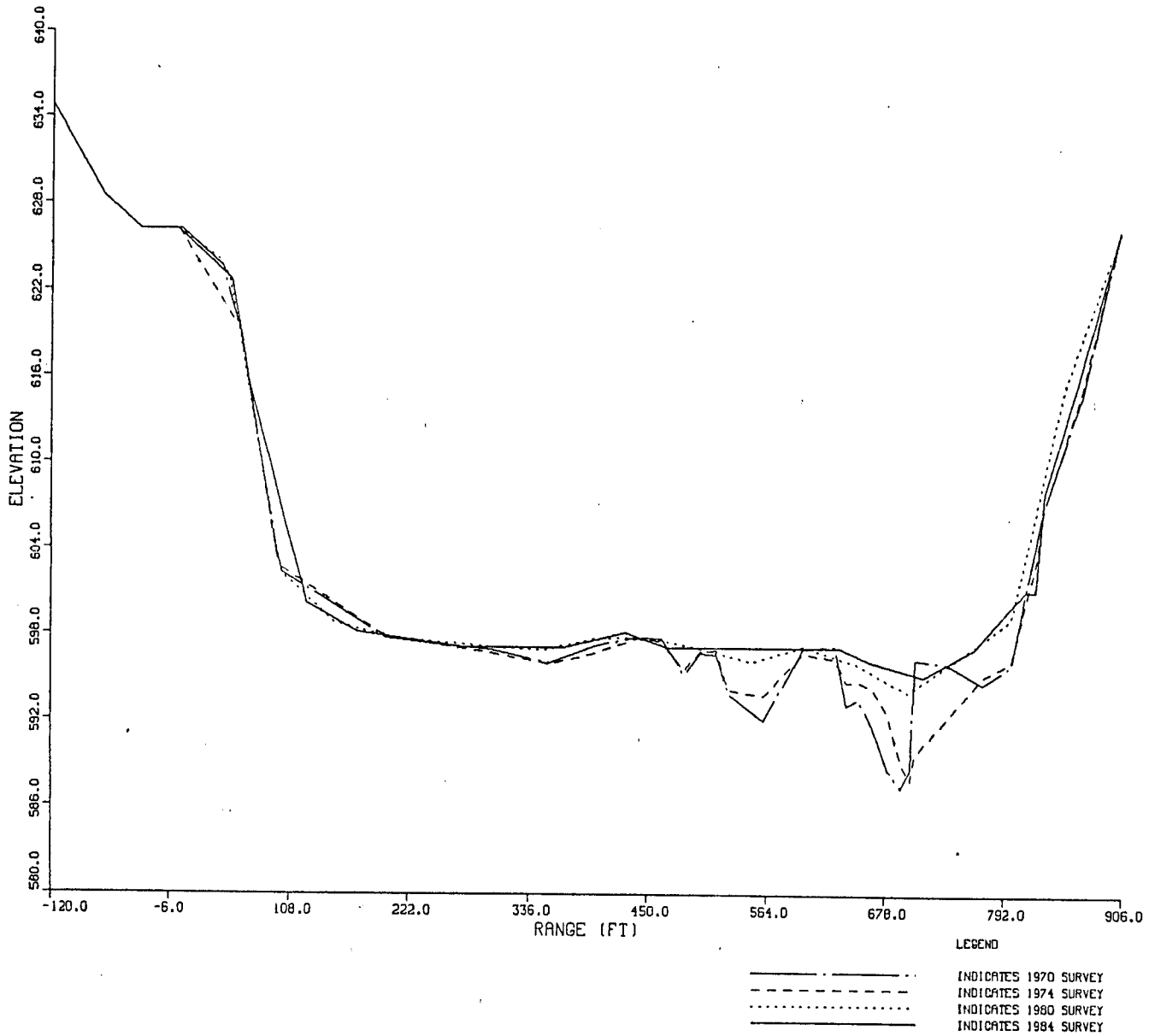


PLATE 15

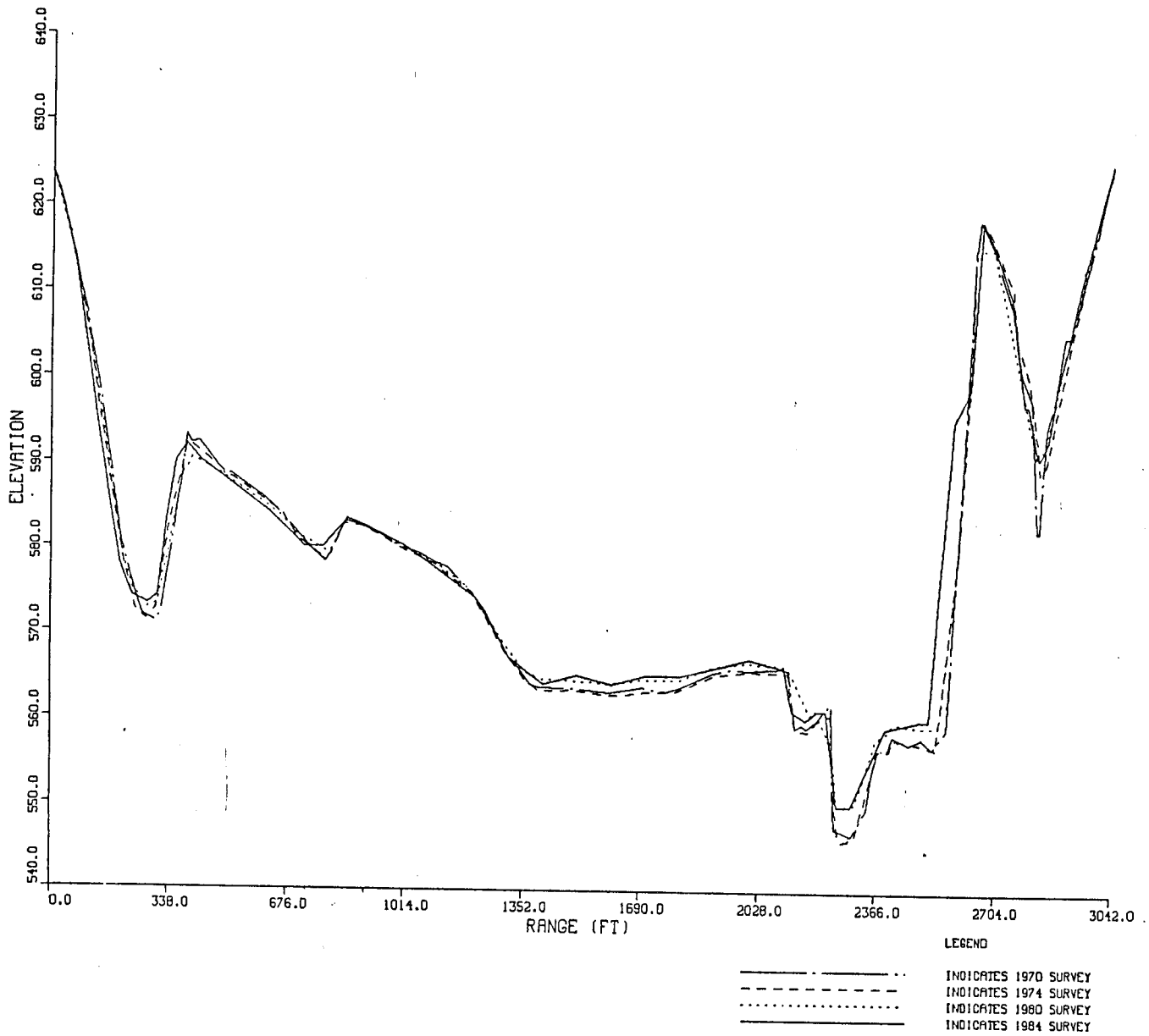

LAKE SHELBYVILLE
SEDIMENTATION RANGE : 11A
ELEVATION
640.0
630.0
620.0
610.0
600.0
590.0
580.0
570.0
560.0
550.0
540.0
0.0
338.0
676.0
1014.0
1352.0
1690.0
2028.0
2366.0
2704.0
3042.0
RANGE (FT)
LEGEND
INDICATES 1970 SURVEY
INDICATES 1974 SURVEY
INDICATES 1980 SURVEY
INDICATES 1984 SURVEY

PLATE 16

LAKE SHELBYVILLE

SEDIMENTATION RANGE : 12A

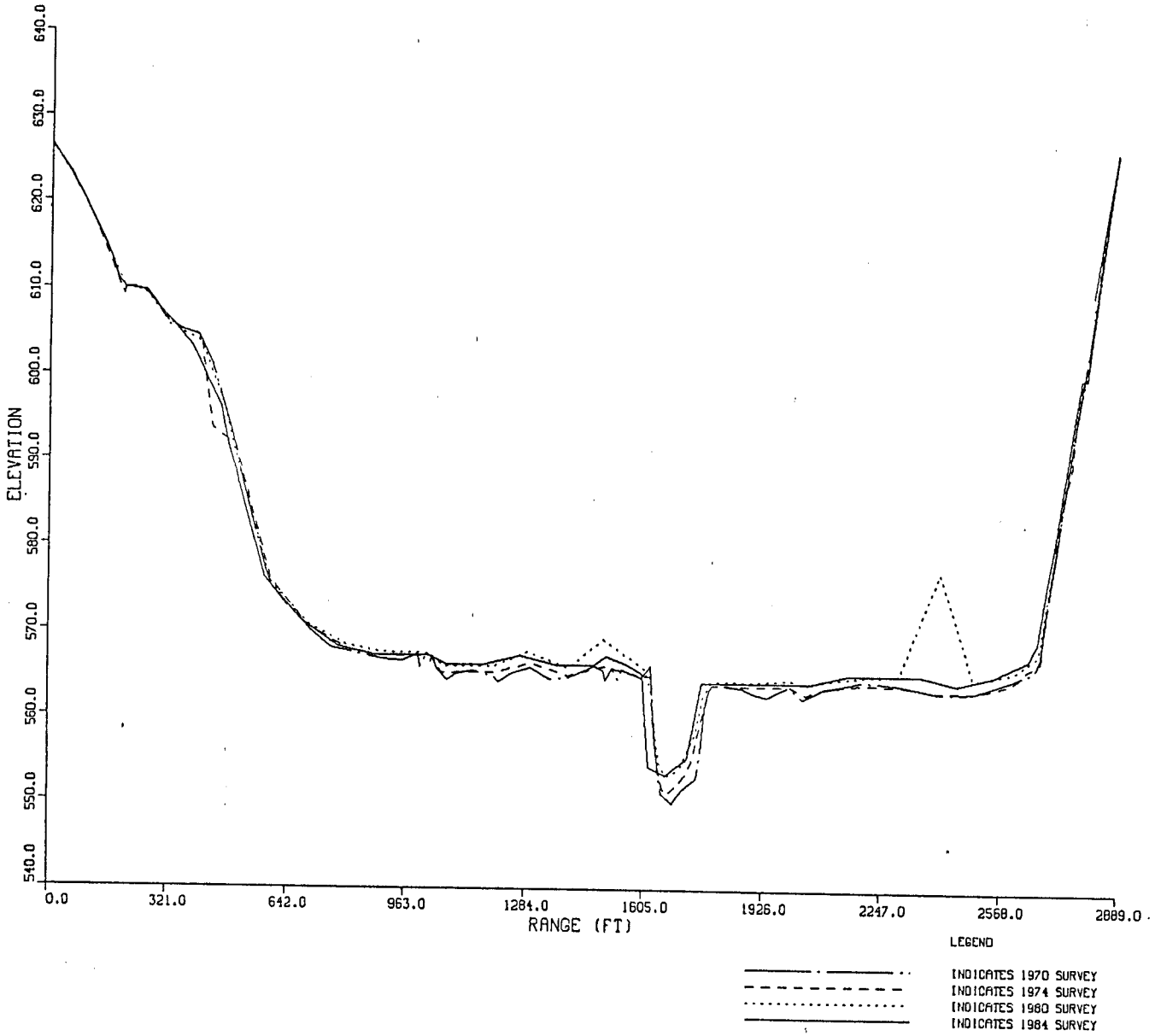


PLATE 17

LAKE SHELBYVILLE

SEDIMENTATION RANGE : 13B

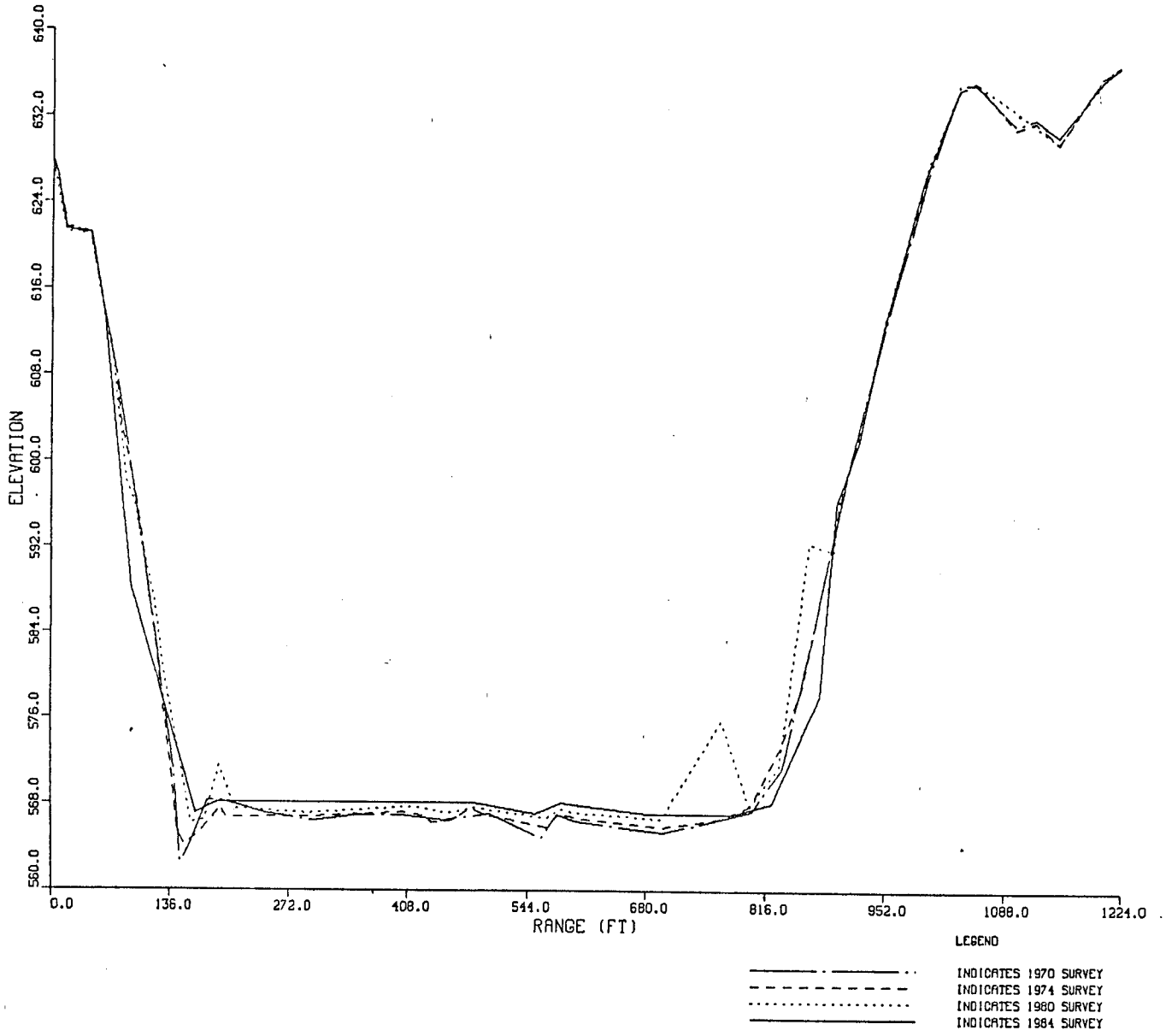


PLATE 18

LAKE SHELBYVILLE

SEDIMENTATION RANGE : 14A

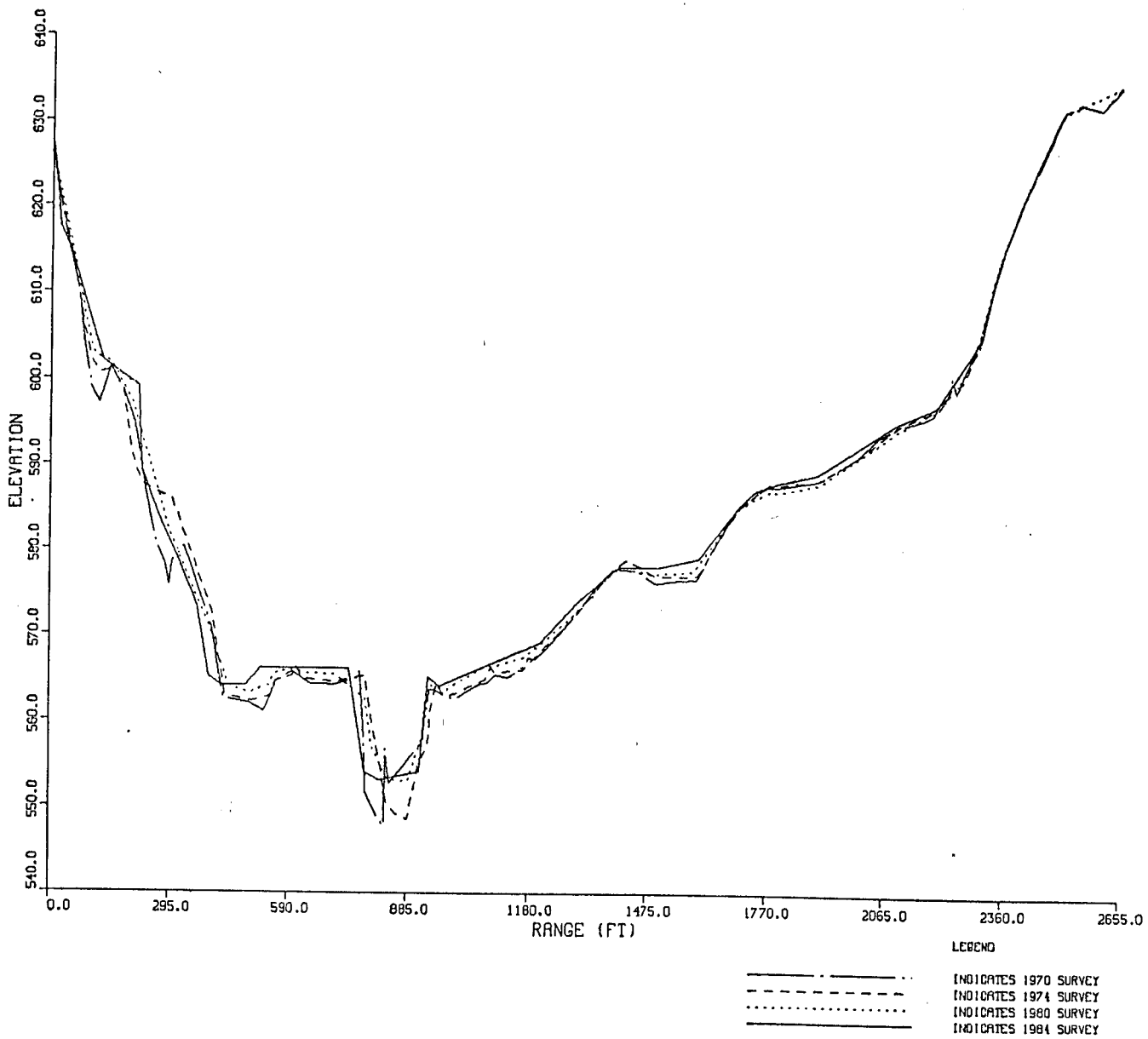


PLATE 19

LAKE SHELBYVILLE

SEDIMENTATION RANGE : 15A

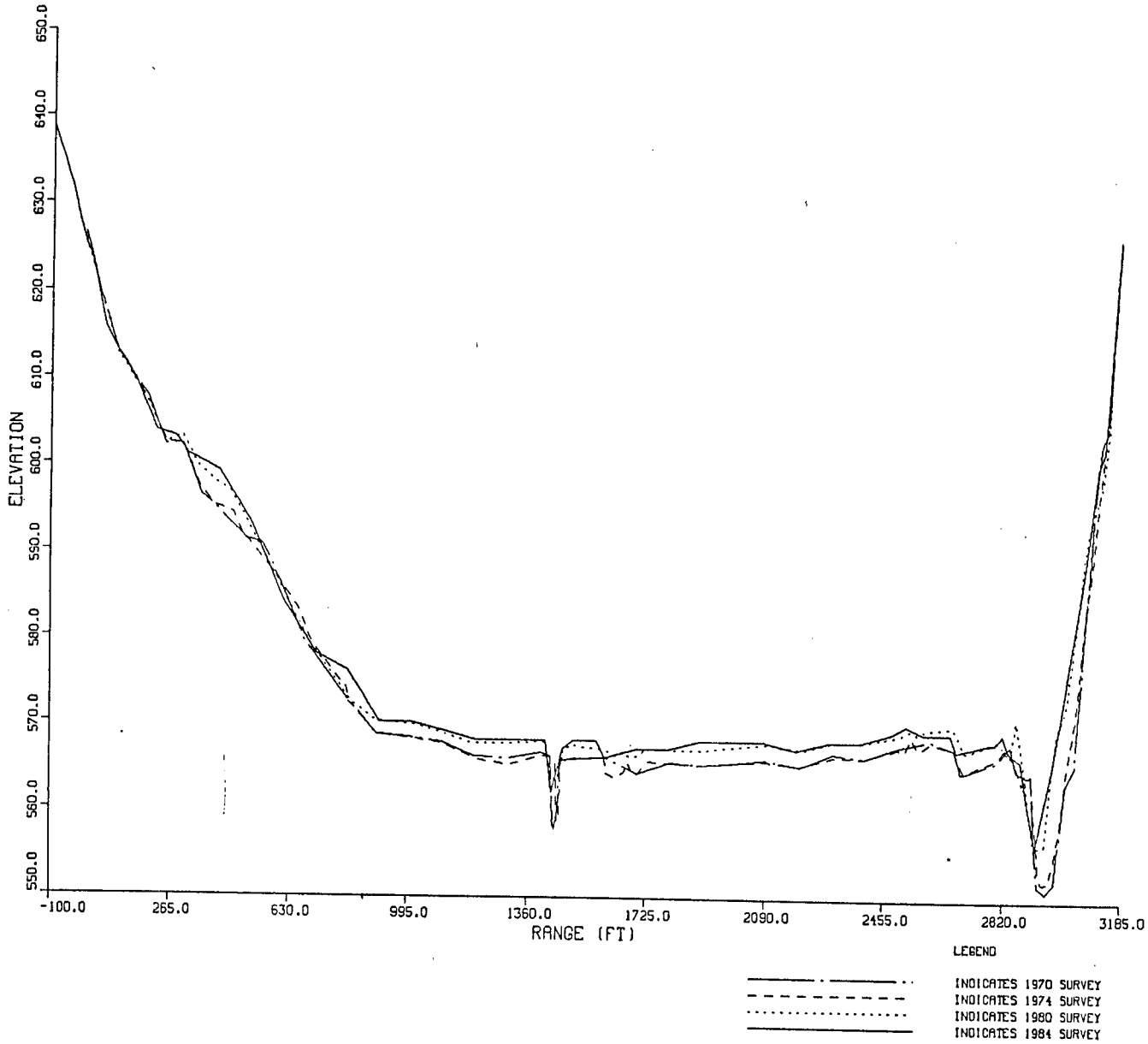


PLATE 20

LAKE SHELBYVILLE

SEDIMENTATION RANGE : 16B

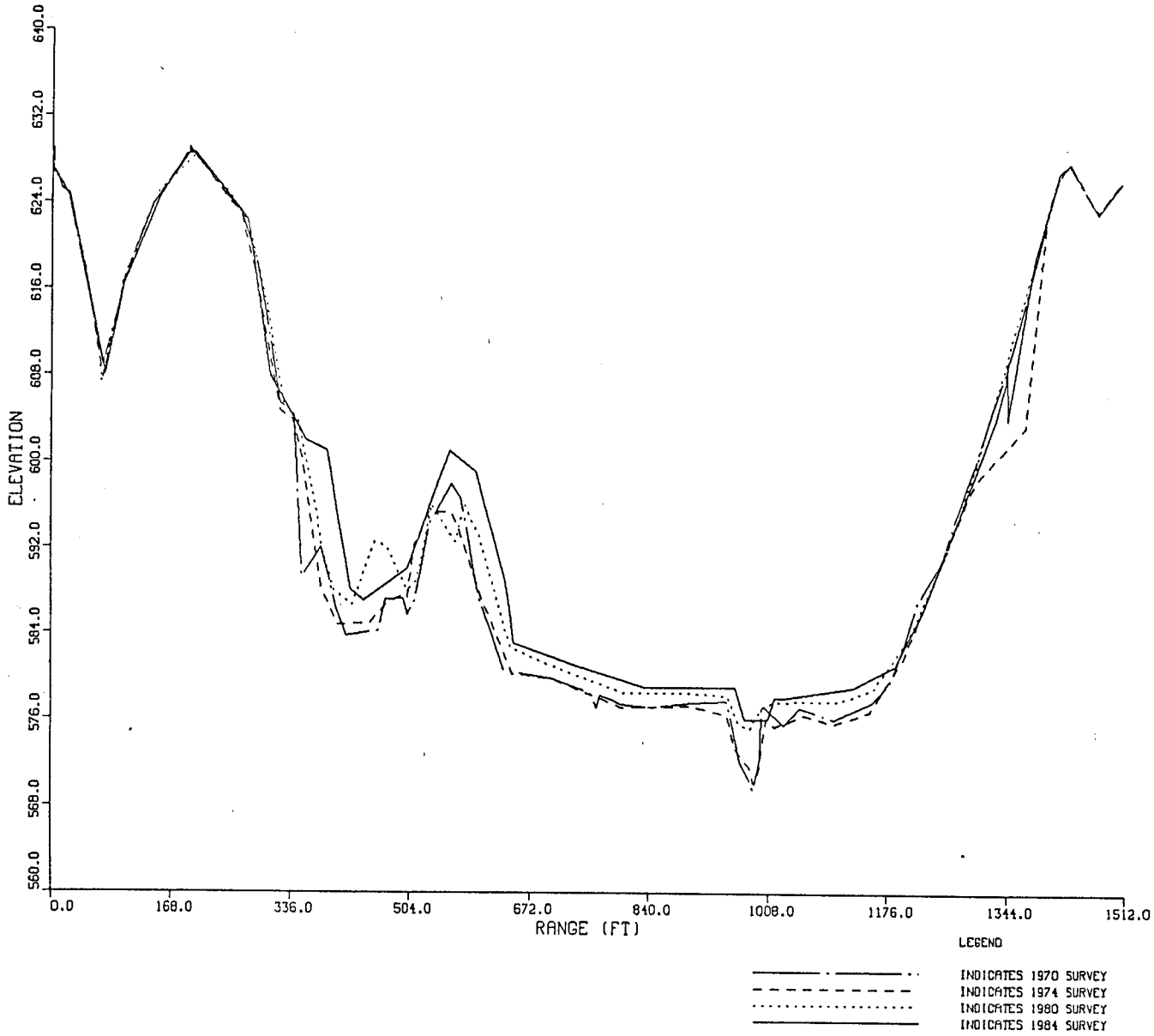
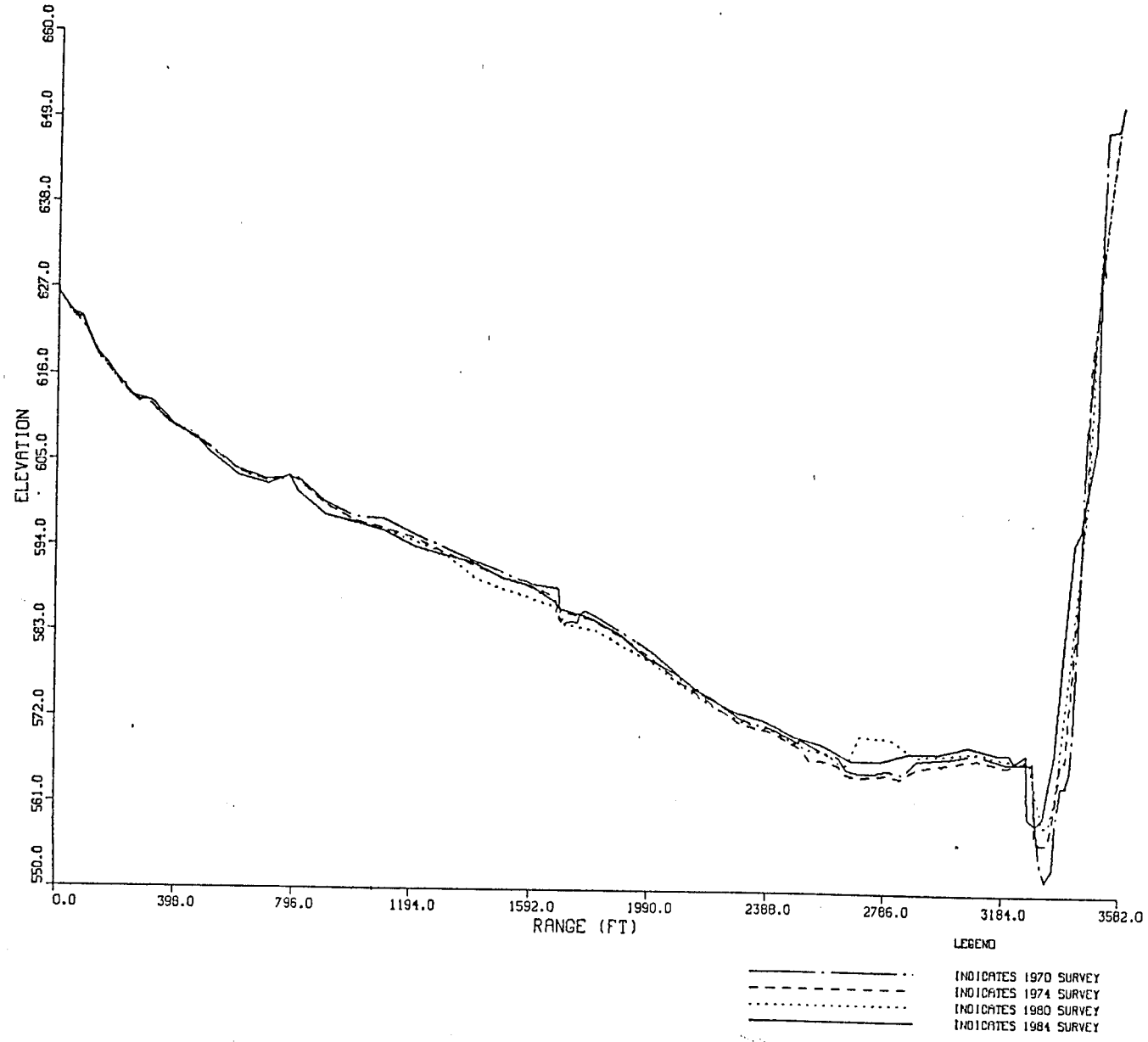


PLATE 21

LAKE SHELBYVILLE

SEDIMENTATION RANGE : 17A



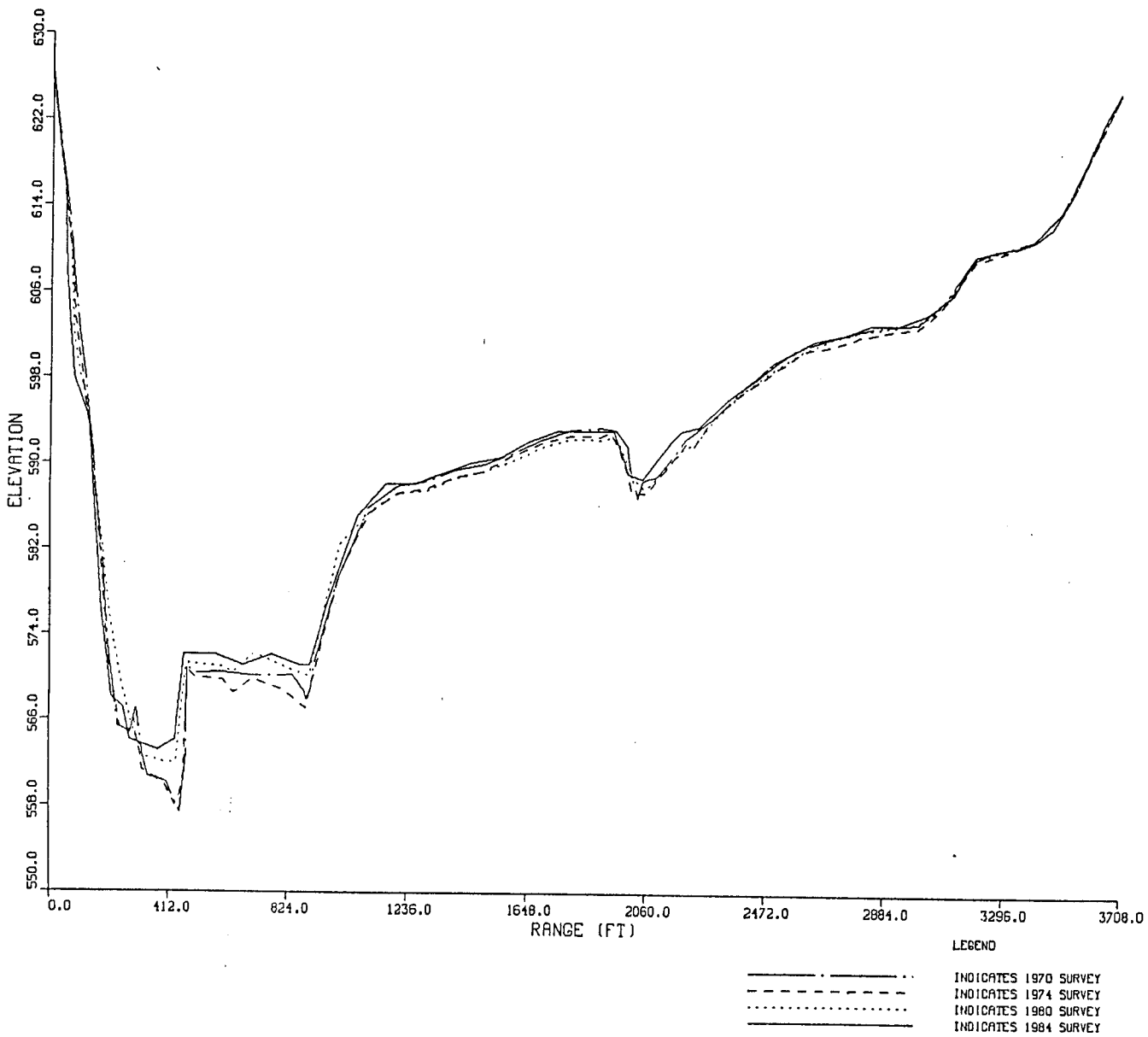

LAKE SHELBYVILLE
SEDIMENTATION RANGE : 180
ELEVATION
630.0
622.0
614.0
606.0
598.0
590.0
582.0
574.0
566.0
558.0
550.0
0.0
412.0
824.0
1236.0
1648.0
2060.0
2472.0
2884.0
3296.0
3708.0
RANGE (FT)
LEGEND
INDICATES 1970 SURVEY
INDICATES 1974 SURVEY
INDICATES 1980 SURVEY
INDICATES 1984 SURVEY

PLATE 23

LAKE SHELBYVILLE

SEDIMENTATION RANGE : 190

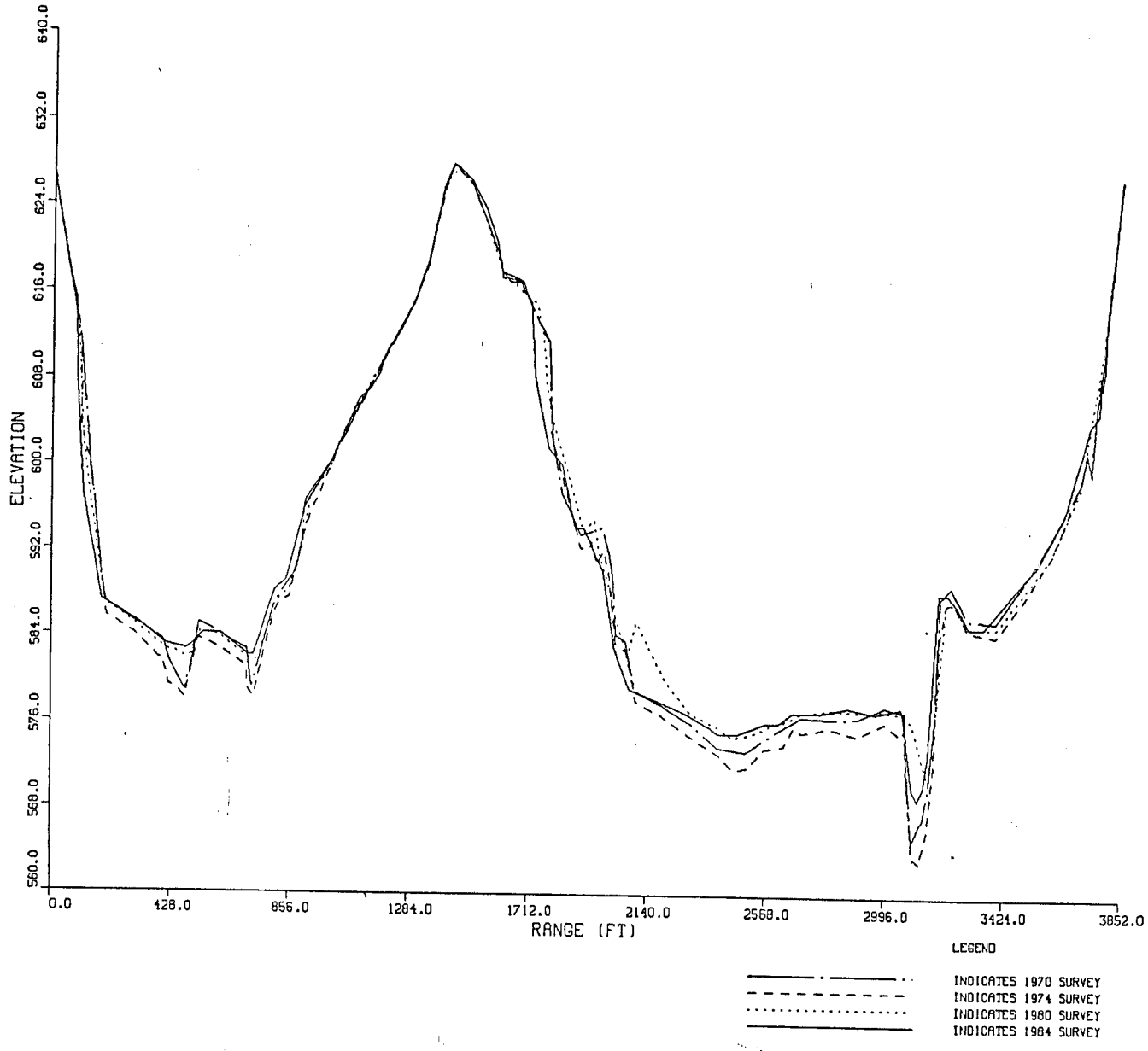
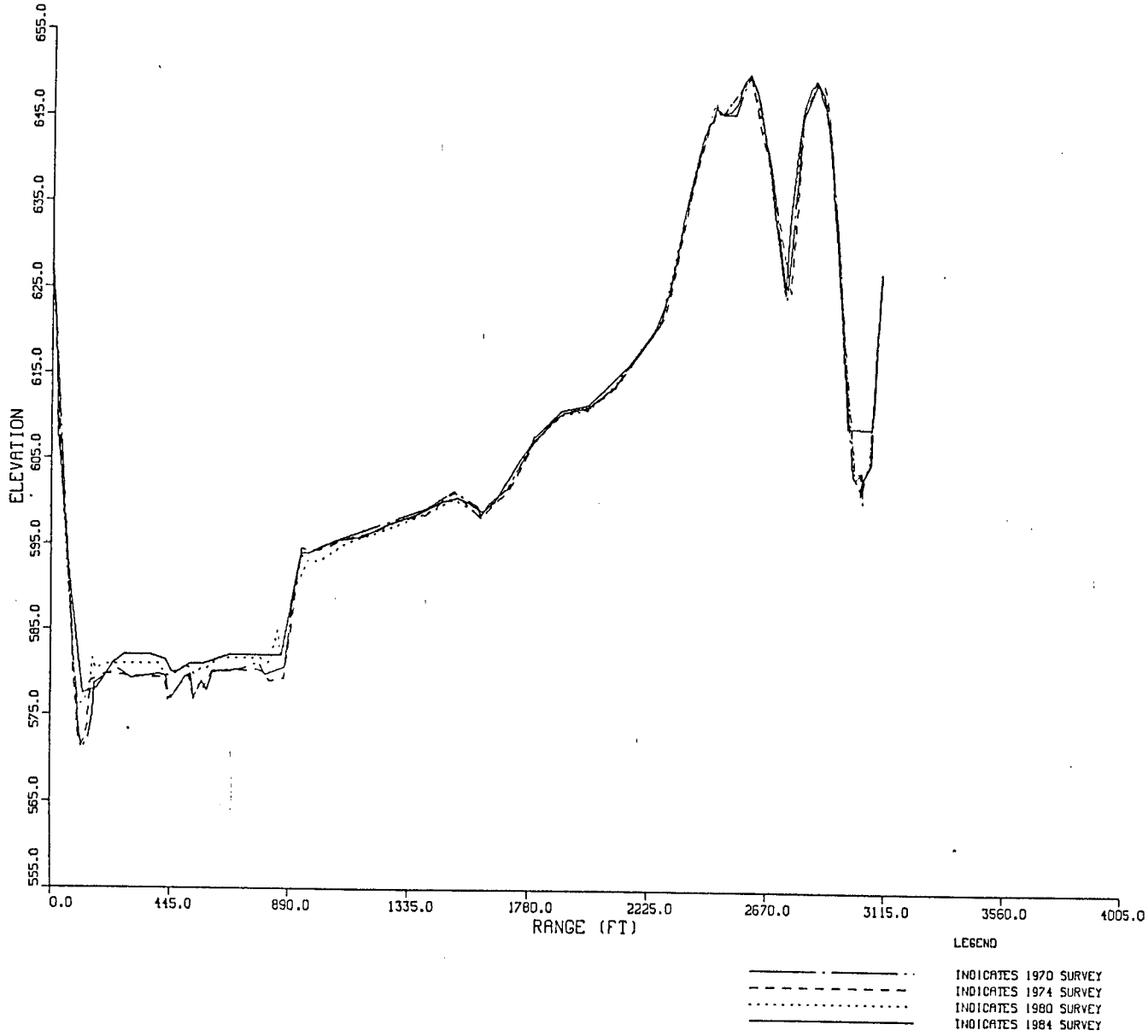


PLATE 24

LAKE SHELBYVILLE

SEDIMENTATION RANGE : 20A



LAKE SHELBYVILLE

SEDIMENTATION RANGE : 21A

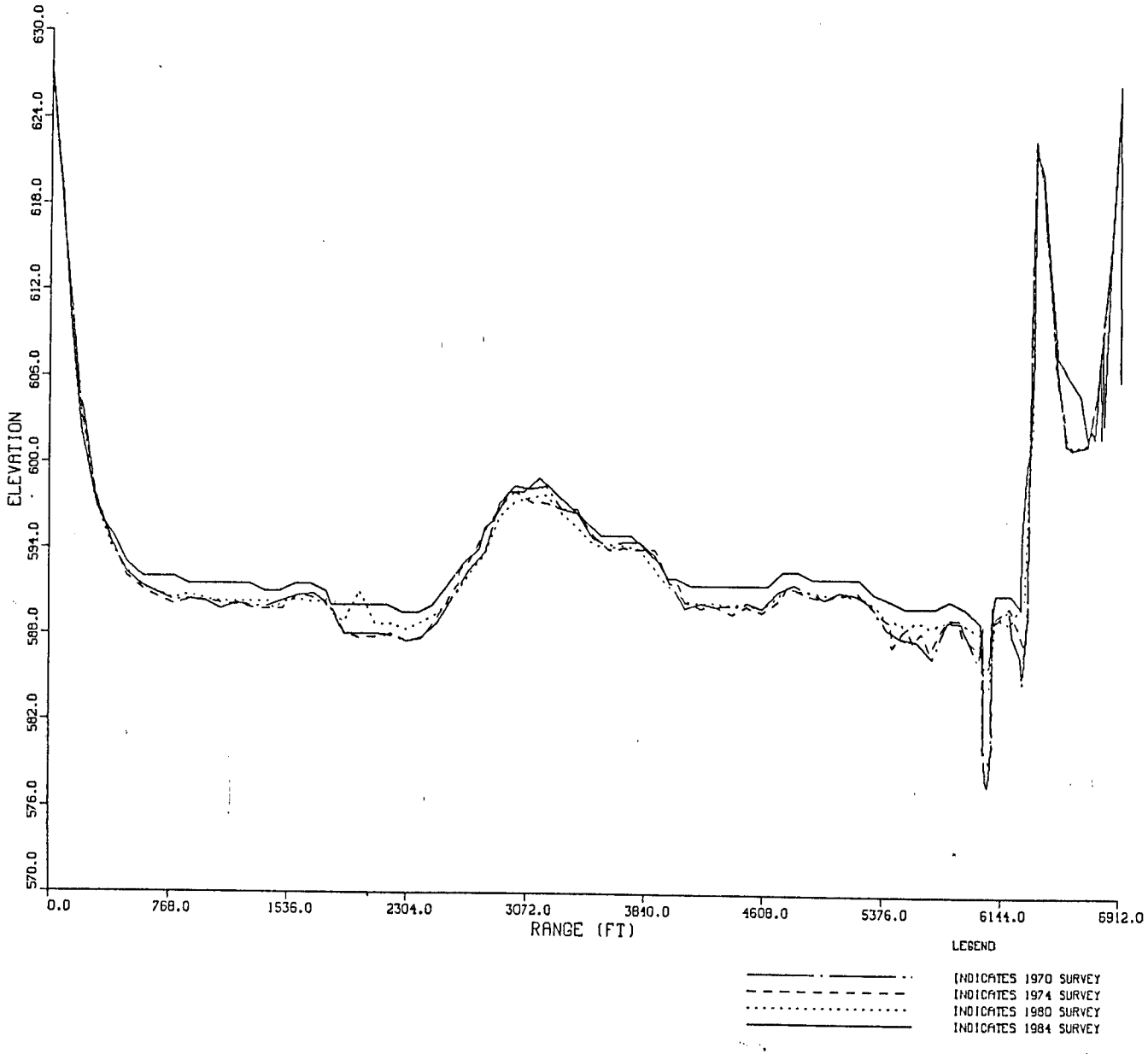


PLATE 26

LAKE SHELBYVILLE

SEDIMENTATION RANGE : 22B

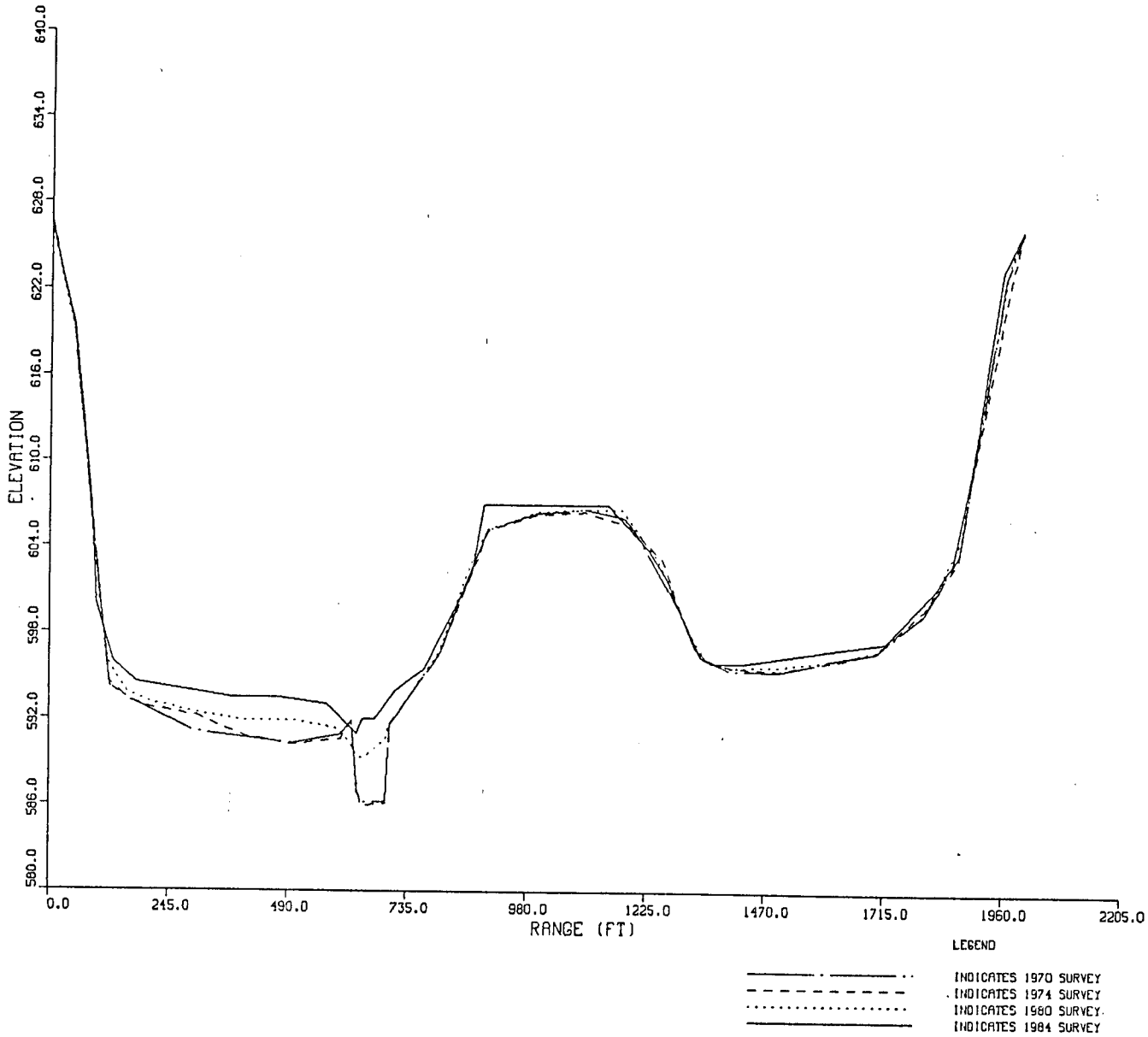
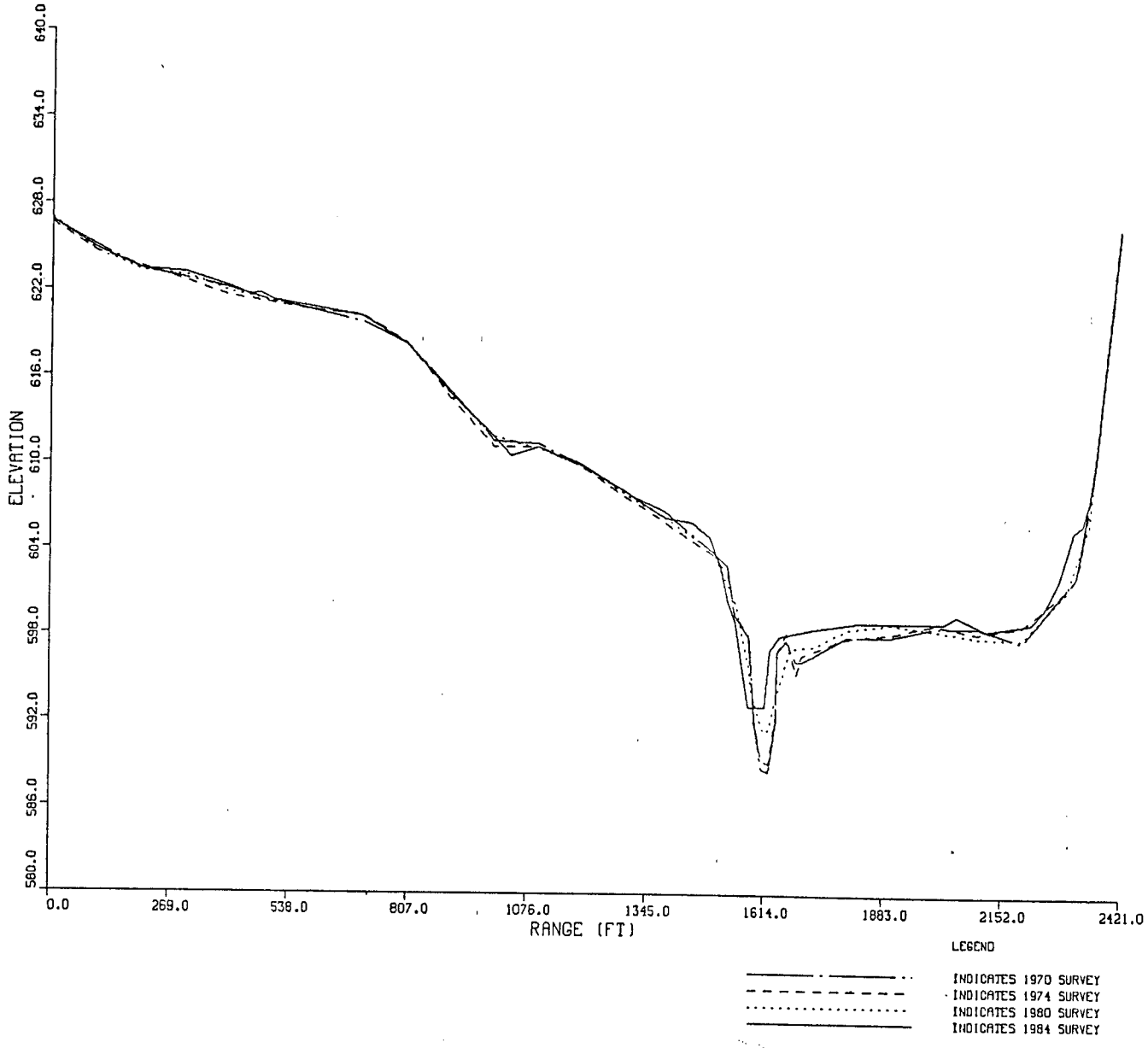


PLATE 27

LAKE SHELBYVILLE

SEDIMENTATION RANGE : 23A



LAKE SHELBYVILLE

SEDIMENTATION RANGE : 24A

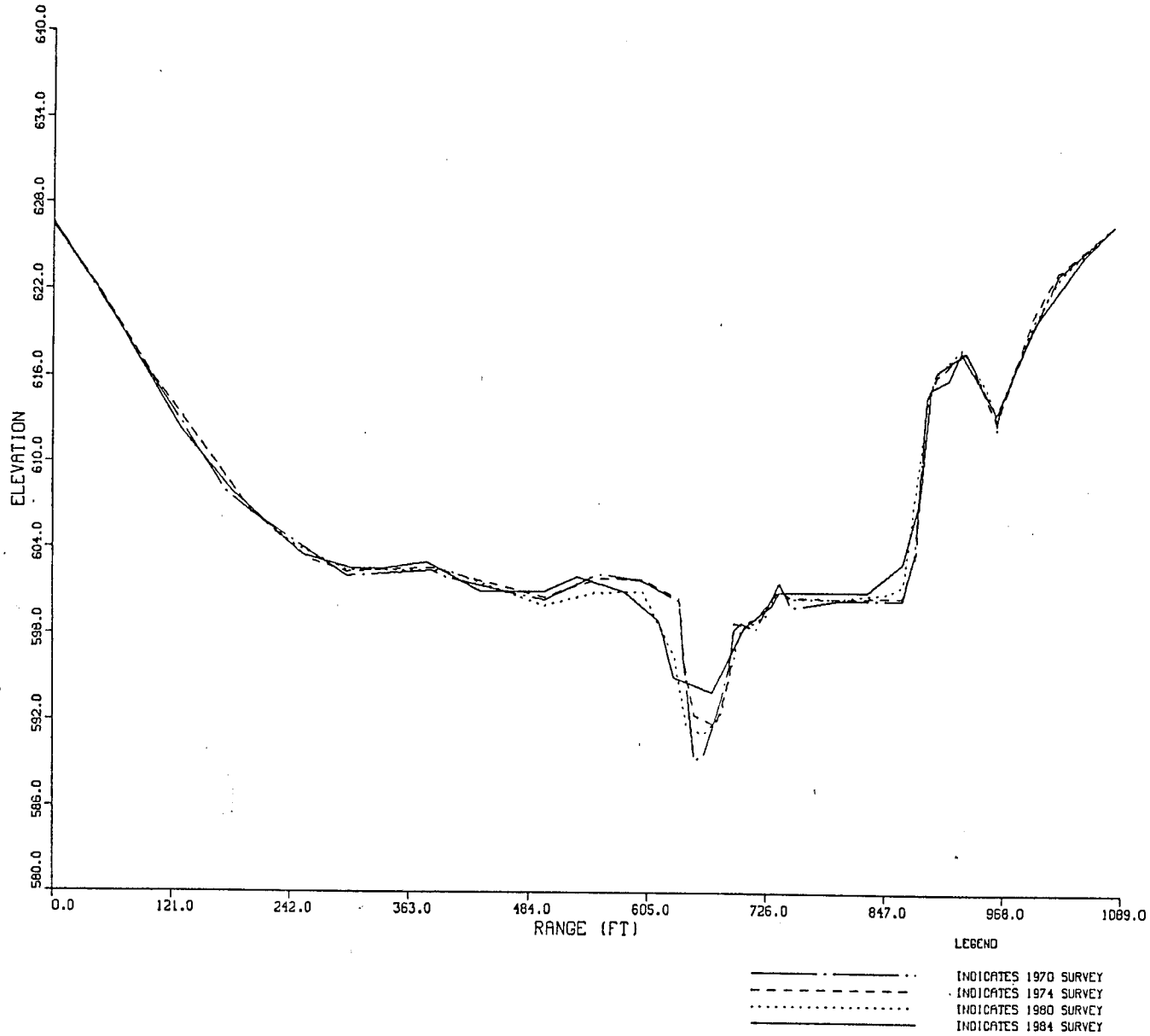
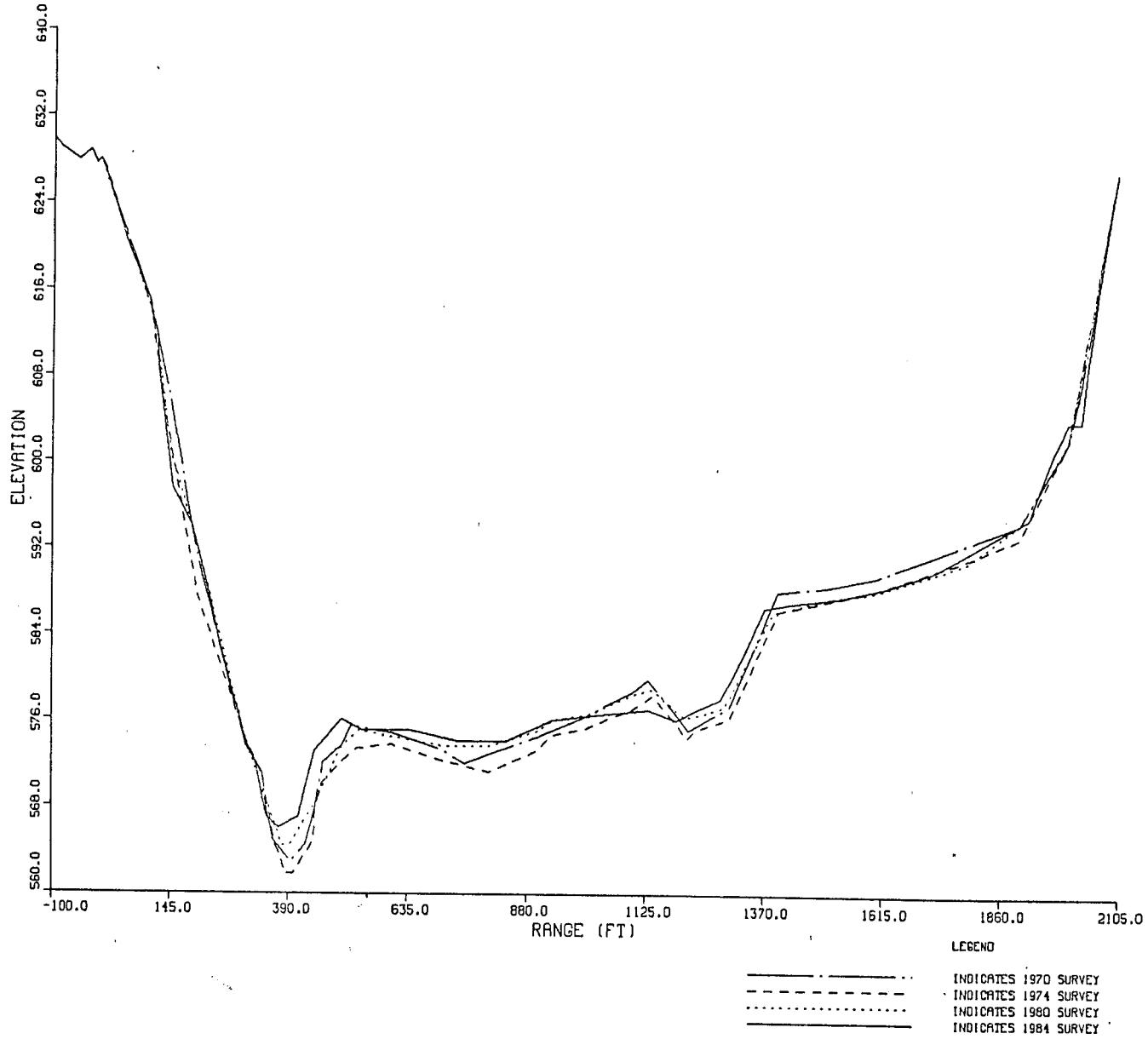


PLATE 29

LAKE SHELBYVILLE

SEDIMENTATION RANGE : 25A



LAKE SHELBYVILLE

SEDIMENTATION RANGE : 26A

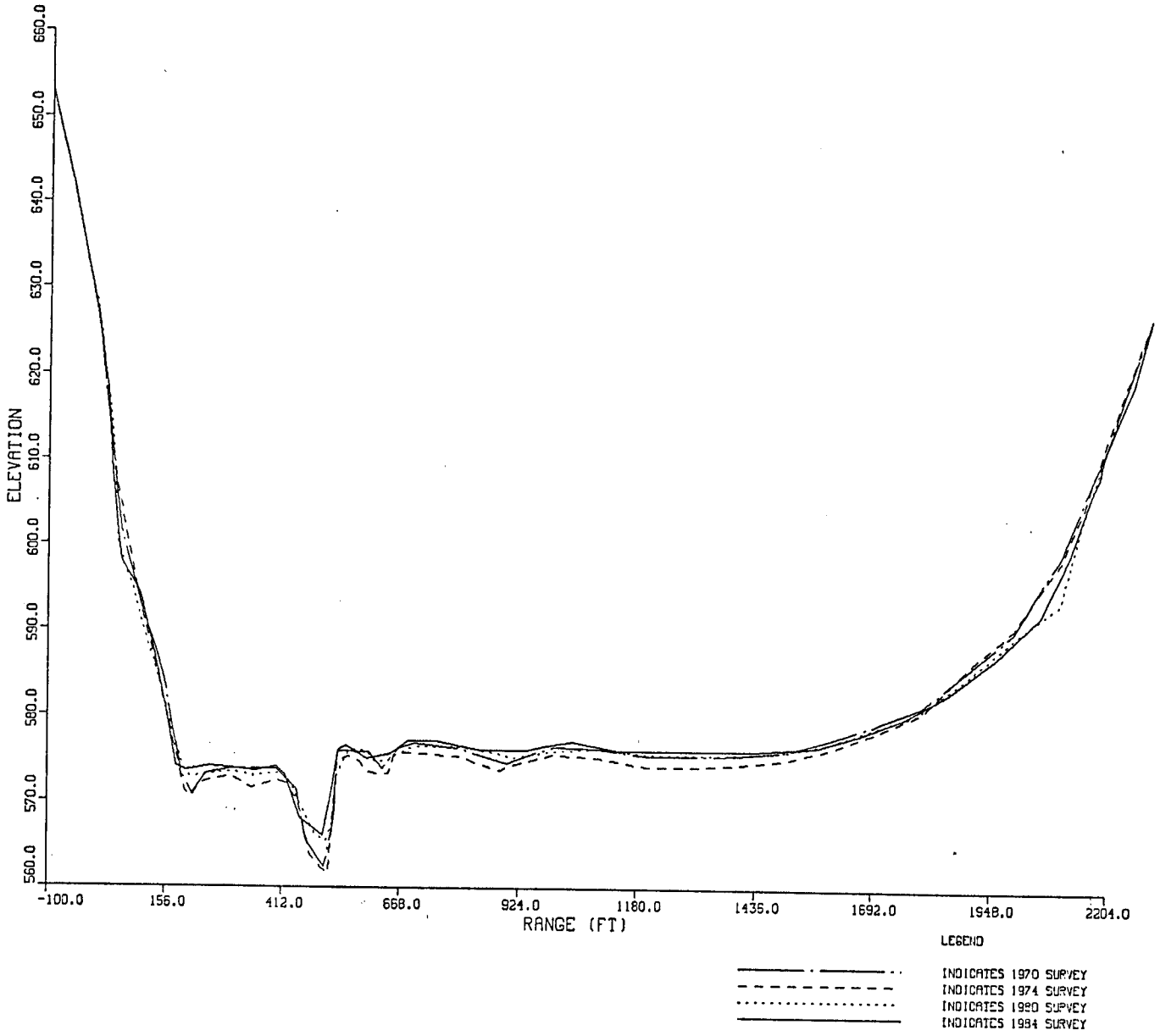


PLATE 31

LAKE SHELBYVILLE

SEDIMENTATION RANGE : 27A

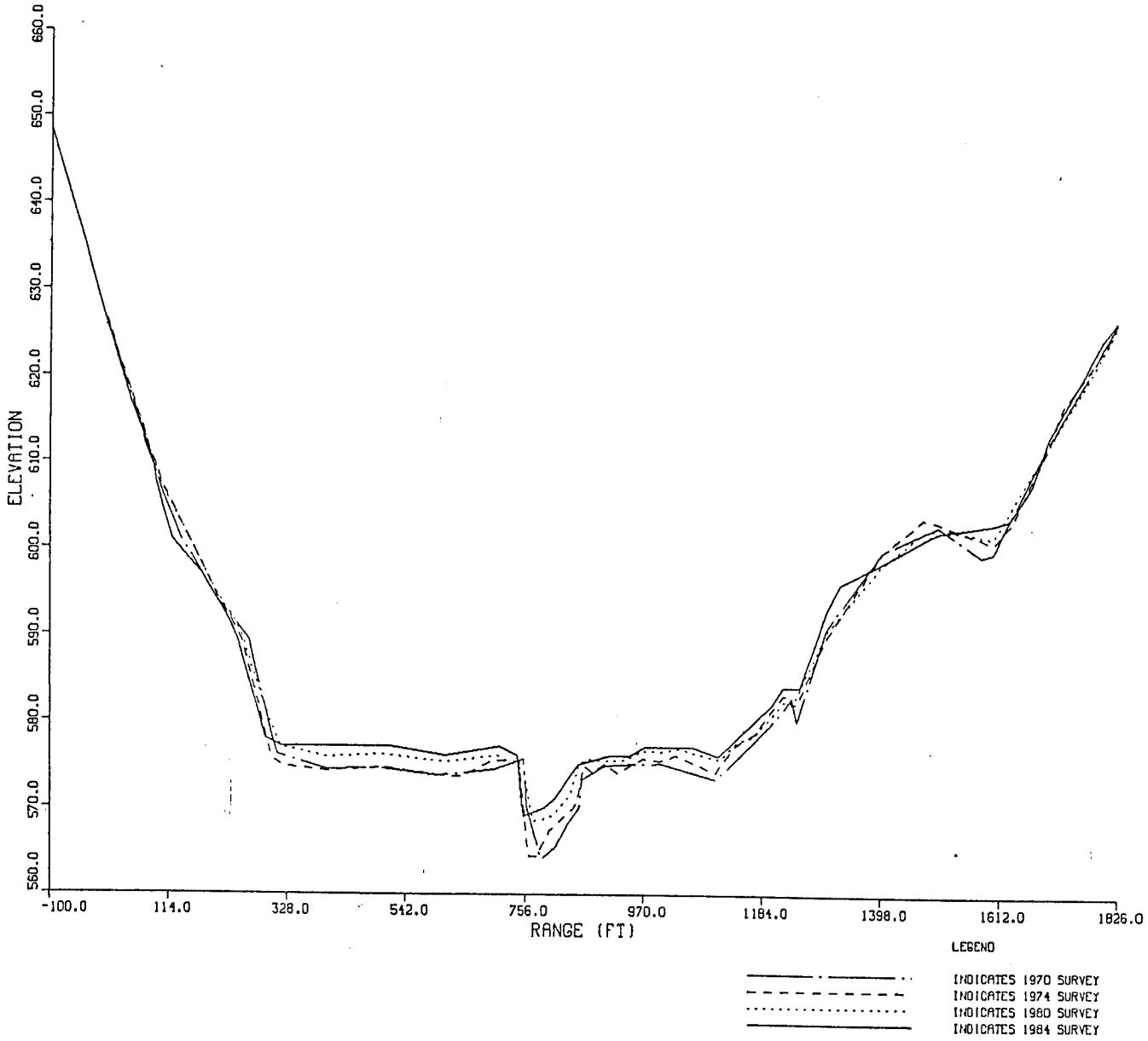


PLATE 32

LAKE SHELBYVILLE

SEDIMENTATION RANGE : 28A

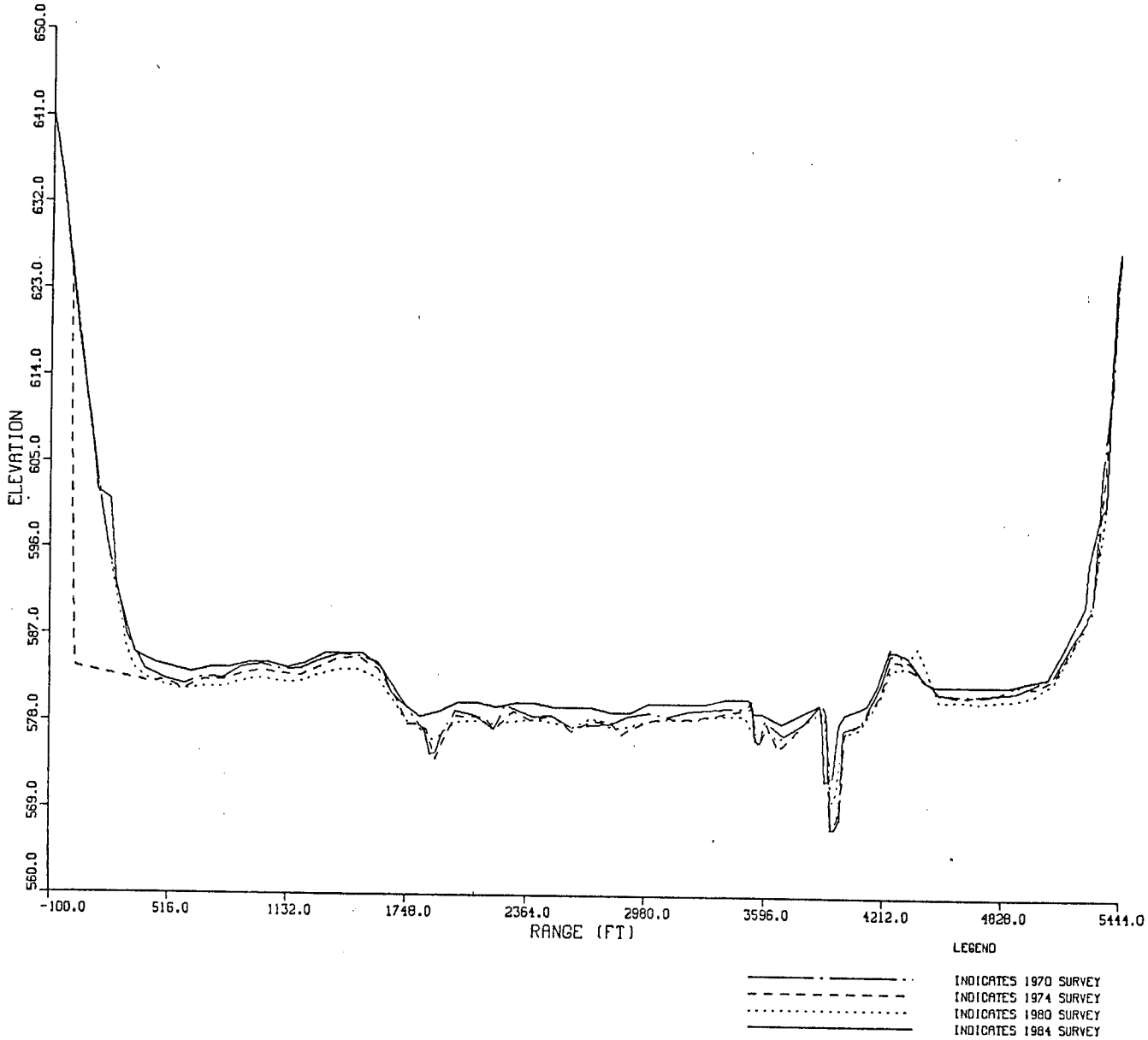
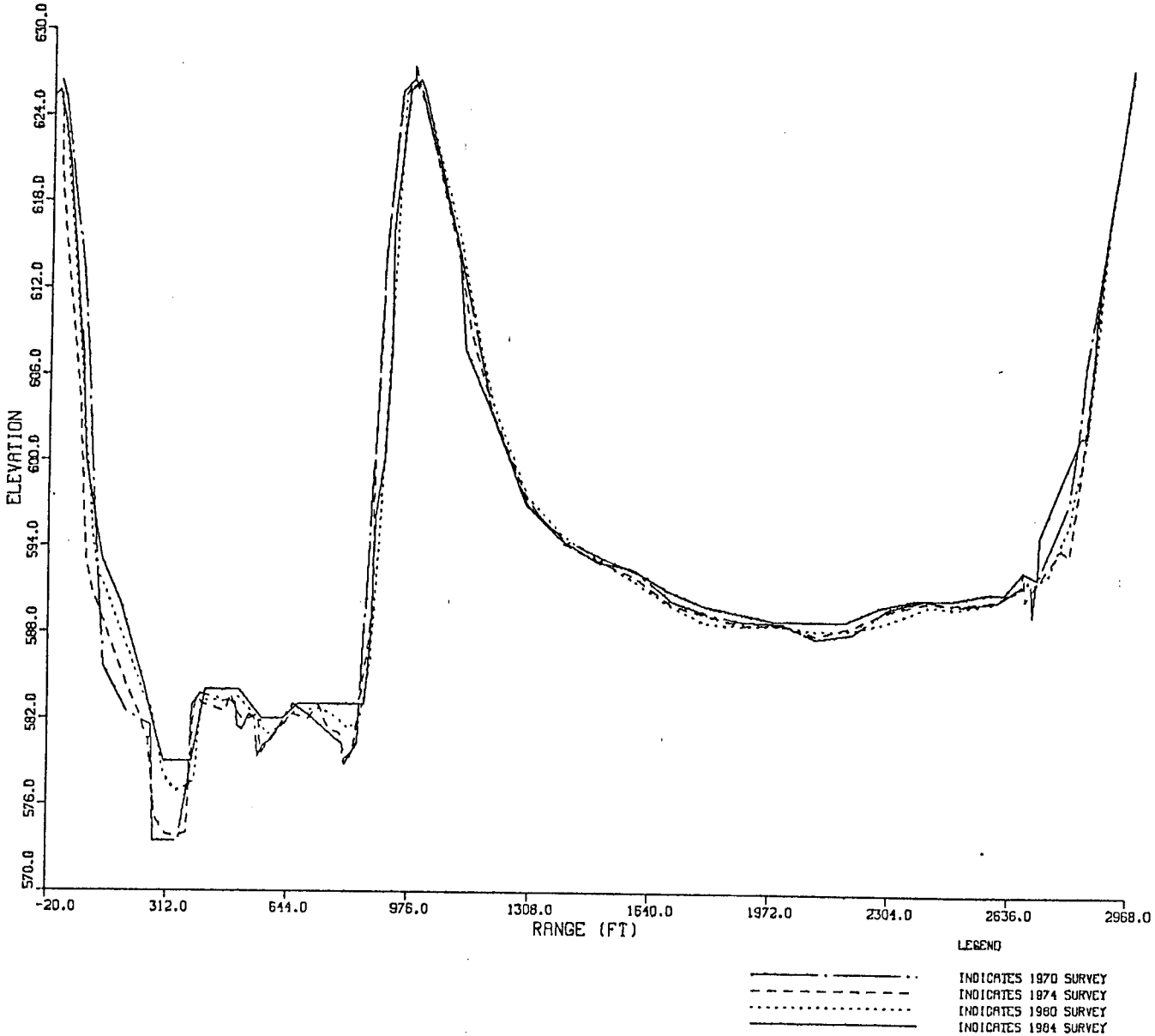


PLATE 33

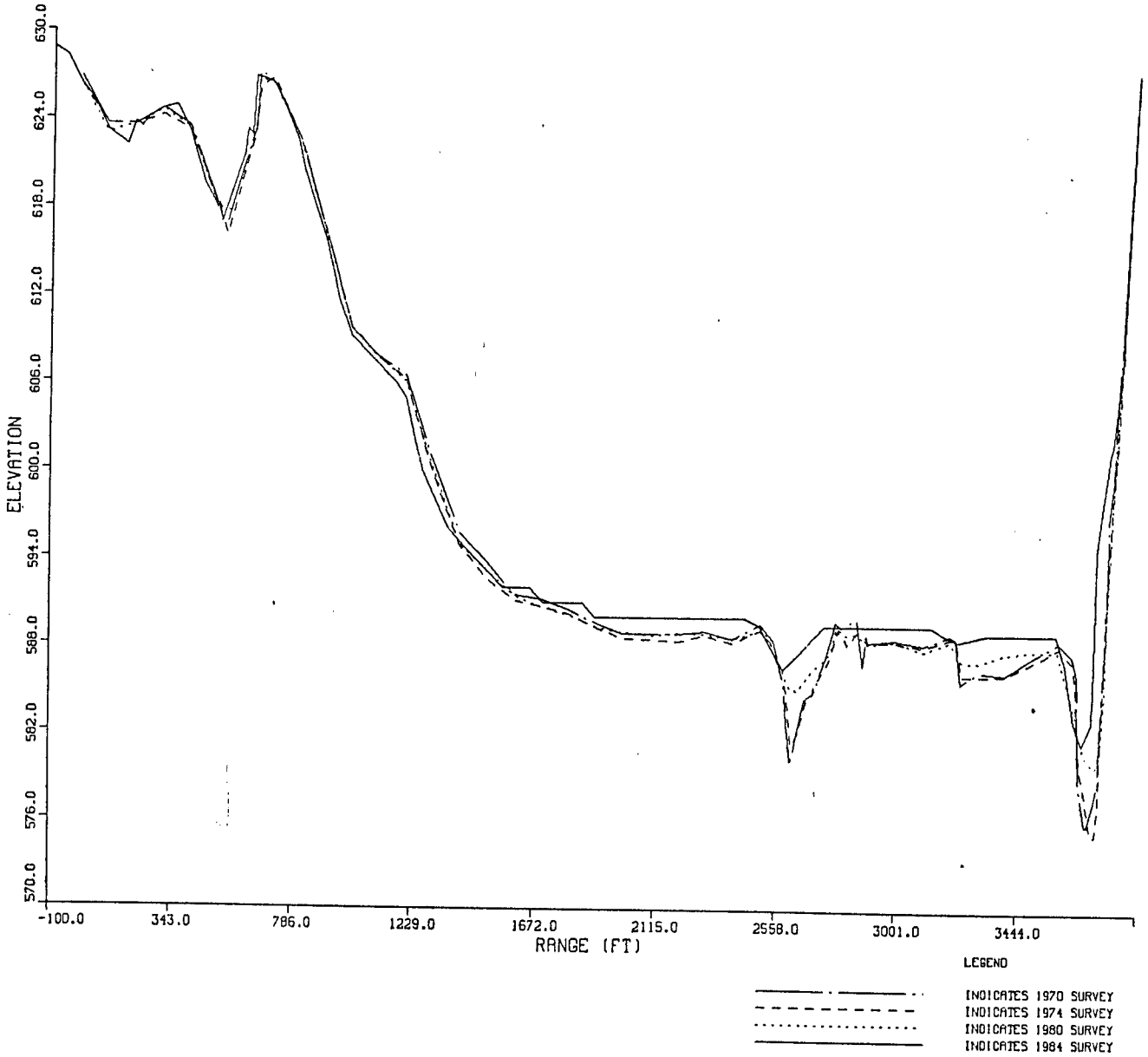
LAKE SHELBYVILLE

SEDIMENTATION RANGE : 29A



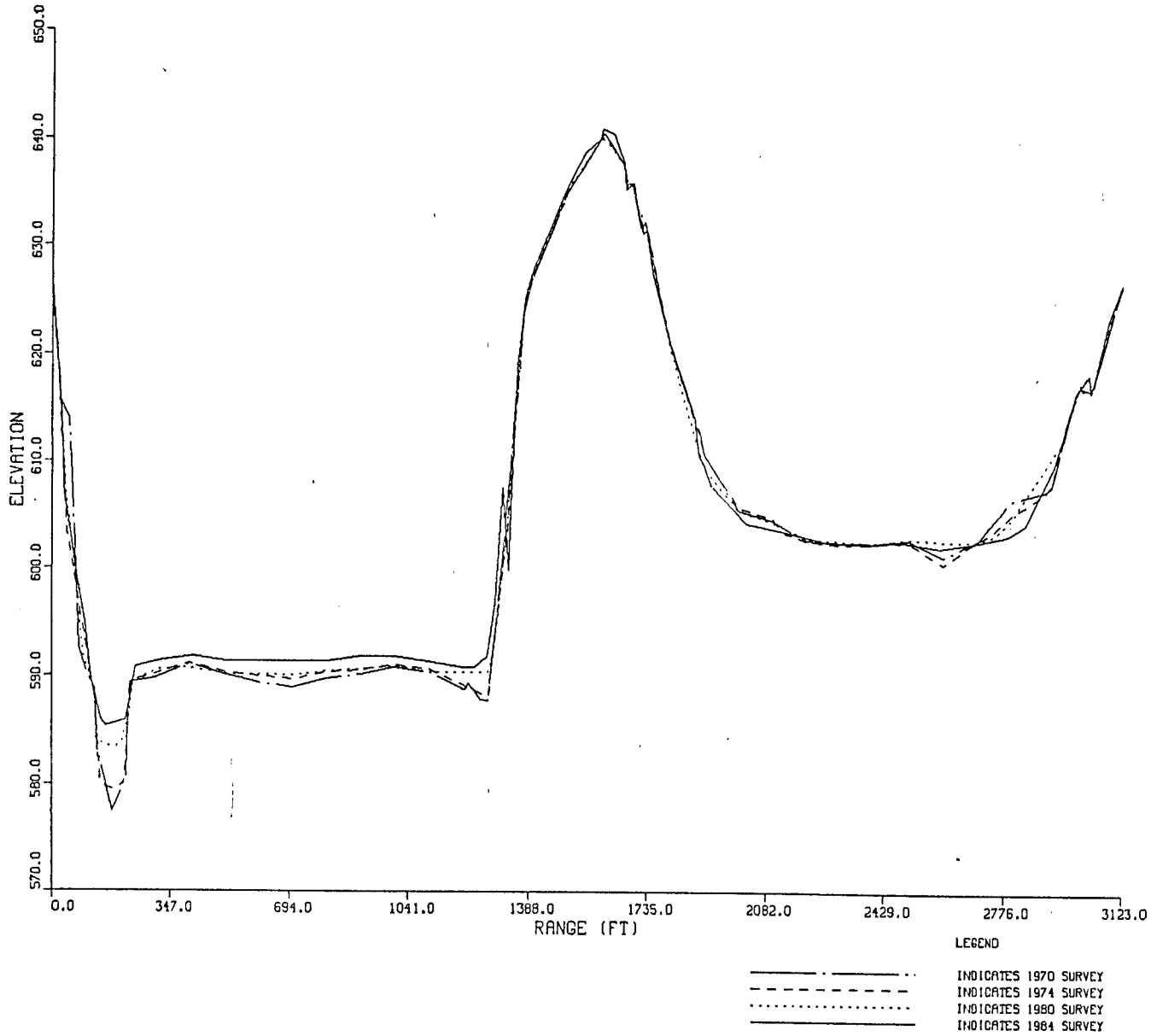
LAKE SHELBYVILLE

SEDIMENTATION RANGE : 30A



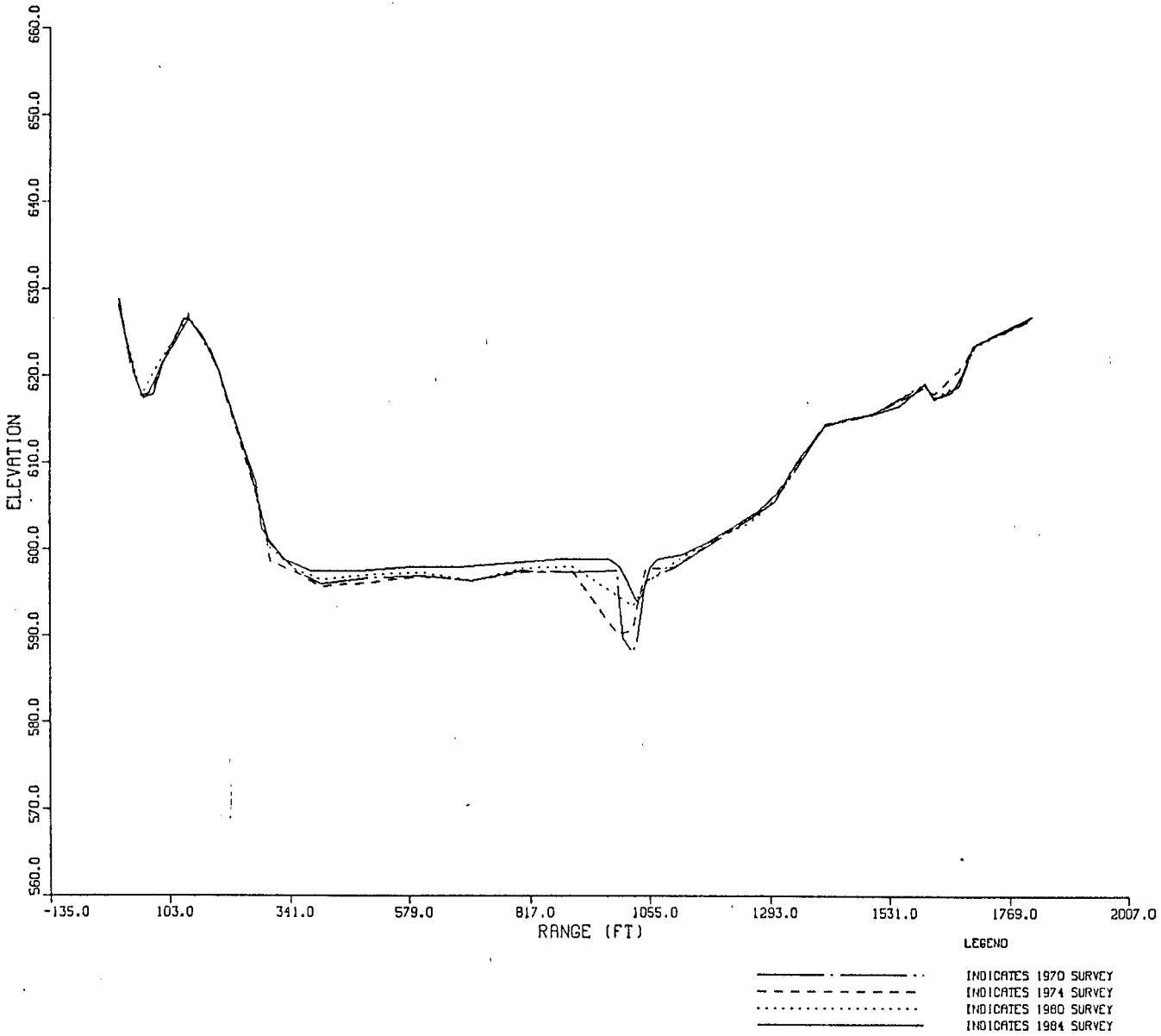
LAKE SHELBYVILLE

SEDIMENTATION RANGE : 31A



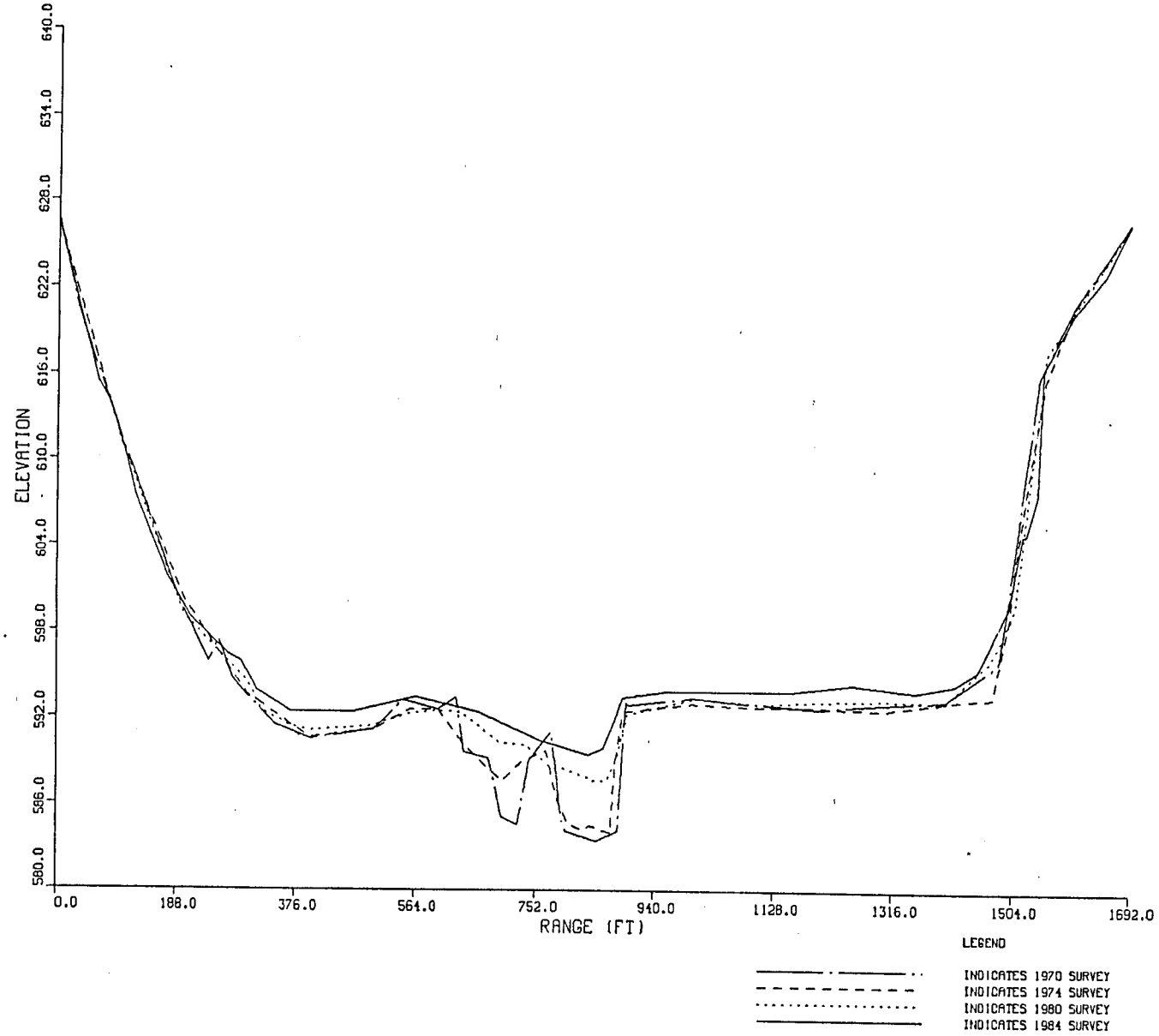
LAKE SHELBYVILLE

SEDIMENTATION RANGE : 32B



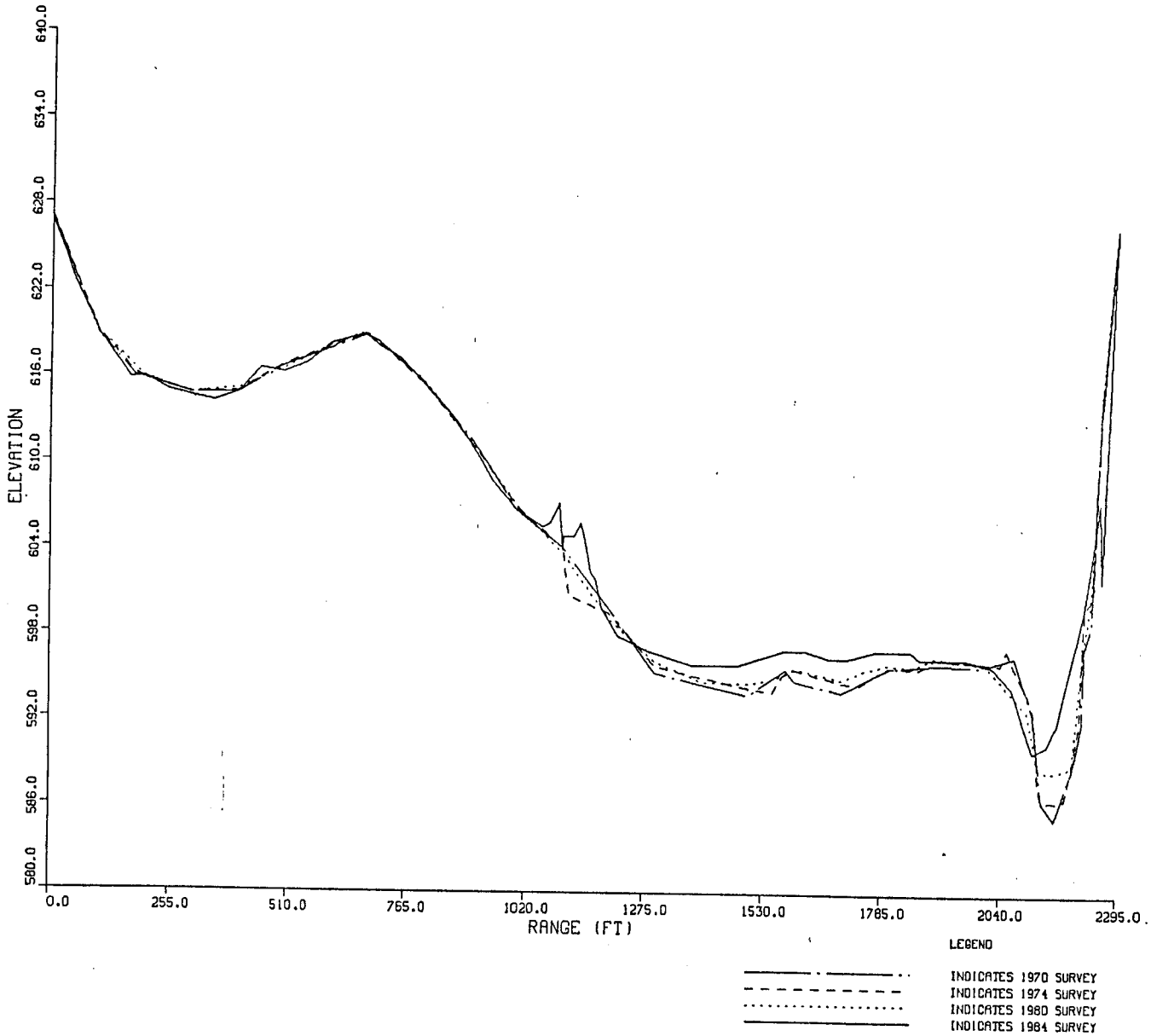
LAKE SHELBYVILLE

SEDIMENTATION RANGE : 33A



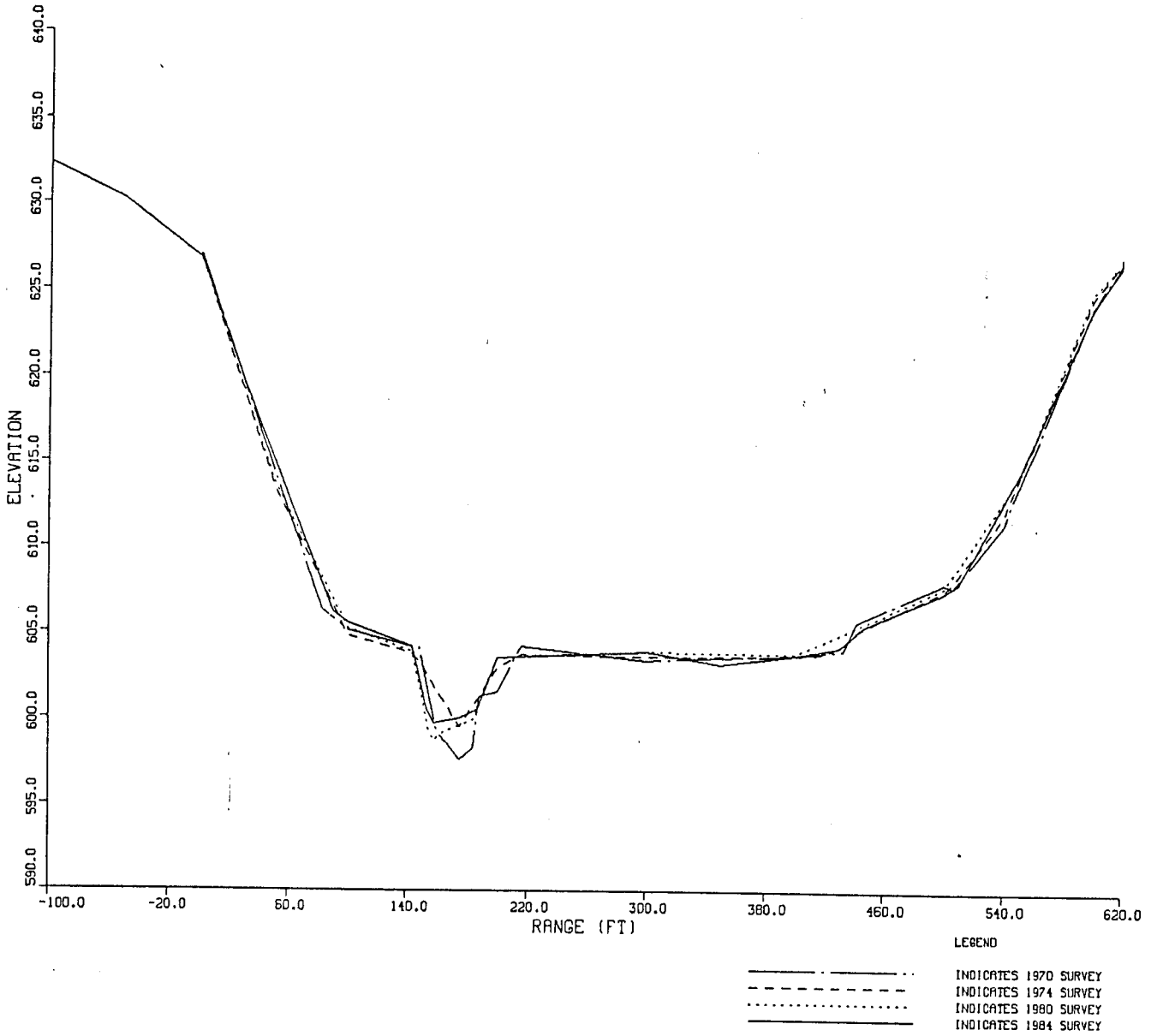
LAKE SHELBYVILLE

SEDIMENTATION RANGE : 34A



LAKE SHELBYVILLE

SEDIMENTATION RANGE : 35B



LAKE SHELBYVILLE

SEDIMENTATION RANGE : 36A

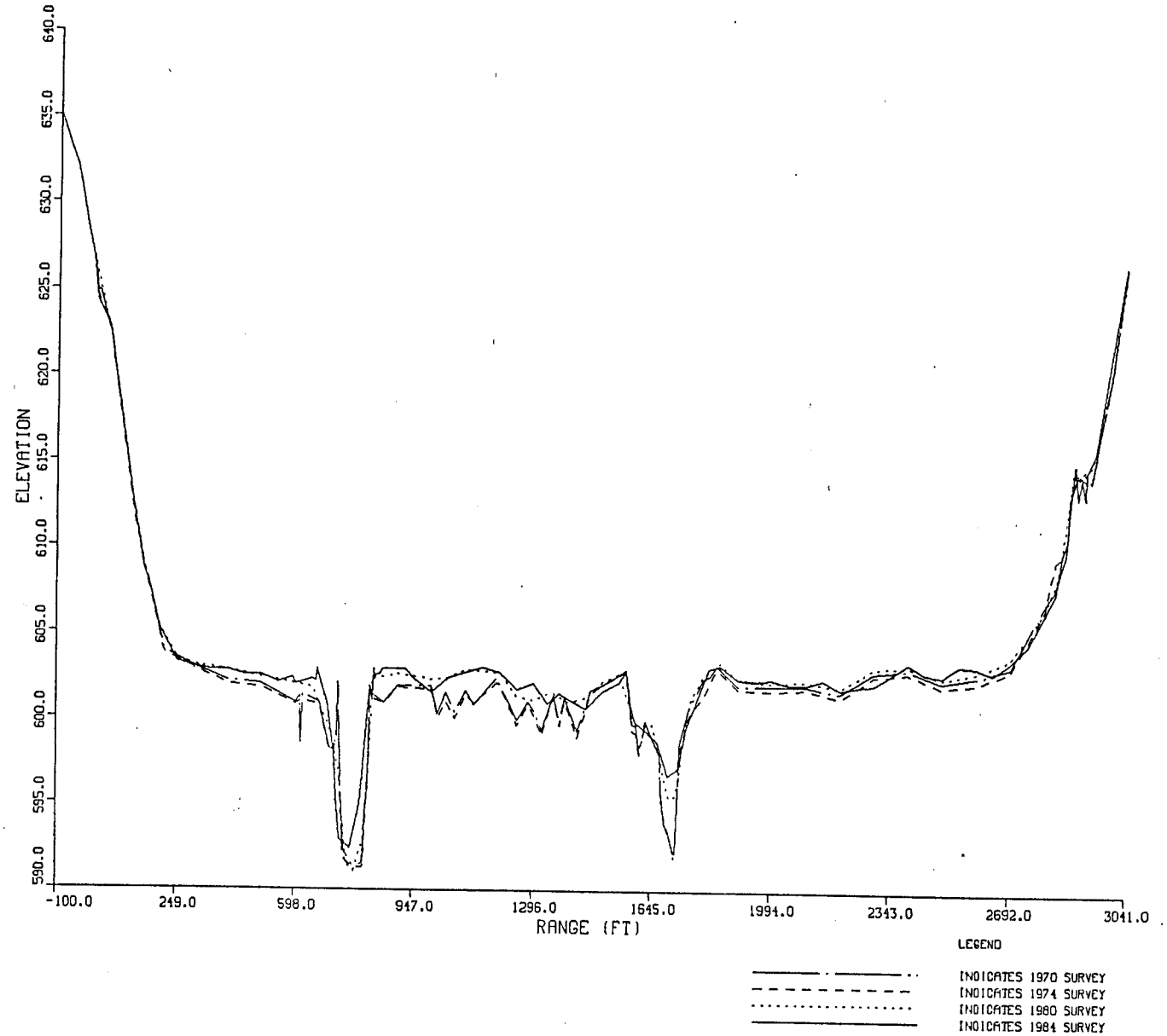
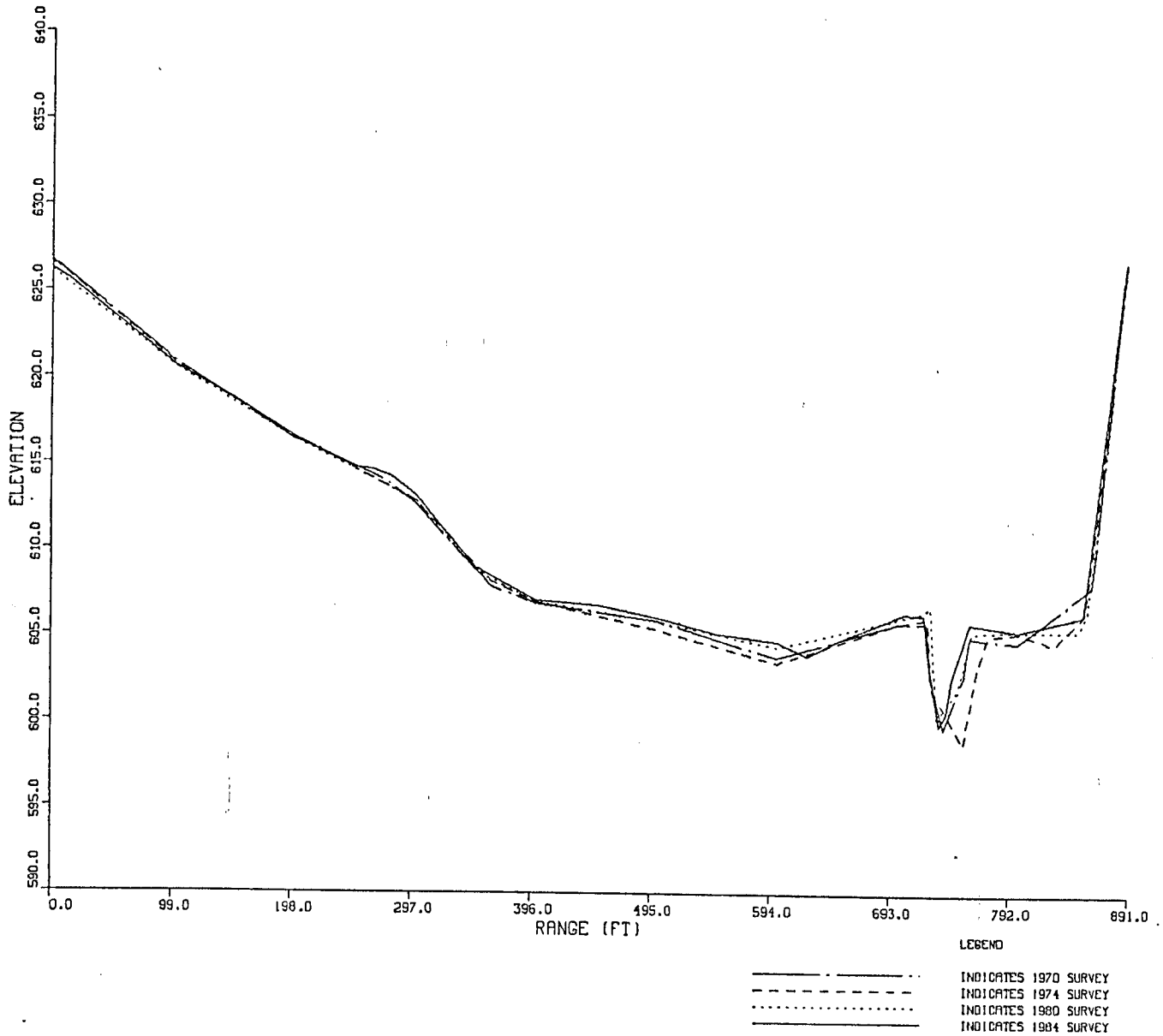


PLATE 41

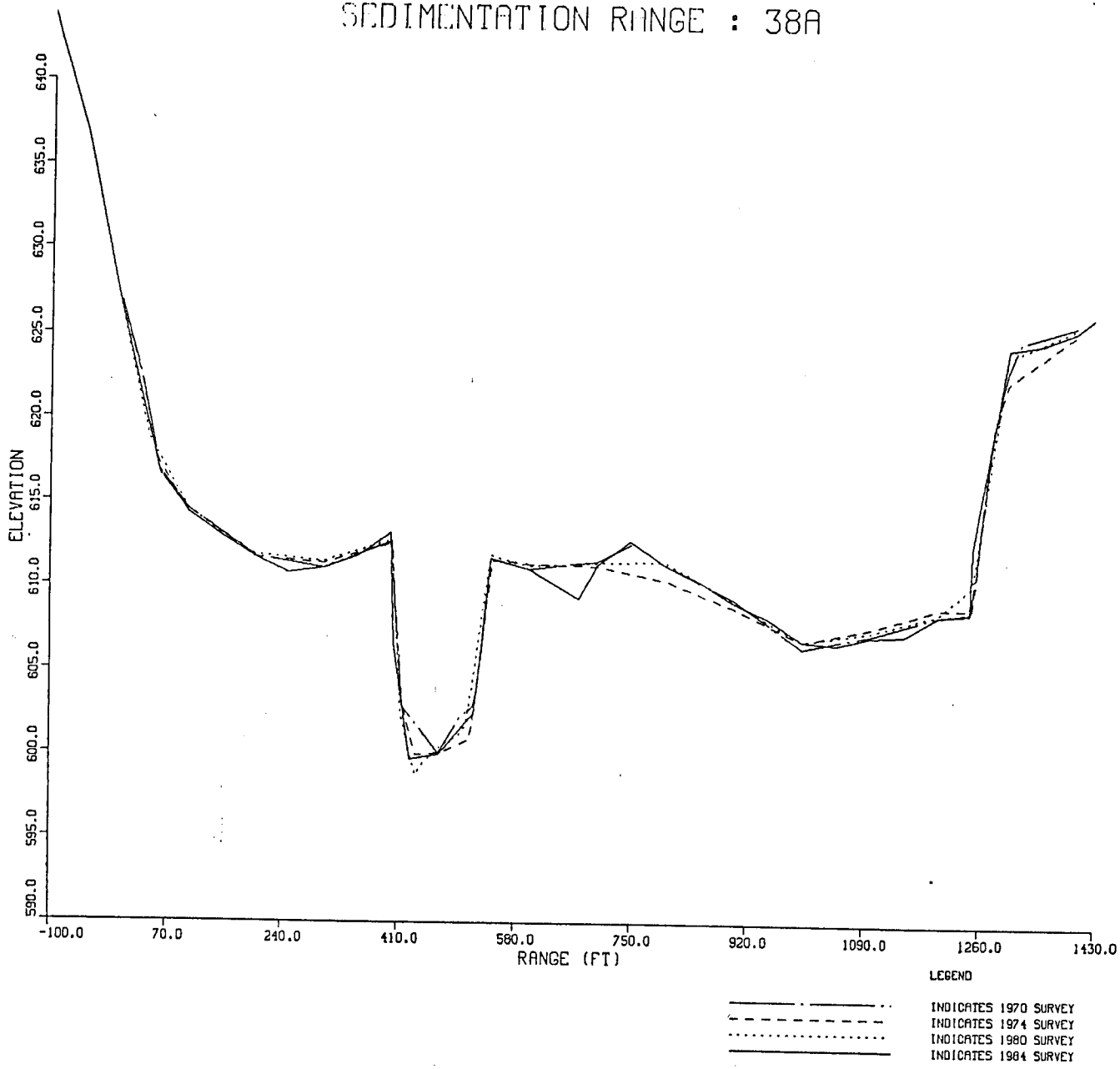
LAKE SHELBYVILLE

SEDIMENTATION RANGE : 37B



LAKE SHELBYVILLE

SEDIMENTATION RANGE : 38A



LAKE SHELBYVILLE

SEDIMENTATION RANGE : 39B

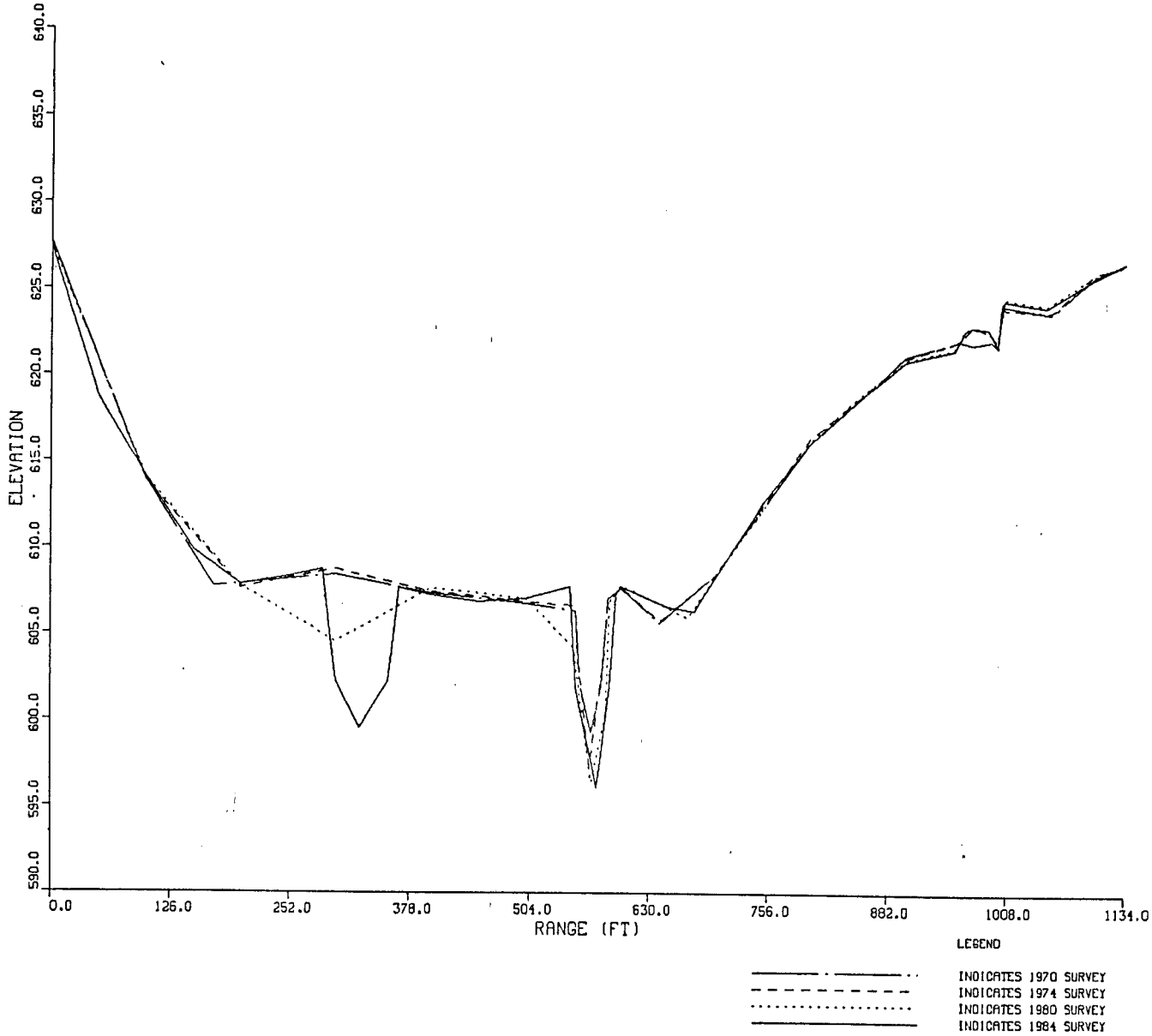
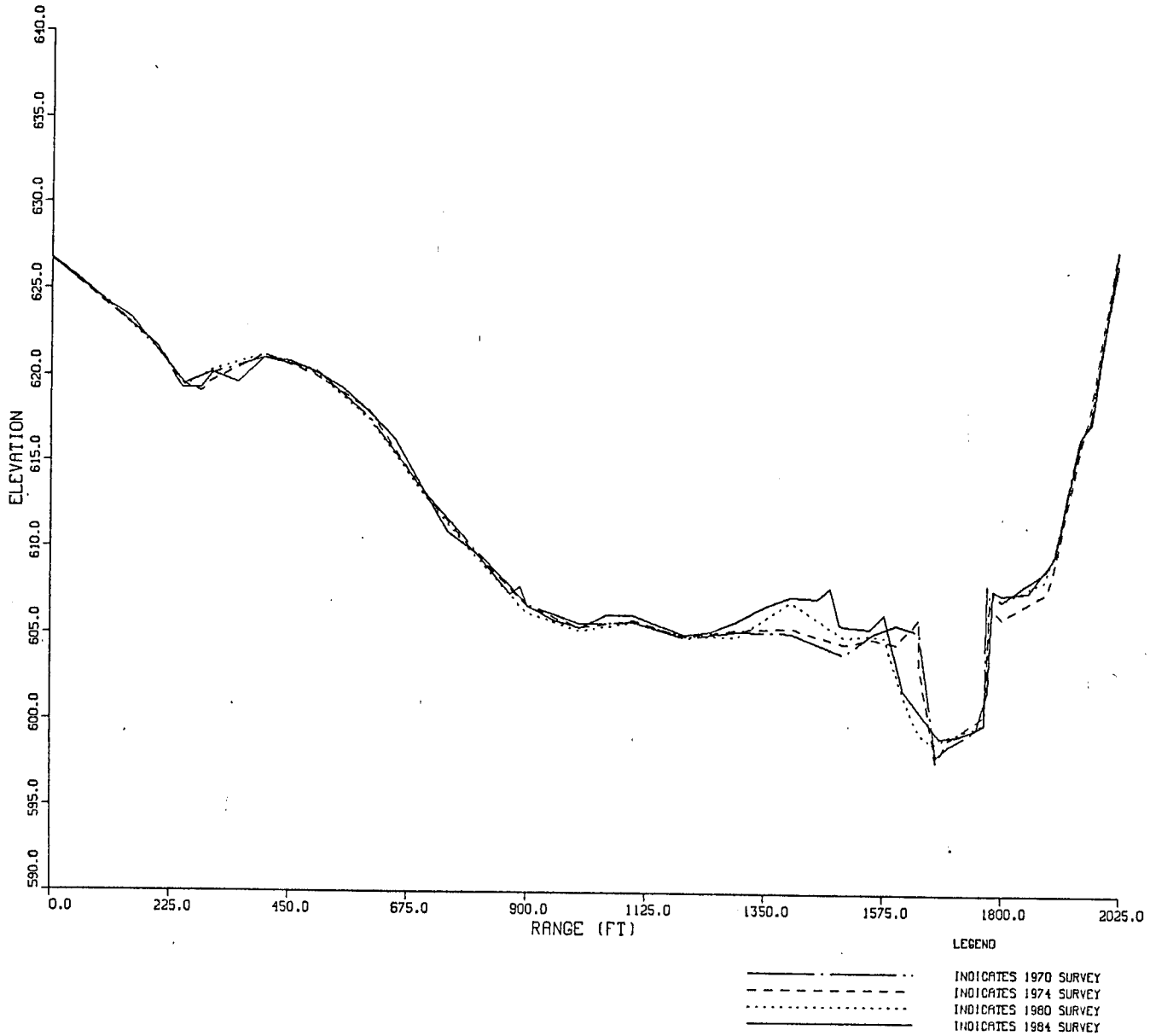
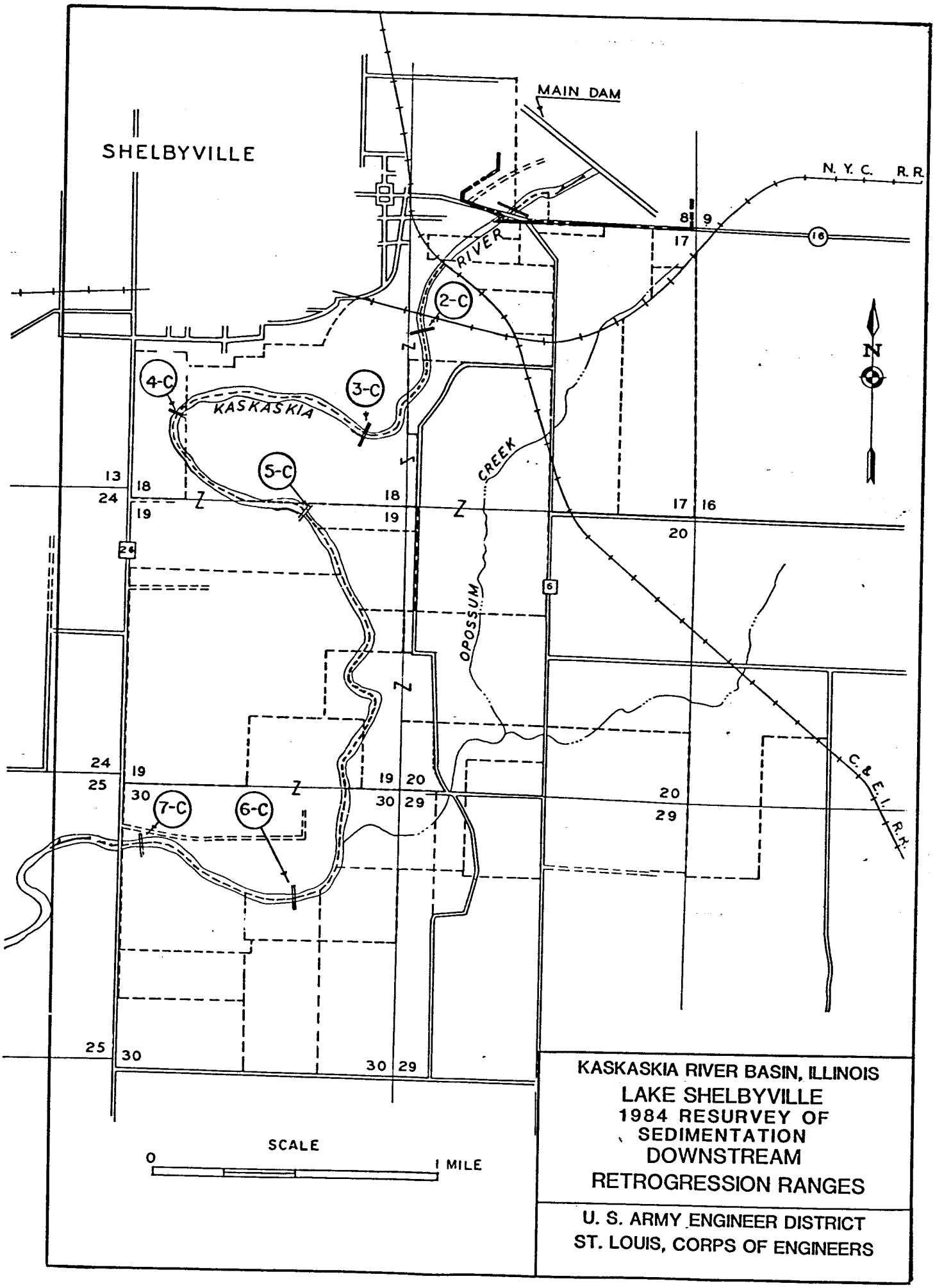


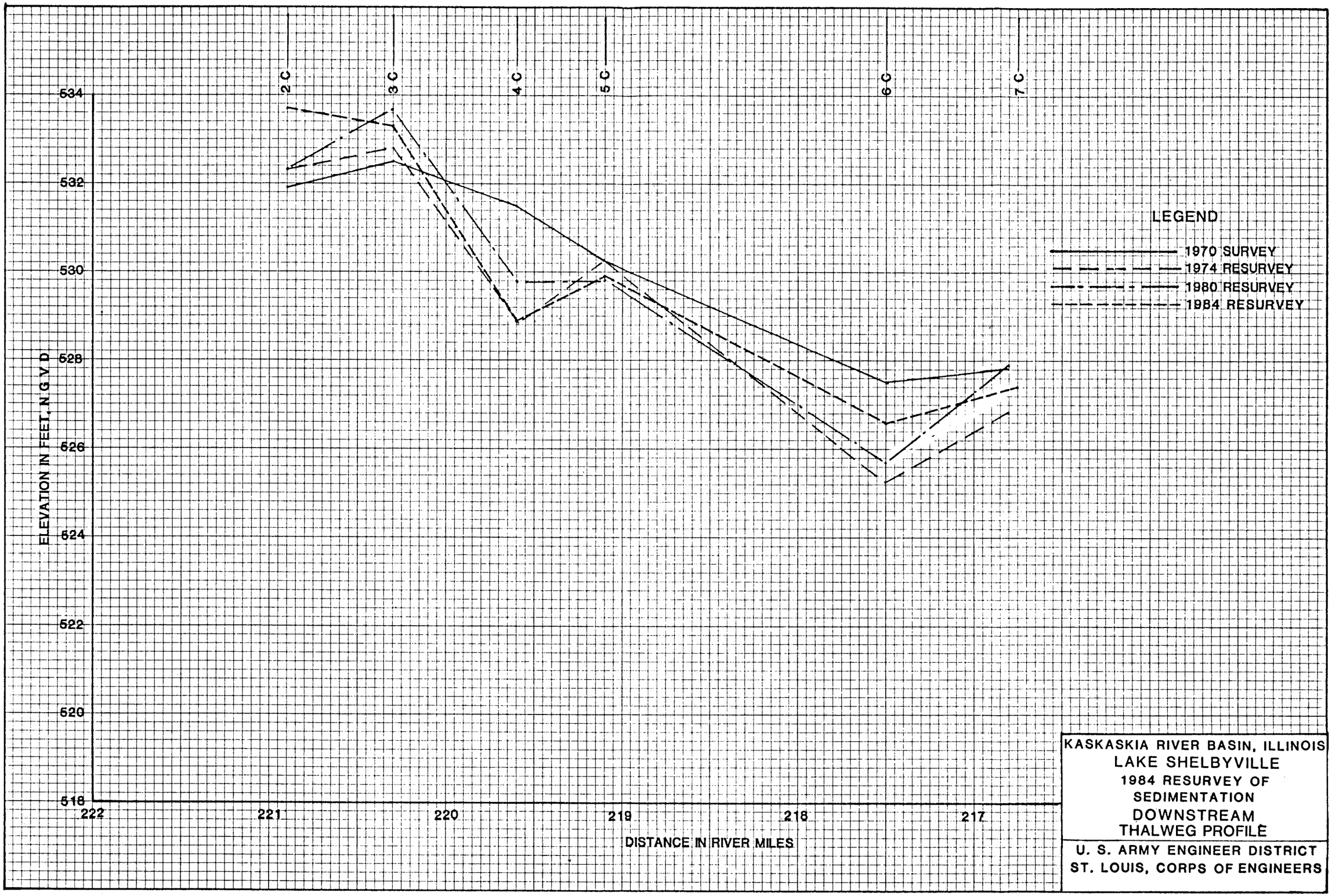
PLATE 44

LAKE SHELBYVILLE

SEDIMENTATION RANGE : 40B



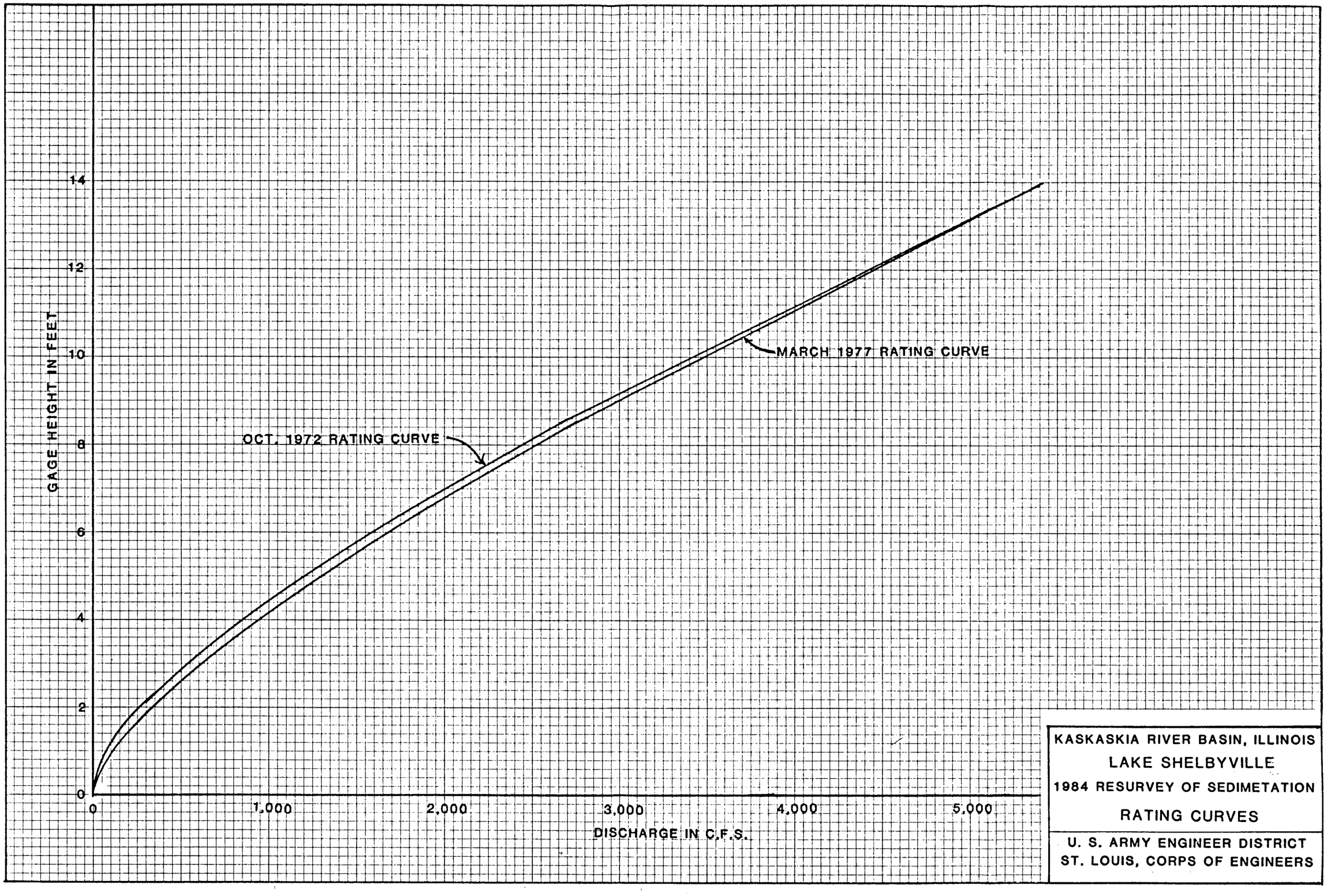

SHELBYVILLE
MAIN DAM
N. Y. C. R. R.
KASKASKIA
RIVER
CREEK
OPOSSUM
C. & E. I. R. R.
2-C
3-C
4-C
5-C
6-C
7-C
N
SCALE
0
1 MILE
KASKASKIA RIVER BASIN, ILLINOIS
LAKE SHELBYVILLE
1984 RESURVEY OF
SEDIMENTATION
DOWNSTREAM
RETROGRESSION RANGES
U. S. ARMY ENGINEER DISTRICT
ST. LOUIS, CORPS OF ENGINEERS



KASKASKIA RIVER BASIN, ILLINOIS
LAKE SHELBYVILLE
1984 RESURVEY OF
SEDIMENTATION
DOWNSTREAM
THALWEG PROFILE

U. S. ARMY ENGINEER DISTRICT
ST. LOUIS, CORPS OF ENGINEERS

47 0707
K+E 10 X 10 TO THE INCH • 10 X 15 INCHES
KEUFFEL & ESSER CO. MADE IN U.S.A.



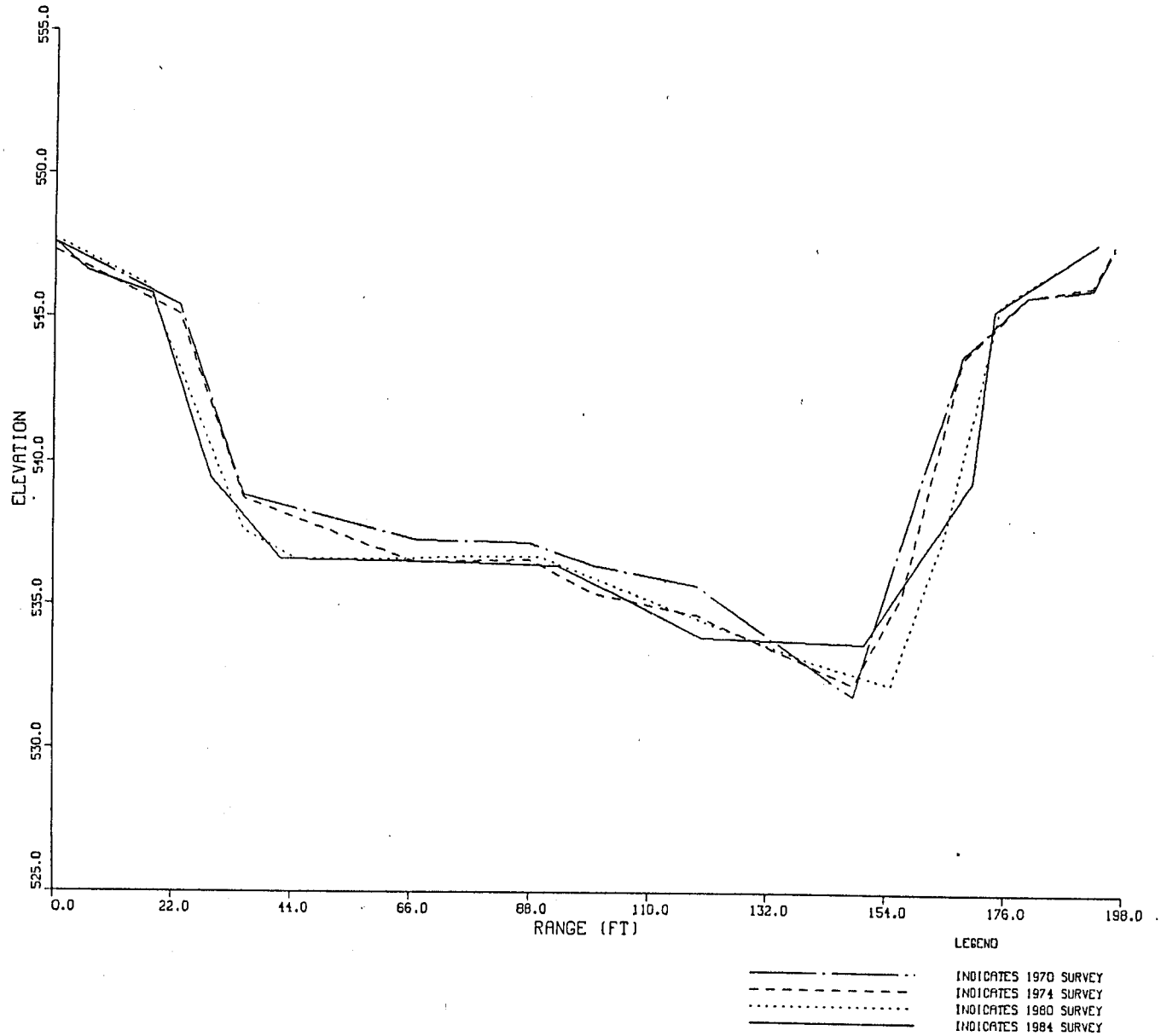
KASKASKIA RIVER BASIN, ILLINOIS
LAKE SHELBYVILLE
1984 RESURVEY OF SEDIMETATION
RATING CURVES

U. S. ARMY ENGINEER DISTRICT
ST. LOUIS, CORPS OF ENGINEERS

47 0707
K+E 10 X 10 TO THE INCH • 10 X 15 INCHES KEUFFEL & ESSER CO. MADE IN U.S.A.

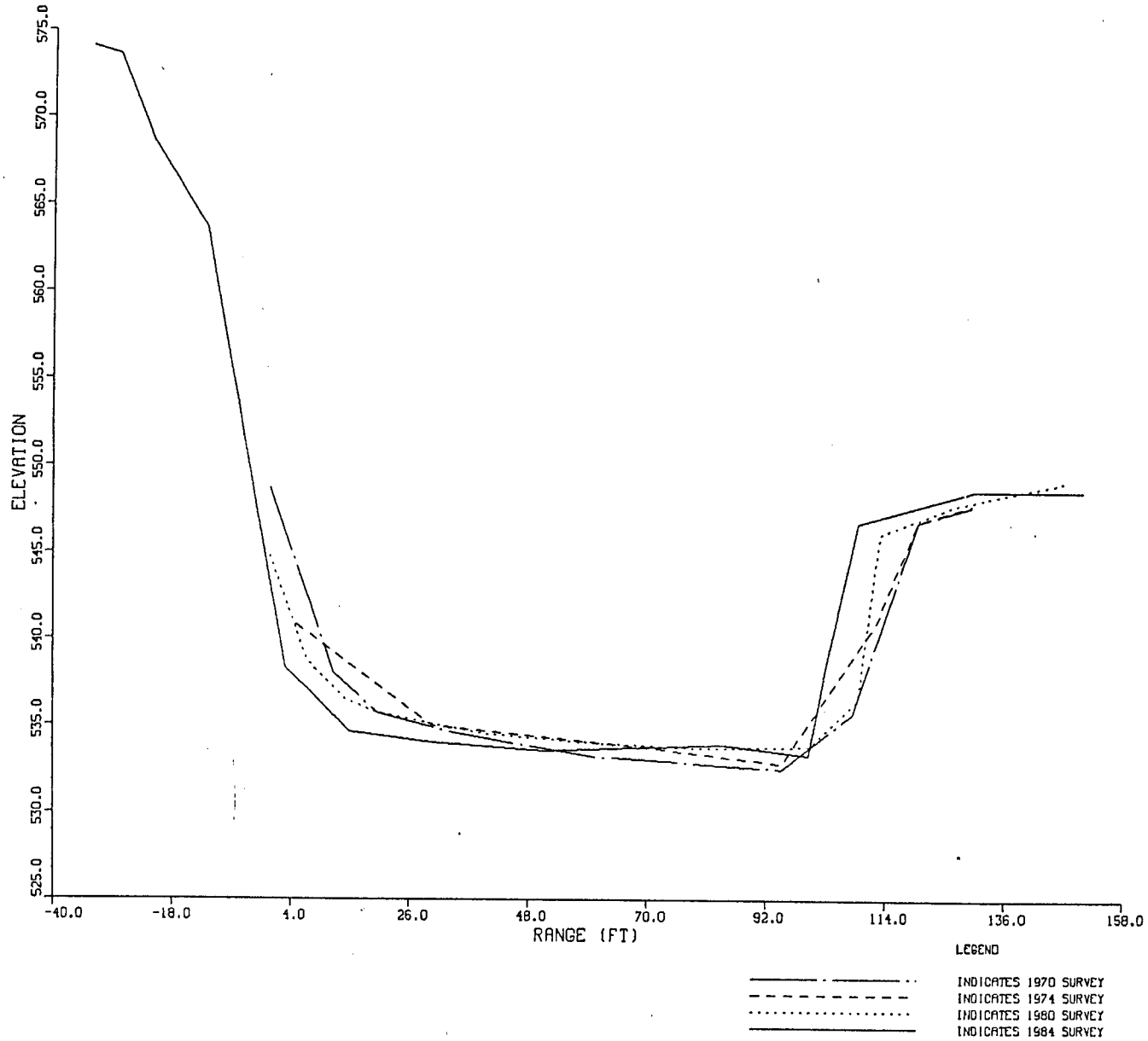
LAKE SHELBYVILLE

RETROGRESSION RANGE #: 20



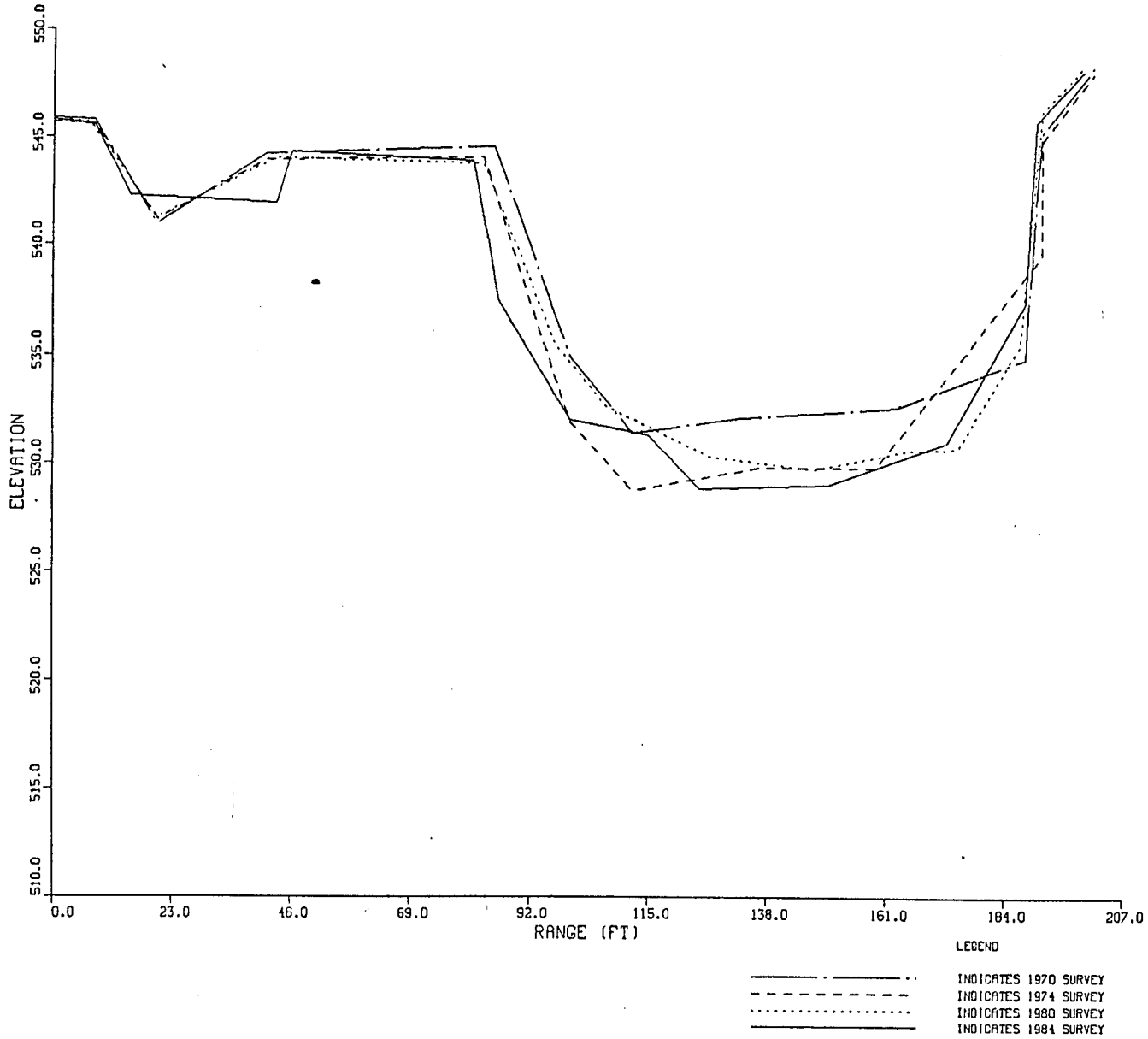
LAKE SHELBYVILLE

RETROGRESSION RANGE : 3C



LAKE SHELBYVILLE

RETROGRESSION RANGE : 4C



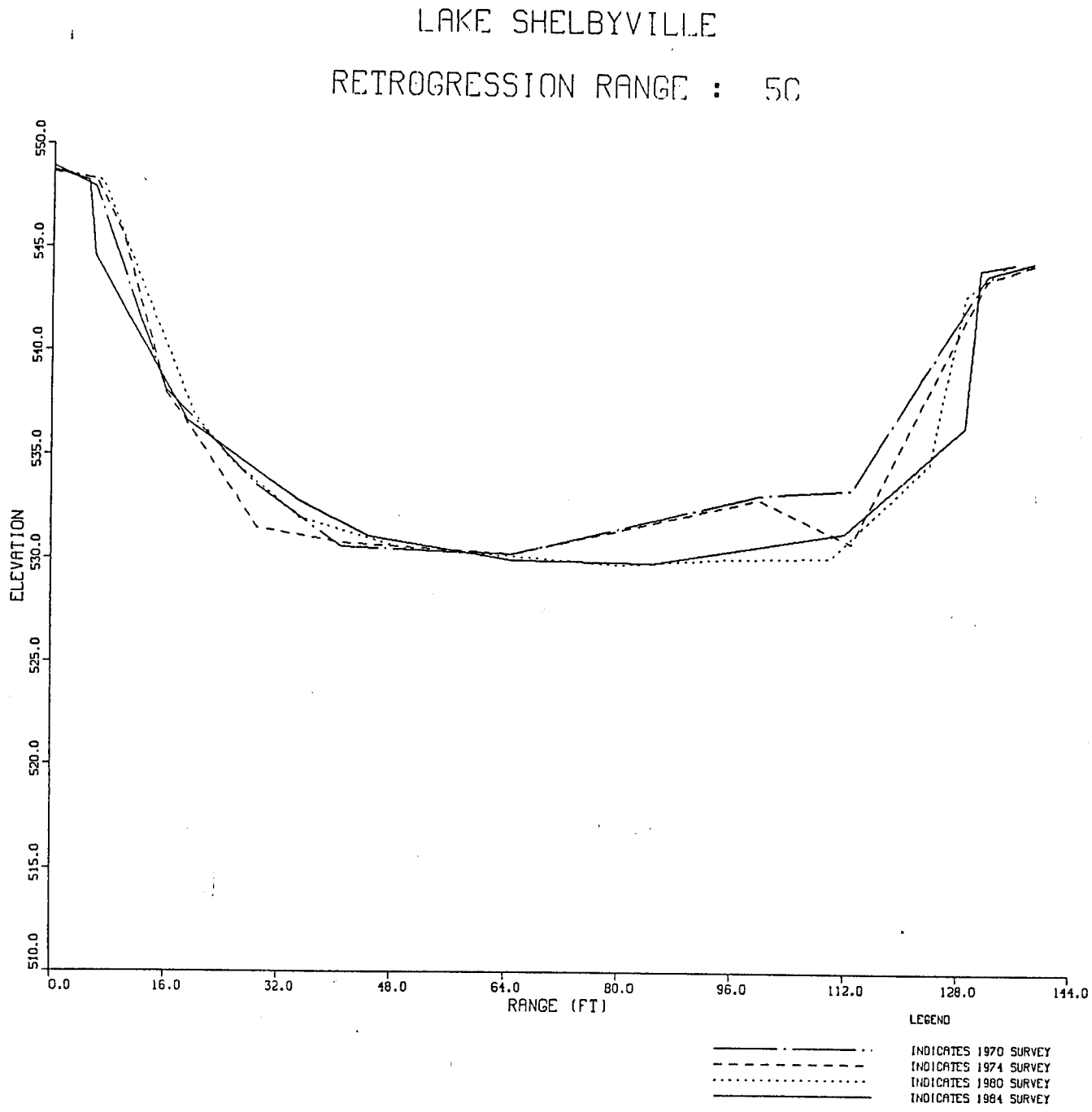
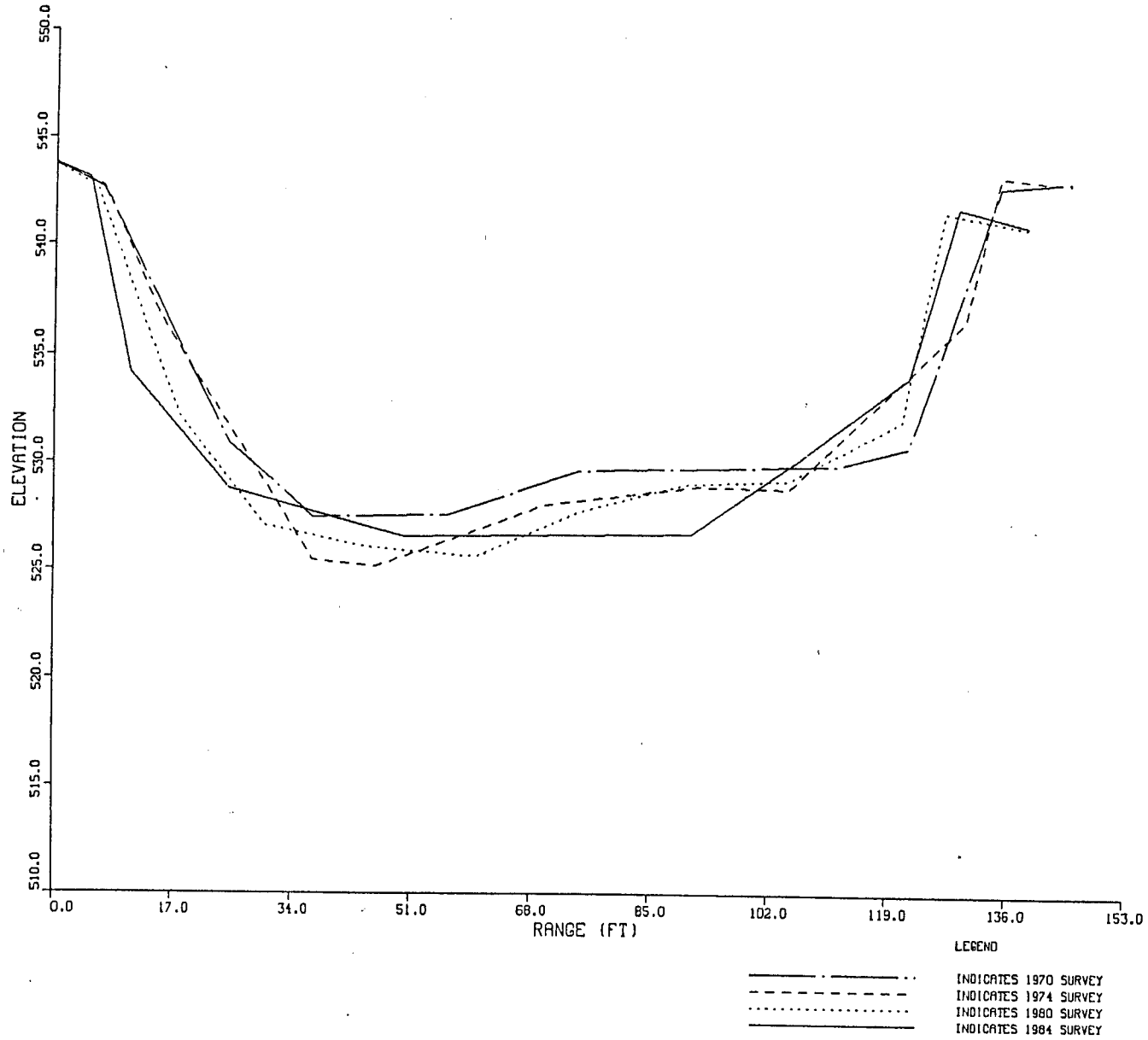
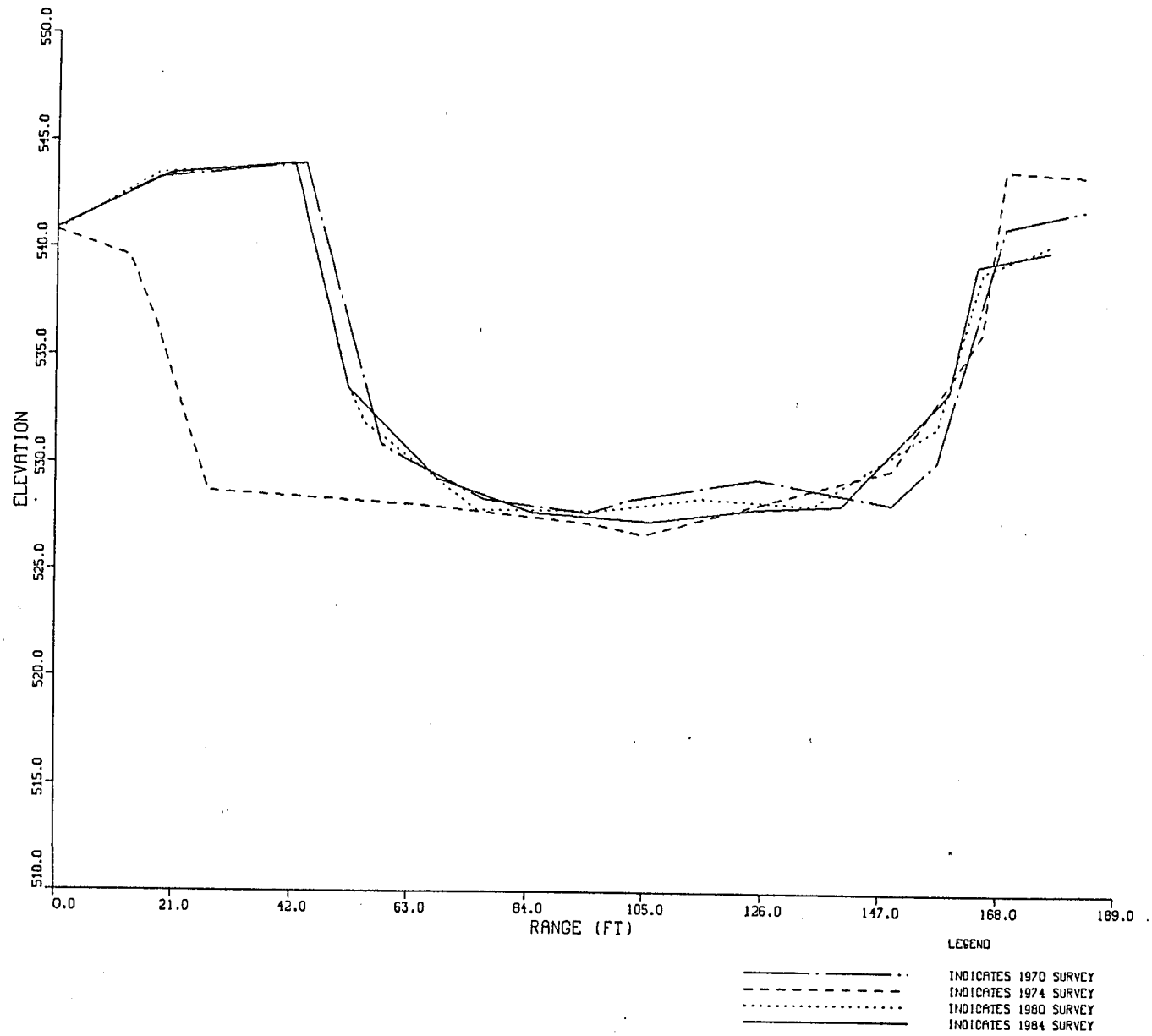

LAKE SHELBYVILLE
RETROGRESSION RANGE : 5C
ELEVATION
550.0
545.0
540.0
535.0
530.0
525.0
520.0
515.0
510.0
0.0
16.0
32.0
48.0
64.0
80.0
96.0
112.0
128.0
144.0
RANGE (FT)
LEGEND
INDICATES 1970 SURVEY
INDICATES 1974 SURVEY
INDICATES 1980 SURVEY
INDICATES 1984 SURVEY

PLATE 51

LAKE SHELBYVILLE

RETROGRESSION RANGE : 60




LAKE SHELBYVILLE
RETROGRESSION RANGE : 7C
ELEVATION
550.0
545.0
540.0
535.0
530.0
525.0
520.0
515.0
510.0
0.0
21.0
42.0
63.0
84.0
105.0
126.0
147.0
168.0
189.0
RANGE (FT)
LEGEND
INDICATES 1970 SURVEY
INDICATES 1974 SURVEY
INDICATES 1960 SURVEY
INDICATES 1984 SURVEY

RESERVOIR SEDIMENT
DATA SUMMARY

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS

Lake Shelbyville
NAME OF RESERVOIR

DATA SHEET NO.

DAM

1. OWNER DA, Corps of Engineers	2. STREAM Kaskaskia River	3. STATE Illinois
4. SEC. 8 TWP. 11N RANGE 3E	5. NEAREST P.O. Shelbyville, Il	6. COUNTY Shelby
7. LAT. 39°24′30″ LONG. 88°46′30″	8. TOP OF DAM ELEVATION 643.0	9. SPILLWAY CREST ELEV. 627.5 1/

RESERVOIR

10. STORAGE ALLOCATION	11. ELEVATION TOP OF POOL	12. ORIGINAL SURFACE AREA, ACRES	13. ORIGINAL CAPACITY, ACRE-FEET	14. GROSS STORAGE, ACRE-FEET	15. DATE STORAGE BEGAN
a. FLOOD CONTROL	626.5	25,269	468,385	676,203	
b. MULTIPLE USE	599.7	11,118	177,795 2/	207,818	1 Aug 1970
c. POWER					
d. WATER SUPPLY					16. DATE NORMAL OPER. BEGAN
e. IRRIGATION					
f. CONSERVATION					
g. INACTIVE	573.0	2,992	30,023	30,023	1 Aug 1970

WATERSHED

17. LENGTH OF RESERVOIR	47 3/ MILES	AV. WIDTH OF RESERVOIR	0.84 MILES
18. TOTAL DRAINAGE AREA	1054 SQ. MI.	22. MEAN ANNUAL PRECIPITATION	40.4 (14) INCHES
19. NET SEDIMENT CONTRIBUTING AREA	1015 SQ. MI.	23. MEAN ANNUAL RUNOFF	12.8 (14) INCHES
20. LENGTH 58 MILES	AV. WIDTH 18.2 MILES	24. MEAN ANNUAL RUNOFF	720,655 (14) AC.-FT.
21. MAX. ELEV. 703	MIN. ELEV. 535	25. ANNUAL TEMP.: MEAN	55°F RANGE −34° to 115°F

SURVEY DATA

26. DATE OF SURVEY	27. PERIOD YEARS	28. ACCL. YEARS	29. TYPE OF SURVEY	30. NO. OF RANGES OR CONTOUR INT.	31. SURFACE AREA, ACRES	32. CAPACITY, ACRE-FEET	33. C/I. RATIO, AC.-FT. PER AC.-FT.
Apr. 1970			Range (D)	46	25,269	676,203	0.94
Nov. 1980	10.6	10.6	Range (D)	46	25,269	668,428	0.93
May 1984	3.5	14.1	Range (D)	46	25,269	664,031	0.92

26. DATE OF SURVEY	34. PERIOD ANNUAL PRECIPITATION	35. PERIOD WATER INFLOW, ACRE-FEET			36. WATER INFL. TO DATE, AC.-FT.	
		a. MEAN ANNUAL	b. MAX. ANNUAL	c. PERIOD TOTAL	a. MEAN ANNUAL	b. TOTAL TO DATE
Apr. 1970	40.4	700,119	1,298,023	7,421,256	700,119	7,421,256
Nov. 1980	42.9	852,363	1,005,894	2,983,271	738,783	10,404,527
May 1984						

26. DATE OF SURVEY	37. PERIOD CAPACITY LOSS, ACRE-FEET			38. TOTAL SED. DEPOSITS TO DATE, ACRE-FEET		
	a. PERIOD TOTAL	b. AV. ANNUAL	c. PER SQ. MI.-YEAR	a. TOTAL TO DATE	b. AV. ANNUAL	c. PER SQ. MI.-YEAR
Apr. 1970	7,205	681	0.67	7,205	681	0.67
Nov. 1980	2,882	823	0.81	10,087	716	0.71
May 1984						

26. DATE OF SURVEY	39. AV. DRY WGT., LBS. PER CU. FT.	40. SED. DEP., TONS PER SQ. MI.-YR.		41. STORAGE LOSS, PCT.		42. SED. INFLOW, PPM	
		a. PERIOD	b. TOTAL TO DATE	a. AV. ANN.	b. TOT. TO DATE	a. PERIOD	b. TOT. TO DATE
Apr. 1970	47.4	692	692	0.10	1.07	738	738
Nov. 1980	51.4 4/	1,085	795	0.11	1.49	951	799
May 1984							

ENG FORM NOV 66 1787 PREVIOUS EDITIONS ARE OBSOLETE.

26. DATE OF SURVEY	43. DEPTH DESIGNATION RANGE IN FEET BELOW, AND ABOVE, CREST ELEVATION											
	Bottom-75	75-65	65-55	55-45	45-35	35-25	25-15	15-5	5-Crest			
	PERCENT OF TOTAL SEDIMENT LOCATED WITHIN DEPTH DESIGNATION											
Apr. 1970 Nov. 1984	4.3	5.4	8.5	19.0	50.1	22.7	-6.2 5/	-3.6	-0.2			

26. DATE OF SURVEY	44. REACH DESIGNATION PERCENT OF TOTAL ORIGINAL LENGTH OF RESERVOIR														
	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	-105	-110	-115	-120	-125
	PERCENT OF TOTAL SEDIMENT LOCATED WITHIN REACH DESIGNATION														
Apr. 1970 Nov. 1984	3.2	7.3	14.5	12.1	6.8	12.2	20.7	16.9	4.6	1.7					

45. RANGE IN RESERVOIR OPERATION

WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW, AC.-FT.	WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW, AC.-FT.
1970	571.9	554.5	554,189	1979	605.7	596.2	816,580
1971	603.6	570.7	507,826	1980	600.6	596.0	298,620
1972	605.1	590.2	667,974	1981	607.5	596.0	531,590
1973	611.6	595.6	937,186	1982	604.5	596.3	852,008
1974	616.6	590.0	1,297,715	1983	612.2	596.2	836,719
1975	600.1	590.9	795,461	1984	609.6	597.2	912,044
1976	593.2	590.0	304,648				
1977	601.5	592.8	480,937				
1978	605.9	595.9	646,042				

46. ELEVATION-AREA-CAPACITY DATA

ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY
Original Capacity - 1970			610	15,956	347,959	580	4,605	53,700
540	41	99	620	20,946	532,310	590	7,645	113,000
550	210	1,105	630	27,940	775,118	600	10,940	202,609
560	919	6,305	1984 Capacity			610	15,952	333,900
570	2,393	22,238	540	17	50	620	20,946	518,200
580	4,674	56,906	550	184	500	630	27,940	765,100
590	7,752	118,383	560	893	5,100			
600	11,233	212,980	570	2,358	20,300			

47. REMARKS AND REFERENCES

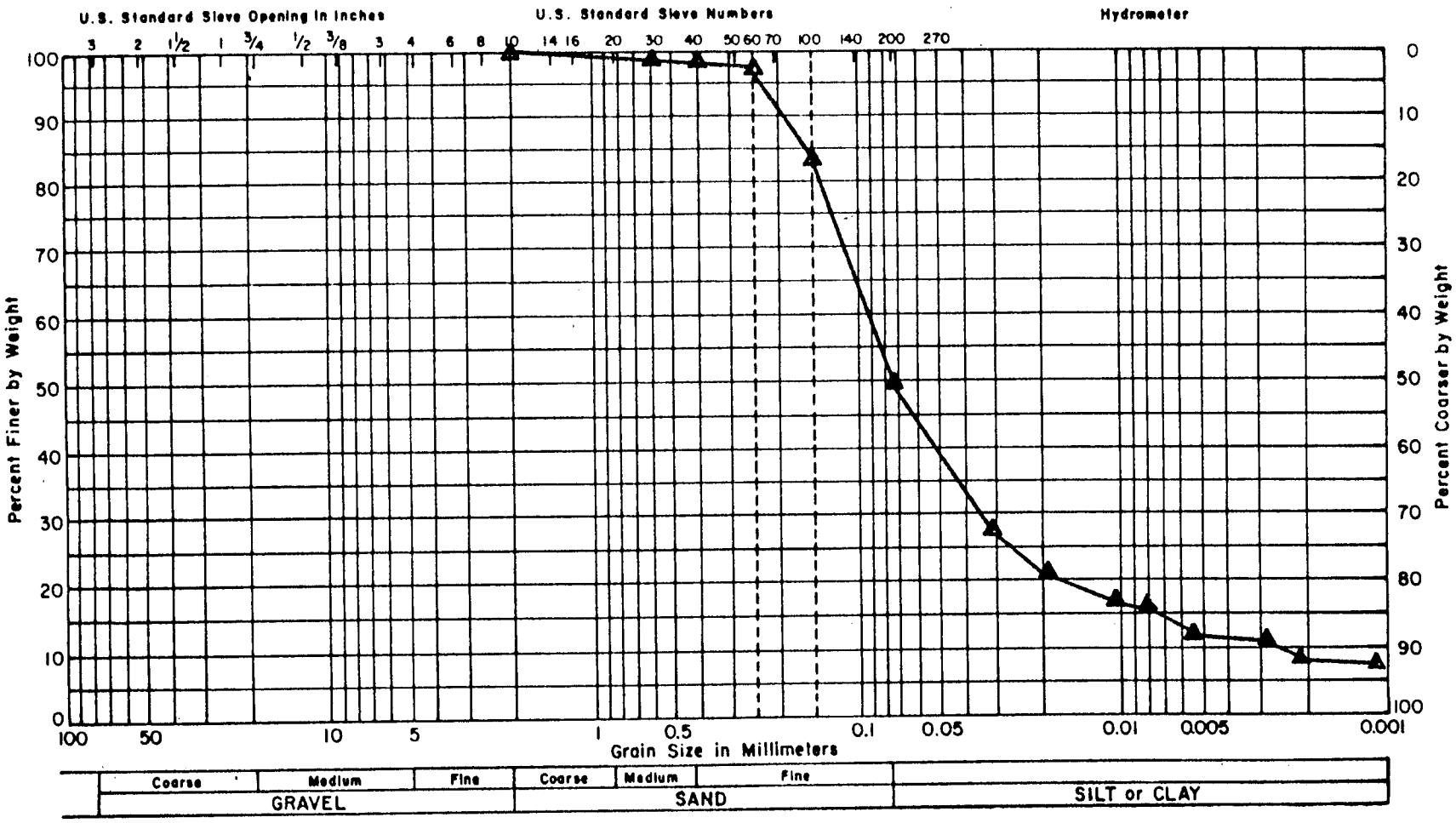
1/ Elevation of top of gates in closed position. Flood control pool (626.5) was used in items 19,31,32,33,41,43.
2/ Includes 25,000 acre-feet for water supply (2 Yr. supply).
3/ 25 miles Kaskaskia River and 22 miles West Okaw River.
4/ Taken from 1982 data, av. dry wgt. not recorded with 1984 data.
5/ Negative sign indicates storage increase.

Reference: "Report of Sedimentation, 1980 Resurvey, Lake Shelbyville," U.S. Army Corps of Engineers, St. Louis District, St. Louis, Missouri.

48. AGENCY MAKING SURVEY

49. AGENCY SUPPLYING DATA U.S. Army Corps of Engineers, SLD 50. DATE 12/85

U.S. GOVERNMENT PRINTING OFFICE: 1967 326-271 (3-1)



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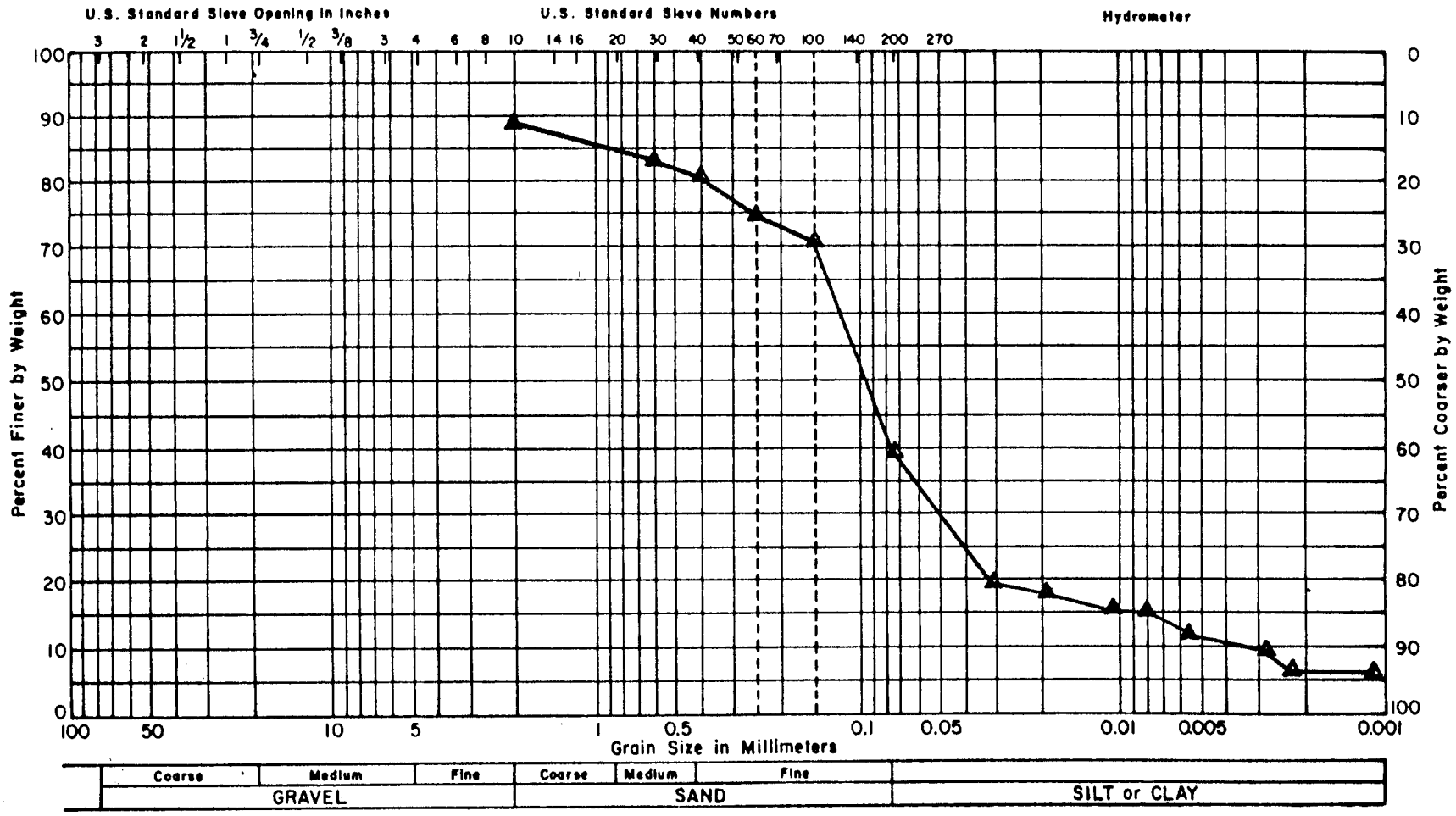
LAKE SHELBYVILLE
SEDIMENT SIZE DISTRIBUTION
RANGE 1A, 1984 RESURVEY



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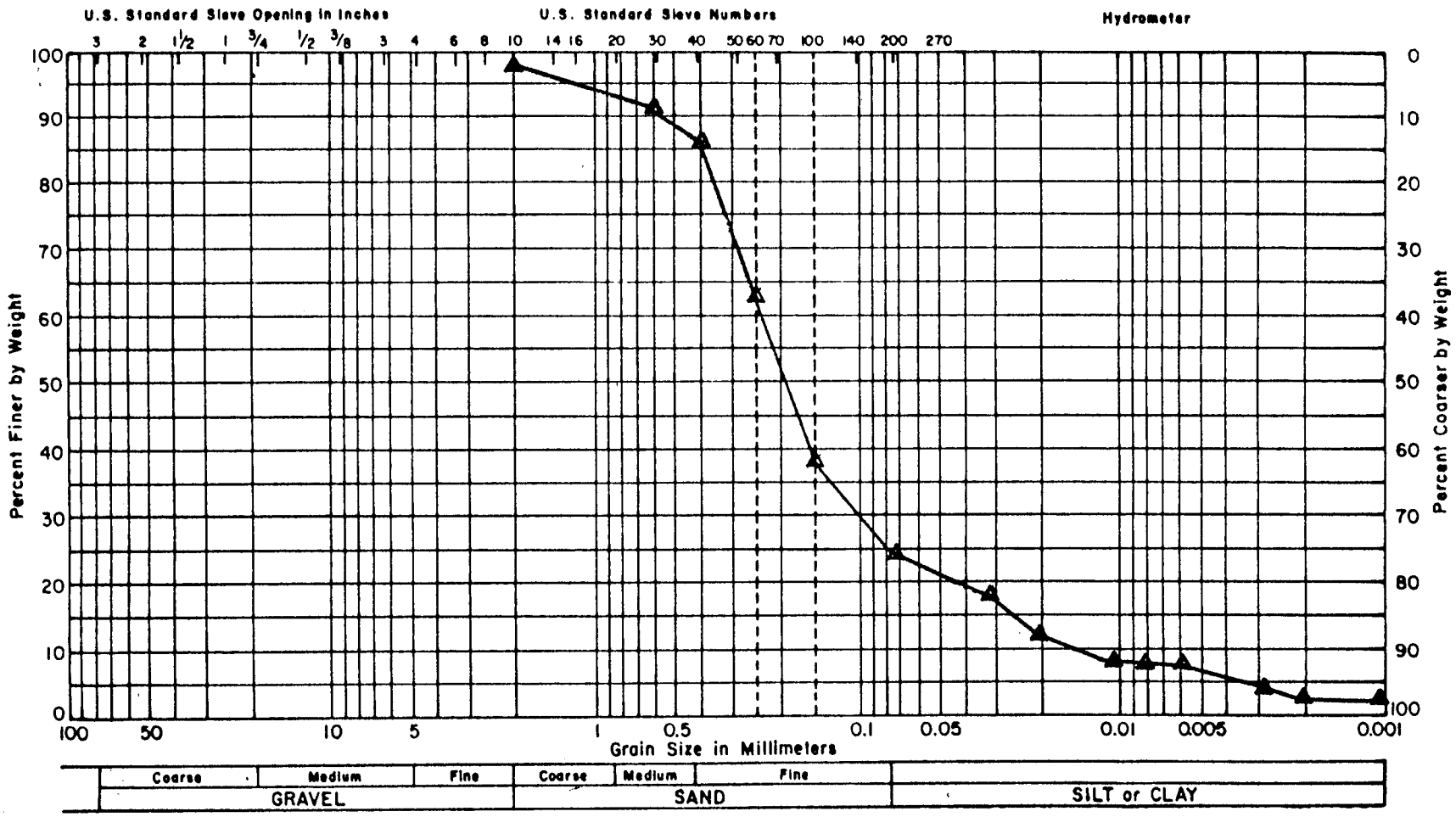

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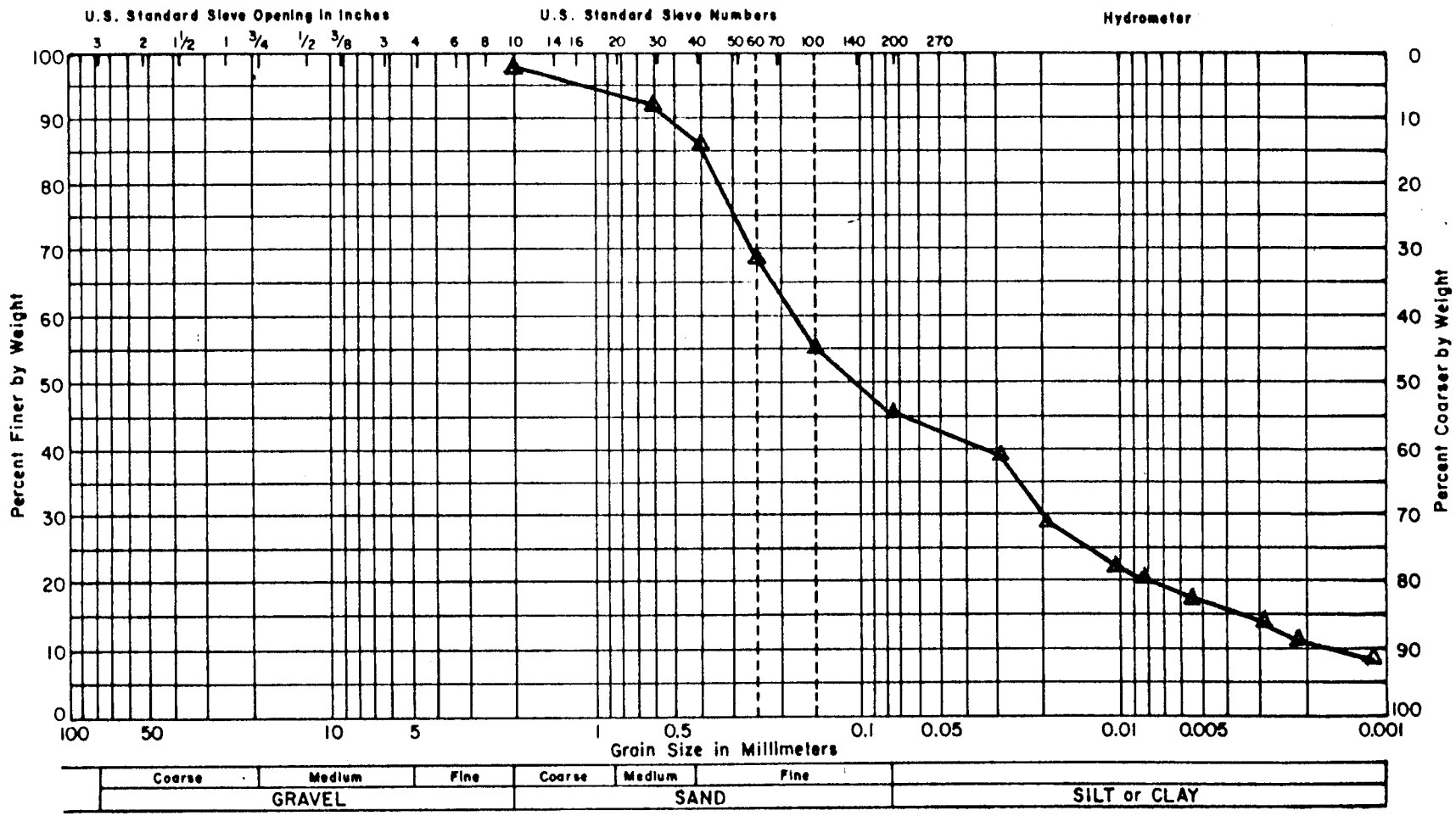
LAKE SHELBYVILLE

SEDIMENT SIZE DISTRIBUTION

RANGE 3A, 1984 RESURVEY



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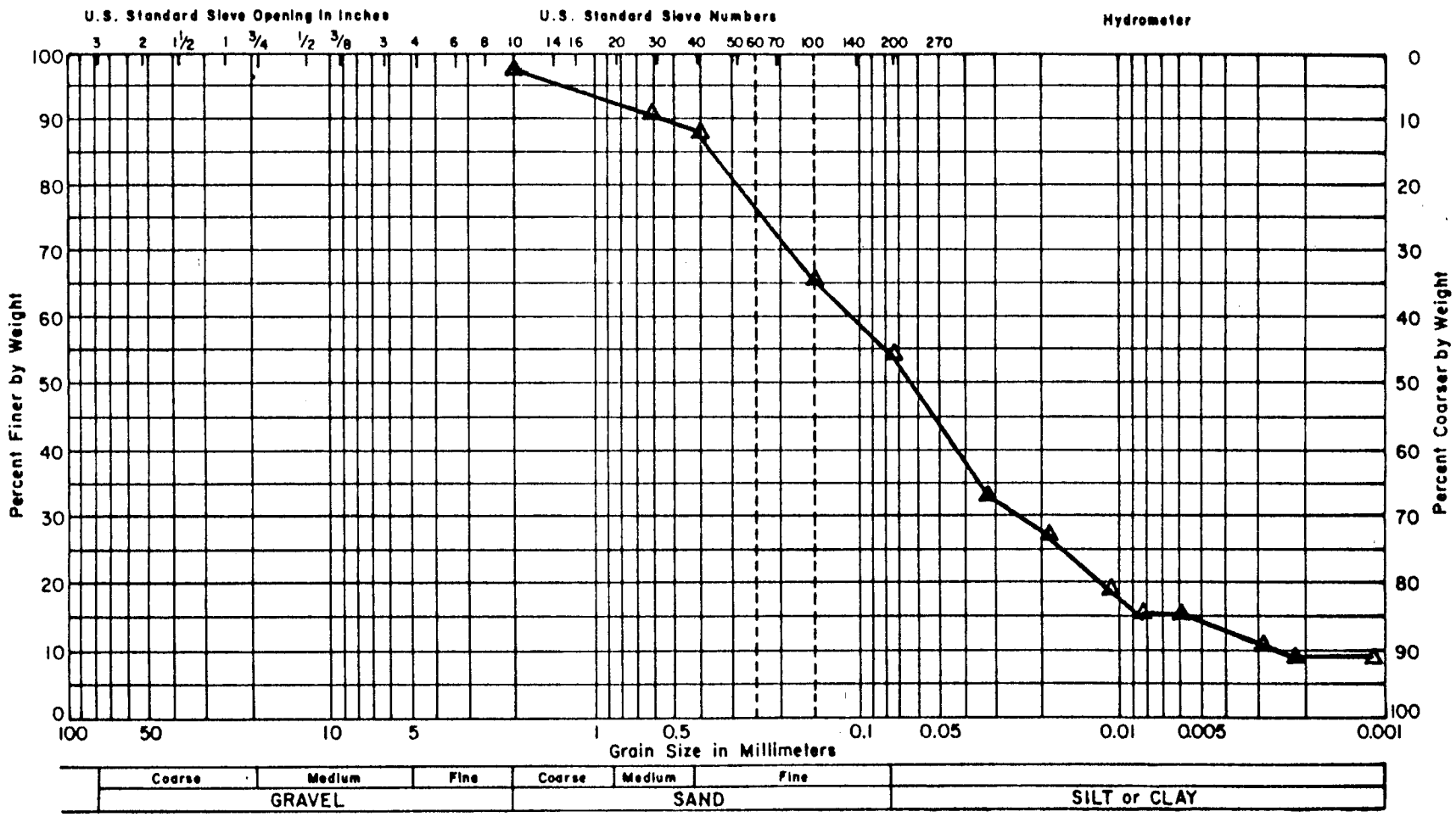
LAKE SHELBYVILLE

SEDIMENT SIZE DISTRIBUTION

RANGE 4A, 1984 RESURVEY



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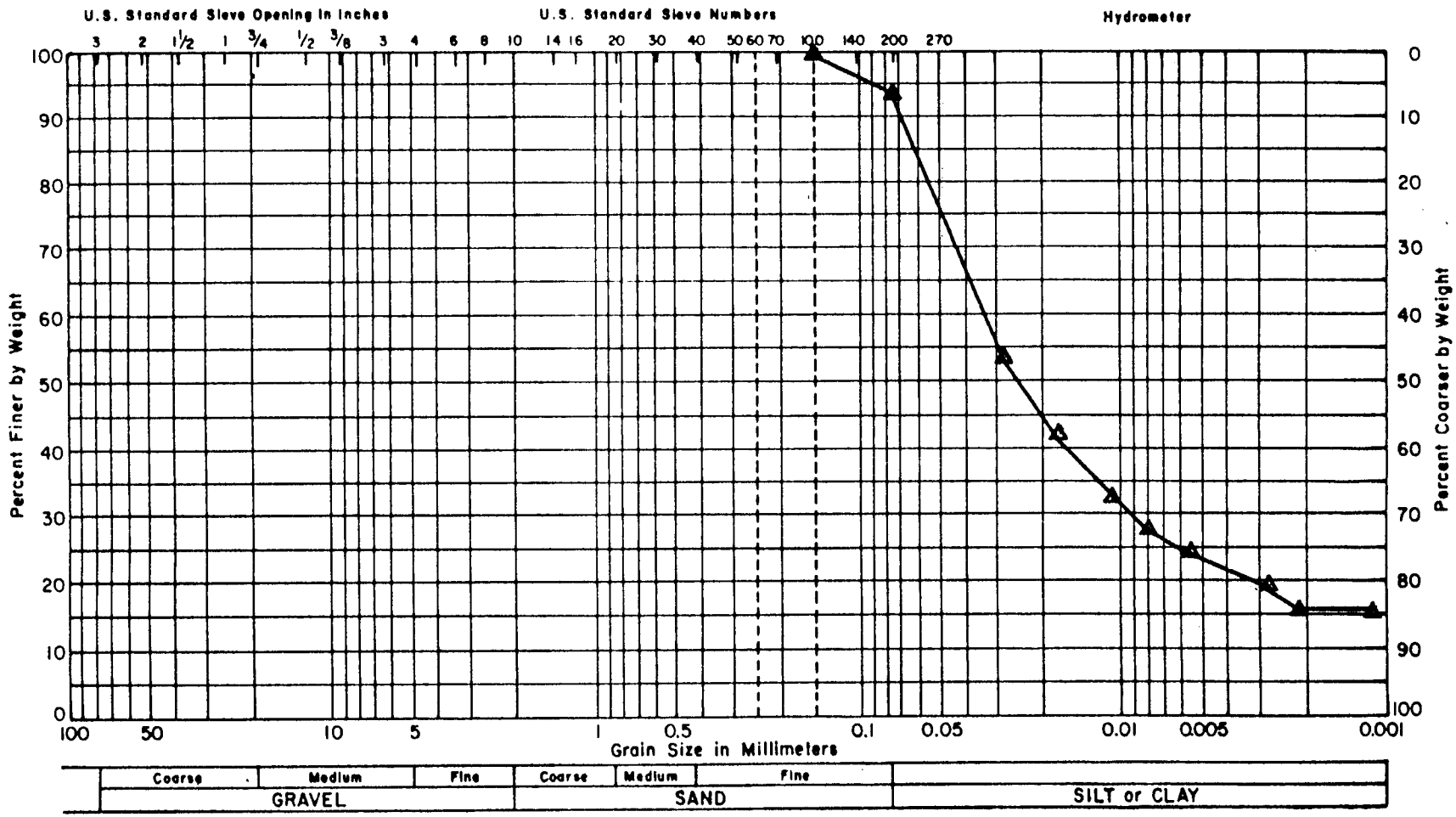
LAKE SHELBYVILLE

SEDIMENT SIZE DISTRIBUTION

RANGE 5A, 1984 RESURVEY



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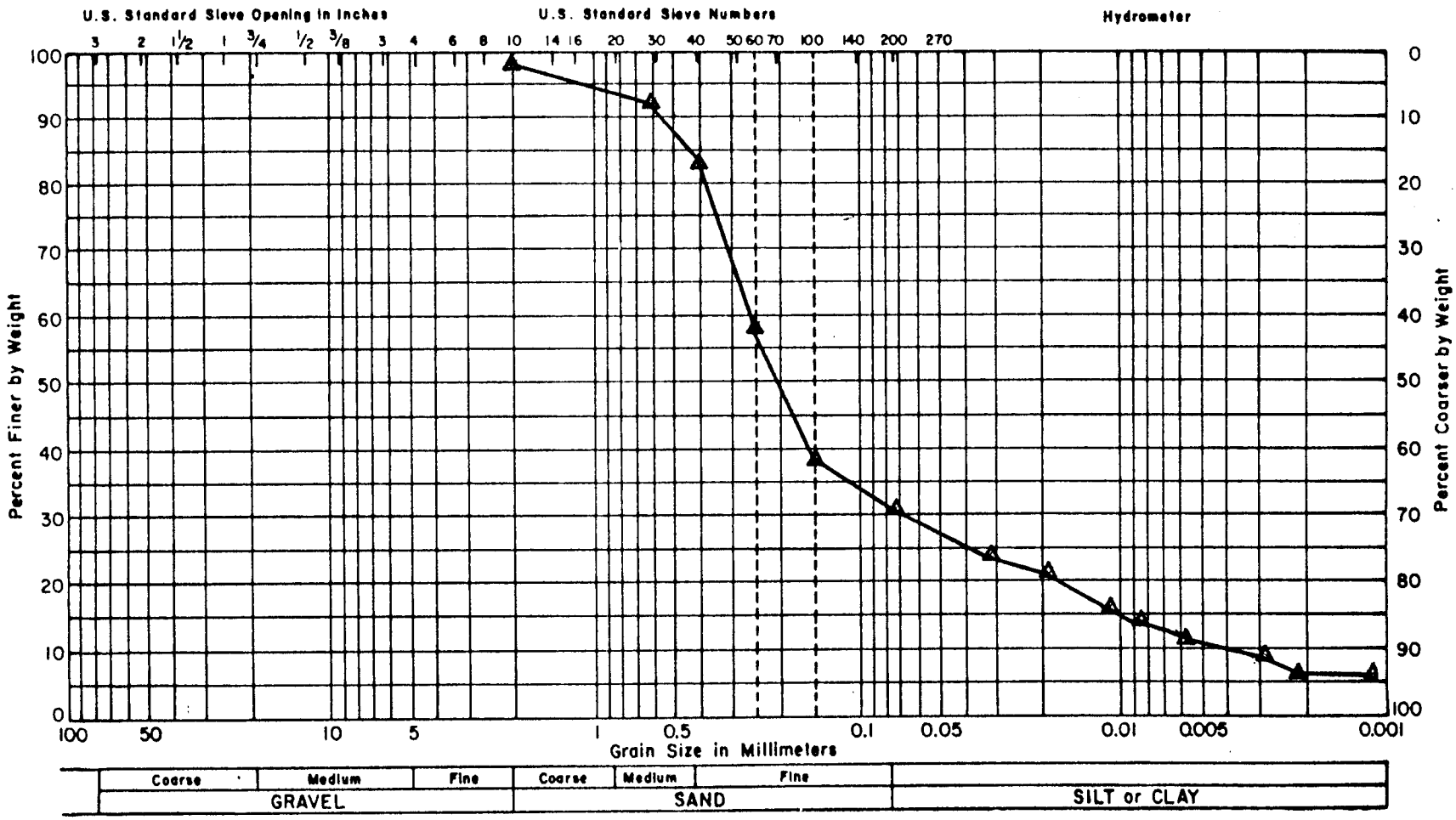
LAKE SHELBYVILLE

SEDIMENT SIZE DISTRIBUTION

RANGE 6A, 1984 RESURVEY



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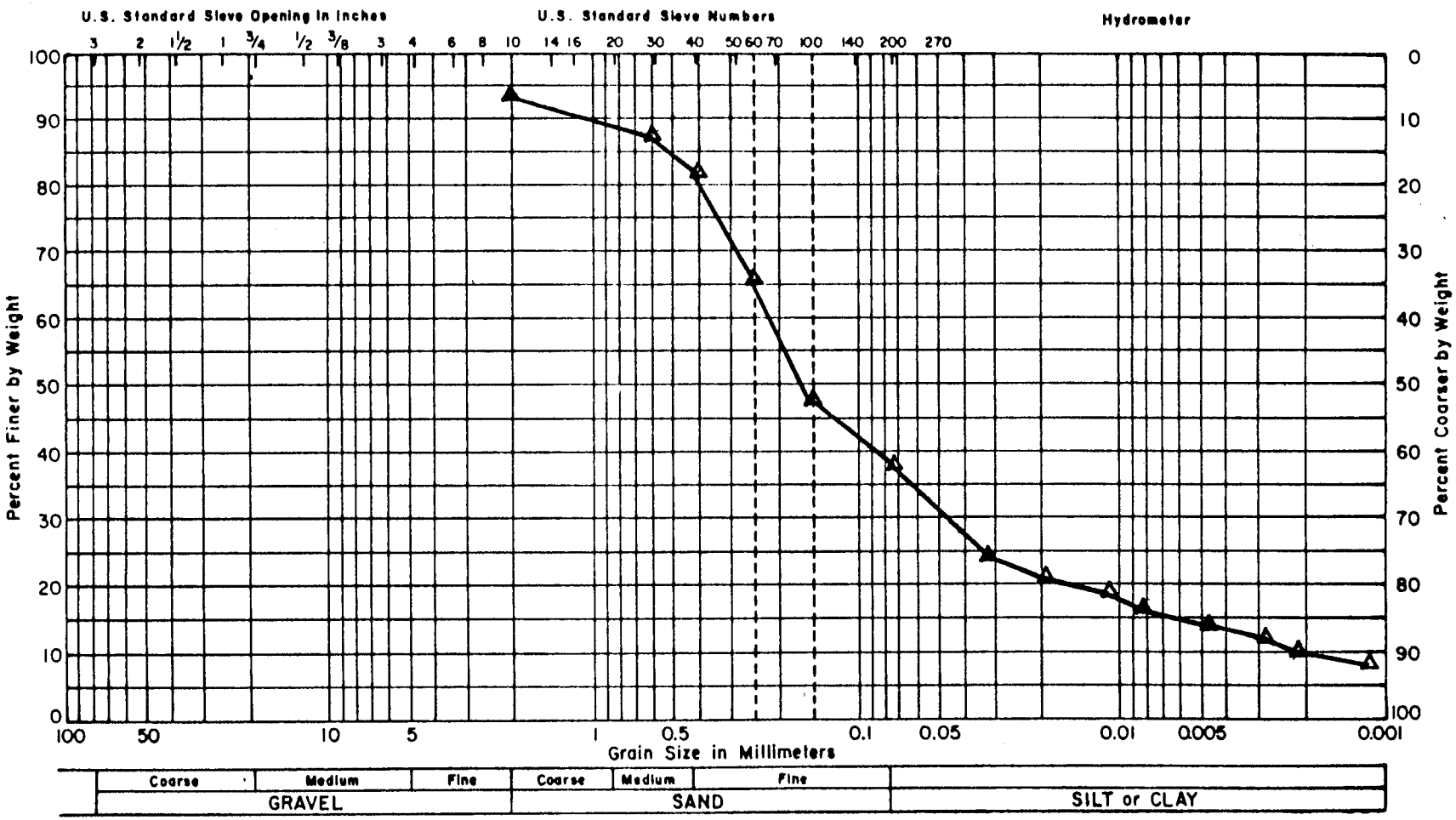
SEDIMENT SIZE DISTRIBUTION
RANGE 7A, 1984 RESURVEY



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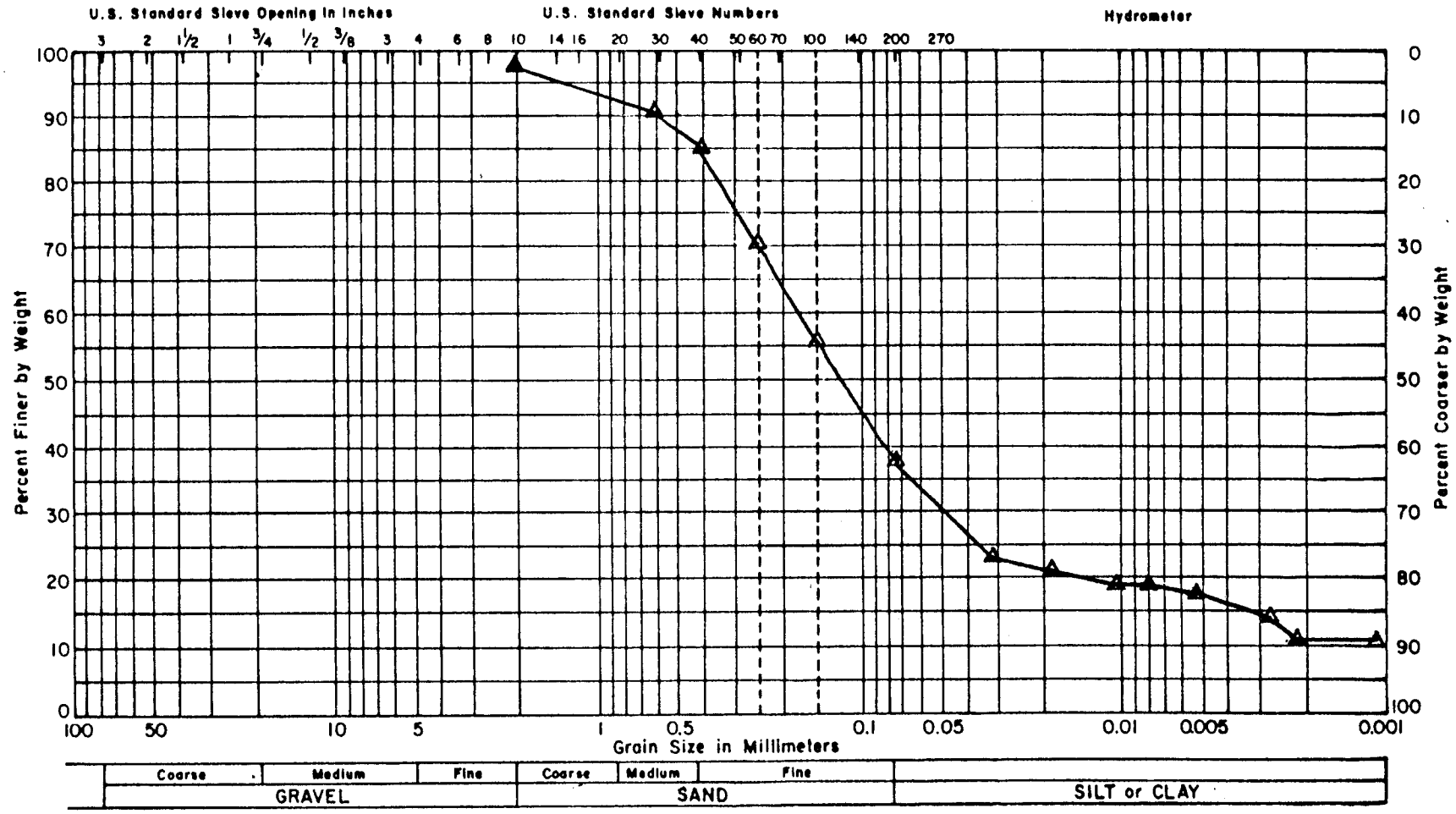
LAKE SHELBYVILLE

SEDIMENT SIZE DISTRIBUTION

RANGE 8B, 1984 RESURVEY



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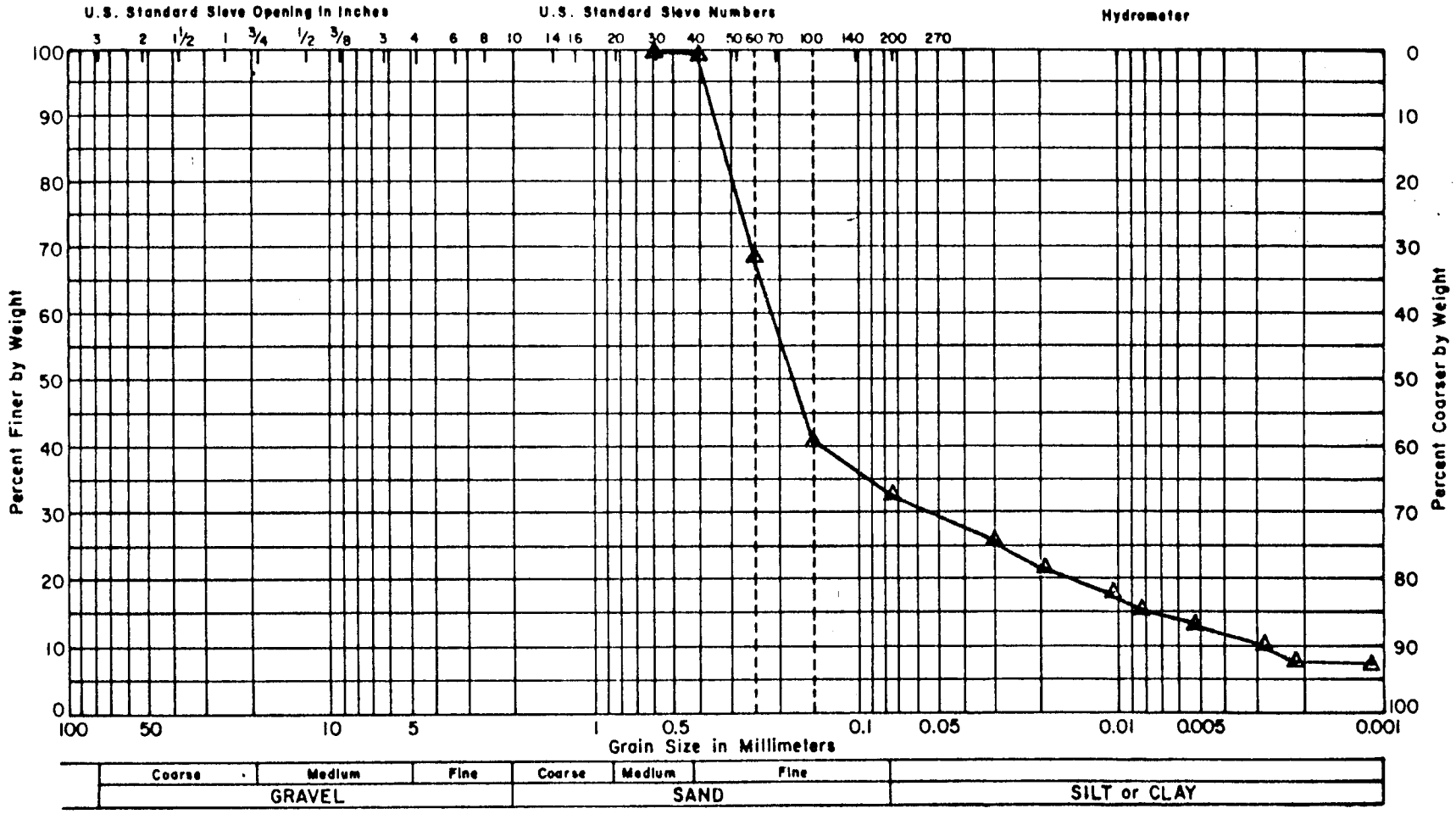
LAKE SHELBYVILLE

SEDIMENT SIZE DISTRIBUTION

RANGE 9B, 1984 RESURVEY



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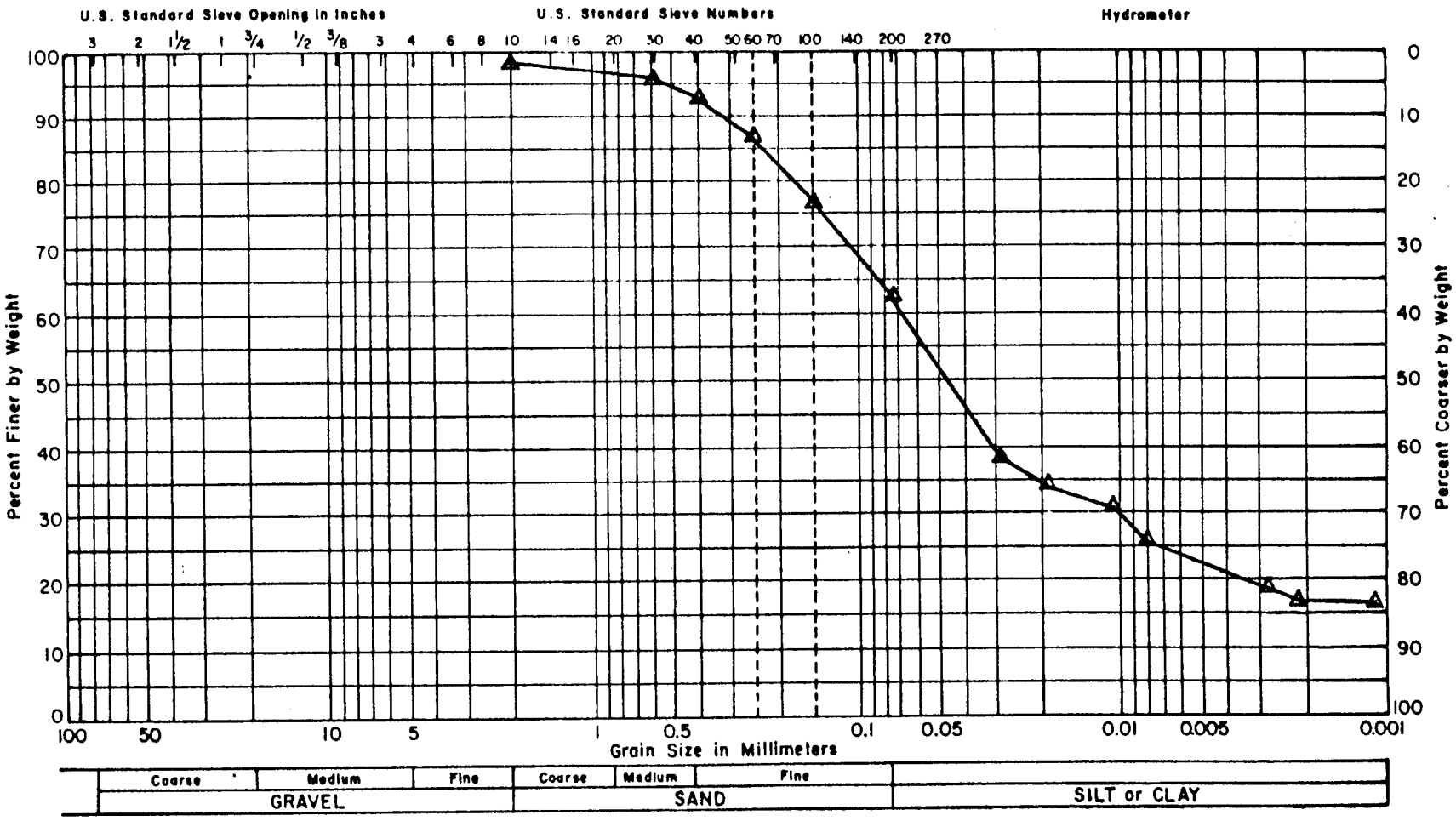
LAKE SHELBYVILLE
SEDIMENT SIZE DISTRIBUTION
RANGE 10B, 1984 RESURVEY



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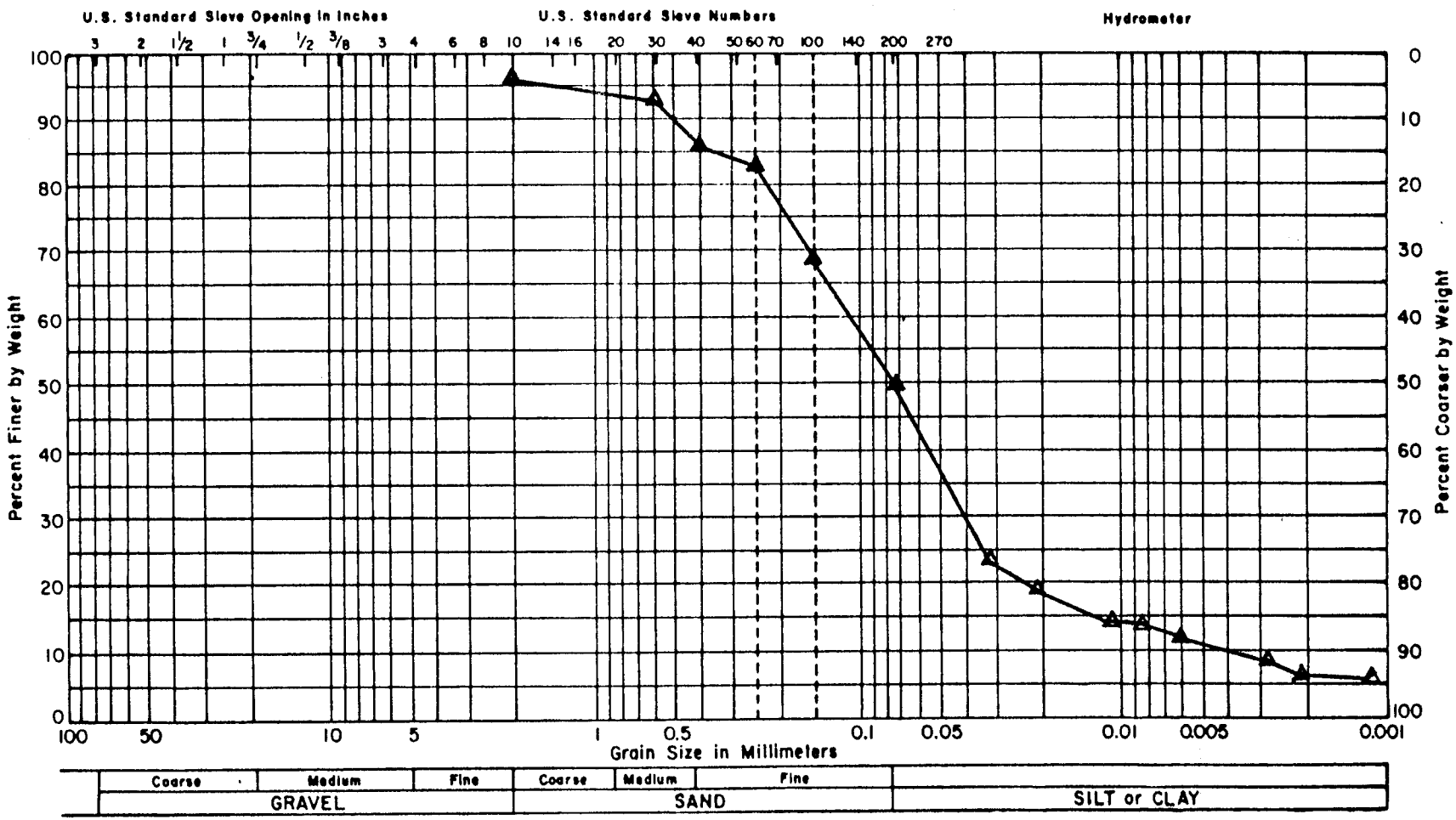
LAKE SHELBYVILLE

SEDIMENT SIZE DISTRIBUTION

RANGE 11A, 1984 RESURVEY



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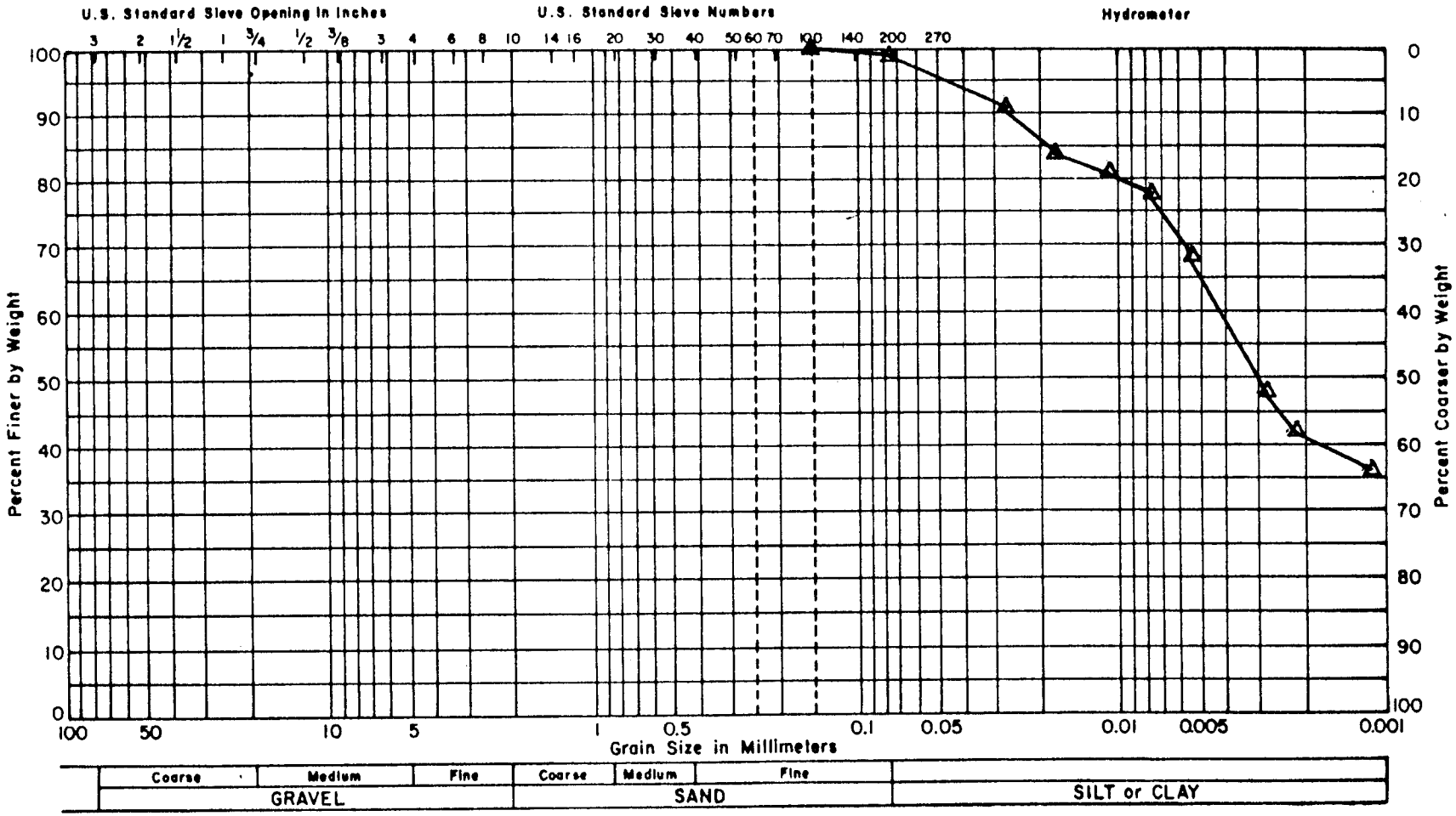
SEDIMENT SIZE DISTRIBUTION

RANGE 12A, 1984 RESURVEY



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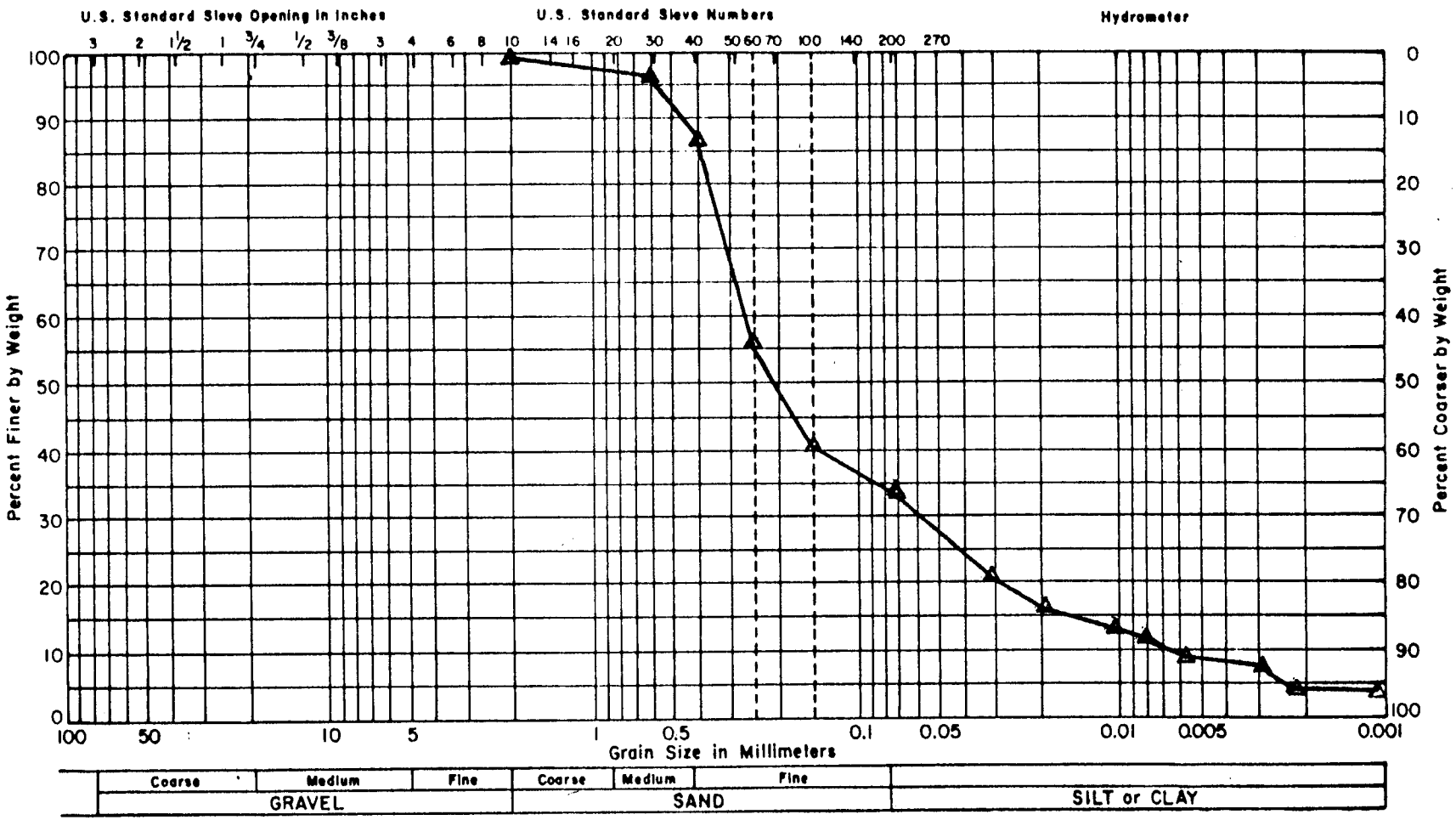
SEDIMENT SIZE DISTRIBUTION

RANGE 13B, 1984 RESURVEY



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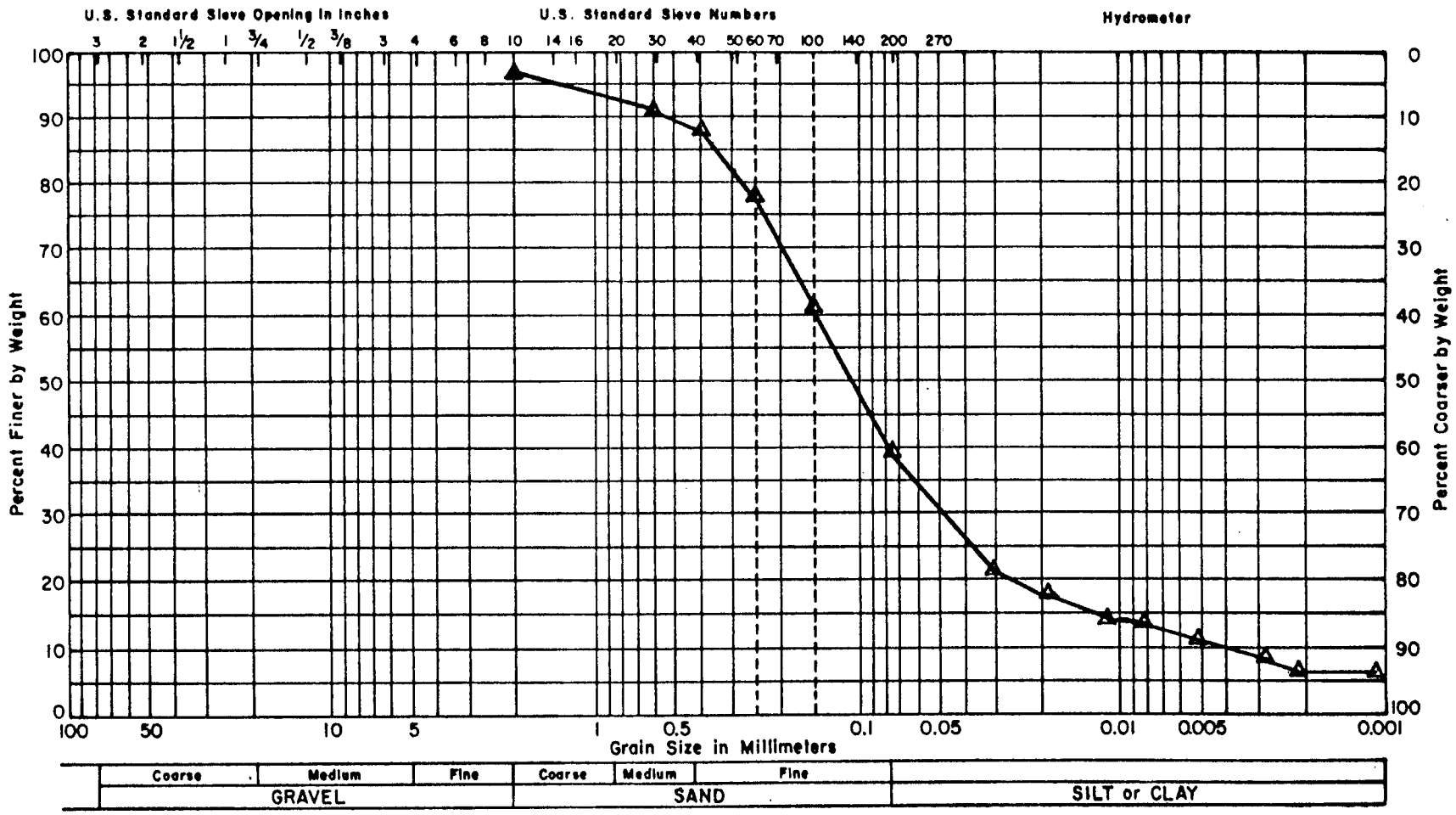
SEDIMENT SIZE DISTRIBUTION

RANGE 14A, 1984 RESURVEY



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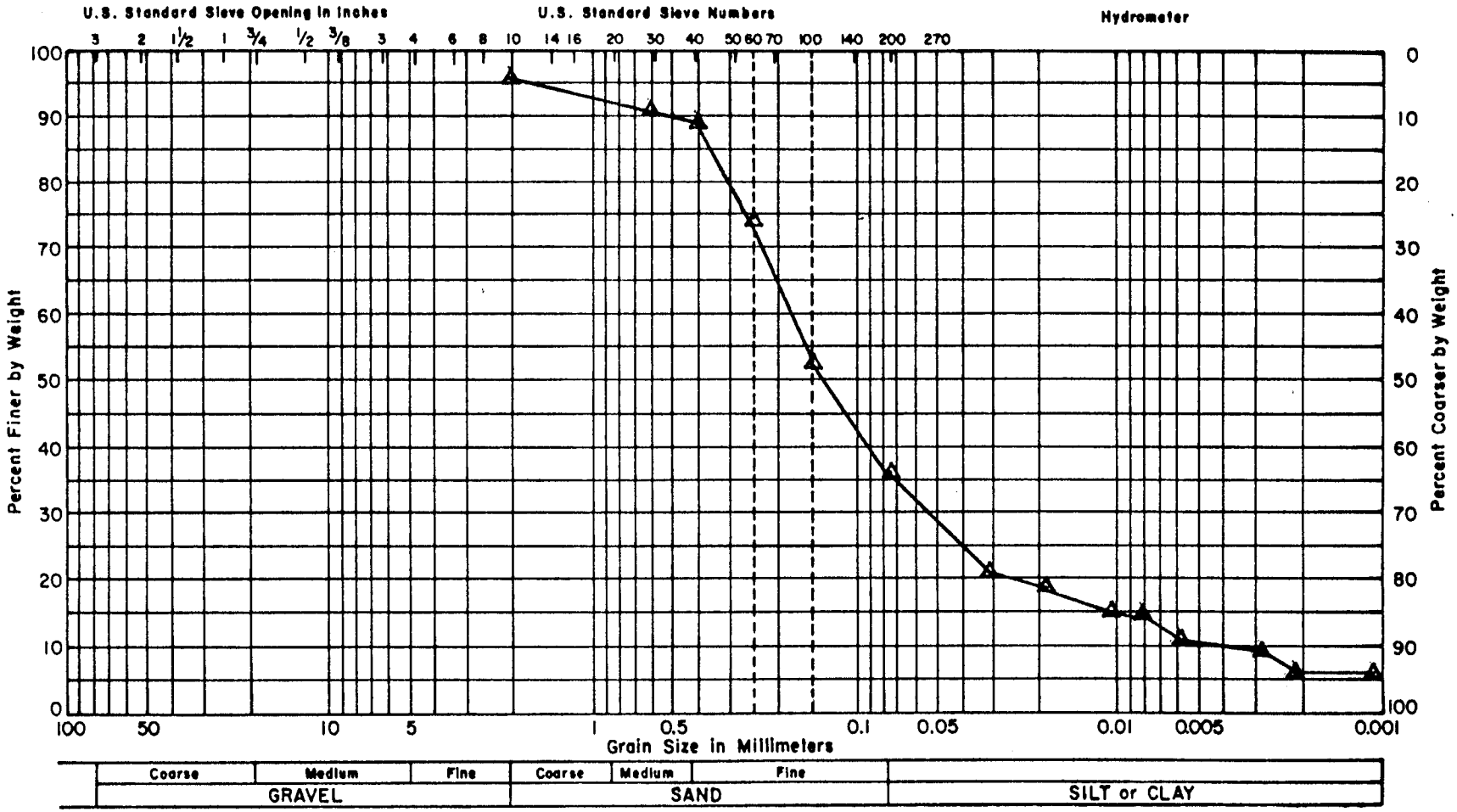
SEDIMENT SIZE DISTRIBUTION

RANGE 15A, 1984 RESURVEY



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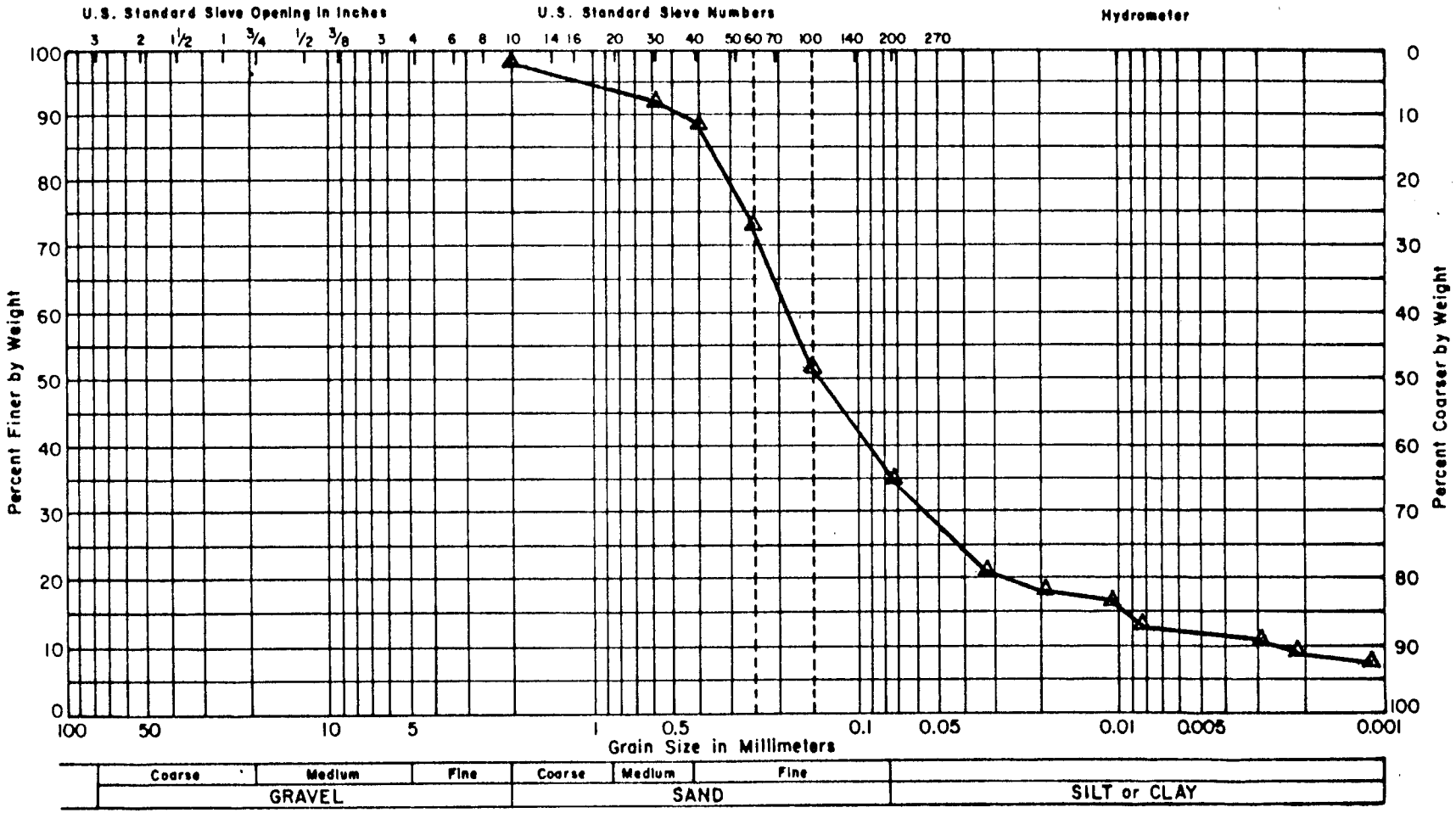
SEDIMENT SIZE DISTRIBUTION

RANGE 16A, 1984 RESURVEY



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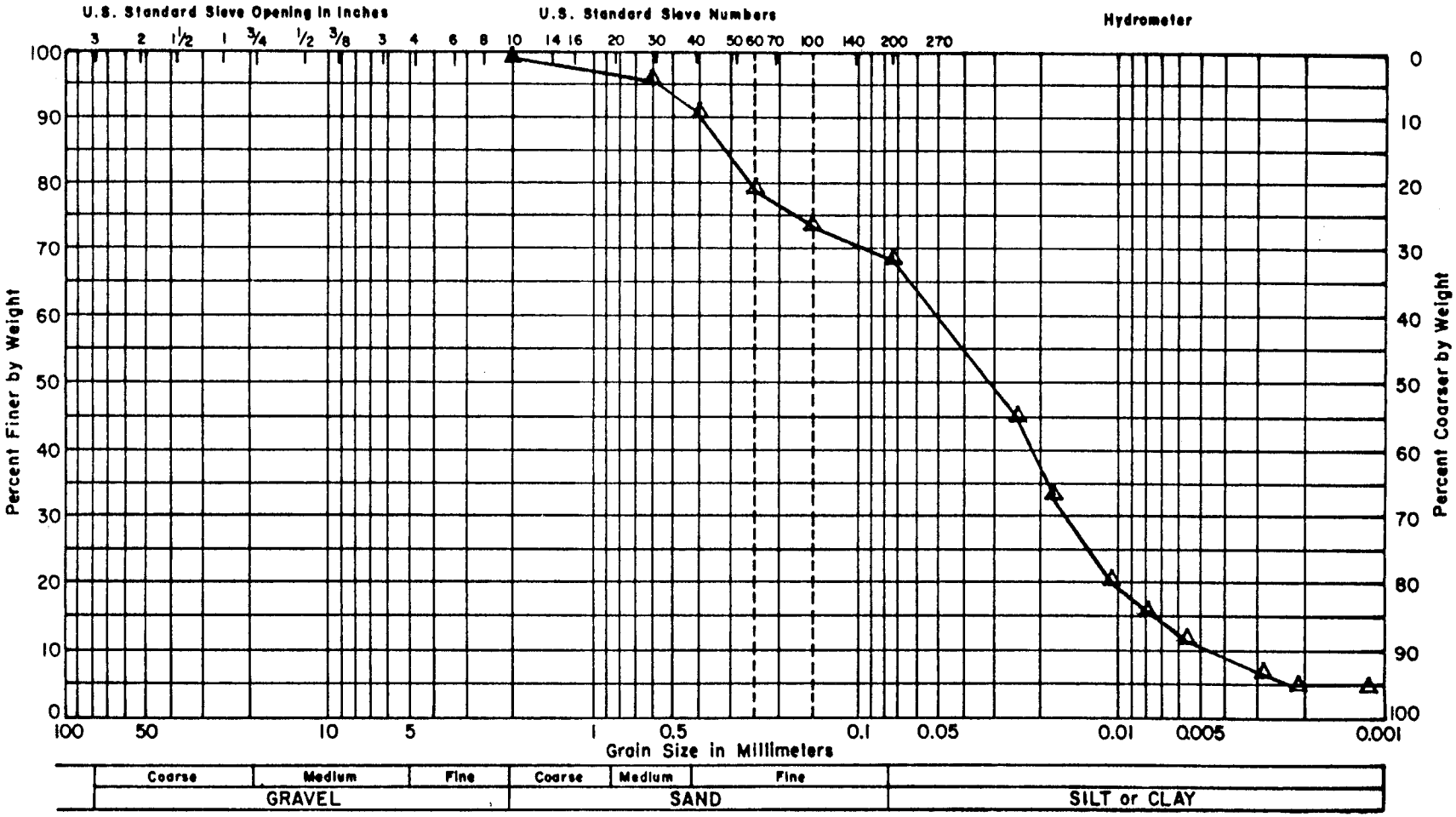
SEDIMENT SIZE DISTRIBUTION

RANGE 16B, 1984 RESURVEY



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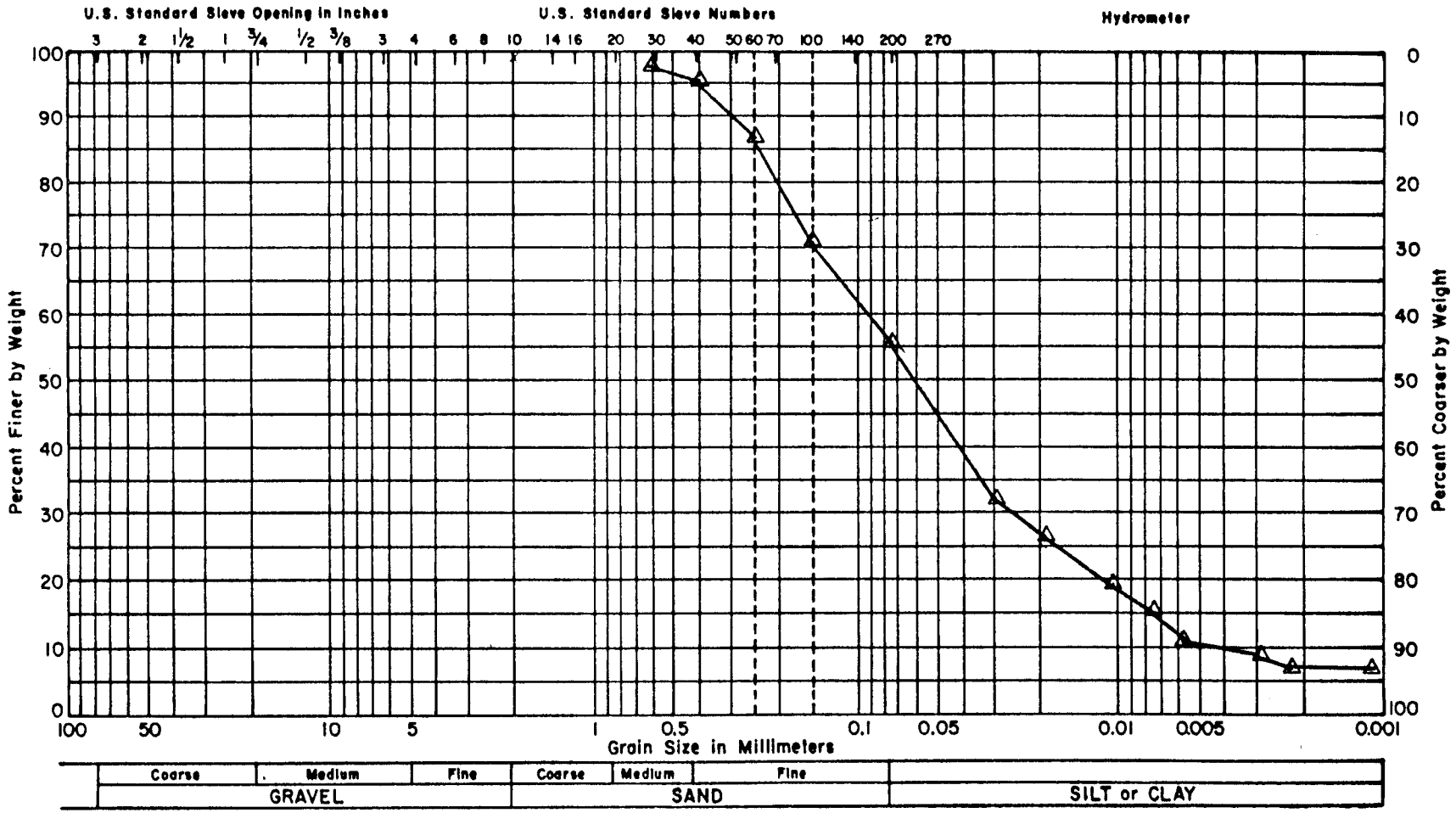
SEDIMENT SIZE DISTRIBUTION

RANGE 17A, 1984 RESURVEY



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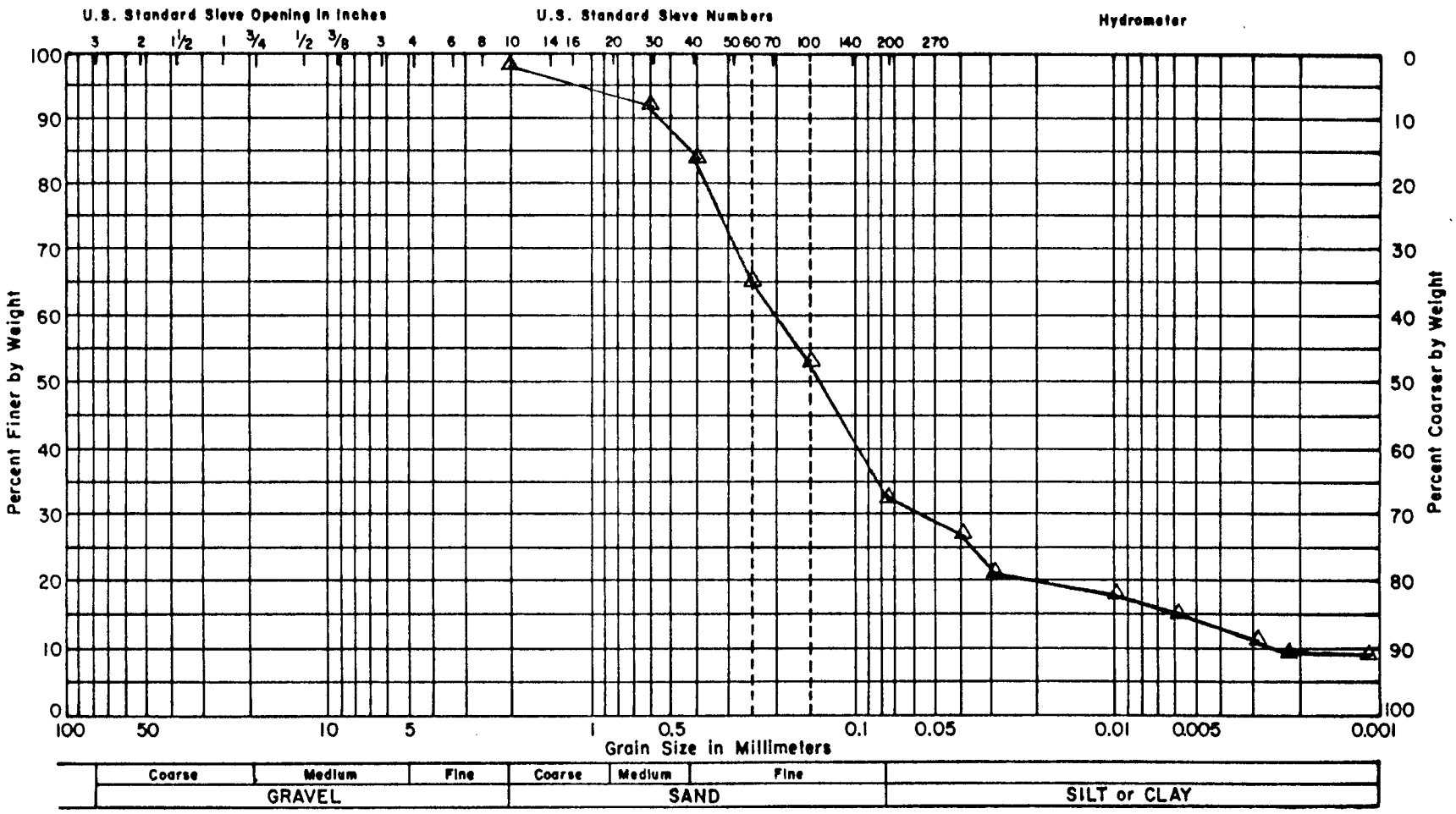
SEDIMENT SIZE DISTRIBUTION
RANGE 19A, 1984 RESURVEY



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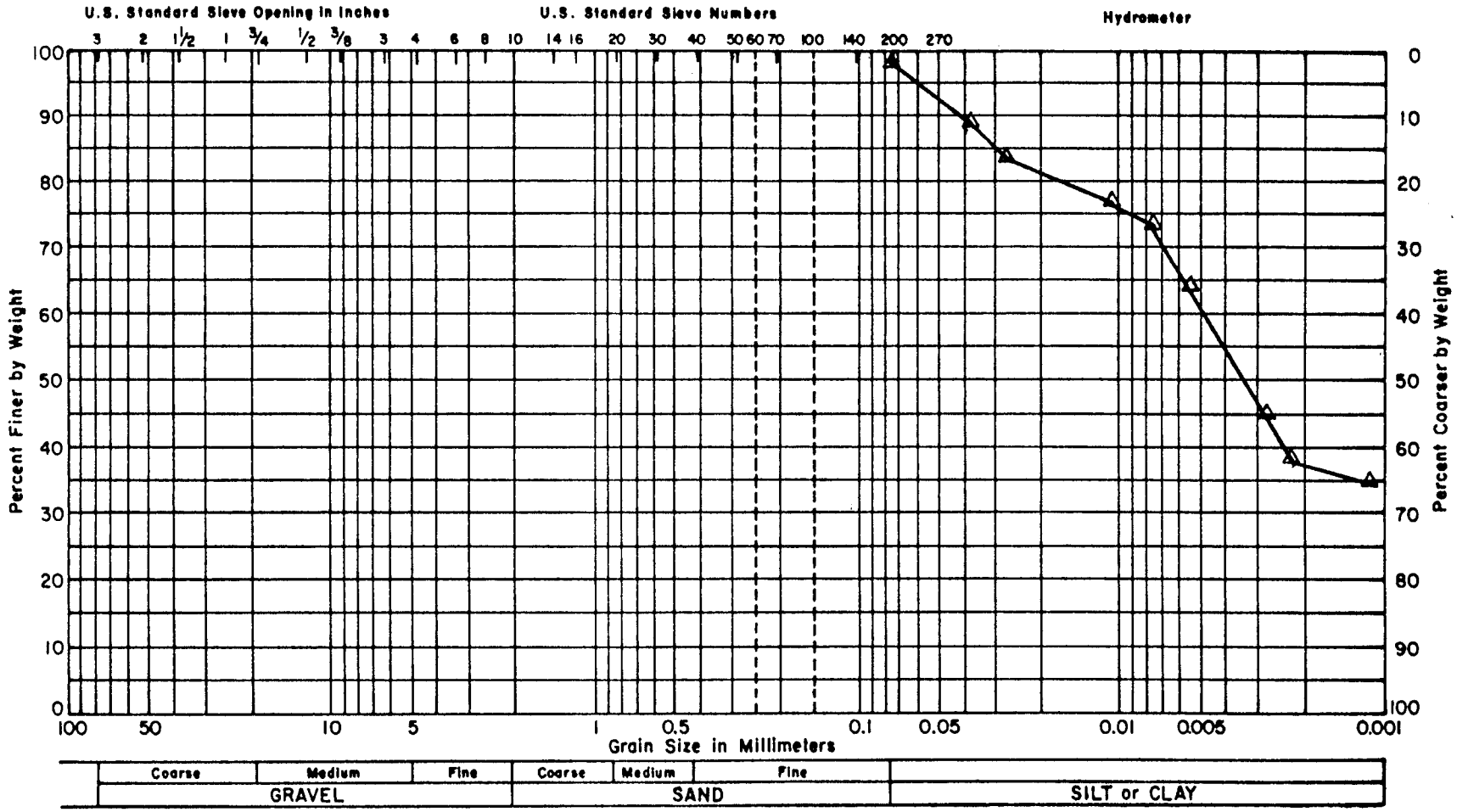
LAKE SHELBYVILLE

SEDIMENT SIZE DISTRIBUTION

RANGE 20A, 1984 RESURVEY



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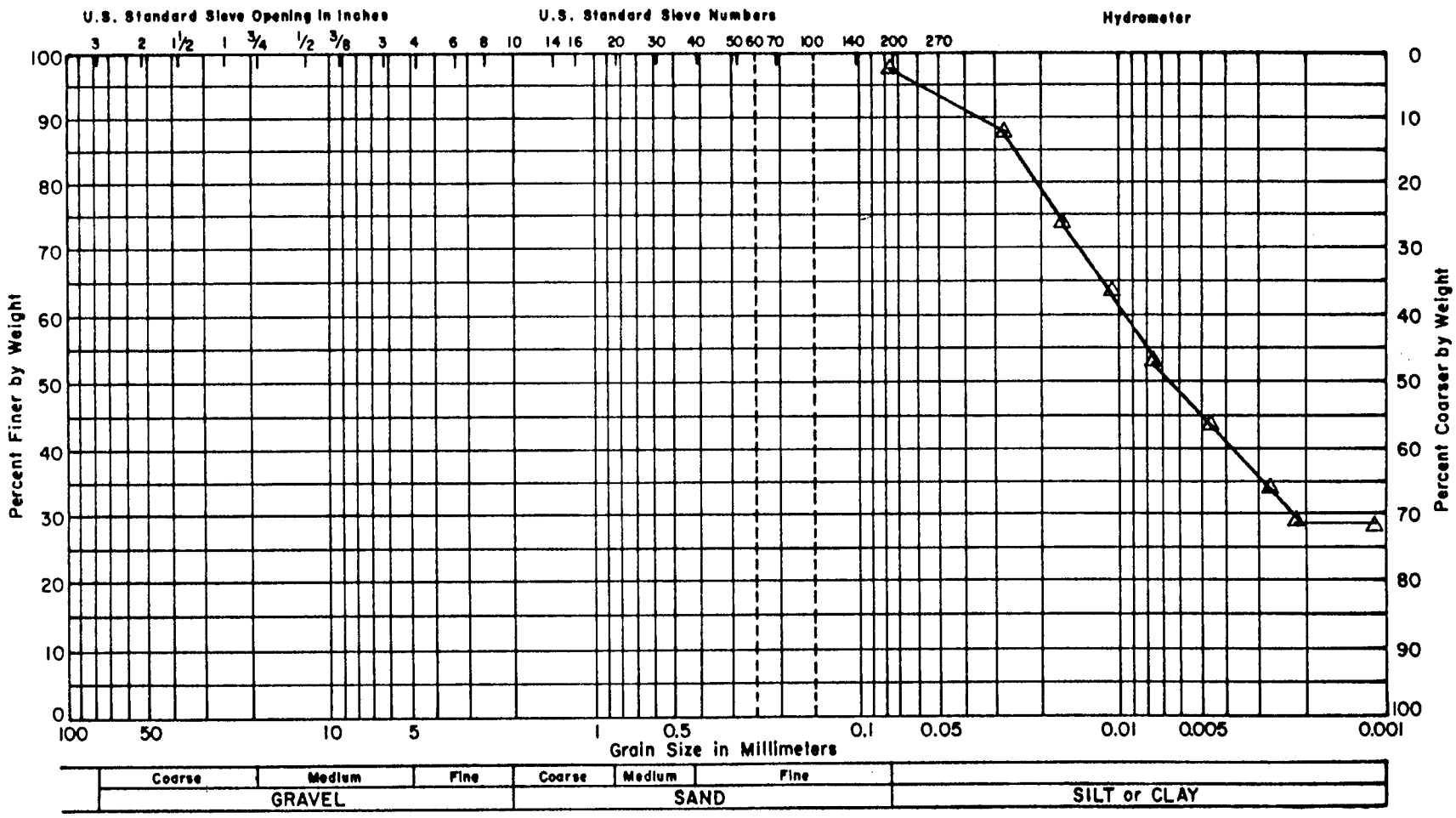
SEDIMENT SIZE DISTRIBUTION

RANGE 21A, 1984 RESURVEY



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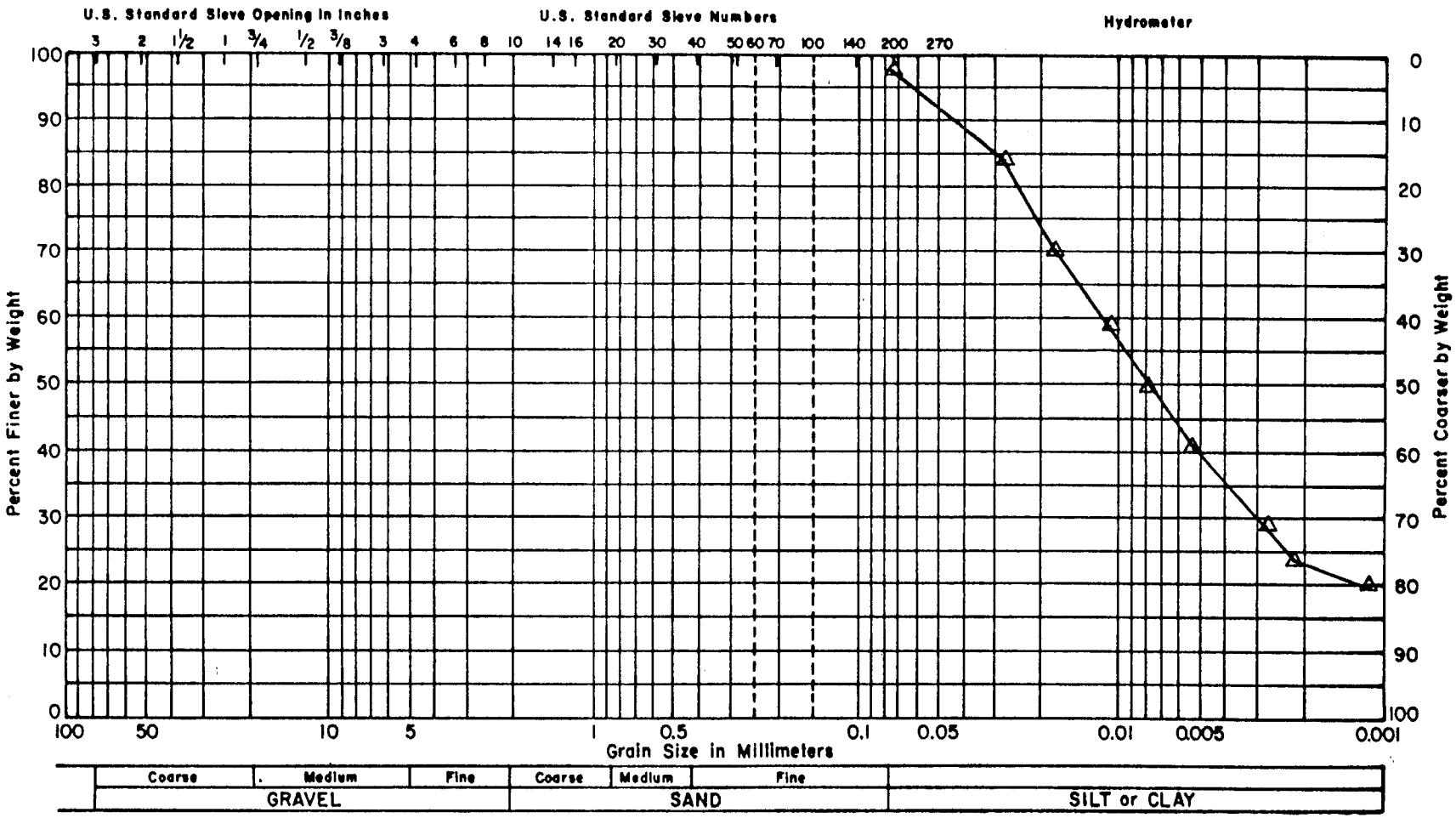
LAKE SHELBYVILLE

SEDIMENT SIZE DISTRIBUTION

RANGE 22B, 1984 RESURVEY



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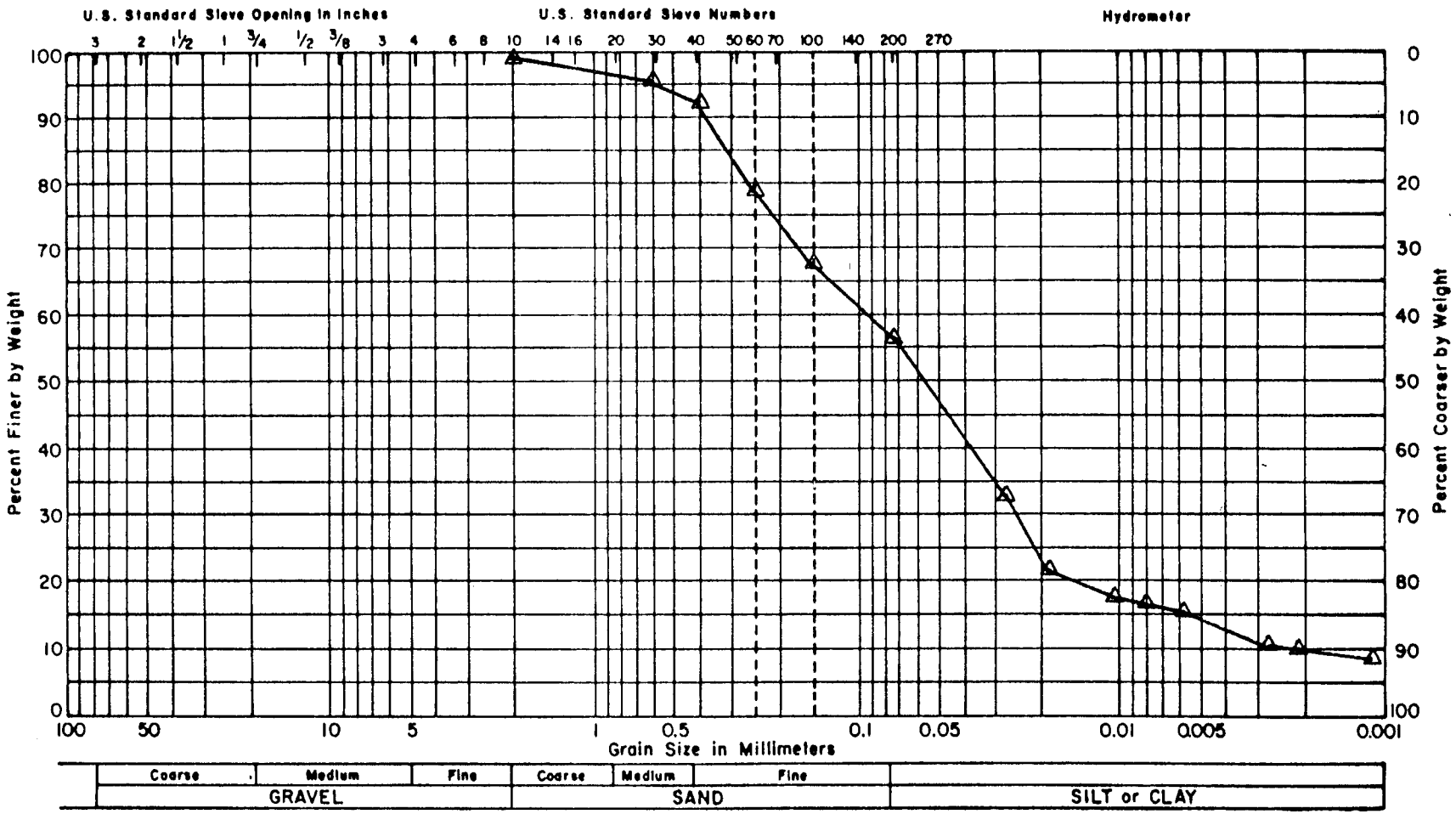
LAKE SHELBYVILLE

SEDIMENT SIZE DISTRIBUTION

RANGE 23A, 1984 RESURVEY



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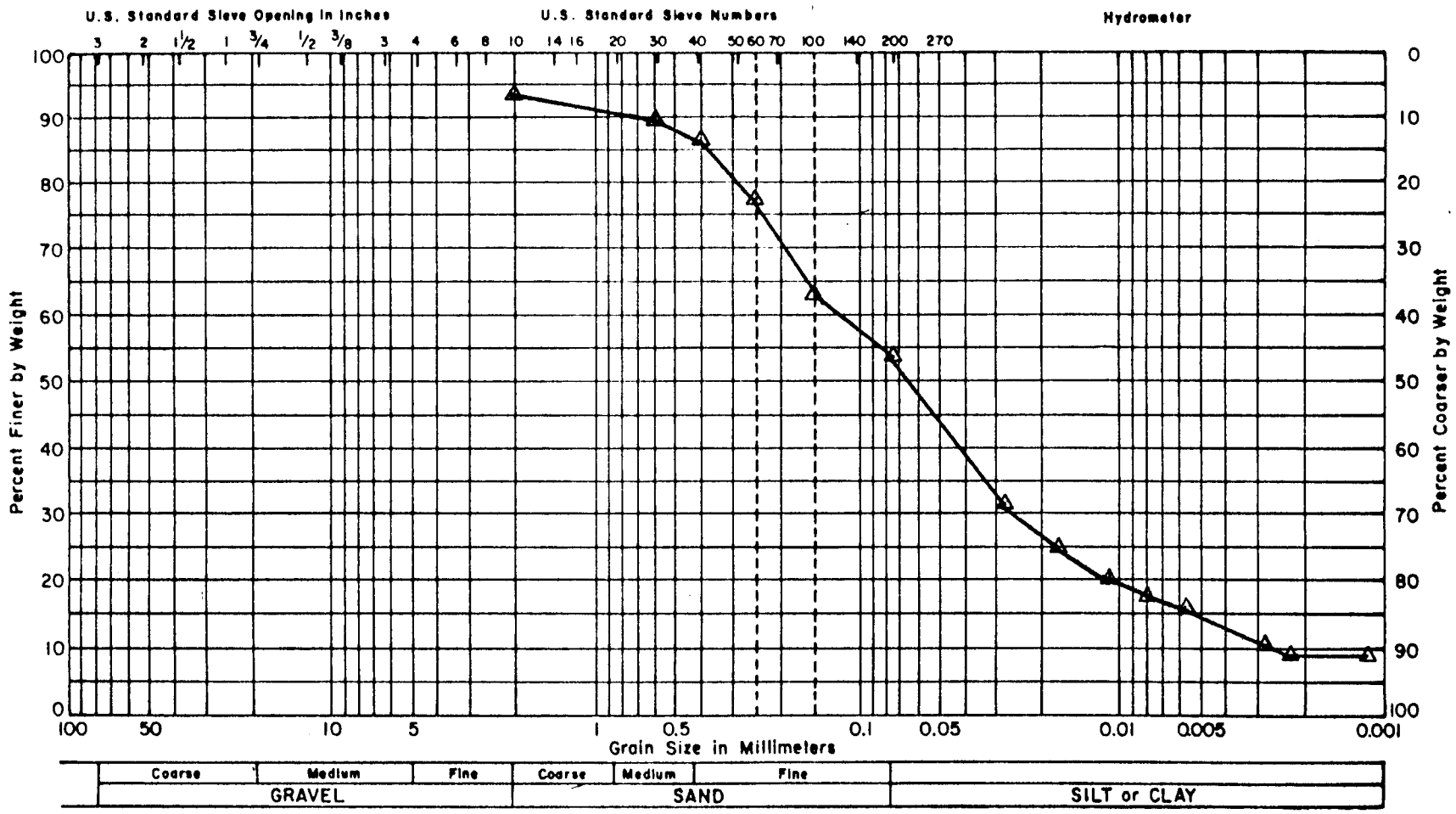
SEDIMENT SIZE DISTRIBUTION

RANGE 25A, 1984 RESURVEY



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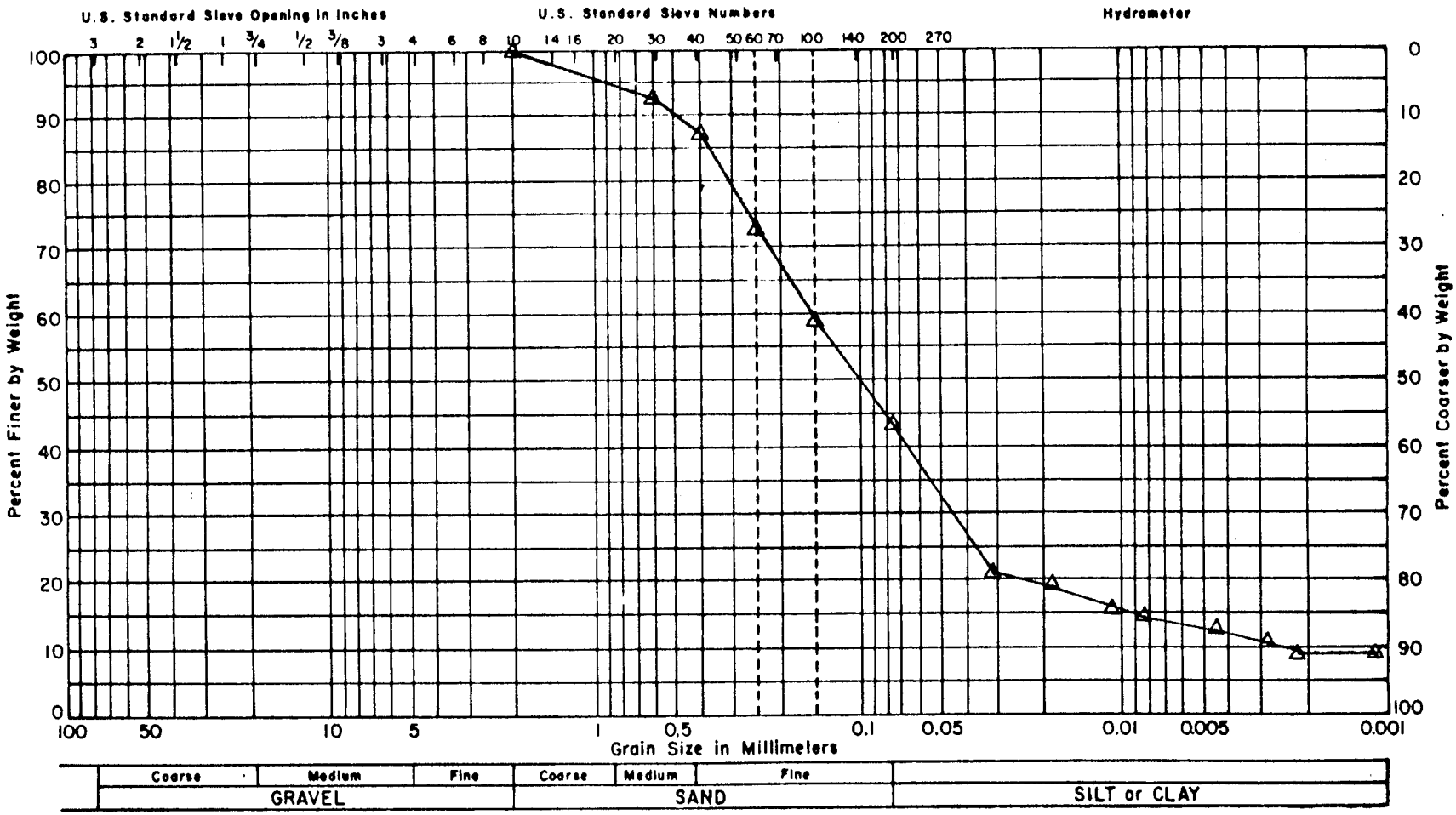
LAKE SHELBYVILLE

SEDIMENT SIZE DISTRIBUTION

RANGE 26A, 1984 RESURVEY



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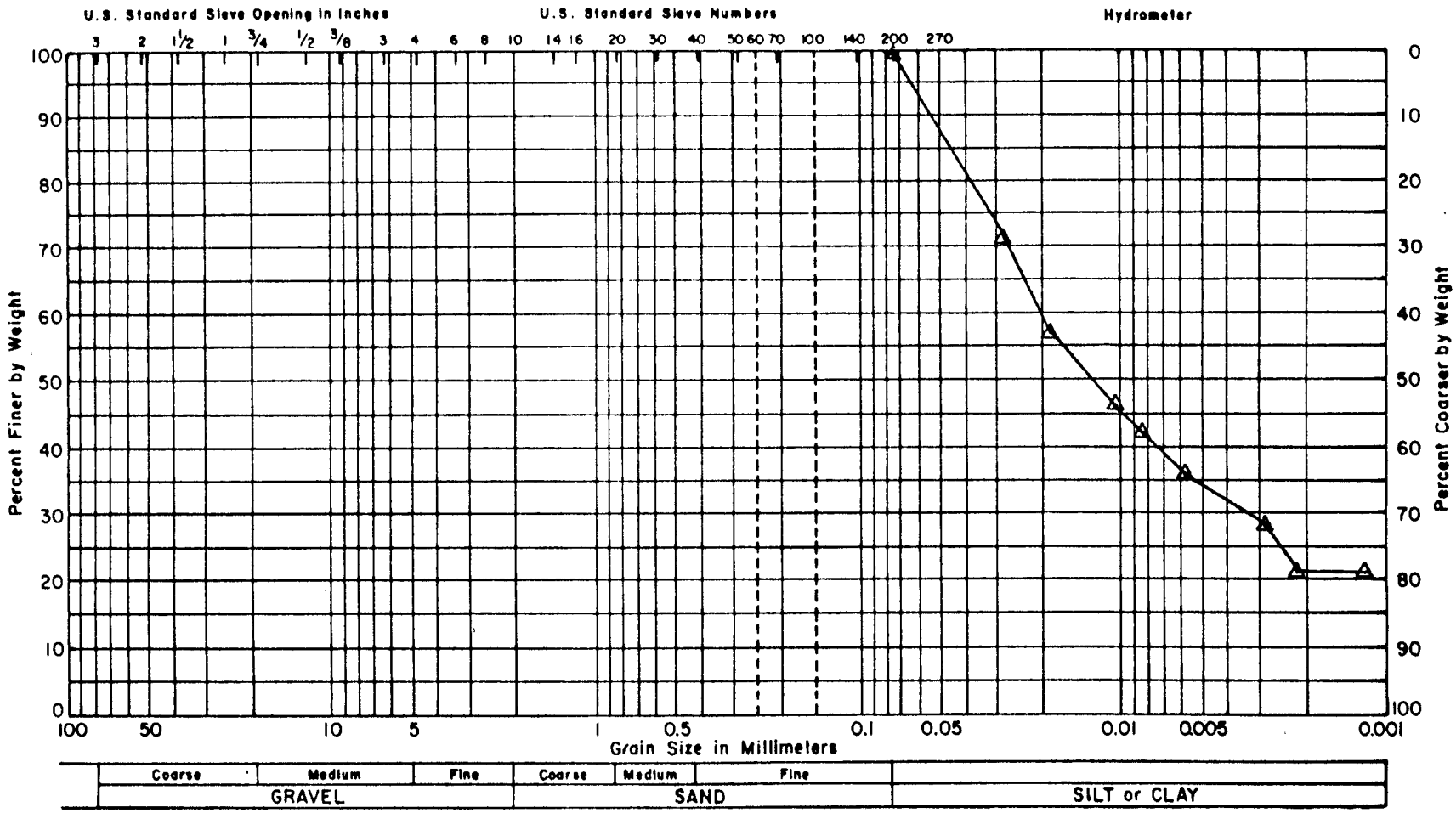
LAKE SHELBYVILLE

SEDIMENT SIZE DISTRIBUTION

RANGE 27A, 1984 RESURVEY



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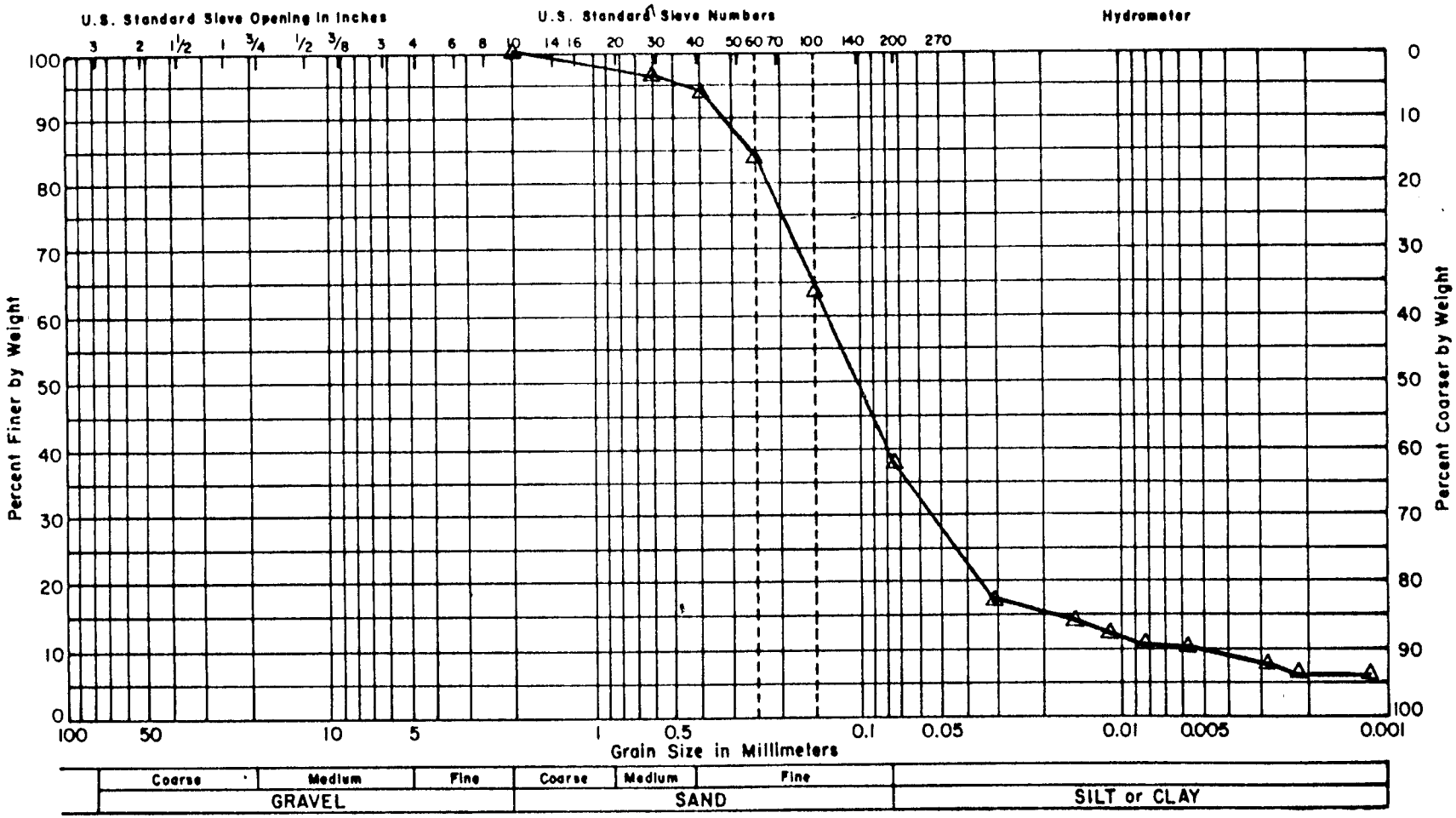
LAKE SHELBYVILLE

SEDIMENT SIZE DISTRIBUTION

RANGE 28A, 1984 RESURVEY



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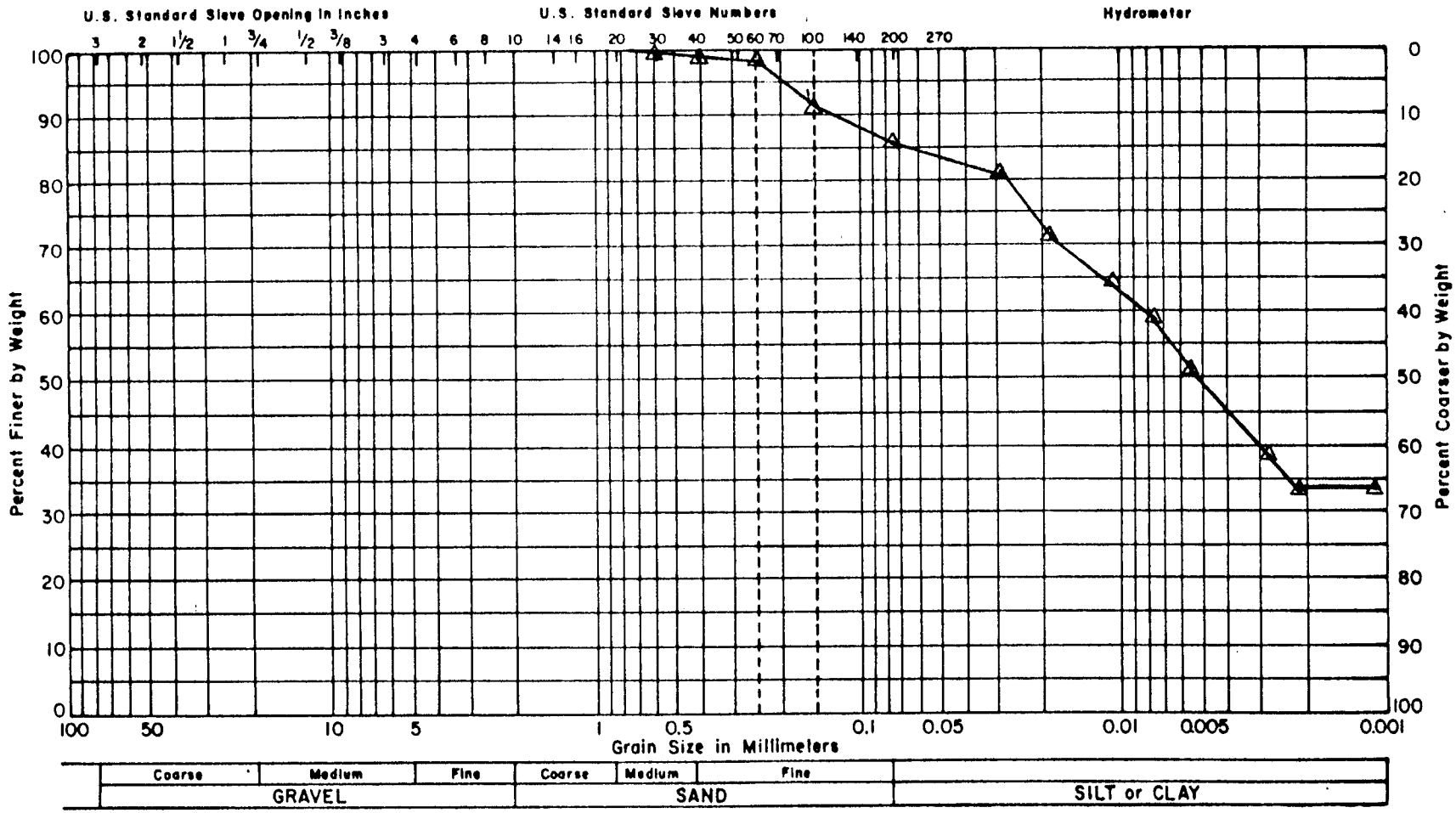
LAKE SHELBYVILLE

SEDIMENT SIZE DISTRIBUTION

RANGE 29A, 1984 RESURVEY



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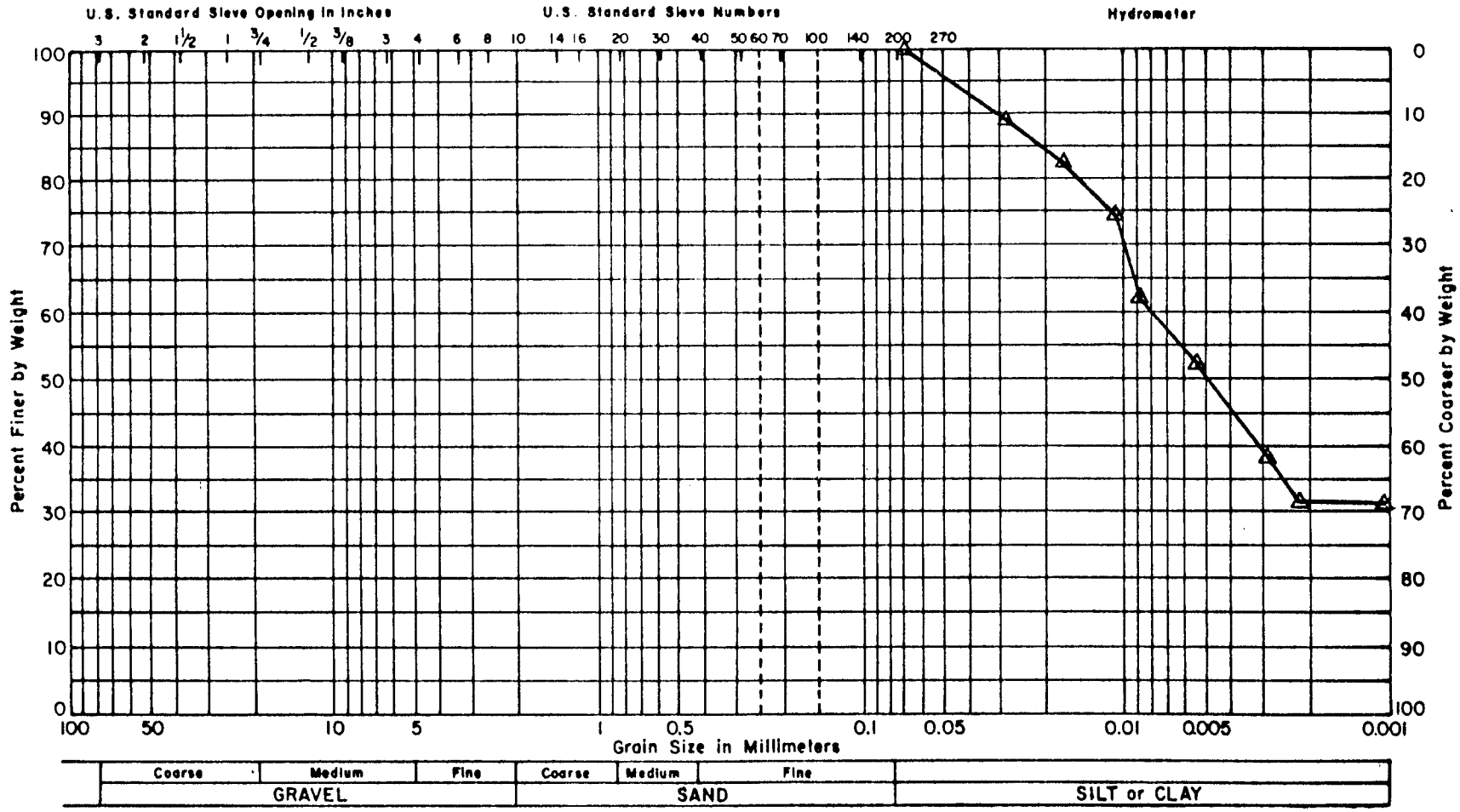
LAKE SHELBYVILLE

SEDIMENT SIZE DISTRIBUTION

RANGE 30A, 1984 RESURVEY



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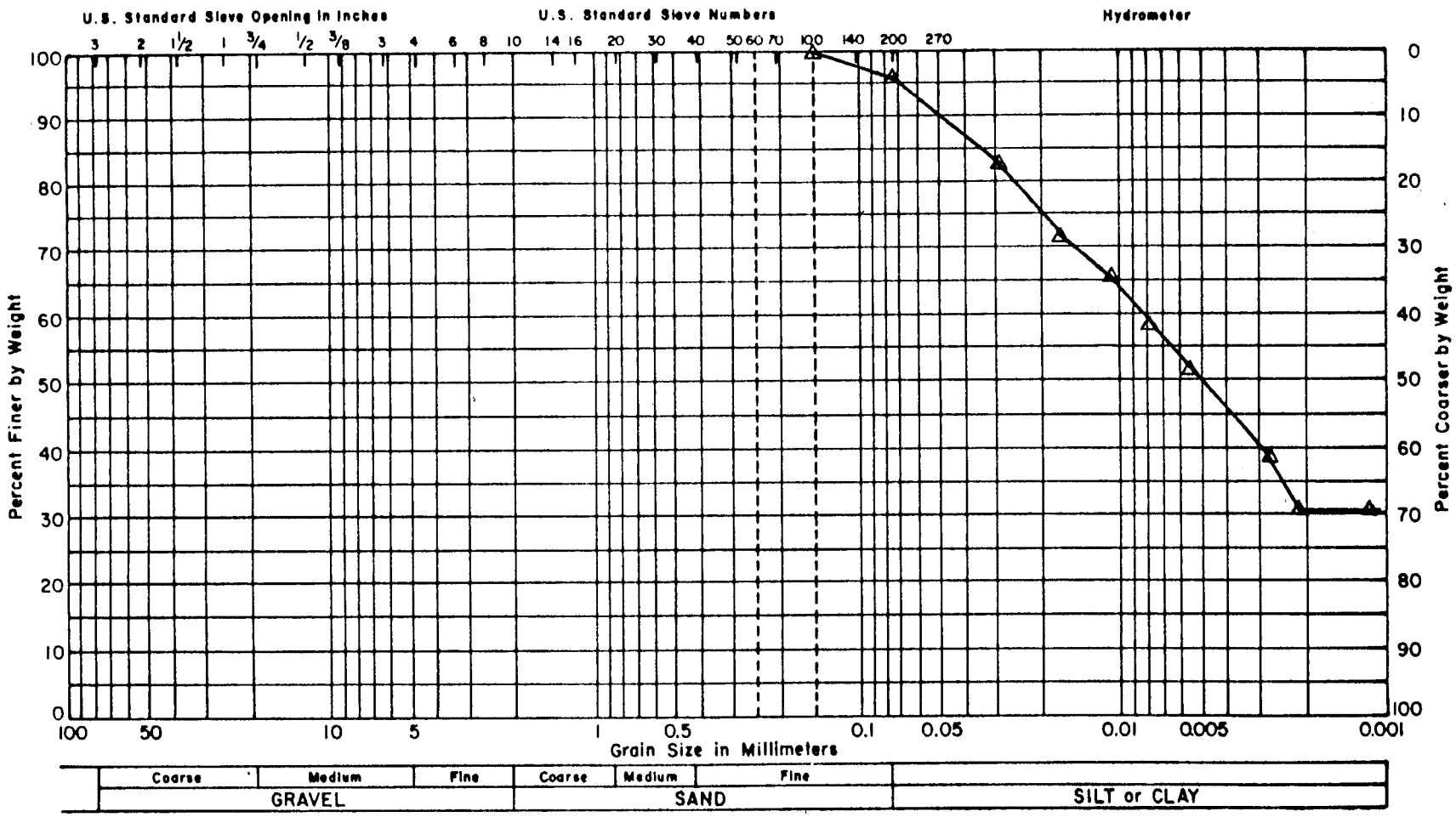
LAKE SHELBYVILLE

SEDIMENT SIZE DISTRIBUTION

RANGE 31A, 1984 RESURVEY



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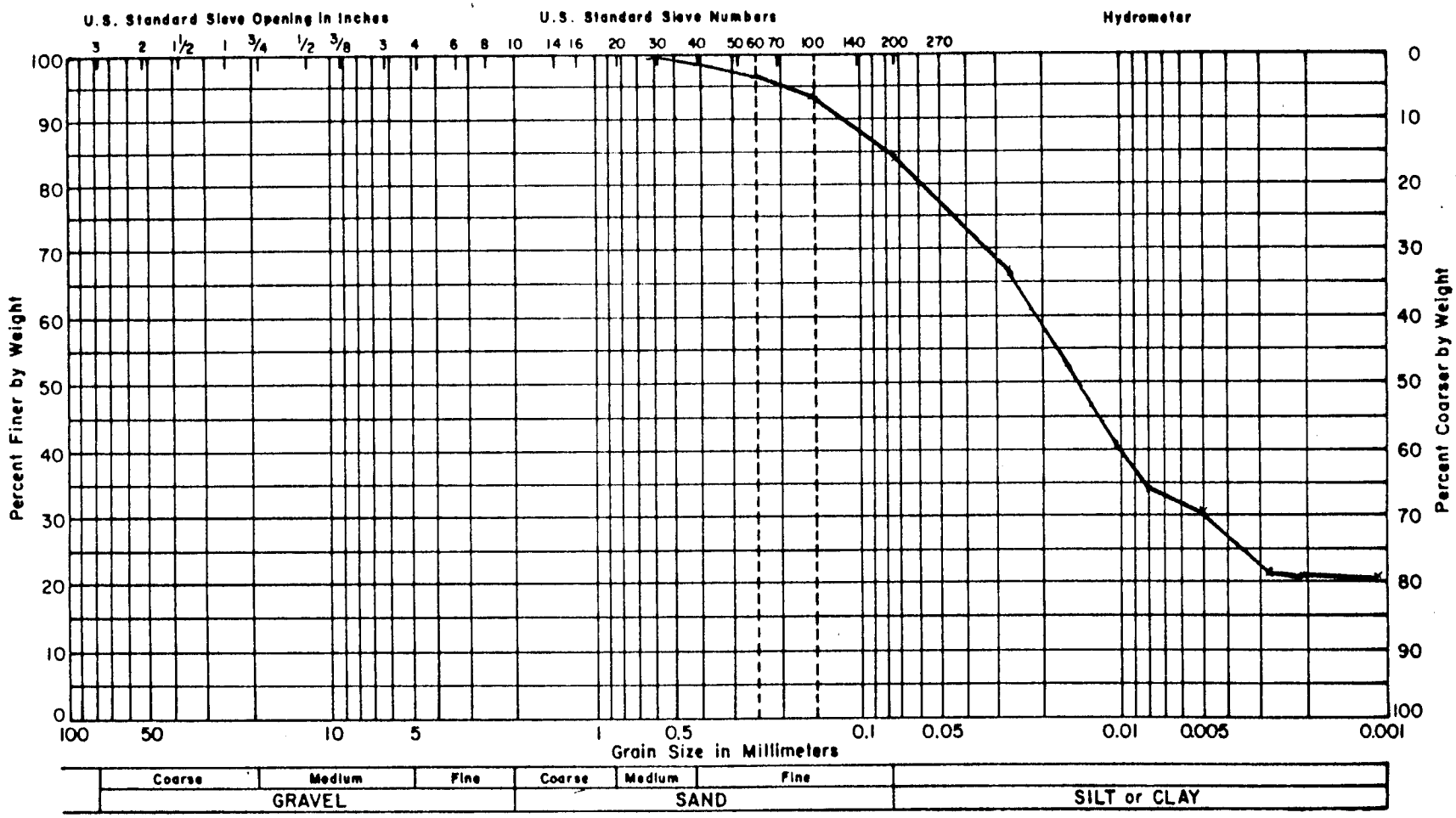
LAKE SHELBYVILLE

SEDIMENT SIZE DISTRIBUTION

RANGE 31B, 1984 RESURVEY

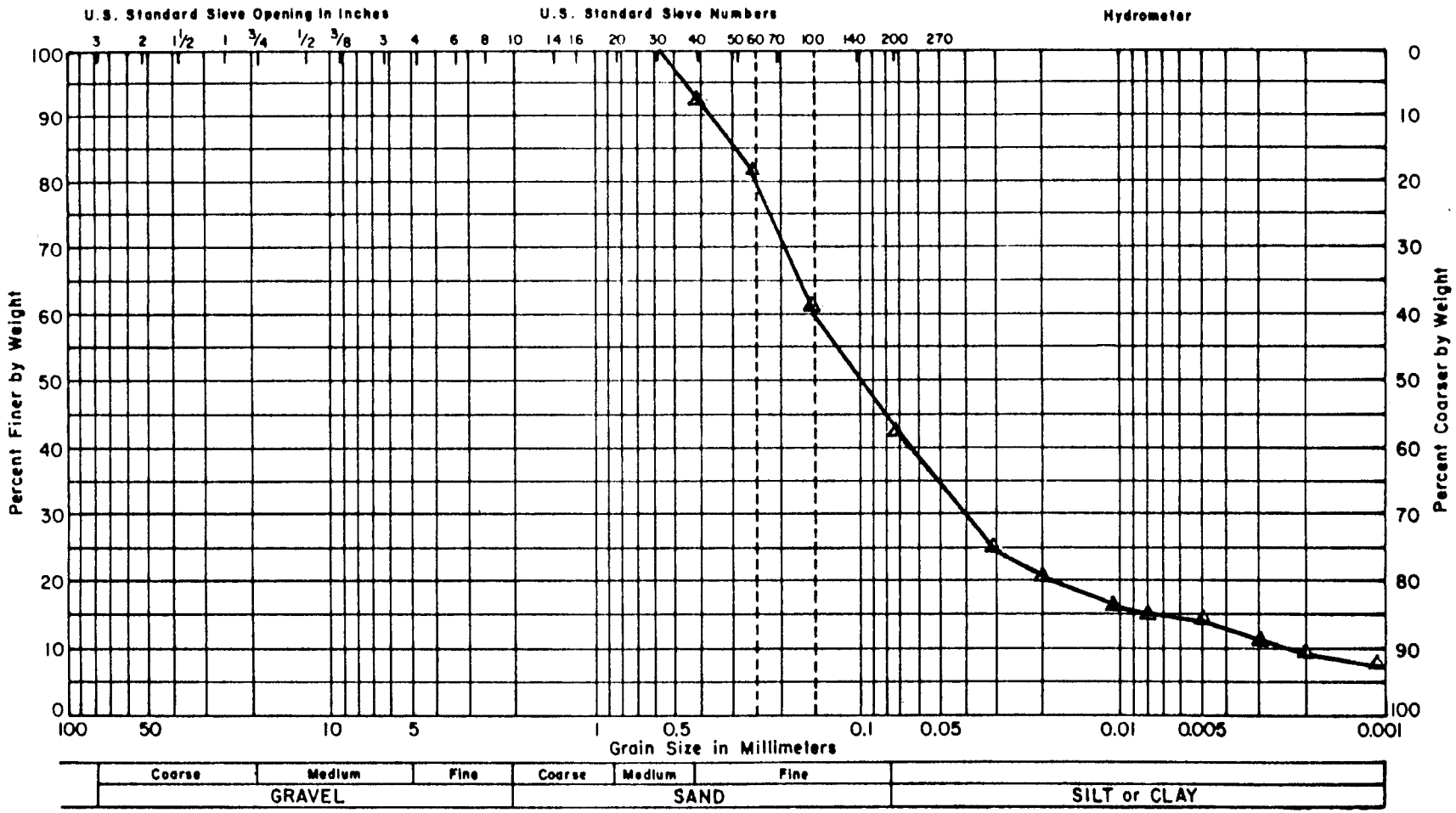


EEI

LAKE SHELBYVILLE

SEDIMENT SIZE DISTRIBUTION

RANGE 32A, 1984 RESURVEY

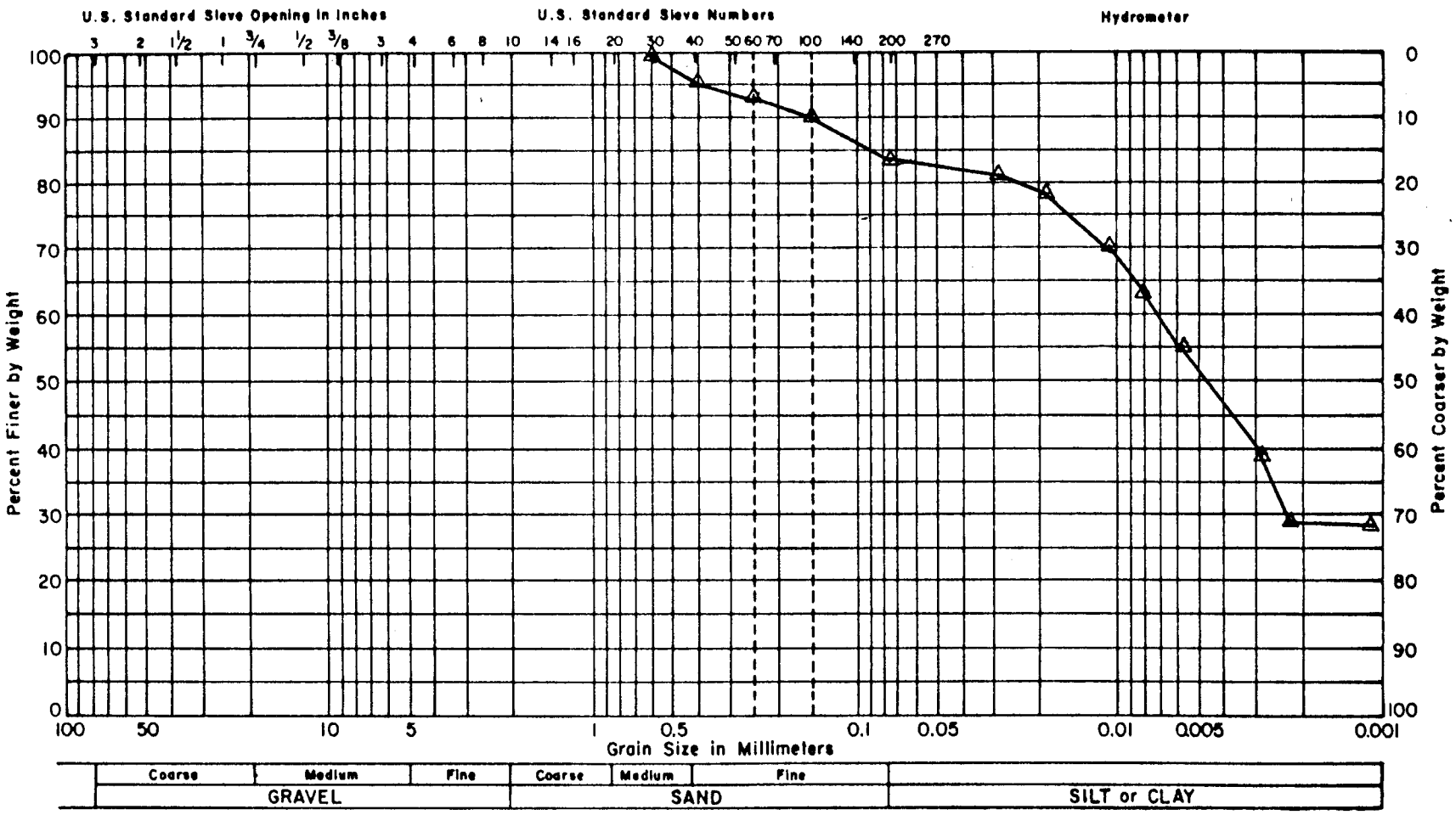


EEI

LAKE SHELBYVILLE

SEDIMENT SIZE DISTRIBUTION

RANGE 33A, 1984 RESURVEY

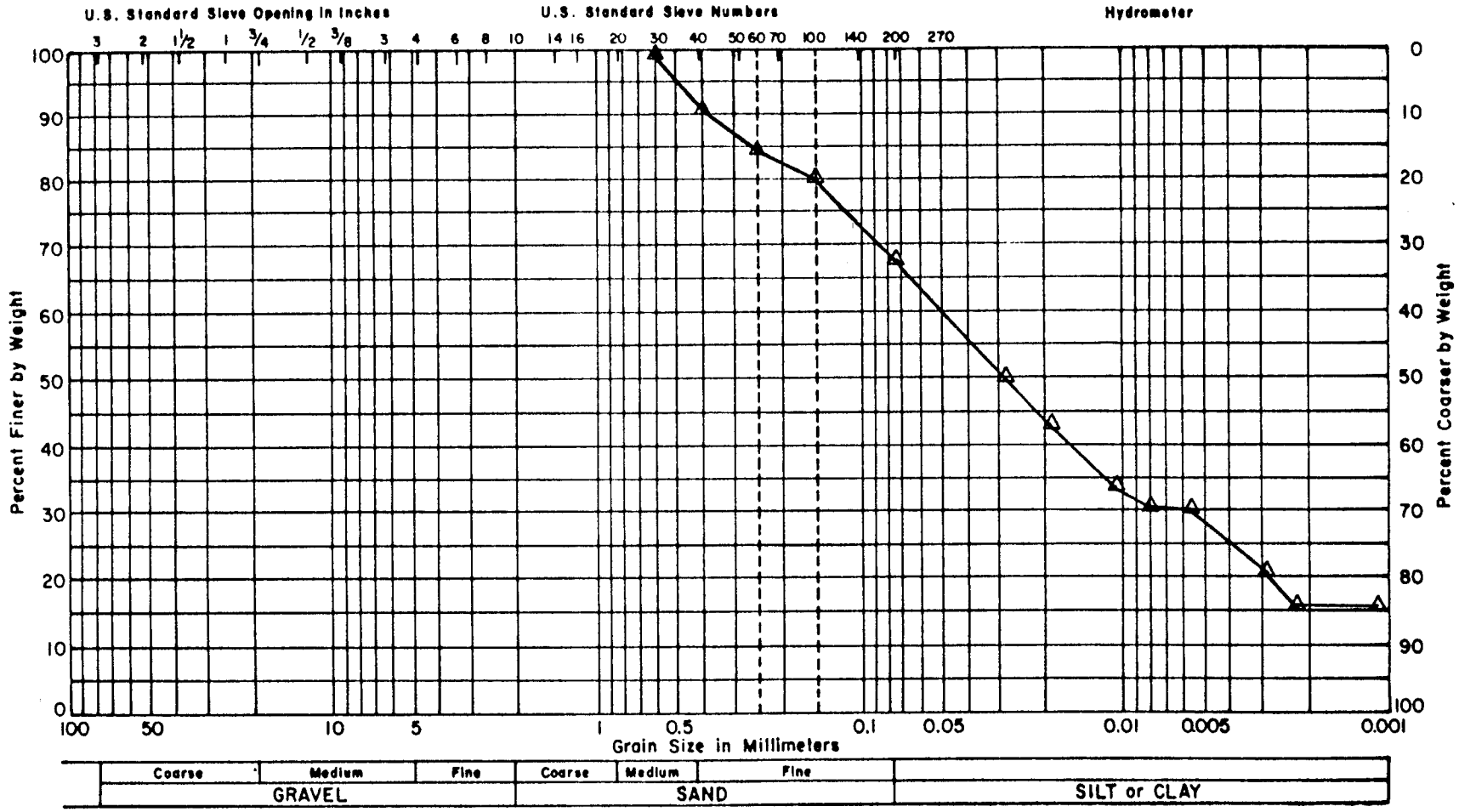


EEI

LAKE SHELBYVILLE

SEDIMENT SIZE DISTRIBUTION

RANGE 34A, 1984 RESURVEY

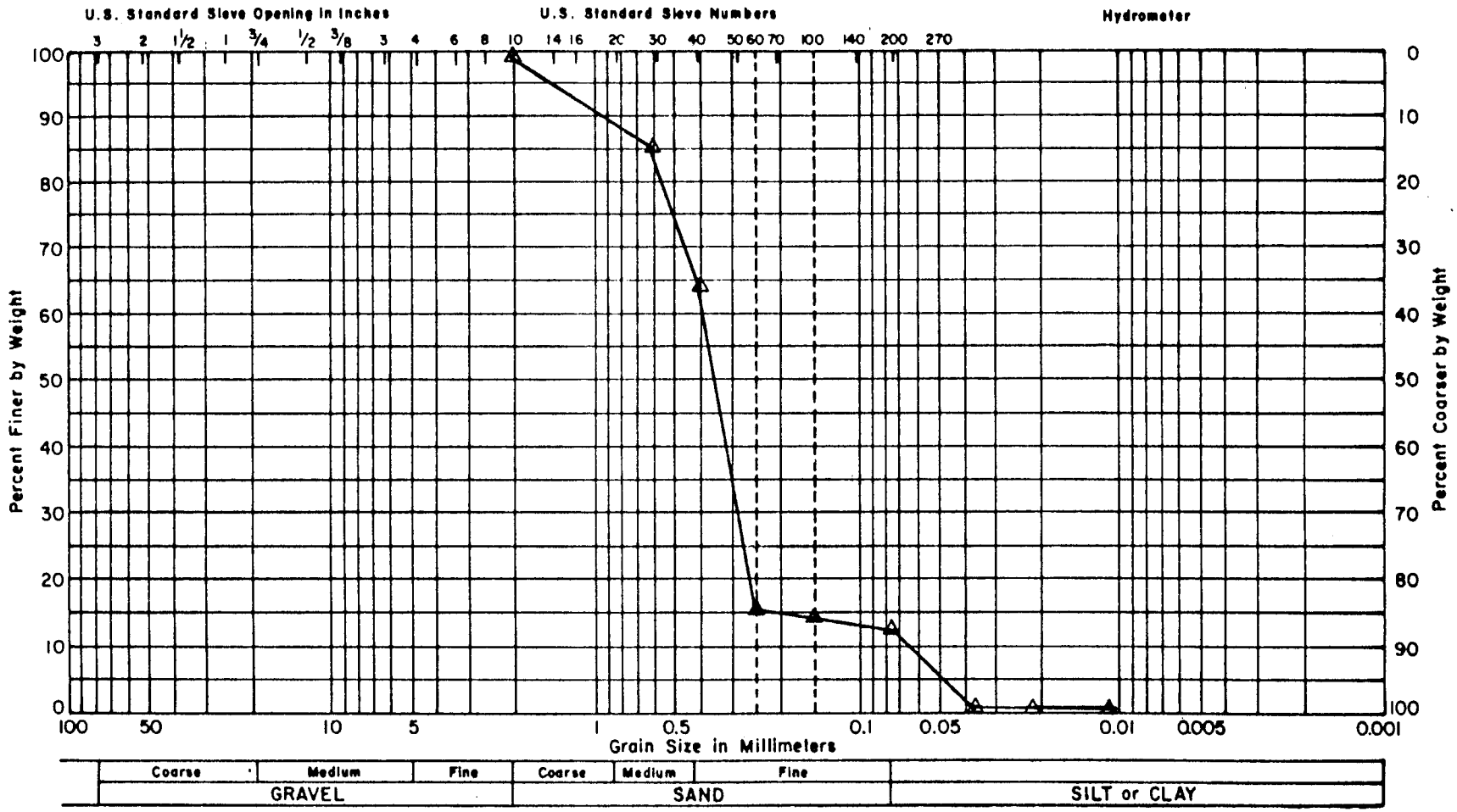


EEI

LAKE SHELBYVILLE

SEDIMENT SIZE DISTRIBUTION

RANGE 35B, 1984 RESURVEY



EEI

LAKE SHELBYVILLE

SEDIMENT SIZE DISTRIBUTION

RANGE 36A, 1984 RESURVEY

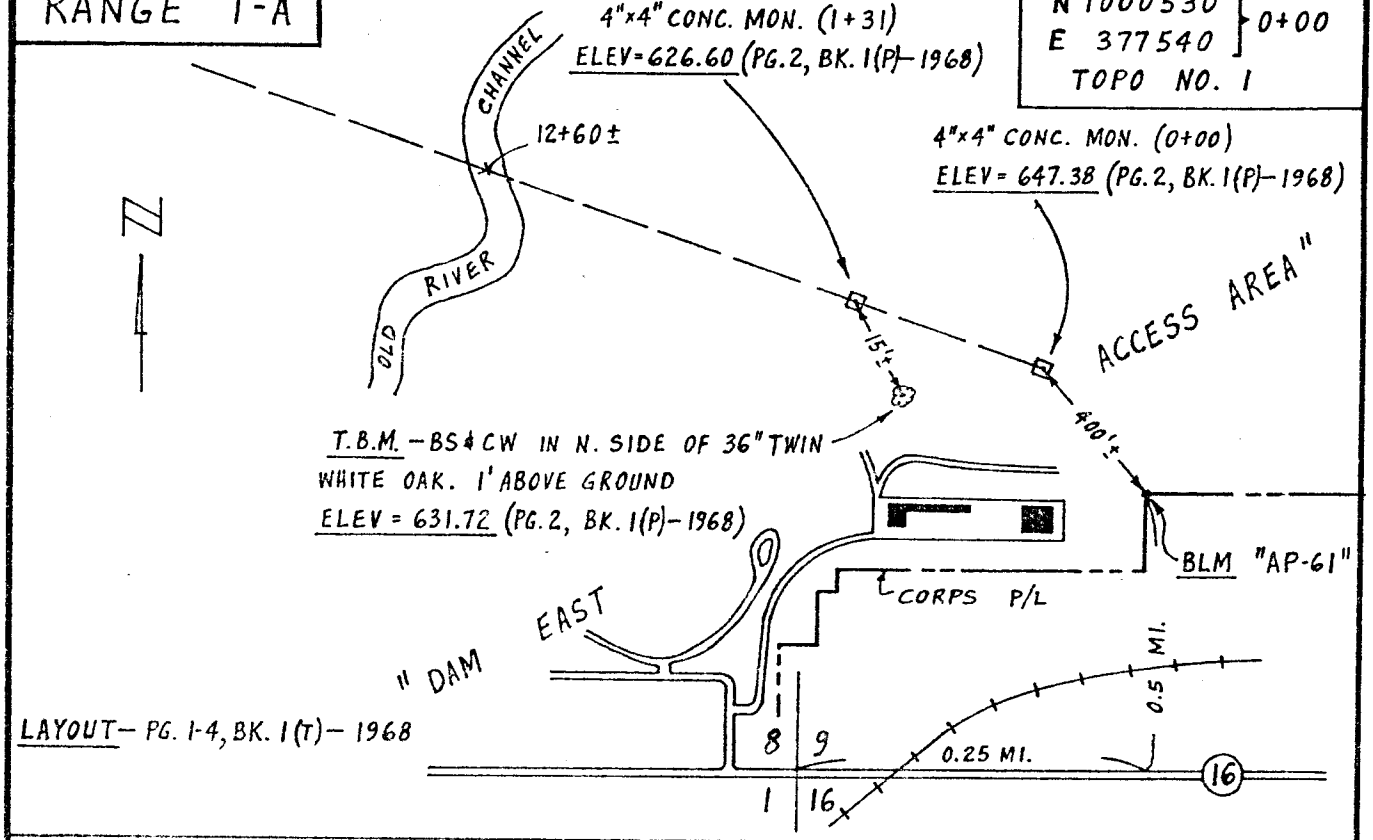
Appendix A

COMPUTATION SHEET

PROJECT	LAKE SHELBYVILLE	PAGE 1 OF 40	COMPUTED BY WJM	DATE 5-19-81
SUBJECT	SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

RANGE 1-A

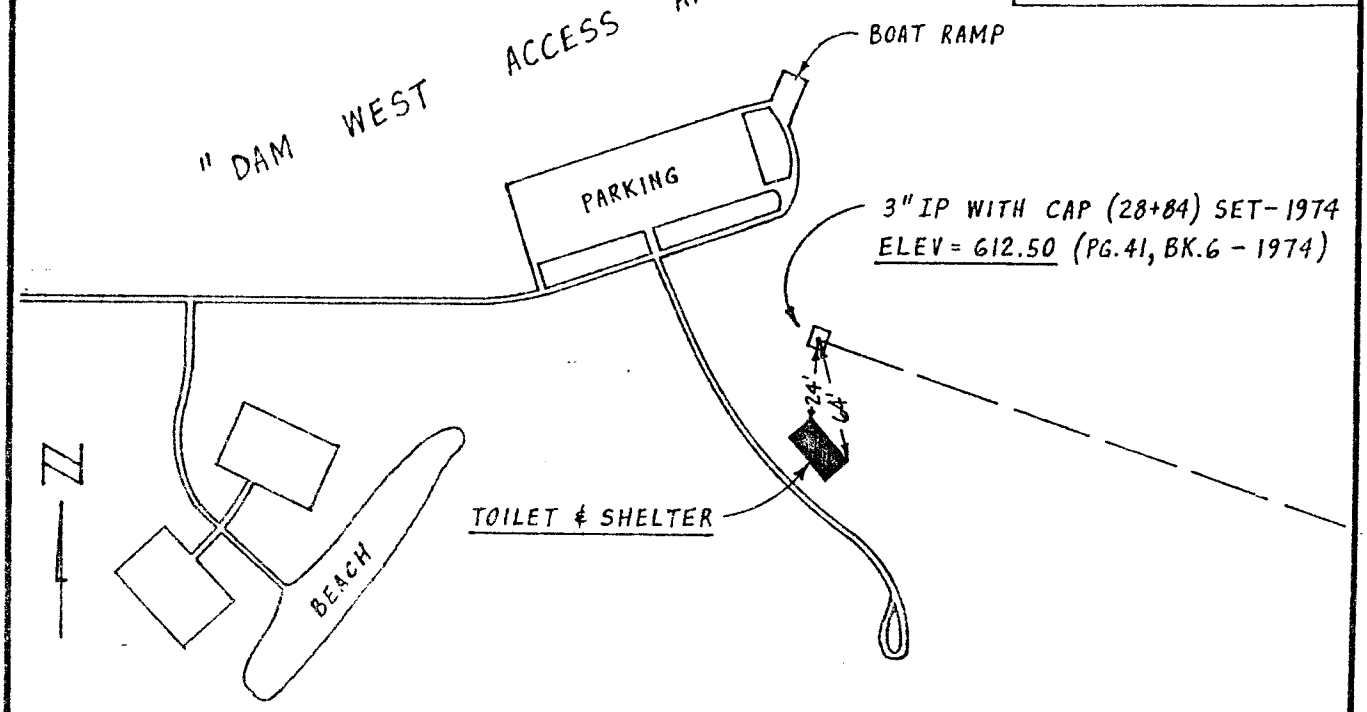
N 1000530
E 377540
TOPO NO. 1
0+00



LAYOUT - PG. 1-4, BK. 1(T) - 1968

LAYOUT - PG. 1-4, BK. 1 (T) - 1968
PG. 42, BK. 6 - 1974

N 1001400
E 374790
TOPO NO. 1
28+84

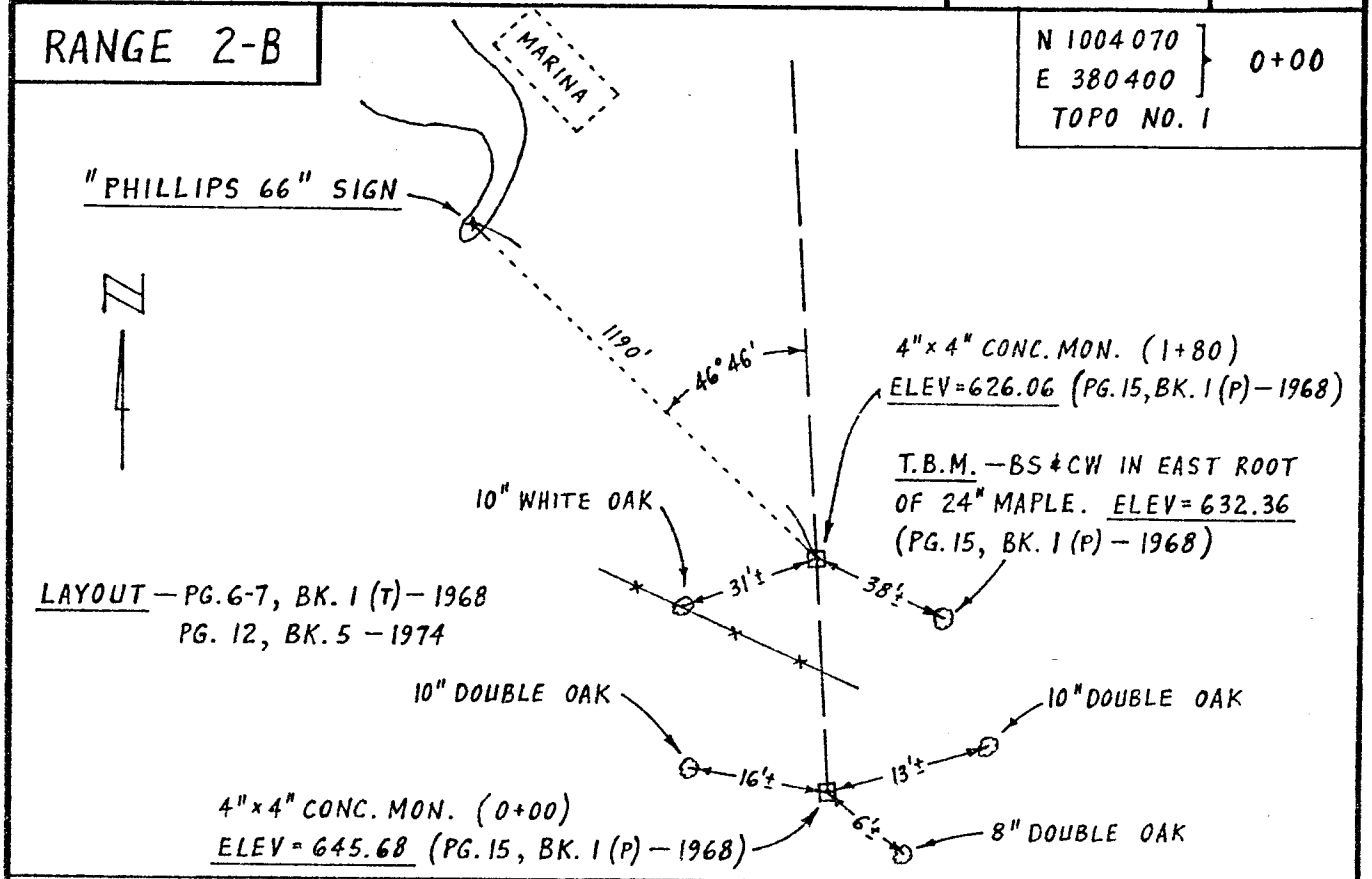


COMPUTATION SHEET

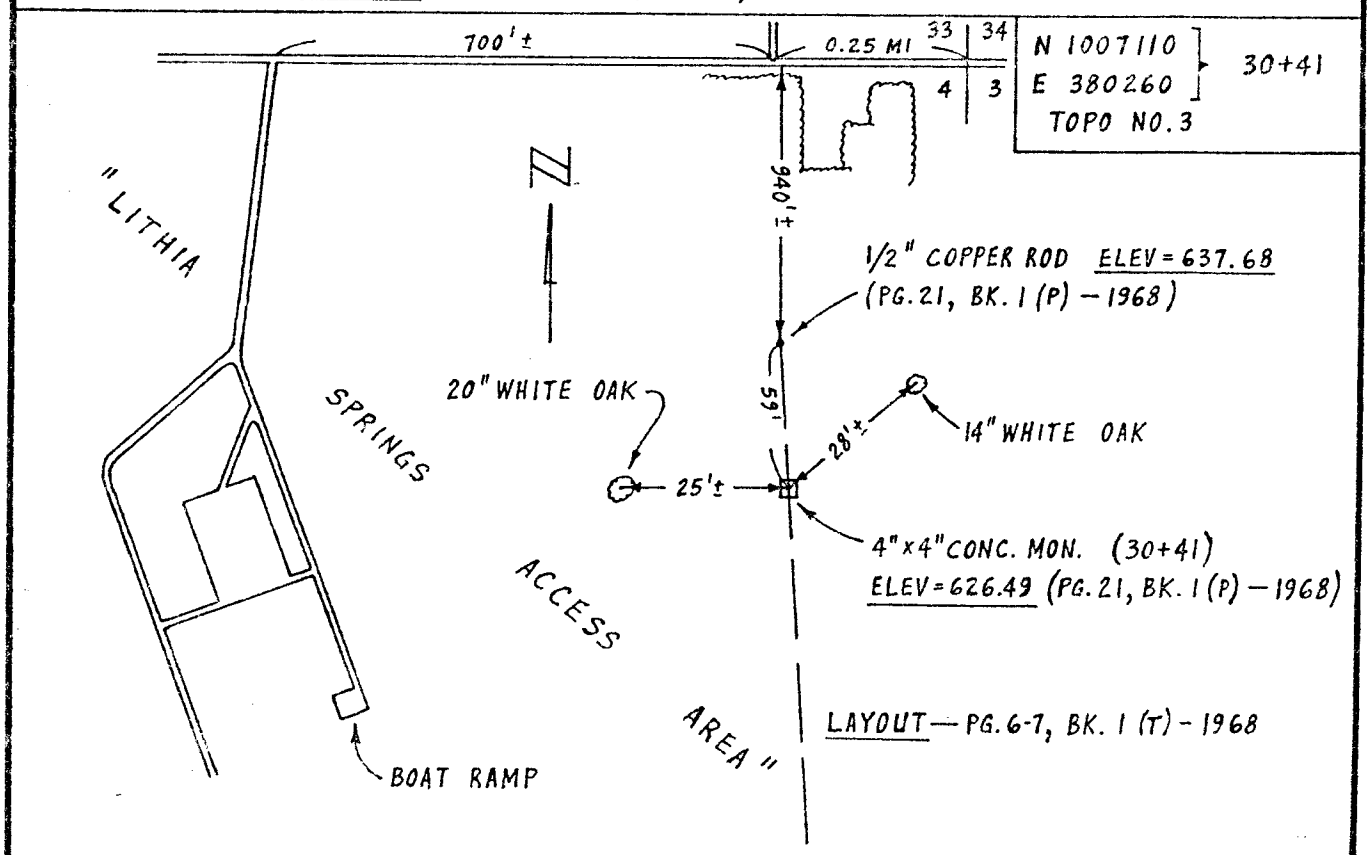
PROJECT	LAKE SHELBYVILLE	PAGE 2 OF 40	COMPUTED BY W&M	DATE 5-20-81
SUBJECT	SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

RANGE 2-B

N 1004070
E 380400
TOPO NO. 1
0+00



N 1007110
E 380260
TOPO NO. 3
30+41

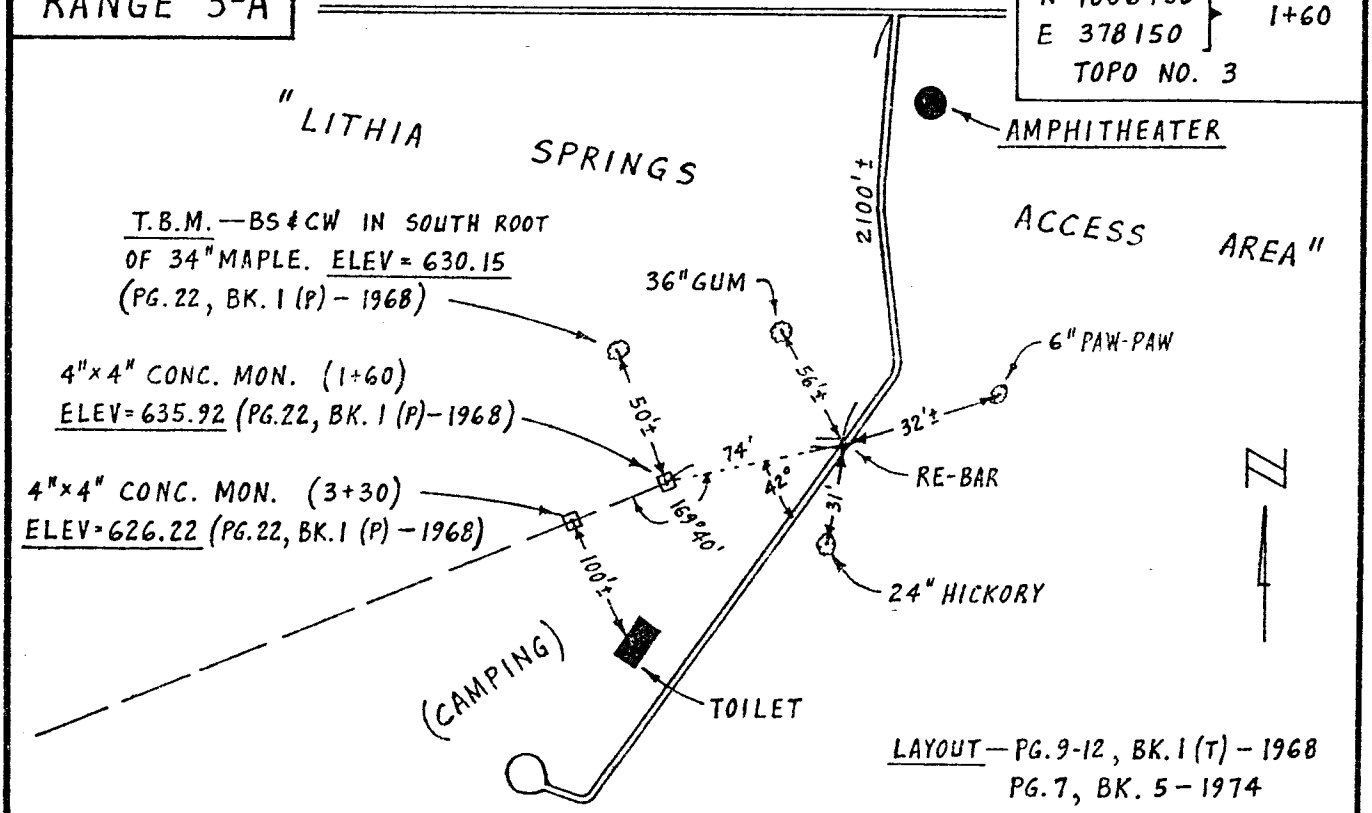


COMPUTATION SHEET

PROJECT	LAKE SHELBYVILLE	PAGE 3 OF 40	COMPUTED BY WJM	DATE 5-20-81
SUBJECT	SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

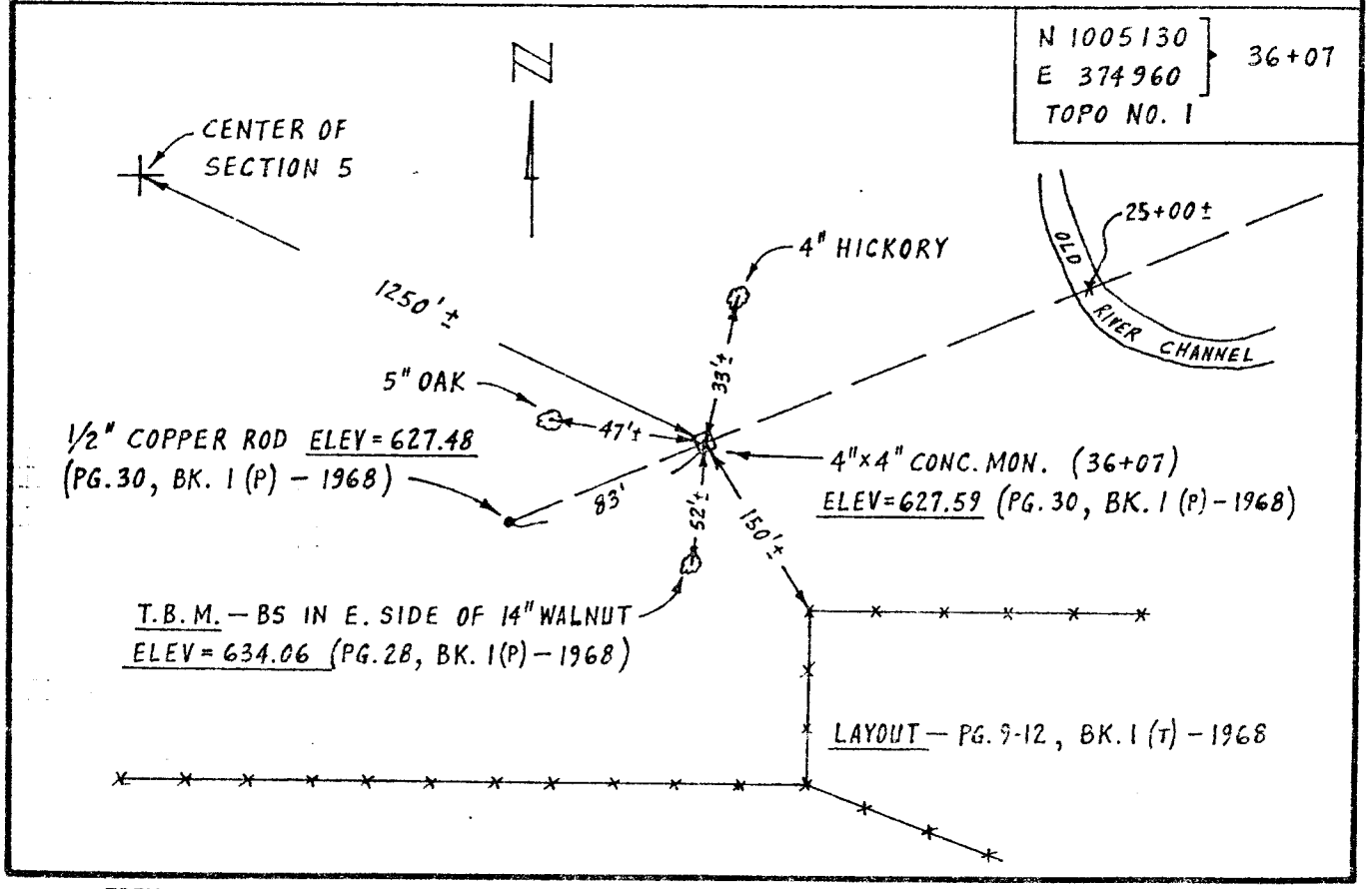
RANGE 3-A

N 1006450
E 378150
TOPO NO. 3
1+60



LAYOUT — PG. 9-12, BK. 1 (T) – 1968
PG. 7, BK. 5 – 1974

N 1005130
E 374960
TOPO NO. 1
36+07



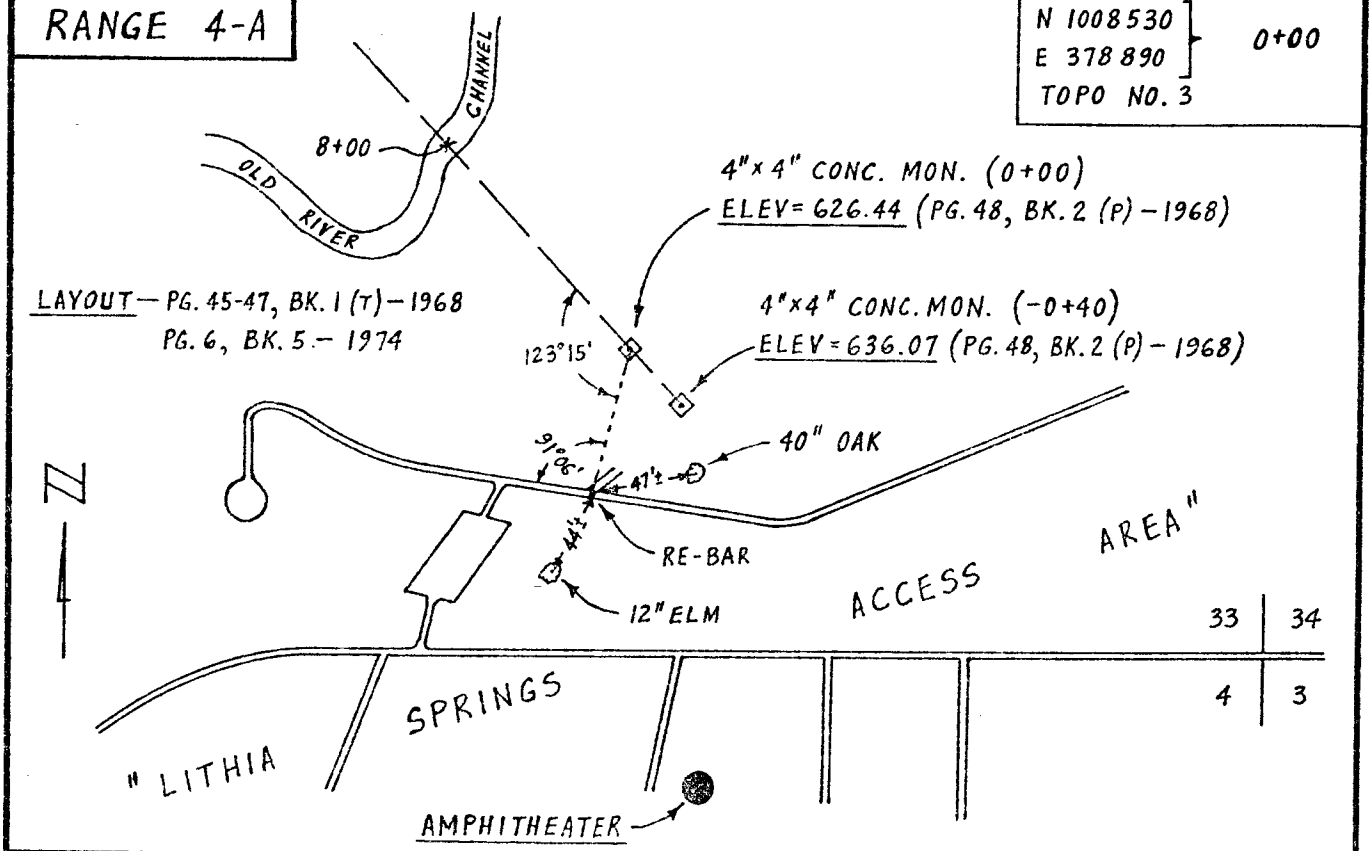
LAYOUT — PG. 9-12, BK. 1 (T) – 1968

COMPUTATION SHEET

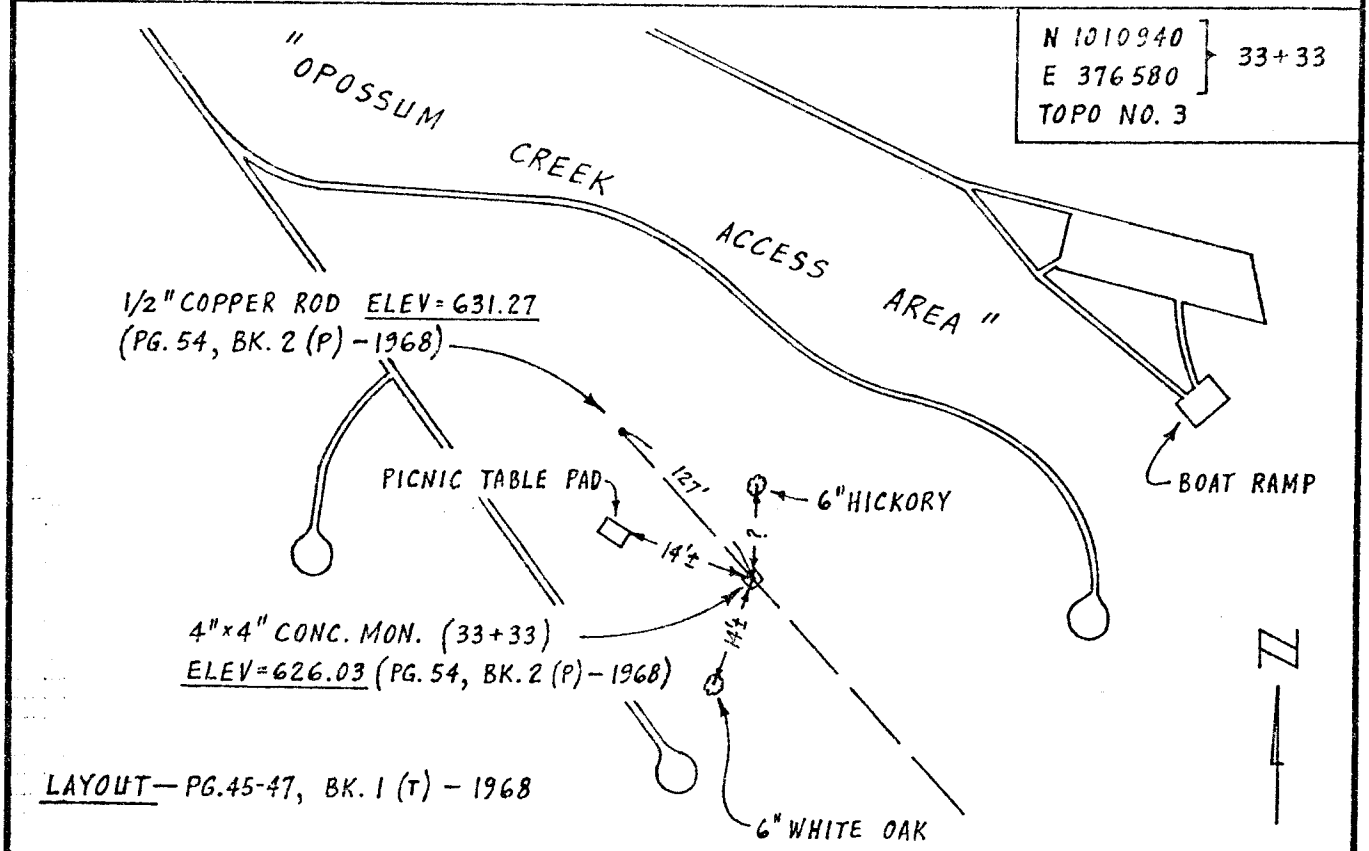
PROJECT	LAKE SHELBYVILLE	PAGE 4 OF 40	COMPUTED BY WJM	DATE 5-21-81
SUBJECT	SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

RANGE 4-A

N 1008530
E 378890 } 0+00
TOPO NO. 3



N 1010940
E 376580 } 33+33
TOPO NO. 3

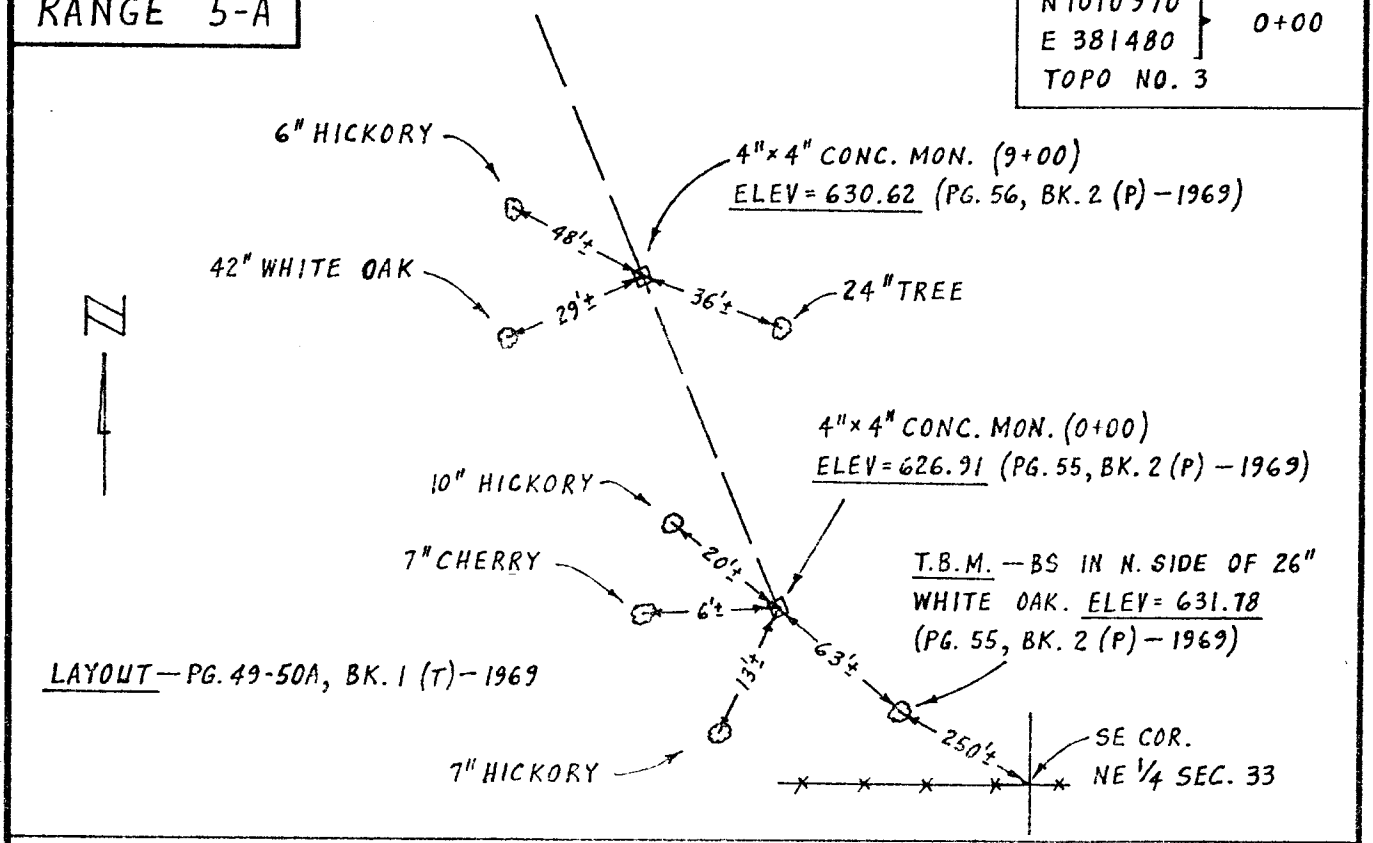


COMPUTATION SHEET

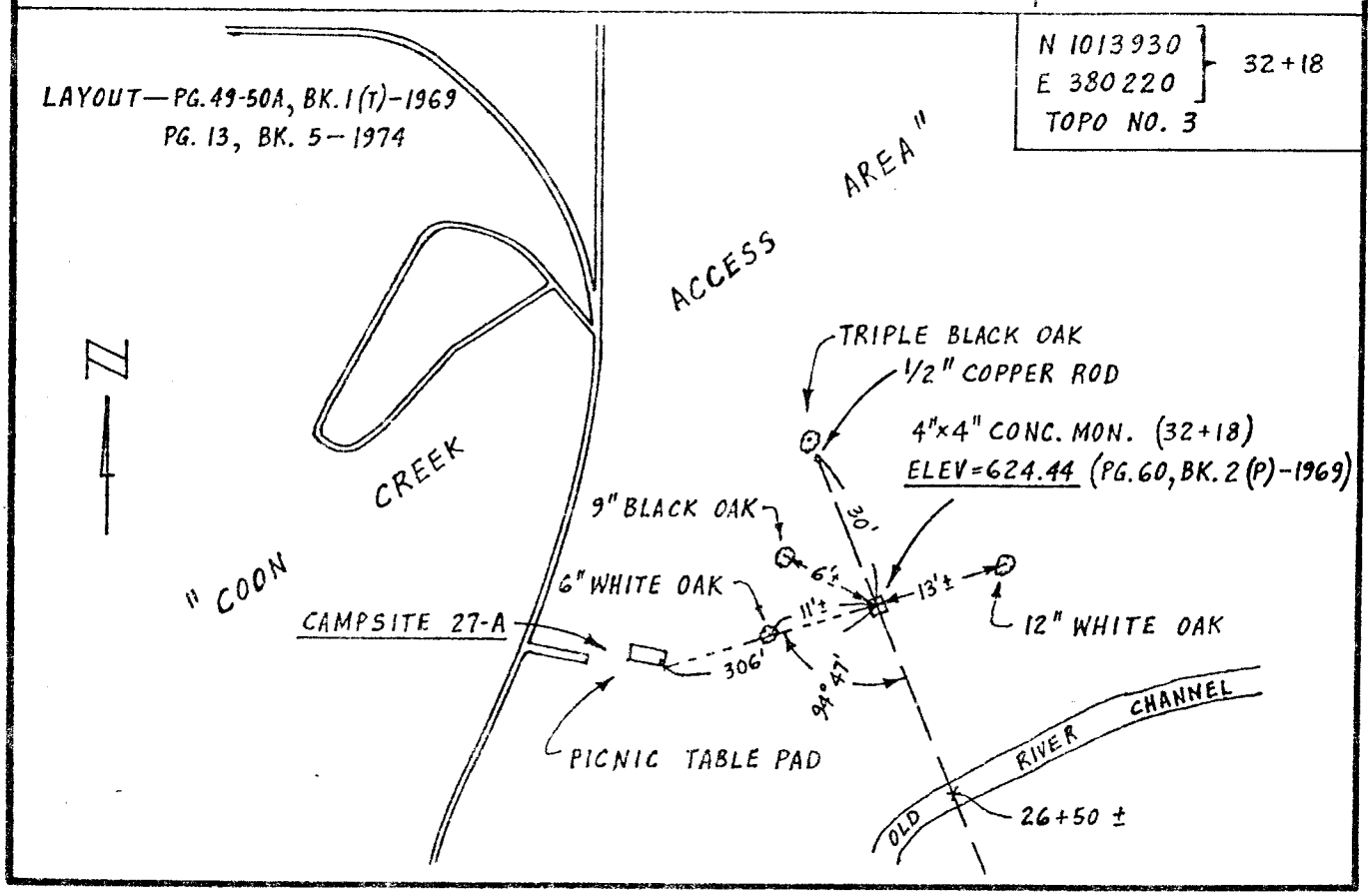
PROJECT	LAKE SHELBYVILLE	PAGE 5 OF 40	COMPUTED BY W&M	DATE 5-22-81
SUBJECT	SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

RANGE 5-A

N 1010970
E 381480
TOPO NO. 3
0+00



N 1013930
E 380220
TOPO NO. 3
32+18



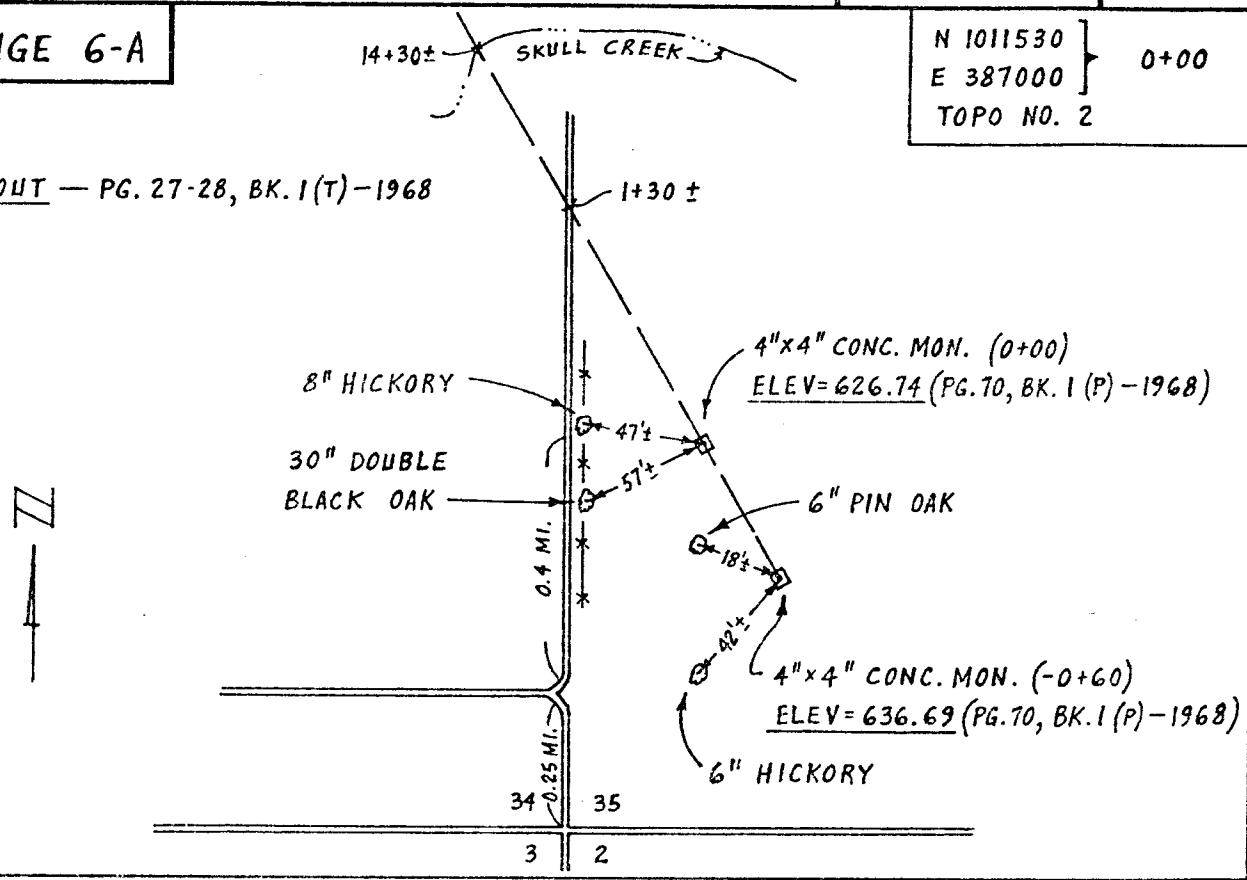
COMPUTATION SHEET

PROJECT	PAGE	COMPUTED BY	DATE
LAKE SHELBYVILLE	6 OF 40	WDM	5-22-81
SUBJECT: SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

RANGE 6-A

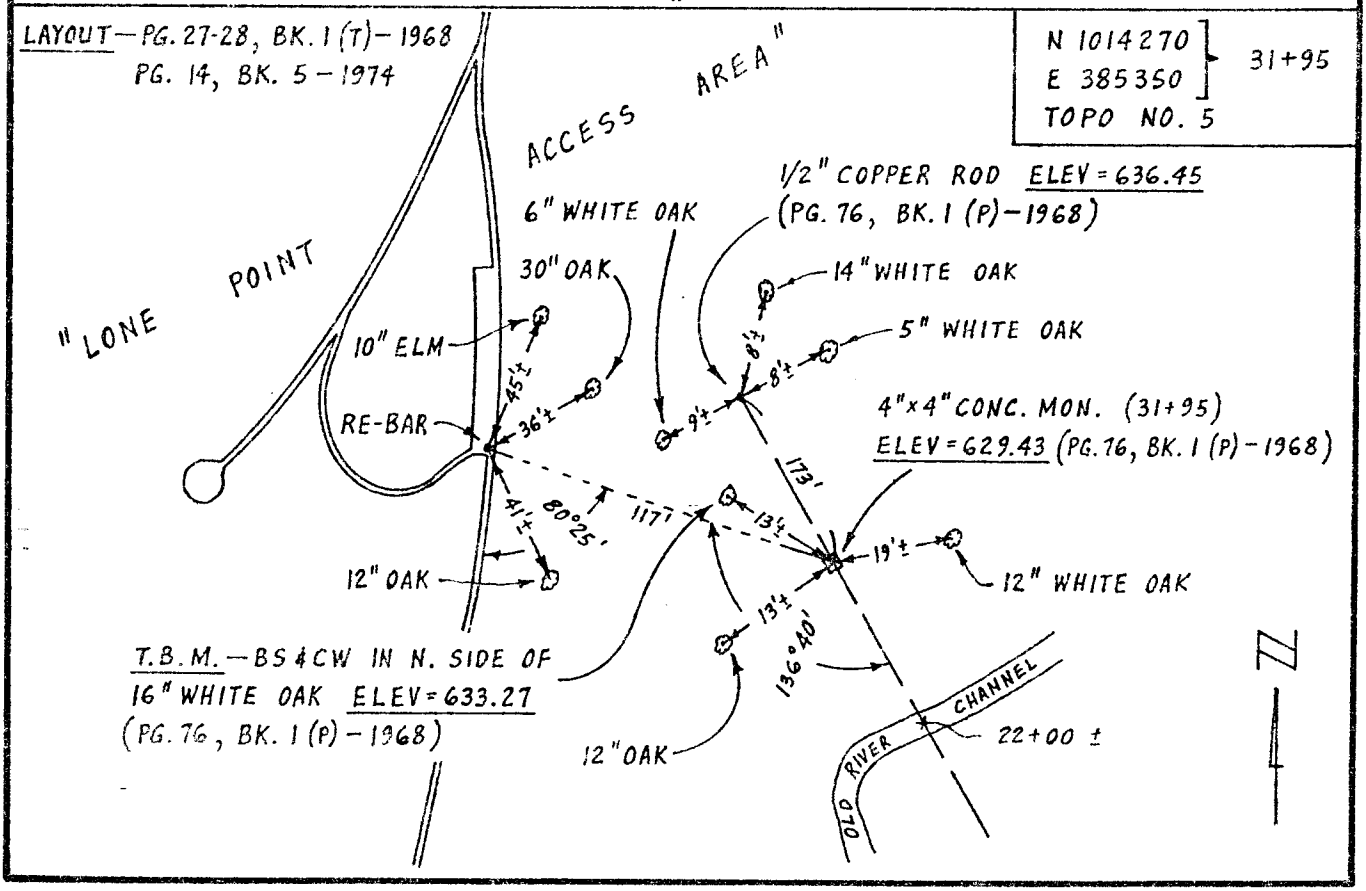
N 1011530
E 387000
TOPO NO. 2
0+00

LAYOUT — PG. 27-28, BK. 1(T)-1968



N 1014270
E 385350
TOPO NO. 5
31+95

LAYOUT—PG. 27-28, BK. 1 (T)-1968
PG. 14, BK. 5-1974

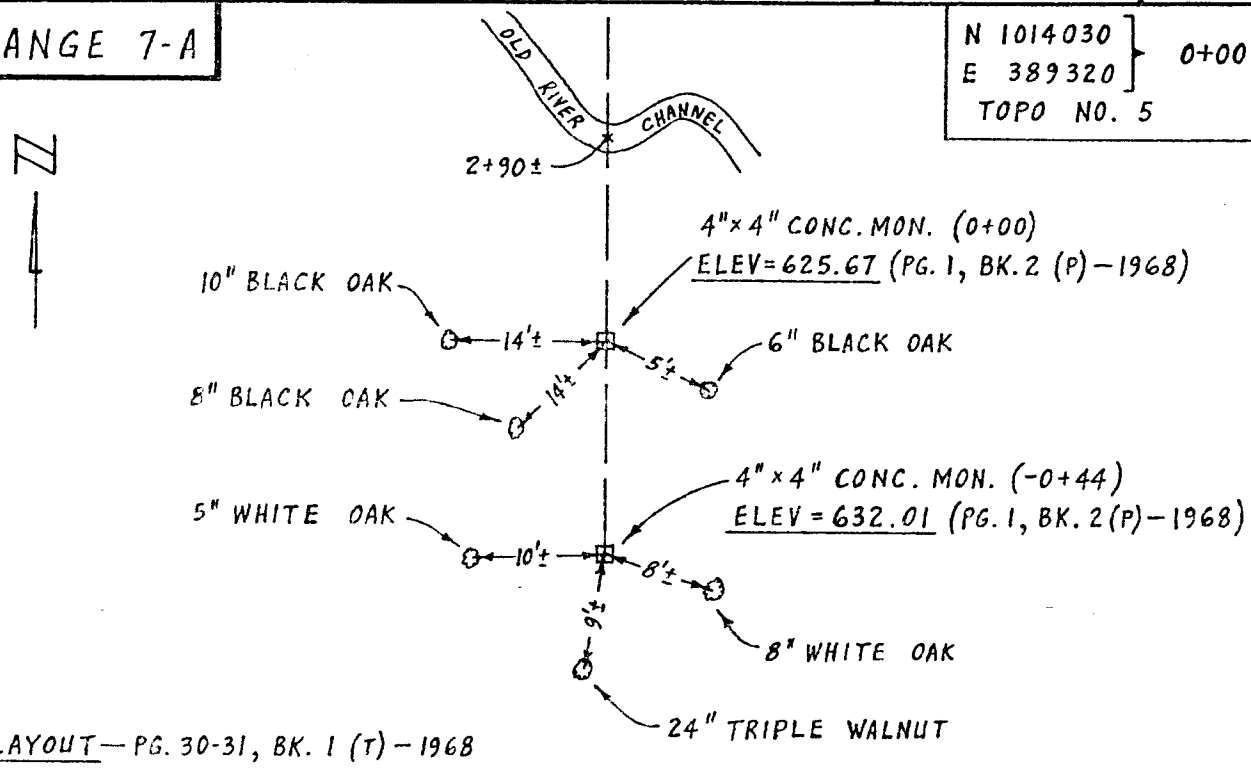


COMPUTATION SHEET

PROJECT	LAKE SHELBYVILLE	PAGE 7 OF 40	COMPUTED BY W&M	DATE 5-27-81
SUBJECT	SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

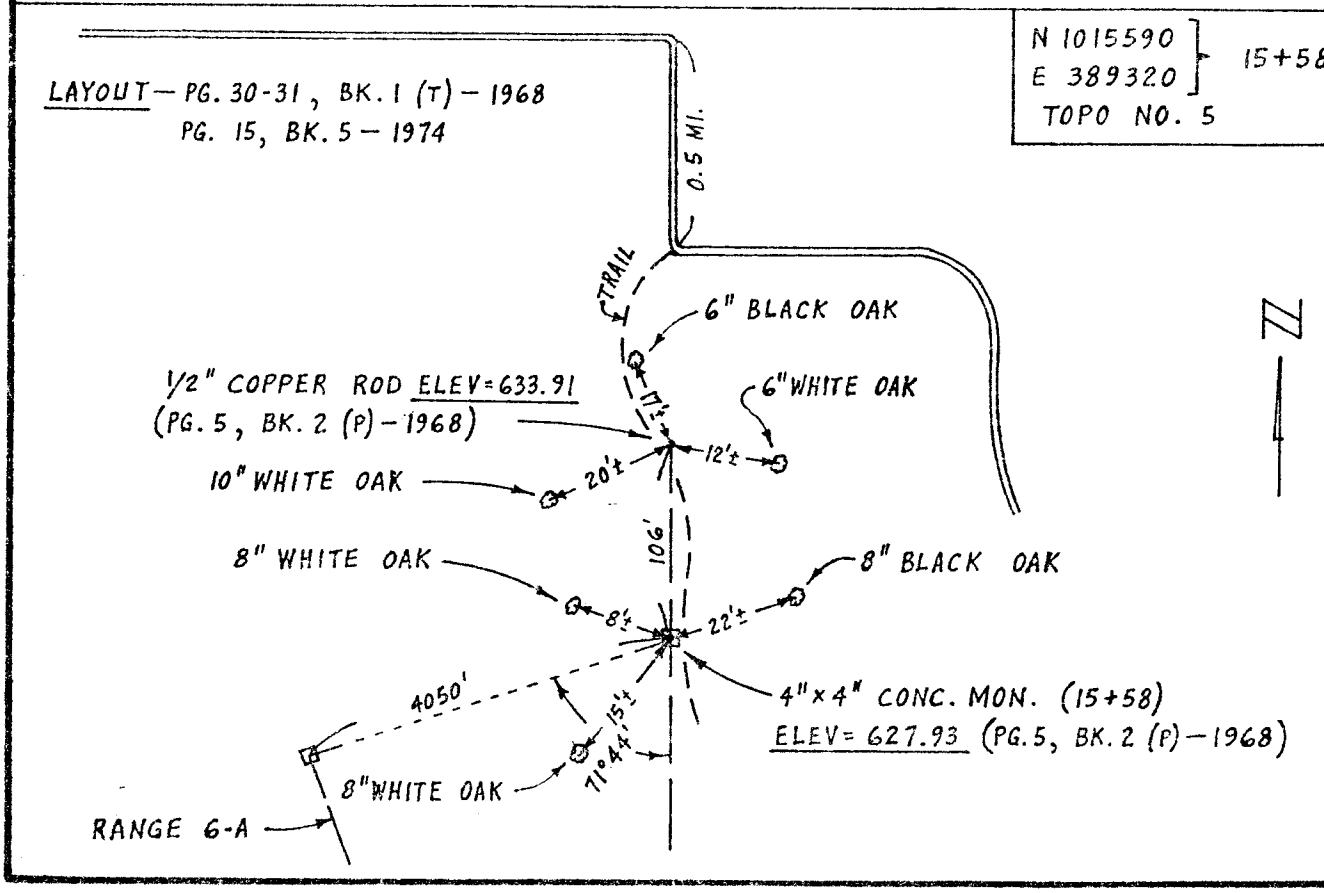
RANGE 7-A

N 1014030
E 389320
TOPO NO. 5
0+00



LAYOUT — PG. 30-31, BK. 1 (T) - 1968

N 1015590
E 389320
TOPO NO. 5
15+58

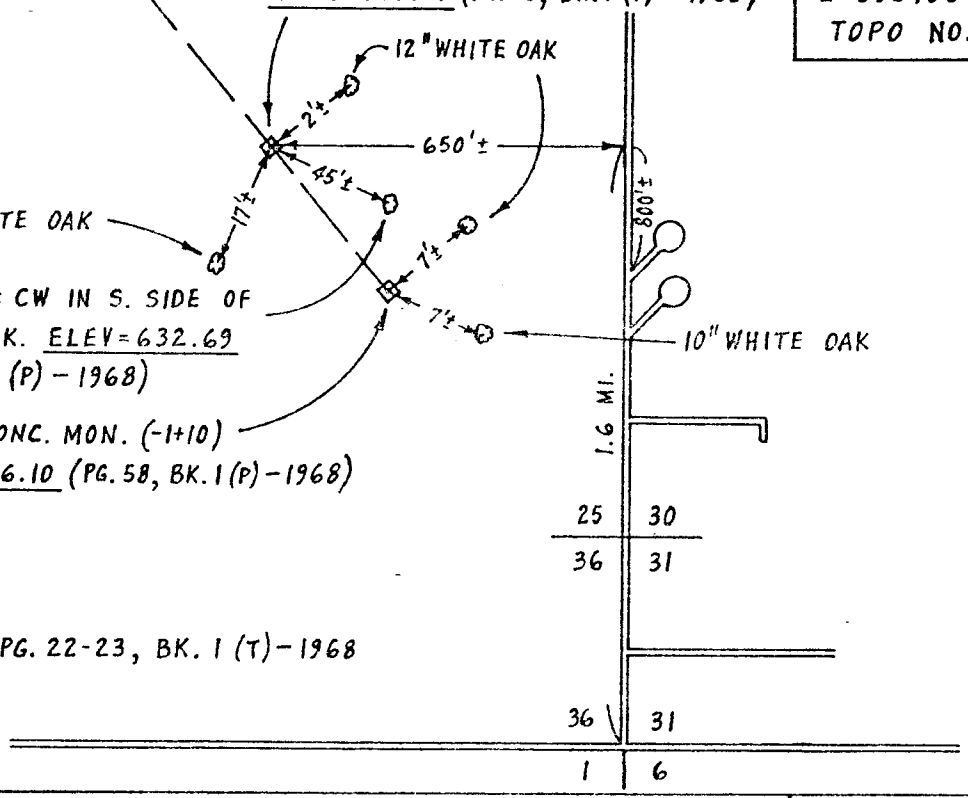


COMPUTATION SHEET

PROJECT LAKE SHELBYVILLE	PAGE 8 OF 40	COMPUTED BY WJM	DATE 5-27-81
SUBJECT SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

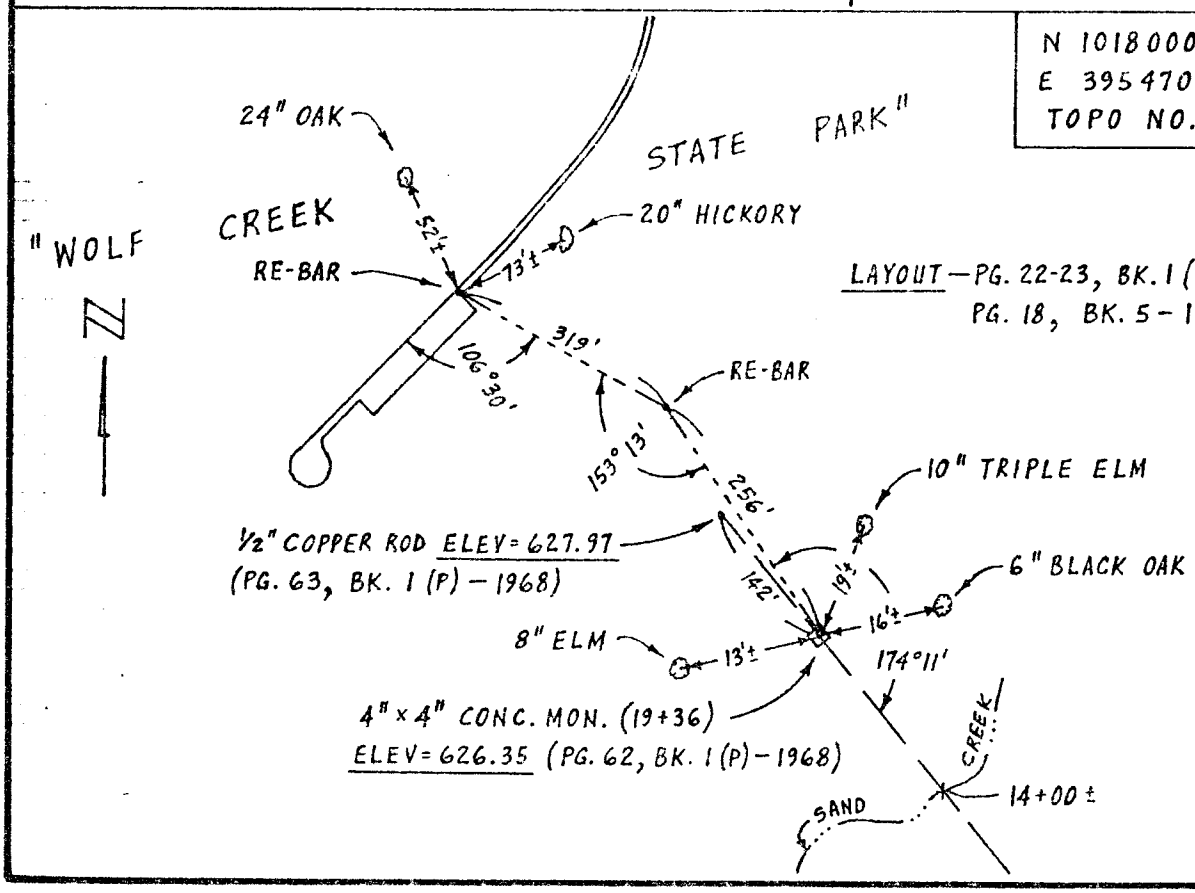
RANGE 8-B

N 1016500
E 396700 } 0+00
TOPO NO. 5



LAYOUT — PG. 22-23, BK. 1 (T) – 1968

N 1018000
E 395470 } 19+36
TOPO NO. 5



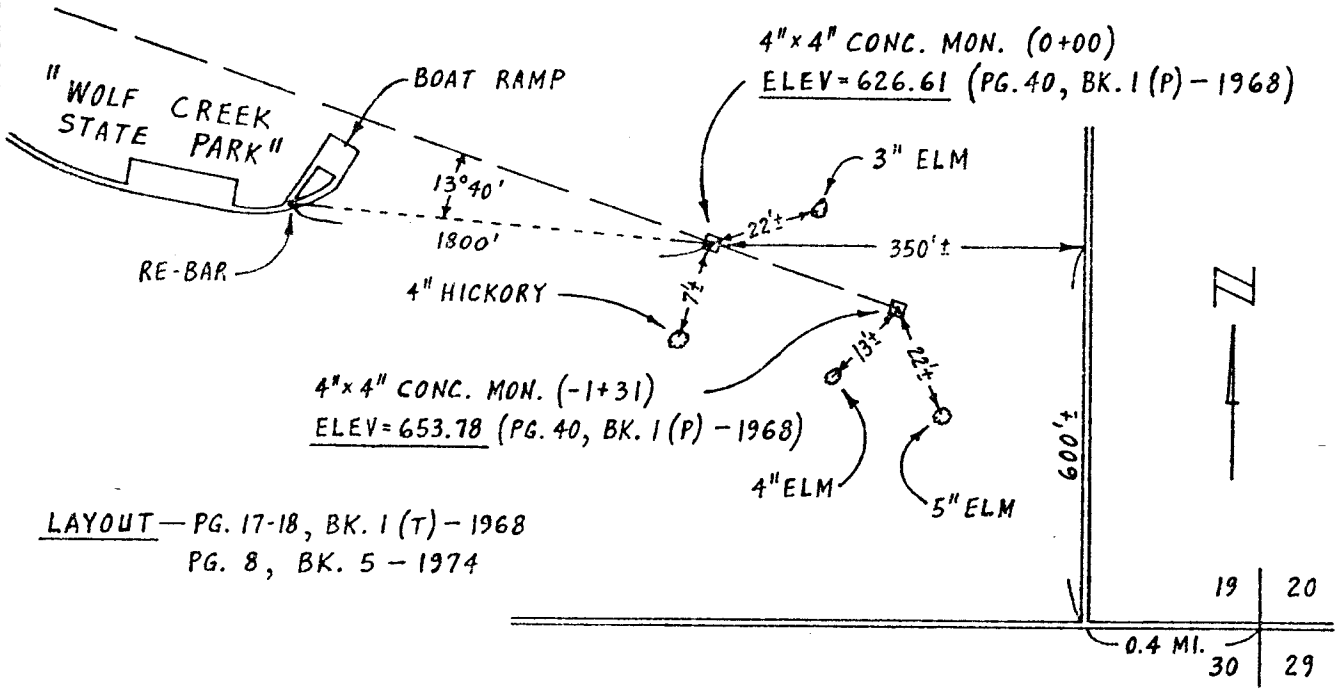
LAYOUT — PG. 22-23, BK. 1 (T) – 1968
PG. 18, BK. 5 – 1974

COMPUTATION SHEET

PROJECT	LAKE SHELBYVILLE	PAGE 9 OF 40	COMPUTED BY WBM	DATE 5-28-81
SUBJECT	SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

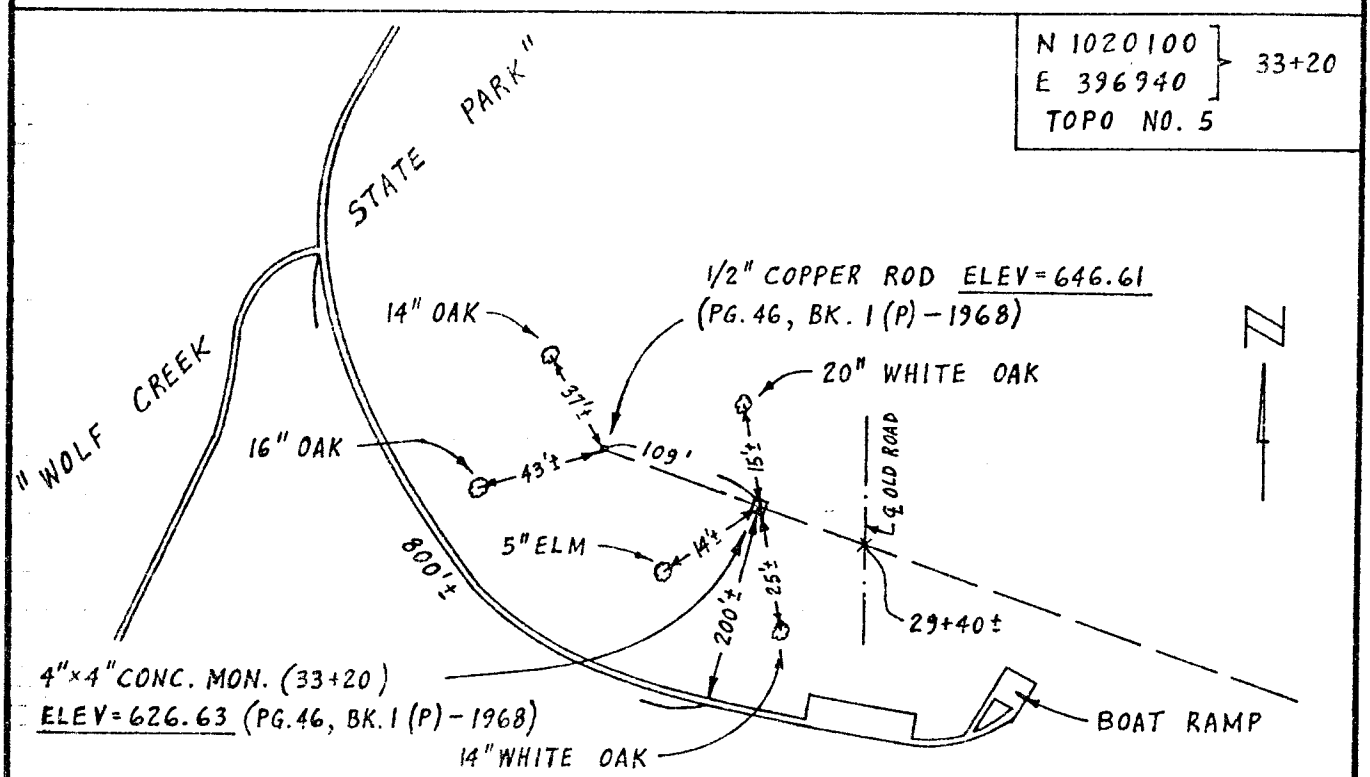
RANGE 9-B

N 1019000
E 400 080 } 0+00
TOPO NO. 6



LAYOUT — PG. 17-18, BK. 1 (T) – 1968
PG. 8, BK. 5 – 1974

N 1020100
E 396940 } 33+20
TOPO NO. 5



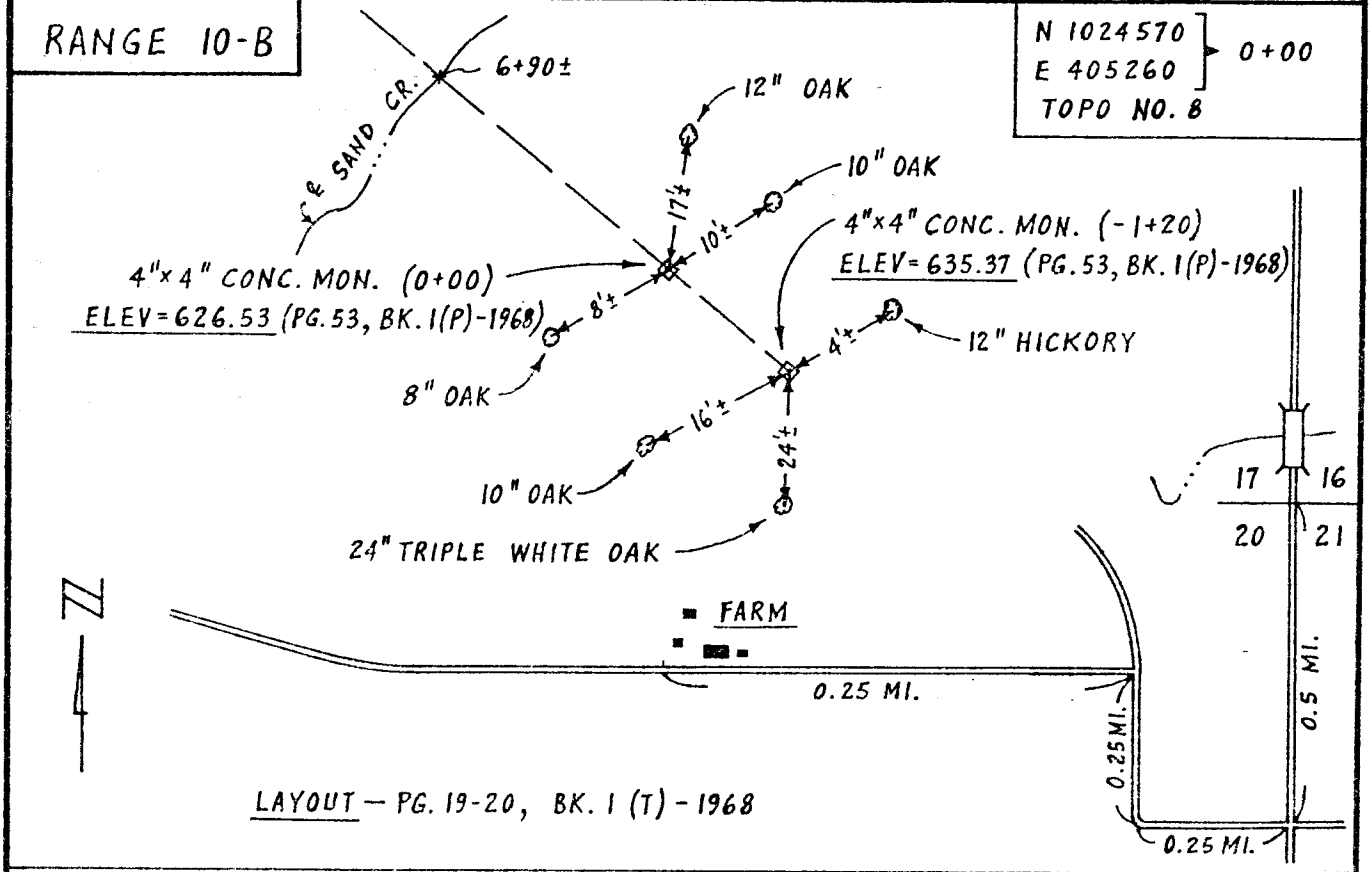
LAYOUT — PG. 17-18, BK. 1 (T) – 1968

COMPUTATION SHEET

PROJECT LAKE SHELBYVILLE	PAGE 10 OF 40	COMPUTED BY WSM	DATE 5-29-81
SUBJECT SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

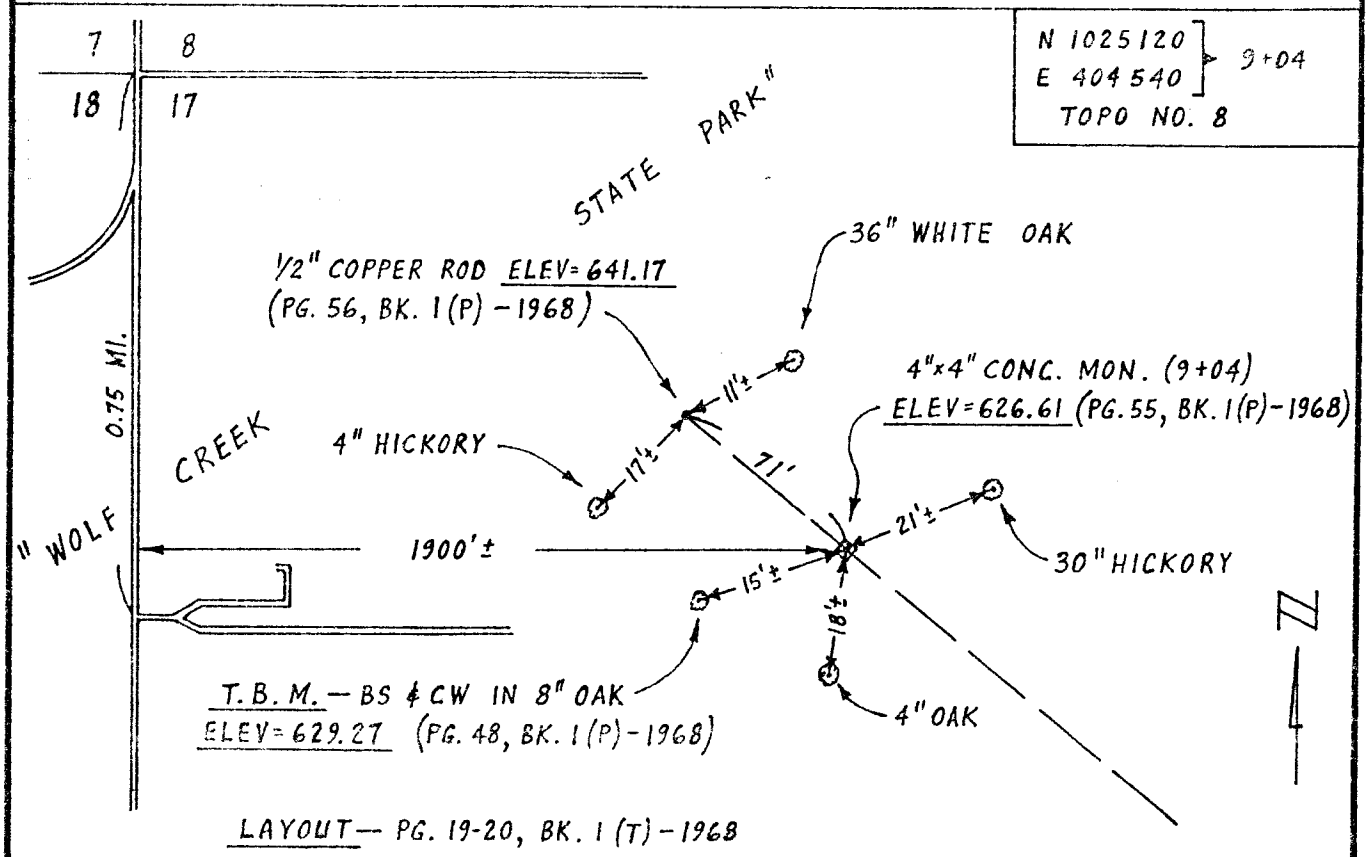
RANGE 10-B

N 1024570
E 405260
TOPO NO. 8
0+00



LAYOUT — PG. 19-20, BK. 1 (T) - 1968

N 1025120
E 404540
TOPO NO. 8
9+04



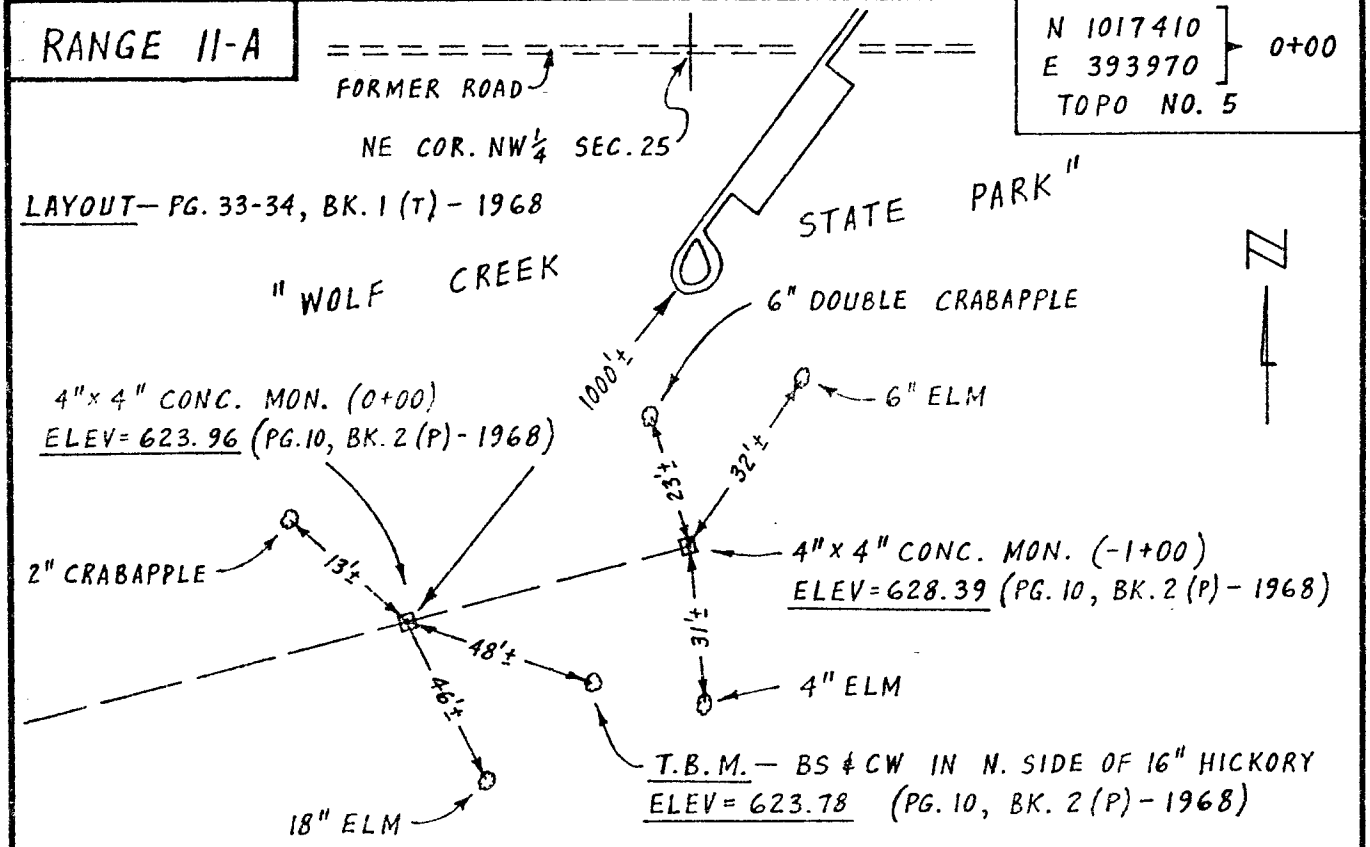
LAYOUT — PG. 19-20, BK. 1 (T) - 1968

COMPUTATION SHEET

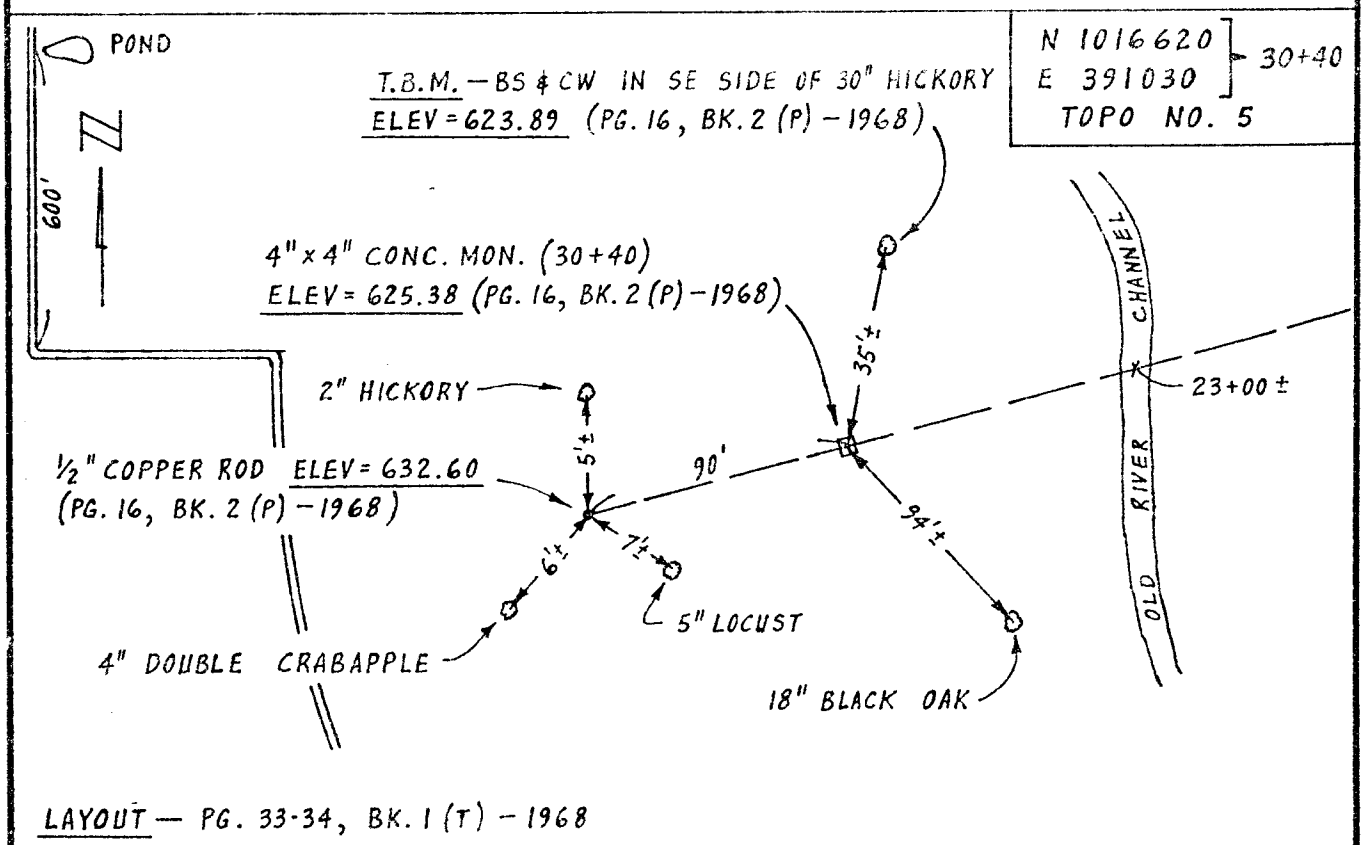
PROJECT	PAGE	COMPUTED BY	DATE
LAKE SHELBYVILLE	11 OF 40	WDM	6-29-81
SUBJECT: SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

RANGE 11-A

N 1017410
E 393970
TOPO NO. 5
0+00



N 1016620
E 391030
TOPO NO. 5
30+40

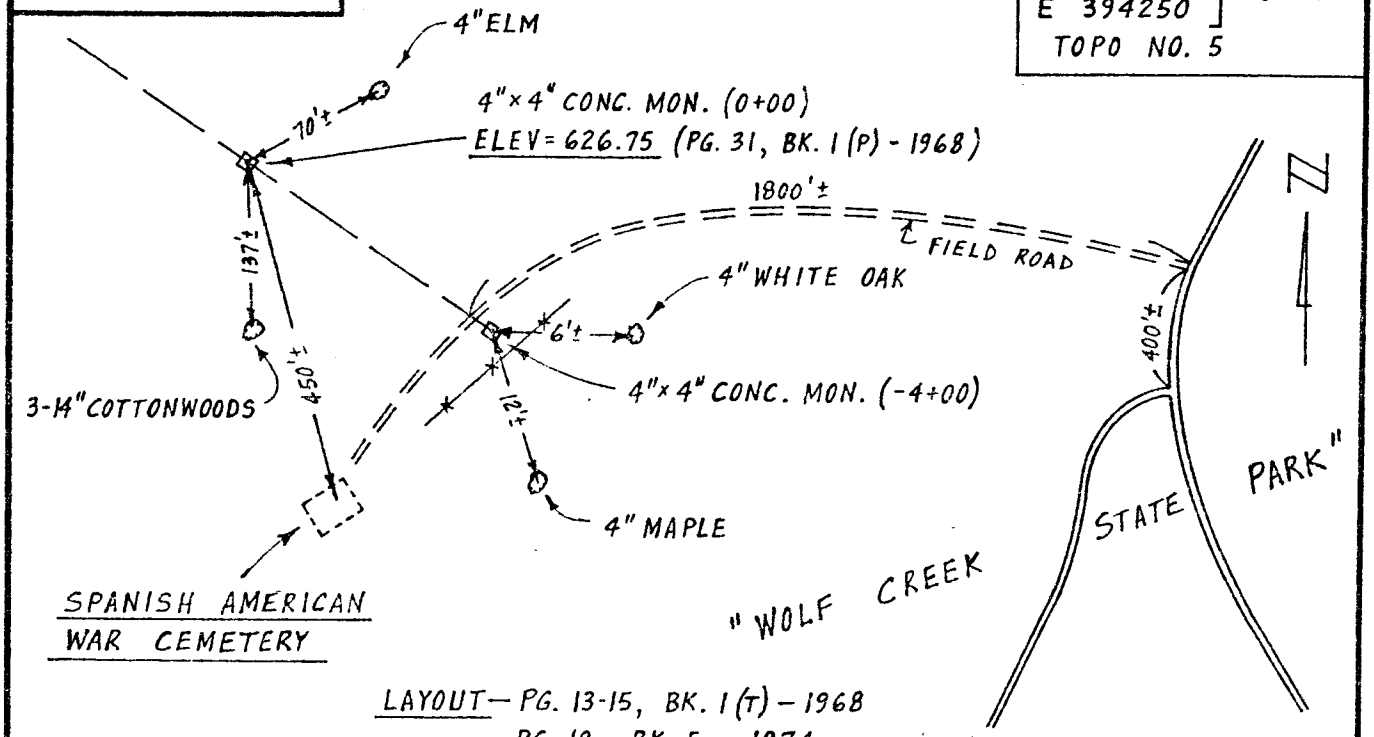


COMPUTATION SHEET

PROJECT	PAGE	COMPUTED BY	DATE
LAKE SHELBYVILLE	12 OF 40	WJM	6-30-81
SUBJECT: SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

RANGE 12-A

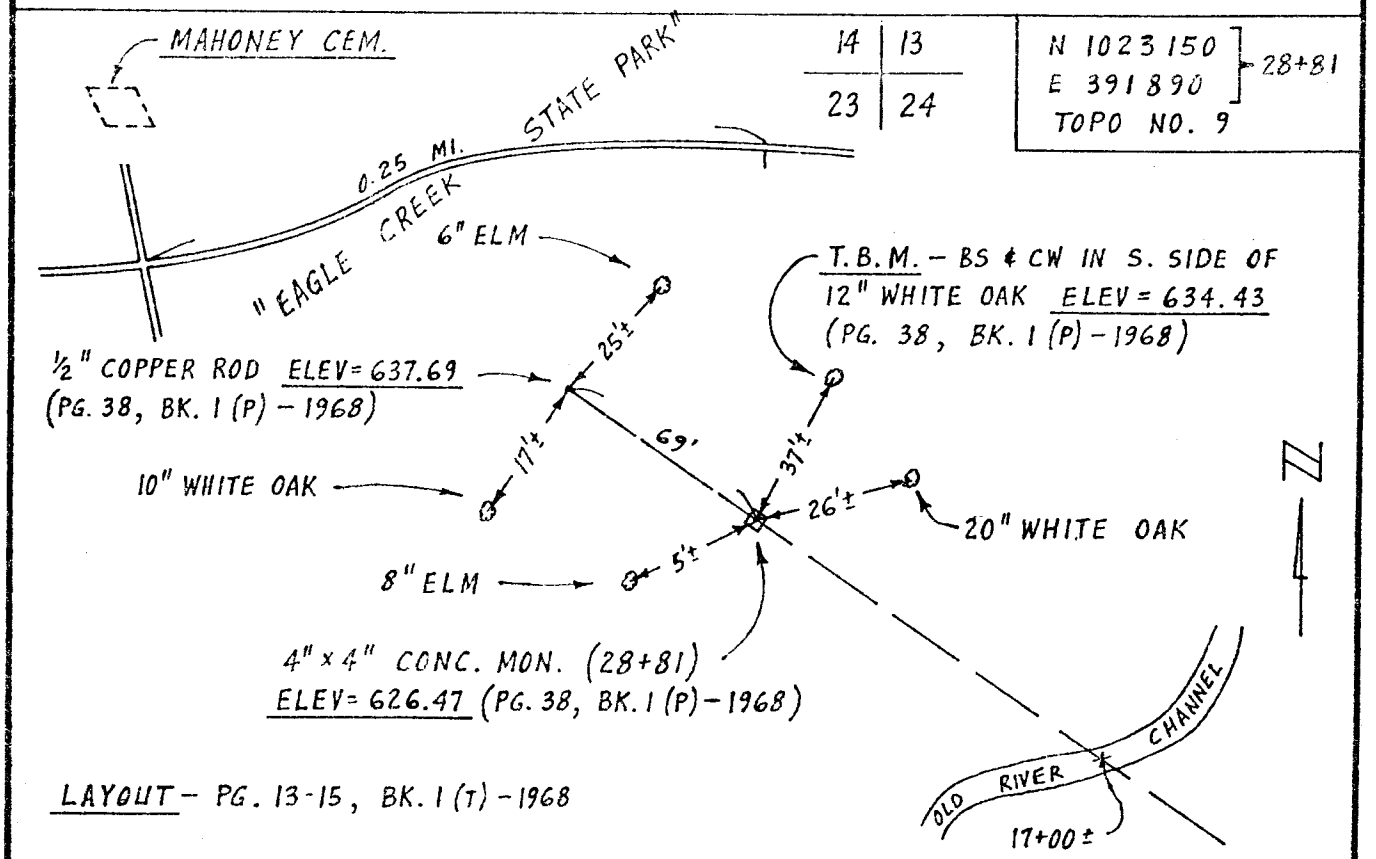
N 1021500
E 394250 } 0+00
TOPO NO. 5



LAYOUT — PG. 13-15, BK. 1 (T) - 1968
PG. 19, BK. 5 - 1974

14	13
23	24

N 1023150
E 391890 } 28+81
TOPO NO. 9



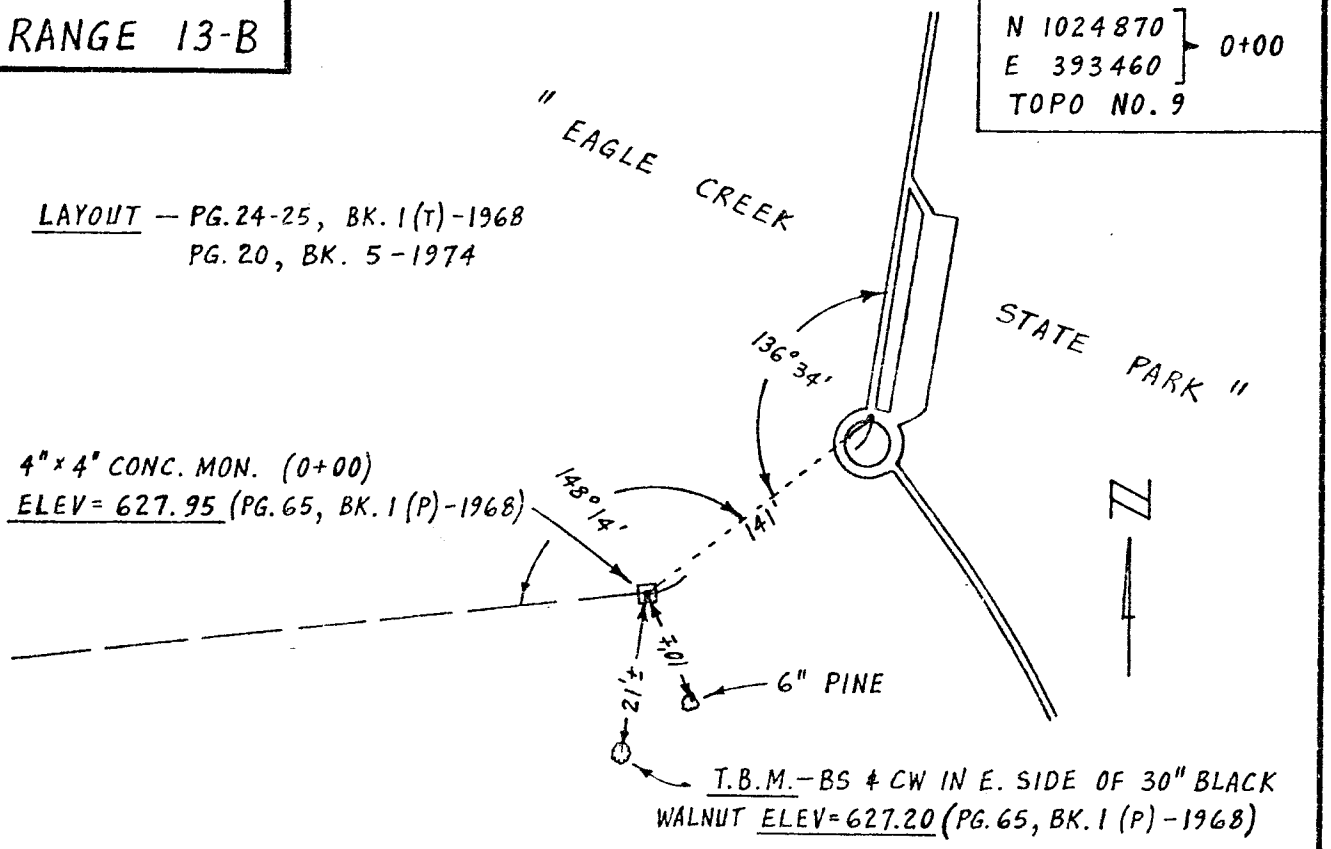
LAYOUT — PG. 13-15, BK. 1 (T) - 1968

COMPUTATION SHEET

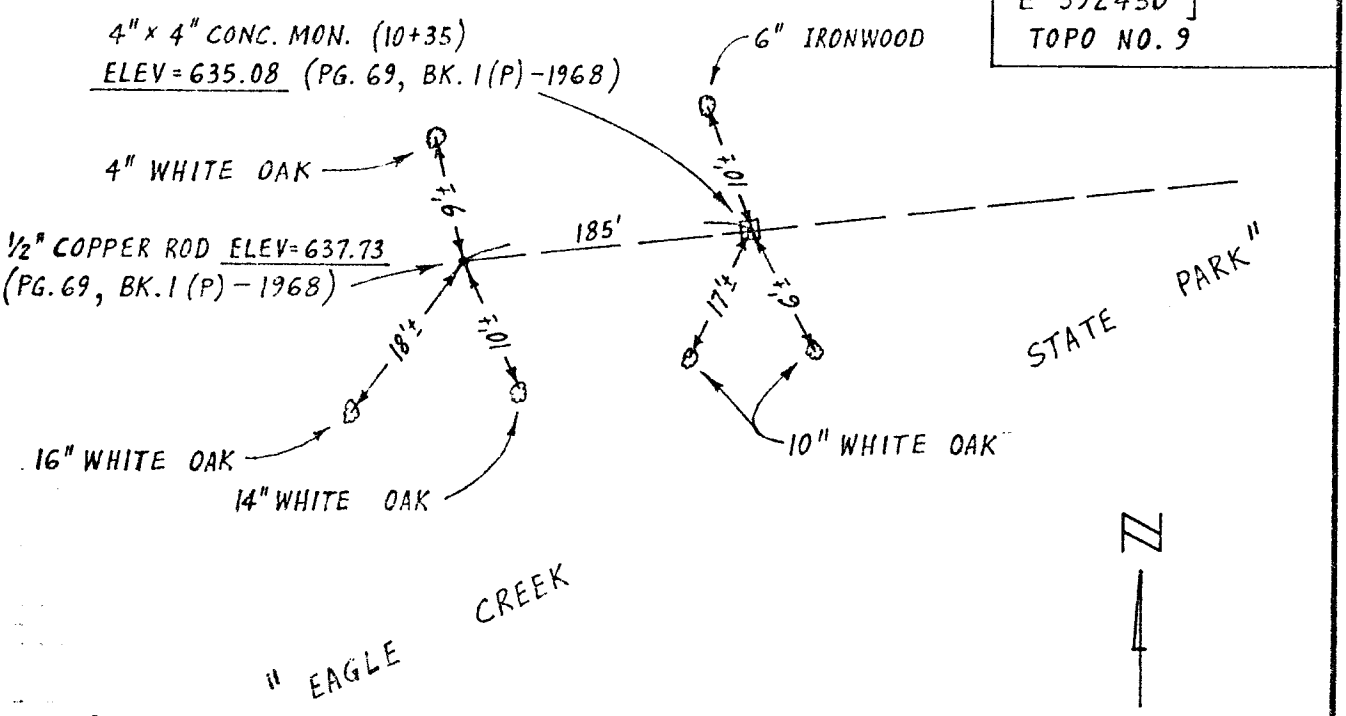
PROJECT	LAKE SHELBYVILLE	PAGE 13 OF 40	COMPUTED BY WJM	DATE 7-10-81
SUBJECT	SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

RANGE 13-B

N 1024870
E 393460
TOPO NO. 9
0+00

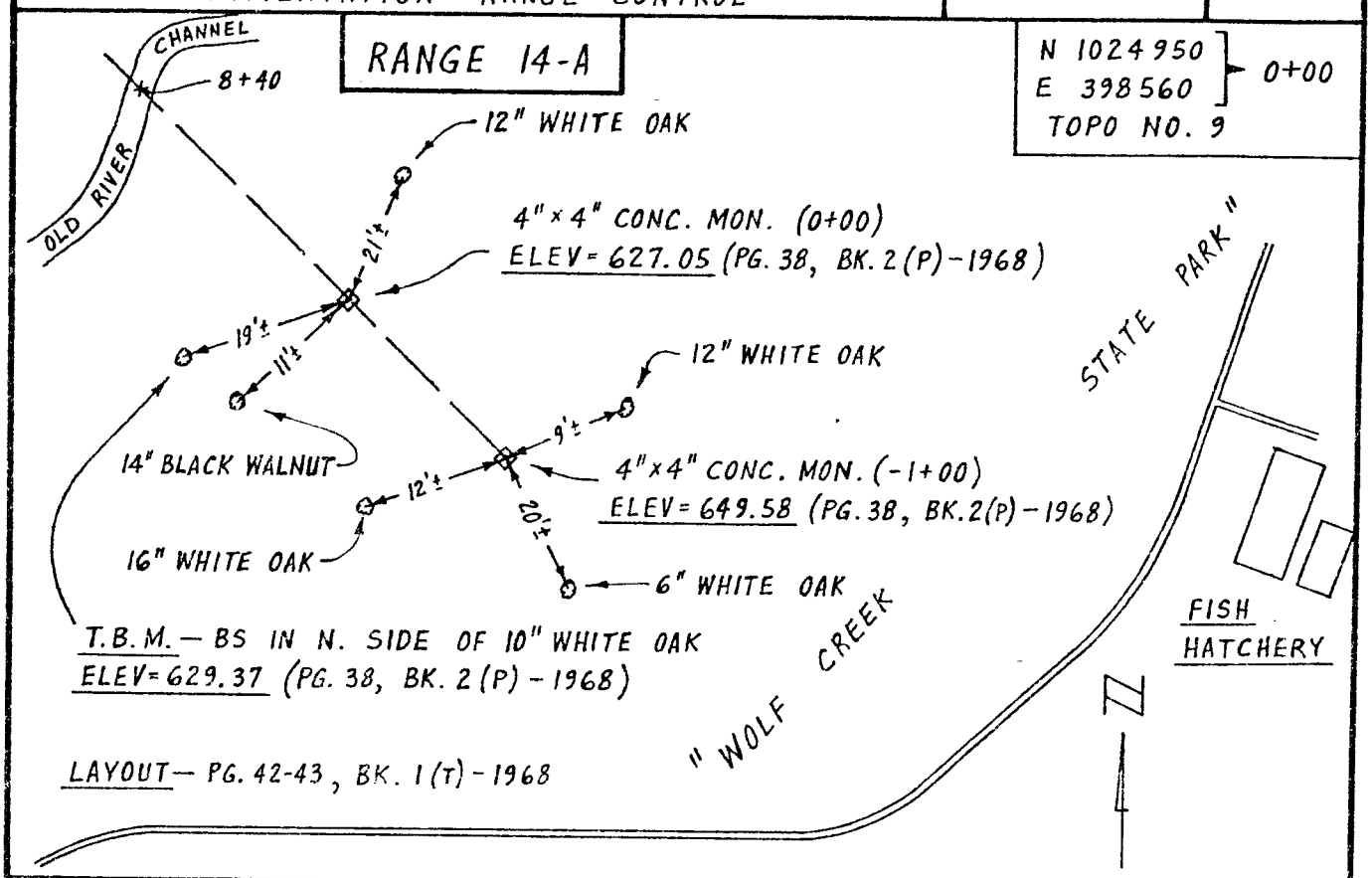


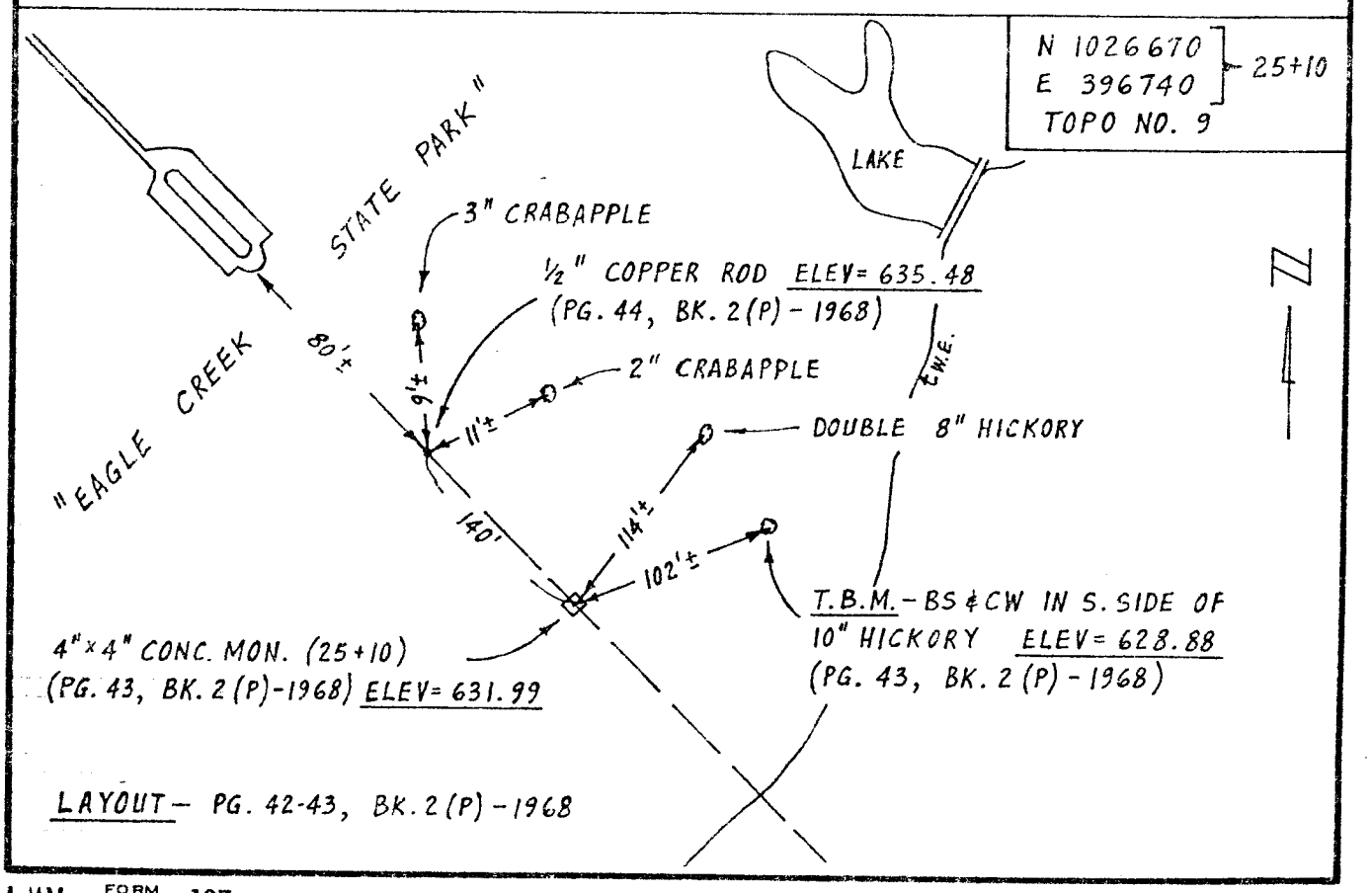
N 1024780
E 392430
TOPO NO. 9
10+35



COMPUTATION SHEET

PROJECT	PAGE	COMPUTED BY	DATE
LAKE SHELBYVILLE	14 OF 40	W&M	7-13-81
SUBJECT: SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE



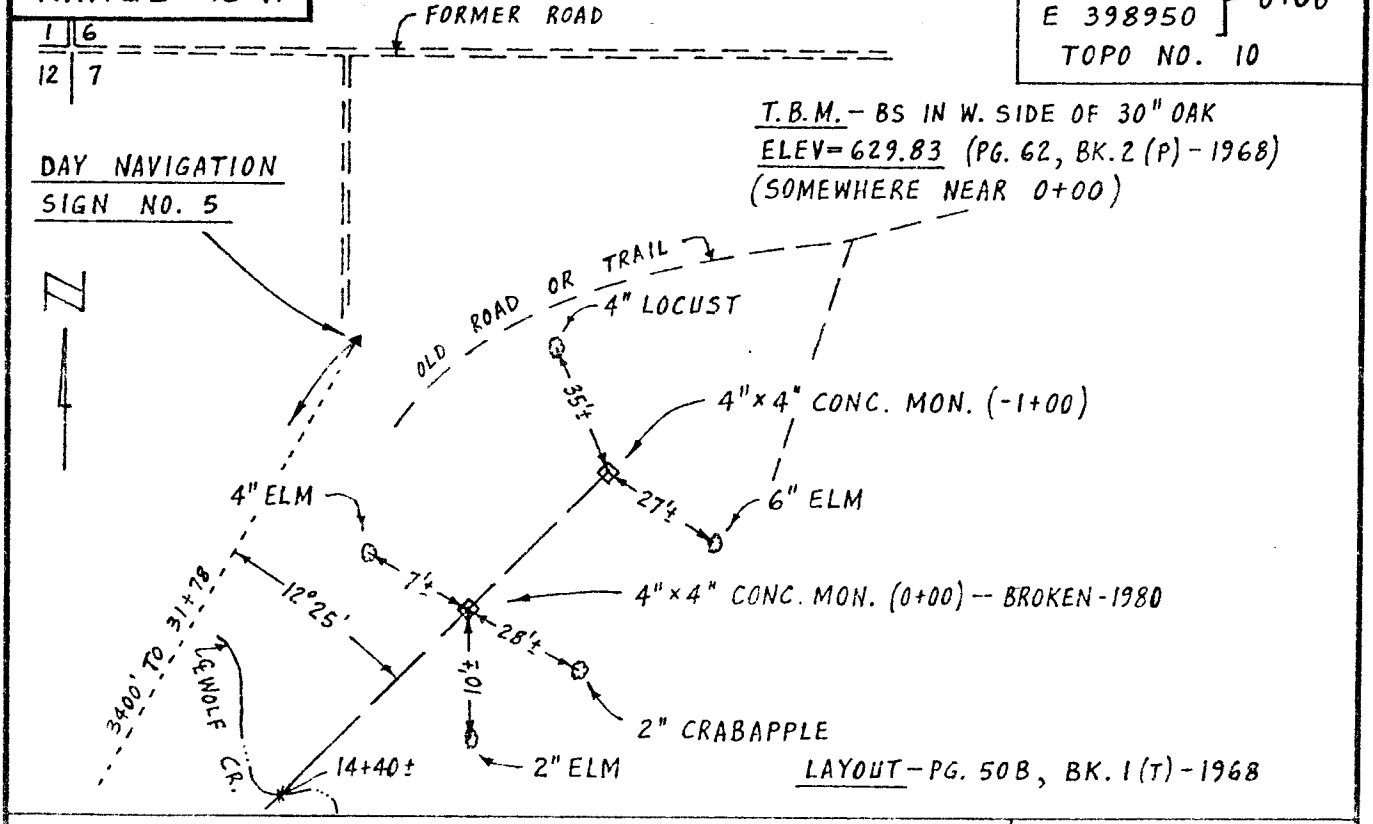


COMPUTATION SHEET

PROJECT	PAGE	COMPUTED BY	DATE
LAKE SHELBYVILLE	15 OF 40	W&M	7-13-81
SUBJECT: SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

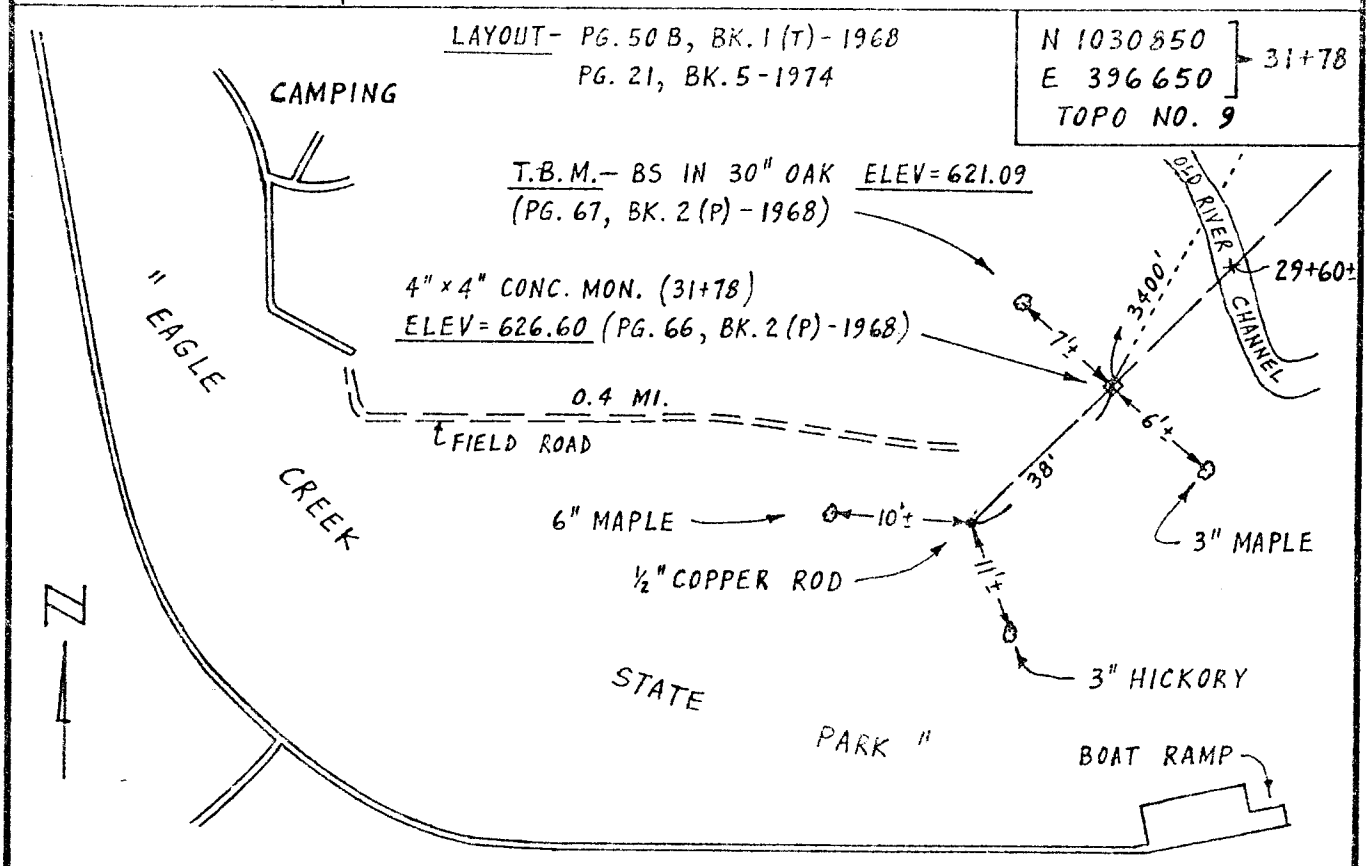
RANGE 15-A

N 1033050
E 398950 } 0+00
TOPO NO. 10



LAYOUT – PG. 50 B, BK. 1 (T) – 1968
PG. 21, BK. 5 – 1974

N 1030850
E 396650 } 31+78
TOPO NO. 9

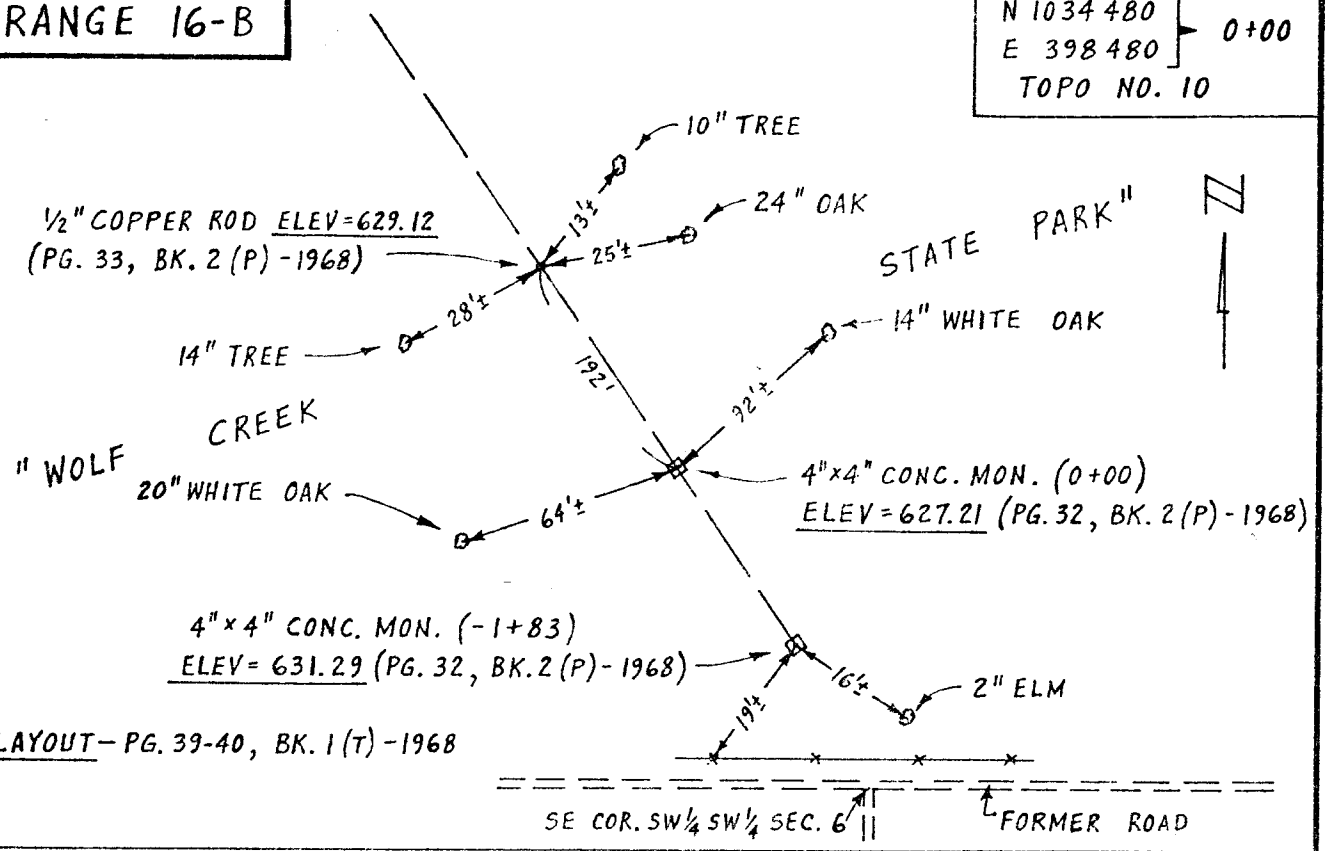


COMPUTATION SHEET

PROJECT	PAGE	COMPUTED BY	DATE
LAKE SHELBYVILLE	16 OF 40	WBM	7-14-81
SUBJECT: SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

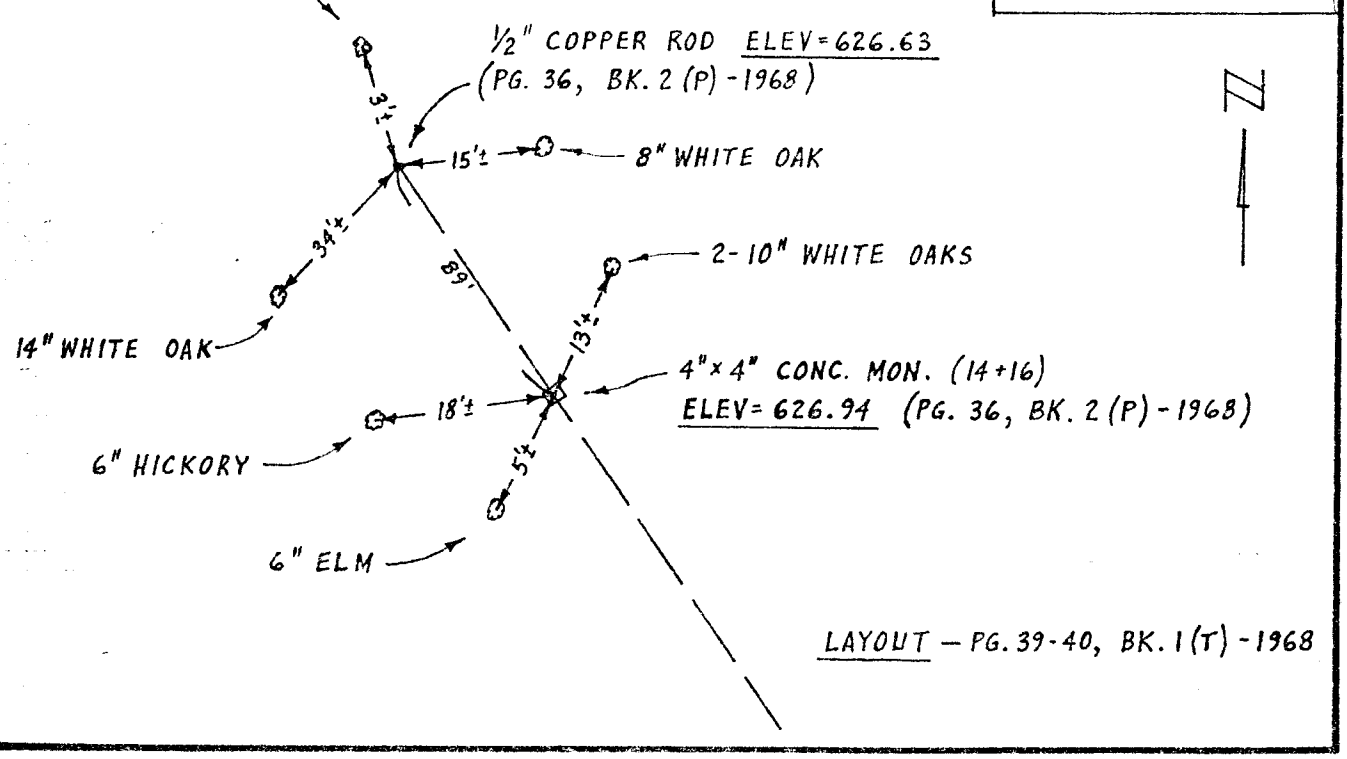
RANGE 16-B

N 1034480
E 398480
TOPO NO. 10
0+00



LAYOUT - PG. 39-40, BK. 1 (T) - 1968

N 1035670
E 397700
TOPO NO. 10
14+16



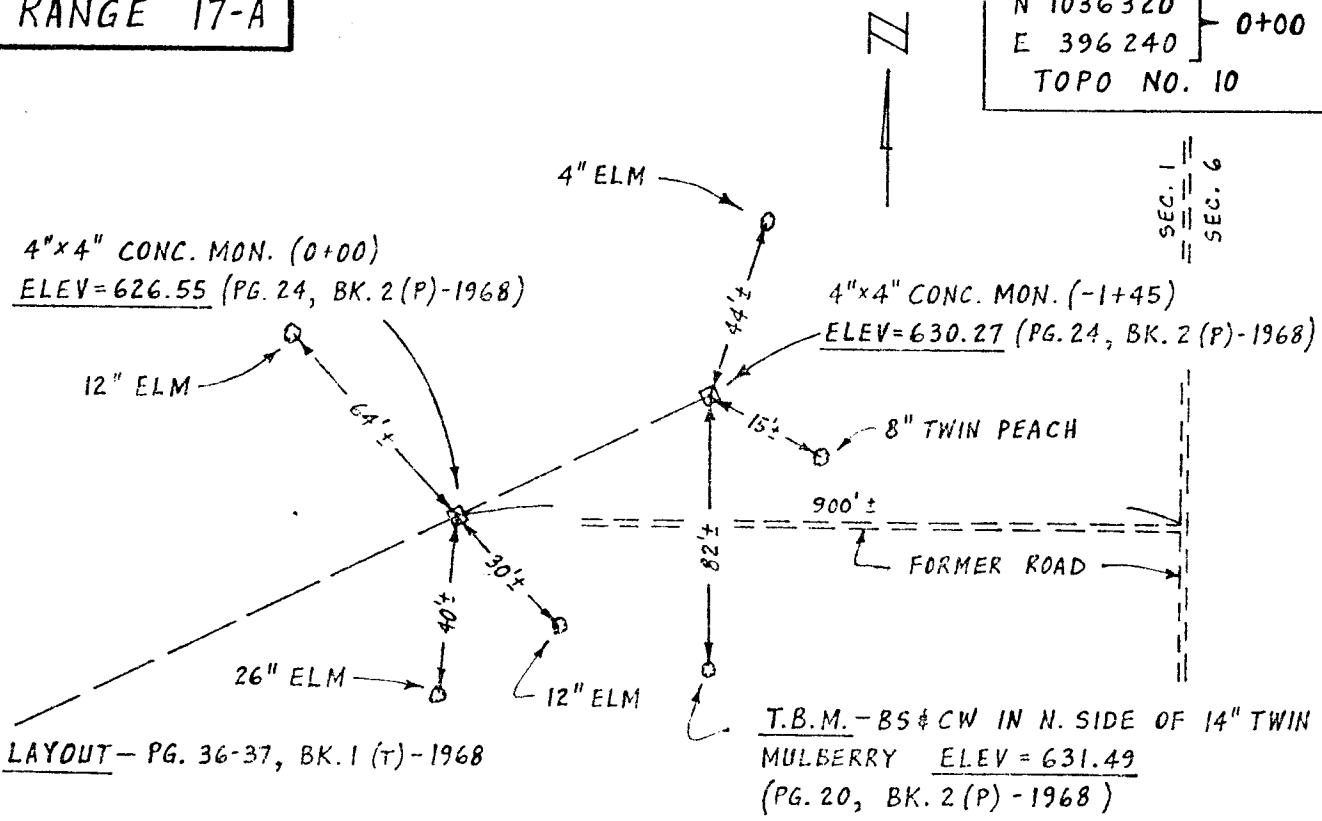
LAYOUT - PG. 39-40, BK. 1 (T) - 1968

COMPUTATION SHEET

PROJECT	LAKE SHELBYVILLE	PAGE 17 OF 40	COMPUTED BY W&M	DATE 7-15-81
SUBJECT	SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

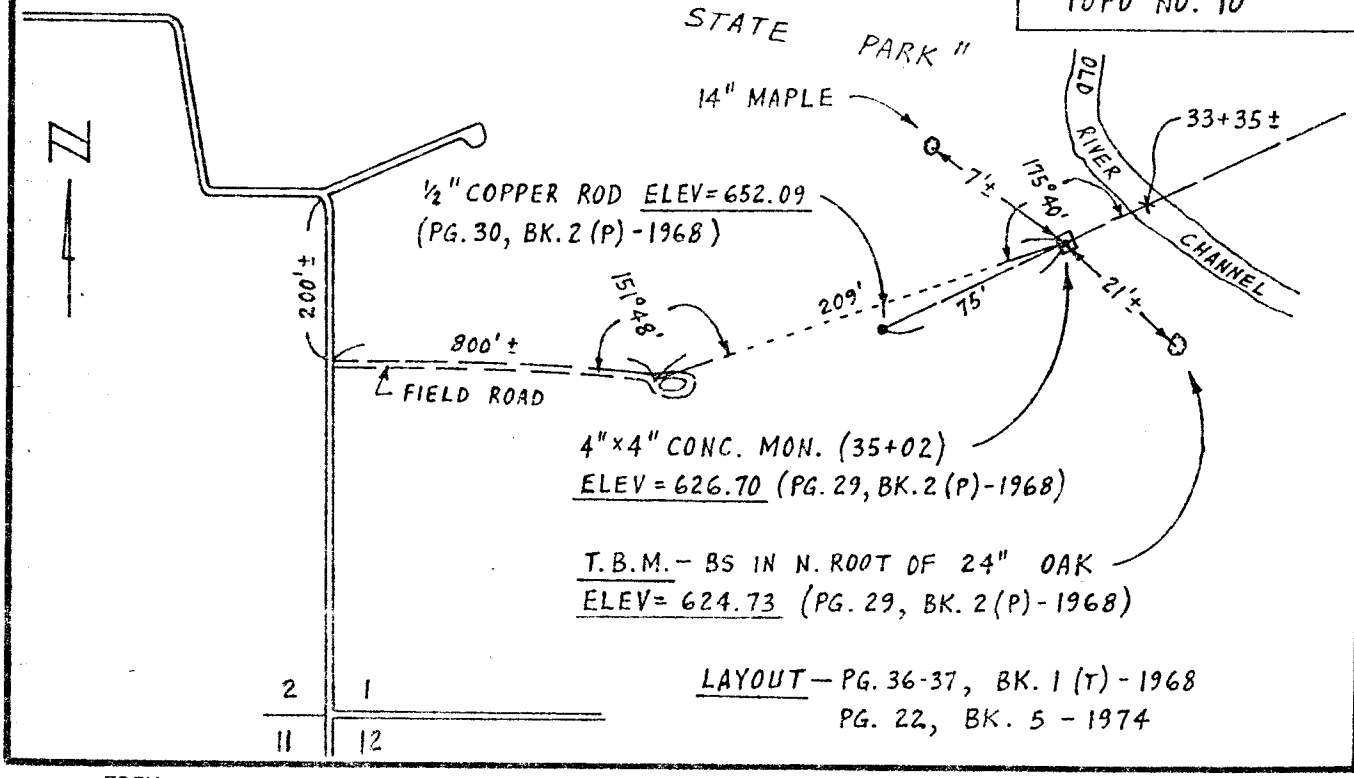
RANGE 17-A

N 1036320
E 396240 } 0+00
TOPO NO. 10



LAYOUT - PG. 36-37, BK. 1 (T) - 1968

N 1034830
E 393070 } 35+02
TOPO NO. 10



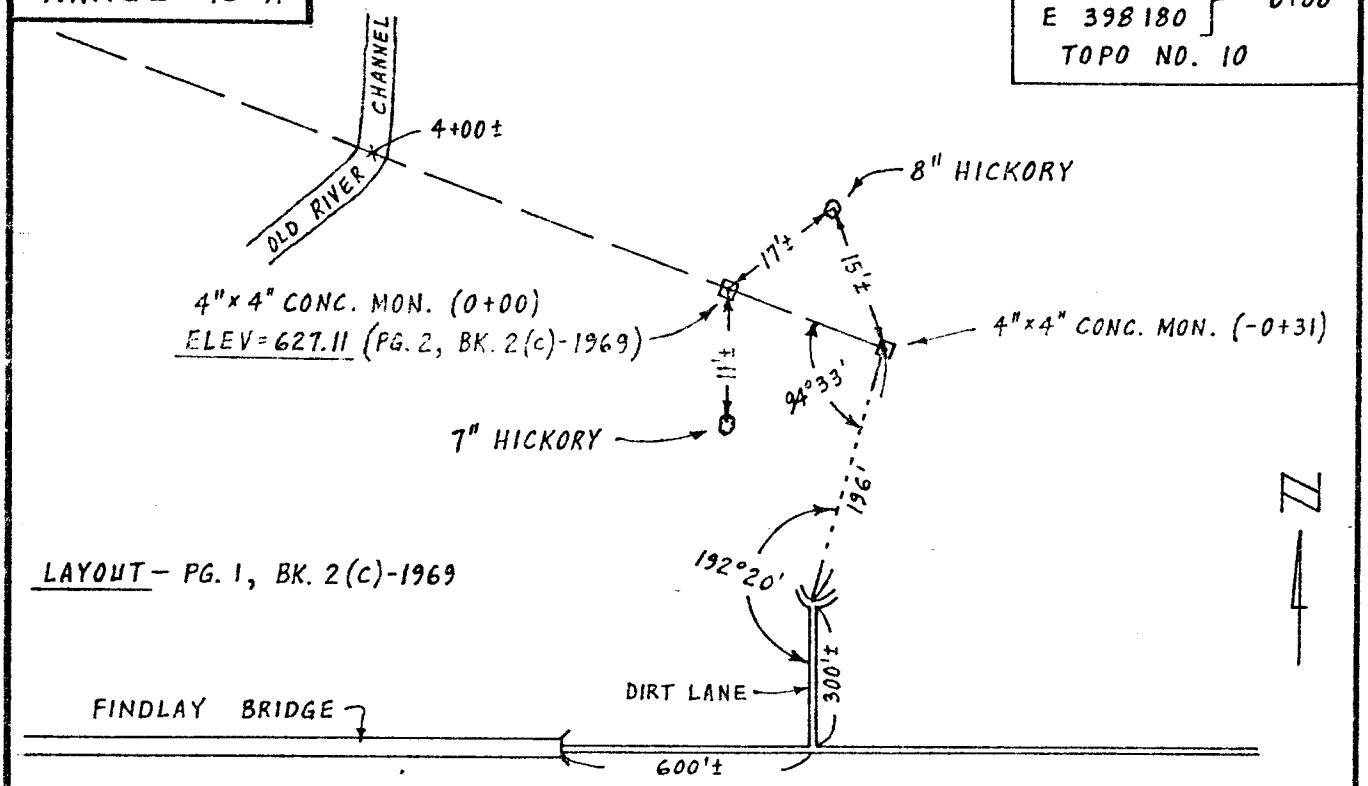
LAYOUT - PG. 36-37, BK. 1 (T) - 1968
PG. 22, BK. 5 - 1974

COMPUTATION SHEET

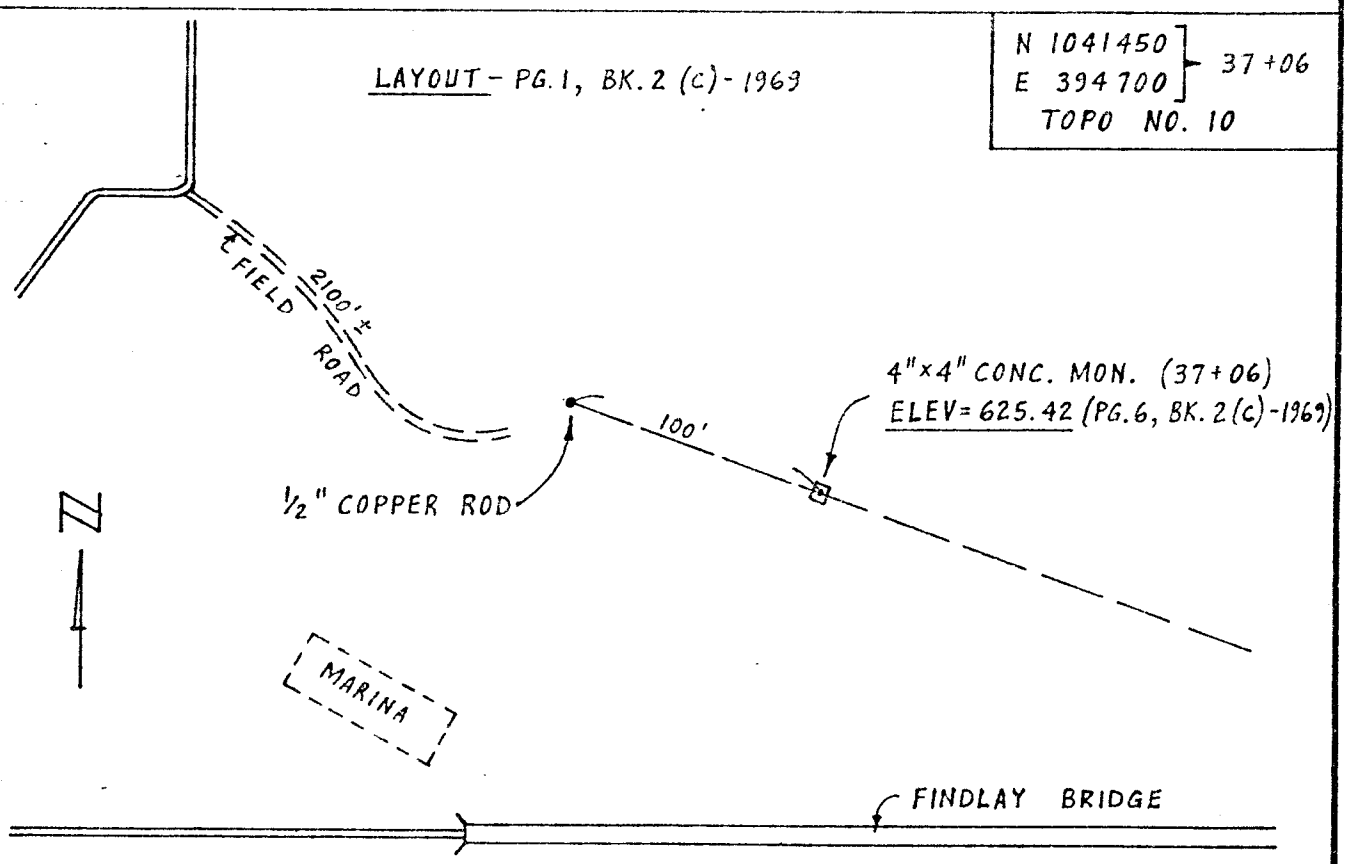
PROJECT	LAKE SHELBYVILLE	PAGE 18 OF 40	COMPUTED BY W&M	DATE 7-16-81
SUBJECT	SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

RANGE 18-A

N 1040180
E 398180 } 0+00
TOPO NO. 10



N 1041450
E 394700 } 37+06
TOPO NO. 10



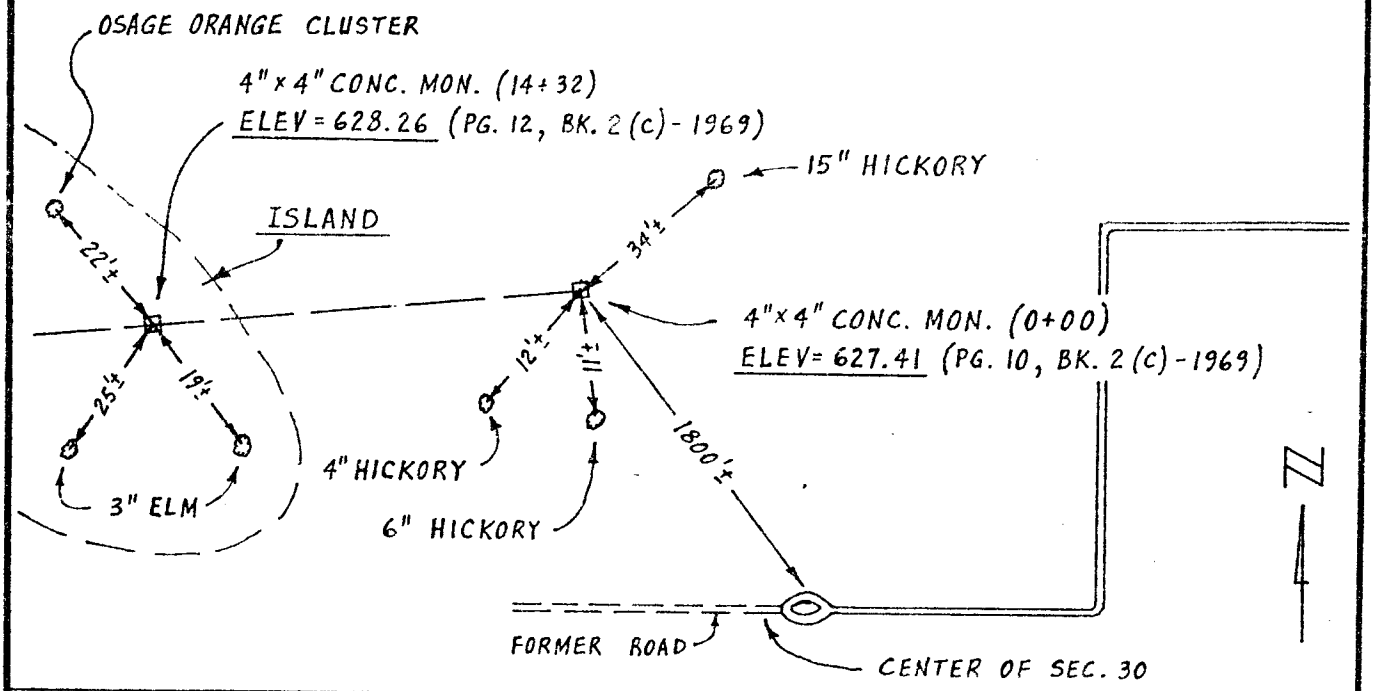
COMPUTATION SHEET

PROJECT	LAKE SHELBYVILLE	PAGE 19 OF 40	COMPUTED BY WDM	DATE 7-17-81
SUBJECT	SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

RANGE 19-A

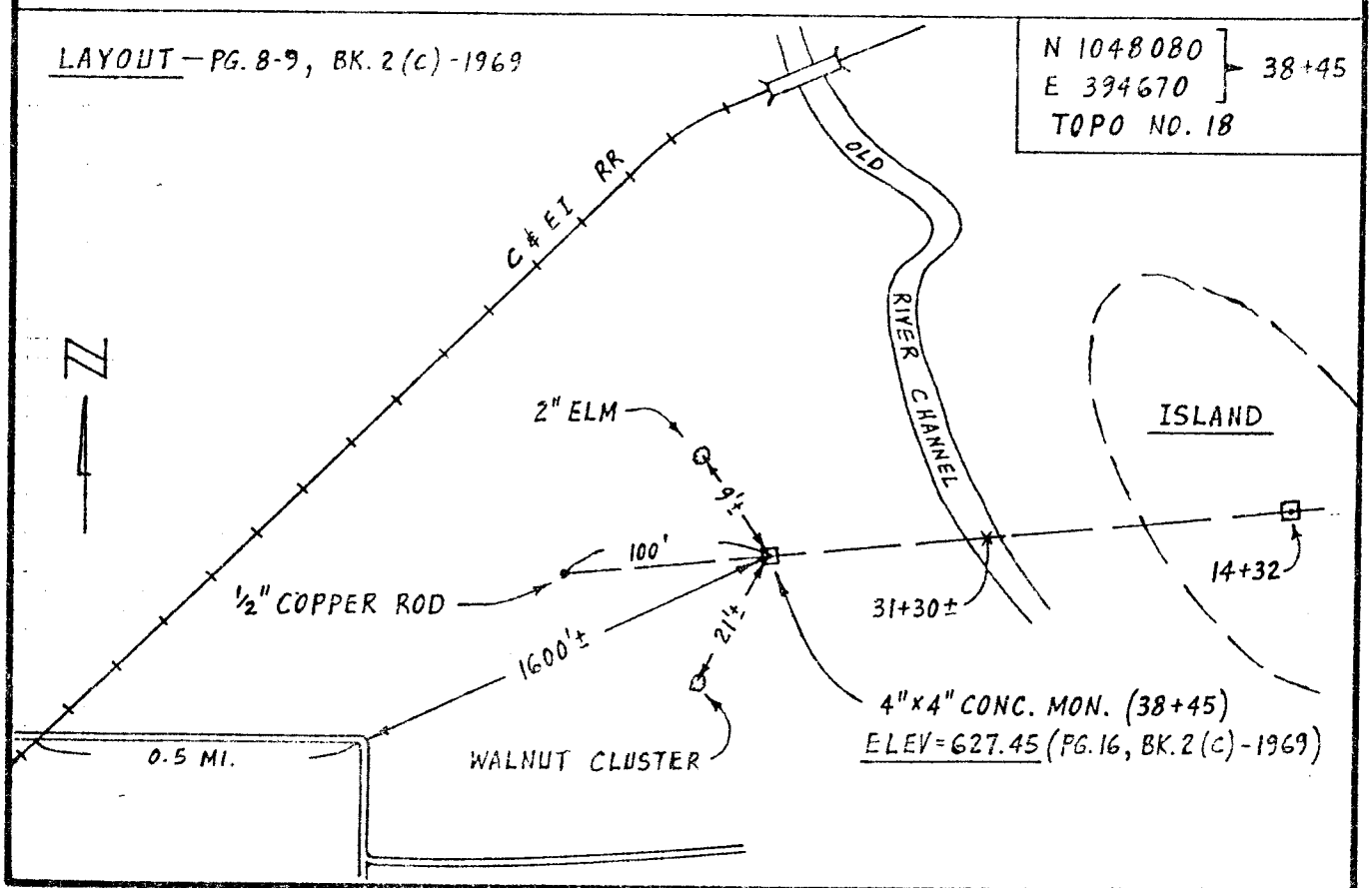
LAYOUT—PG. 8-9, BK. 2(c)-1969

N 1048370
E 398500 } 0+00
TOPO NO. 18



LAYOUT—PG. 8-9, BK. 2(c)-1969

N 1048080
E 394670 } 38+45
TOPO NO. 18



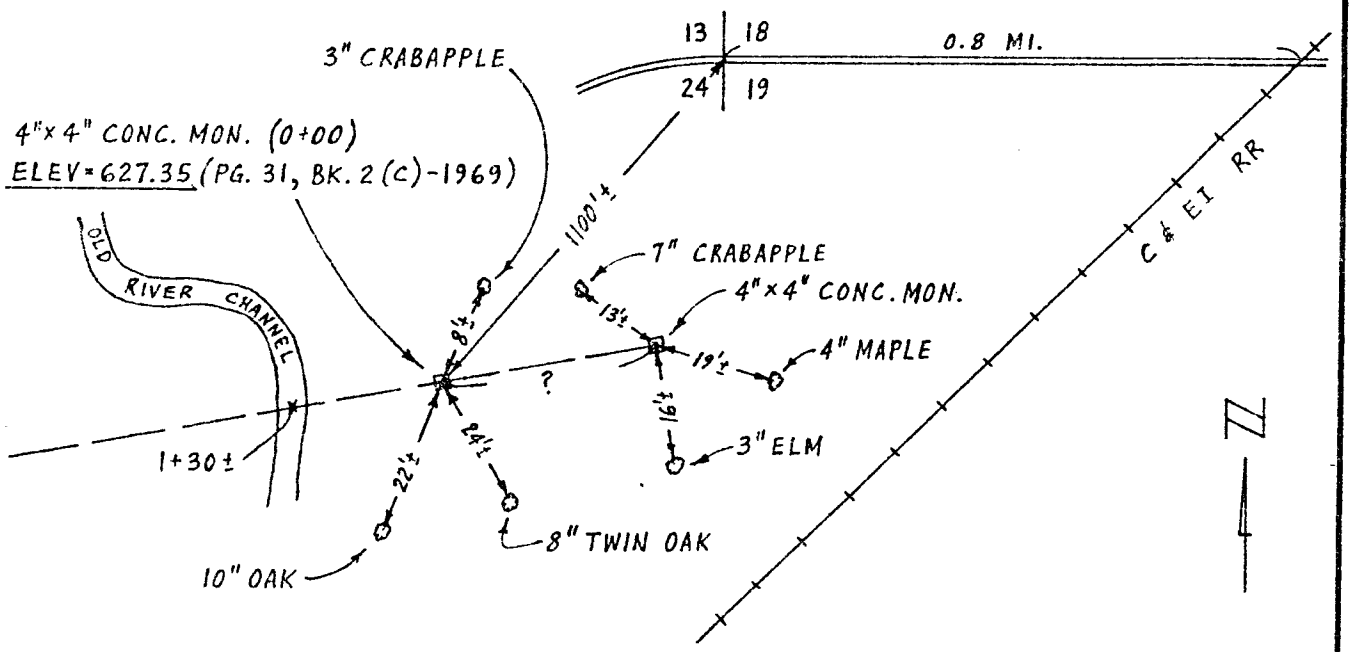
COMPUTATION SHEET

PROJECT	PAGE	COMPUTED BY	DATE
LAKE SHELBYVILLE	20 OF 40	W&M	7-17-81
SUBJECT: SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

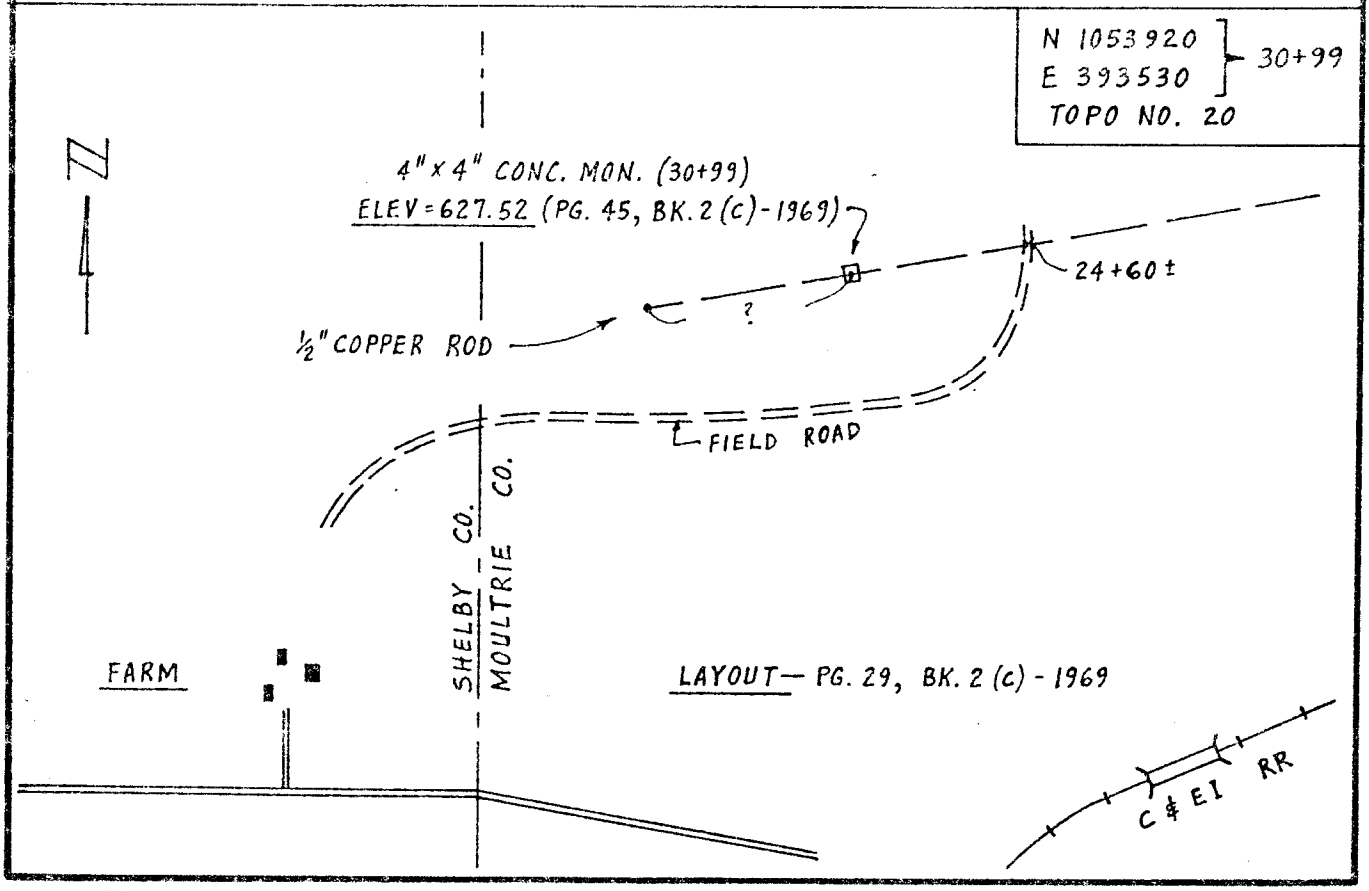
RANGE 20-A

LAYOUT— PG. 29, BK. 2(c)-1969

N 1054500
E 396580
TOPO NO. 20
0+00



N 1053920
E 393530
TOPO NO. 20
30+99



LMV FORM 1 FEB 79 107e

ORIGINAL

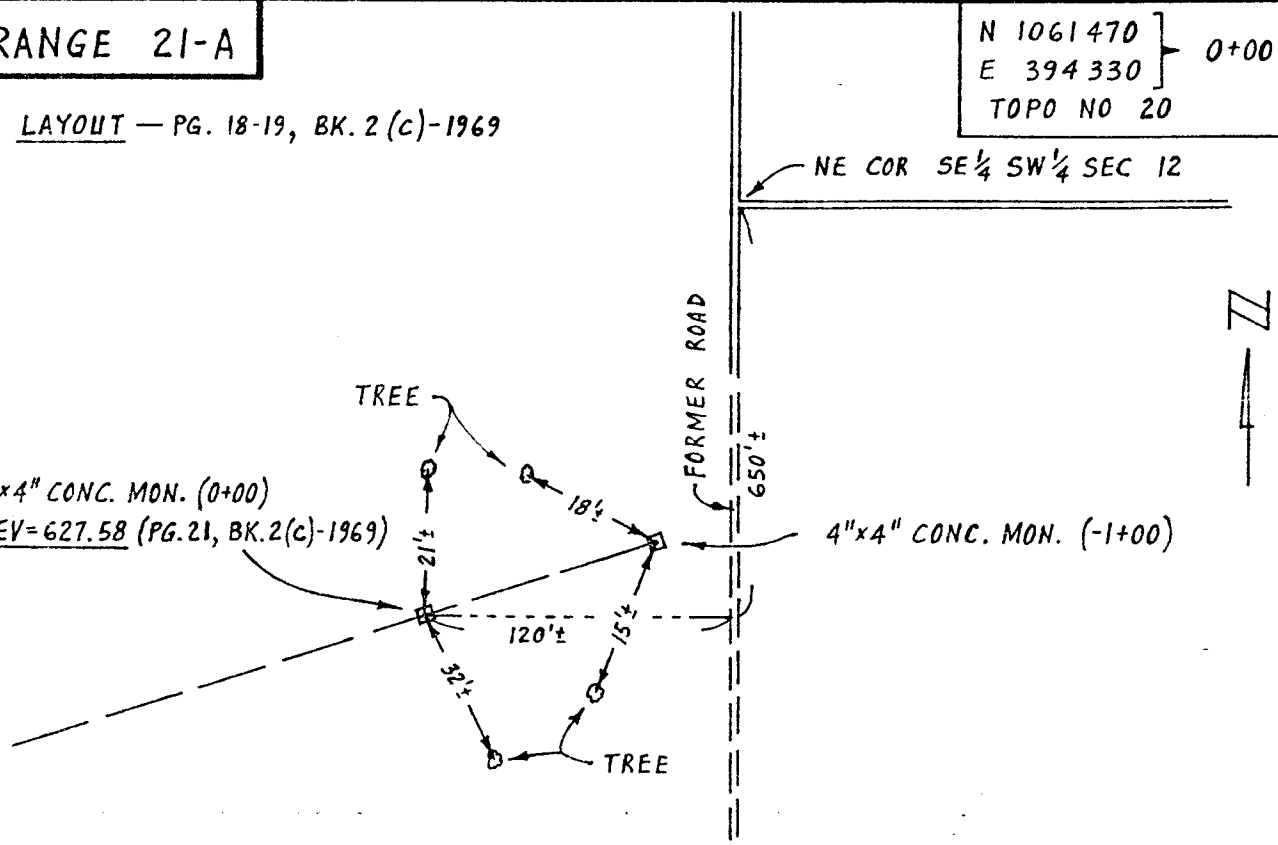
COMPUTATION SHEET

PROJECT	LAKE SHELBYVILLE	PAGE 21 OF 40	COMPUTED BY WJM	DATE 7-20-81
SUBJECT	SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

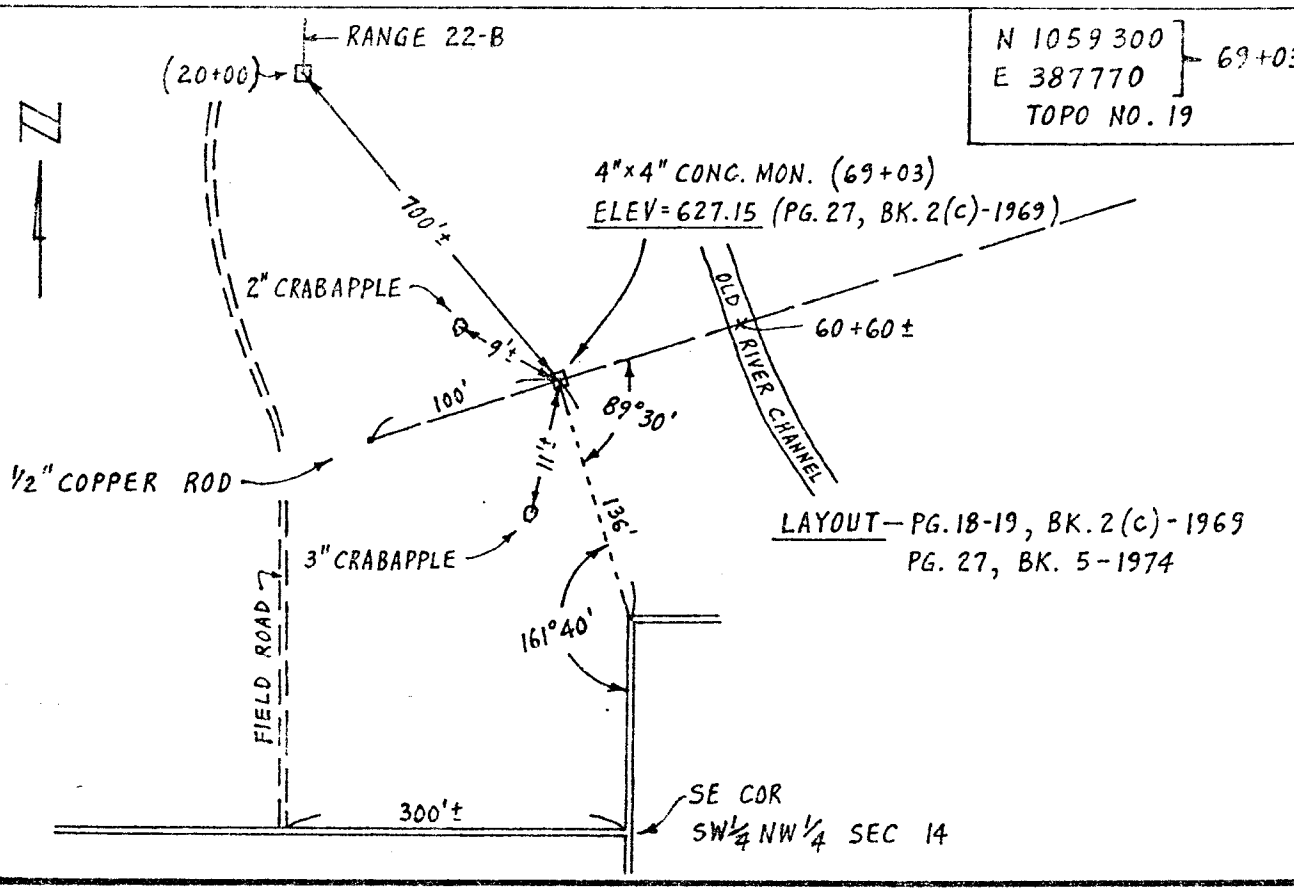
RANGE 21-A

N 1061470
E 394330
TOPO NO 20
0+00

LAYOUT — PG. 18-19, BK. 2 (c)-1969



N 1059300
E 387770
TOPO NO. 19
69+03



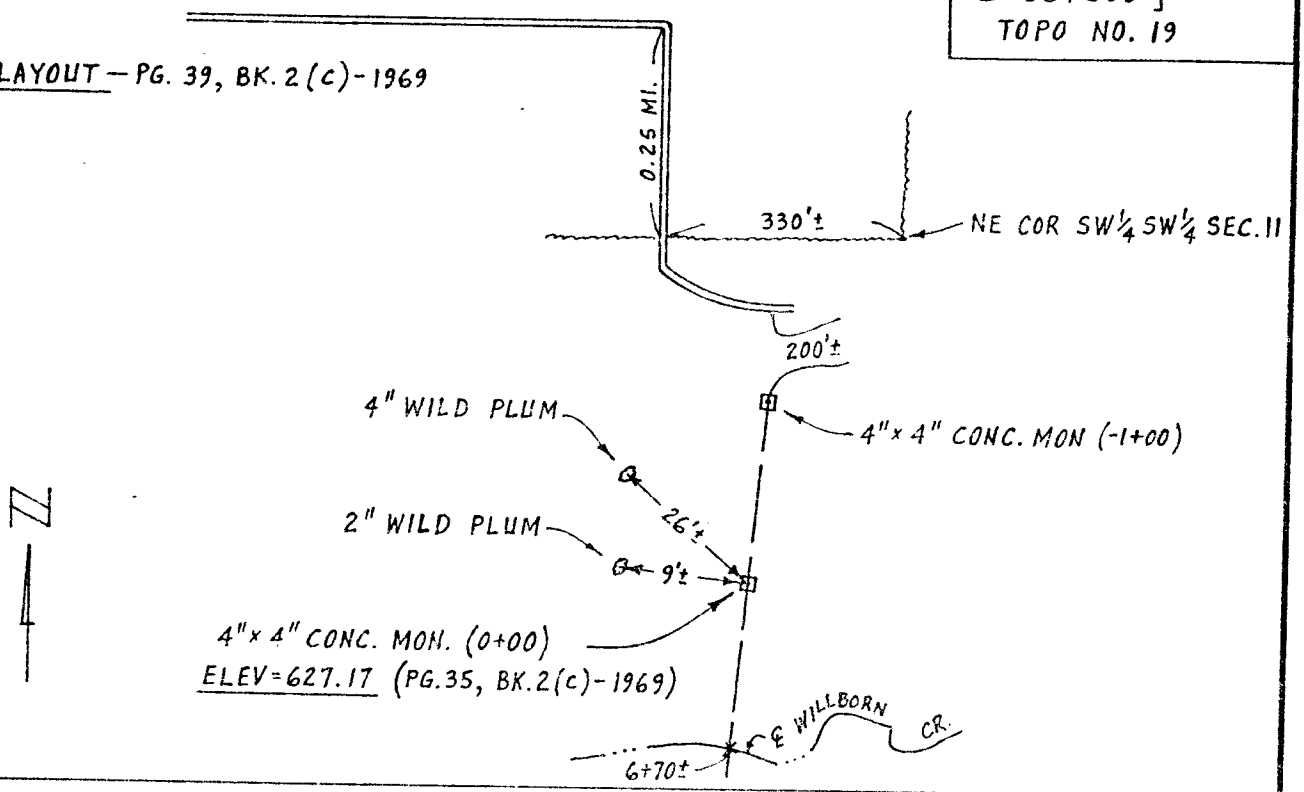
COMPUTATION SHEET

PROJECT	PAGE	COMPUTED BY	DATE
LAKE SHELBYVILLE	22 OF 40	WJM	7-20-81
SUBJECT: SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

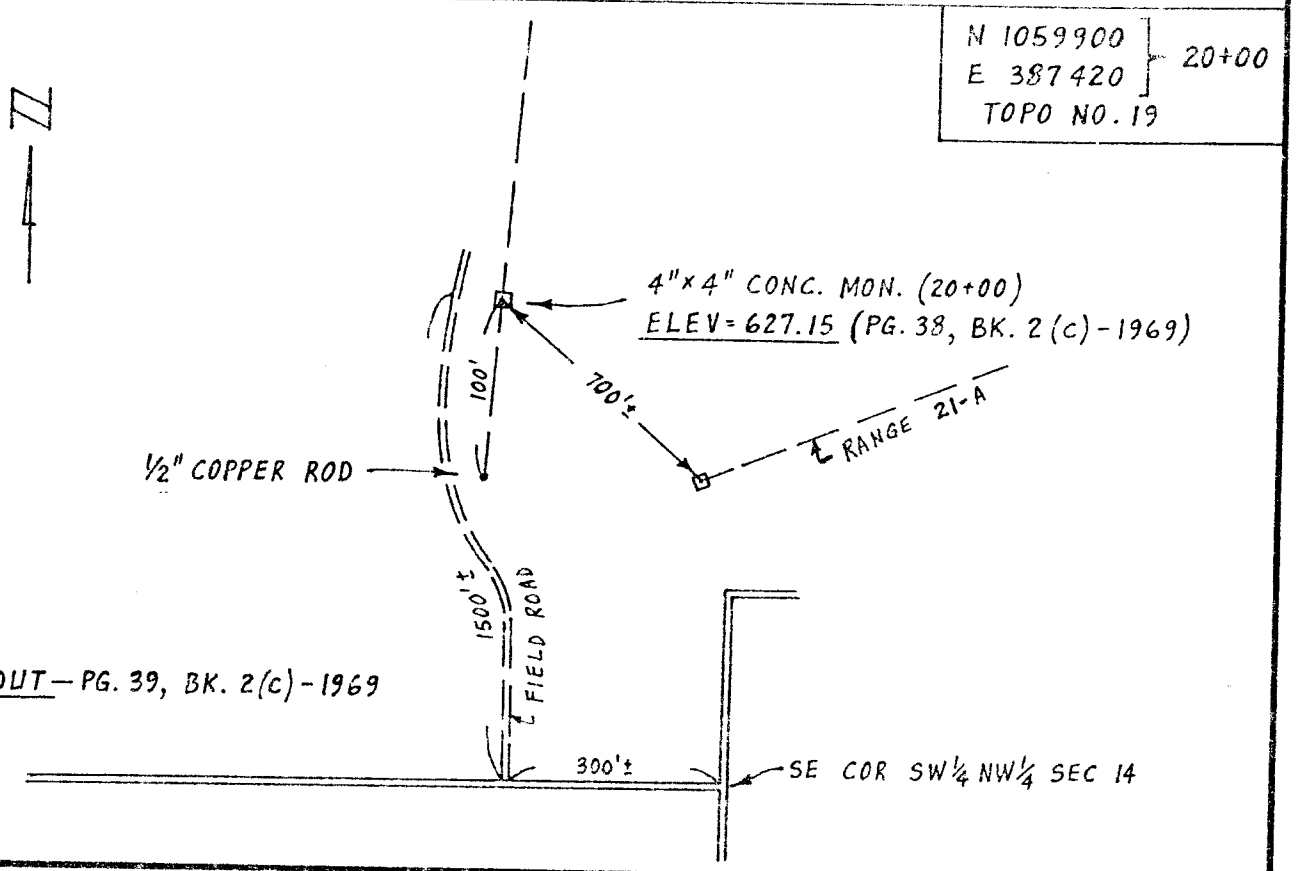
RANGE 22-B

N 1061 900
E 387600 } 0+00
TOPO NO. 19

LAYOUT — PG. 39, BK. 2(c)-1969



N 1059900
E 387420 } 20+00
TOPO NO. 19

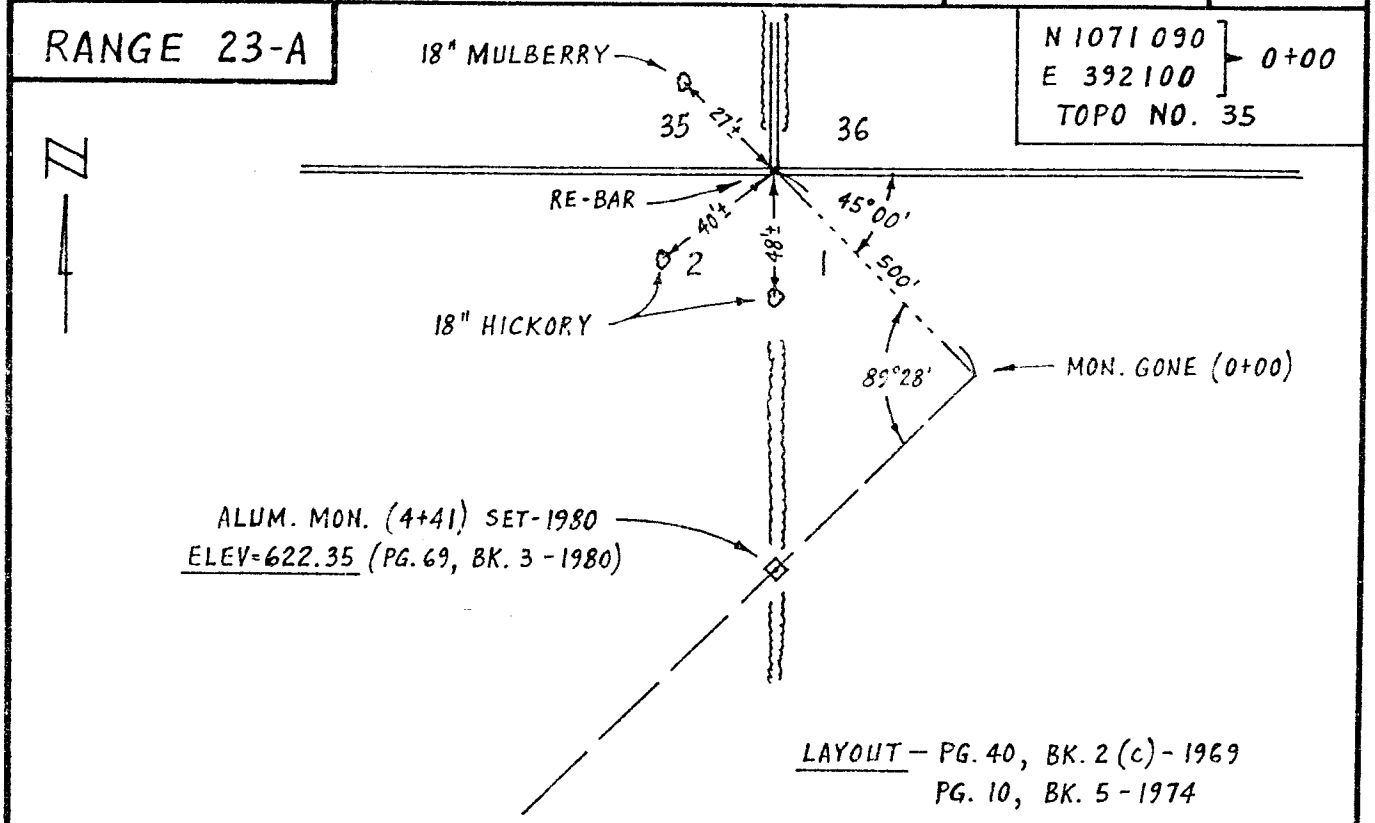


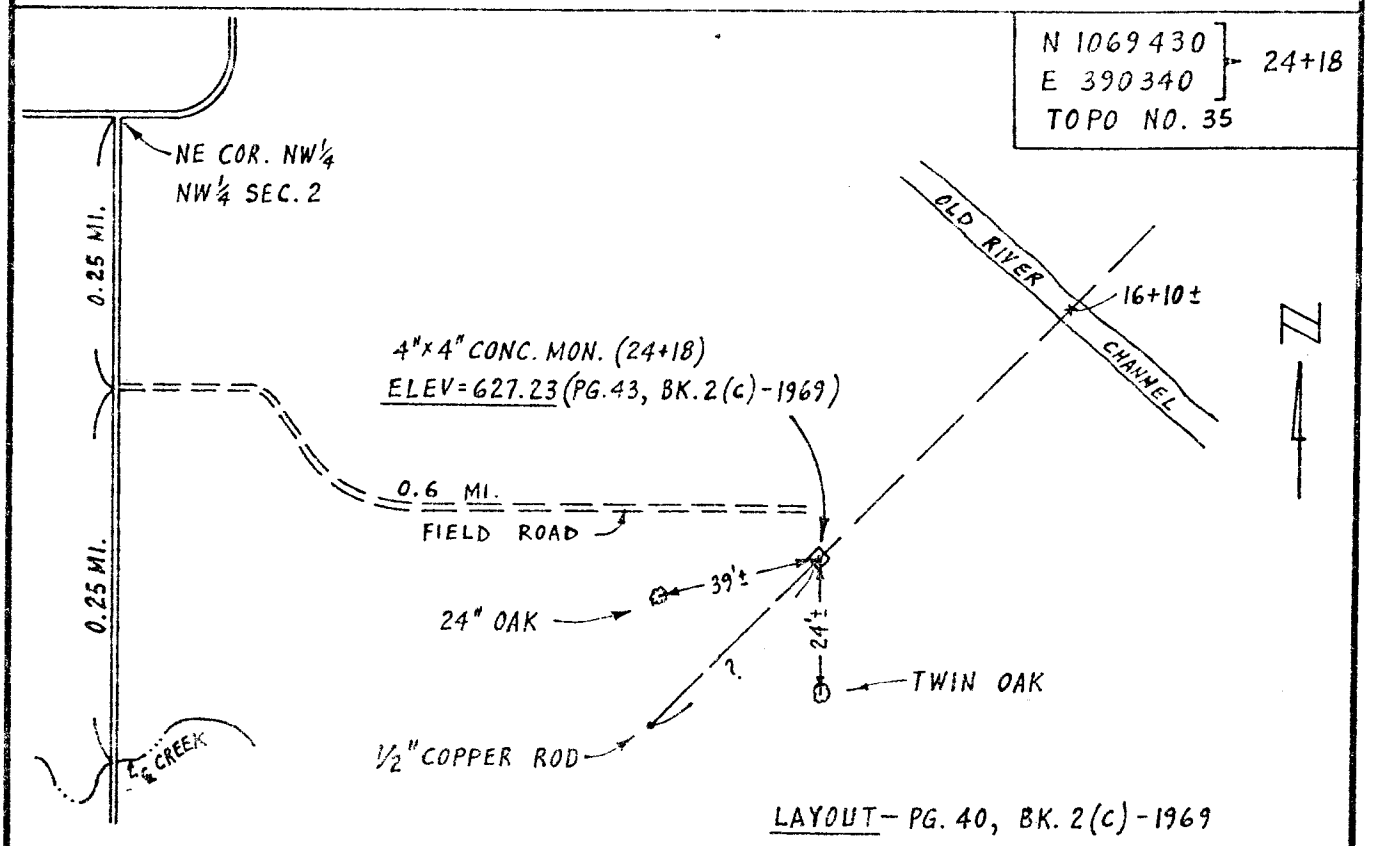
LAYOUT — PG. 39, BK. 2(c)-1969

COMPUTATION SHEET

PROJECT	PAGE	COMPUTED BY	DATE
LAKE SHELBYVILLE	23 OF 40	W&M	7-23-81
SUBJECT: SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

RANGE 23-A



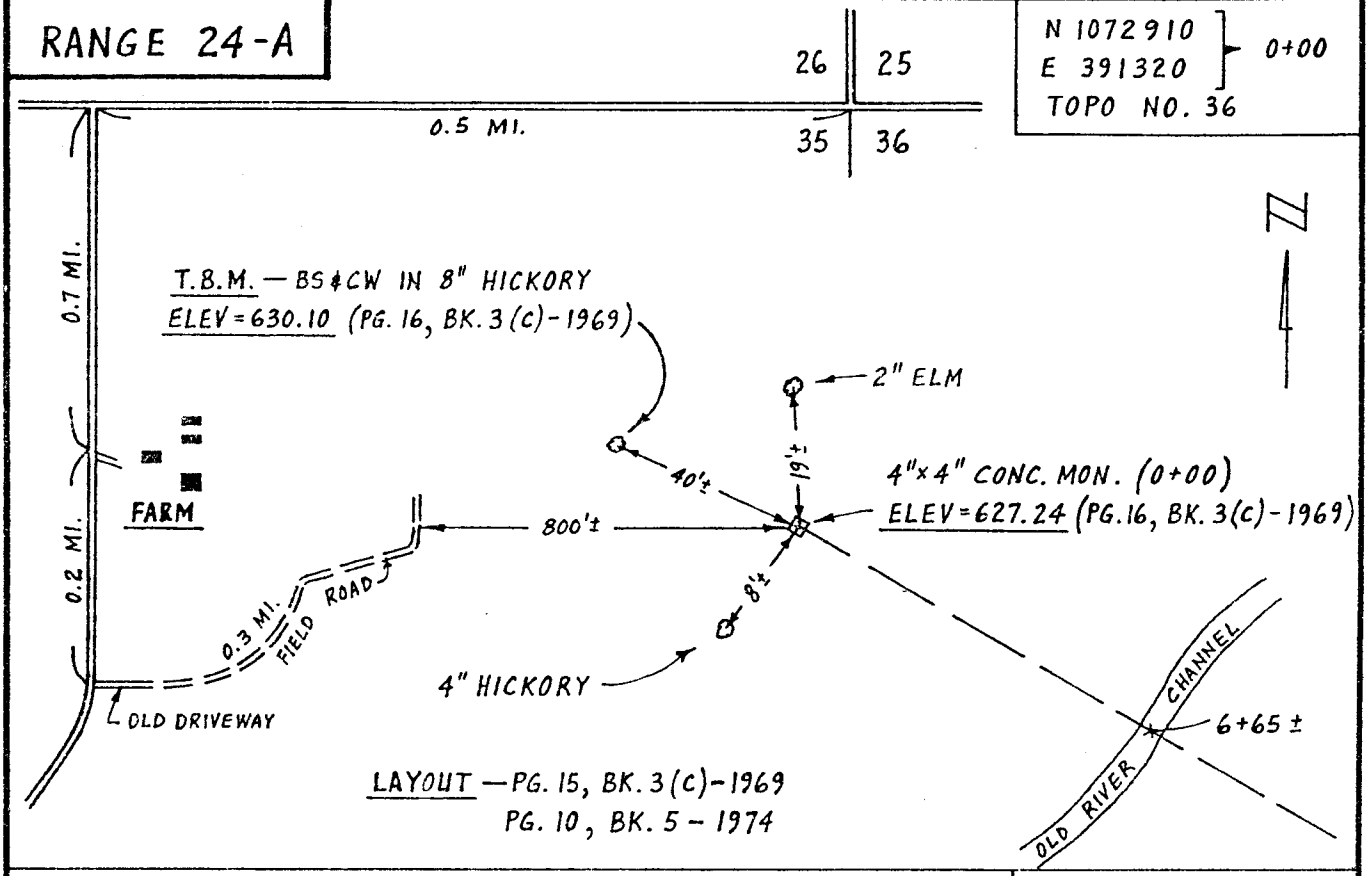


COMPUTATION SHEET

PROJECT	LAKE SHELBYVILLE	PAGE 24 OF 40	COMPUTED BY WDM	DATE 7-27-81
SUBJECT	SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

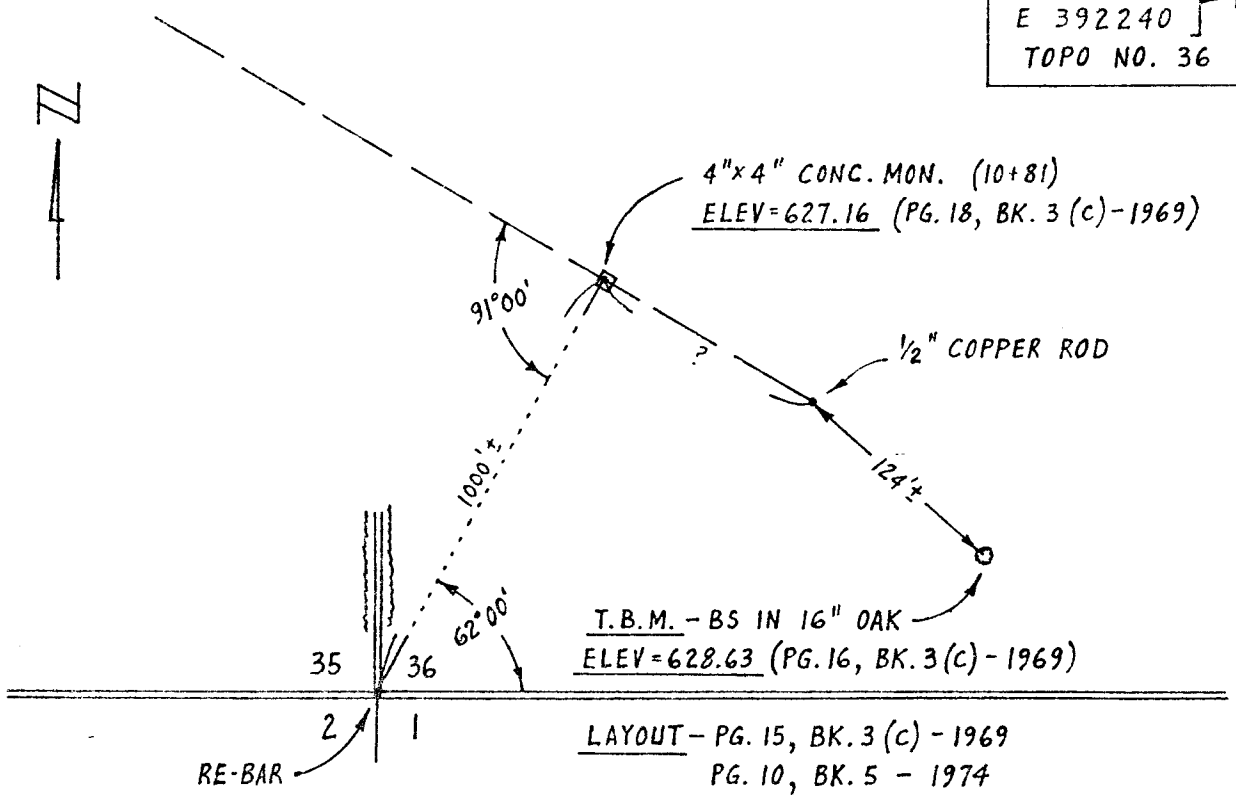
RANGE 24-A

N 1072910
E 391320
TOPO NO. 36
0+00



LAYOUT — PG. 15, BK. 3 (c) - 1969
PG. 10, BK. 5 - 1974

N 1072340
E 392240
TOPO NO. 36
10+81



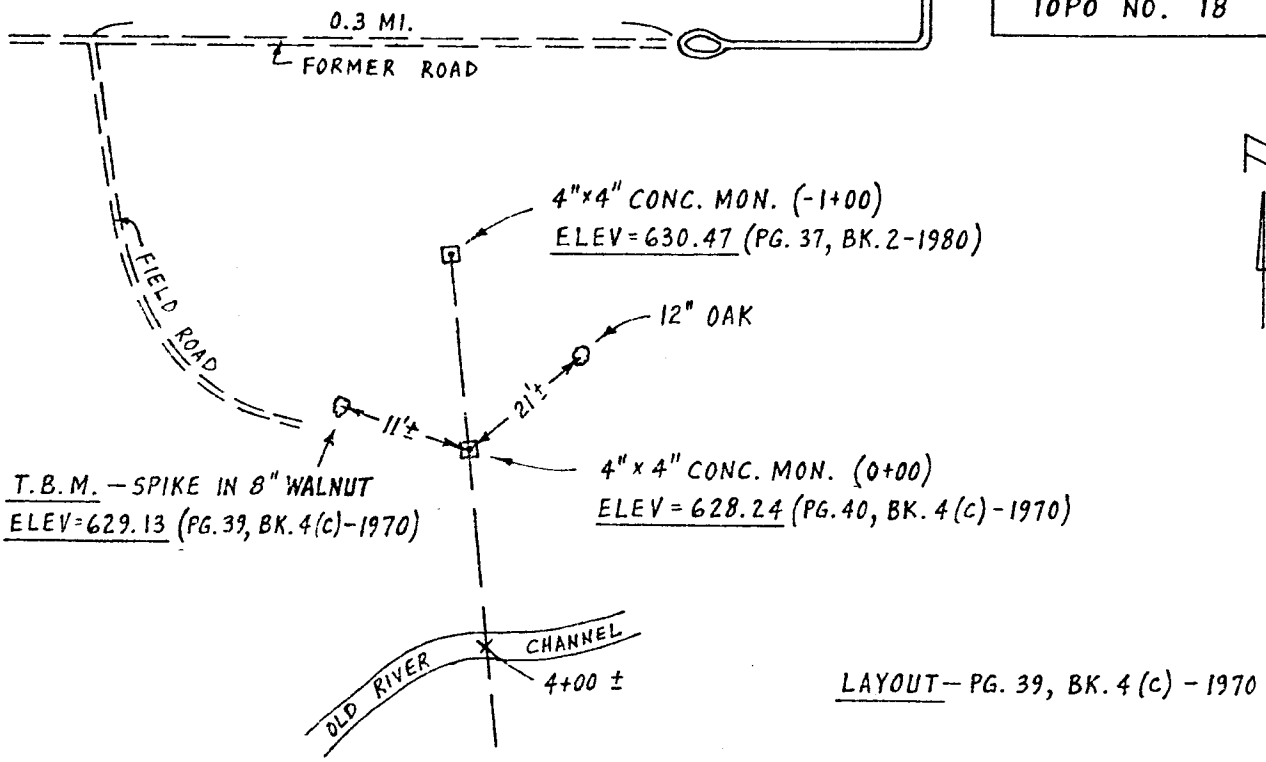
LAYOUT - PG. 15, BK. 3 (c) - 1969
PG. 10, BK. 5 - 1974

COMPUTATION SHEET

PROJECT	LAKE SHELBYVILLE	PAGE 25 OF 40	COMPUTED BY WJM	DATE 7-28-81
SUBJECT	SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

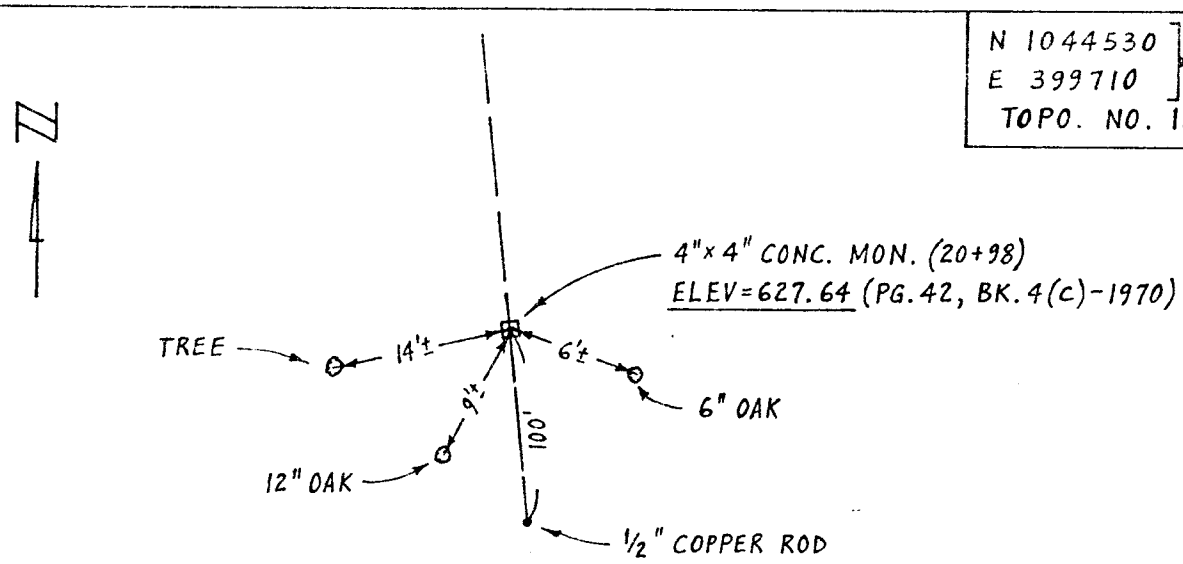
RANGE 25-A

N 1046620
E 399470 } 0+00
TOPO NO. 18



LAYOUT — PG. 39, BK. 4(c) - 1970

N 1044530
E 399710 } 20+98
TOPO. NO. 18

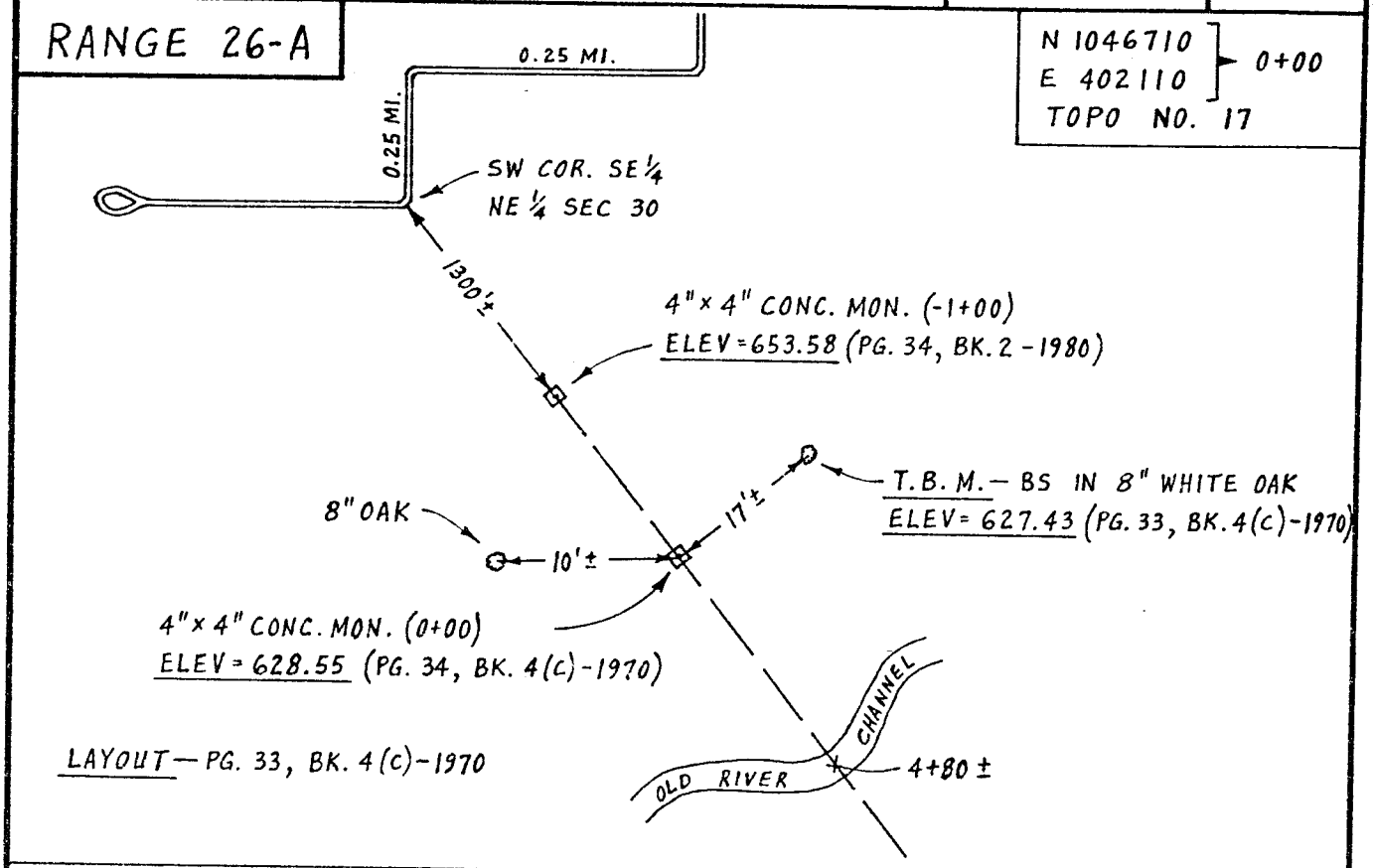


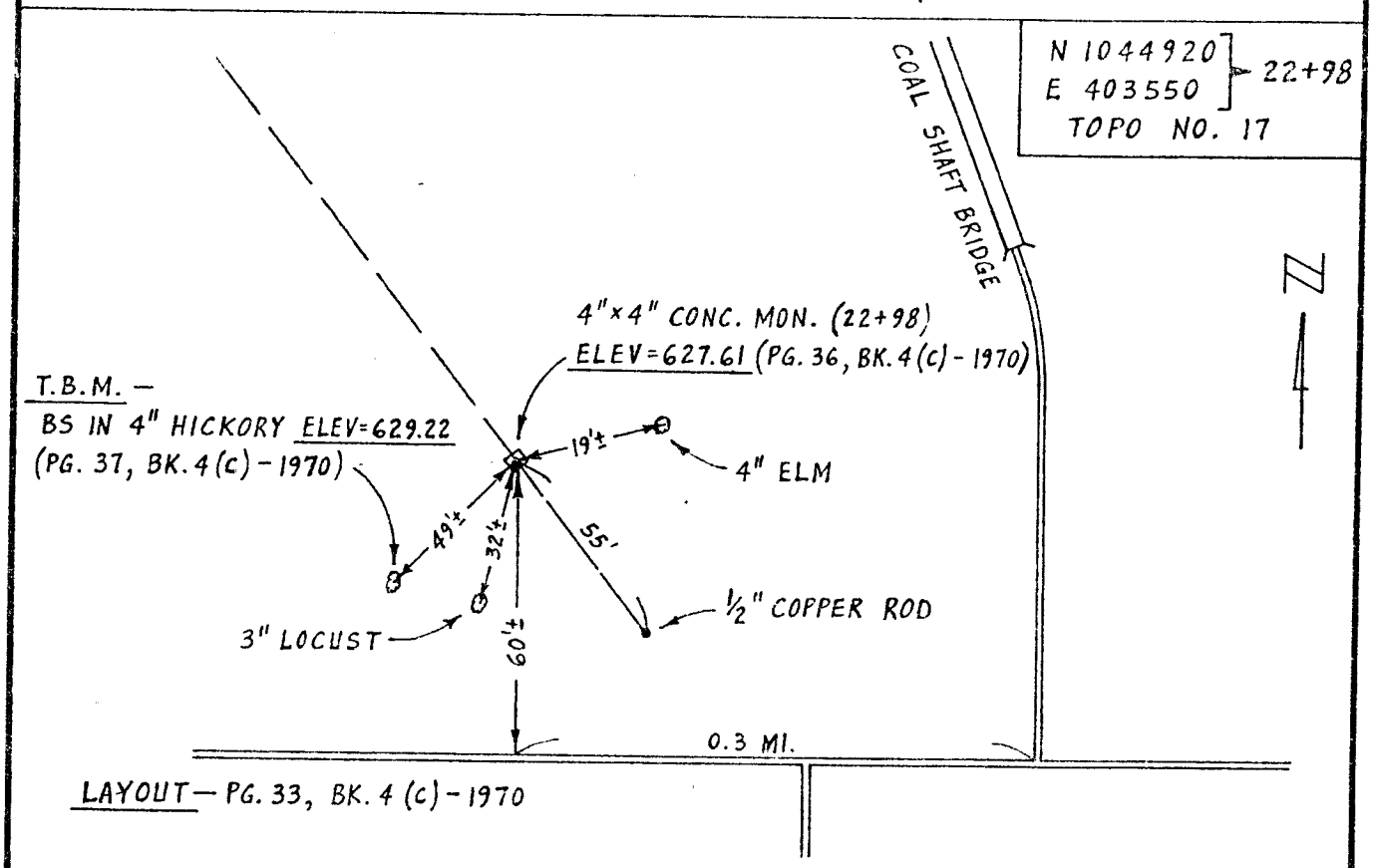
LAYOUT — PG. 39, BK. 4(c) - 1970

COMPUTATION SHEET

PROJECT LAKE SHELBYVILLE	PAGE 26 OF 40	COMPUTED BY WJM	DATE 7-29-81
SUBJECT SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

RANGE 26-A

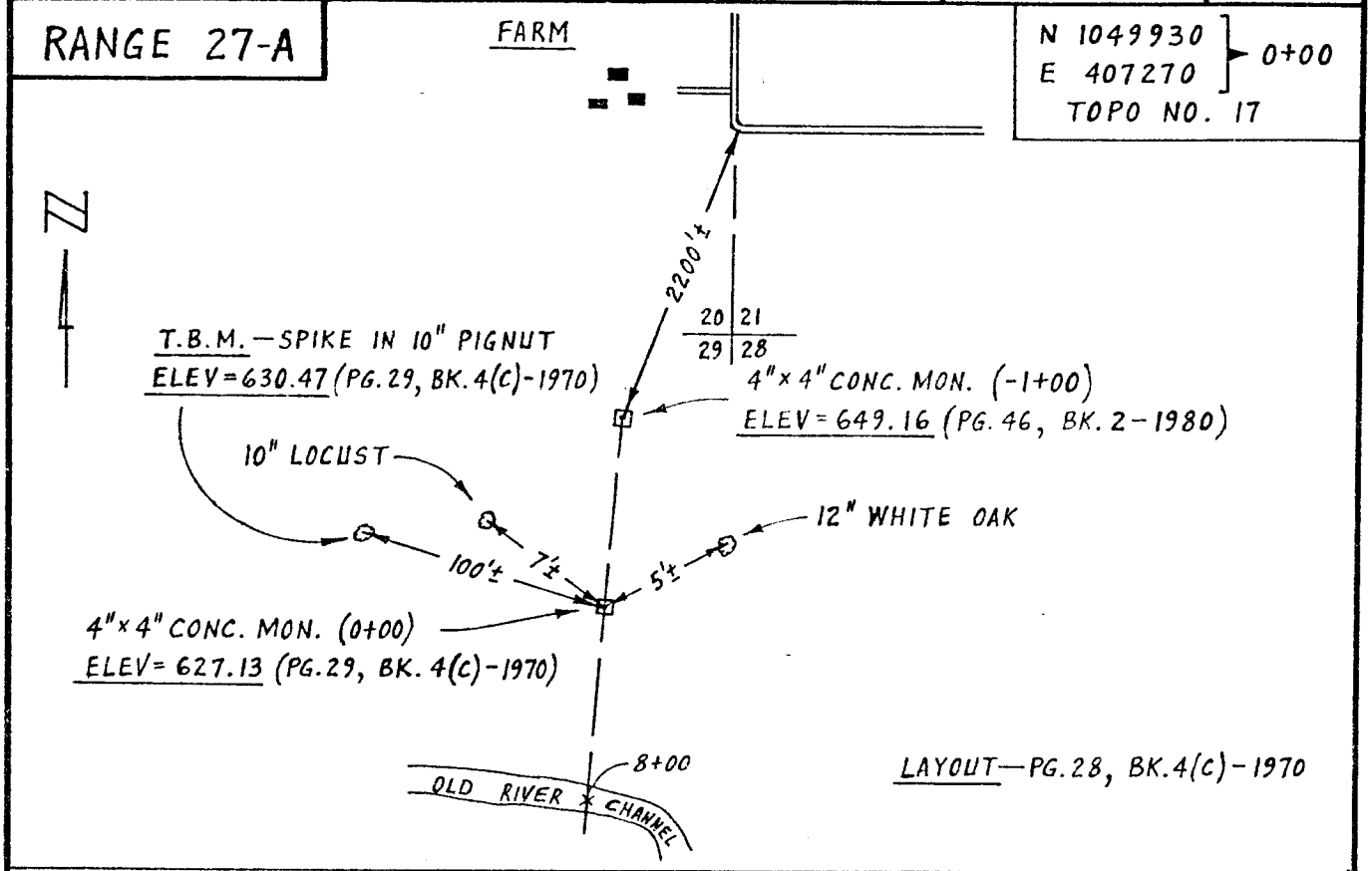


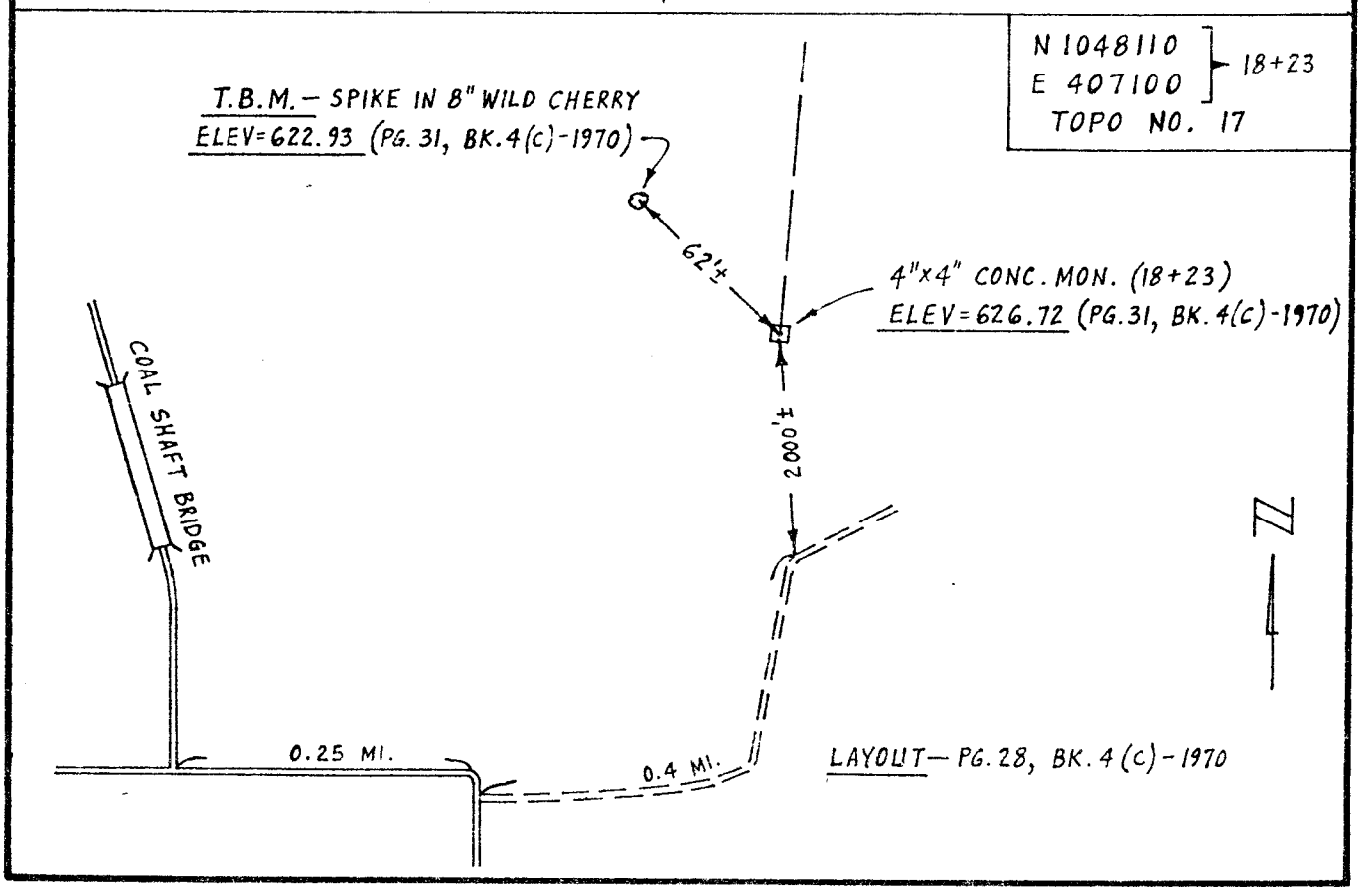


COMPUTATION SHEET

PROJECT LAKE SHELBYVILLE	PAGE 27 OF 40	COMPUTED BY WBM	DATE 7-30-81
SUBJECT SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

RANGE 27-A

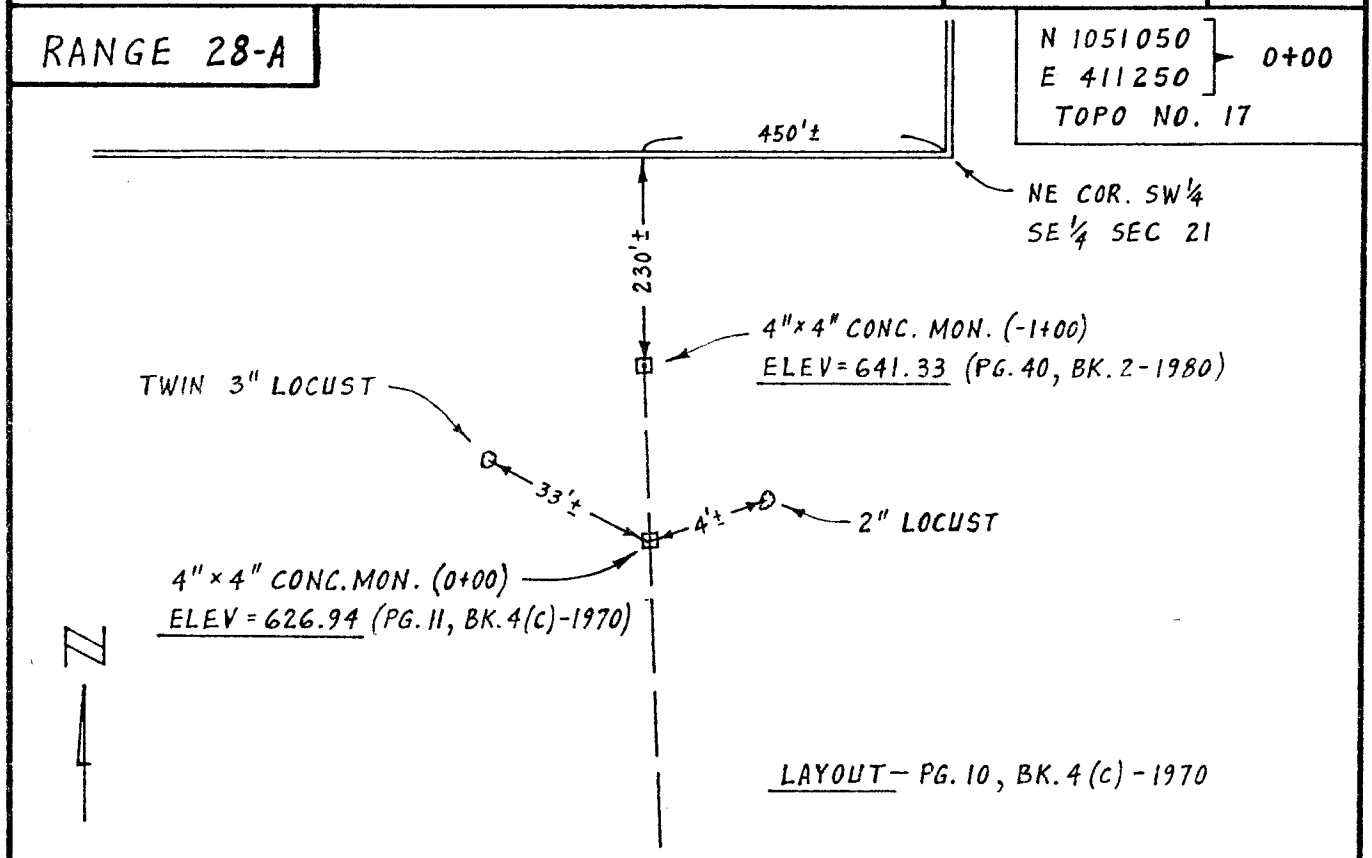


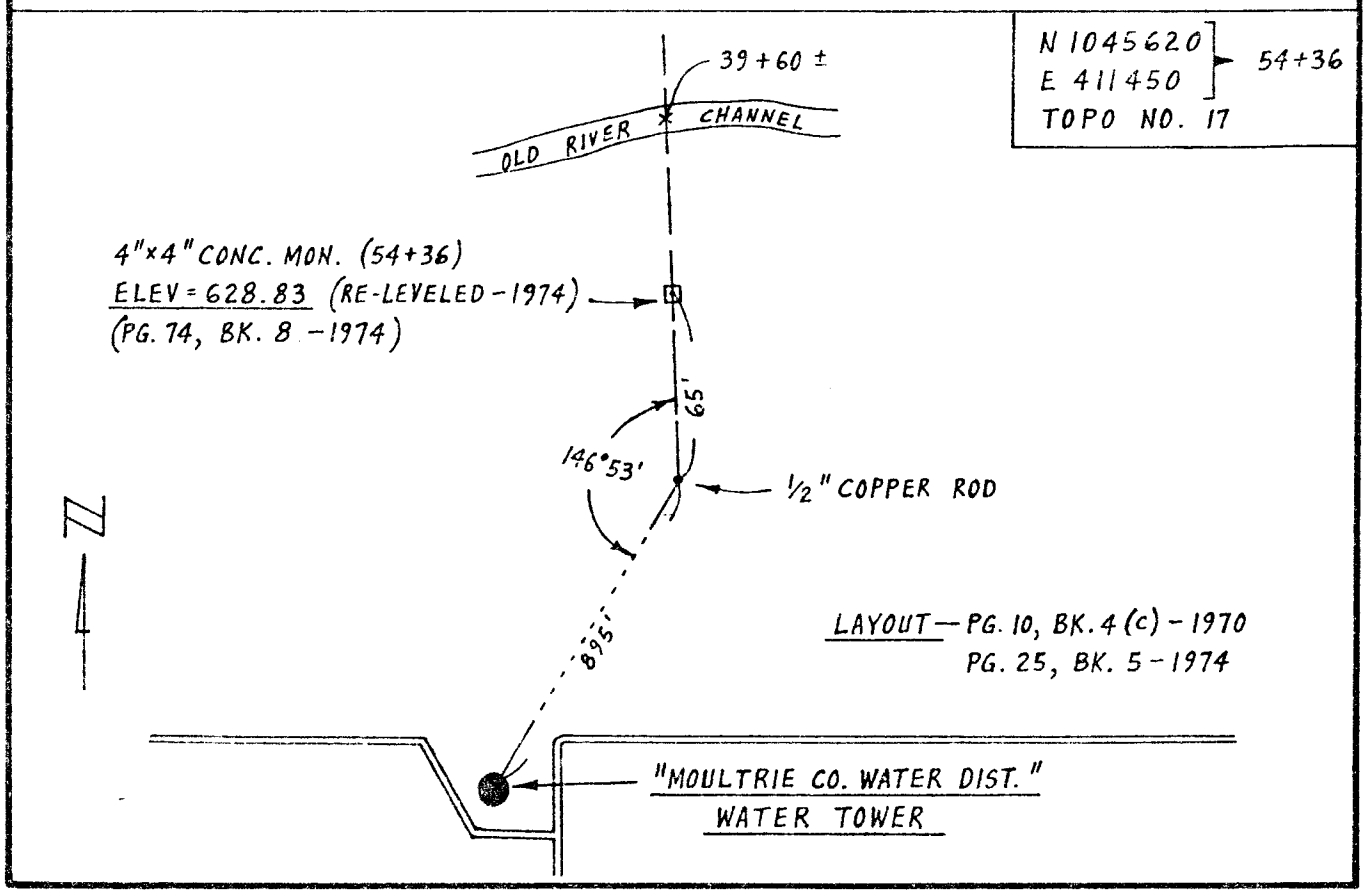


COMPUTATION SHEET

PROJECT	LAKE SHELBYVILLE	PAGE 28 OF 40	COMPUTED BY W&M	DATE 8-03-81
SUBJECT	SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

RANGE 28-A



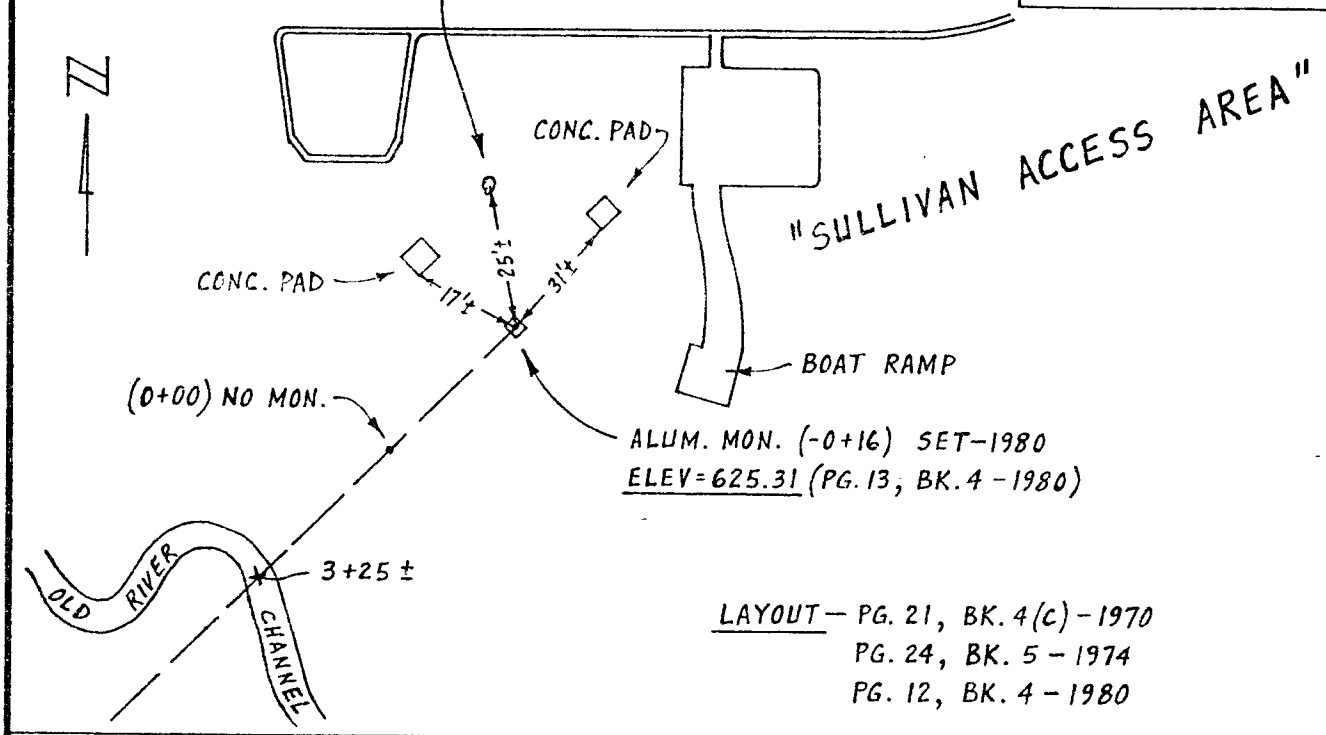


COMPUTATION SHEET

PROJECT	LAKE SHELBYVILLE	PAGE 29 OF 40	COMPUTED BY WJM	DATE 8-03-81
SUBJECT	SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

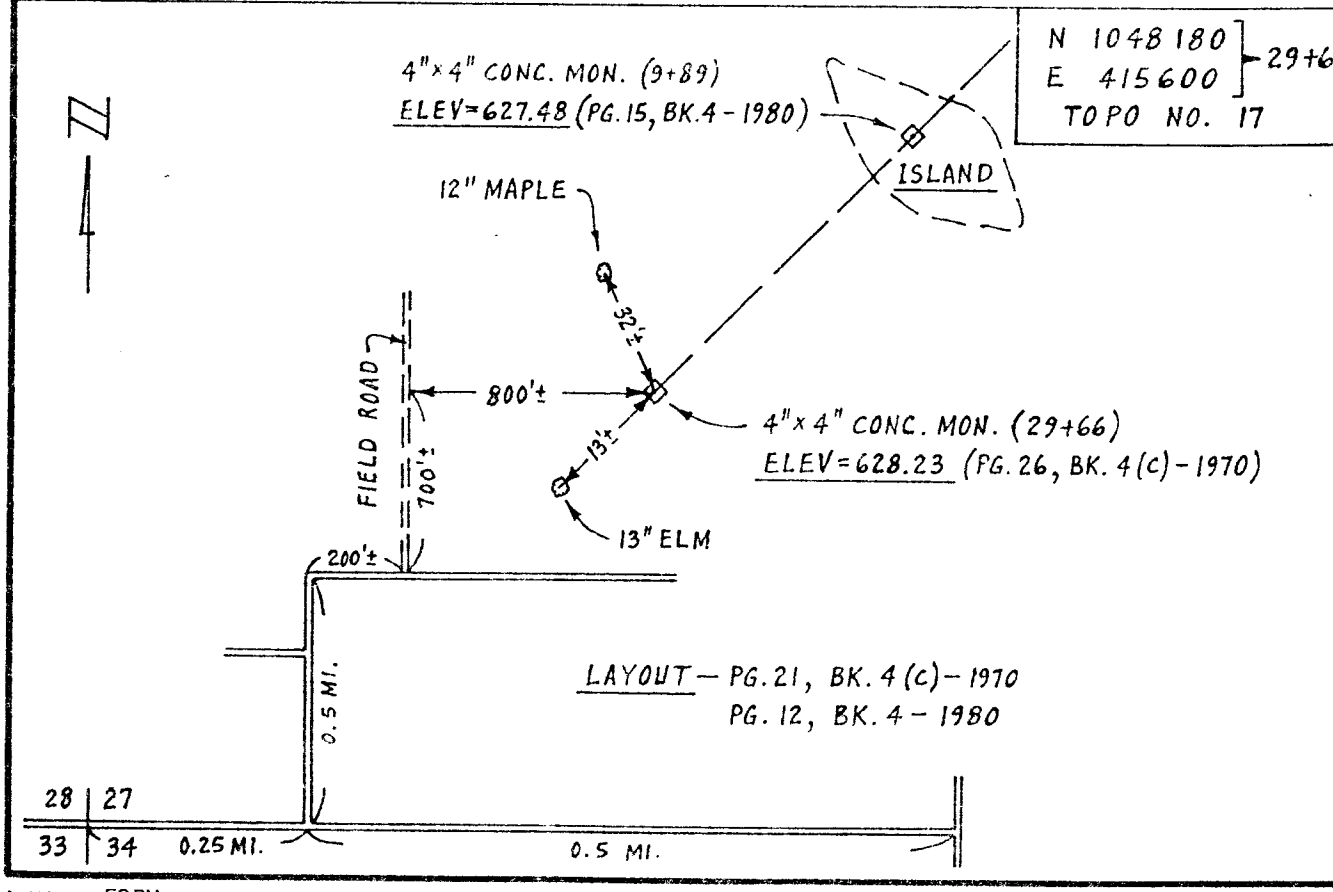
RANGE 29-A

N 1050270
E 417700 } 0+00
TOPO NO. 16



LAYOUT — PG. 21, BK. 4(c) - 1970
PG. 24, BK. 5 - 1974
PG. 12, BK. 4 - 1980

N 1048180
E 415600 } 29+66
TOPO NO. 17



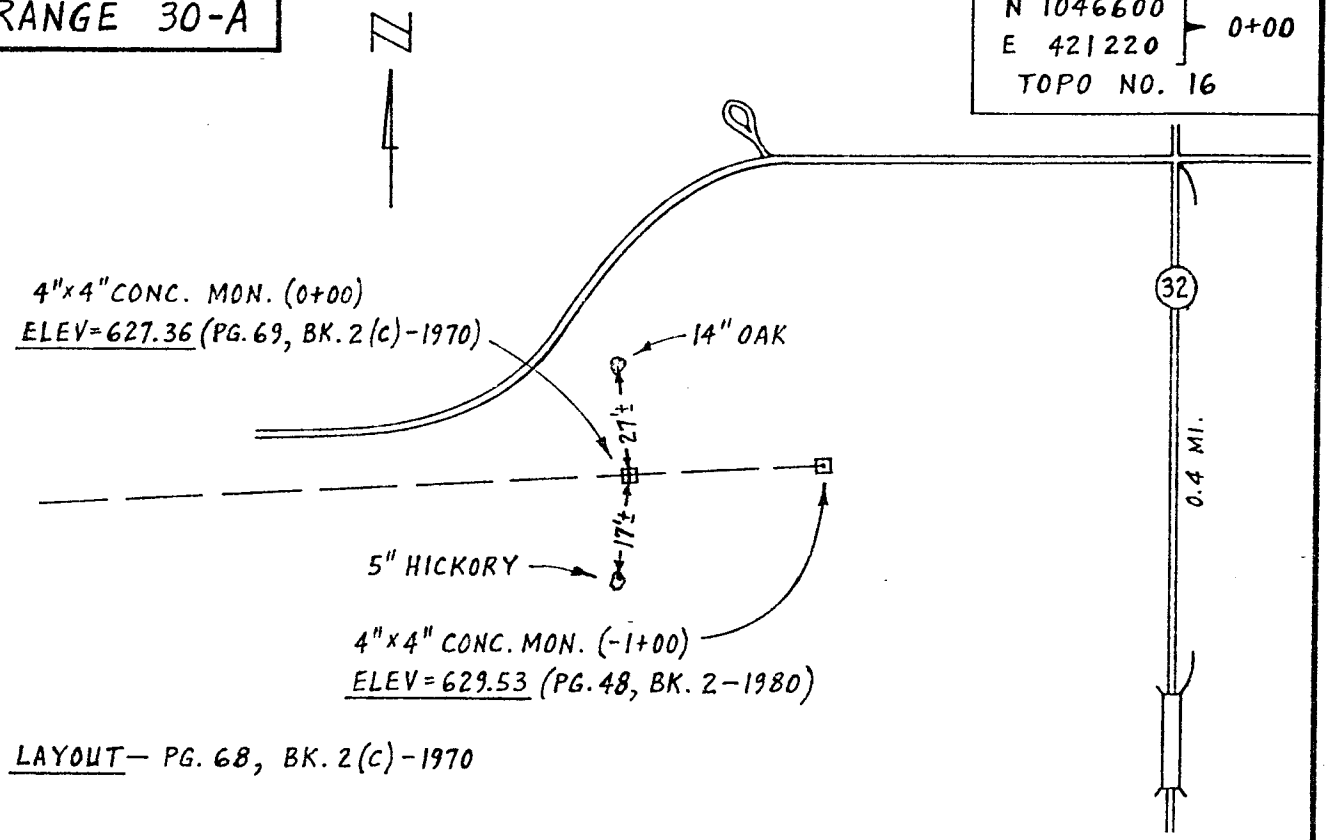
LAYOUT — PG. 21, BK. 4 (c) - 1970
PG. 12, BK. 4 - 1980

COMPUTATION SHEET

PROJECT	LAKE SHELBYVILLE	PAGE 30 OF 40	COMPUTED BY WJM	DATE 8-05-81
SUBJECT	SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

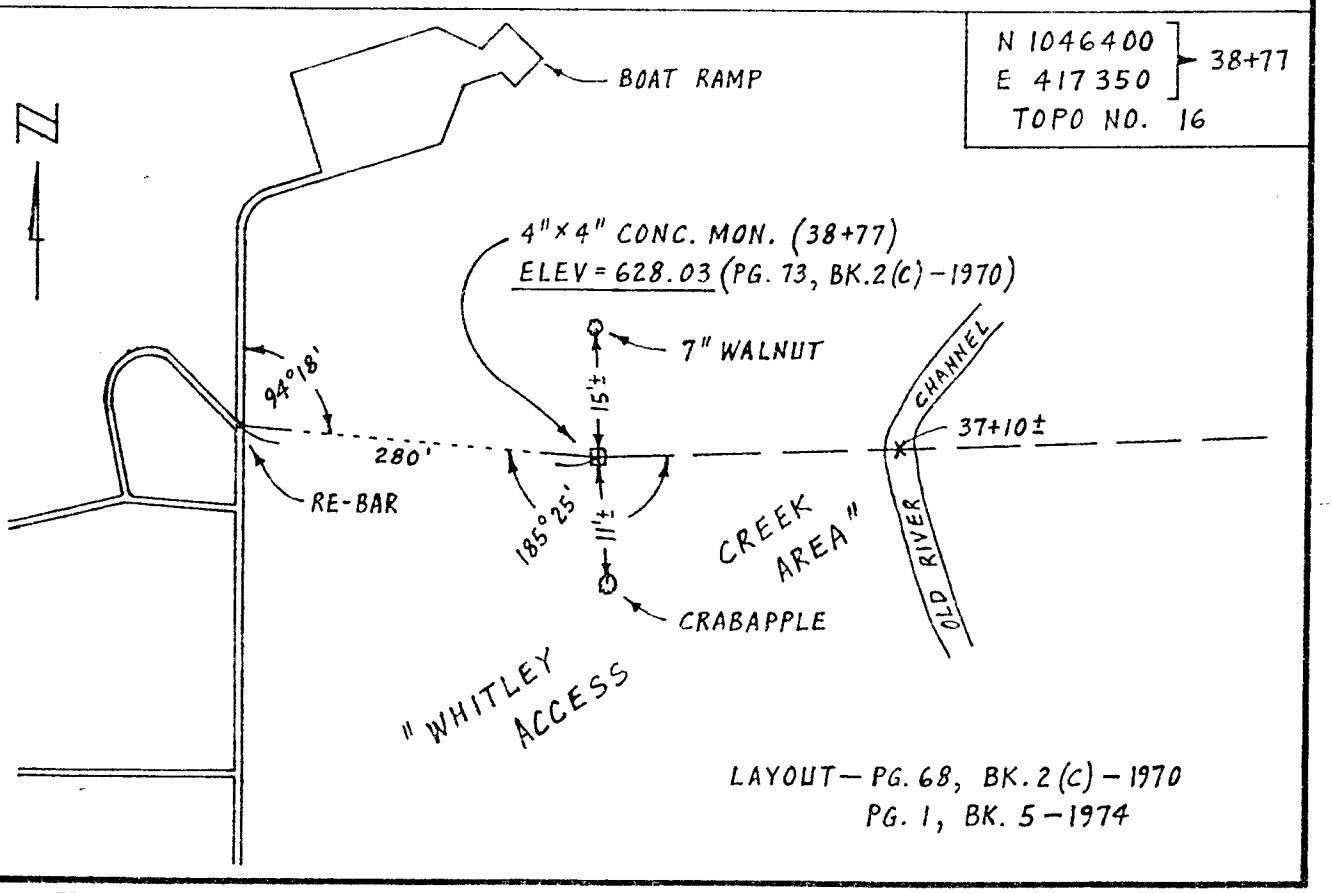
RANGE 30-A

N 1046600
E 421220 } 0+00
TOPO NO. 16



LAYOUT— PG. 68, BK. 2(C)-1970

N 1046400
E 417350 } 38+77
TOPO NO. 16



LAYOUT— PG. 68, BK. 2(C)-1970
PG. 1, BK. 5-1974

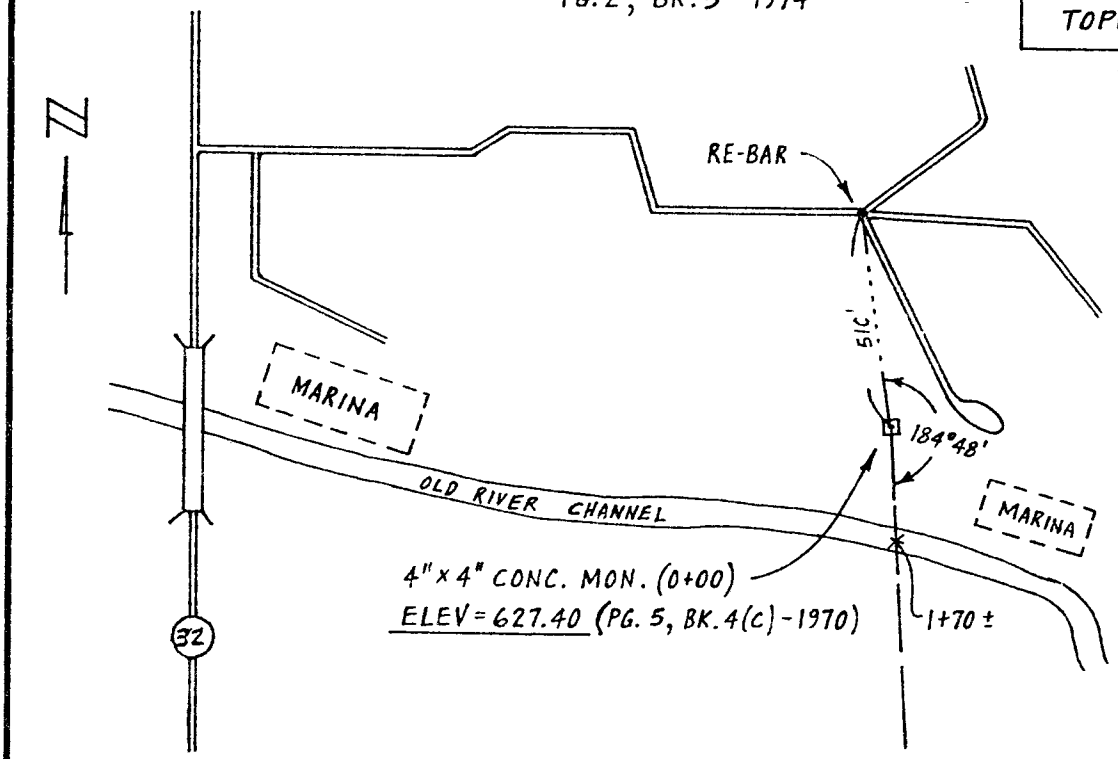
COMPUTATION SHEET

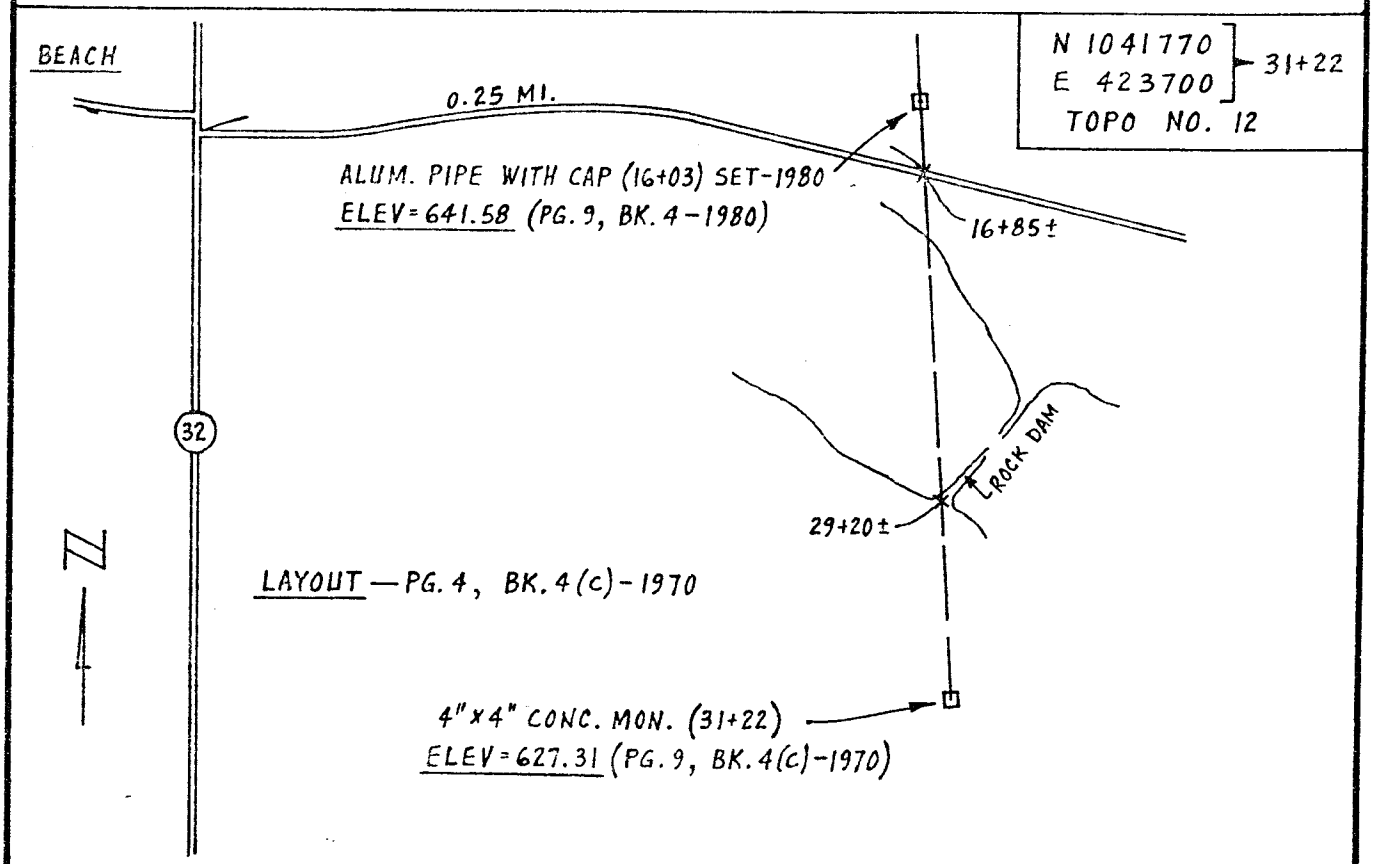
PROJECT	LAKE SHELBYVILLE	PAGE 31 OF 40	COMPUTED BY WJM	DATE 8-06-81
SUBJECT	SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

RANGE 31-A

LAYOUT– PG. 4, BK. 4(c)-1970
PG. 2, BK. 5-1974

N 1044890
E 423500
0+00
TOPO NO. 16





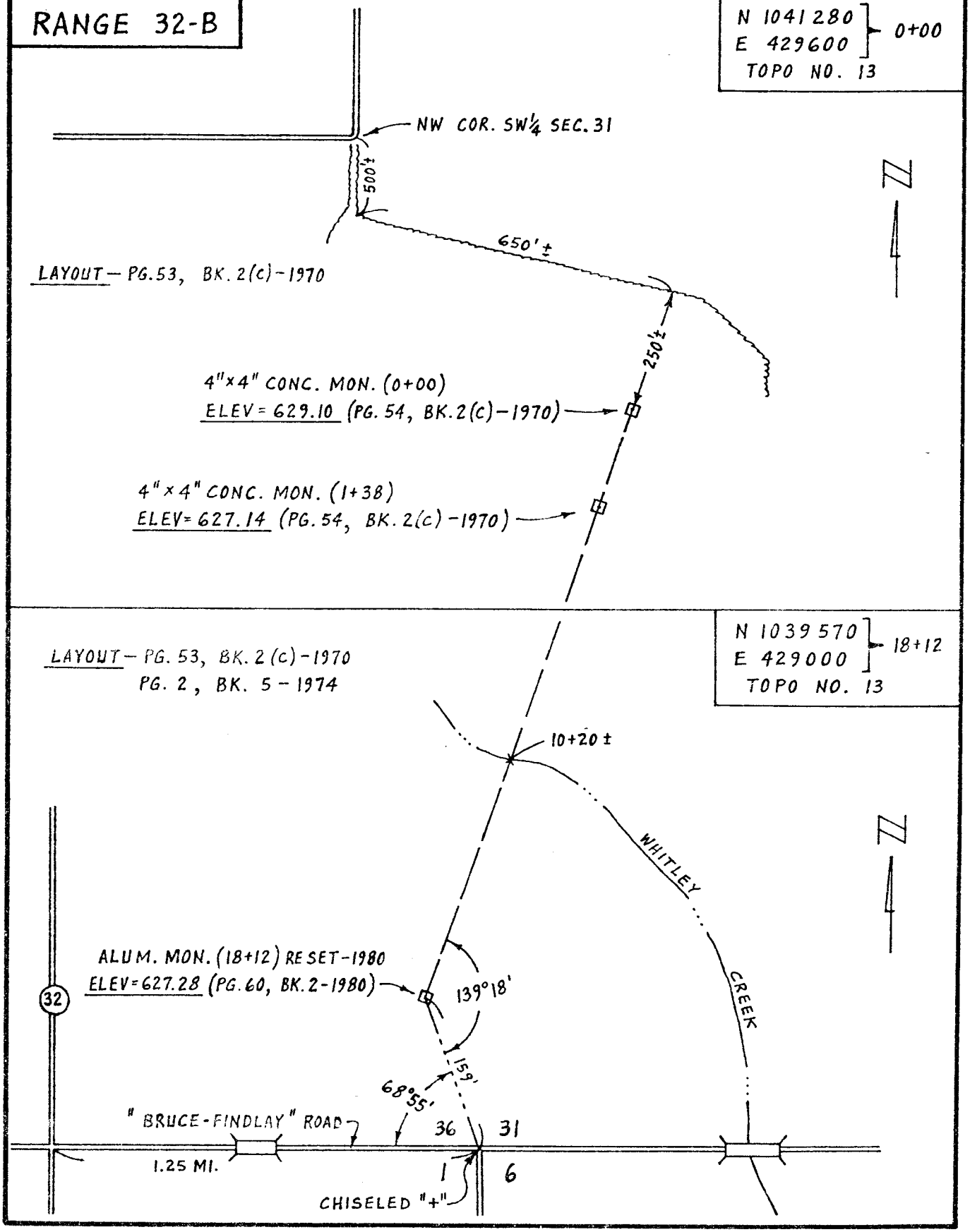
N 1041770
E 423700
31+22
TOPO NO. 12

COMPUTATION SHEET

PROJECT	LAKE SHELBYVILLE	PAGE 32 OF 40	COMPUTED BY WJM	DATE 8-06-81
SUBJECT	SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

RANGE 32-B

N 1041280
E 429600 } 0+00
TOPO NO. 13



LMV FORM 1 FEB 79 107e

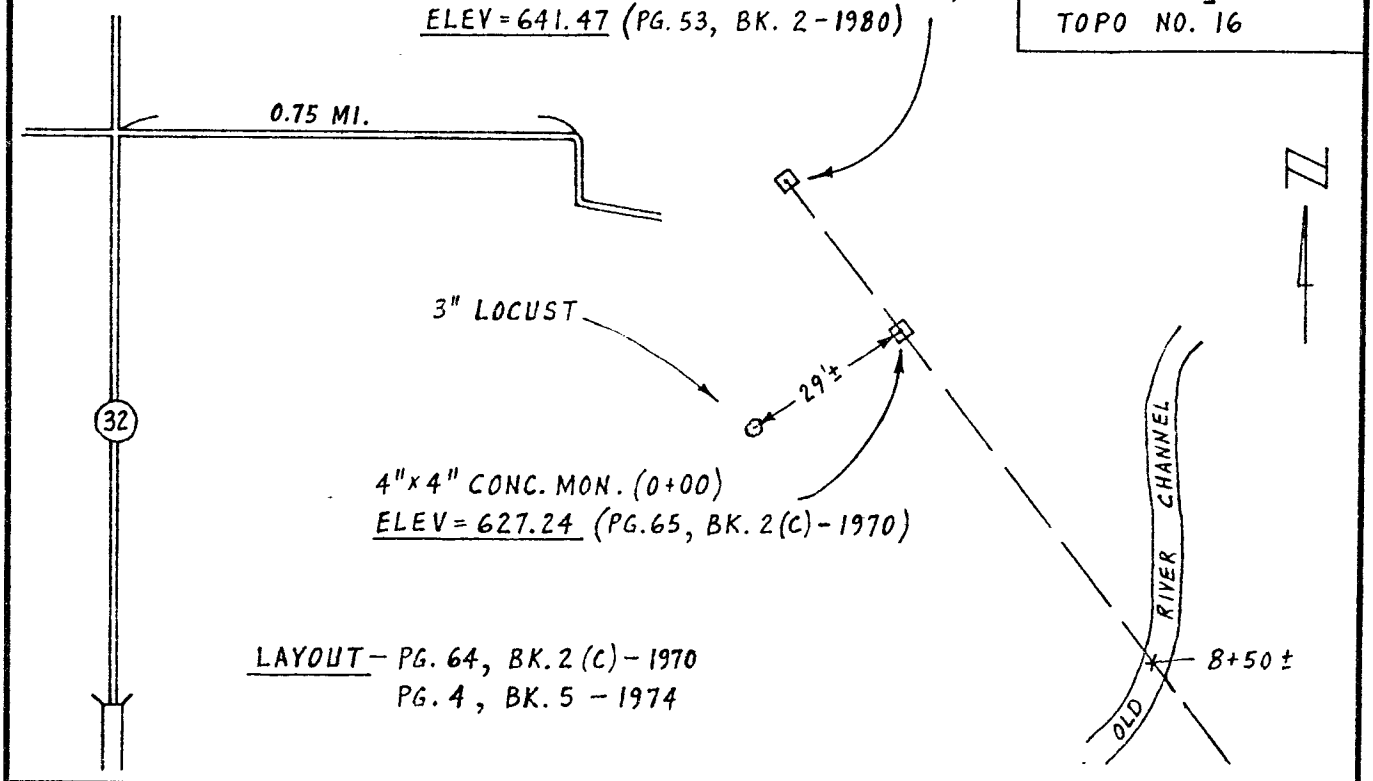
ORIGINAL

COMPUTATION SHEET

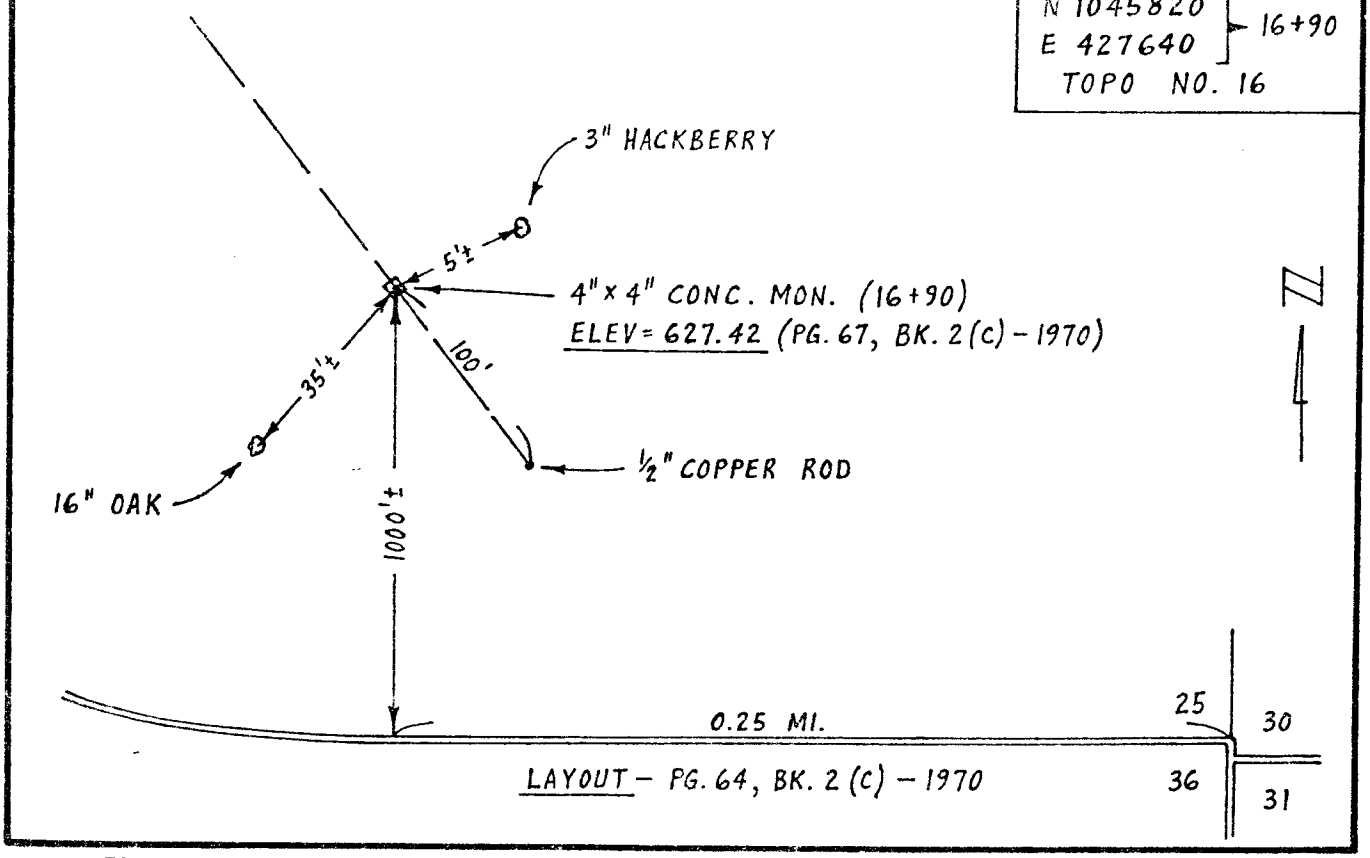
PROJECT LAKE SHELBYVILLE	PAGE 33 OF 40	COMPUTED BY WDM	DATE 8-07-81
SUBJECT SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

RANGE 33-A

N 1047150
E 426600 } 0+00
TOPO NO. 16



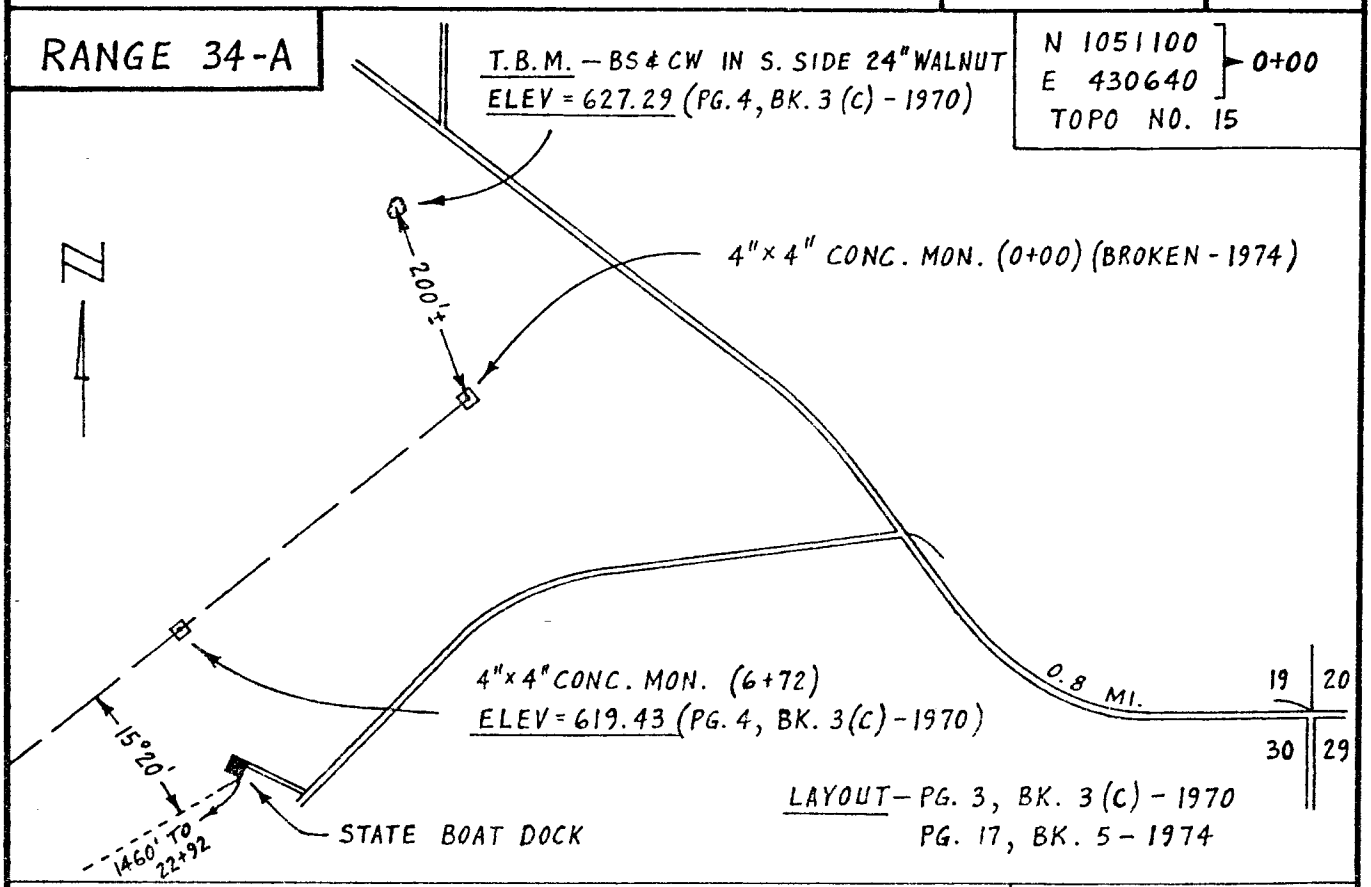
N 1045820
E 427640 } 16+90
TOPO NO. 16



COMPUTATION SHEET

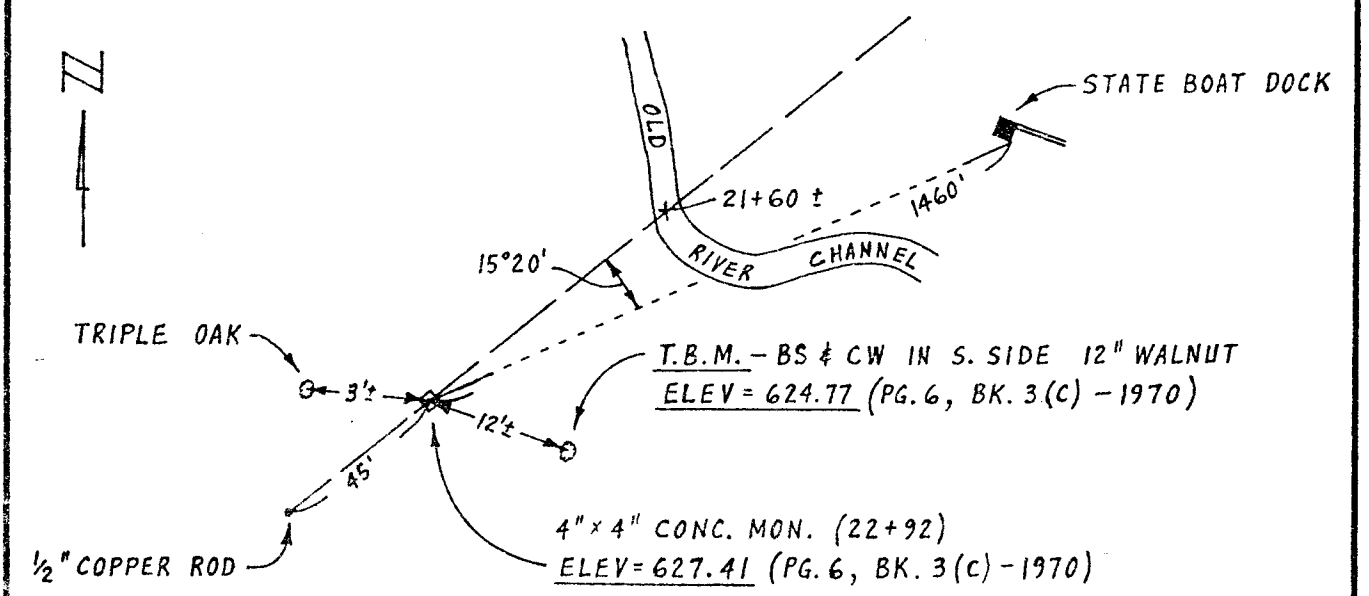
PROJECT	LAKE SHELBYVILLE	PAGE 34 OF 40	COMPUTED BY W&M	DATE 9-08-81
SUBJECT	SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

RANGE 34-A



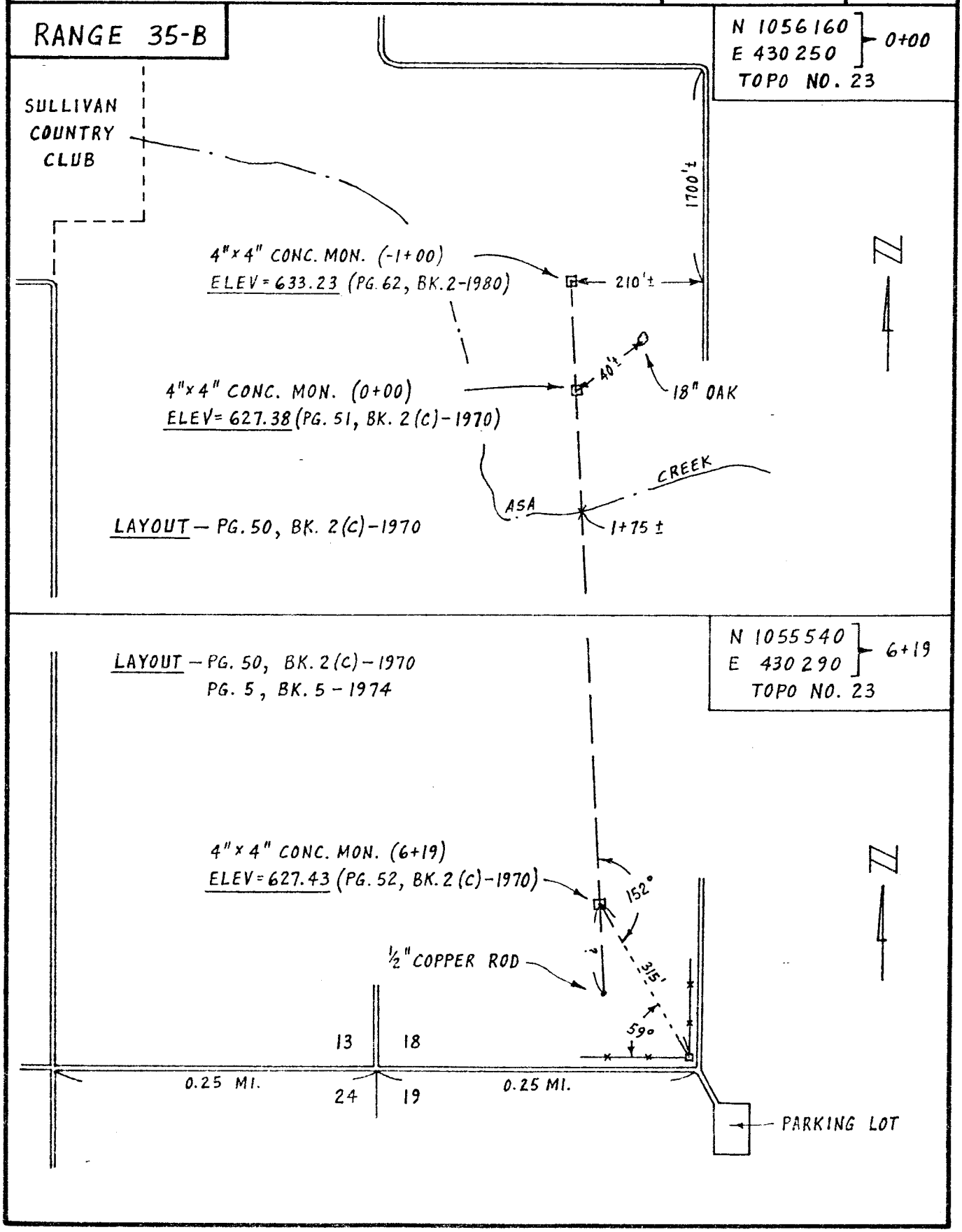
LAYOUT – PG. 3, BK. 3(C) - 1970

N 1050000
E 428630
22+92
TOPO NO. 16



COMPUTATION SHEET

PROJECT LAKE SHELBYVILLE	PAGE 35 OF 40	COMPUTED BY W&M	DATE 9-08-81
SUBJECT SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

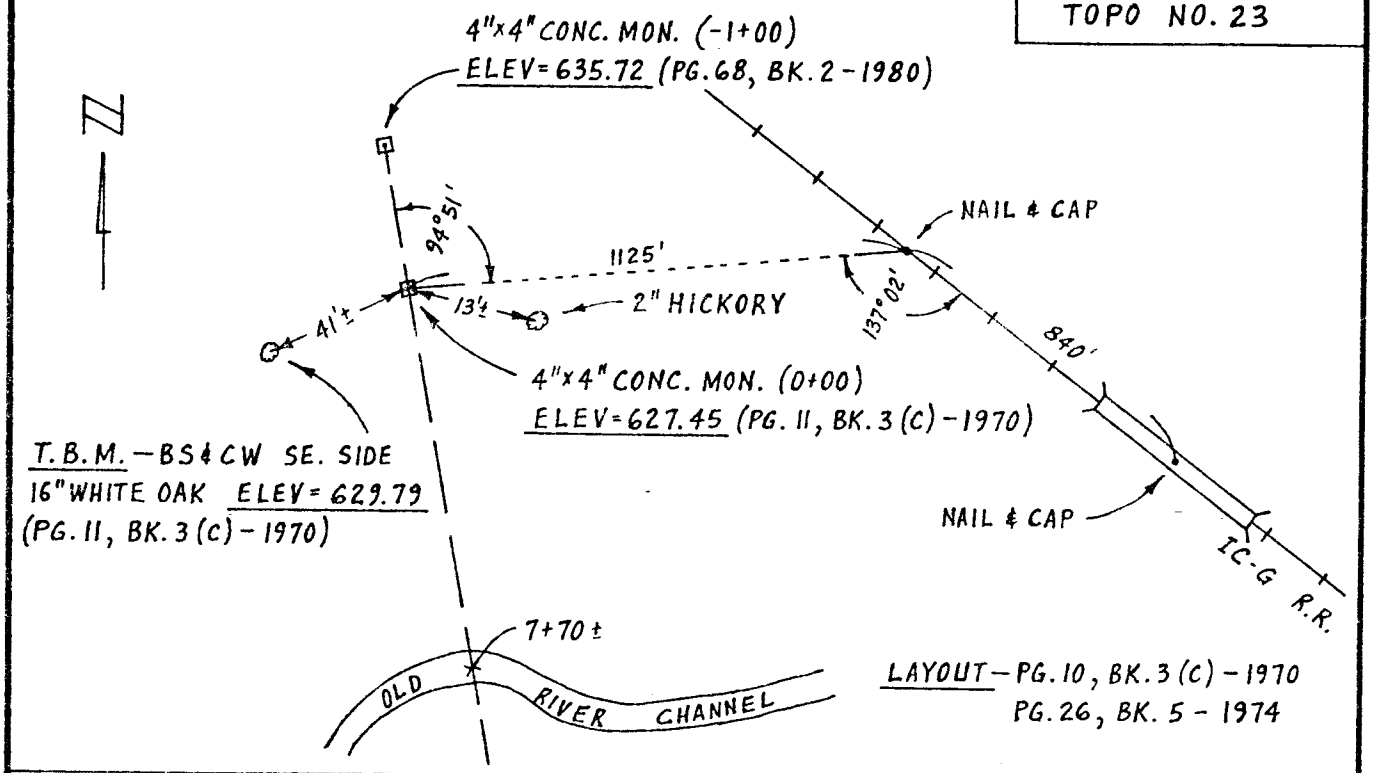


COMPUTATION SHEET

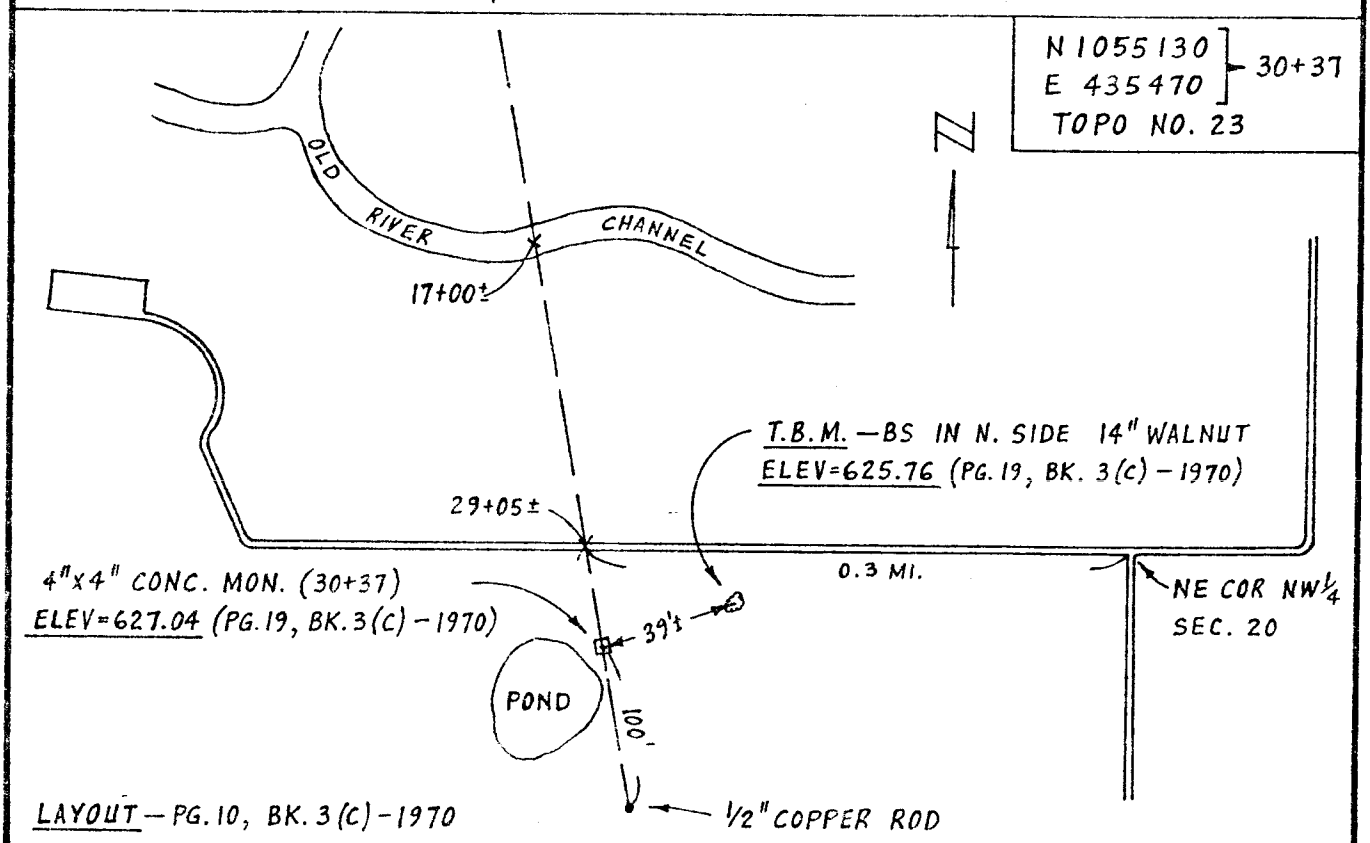
PROJECT	LAKE SHELBYVILLE	PAGE 36 OF 40	COMPUTED BY WJM	DATE 9-09-81
SUBJECT	SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

RANGE 36-A

N 1058120
E 434900 } 0+00
TOPO NO. 23



N 1055130
E 435470 } 30+37
TOPO NO. 23

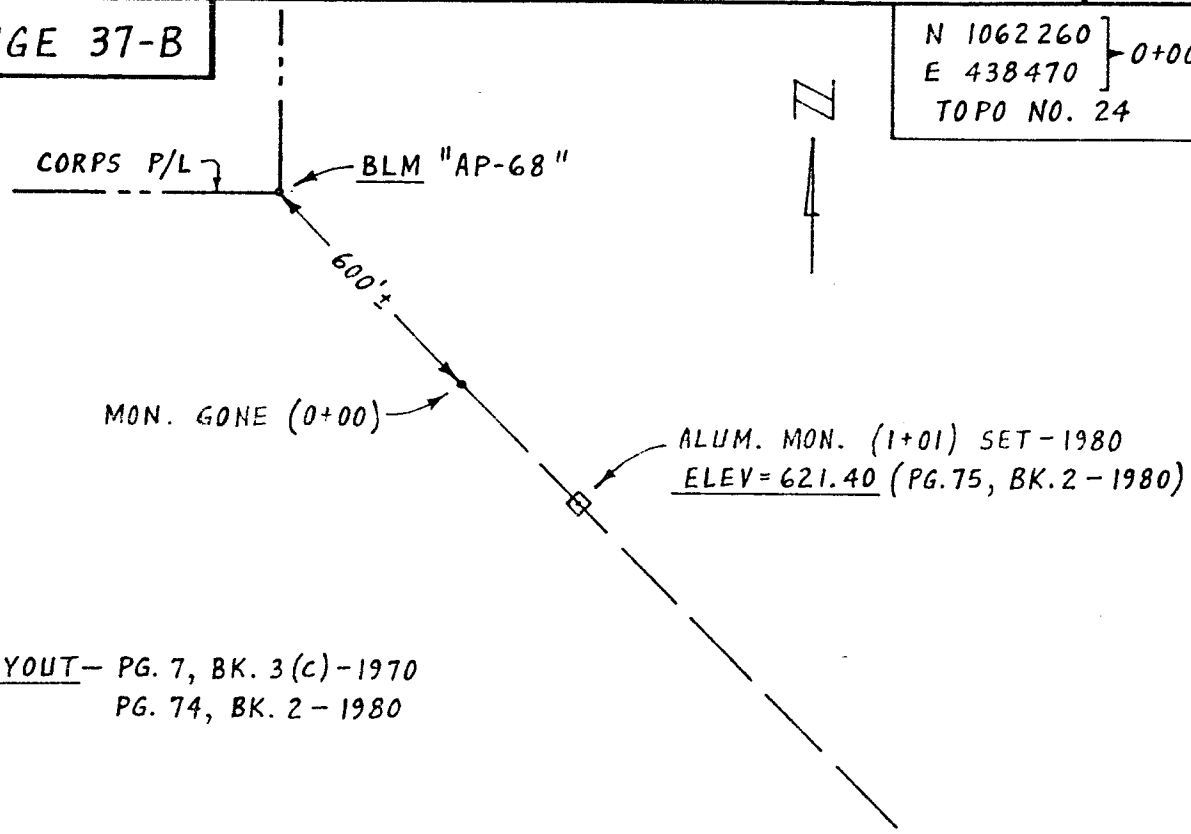


COMPUTATION SHEET

PROJECT	LAKE SHELBYVILLE	PAGE 37 OF 40	COMPUTED BY WJM	DATE 9-16-81
SUBJECT	SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

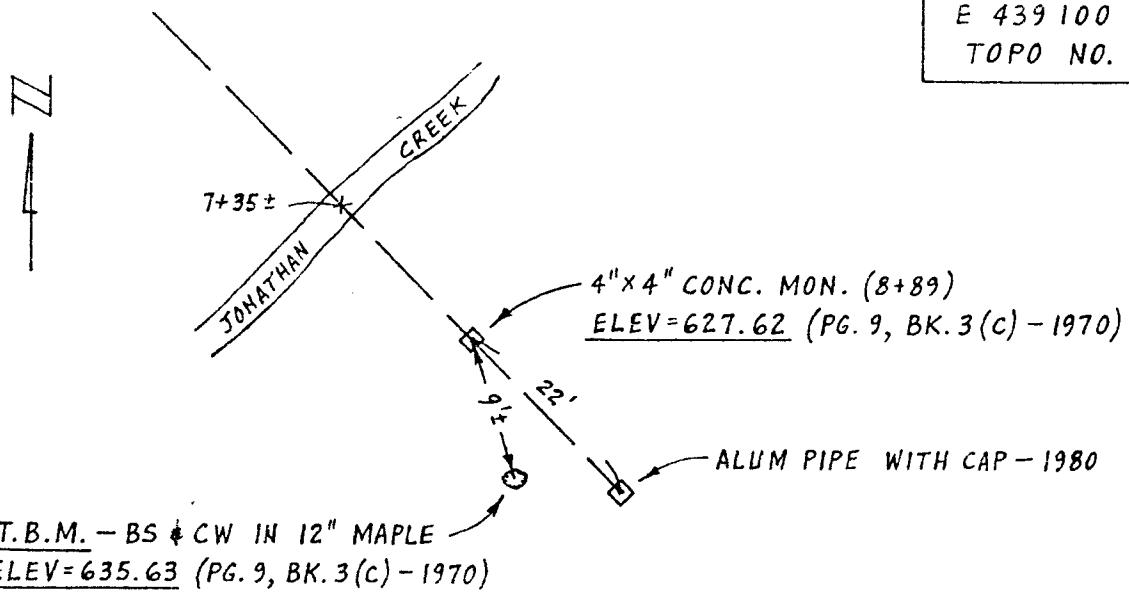
RANGE 37-B

N 1062260
E 438470
0+00
TOPO NO. 24



LAYOUT— PG. 7, BK. 3(c)-1970
PG. 74, BK. 2-1980

N 1061630
E 439100
8+89
TOPO NO. 23



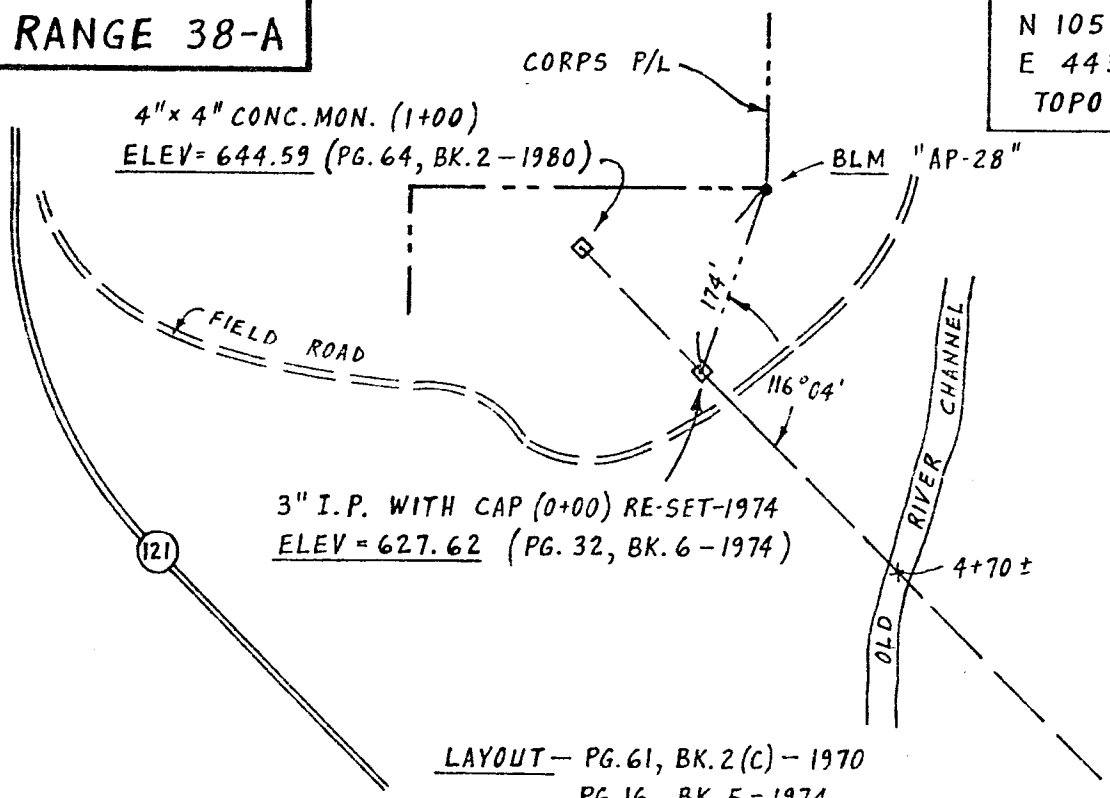
LAYOUT— PG. 7, BK. 3(c)-1970
PG. 74, BK. 2-1980

COMPUTATION SHEET

PROJECT	PAGE	COMPUTED BY	DATE
LAKE SHELBYVILLE	38 OF 40	W&M	9-17-81
SUBJECT: SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

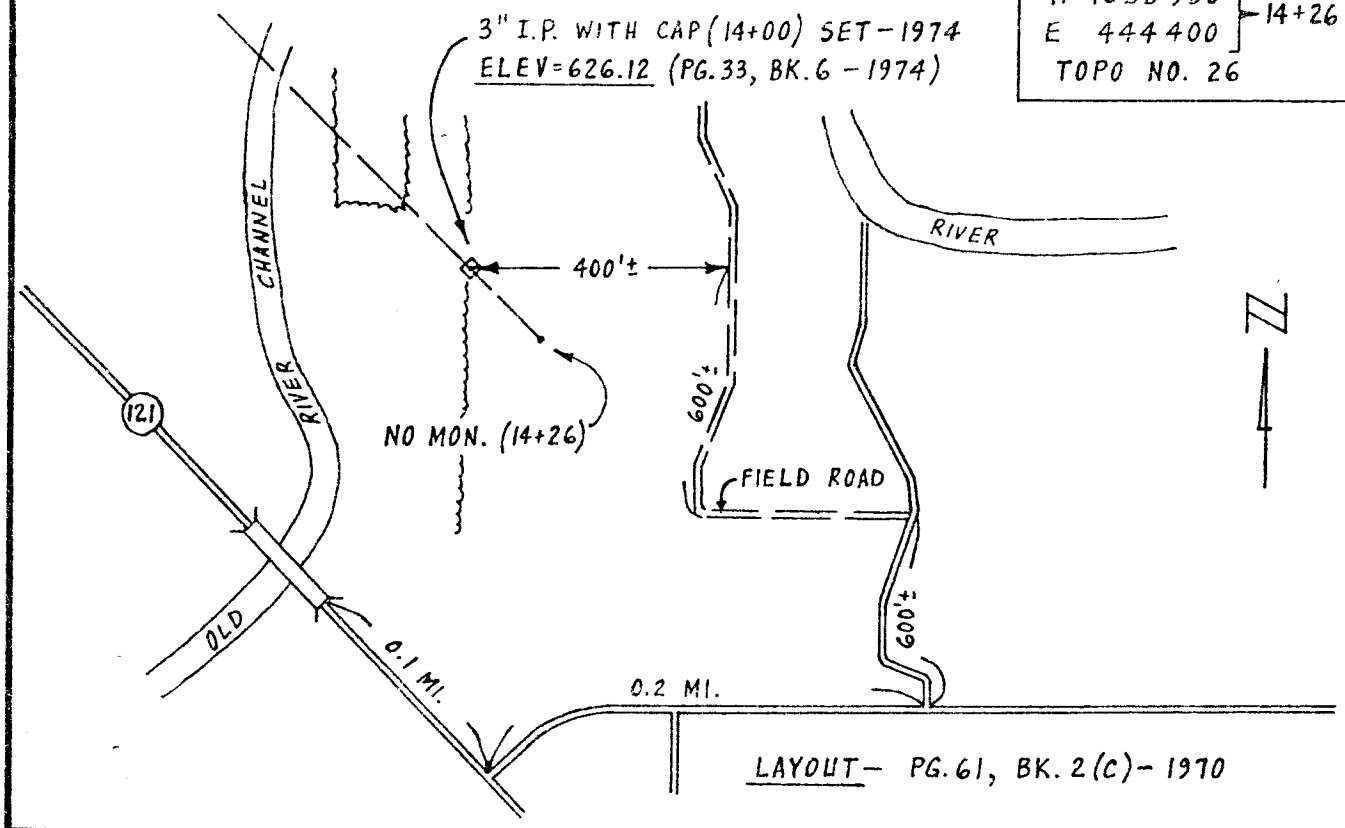
RANGE 38-A

N 1059880
E 443360 } 0+00
TOPO NO. 23



LAYOUT – PG. 61, BK. 2 (C) – 1970
PG. 16, BK. 5 – 1974

N 1058900
E 444400 } 14+26
TOPO NO. 26



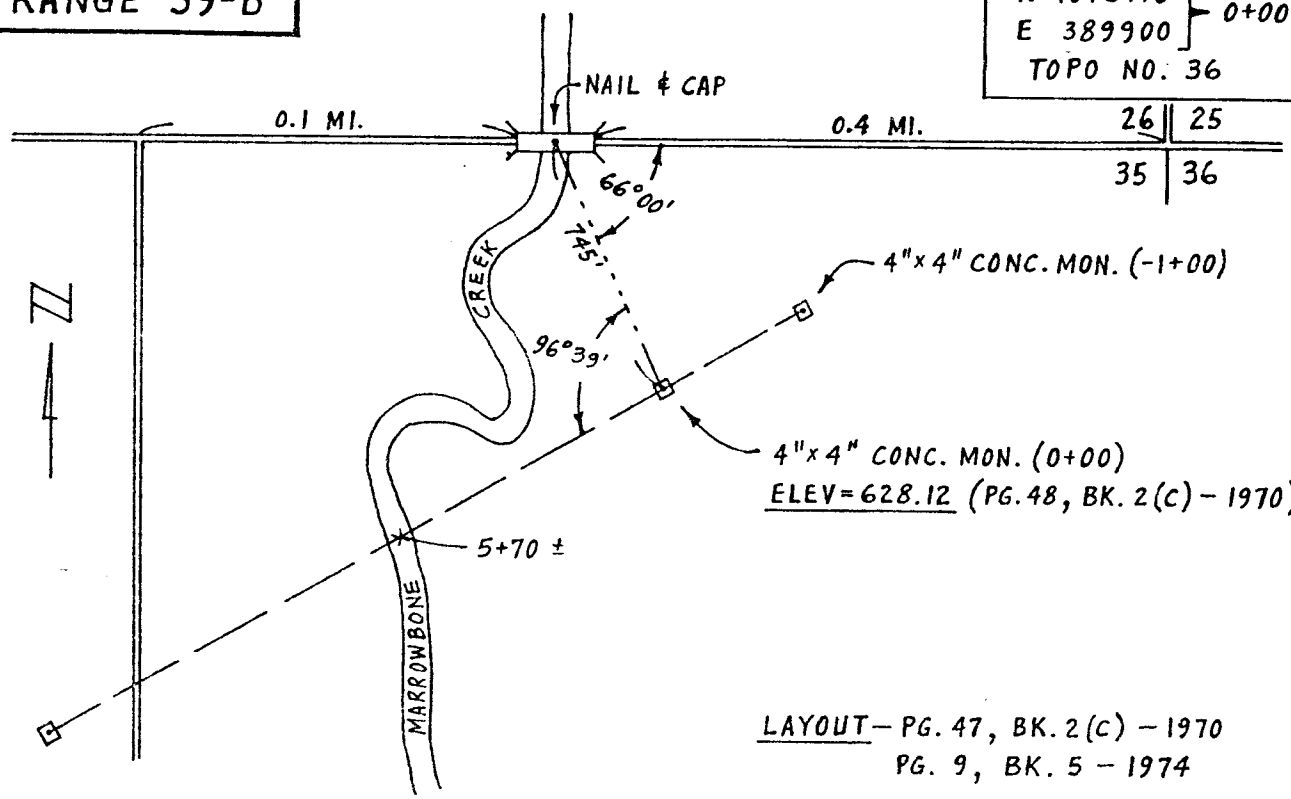
LAYOUT – PG. 61, BK. 2 (C) – 1970

COMPUTATION SHEET

PROJECT	LAKE SHELBYVILLE	PAGE 39 OF 40	COMPUTED BY WJM	DATE 9-24-81
SUBJECT	SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

RANGE 39-B

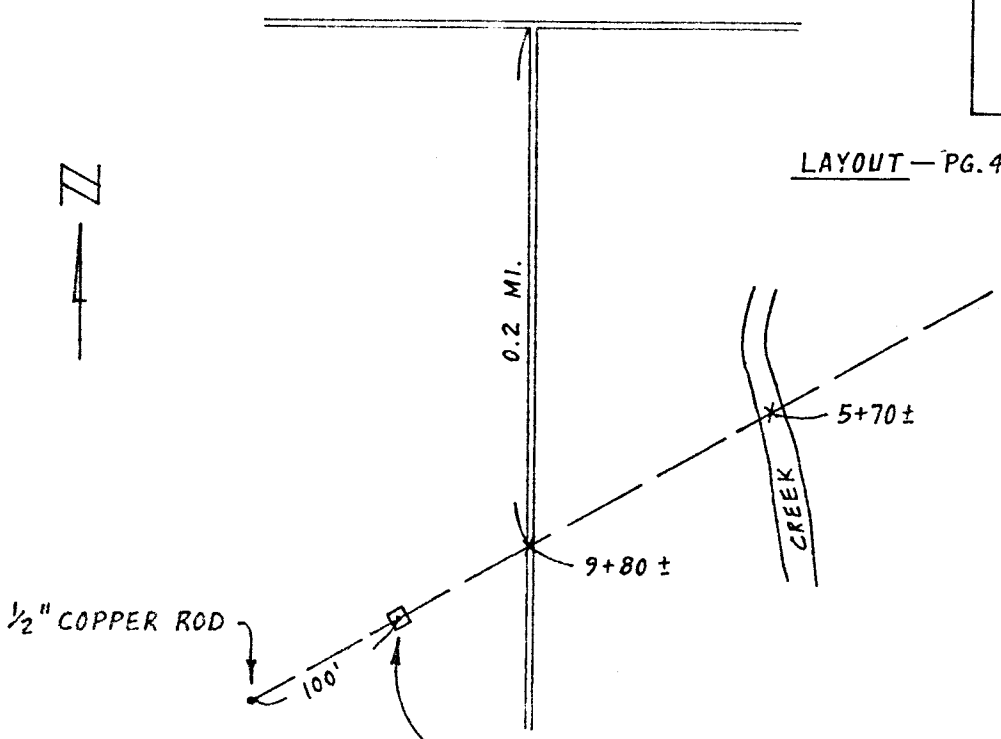
N 1076110
E 389900
0+00
TOPO NO. 36



LAYOUT — PG. 47, BK. 2(C) - 1970
PG. 9, BK. 5 - 1974

N 1075540
E 388920
11+33
TOPO NO. 36

LAYOUT — PG. 47, BK. 2(C) - 1970



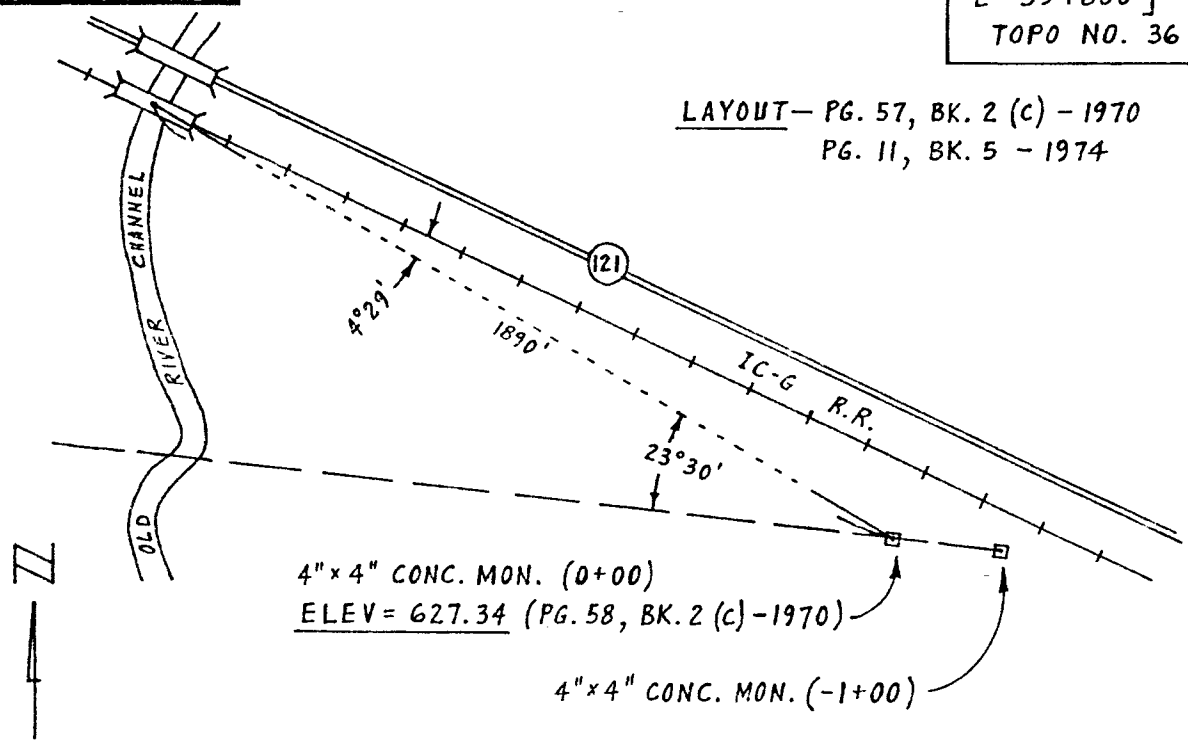
COMPUTATION SHEET

PROJECT	LAKE SHELBYVILLE	PAGE 40 OF 40	COMPUTED BY W&M	DATE 9-30-81
SUBJECT	SEDIMENTATION RANGE CONTROL		CHECKED BY	DATE

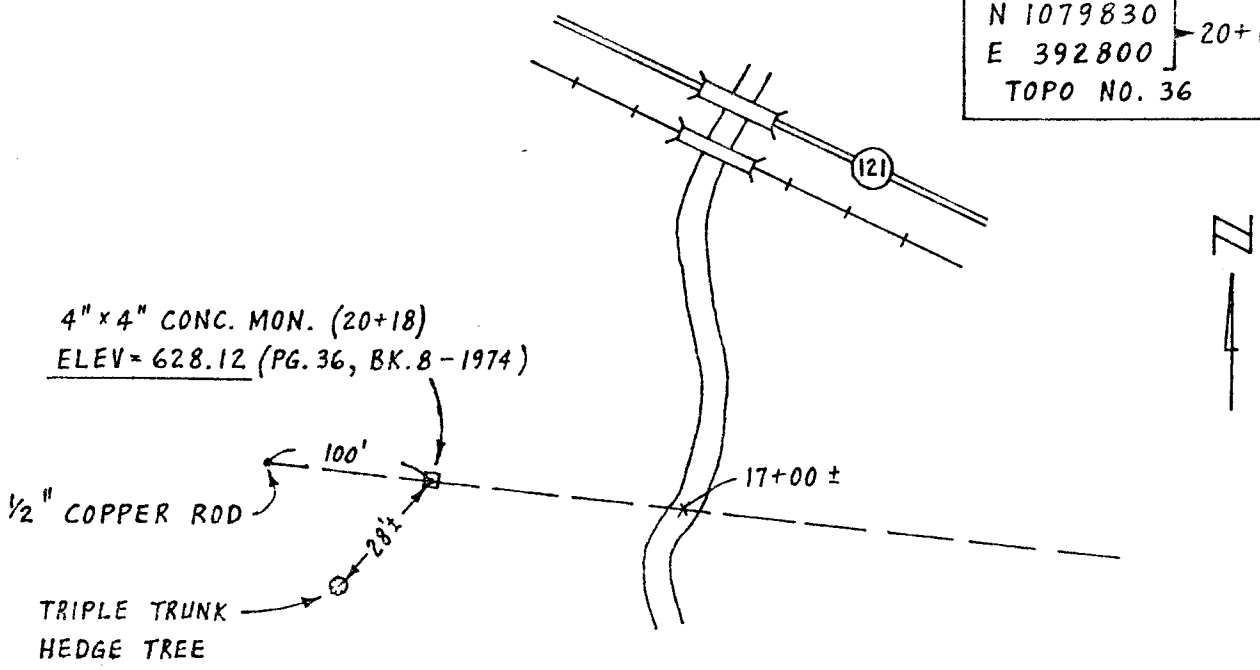
RANGE 40-B

N 1079610
E 394800
0+00
TOPO NO. 36

LAYOUT — PG. 57, BK. 2 (c) - 1970
PG. 11, BK. 5 - 1974



N 1079830
E 392800
20+18
TOPO NO. 36



LAYOUT — PG. 57, BK. 2 (c) - 1970