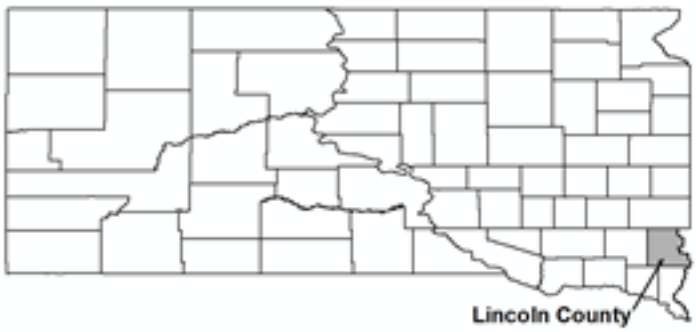
FLOOD INSURANCE STUDY

LINCOLN COUNTY, SOUTH DAKOTA

AND INCORPORATED AREAS

Community Name	Community Number
*BERESFORD, CITY OF	460155
CANTON, CITY OF	460047
FAIRVIEW, TOWN OF	460048
HARRISBURG, TOWN OF	460114
HUDSON, TOWN OF	460049
*LENNOX, CITY OF	460192
LINCOLN COUNTY UNINCORPORATED AREAS	460277
TEA, TOWN OF	460143
*WORTHING, TOWN OF	460151



*NO SPECIAL FLOOD HAZARD AREAS IDENTIFIED

PRELIMINARY

October 8, 2015

REVISED:

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
46083CV000B

NOTICE TO

FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

Part or all of this FIS may be revised and republished at any time. In addition, part of this FIS may be revised by the Letter of Map Revision process, which does not involve republication or redistribution of the FIS report. It is, therefore, the responsibility of the user to consult with community officials and to check the community repository to obtain the most current FIS report components.

Selected Flood Insurance Rate Map panels for this community contain information that was previously shown separately on the corresponding Flood Boundary and Floodway Map panels (e.g., floodways, cross sections). In addition, former flood hazard zone designations have been changed as follows:

Old Zone(s)	New Zone
Al through A30	AE
V1 through V30	VE
B	X
C	X

Effective Date: April 2, 2008

Revised: TBD

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FLOOD INSURANCE STUDY
LINCOLN COUNTY, SOUTH DAKOTA AND INCORPORATED AREAS

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study (FIS) supercedes the FIS reports and/or Flood Insurance Rate Maps (FIRMs) in the geographic area of Lincoln County, South Dakota including: the Cities of Beresford, Canton, and Lennox; the Towns of Fairview, Harrisburg, Hudson, Tea, and Worthing; and unincorporated areas of Lincoln County (hereinafter referred to collectively as Lincoln County), and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates. This information will also be used by Lincoln County to update existing floodplain regulations as part of the Regular Phase of the National Flood Insurance Program (NFIP), and by local and regional planners to further promote sound land use and floodplain development. Minimum floodplain management requirements for participation in the NFIP are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence, and the State (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgements

The hydraulic analyses for Spring Creek; Spring Creek Tributary; Schindler Creek; Ninemile Creek, upstream of 271St Street; and the Ninemile Creek Tributary, were completed by ICON/G&O Joint Venture, for FEMA under contracts EMS2001C00070-T002 and EMS2001C00070-T009. Additionally, Ninemile Creek was redelineated and a floodway was evaluated from Lake Alvin to 271st Street under these same contracts with FEMA. This study was completed in September 2005.

1.3 Coordination

For the April 2, 2008 countywide FIS report, an initial coordination meeting was attended by FEMA, Minnehaha County, the City of Sioux Falls, Lincoln County, FEMA's National Service Provider, and the ICON/G&O Joint Venture, the study contractor on April 13, 2004. At the meeting, the communities were notified that their FIS report and FIRM would be converted to a Digital FIRM (DFIRM) format. Additionally, streams to be added as detailed studies and approximate studies were selected. Base mapping and topographic data was made available by the State of South Dakota, City of Sioux Falls, and Lincoln County.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers Lincoln County, South Dakota, and Incorporated Areas.

For the April 2, 2008 study, identification of streams requiring detailed study was accomplished through discussions among personnel of FEMA Region VIII, Lincoln County, City of Sioux Falls, National Service Provider, and the ICON/G&O Joint Venture. Factors considered in determining which streams were to be studied by detailed methods were stream size, historical flooding, amount of floodplain development, and amount of future floodplain development expected. Ninemile Creek, Ninemile Creek Tributary, Schindler Creek, Spring Creek, and Spring Creek Tributary were studied by detailed methods.

Also for Lincoln County, approximate analyses were used to study the areas having low development potential or minimal flood hazards.

2.2 Community Description

Lincoln County is located in southeastern South Dakota. According to the U.S. Bureau of the Census, Lincoln County had a population of 31,473 in 2004 (Reference 1). The economy is principally agricultural production and limited manufacturing. Lincoln County is served by U.S. Highway 18, Interstate Highway 29, and numerous railroads. Topography ranges from steep hills, to rolling plains, to flat valleys, with soils originating from wind-blown, glacial, and alluvial sources. The climate of Lincoln County is characterized by cold winters and hot summers, with average January and July temperatures of approximately 14°F and 73°F, respectively (Reference 1). The average annual precipitation is approximately 25 inches.

The City of Beresford is located in southwestern Lincoln County, in southeastern South Dakota. The community is 28 miles south of Sioux Falls and approximately 18 miles southwest of Canton. Only unincorporated areas of Lincoln County and Union County lie adjacent to Beresford.

The City of Canton is located on the east-central border of Lincoln County on Highway 18, 10 miles east of interstate 29 on the Iowa border, on the southeast border of South Dakota. Canton is situated approximately 14 miles south of the City of Sioux Falls, 9 miles southwest of the Town of Worthing.

The economy of Canton is based mainly in the wholesale and retail trades and professional and related services (Reference 1). The city also serves as a local business center for the surrounding rural area.

Canton has experienced a general growth trend since 1950. The geographic location of the city, plus general community appearance has encouraged many

persons to locate in Canton. The U.S. Census Bureau figures indicate the 2004 population in Canton was 3,073 (Reference 1).

The climate of the Canton area is basically continental and generally sub-humid. Abrupt weather changes are brought about by invasion of large air-masses of different characteristics: warm, moist air from the Gulf of Mexico; hot, dry air from the southeast; and cold, dry air from the interior of Canada. The average annual precipitation in Canton is approximately 24.2 inches, with approximately 75 percent falling in the growing season from April through September. The average annual snowfall is approximately 28 inches. The mean annual temperature is approximately 44.4°F; the coldest month is January, with a monthly mean of approximately 12.7°F, and the hottest month is July, with a monthly mean of approximately 71.5°F.

The Town of Harrisburg is located in northern Lincoln County, in southeastern South Dakota. Harrisburg is 5 miles southeast of Sioux Falls. U.S. Census Bureau figures indicate the population was 958 in 2004 (Reference 1).

Other incorporated areas within Lincoln County include the City Lennox, and the Towns of Fairview, Hudson, Tea, and Worthing.

The Town of Fairview is located is southeastern Lincoln county on the Iowa border. The population of Fairview, according to the 2004 census was 92.

The City of Lennox is located approximately 17 miles west of Sioux Falls within Lincoln County. The city of Lennox was started when the Milwaukee Railroad started a branch station in 1879. The population of Lennox according to the U.S. Census Bureau records in 2004 was 2,037.

The Town of Tea is located in northwestern Lincoln County, in southwestern South Dakota. Harrisburg is 3 miles southwest of Sioux Falls. According to the U.S. Census Bureau the population of Tea in 2004 was 1,742.

The Town of Hudson is located in the southeastern portion of Lincoln county, approximately 27 miles southeast of Sioux Falls. According to the U.S. Census Bureau the population of Hudson in 2004 was 402.

The Town of Worthing is located in central Lincoln county, southwestern South Dakota. The population in 2004, according to the U.S. Census Bureau, was 585.

2.3 Principal Flood Problems

Lincoln County lies within the floodplains of the Big Sioux River, Ninemile Creek, Schindler Creek and Spring Creek. Flooding from these streams can occur as a result of rapid snowmelt, heavy rainfall, or combinations thereof. Ice effects can also influence flooding. Flooding on these steams under open river conditions would normally be of relatively long duration, with ample warning prior to the peak.

2.4 Flood Protection Measures

Lincoln County has no FEMA certified physical flood protection measures. The county utilizes National Flood Insurance Program (NFIP) regulations to control development within and adjacent to known flood hazards.

3.0 ENGINEERING METHODS

For the flooding sources studied by detailed methods in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10, 2, 1, and 0.2 percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rate floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods of greater than 1 year are considered. For example, the risk of having a flood which equals or exceeds the 1-percent-annual-chance flood in any 50-year period is approximately 40 percent (4 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Discharges along Ninemile Creek within the detailed study limits were determined in a report generated by the USACE, Omaha District for Ninemile Creek in Lincoln County (Reference 2). For the Ninemile Creek analysis, a HEC-1 (Reference 3) flood routing simulation, calibrated to United States Geological Survey (USGS) regional regression equations for South Dakota, was utilized.

Discharges along Spring Creek, Spring Creek Tributary, Schindler Creek, Ninemile Creek Tributary, and Ninemile Creek, upstream of 271St Street, within the detailed study limits were established based on regional regression equations developed by the USGS for South Dakota (Reference 4).

Peak discharge-drainage area relationships for Lincoln County are shown in Table 1, Summary of Discharges.

Table 1 - SUMMARY OF DISCHARGES

Flooding Source/Location	Drainage Area (Sq. Miles)	Peak Discharges (Cubic Feet per Second) 10% Annual Chance Flood	2% Annual Chance Flood	1% Annual Chance Flood	0.2% Annual Chance Flood
Nine Mile Creek Lake					
Lake Alvin	41.30	--[1]	--[1]	4,880	--[1]
273rd Street	38.00	--[1]	--[1]	4,360	--[1]
State Highway 11	33.10	--[1]	--[1]	3,120	--[1]
475th Avenue	28.50	--[1]	--[1]	3,030	--[1]
473rd Avenue	15.80	--[1]	--[1]	1,970	--[1]
Interstate 29	7.30	--[1]	--[1]	1,060	--[1]
272nd Street	4.40	--[1]	--[1]	1,130	--[1]
270th Street	1.45	--[1]	--[1]	821	--[1]
Ninemile Creek Tributary					
Confluence with Ninemile Creek	4.1	--[1]	--[1]	1,410	--[1]
273rd Street	3.38	--[1]	--[1]	1,275	--[1]
Schindler Creek					
Confluence with Ninemile Creek	5.65	--[1]	--[1]	1,667	--[1]
476th Street	2.85	--[1]	--[1]	1,167	--[1]
271st Street	1.5	--[1]	--[1]	835	--[1]
Spring Creek					
At confluence with Big Sioux River	15.91	--[1]	--[1]	2,858	--[1]
Downstream Tributary Confluence	13.33	--[1]	--[1]	2,607	--[1]
Upstream Tributary Confluence	7.8	--[1]	--[1]	1,972	--[1]
477th Avenue	5.32	--[1]	--[1]	1,615	--[1]
South Dakota State Railroad	2.22	--[1]	--[1]	1,024	--[1]
Spring Creek Tributary					
At confluence with Spring Creek	5.37	--[1]	--[1]	1,623	--[1]
270th Street	4.56	--[1]	--[1]	1,491	--[1]
Upstream of Highway 11	1.39	--[1]	--[1]	803	--[1]

[1]Discharges not computed

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Users should be aware that flood elevations shown on the Flood Insurance Rate Map (FIRM) represent rounded whole-foot elevations and may not exactly reflect the report. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are encouraged to use the flood elevation data presented in this FIS report in conjunction with the data shown on the FIRM.

Cross-sections along Spring Creek, Spring Creek Tributary, Schindler Creek, Ninemile Creek Tributary, and Ninemile Creek, upstream of 271st Street were taken from a combination of 2-foot contour interval topographic mapping provided by the City of Sioux Falls, and field survey information obtained by the study contractor. All bridges and other hydraulic structures were field surveyed by the study contractor and compared with technical plans provided by the local communities and Department of Transportation. Water surface elevations were computed using the US Army Corps of Engineers (USCOE) HEC-RAS River Analysis System (Reference 5). Roughness coefficients were obtained by field inspection and comparison with aerial photography.

For Spring Creek, Spring Creek Tributary, and Schindler Creek, Manning's 'n' values ranged from 0.04 to 0.050 along the main channel bottom and ranged from 0.045 to 0.1 along the overbank sections. For Ninemile Creek Tributary, Manning's 'n' values were typically 0.045 along the main channel bottom and ranged from 0.05 to 0.06 along the overbank sections.

The hydraulic analysis for Ninemile Creek, between Lake Alvin and 271St Street was completed by the USCOE, as part of a Section 206, Technical Assistance Study along Ninemile Creek in Lincoln County (Reference 2). Water surface elevations were computed using the USCOE HEC-2 computer program (Reference 6). For this study, the water surface elevations computed by the USCOE were re-projected on new mapping developed by the study contractor (Reference 7).

3.3 Vertical Datum

All FISs and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum in use for newly created or revised FIS reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD29). With the finalization of the North American Vertical Datum of 1988 (NAVD88), many FIS reports and FIRMs are being prepared using NAVD88 as the referenced vertical datum.

All flood elevations shown in this FIS report and on the FIRM are referenced to NAVD88. It is important to note that adjacent communities may be referenced to NGVD29. This may result in differences in base flood elevations across the corporate limits between communities.

As noted above, the elevations shown in the FIS report and on the FIRM for Lincoln County and Incorporated Areas are referenced to NAVD88. Ground, structure, and flood elevations may be compared and/or referenced to NGVD29 by applying a standard conversion factor.

The conversion from NGVD29 to NAVD88 ranged between 0.81 and 1.00 for this county. Accordingly, due to the range in conversion factors, an average conversion factor was established for the entire county. The elevations shown in the FIS report and on the FIRM were, therefore, converted to NAVD88 using a countywide approach in which an average conversion was established for the county. The conversion factor for NGVD 29 to NAVD 88 of 0.92 feet was used for each flooding source in the community.

The BFEs shown in the FIRM represent whole-foot rounded values. For example, a BFE of 1470.4 will appear as 1470 on the FIRM and 1470.6 will appear as 1471. Therefore, users who wish to convert the elevations in this FIS to NGVD29 should apply the stated conversion factor to elevations shown on the Flood Profiles and supporting data tables in the FIS report, which are shown at a minimum to the nearest 0.1 foot.

For more information on NAVD88, see the publication entitled, *Converting the National Flood Insurance Program to the North American Vertical Datum of 1988* (FEMA Publication FIA-20/June 1992), or contact the Vertical Network Branch, National Geodetic Survey, Coast and Geodetic Survey, National Oceanic and Atmospheric Administration, Rockville, Maryland 20910 (Internet address http://www.ngs.noaa.gov).

Qualifying bench marks within a given jurisdiction that are cataloged by the National Geodetic Survey (NGS) and entered into the National Spatial Reference System (NSRS) as First or Second Order Vertical and have a vertical stability classification of A, B, or C are shown and labeled on the FIRM with their 6- character NSRS Permanent Identifier.

Bench marks catalogued by the NGS and entered into the NSRS vary widely in vertical stability classification. NSRS vertical stability classifications are as follows:

- Stability A: Monuments of the most reliable nature, expected to hold position/elevation well (e.g., mounted in bedrock)
- Stability B: Monuments which generally hold their position/elevation well (e.g., concrete bridge abutments)
- Stability C: Monuments which may be affected by surface ground movements (e.g., concrete monument below frost line)

- Stability D: Mark of questionable or unknown vertical stability (e.g., concrete monument above frost line or steel witness post)

To obtain up-to-date elevation information on NGS bench marks shown on the FIRM, please contact the Information Services Branch of the NGS at (301) 7133242, or visit their website at www.ngs.noaa.gov. Map users should seek verification of non-NGS monument elevations when using these elevations for construction or floodplain management purposes.

Temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in the Technical Support Data Notebook associated with this FIS report and FIRM for this community. Interested individuals may contact FEMA to access this data.

For information on additional control points maintained by Lincoln County that are not shown on the FIRM, please visit www.co.Lincoln.co.us.

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The NFIP encourages State and local governments to adopt sound floodplain management programs. Therefore, each FIS provides 1-percent-annual-chance flood elevations and delineations of the 1- and 0.2-percent-annual-chance floodplain boundaries and 1-percent-annual-chance floodway to assist communities in developing floodplain management measures. This information is presented on the FIRM and in many components of the FIS report, including Flood Profiles, Floodway Data table and Summary of Stillwater Elevations Table. Users should reference the data presented in the FIS report as well as additional information that may be available at the local map repository before making flood elevation and/or floodplain boundary determinations.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent-annual-chance flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent-annual-chance flood is employed to indicate additional areas of flood risk in the community. For each stream studied by detailed methods, the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections the boundaries were interpolated using topographic maps at a scale of 1:1200 with a contour interval of 2 feet (References 7 and 8).

The 1- and 0.2-percent-annual-chance floodplain boundaries are shown on the FIRM (Exhibit 2). On this map, the 1-percent-annual-chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A and AE); and the 0.2-percent-annual-chance floodplain boundaries are close together, only the 1-percent-annual-chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the

flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

For the streams studied by approximate methods, only the 1-percent-annual-chance floodplain boundary is shown on the FIRM (Exhibit 2).

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against he resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 1-percent-annual-chance floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 1-percent-annual-chance flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodway presented in this FIS report and on the FIRM was computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations have been tabulated for selected cross sections (Table 2). In cases where the floodway and 1-percent-annual-chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown.

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
NINEMILE CREEK								
A	1,730	200	872	5.6	1,313.0	1,313.0	1,313.0	0.0
B	3,543	141	701	6.2	1,316.4	1,316.4	1,317.1	0.7
C	5,570	104	629	6.9	1,320.9	1,320.9	1,321.6	0.7
D	8,510	107	632	6.9	1,328.3	1,328.3	1,329.3	1.0
E	10,610	103	566	7.7	1,333.6	1,333.6	1,334.4	0.8
F	12,501	100	1,501	2.9	1,346.7	1,346.7	1,346.8	0.1
G	14,470	102	975	4.5	1,346.9	1,346.9	1,347.4	0.5
H	15,785	120	998	4.4	1,349.7	1,349.7	1,350.2	0.5
I	18,070	165	1,390	3.1	1,352.3	1,352.3	1,353.3	1.0
J	20,020	164	720	4.3	1,353.7	1,353.7	1,354.6	0.9
K	23,995	74	529	5.9	1,363.0	1,363.0	1,363.8	0.8
L	26,086	125	729	4.3	1,368.5	1,368.5	1,369.4	0.9
M	30,170	215	1,086	2.9	1,375.5	1,375.5	1,376.5	1.0
N	32,665	200	907	3.4	1,380.6	1,380.6	1,381.5	0.9
O	34,450	259	1,370	2.3	1,384.3	1,384.3	1,385.2	0.9
P	36,880	236	685	4.4	1,388.0	1,388.0	1,388.7	0.7
Q	38,442	96	472	6.4	1,391.6	1,391.6	1,392.2	0.6
R	40,260	122	635	4.8	1,396.8	1,396.8	1,397.7	0.9
S	43,750	181	812	3.7	1,403.2	1,403.2	1,403.8	0.6
T	46,768	886	4,427	0.7	1,410.9	1,410.9	1,410.9	0.0
U	48,504	197	767	4.0	1,412.0	1,412.0	1,412.4	0.4
V	51,830	360	1,562	1.9	1,417.2	1,417.2	1,418.1	0.9
W	53,466	250	964	2.0	1,421.3	1,421.3	1,421.3	0.0
X	55,624	129	407	4.8	1,425.4	1,425.4	1,426.0	0.6
Y	57,796	152	560	3.5	1,432.4	1,432.4	1,433.4	1.0
Z	59,570	67	334	5.9	1,437.6	1,437.6	1,438.4	0.8

[1] Feet Above Lake Alvin

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD AND INCORPORATED AREAS

FLOODWAY DATA

NINEMILE CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	**DISTANCE[1]**	**WIDTH (FEET)**	**SECTION AREA (SQUARE FEET)**	**MEAN VELOCITY (FEET PER SECOND)**	**REGULATORY**	**WITHOUT FLOODWAY**	**WITH FLOODWAY**	**INCREASE**
NINEMILE CREEK								
AA	62,500	450	1,391	1.4	1,443.9	1,443.9	1,444.6	0.7
AB	65,854	500	1,556	1.3	1,447.4	1,447.4	1,447.5	0.1
AC	67,466	308	1,012	1.9	1,448.3	1,448.3	1,448.5	0.2
AD	69,630	30	173	6.1	1,452.1	1,452.1	1,452.9	0.8
AE	72,830	110	285	3.7	1,461.2	1,461.2	1,461.8	0.6
AF	75,680	849	4,304	0.2	1,461.7	1,461.7	1,462.7	1.0
AG	76,622	358	1,025	1.0	1,461.7	1,461.7	1,462.7	1.0
AH	79,950	139	217	3.8	1,472.0	1,472.0	1,472.1	0.1
AI	82,663	193	319	3.5	1,481.9	1,481.9	1,481.9	0.0
AJ	84,850	42	186	6.1	1,491.2	1,491.2	1,491.9	0.7
AK	85,759	953	5,022	0.2	1,498.2	1,498.2	1,498.2	0.0
AL	87,523	250	1,148	1.0	1,498.2	1,498.2	1,498.4	0.2
AM	89,695	112	521	2.2	1,503.5	1,503.5	1,504.4	0.9
AN	92,629	112	358	1.3	1,509.2	1,509.2	1,509.4	0.2
AO	93,442	105	433	0.8	1,512.3	1,512.3	1,512.6	0.3
AP	102,110	161	456	1.8	1,518.2	1,518.2	1,518.6	0.4

[1] Feet Above Lake Alvin

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

FLOODWAY DATA

NINEMILE CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
NINEMILE CREEK TRIBUTARY								
A	652	74	267	5.3	1,386.8	1,386.8	1,387.1	0.3
B	2,215	107	356	4.0	1,394.9	1,394.9	1,395.9	1.0
C	4,275	199	1,175	1.2	1,406.8	1,406.8	1,407.6	0.8
D	6,061	65	271	5.2	1,411.7	1,411.7	1,412.7	0.9
E	7,492	122	972	1.3	1,422.5	1,422.5	1,423.4	0.9
F	9,541	131	422	3.0	1,425.3	1,425.3	1,426.3	1.0
G	11,657	108	387	3.3	1,434.8	1,434.8	1,435.0	0.2
H	13,471	108	328	3.9	1,441.8	1,441.8	1,441.9	0.2
I	15,210	120	445	2.9	1,446.7	1,446.7	1,447.6	0.8
J	17,976	123	563	2.3	1,452.4	1,452.4	1,453.2	0.8
K	19,845	637	3,444	0.4	1,453.3	1,453.3	1,454.1	0.8
L	22,000	187	589	2.2	1,455.2	1,455.2	1,456.2	1.0
M	24,049	79	296	4.3	1,466.1	1,466.1	1,467.0	0.9

[1] Feet Above Confluence With Ninemile Creek

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD AND INCORPORATED AREAS

FLOODWAY DATA

NINEMILE CREEK TRIBUTARY

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
SCHINDLER CREEK								
A	2,623	9	389	18.1	1,285.0	1,285.0	1,285.0	0.0
B	6,014	93	1,353	1.2	1,328.8	1,328.8	1,329.2	0.4
C	10,145	38	245	6.8	1,353.0	1,353.0	1,353.2	0.2
D	12,848	69	281	5.9	1,370.3	1,370.3	1,370.6	0.3
E	16,447	236	842	2.0	1,382.3	1,382.3	1,383.1	0.8
F	17,846	342	3,642	0.5	1,391.8	1,391.8	1,392.5	0.7
G	21,283	346	1,521	0.8	1,391.8	1,391.8	1,392.6	0.8
H	23,112	192	620	1.9	1,392.3	1,392.3	1,393.2	0.9
I	23,937	160	929	1.3	1,396.7	1,396.7	1,397.4	0.7
J	25,972	325	824	1.4	1,403.3	1,403.3	1,403.7	0.4
K	28,759	56	201	5.8	1,418.3	1,418.3	1,418.7	0.4
L	31,104	192	311	3.8	1,425.3	1,425.3	1,425.3	0.0
M	33,636	104	436	2.7	1,433.5	1,433.5	1,434.4	0.9
N	36,448	204	1,180	1.0	1,442.7	1,442.7	1,443.6	0.9
O	38,316	85	279	3.0	1,444.6	1,444.6	1,445.6	1.0
P	38,825	185	788	1.1	1,448.5	1,448.5	1,449.4	0.9
Q	40,358	109	488	1.7	1,449.0	1,449.0	1,449.9	0.9
R	41,716	285	1,493	0.6	1,449.2	1,449.2	1,450.1	0.9
S	43,225	295	1,120	0.8	1,451.6	1,451.6	1,452.4	0.8

[1] Feet Above Confluence With Big Sioux River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD AND INCORPORATED AREAS

FLOODWAY DATA

SCHINDLER CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
SPRING CREEK								
A	889	140	566	5.1	1,271.4	1,271.4	1,271.4	0.0
B	5,698	90	948	3.0	1,297.0	1,297.0	1,297.8	0.8
C	8,496	42	383	6.8	1,302.7	1,302.7	1,303.5	0.8
D	10,728	40	460	5.7	1,315.4	1,315.4	1,316.3	0.9
E	13,238	141	1,535	1.7	1,330.3	1,330.3	1,330.3	0.0
F	14,579	75	1,007	2.6	1,337.0	1,337.0	1,337.1	0.1
G	17,704	127	984	2.0	1,345.9	1,345.9	1,346.6	0.7
H	18,390	230	3,019	0.7	1,355.1	1,355.1	1,356.0	0.9
I	21,408	61	212	9.3	1,356.6	1,356.6	1,356.9	0.3
J	23,406	165	2,576	0.8	1,378.4	1,378.4	1,379.3	0.9
K	24,712	144	973	1.7	1,378.5	1,378.5	1,379.3	0.8
L	27,311	30	171	9.4	1,390.5	1,390.5	1,391.1	0.6
M	30,015	68	324	5.0	1,402.4	1,402.4	1,403.2	0.8
N	31,305	200	710	2.3	1,407.9	1,407.9	1,408.2	0.3
O	33,849	171	530	3.0	1,414.9	1,414.9	1,415.6	0.7
P	36,130	86	314	3.3	1,421.3	1,421.3	1,422.0	0.7
Q	37,018	380	1,002	1.0	1,425.9	1,425.9	1,426.2	0.3
R	39,615	78	262	3.9	1,430.7	1,430.7	1,431.2	0.5
S	42,734	89	441	2.3	1,443.9	1,443.9	1,444.7	0.8
T	44,586	845	5,188	0.2	1,450.6	1,450.6	1,451.4	0.8
U	45,124	138	628	1.6	1,450.7	1,450.7	1,451.4	0.7
V	46,422	242	490	2.1	1,453.0	1,453.0	1,453.4	0.4
W	47,804	467	2,414	0.4	1,460.5	1,460.5	1,460.7	0.2

[1] Feet Above Confluence With Big Sioux River

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD AND INCORPORATED AREAS

FLOODWAY DATA

SPRING CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER-SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
SPRING CREEK TRIBUTARY								
A	77	303	3,530	0.5	1,345.9	1,345.9	1,346.5	0.6
B	1,120	198	2,398	0.7	1,357.2	1,357.2	1,357.9	0.6
C	3,195	56	390	4.2	1,357.7	1,357.7	1,358.3	0.7
D	5,154	49	326	5.0	1,365.9	1,365.9	1,366.8	0.9
E	6,243	99	540	3.0	1,376.1	1,376.1	1,376.8	0.7
F	8,245	75	391	3.8	1,385.1	1,385.1	1,386.0	0.8
G	10,176	83	445	3.4	1,395.1	1,395.1	1,396.1	1.0
H	11,295	117	565	2.6	1,401.9	1,401.9	1,402.6	0.7
I	13,165	40	166	9.0	1,411.6	1,411.6	1,412.1	0.5
J	15,160	158	399	2.0	1,419.2	1,419.2	1,419.4	0.3
K	16,544	160	839	1.0	1,425.3	1,425.3	1,425.6	0.3
L	17,096	196	794	1.0	1,425.4	1,425.4	1,425.7	0.3

[1] Feet Above Confluence With Spring Creek

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

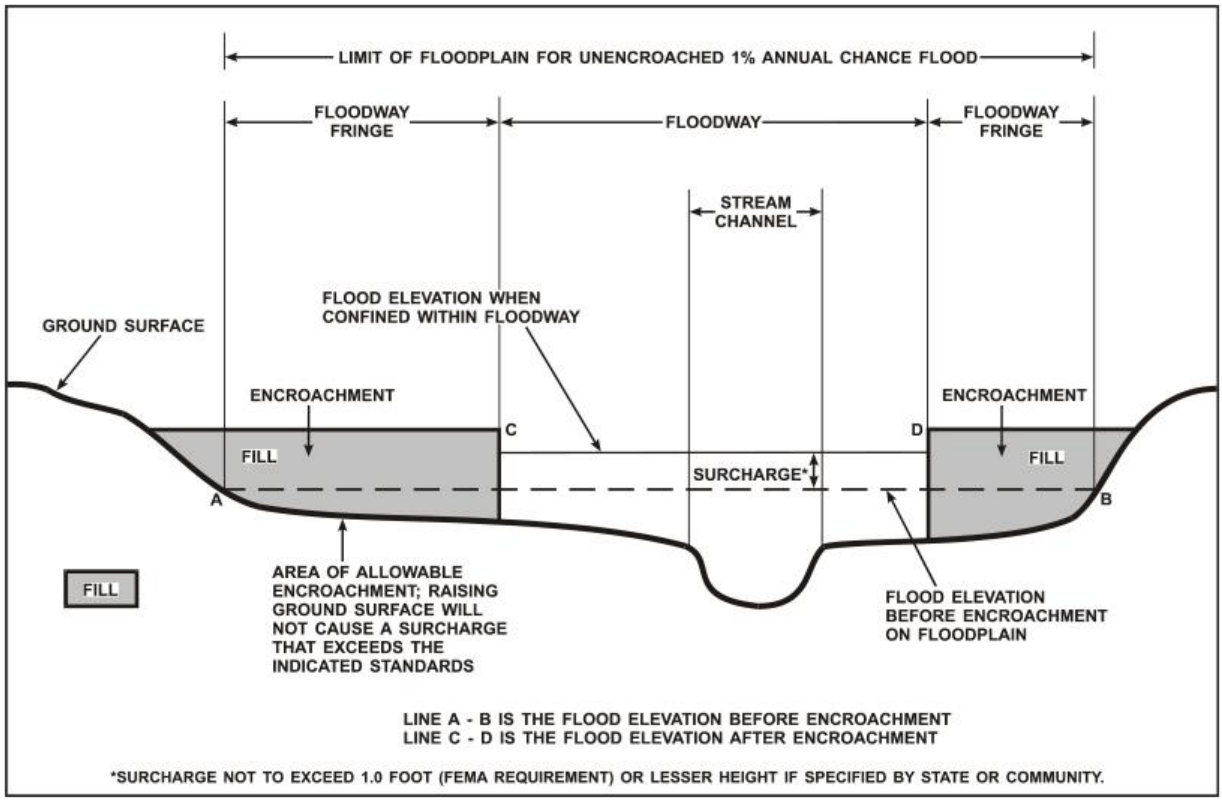
LINCOLN COUNTY, SD AND INCORPORATED AREAS

FLOODWAY DATA

SPRING CREEK TRIBUTARY

The area between the floodway and 1-percent-annual-chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 1-percent-annual-chance flood more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 1.

Figure 1 - Floodway Schematic



5.0 INSURANCE APPLICATIONS

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

Zone A

Zone A is the flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no BFEs or base flood depths are shown within this zone.

Zone AE

Zone AE is the flood insurance risk zone that corresponds to the 1-percent-annual-chance floodplains that are determined in the FIS by detailed methods. In most instances,

whole- foot BFEs derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance risk zone that corresponds to areas outside the 0.2-percent-annual-chance floodplain, areas within the 0.2-percent-annual-chance floodplain, areas of 1-percent-annual-chance flooding where average depths are less than 1 foot, areas of 1-percent-annual-chance flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 1-percent-annual-chance flood by levees. No BFEs or base flood depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP

The FIRM is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance risk zones as described in Section 5.0 and, in the 1-percent-annual-chance floodplains that were studied by detailed methods, shows selected whole-foot BFEs or average depths. Insurance agents use the zones and BFEs in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols, the 1- and 0.2-percent-annual-chance floodplains, floodways, and the locations of selected cross sections used in the hydraulic analyses and floodway computations.

The countywide FIRM presents flooding information for the entire geographic area of Lincoln County. Previously, FIRMs were prepared for each incorporated community and the unincorporated areas of the County identified as flood-prone. This countywide FIRM also includes flood-hazard information that was presented separately on Flood Boundary and Floodway Maps (FBFMs), where applicable. Historical data relating to the maps prepared for each community are presented in Table 3, "Community Map History."

Community Name	Initial Identification	Flood Hazard Boundary Map Revision Date(s)	Flood Insurance Rate Map Effective Date	Flood Insurance rate Map Revision Date(s)
Beresford, City of	July 18, 1975	--	April 2, 2008	--
Canton, City of	August 16, 1974	January 9, 1976	September 4, 1985	April 2, 2008
Fairview, Town of	--	--	April 2, 2008	--
Harrisburg, Town of	--	--	April 2, 2008	--
Hudson, Town of	November 22, 1974	--	December 18, 1985	April 2, 2008
Lennox, City of	September 26, 1975	--	April 2, 2008	--
Lincoln County, Unincorporated Areas	October 25, 1977	--	October 1, 1986	April 2, 2008
Tea, Town of	September 19, 1975	--	April 2, 2008	--
Worthing, Town of	August 22, 1975	--	April 2, 2008	--

Table 3

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD AND INCORPORAED AREAS

COMMUNITY MAP HISTORY

7.0 OTHER STUDIES

This report either supersedes or is compatible with all previous studies published on streams studied in this report and should be considered authoritative for the purposes of the NFIP.

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting FEMA Mitigation Division, Denver Federal Center, Building 710, Box 25267, Denver, Colorado 80225-0267.

9.0 BIBLIOGRAPHY AND REFERENCES

U.S. Department of Commerce, Bureau of the Census, Population Finder, U.S. Census Bureau 2004 Estimates, accessed March 2006, < http://www.census.gov>

U.S. Department of the Army, Corps of Engineers, Omaha District, Technical Assistance Study, Ninemile Creek in Lincoln County, South Dakota, March 1996.

U.S. Department of the Army, Corps of Engineers, Hydrologic Engineering Center, HEC-1 Flood Hydrograph Computer Program, Version 4.0.1 E, 1990.

U.S. Department of the Interior, U.S. Geological Survey, Techniques for Estimating Peak-Flow Magnitude and Frequency Relations for South Dakota Streams, 1998.

U.S. Department of the Army, Corps of Engineers, Hydrologic Engineering Center, HEC-RAS River Analysis System, Version 3.1.1 and Version 3.1.3 Computer Program, Davis, California, May 2003 and May 2005

U.S. Department of the Army, Corps of Engineers, Hydrologic Engineering Center, HEC-2 Water Surface Profiles Computer Program, Davis, California, May 1991

Horizons, Inc, Topographic Mapping for Ninemile Creek, 2-foot contours, scale 1:1200, November 2003.

Horizons, Inc., Topographic Mapping for City of Sioux Falls and Surrounding Areas, 2-foot contours, scale 1:1200, 2001 and 2004.

10.0 REVISIONS DESCRIPTION

This section has been added to provide information regarding significant revisions made since the original FIS report and FIRM were printed. Future revisions may be made that do not result in the republishing of the FIS report. All users are advised to contact the Community Map Repository at the address below to obtain the most up-to-date flood hazard data.

Lincoln County Court House
105 East 5th Street
Canton, South Dakota 57013

10.1 First Revision (TBD)

a. Acknowledgments

The hydrologic and hydraulic analyses for this revision was taken from a report titled "Physical Map Revision Southwest Sioux Falls Base Flood Elevation Study: Nine Mile Creek Basin" prepared by Stockwell Engineers for the City of Sioux Falls Public Works in March 2014 (Reference 1). FEMA reviewed and accepted these data for purposes of this revision.

b. Coordination

A final CCO meeting was held on 9/9/9999, to review the results of this revision.

c. Scope

The scope of this revision includes the upper reaches of Ninemile Creek that extend up to 69th Street and Ellis Road in Sioux Falls and ends near the intersection of 270th Street and Ellis Road. The identification of the study area was accomplished through discussions among personnel of FEMA Region VIII, the City of Sioux Falls and Stockwell Engineers. Factors considered in determining which streams were to be studied by detailed methods were historic flooding, amount of floodplain development and amount of future floodplain development expected.

This Base Flood Elevation Study covers the upper reaches of Ninemile Creek that drains an approximate area of 954 acres (1.49 mi^2). The area of study encompasses a tributary area that includes properties in Lincoln County.

d. Hydrologic Analysis

Peak discharges were developed for each sub-basin in the Ninemile Creek Basin using regional regression equations as published by the USGS for South Dakota (Reference 2). The National Streamflow Statistics Program (Reference 3) was used to check the calculations and develop hydrographs based upon calculated lag times.

e. Hydraulic Analysis

The Ninemile Creek Basin was studied using two-dimensional methods in XPSWMM-2D (Reference 4). XPSWMM-2D simulates two-dimensional free surface flows by solving the full-dimensional, depth averaged, momentum and continuity equations. An option of the software is to dynamically link the two-dimensional model with a 1-dimensional XPSWMM model by using the 1-dimensional/2-dimensional interface line as an internal boundary condition allowing the transfer of water between the two different solution algorithms. This option was utilized in the study of the Ninemile Creek cross sectional data and detailed hydraulic structure information (Reference 1). The limits of detailed study began just downstream of the culvert crossing at the intersection of 270th Street and

Ellis road and continued to the uppermost reaches of the basin. A starting water-surface elevation was not available in the vicinity of the study limits. The study provides one-dimensional unsteady flow solutions within the stream channel and two-dimensional flow solutions for the wide overbank floodplains.

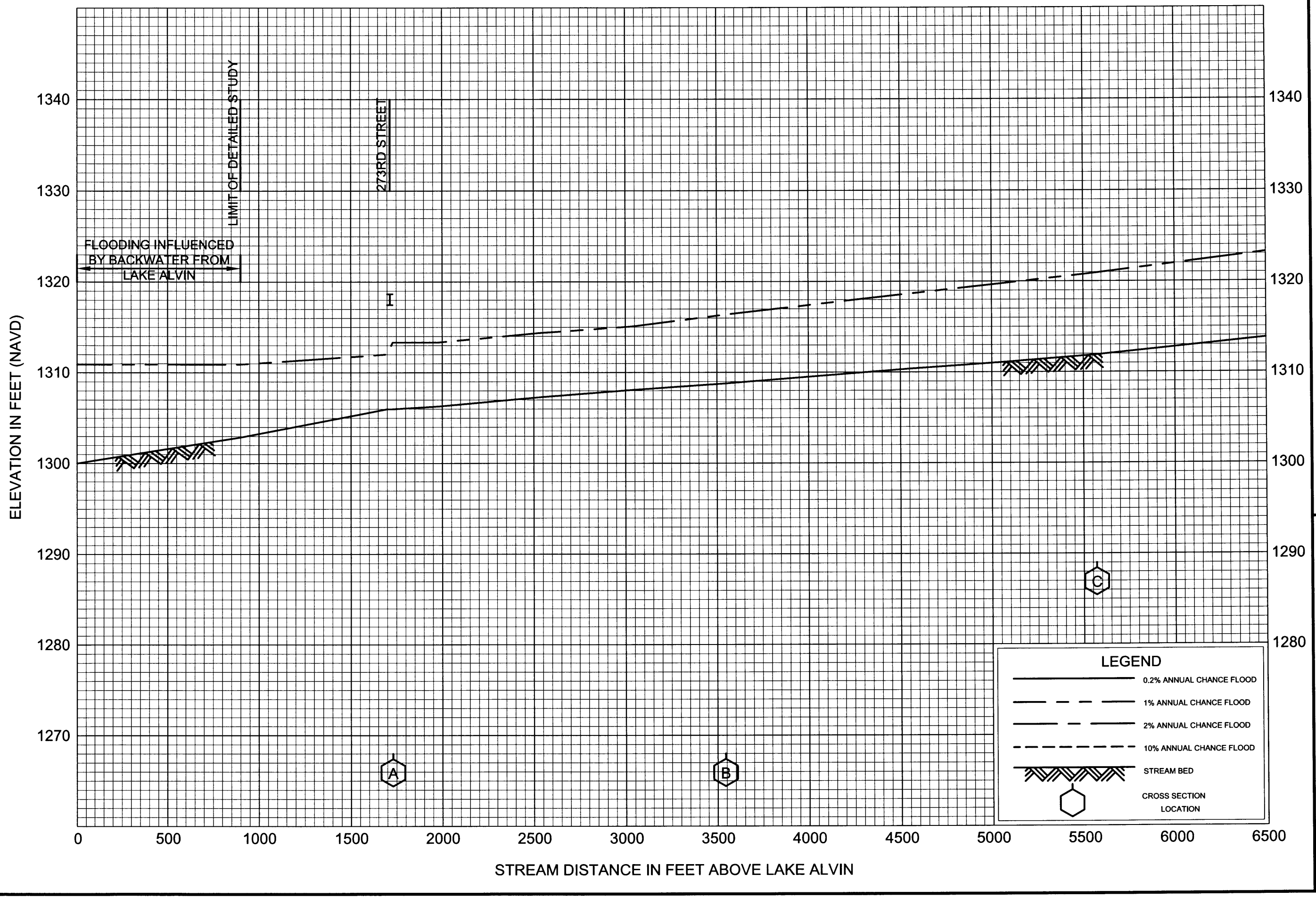
f. Bibliography and References

1. Stockwell Engineers, Inc., Physical Map Revision Southwest Sioux Falls Base Flood Elevation Study: Nine Mile Creek Basin, Sioux Falls, South Dakota, March 7, 2014.

2. U.S. Department of the Interior, U.S. Geological Survey, Techniques for Estimating Peak-Flow Magnitude and Frequency Relations for South Dakota Streams, 1998.

3. U.S. Department of the Interior, U.S. Geological Survey, National Streamflow Statistics Computer Program, 2012.

4. XP Solutions, Inc., XPSWMM Version 2012 Computer Program, Portland, Oregon, January 2013.



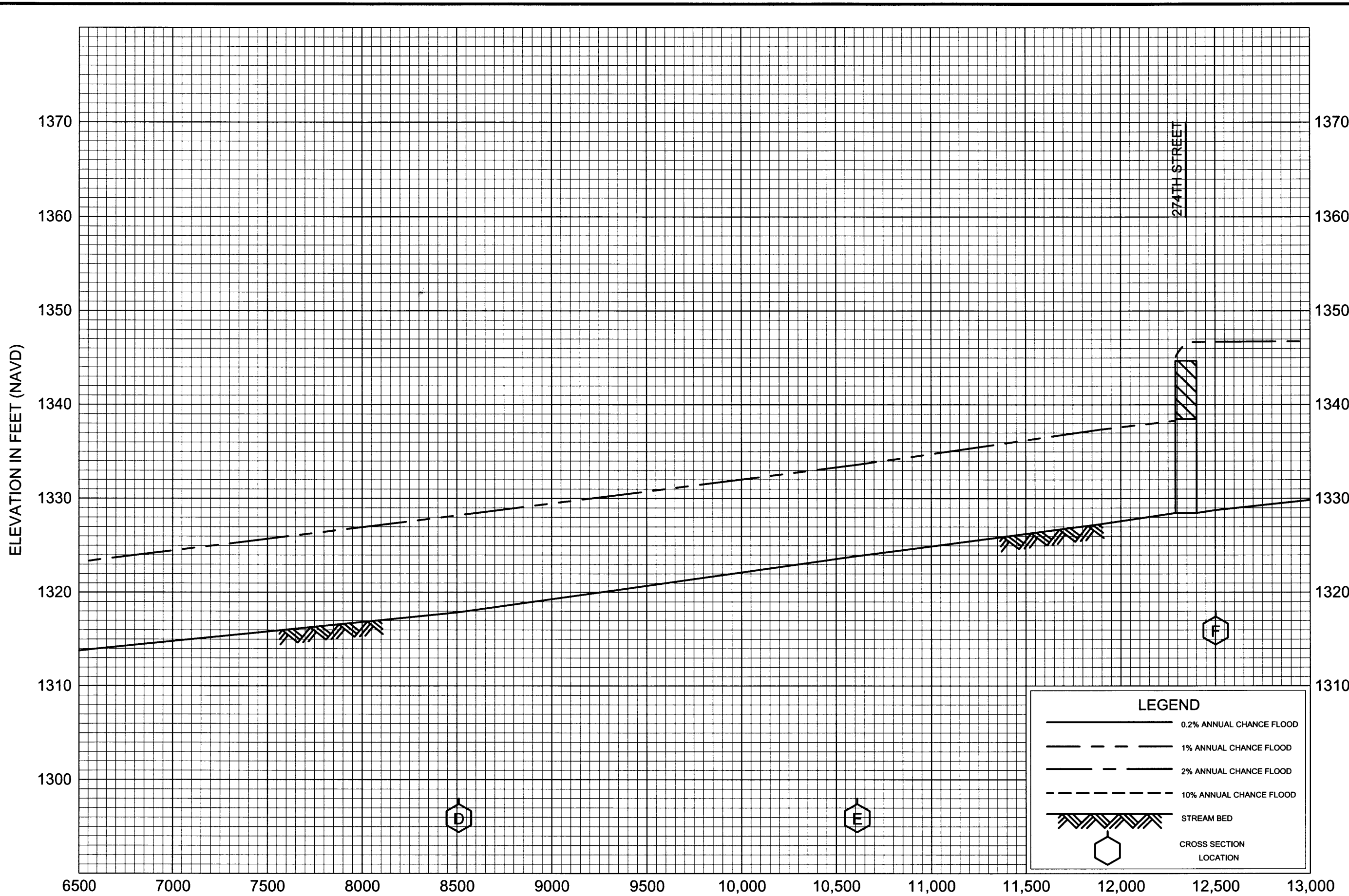
FLOOD PROFILES

NINEMILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

01P



FLOOD PROFILES

NINEMILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

02P

ELEVATION IN FEET (NAVD)

1300 1310 1320 1330 1340 1350 1360 1370

13,000 13,500 14,000 14,500 15,000 15,500 16,000 16,500 17,000 17,500 18,000 18,500 19,000 19,500

STREAM DISTANCE IN FEET ABOVE LAKE ALVIN

G

H

STATE HIGHWAY 11

H

I

LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- 1% ANNUAL CHANCE FLOOD
- 2% ANNUAL CHANCE FLOOD
- 10% ANNUAL CHANCE FLOOD
- STREAM BED
- CROSS SECTION LOCATION

1310 1320 1330 1340 1350 1360 1370

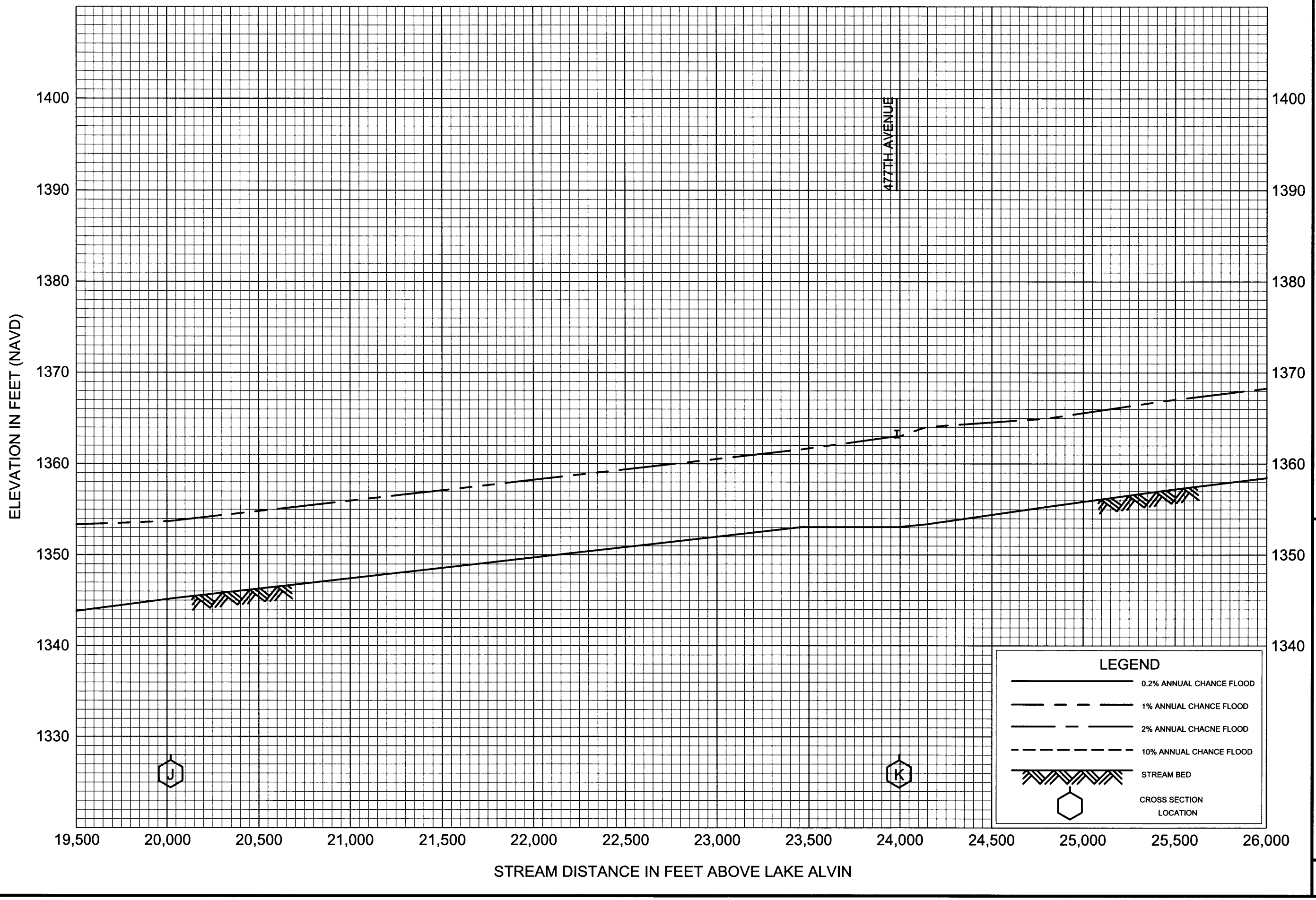
FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

FLOOD PROFILES

NINEMILE CREEK

03P



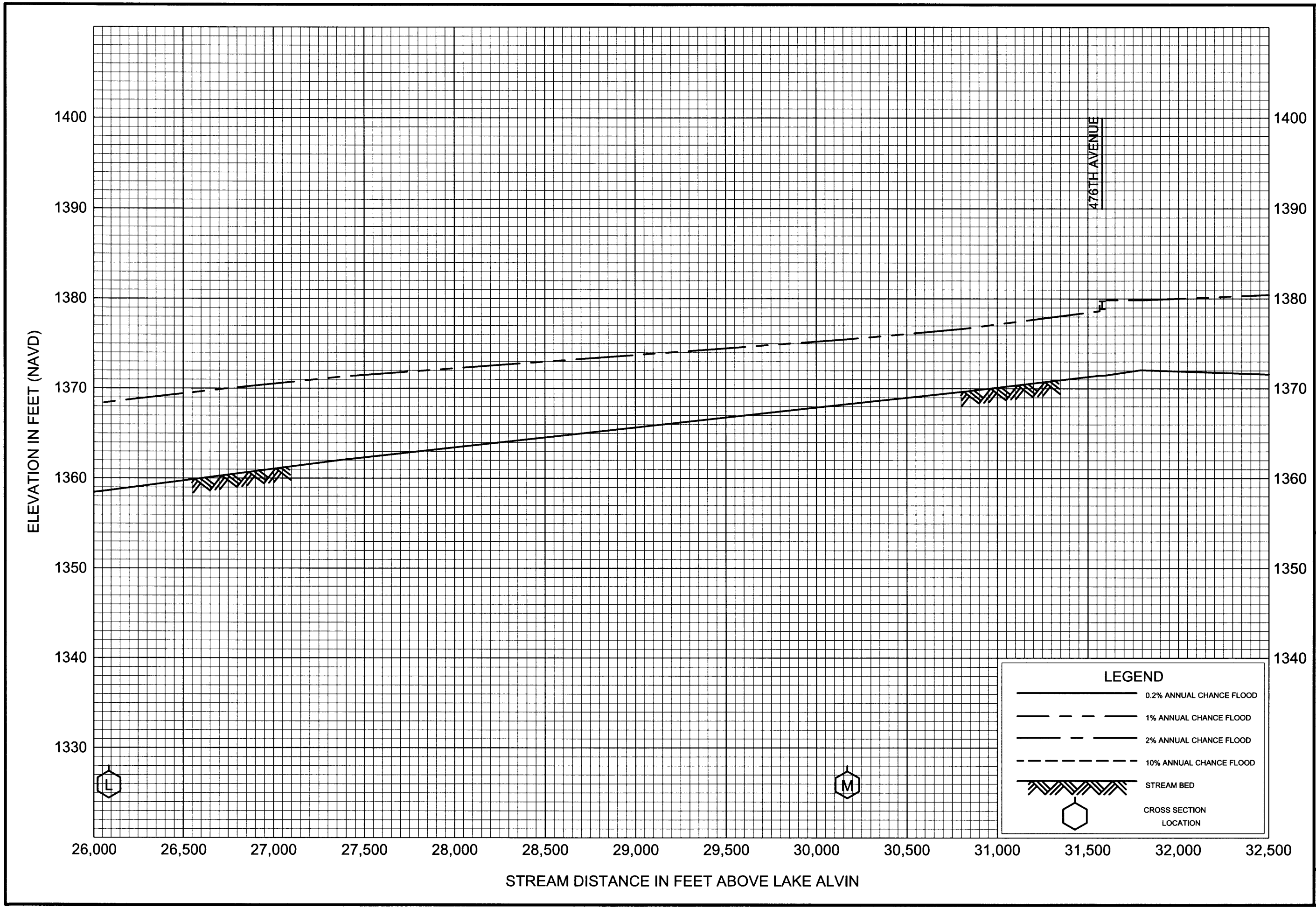
FLOOD PROFILES

NINEMILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

04P



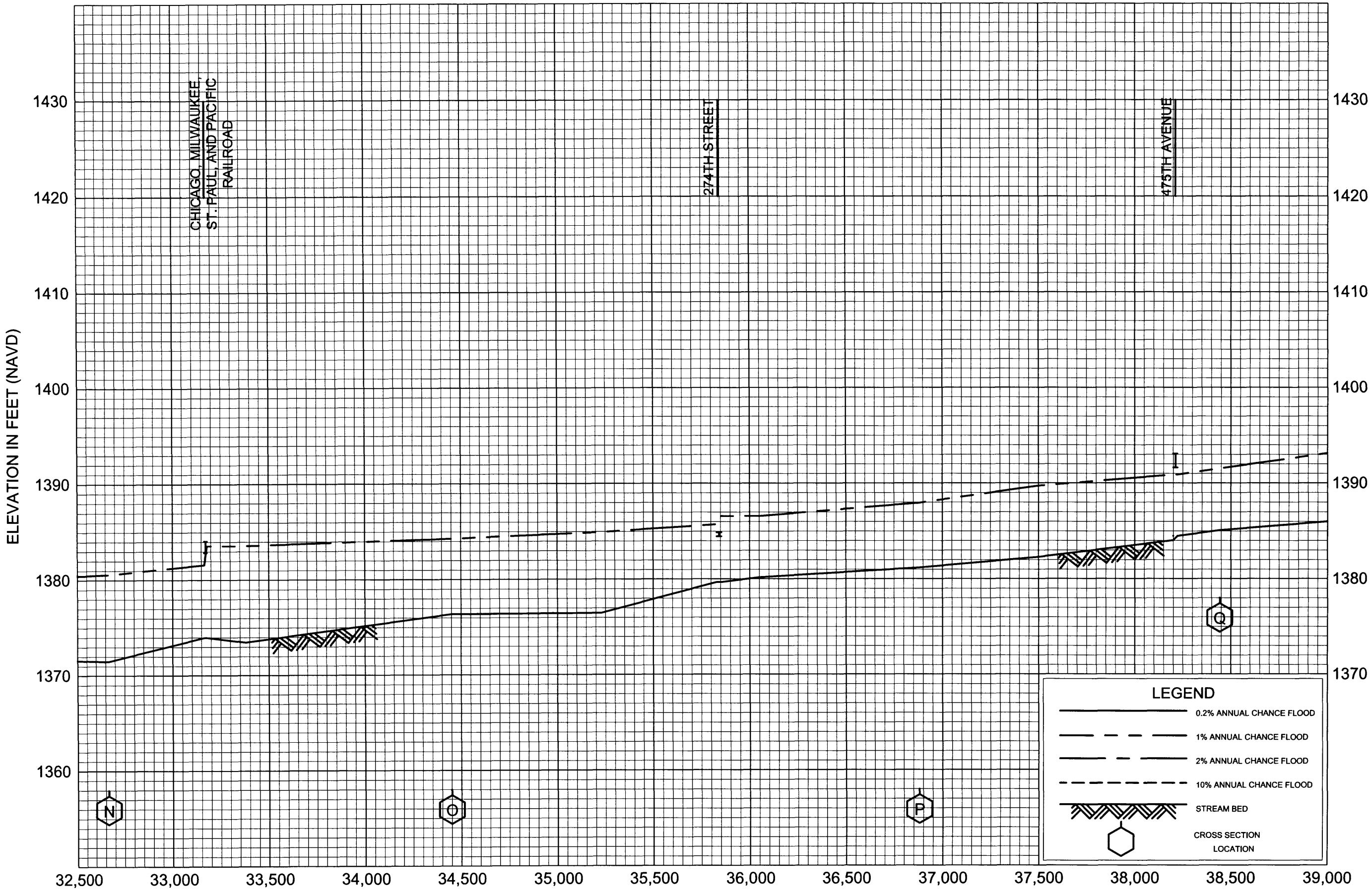
FLOOD PROFILES

NINEMILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

05P



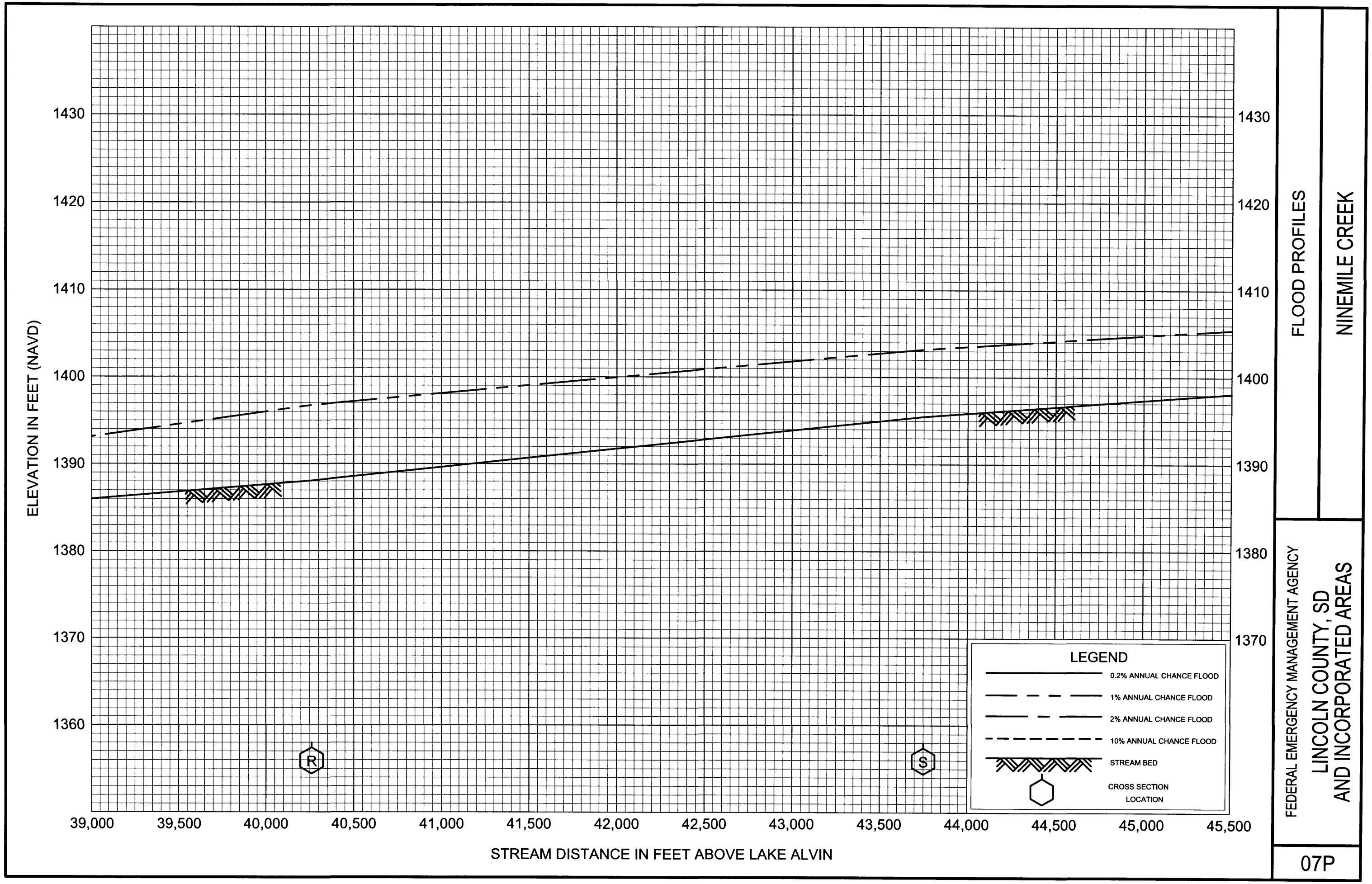
FLOOD PROFILES

NINEMILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

06P



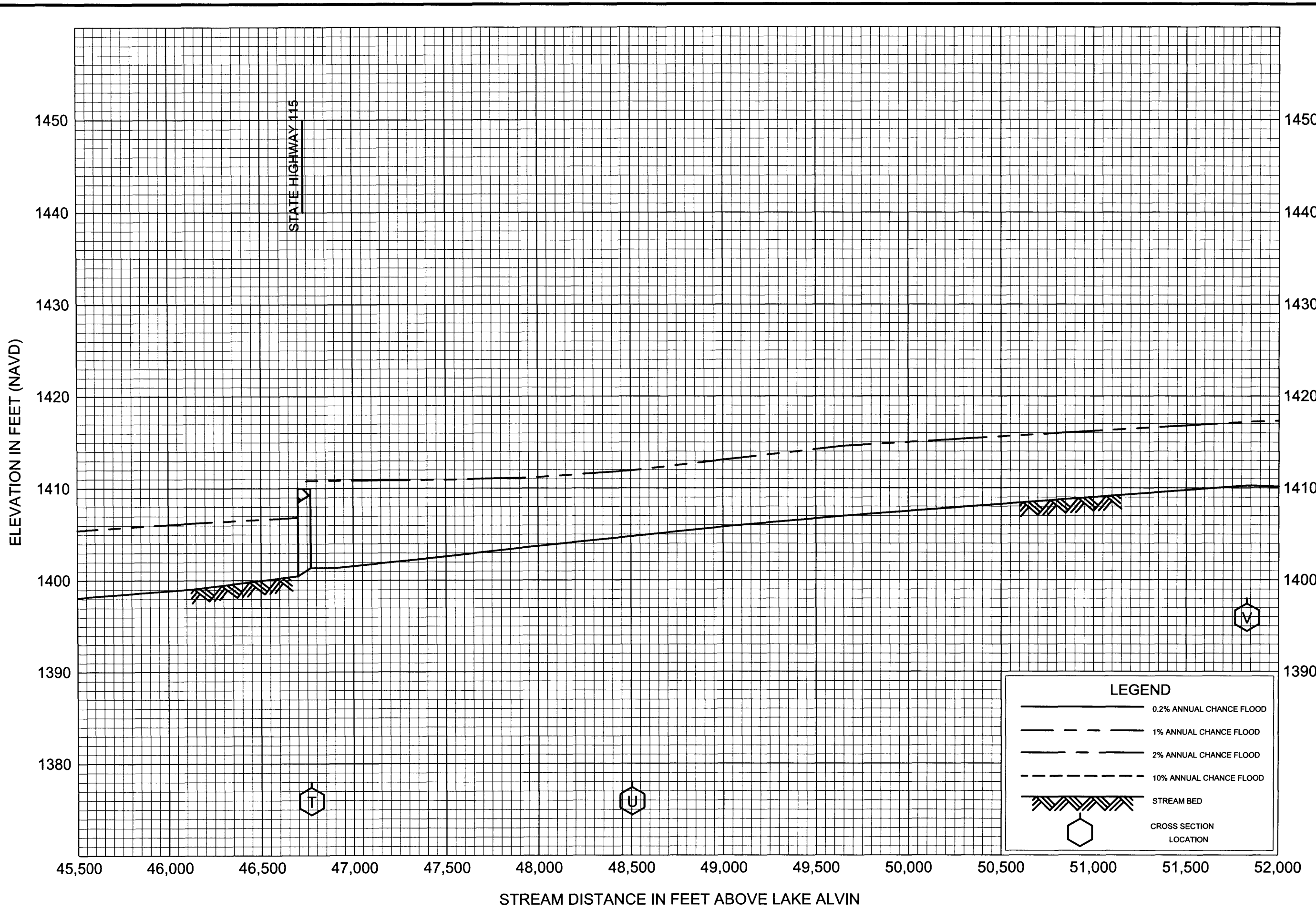
FLOOD PROFILES

NINEMILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

07P



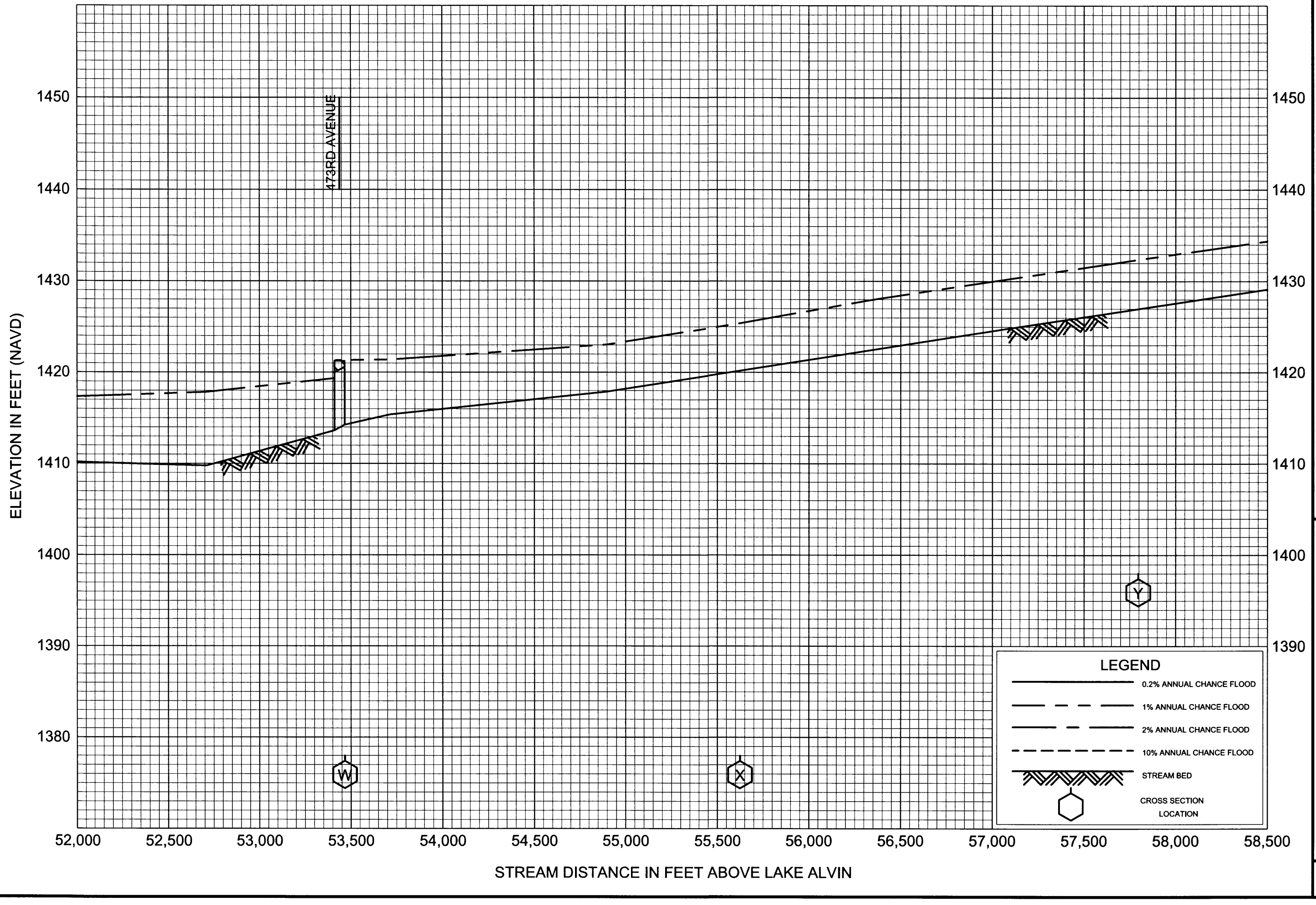
FLOOD PROFILES

NINEMILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

08P



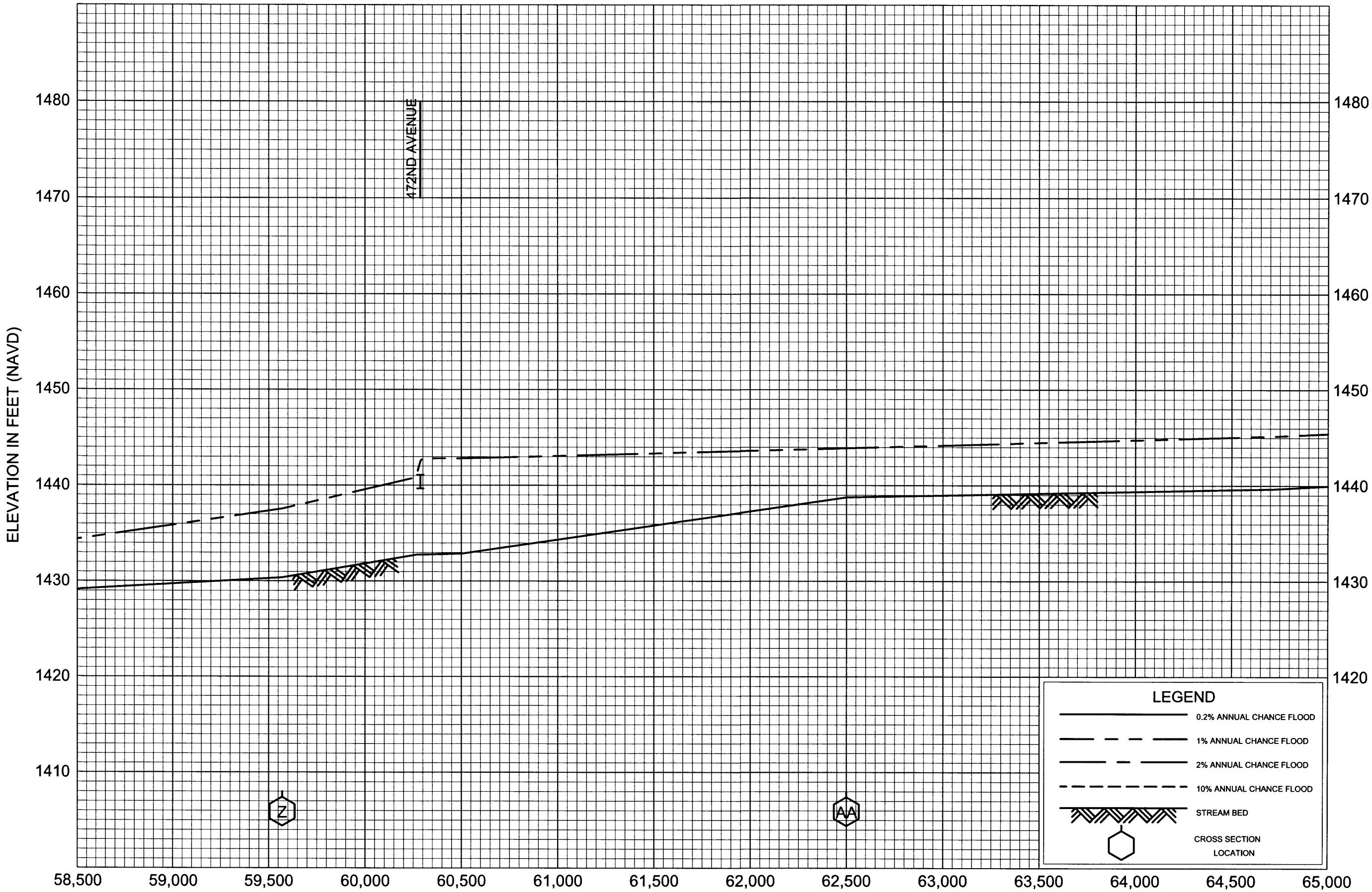
FLOOD PROFILES

NINEMILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

09P



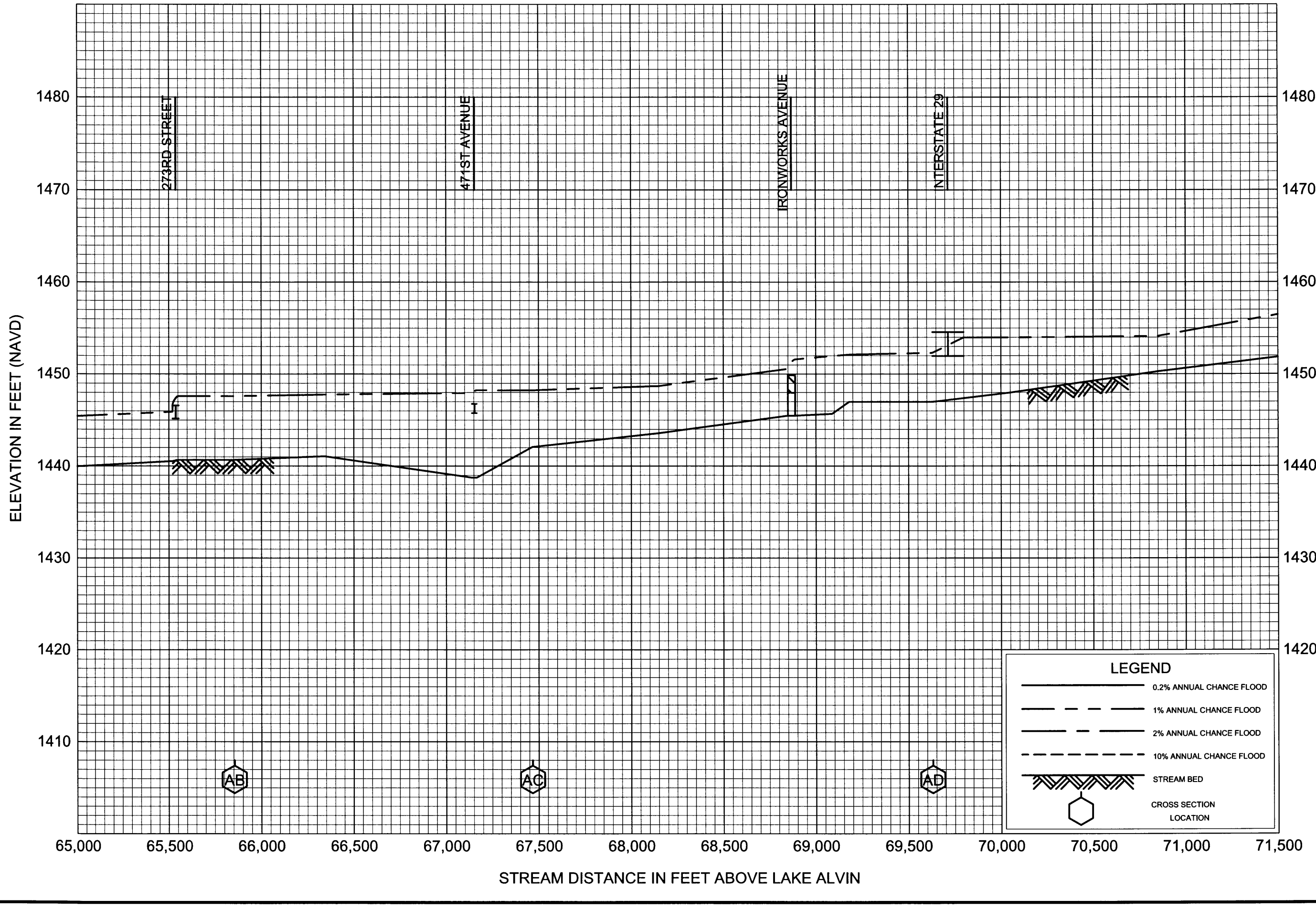
FLOOD PROFILES

NINEMILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

10P

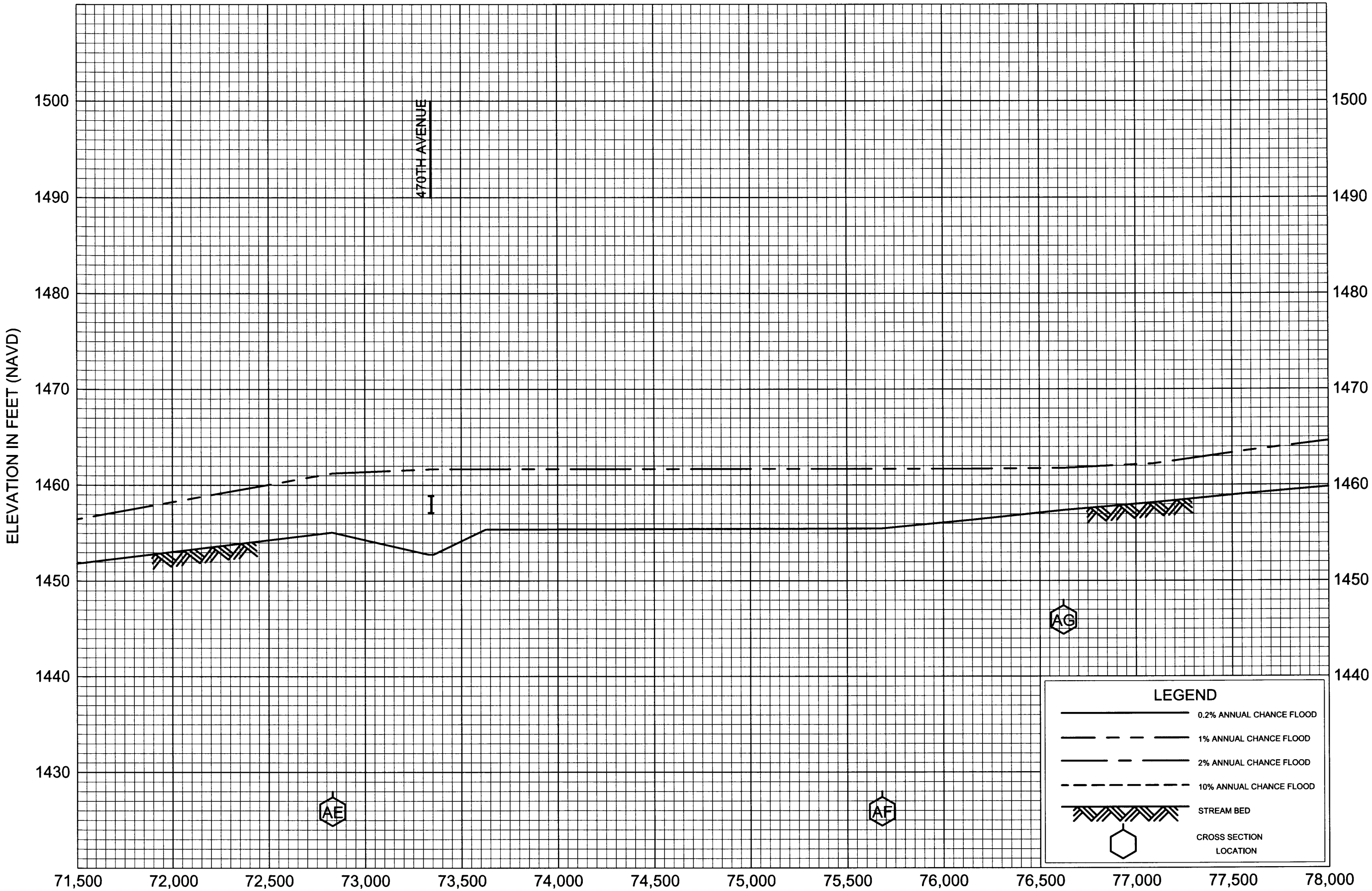


FLOOD PROFILES

NINEMILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS



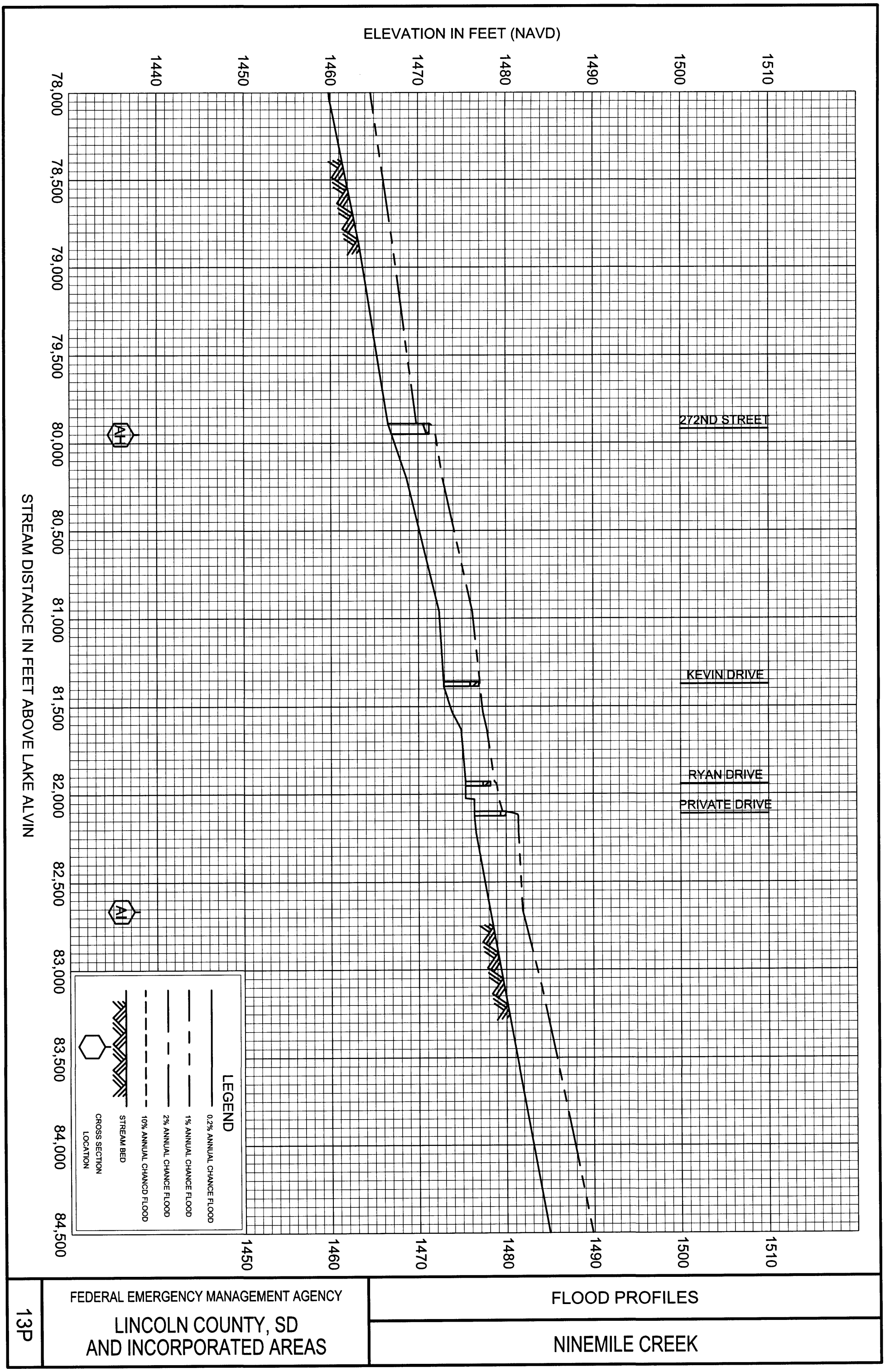
FLOOD PROFILES

NINEMILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

12P



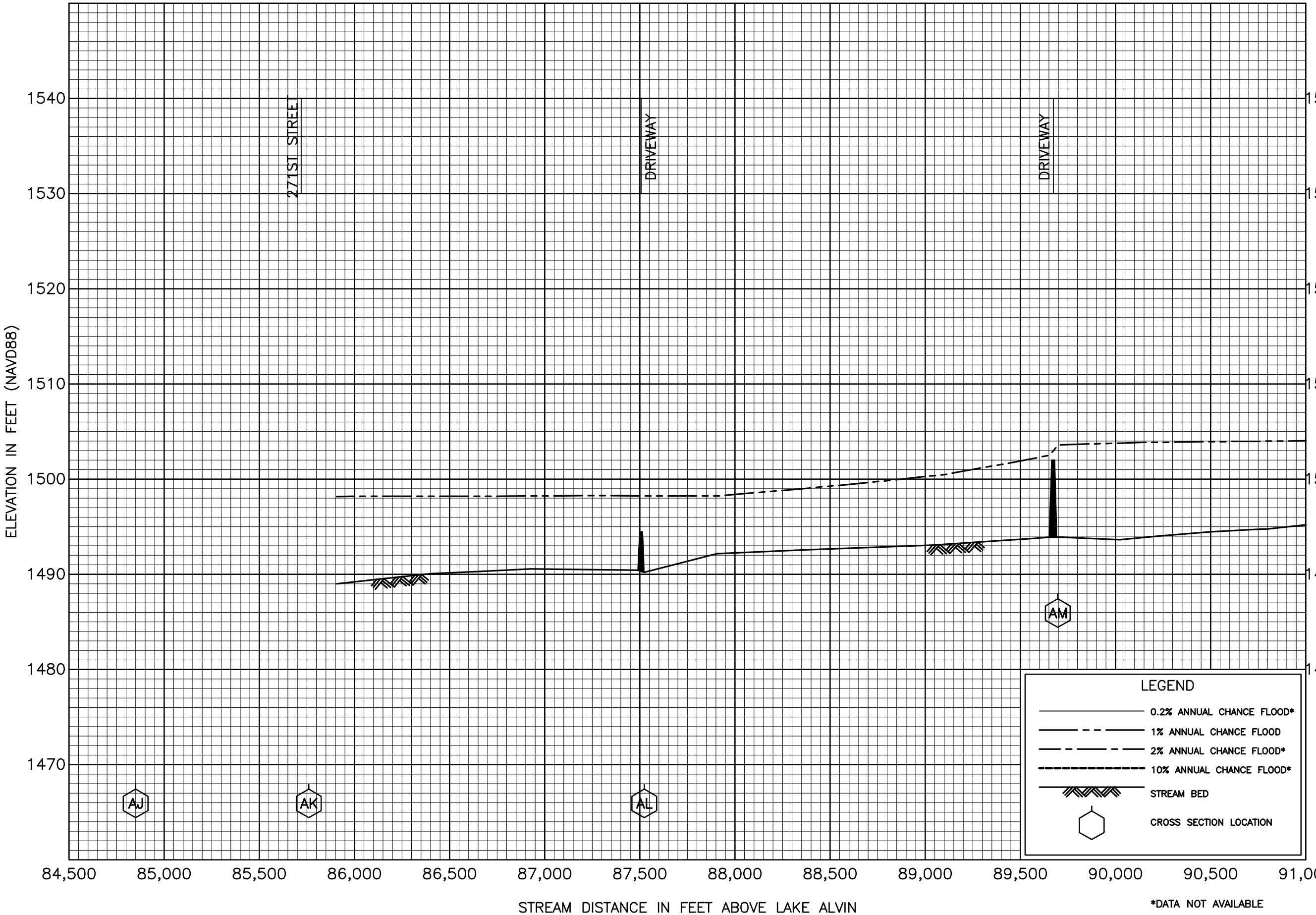
FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

FLOOD PROFILES

NINEMILE CREEK

13P

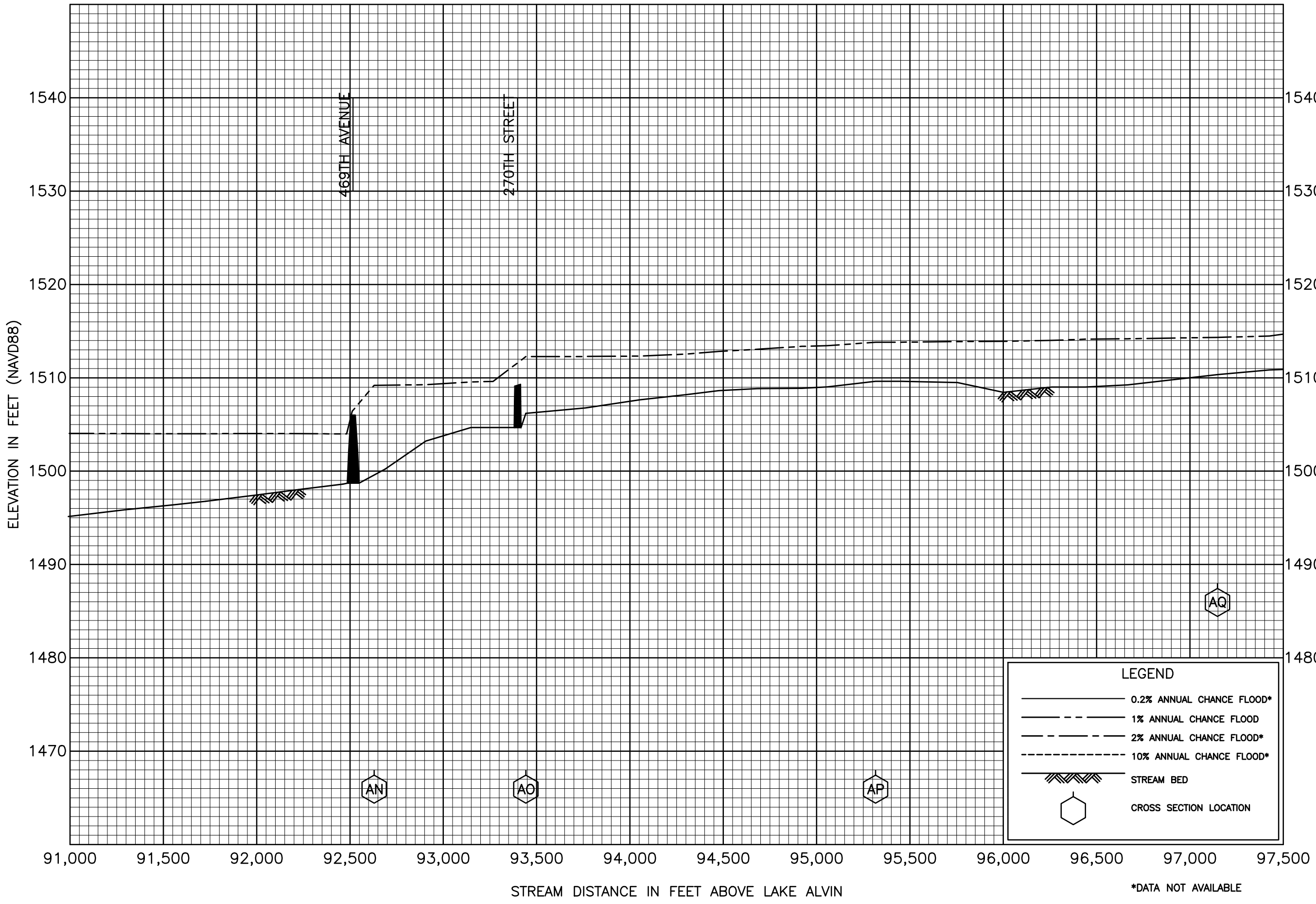


FLOOD PROFILES

NINEMILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS



FLOOD PROFILES

NINEMILE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

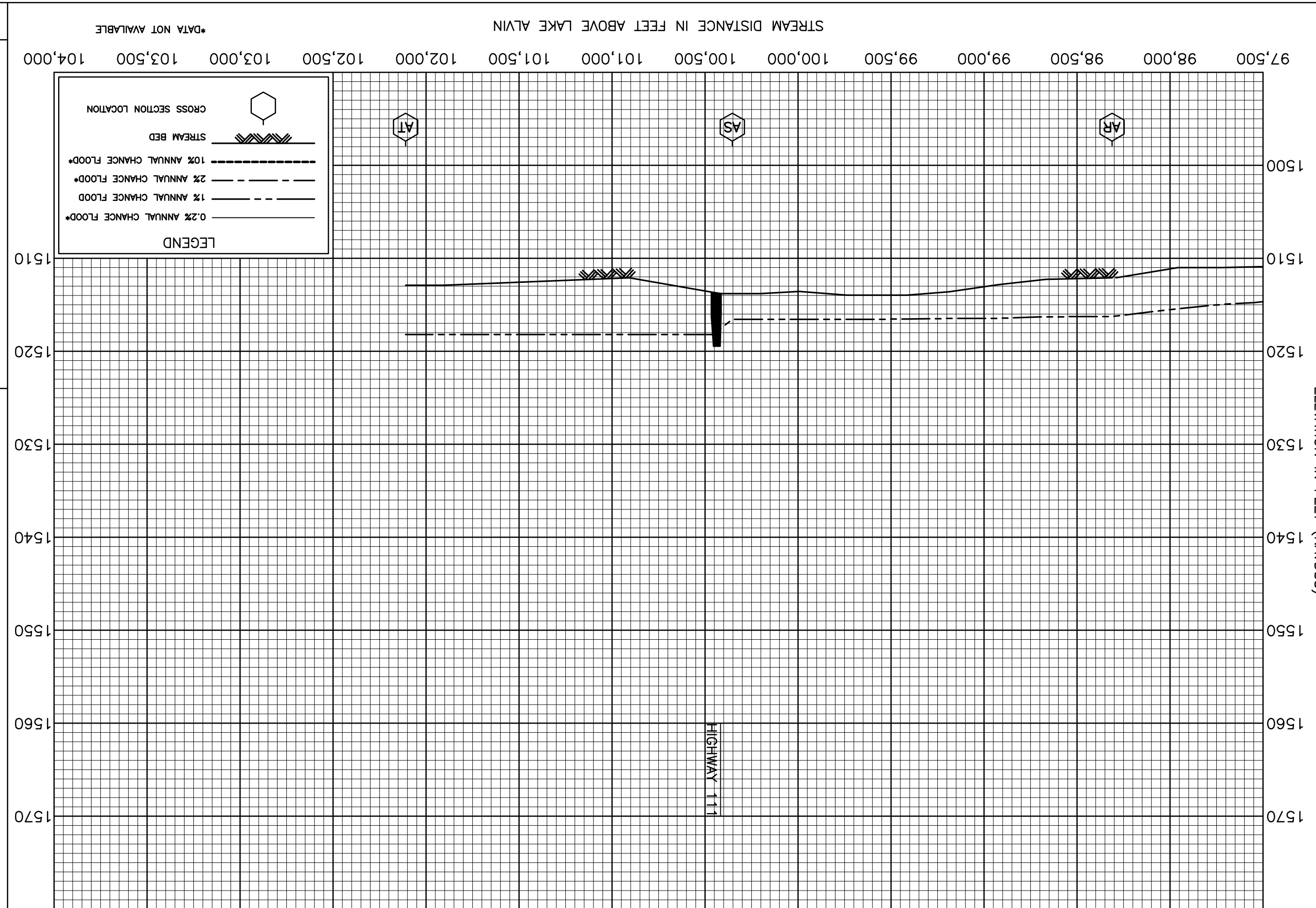
FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD

AND INCORPORATED AREAS

FLOOD PROFILES

NINEMILE CREEK



ELEVATION IN FEET (NAVD)

1360 1370 1380 1390 1400 1410 1420 1430

0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000 6500

STREAM DISTANCE IN FEET ABOVE NINEMILE CREEK

CONFLUENCE WITH NINEMILE CREEK

475TH AVENUE

CULVERT

A B C D

LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- 1% ANNUAL CHANCE FLOOD
- 2% ANNUAL CHANCE FLOOD
- 10% ANNUAL CHANCE FLOOD
- STREAM BED
- CROSS SECTION LOCATION

1370 1380 1390 1400 1410 1420 1430

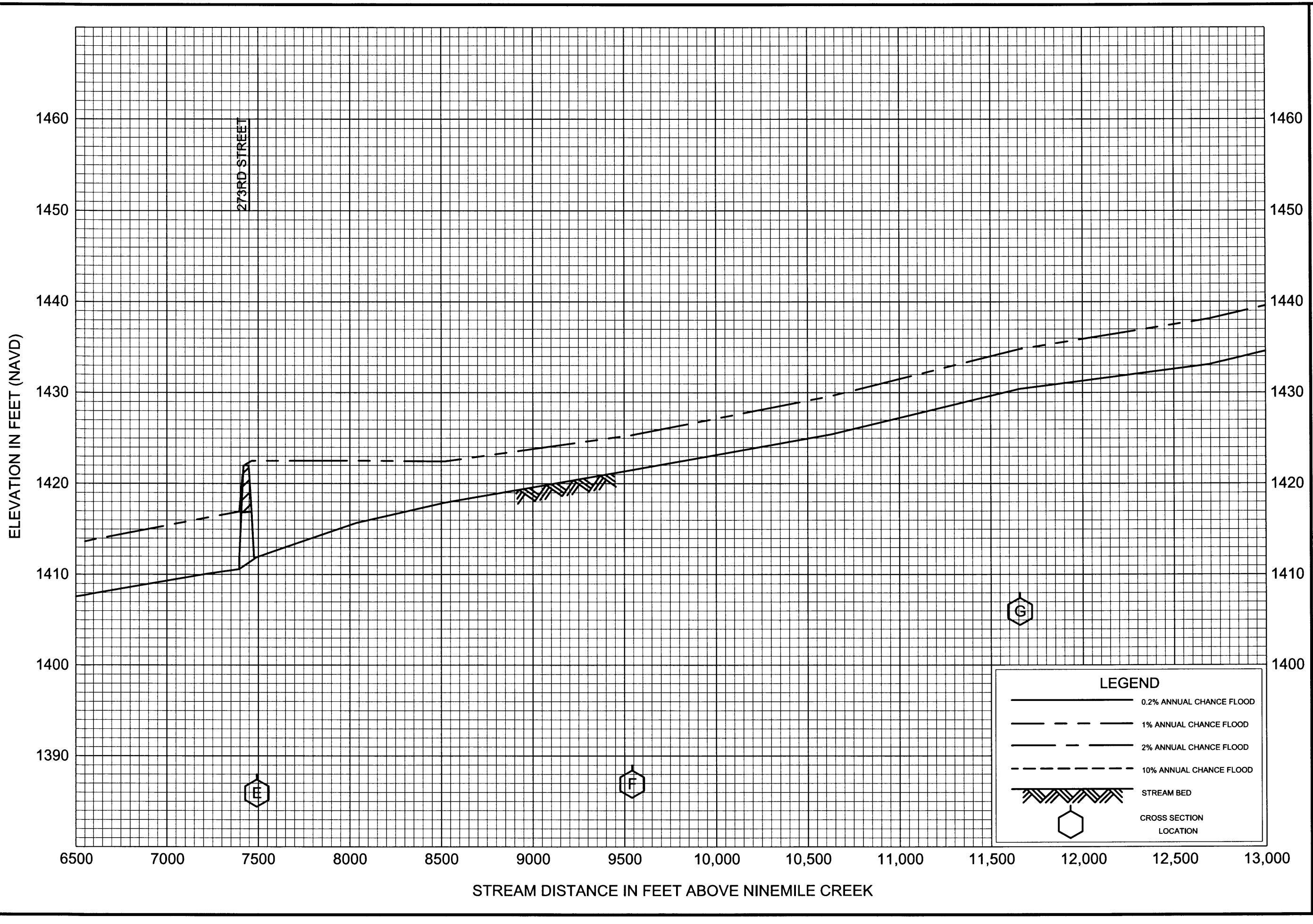
FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

FLOOD PROFILES

NINEMILE CREEK TRIBUTARY

17P

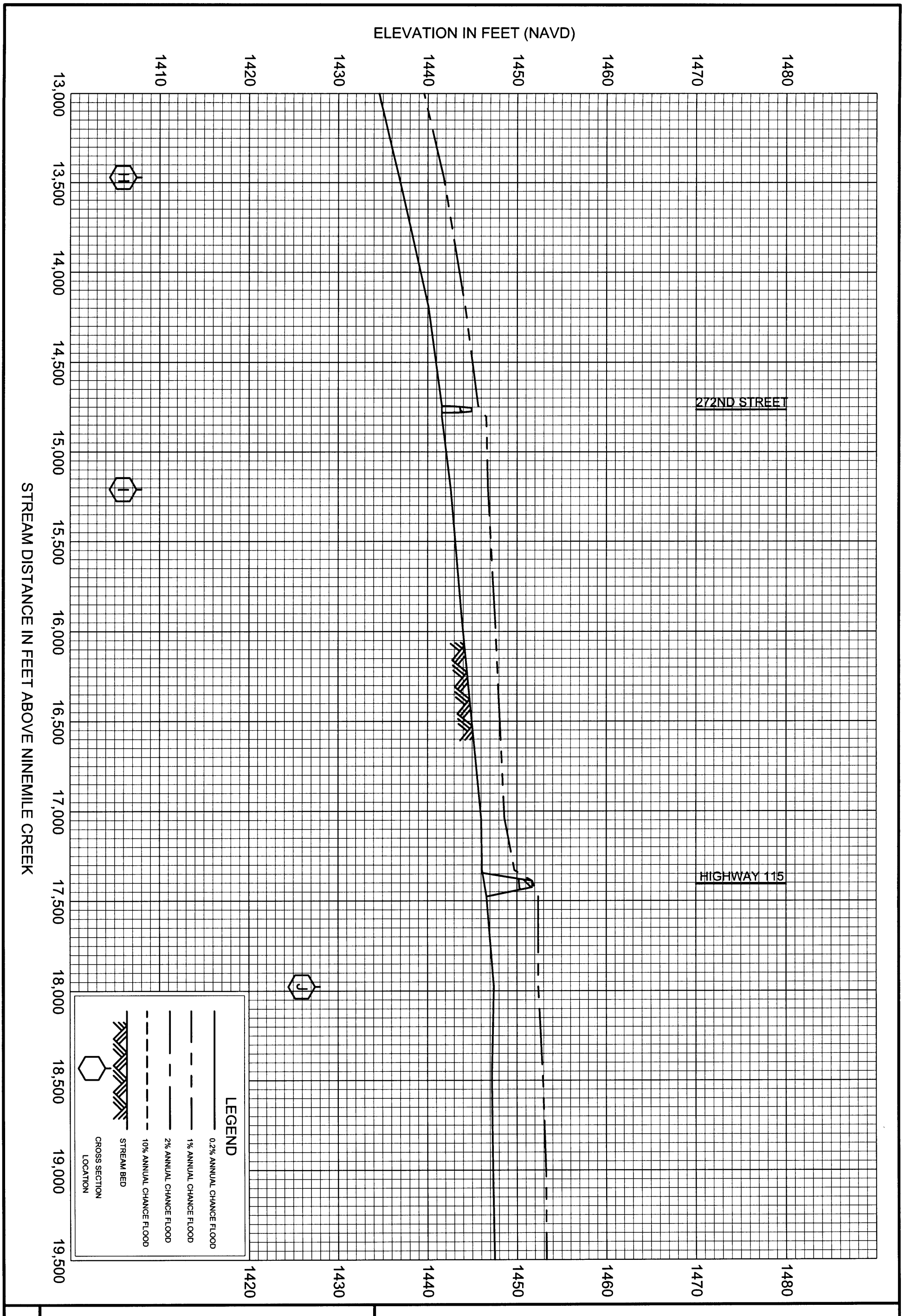


FLOOD PROFILES

NINEMILE CREEK TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS



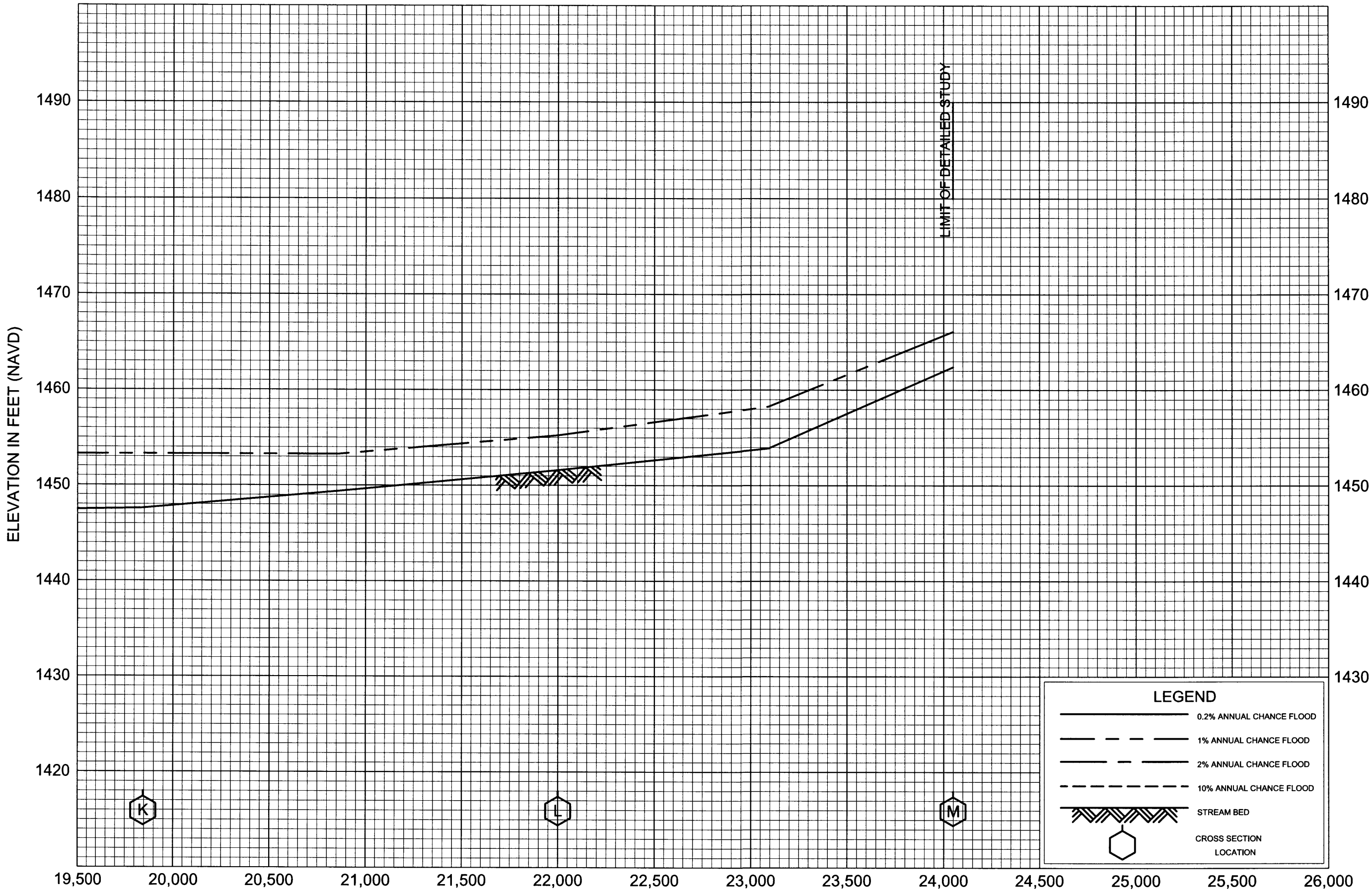
FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

FLOOD PROFILES

NINEMILE CREEK TRIBUTARY

19P



FLOOD PROFILES

NINEMILE CREEK TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

20P

ELEVATION IN FEET (NAVD)

1260 1270 1280 1290 1300 1310 1320 1330

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH BIG SIOUX RIVER

0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000 6500

CONFLUENCE WITH
BIG SIOUX RIVER

480TH AVENUE

A

B

LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- 1% ANNUAL CHANCE FLOOD
- 2% ANNUAL CHANCE FLOOD
- 10% ANNUAL CHANCE FLOOD
- STREAM BED
- CROSS SECTION LOCATION

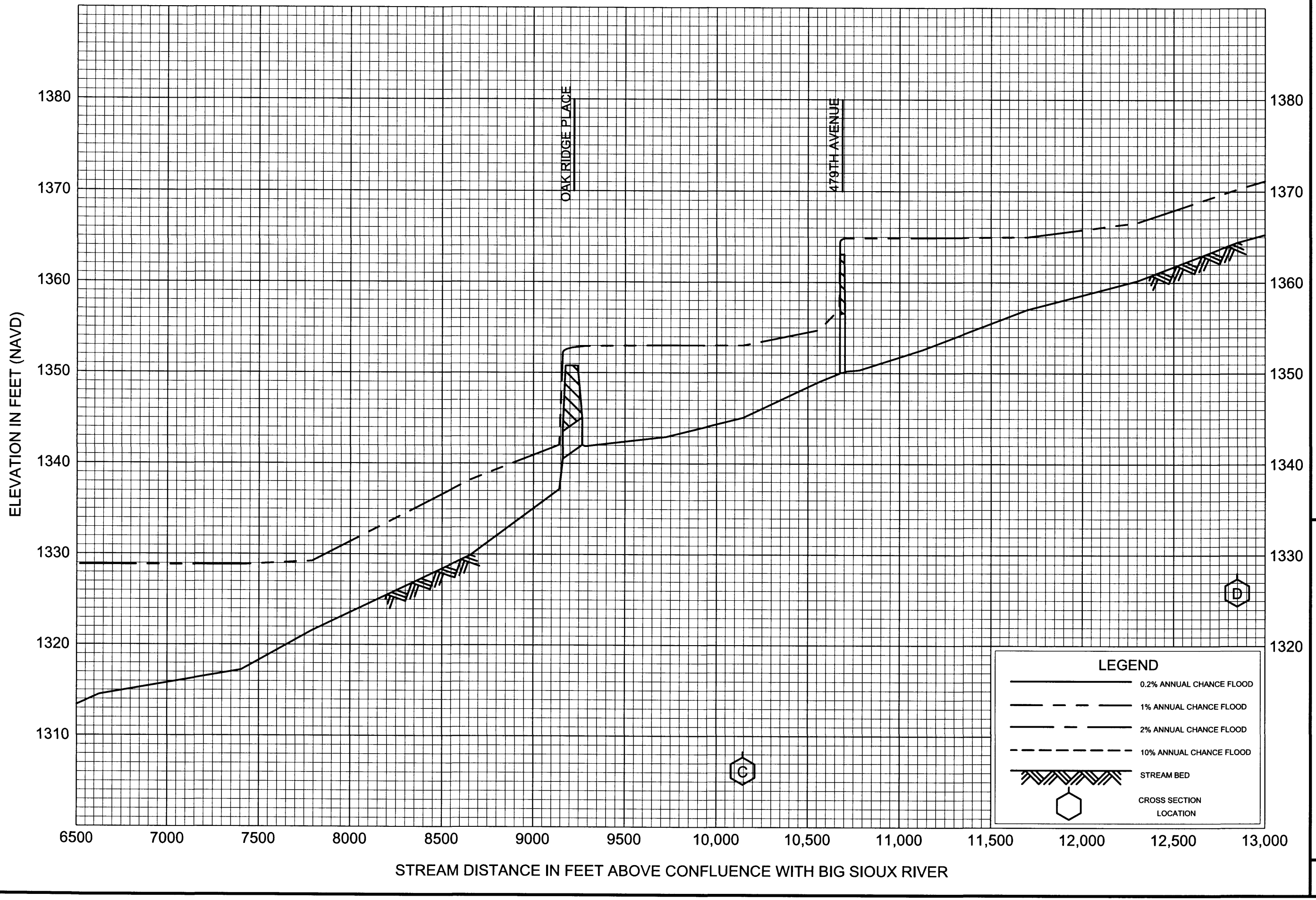
1270 1280 1290 1300 1310 1320 1330

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

FLOOD PROFILES

SCHINDLER CREEK



FLOOD PROFILES

SCHINDLER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

22P

ELEVATION IN FEET (NAVD)

1420
1410
1400
1390
1380
1370
1360
1350

STATE HIGHWAY 11

E
F

LEGEND
- 0.2% ANNUAL CHANCE FLOOD
- 1% ANNUAL CHANCE FLOOD
- 2% ANNUAL CHANCE FLOOD
- 10% ANNUAL CHANCE FLOOD
- STREAM BED
- CROSS SECTION LOCATION

13,000 13,500 14,000 14,500 15,000 15,500 16,000 16,500 17,000 17,500 18,000 18,500 19,000 19,500

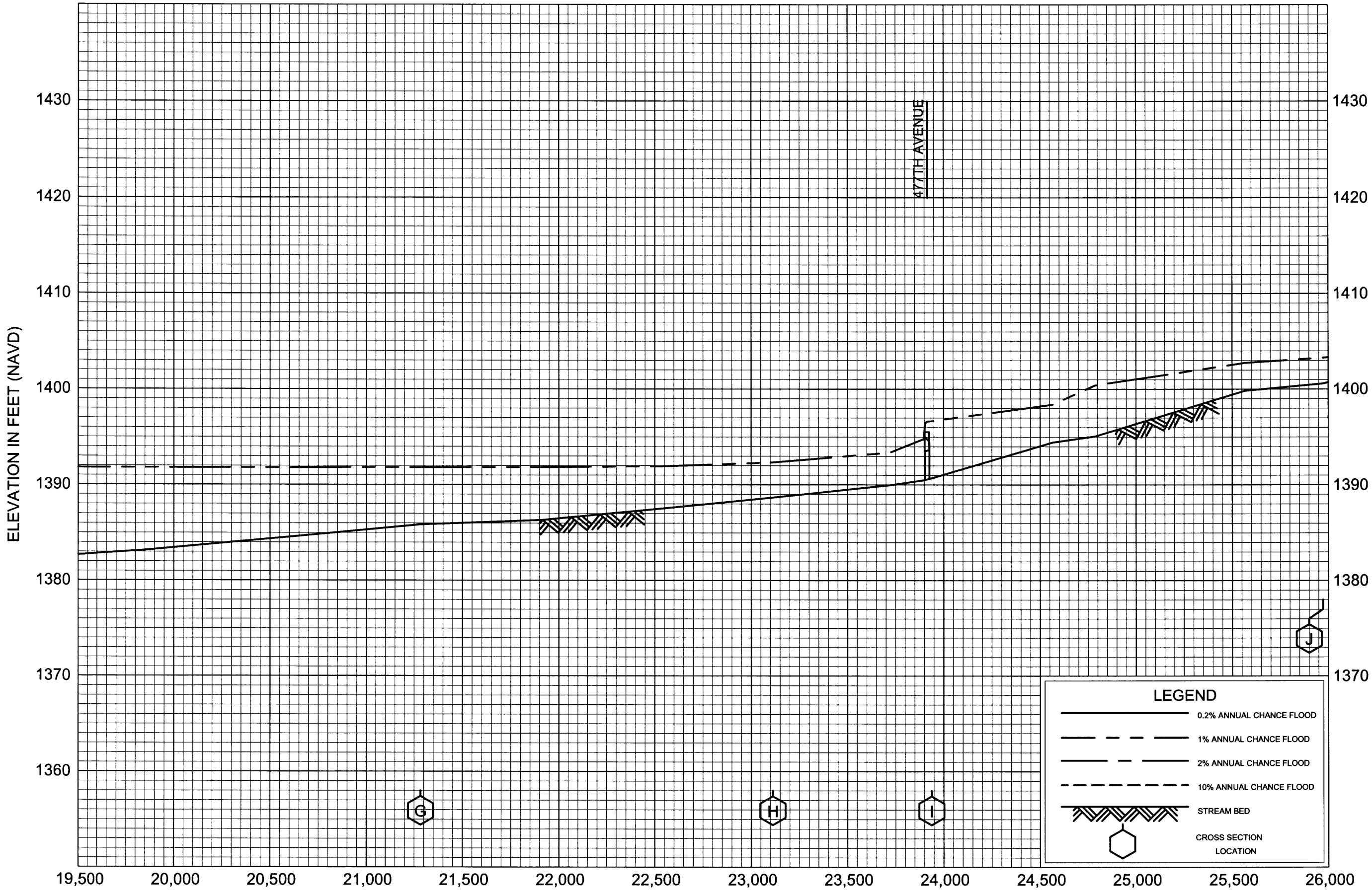
STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH BIG SIOUX RIVER

FLOOD PROFILES

SCHINDLER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

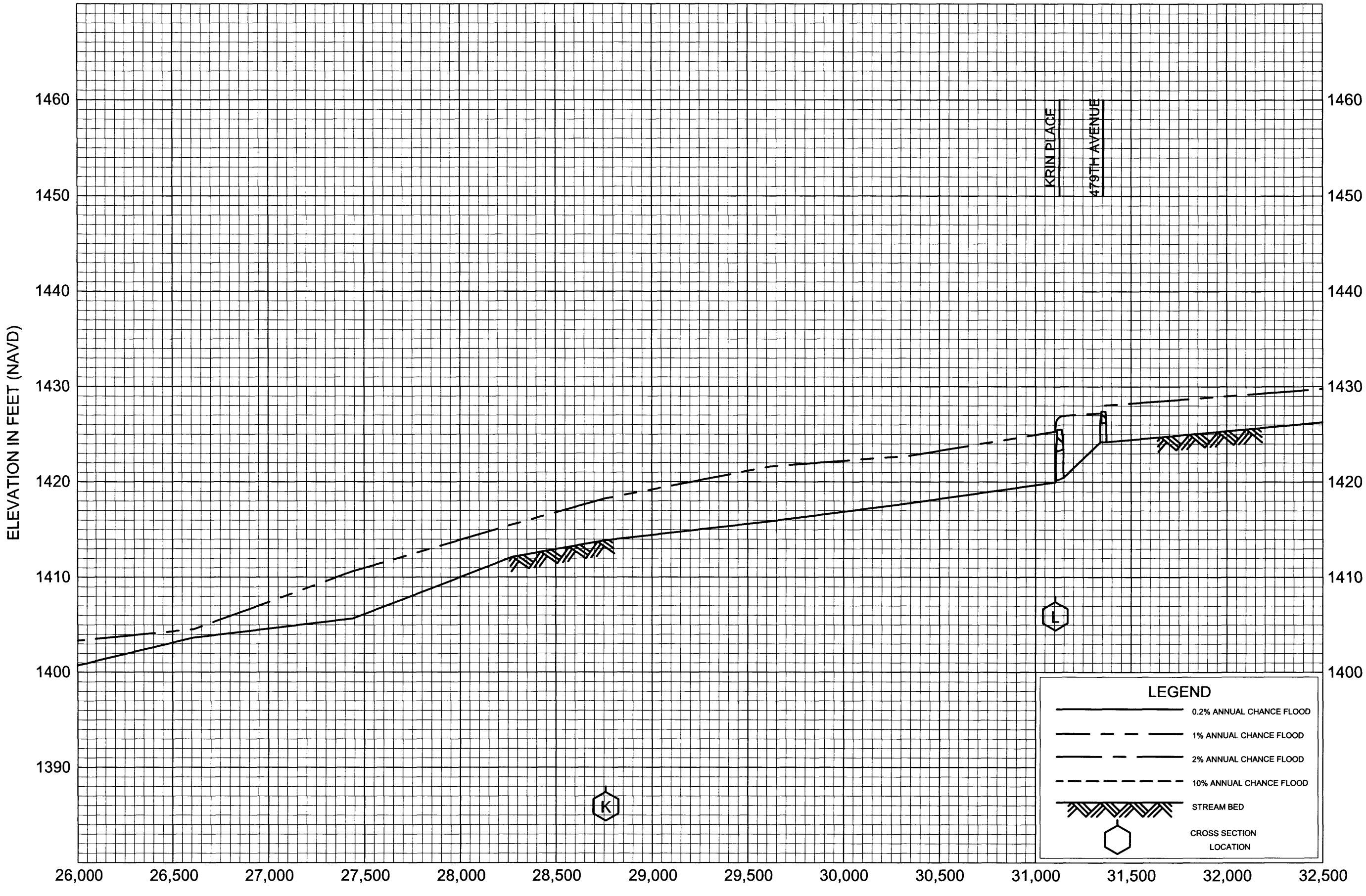


FLOOD PROFILES

SCHINDLER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS



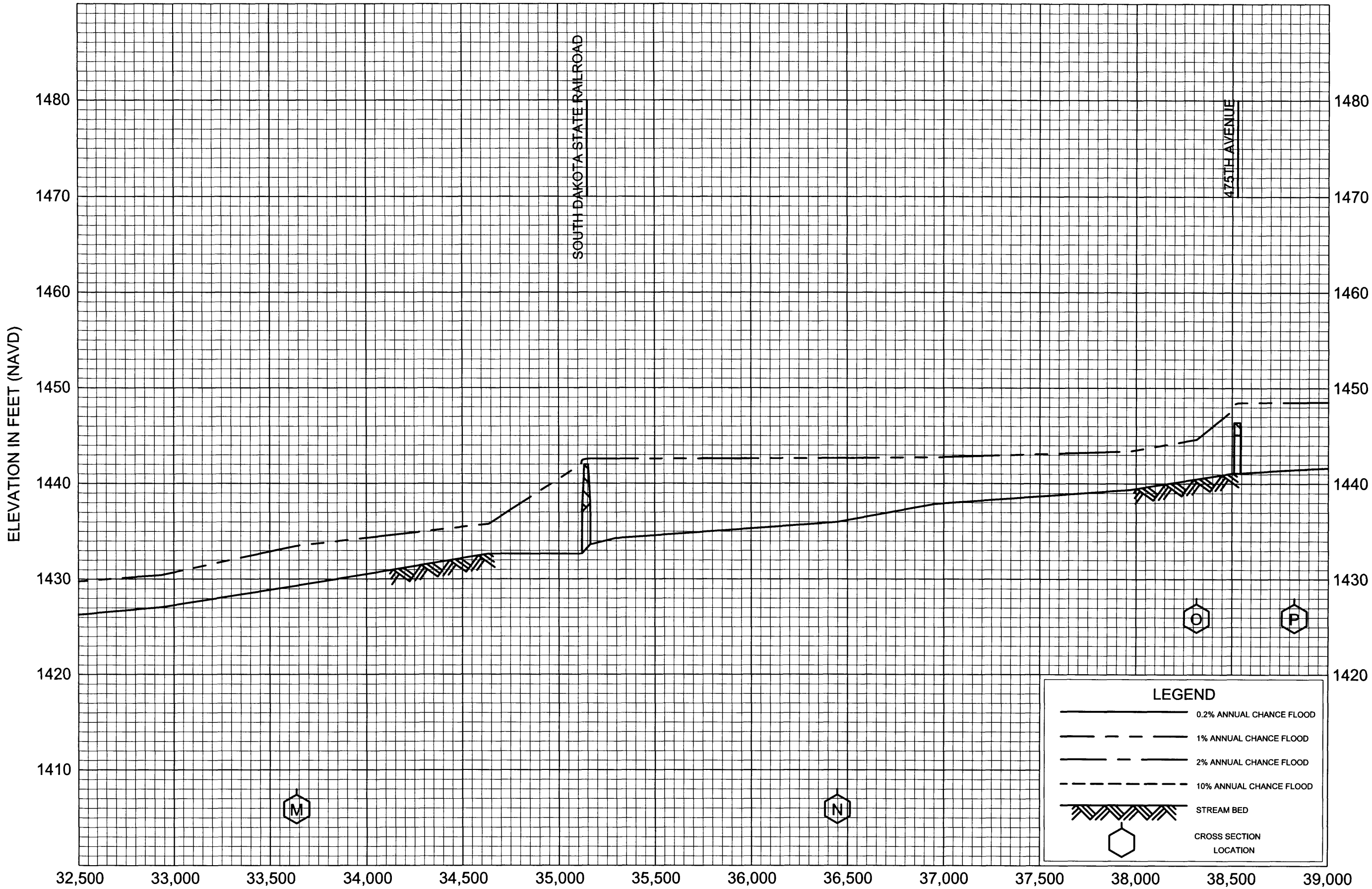
FLOOD PROFILES

SCHINDLER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

25P



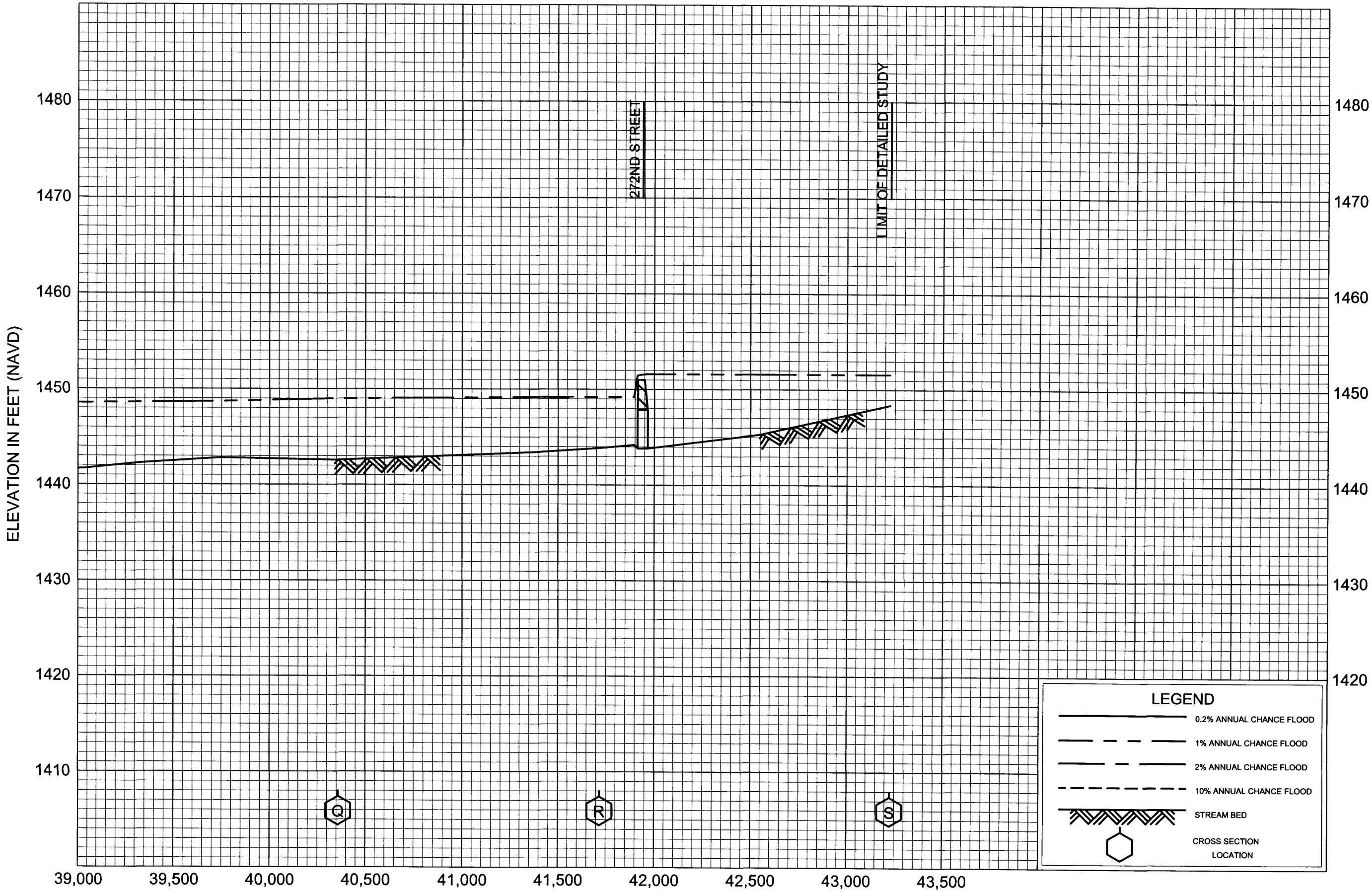
FLOOD PROFILES

SCHINDLER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

26P



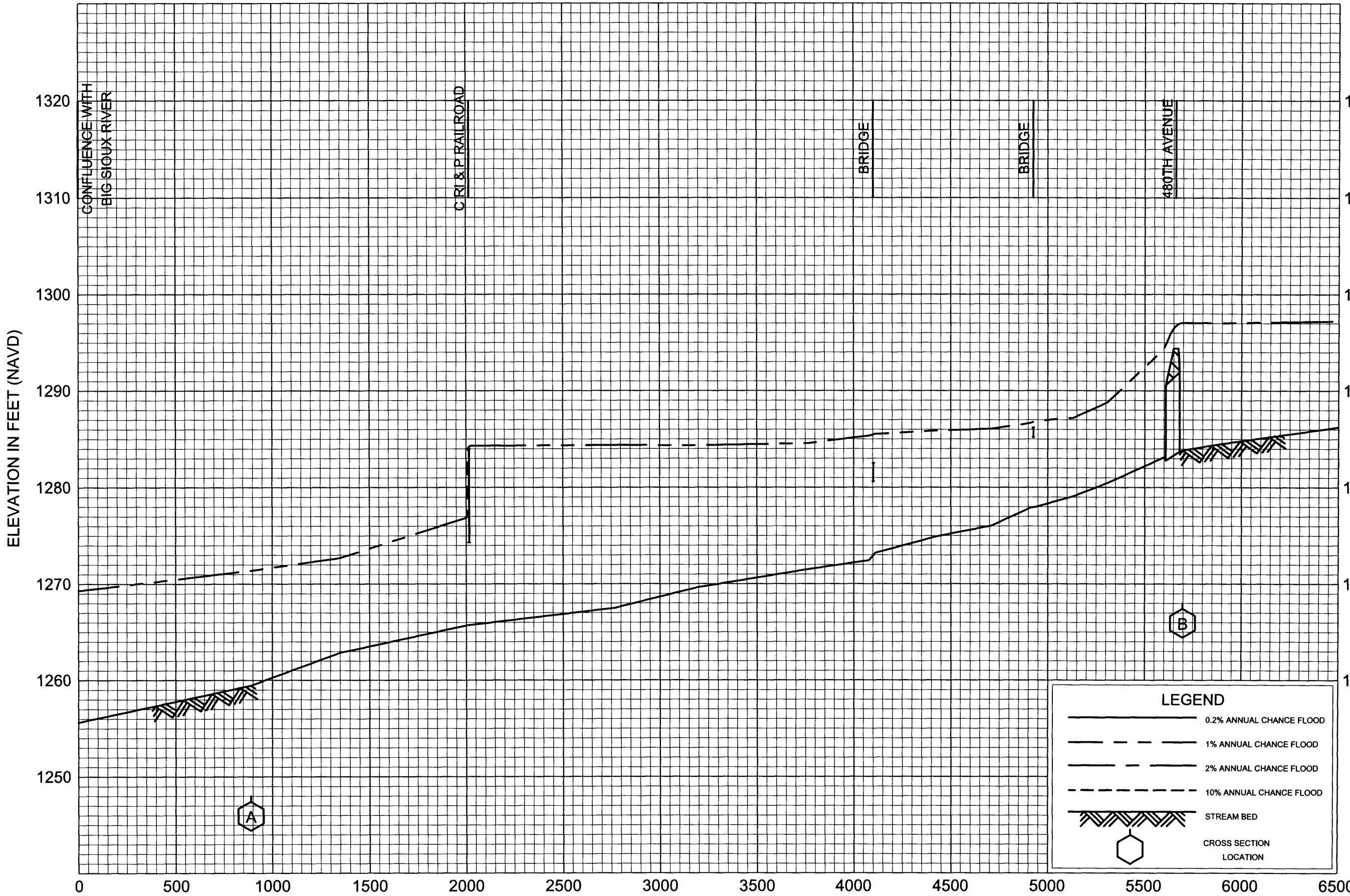
FLOOD PROFILES

SCHINDLER CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

27P



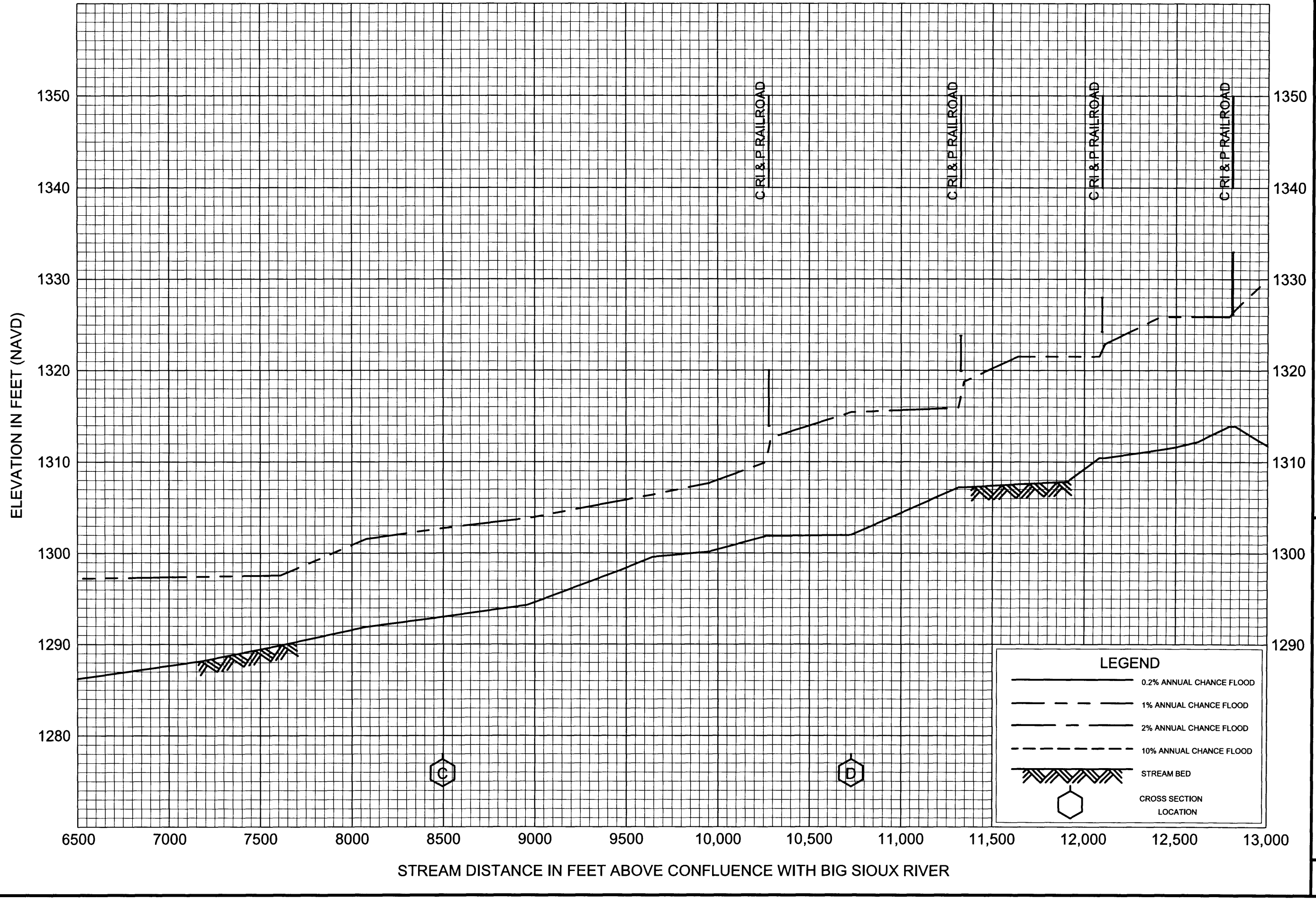
FLOOD PROFILES

SPRING CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

28P



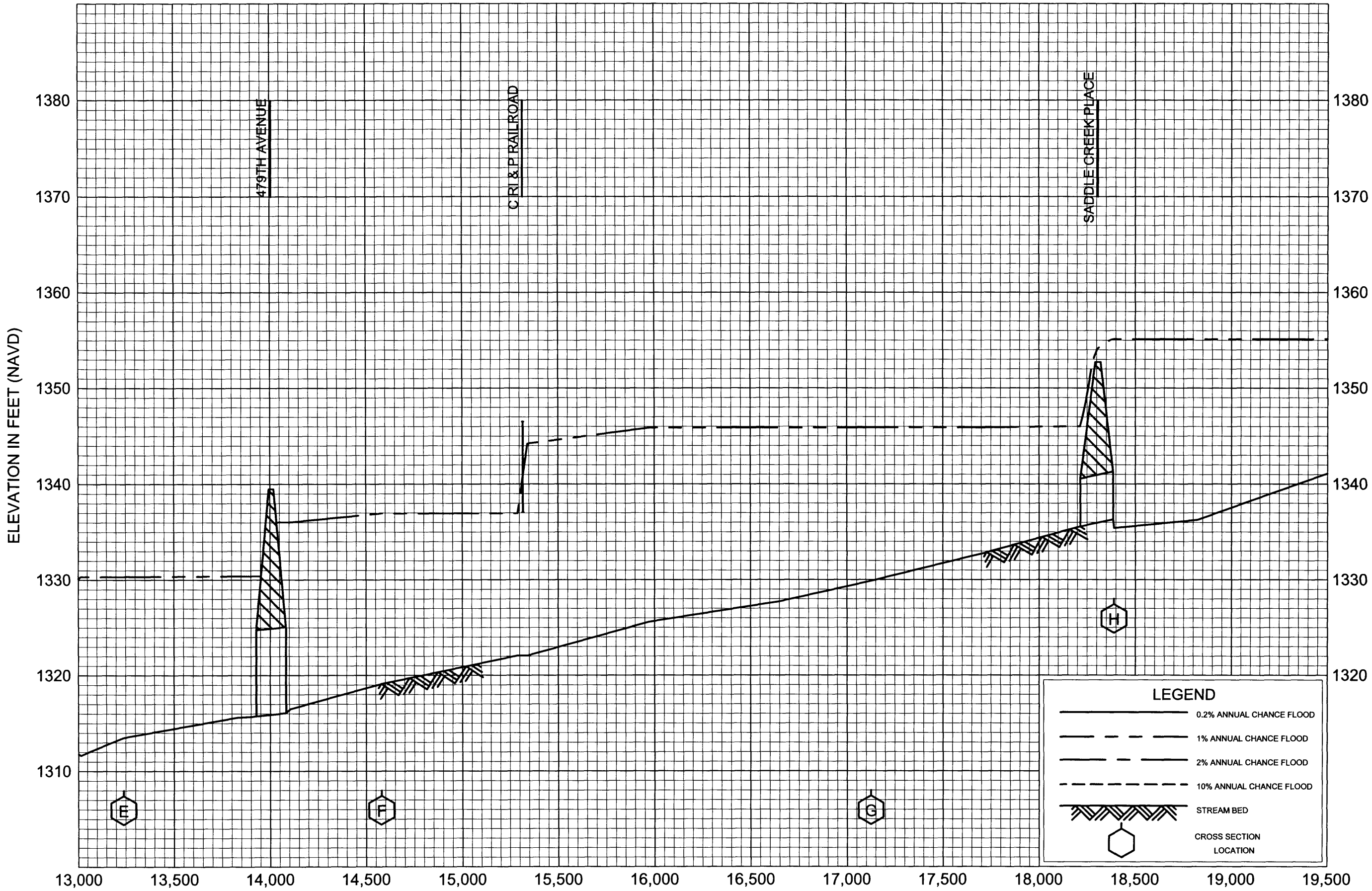
FLOOD PROFILES

SPRING CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

29P

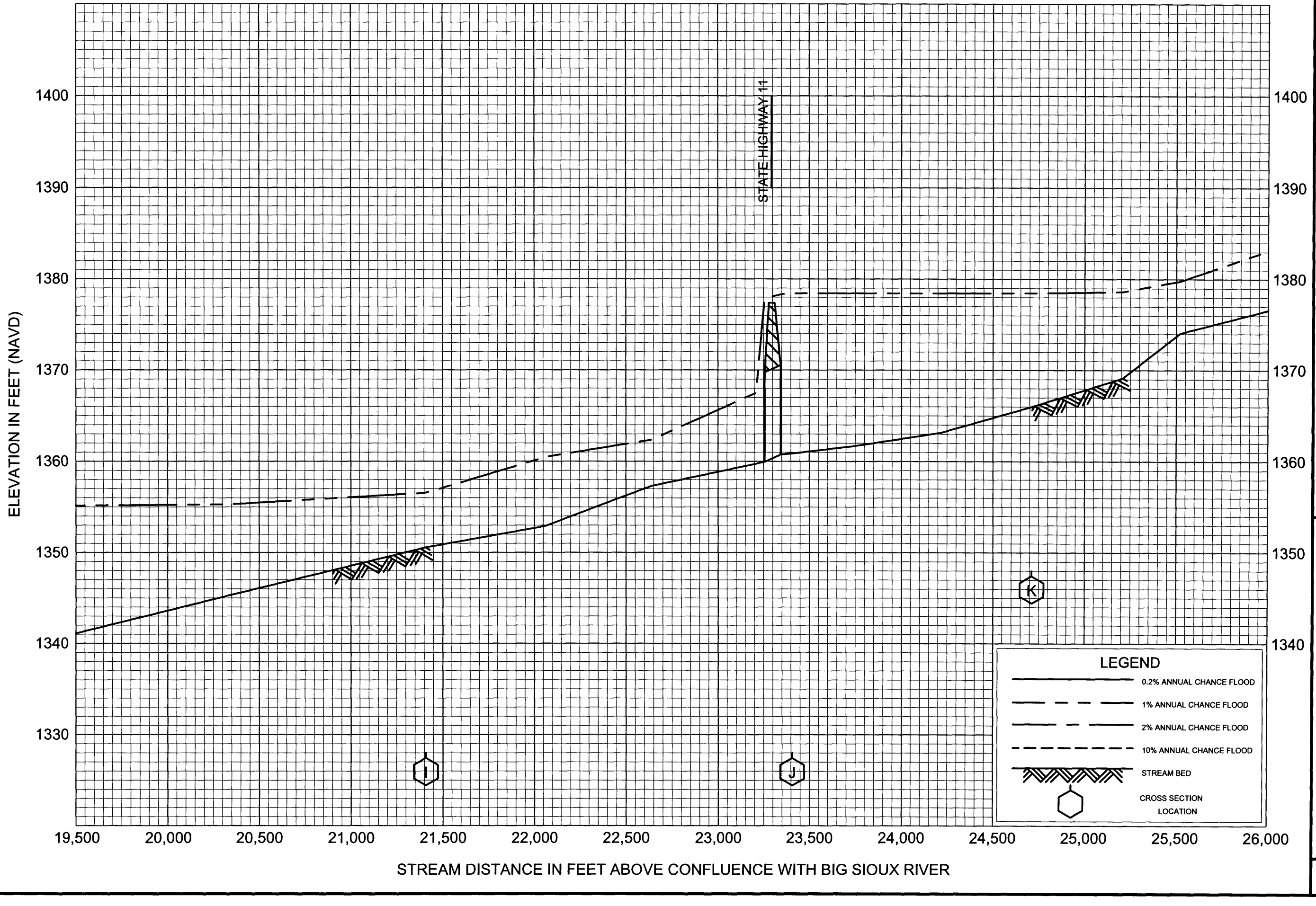


FLOOD PROFILES

SPRING CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

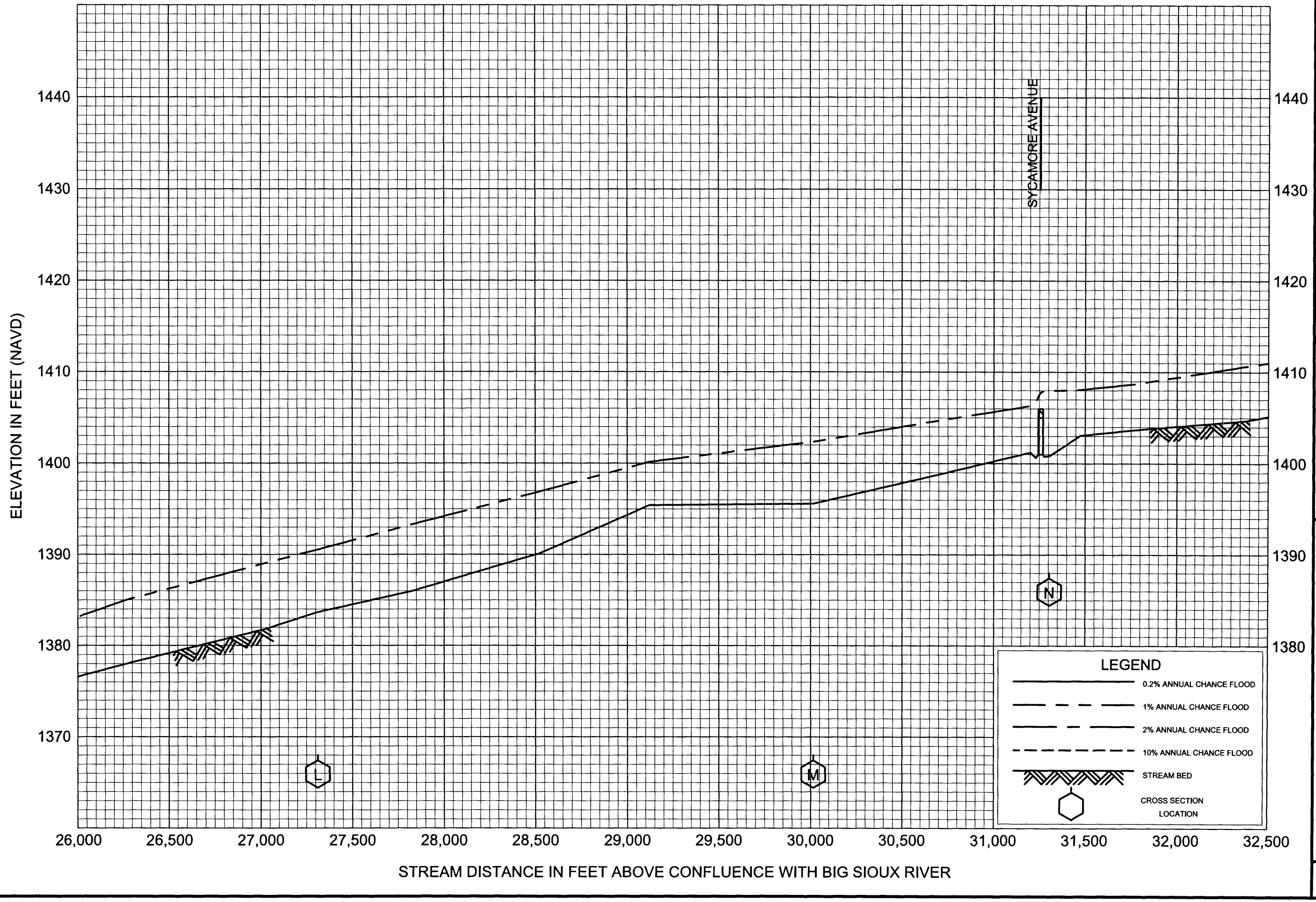


FLOOD PROFILES

SPRING CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS



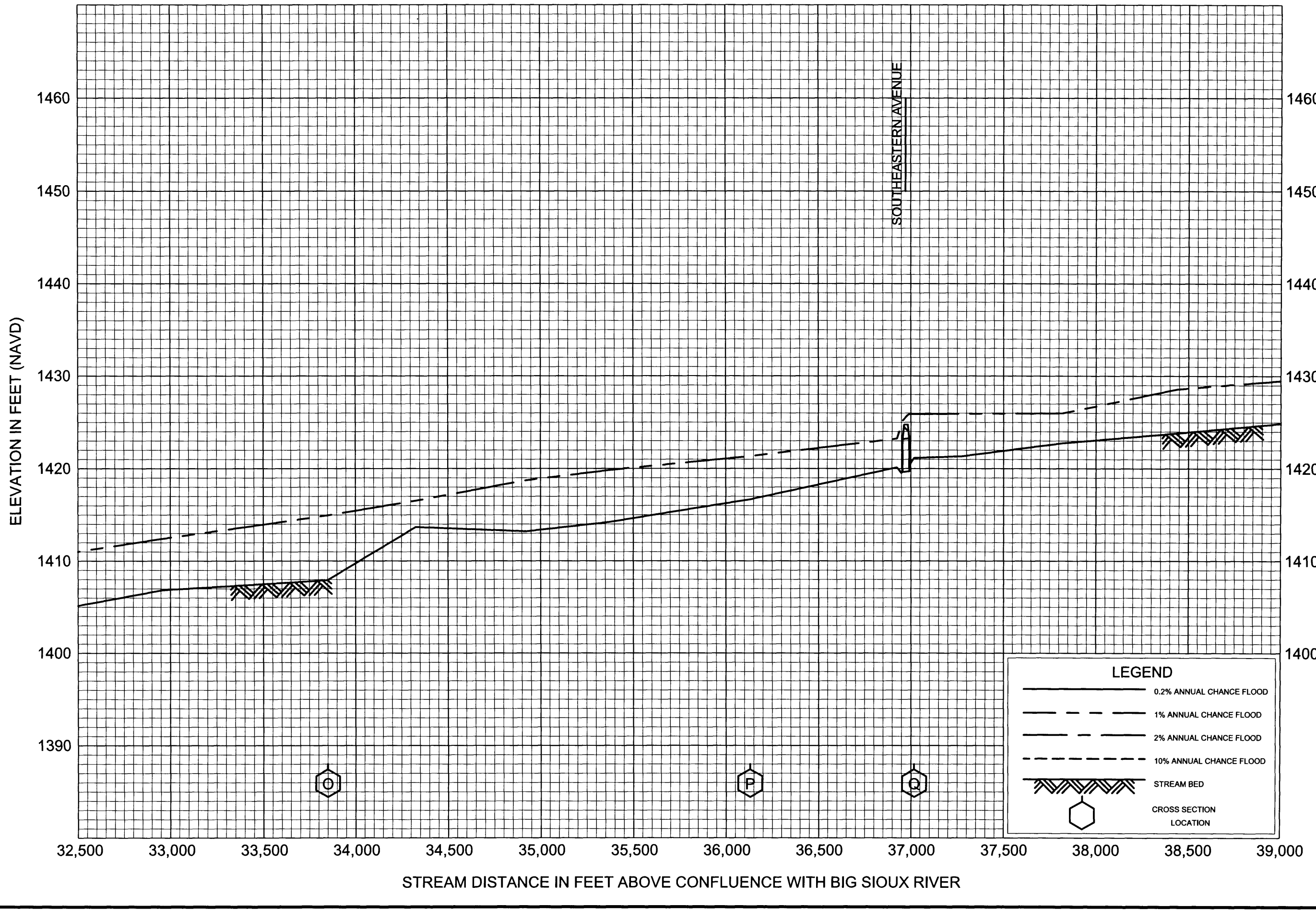
FLOOD PROFILES

SPRING CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

32P



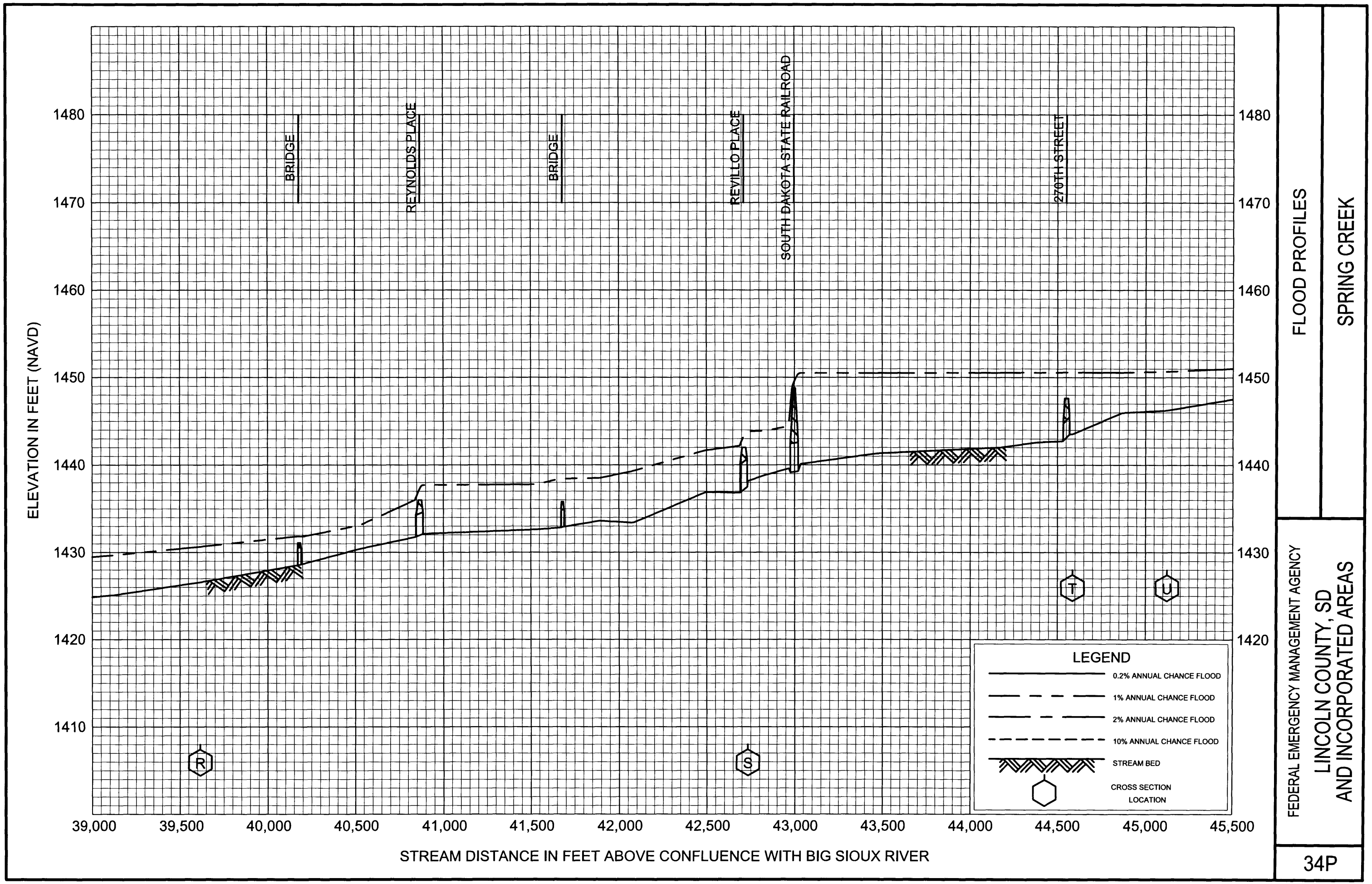
FLOOD PROFILES

SPRING CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

33P



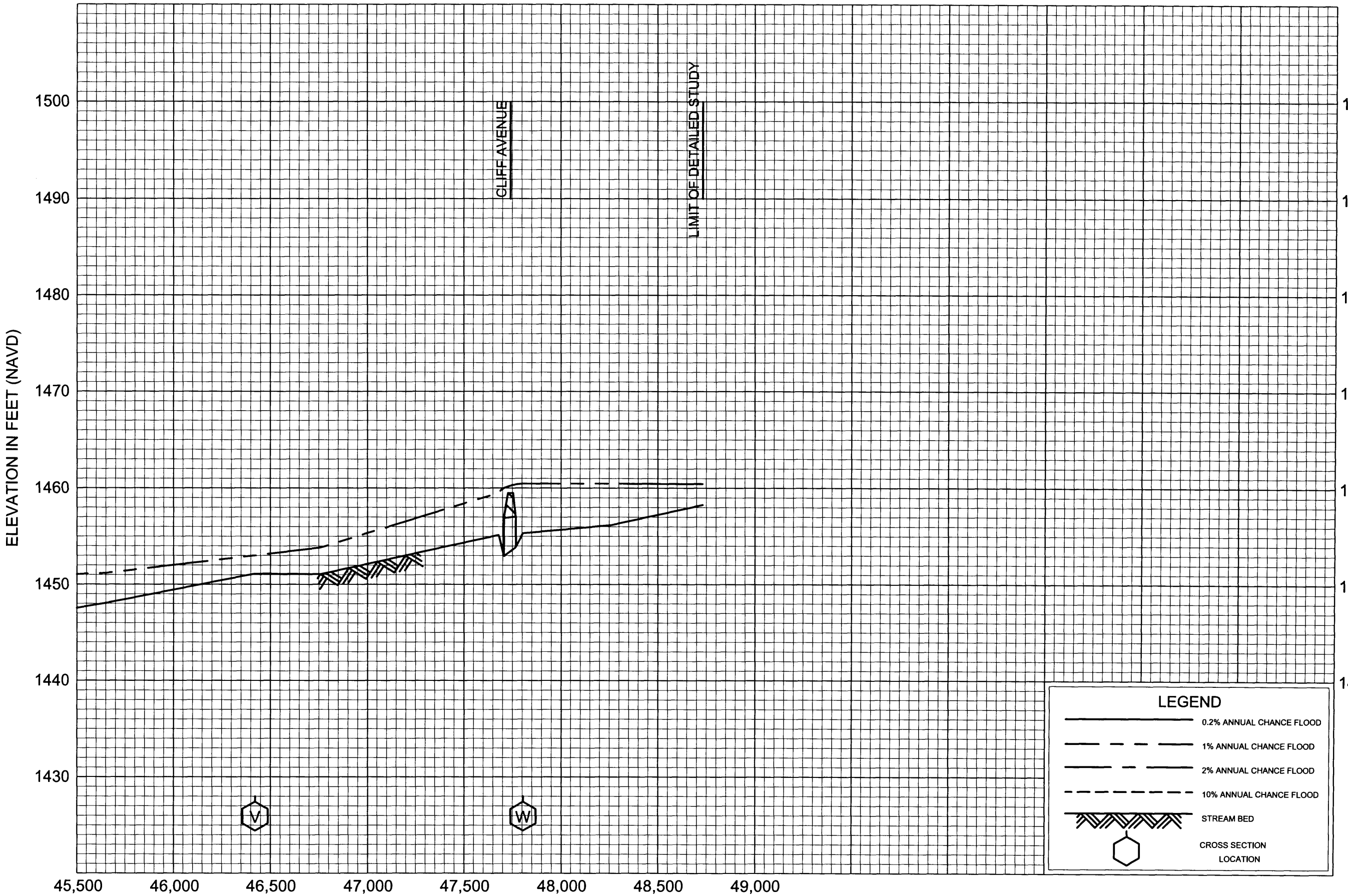
FLOOD PROFILES

SPRING CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

34P



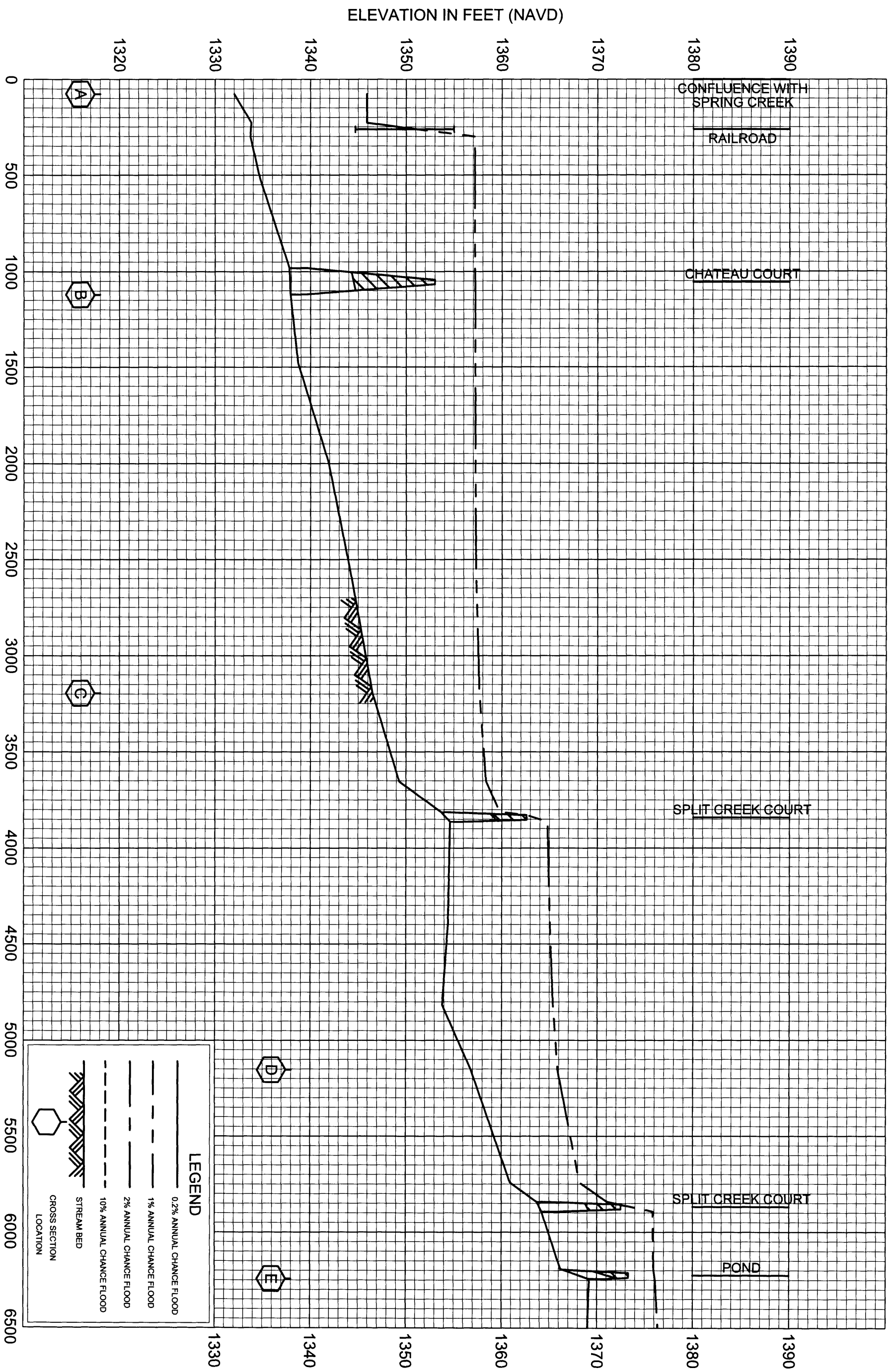
FLOOD PROFILES

SPRING CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

35P

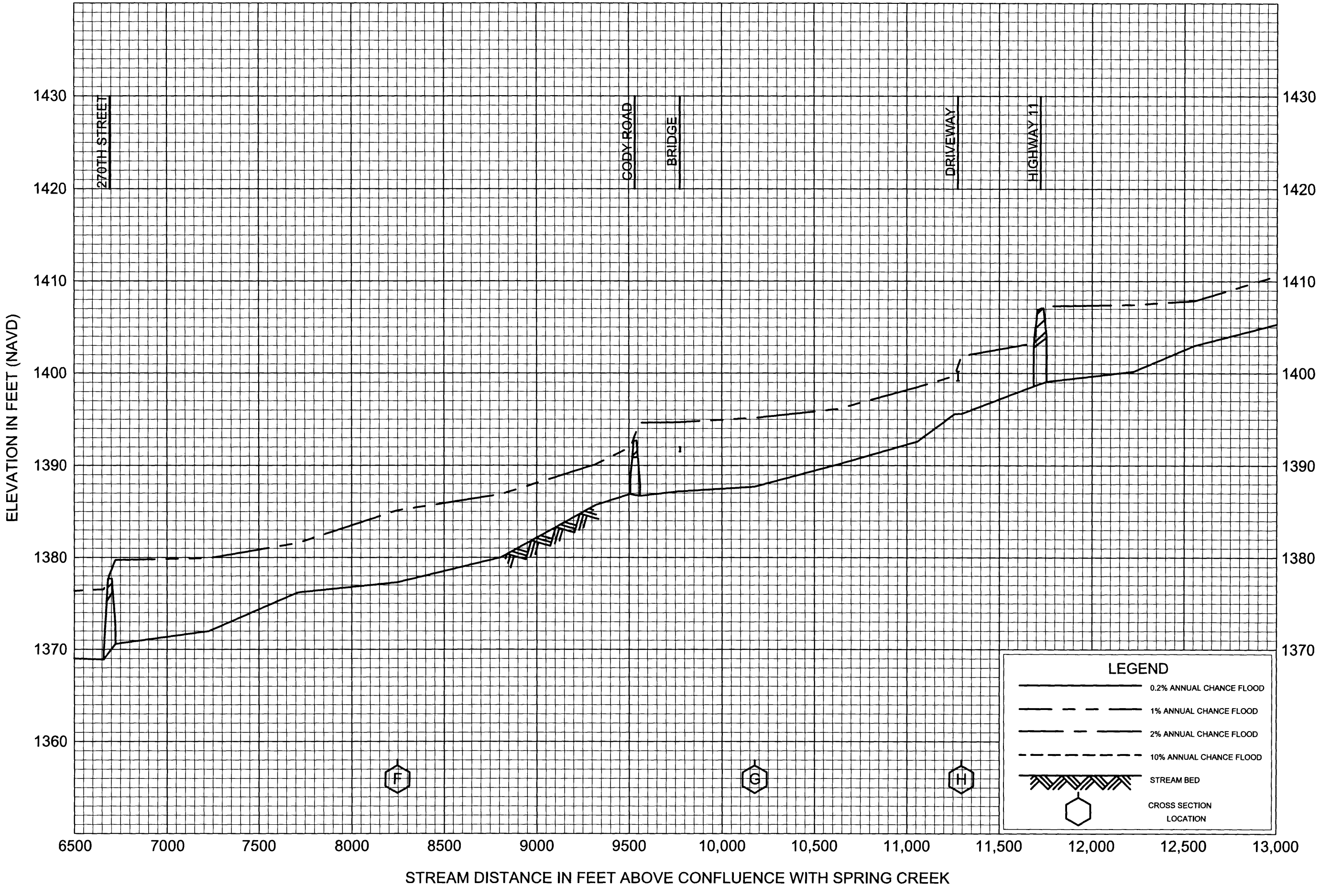


FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

FLOOD PROFILES

SPRING CREEK TRIBUTARY



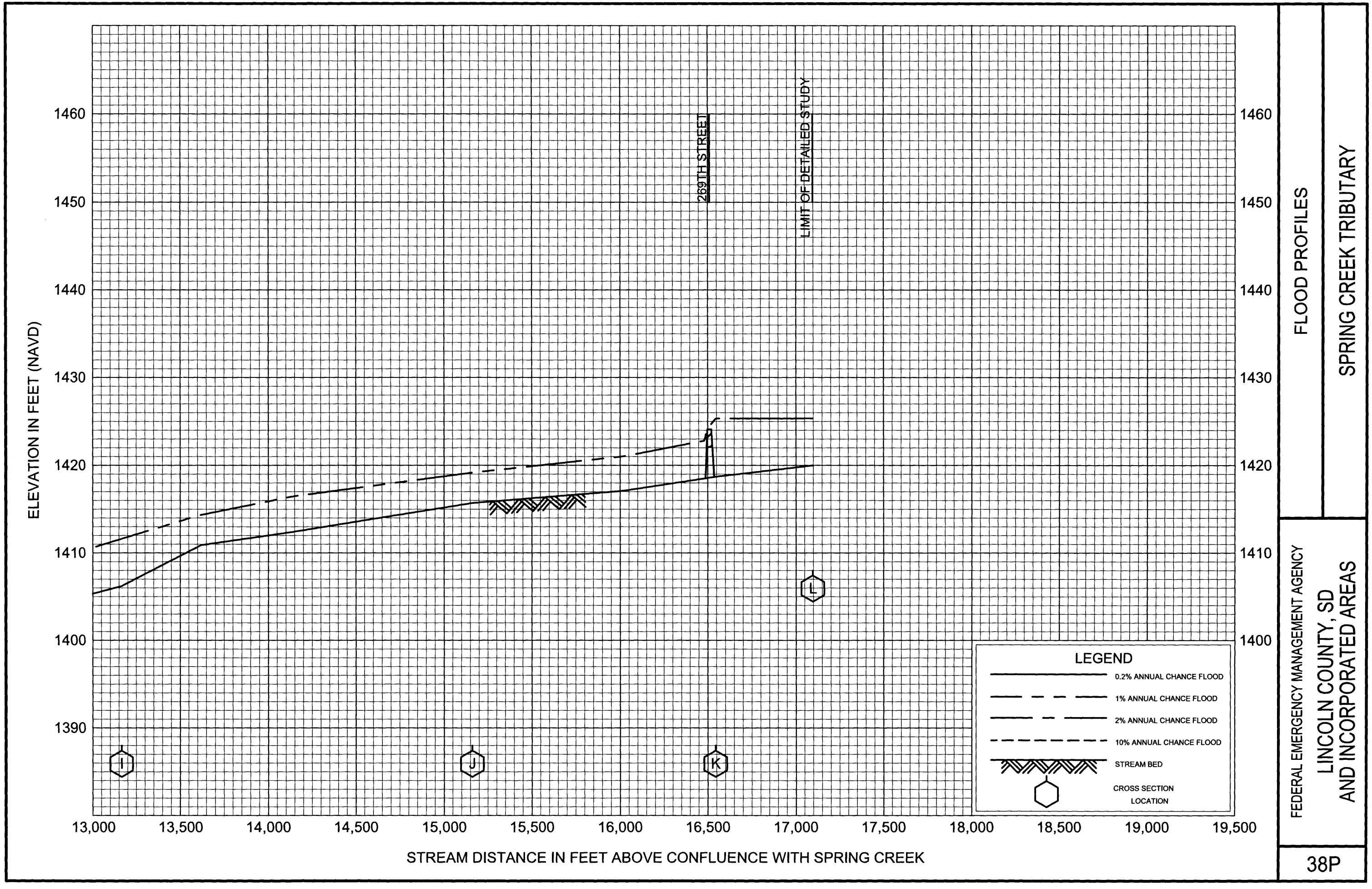
FLOOD PROFILES

SPRING CREEK TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

37P



FLOOD PROFILES

SPRING CREEK TRIBUTARY

FEDERAL EMERGENCY MANAGEMENT AGENCY

LINCOLN COUNTY, SD
AND INCORPORATED AREAS

38P