FLOOD PLAIN INFORMATION

DRY CREEK AND TRIBUTARIES

ROSEVILLE, CALIFORNIA

PREPARED FOR THE CITY OF ROSEVILLE
BY THE DEPARTMENT OF THE ARMY, SACRAMENTO DISTRICT CORPS OF ENGINEERS, SACRAMENTO, CALIFORNIA
MAY 1973

FLOODS

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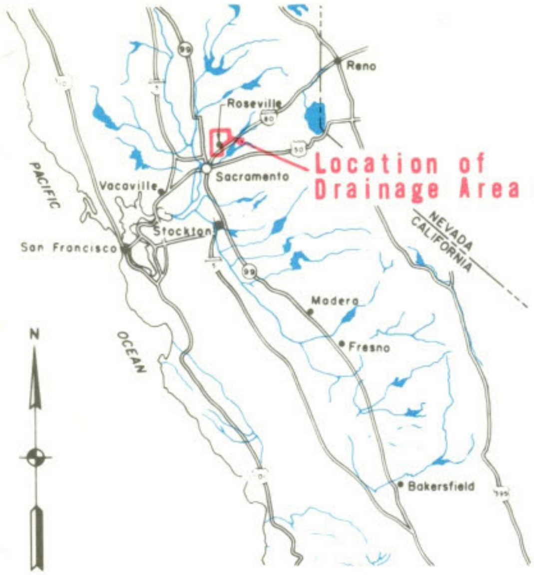
Cover Photograph: The intersection of Champion Oaks Drive and Hurst Way during flooding that occurred in 1969. (Photo courtesy of the Roseville Department of Public Works.) Also see Figures 11-13, pages 17 and 18.

+ N O T E +

Unless otherwise indicated, all photographs in this report were taken by Corps of Engineers personnel.



VICINITY MAP

SCALE IN MILES

50 0 50 100 150

LEGEND

Drainage Basin Boundary

Approximate City Limits

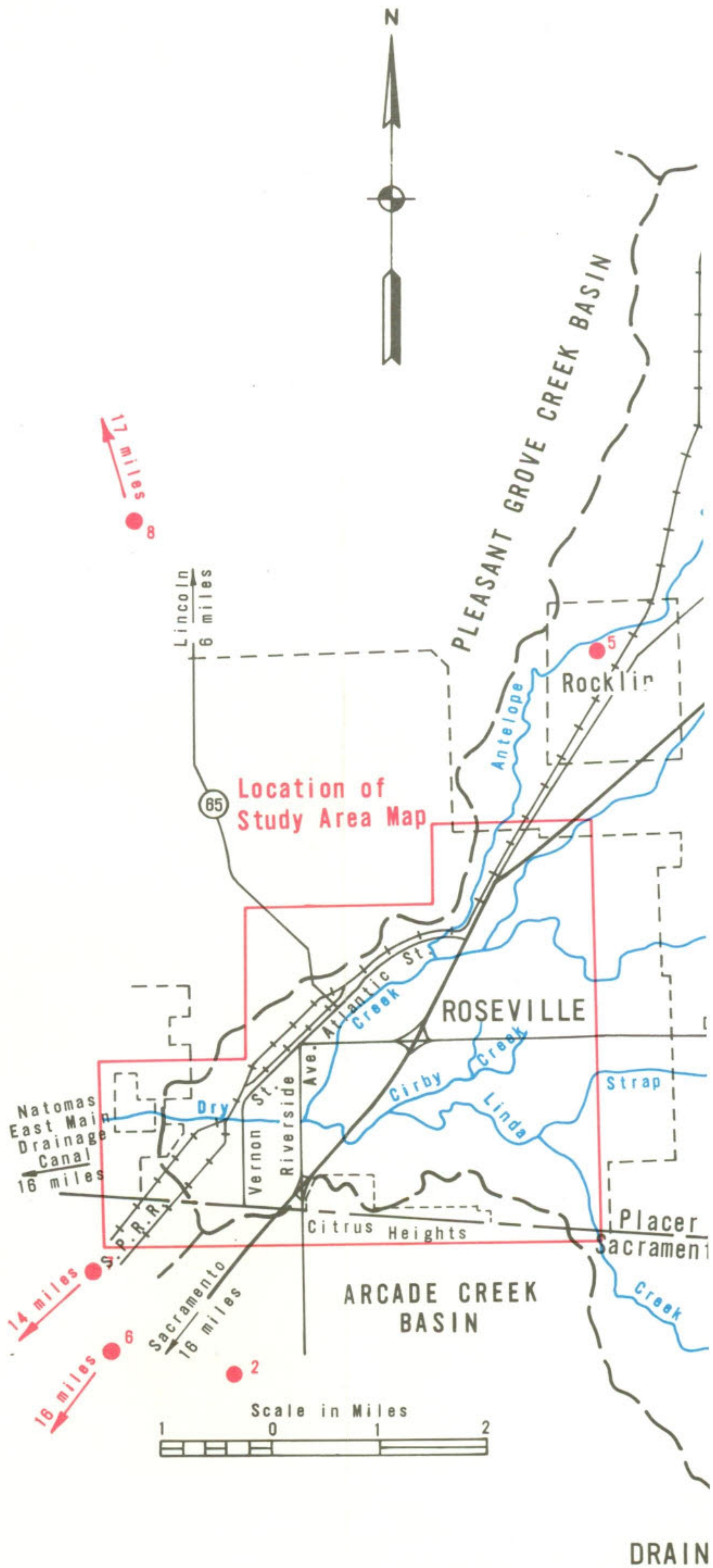
Interstate Highway

State Highway

Stream Gage (see Table 2 for identification)

Precipitation Gage (see Table 3 for identification)

Study Limits



DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

FLOOD PLAIN INFORMATION
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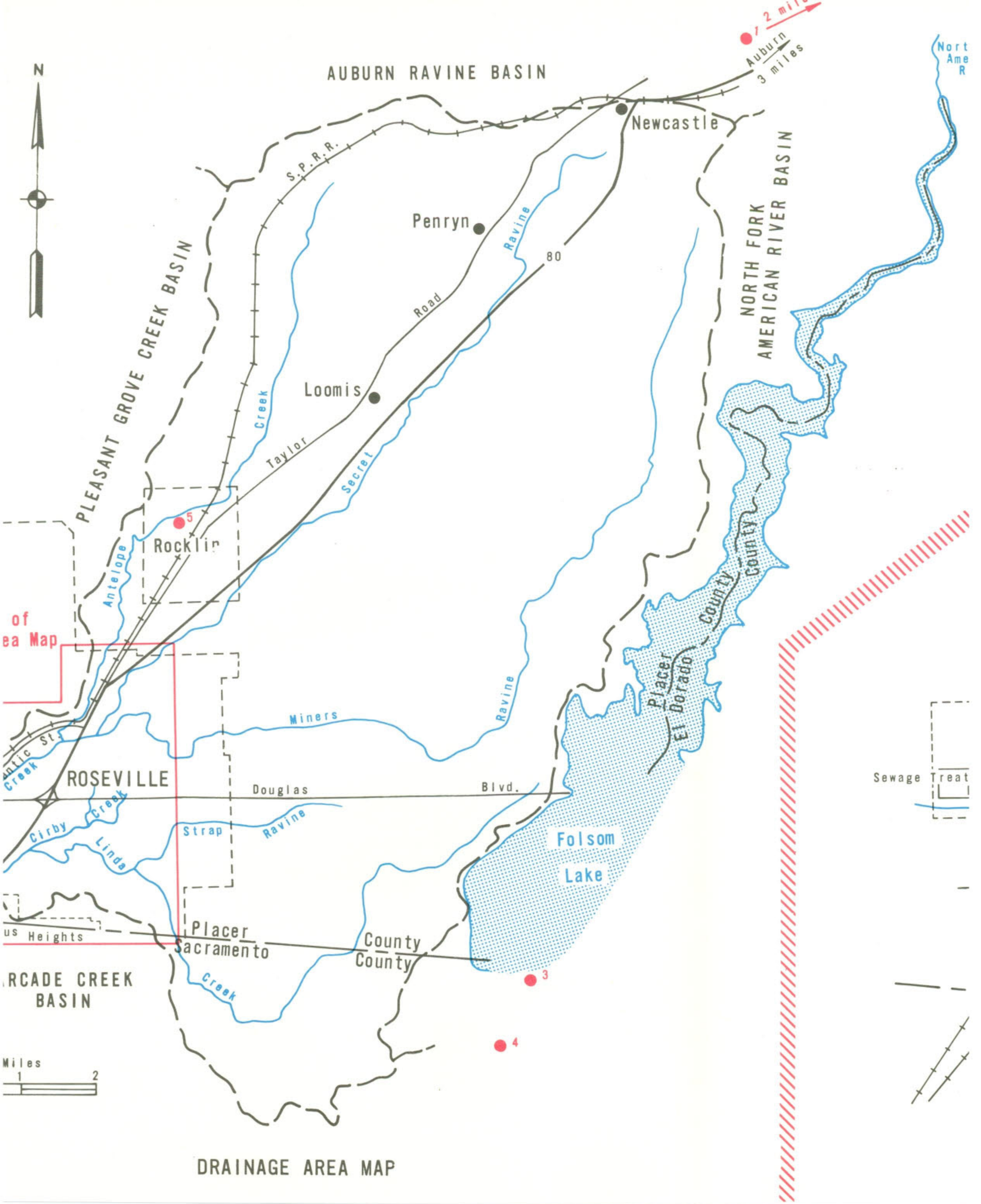
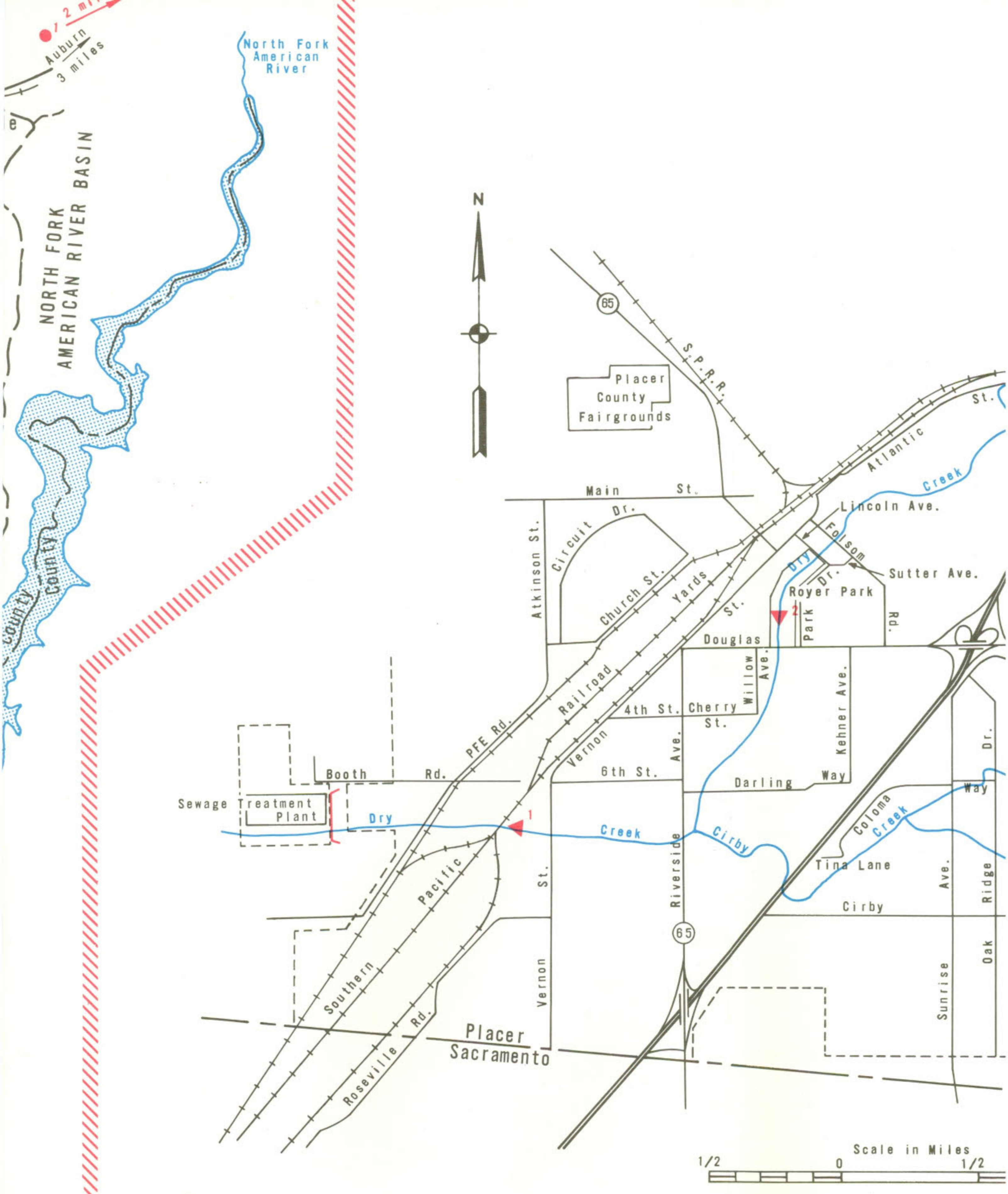
GENERAL MAP

MAY 1973

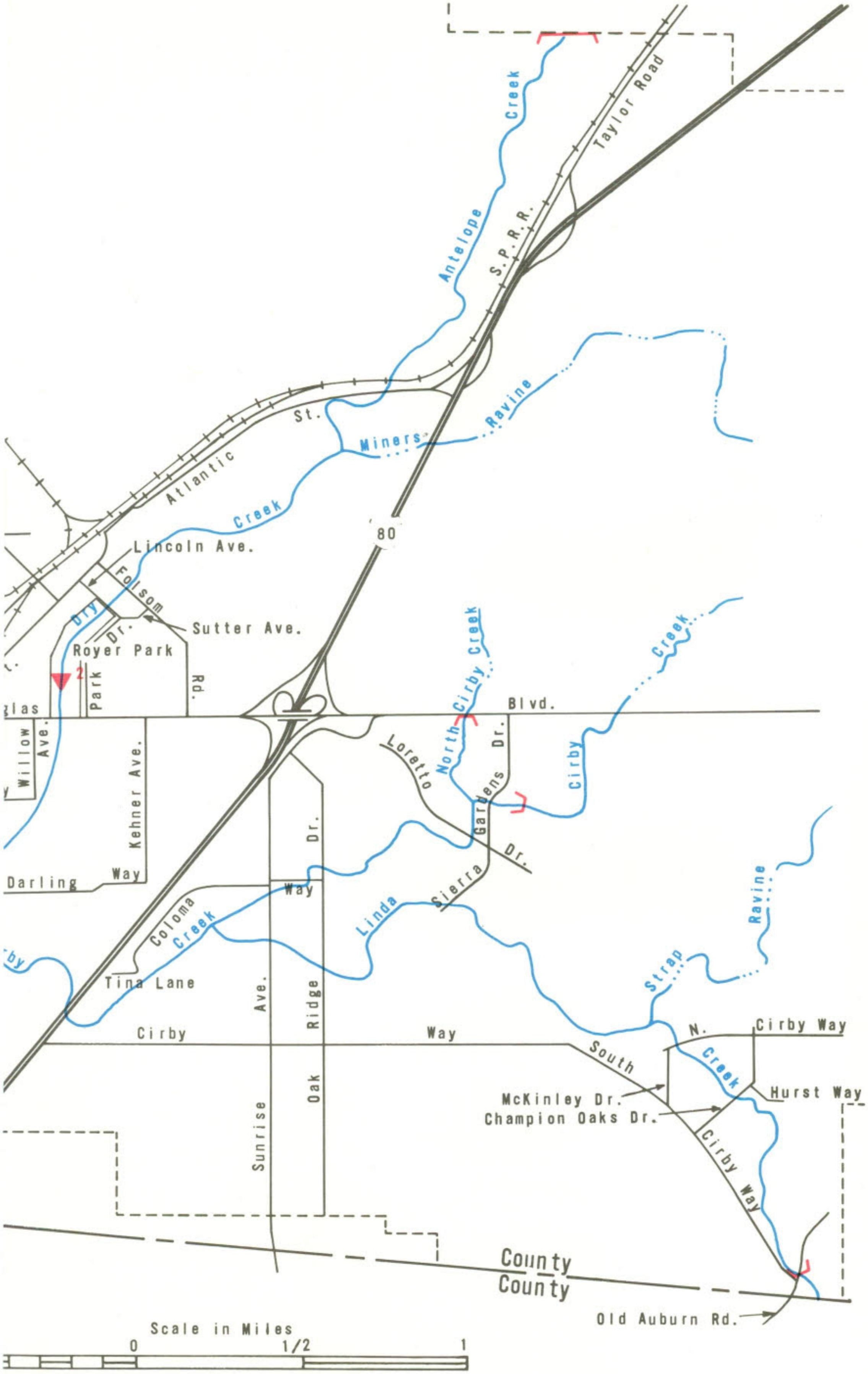
PLATE 1



DRAINAGE AREA MAP



STUDY AREA MAP



STUDY AREA MAP

PREFACE

The purpose of this report is to present information on the flood hazard along Dry, Antelope, Cirby, North Cirby, and Linda Creeks in the city of Roseville, Placer County, California. These streams are known to have a long history of flooding and records show that floods have occurred in the area 16 times since 1937 or about once in 2 to 3 years on the average. The largest and most damaging flood known during recent years occurred in October 1962.

Investigations made for this report show that flood-producing storms larger than those of the past could occur in the study area. This report contains information on past floods, and maps, profiles, and cross sections that indicate the approximate extent and depth of inundation from large floods that can reasonably be expected to occur in the future.[a] For purposes of this report, these future floods have been designated as the Standard Project and Intermediate Regional Floods.

This report was prepared at the request of the City Council of the city of Roseville with the indorsement of the California Department of Water Resources. It was prepared under the continuing authority provided the Corps of Engineers in Section 206 of the 1960 Flood Control Act (Public Law 86-645), as amended by the 1966 and 1970 Flood Control Acts. It is intended that the report be used by local agencies, and other flood plain users, in developing and using flood plain areas in such a way that flood hazards and future flood damages are minimized. Recommendations or plans for solution of flood problems in the study area are not

(a) The maps and profiles in this report join and extend upstream those contained in an earlier report entitled "Technical Appendixes, Flood Plain Information, Northeastern Sacramento County, California" (June 1965).

included in this report. Neither does it extend any Federal authority over zoning or other regulations of flood plain use. However, it does provide the city of Roseville a basis for further study and planning for optimum use and development of flood-prone areas through zoning and subdivision regulations, construction of flood control projects, or by a combination of these and other approaches to reducing flood hazards and flood damage. Information contained in the report would also be useful in programs dealing with the ecological and environmental aspects of the study area.

The Sacramento District gratefully acknowledges the assistance and cooperation of the California Division of Highways, the California State Library, the Roseville Department of Public Works, and others who directly or indirectly aided in the preparation of this report.

The Roseville Department of Public Works will make the information in this report available to all interested agencies and individuals. Copies of the report and information on its use are available from that agency. The Sacramento District Corps of Engineers will, upon request, provide technical assistance to local, State, and Federal agencies in the interpretation and use of data presented herein, and will provide other available flood data related thereto.

BACKGROUND INFORMATION

SETTLEMENT

The agricultural potential of the fertile flood plain lands in the study area attracted permanent settlers during the early 1850's. First came a period of stock raising and dry farming undertaken primarily by miners who failed in the quest for gold. With the advent of irrigation systems and the railroad for rapid transportation of products to distance markets, numerous orchard and vineyard crops were introduced.

Roseville was once known as Junction because the tracks of the Central Pacific (Southern Pacific today) and California Central Railroads were joined here early in 1864. Later that same year, the townsite was plotted and renamed Roseville, probably due to the roses growing in nearby ravines and all around the town. From 1870 to 1890, Roseville was primarily an agricultural and shipping center. Population increase was minimal and commercial development only kept pace with the needs. Following a short lived "gold rush" in the Mother Lode country from 1894 to 1897, the population of the Roseville area was again swelled by an influx of disappointed miners. Many of these people turned to agricultural pursuits and the production and shipping of local fruit crops rapidly increased.

The greatest boom for Roseville occurred in 1906 when the Southern Pacific Railroad moved its yards and shops from nearby Rocklin to Roseville. Within two years, Roseville developed into a busy railroad center and could boast of having two of the largest roundhouses in the State. The introduction of the yards and shops caused a real estate, commercial, industrial, and population boom for Roseville that led to its incorporation on April 10, 1909.

Since becoming incorporated, Roseville has grown into an important railroad, industrial, commercial, and residential area and is now the largest city in Placer County. Its role as an outstanding and progressive community has been nationally recognized.

THE STREAMS AND THEIR VALLEYS

As may be seen on Plate 1, all of the streams in Roseville are directly or indirectly tributary to Dry Creek. The study area for this report comprises the flood plains along Dry Creek from its source--the confluence of Antelope Creek and Miners Ravine--downstream to the city sewage treatment plant (3.6 miles); along Antelope Creek from the northern city limits downstream to Dry Creek (2.1 miles); along Cirby Creek from near Sierra Gardens Drive downstream to Dry Creek (2.7 miles); along North Cirby Creek from Douglas Boulevard downstream to Cirby Creek (0.4 mile); and along Linda Creek from Old Auburn Road downstream to Cirby Creek (2.9 miles). Floodwaters from Dry Creek discharge into the Natomas East Main Drainage Canal, a unit of the Sacramento River Flood Control Project that enters the American River Floodway.

The drainage basins of Dry Creek and its tributaries lie in Placer and Sacramento Counties. They are bounded by the drainage basins of Pleasant Grove Creek on the west, Auburn Ravine on the north, North Fork American River on the east, and Arcade Creek on the south. Elevations in the stream basin range from about 100 feet above mean sea level at the lower limit of the study area to about 1,200 feet in the headwater region. Vegetation in the basin ranges from moderate stands of oak, ground cover of native grasses, and patches of low brush in the upper reaches to isolated oak trees and ground cover of native grasses in the lower reaches. Native vegetation has been drastically modified in some areas in the lower reaches by agricultural activities (principally fruit production and pasturing) and urbanization.

The study area has a temperate, sub-humid climate. Summers are characteristically warm and dry and winters are mild and wet.

Temperatures range from average highs of about 100 degrees during summer to average lows near freezing during winter. Annual precipitation varies from about 5 inches in extremely dry years to about 36 inches in very wet years and occurs almost entirely from October through May.

The drainage area for Dry Creek and its tributaries totals about 80 square miles upstream from the sewage treatment plant. Drainage areas at selected locations in the study area are shown in Table 1.

TABLE 1

DRAINAGE AREAS

Location	Drainage Area sq. mi.
Antelope Creek at mouth	15
Miners Ravine at mouth	43
Linda Creek at mouth	17
Cirby Creek at mouth	20
Dry Creek at Riverside Avenue	78
Dry Creek at sewage treatment plant	80

All of the stream channels are generally well defined, but are usually quite overgrown with weeds, shrubs, and often, stands of willows. The Dry Creek channel has been improved through Royer Park and the city of Roseville proper. However, floods produce peak flows and large volumes of water that exceed channel capacities and spread overland.

DEVELOPMENTS IN THE FLOOD PLAIN

Lands in the study area are urbanized to various degrees ranging from scattered residential development to well established business districts and portions of the railroad installation. The present population of Roseville, the largest city in Placer County, is estimated at about 18,000 and is projected to increase to about 40,000 by the year 2000.[a]

(a) *Population projection based on California Department of Finance projections for Placer County.*

The study area is traversed by an interstate highway, one state highway, and a network of county roads and city streets that affords access to points in the study area and surrounding localities. The Southern Pacific Railroad not only traverses the study area but has its main railroad yards in downtown Roseville. Roseville is indirectly served by many major airlines at Sacramento Metropolitan Airport, which is only 20 miles away by freeway.

FLOOD SITUATION

SOURCES OF DATA AND RECORDS

Information relative to past floods was developed from available streamflow records; from interviews with local residents and officials; and from research of newspaper files, historical documents, and various unpublished reports. Basic hydrologic data were derived from streamflow records of the gaging stations shown in Table 2. The location of these stations are shown on Plate 1.

TABLE 2

STREAM GAGING STATIONS[a]

Station Number	Station Name	Period of Record	Maximum Recorded Peak Flow c.f.s.	Maximum Recorded Peak Flow date
1	Linda (Dry) Creek near Roseville (above SPRR bridge)	1949-1966	4,400[b]	Oct 1962
2	Dry Creek at Roseville (above Douglas Boulevard)	1966-Present	2,370	Jan 1969

(a) *Gaging stations maintained by State of California.*
(b) *Estimated.*

There is one precipitation station in the drainage area directly tributary to the study reaches. Records from this station and from other selected nearby stations were used in the basic hydrology studies for this report. Table 3 lists the stations used, shows normal annual precipitation, and gives the precipitation recorded for the April 1958 and October 1962 flood producing storms. The location of these stations are shown on Plate 1.

TABLE 3

RELATIVE PRECIPITATION VALUES

Station Number	Station Name	Normal Annual Precipitation inches	Recorded Precipitation 1-7 Apr 58 inches	Recorded Precipitation 10-14 Oct 62 inches
1	Auburn	35.1	7.2	13.9
2	Citrus Heights	19.0 [a]	*(b)*	9.1
3	Folsom Dam	23.7 [a]	5.7	9.8
4	Represa	22.2	4.8	8.8
5	Rocklin	23.2	4.9	9.5
6	Sacramento WB AP	16.3	4.0	7.5
7	Sacramento WB City	18.0	4.4	6.8
8	Wheatland 2NE	19.3	4.0	9.4

(a) Estimated. Period of record less than 30 years.
(b) Not recorded

The maps prepared for this report were based on the U.S. Geological Survey 7½ minute quadrangle sheets entitled "Citrus Heights", "Folsom", and "Roseville" (1967 editions). Cross sections and stream profiles were developed from data and topography furnished by the city of Roseville and supplemented in part with the quadrangles named above. Structural data on bridges and culverts were furnished by the city of Roseville and the California Division of Highways.

FLOOD SEASON AND FLOOD CHARACTERISTICS

General rainfloods can occur in the study area anytime during the period October through May. This type of flood results from prolonged heavy rainfall over a large part of the tributary areas and is characterized by high peak flows of moderate duration. Flooding is more severe when antecedent rainfall has caused a saturated ground condition.

Cloudburst storms, sometimes lasting as long as 3 hours, can occur in the drainage basins tributary to the study area anytime from late spring to early fall, but may occur in conjunction with general winter rainstorms. Although cloudbursts are characterized by extremely heavy downpours of rain, the resulting runoff from such storms over the tributary drainage basins would normally be less in peak and volume than that from general flood producing rainstorms. Accordingly, cloudbursts do not constitute a serious flood hazard in the study area.

Because of the relatively low elevations in the tributary drainage basins, snow accumulation is so minor and infrequent that there is no threat of snowmelt floods in the study area.

FACTORS AFFECTING FLOODING AND ITS IMPACT

Obstructions To Floodflows

Natural obstructions to floodflow include brush and other vegetation growing along the streambanks in floodway areas. During floods, brush growing in floodways impedes floodflows and results in backwater and increased flood heights. Brush washed out during floods and carried downstream may collect on bridges, thus creating a damming effect and overbank flow. As floodflow increases, masses of debris break loose and a wall of water and debris surges downstream until another obstruction is encountered. Debris collecting against a bridge may increase to the point where the structural capability is exceeded and the bridge is destroyed, or may raise water levels and increase flow velocity to the extent that abutments are eroded and the overlying and approach pavements are damaged. It should be noted, however, that the effect of floating debris during floods is extremely unpredictable and subject to constantly changing conditions.

In the study area, there are 12 street bridges, 3 footbridges (in Royer Park), 8 culverts, and 2 railroad bridges. Of these, 11 street bridges, the 3 footbridges, all the culverts, and 1 railroad bridge are considered to be obstructive to floodflows. Figures 1-8 show representative structures that are obstructive to floodflows. Pertinent data on all obstructive bridges and culverts are contained in Table 6, page 27.

Figure 1 - Southern Pacific Railroad crossing of Dry Creek immediately upstream from PFE Road.

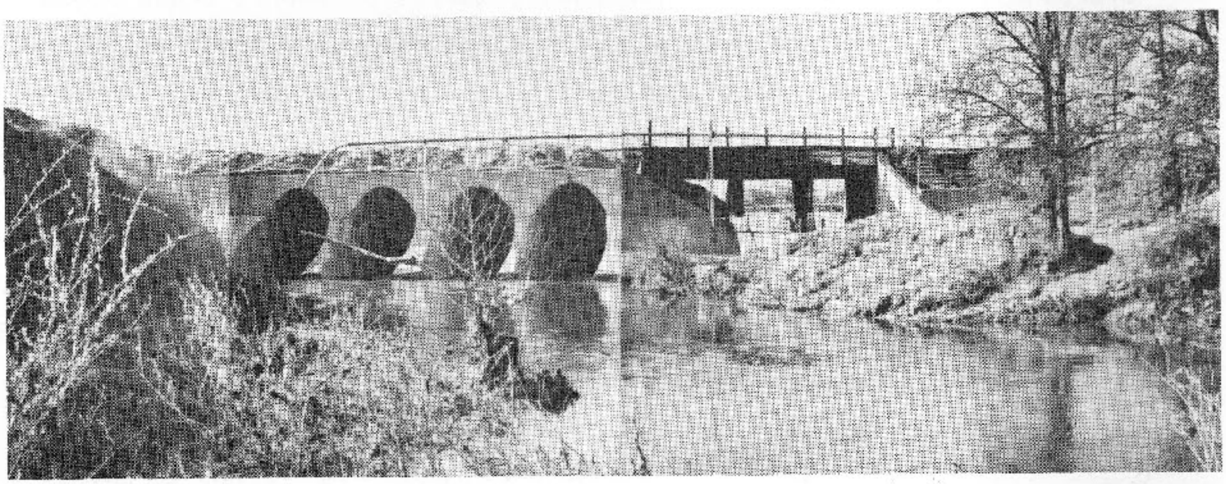


Figure 2 - Southern Pacific Railroad crossing of Dry Creek at Booth Road subway.

Figure 3 - North Footbridge in Royer Park, Dry Creek.

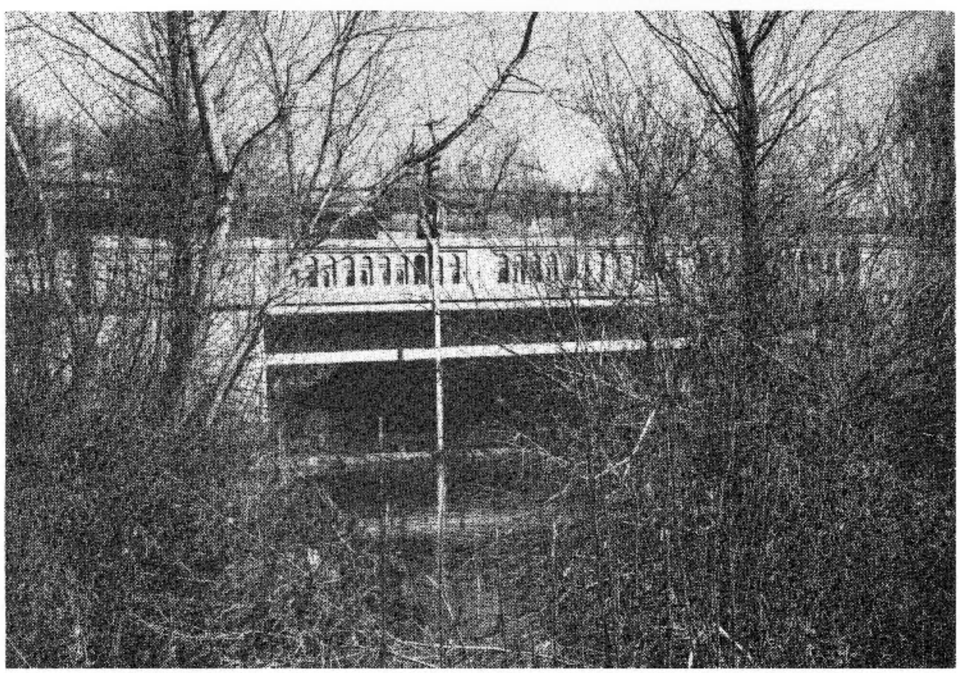


Figure 4 - Bridge over Antelope Creek at Atlantic Street.

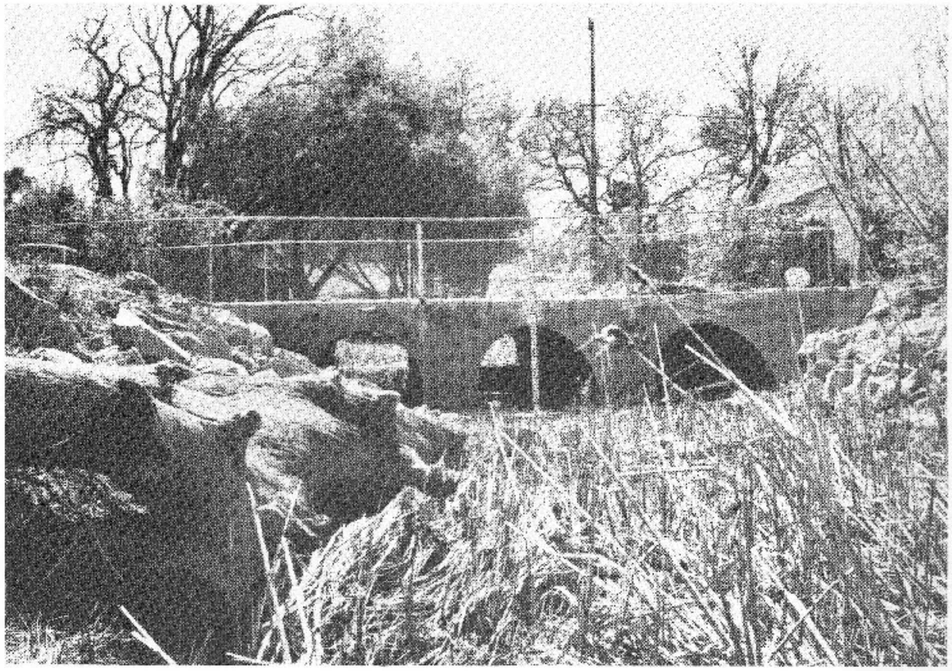


Figure 5 - Culvert on Cirby Creek at Loretto Drive.

Figure 6 - Culvert on Cirby Creek at Sierra Gardens Drive.

Figure 7 - Culvert on Linda Creek at Champion Oaks Drive.

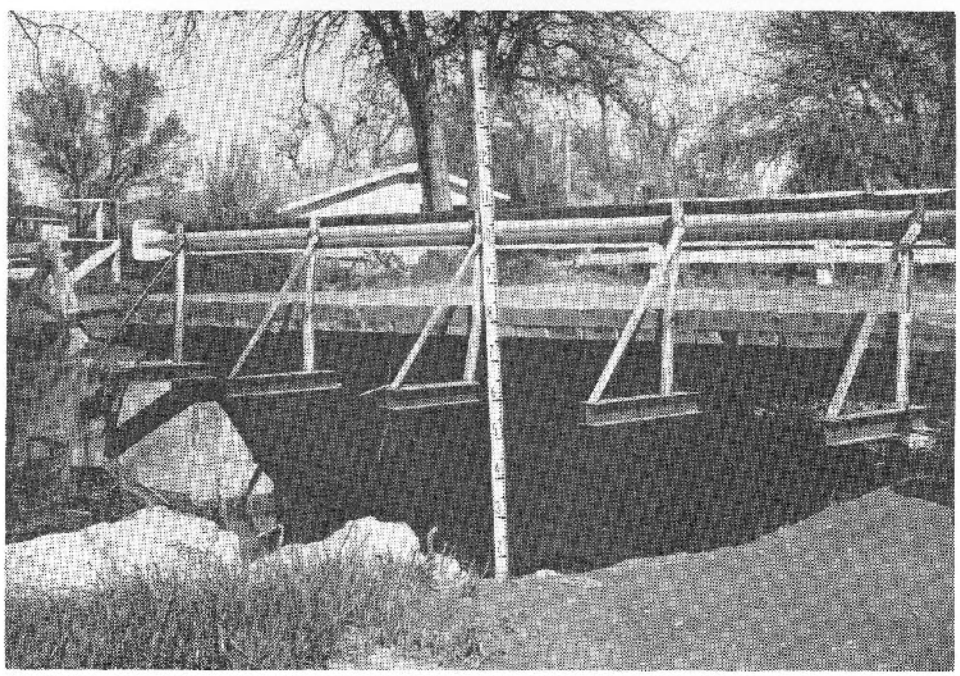


Figure 8 - Bridge over Linda Creek at Old Auburn Road.

Flood Damage Reduction Measures

There are no existing or authorized flood control structures that would have an effect on the study area. However, in recent years, the Dry Creek channel has been improved through Royer Park and the city of Roseville proper. Also, the flow capacities of the bridge over Dry Creek at Douglas Boulevard and the Southern Pacific Railroad culverts near the Booth Road subway have been increased. During the summer of 1973, the city plans to replace the bridge over Dry Creek at Vernon Street, and to increase the capacity of the culvert on Linda Creek at Sunrise Avenue. These improvements will reduce water surface elevations during future periods of high runoff.

In 1971, the city inacted an interim flood plain zoning ordinance. It prohibits any development within 150 feet of a stream channel. Ultimately, the city is expected to complete an ordinance that reflects the flood hazard shown in this report.

Other Factors And Their Impacts

Flood warning and forecasting - The National Oceanic and Atmospheric Administration, through its National Weather Service, maintains year-round surveillance of weather conditions. Storm forecasts made by the National Weather Service, are furnished to Weather Service District offices for distribution to agencies responsible for flood protection and to the public by local news media.

Personnel from the National Weather Service and the California Department of Water Resources are assigned to the joint Federal-State River Forecast Center in Sacramento, which monitors weather conditions and river stages on a year-round basis. When floods become imminent, the State Flood Operations Center is activated. It operates on a 24-hour basis in conjunction with the River Forecast Center, and among other flood emergency activities, advises all interested parties of flood situations as they develop. The Flood Operations Center furnishes flood information to local news media, law enforcement agencies, and other agencies for dissemination to the public. The River Forecast Center issues flood warnings.

Although specific flood forecasts are not made for streams in the study area, applicable daily weather forecasts are issued by the National Weather Service office in Sacramento. When weather conditions so warrant, storm and probable flood warnings for the areas are issued by the National Weather Service River District Office in Sacramento. Local news media and law enforcement agencies disseminate these warnings to the public.

Flood fighting and emergency evacuation plans - There are no specific flood fighting or emergency evacuation plans for the study area. If the need arises, State and local law enforcement agencies, and highway maintenance and other public works crews assist in the rescue of stranded persons and perform other flood fighting activities. The California Department of Water Resources, through the Flood Operations Center, coordinates flood fighting activities throughout the State and is authorized to receive requests from local public agencies for assistance during floods.

Floatable material in flood plain areas - Floatable materials resulting from commercial, agricultural, or industrial operations, or from other activities, may be picked up and carried away by floodwaters; thereby increasing flood losses. Flood hazards are intensified by such materials collecting against bridges or plugging culverts and obstructing the passage of floodflows. The uses of flood plains in the study area do not result in the accumulation of significant amounts of floatable materials that could be carried away by floodwaters to lodge on bridges or plug culverts.

PAST FLOODS

SUMMARY OF HISTORICAL FLOODS

The foothill streams flowing in and through Roseville have a long history of flooding. Newspaper accounts and other records show that flooding occurred in or around the city in 1937, 1938, 1940, 1943, 1945, 1950, 1952, 1955, 1958, 1962 (two flood periods), 1963, 1964, 1969, 1970 and 1973. Floods undoubtedly occurred in earlier years, but little is known about them.

The floods that affected Roseville most seriously were those that occurred in December 1955, April 1958, February and October 1962, and December 1964. The October 1962 flood was the largest and most damaging known in the Roseville area. Locations in Roseville frequently affected by floods are shown in Figures 9 and 10.

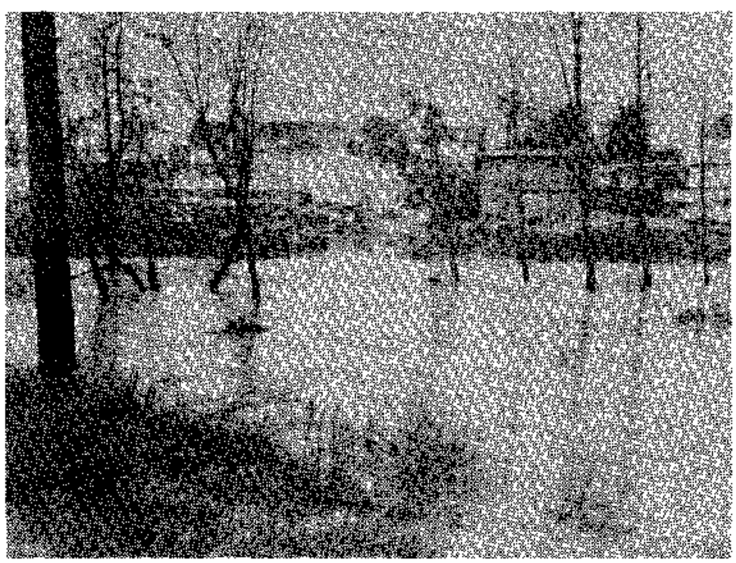


Figure 9 - Vicinity of Sutter Avenue along Dry Creek, 1969. (Photo courtesy of the Roseville Department of Public Works.)

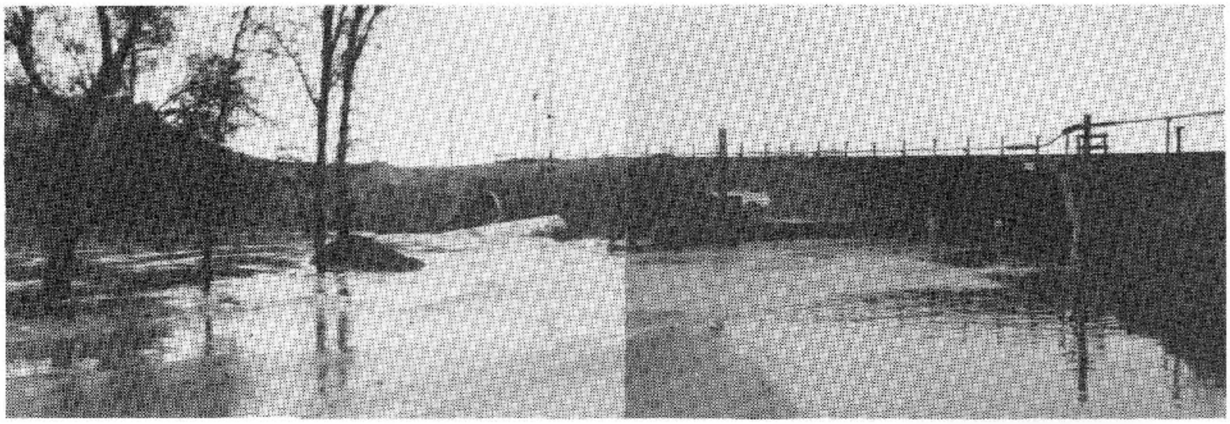


Figure 10 - Flooding at the Booth Road underpass of the Southern Pacific Railroad, January 1970. (Photo courtesy of the Roseville Department of Public Works.)

FLOOD RECORDS

Information on the earlier historical floods that have occurred in the study area is very limited because streamflow records were not being made, eyewitness accounts are not available, and few contemporary records are available. Streamflow measurements are available for floods that have occurred since 1949. Flood information in this report is based on available streamflow records, newspaper accounts, and post-flood and other reports prepared by the Corps of Engineers.

FLOOD DESCRIPTIONS

December 1964

A recent serious flood in Roseville occurred in December 1964. During the flood, the fire and police departments evacuated four families when floodwater from Linda Creek surrounded their homes on Champion Oaks Drive and Lee Way. Dry Creek overflowed its banks in several locations, and flood borne debris was removed in a floodfight to keep the stream flowing at Booth Road and the Southern Pacific tracks. Floodwater at that location was deep enough to submerge a car stalled in the underpass. Streambank erosion occurred along the east bank of Dry Creek behind the Campfire Girls lodge on Sutter Avenue.

Figure 11

Figure 12

Figures 11-12. *The intersection of Champion Oaks Drive and Hurst Way as it appeared during the floods of 1964 (note high water mark) and 1969. (Photos courtesy of the Roseville Department of Public Works.) The intersection as it normally appears is shown as Figure 13 on the following page. (Also see Figure 20, page 36.)*

Figure 13 - The intersection of Champion Oaks Drive and Hurst Way in March 1973.

October 1962

As previously noted, the October 1962 flood was the largest and most damaging known to have occurred in Roseville. Over 9 inches of rain fell during the storms that resulted in the flood. Creeks overflowed their banks throughout the city, but the areas most severely affected were along Linda Creek in the Sierra Gardens Subdivision and along Dry Creek. A number of families were evacuated from their homes on Lee Way and Douglas Boulevard. Royer Park was completely inundated for a time and one deer in the zoo collection was drowned before the animals could be evacuated. Other flood losses in the park included bank erosion, destruction of fencing, damage to one of the footbridges, and damage to the recreation building and park office. Restoration of the park required two weeks. In the Cresthaven and Atlantic Street areas, water service was cut off when floodflows broke the mains under the Dry Creek Bridge on Riverside Avenue and the Antelope Creek Bridge on Atlantic Street. Cresthaven was without water for 24 hours.

Numerous streets were impassable or nearly impassable during the flood period. The October 1962 rainstorm that precipitated flooding was probably the greatest known in the history of Roseville. Dry ground conditions prevented greater flooding. If the ground had been saturated, as it sometimes is in October, the flood would have been much more extensive.

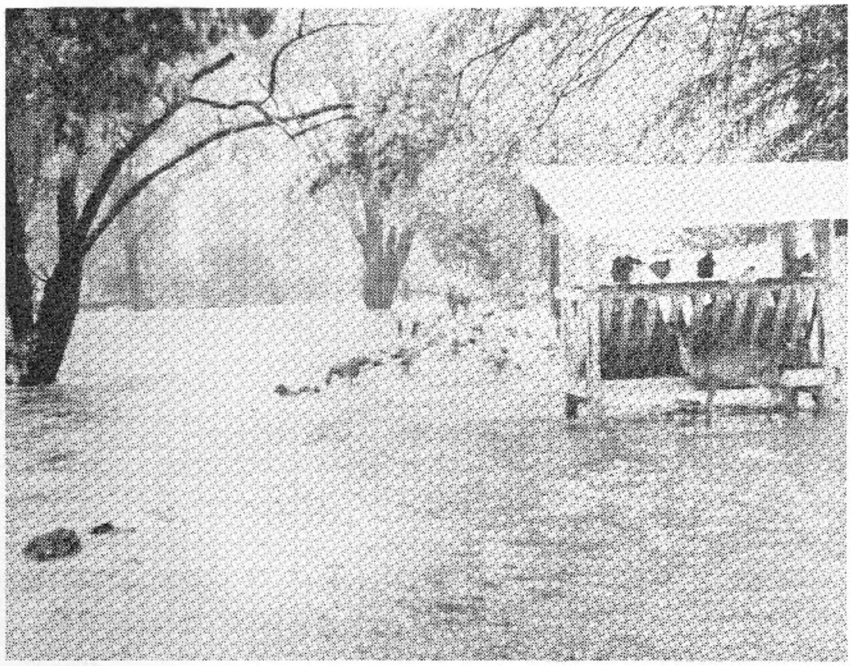


Figure 14 - Royer Park during the flood of October 1962. (Photo courtesy of the Roseville Department of Public Works.)

April 1958

The flood that occurred in April 1958 was the second largest known in Roseville. Flood conditions were most severe on Sunrise Avenue in the southeast portion of the city, on Douglas Boulevard, in the Royer Park area, and on Riverside Avenue at Dry Creek. Agricultural damage occurred along Dry Creek immediately west of the city. Many homes and businesses were surrounded by floodwaters at the peak of the flood. Several families were evacuated by boat from homes in the Columbia Street and Douglas Boulevard areas. As in several other floods, Royer Park became a lake and floodwater covered the ballfield and extended across Park Drive. Part of the sewage treatment plant was flooded but remained operative throughout the flood, which continued for a period of about 12 hours. Destruction of a building housing a van and storage firm on Linda Drive was prevented by 20 Explorer and Sea Scouts who spent the night sandbagging around the building and pumping and bailing water from the lower floor. According to newspaper accounts, flood losses were not as great as they might have been due to an improved storm sewer system that rapidly carried off overflows.

Other Large Floods

Damaging floods also occurred in Roseville in December 1955 and February 1962.

In December 1955, flooding in Roseville was primarily due to Dry Creek. Homes in the Douglas Boulevard area were surrounded by floodwater and one family was evacuated. Douglas Boulevard was impassable and the pavement was damaged. Royer Park was inundated with floodwater extending across Park Drive.

In February 1962, creeks throughout town overflowed. Several residents were trapped in their homes when streams flooded the lower areas of the city. Parts of the Sierra Gardens, Meadow Oaks, and Crestmont Subdivisions were inundated. Twenty-four streets were damaged, the Douglas Boulevard Bridge was threatened by Dry Creek floodwater, the Booth Road subway in southwest Roseville was blocked, and Royer Park had 2 feet of floodwater on the baseball diamond. The City Director of Public Works said that "the creek channels were not clear enough to carry the water, causing the creeks to rise and flood parts of [the city]".[a]

(a) *Roseville Press Tribune, February 12, 1962, page 1.*

FUTURE FLOODS

Although flood producing storms of the same magnitude as those that have occurred in the past could recur in the future, discussion of future floods in this report is limited to those that have been designated as the Standard Project and Intermediate Regional Floods. The Standard Project Flood would be larger and occur less frequently than the Intermediate Regional Flood. A Standard Project Flood would be a rare event, but could reasonably be expected to occur. As previously indicated, the most severe flood conditions in the study area generally result from prolonged general rain. Therefore, the future floods discussed herein are of the general rain type.

During floods, debris collecting on bridges could decrease their flow carrying capacity and cause greater water depths (backwater effects) upstream of those structures. Since the occurrence and amount of debris are indeterminate factors, only the physical characteristics of the structures were considered in preparing the maps and other illustrations showing the Standard Project and Intermediate Regional Floods. These maps and illustrations assume completion of the improvements planned for completion during the summer of 1973. They also reflect consideration of vegetation normally existing in floodways, and show the backwater effect of obstructive bridges and culverts, but do not reflect increased water surface elevations that could be caused by debris collecting against bridges, by deposition of silt in the stream channel, or by debris or silt plugs in culverts.

STANDARD PROJECT FLOOD

The Standard Project Flood is one that can be expected from a standard project rainstorm[a] centered over the tributary drainage area. Peak flows of the Standard Project Flood on streams in the study area, which take into account the runoff characteristics of the stream basins, and reduction of runoff through infiltration, surface pondage, and other factors, are shown at selected locations in Table 4.

INTERMEDIATE REGIONAL FLOOD

The Intermediate Regional Flood is one that could be expected to occur about once in 100 years on the average, although it could occur in any year. Peak flows for the Intermediate Regional Flood were based on statistical analysis of available streamflow and precipitation records and runoff characteristics of the stream basins, ground saturation conditions and losses from surface pondage and other factors. Peak flows thus developed for the Intermediate Regional Flood at selected locations in the study area are shown in Table 4. Synthesized stage hydrographs of the Intermediate Regional Flood at selected locations in the study area are shown on Plates 2 and 3.

(a) *The most severe combination of meteorological conditions reasonably characteristic of the geographical region, excluding extremely rare combinations.*

TABLE 4

PEAK FLOWS FOR STANDARD PROJECT AND INTERMEDIATE REGIONAL FLOODS

Location	Standard Project Flood c.f.s.	Intermediate Regional Flood c.f.s.
	DRY CREEK	
Mouth of Antelope Creek and Miners Ravine	12,200	7,300
Riverside Avenue	15,400	9,200
	ANTELOPE CREEK	
Mouth	3,200	1,900
	CIRBY CREEK	
Upstream Limit of Study	500	350
Mouth	3,400	2,000
	NORTH CIRBY CREEK	
Mouth	150	100
	LINDA CREEK	
Old Auburn Road (Upstream Limit of Study)	2,600	1,500
Mouth	3,100	1,900

FREQUENCY

Frequency curves of peak flows were constructed on the basis of available precipitation records and computed peak flows of floods up to the magnitude of the Standard Project Flood. The frequency curves thus derived reflect the judgment of hydrologists familiar with the region. They show that the 1955, 1958, 1962, and 1964 flood events had frequencies of occurrence as summarized in Table 5. In the table, the location of flows shown is at the site of the now-discontinued Linda (Dry) Creek near Roseville (above Southern Pacific Railroad Bridge) gage, which was near Vernon Street.

TABLE 5

FREQUENCY DATA

Stream	Date	Flow c.f.s.	Approximate Frequency
Dry Creek	Dec 23, 1955	3,750[(a)]	8
Dry Creek	Apr 2, 1958	4,190	10
Dry Creek	Feb 10, 1962	3,750	8
Dry Creek	Oct 13, 1962	4,400[(a)(b)]	11
Dry Creek	Dec 23, 1964	3,800	8

(a) Reported as estimated by the State of California.
(b) Largest of record.

As previously indicated, an Intermediate Regional Flood has a frequency of occurrence of once in 100 years, on the average, and a Standard Project Flood would occur less frequently than an Intermediate Regional Flood. Although the Standard Project Flood is a rare event, it can reasonably be expected to occur. Floods larger than the Standard Project Flood are possible; however, the combination of events necessary to produce such large flows would be exceedingly rare.

HAZARDS OF LARGE FLOODS

The amount and extent of damage caused by any flood depends on the topography of the area flooded, depth and duration of flooding, velocity of flow, rate of rise, and developments in the flood plain. An occurrence of a Standard Project or Intermediate Regional Flood on Dry Creek and its tributaries at the present time would result in extensive inundation of agricultural lands and orchards. Also, as a result of these floods, residential areas, commercial developments, Royer Park, streets, roads, and public utilities would be inundated. Floodwater flowing at a high velocity and carrying floating debris would create conditions hazardous to persons and vehicles attempting to cross flooded areas. In general, floodwater 3 or more feet deep and flowing at a velocity of

3 or more feet per second could easily sweep a person off his feet, thus creating definite danger of injury or drowning. Rapidly rising and swiftly flowing floodwater may trap persons in homes that are ultimately destroyed, or in vehicles that are ultimately submerged. Sewage, garbage, and other organic materials carried or deposited by floodwater could create health hazards. Isolation of areas by floodwater could create hazards in terms of medical, fire, or law enforcement emergencies.

FLOODED AREAS AND FLOOD DAMAGES

The approximate limits of inundation that could result from a Standard Project Flood in the study area are shown on Plate 4, which is also an index to more detailed maps showing the areas that could be inundated by the Intermediate Regional and Standard Project Floods (Plates 5-7). As may be seen from those plates, floodwaters generally parallel the stream channels. Along Antelope Creek, upstream of the Southern Pacific Railroad, the channel is deeply entrenched and the flood plains are very narrow. Along Cirby Creek, upstream of Oak Ridge Drive, and North Cirby Creek, the peak flows are small and the floodwaters are generally contained within the streambanks. Due to flatter terrain and the combining of runoff, the areas flooded along Dry Creek, Linda Creek, and the lower reaches of Antelope and Cirby Creeks become wider, but still generally parallel the streamcourses.

In general, the areas that would be inundated under Intermediate Regional and Standard Project Flood conditions comprise relatively narrow areas adjacent to the natural channels. The areas of most extensive flooding would be along Linda Creek in the vicinity of Champion Oaks Drive and upstream of Oak Ridge Drive; along Dry Creek upstream of Folsom Road, in and around Royer Park, and from about Darling Way downstream to the sewage treatment plant. The major area that would be inundated along Cirby Creek is in the vicinity of Sunrise Avenue.

Due to the wider flood plain, greater depth of flooding, and higher velocity of flow during a Standard Project Flood, damage would be more extensive than during an Intermediate Regional Flood. Plates 8-15 show water surface profiles of the Intermediate Regional and Standard Project Floods. Depth of flow in the channels can be estimated from these illustrations. Typical cross sections of the flood plain at selected locations, together with the water surface elevation and lateral extent of the Intermediate Regional and Standard Project Floods are shown on Plates 16-19.

OBSTRUCTIONS

As previously noted, 11 street bridges, 3 footbridges, 8 culverts, and 1 railroad bridge are obstructive to floodflows. Pertinent data on these structures are contained in Table 6. As may be seen from that table, all of the bridges and culverts shown would obstruct passage of the Standard Project Flood, and all but 8 would obstruct passage of the Intermediate Regional Flood.

As may be seen from Plates 8-15, the effect of obstructive bridges and culverts is to raise the water surface elevation upstream. Obstructive bridges are especially susceptible to structural damage from the forces of floodwater and floating debris.

TABLE 6

OBSTRUCTIVE BRIDGES AND CULVERTS

Identification	Location (b)	Elevation(a) Stream-bed	Top of Under-clearance (c)	Road-way (c)	Inter-mediate Regional Flood	Standard Project Flood
		DRY CREEK				
PFE Road	67.3	105	118	121	119	121
Southern Pacific RR	67.4	105	122	126	119	123
Southern Pacific RR (4-17'x13' CMP Oval)(d)	68.8	108	125	134	122	126
Vernon Street	69.8	110	127	129	124	128
Riverside Avenue	72.4	112	124	128	129	132
Darling Way	73.7	116	131	133	133	135
Douglas Boulevard	76.8	124	138	140	138	140
South Footbridge(e)	77.2	127	139	142	139	142
Middle Footbridge(e)	78.0	129	140	143	140	143
North Footbridge(e)	78.4	131	142	146	142	145
Lincoln Avenue	78.9	132	146	148	144	147
Folsom Road	79.5	132	146	148	145	148
		ANTELOPE CREEK				
Atlantic Street	2.3	152	159	162	160	162
		CIRBY CREEK				
Sunrise Avenue (1-10'8"x6'11" CMP Arch)(d)	7.3	128	135	138	134	135
(1-7' Dia CMP)(d)	7.3	128	135	138	134	135
Coloma Way	8.1	130	135	138	135	136
Oak Ridge Drive (3-5'6" Dia CMP)(d)	9.0	133	138	140	137	138
Loretto Drive (3-5'6" Dia CMP)(d)	11.5	140	145	147	147	148
Sierra Gardens Drive (3-5'6" Dia CMP)(d)	12.3	142	148	150	148	149
		LINDA CREEK				
Sunrise Avenue (1-12'x11' CMP Arch)(d)	1.2	130	141	143	137	141
(2-9' Dia CMP)(d)	1.2	129	138	143	137	141
Oak Ridge Drive	2.7	131	144	145	141	144
North Cirby Way (1-16'x8' CMP Arch)(d)	10.3	143	151	155	155	156
Champion Oaks Drive (1-16'x8' CMP Arch)(d)	11.2	144	152	155	156	157
Old Auburn Road	15.3	157	163	165	164	165

(a) All elevations are rounded to nearest foot, mean sea level datum.
(b) Stream distance (1,000's of feet) upstream from Natomas East Main Drainage Canal along Dry Creek, upstream from mouth on other streams.
(c) Average elevation.
(d) CMP = Corrugated metal pipe.
(e) In Royer Park.

VELOCITIES OF FLOW

During an Intermediate Regional Flood, average velocity of flow in the main channel and overbank areas along the streams studied would be as shown in Table 7.

TABLE 7

AVERAGE FLOW VELOCITIES INTERMEDIATE REGIONAL FLOOD

Reach	Main Channel (feet per second)	Overbank Area (feet per second)
DRY CREEK		
Sewage Treatment Plant (Downstream Limit of Study)-Riverside Ave	5-7	1-3
Riverside Ave-Junction of Antelope Creek and Miners Ravine	4-6	1-3
ANTELOPE CREEK		
Mouth of Antelope Creek-Upstream Limit of Study	5-7	1-3
CIRBY CREEK		
Mouth of Cirby Creek-Mouth of Linda Creek	5-7	1-3
Mouth of Linda Creek-Oak Ridge Drive	2-4	1-3
Oak Ridge Drive-Upstream Limit of Study	3-5	0-2
NORTH CIRBY CREEK		
Mouth of North Cirby Creek-Douglas Blvd (Upstream Limit of Study)	3-5	0-2
LINDA CREEK		
Mouth of Linda Creek-Mouth of Strap Ravine	4-6	1-3
Mouth of Strap Ravine-Old Auburn Road (Upstream Limit of Study)	3-5	0-2

Water flowing at a rate of 6 feet per second or greater will cause severe channel erosion and is capable of transporting large rocks. Velocities in the range of 4 to 6 feet per second could erode fill around bridge abutments. Water flowing at about 2 feet per second or less will deposit debris and silt. It is expected that velocity of flow during a Standard Project Flood would be slightly higher than during an Intermediate Regional Flood.

RATES OF RISE AND DURATION OF FLOODING

Intense rainfall from general storms centered over the upper portions of the stream basins rapidly collects as runoff that reaches the study area soon after the beginning of the storm. Stream channels in the study area are generally well defined, but relatively small in cross sectional area. Consequently, flows from flood producing storms quickly rise to channel capacity in the lower reaches of the streams and spread overland. General rainstorms can last for several days. Therefore, the total volume of runoff is large and overbank flow can continue for many hours. Table 8 (page 30) gives the maximum rate of rise, height of rise, time of rise, and duration of flood stage for the Intermediate Regional and Standard Project Floods on Dry Creek near Riverside Avenue and along Linda Creek near Sunrise Avenue. The conditions shown for Dry Creek are also considered representative of the conditions along the lower reach of Cirby Creek, and the conditions shown for Linda Creek are considered representative of the conditions along the middle reach of Cirby Creek.

As previously stated, the stream channel for Antelope Creek is generally deeply entrenched and has a very narrow flood plain. Also, floodflows along North Cirby Creek and the upper reaches of Cirby Creek are contained within the streambanks. Therefore, stage hydrographs and data relating to rates of rise and duration of flooding were not calculated for these streams.

TABLE 8

RATES OF RISE AND
DURATION OF FLOODING

Flood	Maximum Rate of Rise (ft/hr)	Height of Rise[(a)] (ft)	Time of Rise[(b)] (hrs)	Duration above Flood Stage (hrs)
DRY CREEK NEAR RIVERSIDE AVENUE				
Intermediate Regional	1	3	6	12
Standard Project	3	6	13	26
LINDA CREEK NEAR SUNRISE AVENUE				
Intermediate Regional	1	2	9	19
Standard Project	1	6	17	31

(a) Flood stage to maximum flood level. (Values rounded to nearest foot)
(b) Time period corresponding to height of rise.

PHOTOGRAPHS, FUTURE FLOOD HEIGHTS

The levels that the Intermediate Regional and Standard Project Floods are expected to reach at various locations in the study area are indicated in the series of photographs beginning on page 31.

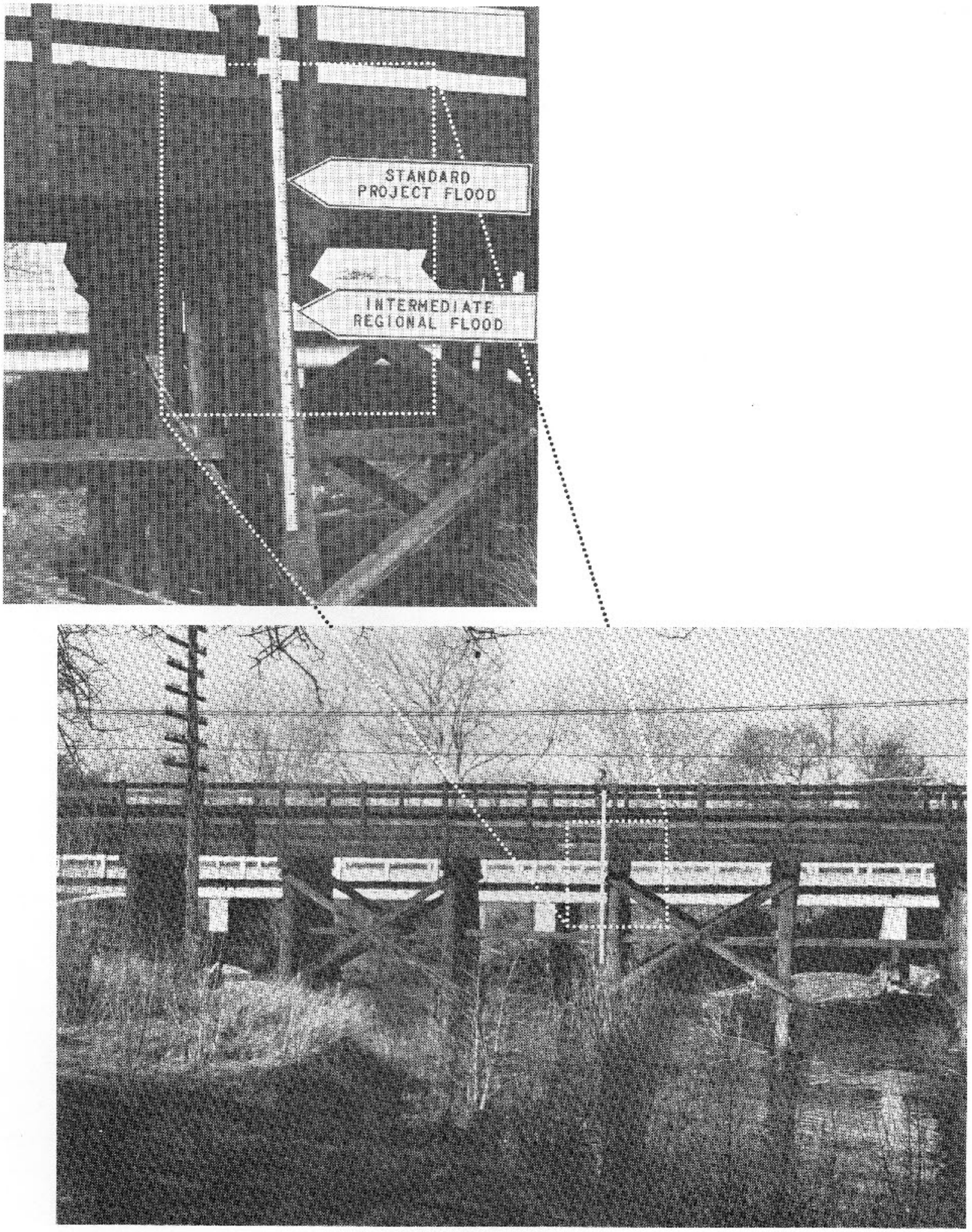


Figure 15 - Future flood heights, Dry Creek at the railroad crossing just upstream from PFE Road.

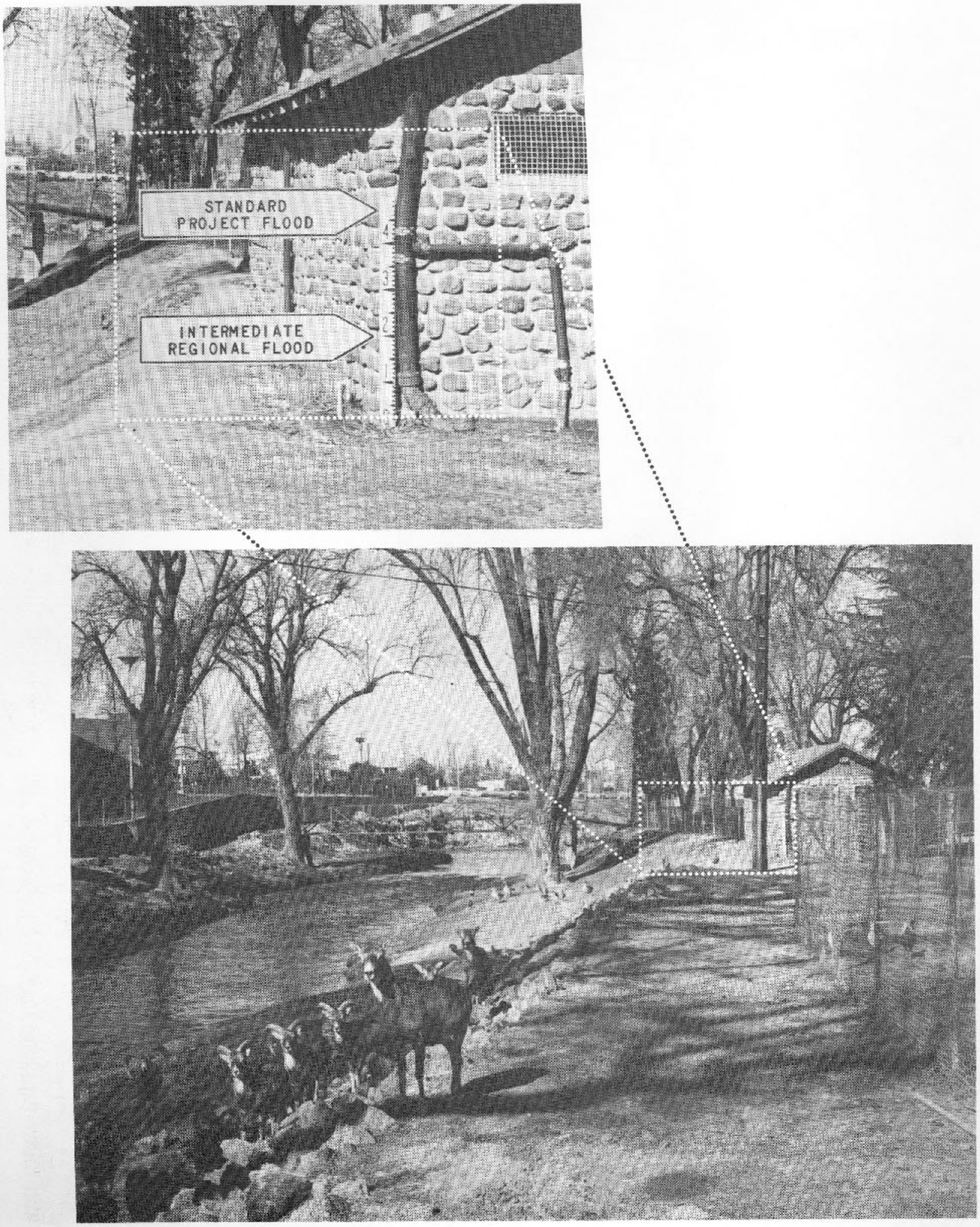


Figure 16 - Future flood heights, Dry Creek in Royer Park just downstream from Middle Footbridge.

Figure 17 - Future flood heights, Antelope Creek at Atlantic Street (downstream side of bridge).

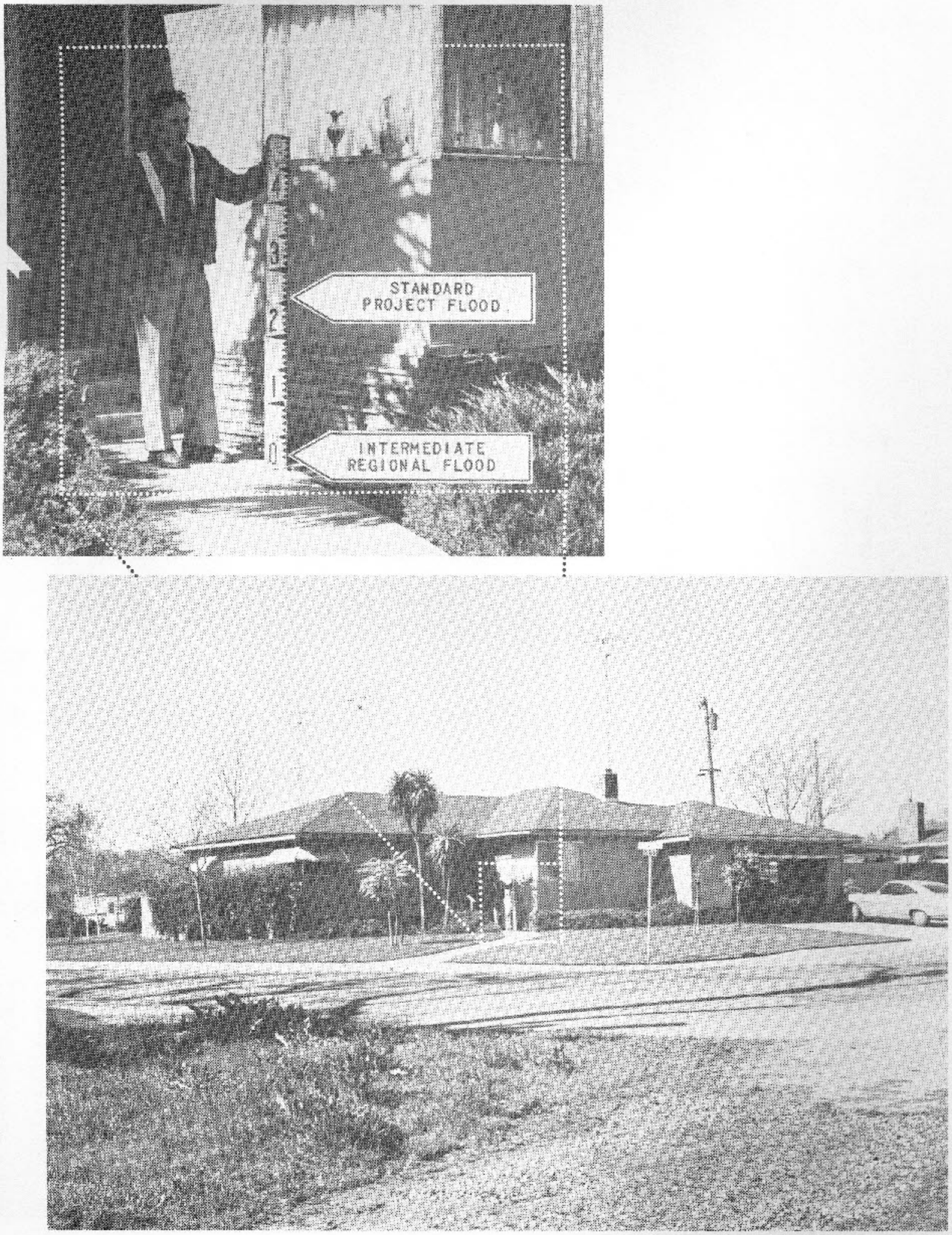


Figure 18 - Future flood heights, Cirby Creek at Tina Lane and Coloma Way.

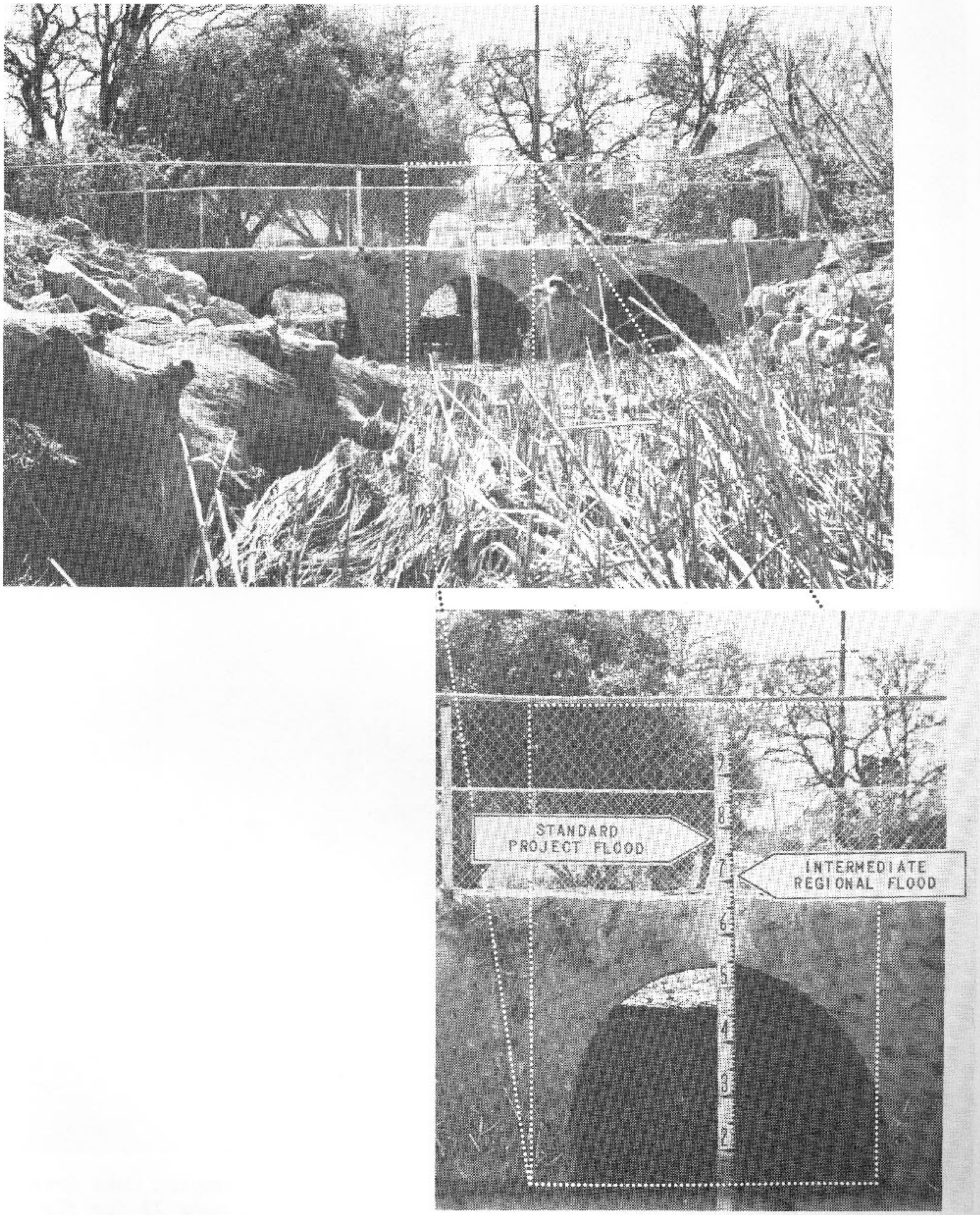


Figure 19 - Future flood heights, Cirby Creek at Loretto Drive.

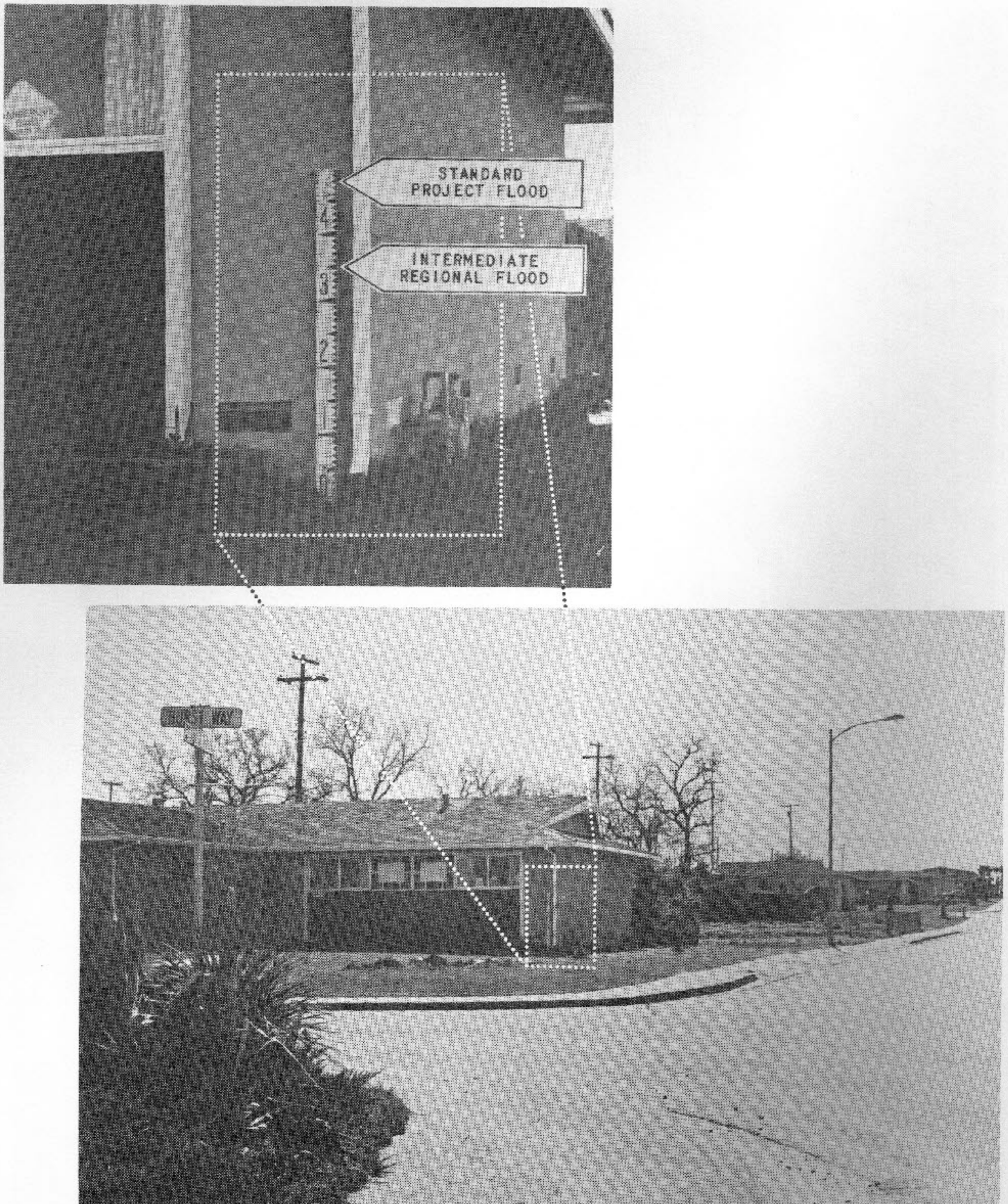


Figure 20 - Future flood heights, Linda Creek at Champion Oaks Drive and Hurst Way. See Figures 11 and 12, page 17 for flood conditions at this location.

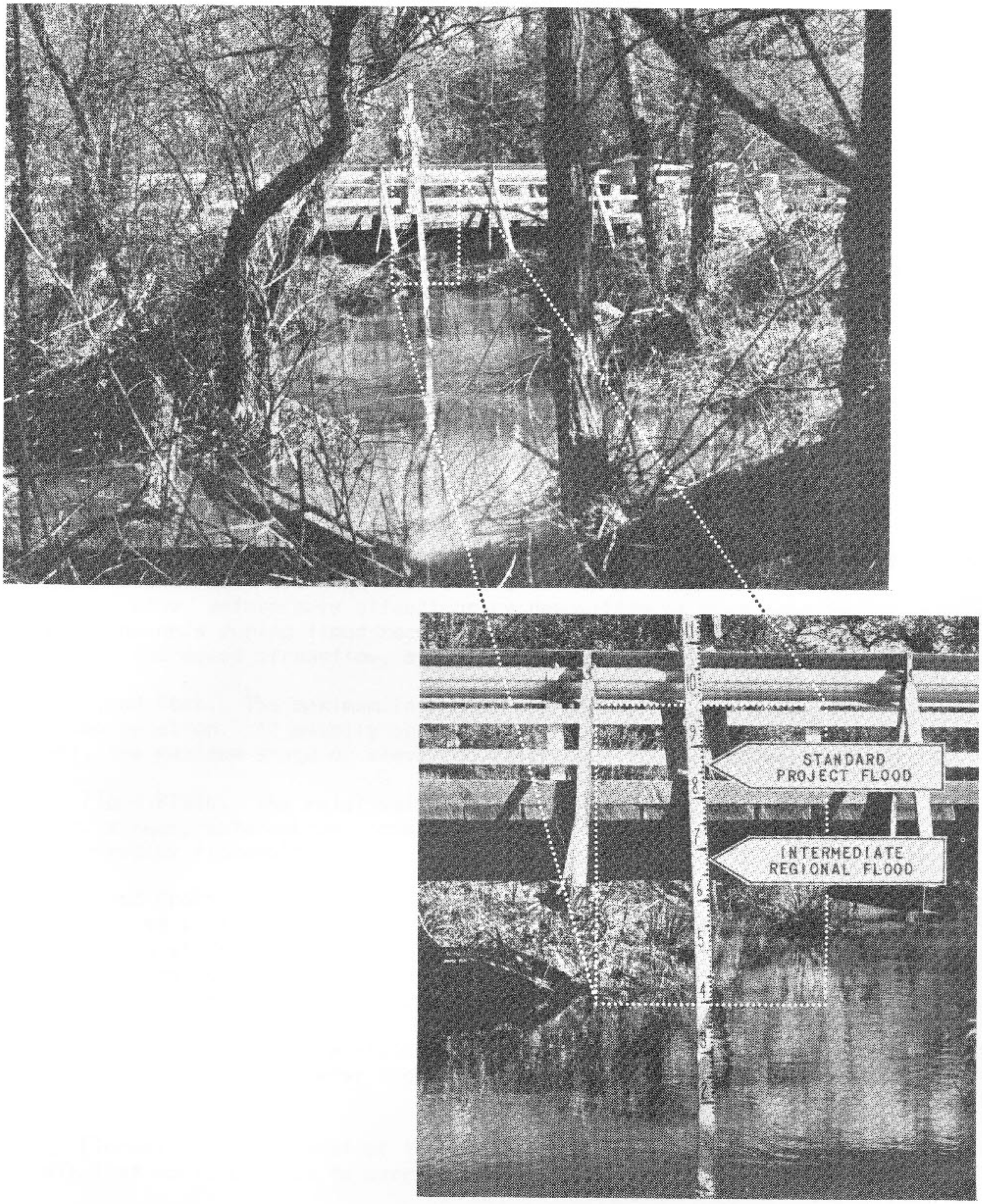


Figure 21 - Future flood heights, Linda Creek at Old Auburn Road.

GLOSSARY

Backwater Effect. The rise in surface elevation of flowing water upstream from and as a result of an obstruction to flow.

Cloudburst. A sudden and extremely heavy downpour of rain that is small in areal extent; of short duration; and may be accompanied by lightning, thunder, and strong gusts of wind.

Flood. An overflow of water onto lands that are used or usable by man and not normally covered by water. Floods have two essential characteristics: The inundation of land is temporary; and the land is adjacent to and inundated by overflow from a river, stream, lake, or ocean.

Normally a "flood" is considered as any temporary rise in streamflow or stage (but not the ponding of surface water) that results in significant adverse effects in the vicinity. Adverse effects may include damages from overflow in land areas, temporary backwater effects in sewers and local drainage channels, creation of unsanitary conditions or other unfavorable situations by deposition of materials in stream channels during flood recessions, rise of groundwater coincident with increased streamflow, and other problems.

Flood Peak. The maximum instantaneous discharge of a flood at a given location. It usually occurs at or near the time of the flood crest, the maximum stage or elevation reached by the floodflow.

Flood Plain. The relatively flat area or lowlands adjoining a river, stream, watercourse, ocean, or lake, which have been or may be covered by floodwater.

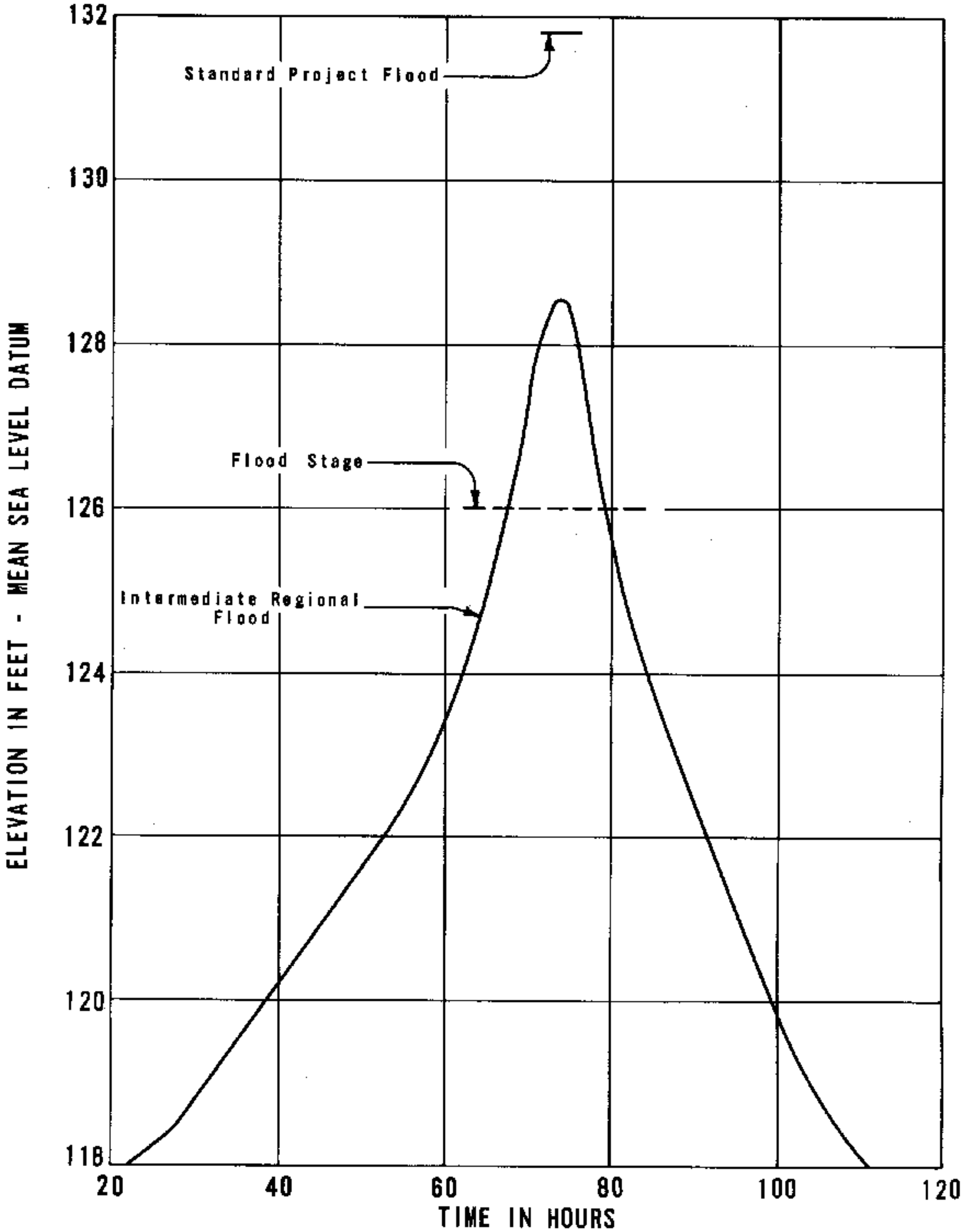
Flood Profile. A graph showing the relationship of water surface elevation to location, the latter generally expressed as distance above mouth for a stream of water flowing in an open channel. It is generally drawn to show surface elevation for the crest of a specific flood, but may be prepared for conditions at a given time or stage.

Flood Stage. The elevation at which overflow of the natural banks of a stream or body of water begins in the reach or area in which the elevation is measured.

Floodway. The channel of the stream and that portion of the flood plain that would be used to carry floodflows.

Intermediate Regional Flood. A flood having an average frequency of occurrence in the order of once in 100 years although the flood may occur in any year.

Standard Project Flood. The flood that may be expected from the most severe combination of meteorological and hydrological conditions that are considered reasonably characteristic of the geographical area in which the drainage basin is located, excluding extremely rare combinations.



NOTES

Hydrograph based on computed data.

Hydrograph near Riverside Avenue (72,500 feet upstream from Natomas Drainage Canal).

Flood Stage is beginning of overbank flow.

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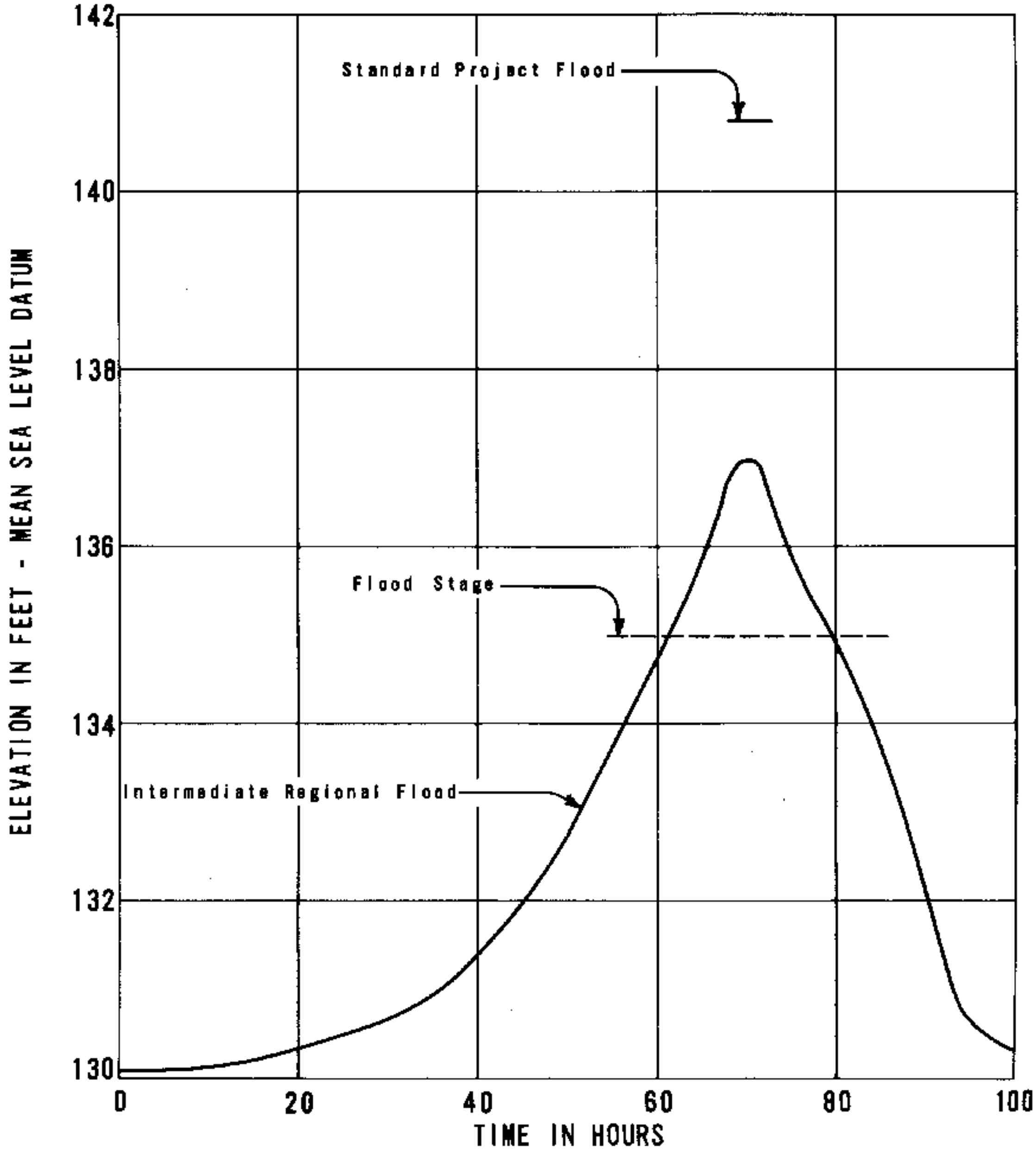
SACRAMENTO, CALIFORNIA

FLOOD PLAIN INFORMATION

DRY CREEK AND TRIBUTARIES

ROSEVILLE, CALIFORNIA

STAGE HYDROGRAPH
INTERMEDIATE REGIONAL FLOOD
DRY CREEK
MAY 1973



NOTES

Hydrograph based on computed data.

Hydrograph near Sunrise Avenue (1,190 feet upstream from mouth).

Flood Stage is beginning of overbank flow.

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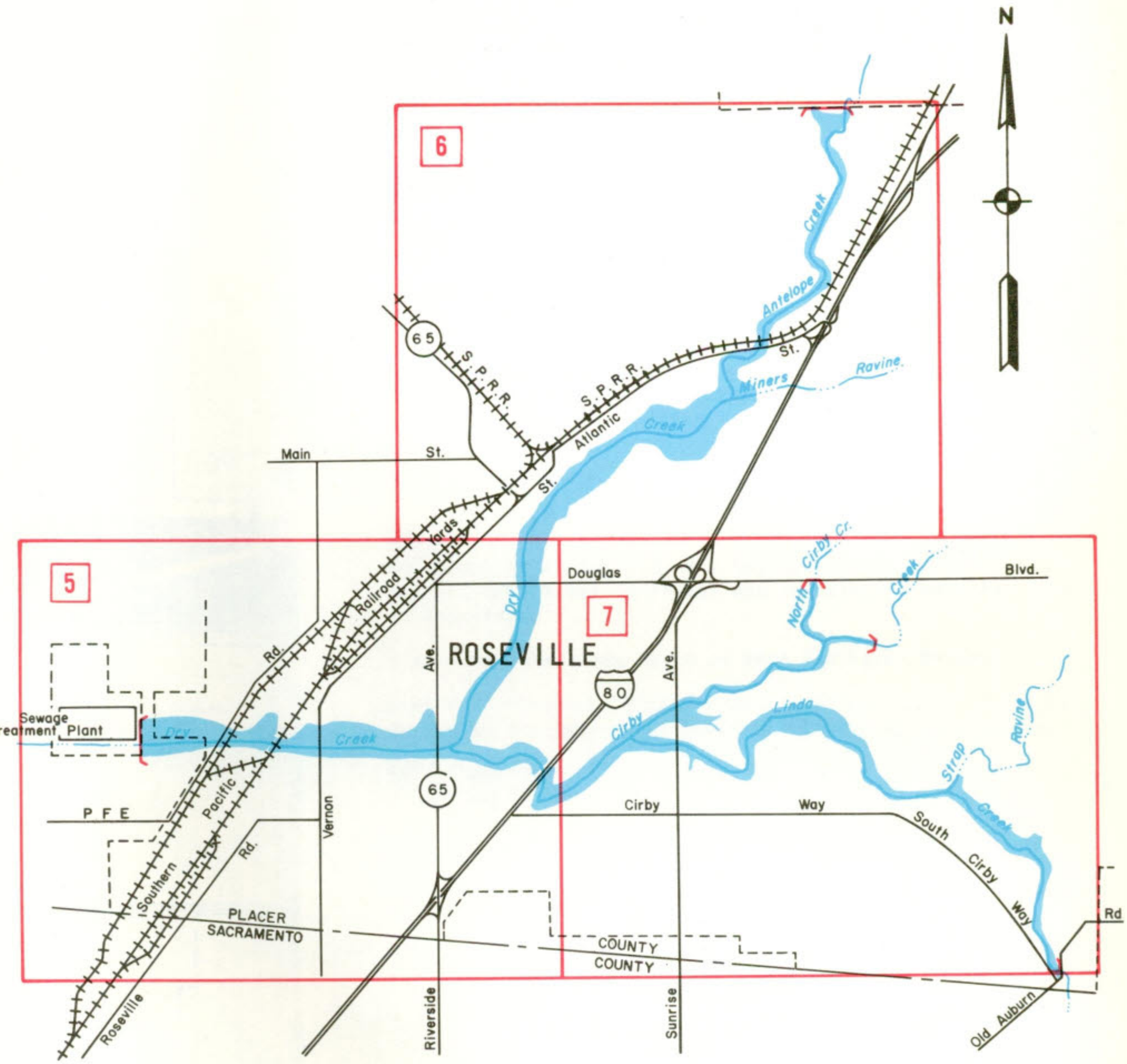
SACRAMENTO, CALIFORNIA

FLOOD PLAIN INFORMATION
DRY CREEK AND TRIBUTARIES

ROSEVILLE, CALIFORNIA

STAGE HYDROGRAPH
INTERMEDIATE REGIONAL FLOOD
LINDA CREEK
MAY 1973

PLATE 3



SCALE IN MILES

1 0 1

LEGEND

----- Approximate City Limits

80 Interstate Highway

65 State Highway

Standard Project Flood

5 Plate Number

Study Limits

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SACRAMENTO, CALIFORNIA

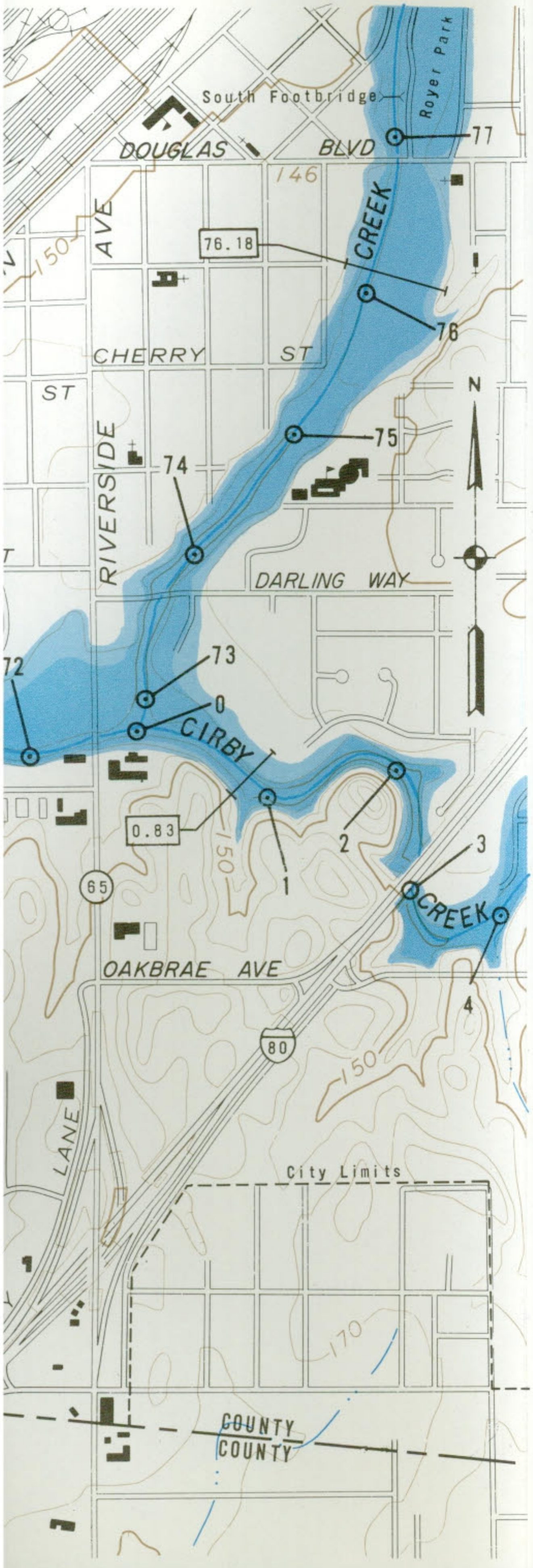
FLOOD PLAIN INFORMATION

DRY CREEK AND TRIBUTARIES

ROSEVILLE, CALIFORNIA

FLOOD LIMITS AND INDEX MAP

MAY 1973



LEGEND

Overflow Limits

Stream Center Line — Intermediate Regional Flood — Standard Project Flood

0.83 — Cross Section

80 — Interstate Highway

65 — State Highway

—76 Distance in thousands of feet upstream from Natomas East Main Drainage Canal along Dry Creek or upstream from mouth along Cirby Creek

Levee

NOTES

Map based on U.S.G.S. 7.5-min. quadrangle sheet Citrus Heights, 1967. Minor additions and adjustments made by Corps of Engineers.

Elevations shown are based on Mean Sea Level Datum.

Limits of flooding indicated may vary from actual locations on the ground because of accuracy of available topography.

Areas outside the floodway may be subject to flooding from local runoff.

SCALE IN FEET

500 0 1000 2000

CONTOUR INTERVAL 10 FEET

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SACRAMENTO, CALIFORNIA

FLOOD PLAIN INFORMATION

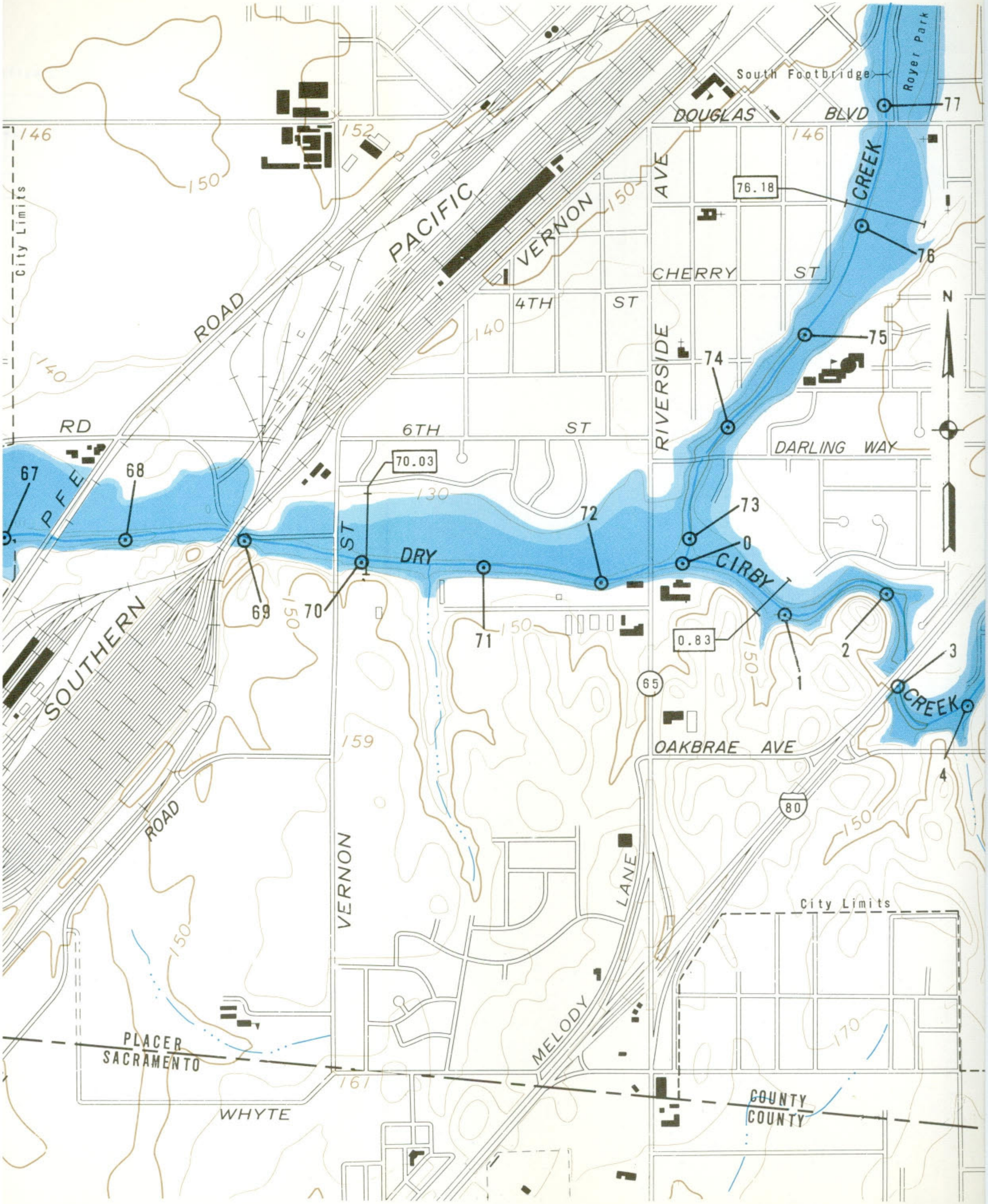
DRY CREEK AND TRIBUTARIES

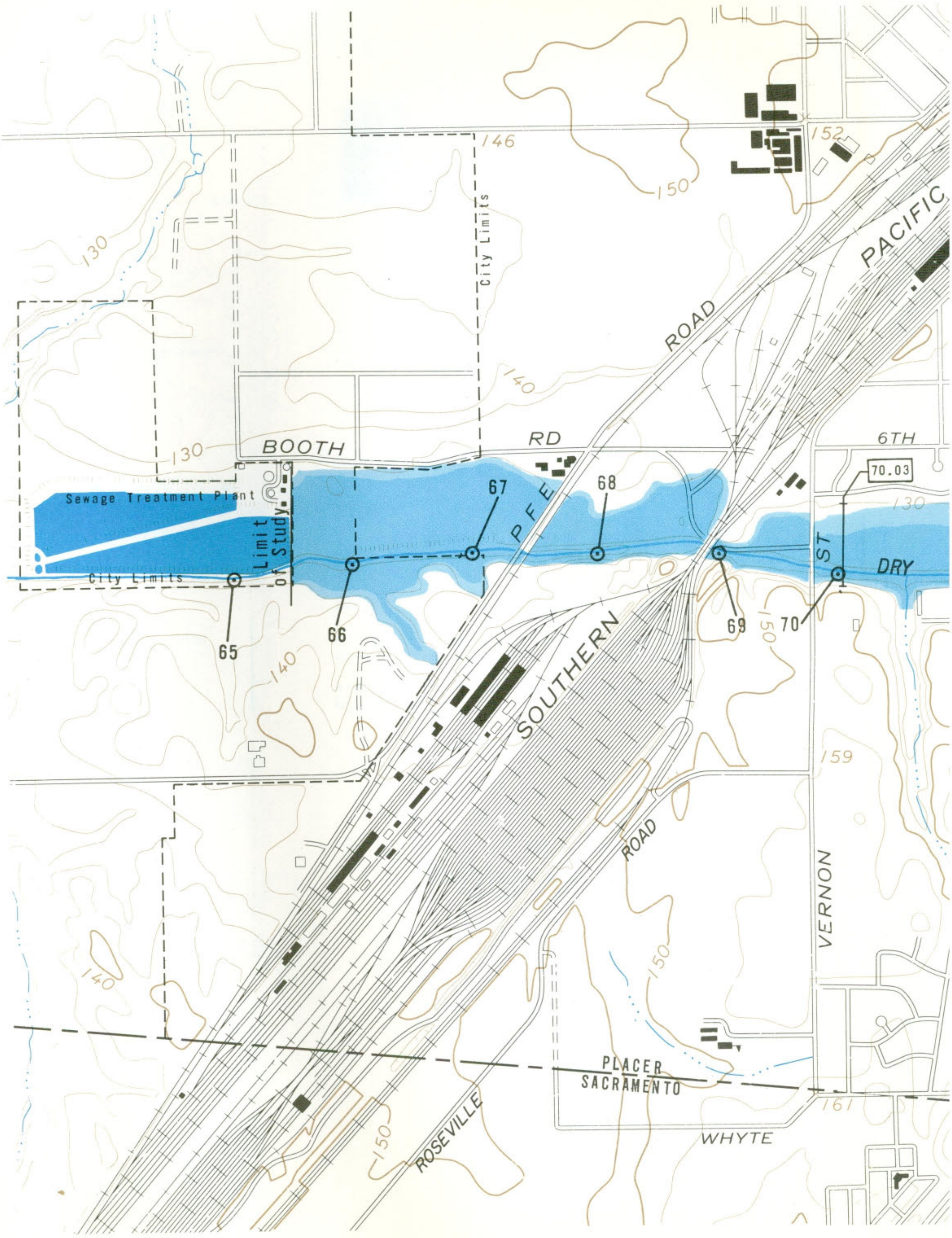
ROSEVILLE, CALIFORNIA

FLOODED AREAS

MAY 1973

PLATE 5


City Limits
146
152
150
SOUTHERN
PACIFIC
ROAD
VERNON
DOUGLAS
BLVD
South Footbridge
Royer Park
77
76.18
CREEK
76
AVE
CHERRY
ST
4TH
ST
140
RIVERSIDE
75
74
N
RD
6TH
ST
DARLING WAY
67
68
P F E
70.03
130
72
73
0
69
70
DRY
71
CIRBY
1
2
3
0.83
65
CREEK
4
159
OAKBRAE AVE
80
VERNON
LANE
MELODY
City Limits
170
PLACER
SACRAMENTO
161
WHYTE
COUNTY
COUNTY



146
152
150
130
City Limits
PACIFIC
ROAD
140
BOOTH
RD
6TH
70.03
Sewage Treatment Plant
Limit of Study
67
68
P F E
ST
DRY
City Limits
65
66
69
70
SOUTHERN
140
159
ROAD
VERNON
140
150
PLACER
SACRAMENTO
161
ROSEVILLE
WHYTE
150

N
Diamond Oaks
Municipal Golf Course
150
175
200
SIERRA VIEW
COUNTRY CLUB
65
Roseville
Cem
HS
BM 163
Woodbridge
Park
BLVD
SIERRA
STREET
0.69
Woodbridge
Sch
165
ATLANTIC
CREEK
BM 172
Library
81
83
80
82
80.53
Park
BM 160
FOLSOM
LINCOLN
AVE
DRY
North Footbridge
79
Middle Footbridge
78
Royer Park
RD
170
1

LEGEN

7.80

80

65

NOTES

Map b
Heigh
adjus

Eleva

Limit
on th

Areas
local

LEGEND

Overflow Limits

Stream Center Line

Intermediate Regional Flood

Standard Project Flood

7.80 — Cross Section

80 — Interstate Highway

65 — State Highway

⊙—5 — Distance in thousands of feet upstream from Natomas East Main Drainage Canal along Dry Creek or upstream from mouth along Antelope Creek

NOTES

Map based on U.S.G.S. 7.5-min. quadrangle sheets Citrus Heights, 1967, and Roseville, 1967. Minor additions and adjustments made by Corps of Engineers.

Elevations shown are based on Mean Sea Level Datum.

Limits of flooding indicated may vary from actual locations on the ground because of accuracy of available topography.

Areas outside the floodway may be subject to flooding from local runoff.

SCALE IN FEET

500 0 1000 2000

CONTOUR INTERVAL 5 & 10 FEET

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SACRAMENTO, CALIFORNIA

FLOOD PLAIN INFORMATION

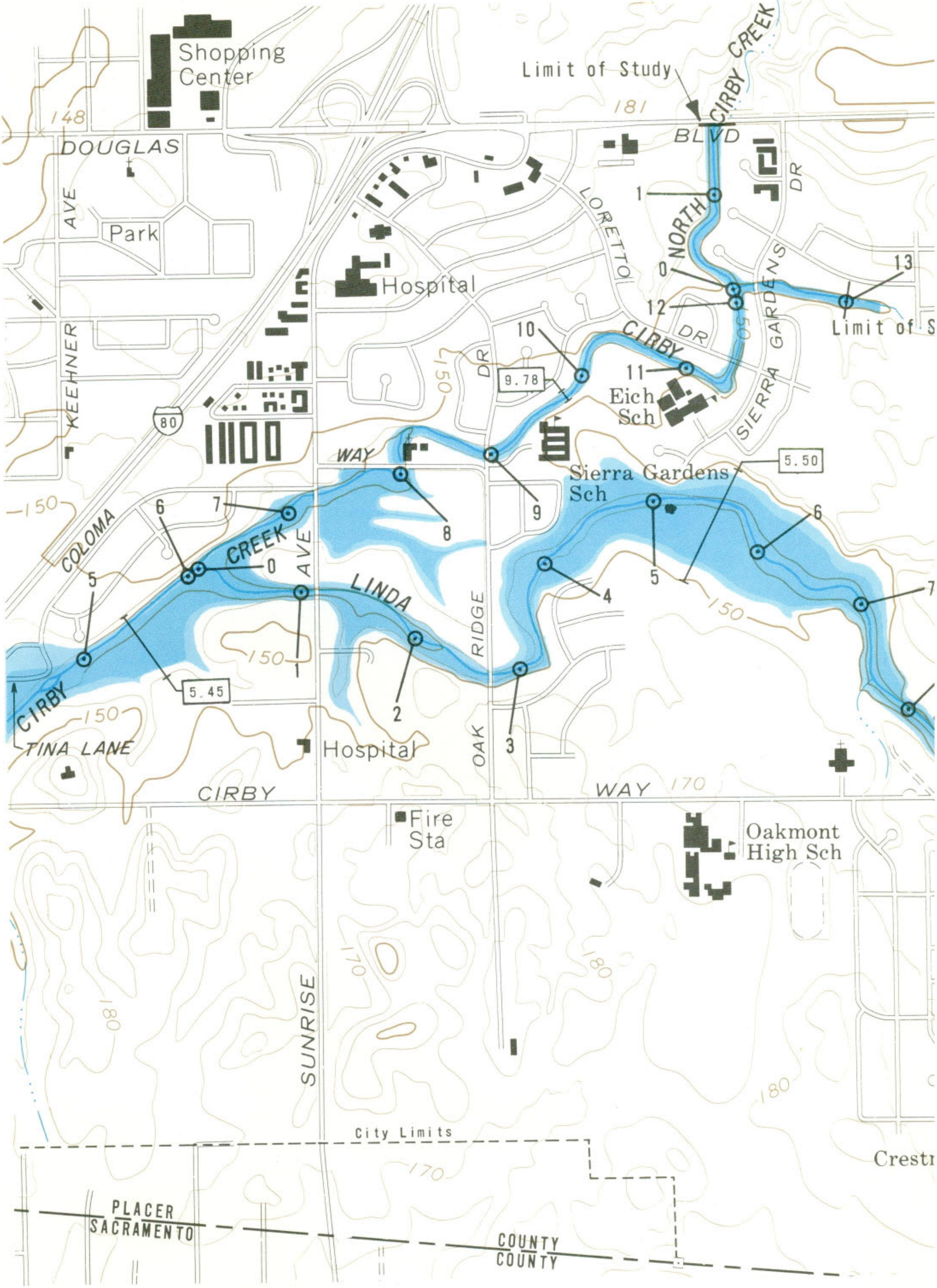
DRY CREEK AND TRIBUTARIES

ROSEVILLE, CALIFORNIA

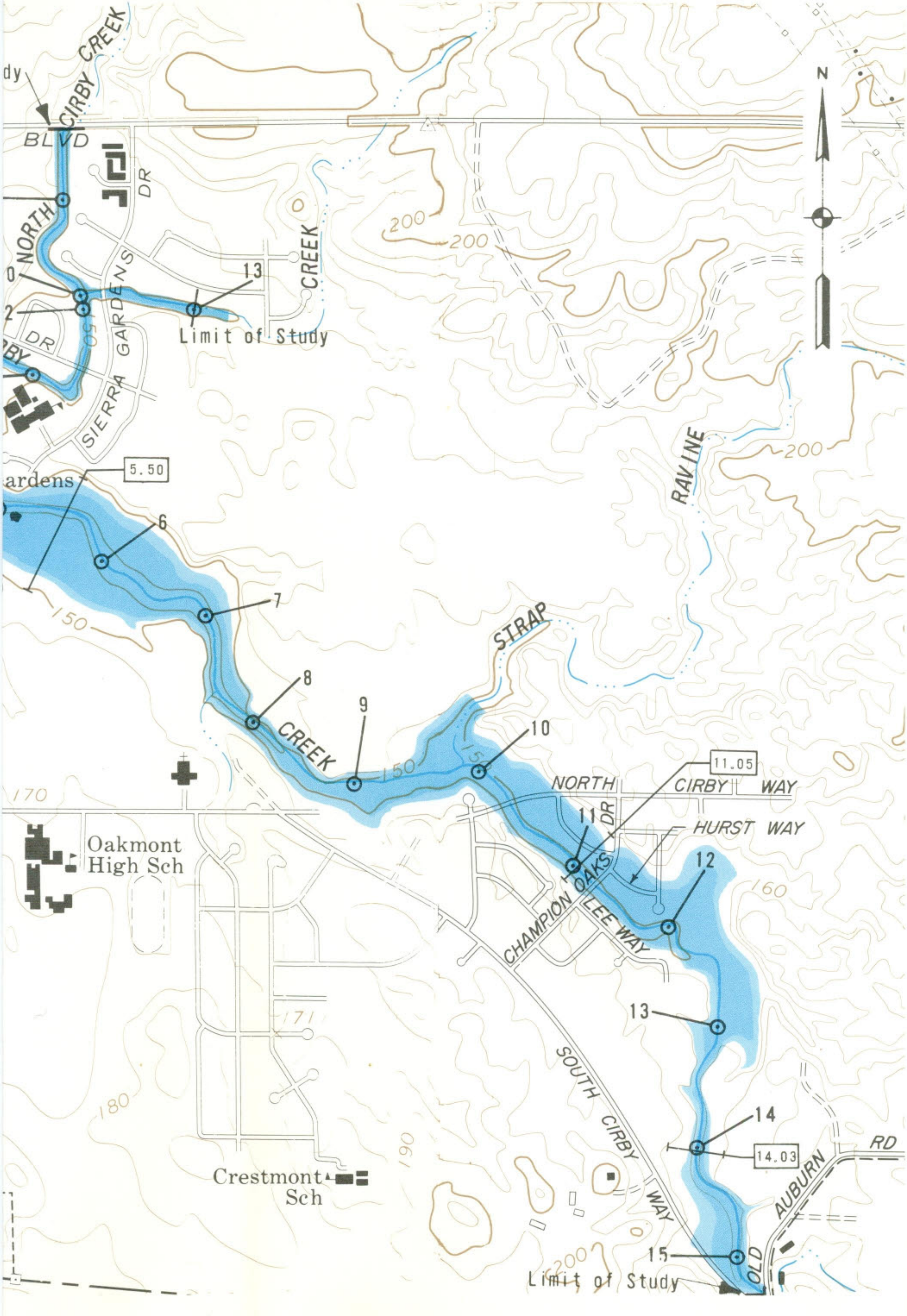
FLOODED AREAS

MAY 1973

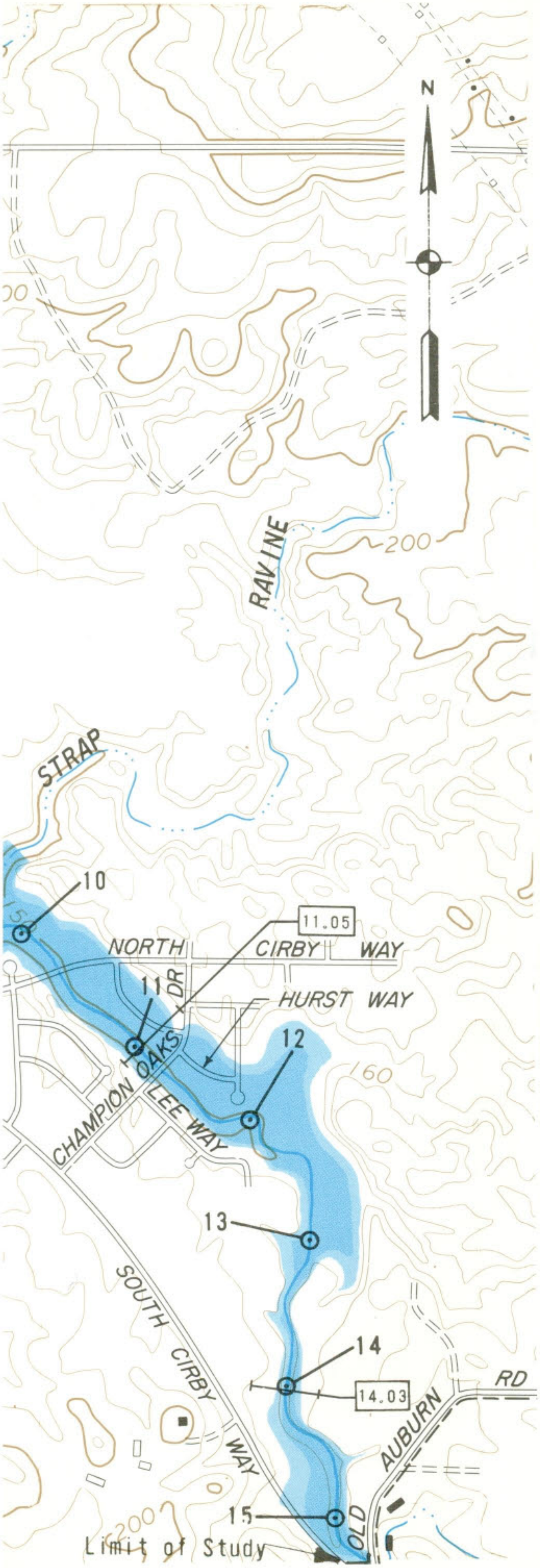
PLATE 6



Shopping Center
Limit of Study
NORTH CIRBY CREEK
181
148
DOUGLAS BLVD
KEEHNER AVE
Park
Hospital
LORETTO DR
SIERRA GARDENS DR
CIRBY DR
Limit of S
13
12
11
10
9.78
Eich Sch
Sierra Gardens Sch
5.50
80
WAY
150
COLOMA
CIRBY CREEK
LINDA CREEK
SUNRISE AVE
OAK RIDGE DR
5.45
TINA LANE
Hospital
CIRBY WAY
170
Fire Sta
Oakmont High Sch
180
City Limits
PLACER COUNTY
SACRAMENTO COUNTY
Crestı



CIRBY CREEK
BLVD
DR
NORTH
SIERRA GARDENS
13
CREEK
Limit of Study
200
5.50
6
7
8
9
10
150
170
ardens
STRAP
CREEK
RAVINE
NORTH CIRBY WAY
11.05
11
DR
HURST WAY
12
160
CHAMPION OAKS
LEE WAY
Oakmont High Sch
13
171
180
190
SOUTH CIRBY WAY
14
14.03
RD
AUBURN
OLD
Crestmont Sch
15
Limit of Study



LEGEND

Overflow Limits

Stream Center Line | Intermediate Regional Flood | Standard Project Flood

5.50 Cross Section

80 Interstate Highway

1 Distance in thousands of feet upstream from mouth

NOTES

Map based on U.S.G.S. 7.5-min. quadrangle sheets Citrus Heights, 1967, and Folsom, 1967. Minor additions and adjustments made by Corps of Engineers.

Elevations shown are based on Mean Sea Level Datum.

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Areas outside the floodway may be subject to flooding from local runoff.

SCALE IN FEET

500 0 1000 2000

CONTOUR INTERVAL 10 FEET

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SACRAMENTO, CALIFORNIA

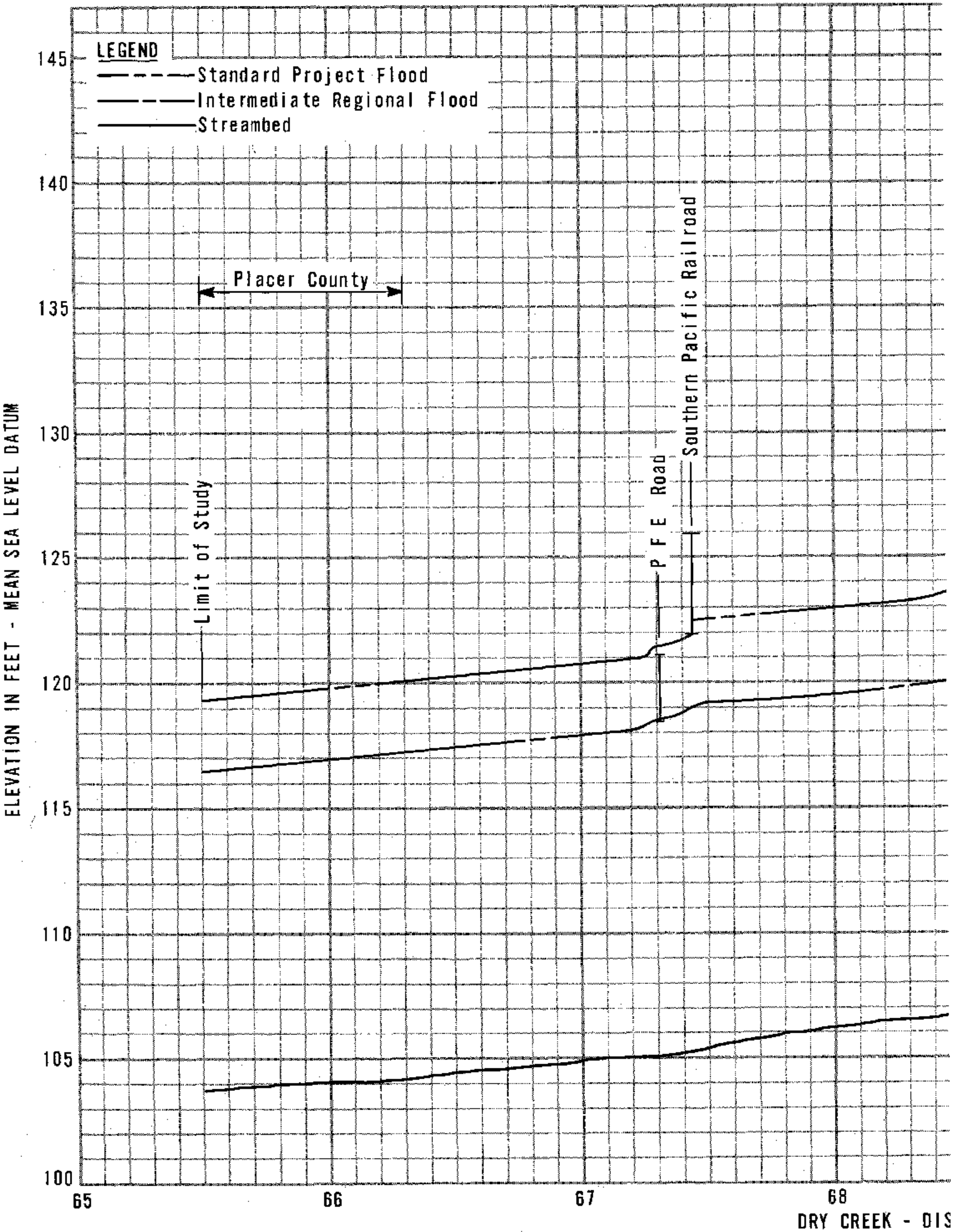
FLOOD PLAIN INFORMATION

DRY CREEK AND TRIBUTARIES
ROSEVILLE, CALIFORNIA

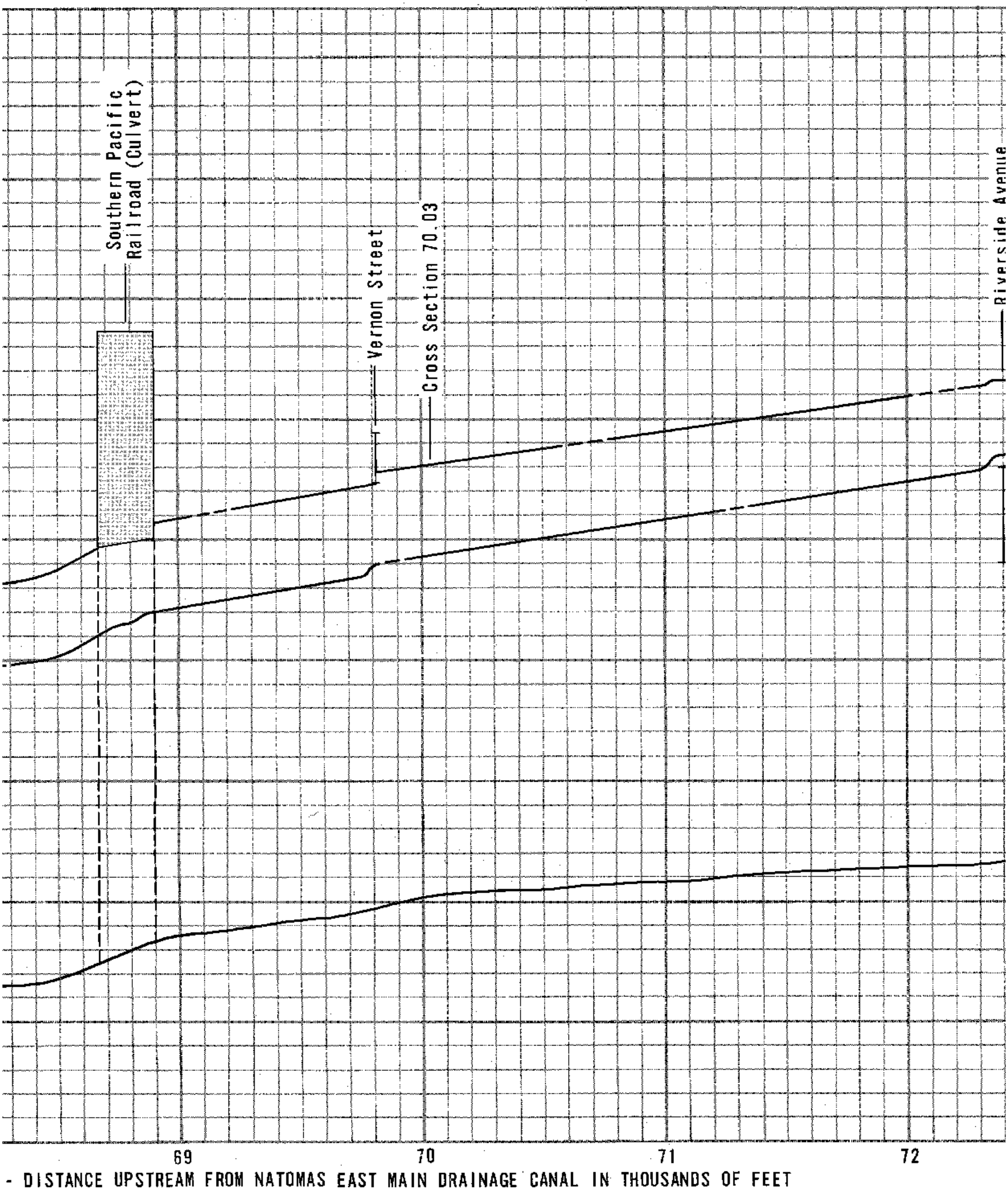
FLOODED AREAS

MAY 1973

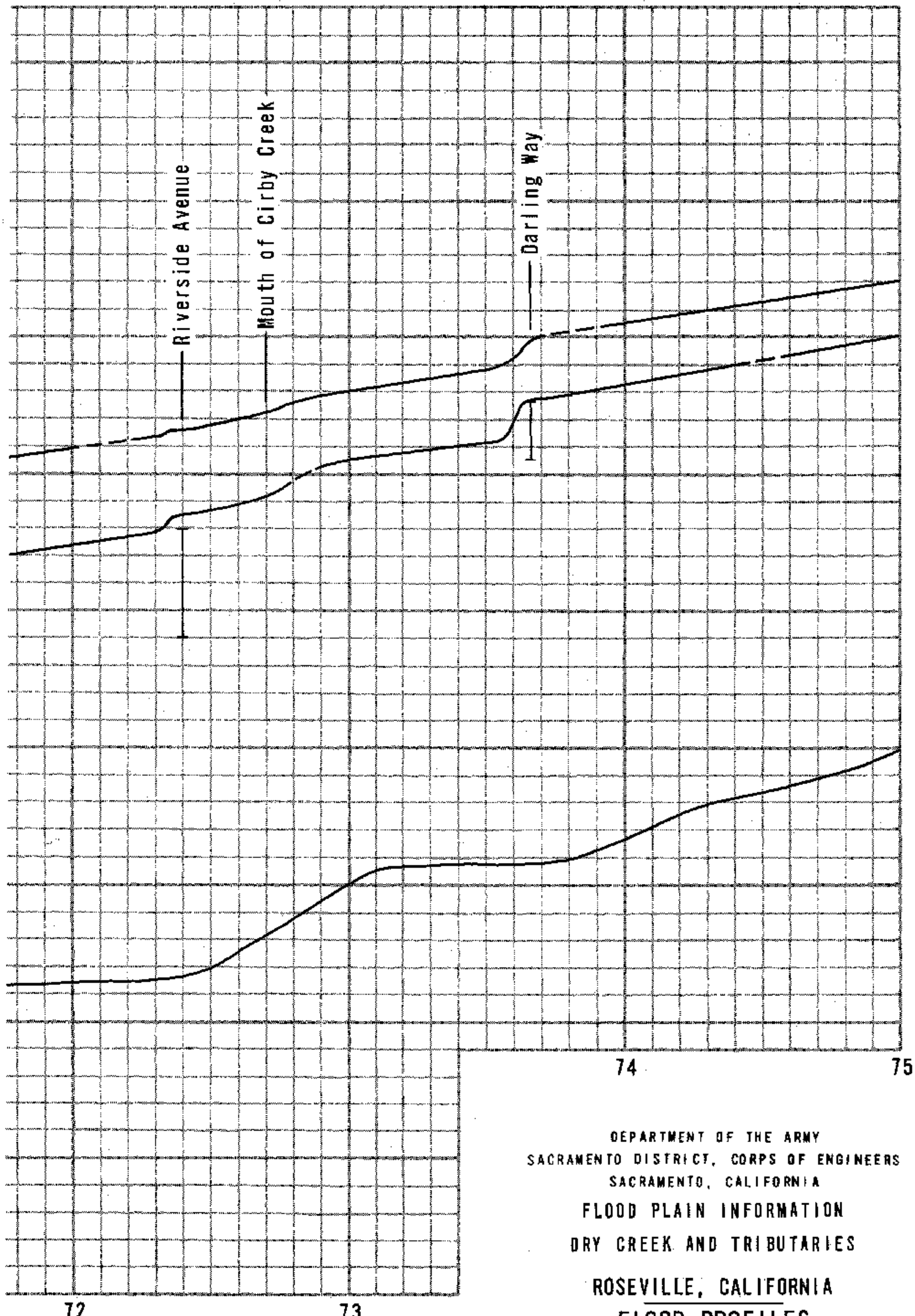
PLATE 7



LEGEND
Standard Project Flood
Intermediate Regional Flood
Streambed
Placer County
Limit of Study
P F E Road
Southern Pacific Railroad
ELEVATION IN FEET - MEAN SEA LEVEL DATUM
145
140
135
130
125
120
115
110
105
100
65
66
67
68
DRY CREEK - DIS



Southern Pacific
Railroad (Culvert)
Vernon Street
Cross Section 70.03
Riverside Avenue
69
70
71
72
- DISTANCE UPSTREAM FROM NATOMAS EAST MAIN DRAINAGE CANAL IN THOUSANDS OF FEET



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SACRAMENTO, CALIFORNIA

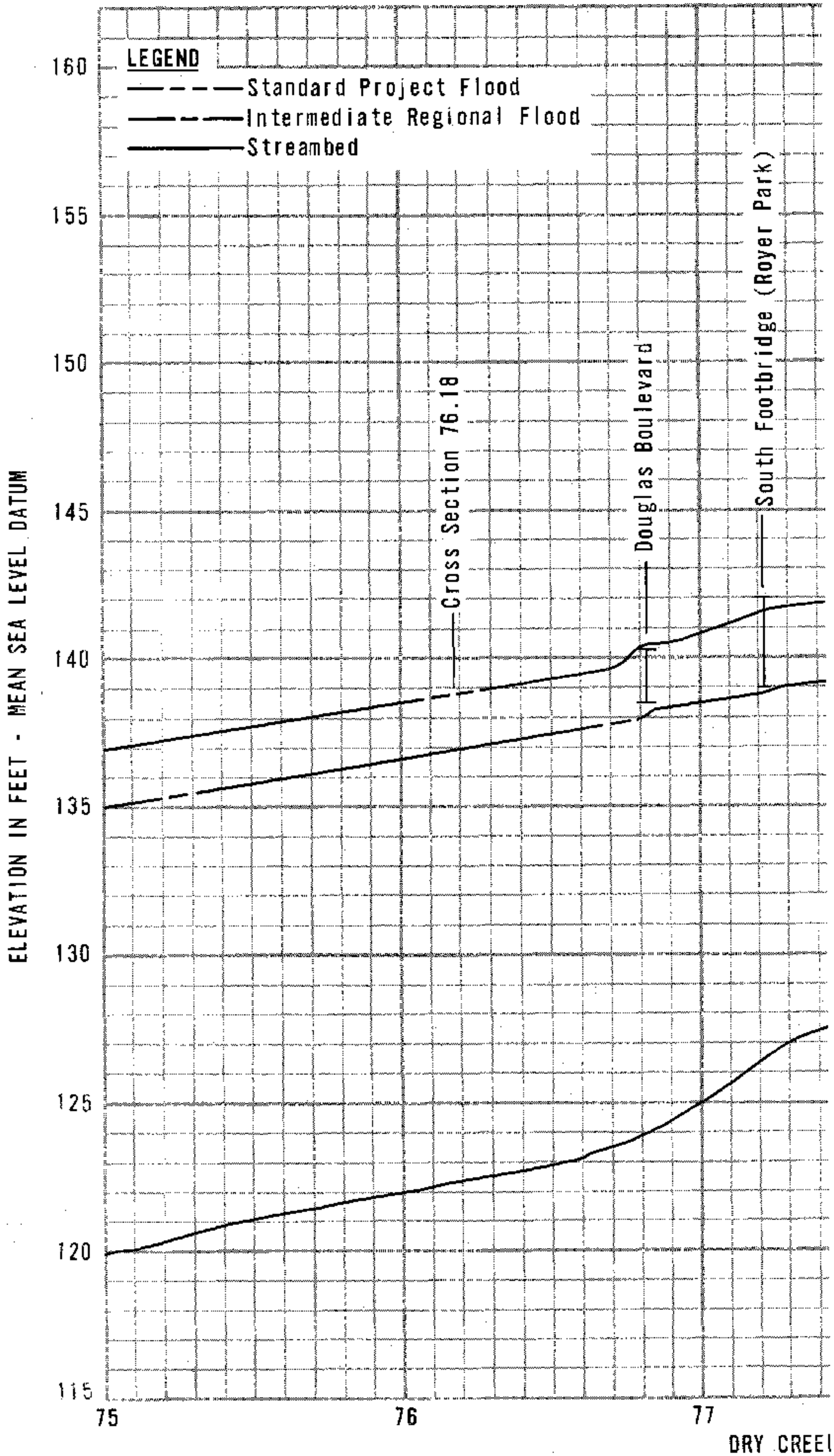
FLOOD PLAIN INFORMATION

DRY CREEK AND TRIBUTARIES

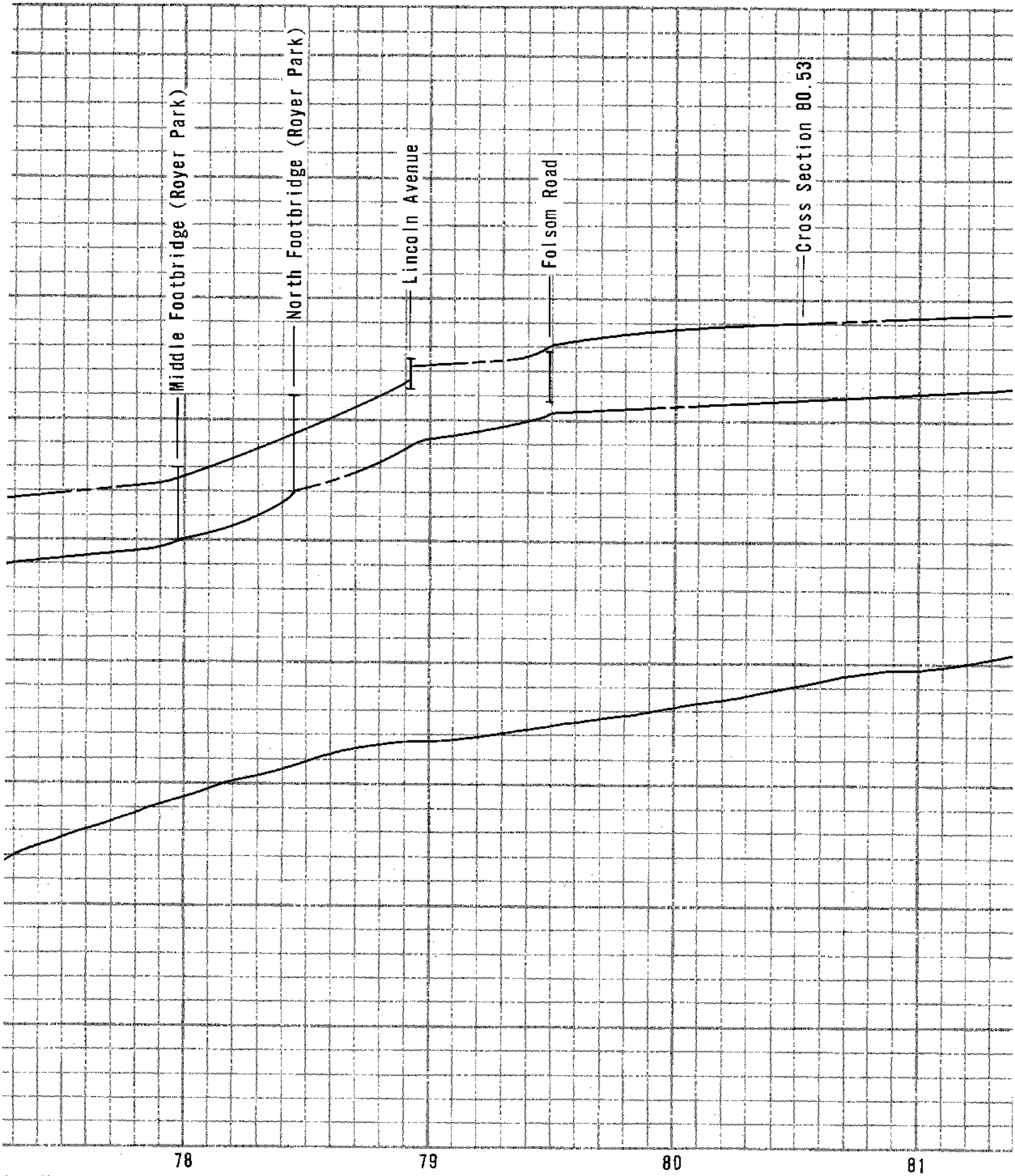
ROSEVILLE, CALIFORNIA

FLOOD PROFILES

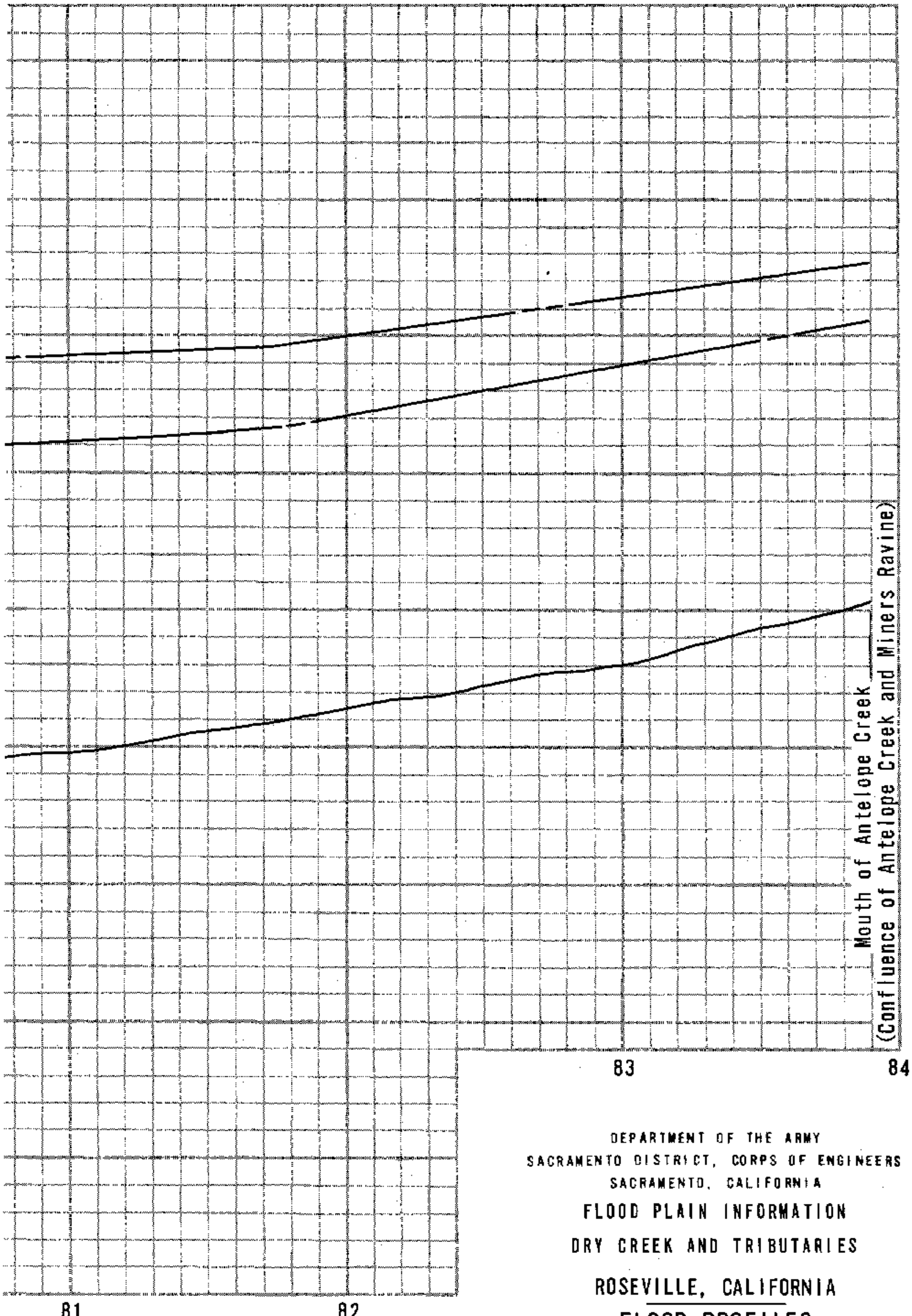
DRY CREEK
MAY 1973



LEGEND
Standard Project Flood
Intermediate Regional Flood
Streambed
Cross Section 76.18
Douglas Boulevard
South Footbridge (Royer Park)
ELEVATION IN FEET - MEAN SEA LEVEL DATUM
160
155
150
145
140
135
130
125
120
115
75
76
77
DRY CREE



CREEK - DISTANCE UPSTREAM FROM NATOMAS EAST MAIN DRAINAGE CANAL IN THOUSANDS OF FEET



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SACRAMENTO, CALIFORNIA

FLOOD PLAIN INFORMATION

DRY CREEK AND TRIBUTARIES

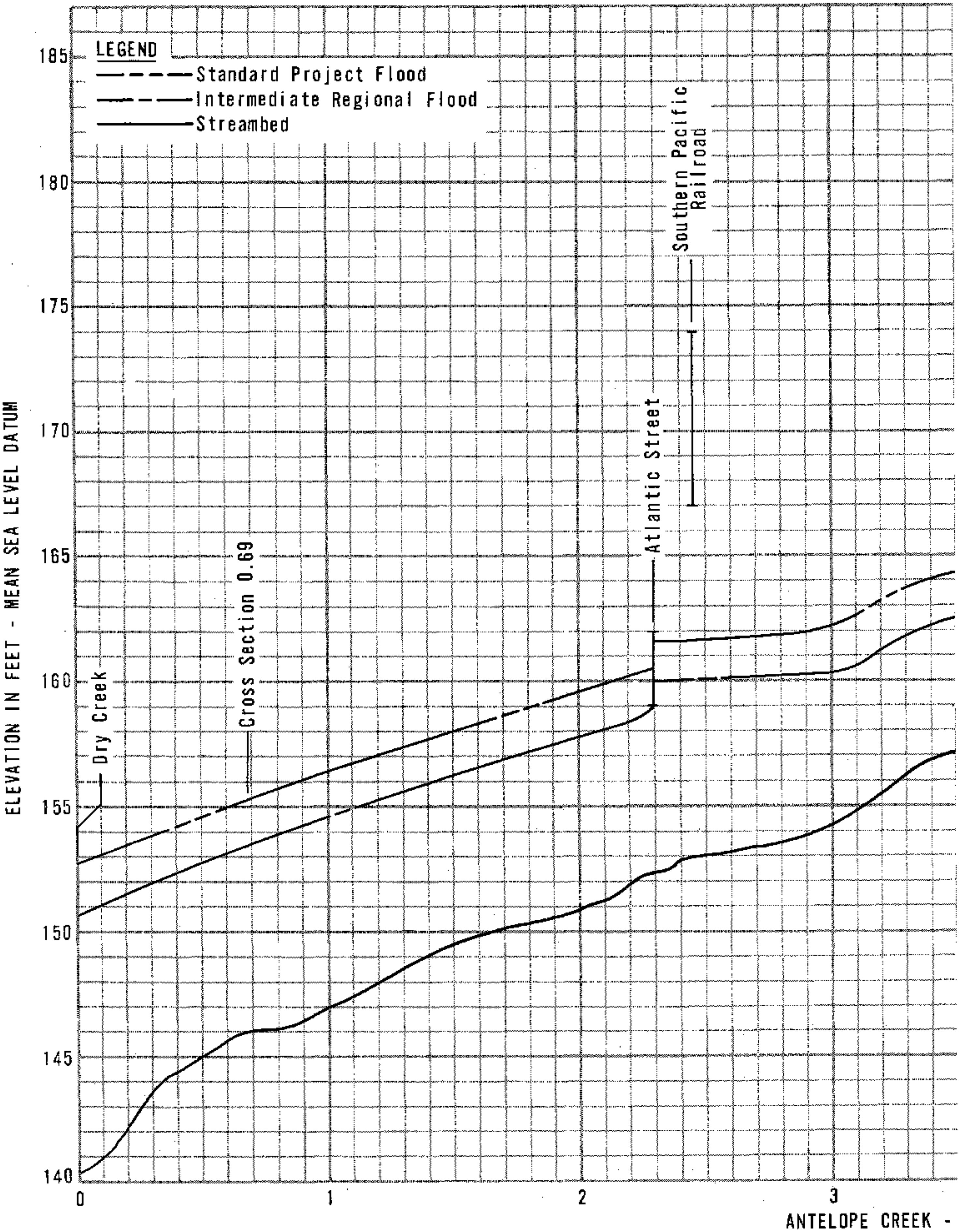
ROSEVILLE, CALIFORNIA

FLOOD PROFILES

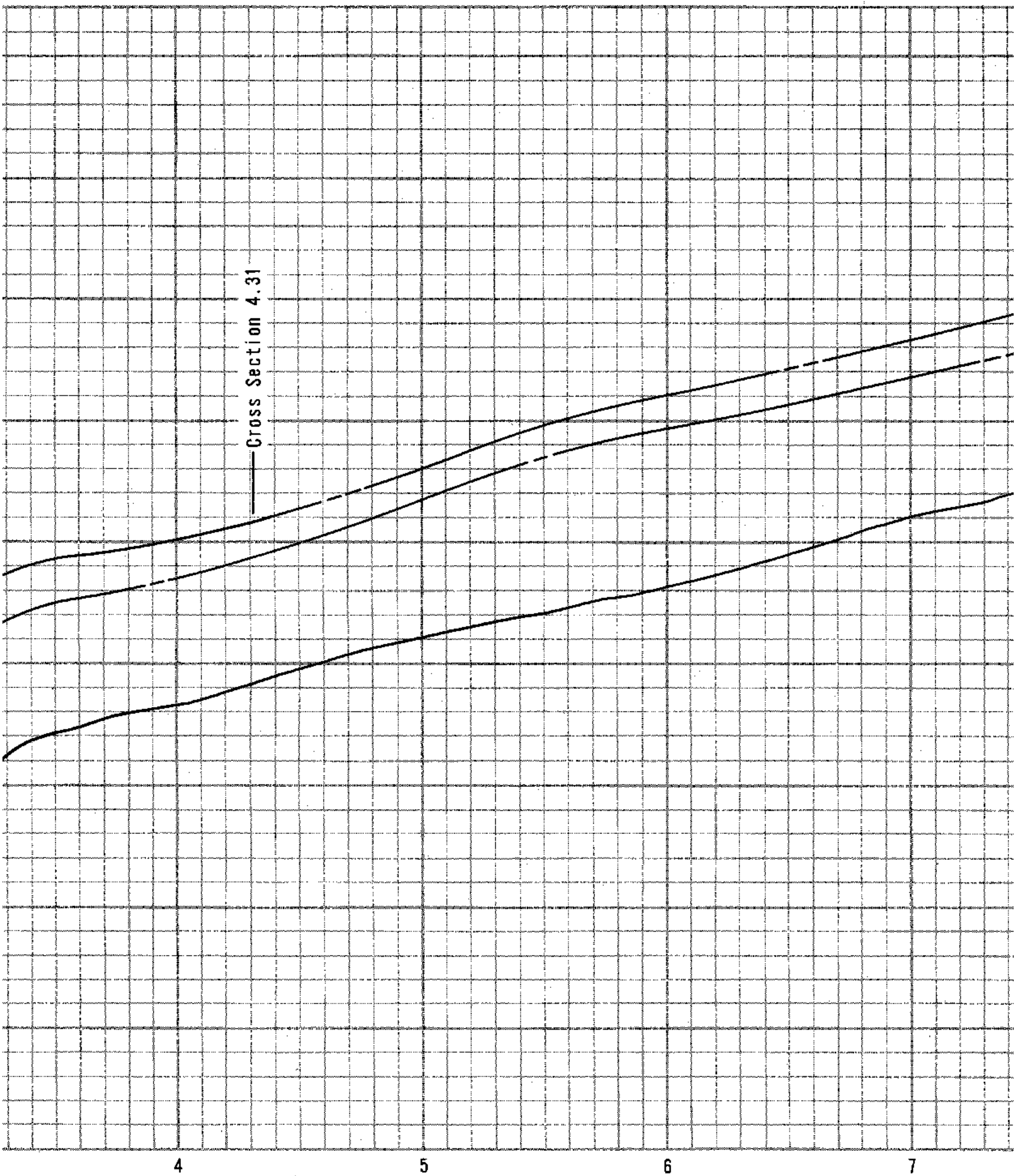
DRY CREEK

MAY 1973

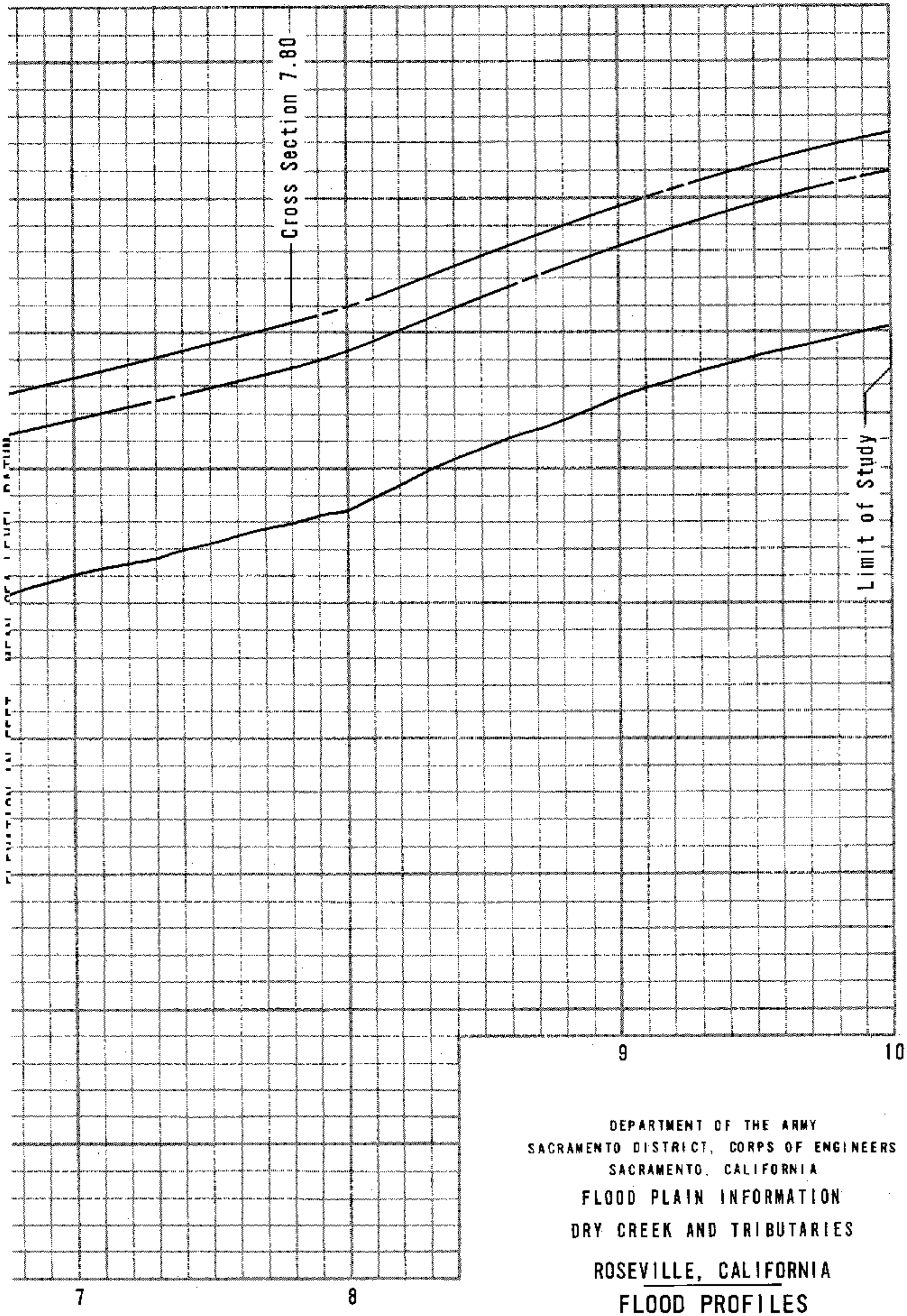
PLATE 9



LEGEND
Standard Project Flood
Intermediate Regional Flood
Streambed
Southern Pacific Railroad
Atlantic Street
Cross Section 0.69
Dry Creek
ELEVATION IN FEET - MEAN SEA LEVEL DATUM
185
180
175
170
165
160
155
150
145
140
0
1
2
3
ANTELOPE CREEK -



EEK - DISTANCE UPSTREAM FROM MOUTH (DRY CREEK) IN THOUSANDS OF FEET



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SACRAMENTO, CALIFORNIA

FLOOD PLAIN INFORMATION

DRY CREEK AND TRIBUTARIES

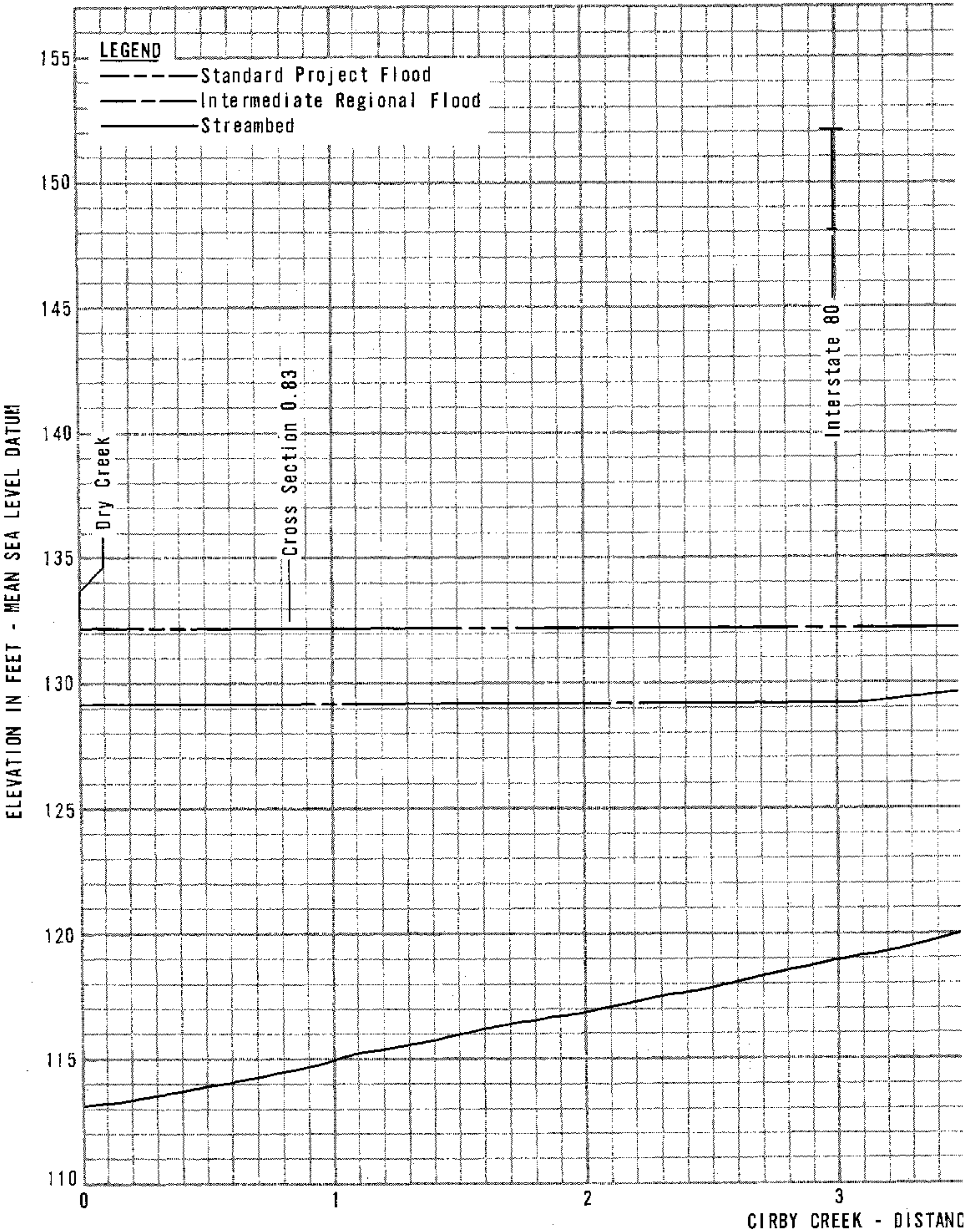
ROSEVILLE, CALIFORNIA

FLOOD PROFILES

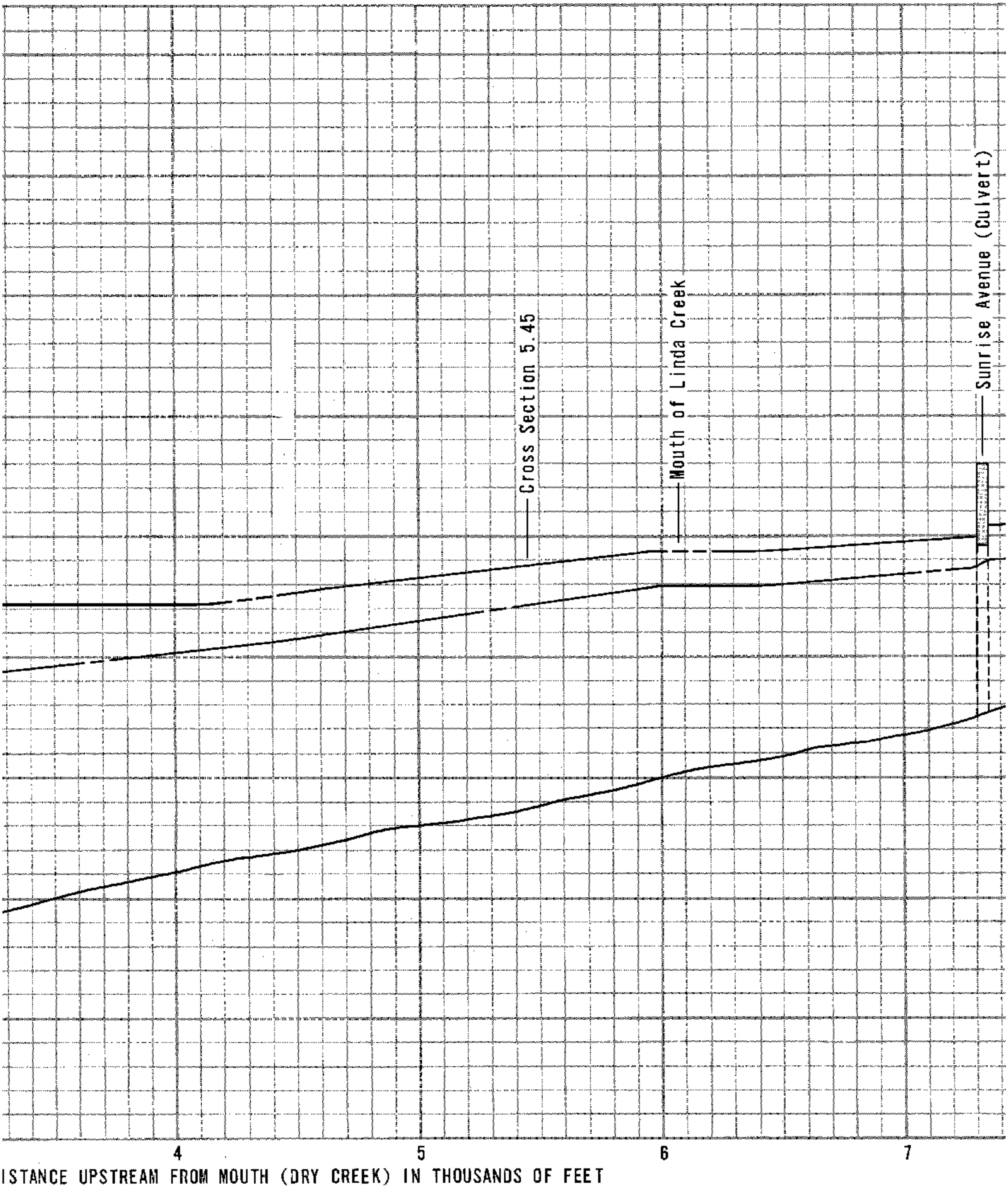
ANTELOPE CREEK

MAY 1973

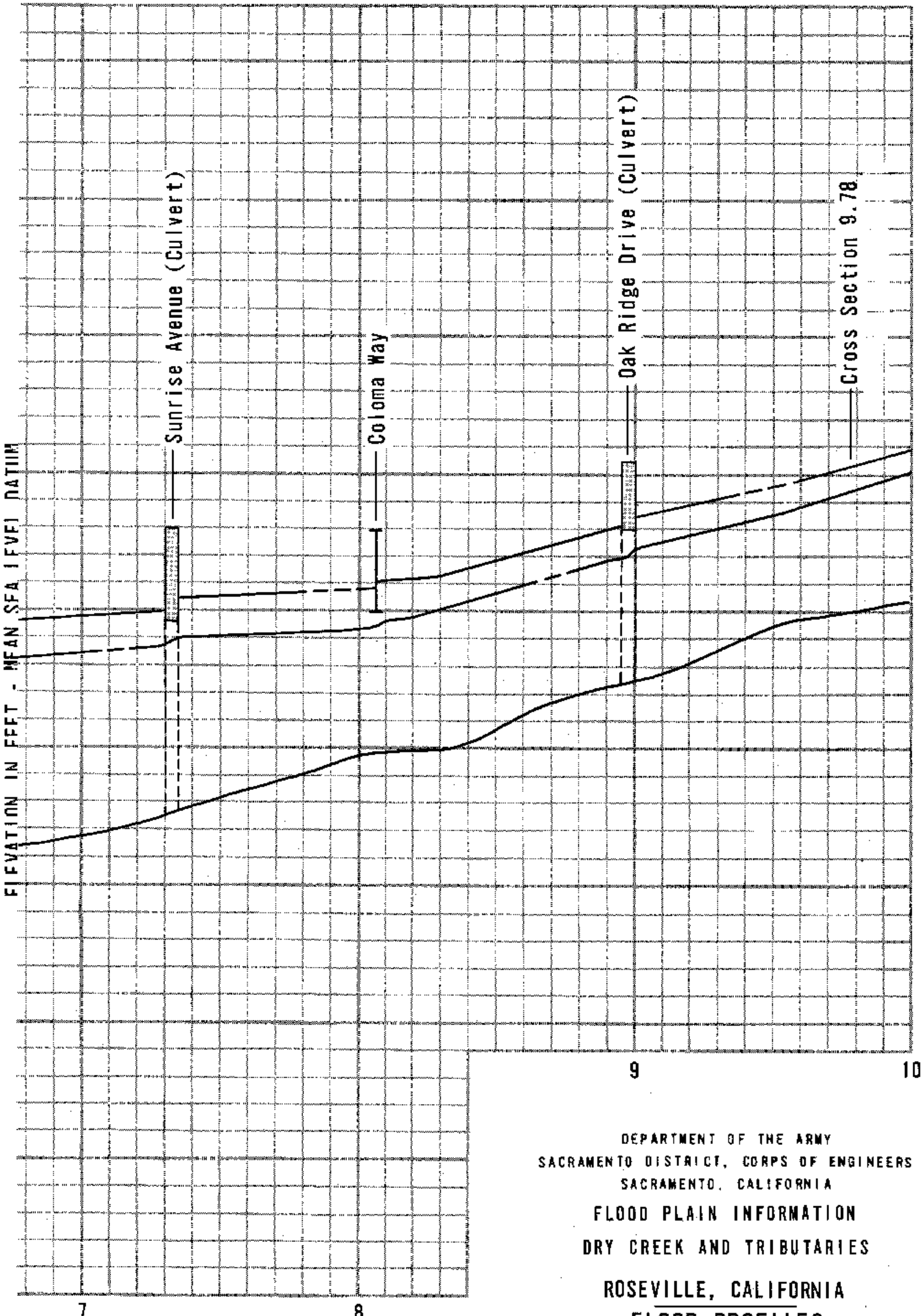
PLATE 10



LEGEND
Standard Project Flood
Intermediate Regional Flood
Streambed
Dry Creek
Cross Section 0.83
Interstate 80
ELEVATION IN FEET - MEAN SEA LEVEL DATUM
155
150
145
140
135
130
125
120
115
110
0
1
2
3
CIRBY CREEK - DISTANC



Cross Section 5.45
Mouth of Linda Creek
Sunrise Avenue (Culvert)
4
5
6
7
ISTANCE UPSTREAM FROM MOUTH (DRY CREEK) IN THOUSANDS OF FEET



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SACRAMENTO, CALIFORNIA

FLOOD PLAIN INFORMATION

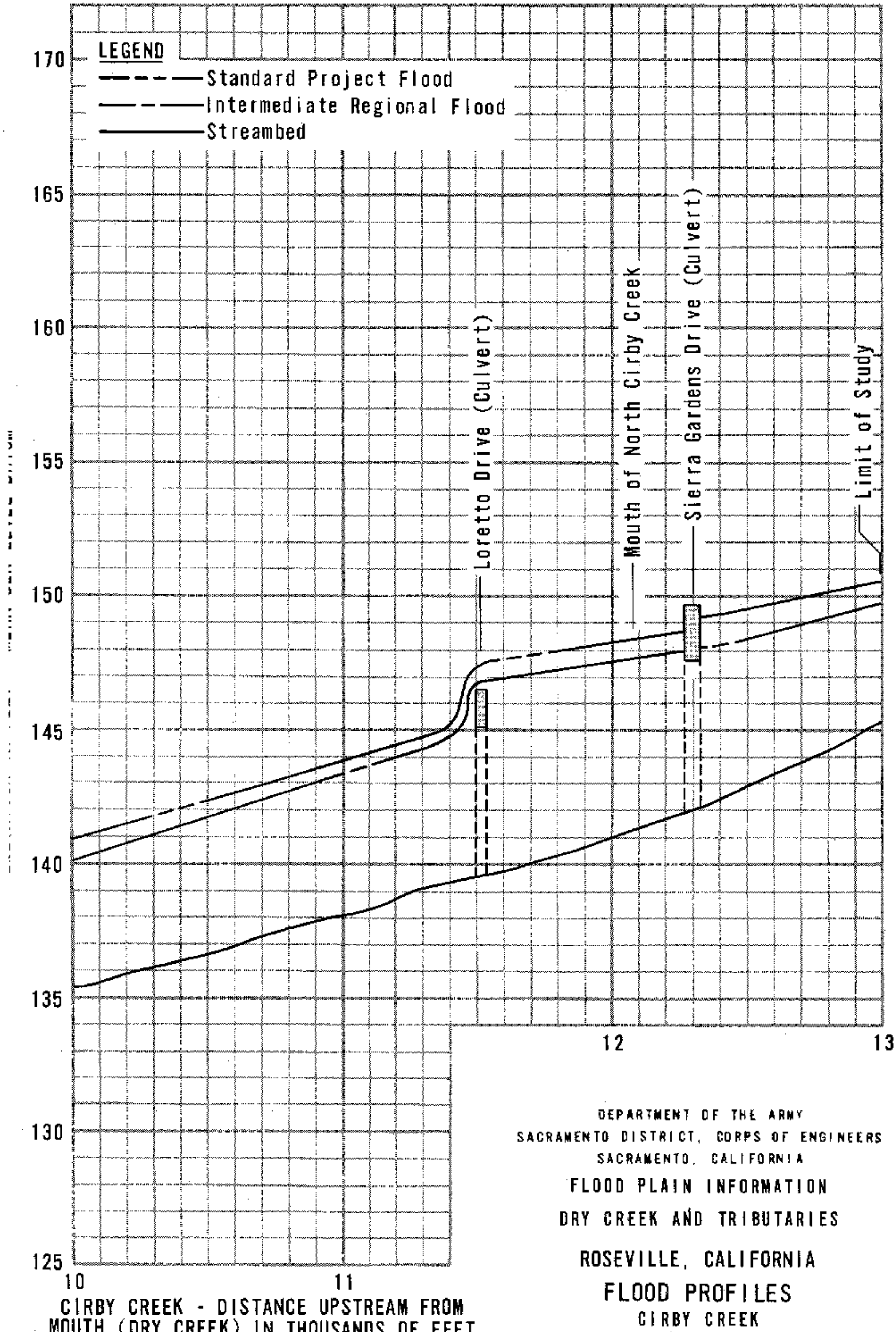
DRY CREEK AND TRIBUTARIES

ROSEVILLE, CALIFORNIA

FLOOD PROFILES

CIRBY CREEK
MAY 1973

PLATE 11



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FLOOD PLAIN INFORMATION

DRY CREEK AND TRIBUTARIES

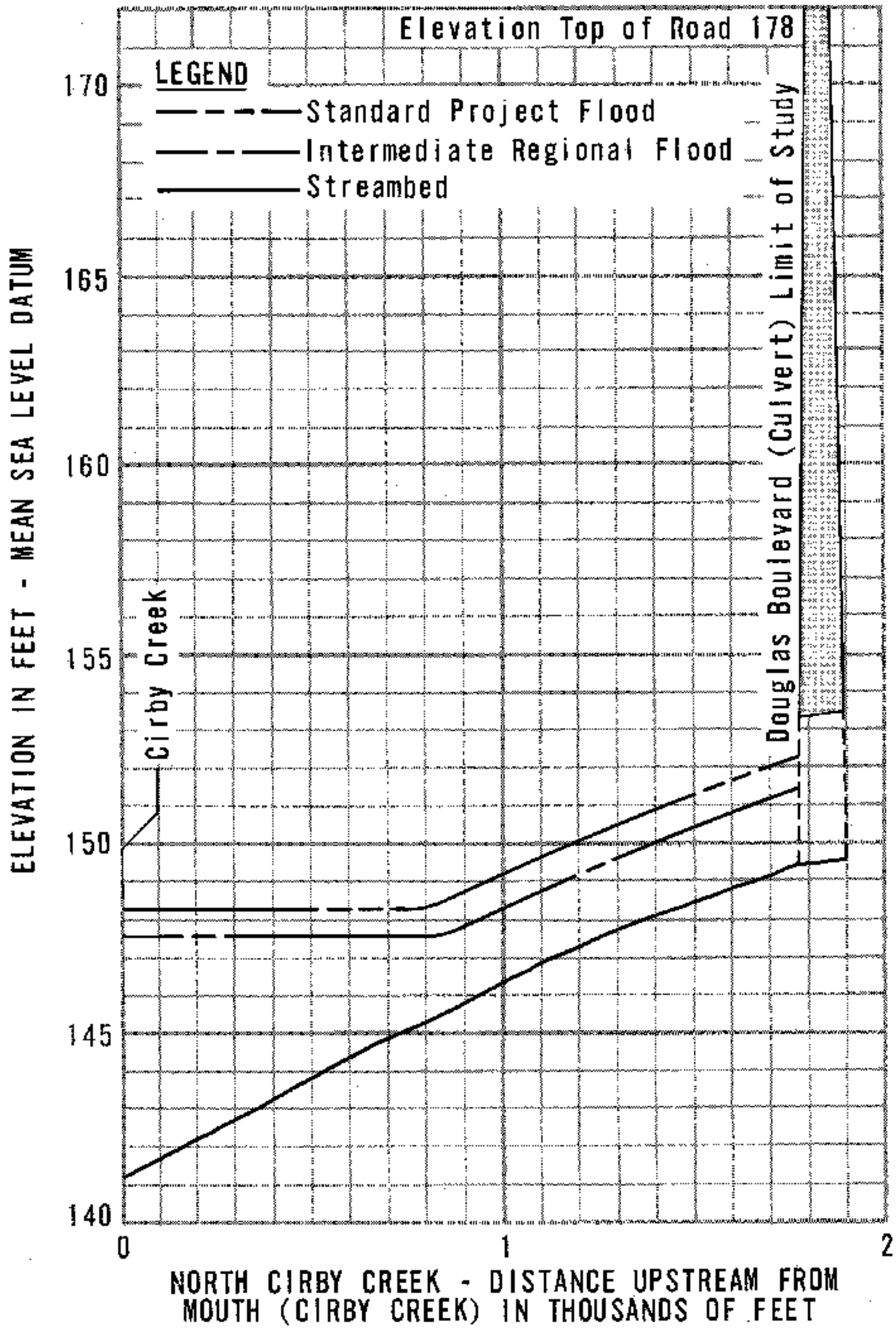
ROSEVILLE, CALIFORNIA

FLOOD PROFILES

CIRBY CREEK

MAY 1973

PLATE 12



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FLOOD PLAIN INFORMATION

DRY CREEK AND TRIBUTARIES

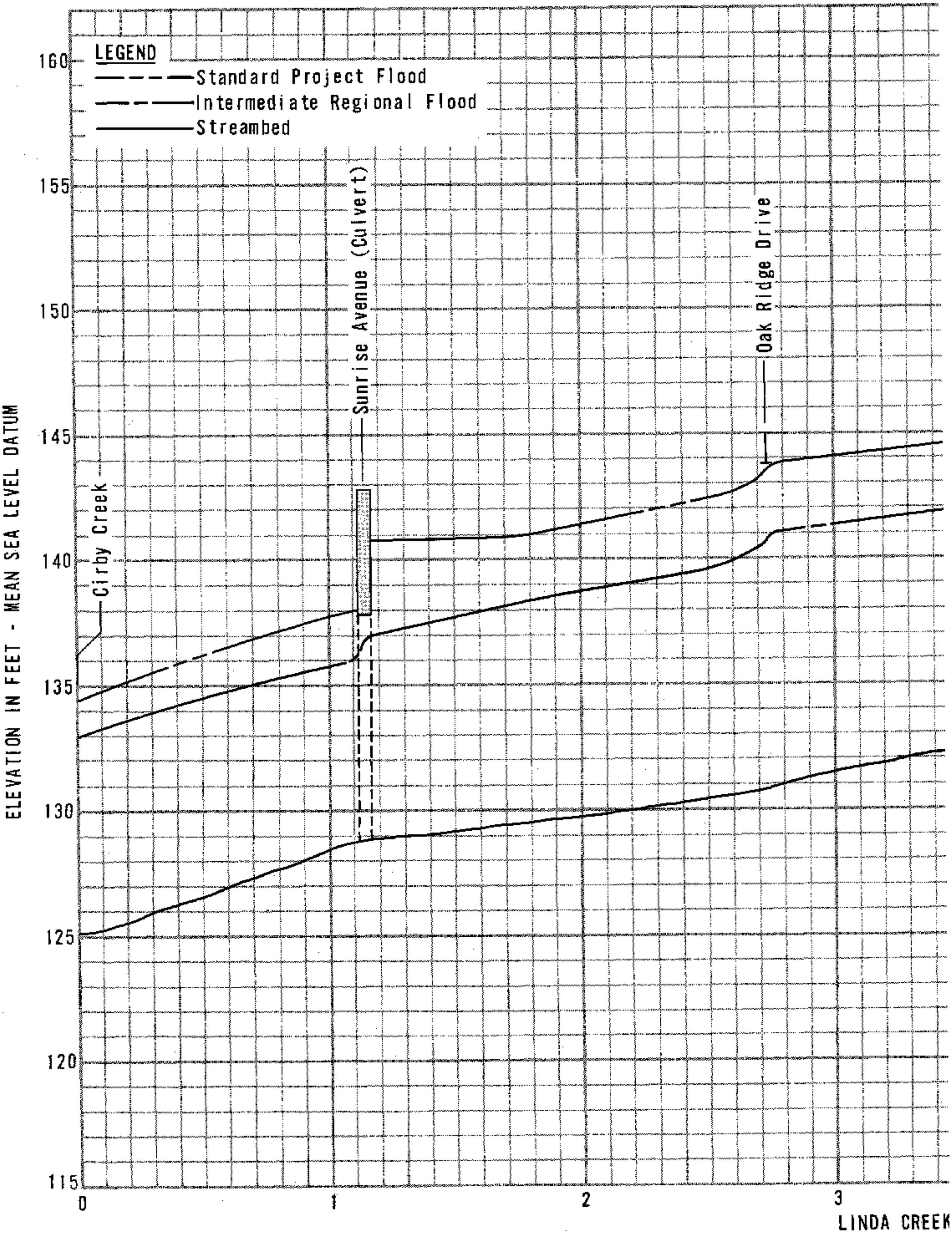
ROSEVILLE, CALIFORNIA

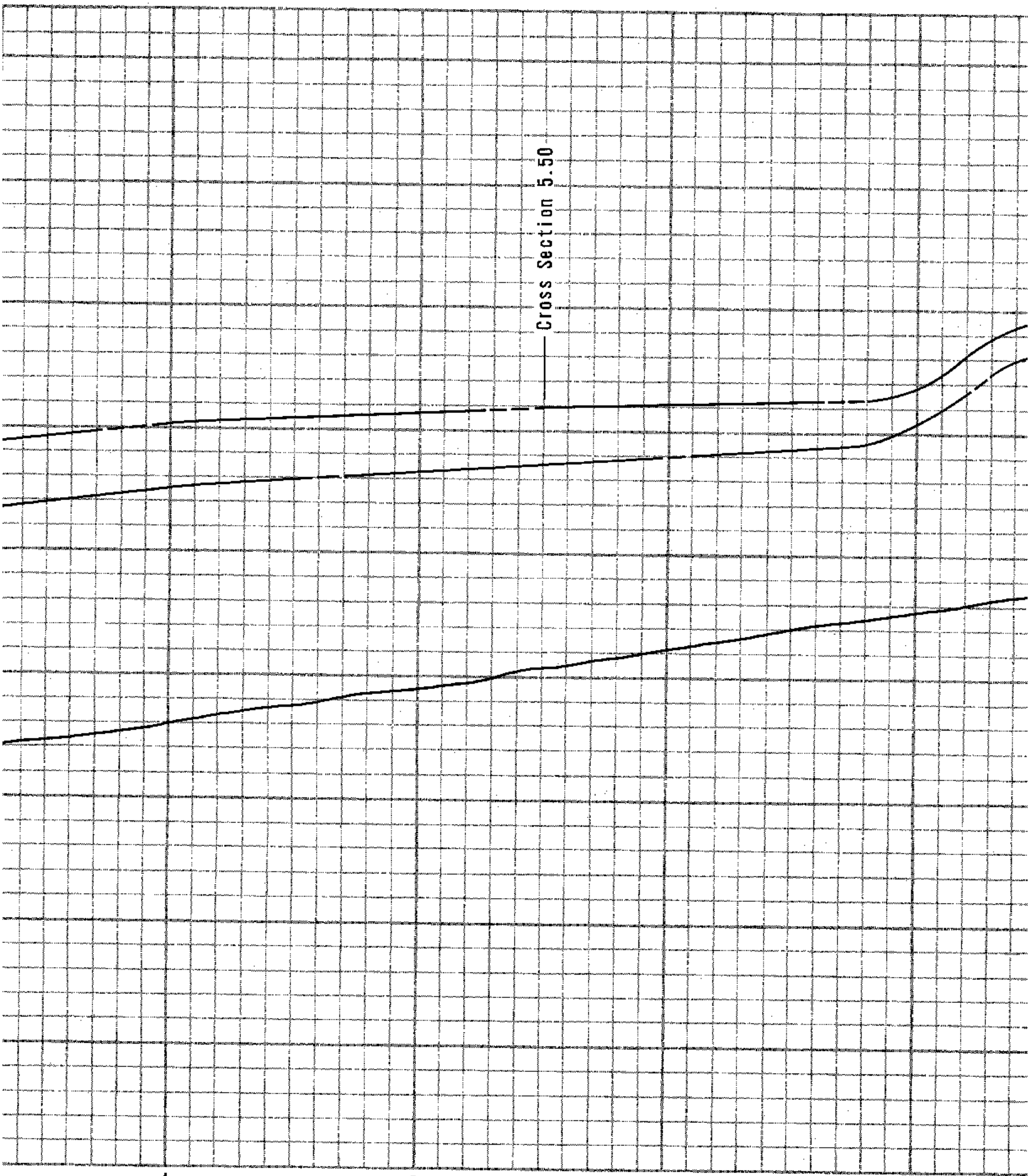
FLOOD PROFILES

NORTH CIRBY CREEK

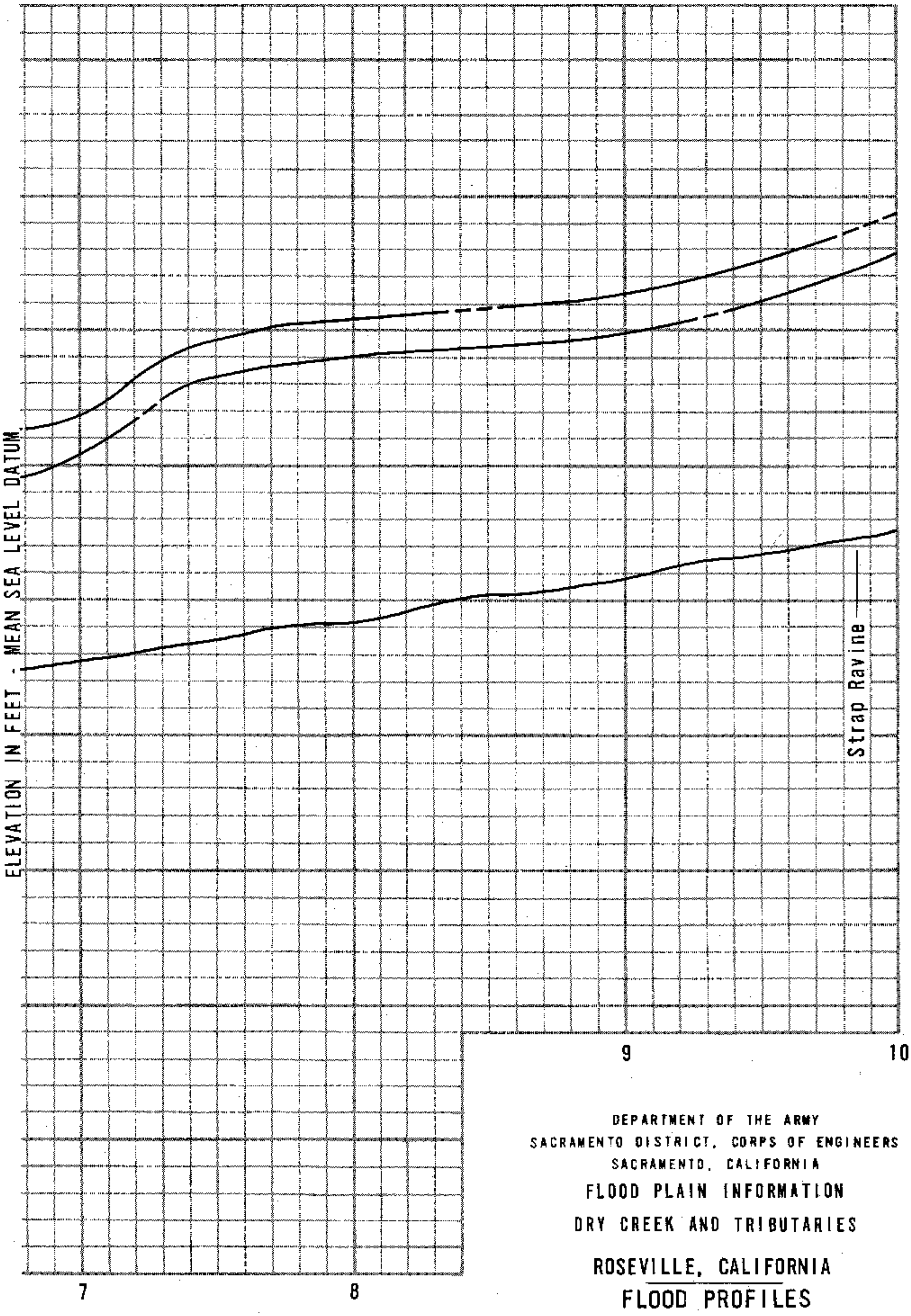
MAY 1973

PLATE 13


LEGEND
Standard Project Flood
Intermediate Regional Flood
Streambed
ELEVATION IN FEET - MEAN SEA LEVEL DATUM
160
155
150
145
140
135
130
125
120
115
0
1
2
3
Cirby Creek
Sunrise Avenue (Culvert)
Oak Ridge Drive
LINDA CREEK



EEK - DISTANCE UPSTREAM FROM MOUTH (CIRBY CREEK) IN THOUSANDS OF FEET



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SACRAMENTO, CALIFORNIA

FLOOD PLAIN INFORMATION

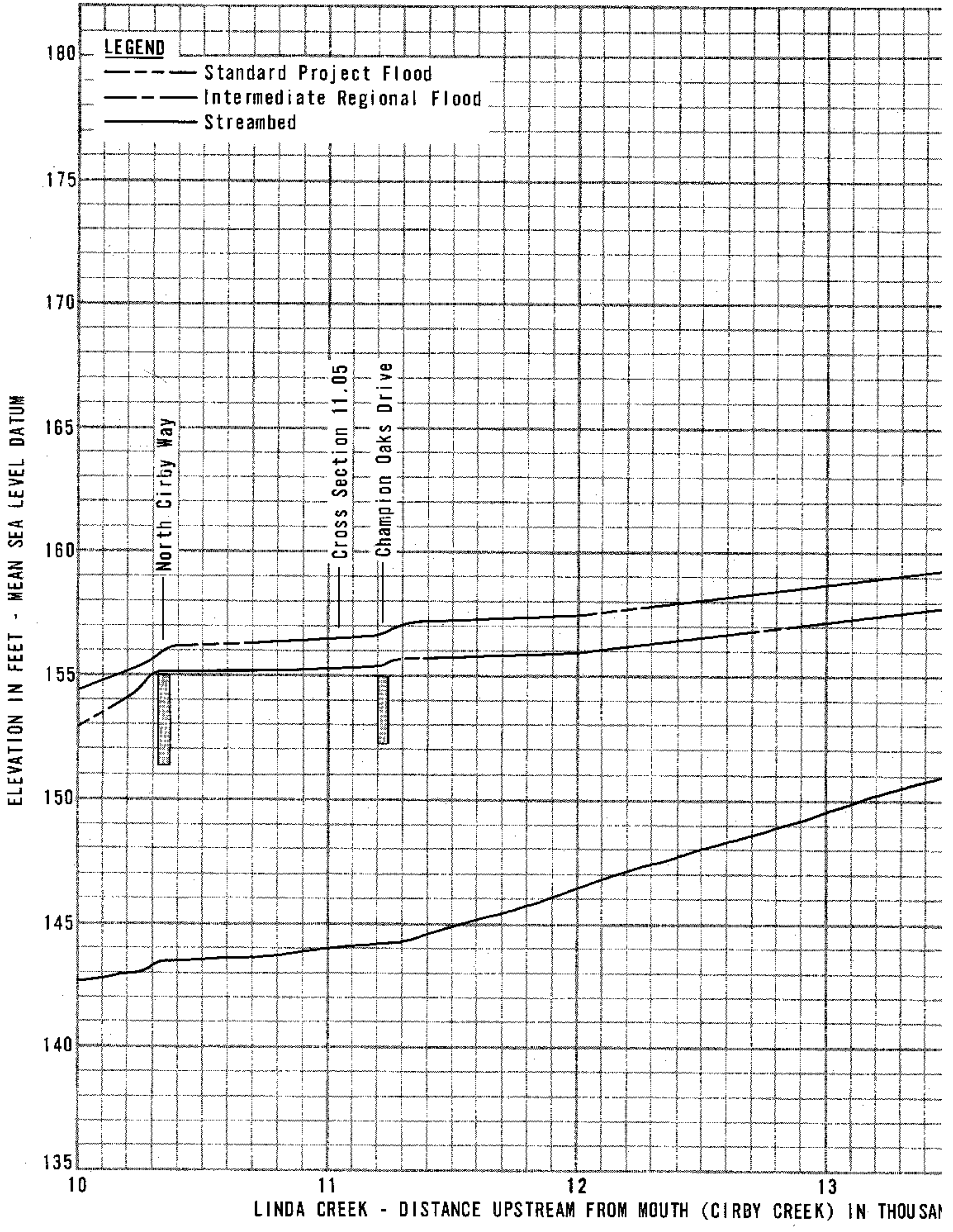
DRY CREEK AND TRIBUTARIES

ROSEVILLE, CALIFORNIA

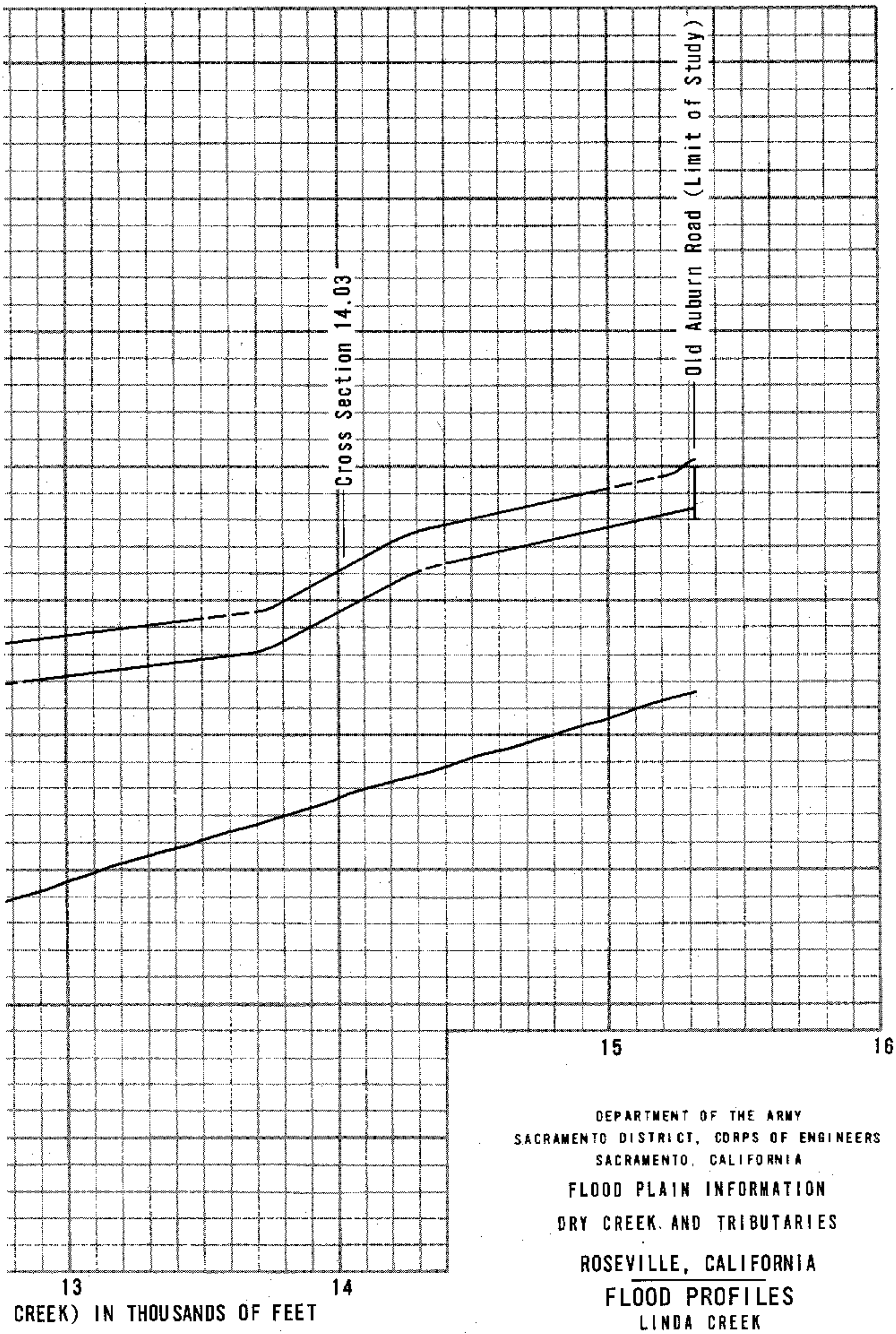
FLOOD PROFILES

LINDA CREEK
MAY 1973

PLATE 14



LEGEND
Standard Project Flood
Intermediate Regional Flood
Streambed
North Cirby Way
Cross Section 11.05
Champion Oaks Drive
ELEVATION IN FEET - MEAN SEA LEVEL DATUM
180
175
170
165
160
155
150
145
140
135
10
11
12
13
LINDA CREEK - DISTANCE UPSTREAM FROM MOUTH (CIRBY CREEK) IN THOUSAN



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SACRAMENTO, CALIFORNIA

FLOOD PLAIN INFORMATION

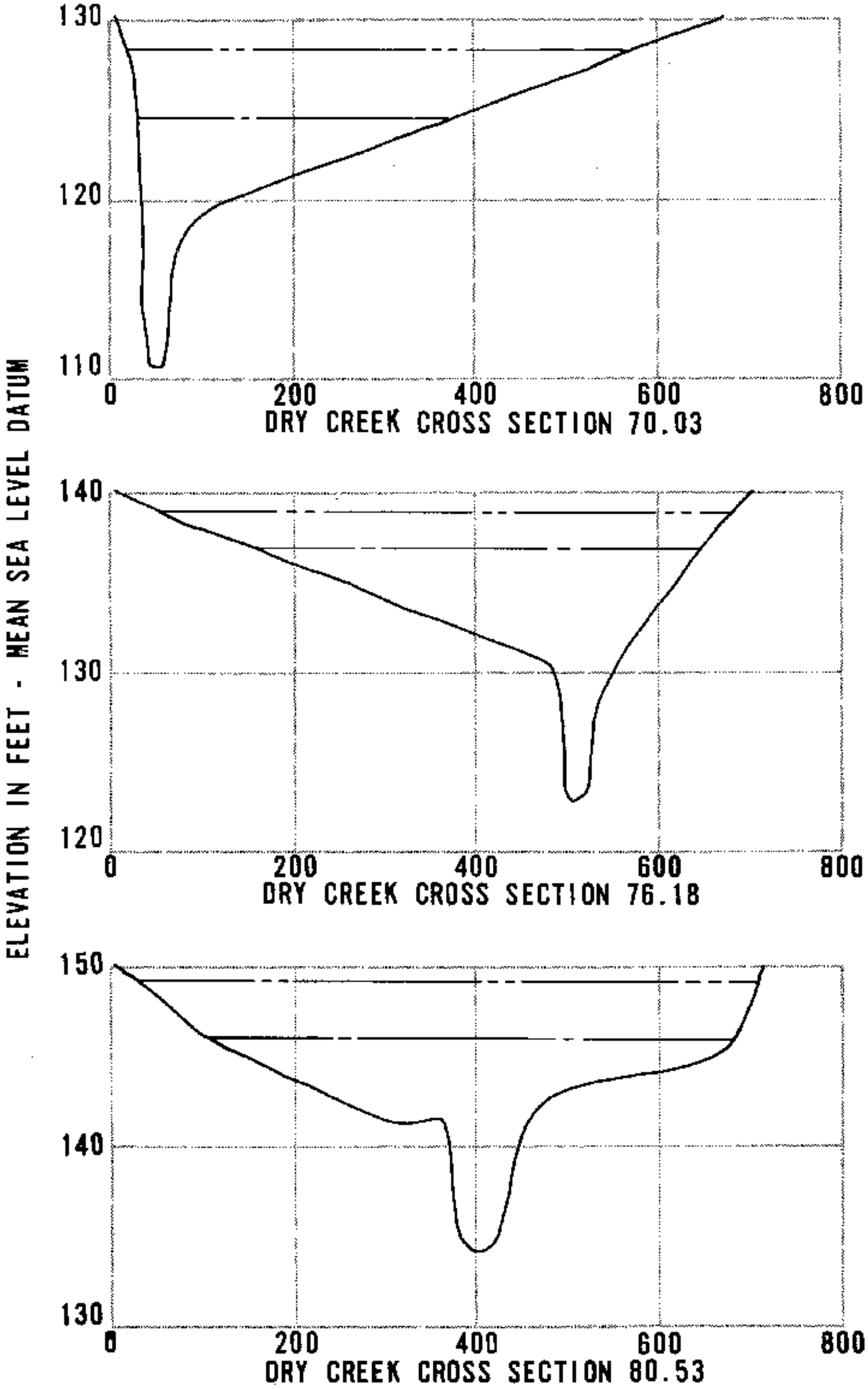
DRY CREEK AND TRIBUTARIES

ROSEVILLE, CALIFORNIA

FLOOD PROFILES

LINDA CREEK

MAY 1973



LEGEND

—·-·— Standard Project Flood

—·—— Intermediate Regional Flood

——— Ground Line

NOTES

Cross sections are viewed in direction of flow.

All horizontal distances are in feet.

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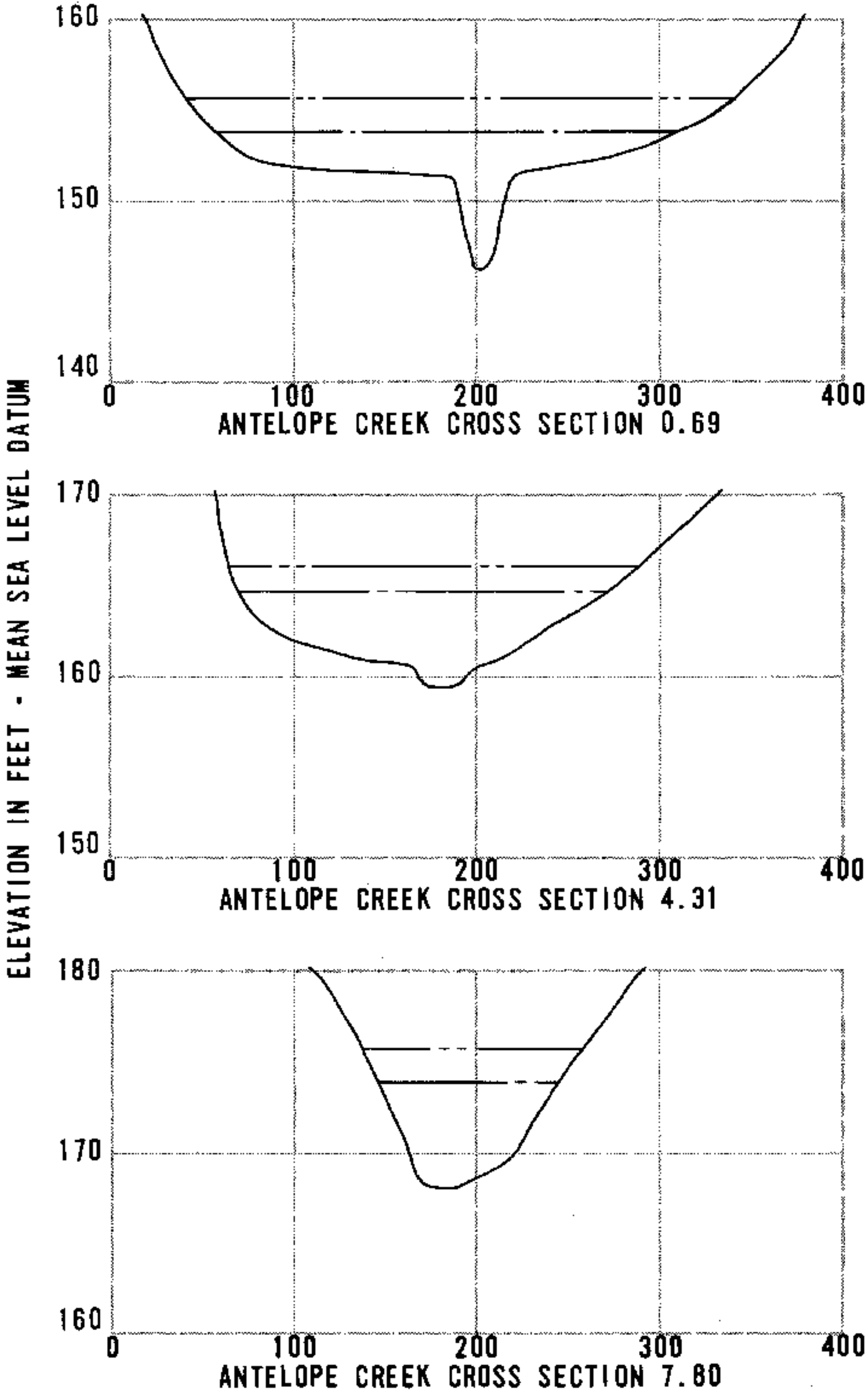
SACRAMENTO, CALIFORNIA

FLOOD PLAIN INFORMATION

DRY CREEK AND TRIBUTARIES

ROSEVILLE, CALIFORNIA

CROSS SECTIONS
DRY CREEK
MAY 1973



LEGEND

———- - - —— Standard Project Flood

———- - —— Intermediate Regional Flood

———~~—— Ground Line

NOTES

Cross sections are viewed in direction of flow.

All horizontal distances are in feet.

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SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

FLOOD PLAIN INFORMATION

DRY CREEK AND TRIBUTARIES

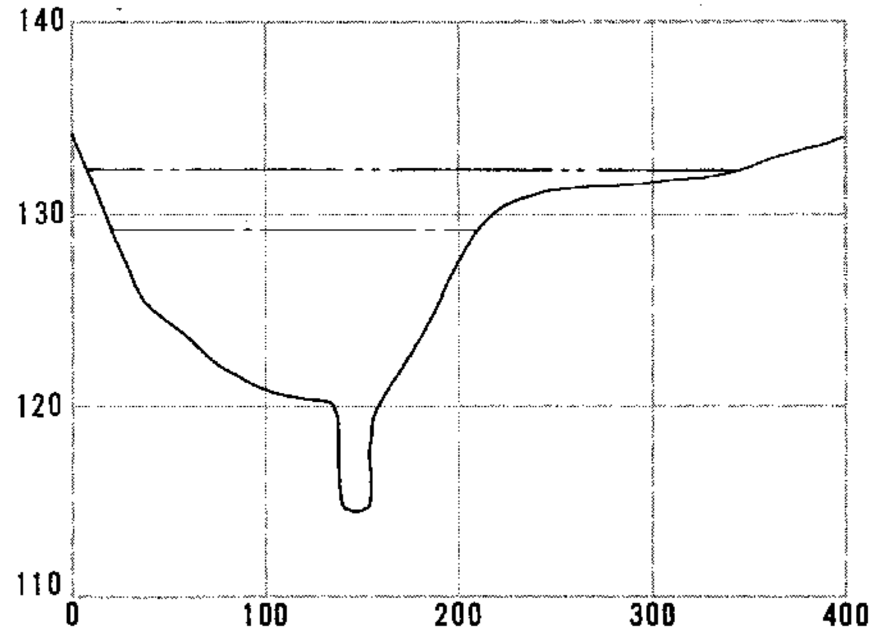
ROSEVILLE, CALIFORNIA

CROSS SECTIONS

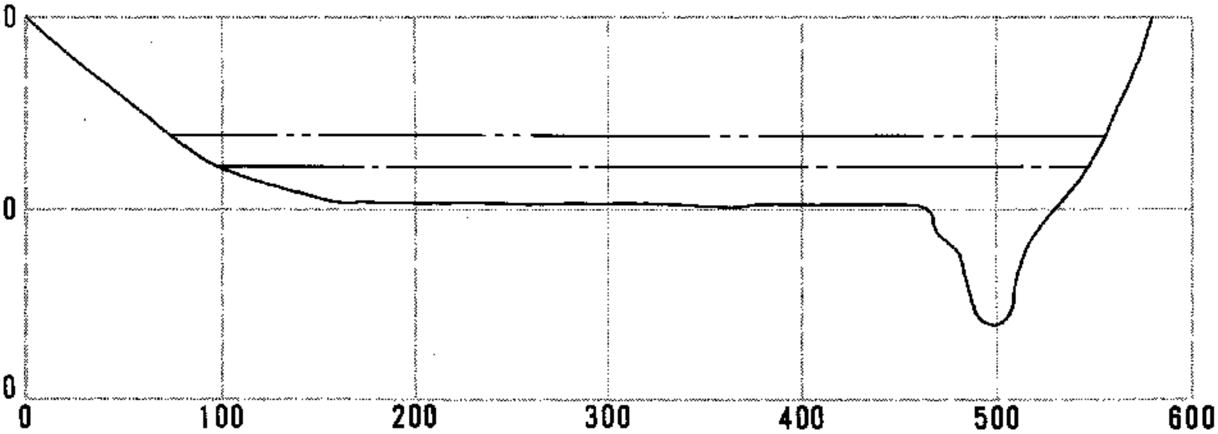
ANTELOPE CREEK
MAY 1973

PLATE 17

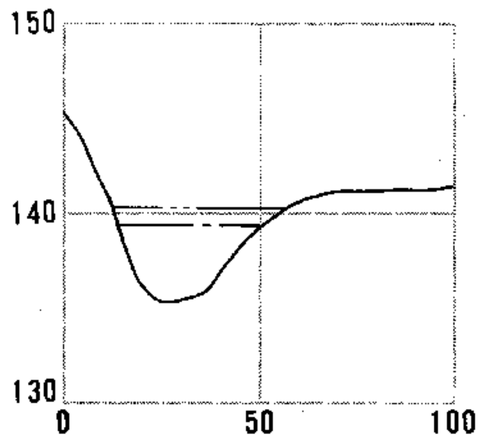
ELEVATION IN FEET - MEAN SEA LEVEL DATUM



CIRBY CREEK CROSS SECTION 0.83



CIRBY CREEK CROSS SECTION 5.45



CIRBY CREEK CROSS SECTION 9.78

LEGEND

- Standard Project Flood
- Intermediate Regional Flood
- Ground Line

NOTES

Cross sections are viewed in direction of flow.

All horizontal distances are in feet.

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FLOOD PLAIN INFORMATION

DRY CREEK AND TRIBUTARIES

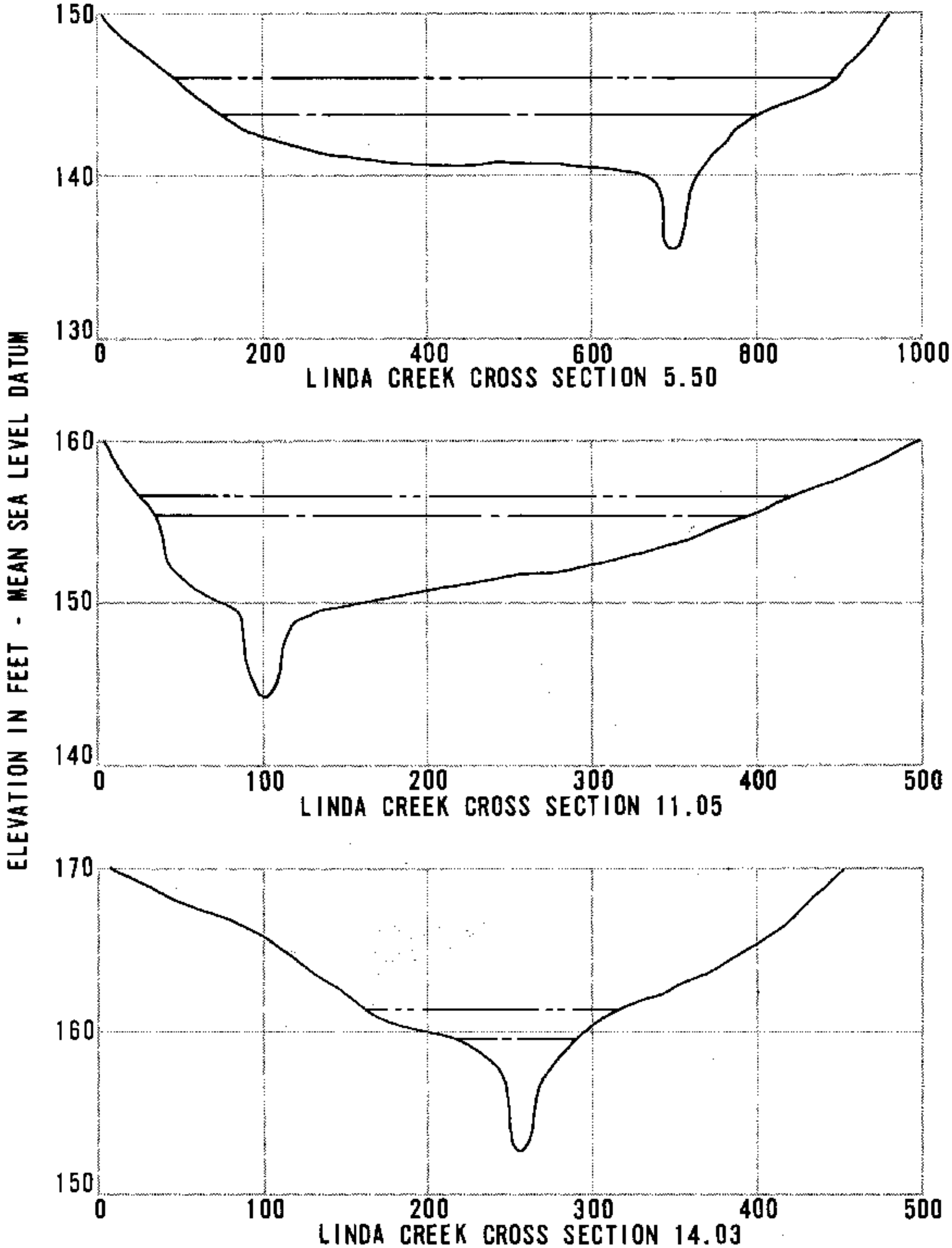
ROSEVILLE, CALIFORNIA

CROSS SECTIONS

CIRBY CREEK

MAY 1973

PLATE 18



LEGEND

—·—·— Standard Project Flood

—·—·— Intermediate Regional Flood

~~~~ Ground Line

NOTES

Cross sections are viewed in direction of flow.

All horizontal distance are in feet.

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SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

FLOOD PLAIN INFORMATION

DRY CREEK AND TRIBUTARIES

ROSEVILLE, CALIFORNIA

CROSS SECTIONS
LINDA CREEK
MAY 1973

PLATE 19
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ACTION is needed

Flood plains along Dry Creek and its tributaries in Roseville are being converted from their natural state and agricultural uses to commercial, industrial, and residential uses.

With continued community growth, greater pressure to utilize these flood prone areas will occur. Flood hazards and flood damage will continue to increase unless some preventive or corrective action is taken.

Effective regulatory measures such as flood plain zoning, subdivision regulations, and building codes can be adopted to prevent or minimize increase in flood damage. Floodproofing can prevent future damage to existing structures subject to flooding, and flood control works to modify flood patterns can also be a part of a long-range solution. The adoption of flood plain regulations, which is becoming more and more acceptable as a practical approach to reduction of future flood damage, would not prevent the highest and best use of flood prone areas.

Future flood heights, Dry Creek at the Southern Pacific Railroad crossing just upstream from PFE Road.

This folder has been prepared for the city of Roseville by the U.S. Army Corps of Engineers. It is partially based on data in the report entitled, "Flood Plain Information, Dry Creek and Tributaries, Roseville, California." Copies of the report and this folder are available upon request from the city of Roseville, 316 Vernon Street, Roseville, California 95678.

FLOODS

DRY CREEK and TRIBUTARIES

ROSEVILLE, CALIFORNIA

MAY 1973

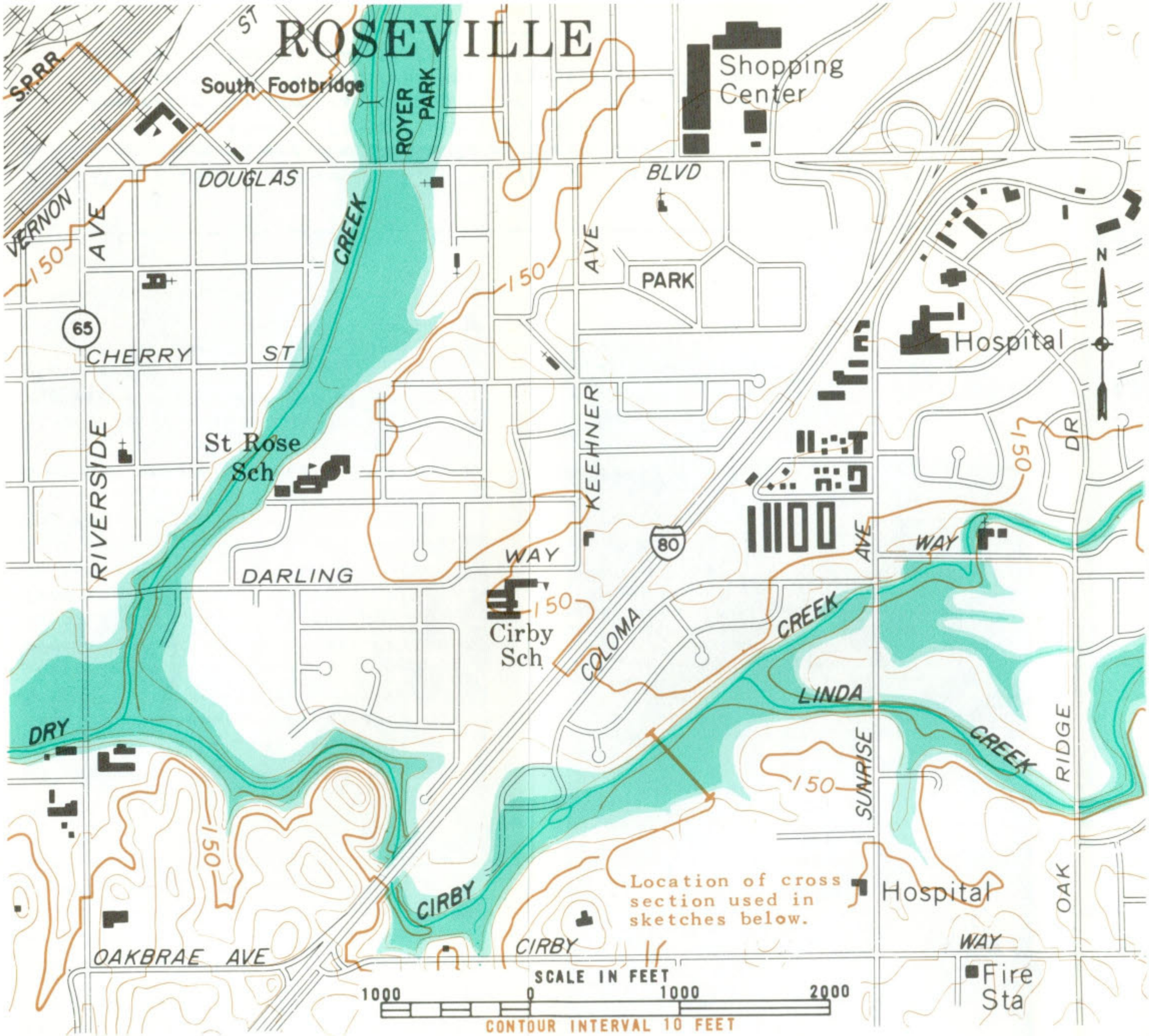
FLOODS on DRY CREEK and TRIBUTARIES

Roseville has suffered damage from large floods along Dry Creek and its tributaries in the past. Studies made for a flood plain information (FPI) report in the Roseville area show that floods of similar magnitude can occur on these streams in the future. The FPI report presents facts on the flood potential and flood hazard along Dry Creek and its tributaries in Roseville. It includes maps, drawings, and photographs that illustrate the extent and severity of future floods that have been designated as the Intermediate Regional Flood (IRF) and Standard Project Flood (SPF). An IRF is a large flood that can be expected to occur once in 100 years on the average, but could occur in any given year. A SPF is an extremely large flood, but one that can reasonably be expected to occur in the future. It would be a much greater flood than an IRF, but still could occur in any particular year.

The purpose of FPI reports is to provide a basis for managing the use of flood prone lands in such a way that flood hazards and damage during future floods are minimized or eliminated.

The intersection of Champion Oaks Drive and Hurst Way as it appeared during the 1962 flood. (Photo Courtesy of the Roseville Department of Public Works.)

Future flood heights, Linda Creek at Champion Oaks Drive and Hurst Way.



FLOOD PATTERNS at ROSEVILLE, CALIFORNIA

LEGEND

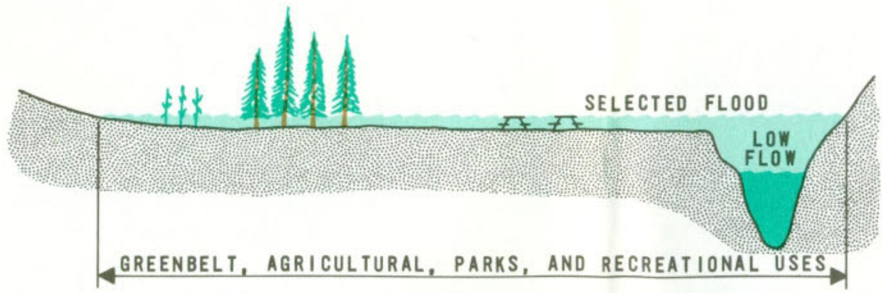
Approximate limits of overflow

- NORMAL STREAM
- INTERMEDIATE REGIONAL FLOOD
- STANDARD PROJECT FLOOD

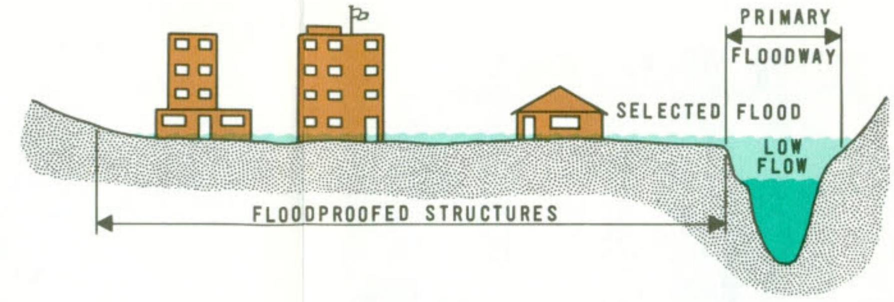
Maps and other illustrations for the entire study area (from the sewage treatment plant upstream along Dry Creek to the mouth of Antelope Creek, Antelope Creek from its mouth upstream to the city limits, Cirby Creek from its mouth upstream to the vicinity of Sierra Gardens Drive, North Cirby Creek from its mouth upstream to Douglas Boulevard, and Linda Creek from its mouth upstream to Old Auburn Road) are contained in the FPI Report.

FLOOD PLAIN MANAGEMENT MEASURES USABLE FOR THE REDUCTION OF FLOOD DAMAGE

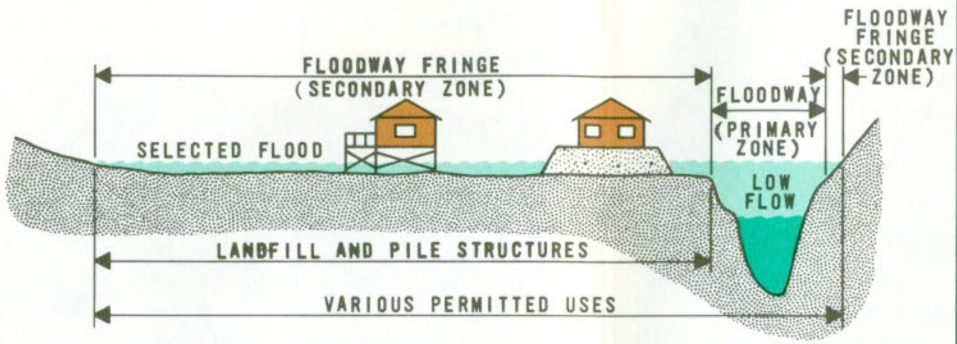
PREVENTIVE MEASURES



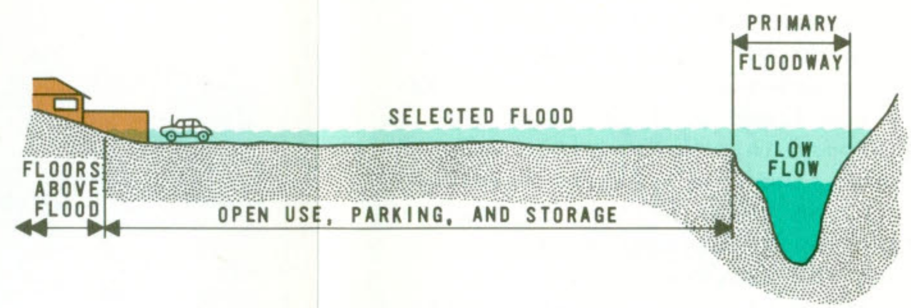
OPEN SPACE DEVELOPMENT



FLOOD PROOFING



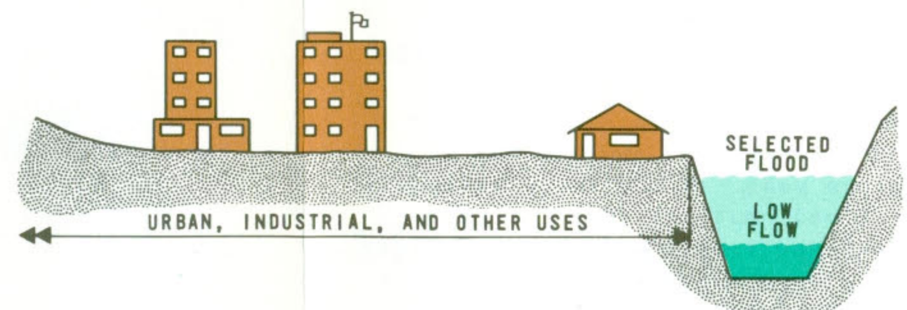
ZONING ORDINANCES



DEVELOPMENT POLICIES

CORRECTIVE MEASURES

LEVEES OR FLOOD WALLS



CHANNEL IMPROVEMENTS

PREVENTIVE MEASURES REDUCE VULNERABILITY TO FLOOD DAMAGE AND PROVIDE FOR GREATER FLEXIBILITY IN LAND USE MANAGEMENT, OFTEN AT MINOR COST AND WITH LITTLE ADVERSE EFFECT ON THE ENVIRONMENT. OTHER PREVENTIVE MEASURES INCLUDE SUBDIVISION REGULATIONS, BUILDING CODES, HEALTH REGULATIONS, DEVELOPMENT POLICIES, TAX ADJUSTMENTS, WARNING SIGNS, AND FLOOD INSURANCE. CORRECTIVE MEASURES ARE OFTEN REQUIRED TO ALLEVIATE EXISTING FLOOD PROBLEMS AND FORESTALL FUTURE PROBLEMS. OTHER CORRECTIVE MEASURES INCLUDE WATERSHED TREATMENT, EVACUATION, FLOOD FORECASTING, AND URBAN REDEVELOPMENT. PREVENTIVE AND CORRECTIVE MEASURES MAY BE USED BY THEMSELVES OR IN VARYING COMBINATIONS TO MEET THE SPECIFIC NEEDS OF A PARTICULAR FLOOD PRONE AREA. PUBLIC SUPPORT IS NECESSARY TO OBTAIN NEEDED FLOOD DAMAGE REDUCTION THROUGH FLOOD PLAIN MANAGEMENT MEASURES.