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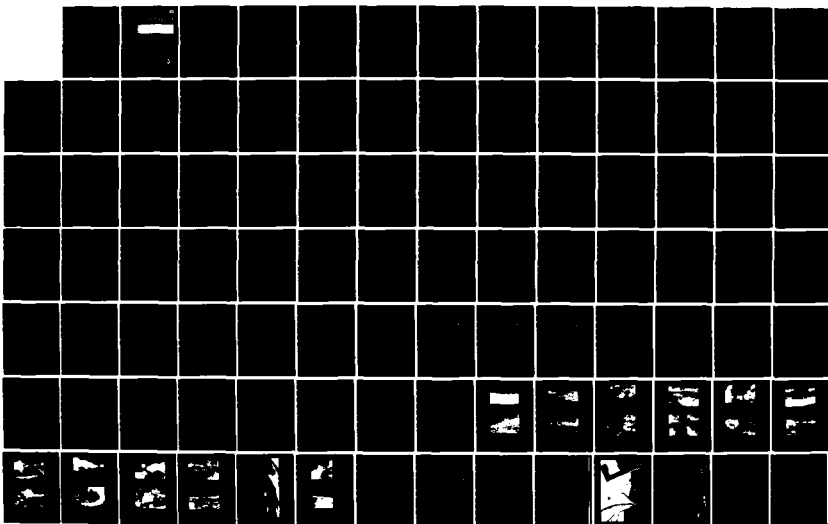
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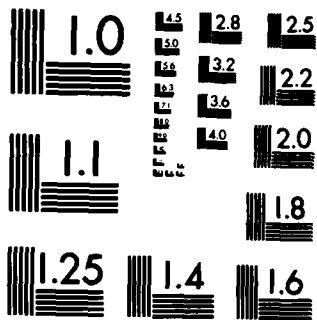
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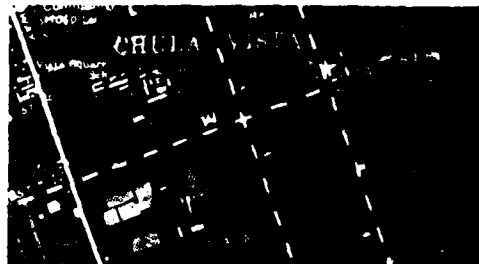


US Army Corps
of Engineers
Los Angeles District

AD-A150 163

telegraph canyon creek City of Chula Vista

San Diego County, California



main report

Detailed Project Report for
Flood Control
and
Final Environmental
Impact Statement

July 1983

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Volume I

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TELEGRAPH CANYON CREEK
CITY OF CHULA VISTA
SAN DIEGO COUNTY, CALIFORNIA

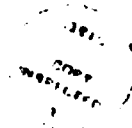
MAIN REPORT

DETAILED PROJECT REPORT FOR FLOOD CONTROL
AND
FINAL ENVIRONMENTAL IMPACT STATEMENT

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SYLLABUS

This Detailed Project Report concerning Telegraph Canyon Creek is submitted under the authority contained in Section 205 of the Flood Control Act of 1948, as amended. Study under this authority was requested by the County of San Diego and the City of Chula Vista, and was approved.

Telegraph Canyon Creek Basin is an elongated drainage area comprising about 4,800 acres, or 7.5 square miles, in San Diego County. It is located about 8 miles south of the City of San Diego. The creek flows through unincorporated County territory and the City of Chula Vista.

The Telegraph Canyon Creek study originally considered all of Telegraph Canyon Creek from its headwaters in the San Miguel Mountains to the San Diego Bay. This detailed project report, however, is principally concerned with the lower 2.5-mile reach which begins downstream of Hilltop Drive and continues to the San Diego Bay. It was this reach of the creek that was found to have water-resource-related problems that warrant further study.

The study area has been broken into two reaches. Reach I comprises the 1.6-miles from San Diego Bay to a point 500 feet upstream from 4th Avenue. Reach II comprises the 0.9-mile reach from a point 500 feet upstream from 4th Avenue to Hilltop Drive.

Flood problems result from floodwaters exceeding the capacity of the stream channel and existing culverts, and then overflowing onto adjacent residential, commercial, and industrial properties. The creek channel that might have been adequate to convey intermittent floodflows when Chula Vista was primarily an agricultural community has become inadequate with the present level of urbanization.

About 84 percent, or about 283 acres, of the 337-acre standard project flood plain in the study area has been developed to urban use. The remaining developable land within the study area, much of which at present is in scattered small parcels adjacent to existing development, should be developed into urban uses according to estimates contained in the Chula Vista General Plan 1990. About 9 acres of land outside the 100-year flood plain suitable for residential and industrial use are expected to be developed before 1990 with or without flood control. About 4 acres of land in the 100-year flood plain suitable to industrial use are expected to be developed before 1990, assuming flood control would be provided.

Because of the serious potential flood hazard to a highly developed area, the County of San Diego and the City of Chula Vista have sought aid to provide improvements along Telegraph Canyon Creek to protect the area.

Public participation played an important part in the study. The Telegraph Canyon Creek Citizens Advisory Committee was formed to assist in the development of alternative solutions to the flood problems. Numerous meetings to consider structural and nonstructural solutions were held with the County of San Diego, the City of Chula Vista, and the Advisory Committee.

In the interim, and prior to any flood control improvements, flood insurance is available to residents within the flood plain along Telegraph Canyon Creek under the National Flood Insurance Program administered by the Federal Emergency Management Agency.

A critical factor in the formulation of the plans is the capacity of the existing 1,240-foot-long culvert under Interstate 5. Any solution that requires the reconstruction of the culvert is not cost effective. Such reconstruction is estimated to cost about \$3 million.

A combination reservoir and channel plan could not be incrementally justified over the overall channel plan. In addition, the City of Chula Vista Department of Public Works has expressed opposition to the retention dam because of several reasons: Telegraph Canyon Road would have to be relocated; residential development has already taken place within the proposed reservoir site; extensive utility relocation would be required; and the topography of the area would restrict the number of viable north-south alignments for connection to Telegraph Canyon Road.

The recommendation of the Telegraph Canyon Creek Citizens Advisory Committee was for Plan M because the members desired a plan from Hilltop Drive to San Diego Bay. Their recommendation was that the Federal Government participate in Reach I and that local interests implement Reach II. Federal participation in Reach II was not warranted because bridge modifications represent the principal cost for this plan. Since this is a non-Federal cost, the Telegraph Canyon Creek Advisory Committee recommended that the plan for Reach II be implemented by San Diego County.

The selected plan would consist of (1) a 0.7-mile-long rectangular concrete-lined channel from a point about 500 feet upstream from 4th Avenue (near 3rd Avenue) to 0.3- miles upstream from Interstate 5; (2) a 0.3-mile-long section comprising double 10x12-foot boxes of covered channel connecting the rectangular channel to the existing 0.2-mile culvert under Interstate 5, which would be incorporated into the project; (3) a 0.3-mile-long concrete trapezoidal channel downstream from Interstate 5; and (4) a 0.1 mile-long earth-bottom trapezoidal channel leading into the San Diego Bay. This plan would provide protection from a 100-year flood. In Reach II, there would be some bridge modifications and channel clearing. Construction of Reach I improvements is not dependent upon construction in Reach II.

The channel upstream of the double-box culvert was initially designed to have above-ground walls, ranging in height from zero to 16 feet, for a distance of 850 feet. This was to induce sufficient head

for the 100-year peak discharge to be conveyed through the culvert under Interstate 5. Following submittal of this plan as part of the Final Detailed Project Report in April 1980, both the County of San Diego and the City of Chula Vista requested by resolution that the project be restudied. Their major concerns were that the channel walls were too high in the reach just upstream of the box culvert, and the major utilitites downstream of Interstate 5 required cost-prohibitive relocations. In response to the resolutions from the local interests, the Army Corps of Engineers, Los Angeles District requested additional funding in order to proceed with design modifications.

A model study investigating the feasibility of replacing the high channel walls with a box culvert was performed by the Waterways Experiment Station. The results of the study show that the box culvert can be extended 750 feet upstream of where the box culvert began in the April 1980 design, and that the remaining 100 feet of high wall section upstream of the covered section can be reduced to about 8 to 9 feet aboveground. Further, the problem of relocating a high-pressure gas line that is currently downstream of the freeway was solved by changing a section of the earth-bottom trapezoidal channel to a concrete trapezoidal channel. This allows higher velocity flow which, in turn, allows raising the channel bottom above the gas line, thereby precluding the need for the costly relocation. The current Final Detailed Project Report reflects these design modifications.

The design revisions and attendant increase in costs do not change plan formulation for this study nor do they affect the economic justification of the selected plan.

The total cost of the selected plan in Reach I including study costs would be \$5,390,000 (April 1983 price levels) with annual charges, not including study costs, of \$394,000 and annual benefits equal to \$430,000. The benefit-cost ratio would be 1.1.

The proposed project would have a minimal permanent impact upon the environment. Vegetation and wildlife habitat removed during the construction period would be permitted, in part, to reestablish. Maintenance and operation after construction, however, could periodically disturb vegetation and wildlife.

The concrete channel would reduce groundwater recharge along its length, affecting about 3 acres of natural channel. However, the quality of the groundwater is presently considered to be unsuitable for domestic and most irrigation uses.

Any small increase in urbanization in the study area would not result in an appreciable increase in air pollution levels or in noise levels.

There are no known surface paleontological or archeological resources or historical sites in the study area.

It is recommended that, subject to certain conditions of non-Federal cooperation as outlined in this report, the proposal for flood control in Reach I along Telegraph Canyon Creek be adopted for construction under the Small Project Authority, Section 205 of the 1948 Flood Control Act, as amended. The Federal cost limitation under Section 205 is currently \$4 million. The Federal cost for the plan would be \$4,000,000 (April 1983). Following construction, non-Federal interests would be required to maintain and operate all project features, at an estimated cost of \$9,000 annually.

TELEGRAPH CANYON CREEK, CITY OF CHULA VISTA
DETAILED PROJECT REPORT FOR FLOOD CONTROL
AND
DRAFT ENVIRONMENTAL IMPACT STATEMENT

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INTRODUCTION

The San Diego region has been influenced by Spanish and Mexican colonization ever since the discovery of San Diego Bay by Juan Rodriguez Cabrillo in 1542 and the founding of San Diego de Alcalá as the southernmost mission in California by Father Junipero Serra in 1769. The San Diego mission, originally located on a site in what is now called Old Town in the City of San Diego, became the first presidio in California in 1835. In 1845, the Mexican government granted the pueblo eleven leagues of land (48,884 acres). Its boundary lines inclosed about 75 square miles yet its population was less than ten to the square mile. During the decade between 1850 and 1860, the town made insignificant growth and little or nothing was done to develop the back country, which was held in vast Mexican grants. The famine years of 1863-64, which brought about the ruin of many cattle barons in southern California, served to retard agricultural development. The colonization era of the early 1870's that resulted in the subdivision of many ranchos and the founding of prosperous settlements in the north did not result in the founding of any colonies in what is now San Diego County. The early development and population of San Diego fluctuated from one extreme to another as hopes for the extension of stage line and railroad routes rose and fell, resulting in land booms and land busts. Early in 1887, the California Southern railroad was completed to Barstow, California. This railroad and the connecting railroads--the Atchison, Topeka, and Santa Fe and the Atlantic Pacific--formed a transcontinental system of which San Diego and National City comprised the western terminal. That event and the later construction of vast agricultural irrigation systems that resulted in the development of the back country had a stabilizing effect on the economy, and growth of the region subsequently progressed.

From its early history to the present, the natural harbor at San Diego has been a major factor in the economic development of the area. The permanent base maintained in the harbor by the U.S. Navy has resulted in military operations playing an important role in the growth of the area. Efforts to augment military operations with industrial and commercial development, along with increases in State and Federal services, have led to the current state of growth of the economy and population in the area.

Economic, social, and historical information concerning the Telegraph Canyon area is very limited. For that reason, and because the economy of the study area is dependent almost entirely on that of the greater San Diego area, the background material given above is pertinent to the study of Telegraph Canyon Creek.

STUDY AUTHORITY

Section 4 of the Flood Control Act of August 18, 1941, authorized and directed the Secretary of War to make surveys for flood control of "all streams in San Diego County, California, flowing into the Pacific

Ocean." Preparation of a draft interim feasibility report was in progress under this authority when communications were received from the County of San Diego, on January 19, 1977, and the City of Chula Vista, on May 11, 1977, requesting that Telegraph Canyon Creek be studied as a small project under the authority contained in Section 205 of the 1948 Flood Control Act, as amended.

The City and County requested such action because (1) the construction cost of the most likely solution was not expected to greatly exceed the (at that time) Federal cost limitation of \$2 million, and (2) the implementation of the program would be greatly accelerated under this authority. The Small Project Authority had contained the provision that the Federal cost limitation would be increased to \$3 million if a project protects an area which had been declared a major disaster area in a 5-year period preceding the date of project approval by the Chief of Engineers. Such declaration for San Diego County was made after the March 1978 flood. Recently, however, the Federal cost limitation has been increased to \$4 million regardless of whether or not an area has been declared a disaster area.

SCOPE OF THE STUDY

The Telegraph Canyon Creek study encompasses all of Telegraph Canyon Creek from its headwaters in the San Miguel Mountains to San Diego Bay. (See pl. 1.) This report, however, is concerned principally with water-related problems that occur in the 337-acre, highly-developed area within the standard project flood plain along a 2.5-mile reach downstream from Hilltop Drive (near 1st Avenue) to San Diego Bay. (See pl. 2.)

The study area has been broken into two reaches: Reach I comprises the 1.6-mile reach from San Diego Bay to a point 500 feet upstream of 4th Avenue (near 3rd Avenue). Reach II comprises the 0.9-mile reach from a point 500 feet upstream of 4th Avenue (near 3rd Avenue) to Hilltop Drive.

Photographs 1 through 23 show the study area. See plate 2 for location of the photographs.

STUDY PARTICIPANTS AND COORDINATION

Public participation has been an important goal throughout this study. A public meeting was held on May 15, 1968, at the initiation of the overall study of "all streams in San Diego County, California, flowing into the Pacific Ocean" to determine the character and extent of the improvements desired and the need and advisability of implementation. The Telegraph Canyon Creek Citizens Advisory Committee was formed on September 20, 1972, to assist the Corps in the development of alternative solutions to the flood problems on Telegraph Canyon Creek. Numerous meetings were held in 1972 and 1973 with members of the Advisory Committee, other concerned citizens, and representatives of the

City of Chula Vista and the San Diego County Department of Sanitation and Flood Control. The study was also coordinated with Federal agencies to obtain input and to insure results compatible with their interests.

During 1974, accumulated data was reevaluated to conform to new economic criteria and to comply with the Water Resources Council Principles and Standards for Planning Water and Related Land Resources.

A draft information brochure was presented to the Advisory Committee in April 1975. The information brochure was distributed to the public prior to the public meeting held on May 28, 1975. This meeting was held for the purpose of presenting alternative solutions.

Subsequent to that public meeting, the Telegraph Canyon Creek Citizens Advisory Committee recommended a combination structural and nonstructural solution. The Chula Vista City Council passed a resolution on October 21, 1975 recommending such solution for further detailed study. The County of San Diego Department of Sanitation and Flood Control endorsed that concept on December 4, 1975. The San Diego County Board of Supervisors passed a resolution to that effect on April 20, 1976.

In 1977, because the flood hazard potential for flood damage had increased so greatly, the County of San Diego and the City of Chula Vista requested that the study proceed in the most expeditious manner possible. Pursuant to these requests, further study under the authority of Section 205, Flood Control Act of 1948, as amended, was approved. A meeting was held with representatives of the City of Chula Vista Public Works Department and representatives of the County of San Diego Department of Sanitation and Flood Control in August 1978 to discuss the implementation of the study under the Small Project Authority. An informal meeting was held in September 1978 with the same personnel to discuss the draft information brochure and alternative solutions. By letter dated September 29, 1978, the City of Chula Vista Public Works Department reaffirmed its endorsement of a structural and nonstructural solution; the County of San Diego Department of Sanitation and Flood Control by letter dated November 10, 1978 also reaffirmed its support of such solution. Such reaffirmation was again approved by the Boards of the local sponsors in June 1983 to reflect the re-design of the selected plan.

STUDIES BY OTHERS

There are no recent detailed studies or reports made by others to evaluate flood control needs along Telegraph Canyon Creek. A flood insurance study for the City of Chula Vista has been completed by the State of California Department of Water Resources for the Federal Emergency Management Administration (formerly Federal Insurance Administration). This study includes the portion of Telegraph Canyon Creek within the city limits of Chula Vista.

The program enables property owners to buy flood insurance at a reasonable cost. In return for this, the government requires that the community carry out flood plain management measures and regulations which are designed to protect lives and any new construction from future flooding.

THE REPORT

This report comprises a main report (volume I) and nine appendixes (volume II). The main report presents (1) a history of the study process including the initial identification of the problem, formulation and evaluation of alternatives, plan selection, and finally project recommendations; and (2) a final environmental impact statement.

The main report presents the results of the feasibility study in a nontechnical fashion and recommends flood control and related improvements. The appendixes present more detailed data and analysis, and are briefly described below.

- o Appendix A - Public Views and Responses: This appendix contains correspondence received from the local interests, public agencies, and concerned citizens as a result of the public coordination program.
- o Appendix B - Problem Identification: This appendix contains data describing the existing condition, including census information and projected growth of the population and developments in the area. This information is also described in the main report.
- o Appendix C - Formulation, Assessment, and Evaluation of Detailed Plans: Contained herein is the systems of accounts table that describes each plan. It is this information that enabled the assessment and evaluation of alternatives.
- o Appendix D - Public Involvement Program: This appendix explains the coordination and meetings that have taken place amongst the Corps of Engineers, the Telegraph Canyon Creek Citizens Advisory Committee, the County of San Diego, and the City of Chula Vista.
- o Appendix E - Hydrology: The hydrologic data used for design of the channel plans are contained in this appendix.
- o Appendix F - Design and Cost: In detailing the design and cost of the project, this appendix describes the hydraulic, structural, and geotechnical design criteria and features, and estimates costs for all project features including real estate and esthetic treatment.
- o Appendix G - Recreation and Beautification: This appendix gives the rationale for not developing a recreation plan, and outlines a plan and cost for esthetic treatment along sections of the channel.

- o Appendix H - fish and Wildlife: Correspondence and coordination information between the Corps of Engineers and Fish and Wildlife Service are contained in this appendix.
- o Appendix I - Economics: In evaluating the alternatives economically, this appendix describes the procedure for determining economic justification of the alternative plans.

STUDY PROCESS

The study process was conducted in two distinct stages. The first stage addressed identification of problems and needs and the formulation of an array of alternatives to meet the needs. This stage concluded with the identification of a single plan that best met the needs of the study area and would be carried forward into the next study stage. The second stage concentrated on developing the detailed design features, detailed cost estimates, detailed evaluation of impacts, and the division of plan responsibilities for the recommended plan.

PROBLEM IDENTIFICATION

Telegraph Canyon Creek originates at an elevation of about 800 feet in the gently dipping southwest lower slopes of the San Miguel Mountains. After the stream leaves the highlands, it flows across a wide aggraded valley through an unincorporated area of San Diego County. It then flows through the City of Chula Vista, which is about 8 miles south of downtown San Diego, and finally empties into the southern part of the J Street Marsh in South San Diego Bay. The total length of flow is about 9 miles. (See pls. 1, 2, and 3.)

Telegraph Canyon Creek, like most streams in the Pacific Southwest, flows only during and immediately following rainstorms. In its upper reach, east of Interstate 805, the stream is confined to the bottom of Telegraph Canyon. Downstream, however, a different situation prevails.

Urban development began to encroach upon agriculture particularly along the lower reach of Telegraph Canyon as increasing numbers of people migrated to the San Diego region during and after World War II. Paving of surface areas for roads and the construction of buildings, among other urbanization activities, increased rainfall runoff. The creek channel that might have been adequate to convey intermittent flood flow when Chula Vista was primarily an agricultural community has become inadequate for the present level of urbanization. Most of the current (1983) population in the drainage area is centered in the lower one-third of Telegraph Canyon Creek. In this area, the creek channel and existing culverts (with the exception of culverts under Interstate Routes 5 and 805) are small and are inadequate to carry even medium-sized flows. The capacity of the existing channel from 4th Avenue to Interstate 5 ranges from 200 cubic feet per second to 500 cubic feet per second, a 5-year flood. Should a major flood occur, this area, consisting mostly of single-family residences and apartment buildings and some commercial developments, would be inundated.

GENERAL DESCRIPTION OF THE BASIN

Telegraph Canyon Creek Basin is in San Diego County, the most southern of the coastal counties in California. (See pl. 1.) The basin comprises about 4,800 acres, or 7.5 square miles, and is an elongated area with a length of about 9 miles and an average width of about 0.8 mile. (See pl. 2 for detail.)

EXISTING CONDITIONS

Economic activity

Like most regions, the economic history of San Diego County begins with agriculture. The first major industry was ranching. A fine natural harbor served as a trade center where the Spanish colonists traded hides and tallow for metal and luxury goods. From this early beginning, to shortly after World War I when San Diego Harbor became the home port for the Eleventh Naval District, and finally to its current

role as a commercial harbor from which specialty crops grown in the area are shipped worldwide, the harbor has been an important contributor to the economy of the area.

Economic growth in the San Diego region has in the recent past been based primarily on military and space program activities. Between 1950 and 1957, during the Korean War and the later buildup of the United States Air Force, employment in aircraft and ordnance production tripled. Employment in related industries, such as metal and machinery, also increased substantially. Population increased 60 percent and employment serving the local market expanded. In the period from 1957 to 1961, when the military strategy of the United States shifted from bombers to guided missiles, aerospace employment dropped off but the electronics industry continued to expand. It was during this period that tourist or visitor demand became a driving force in the economy. Aerospace employment continued to decline from 1961 to 1969. The local economy continued to grow, however, primarily because of the economic activities of State and Federal governments that accounted for about three-fourths of the growth. During the period 1969 to 1973, economic growth in the San Diego region continued at an unusually high rate spurred on by the increased size of the San Diego market, diversification of the retail and service sectors, and housing construction.

By the middle of 1974, the deepening national slump eroded consumer confidence. At the same time, the construction industry suffered a dramatic decline and higher fuel costs depressed the aircraft market. However, from mid-1975 to 1982, there has been a general increase in all sectors of employment.

San Diego hopes to monitor its industrial growth and guide the location of employment and population centers. Industrial parks designed to attract new firms are strategically situated throughout the County and provide flat land, accessibility to major freeways, and close proximity to the labor force. Major airport facilities, pre-zoned lands for commercial construction, international ports, and a highly skilled labor force in a growing indigenous market are some of the major assets of San Diego County that most other California counties may not be able to offer to new industry.

Two large manufacturing plants and a utility complex dominate the economy of the study area. The Ratner Company, a major producer of men's clothing, and the San Diego Gas and Electric Southbay power plant are in the lower reach, the latter just west of Interstate 5. Rohr Industries, a research and development firm, is just north of the utility complex on the bayfront. Other commercial and manufacturing developments are confined to areas primarily along principal motor routes in unincorporated Castle Park and in Harbor Side.

Land Use

Most of the drainage area east of Interstate 805 is rural. About one-third of this area is under the jurisdiction of the City of Chula Vista and is primarily designated as residential and commercial in the 1990 General Plan. (See pl. 8 of app. E.) The other two-thirds of the area are unincorporated County lands for which no general development plan has been prepared. Of the 2,000-acre area within the drainage basin west of Interstate 805, 1,700 acres have been developed for urban uses.

The flood plain of Telegraph Canyon Creek contains predominantly residential and commercial development. About 462 single-family residential units, 152 apartment units, 22 commercial establishments, a trailer park, and two schools lie in the flood plain between Hilltop Drive to San Diego Bay. About 84 percent (283 acres) of the 337-acre flood plain in the study area has been developed to urban use.

According to estimates in the Chula Vista General Plan 1990, all of the developable land within the area from Hilltop Drive to San Diego Bay, much of which is in scattered small parcels adjacent to existing development, should be developed into urban uses. About 9 acres of land outside the 100-year flood plain are expected to be developed before 1990, with or without flood control. About 4 acres of land in the 100-year flood plain suitable to industrial use are expected to be developed before 1990, assuming flood control would be provided.

Transportation

Two freeways, Interstate 5 and Interstate 805, cross the study area in a north-south direction. (See pl. 2.) The San Diego area is additionally served by state highways, the Lindberg Airport, the Atchison-Topeka and Santa Fe railway, and the San Diego and Arizona Eastern railway, subsidiary of the Southern Pacific Company. The area is also served by the San Diego Transit System, Greyhound Lines, and Continental Trailways.

Housing

The housing characteristics of the Telegraph Canyon Creek Basin are best described by considering the area as consisting of two distinct communities. The urban area east of Broadway Avenue is primarily a middle class community. This area consists of medium to high value homes and apartments. The area west of Broadway Avenue is the older part of the community. This area consists of a combination of low to medium value homes and apartments, and industrial and commercial structures. The single-family residences in this area are generally valued at \$50,000 to \$95,000. These values include land.

Employment

Aircraft manufacturing, both civilian and military, is a significant basin industry. Employment in aircraft and ordnance, the major industries in the San Diego area for several decades during and after World War II, fluctuated according to the military needs of the Nation. Between 1950 and 1957, this type of employment tripled. Aircraft employment dropped off subsequent to 1957, but the electronics industry continued to expand, producing sophisticated equipment needed by the missile and space programs. Between 1969 and 1973, the local economy continued to grow. Employment increased in Government and especially in service industries. From mid-1975 to 1982 there has been a general increase in all sectors of employment in the San Diego area.

Life, health, safety

A warm, sunny, healthful climate contributes to a life-style that is attractive to residents and tourists alike. Health-care facilities and health research institutions provide for the needs of the area. The upper reach of the study area is rural. Residents, especially in that area, enjoy a high degree of personal safety.

However, under a "without project" condition, the inhabitants as well as the developments in the flood plain of Telegraph Canyon Creek would continue to be in jeopardy in times of high floodflows. Due to increased development in the Telegraph Canyon Creek drainage area, the potential for flooding will increase. Rainfall events in 1979, 1980, and 1983 resulted in flood damages in some areas to be caused by flood discharges of even less than 5-year events. Residents have observed that with saturated antecedent conditions and increasing localized siltation, the creek is unable to transport flows from even small amounts of rain, with subsequent results being that overflows and attendant damages to property are becoming more and more commonplace. Damages occurred downstream of the 5th Avenue bridge when it was overtopped during three separate incidents in March and early-April 1983. The several schools along the creek result in children playing near areas of rapid flow. Discharge and velocities have been sufficient to cause a car to be washed downstream during one of the March 1983 storms.

Population

Population and economic growth in the Telegraph Canyon Creek area has reflected the economic pattern of the San Diego region. Population in Chula Vista was shown to be 83,900 in 1980. Most of this population is centered in the reach of Telegraph Canyon Creek between Hilltop Drive and Interstate 5, which is the area most affected by the flood problem. Population in the Telegraph Canyon Creek flood plain area is about 1,400.

It is projected that the population of the City of Chula Vista will be 131,100 by 1995. Most of this growth will be in the suburbanizing areas on the east side of the city.

Population characteristics

The total population in the Chula Vista area in April 1980 consisted mostly of the white race; only a small percentage consisted of minority races. The Spanish-American ethnic group, which can include whites, blacks, and other races, accounted for about 23 percent of the total population. Employment categories consisted of white collar workers (a majority) and blue collar and service workers. Less than 1 percent consisted of farm workers. A majority of those in the study area over 25 years old have completed high school. Only about 9 percent have completed college. Per capita income in Chula Vista is slightly below the San Diego County average.

Physical environment

The physical environment of the Telegraph Canyon Creek Basin is typical of the coastal areas of Southern California. Telegraph Canyon Creek is located on the Pacific side of the Peninsular Range in the coastal plain, which consists of mesa-like terraces that range from near sea level to about 1,200 feet in elevation. These terraces have been dissected by intermittent rivers and streams during which process the valleys have been filled with as much as 200 feet of alluvium. Soils in the area are comprised of sands, silts, and silty clays.

The Telegraph Canyon Creek Basin is subject to seismic activity because of the presence of faults in the San Diego region.

Little streamflow occurs in Telegraph Canyon Creek except during and immediately following rains. Local storms occur throughout the year, either during general storms or as isolated phenomena. These storms often result in high intensity precipitation for short durations over small areas.

A dry subtropical climate characterizes the study area. The annual mean temperature is 61.9 degrees Fahrenheit with an average daily range of 13.7 degrees Fahrenheit.

Air quality in the Telegraph Canyon Creek Basin is reflected by the fact that San Diego is ranked as one of the 14 smoggiest cities in the Nation.

For more detailed information, see the Environmental Impact Statement.

Biological Environment

The Telegraph Canyon Creek Basin encompasses both urban and rural habitats along about 9 miles of the creek. The basin has significantly important habitat for wildlife in the undeveloped upper two-thirds of the drainage area, and limited wildlife habitat in the developed lower one-third of the drainage area, except at San Diego Bay, where the tidal areas have highly valuable wildlife habitat.

In the upper basin, open space and agricultural land uses predominate. A coastal scrub community predominates along the flood plain. Riparian vegetative growth occurs along the ephemeral creek. Wildlife species such as rabbits, opossum, skunks, doves, songbirds, ground squirrels, small reptiles and mammals utilize the available habitat. The lower one-third of the basin is highly urbanized; encroachments and developments have greatly modified and limited the creek and flood-plain vegetative community. Introduced and native annual and perennial herbs, grasses, and some trees and shrubs characterize the vegetation throughout the urbanized areas. Urbanization has also limited the available habitat for wildlife where existing species are those that are tolerant of man's presence and common to developed areas. These species include mourning doves, songbirds, ground squirrels, and small reptiles and mammals.

Telegraph Canyon Creek discharges into San Diego Bay where salt marsh and tidal habitats predominate. This area, known as the J Street Marsh, is a valuable and productive habitat that supports many species of waterfowl, shorebirds, and other water-associated birds that feed upon the vegetation or upon marine invertebrates.

For further details, see the Environmental Impact Statement.

Socio-cultural environment

No definite cultural resources sites were discovered during the course of study of the Telegraph Canyon Creek area. No cultural sites are listed in either archeological and historical literature or in the National Register of Historic Places for the area.

The visual esthetics have definite boundaries at Interstate 5 and Hilltop Drive. The tidal area west of Interstate 5 is very flat with no vertical visual variety. Between Interstate 5 and Hilltop Drive, the esthetics are generally those of an urban area. Upstream from Hilltop Drive to Interstate 805, the creek is less defined, with a highly modified shrub community on gentle slopes adjacent to the creek.

Limited park facilities are available to meet the recreation needs of the area. During after-school hours and on weekends, several school playgrounds provide areas for physical activities. The largest recreational open space is a private golf course located south of L Street between Hilltop Drive and 3rd Avenue.

CONDITIONS IF NO FEDERAL ACTION TAKEN

A condition of no Federal action taken would permit a continued threat to the health and safety of inhabitants and to developments in the flood plain along Telegraph Canyon Creek. Flood damages would increase due to the increased runoff resulting from future development in the upstream area.

PROBLEMS, NEEDS, AND OPPORTUNITIES

Flood problem

The main channel of Telegraph Canyon Creek is well defined in the upstream reach east of Interstate 805, and the flood plain is extremely narrow. The flood plain comprises less than 30 acres on or adjacent to Telegraph Canyon Road over a distance of about 6.5 miles in this reach. Very little urban development has taken place in this area and any future development should be protected from the 100-year flood. Therefore, flooding in this upstream reach is not now a major problem and should not be in the future.

The creek downstream from Interstate 805, however, is limited in capacity. From Hilltop Drive to 4th Avenue, the capacity of the existing channel ranges from 500 cubic feet per second to 1,000 cubic feet per second; from 4th Avenue to Interstate 5, the capacity ranges from 200 cubic feet per second to 500 cubic feet per second except for a small section of concrete trapezoidal channel downstream from 4th Avenue (700 feet) that has been constructed by local interests. The maximum capacity of the existing creek downstream from Interstate 5 is about 700 cubic feet per second with a velocity of 6 feet per second. No other structural measures have been undertaken by local entities to provide protection for existing development in this area. Recognizing this inadequacy, the County of San Diego and the City of Chula Vista sought the aid of the Corps of Engineers in providing works along Telegraph Canyon Creek to protect existing and future development.

Almost no information is available regarding floods in the Telegraph Canyon Creek area inasmuch as very little development existed in the area prior to 1950, and no major floods have occurred in the area since that time. The Harbor Side-Castle Park area, which borders the south side of the creek near the lower end, sustained considerable damage during the flood of 1968. The greatest recorded short-term rainfall intensities that the storm produced were in the south coastal San Diego County area. The resultant flood produced an estimated peak flow of 60 cubic feet per second on the south tributary to Telegraph Canyon Creek at Clariss Street (near 5th Avenue). About 63 homes and 28 apartments were flooded and 26 streets were impassable or hazardous to traffic in the City of Chula Vista. The flood damages within the city were estimated at \$106,000 (1968 price levels). No separate estimate of flood damages along the main stem of Telegraph Canyon Creek is available.

A more recent flood occurred in January 1979. About 3 businesses, 4 homes, and an apartment complex sustained flood damages from Telegraph Canyon Creek floodwaters. Although the flood discharge was less than a 5-year flood event, damages sustained were approximately \$20,000.

Flood damages have been caused by several rainfall events since 1980--some from discharges of less than 5-year events. Damages occurred downstream of the 5th Avenue bridge when it was overtopped during three

separate incidents in March and early-April 1983. One apartment complex, in particular, floods whenever a medium amount of flow exists in the channel, according to residents. Clean-up costs alone for this unit totalled \$50,000 following one of the storms in March, 1983.

Major floods have occurred in San Diego County in 1862, 1884, 1916, 1927, and 1937. Medium to small floods occurred in 1889, 1891, 1895, 1906, 1921, 1938, 1941, and 1943. The 1862 flood was probably the largest of record in the county, but the 1916 flood was the most destructive. The 1916 flood caused damages to all important highway and railroad bridges and washed out many miles of track and roadbed. For nearly a month, all supplies had to be brought into San Diego by ship. All communication with areas outside the County was by wireless after all telephone and telegraph lines failed. Almost all water supply systems were damaged, including damage to dams, watermains, pipelines, irrigation ditches, wells, and pumps. The greatest damage occurred to farmland improvements. Most of the agricultural lands were severely damaged. The 1927 flood caused extensive damage to buildings, roads, bridges, utilities, land, and crops in San Diego County. Flooding occurred on most streams in the County.

Because there are no historic data available that were directly applicable to the Telegraph Canyon area, regionalized flood frequency studies in San Diego County were used and theoretical determinations were made to determine the areas subject to overflow and to determine resultant flood damages on the occurrence of floods.

About 2,000 acres of the total drainage area lie within the 2.5-mile reach from San Diego Bay to Hilltop Drive; 337 acres are within the standard project flood plain. Under present conditions, the 100-year flood (the flood that has a 1 percent chance of occurrence in any one year) would inundate about 224 acres. Standard project flood and 100-year flood discharges, calculated for conditions of present development, are shown in figure 1. The present and future overflow areas for the standard project flood and the 100-year flood are shown on plates 4 and 5.

The standard project flood plain in the reach from Hilltop Drive to 3rd Avenue contains approximately 12 acres of residential properties. In the reach between 3rd Avenue and San Diego Bay, the standard project flood overflow area contains 325 acres. Low to moderate value single-family residences predominate with values ranging from \$50,000 to \$95,000, including the value of land. There are 395 single dwellings in the lower reach as well as 152 apartment complexes and 22 commercial structures. Most of the developable land in the overflow area is already developed, but sites remain for approximately 1 acre of residential development (4 houses) and 8 acres of that they are expected to be developed before 1990 even without flood control protection. In addition, 4 acres of land in the 100-year flood plain suitable for industrial use can be expected to be developed before 1990 with flood control.

The value of property in the overflow area provides a basis for determining the probable damages that would occur during selected floods. Table 1 presents property values in the standard project flood overflow area. The figures are based on 1983 development conditions. Even though the project that is being considered provides 100-year flood protection, the standard project flood overflow area is significant when assessing the residual damages expected from a standard project flood with 100-year protection already in place.

Table 1.

Value of damageable property in standard project flood overflow area along Telegraph Canyon Creek from Hilltop Drive to San Diego Bay (in thousands of April, 1983 dollars).

	REACH I (Bay to above 4th Ave.)	REACH II (above 4th Ave. to Hilltop Dr.)	Total
Residential	32,681	4,864	37,545
Commercial	5,038	-	5,038
Industrial	-	-	-
Public	1,720	-	1,720
Total	39,439	4,864	44,303

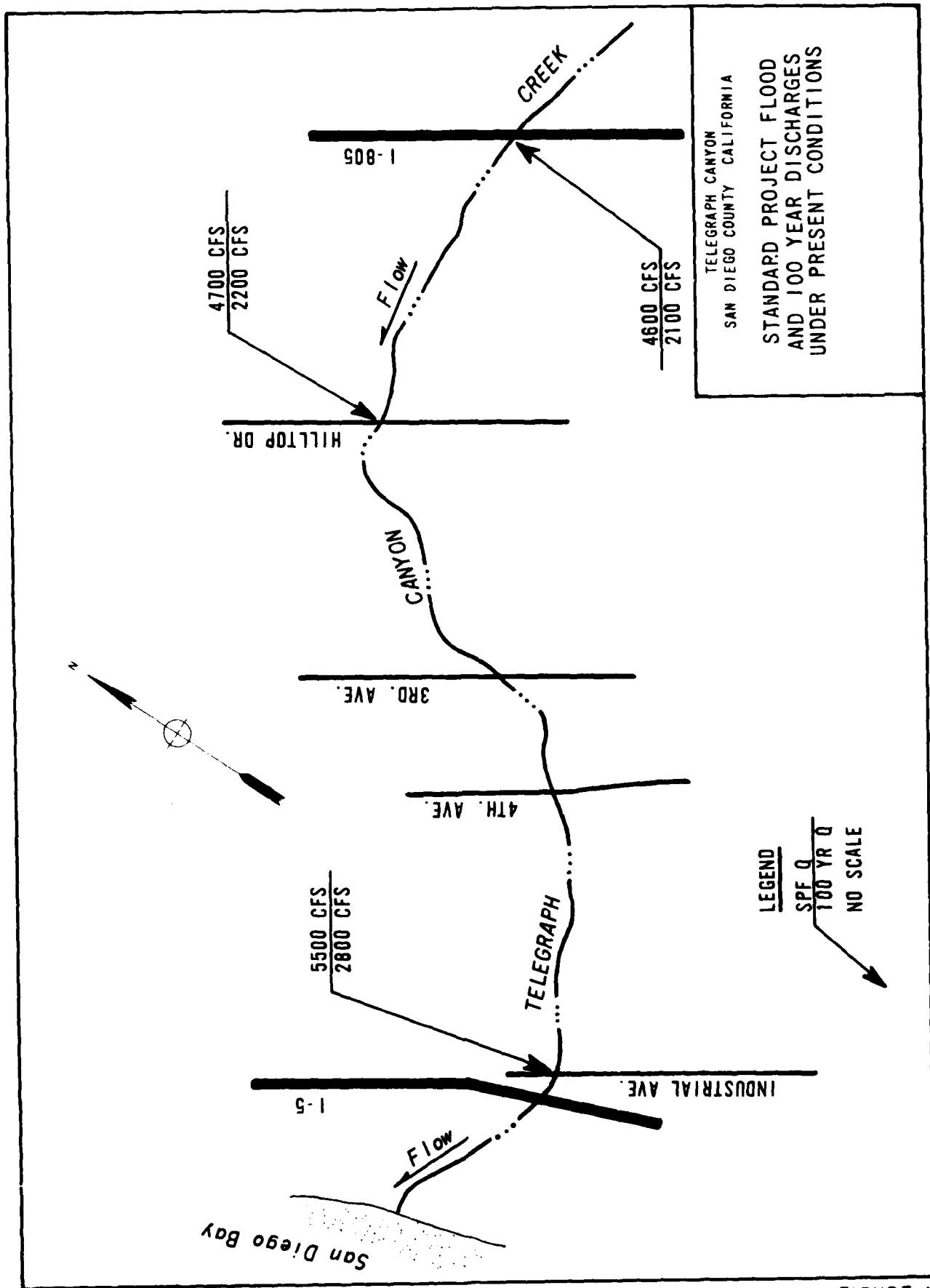


FIGURE 1

Hydraulic studies indicate that under the standard project flood, flood depths of about 2.0 feet would occur from Hilltop Drive to 3rd Avenue and about 3.0 feet from 3rd Avenue to Interstate 5. Flood depths of the 100-year flood would be about 1/2 foot less than the standard project flood depths from 3rd Avenue to Interstate 5. In the ponding area (east of I-5), flood depths of the 100-year flood would be about 2.0 feet less than the standard project flood depths.

The standard project and 100-year floods would cause extensive damages to existing properties. Table 2 presents damages to the property in the overflow areas.

Table 2.

Damages to existing property in the standard project flood, 100-year flood, and 50-year flood overflow areas along Telegraph Canyon Creek from Hilltop Drive to San Diego Bay (in thousand of April, 1983 dollars).

	REACH I (Bay to above 4th Ave.)			REACH II (above 4th Ave. to Hilltop Dr.)		
	SPF	100-Yr.	50-Yr.	SPF	100-Yr.	50-Yr.
Residential	7,980	4,260	2,755	940	608	499
Commercial	951	281	182	-	-	-
Public	872	623	448	-	-	-
Parks and Channels	31	10	3	-	-	-
Emergency Admin.	40	20	12	-	-	-
Total	9,874	5,194	3,400	940	608	499

Damage from single floods in the future would increase over the years reflecting increasing productivity and level of economic activity. The increase in productivity was applied only to residential contents. No such increase was applied to commercial and public properties. The equivalent average annual damages not only reflect the increased productivity, but also the increase as a result of increased runoff due to future development in the watershed. The average annual damages under present (1983) conditions and the equivalent average annual damages for a 100-year period (1985-2085) are as follows:

	Average annual damages (1983 conditions)	Equivalent average annual damages (1985-2085)
Reach I	\$300,000	\$380,000
Reach II	47,000	59,000

Without the project, approximately 4 acres of vacant land could not be developed. With a project, these lands could be developed to conform to the Chula Vista General Plan 1990.

Water quality and conservation

The municipal and industrial water for the San Diego area is imported from the Colorado River. Groundwater in the project area is of marginal quality as a result of seawater intrusion and cannot be used for domestic purposes. Use of this water for irrigation at the golf course upstream from the study area has shown that only hardier plant species can survive irrigation by groundwater with periodic applications of domestic water. The natural channels in the Telegraph Canyon Creek Basin serve as recharge areas for the percolation of local flows into the underground basin. However, the groundwater is not suitable for domestic and most irrigation uses. Therefore, a concrete channel would not have an appreciable adverse impact on the groundwater supply or its quality. Increased seawater intrusion resulting from the excavation of the earth-bottom channel would not significantly affect the already marginal quality of the groundwater.

Recreation

The need for recreation facilities is growing at a rapid rate in conjunction with the increasing population in the San Diego area. Those who seek recreation such as picnicking and formal bicycling and hiking must generally go outside the area to satisfy this demand.

Other needs

Southern California is an area deficient in water supply, necessitating the importation of much of its water. Any plan to conserve water would be desirable. According to the Parks and Recreation Information System, there is a need for water-based recreation.

PLANNING CONSTRAINTS

A critical factor in the formulation of the plans is the capacity of the existing 1,240-foot-long culvert under Interstate 5. (See photos 22 and 23.) Any solution that required the reconstruction of the culvert would not be cost effective. Such reconstruction is estimated to cost over \$3 million. Although the culvert is not a true planning constraint, it did become a constraint in that any efforts to increase the capacity of the culvert were prohibitive.

The City of Chula Vista opposes the construction of the retention dam because Telegraph Canyon Road would have to be relocated, development consisting of 56 houses has already taken place within the proposed reservoir site, extensive utility relocation would be required, and the topography of the area would restrict the number of viable north-south alignments for connection to Telegraph Canyon Road.

Both constraints were considered in the plan formulation stage.

The U.S. Department of the Interior, Fish and Wildlife Service, has recommended that wildlife habitat, especially near J Street Marsh, be preserved as much as possible during construction and that disturbance of migratory waterfowl be avoided. (See the Environmental Impact Statement.)

PLANNING OBJECTIVES

Water Resources Council's Principles and Guidelines for Planning Water and Related Land Resources, effective 8 July 1983, provides that the planning of the Nation's water and land resources contribute to national economic development consistent with protecting the Nation's environment, pursuant to national environmental statutes, orders, and requirements. This objective, as well as other factors such as regional development and social well-being, were fully evaluated.

Specifically, the planning objectives include the following.

Flood damage reduction

Reducing flood damages along Telegraph Canyon Creek by constructing channels or reservoirs, regulating flood plain development, and flood proofing is the major planning objective.

Recreation

Providing for recreational needs could be accomplished by incorporating hiking and bicycling trails into flood control facilities.

Cultural resources

Any impacted cultural resources might be protected either through preservation or mitigation.

Fish and wildlife habitat

Protection and enhancement of wildlife and their habitat along Telegraph Canyon Creek and in J Street Marsh is an important planning objective.

Water conservation

Water conservation was considered a planning objective even though groundwater quality in the study area is marginal as a result of seawater intrusion and the water cannot be used for domestic purposes. Surface storage was not considered a planning objective because construction of a retention dam was not a cost effective solution.

Water conservation would not improve the prospects for a favorable consideration of a reservoir.

FORMULATION OF PRELIMINARY PLANS

Several general approaches were considered in arriving at the best plans to alleviate the flood problem along Telegraph Canyon Creek. Nonstructural, combination nonstructural and structural, and structural methods were evaluated. The evaluations were coordinated with Federal, State, and local agencies, as well as with the Telegraph Canyon Creek Citizens Advisory Committee and other private citizens.

MANAGEMENT MEASURES

Identification of Measures

Both structural and nonstructural measures identified along Telegraph Canyon Creek include reservoirs, earth-bottom channels, concrete channels, flood plain management, floodproofing, flood warning systems, relocation and evacuation, floodwalls, bridge modification, and channel clearing. From these measures, the alternatives were developed. These alternatives are discussed in the subsequent section, "analysis of plans considered in preliminary planning."

PLAN FORMULATION RATIONALE

Formulation and evaluation of the alternative plans of improvement for Telegraph Canyon Creek were based on engineering, economic, social, and environmental feasibilities, as well as intangible criteria such as health and the reduction of safety hazards. The expressed needs and desires of the concerned public were considered in the plan formulation processes and in the selection of a plan.

ECONOMIC EVALUATIONS OF ALTERNATIVE PLANS

Benefits resulting from all alternatives except A-1 were compared with the corresponding costs to determine economic feasibility. Benefits and corresponding costs were not analyzed for plan A-1, the flood plain management plan. Benefits include an estimate of the flood damages each alternative would prevent and other related categories. Costs include interest, amortization, and operation and maintenance expenditures. In order to compare costs and benefits that would occur at different times, conversion was made to an equivalent time basis using a discount rate of 7-7/8 percent. Benefits and costs were calculated assuming a project life of 100 years for all alternatives except alternative A-2. Because alternative A-2, the floodproofing plan, depends on the remaining economic life of the structures protected, a 40-year project life was used.

Project cost estimates - first cost and annual charges

The first cost for the proposed project includes estimates for construction, engineering and design, supervision and administration, relocations, rights-of-way, beautification or esthetic treatment, and allowance for contingencies. Unit prices were developed by using

current (April 1983) costs for material, equipment, and labor for the basic facilities, as well as the cost for the additional land. To appraise the land costs, the sites of the recommended improvements were inspected and the real estate markets concerned were analyzed. The cost of rights-of-way, which includes acquisition cost, is based on developments currently in place.

Total first costs are converted to annual payments by applying the capital recovery factor at the current interest rate of 7-7/8 percent. To this annual payment is added the estimated annual charge for operation and maintenance of the project. Annual charges thus include (a) interest on total investment, (b) amortization of the total investment over the project life, and (c) average annual costs of project maintenance and operation. No interest was charged during construction since all items would be operational and would be accruing benefits within a year after construction was initiated.

Project benefits

Flood damage reduction benefits reflect the savings that can be attributed to the prevention of direct damages inflicted by floodwaters on real and personal property. Also included is some measure of the reduction on nonphysical losses that would be otherwise experienced by residents of the area in terms of lost wages and loss by return on capital investments. These flood damage reduction benefits are calculated by comparing the damages that would occur without an improvement to those damages that would occur if each alternative plan were in place. Any such reduction during the project life is claimed as a benefit.

Flood damage reduction benefits were estimated by evaluating damages that would occur to present (1983) and projected development if no project were constructed and then deducting the damages that would be expected to occur under the same conditions after the project was constructed. Damages are a function of type and value of damageable property as well as hydrologic and topographic conditions.

Sensitivity analysis

As a check on the sensitivity of net benefits to the discount rate, the internal rate of return was calculated for each alternative. This is the discount rate at which benefits from flood damages prevented would equal costs for flood control improvements.

Economic summary

The economic justification and a comparison of the first costs, the average annual costs and benefits, the benefit/cost ratio, and the net benefits (benefits minus costs) of each alternative for flood control are shown in table 3.

Table 3.
COMPARISON OF ALTERNATIVE PLANS
(SUMMARY SYSTEM OF ACCOUNTS)

	Flood plain seawall Plan A-1 Reach I & II	Flood plain proofing Plan A-2 Reach I & II	Rectangular concrete channel Plan B Reach I Reach II	Rectangular concrete earth-bottom channel Plan C-1 Reach I Reach II (MED plan)	Rectangular concrete channel Plan C-2 Reach I Reach II	Earth-bottom channel Plan C-3 Reach I Reach II	Retention dam with concrete channel Plan D Reach I & II	Concrete and earth- bottom concrete with a diversion Plan E Reach I Reach II	Rectangular concrete and earth-bottom channel Plan F Reach I Reach II
Level of protection	100-Year	100-Year	S. P. F.*	60-Year	60-Year	60-Year	100-Year	100-Year	100-Year
Economic justification	Unjustified	Unjustified	Unjustified	Unjustified	Unjustified	Unjustified	Unjustified	Unjustified	Unjustified
Project cost:									
Federal:	\$2,930,000	\$4,040,000**	\$2,380,000	\$2,600,000	\$2,080,000	\$3,340,000	\$2,080,000	\$1,570,000	\$1,520,000
Non-Federal:									
Right-of-way and relocation	0	740,000	6,670,000	1,490,000	820,000	3,790,000	1,150,000	1,510,000	810,000
TOTAL COST	0	\$3,670,000	\$10,730,000	\$3,870,000	\$2,880,000	\$5,360,000	\$1,330,000	\$7,110,000	\$3,090,000
ANNUAL CHARGES (7-7/82)									
Flood control	0	\$289,000	\$845,000	\$305,000	\$227,000	\$422,000	\$1,100,000	\$560,000	\$244,000
Operation and maintenance	0	30,000	15,000	7,000	6,000	11,000	60,000	9,000	6,000
TOTAL	0	\$319,000	\$860,000	\$312,000	\$233,000	\$433,000	\$1,160,000	\$569,000	\$250,000
Benefits:									
Flood damage benefits**	0	\$219,000	\$473,000	\$84,000	\$72,000	\$373,000	\$498,000	\$416,000	\$76,000
Benefit/cost ratio	0	0.7	0.6	0.3	0.3	0.9	0.4	0.7	0.3
NET BENEFITS	0	-\$100,000	-\$387,000	-\$228,000	-\$161,000	-\$58,000	-\$662,000	-\$153,000	-\$174,000
Environmental impacts									
Disturb channel vegetation	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Decrease groundwater recharge	No	No	Yes	Yes	Yes	No	No	Yes	Yes
Negative aesthetic appeal	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Social well-being impacts									
No. businesses relocated	0	0	2	0	0	5	2	2	0
No. homes relocated	0	0	1	1	4	30	30	1	0
Creates new recreation	No	No	No	No	No	No	No	No	No
Mental and physical security	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

* Standard Project Flood.

** Exceeds the Federal limitation of \$3 million. Local sponsors would have to accept financial responsibility above the Federal limitation.

*** Includes reduction in flood damages, advance replacement of bridges, and location benefits.

PLANS OF OTHERS

The Telegraph Canyon Creek Citizens Advisory Committee proposed a plan for Telegraph Canyon Creek from Hilltop Drive to San Diego Bay. The committee's recommendation was that the Federal government participate in the lower reach (from 500 feet upstream of 4th Avenue to the bay) where a Federal interest was evident, and that local sponsors would replace inadequate bridges and perform channel clearing from Hilltop Drive to about 500 feet upstream of 4th Avenue.

San Diego Gas and Electric Company proposed a realignment of the channel from Interstate 5 to San Diego Bay.

Both plans were considered and are described in detail in this report.

ANALYSIS OF PLANS CONSIDERED IN PRELIMINARY PLANNING

Various proposals for the solution of the flood problem along Telegraph Canyon Creek were considered in the plan formulation stage. The alternatives presented reflect the joint efforts of the Telegraph Canyon Creek Citizens Advisory Committee and the Corps of Engineers. The County of San Diego and the City of Chula Vista also participated in the formulation of alternative solutions. As was mentioned previously, a preliminary draft survey report was completed in January 1976. Subsequent to this report, the County of San Diego and the City of Chula Vista requested the Corps of Engineers to pursue the study under the Small Project Authority to expedite the study. Under this authority, the Chief of Engineers has the authority to approve projects for construction without requiring Congressional authorization.

A reevaluation was made of the alternatives previously presented to the community. The results of the reevaluation were presented in September 1978 to the City of Chula Vista and the County of San Diego. Both sponsors concurred in these studies and supported the conclusions. Alternatives set forth in the following paragraphs were as presented.

Nonstructural alternatives

Plan A-1 - Flood Plain Management Plan. This plan would involve flood insurance and restrictions on the use of the 100-year flood plain. Flood damages to existing developments would not be eliminated. Presently, Telegraph Canyon Creek Basin is regulated under the emergency program of the National Flood Insurance Program, which could provide financial relief to property owners suffering damages from future floods. The management plan would retain the existing vegetation and limited wildlife habitat along the creek. However, the plan is not considered desirable as flood damage would continue and floods would still pose a threat to life, health, and property. A management plan or "no action" plan of the nature described is not eligible for Corps of Engineers financial participation. In addition, flood damages estimated

at \$439,000 (equivalent average annual damages) would continue under this plan. A management plan would be effective in preventing damages to future development by curtailing future development in the floodway, and requiring flood proofing in the 100-year flood plain.

Plan A-2 - Floodproofing Plan - 100-Year Flood Protection. This plan would involve the floodproofing of existing structures by the construction of floodwalls around each building to be protected and the institution of a flood-warning system. This floodproofing method is applicable to homes with slab floors. Inclosure of each building was preferred to placing retaining walls at property lines because these works would divert floodflows to areas not previously subject to flooding. This plan is not considered desirable because floodproofing costs would exceed benefits from flood damages prevented, flooding would continue in the streets and lawns, and the floodwalls might create a negative esthetic appeal.

Relocation Plan. cursory evaluation of a plan to relocate the improvements in the 100-year flood plain (valued at close to \$30,000,000 - land excluded) indicated that the cost would be prohibitive inasmuch as the flood plain is almost completely developed to urban use.

Structural alternatives

Seven structural solutions were considered for Telegraph Canyon Creek, six of which involved an all-channel plan; the other consisted of a combination reservoir and channel. A major consideration in the development of the alternative plans was the capacity of the existing 1/4-mile-long culvert under Interstate 5. The maximum capacity of the culvert is estimated at about 2,200 cubic feet per second, which represents a peak discharge of about a 60-year flood (present conditions).

In the consideration of the all-channel alternatives, the study reach was broken into two reaches: Reach I comprises the 1.6-mile reach from San Diego Bay to a point 500 feet upstream from 4th Avenue (near 3rd Avenue); Reach II comprises the 0.9-mile reach from a point 500 feet upstream from 4th Avenue (near 3rd Avenue) to Hilltop Drive. In each of these structural alternatives, Reach II could not be justified because of the narrowness of the overflow area. A nonstructural solution was justified in Reach II. However, because modification to bridges was a primary cost for this plan and is a non-Federal cost, this solution was recommended by the Telegraph Canyon Creek Advisory Committee to be implemented by San Diego County.

One plan--Plan B--considered providing standard project flood protection. This plan would require the reconstruction of the culvert crossing Interstate 5, at a cost of over \$3.0 million. The plan would consist of a rectangular concrete channel and the reconstruction of ten bridges. This plan is not economically justified.

Three plans--Plan C-1, Plan C-2, and Plan C-3--considered providing protection from a 60-year flood under present conditions (40-year under future conditions). The peak discharge, or 2,200 cubic feet per second, from such a flood is estimated to be the maximum flow that could be conveyed under open-channel, non-pressurized flow conditions through the existing Interstate 5 culvert. These plans are economically justified and detailed studies were made.

Plan C-1 would consist of a rectangular concrete channel from 4th Avenue to Interstate 5, and an earth-bottom channel from Interstate 5 to J Street Marsh. The improvements, in general, would follow the existing creek.

Plan C-2 would be similar to Plan C-1 except that the entire length of the channel would be concrete. In addition, the alignment of the proposed channel was modified downstream from Interstate 5 to continue in a northern and then western direction instead of following the existing creek. This realignment consideration was requested by the San Diego Gas and Electric Company. The additional cost of this plan, due primarily to additional length and rights-of-way requirements, could not be supported.

Plan C-3 would consist of an earth-bottom channel. Because of the steepness of the natural channel gradient, drop structures would be required to insure the stability of the channel bottom. In addition, this plan would require the relocation of 60 homes and 5 businesses. The additional cost of this plan over Plan C-1 is estimated at almost \$2 million.

The combination reservoir and channel plan--Plan D--would consist of a dam and reservoir located at a site about 1 mile upstream from Interstate 805 and a rectangular concrete channel from a point 500 feet upstream from 4th Avenue to Interstate 5, and an earth-bottom channel downstream from Interstate 5. This plan would provide protection from a flood with a recurrence interval of about 100 years (2,200 cubic feet per second) in the reach downstream from 4th Avenue. Preliminary studies showed that (1) a reservoir alone, because of its location and the intervening uncontrolled flows, would not provide adequate flood control, (2) this combination plan could not be incrementally justified over the all-channel plan, and (3) the plan was generally not supported. In addition, the City of Chula Vista Department of Public Works has expressed opposition to the retention dam. Briefly, the reasons for opposition are that: (1) Telegraph Canyon Road would have to be relocated, (2) a subdivision consisting of 56 homes has been constructed within the proposed reservoir site and the cost of relocation of this subdivision would be extensive and socially disruptive; based on recent sales studies, the average value of the homes in this area would be over \$100,000 per home; this would yield a buy-out cost of approximately \$5.6 million, (3) extensive utility relocation would be required with any road realignment, and (4) the

topography of the area restricts the number of viable north-south alignments for connection to Telegraph Canyon Road. Thus, this alternative is not economically justified and is not supported by the community.

Plan E would provide 100-year flood protection and consists of a rectangular concrete channel from 4th Avenue to Interstate 5. A diversion channel would divert flows in excess of 2,200 cubic feet per second (estimated at 1,100 cubic feet per second for future conditions) along the railroad and then would cross Interstate 5 at J Street. The diversion channel would join the main stem of Telegraph Canyon Creek below Interstate 5. The remainder of the channel from Interstate 5 downstream to San Diego Bay would consist of an earth-bottom channel. Two businesses and five homes would be relocated, 12 bridges would be constructed, and some utilities crossing the channel would require relocation.

Combination structural and nonstructural alternative

One alternative consisted of a combination of structural and nonstructural solutions.

Plan M as originally considered has been modified at the request of the City of Chula Vista and in accordance with further engineering studies. Plan M, in Reach I, would consist primarily of a rectangular concrete channel from 500 feet upstream of 4th Avenue to about 1350 feet upstream of Interstate 5, at which point a concrete culvert would be constructed that would continue to the culvert under the freeway. A trapezoidal concrete channel would begin downstream of the Interstate 5 freeway; the final 500 feet of channel would be earth-bottom leading into the San Diego Bay. About two businesses would have to be relocated. Plan M is economically justified and detailed studies were made for this 100-year plan.

Plan M at one time had above-ground walls for a distance of 1,000 feet upstream of Interstate 5. These walls ranged in height from zero to 16 feet, and were necessary to induce sufficient head to convey the 100-year peak discharge of 3,300 cubic feet per second through the Interstate 5 culvert. The current Plan M reflects local requests to replace the high-walled section with an underground concrete culvert. The culvert produces an effect similar to the high walls. Model studies have confirmed that the 100-year peak discharge would be conveyed under the freeway to the downstream trapezoidal section.

In Reach II there would be bridge modifications and minor channel clearing. However, because modification of bridges is a primary cost for this plan and is, by definition, a non-Federal cost, this solution was recommended by the Telegraph Canyon Creek Advisory Committee to be implemented by San Diego County.

Therefore, preliminary planning reduced the cost effective alternatives for Reach I to Plan C-1, Plan C-2, Plan C-3, Plan E, and Plan M. Further studies were made of the cost effective plans. Design refinements and price level updates were performed during these studies. Therefore, the more detailed assessment and evaluation of these plans presented in the next section reflects that some of the alternatives are no longer cost effective.

ASSESSMENT AND EVALUATION OF DETAILED PLANS

The purpose of impact assessment is to determine the type and amount of change expected from implementation of alternative plans as compared to impacts under the "without plan" conditions. The task of impact assessment requires identifying all significant economic, social, environmental, and institutional effects associated with each alternative plan.

The sources of impacts associated with the alternative must be identified in terms of type, location, and extent. This identification has been made for each cost effective alternative.

All significant impacts have been determined as a result of identifying and tracing the input, output, and measures for each cost effective alternative plan, all of which were compared to the base condition to determine effects and the extent of the effects.

All cost effective alternative plans have been evaluated in the process of analyzing each plan against the "without plan" conditions and against each other to determine and compare their beneficial and adverse contributions for the purpose of selecting a plan.

All plans assessed and evaluated are presented to the same level of detail. The selected plan has received the most recent and detailed price level update, and it was used as a basis on which to update the other evaluated plans. Some of the alternatives are no longer cost effective as a result of this update.

Mitigation as discussed in the environmental impact statement will be a part of any flood control recommendation.

The construction of recreation facilities for Telegraph Canyon Creek--primarily bicycle trails--was considered but found not to be feasible because of limited access, insufficient rights-of-way, local concern for safety, and high cost and negligible benefits. Beautification was also considered and a program was developed. For further information, see appendix G.

The following paragraphs describe the Reach I alternatives that were initially cost effective. These alternatives are Plan C-1, Plan C-2, Plan C-3, Plan E, and Plan M.

PLAN C-1

Plan description

This plan would consist of a rectangular concrete channel from 4th Avenue to Interstate 5, and an earth-bottom channel from Interstate 5 downstream to San Diego Bay. It would control the 60-year flood of 2,200 cubic feet per second. The length of channel construction would be 1.4 miles, in addition to the incorporation of the 0.2 mile existing

culvert. (See fig. 3.) About one home and two businesses would be relocated. In addition, four bridges would be reconstructed and some utilities crossing the channel would require relocation. This plan would prevent 77 percent of the total damages. Average annual benefits would consist of prevention of flood damage, location benefits, and advance replacement of bridges.

Impact assessment

The significant economic, regional, environmental and social impacts for Plan C-1 are listed in table 4.

Table 4. Plan C-1 Summary. Reach I.

1. <u>NATIONAL ECONOMIC DEVELOPMENT EFFECTS</u> <u>(60-year protection)</u>	
ITEM	COSTS
Beneficial effects:	
Reduction in flood damages.....	\$ 340,000
Advance replacement of bridges.....	13,000
Location benefits.....	<u>22,000</u>
TOTAL BENEFICIAL EFFECTS.....	\$ 375,000
Adverse effects:	
A. First costs:	
1. Federal cost - flood control.....	\$2,600,000
2. Non-Federal cost - rights-of-way and relocations.....	<u>1,060,000</u>
TOTAL FIRST COSTS.....	\$3,660,000
B. Annual charges (7-7/8% - 100-year):	
1. Flood control	\$ 288,000
2. Operation and maintenance.....	<u>9,000</u>
TOTAL ANNUAL COSTS.....	\$ 297,000
Benefit-cost ratio.....	1.3
Net benefits.....	\$ 78,000

Table 4. Continued

2. <u>REGIONAL, ENVIRONMENTAL, AND SOCIAL WELL-BEING EFFECTS.</u>	
BENEFICIAL	ADVERSE
<u>Regional development effects</u>	
Would create temporary increases in employment and personal business incomes during construction.	Would require the relocation of 2 businesses and 1 home in Reach I.
Because the 100-year flood plain is reduced, about 219 out of 389 owners in Reach I would not be required to purchase flood insurance.	
Approximately 4 acres of land in the flood plain could be developed.	
<u>Environmental impacts</u>	
Control of floods would prevent damages to utilities, water and sewer lines.	Would eliminate vegetation and limited wildlife habitat along the creek.
	Would reduce groundwater recharge.
	Would result in possible esthetic losses because of the concrete channel.
	Temporary construction impacts.
<u>Social well-being effects</u>	
Would provide mental and physical security for the residents of the flood plain.	The concrete channel could create a possible barrier to the community.

Implementation responsibilities

Cost allocation and apportionment. Federal legislation and administrative determinations pertaining to local protection projects are the basis of the sharing of costs between Federal and non-Federal interests for the plan. The 4 acres that would develop as a result of this plan are in small parcels and in different ownerships. The largest ownership consists of only 1-1/2 acres. For this reason, the increased utilization of land is not considered to be a special local benefit, and local cost sharing in the construction cost as a result of this benefit is not required. Table 4 presents details of the costs.

Federal responsibilities. The Federal Government would design and prepare detailed plans and also construct the project after authorization and funding and after receipt of local assurances.

Non-Federal responsibilities. Under present law, local interests are required to provide the necessary rights-of-way for the project; bear the expense of all relocations required for project construction, including people, structures, highways, utilities, and drainage facilities; and maintain and operate all works after completion. In addition, all construction costs in excess of \$4 million will be borne by local interests.

PLAN C-2

Plan Description

The plan would consist of a rectangular concrete channel to control the 60-year flood. This plan is similar to Plan C-1, except that the total length of the channel would be concrete and there would be a different alignment at the lower end. Flows would be diverted in a northern direction on the east side of the railroad for approximately 2,000 feet and then would continue west to the bay. The San Diego Gas and Electric Company requested consideration of this plan. The length of channel construction would be 1.6 miles in Reach I. (See fig. 4.) Two businesses and one home would be relocated. This plan would prevent 77 percent of the total damages. Average annual benefits would consist of prevention of flood damage, location benefits, and advance replacement of bridges.

Impact assessment

The significant economic, regional, environmental, and social impacts for Plan C-2 are listed in table 5.

Table 5. Plan C-2 Summary. Reach I

1. <u>NATIONAL ECONOMIC DEVELOPMENT EFFECTS</u> <u>(60-year protection)</u>	
ITEM	COST
Beneficial effects:	
Reduction in flood damages.....	\$ 340,000
Advance replacement of bridges.....	13,000
Location benefits.....	<u>22,000</u>
TOTAL BENEFICIAL EFFECTS.....	\$ 375,000
Adverse effects:	
A. First costs:	
1. Federal cost - flood control.....	\$3,340,000
2. Non-Federal cost - rights-of-way and relocations.....	<u>1,200,000</u>
TOTAL FIRST COSTS.....	\$4,540,000
B. Annual charges (7-7/8% - 100-year):	
1. Flood control.....	\$ 358,000
2. Operation and maintenance.....	<u>9,000</u>
TOTAL ANNUAL COSTS.....	\$ 367,000
Benefit-cost ratio.....	1.02
Net benefits.....	\$ 8,000

Table 5. Continued

2. <u>REGIONAL, ENVIRONMENTAL, AND SOCIAL WELL-BEING EFFECTS.</u>	
BENEFICIAL	ADVERSE
<u>Regional development effects</u>	
Would create temporary increases in employment and personal business incomes during construction.	Would increase the cost of rights-of-way over Plan C-1.
Because the 100-year flood plain is reduced, about 219 out of 389 owners in Reach I would not be required to purchase flood insurance.	Would require the relocation of 2 business and 1 home along Reach I.
Approximately 4 acres of land in the flood plain could be developed.	
<u>Environmental Impacts</u>	
Control of floods would prevent damages to utilities, water and sewer lines.	Would eliminate vegetation and limited wildlife habitat along the creek.
	Would reduce groundwater recharge.
	Would result in possible esthetic losses because of the concrete channel.
	Temporary construction impacts.
<u>Social well-being effects</u>	
Would provide mental and physical security for the residents of the flood plain.	The concrete channel could create a possible barrier to the community.

Implementation responsibilities

Cost allocation and apportionment. Federal legislation and administrative determinations pertaining to local protection projects are the basis of the sharing of costs between Federal and non-Federal interests for the plan. The 4 acres that would develop as a result of this plan are in small parcels and in different ownerships. The largest ownership consists of only 1-1/2 acres. For this reason, the increased utilization of land is not considered to be a special local benefit and local cost sharing in the construction cost as a result of this benefit is not required. Table 5 presents details of the costs.

Federal responsibilities. The Federal Government would design and prepare detailed plans and also construct the project after authorization and funding and after receipt of local assurances.

Non-Federal responsibilities. Under present law, local interests are required to provide the necessary rights-of-way for the project; bear the expense of all relocations required for project construction, including people, structures, highways, utilities, and drainage facilities; and maintain and operate all works after completion. In addition, all construction costs in excess of \$4 million will be borne by local interests.

PLAN C-3

Plan Description

This plan would consist of an earth-bottom channel throughout Reach I to control the 60-year flood of 2,200 cubic feet per second. The length of channel construction would be 1.4 miles in addition to the incorporation of the 0.2 mile of existing culvert. (See fig. 5.) About 5 businesses and 30 homes would be relocated. In addition, four bridges would be reconstructed and some utilities crossing the channel would require relocation. This plan would prevent 77 percent of the total damages. Average annual benefits would consist of prevention of flood damage, location benefits, and advance replacement of bridges.

Impact assessment

The significant economical, regional, environmental, and social impacts for Plan C-3 are listed in table 6.

Table 6. Plan C-3 Summary. Reach I

1. <u>NATIONAL ECONOMIC DEVELOPMENT EFFECTS</u> <u>(60-year protection)</u>	
ITEM	COST
Beneficial effects:	
Reduction in flood damages.....	\$ 340,000
Advance replacement of bridges.....	13,000
Location benefits.....	<u>22,000</u>
TOTAL BENEFICIAL EFFECTS.....	\$ 375,000
Adverse effects:	
A. First costs:	
1. Federal cost - flood control.....	\$ 1,570,000
2. Non-Federal cost - rights-of-way and relocations.....	<u>3,790,000</u>
TOTAL FIRST COSTS.....	\$5,360,000
B. Annual charges (7-7/8% - 100-year):	
1. Flood control.....	\$ 422,000
2. Operation and maintenance.....	<u>11,000</u>
TOTAL ANNUAL COSTS.....	\$ 433,000
Benefit-cost ratio.....	0.9
Net Benefits.....	\$ -58,000

Table 6. Continued

2. <u>REGIONAL, ENVIRONMENTAL, AND SOCIAL WELL-BEING EFFECTS.</u>	
BENEFICIAL	ADVERSE
<u>Regional development effects</u>	
Would create temporary increases in personal and business income during construction. Because the 100-year flood plain is reduced, about 219 out of 389 owners in Reach I would not be required to purchase flood insurance. Approximately 4 acres of land in the flood plain could be developed.	Would require greater rights-of-way resulting in the relocation of about 30 homes and 5 businesses in Reach I. Would require higher maintenance cost than a concrete channel.
<u>Environmental impacts</u>	
Would more readily adapt to the natural environment. Would have greater esthetic appeal than a concrete channel. Would retain existing groundwater recharge. Control of floods would prevent damages to utilities, water and sewer lines.	Would remove vegetation and limited wildlife habitat during construction. Vegetation could reestablish along and within earth-bottom channel but channel clearing maintenance operation would limit growth. Temporary construction impacts.
<u>Social well-being effects</u>	
Would provide physical and mental security for the residents of the flood plain.	Would require the relocation of about 30 homes and 5 businesses.

Implementation responsibilities

Cost allocation and apportionment. Federal legislation and administrative determinations pertaining to local protection projects are the basis of the sharing of costs between Federal and non-Federal interests for the plan. The 4 acres that would develop as a result of this plan are in small parcels and in different ownerships. The largest ownership consists of only 1-1/2 acres. For this reason, the increased utilization of land is not considered to be a special local benefit, and local cost sharing in the construction cost as a result of this benefit is not required. Table 6 presents details of the costs.

Federal responsibilities. The Federal Government would design and prepare detailed plans and also construct the project after authorization and funding and after receipt of local assurances.

Non-Federal responsibilities. Under present law, local interests are required to provide the necessary rights-of-way for the project; bear the expense of all relocations required for project construction, including people, structures, highways, utilities, and drainage facilities; and maintain and operate all works after completion. In addition, all construction costs in excess of \$4 million will be borne by local interests.

PLAN E

Plan description

This plan would consist of a rectangular concrete channel from 4th Avenue to Interstate 5 to control the 100-year flood. A diversion channel would divert flows in excess of 2,200 cubic feet per second (estimated at 1,100 cubic feet per second) along the railroad and would cross Interstate 5 near J Street. The diversion channel would join the main stem of Telegraph Canyon Creek below Interstate 5. The remainder of the channel from Interstate 5 downstream to San Diego Bay would consist of earth-bottom channel. (See fig. 6.) The length of channel construction would be 2.0 miles. Two businesses and one home would be relocated. In addition, 4 bridges would be constructed and some utilities crossing the channel would require relocation. This plan would prevent 90 percent of the total damages. Average annual benefits would consist of prevention of flood damage, location benefits, and advance replacement of bridges.

Impact assessment

The significant economic, regional, environmental, and social impacts for Plan E are listed in table 7.

Table 7. Plan E Summary. Reach I.

1. <u>NATIONAL ECONOMIC DEVELOPMENT EFFECTS</u> <u>(100-year protection)</u>	
ITEM	COST
Beneficial effects:	
Reduction in flood damages.....	\$ 381,000
Advance replacement of bridges.....	13,000
Location benefits.....	<u>22,000</u>
TOTAL BENEFICIAL EFFECTS.....	\$ 416,000
Adverse effects:	
A. First costs:	
1. Federal cost - flood control.....	\$4,000,000
2. Non-Federal cost - flood control.....	1,600,000
3. Non-Federal cost - rights-of-way and relocation.....	<u>1,510,000</u>
TOTAL FIRST COSTS.....	\$7,110,000
B. Annual charges (7-7/8% - 100-year):	
1. Flood control.....	\$ 560,000
2. Operation and maintenance.....	<u>9,000</u>
TOTAL ANNUAL COSTS.....	\$ 569,000
Benefit-cost ratio.....	0.7
Net benefits.....	\$ -153,000

Table 7. Continued

2. REGIONAL, ENVIRONMENTAL, AND SOCIAL-WELL BEING EFFECTS.	
BENEFICIAL	ADVERSE
Regional development effects	
Would create temporary increases in employment and personal and business incomes during construction.	Would require the relocation of 2 businesses and 1 home in Reach I.
Because the 100-year flood plain is reduced, all of the 389 owners in Reach I would not be required to purchase flood insurance.	
Approximately 4 acres of land in the flood plain could be developed.	
Environmental impacts	
Control of floods would prevent damages to utilities, water and sewer lines.	Would eliminate vegetation and limited wildlife habitat along the creek.
	Would reduce groundwater recharge.
	Would result in possible esthetic changes because of the concrete channel.
	Temporary construction impacts.
Social well-being effects	
Would provide mental and physical security for the residents of the flood plain.	The concrete channel could create a possible barrier to the community.

Implementation responsibilities

Cost allocation and apportionment. Federal legislation and administrative determinations pertaining to local protection projects are the basis of the sharing of costs between Federal and non-Federal interests for the plan. The 4 acres that would develop as a result of this plan are in small parcels and in different ownerships. The largest ownership consists of only 1-1/2 acres. For this reason, the increased utilization of land is not considered to be a special local benefit, and local cost sharing in the construction cost as a result of this benefit is not required. Table 7 presents details of the costs.

Federal responsibilities. The Federal Government would design and prepare detailed plans and also construct the project after authorization and funding and after receipt of local assurances.

Non-Federal responsibilities. Under present law, local interests are required to provide the necessary rights-of-way for the project; bear the expense of all relocations required for project construction, including people, structures, highways, utilities, and drainage facilities; and maintain and operate all works after completion. In addition, all construction costs in excess of \$4 million will be borne by local interests.

PLAN M

Plan description

This plan would consist of the following improvements. In reach I, (1) a 0.71-mile-long rectangular concrete-lined channel from a point about 500 feet upstream from 4th Avenue to 0.28-miles upstream from Interstate 5; (2) two 12-foot-wide by 10-foot-high boxes, totaling 0.28-miles in length, that would connect the rectangular concrete channel to the existing culvert under Interstate 5; (3) incorporation of the existing culvert under Interstate 5; and (4) a 0.28-mile-long trapezoidal concrete channel downstream of Interstate 5; and (5) a 0.1-mile-long earth-bottom channel leading into the San Diego Bay. (See fig. 7.) This plan would provide protection from a 100-year flood. The length of the channel would be 1.6 miles, including the incorporation of the 0.23-miles of existing culvert.

In Reach II, that is, from Hilltop Drive to about 500 feet upstream of 4th Avenue, there would be some bridge modifications and channel clearing. Numerous structural solutions for Reach II were considered. However, no further studies were made because the benefit/cost ratio was below 1.0.

The channel upstream of the double-box culvert was initially designed to have above-ground walls, ranging in height from zero to 16 feet, for a distance of 850 feet. This was to induce sufficient head for the 100-year peak discharge to be conveyed through the culvert under Interstate 5. Following submittal of this plan as part of the Final

Detailed Project Report in April 1980, both the County of San Diego and the City of Chula Vista requested by resolution that the project be restudied. Their major concerns were that the channel walls were too high in the reach just upstream of the box culvert, and that major utilities downstream of Interstate 5 required cost-prohibitive relocations. In response to the resolutions from the local interests, the Army Corps of Engineers, Los Angeles District requested additional funding in order to proceed with design modifications.

A model study investigating the feasibility of replacing the high channel walls with a box culvert was performed by the Waterways Experiment Station. The results of the study show that the box culvert could be extended 750 feet upstream of where the box culvert began in the April 1980 design, and that the remaining 100 feet of high wall section upstream of the covered section could be reduced to about 8-9 feet above ground. Further, the problem of relocating a high-pressure gas line that is currently downstream of the freeway was solved by changing a section of the earth-bottom trapezoidal channel to a concrete trapezoidal channel. This allows higher velocity flow which, in turn, allows raising the channel bottom above the gas line, thereby precluding the need for the costly relocation. This Final Detailed Project Report reflects these design modifications.

About two businesses would require relocation with this plan.

This plan would prevent 90 percent of the total damages in Reach I. The level of protection in Reach II is for a 25-year flood, and the plan for this reach would prevent 71 percent of the total damages. Average annual benefits would consist of prevention of flood damage, location benefits, and advance replacement of bridges.

Impact assessment

The significant economic, regional, environmental, and social impacts for Plan M are listed in table 8.

Table 8. Plan M Summary.

1. <u>NATIONAL ECONOMIC DEVELOPMENT EFFECTS</u> (100-year protection)		
ITEM	COST, REACH I	COST, REACH II
Beneficial effects:		
Reduction in flood damages.....	\$ 395,000	\$ 50,000
Advance replacement of bridges.....	13,000	0
Location benefits.....	<u>22,000</u>	<u>0</u>
TOTAL BENEFICIAL EFFECTS.....	\$ 430,000	\$ 50,000
Adverse effects:		
A. First costs:		
1. Federal cost - flood control....	\$3,660,000	*
2. Non-Federal cost - rights-of -way and relocation.....	<u>1,230,000</u>	<u>350,000</u>
TOTAL FIRST COSTS.....	\$ 4,890,000	\$ 350,000
B. Annual charges (7-7/8% - 100-year Reach I and 50-year Reach II)		
1. Flood control.....	\$ 385,000	\$ 28,000
2. Operation and maintenance.....	<u>9,000</u>	<u>7,000</u>
TOTAL ANNUAL COSTS.....	\$ 394,000	\$ 35,000
Benefit-cost ratio	1.1	1.4
Net benefits.....	\$ 36,000	\$ 15,000

* While the improvements in reach II are cost effective, bridge modifications and channel clearing costs are considered local costs. The local sponsors have expressed a desire to implement this alternative.

Table 8. Continued

2. REGIONAL, ENVIRONMENTAL, AND SOCIAL WELL-BEING EFFECTS.	
BENEFICIAL	ADVERSE
Regional development effects	
Reach I	
Would create temporary increases in employment and personal and business incomes during construction. Because the 100-year flood plain is reduced, all of the 389 owners would not be required to purchase flood insurance. Approximately 4 acres of land in the flood plain could be developed.	Would require the relocation of 2 businesses.
Reach II	
Would require no relocation of homes and businesses. Would require no disruption of business and transportation associated with construction. Because the 100-year flood plain is reduced, all of the owners (62) in Reach II would not be required to purchase flood insurance.	Would result in continued flood losses and resultant disruption.
Environmental Impacts	
Reach I	
Control of floods would prevent damages to utilities, water and sewer lines.	Would eliminate vegetation and limited wildlife habitat along the creek. Would reduce groundwater recharge. Would result in possible esthetic changes because of the concrete channel and the high wall. Temporary construction impacts.

Table 8. Continued)

BENEFICIAL	ADVERSE
Reach II	
Would retain existing vegetation and limited wildlife habitat along the creek.	None anticipated.
Would retain existing groundwater recharge.	
Would retain existing esthetic values.	
Social well-being effects	
Reach I	
Would provide mental and physical security for the residents of the flood plain.	The concrete channel could create a possible barrier to the community. The high wall would result in possible esthetic changes.
Reach II	
Would require no relocation of facilities.	Would disrupt community activities and well-being during floods. Would continue to require strict flood plain regulation by local government. Would permit health and safety hazards to continue.

Implementation responsibilities

Cost allocation apportionment. Federal legislation and administrative determinations pertaining to local protection projects are the basis of the sharing of costs between Federal and non-Federal interests for the plan. The 4 acres that would develop as a result of this plan are in small parcels and in different ownerships. The largest ownership consists of only 1-1/2 acres. For this reason, the increased utilization of land is not considered to be a special local benefit, and local cost sharing in the construction cost as a result of this benefit is not required. Table 8 presents details of the costs.

Federal responsibilities. The Federal Government would design and prepare detailed plans and also construct the project after authorization and funding and after receipt of local assurances.

Non-Federal responsibilities. Under present law, local interests are required to provide the necessary rights-of-way for the project; bear the expense of all relocations required for project construction, including people, structures, highways, utilities, and drainage facilities; and maintain and operate all works after completion. In addition, all construction costs in excess of \$4 million will be borne by local interests.

EVALUATION AND TRADE-OFF ANALYSIS

INTRODUCTION

Evaluation is the process of analyzing plans against the "without plan" conditions and against each other to determine and compare their beneficial and adverse contributions for the purpose of selecting a plan. A detailed impact assessment and evaluation analysis has been performed.

APPRAISAL OF THE FULFILLMENT OF PLANNING OBJECTIVES

The purpose of this task is to determine the degree to which the alternative plans and their impacts meet the planning objectives. The result of this evaluation is presented in table 9.

SYSTEM OF ACCOUNTS

The associated impacts (economic, regional, environmental, and social well-being) for the alternatives considered are presented in table 3.

EVALUATION CRITERIA

This activity involves applying specified criteria to the alternative plans to test their responsiveness. These criteria are: acceptability (public expression concerning the various impacts and the degree to which the alternatives achieve the planning objectives); certainty (likelihood of achieving the planning objectives should the plan be implemented); completeness (inclusion and incorporation of all necessary actions and investments required to assure full attainment of the plan and its objectives); effectiveness (technical performance and contribution to the planning objectives); efficiency (ability to achieve planning objectives in the least costly manner); National Economic Development (NED); benefit/cost ratio (ratio of net tangible benefits to tangible economic costs); geographic scope (pertinence of the geographic area encompassed by an alternative to the services and outputs of the plan); reversibility (degree to which a given alternative, once partially or fully implemented, could be reversed and impacted areas restored to approximate base condition); and stability (the range of "alternative futures" that can be meaningfully addressed within the scope of the alternative, or with minor modifications). The response to the evaluation criteria is shown in table 10.

Table 9. Fulfillment of Planning Objectives

PLAN	OBJECTIVES				
	Flood damage reduction	Recreation	Cultural resources	Fish and wildlife habitat	Water conservation
Plan C-1	+	0	0	0	0
Plan C-2	+	0	0	-	0
Plan C-3	+	0	0	+	0
Plan E	+	0	0	-	0
Plan M	+	0	0	+	0

+ = Positive

- = Negative

0 = Neutral

Table 10. Response to Evaluation Criteria

Criteria	Plan C-1	Plan C-2	Plan C-3	Plan E	Plan M Reach I	Plan M Reach II
Acceptability	-	-	-	+	+	+
Certainty	+	+	+	+	+	-
Completeness	-	-	-	+	+	-
Effectiveness	+	+	+	+	+	-
Efficiency	-	-	-	-	+	+
Geographic scope	+	+	+	+	+	+
NED B/C ratio	+	+	+	+	+	+
Reversibility	-	-	-	-	-	+
Stability	+	+	+	+	+	-

Positive = +

Negative = -

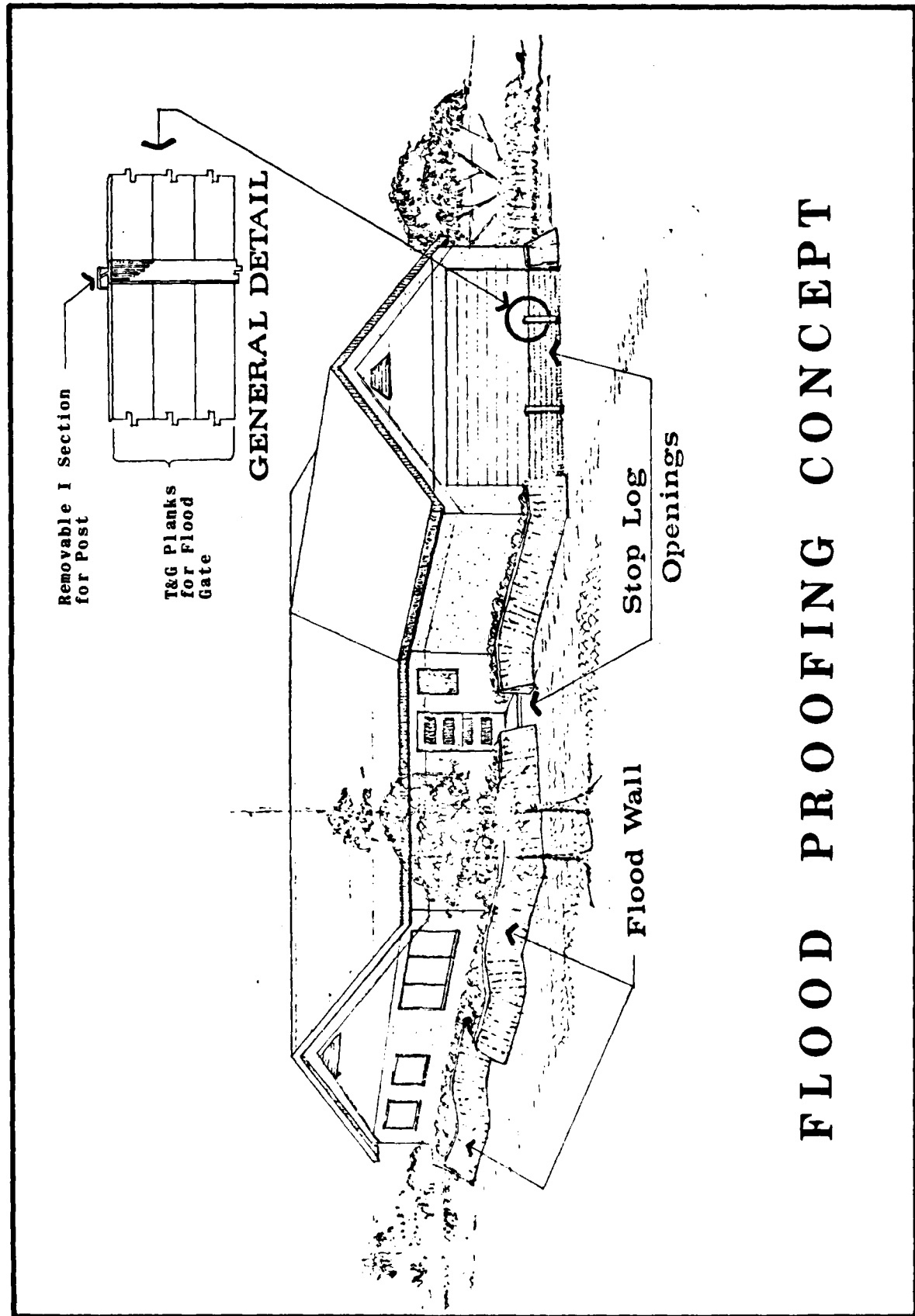
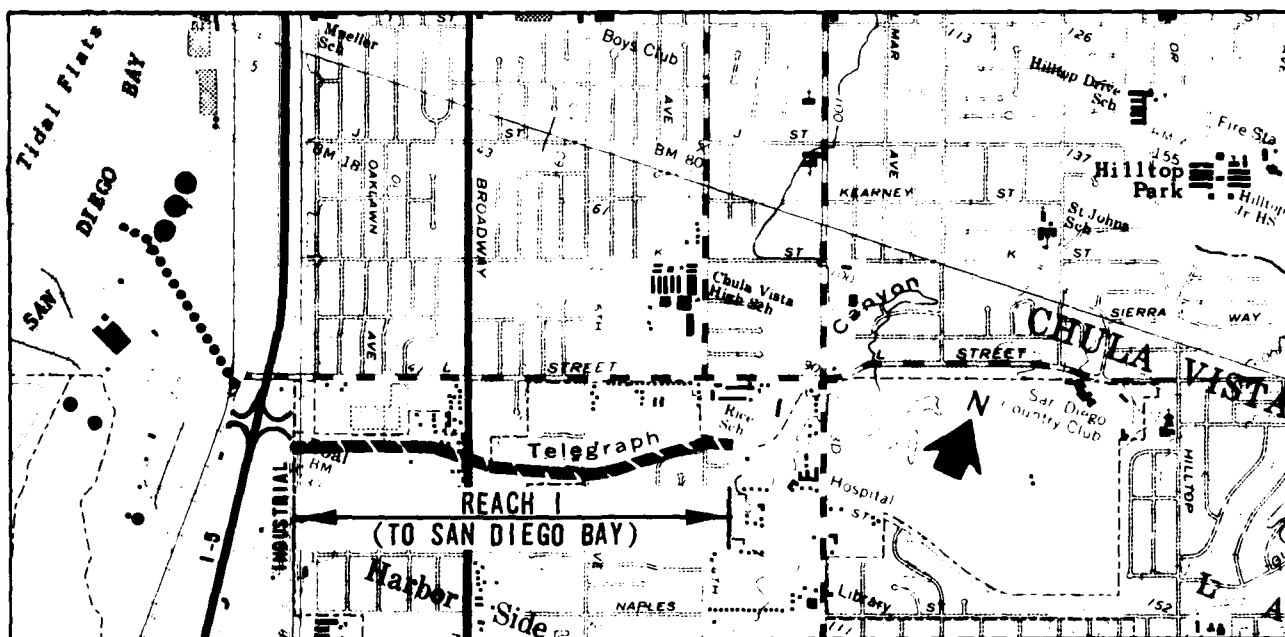


FIGURE 2

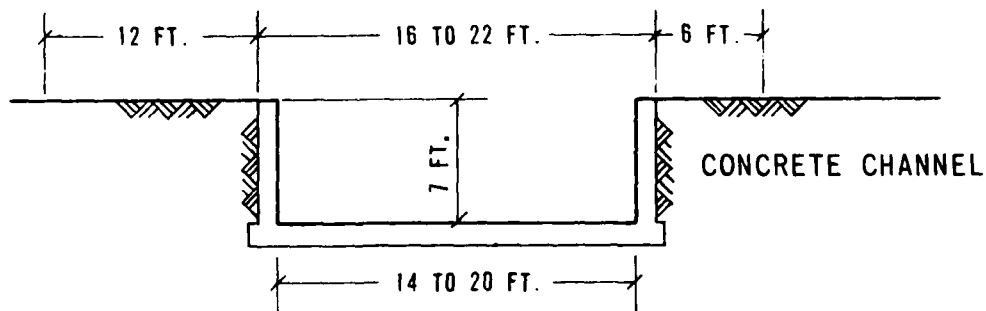
FLOOD PROOFING CONCEPT



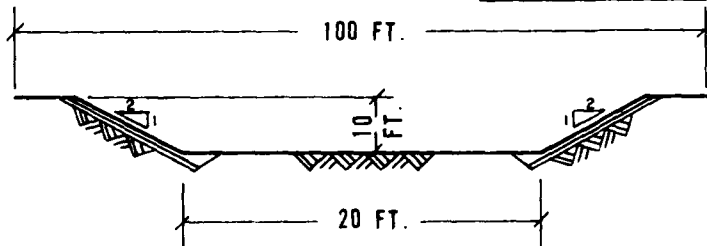
PLAN

LEGEND

- 
 RECTANGULAR CONCRETE CHANNEL
- 
 TRAPEZOIDAL EARTH-BOTTOM CHANNEL



TYPICAL SECTIONS

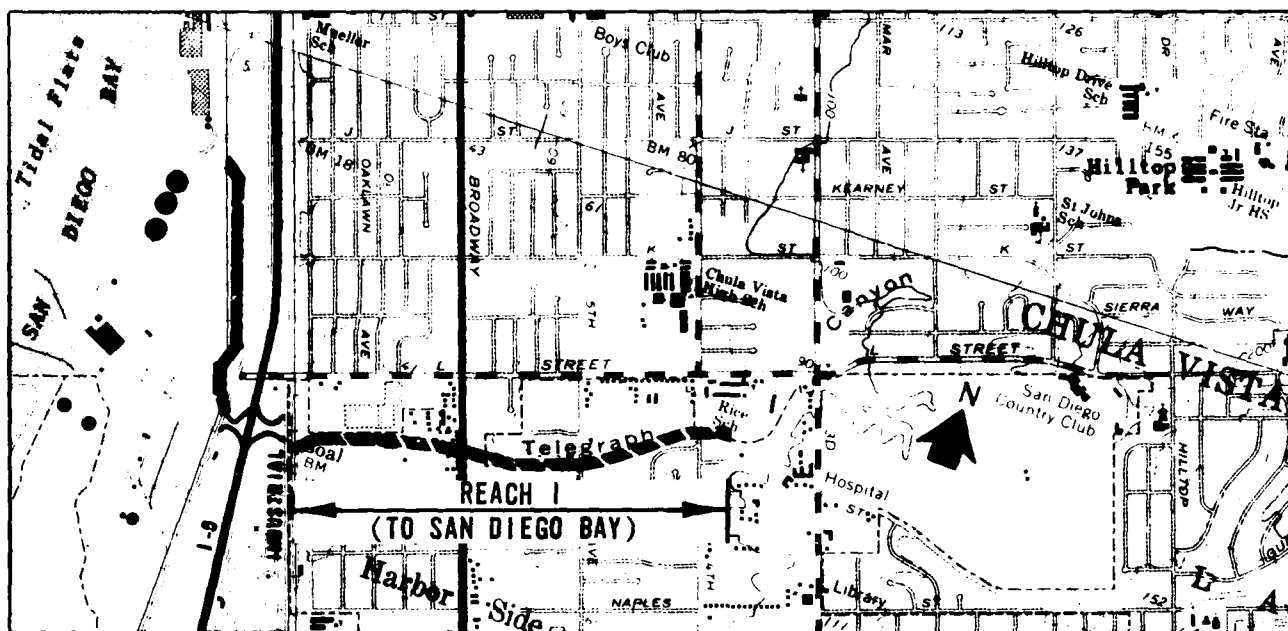


EARTH-BOTTOM CHANNEL
DOWNSTREAM OF I-5

TELEGRAPH CANYON
SAN DIEGO COUNTY, CALIFORNIA

PLAN C-1
60-YR DESIGN
RECTANGULAR CONCRETE WITH
TRAPEZOIDAL EARTH-BOTTOM
CHANNEL DOWNSTREAM OF I-5

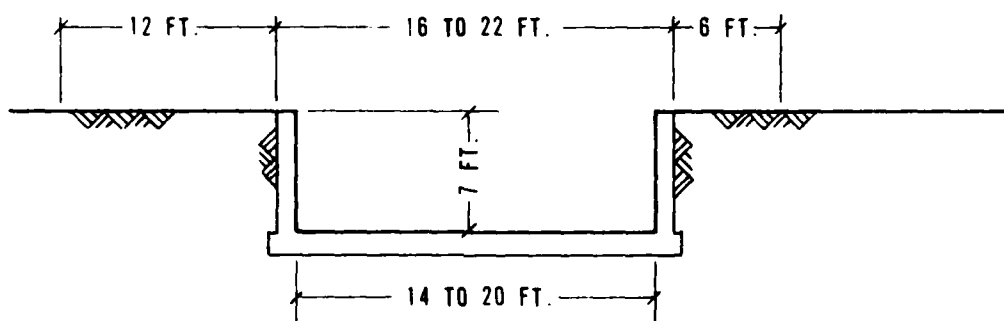
FIGURE 3



PLAN

LEGEND

--- RECTANGULAR CONCRETE CHANNEL

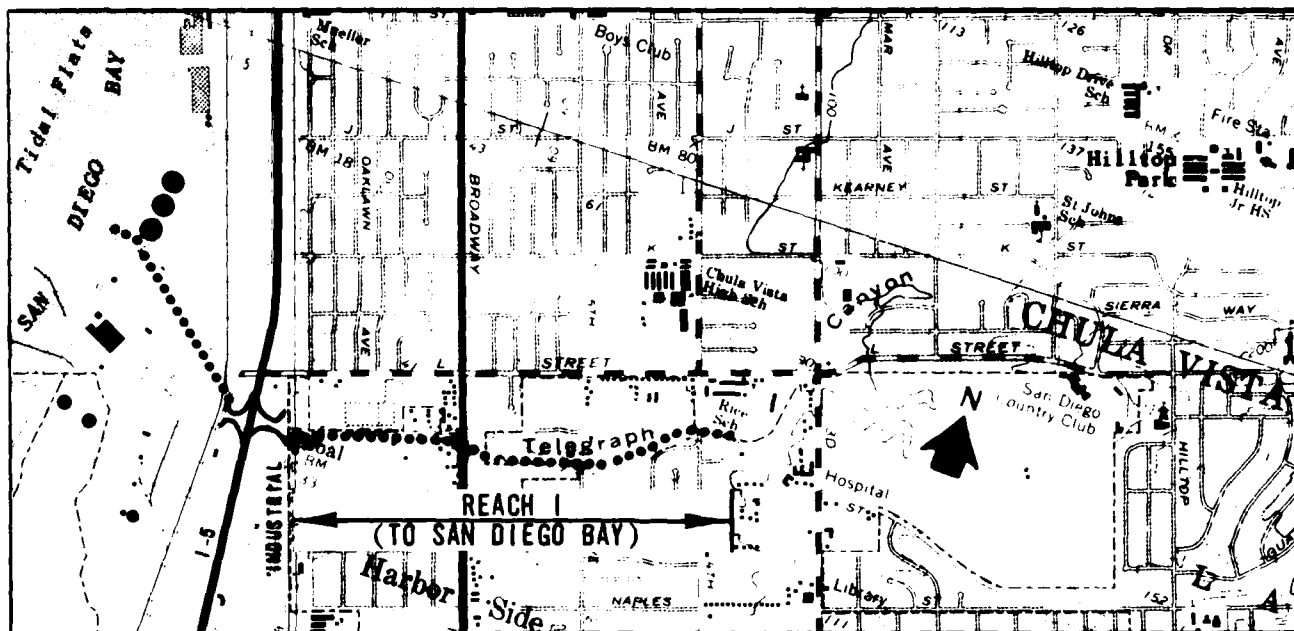


TYPICAL SECTION

TELEGRAPH CANYON
SAN DIEGO COUNTY, CALIFORNIA

PLAN C-2
60-YR DESIGN
RECTANGULAR CONCRETE CHANNEL

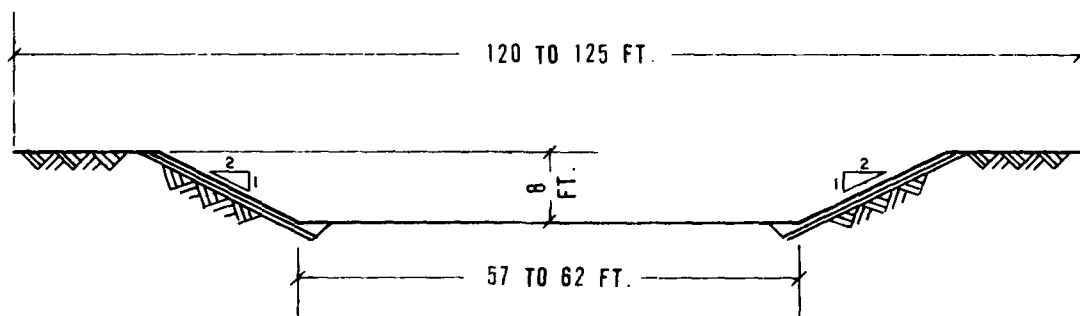
FIGURE 4



PLAN

LEGEND

..... TRAPEZOIDAL EARTH-BOTTOM CHANNEL

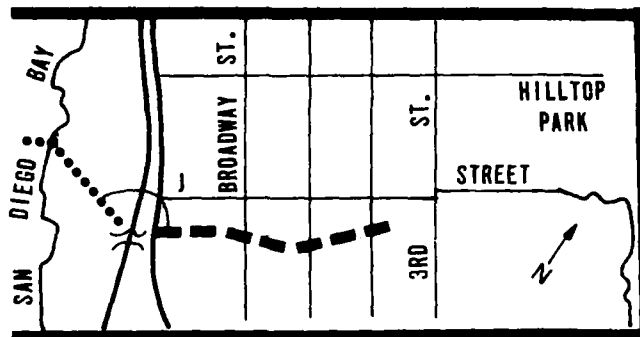


TYPICAL SECTION

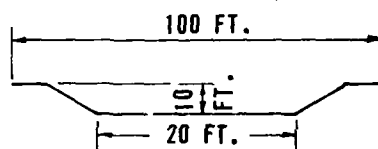
TELEGRAPH CANYON
SAN DIEGO COUNTY, CALIFORNIA

PLAN C-3
60-YR DESIGN
TRAPEZOIDAL EARTH-BOTTOM
CHANNEL

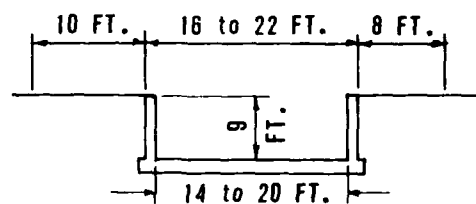
FIGURE 5



PLAN



CROSS SECTION
TRAPEZOIDAL EARTH-BOTTOM CHANNEL
DOWNSTREAM OF 1-5



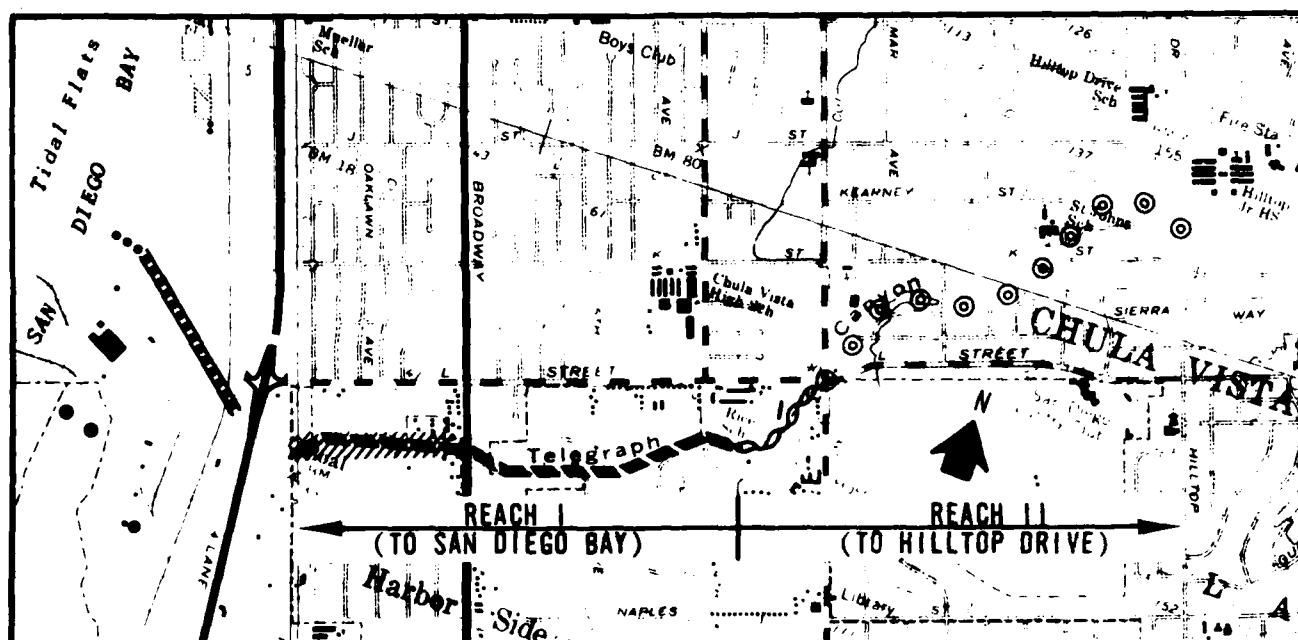
CROSS SECTION
RECTANGULAR CONCRETE CHANNEL

LEGEND

- — — RECTANGULAR CONCRETE CHANNEL
- TRAPEZOIDAL EARTH-BOTTOM CHANNEL
- DIVERSION

TELEGRAPH CANYON
SANDIEGO COUNTY, CALIFORNIA
PLAN -E
100 YEAR DESIGN
RECTANGULAR CONCRETE WITH
TRAPEZODIAL EARTH-BOTTOM CHANNEL
DOWNSTREAM OF 1-5
(DIVERSION CHANNEL)

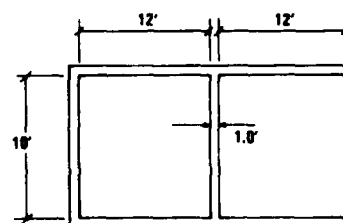
FIGURE 6



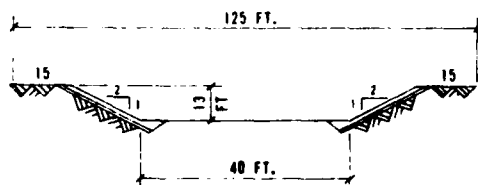
PLAN

LEGEND

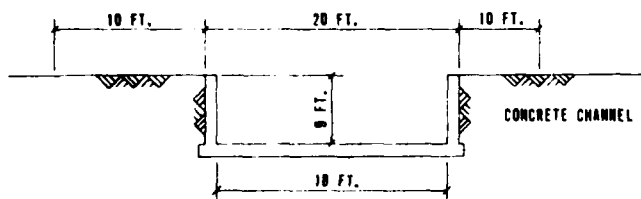
- CONCRETE BOX CULVERT
- TRAPEZOIDAL EARTH-BOTTOM CHANNEL
- TRAPEZOIDAL CONCRETE CHANNEL
- RECTANGULAR CONCRETE CHANNEL
- CHANNEL CLEARING
- MODIFICATION OF BRIDGE UPSTREAM FROM 3RD AVENUE



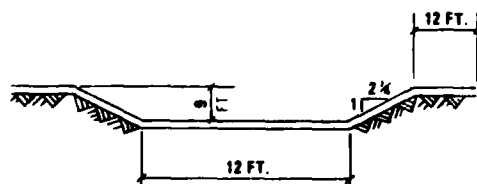
TYPICAL BOX SECTION



**EARTH-BOTTOM CHANNEL
DOWNSTREAM OF I-5**



TYPICAL SECTION



**CONCRETE CHANNEL
DOWNSTREAM OF I-5**

**TELEGRAPH CANYON
SAN DIEGO COUNTY, CALIFORNIA
PLAN M
100 YEAR
RECTANGULAR AND TRAPEZOIDAL
CONCRETE AND EARTH-BOTTOM
CHANNEL AND
25 YEAR CHANNEL CLEARING**

FIGURE 7

PUBLIC VIEWS

VIEWS OF FEDERAL AGENCIES

The U.S. Department of Interior, Fish and Wildlife Service, has recommended that wildlife habitat be preserved during construction whenever possible, that appropriate landscaping be provided, and that construction near J Street Marsh be undertaken between September and March to minimize disturbance to migratory waterfowl. In addition, they recommend that no work be conducted in J Street Marsh.

The Fish and Wildlife Service does not expect adverse environmental effects from the construction of the proposed project if the recommendations that they have made are followed. The Corps has advised that agency that the recommendations can be accommodated.

VIEWS OF NON-FEDERAL AGENCIES AND OTHERS

The City of Chula Vista, Public Works Department, has endorsed Plan M. This indicates that the City has concluded that Plan M is superior to the other alternatives proposed by the Corps of Engineers.

The County of San Diego, through its Department of Sanitation and Flood Control and the County Board of Supervisors, has also endorsed Plan M and has pledged its cooperation and support of a Federal flood control project on Telegraph Canyon Creek.

An informal meeting was held in September 1978 with representatives of the City and County to discuss the draft of an information brochure and alternative solutions. By letter dated September 29, 1978, the City of Chula Vista Public Works Department reaffirmed its endorsement of a structural and nonstructural solution; the County of San Diego Department of Sanitation and Flood Control by letter dated November 10, 1978 also reaffirmed its support of such solution. More recently, by letter dated June 20, 1983, the County has shown support for Plan M and has indicated their intent to provide assurances of local cooperation.

The State of California Department of Water Resources has recommended approval of Plan M supplemented by local flood plain zones to at least the limits of a 100-year flood above the proposed action.

Local interests have expressed concern and a desire that provision of flood control protection be expedited, especially in view of the damage caused by recent (January 1979 and February-March 1983) flooding.

COMPARISON OF DETAILED PLANS

A comparison of the alternative plans and their economic justification are shown in table 3.

RATIONALE FOR DESIGNATION OF THE NATIONAL ECONOMIC DEVELOPMENT PLAN (NED)

The National Economic Development Plan, that is, the plan that would maximize net economic benefits, is Plan C-1. Although the net benefits of Plan C-1 would be \$78,000 -- versus \$36,000 for Plan M--it would provide only 60-year protection as compared to 100-year protection for Plan M. This is not acceptable to the local interests, who prefer a plan with 100-year protection.

RATIONALE FOR SELECTED PLAN

The viable plans for Reach I are C-1, C-2, C-3, E, and M. The floodproofing plan (Plan A-2) would involve the flood-proofing of existing structures by construction of floodwalls around each building. Plan A-2 would only prevent about 57 percent of damages in the area and thus does not offer a high degree of flood control. This plan is not considered desirable because floodproofing costs would exceed benefits for flood damages prevented, flooding would continue in the streets and lawns, and the floodwalls might represent negative esthetic appeal.

Plans C-1 and C-2 were not selected because the 60-year protection that they would provide was not acceptable to local interests; the City of Chula Vista, especially, has instituted the standard of 100-year flood protection for all future flood control construction. Additionally, the plans would require some of the property owners to obtain flood insurance to comply with the Federal Flood Insurance Program.

Selection of a 100-year plan is consistent with Corps of Engineers policy for providing adequate protection for highly urbanized areas. This selection is predicated on the flashy nature of the flooding and the depths of residual damage--particularly those associated with a Standard Project Flood event. Due to the threat to life, health, safety, and property, both the locals and the Corps of Engineers feel that it is rational and prudent to select the plan that offers both a high degree of flood protection and cost effectiveness. Plan M, rather than Plan C-1, fulfills these criteria. Standard project flood protection, on the other hand, would require the reconstruction of the Interstate 5 culvert at an additional cost of over \$3.0 million. This additional cost is not cost effective.

Plan E would provide 100-year protection, but would cost more than Plan M.

The Telegraph Canyon Creek Citizens Advisory Committee wanted a plan for Telegraph Canyon Creek from Hilltop Drive to San Diego Bay, and the members recommended Plan M, with the Federal Government participating in Reach I and local interests implementing Reach II. Input from the Environmental Impact Statement was incorporated in the determination of the selected plan. The earth-bottom channel that is recommended downstream from Interstate 5 to San Diego Bay would allow vegetation to reestablish in the channel bottom. In addition, the energy dissipator would maintain the existing velocities of the floodflow within the channel.

Plan M as originally considered would have consisted of a 1.4-mile-long rectangular concrete channel from San Diego Bay to a point about 500 feet upstream from 4th Avenue (Reach I) in addition to the incorporation of the 0.2 mile of existing channel. Detailed studies indicated that an earth-bottom channel along the lower portion of Reach I (San Diego Bay to Interstate 5) would result in a savings of over \$100,000 and would be more environmentally pleasing than a concrete channel. However, further studies indicated that an earth-bottom channel throughout this lower area would require costly utility relocations, and so, a concrete trapezoidal channel would be incorporated downstream of Interstate 5. The final 500 feet of the channel would be earth-bottom.

In conclusion, the selected plan is an economical plan that offers a high degree of flood protection. Also, the plan includes landscaping that would blend in with the existing environment and reduce the visual impact of the channel. The selected plan has the support of the Telegraph Canyon Creek Citizens Advisory Committee, the Chula Vista City Council, and the County of San Diego, Department of Sanitation and Flood Control.

Table 11, entitled "Summary comparison of alternative plans," in this section of the report, presents determinative factors that underlie each alternative and are relevant to plan selection.

Table 11 - Summary comparison of alternative plans

		Alternatives									
		A-1 (Base Case)	A-2	B	C-1	C-2	C-3	D	E	M-Reach I	M-Reach II
A. Significant impacts											
1.*	Homes taken	None	None	9	5	5	60	56	5	0	0
2.*	Businesses taken	None	None	2	2	2	5	2	2	2	0
3.*	Community cohesion	None	None	Decrease because of relocations and channel barrier effects							
5.*	Esthetic values	None	Change in residential appearance	Some increase in neighborhood unsightliness							
6.*	Transportation	None	None	Increase in access during floods							
7.*	Leisure opportunities			None							
8.*	Community growth	None	None	Facilitates desired growth							
9.*	Local activity and land use										
	Beneficial	None	None	Eliminates waste of urban land							
	Adverse	None	None	Destruction of habitat							
10.*	Public facilities			None							
11.*	Employment										
	Beneficial	None		Creation of jobs during construction period							
	Adverse		41	213	80	94	109	62	85	80	38
			Transfer of jobs from neighborhood due to relocation of businesses								
12.*	Displacement of farms			None							
13.*	Noise			Short-term effects during construction							
14.*	Property values										
	Beneficial	None	None	Increase in value of raw land due to development potential							
	Adverse	None	None	Loss in assessed value due to relocations							
B. Plan evaluation											
1. Contributions to planning objectives											
	Flood control	No	100-year structures only	SPF	60-yr	60-yr	60-yr	100-yr	100-yr	100-yr	25-yr
	Recreation			No							
	Environmental quality			No significant contributions							
				Limited beneficial contributions							

Table 11 - Summary comparison of alternative plans-Continued

	A-1 (Base Case)	A-2		B		C-1		C-2		C-3		D		E		F	
		Reach I & II	Reach I	Reach II	Reach I (NED Plan)	Reach II	Reach I	Reach II	Reach I	Reach II	Reach I	Reach II	Reach I & II	Reach I	Reach II	Reach I	Reach II
2. Relationship to National accounts																	
a. NED (equivalent annual 7-7/8% - 100-yr)																	
Beneficial Flood control		\$250,000	\$ 470,000	\$ 81,000	\$375,000	\$ 70,000	\$375,000	\$ 70,000	\$375,000	\$ 85,000	\$ 494,000	\$ 416,000	\$ 73,000	\$430,000	\$50,000		
Adverse Flood control	0	\$303,000	\$ 850,000	\$ 258,000	\$297,000	\$193,000	\$367,000	\$193,000	\$433,000	\$ 335,000	\$1,020,000	\$ 569,000	\$ 207,000	\$394,000	\$35,000		
Net Benefits		\$-53,000	\$-380,000	\$-178,000	\$78,000	\$-123,000	\$-8,000	\$-123,000	\$-58,000	\$-250,000	\$-526,000	\$-153,000	\$-134,000	\$-36,000	\$-77,000		
b. Regional development																	
Beneficial																	
Same as NED benefits																	
Savings in flood insurance administrative costs																	
Minimal																	
Savings in cost to fill																	
Adverse																	
Loss of tax base	None	None	\$150,000	\$400,000	\$150,000	\$200,000	\$150,000	\$200,000	\$1,750,000	\$1,300,000	\$5,700,000	\$150,000	\$200,000	\$100,000	None		
c. Social well-being																	
Beneficial	None																
Decrease flood threat to life and property																	
Adverse impact on community cohesion due to relocations and barrier of the channels.																	
d. Environmental quality																	
Disturbs channel vegetation	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	
Decreases ground-water recharge	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	
Negative esthetic appeal	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	

Same as NED benefits
Savings in flood insurance administrative costs

Minimal

Decrease flood threat to life and property

Adverse impact on community cohesion due to relocations and barrier of the channels.

IMPLEMENTATION RESPONSIBILITIES

Legislative and administrative policies have established the basis for the division of Federal and non-Federal responsibilities in the construction and operation and maintenance of Federal water resource projects.

COST ALLOCATION

All monies allotted for this project are required for the purpose of flood control.

COST APPORTIONMENT

Federal legislation pertaining to traditional cost sharing of local protection projects requires that local interests provide all necessary rights-of-way, bear the expense of all relocations, and maintain and operate all features of the project after construction. However, because the project is being pursued under the Small Project Authority, the Federal share for construction costs, which include all study costs, cannot exceed the Federal limit of \$4,000,000.

FEDERAL RESPONSIBILITIES

The estimated Federal share of the total first cost of the project is \$4,000,000.

As part of its financial responsibility, the Federal Government would design and prepare detailed plans and administer contracts for the construction of the project after authorization of funding and receipt of non-Federal assurances.

NON-FEDERAL RESPONSIBILITIES

The estimated non-Federal share of total first cost of the project is \$1,390,000 which includes \$160,000 of the construction cost because of Small Project Authority limitations; \$410,000 for utilities and relocations; and \$820,000 for rights-of-way, all in April 1983 dollars.

In addition, maintenance and operation of the project would cost the local interests \$9,000 annually.

The local sponsor for the project is the County of San Diego.

Table 12 shows the apportionment of the first costs between Federal and non-Federal interests for the selected plan.

Table 12. Cost Apportionment
(April 1983 dollars)

Item	First Cost	Federal Share	Non-Federal Share
Flood control			
Construction	\$4,160,000*	\$4,000,000	\$ 160,000
Relocations, utilities	410,000	0	410,000
Rights-of-way	820,000	0	820,000
TOTAL	\$5,390,000	\$4,000,000	\$1,390,000

*includes \$500,000 for Detailed Project Report (pre-authorization studies) This cost is included in the first cost for the purpose of cost apportionment and is considered the financial cost of the project. The cost appearing in various tables throughout the report is used for determining economic feasibility, and is considered the economic cost of the project.

CONCLUSIONS

Various alternative solutions, both structural and nonstructural, were considered along Telegraph Canyon Creek. Public involvement was an important function in the development of each alternative solution and its impact for the water resources in the drainage area. Five cost effective solutions for Reach I are presented in this report and are discussed in detail.

It was concluded that Plans C-1, C-2, and C-3 were not acceptable because the 60-year flood protection that they would provide was not acceptable to the local interests. Adoption of these plans would necessitate a continuation of the flood insurance program. Part of this program requires regulation of the 100-year flood plain. This would require purchase of flood insurance and floodproofing to the limits of the 100-year flood plain. Moreover, it was concluded that 60-year flood protection does not provide adequate protection to this highly urbanized area.

It was further concluded that construction of recreation facilities along Telegraph Canyon Creek is not feasible. Beautification was considered and a program was developed.

The selected plan (Plan M) was economically justified, environmentally acceptable, supported by the sponsors (San Diego County and the City of Chula Vista), and recommended by the Telegraph Canyon Creek Citizens Advisory Committee.

Plan M is a combination structural and nonstructural solution to the flood problem along Telegraph Canyon Creek. Reach I (San Diego Bay to 4th Avenue) was found to be a Federal responsibility and Reach II (4th Avenue to Hilltop Drive) was found to be a non-Federal responsibility. Local sponsors have expressed a desire to implement this alternative.

In accordance with the requirements of Executive Order 11988, an evaluation has been made concerning the 4 acres of land in the project area that would be subject to development if the project were constructed. These 4 acres consist of several parcels located in various areas of the proposed project. This land cannot be excluded from the project. It has been determined that construction of the proposed project will induce development of these 4 acres within the flood plain. The evaluation resulted in a determination that there is no practicable alternative to locating in or impacting the flood plain.

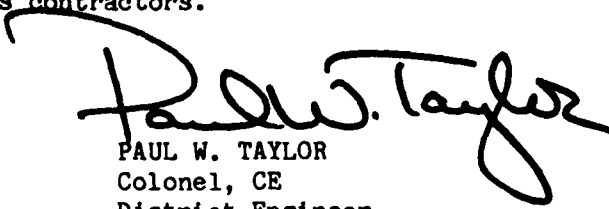
Protection of wetlands was a consideration in the planning process. Measures have been incorporated to avoid any adverse construction impacts upon the habitat or endangered species in the J Street Marsh. The operation and maintenance program, as proposed, would not adversely affect the marsh habitat. (See pars. 4.19 and 4.20, environmental impact statement.) The recommended plan is in compliance with Executive Order 11990, Protection of Wetlands.

RECOMMENDATIONS

I recommend that the Chief of Engineers approve a project for the control of floods along Telegraph Canyon Creek, San Diego County, California, in accordance with the authority contained in Section 205, Flood Control Act of 1948, as amended, and also in accordance with the selected plan described in this report and shown in figure 7 with such modifications as may be advisable, at a total first cost now estimated to be \$5,390,000 and at a first cost to the United States limited to \$4,000,000 (April 1983 price levels). Except as otherwise provided in these recommendations, the exact amount of non-Federal contributions shall be determined by the Chief of Engineers prior to project implementation, in accordance with the following requirements to which non-Federal interests must agree prior to implementation:

1. Provide without cost to the United States all lands, easements, and rights-of-way, including suitable borrow and spoil disposal areas, necessary for construction of the project.
2. Where total construction costs for the entire project exceed the Federal limitation expressed in Section 205 of the 1948 Flood Control Act (PL 80-858) and its amendments, provide a cash contribution for the amount of the excess. This contribution is presently estimated at \$160,000.
3. As made necessary by construction, accomplish, without cost to the United States, all alterations and relocations of buildings, transportation facilities, storm drains, utilities, and other structures and improvements. This provision excludes railroad bridges and approaches, and facilities necessary for the normal interception and disposal of local interior drainage at the line of protection.
4. Maintain and operate all the works after completion in accordance with regulations prescribed by the Secretary of the Army, at an annual cost now estimated at \$9,000.
5. Hold and save the United States free from water rights claims caused by the construction and operation of the project.
6. Prescribe and enforce regulations to prevent obstruction or encroachment on flood control works that would reduce their flood-carrying capacity or hinder maintenance and operation, and control development in the project area to prevent an undue increase in the flood damage potential.
7. Publicize flood plain information in the areas concerned and provide this information to zoning and other regulator agencies for their guidance and leadership in preventing unwise future development in the flood plain.

8. Hold and save the United States free from damages caused by construction, operation, and maintenance of the project, excluding damages that are due to the fault or negligence of the United States or its contractors.



PAUL W. TAYLOR
Colonel, CE
District Engineer



PHOTO 1 - Looking west at Telegraph Canyon Creek valley about 2 miles east of I-805.

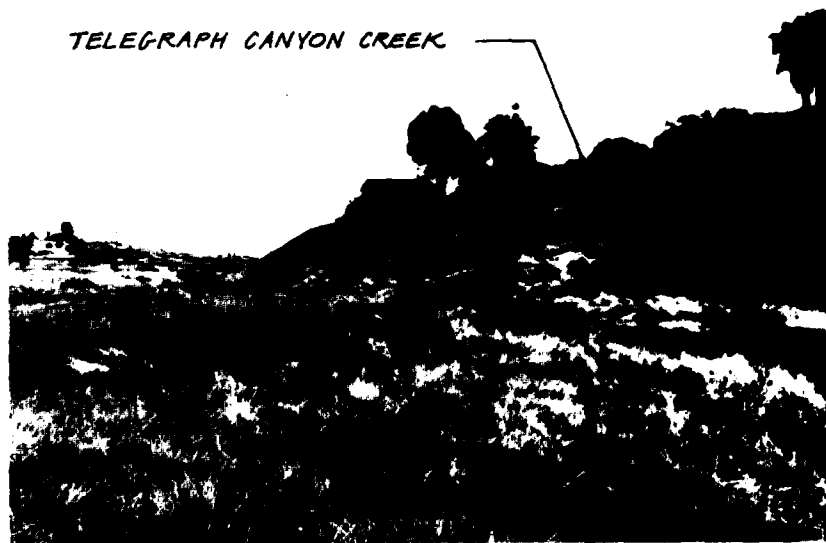


PHOTO 2 - Looking upstream above Hilltop Drive.



PHOTO 3 - Shade structure in Hilltop Park



PHOTO 4 - Looking downstream along Telegraph Canyon Creek at Hilltop Park. Concrete swale is low flow channel for the creek.



PHOTO 5 - Looking upstream along Telegraph Canyon Creek from a point between 2nd Avenue and "K" Street.

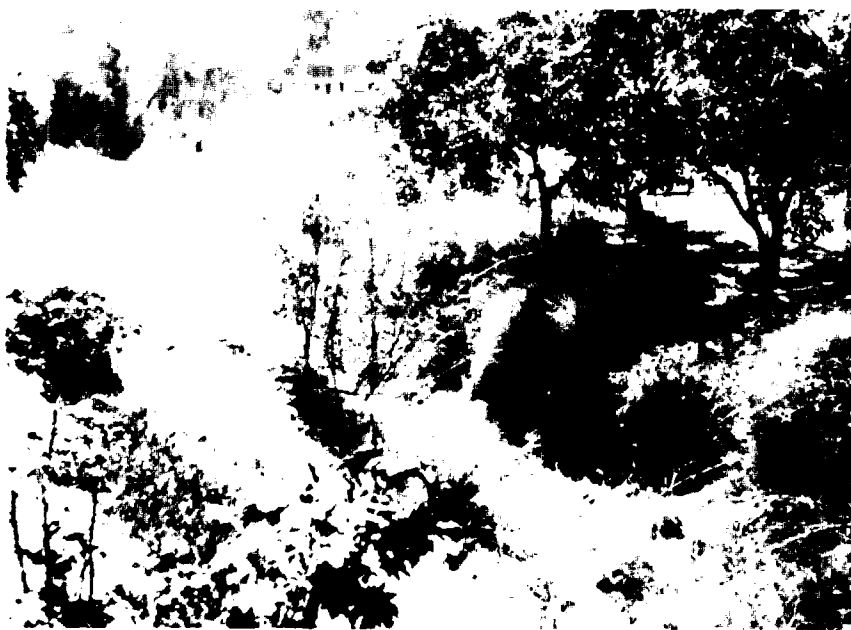


PHOTO 6 - Looking downstream along Telegraph Canyon Creek from a point between 2nd Avenue and "K" Street.



PHOTO 7 - Looking downstream along Telegraph Canyon Creek from the 1st Street crossing.



PHOTO 8 - Looking downstream along Telegraph Canyon Creek from the 2nd Avenue crossing.

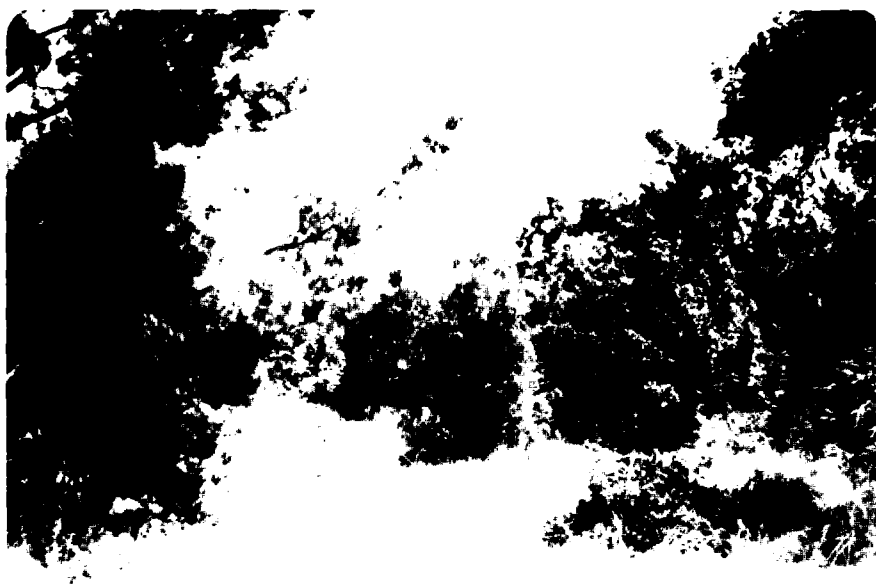


PHOTO 9 - Heavy vegetative growth in an area adjoining Telegraph Canyon Creek near 3rd Avenue.



PHOTO 10 - Looking upstream along Telegraph Canyon Creek from the 4th Avenue crossing.

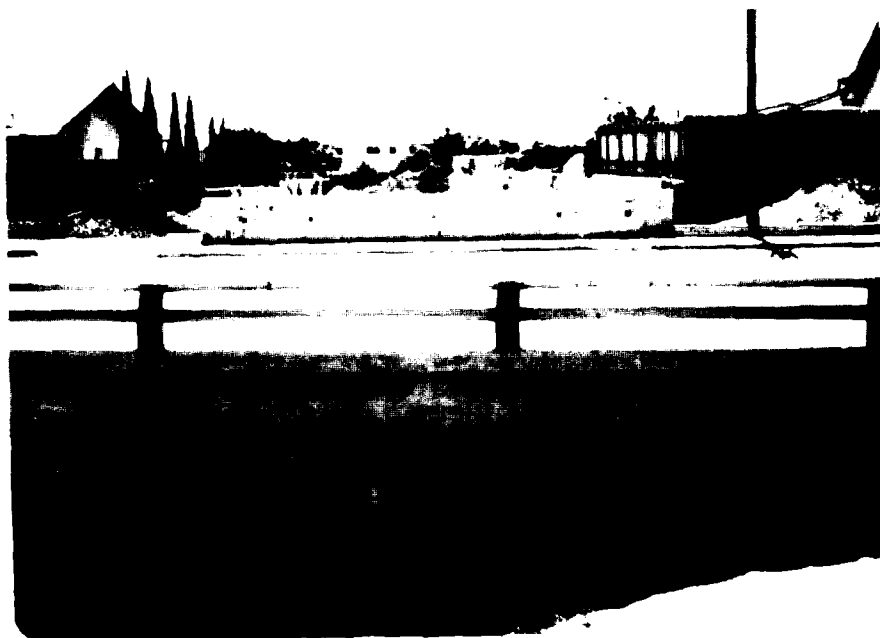


PHOTO 11 - Looking downstream from 4th Avenue crossing.



PHOTO 12 - Looking upstream at existing channel improvement between 4th Avenue and 5th Avenue



PHOTO 13 - Looking downstream along Telegraph Canyon Creek upstream from 5th Avenue bridge.



PHOTO 14 - Looking downstream from 5th Avenue bridge. An apartment complex is located to the left of Telegraph Canyon Creek.



PHOTO 15 - Telegraph Canyon Creek downstream from 5th Avenue. 5th Avenue crossing can be seen in background. Apartment complex to the right and grove of olive trees to the left.



PHOTO 16 - Streambed of Telegraph Canyon Creek between Broadway-National Avenue and 5th Avenue downstream from apartment complex.



PHOTO 17 - Telegraph Canyon Creek immediately upstream from Broadway-National Avenue.



PHOTO 18 - Commercial development adjacent to Telegraph Canyon Creek just downstream from Broadway-National Avenue.



PHOTO 19 - Looking upstream along Telegraph Canyon Creek between Industrial and Broadway-National Avenues.



PHOTO 20 - Looking downstream along Telegraph Canyon Creek between Industrial Avenue and Broadway-National Avenue. Ratner Corporation is on the right.



PHOTO 21 - Panoramic view at San Diego Gas and Electric Company plant adjacent to Telegraph Canyon Creek.
Looking downstream from I-5

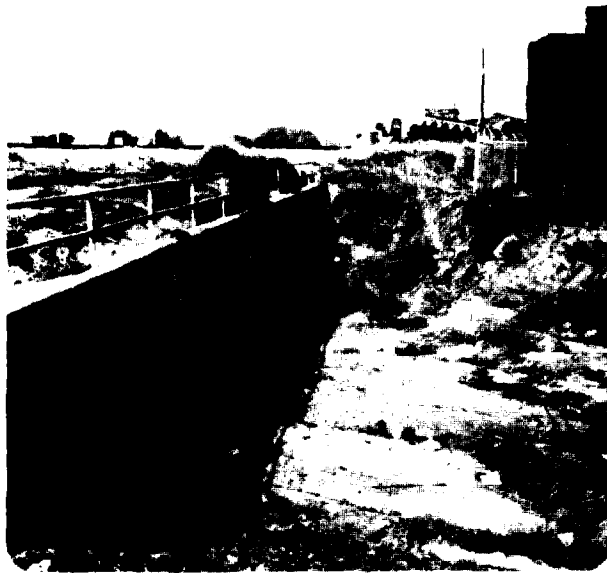


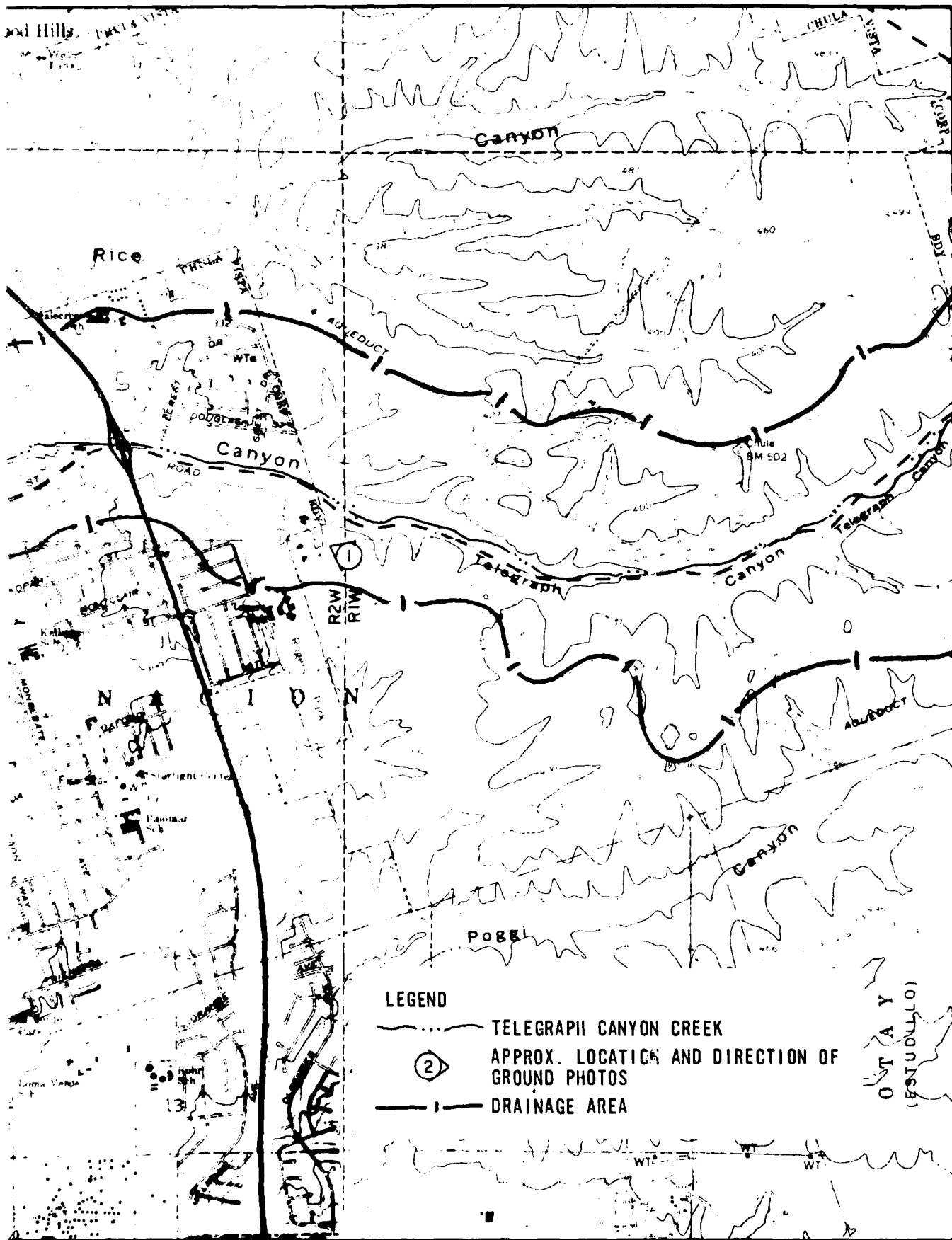
PHOTO 22 - Looking north at existing inlet at I-5 culvert.



PHOTO 23 - Looking upstream at existing outlet at I-5. Notice high embankment of freeway.

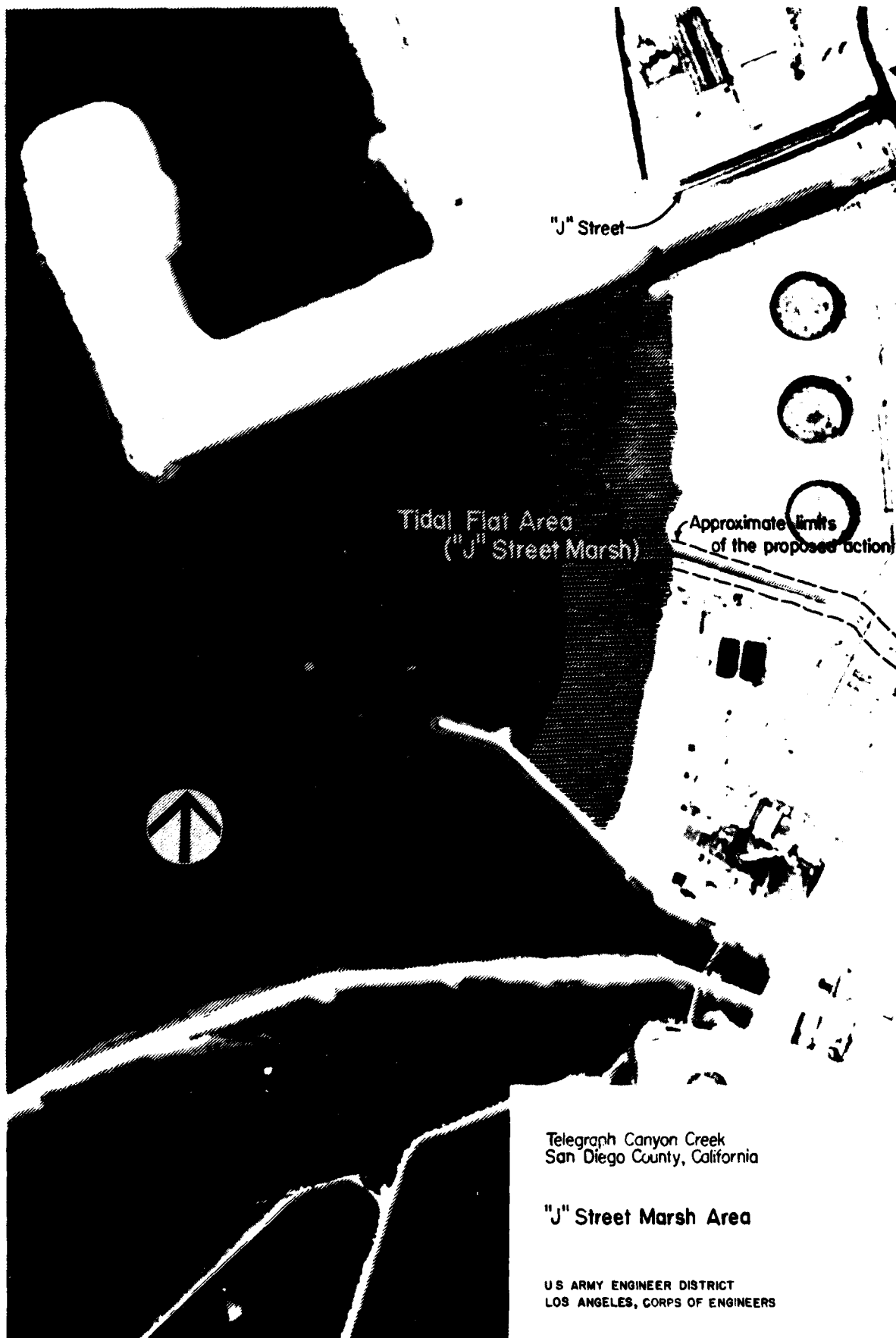






LEGEND

- TELEGRAPH CANYON CREEK
- ② APPROX. LOCATION AND DIRECTION OF GROUND PHOTOS
- DRAINAGE AREA



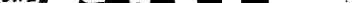
Telegraph Canyon Creek
San Diego County, California

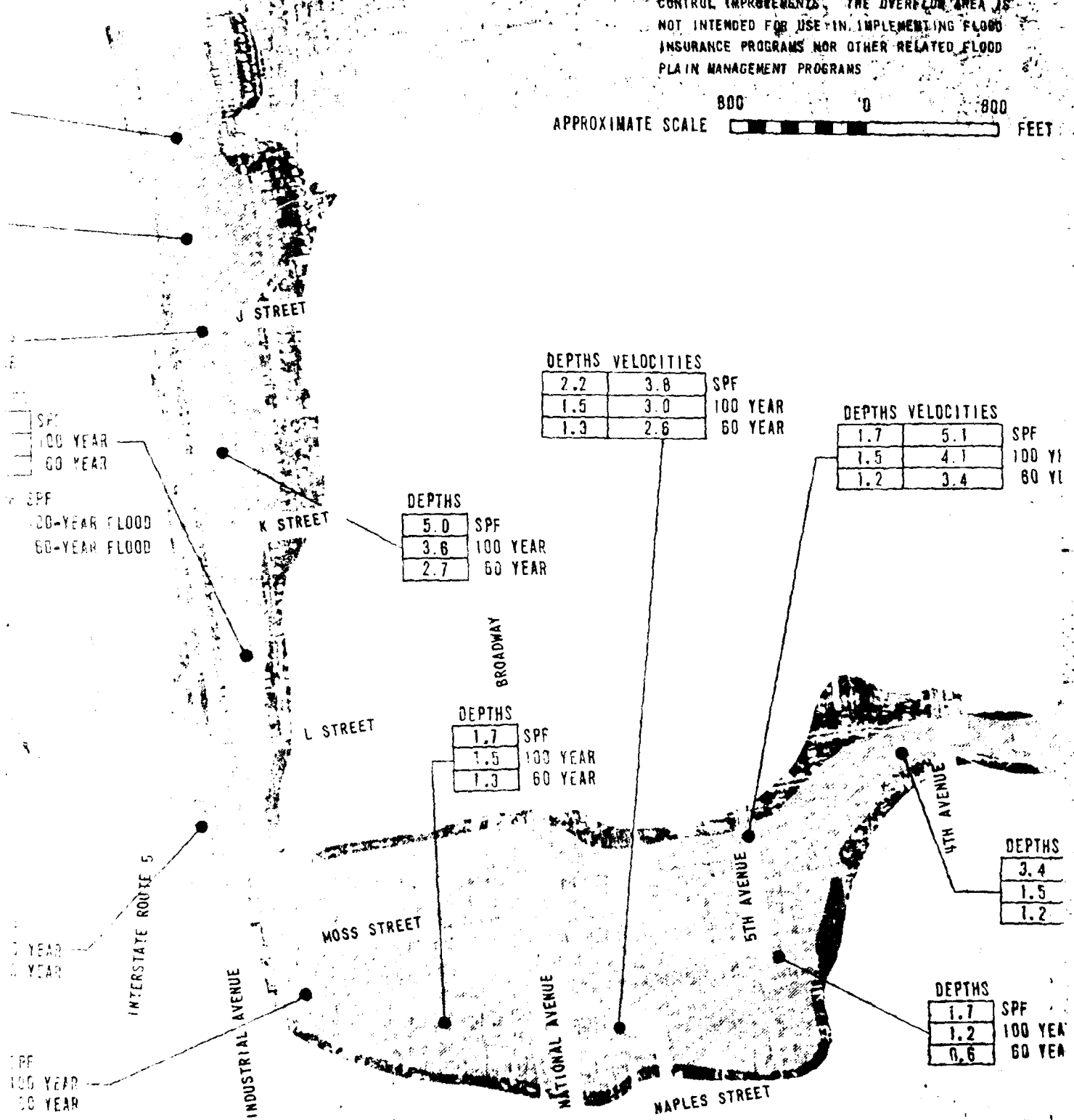
"J" Street Marsh Area

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES, CORPS OF ENGINEERS



THE APPROXIMATE OVERFLOW LIMITS SHOWN ON THIS DRAWING WERE PREPARED SPECIFICALLY FOR THE PURPOSE OF EVALUATING THE ECONOMICS FOR FLOOD CONTROL IMPROVEMENTS. THE OVERFLOW AREA IS NOT INTENDED FOR USE IN IMPLEMENTING FLOOD INSURANCE PROGRAMS NOR OTHER RELATED FLOOD PLAIN MANAGEMENT PROGRAMS.

APPROXIMATE SCALE  FEET



2

FLOW LIMITS SHOWN ON THIS
SPECIFICALLY FOR THE
THE ECONOMICS FOR FLOOD
THE OVERFLOW AREA IS
IN IMPLEMENTING FLOOD
OR OTHER RELATED FLOOD
PANS

0 800
FEET

LEGEND



100-YEAR
FLOOD
Q 2800 CFS

OVERFLOW LIMITS

STANDARD
PROJECT
FLOOD Q 5500 CFS

..... CREEK ALINEMENT

HILLTOP DRIVE

1ST AVENUE

2ND AVENUE

3RD AVENUE

4TH AVENUE

DEPTHS VELOCITIES

1.7	5.1
1.5	4.1
1.2	3.4

SPF
100 YEAR
60 YEAR

DEPTHS

3.4
1.5
1.2

SPF
100 YEAR
60 YEAR

DEPTHS

1.7
1.2
0.6

SPF
100 YEAR
60 YEAR

TELEGRAPH CANYON
SAN DIEGO COUNTY, CALIFORNIA

OVERFLOW MAP

PRESENT CONDITIONS
WITHOUT PROJECT

PLATE 4

3

AD-A150 163 TELEGRAPH CANYON CREEK CITY OF CHULA VISTA SAN DIEGO
COUNTY CALIFORNIA DE. (U) ARMY ENGINEER DISTRICT LOS
ANGELES CA JUL 83

TELEGRAPH CANYON CREEK CITY OF CHULA VISTA SAN DIEGO
COUNTY CALIFORNIA DE. (U) ARMY ENGINEER DISTRICT LOS
ANGELES CA JUL 83

2/2

UNCLASSIFIED F/G 13/2

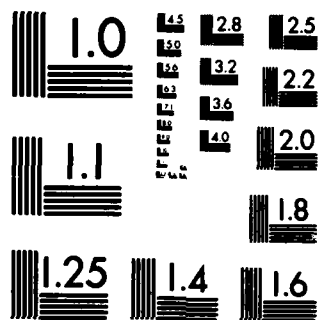
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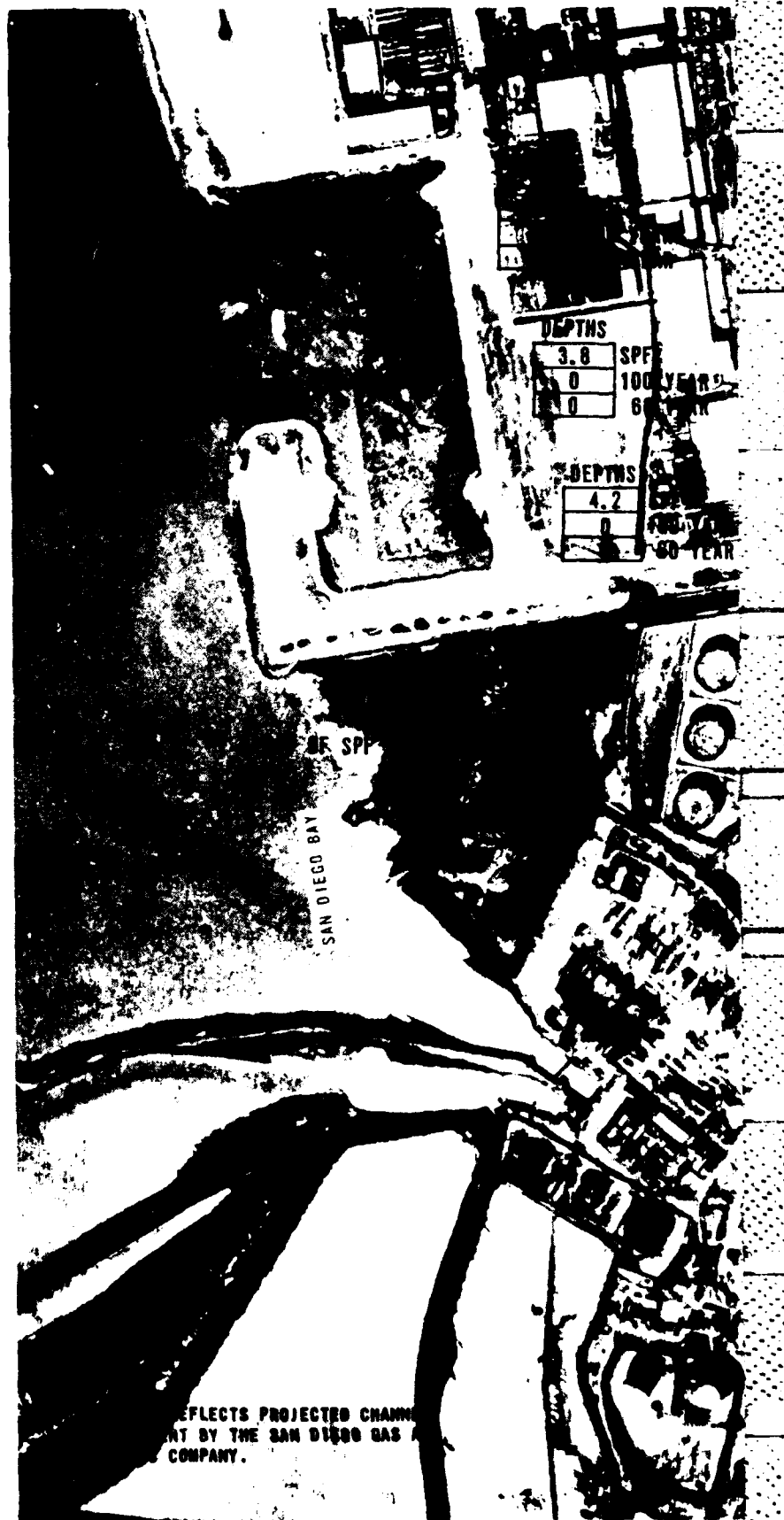
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FALL 2007

DTIC



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A





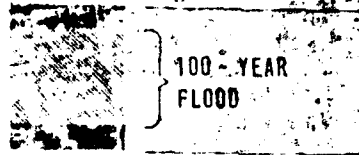
PROJECTED CHANNEL;
THE SAN DIEGO GAS AND

800

THE APPROXIMATE OVERFLOW LIMITS SHOWN ON THIS DRAWING WERE PREPARED SPECIFICALLY FOR THE PURPOSE OF EVALUATING THE ECONOMICS FOR FLOOD CONTROL IMPROVEMENTS. THE OVERFLOW AREA IS NOT INTENDED FOR USE IN IMPLEMENTING FLOOD INSURANCE PROGRAMS FOR OTHER RELATED FLOOD PLAIN MANAGEMENT PROGRAMS.

LEGEND

OVERFLOW LIMITS

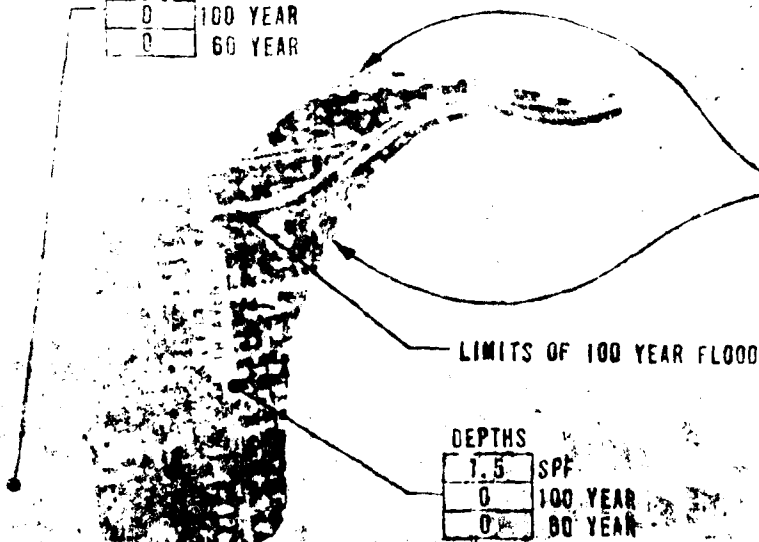


STANDARD PROJECT FLOOD

CREEK ALIGNMENT

DEPTHS

1.6	SPF
0	100 YEAR
0	60 YEAR



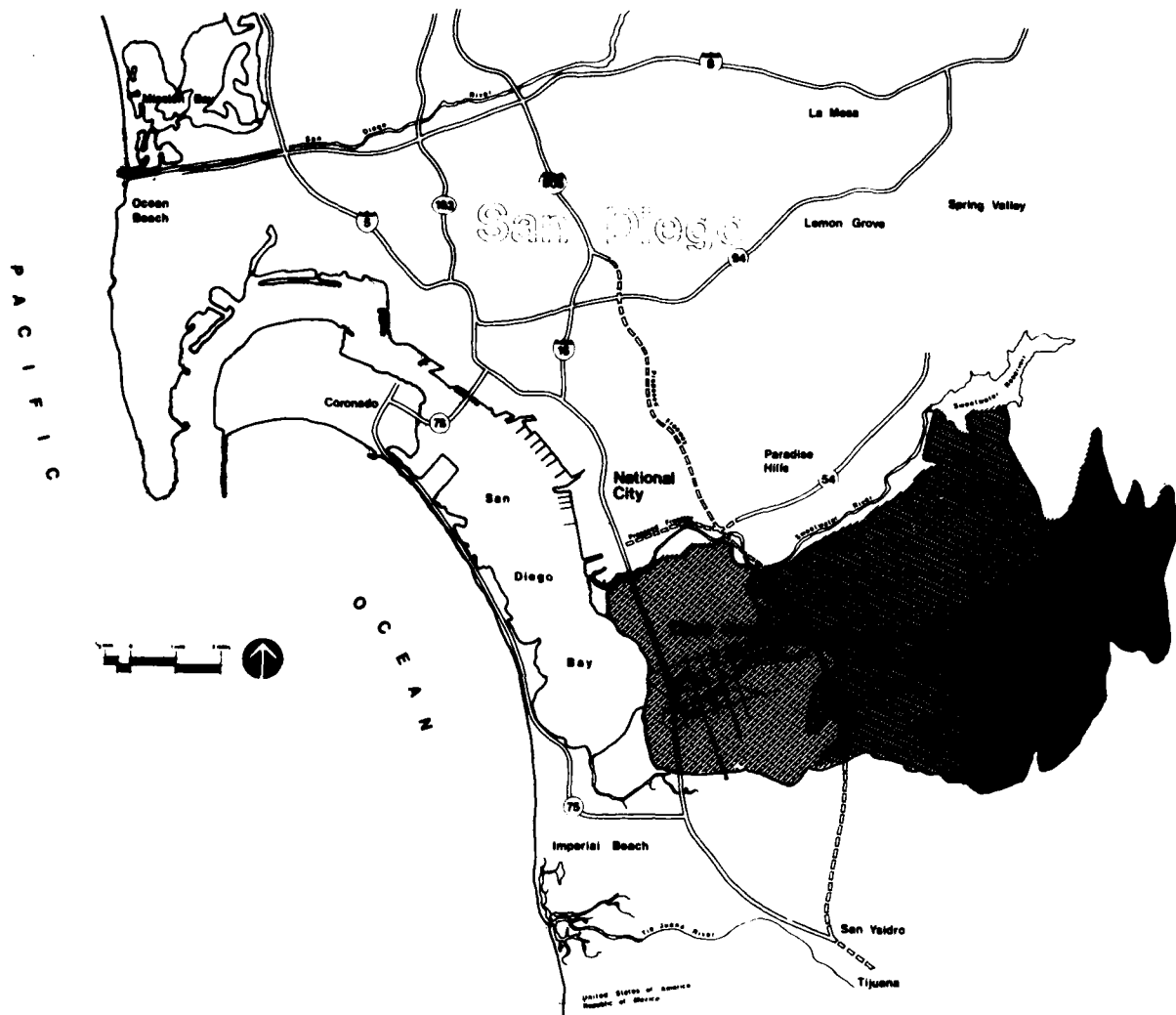
DEPTHS

1.5	SPF
0	100 YEAR
0	60 YEAR

TELEGRAPH CANYON
SAN DIEGO COUNTY, CALIFORNIA

OVERFLOW MAP

FUTURE CONDITIONS
WITH PROJECT



-  Huerhuero-Stockpen association:
0 to 9 percent slopes
-  Diablo-Altamont association:
5 to 15 percent slopes
-  Diablo-Linne association:
15 to 50 percent slopes

Telegraph Canyon Creek
San Diego County, California

Regional Soil Classification

U.S. ARMY ENGINEER DISTRICT
LOS ANGELES, CORPS OF ENGINEERS

FINAL ENVIRONMENTAL IMPACT STATEMENT

TELEGRAPH CANYON CREEK

FLOOD CONTROL PROJECT

CITY OF CHULA VISTA

SAN DIEGO COUNTY, CALIFORNIA

PREPARED BY
U.S. ARMY ENGINEER DISTRICT

LOS ANGELES, CALIFORNIA

JULY 1983

Note on content and format of FEIS: The September 1979 Draft Environmental Impact Statement for Telegraph Canyon Creek Flood Control Project was prepared prior to receipt of current Council on Environmental Quality (CEQ) regulations. The CEQ final regulations implementing the National Environmental Policy Act require that certain information must be included in this statement. These sections are: Summary; Need For and Objectives of Action; Alternatives; Affected Environment; Environmental Effects; Public Involvement; List of Recipients of the Draft Statement; and a List of Preparers. The statement must also include a discussion of the relationship of the project to environmental protection statutes and other environmental requirements.

A new chapter 10 (No. 10) has been added to the FEIS to summarize project planning since publication of the DEIS. The need for and objectives of the action are discussed in chapter 10. Compliance with applicable statutes is discussed in the summary and in chapter 10. Alternatives are discussed in the summary and chapter 6. Environmental effects are discussed in the summary and chapter 4. Affected environment is discussed in chapter 2 and public participation in chapter 9. In addition, chapter 10 contains a discussion of the coordination and consultation process that has occurred since publication of the draft statement; the project modifications made in response to concerns of the San Diego Gas and Electric Company, the U.S. Fish and Wildlife Service, and the Ratner Corporation; and any unresolved issues. The list of recipients of the draft statement is included in the summary and chapter 9, and a list of agencies, organizations and individuals responding to the draft statement is included in the summary. A list of preparers has been included, at the end of chapter 10.

In response to the above cited regulations, the Corps response to agency and public comments must appear alongside the letters of comment. Also, in response to comments from the U.S. Department of Interior and the State Resources Agency, additional information regarding expected sediment and erosion patterns as well as a description of the proposed operation and maintenance program has been incorporated into chapter 4.

This final environmental impact statement (FEIS) has been revised in response to comments on the Draft EIS and to reflect modifications in the Corps' recommended plan (see paragraphs 10.04 and 10.05). Because most pages have some changes or modifications, the individual pages have not been marked revised. For purposes of comparison with this document, the DEIS is on file in the Los Angeles District Office.

To comply with the requirements of the Clean Water Act of 1977, a Section 404(b)(1) water quality evaluation has been included as Attachment 1. The required determination of consistency with the California Coast Management Plan is included as Attachment 2. All pertinent project-related correspondence cited in this statement and all letters of comment and responses to those comments are contained in Appendix A to the main report. Where necessary, paragraph numbers have been changed to accommodate additional material included in the FEIS.

FINAL ENVIRONMENTAL IMPACT STATEMENT
TELEGRAPH CANYON CREEK FLOOD CONTROL PROJECT

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FINAL ENVIRONMENTAL IMPACT STATEMENT

SUMMARY

TELEGRAPH CANYON CREEK

CITY OF CHULA VISTA

SAN DIEGO COUNTY, CALIFORNIA

() Draft

(X) Final Environmental Statement

RESPONSIBLE OFFICE:

U.S. Army Engineer District,
Los Angeles, California

1. NAME OF ACTION. (X) Administrative () Legislative

2. DESCRIPTION OF ACTION. The proposed action would include the construction of (1) a 0.83-mile-long rectangular concrete-lined channel from about 450 feet upstream from 4th Avenue to 780 feet upstream from Interstate 5; (2) two 12-foot-wide by 10-foot-high boxes, totaling 780 feet in length, that would connect the rectangular concrete channel to the existing 0.23-mile culvert under Interstate 5; (3) a 0.31-mile concrete trapezoidal channel from Interstate 5 to a drop structure; (4) a 0.08-mile earth-bottom trapezoidal channel from the drop structure to San Diego Bay; and (5) the incorporation of the existing culvert under Interstate 5.

3a. ENVIRONMENTAL IMPACTS. One hundred year (100-year) flood protection would be provided to urban developments along about 1.6 miles of the creek; exit velocities into the J Street marsh would be reduced, which would reduce scour of the J Street marsh during high discharge; and widening and deepening of the channel would create an additional area of 40,800 square feet, which would be subject to tidal inundation.

3b. ADVERSE ENVIRONMENTAL EFFECTS. Adverse environmental effects include alteration and loss of vegetation in the concrete-lined reaches of the channel; removal of channel bottom for potential groundwater recharge; relocation of two businesses; possible increased salt water intrusion into groundwater aquifers; elimination of wildlife habitat along the concrete-lined portions of the channel; and temporary impacts on noise, energy consumption, air pollution, utilities and traffic during construction.

4. ALTERNATIVES. The alternatives to the proposed action include: (a) Alternative A-1, the no action or "do nothing" alternative (b) Alternative A-2, which proposes floodproofing of homes in the flood plain; (c) Alternative B, which proposes a 2.5-mile-long concrete channel along the creek alignment which would provide standard project flood (SPF) protection in that reach; (d) Alternative C-1, which proposes a 2.5-mile-long concrete channel along the reach; (e) Alternative C-2, which proposes a channel which would be similar to the channel in Alternative C-1 with the exception of the alignment of the channel in the last 2,150 feet of channel; (f) Alternative C-3, which proposes a 2.5-mile-long earth channel in addition to the incorporation of the 0.2 miles of existing culvert; (g) Alternative D, which proposes a dam and reservoir in the upper drainage area, in addition to the channel which would provide 100-year protection in that reach; (h) Alternative E, which proposes in addition to the channel in Plan C-1, a diversion channel downstream from the railroad which would provide 100-year protection; and (i) Alternative M, which proposes a 1.6-mile-long combined earth and concrete channel which includes a covered box portion and would provide 100-year protection.

5. CONCLUSIONS AND FINDINGS. It is the District's conclusion that the proposed project is consistent with the goals of Executive Order 11988 (Flood Plain Management), Executive Order 11990 (Protection of Wetlands), and other regulations as described in the FEIS. A Section 404(b)(1) ecological evaluation of proposed discharge of fill materials has been included in this FEIS for the purposes of obtaining an exemption from the requirement of Sections 301 and 402 of the Clean Water Act.

6. RECIPIENTS OF THE DRAFT ENVIRONMENTAL IMPACT STATEMENT (SEPTEMBER 1979)

Federal

Department of Agriculture

Forest Service, Region 5

Soil Conservation Service, Davis, California

Department of Commerce

Assistant Secretary for Science and Technology, Washington, D.C.

Department of Energy

Director, Region IX

Public Health Service, Regional Program Chief, Water Supply and Sea Resources Program

Department of Housing and Urban Development

Administrator, Region IX

Director, Southwest Area Office, Los Angeles

Department of Interior

Bureau of Indian Affairs

Bureau of Land Management

Bureau of Mines

Bureau of Outdoor Recreation

Bureau of Reclamation

Fish and Wildlife Service

Geological Survey

National Park Service

Pacific Southwest Planning Office

Department of Transportation

Commander, Eleventh Coast Guard District

Federal Aviation Administration

Federal Highway Administration

Federal Railroad Administration

Environmental Protection Agency, Region IX

Federal Power Commission

State of California

State Clearing House (multiple copies for distribution to concerned state agencies)

San Diego County

County Engineer

Department of Sanitation and Flood Control

Government Reference Library

San Diego County Water Authority, General Manager

Other Agencies

City of Chula Vista

San Diego Unified Port District

Utilities, Railroads

Metropolitan Water District of Southern California

San Diego and Arizona Eastern Railway Company

San Diego Gas and Electric Company

Santa Fe Railway

Southern California Edison Company

Pacific Telephone Company

Other

Audubon Society, San Diego Chapter

National Audubon Society, Western Regional Office

CEP Associates, San Diego

Chula Vista Public Library

Izaak Walton League of America, Inc.

National Wildlife Federation

San Diego Chamber of Commerce

Sierra Club, San Diego Chapter

Telegraph Canyon Creek Flood Control Advisory Committee

7. COMMENTS RECEIVED.

Federal

Department of Agriculture, Soil Conservation Service, Davis, Calif.

Department of Commerce:

The Assistant Secretary for Science and Technology,
Washington, D.C.

National Oceanic and Atmospheric Administration

Department of Housing and Urban Development

Department of Interior, Office of the Secretary, Pacific Southwest
Region, San Francisco, California

Department of Transportation

Federal Aviation Administration, Los Angeles, Calif.

Federal Highway Administration, San Francisco, Calif.

Environmental Protection Agency, San Francisco, Calif.
Federal Energy Regulatory Commission, San Francisco, Calif.

State

The Resources Agency of California, Sacramento, California

Other

Metropolitan Transit Development Board, San Diego, Calif.

8. DRAFT STATEMENT TO EPA, 28 December 1979.

1. PROJECT DESCRIPTION

1.01 LOCATION. Telegraph Canyon Creek Basin is an elongated area comprising about 7.5 square miles in San Diego County. The creek's headwaters in the San Miguel Mountains and empties into the San Diego Bay at "J" Street Marsh. The creek flows through unincorporated county area and the city of Chula Vista. The study area, however, involves only the western 2.5 miles of the reach downstream from Hilltop Drive to San Diego Bay.

1.02 AUTHORITY. In 1977, the City of Chula Vista and the County of San Diego requested that Telegraph Canyon Creek be studied as a small project under the authority contained in Section 205, Flood Control Act of 1948, as amended.

1.03 DESCRIPTION OF PROJECT. The proposed project would include the construction of (1) a 0.83-mile-long rectangular concrete-lined channel from 450 feet upstream from 4th Avenue to 780 feet upstream from Interstate 5; (2) two 12-foot-wide by 10-foot-high boxes, totaling 780 feet in length, that would connect the rectangular concrete channel to the existing 0.23-mile culvert under Interstate 5; (3) a 0.31-mile concrete trapezoidal channel from Interstate 5 to a drop structure; (4) a 0.08-mile earth-bottom trapezoidal channel from the drop structure to San Diego Bay; and (5) the incorporation of the existing culvert under Interstate 5. The proposed project is a modification of the tentatively selected plan as described in the DEIS. The changes to the plan were made in response to public concerns to the project. See paragraphs 10.04 and 10.05 for a more complete description of how the plans differ.

1.04 The channel upstream from the double box would have a wall above ground for a distance of approximately 350 feet. The wall, which would range from 0 to 11 feet high, is required to induce sufficient head to convey the 100-year peak discharge of 3,300 cubic feet per second (cfs) through the existing culvert under Interstate 5.

1.05 This alternative would increase the area subject to tidal inundation more than four fold the existing condition. This would be accomplished by nearly doubling the current channel width, deepening the channel, and reducing the slope of the channel banks. These modifications, in addition to the area of increased tidal inundation, are expected to increase the number of water-associated bird species and other wildlife that feed in the lower 600 feet of the creek.

2. ENVIRONMENTAL SETTING WITHOUT THE PROJECT

Physical Environment

2.01 PHYSIOGRAPHY. Telegraph Canyon Creek is within the physiographic boundaries of the Peninsular Range Province, which occupies all of southwestern California and portions of Baja California, Mexico. This province, developed on an extensive uplifted fault block, is expressed topographically by mountain ranges separated by intermediate valleys, steep-sloped hills and low-lying coastal plains. Elevations of 6,500 feet are found on the higher peaks, approximately 50 miles east of the coast, in the Central Mountain Valley area. Telegraph Canyon Creek is located on the Pacific side of the Peninsular Range in the coastal plain subprovince. This subprovince consists primarily of mesa-like terraces that range from near sea level to about 1,200 feet in elevation. These terraces grade inland into rolling hills topped by remnants of terraces. Intermittent rivers and streams in their westward and south-westward flow to the Pacific Ocean have dissected these marine terraces and formed deep flat-bottomed valleys. Subsequent erosional and depositional cycles have filled the valley with as much as 200 feet of alluvium.

2.02 GEOLOGY. Telegraph Canyon Creek rises in the gently southwest-dipping lower slopes of the San Miguel Mountains, approximately 10 miles northeast of the project site, and crosses sedimentary rock of Tertiary age for the first 6 miles of its course. Downstream from this area, the stream leaves the highlands and flows across a wide aggraded valley to where it empties into San Diego Bay. The valley walls are cut from Miocene marine sediments and dissected Pleistocene terrace and alluvial deposits. The valley floor consists of Recent and Pleistocene age floodplain materials.

2.03 The complete length of the channel excavation would be in alluvial soils of Recent age. These materials consist of poorly consolidated micaceous sands, silts, and silty clays derived from erosion of the nearby highlands. The total depth of these deposits is estimated to be in excess of 200 feet.

2.04 SEISMICITY. There are three northwest-trending faults in the San Diego area. The Rose Canyon fault is located about 9 miles north of the project area; the Sweetwater and La Nacion faults are located 2 and 4 miles east, respectively. Other major northwest-trending faults that have a greater potential for the possible occurrence of a large earthquake include the Whittier-Elsinore, Agua Caliente, San Jacinto, and the San Andreas. These are located to the northeast 40 miles, 51 miles, 60 miles, and 100 miles, respectively. The San Clemente fault is about 40 miles offshore.

2.05 Approximately 40 earthquakes with Richter magnitude 4.0 or greater have occurred within a 35-mile radius of the project area during the last 40 years. Thirty-four of these events had a recorded magnitude of 4.0 to 4.9 and six had a recorded magnitude of 5.0 to 5.7. Twelve earthquakes of magnitude 3.0 to 3.9 have occurred within a 12-mile radius of downtown San Diego. Although some of the local faults are considered active or potentially active, they would not be capable of producing sufficient force to generate a major earthquake. The most likely source for a major earthquake would be one of the

large faults that has a considerable length such as the San Jacinto. Recent geologic studies indicate that an earthquake with a magnitude of 7.0+ could occur on this fault system.

2.06 SOIL CHARACTERISTICS. A generalized map showing the distribution of soil types within the study area is shown on plate 6. The soils in the lower drainage area, downstream from Hilltop Drive, are in the Huerhuero Series. Soils in the drainage area, upstream from Hilltop Drive, are in the Diablo Series.

2.07 Soils in the Huerhuero Series have a shallow surface (largely of loam about 1 foot thick) with a deeper layer of clays below (about 3 feet thick), and a third stratum consisting of loam (about 3 feet thick). When undisturbed, these soils demonstrate a slight to moderate erosion hazard; this hazard increases with mixing of the clays and loams in the series. Soils between Hilltop Drive and 3rd Avenue and south of the existing channel between Interstate 5 and J Street Marsh are generally between clay and sand in texture.

2.08 The Diablo Series in the upper drainage area are generally clayey, with a layer of sandy loam beneath, and a substratum of decomposed sandstone. These soils demonstrate slight to moderate erosion hazards.

2.09 GROUNDWATER. Information concerning groundwater in the lower Telegraph Canyon Creek drainage area is not extensive. There are no well monitoring programs at present (1979), nor has there been any monitoring in the last 7 years. Based upon the limited data available, the configuration of the water table appears to approximate that of the ground surface. The water table is a few feet below ground surface in the lower reaches of the project near the bay and is 25 to 35 feet below ground surface near 3rd Avenue.

2.10 Intermittent records were kept from 1941 until 1971 on Well No. 185/2W 22F., located approximately 2 miles south of the project area in the Otay River Valley. Groundwater elevations in this well ranged from a high of 19.5 feet (mean sea level datum) in 1944 to a low of 4.7 feet in 1965.

2.11 HYDROLOGY. Little streamflow occurs in Telegraph Canyon Creek except during and immediately following rains. Water enters the creek from street drains during the summer months, but is limited in quantity and percolates into the ground almost immediately.

2.12 Local storms can occur throughout the year, either during general storms or as isolated phenomena. Local summer storms are not uncommon in the interior mountains and can result in high intensity precipitation covering comparatively small areas. General summer storms in southern California have historically occurred in the form of tropical storms. Local winter storms, like their summer counterparts, result in high intensity precipitation for short durations over small areas.

2.13 Although a flood of specific magnitude cannot be predicted to occur during a specified year, statistical techniques permit analysis of the impacts of all sizes of floods over a time period. The "standard project flood" is

that flood magnitude for which the Corps strives to provide protection in urban areas. The standard project flood (SPF) represents the flood that may be expected from the most severe combination of meteorological and hydrological conditions that are considered reasonably characteristic of the region in which the drainage basin is located.

2.14 In this study, a thunderstorm that occurred in March 1943 in the vicinity of Sierra Madre in Los Angeles County was used to develop the standard project flood discharge, which was estimated to have frequency of occurrence of about once every 500 years. If such a flood were to occur today (1979), it would inundate 335 acres (43 acres within San Diego Gas and Electric Company property), of which 283 acres are currently urbanized. The 100-year flood (the flood that would be expected to be equaled or exceeded on the average of once every 100 years) would inundate about 224 acres. (See pls. 4 and 5.) Property damage and economic losses would be severe.

2.15 Additional data is contained in appendix E to the main report.

2.16 WATER QUALITY. A limited amount of data concerning groundwater quality is available from two wells at the San Diego Country Club located 1/2 mile south of Telegraph Canyon Creek and about 1/4 mile upstream from the proposed channel inlet. These wells are located on the Country Club property and are being used to irrigate the golf course fairways. Water from these wells contains fairly high concentrations of sodium chloride and sulfate; consequently, the water quality is marginal. (See app. B to main report for water analysis.)

2.17 CLIMATE. A dry subtropical climate characterizes the study area. The annual mean temperature is 61.9 degrees F. with an average daily range of 13.7 degrees F. The monthly means are 75.0 degrees F. in August and 46.6 degrees F. in January.

2.18 The study area is located in the path of high-pressure-influence westerlies that average about 6.7 miles per hour. These winds pick up moisture from the surface of the ocean; the moisture is dissipated inland over the warmer land mass. The average annual rainfall is about 10 inches in the study area, with most rainfall occurring between November and May.

2.19 AIR QUALITY. The City of San Diego is ranked as one of the 14 smoggiest cities in the Nation. Nearly 130,000 tons of hydrocarbons are being discharged into the air annually, about 72 percent of which is believed to be derived from about 900,000 motor vehicles used within the county.

2.20 Air contaminants monitored within the San Diego Bay air basin include carbon monoxide (CO), total oxidant (O₃), nitrogen oxides (NOX), hydrocarbons (HC), and sulfur dioxide (SO₂). The percentage of the days exceeding the Federal standard for total oxidants in the Chula Vista area in 1971, 1972, 1973, 1974, 1975, 1976, and 1977 were 56, 46, 44, 43, 35, 47, and 52, respectively.

2.21 NOISE. Noises generated by vehicular transportation (particularly trucks and motorcycles) have been identified as problems in the Chula Vista area. Industrial noises are effectively regulated locally. Construction noises are increasingly responsible for auditory discomfort. Neighborhood noises also are a source of annoyance.

2.22 NATURAL RESOURCES. The natural resources of San Diego County are chiefly centered on the fishing industry, both commercial and recreational, and mineral commodities, the most prevalent of which are sand and gravel and crushed and broken stone.

Biological Environment

2.23 VEGETATION AND WILDLIFE. The prevailing biotic community associated with the urbanized flood plain and the lower drainage area of Telegraph Canyon Creek has adapted to urban subjugation. Introduced and native annual and perennial herbs, grasses, shrubs, and trees characterize the vegetation of the urban community. Wildlife tolerant of man's presence such as mourning dove, rock dove, mockingbird, starling, Brewer's blackbird, opossum, ground squirrel, Norway rat, and house mouse generally inhabit this community.

2.24 A coastal scrub community still persists within much of the upper drainage area of Telegraph Canyon Creek (east of Interstate 805). Agricultural and urban developments have intruded upon this community. In general, coastal scrub communities occur in coastal lowlands and extend eastward to elevations below 3,000 feet. Such plants as white sage, black sage, yerba santa, California buckwheat, lemonade-berry, and prickly pear cactus are characteristic of the coastal scrub community. Wildlife such as mourning dove, wren-tit, brown towhee, western meadowlark, sage sparrow, scrub jay, Anna's hummingbird, red-tailed hawk, coyote, gray fox, striped skunk, California ground squirrel, black-tailed jack rabbit, California pocket mouse, deer mouse, western rattlesnake, striped racer, and western fence lizard generally inhabit this community.

2.25 Riparian vegetation exists in the drainage area, but is limited and modified because of the encroachment of man. The existing riparian vegetation is largely in areas where normal waterflow is confined within earth channel embankments and where the area is seldom disturbed by channel clearing operations. Native and introduced grasses, shrubs, and trees such as giant reed, castor bean, and various species of willows typify the riparian growth in the drainage area.

2.26 Telegraph Canyon Creek discharges into south San Diego Bay in the southern part of the J Street Marsh area (see pl. 3). The existing channel passes through San Diego Gas and Electric Company property. The South Bay Power Plant facilities are located on this property. A local stream also flows into the northern part of J Street Marsh.

2.27 J Street Marsh is not as large as the Sweetwater Marsh to the north, which is one of the highest quality marshes remaining in San Diego Bay, but it is an important remnant of a diminishing habitat in the area. San Diego Bay marshlands have been reduced by 85 percent of their original area and the remaining marshes in San Diego Bay are considered areas of high quality vegetation. J Street Marsh is used by resident and migratory birds. Public access to the marsh is limited because of restricted access to the San Diego Gas and Electric Company's property. The marsh is dominated by pickleweed with a small percentage of cord grass, saltwort, and seablite. An extensive area of mudflats is exposed during low tides. Many marine invertebrates occupy the saltmarsh and mudflat habitats providing food for fish and for shorebirds, waterfowl and other water-associated birds.

2.28 RARE AND ENDANGERED SPECIES. The following birds, which are known to reside in or visit the marshes in San Diego Bay, are on the U.S. Department of Interior and the California Department of Fish and Game lists of endangered species: (a) light-footed clapper rail, (b) California least tern, (c) California brown pelican and (d) Belding's savannah sparrow (State list only). The J Street Marsh area has been designated as critical habitat for the California least tern and the light-footed clapper rail. The brown pelican may be found in San Diego throughout the year, but its nearest nesting area is the Coronado Islands. The pelican feeds in the bay and in the open sea, but is found on sandbars and tidal flats adjacent to the marshes. Least terns nest in the San Diego Bay area from April to September they utilize the dikes of the salt evaporation ponds located in the southern tip of south San Diego Bay for nesting and feed around the edges of local marshes during high tide and in the tidal channels during all tidal stages. The clapper rail is entirely dependent upon the salt-marsh habitat. Tidal mudflats and marshes provide the only feeding habitats for this species, and there is probably a small nesting population in the Sweetwater Marsh and at the mouth of the Otay River. It is not presently known if there are any nesting birds in J Street Marsh. Another endangered species not listed above is the American peregrine falcon. It has been sighted in the San Diego area on occasion, but there have been no recent sightings in the study area.

2.29 Of the faunal species expected to be found in the study area, only the black rail is listed on the California Department of Fish and Game list of rare species.

Socio-cultural Environment

2.30 PALEONTOLOGICAL, ARCHEOLOGICAL, AND HISTORICAL RESOURCES. An archeological survey from 4th Avenue to the bay was made by the San Diego State University Foundation under the direction of Dr. Larry L. Leach at the request of the Corps of Engineers.

2.31 No definite cultural resource sites were discovered during the course of the survey. Artifacts were found near J Street Marsh and near Hilltop Park, but were believed to have been imported during construction activities in those areas. A great deal of glass, metal, and other trash was encountered in all parts of the drainage area, but was of no significance to the history of the area.

2.32 In September 1978, a limited control test trench investigation was made of properties adjacent to Telegraph Canyon Creek from the mouth of the creek in San Diego Bay to 1,800 feet inland. A series of four trenches was mechanically excavated and analyzed with regard to subsurface cultural values along the existing channel. Results of the test trench investigation proved to be negative. No cultural resource deposits of either the historic or prehistoric past were encountered. As a result of this investigation, it was concluded that no impacts on subsurface cultural resources were expected to exist within the study area.

2.33 No cultural sites are listed in either archeological and historical literatures or in the National Register of Historic Places for the area in question.

2.34 ESTHETICS. The visual esthetics have definite boundaries at Interstate 5 and Hilltop Drive. The tidal area west of Interstate 5 is very flat with no vertical visual variety. In the background between this tidal flat area and Interstate 5, is the San Diego Gas and Electric Company property, which is basically flat, but is dominated visually by the Company structures and the freeway in the background.

2.35 Between Interstate 5 and Hilltop Drive, the esthetics are generally those of an urban area; the field of vision adjacent to the channel includes the channel itself and those residential and industrial areas bordering the channel. Hilltop Park and the riparian area between 3rd Avenue and 4th Avenue offer a park-like variety to the urban esthetics of the area.

2.36 Upstream from Hilltop Drive to Interstate 805, the creek is less defined with a highly modified scrub community on gentle slopes adjacent to the creek. At the tops of hills, urbanization has taken place in the form of residential development. In the area east of Interstate 805, the urbanization gives way to scrub communities and agriculture.

2.37 RECREATION. There is one neighborhood park in the immediate area. This 10.9-acre park, known as Hilltop Park, is located along Telegraph Canyon Creek between Hilltop Drive and 1st Avenue. This park is open to the general public and features picnic facilities, a multipurpose play area, and a tot lot. The Parks and Recreation element of the Chula Vista General Plan cites a need for additional parks in the area.

2.38 During after-school hours and on weekends, the playgrounds of Chula Vista High School, Hilltop Junior High School, and numerous elementary schools provide areas for physical activities. The Chula Vista High School offers the use of its gym for the city-sponsored basketball league, and Chula Vista Elementary School District offers after-school recreational programs for youngsters.

2.39 The largest recreational open space in the study area is the San Diego Country Club, an 18-hole private golf course located south of L Street between Hilltop Drive and 3rd Avenue.

3. RELATIONSHIP OF THE PROPOSED ACTION TO LAND-USE PLANS

3.01 COMPREHENSIVE PLANNING ORGANIZATION. The San Diego Association of Governments (SANDAG) is an association of local governmental agencies, which includes the County of San Diego and the City of Chula Vista. SANDAG is responsible for working with local governments to develop a cohesive regional development plan for the San Diego area. Telegraph Canyon Creek is not discussed in the SANDAG land-use plan. SANDAG has, however, designated the J Street Marsh areas as a regional natural resource area.

3.02 CITY OF CHULA VISTA. The 1980 General Plan for Chula Vista does not indicate flood control areas or land-use categories for flood plain areas. The 1990 General Plan does indicate encroachment of various types of land use (including industrial and residential) on the Telegraph Canyon Creek area.

3.03 The Conservation Element of the Chula Vista General Plan (which included the J Street Marsh area) states that of the areas inventoried for development, only the Sweetwater Marsh "was deemed to be of sufficient natural habitat value to justify preservation." One of the objectives in the Chula Vista Conservation Policy is, however, to "preserve habitat for unique and endangered species of wildlife and areas of rare or unique vegetation."

3.04 CALIFORNIA COASTAL ZONE CONSERVATION COMMISSION. The California Coastal Zone Conservation Commission (CCZCC), a State agency created to monitor and regulate development of the California coastline, finalized the California Coastal Zone Plan in December 1975. This Plan concerns primarily coastal resources. The proposed flood control project is consistent with the general goals and objectives of the Coastal Zone Plan (see attachment 2 to the FEIS, Determination of Consistency with the California Coastal Act).

3.05 CALIFORNIA WATER QUALITY CONTROL BOARD. In the abstract for the "Comprehensive Water Quality Control Plan for the San Diego Region" (April 1974), it was stated that groundwater recharge has potential for beneficial uses in the lower Sweetwater hydrographic unit (which includes Telegraph Canyon Creek). This plan does not define specific areas of potential within, and does not outline the intended purposes of groundwater recharge in the area.

3.06 In general, there are no conflicts between the proposed action and the land-use plans developed by the above city, regional, and State agencies.

4. PROBABLE IMPACT OF THE PROPOSED ACTION
ON THE ENVIRONMENT
Physical Environment

4.01 SURFACE HYDROLOGY. Flood protection would not be provided upstream from the proposed channel inlet. Within the proposed channel from 4th Avenue to San Diego Bay, floods of 100-year and lesser magnitude will be contained.

4.02 Under 100-year flood conditions, freshwater flows into the J Street Marsh will increase from about 1,600 cfs to about 3,300 cfs, and velocities will remain the same (see par. 4.10 for a discussion of velocities). The largest flow that will be expected downstream from Interstate 5 is 3,300 cfs. The project will not affect flows into the J Street Marsh as a result of 7-year and lesser floods.

4.03 GROUNDWATER HYDROLOGY. The concrete-lined portion of the channel will replace about 5 total acres of natural earth channel that presently allows percolation of surface flows into the groundwater aquifers.

4.04 GROUNDWATER QUALITY. There are no perennial surface waterflows in Telegraph Canyon Creek; groundwater recharge occurs in the existing earth channel only during storm runoff. The proposed concrete channel will prevent groundwater recharge in that reach. The concrete channel would not have an appreciable adverse impact on the groundwater supply or its quality. The proposed earth-bottom channel adjacent to the bay will allow seawater to penetrate about 400 feet inland from the marsh area during high tides and percolate into the groundwater aquifers. As existing groundwater quality is marginal as the result of saline intrusion, the effects on groundwater quality and its present use are deemed to be insignificant. Should local demands for water require the use of the groundwater in the area, the proposed action would have an adverse effect on the groundwater and its future use.

4.05 SURFACEWATER QUALITY. Short-term degradation of both surface-water and groundwater quality as a result of construction activities is a potential impact. Construction specifications will require that the contractor performing the work will not pollute the creek or bay with fuel, oils, bitumens, calcium chloride, acids, or any other harmful materials.

4.06 SECTION 404(b)(1) EVALUATION. Section 404(b)(1) of the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500), as amended by the Clean Water Act of 1977 (Public Law 95-217), requires the Corps of Engineers to evaluate proposed deposition of material into waters of the United States. Construction of the proposed project will result in increased saline intrusion into groundwater aquifers and removal of channel bottom for potential groundwater recharge (see pars. 4.04 and 4.05). In the event of a 100-year or greater flood, small quantities of suspended solids will be deposited in the J Street Marsh if the project is implemented (see par. 4.11). By confining floodflows to the area within the channel, construction of the channel downstream from Interstate 5 will impact existing wetland, the J Street Marsh (see par. 4.16 and 4.17). The complete 404(b)(1) evaluation, prepared in accordance with 40 CFR 230 dated September 1982, is located at the end of this environmental statement as attachment 1. By letter dated 8 April

1980, the California Regional Water Quality Control Board, San Diego Region, stated that formal State certification for the project would not be necessary (see Appendix A).

4.07 AIR QUALITY. Air pollutants created as a result of operation of equipment during construction of the project would have a temporary impact on air quality on a local scale. Construction specifications will require that the contractor comply with Federal, State, and local laws and regulations for control of dust and vehicular emissions.

4.08 NOISE. Operation of equipment during construction will temporarily increase local noise levels during the day and would be a cause of annoyance to adjacent residents. Again, the contractor will be subject to Federal, State, and local laws and regulation for the control of noise pollutants.

4.09 ENERGY. Operation of construction equipment will consume a presently unquantifiable amount of energy in the form of petroleum fuel and electricity.

4.10 EXIT VELOCITIES/SCOUR. Extension of the project to the 4-foot contour line was incorporated into the project to reduce the exit velocity and thus reduce project-related impacts on the marsh. The existing velocity at the exit is calculated to be 9.6 feet per second (fps). Under the original project design (project to 5-foot contour line), the velocity at the same point would be 9.2 fps, whereas under the modified project condition (project extension to the 4-foot contour) it would be reduced to 7.6 fps. The velocity calculated over the entire reach averages about 6 fps under both present and project condition. Reducing the exit velocity from 9.2 fps to 7.6 fps should reduce scour of the J Street marsh during high discharge.

4.11 SEDIMENT TRANSPORT. The area downstream from Interstate 805 is nearly fully urbanized but lands above Interstate 805 are presently mainly agricultural. Plate 8 in appendix E (Urbanization/Land Use; 1990 General Plan) indicates partial urbanization of the project drainage area above Interstate 805 by 1990. Runoff from the primarily urban portions of the drainage area does not carry much sediment, and as urbanization extends upstream from Interstate 805, the percentage of runoff lacking in sediments should increase. No significant changes in sediment deposition or turbidity will be caused by the proposed action. Small quantities of suspended solids that would normally be deposited in the ponded area upstream from Interstate 5 during the 100-year flood would be carried to J Street Marsh by floodflows and would be deposited there. No changes in sediment deposition or turbidity will result for 7-year and lesser frequency floods. Construction specifications will require that the contractor implement temporary sediment and erosion control measures during construction.

Biological Environment

4.12 PLANT LIFE. Vegetation will be removed on about 10 acres of land during construction; 6 acres upstream of Interstate 5 and 4 acres bayward of Interstate 5. Vegetation will not be allowed to reestablish in those areas serviced by a concrete channel. Minimal landscaping will be incorporated in the project. In the earth-bottom portions, of the channel will return to its existing state after construction is complete, but will be subjected to periodic disturbance during maintenance operations (see par. 4.20).

4.13 WILDLIFE. Wildlife in the project area will be disturbed during construction of the project and will be permanently disturbed from about 8 acres. The elimination of vegetation will reduce the available food and shelter for small mammals and thus a decrease in the population is anticipated. The concrete channel will be a permanent barrier to the migration of nonflying wildlife across the channel between road crossings. This barrier may result in isolated communities as well as a reduction in the individual interactions within the species (i.e. courtship, breeding, etc.).

4.14 Landscaping of the project area will provide habitat for those species tolerant of human disturbances. The placement of riprap along the slopes of the lower earth-bottom channel may provide habitat conditions for lizards, snakes, and small rodents.

4.15 The increased area subject to tidal inundation will greatly improve the existing aquatic resources by providing more area for food and shelter and by providing for greater diversity because of the addition of hard substrate under tidal influence. The increase in the intertidal community would make a significant contribution to the productivity of the creek. The fish supported by the intertidal (marsh) and benthic habitats are in turn fed upon by birds. The resident and migratory bird species using the marsh during the winter and spring months would be adversely impacted during the construction of the lower reach of the channel. Construction may potentially disturb avian life in other marshes in the area.

4.16 ECOLOGICAL ASPECTS. Construction of the channel downstream from Interstate 5 will impact the "J" Street Marsh area by confining flood flows to the area within the channel. As a result, water will flow into the marsh from a point source and will pass through the marsh in a narrower corridor than under present conditions. This would result in a deeper and more well-defined channel through the marsh than would occur under present conditions. Fresh water floodflows, which would normally overflow the existing channel banks as a result of 7 year and greater floods, would no longer be allowed to carry nutrients to the upper intertidal area. However, the area of tidal inundation within the creek channel will be increased from 13,800 square feet to 53,200 square feet. This would be accomplished by nearly doubling the current channel width, reducing the slope of the channel banks, and deepening the channel by nearly 4 feet for a distance of 500 feet (reference Fish and Wildlife Planning Aid Letter dated March 23, 1982 in Appendix H).

4.17 There is no record of flood water overflowing the channel banks onto the San Diego Gas and Electric Company (SDGEC) property. Most of the existing habitat in this area, which is immediately east of the tidal flat area, was established after the area was filled by SDGEC. Thus, the tidal area in its present state is probably not dependent upon freshwater flows for nutrients, and any restriction of floodwaters from the tidal areas will not significantly impact the existing marsh habitat. The project will not encourage nourishment of the upper intertidal area as a result of flooding.

4.18 RARE AND ENDANGERED SPECIES. The U.S. Fish and Wildlife Service (USFWS) has prepared a biological opinion letter dated 25 January 1979 (appendix H) stating that the proposed project will not likely jeopardize either the California least tern or the light-footed clapper rail provided conditions outlined in the letter are met. These conditions will be incorporated into

the proposed plan except that the project will extend to the 4-foot contour to reduce scour in J Street Marsh during high discharge. The design modification (5-foot contour to 4-foot contour) has been coordinated with USFWS field office personnel (see USFWS letters dated 12 March 1980 and 23 March 1982 in appendix H).

4.19 MITIGATION. The mitigation program for the project includes: restricting construction to certain times of the year to minimize impacts on endangered species; providing a landscape corridor along the entire length of the channel to provide food and cover for wildlife and to improve the esthetics; preventing construction work or machinery to encroach bayward of the 4-foot contour; utilizing a dragline or other least damaging equipment to perform work at the mouth of the creek; disposing excavated spoil outside the wetlands and creek area; reducing the scour to the marsh from high discharges; implementing measures to ensure that abnormal pollution and siltation of the marsh do not occur; planting marsh species in the earth-bottom channel after construction to hasten re-vegetation; notching the stabilizer to allow for a high volume of tidal flushing; and the maintenance program outlined in paragraph 4.20. All of the conditions outlined in the USFWS biological opinion letter dated 25 January 1979 (Appendix H) will be incorporated into the project, except that the project will extend to the 4-foot contour to reduce scour in the J Street Marsh during high discharge (See USFWS letters dated 12 March 1980 and 23 March 1982 in Appendix H). In the event any cultural resources are unearthed during construction, a qualified archeologist will perform professional data recovery studies.

4.20 OPERATION AND MAINTENANCE/VEGETATION. The maintenance program in the earth-bottom portion of the channel should be beneficial in controlling erosion resulting from storm runoff. Vegetation will be allowed to reestablish along the earth-bottom channel subject to the maintenance conditions outlined as follows: Any trees and large shrubs will have to be removed from the channel in this reach; marsh vegetation (e.g., pickleweed, cordgrass) will not be removed. No heavy equipment will be allowed in the channel or channel mouth in the intertidal area; removal will be selective and by hand labor. No maintenance will be necessary in the intertidal area, with the exception of any trees or shrubs that might grow in this reach, which would be removed by hand. Grasses, cattails and bulrush would not be removed. The U.S. Fish and Wildlife Service, by mutual agreement with the San Diego County Flood Control District, may review the operation and maintenance manual for the project.

Cultural Environment

4.21 PALEONTOLOGICAL, ARCHEOLOGICAL, AND HISTORICAL ASPECTS. The project will not impact any recognizable paleontological, archeological or historical resources in or near the project area. In September 1978, the Corps completed an archeological test and data recovery program at Telegraph Canyon, Chula Vista, California. This report concluded that no cultural resources listed on the National Register of Historic Places will be affected by the proposed action. Should any cultural resources be unearthed during construction, a qualified archeologist will perform professional data recovery studies. These efforts would be coordinated with the State Historic Preservation Officer (SHPO). The Corps coordinated the cultural resource elements of the project with the SHPO (see 7 March 1980 letter to SHPO in Appendix A), requesting a

response by 30 March 1980 if their office did not concur with the findings of the report. No response has been received to date of publication. The 6 June 1979 letter from the Heritage Conservation and Recreation Service, Pacific Southwest Region, is included in Appendix A.

4.22 EMPLOYMENT. A survey conducted by CALTRANS to determine construction impacts of the Sweetwater River-State Highway Route 54-Interstate Highway Route 5 project found that about 10 percent of the construction work force, for three previous construction contracts, came from the Chula Vista-National City area and, of the total work force, about 25 percent came from San Diego County. It can thus be assumed that the proposed action will provide only a limited amount of employment in the study area.

4.23 LAND USE. All of the 4 vacant and developable acres of land upstream from Interstate 5 to be protected by the proposed action will be protected from the 100-year flood. Because the level of protection is for a 100-years event, the owners of this property would be relieved of the burden of purchasing flood insurance established by the Flood Disaster Protection Act of 1973. Thus, the proposed action would enhance the potential for development of this land.

4.24 About 13 acres of land will be converted from industrial, commercial, and residential uses to flood control purposes. Two businesses will require relocation. Individuals involved in these relocations will be compensated according to the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970.

4.25 RECREATION. No lands now used for formal recreation purposes will be required for the proposed project.

4.26 ESTHETICS. The esthetics downstream from Interstate 5 will be significantly changed: the channel will be widened and will be constructed with concrete, except the lower 400 feet which will be earth-bottom. The appearance of the creek between Interstate 5 and 4th Avenue will be converted from that of a natural channel to a concrete rectangular channel with associated landscaping. Construction of the inlet will require the removal of about 1 acre of riparian growth and about 4 acres of annual grasses which will be replaced by a rectangular concrete inlet structure.

4.27 UTILITIES AND TRANSPORTATION. Modification to utilities and roads during construction of the channel and crossings will cause local temporary service inconveniences.

4.28 OTHER IMPACTS. Construction of the proposed project may imply flood protection from the standard project flood to those landowners near the channel who are not aware of its design capacity, possibly giving these people a false sense of security.

4.29 The construction of the channel will increase the physical separation between neighborhoods on each side of the channel and may also create a psychological barrier.

5. UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

5.01 The following unavoidable adverse environmental effects will result from the proposed action:

- a. Temporary local inconveniences during construction due to noise, increased air pollution, utility relocation, and road crossing improvements;
- b. Over 5 acres of existing earth channel will be lined with concrete, eliminating this area as a resource for percolation of freshwater into the groundwater aquifers;
- c. Energy will be consumed in the construction process;
- d. Vegetation will not be allowed to reestablish on about 9 acres of land upstream from I-5, and about 1 acre of land downstream from I-5;
- e. Two businesses will require relocation;
- f. Seawater intrusion will be increased in the earth-bottom portion of the channel, which will degrade the quality of the groundwater in the area;
- g. About 10 acres of wildlife habitat will be permanently removed along the proposed channel alignment;
- h. Resident and migratory birds utilizing the marsh will be disturbed during the construction period;
- i. Land owners whose property is bisected by the creek will be inconvenienced by a restriction of access until the bridges can be replaced;
- j. The community will be physically bisected to a greater degree than presently and a loss of "sense of community" will be experienced especially by those adjacent to the creek;
- k. The area upstream of Interstate 5 currently used informally by youngsters for recreation will be lost and;
- l. The esthetics of the general project area will be degraded.

6. ALTERNATIVES TO THE PROPOSED ACTION

6.01 GENERAL. Eight alternatives, in addition to the "no action" alternative and the recommended plan, were considered. Descriptions of these alternatives along with their environmental effects and the reasons for rejection of the alternatives, are discussed under the following subparagraphs.

Alternative A-1: "No Action"

6.02 DESCRIPTION. This alternative would retain a status quo condition in the Telegraph Canyon Creek area.

6.03 ENVIRONMENTAL EFFECTS. The present flood problems will persist adjacent to the creek. The no action plan would not affect the existing esthetics vegetation or limited wildlife habitat along the creek. Scouring of the marsh during periods of intense rainfall, as well as sea water intrusion at the mouth of the creek, would continue. The acreage under tidal influence would remain the same. Although flood plain insurance, as established by the Flood Disaster Protection Act of 1973, would provide monetary compensation to homeowners and business owners for flood losses, interruptions in utility service and street traffic would occur during flooding. This alternative also would not meet the project objectives of flood control. Implementation of flood plain insurance will also impose constraints on future development in the flood plain.

6.04 REASONS FOR REJECTION. This alternative was rejected because it would not achieve the project purpose of flood protection.

Alternative A-2: Floodproofing

6.05 DESCRIPTION. This alternative comprises a plan to floodproof homes and businesses between Hilltop Drive and San Diego Bay to provide protection against the 100-year flood (see fig. 2). Residential, industrial, and commercial structures would require modifications to eliminate flood damage to both the structure and its contents. A warning system would also be necessary to allow property owners to evacuate the flood-prone areas during periods of intense rainfall.

6.06 ENVIRONMENTAL EFFECTS. No impacts are anticipated on the existing vegetation on limited wildlife habitat along the creek. Those homes situated within the 100-year flood plain would be protected from 100-year and lesser frequency floods. The practicality of this alternative might require that homeowners either be in the proximity of their home during the flood season to implement necessary measures to protect their property against flooding or that they take necessary precautions prior to leaving their property to reduce flood damage (flood protection and warning systems would be the responsibility of local agencies). No protection would be provided to utilities or streets, and floods exceeding the present capacity of the channel could disrupt these services. Temporary interruptions in home life would occur during construction of floodproofing. It cannot be determined at this time whether floodproofing would change the flood hazard status of those homes within the existing special flood hazard area as established by the Federal Emergency Management Agency (formerly Federal Insurance Administration).

6.07 REASONS FOR REJECTION. Flood protection costs would not be economically justifiable and would not provide protection to properties other than structures and their contents.

Alternative B: Rectangular Concrete Channel

6.08 DESCRIPTION. This alternative would involve the construction of a concrete channel that would provide protection from the standard project flood downstream from Hilltop Drive. The features of this alternative would include: (a) construction of a 2.5-mile-long rectangular concrete channel with varying depths between 12 to 13 feet, and varying widths between 48 and 56 feet between San Diego Bay and Hilltop Drive; (b) construction of new culverts underneath Interstate 5; (c) modification of 10 bridge street crossings; and (d) assumption of operation and maintenance of the project by local agencies.

6.09 ENVIRONMENTAL EFFECTS. This alternative would provide protection to the overflow area downstream from Hilltop Drive, and would probably relieve property owners in this area of the burden of flood plain insurance. About 19 acres of land would be cleared and grubbed, and vegetation would not be allowed to reestablish. Landscaping would be planted along some 8.5 acres of the creek which would provide some wildlife habitat. About 11.5 acres would be paved. Construction of a concrete channel downstream of Interstate 5 would prevent non-flying wildlife in the area from crossing the channel as well as eliminating the soft-bottom acreages in the channel currently under tidal influence. Seawater intrusion at the mouth of the creek would be reduced. Construction of a concrete channel and outlet would create larger streamflow velocities into the J Street Marsh area which would increase scouring in this area. Modification of the culverts beneath Interstate 5 would increase flows into the J Street Marsh area over a shorter time period during flooding and would create temporary inconveniences to automobile travelers during construction. The concrete channel would eliminate groundwater recharge from occurring along the length of the channel and would degrade the general esthetic value of the area. Such a channel would divide some properties, and homeowners adjacent to the project would experience a loss of "sense of community" with their neighbors. This alternative would require the relocation of nine homes and two businesses. The effects of this alternative on surface-water quality, air quality, noise, energy, erosion, and cultural resources would be similar to those of the recommended plan.

6.10 REASON FOR REJECTION. This alternative cannot be justified economically.

Alternative C-1: Rectangular Concrete/Earth-bottom channel

6.11 DESCRIPTION. This alternative consists of a 1.2-mile concrete-lined channel between Interstate 5 and 4th Avenue and a 0.4 mile earth-bottom channel between Interstate 5 and the San Diego Bay that would provide protection from the 60-year flood in this area (see fig. 3).

6.12 ENVIRONMENTAL EFFECTS. Effects would be the same as those attributed to Alternative B, the rectangular concrete channel upstream from Interstate 5; these include: loss of groundwater recharge; degradation of esthetics; loss of vegetation and wild-life habitat; division of properties and loss of sense of community; would also be attributed to this alternative. Vegetation would not be allowed to reestablish in the channel downstream from Interstate 5 and

nonflying wildlife in this area would not be able to cross this reach of the channel. Scouring of the J Street Marsh would not be affected by this alternative, nor would the present condition of sea water intrusion be changed. Landscaping would be planted along the length of the channel. Protection from the 60-year flood would be provided to property owners in the flood plain. This alternative would require the relocation of two businesses and one home. The effects of this alternative on water quality, air quality, noise, energy, erosion, and cultural resources would be similar to those of the recommended plan.

6.13 REASON FOR REJECTION. Although this alternative is economically justified, it was not selected because it would provide only 60-year protection and would require some of the adjacent property owners to obtain flood insurance to comply with the Federal Flood Insurance Program. The recommended plan would provide maximum net benefits.

Alternative C-2: Rectangular Concrete Channel

6.14 DESCRIPTION. This alternative is similar to Alternative C-1, except that the channel downstream from Interstate 5 would be routed around existing San Diego Gas and Electric Company facilities, and the channel improvement downstream from Interstate 5 would be concrete (see fig. 4).

6.15 ENVIRONMENTAL EFFECTS. The environmental effects of this alternative upstream from Interstate 5 would be identical to those of Alternative C-1. Downstream from Interstate 5, the environmental effects would be similar to those discussed under Alternative B except that scouring of the J Street Marsh would not be increased since the culverts would not be changed. The rerouting of the alignment would permit San Diego Gas and Electric Company to use land presently occupied by the existing channel.

6.16 REASON FOR REJECTION. Although this alternative is economically justified, it was not selected because it would only provide 60-year protection and would require some of the adjacent property owners to obtain flood insurance to comply with the Federal Flood Insurance Program. The recommended plan would provide maximum net benefits.

Alternative C-3: Earth-bottom Channel

6.17 DESCRIPTION. The alternative consists of a 1.6 mile trapezoidal earth-bottom channel with revetted side slopes between 4th Avenue and San Diego Bay designed to contain the 60-year flood (see fig. 5).

6.18 ENVIRONMENTAL EFFECTS. This alternative would destroy about 14 acres of wildlife habitat, but would allow about 22 acres of vegetative growth to reestablish; this vegetation would, however, be subject to removal at periodic maintenance intervals. Groundwater recharge, seawater intrusion, and scouring of J Street Marsh would not be affected by this alternative. The area under tidal influence would be increased. Temporary construction noise, visual and air quality effects will be increased from those of the proposed action due to the increased size and nature of the alternative. This alternative would require relocation of about 30 homes and 5 businesses and would protect the

flood plain downstream from Hilltop Drive from the 60-year flood. The earth-bottom channel would create a greenbelt area which would alter the esthetics in the area, and would increase the physical separation between neighborhoods. The effects of this alternative on erosion, employment, utilities, transportation, and cultural resources would be similar to effects attributed to the recommended plan.

6.19 REASON FOR REJECTION. Although this alternative is economically justified, it was not selected because it would provide only 60-year protection and would require some of the adjacent property owners to obtain flood insurance to comply with the Federal Flood Insurance Program. The recommended plan would provide maximum net benefits.

Alternative D: Retention Dam with Concrete Channel

6.20 DESCRIPTION. This alternative, which would provide protection from a 100-year flood, consists of a reservoir located about 1 mile upstream from Interstate 805, a rectangular concrete channel from 3rd Avenue to the San Diego Bay, and an earth-bottom channel downstream from Interstate 5. The dam would be about 50 feet high with a reservoir area of about 50 acres. The channel dimensions would be the same as described in Plan C-1, but due to upstream reservoir storage and releases, it would be able to provide greater than a 60-year flood protection. Telegraph Canyon Road would be relocated around the proposed dam.

6.21 ENVIRONMENTAL EFFECTS. The effects of the channel construction between San Diego Bay and the inlet upstream from 4th Avenue would be identical to those of Plan C-1. The construction of the dam and additional development of recreation facilities would permanently remove about 25 acres of coastal sage scrub and riparian vegetation, and would temporarily disturb another additional 30 acres within the reservoir area. It is anticipated that the vegetation in this area would reestablish upon completion of the project. Inundation of vegetation within the reservoir taking line would result in irreparable damage. Construction of the dam would also deprive the J Street Marsh area of sediments which provide nutrients to the marine organisms. This alternative would provide 100-year flood protection downstream from 4th Avenue and 60-year flood protection upstream to the dam. Other impacts include the creation of a visual barrier in the local canyon area, and the relocation of Telegraph Canyon Road which would destroy about 7 acres of coastal sage scrub and would inconvenience local traffic during construction. Extensive utility relocation would be required with any road realignment. Construction of the dam and road would increase local temporary construction impacts.

6.22 REASON FOR REJECTION. Current development (56 houses) within the proposed reservoir site precludes this proposal. In addition, the City of Chula Vista expressed opposition to the disruption of existing developments in the Telegraph Canyon area.

Alternative E: Concrete/Earth-bottom Channel with a Diversion Channel

6.23 DESCRIPTION. This alternative consists of a 1.0 mile concrete-lined channel between Interstate 5 and 4th Avenue and a 0.4 mile earth-bottom channel between Interstate 5 and the San Diego Bay. In addition, a diversion channel would divert flows (estimated at 1,100 cfs) in excess of 2,200 cfs along the railroad crossing Interstate 5 to J Street. The diversion channel would join the main stem of Telegraph Canyon Creek below Interstate 5. This plan would provide 100-year flood protection. (See fig. 6.)

6.24 ENVIRONMENTAL EFFECTS. The environmental effects of this alternative would be identical to those of Alternative C-1 except for the additional impacts of the diversion channel. The diversion channel would destroy vegetation of value as urban wildlife habitat. Because the diversion channel would be earth-bottom channel below Interstate 5, it would allow vegetation to reestablish in the channel.

6.25 REASON FOR REJECTION. Although this alternative would be economically justified, it was not selected because it would cost more than the recommended plan, which would provide maximum net benefits.

Alternative M: Rectangular Concrete and Trapezoidal Earth-bottom Channel--considered prior to revision of the selected Plan M.

6.26 DESCRIPTION. This alternative would consist of (1) a 1.0 mile-long rectangular concrete-lined channel from a point about 400 feet upstream from 4th Avenue (near 3rd Avenue) to 700 feet upstream from Interstate 5; (2) two 12-foot-wide by 10-foot-high boxes, totaling 700 feet in length, which would connect the rectangular concrete channel to the existing culvert under Interstate 5; and (3) a .04-mile-long earth-bottom trapezoidal channel from Interstate 5 to San Diego Bay. The total length of the channel would be 1.4 miles, in addition to the incorporation of the 0.2 mile of existing culvert. This alternative would provide protection from the 100 year flood.

6.27 The channel upstream from the double box would have a wall above ground for a distance of 1,000 feet. The wall, which would range from zero to 16 feet high, is required to induce sufficient head to convey the 100-year peak discharge of 3,300 cubic feet per second through the culvert under Interstate 5.

6.28 ENVIRONMENTAL EFFECTS. The environmental effects of this alternative upstream from Interstate 5 would be similar to those discussed under Alternative C-1. In addition the high walls would create an even greater esthetic impact and intensify the loss of "sense of community." The high walls would create security problems for the employees of the Ratner Corporation and would create obstacles for property owners whose property is bisected by the channel. Downstream from Interstate 5, the earthbottom trapezoidal channel would be widened, which will greatly increase the area within tidal influence, enhancing the salt marsh. The construction of stabilizers in the lower reach would reduce scour of the J Street Marsh from 9.6 fps to 9.2 fps but could increase the seawater intrusion currently occurring at the mouth of the creek. Construction of the concrete channel in the upper reach would permanently remove 12 acres of vegetation, impacting the limited wildlife habitat presently existing along the creek. Temporary construction impacts which include the creation of noise and erosional

problems, a decline in air and surface water quality and an increase in energy consumption would be similar to those experienced under Alternative C-1. Two businesses would be relocated as a result of this plan.

6.28 REASON FOR REJECTION. Public opposition to the 16 foot high walls and the cost of relocating the utility lines caused the modification of this plan to the new recommended plan M-2 as described in this FEIS.

Alternative C-3: Environmental Quality (EQ) Plan

6.29 Alternatives that would enhance the quality of the environment were considered during the planning process (see "Rationale for Designation of the Environmental Quality (EQ) Plan" in the main report). One possible environmental quality alternative consisted of Plan C-1, with incorporation of selected covered sections and realignment of the channel so that rights-of-way would be on one side of the channel only. This alternative would enhance the connection or social interaction of neighborhoods on each side of the channel. The esthetics and social values of this alternative, however, did not offset the additional costs, local objections, maintenance problems, and the reduction in channel capacity associated with implementation of this alternative. An economically feasible environmental quality plan that would enhance the esthetic, ecological, and cultural values could not be developed; but Plan C-3, the earth-bottom channel, was designated the least damaging alternative. However, this plan was not selected because it would require the removal of a number of homes and businesses.

7. THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

7.01. The recommended action would provide 100-year flood protection for the life of the project. Permanent habitat loss between 3rd Avenue and 420 feet upstream from the bay would result from this. Channelization of Telegraph Creek between 3rd Avenue and 420 feet upstream from the bay will prevent groundwater recharge in this reach. The channel between the bay and 420 feet upstream will be subject to seawater intrusion which will continue to degrade the water quality in this reach.

8. ANY IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES WHICH
WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED

8.01 The proposed action would commit materials, energy resources and lands used in the construction of the project. Lands proposed for development would be committed to flood control for the life of the project. The proposed action would encourage urban development on 4 acres of presently undeveloped land.

9. PUBLIC INVOLVEMENT

9.01 PUBLIC INVOLVEMENT. The initial public meeting was held on 15 May 1968 to provide an opportunity for local interests to express their concerns regarding flood control on numerous streams in San Diego County. Telegraph Canyon Creek was considered to have a high ranking on a list of stream priorities. On 20 September 1972, the Telegraph Canyon Creek Advisory Committee (TCCAC) was formed which was composed of private citizens as well as representatives from the following agencies and organizations: San Diego County; Chula Vista Planning Commission; Chula Vista City School District; Chula Vista Chamber of Commerce; South Bay Cities Board of Realtors; Taxpayer's Association; Citizens Coordinate for Century III; Environmental Control Commission; San Diego Gas and Electric; South Bay Baptist Church; and the Sierra Club. Seven meetings, which were open to the public, were held with the TCCAC and the Corps between September 1972 and May 1975. The purpose of these meetings was to acquire public input for the plan formulation of the various alternatives as well as to serve as a review body for the design plans.

9.02 In 1977, because the potential for flood damage had increased greatly, the County of San Diego and the City of Chula Vista requested that the study proceed under the Small Project Authority. Pursuant to these requests, further study under the authority of Section 205, Flood Control Act of 1948, as amended, was approved. A meeting was held with the City and County in August 1978 to consider such implementation.

9.03 Three public meetings were held between May 1975 and November 1979. The 28 May 1975 and 29 November 1979 meetings were conducted by the District. Informational brochures, describing the various proposed alternatives, were distributed prior to these meetings. The alternatives were described and compared, the rationale for the recommended plan was presented, and public concerns and comments were recorded at these meetings. On 28 August 1980 a public meeting was conducted by the City of Chula Vista to specifically discuss the proposed construction of above-ground channel walls in the reach west of Broadway.

9.04 The Chula Vista City Council, the Chula Vista Public Works Department, the San Diego County Board of Supervisors and the San Diego County Department of Sanitation and Flood Control endorsed the Corps' recommended plan (resolutions and letters dated 21 Oct 1975, 29 September 1978, 20 April 1976, and 10 November 1978, respectively; see Appendix A). The Telegraph Canyon Creek Advisory Committee supported Alternative M over the other proposed alternatives.

9.05 PUBLIC VIEW AND RESPONSES. In March 1978 and February 1980, San Diego County experienced major flooding and was declared a disaster area. The public is most concerned with establishing effective flood control along Telegraph Canyon Creek. Other concerns include the construction of an 11 foot wall along the channel bisecting property, restricting access, impacting esthetics and creating security problems for businesses and residences adjacent to the walls; proper channel maintenance upstream of 4th Avenue; localized flooding just upstream of I-5 due to the inability of side drainages

to enter the covered channel; preserving wildlife habitat; landscaping along entire length of channel; siltation of the marsh and bay; and minimally impacting endangered species which inhabit the marsh.

9.06 In response to public and Corps concerns, the original Alternative M 60-year flood protection was increased to 100 year flood protection. Re-evaluation of the plan, with particular attention paid to the possibility of reducing the height of the above-ground channel walls west of Broadway, it was determined that the overall distance covered by the high walls could be reduced. In addition, 4 foot rather than 11 foot walls, would be sufficient for part of the distance. The San Diego Gas and Electric's comments pertaining to the location of some major pipelines through the proposed project area resulted in a design modification which made rerouting of the pipelines unnecessary. This modification required a concrete instead of an earth-bottom channel for the distance of 0.24 miles downstream of I-5. In response to U.S. Fish and Wildlife concerns, the stabilizer structure at the channel mouth will be notched to allow for daily tidal flushing.

9.07 AGENCY COORDINATION AND EIS RECIPIENTS. Formal coordination was maintained with appropriate City and County representatives and with the U.S. Fish and Wildlife Service. Informal coordination with other agencies and organizations was conducted by requesting and receiving comments on the DEIS. A list of recipients of the DEIS is as follows:

Federal

Department of Agriculture
Forest Service, Region 5
Soil Conservation Service, Davis, California

Department of Commerce
Assistant Secretary for Science and Technology, Washington, D.C.

Department of Energy
Representative, Region IX

Department of Health, Education and Welfare
Director, Region IX
Public Health Service, Regional Program Chief, Water Supply and Sea Resources Program

Department of Housing and Urban Development
Administrator, Region IX
Director, Southwest Area Office, Los Angeles

Department of Interior
Bureau of Indian Affairs
Bureau of Land Management
Bureau of Mines
Bureau of Outdoor Recreation
Bureau of Reclamation
Fish and Wildlife Service

Geological Survey
National Park Service
Pacific Southwest Planning Office

Department of Transportation
Commander, Eleventh Coast Guard District
Federal Aviation Administration
Federal Highway Administration
Federal Railroad Administration

Environmental Protection Agency, Region IX

Federal Power Commission

State of California

State Clearing House (multiple copies for distribution to concerned state agencies)

San Diego County

County Engineer
Department of Sanitation and Flood Control
Governmental Reference Library
San Diego County Water Authority, General Manager

Other Agencies

City of Chula Vista
San Diego Unified Port District

Utilities, Railroads

Metropolitan Water District of Southern California
San Diego and Arizona Eastern Railway Company
San Diego Gas and Electric Company
Santa Fe Railway
Southern California Edison Company
Pacific Telephone Company

Other

Audubon Society, San Diego Chapter
National Audubon Society, Western Regional Office
CEP Associates, San Diego
Chula Vista Public Library
Izaak Walton League of America, Inc.
National Wildlife Federation
San Diego Chamber of Commerce
Sierra Club, San Diego Chapter
Telegraph Canyon Creek Flood Control Advisory Committee

9.08 LETTERS OF COMMENT/RESPONSE. Letters of comment on the DEIS and any response to those letters are contained in a comment/response section at the end of this FEIS.

10. MAJOR CONCLUSIONS AND FINDINGS

10.01 This chapter was prepared to document the planning process since the publication of the DEIS in September 1979 and to comply with CEQ regulations regarding preparation of environmental impacts statements.

10.02 NEED FOR AND OBJECTIVES OF ACTION. The principal features of the proposed project are a combination of structural and nonstructural flood control measures.

a. Study Authority. Flood control surveys for Telegraph Canyon Creek were authorized by Congress in 1941 by Section 4 of the Flood Control Act of 18 August 1941. In 1977, the County of San Diego and City of Chula Vista requested that Telegraph Canyon Creek be studied as a small project under the authority contained in Section 205, Flood Control Act of 1948, as amended. Further information is provided in the Main Report under "Study Authority."

b. Public Concerns. Public comments were solicited throughout the planning process. The Telegraph Canyon Creek Citizens Advisory Committee, representing the public at large, provided input for the Plan Formulation of structural and nonstructural alternatives, and reviewed the informational brochures and EIS documents put out by the Corps. Public meetings were conducted by both Corps and City staff, where citizens and agency representatives could express concerns. Formal and informal meetings between Corps and city/county personnel were held continuously throughout the planning process.

c. Planning Objectives. The project planning objectives are discussed in the Main Report under "Planning Objectives." They include: (1) reduction of flood damage along Telegraph Canyon Creek; (2) preservation or mitigation of any discovered cultural resources; (3) protection and enhancement of habitat, especially in J Street Marsh; and (4) water conservation, although the water cannot be used for domestic purposes due to saltwater intrusion into the groundwater in the study area.

10.03 RELATIONSHIP TO ENVIRONMENTAL PROTECTION STATUTES AND OTHER ENVIRONMENTAL REQUIREMENTS

Federal

a. National Environmental Policy Act of (NEPA) of 1969 (Public Law 91-190). The proposed project has been developed in accordance with the goals specified in Section 101 of the Act.

b. National Historic Preservation Act of 1966, as amended. A cultural resource study prepared for the proposed project concluded that no archeologic or historic resources exist within the project area. The report was coordinated with the State Historic Preservation Office (SHPO) and the Heritage Conservation and Recreation Service (HCRS). No response was received from the SHPO and their concurrence is assumed. A letter of concurrence was received from the HCRS on 6 June 1979 (refer to Appendix A).

c. Clean Air Act, as amended. The Draft EIS was reviewed by the Regional Administrator, Region IX of the Environmental Protection Agency. No objections to the project were presented in the response dated 31 January 1980.

d. Clean Water Act of 1977 (Public Law 95-217). A Water Quality Evaluation, addressing the effects of the project, has been prepared in accordance with Section 404(b) of the Federal Water Pollution Control Act Amendments of 1972, as amended by the Clean Water Act of 1977. This evaluation is included at the end of this environmental statement as Attachment 1. By letter dated 8 April 1980, the California Regional Water Quality Control Board, San Diego Region, stated that formal State certification for the project would not be necessary (see Appendix A).

e. Endangered Species Act of 1973, as amended. The Los Angeles District has coordinated with the U.S. Fish and Wildlife Service (USFWS) concerning potential impacts on the endangered California least tern and the light-footed clapper rail. Formal Section 7 consultation for endangered species in the marsh resulted in a biological opinion by the USFWS (25 January 1979). The USFWS has determined that adverse impacts to endangered species would be minimized as long as the conditions outlined in various letters (25 January 1979, 12 March 1980, 23 March 1982) are met (see Appendix H).

f. Fish and Wildlife Coordination Act. The Los Angeles District has conducted ongoing coordination with the USFWS throughout the planning process. The USFWS originally expressed concern regarding potential adverse impacts to the marsh and to the two endangered birds, the California least tern, and the light-footed clapper rail, which utilize the marsh. The USFWS later determined that the proposed project would have a beneficial effect on fish and wildlife resources since the area subject to tidal inundation would be increased to over four times its existing size; and the creek would be widened, making it more acceptable to birds, and reducing scour in the marsh from 9.6 fps to 7.6 fps (letter from USFWS dated 23 March 1982; Appendix H).

j. Estuary Protection Act (Public Law 90-454). The Draft EIS has been reviewed by the Department of the Interior, and their concerns were expressed in a 18 December 1979 letter. These issues of concern were resolved through coordination with the USFWS. The resolution of issues specifically related to potential adverse impacts on the marsh is documented in the 12 March 1980 and 23 March 1982 letters by USFWS.

h. Federal Water Project Recreation Act. The recommended plan would enhance the fish and wildlife resources of the affected marsh. The incorporation of outdoor recreational opportunities (i.e., bicycle trails) in the proposed project is not considered to be feasible. The Department of the Interior concurred with this determination in an 18 December 1979 letter.

i. Wild and Scenic Rivers Act. Telegraph Canyon Creek is not currently included in the Nationwide Rivers Inventory and is not expected to be proposed as an addition in the near future.

j. Coastal Zone Management Act of 1972. Section 307(title 16, USC Section 1456 c) states that Federal actions must be consistent with local programs to the maximum extent practicable. The proposed project has been developed in accordance with applicable sections of the California Coastal Act of 1976 to the maximum extent practicable. The Corps has determined that the modified recommended plan (Alternative M-1) is the most feasible alternative. Mitigation measures which would minimize adverse environmental effect have been included and the functional capacity of the wetland would not be impaired. The Determination of Consistency with the California Coastal Act is included as Attachment 2 to this FEIS.

k. Executive Order 11990, Protection of Wetlands, 24 May 1977. This executive order mandates Federal agencies to avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds (1) that there is no practicable alternative to such construction and (2) that the proposed action includes all practical measures to minimize harm to wetlands which may result from such use. The proposed project has been developed in accordance with the requirements of this executive order. Although the channel would extend into lands affected by tidal inundation, the impact to these lands and to the adjacent marsh has been determined to be beneficial.

m. CEQ Memorandum, 11 August 1980, Analysis of Impacts on Prime or Unique Agricultural Lands in Implementing NEPA. The District requested the locations of any prime or unique farmlands within the project area from the Soil Conservation Service (SCS). The SCS responded in a letter dated 30 October 1979 that the proposed project would not impact any prime or unique lands (see Appendix A).

State and Local

a. California Coastal Act of 1976. See "j" above.

b. California Environmental Quality Act (CEQA). The proposed project has been developed in accordance with CEQA goals.

c. Local Ordinances, Policies and Plans. The relationship of the proposed project to local plans is discussed in Chapter 3.

10.04 PROJECT PLANNING SINCE PUBLICATION OF 1979 DEIS. Modifications to the tentatively selected plan as described in the DEIS were made in response to public concerns to the project. Concerns over the 1000 foot long, 16 foot high above-ground channel walls in the vicinity of Broadway resulted in the walls being reduced in height. This would lessen the visual impact on the area as well as help reduce the potential security problems for the employees of the Ratner Corporation.

10.05 The channel downstream of I-5 will be modified from a 2112 foot earth-bottom channel to a combination earth-bottom/concrete-lined channel. This design change was necessary to avoid the relocation of some major gas pipelines. The concrete-lined channel would extend 1567 feet from the I-5 culverts and terminate at a drop structure. In order to prevent scouring of

the marsh during periods of high volume discharge, a stabilizer would be placed in the marsh at about the 4 foot contour line, one foot downstream of the original channel mouth design.

10.06 The USFWS was kept informed of the project modifications and approved the design changes shown in letters dated 12 March 1980 and 23 March 1982 in Appendix H.

10.07 UNRESOLVED ISSUES. The 1979 DEIS was prepared prior to the requirement to submit a determination of consistency of the proposed project with the California Coast Management Plan to the California Coastal Commission (CCC). This determination is included as Attachment 2 of the FEIS.

10.08 LIST OF PREPARERS. The following people are principally responsible for preparing and reviewing this environmental impact statement or for providing information used to prepare this FEIS.

Ira Arzt, Project Manager for Telegraph Canyon Creek from 1982; Community Planner, Water Resources Branch, 3 years.

John S. Ferguson, Jr., Engineering Geologist, Geotechnical Branch, 25 years

Peter Glycer, Project Manager for Telegraph Canyon Creek from 1981 to 1982; Community Planner, Water Resources Branch, 2 years; Captain, U.S. Army Corps Regional Planning, 3 years.

Dee Gonzales, Project Manager for Telegraph Canyon Creek from 1975 to 1980. Civil Engineer, 15 years.

Deborah Harmon, Geographer. Environmental Planning Section, 1 year.
John Kennedy, FEIS review responsibility. Geographer. Chief, Environmental Planning Section, Environmental Planning, 4 years; Recreation Planning, 3 years.

Kenneth M. Kules, DEIS review responsibility; Civil Engineer, Chief, Environmental Planning Section (former); Environmental Planning Section, 7 years; Recreation Planning, 2 years.

Kathy Kunysz, Geographer, Environmental Planning Section, 3 years.

Patricia Martz, Archeologist, Environmental Planning Section, 6 years.

Tad Ouchi, Project Manager for Telegraph Canyon Creek until 1975, Civil Engineer, 28 years.

Dale Pierce, Biologist, Environmental Planning Section (former), 5 years.

Laura Tschudi, Geographer, Environmental Planning Section, 7 years.

Russ Ukita, Civil Engineer. Environmental Resources Branch (former) and Water Resources Branch, 13 years.

Consultants:

Westec Services, Inc., San Diego; Richard Carrico, Principal Investigator; Archeological Test and Data Recovery Program at Telegraph Canyon, Chula Vista, CA, September 1978. Contract No. DACW09-78-M-1700.

Leach, Larry L., Ph.D. and Tim Cross, Supervisory Archeologist. A Cultural Impact Survey of Telegraph Canyon Creek, San Diego County, CA, Unpublished manuscript on file at San Diego State University, San Diego, CA, 1975.

Scott, David B., Dorothy Norris, and Timothy L. Cass. Species Lists and Impact Statement for the "J" Street Marsh Area, South San Diego Bay, Environmental Studies Laboratory, University of San Diego, August 1975.

THE EVALUATION OF THE EFFECTS
OF THE DISCHARGE OF DREDGED OR FILL MATERIAL
INTO THE WATERS OF THE UNITED STATES
AT TELEGRAPH CANYON CREEK
SAN DIEGO COUNTY, CALIFORNIA

Prepared by

U.S. Army Engineer District
Los Angeles, California

MAY 1979

Attachment 1

EIS-36

THE EVALUATION OF THE EFFECTS
OF THE DISCHARGE OF DREDGED OR FILL MATERIAL
INTO THE WATERS OF THE UNITED STATES
AT TELEGRAPH CANYON CREEK,
SAN DIEGO COUNTY, CALIFORNIA

INTRODUCTION. The following evaluation is provided in accordance with Section 404(b) of the Federal Water Pollution Control Act Amendments of 1972 (Public Law 92-500) as amended by the Clean Water Act of 1977 (Public Law 95-217).

1. PROJECT DESCRIPTION.

a. Description of the proposed discharge of dredged or fill material:

(1) General characteristics of material. The fill material will be unpolluted and will consist of earth, stone, cement, and concrete.

(2) Quantity of material proposed for discharge. The amount of material are as follows: 19,197 cubic yards of earth; 1,722 cubic yards of stone; 775 cubic yards of cement (grouting); and about 2298 cubic yards of concrete.

(3) Source of material. Material will be purchased; the rock will be obtained from nearby quarries, and the sand and earth will be purchased from nearby suppliers. All material will be unpolluted.

b. Description of the proposed disposal site for dredged or fill material:

(1) Location. Telegraph Canyon Creek is in the City of Chula Vista in San Diego County, California. The element of the project discussed in this evaluation will be constructed in the reach of the channel that extends from Interstate 5 to the mean higher high water elevation of San Diego Bay, a distance of 0.4 mile.

(2) Type of disposal site. The disposal site is Telegraph Canyon Creek. The earth-bottom concrete-lined trapezoidal channel will follow the alinement of the existing channel. The construction materials will be used for riprap and cement sideslopes and unpaved service roads.

(3) Method of discharge. The material will be discharged by conventional construction methods. A dragline (or other comparable construction equipment that would be least-damaging to the J Street Marsh area) will be specified for channel work at the mouth of the creek.

(4) When will disposal occur. Construction of this element of the project is scheduled to commence in April 1985 and be completed by December 1985.

(5) Projected life of disposal site. The disposal site should require no future modification.

(6) Bathymetry (if open water disposal). Not applicable.

2. PHYSICAL EFFECTS (40 CFR 230.4-1(a)).

a. Potential destruction of wetlands--effects on (40 CFR 230.4-1(a)(1) (i-vi)):

(1) Food chain production. The vegetation within the proposed disposal area provides a limited source of food for songbirds and small mammals.

(2) General habitat. The creek channel downstream from I-5 contains various native and exotic grasses. Vegetation includes pickleweed (Salicornia) and patches of cordgrass (Spartina).

(3) Nesting, spawning, rearing, and resting sites for aquatic or land species. The salt-marsh and riparian habitats along this reach of the creek provide food and cover for several species of birds, some species of small mammals, and various species of invertebrates.

(4) Those set aside for aquatic environment study or sanctuaries or refuges. Not applicable.

(5) Natural drainage characteristic. Removal of the vegetation and deposition of fill during construction will not affect the natural drainage characteristics of the channel.

(6) Sedimentation patterns. No significant changes in sediment deposition or turbidity will result from implementation of the proposed action.

(7) Salinity distribution. Not applicable.

(8) Flushing characteristics. Not applicable.

(9) Current patterns. Not applicable.

(10) Wave action, erosion, or storm damage protection. The existing vegetation in the proposed disposal area does not shield other areas from wave action, erosion, or storm damage.

(11) Storage areas for storm and floodwaters. Not applicable.

(12) Prime natural recharge areas. With the project, ground water recharge will occur in the earth-bottom portion of the channel during periods of storm runoff.

b. Impact on water column (40 CFR 230.4-1(a)(2)):

(1) Reduction in light transmission. Not applicable.

(2) Esthetic values. The proposed project would not significantly affect the appearance of the channel in the earth-bottom reach. The upper reach composed of a concrete-lined channel would significantly affect the appearance of the existing earth-bottom channel.

(3) Direct destructive effects on nektonic and planktonic populations. Not applicable.

c. Covering of benthic communities (40 CFR 230.4-1(a)(3)):

(1) Actual covering of benthic communities. Not applicable.

(2) Changes in community structure or functions. There would not be any significant changes in the earth-bottom channel. In the concrete portion of the channel under tidal influences a new ecosystem would develop differing from the existing soft-bottom channel.

d. Other effects (40 CFR 230.4-1(a)):

(1) Changes in bottom geometry and substrate composition. The proposed earth-bottom portion of the channel would have an average bottom width of 40 feet which would increase to a maximum of 230 feet at the mouth and an average depth of 10 feet which would decrease to 5 feet at the mouth, and would follow the alignment of the existing channel. The proposed concrete-lined portion of the channel would have an average bottom width of 12 feet and an average depth of 9 feet and would follow the alignment of the existing channel.

(2) Water circulation. Channel design will allow adequate tidal exchange between the proposed channel and the J Street Marsh.

(3) Salinity gradients. The proposed channel will allow seawater to penetrate about 1/10 mile inland from the marsh area and percolate into groundwater aquifers. Since existing ground water quality is marginal as the result of saline intrusions, the effects on ground water quality on its present use are deemed insignificant.

(4) Exchange of constituents between sediments and overlying water with alterations of biological communities. No adverse impacts are anticipated.

3. CHEMICAL-BIOLOGICAL INTERACTIVE EFFECTS (40 CFR 230.4-1(b)).

a. Does the material meet exclusion criteria? Yes. The construction material will consist of purchased earth, sand, stone, cement, and concrete and will meet EPA exclusion criteria. All material excavated from the site will be disposed of outside of the channel.

b. Water column effects of chemical constituents (elutriate test optional but recommended) (40 CFR 230.4-1(b)(2)). Are contaminants released? If so, at what levels? Not applicable. Meets exclusion criteria.

c. Effects of chemical constituents on benthos (40 CFR 230.4-1(b)(3)). Not applicable.

4. DESCRIPTION OF SITE COMPARISON (40 CFR 230.4-1(c)).

a. Total sediment analysis (40 CFR 230.4-1(c)(1)). Not applicable.

b. Biological community structure analysis (40 CFR 230.4-1(c)(2)). Not applicable.

5. REVIEW APPLICABLE WATER QUALITY.

a. Compare constituent concentration. Not applicable.

b. Consider mixing zone. Not applicable.

c. Based on a and b above, will disposal operations be in conformance with applicable standards? Not applicable.

6. SELECTION OF DISPOSAL SITES (40 CFR 230.5) FOR DREDGED OR FILL MATERIAL.

a. Need for the proposed activity. The earth-bottom channel is a necessary element of the proposed project, which would provide flood protection to urban development along Telegraph Creek.

b. Alternative considered. Alternatives considered included "no action", flood proofing of homes in the flood plain, and various channel alternatives. The alternatives chosen will provide protection from the 100-year flood along the creek and was the most economically justified plan.

c. Objectives to be considered in discharge determination (40 CFR 230.5(a)):

(1) Impacts on chemical, physical, & biological integrity of aquatic ecosystem (40 CFR 230.5(a)(1)). About 4 acres of land will be cleared and grubbed for construction between I-5 and the marsh. About 1.6 acres will return to its existing state after construction, but will be subject to periodic disturbance during maintenance operations.

(2) Impact on food chain. The food chain will be disrupted until the area revegetates.

(3) Impact on diversity of plant and animal species. After construction, the vegetation that reestablishes should be similar to existing vegetation, providing habitat for essentially the same types of wildlife that now utilize the area in the earth-bottom portion of the channel. The addition of the concrete-lined channel within tidal influence should increase the diversity of animal species.

(4) Impact on movement into and out of feeding, spawning, breeding, and nursery areas. Wildlife utilizing habitat within the disposal area would be displaced but would return as vegetation becomes reestablished after construction.

(5) Impact on wetland areas having significant functions of water quality maintenance. Not applicable.

(6) Impact on areas that service to retain natural high waters or floodwater. Not applicable.

(7) Methods to minimize turbidity. Construction specifications will require that the contractor performing the work will not pollute the creek or bay with any harmful materials, including sediments.

(8) Methods to minimize degradation of esthetics, recreational, and economic values. There are no recreational or economic uses of the channel along this reach of the creek. The esthetics will not be significantly changed in the soft-bottom portion of the channel; the channel will be widened and the channel sides will be lined with stone. The esthetics will be significantly changed in the concrete-lined portion of the channel from the existing soft-bottom channel. The channel will be landscaped to provide a "wildlife corridor" along the length of the channel.

(9) Threatened and endangered species. No rare or endangered species will be impacted by the proposed action. The Corps will implement measures to ensure that the proposed project will not likely jeopardize either the California least tern or the light-footed clapper rail. These measures are outlined in U.S. Fish and Wildlife Service letter dated 23 March 1982, which is contained in the Detailed Project Report for the project in appendix H.

d. Impacts on water uses at proposed disposal site (40 CFR 230.5(b)(1-10)):

(1) Municipal water supply intakes. The proposed construction would have no impact on the municipal water supply. (There are two wells on San Diego County Country Club property located 1/2 mile south of Telegraph Canyon Creek and about 1/4 mile upstream from the proposed channel inlet for the project. These wells are used to irrigate the fairways.)

(2) Shellfish. Not applicable.

(3) Fisheries. Not applicable.

(4) Wildlife. Any wildlife utilizing habitat within the proposed disposal area will be displaced until the affected channel reach revegetates.

(5) Recreation activities. Not applicable.

(6) Threatened and endangered species. The project is not anticipated to have any impacts on threatened and endangered species of wildlife.

(7) Benthic life. Not applicable.

(8) Wetlands. Disposal will not have an overall unacceptable adverse impact of aquatic resources.

(9) Submerged vegetation. There is no submerged vegetation of significant biological productivity within the proposed disposal area.

(10) Size of disposal site. The configuration of the proposed earth-bottom channel was based on flood control considerations.

(11) Coastal Zone Management programs (40 CFR 230.3(e)). The proposed flood control project is consistent with the general goals and objectives of the Coastal Zone Plan.

e. Considerations to minimize harmful effects (40 CFR 230.5(c)(1-7)):

(1) Water quality criteria. Not applicable

(2) Investigate alternatives to open water disposal. Flood control measures within Telegraph Canyon Creek were the only alternative considered.

(3) Investigate physical characteristics of alternative disposal sites. Not applicable.

(4) Ocean dumping. Not applicable

(5) Where possible, investigate covering contaminated dredged material with cleaner material. Not applicable.

(6) Investigate methods to minimize effect of runoff from confined areas on the aquatic environment. Not applicable.

(7) Coordinate potential monitoring activities at disposal site with the Environmental Protection Agency (EPA). Not applicable.

7. STATEMENT AS TO CONTAMINATION OF FILL MATERIAL IF FROM A LAND SOURCE (40 CFR 230.5(d)). Material meets EPA exclusion criteria (see 3a).

8. CONCLUSION AND DETERMINATION. An ecological evaluation has been made following the evaluation guidance in 40 CFR 230.4, in conjunction with evaluation considerations in 40 CFR 230.5. Appropriate measures have been identified and incorporated in the the proposed plan to minimize adverse effects on the environment as a result of the discharge. Consideration has been given to the need for the proposed activity, the availability of alternate sites and methods of disposal that are less damaging to the environment, and such water quality standards as are appropriate and applicable by law.

The activity associated with the fill must have direct access or proximity to, or be located in, the water in order to fulfill its basic purpose.

9. FINDINGS. The discharge site for the Telegraph Canyon Creek, City of Chula Vista, San Diego County, California, project has been specified through the application of the Section 404(b)(1) Guidelines.

Determination of Consistency
with California Coastal Act

Telegraph Canyon Creek
Flood Control Channel

Attachment 2

Determination of Consistency with California Coastal Act

The following determination is prepared in compliance with the Federal Coastal Zone Management Act of 1972, Section 307 (Title 16, USC Section 1456 (c)), which states that Federal, actions must be consistent with approved State Coastal Management programs to the maximum extent practicable. Section of the California Coastal Act of 1976 applicable to this project are 30230-Marine Resources; 30233 - Wetlands, Open Coastal Waters; 30236 - Flood Control Projects; and 30240 - Environmentally Sensitive Habitats.

It is the opinion of the Corps of Engineers, based on a review of the applicable sections of the Act, on data presented in the final environmental impact statement (FEIS) and on the Biological Opinion and Planning Aid letters prepared by the U.S. Fish and Wildlife Service in accordance with Section 7 of the Endangered Species Act of 1973, as amended, and the Fish and Wildlife Coordination Act and on mitigation measures incorporated into the project, that the proposed project is consistent with the applicable sections of the California Coastal Act of 1976 to the maximum extent practicable. The Corps has determined that the modified recommended plan (M-1) is the most feasible alternative; and that feasible mitigation measures have been included to minimize adverse environmental effects; and that, with the mitigation measures in effect, the function capacity of the wetlands will be maintained.

To comply with the Department of Commerce regulations, Federal consistency with Approved Coastal Management Programs (15 CFR Part 930, Federal Register, 25 June 1979), the consistency determination submitted at the State should include, in support of the above determination, a detailed description of the activity and associated facilities, coastal zone effects of that activity, and comprehensive data and information sufficient to support the consistency statement. The proposed project is described in detail in the Main Report and Technical Determination of Consistency with California Coastal Act

Appendix for the proposed project. The environmental consequences of the proposed action and the mitigation measures are described in the FEIS and the biological assessment (Appendix H).

The proposed, action is consistent with the following applicable sections of the California Coastal Management Plan to the maximum extent practicable.

Section 30230, Marine Resources: The excavation of the channel below the present ground surface (about 4') and widening the channel from 25 to 215 feet will result in the creation of additional intertidal area in the western-most reach (0.08 miles) of the channel. Rocks lining the innerface of the channel will create new habitat for various species of invertebrates. It is expected that within a few years of completion of the channel the sediments in the intertidal, area would be inhabited by the more tolerant species found on similar substrates and at comparable depths in San Diego Bay. With completion of the project scouring in the marsh will be reduced to levels below which presently exist (9.6 feet per second) to 7.6 fps during periods of high discharge.

Mitigation measures have been incorporated into the project to protect marine resources. Permanent erosion control features will be installed concurrently with or immediately following all grading operations when erosion damage is probable during the rainy season to decrease the chance that rainwater will carry large quantities of sediment into San Diego Bay or J Street Marsh. Other pollution control features will also be installed to prevent deterioration of the Bay or Marsh.

Coastal Consistency - Telegraph Canyon Creek

In order to preserve marine resources no construction will occur bayward of the 4 foot contour line (msl) and no heavy equipment will operate within the marsh or intertidal area. A dragline or comparable equipment which would be least damaging will be used at the mouth of the creek. The stabilizer at the mouth of the creek will be notched to aid in regular tidal flushing of the intertidal area. An energy dissipator will be installed as part of the project to lessen the impacts of scouring which occurs during periods of high discharge.

Section 30233, Wetlands - Open Coastal Waters: The proposed project will maintain and enhance the function capacity of the J Street Marsh. The channel will be widened and deepened beyond its current dimensions. About 1 acre of intertidal habitat will be created by the proposed channel in the lower reach. Some of this habitat area will be along the rock-lined or concrete interface of the channel. This will provide greater diversity within the marsh ecosystem complex which is presently exclusively soft-bottom.

Project modification and mitigation measures incorporated into the project have resulted in a determination by the U.S. Fish and Wildlife Service of no jeopardy to the California least tern and the lightfooted clapper rail, two federally listed endangered species that utilize the habitat in the project area. Increased area of the marsh will directly benefit the larger marsh complex for those species using it for resting, nesting, and feeding during seasonal migrations as well as for the year round residents.

Section 30236, Flood Control Projects: The proposed flood control channel is necessary for public safety. Flooding of Telegraph Canyon Creek threatens residential and industrial areas as well as disrupts major transportation routes that cross the flood plain. The proposed flood control channel is designed to control all floods up to and including the 100 year flood (of 3,300 cubic feet per second). Investigations carried out as part of the planning process are listed in the Main report and contained in the technical appendix for the project. These investigations address the need for the project and the feasibility of the recommended plan. It was determined as a result of the extensive planning process that the recommended plan is the most feasible of the various alternatives studied which are discussed in the both the Main Report and the FEIS.

Section 30240, Environmental Sensitive Habitat: The project will protect environmentally sensitive wetland habitat by observing several conditions for the construction and maintenance of the project (as outlined in the USFWS letter of March 23, 1982). There will be no heavy equipment permitted in the

channel or channel mouth in the intertidal area and a dragline or comparable equipment which would be least damaging will be used at the mouth of the creek. Vegetation such as large shrubs and trees in the soft-bottom reach will be selectively removed by hand labor and marsh vegetation (e.g. pickleweed, cordgrass) will not be removed. Marsh vegetation will be planted in the newly created intertidal area subsequent to the completion of the channel. Best management practices including erosion control will be implemented to prevent pollution including sediment from being disposed in the San Diego Bay or J Street Marsh. A landscape corridor along the levee would be established and would provide habitat for more tolerant species. All construction from the mouth of the creek to 500 feet upstream will occur in a construction window of September to March to avoid the nesting season for the light-footed clapper rail and the California Least tern. All excavated spoil will be disposed of outside of the wetland and creek.



United States
Department of
Agriculture

Soil
Conservation
Service

2828 Chiles Road
Davis, CA
95616

October 30, 1979

Gwynn A. Teague
Colonel, CE
District Engineer
Department of the Army
Los Angeles District, Corps of Engineers
P. O. Box 2711
Los Angeles, California 90033

Dear Colonel Teague:

We acknowledge receipt of the Draft Detailed Project Report for Flood Control and Draft Environmental Impact Statement for Telegraph Canyon Creek, City of Chula Vista, San Diego County, California. This document adequately describes the impact the proposed project will have upon the stream channel riparian habitat. It also adequately describes the impact the proposed project will have upon the southern part of the J Street Marsh.

Review of this document reveals no adverse impacts upon any other concerns of the Soil Conservation Service. No prime agricultural land will be affected. No agricultural water resource will be lost because of project action.

We appreciate the opportunity to review and comment on this study.

Sincerely,

FRANCIS C. H. LUM
State Conservationist

cc: Norman A. Berg, Administrator, USDA, SCS, Washington, D. C.
Director, Office of Federal Activities (Mail Code A-104),
Environmental Protection Agency, Room 537 West Tower,
Waterside Mall S. W., Washington, D. C. 20460



UNITED STATES DEPARTMENT OF COMMERCE
The Assistant Secretary for Science and Technology
Washington, D.C. 20230
(202) 377-501X 4335

December 31, 1979

District Engineer
U.S. Army Corps of Engineers,
Los Angeles District,
P.O. Box 2711
Los Angeles, California 90053

Dear Sir:

This is in reference to your draft Environmental Impact Statement entitled, "Telegraph Canyon Creek, Chula Vista, California." The enclosed comment from the National Oceanic and Atmospheric Administration is forwarded for your consideration.

Thank you for giving us an opportunity to provide this comment, which we hope will be of assistance to you. We would appreciate receiving seven copies of the final statement.

Sincerely,

Sidney R. Miller
Sidney R. Miller
Deputy Assistant Secretary
for Environmental Affairs

Enclosure: Memo from:
NOAA-Environmental Data and Information Service-N. Strommen

No response required.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
ENVIRONMENTAL DATA AND INFORMATION SERVICE
Washington, D.C. 20235
Center for Environmental Assessment Services

December 11, 1979 OA:D24:HDS

Rec'd PMIC
12 DEC 1979

TO: PP/EC - R. Lehman
FROM: OA/D24 - M. Strommen
SUBJECT: DEIS 7912.01 - Telegraph Canyon Creek - City of Chula Vista;
San Diego County, California

Specific Comment:

Volume 11, Page E-5, Paragraph b., last sentence, should be changed to read:
"Both sets of data are based upon the 30 year means for the period 1951-1970,
the period used by the Weather Service to compute it's current climatic
normals."

(BP: M. Strommen, D24)

Attachment - DEIS 7912.01

Page E-5 has been changed as noted.





DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
AREA OFFICE
1300 WILSHIRE BOULEVARD, LOS ANGELES, CALIFORNIA 90017

December 5, 1979

RECORD 11
410 Golden Gate Avenue
P.O. Box 10053
San Francisco, California 94102

IN REPLY REFER TO:
9.2SS

Mr. Norman Arno
Chief, Engineering Division
Department of the Army
Los Angeles District Corps of Engineers
P.O. Box 2711
Los Angeles, California 90053

Dear Mr. Arno:

Subject: Draft Environmental Impact Statement
Telegraph Canyon Creek Improvement
Chula Vista, California

HUD financial assistance in the form of Community Development
Block Grant funds are being expended in the City of Chula Vista.

Based on our review, CDBG funds are not presently being expended
in the Census Tracts bisected by Telegraph Creek. However, as
Telegraph Creek does cross through several existing residential
neighborhoods, where potential housing sites exist, the appropriate
officials of the City should be consulted in your decision making
process with regard to floodplain, land planning and zoning
requirements on the subject project.

Thank you for informing us of this project proposal.

Sincerely,

J.P. Sabella
J.P. Sabella
Acting Area Manager

No response required.



UNITED STATES
DEPARTMENT OF THE INTERIOR

OFFICE OF THE SECRETARY

PACIFIC SOUTHWEST REGION
BOX 36086 • 480 GOLDEN GATE AVENUE
SAN FRANCISCO, CALIFORNIA 94102
(415) 956-3200

ER-79/1065

December 18, 1979

District Engineer
Los Angeles District, Corps of Engineers
P. O. Box 2711
Los Angeles, California 90053

Dear Sir:

The Department of the Interior has reviewed the draft detailed project report and draft environmental statement for Telegraph Canyon Creek, San Diego County, California, and offers the following comments.

DRAFT ENVIRONMENTAL STATEMENT

General Comments

The document is inaccurate in its presentation of the U. S. Fish and Wildlife Service position concerning this project, deficient in discussing adverse environmental impacts associated with this project, and neglects to include a section discussing what mitigation measures will be implemented to offset the adverse environmental impacts.

We suggest that mitigation measures be proposed to preserve or protect any cultural resources that may be unearthed during construction. In the event that archeological resources are discovered, a qualified archeologist should be called to the site to perform professional data recovery studies which may include site mapping, artifact collection, excavation, analysis, and report preparation in consultation with the State Historic Preservation Office. The archeologist may determine that work should be temporarily stopped or that the project should be altered in order to preserve or protect archeological resources discovered. Although the cultural resources survey indicates that construction of the proposed project should not endanger cultural resources, mitigation measures should be proposed. Furthermore, comments received from the State Historic Preservation Office and the Interagency Archeological Service on the cultural resources survey should be included in the final statement.

The final statement should clearly state that the proposed project will not involve the taking of any land now used for public recreation. In the case of the Rice School, land to be taken for the proposed project is now being used for flood control and is not used for recreational

General comments, par. 2: Should any cultural resources be unearthed during construction, a qualified archeologist will perform professional data recovery studies as noted in review comment. These efforts would be coordinated with the State Historic Preservation Officer. This information has been added to paragraph 4.19. The 6 June 1979 letter from the Heritage Conservation and Recreation Service, Pacific Southwest Region, is included in appendix A. A copy of the 7 March 1980 letter to the State Historic Preservation officer is also included in Appendix A.

General Comments, par. 3: No lands now used for formal recreation will be required for the proposed project. This has been noted in paragraph 4.23.

purposes. We concur with the conclusion of the project sponsor that incorporation of recreational opportunities (bike trail) is not feasible in the proposed project.

Specific Comments

Section 4.13, page 128. It is stated that the Corps of Engineers will implement the conditions outlined in the Fish and Wildlife Service's January 23, 1979, biological opinion to insure the proposed project will not jeopardize either the California least tern or the light-footed clapper rail. Section 6, pages 149-150, "Selection of Disposal Sites for Dredged Material," c. (1) further states that the FWS letter of May 14, 1979, anticipates long-term positive impacts between Interstate 5 and the existing marsh if the project is implemented according to agreed-upon project conditions. However, the document does not mention that FWS comments on this project were based upon a different set of project conditions than have been revealed therein, and in recent CE correspondence. Our prior understanding of the agreed-upon project conditions was as follows:

The project would:

1. Not proceed beyond the 5-foot contour;
2. Result in approximately a 6 foot per second channel velocity (aided by a drop structure and stabilizer);
3. Result in increased and undisturbed salt marsh and mudflat;
4. Not adversely impact the existing salt marsh and mudflat;
5. Not scour out or deposit heavy loads of sediment in the marsh;
6. Minimize the size of the channel opening into the marsh;
7. Not grout the rock riprap leading to the channel opening.

The project now proposed in the EIS and in subsequent CE correspondence to the FWS is one which will:

1. Encroach to the 4-foot contour to reduce channel exit velocities from 9.2 to 7.6 feet per second (letter to the FWS dated October 9, 1979). This is the first indication that channel velocities are of this magnitude, and necessitate reduction to reduce anticipated scouring in the marsh. Previous coordination with the FWS indicated exit velocities would be about 6 cubic feet per second. The magnitude of scouring is confirmed in Section 4.13 of the EIS;
2. Subject area between Interstate 5 and the existing marsh to "periodic maintenance operation." This is confirmed in Section 4.11 of the EIS.

General Response, page 2: The U.S. Fish and Wildlife Service was informed of the proposed project modification in a timely manner. The Corps regrets that the proposed extension of the project to the 4-foot contour line, which was incorporated into the project to reduce the exit velocity and thus reduce project-related impacts on the marsh, was not noted in the draft environmental impact statement. A meeting was held at the FWS field office, Laguna Niguel, to clarify the misunderstanding regarding exit velocities and to discuss the effects of the modified velocity on the marsh. The FWS was advised that the existing velocity at the exit is calculated to be 9.6 feet per second. Under the original project design, the velocity at the same point would be 9.2 fps, whereas under the modified project condition it would be reduced to 7.6 fps. It was pointed out that the velocity calculated over the entire reach averages about 6 fps under both present and project condition.

The very limited project maintenance in the intertidal reach and the reduction in velocity at the mouth made possible by the project modification should ensure that the project will not adversely affect endangered species utilizing J Street Marsh (see FWS letter of 12 March 1980 in Appendix A).

The project, as proposed in the subject document, reveals potential adverse impacts to the marsh associated with accelerated erosion, deposition, and periodic maintenance operations. It is obvious that the biological opinion of January 25, 1979, no longer applies to this changed design. Any material included on potential impacts on California least tern and light-footed clapper rail would have to be based on a further consultation.

We believe the EIS should:

1. Greatly expand on and detail the extent of the expected erosion, deposition, and maintenance activities in the area between Interstate 5 and the existing marsh;
2. Modify or delete the section referring to previous FWS comments, which were based on a different set of project conditions than now exist;
3. Incorporate comments in the text that establish the fact that the FWS believes the project as now proposed could result in significant adverse impacts on the marsh unless the project conditions return to what they were previously;
4. Expand the section entitled, "Adverse Environmental Effect Which Cannot Be Avoided" to include the environmental effects concerning wildlife resources. This section should include the following statements:
 - (a) This project will permanently destroy the majority of the viable wildlife habitat existing within the proposed channel alignment;
 - (b) This project will result in permanent degradation of the salt marsh by:
 - (1) significantly accelerating the rate of scouring in the salt marsh;
 - (2) significantly accelerating the distribution and deposition of sediments on established salt marsh vegetation;
 - (3) periodic removal of salt marsh and other buffer vegetation between Interstate 5 and the existing marsh.

A section should be added following the revised Section 5.01 which clearly details mitigation measures to be implemented to offset each of the adverse impacts described in these comments.

Specific Comments:

Page 3, No. 1. The area downstream from Interstate 805 is nearly fully urbanized, but lands above Interstate 805 are presently mainly agricultural. Plate 8 in appendix E (Urbanization--Land Use; 1990 General Plan) indicates partial urbanization of the project drainage area above Interstate 805 by 1990. Runoff from the primarily urban portions of the drainage area does not carry much sediment, and as urbanization extends upstream from Interstate 805, the percentage of "clean" runoff, that is runoff lacking in sediments, should increase. As noted in paragraph 4.11 in the DGIS, no significant changes in sediment deposition or turbidity will be caused by the proposed action. This applies with the project modification as well.

Reducing the exit velocity from 9.2 fps to 7.6 should reduce scour of the J Street marsh during high discharge. The maintenance program downstream from Interstate 5 (in the earth-bottom portion of the channel) should be beneficial in controlling erosion resulting from storm runoff. Trees and large shrubs will have to be removed from the channel in the reach downstream from I-5. No heavy equipment will be allowed in the channel or channel mouth in the intertidal area; removal will be selective and by hand labor. Marsh vegetation (e.g., pickleweed, cordgrass) will not be removed. Under normal conditions, no maintenance will be necessary in the intertidal area, but, as noted above, if any trees or shrubs should grow in this reach they would be removed by hand. Within the rest of the earth-bottom channel upstream to Interstate 5, grasses and such flexible vegetation as cattail and bulrush will be allowed to grow. The FWS, by mutual agreement with the San Diego County Flood Control District, may review the operation and maintenance manual for the project.

Page 3, No. 2. Reference to previous FWS comments has been deleted from the report.

Page 3, No. 3. As noted under general response, the modification was incorporated into the plan to reduce impacts on the marsh. The new design reduces velocity at the mouth from 9.2 fps to 7.6 fps.

(additional response on next page)

Although the FWS has had involvement with this project, the concerns raised herein are the result of changes and/or refinements in the project by the Corps of Engineers. The FWS welcomes in-depth coordination efforts and resolution of problems. We are hopeful that diligent CE coordination efforts will help resolve many project-associated difficulties.

DRAFT DETAILED PROJECT REPORT

Specific Comment

Page 99. It is stated that the data in the EIS was used in the determination of a selected plan. Since this data was based on previous understandings on project design and seriously underestimated the environmental hazards, we do not believe adequate consideration could have been given to ways to avoid or mitigate these damages. We believe further consideration and coordination with the Fish and Wildlife Service is needed before this plan is forwarded to higher authority.

We also do not believe the plan in its present form meets the intent of the Executive Order on Flood Plains and Wetlands since there is a potential for significant encroachment or degradation of these resources. Rather than encouraging continued use and future development in the floodplain, the plan should include effective zoning by the city of Chula Vista and the county of San Diego to limit growth and new development on the floodplain.

Thank you for the opportunity to comment on these documents. If you have any questions on these comments, please contact me directly.

Sincerely,

Patricia S. Port

Patricia Sanderson Port
Regional Environmental Officer

Page 3, No. 4.

(a) Vegetation will be allowed to reestablish along the earth-bottom channel downstream from Interstate 5 subject to the maintenance conditions outlined under response for page 3, No. 1. (Also see b(3) below.) No marsh vegetation will be removed during limited maintenance operations.

(b) The following are in response to comments on the salt marsh:

(1) Scouring will be reduced as noted in general response.

(2) No significant changes in sediment deposition are anticipated as a result of the proposed action.

(3) Trees and large shrubs will be removed from the earth-bottom channel reach but salt marsh vegetation, grasses, and other flexible vegetation will be allowed to reestablish. Of the 12 acres of vegetation that will be destroyed during the construction process, 3 acres will be allowed to revegetate. This acreage consists of the earth-bottom channel from Interstate 5 to the channel mouth (see par. 4.12 in the DEIS). The other 9 acres consists of the concrete channel area in the project reach upstream from Interstate 5.

Page 3, final paragraph. The mitigation program for the project includes: timing of construction to avoid impacts on endangered species; preventing construction work or machinery to encroach bayward of the 4-foot contour; implementing measures to ensure that abnormal pollution and siltation of the marsh do not occur; and the maintenance program outlined in response for page 3, No. 1.

Page 4, comment concerning page 99 of draft DPR. Further coordination has taken place to clarify misunderstandings related to the project design and the modification. The Corps believes that the modified plan, by reducing anticipated impacts in the marsh, meets the intent of the Executive Order on Wetlands. By incorporating a study of nonstructural solutions into the planning process, the proposed project is also in compliance with the Executive Order on Flood Plains

cc: Director, OEPR (w/copy incoming)
Director, Heritage Conservation & Recreation Service
Director, National Park Service
Director, Fish and Wildlife Service
Director, Geological Survey
Director, Bureau of Land Management
Director, Bureau of Mines
Director, Water and Power Resources Service
Commissioner, Bureau of Indian Affairs
Reg. Dir., NCRS
Reg. Dir., BLM
Reg. Dir., NPS
Reg. Dir., FWS
Reg. Dir., CS
Reg. Dir., BH
Reg. Dir., WPM
SRPO

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

WESTERN REGION
P O BOX 28001 WASHINGTON POSTAL CENTER
LOS ANGELES CALIFORNIA 90009



December 4, 1979

Mr. Dee Gonzales, Project Manager
U. S. Corps of Engineers
Los Angeles District
P. O. Box 2711
Los Angeles, California 90053

Dear Mr. Gonzales:

As requested, we have now completed the review of your Draft Detailed Project Report for the Telegraph Canyon Creek Project located in San Diego County, California.

Please be advised that our preliminary findings indicate that this proposed project will not present any problem to any existing or presently planned FAA facilities. However, it is advised that the Corps of Engineers is required to file a notice with the Federal Aviation Administration for this project if determined applicable and as stipulated under Part 77 of the Federal Aviation Regulations (FARs).

No response required.

We appreciate the courtesy extended in bringing this matter to our attention.

Sincerely,


G. BRIDGES
Regional Planning Officer



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
REGION NINE

ARIZONA
CALIFORNIA
HAWAII
NEVADA
NEW MEXICO
UTAH
VIRGINIA
WASHINGTON
YUKON TERRITORY

Two Embarcadero Center, Suite 530
San Francisco, California 94111

November 15, 1979

IN REPLY REFER TO

HED-09

Colonel Gwynn A. Teague
Los Angeles District Engineer
U. S. Army Corps of Engineers
P. O. Box 2711
Los Angeles, California 90053

Dear Colonel Teague:

We have reviewed the Draft Environmental Impact Statement and Detailed Project Report for Telegraph Canyon Creek, San Diego County, California, and have no specific comments to offer.

We appreciate this opportunity to review the subject Draft Statement.

Sincerely yours,

Neil Dillabough
Neil Dillabough, Director
Office of Environment and Design

EIS-57

No response required.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX

215 Fremont Street
San Francisco, Ca. 94106

Project #D-COE-K36036

Gwynn A. Teague
Colonel, CE
District Engineer
Los Angeles District, Corps of Engineers
P.O. Box 2711
Los Angeles CA 90053

31 JAN 1980

Dear Colonel Teague:

The Environmental Protection Agency (EPA) has received and reviewed the Draft Environmental Impact Statement (DEIS) titled Telegraph Canyon Creek, City of Chula Vista. The EPA's comments on the DEIS have been classified as Category LO-1. Definitions of the categories are provided on the enclosure. The classification and the date of the EPA's comments will be published in the Federal Register in accordance with our responsibility to inform the public of our views on proposed Federal Actions under Section 309 of the Clean Air Act. Our procedure is to categorize our comments on both the environmental consequences of the proposed action and the adequacy of the environmental statement.

The EPA appreciates the opportunity to comment on this DEIS and requests three copies of the Final Environmental Impact Statement when available.

If you have any questions regarding our comments, please contact Susan Sakaki, Acting EIS Coordinator, at (415)556-6925.

Sincerely yours,

Paul C. Hahn
Paul De Falco, Jr.
Regional Administrator

Enclosure:

EIS CATEGORY CODES

Environmental Impact of the Action

LO--Lack of Objections

EPA has no objection to the proposed action as described in the draft impact statement; or suggests only minor changes in the proposed action.

ER--Environmental Reservations

EPA has reservations concerning the environmental effects of certain aspects of the proposed action. EPA believes that further study of suggested alternatives or modifications is required and has asked the originating Federal agency to reassess these aspects.

EU--Environmentally Unsatisfactory

EPA believes that the proposed action is unsatisfactory because of its potentially harmful effect on the environment. Furthermore, the Agency believes that the potential safeguards which might be utilized may not adequately protect the environment from hazards arising from this action. The Agency recommends that alternatives to the action be analyzed further (including the possibility of no action at all).

Adequacy of the Impact Statement

Category 1--Adequate

The draft impact statement adequately sets forth the environmental impact of the proposed project or action as well as alternatives reasonably available to the project or action.

Category 2--Insufficient Information

EPA believes that the draft impact statement does not contain sufficient information to assess fully the environmental impact of the proposed project or action. However, from the information submitted, the Agency is able to make a preliminary determination of the impact on the environment. EPA has requested that the originator provide the information that was not included in the draft statement.

Category 3--Inadequate

EPA believes that the draft impact statement does not adequately assess the environmental impact of the proposed project or action, or that the statement inadequately analyzes reasonably available alternatives. The Agency has requested more information and analysis concerning the potential environmental hazards and has asked that substantial revision be made to the impact statement.

If a draft impact statement is assigned a Category 3, no rating will be made of the project or action, since a basis does not generally exist on which to make such a determination.

Water Comment

The EPA recommends the utilization of "Best Management Practices Guidance, Discharge of Dredged or Fill Materials" (EPA 440/3-79-028, September 1979) with respect to mitigating potential adverse impacts on water quality resulting from the proposed project. The Final EIS should indicate consideration of these Best Management Practices.

The Corps has obtained a copy of this report from EPA and will consider these Best Management Practices in implementing the proposed project.

FEDERAL ENERGY REGULATORY COMMISSION

REGIONAL OFFICE
585 BATTERY STREET, ROOM 415
SAN FRANCISCO, CA 94111

December 18, 1979

Colonel Gayun A. Teague
District Engineer
Los Angeles District
U.S. Army Corps of Engineers
P.O. Box 2711
Los Angeles, California 90053

Dear Colonel Teague:

This is in response to your letter, received in this office on October 25, 1979, requesting our comments on your Draft Detailed Project Report for Flood Control and Draft Environmental Impact Statement for Telegraph Canyon Creek in San Diego County, California, dated September 1979.

We have reviewed your draft report to determine the effect on matters affecting the Federal Energy Regulatory Commission's responsibilities. Such responsibilities relate to the licensing of non-federal hydroelectric projects and associated transmission lines, certification for construction and operation of natural gas pipeline facilities, defined to include both interstate pipeline and terminal facilities; and the permit and approval required for the abandonment of natural gas pipeline facilities.

Our review indicates there would not be any significant impacts in those areas of concern nor serious conflicts with this agency's responsibilities if this plan were adopted.

Sincerely,


Eugene Heblert
Regional Engineer

No response required.

OFFICE OF THE SECRETARY
RESOURCES BUILDING
1418 NINTH STREET
SACRAMENTO
95816

(916) 445-5656

Department of Conservation
Department of Fish and Game
Department of Natural Resources
Department of Parks and Recreation
Department of Public Works
Department of Transportation
Department of Water Resources
Department of Forestry

EDMUND G. BROWN, JR.
GOVERNOR OF
CALIFORNIA



THE RESOURCES AGENCY OF CALIFORNIA
SACRAMENTO, CALIFORNIA

1979 DEC 14

U. S. Army Corps of Engineers
Post Office Box 2711
Los Angeles, CA 90053

Attention: Dee Gonzales

The State of California has reviewed the Telegraph Canyon Creek, City of Chula Vista, San Diego County, California, Main Report, Vol. I, September 1979, and the Technical Appendices, Detailed Project Report for Flood Control and Draft Environmental Impact Statement, Vol. II, September 1979, submitted through the Office of Planning and Research (State Clearinghouse) in the Governor's Office.

The Department of Fish and Game has the following comments:

"We fully support the Corps of Engineers intention to include and implement the measures outlined in the U. S. Fish and Wildlife Service letter of January 25, 1979, as contained in Appendix H of the document. We believe these measures will provide protection of the endangered light-footed clapper rail, the California least tern, and the ecological integrity of the J Street Marsh and marine environment of San Diego Bay.

"However, we are concerned that storm runoff entering the J Street Marsh would be confined to a narrower channel than currently exists. This could result in scouring a deeper channel through the marsh thus causing an increased sediment load with resultant deposition within the marsh and San Diego Bay. For our full concurrence of the project we request that an impact assessment report describing the potential impacts of increased sediments upon the marsh ecosystem and marine environment be provided in an amended EIS for our review and comment. This assessment should also include effective mitigation measures to offset potential impacts that may be identified in the document."

The concerns expressed by the Resources Agency have been addressed under response to the Department of Interior letter of comment. Additional information on exit velocities, sedimentation, and operation and maintenance in the intertidal reach have been incorporated into chapter 4. Also see 12 March 1980 letter from U.S. Fish and Wildlife Service in Appendix B.

As Resources Board
California River Board
San Francisco Bay Conservation and
Development Commission
Soil and Water Conservation Board
State Lands Commission
State Reclamation Board
State Water Resources Control Board
State Water Resources Control Board
Energy Resources Conservation and
Development Commission
California Coastal Commission
California Coastal Conservancy
State Coastal Conservancy

U. S. Army Corps of Engineers
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The Corps has informed the San Diego Regional Board that waste discharge requirements will not be needed for the discharge from project dewatering.

The State Water Resources Control Board, through the California Regional Water Quality Control Board, San Diego Region, has the following comments:

"The document states that dewatering will be required in order to excavate and construct the proposed improvements below station 40+00 (Volume II, p. P-20).

"Please contact Mr. Arthur Coe at the San Diego Regional Board to determine if waste discharge requirements will be needed for the discharge from project dewatering."

The State's review, which fulfills the requirements of Part II of Office of Management and Budget Circular A-95 and the National Environmental Policy Act of 1969, was coordinated with the Departments of Water Resources, Conservation, Fish and Game, Food and Agriculture, Health Services, and Parks and Recreation; the Air Resources, the State Water Resources Control, and the Solid Waste Management Boards; and the State Lands Commission.

We appreciate having been given the opportunity to review these documents.

Sincerely,

James W. Burns

JAMES W. BURNS
Assistant Secretary for Resources

cc: Director of Management Systems
State Clearinghouse
Office of Planning and Research
1400 Tenth Street
Sacramento, CA 95814
(SCR 7910109E)

mtadb

Metropolitan Transit Development Board
620 "C" Street, Suite 400, San Diego, California 92101 (714) 231-1466

November 26, 1979

Mr. Dee Gonzales
Project Manager
Corps of Engineers
P.O. Box 2711
Los Angeles, CA. 90053

Dear Mr. Gonzales:

The Federal Rail Administration forwarded your Draft Environmental Impact Statement for Improvements on Telegraph Canyon Creek in San Diego County California to us for comment since the project crosses the San Diego and Arizona Eastern Railway which we recently purchased.

Since the project would probably provide favorable impacts on our operations we offer no comments. However we request that if detailed design is commenced we be contacted to coordinate suitable connections to our facilities.

Sincerely,

Roger D. Clark

Roger D. Clark
Director of Engineering

cc: Jina Kuehn
Flake Mills, SD&AE

RMC/lsd

No response required

San Diego County, City of Chula Vista, City of El Cajon, City of Imperial Beach, City of La Mesa,
City of Lemon Grove, City of National City, City of San Diego, County of San Diego, State of California

END

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