

Table 19
HEMET AREA MASTER DRAINAGE PLAN
TOTAL PRIMARY AND INDUCED ECONOMIC IMPACT
(1977 Dollars)

	<u>Annual Basis</u>	<u>Project Basis</u>
<u>Primary Impact</u>		
Construction Payrolls	\$3,064,300	\$9,193,000
Purchase of Materials & Supplies	2,981,900	8,945,800
Induced Impact	<u>2,451,500</u>	<u>7,354,400</u>
TOTAL	<u>\$8,497,700</u>	<u>\$25,493,200</u>

SOURCE: Urbanomics Research Associates

on a local and regional basis. Sales tax revenues received by the State Board of Equalization will exceed \$447,000. Riverside County will ultimately receive a portion of the State tax receipts.

Public Costs

As the urbanization of the project area occurs, certain public capital and operating costs will be incurred. The newly developed area will need to be served with police and fire protection and schools. Water, sewer, recreation, and waste disposal systems will also be required. The magnitude of public expenditures will be directly correlated with the character of residential, commercial and industrial developments.

3.12.2.3 Mitigation Measures

A large portion of the development will occur within the immediate sphere of interest of the City of Hemet. Accordingly, the environmental impacts of future population and economic growth and land use conversions will be governed by the General Plan, Zoning, and Building Code ordinances of the City of Hemet. In the unincorporated areas, the standards of development will be defined by Riverside County.

In the case of both governmental jurisdictions the standards of orderly growth and development are defined and enforced. This assures that the future pressures of growth will be accommodated in an orderly fashion. Moreover, each new residential, commercial, industrial or public project with environmental significance will require the preparation of an Environmental Impact Report. The environmental review process should guarantee that the potential environmental impacts of future urban-economic developments of significance will be mitigated by appropriate requirements in the areas of design, land-use, densities, and facilities

3.13 Service Systems

3.13.1 Environmental Setting

Telephone, power, water and gas supplies are available throughout the Salt Creek Basin. These services are provided by General Telephone, Southern California Edison Company, Eastern Municipal Water District (EMWD) and the City of Hemet Water Department. In addition, private water supply through drilled wells and liquid waste-water supply through waste-water treatment facilities do exist in the study area. One waste-water reclamation plant facility on Sanderson Avenue north of Cottonwood Avenue serves the residents of the City of Hemet within the study area. This plant is operated by EMWD. A water treatment plant, which is operated by EMWD is located in Winchester within the 100 year flood limit. Solid waste is transported and disposed of at the nearby land fill site located in the hilly region near Winchester. None of these water and waste-water treatment facilities face any inundation danger from a 100 year flood, however, at many points proposed drainage systems do cross the water distribution system. The Salt Creek Channel intersects the San Diego Aqueduct about 1200 feet east of California Avenue near Olive Avenue. The proposed Hemet Channel crosses the San Diego Aqueduct 3300 feet south of Stetson Avenue near Winchester.

3.13.2 Environmental Impacts

3.13.2.1 Liquid Waste

(a) Beneficial Impacts

(1) The completion of the proposed storm drainage system would eliminate the possibility of disruption of the water filtration plant due to flooding.

(2) Infiltration of storm water into the sewage collection system and contamination of surface areas due to storm water entering the collection system would be greatly reduced.

(b) Significant Unavoidable Adverse Impacts

The construction of the storm drainage system, particularly the underground portions,

may necessitate the relocation or realignment of some underground utilities including sanitary sewers. There could be an impact in the form of money expended to realign portions of the existing sewage collection or trunk lines.

(c) Significant Irreversible Impacts

(None)

(d) Short-Term Versus Long-Term Productivity

(Not applicable)

(e) Growth Inducing Impacts

(Not applicable)

(f) Significant Cumulative Effects

(None)

3.13.2.2 Solid Waste

(a) Beneficial Impacts

The construction of the proposed drainage system would only slightly affect the collection and disposal of solid wastes. The project, when completed, will help assure the regular collection of solid waste by eliminating disruptions caused by flooding and wash-out of streets.

(b) Significant Unavoidable Impacts

(None)

(c) Significant Irreversible Impacts

(None)

(d) Short-Term Versus Long-Term Productivity

(Not applicable)

(e) Growth Inducing Impacts

(Not applicable)

(f) Significant Cumulative Effects

(None)

3.13.2.3 Water Supply

The major portion of the project area, as indicated above, is served by the Water Department of the City of Hemet and by Eastern Municipal Water District. Deep well water constitutes the entire domestic water supply in the

City of Hemet. Eastern Municipal serves deep well water and Colorado River Water to its customers. Because deep well water (groundwater) makes up a large portion of the water supply, the impacts discussed in 3.2.2.2 of this report are also applicable.

(a) Beneficial Impacts

The completion of the storm water collection system would greatly reduce the probability of the wash-out of improved streets and the possible damage to the water facilities in such streets and contamination of water supply. Likewise water mains installed in rights of way other than streets will be afforded a greater measure of protection.

(b) Significant Unavoidable Adverse Impacts

The construction of the proposed storm water collection system would require adjustments in alignment and grade of existing water mains and services in numerous places for both underground storm drains and larger open channels.

(c) Significant Irreversible Impacts

(None)

(d) Short-Term Versus Long-Term Productivity

(Not applicable)

(e) Growth Inducement

(Not applicable)

(f) Significant Cumulative Effects

(None)

3.13.2.4 Natural Gas

(a) Beneficial Impacts

As in the case of water mains discussed in the previous section of this report, the completion of the storm drain system would help prevent damage to the natural gas transmission and distribution system due to wash-out and erosion.

- (b) Significant Unavoidable Adverse Impacts
As in the case of water supply, the construction of a storm drain system would necessitate some changes in alignment and grade of mains.
- (c) Significant Irreversible Impacts
(None)
- (d) Short-Term Versus-Long Term Productivity
(Not applicable)
- (e) Growth Inducement
(Not applicable)
- (f) Significant Cumulative Effects
(None)

3.13.2.5 Electricity

- (a) Beneficial Impacts

(1) The completion of the proposed drainage project would have a very significant beneficial impact on the electrical distribution system in the project area. The electrical distribution system consisting primarily of overhead pole mounted power lines is quite vulnerable to damage from wash-outs of pole foundations. The grounding of high voltage electrical power in damp or flooded areas may cause extensive damage to the system and at the same time create extreme hazards to life and property. An adequate drainage system would greatly alleviate this problem.

(2) Maintenance activity related to overhead power lines is frequently required as a result of storm activity such as lightning damage or tipped over power poles. It is also during storm periods that streets and highways become impassable and hinder such maintenance work. An adequate drainage system would, to a large extent, eliminate this conflict.

- (b) Significant Unavoidable Adverse Impacts
Conflicts between new storm drain facilities under construction and existing or proposed Edison Company sub-structures may develop which could require relocation or redesign of some Edison Company facilities.
- (c) Significant Irreversible Impacts
(None)
- (d) Short-Term Versus Long-Term Productivity
(Not applicable)
- (e) Growth Inducement
(Not applicable)
- (f) Significant Cumulative Effects
(None)

3.13.2.6 Telephone

- (a) Beneficial Impacts
The construction of the storm drain system as anticipated in this project would substantially reduce the possibility of damage to overhead telephone lines from flooding.
- (b) Significant Unavoidable Adverse Impacts
As in Section 3.13.2.5 of this report the construction of drainage facilities may conflict with existing Telephone Company underground structures in some locations and some reconstruction of those underground structures could be required.
- (c) Significant Irreversible Impacts
(None)
- (d) Short-Term Versus Long-Term Productivity
(Not applicable)
- (e) Growth Inducing Impact
(Not applicable)
- (f) Significant Cumulative Effects
(None)

3.13.3 Mitigation Measures

Maintain up-to-date and definitive substructure maps for the project area. Closely coordinate space allocation in public rights of way with utility companies and municipalities to minimize conflict. Use "pot-hole" method for positive verification of utility locations in proximity of the proposed project.

3.14 Public Facilities

3.14 PUBLIC FACILITIES

3.14.1 Environmental Setting

3.14.1.1 Police Services

Law enforcement, police protection and traffic regulation services within the City of Hemet are provided by the Police Department of the City of Hemet. The Hemet Police Station is located at 450 E. Latham Avenue. Hemet is a full service, independent City and its police department provides a full range of services through its Traffic, Detective, Records Bureau and its administrative offices.

In the balance of the project area outside of the corporate limits of the City of Hemet, law enforcement services are provided by the Riverside County Sheriff Department and the California Highway Patrol.

3.14.1.2 Fire Services

Within the City of Hemet fire prevention and fire suppression services are rendered by the Hemet Fire Department with headquarters at 220 North Juanita Street and a second station at 895 West Stetson Avenue. They operate two pumper units plus a reserve unit with a standby and a ladder truck. In the balance of the project area fire services are provided by the Riverside County Fire Department. Ambulance service is provided by a private agency with back up by the Fire Department for city calls.

3.14.1.3 Education

Two school districts have jurisdiction within the study area including the Hemet Unified School District and the Menifee Union School District. One high school, one junior high school, one intermediate school and six elementary

schools serve the entire area. Transportation to these schools is provided by each District.

3.14.1.4 Medical Facilities

There is only one hospital which provides the medical services to the communities within the study area. It is located in the City of Hemet and doctors are available in all the major residential areas. Ambulance service is provided by the private Hemet Valley Ambulance Company as mentioned in (2) above.

3.14.2 Environmental Impacts

(a) Beneficial Impacts

The completion of this project would beneficially impact upon all public facilities discussed in this section by eliminating travel and transport hazards and delays. Police, fire and ambulance services, particularly, depend upon local roads, streets and highways in the performance of their work. The elimination of wash-outs, flooded roads and accident potential situations will be a substantial improvement in terms of the protection of life and property in the project area.

(b) Significant Unavoidable Impacts

(None)

(c) Significant Irreversible Impacts

(None)

(d) Short-Term Versus Long-Term Productivity

(None)

(e) Growth-Inducing Impacts

(None)

(f) Significant Cumulative Effects

(None)

3.14.3 Mitigation Measures

(None deemed necessary)

3.15 Energy Consumption and Conservation

3.15 ENERGY CONSUMPTION AND CONSERVATION

During the construction period considerable energy will be consumed as is set forth in Section 3.16.5 of this report, but in the long run, the completed project will result in energy conservation. During each storm of greater-than-average magnitude, some damage to roadway embankments is probable and repair work necessary. As storms of greater intensity occur, such as those of 1952 and 1969, a great deal of repair effort is necessary on roads and streets and on agricultural land as well. "Clean-up" after more severe storms frequently requires the consumption of energy in appreciable quantities. These recurrent repair and clean-up operations in a relatively short time will consume more energy than that used to construct the proposed storm drain facilities. Similarly, the construction of underground storm drains in the Hemet area will eliminate after storm clean up on many City streets with a consequent saving in energy.

This project, when completed, will be a gravity flow system. No pumping stations or other energy consuming facilities are anticipated. Energy considerations are therefore not significant except energy uses which will result from growth inducement with attendant increases in automobile travel and fuel consumption for normal municipal type services.

3.16 Project Construction Impacts

3.16 PROJECT CONSTRUCTION IMPACTS

3.16.1 Construction Noise and Vibrations

Construction noise associated with the Salt Creek Channel improvements would probably not impact greatly upon residents because most of the channel would be constructed through rural and sparsely populated territory. Conversely, however, the Hemet Area Master Drainage Plan Projects would be constructed in urban areas where noise and vibrations would impact upon many people. During construction of the project heavy earth moving equipment, graders, trucks, skiploaders, trenching equipment, hoists, pavement breakers and paving equipment, plus many other kinds of construction equipment would be regularly in use on the project. All of this equipment does create noise and frequently causes vibrations when it is in operation.

The following chart shows typical examples of the level of noise generated by construction equipment. The figures in the chart are noise levels in db(A) ratings (decibels adjusted to consider tonal qualities).

Fortunately the various phases of improvement would follow, one after the other, in logical pre-planned sequences so that the sound would not be cumulative in a single area at any given time.

TABLE OF NOISE LEVELS CAUSED BY
CONSTRUCTION EQUIPMENT

<u>Equipment</u>	<u>Distance from Equipment</u>		
	<u>50 ft.</u>	<u>100 ft.</u>	<u>200 ft.</u>
Earthmoving	75-91	69-85	63-79
Concrete Mixer	75-85	69-79	63-73
Crane	75-83	69-77	63-71
Derrick	75-85	69-82	63-76
Pumps	75-76	69-70	63-64
Compressors	75-81	69-75	63-69
Jack Hammer	74-88	69-82	63-76
Saws	75-78	69-72	63-66
Vibrators	75-76	69-70	63-64

3.16.2 Dust

The construction of storm drain facilities both open channel and underground facilities would require excavation, backfill and transportation of earth. A project of this magnitude would require "working" large quantities of soil and dispersal of "dust" into the atmosphere must be anticipated. The level of such dust would depend upon the level of prevention exercised by the Contractor. This is discussed in the section of Mitigation Measures. As mentioned in Section 3.16.1 this impact would probably be significant in populated areas only.

3.16.3 Air Pollution & Odors

Construction equipment which would be used during the construction of the open channels and underground storm drains would be gasoline or diesel powered equipment. These vehicles and machines do emit contaminants into the atmosphere causing some measure of air pollution. Likewise, automobiles and trucks transporting equipment and personnel to the various job sites would emit some pollutants into the air.

A recent report of the Los Angeles County Air Pollution Control District entitled "Energy Use Emission Factors" indicates that the average gasoline powered motor vehicle, 1977 models, will emit total pollutants equal to 22.7 grams per mile travelled. Of this total, 18 grams or about 80% of the emission will be carbon monoxide.

This additional use of equipment and vehicles may cause some noticeable air pollution in the vicinity of the separate projects and may create noticeable odors in the form of sulfur oxides or hydrocarbon gases but on an area wide basis this added air pollution would not be significant, as indicated in Section 3.5, Air Resources.

Gentle winds in the range of one to four miles per hour are common to this area so the air pollutants would be dispersed from the source and generally would not accumulate to higher levels of concentration.

3.16.4 Traffic Disruption

The Hemet Master Drainage Plan area would experience some inconvenience resulting from underground storm drain construction in the streets. The construction of the Salt Creek improvements would impact upon traffic at those locations where existing roads and streets cross the proposed channel but detours around construction could easily be provided where interference of this nature does occur.

Inconvenience and traffic disruption in the more densely populated areas would affect specific locations for limited periods of time. As work progresses along a given route only short segments of street would be closed to property owners in the vicinity, although the street may be closed to through traffic for an extended period of time, particularly in those cases where large diameter pipe is being installed.

Detours and limited access situations affect property owners whose driveways may be blocked during certain work hours and possibly for a day or two in some cases, but may also have a more serious impact upon emergency vehicle operation. Alternate routes for responding to emergency situations should be planned in advance as outlined in the Mitigation Measures Section of this Report.

3.16.5 Energy (fuel) Consumption

A project of this magnitude would involve the use of a wide variety of heavy construction equipment. Such equipment would consume large quantities of diesel fuel in a relatively short period of time but would use the fuel efficiently. The energy expended in accomplishing the work required can also be considered an irreversible impact since the energy expended is not retrievable.

3.16.6 Truck Traffic & Heavy Equipment Traffic

As indicated in the previous section of this report this project would involve the use of a great variety of equipment and materials. Much of the equipment and all of the material would be brought into the area over existing streets and highways and there would be a noticeable increase in traffic at some locations. This increase could disrupt normal traffic conditions and could result in some traffic congestion at high traffic locations during peak hours. Some of this impact could be mitigated by proper enforcement of suggested mitigation measures.

3.16.7 Excess Materials

The construction of this project as outlined in the preliminary plans will result in an excess of earth which will have to be legally disposed of at some off site disposal location. This, of course, creates additional truck traffic which has already been discussed but in addition means the "filling in" of some remote site with earth. This may be either a beneficial impact (if it eliminates some environmental problem) or a negative impact if it occupies space that could more advantageously serve some other purpose.

3.16.8 Disruption of Agricultural Activities

Construction activity along the Salt Creek Channel and along the westerly reaches of Line "A" of the Hemet Area Master Drainage Plan may require access roads and peripheral area for equipment operation and storage. This additional land utilization may temporarily affect agricultural activity by taking away additional land area that would otherwise be used productively.

3.16.9 Attractive Nuisance

Storage of construction equipment, supplies, materials and machinery along public rights of way during non-work hours may create opportunities for vandalism and theft. This condition may also attract inquisitive children who could sustain injury while playing in the construction area. This adverse impact can be almost entirely mitigated by rigid enforcement of appropriate mitigation measures discussed in another section of this report.

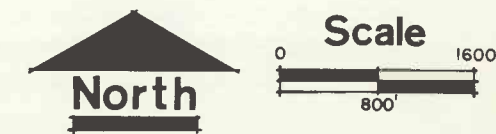
3.16.10 Mitigation Measures

- (a) The mitigation of construction noise and vibration has been discussed in Section 3.10 of this report.
- (b) The dispersal of finely divided soil particles into the atmosphere during construction where earth moving is involved can be mitigated by the proper use of water to prevent dust. It has been pointed out previously that farming operations in the project area regularly create dust conditions. This happens generally, away from more densely populated areas and the impact is negligible. In populous areas dust prevention by watering and proper construction sequence will be essential.
- (c) Air pollution from construction equipment burning gasoline and diesel fuel can be mitigated by using properly maintained equipment and by using the correct machine for the work at hand.
- (d) Traffic congestion and disruption resulting from project construction can be mitigated by the implementation of proper traffic control measures and by proper advance planning. Storm drains of larger diameter to be installed in city streets particularly can be a difficult problem unless a sound traffic plan is developed before construction begins and implemented on a timely basis. Proper use of traffic control, directional and regulator signs and flagmen where needed can virtually eliminate problems of traffic congestion.
- (e) The expenditure of energy for construction cannot, of course, be prevented but certain mitigating measures can be implemented to conserve energy to the greatest extent possible. Such measures include; use of properly maintained equipment, use of correct (not too small or too large) machinery, proper phasing of construction activity, avoiding unnecessary trips, and making every motion effective, and avoiding shuttle runs. Proper supervision of

construction by skilled personnel can promote the most efficient construction techniques thereby minimizing waste.

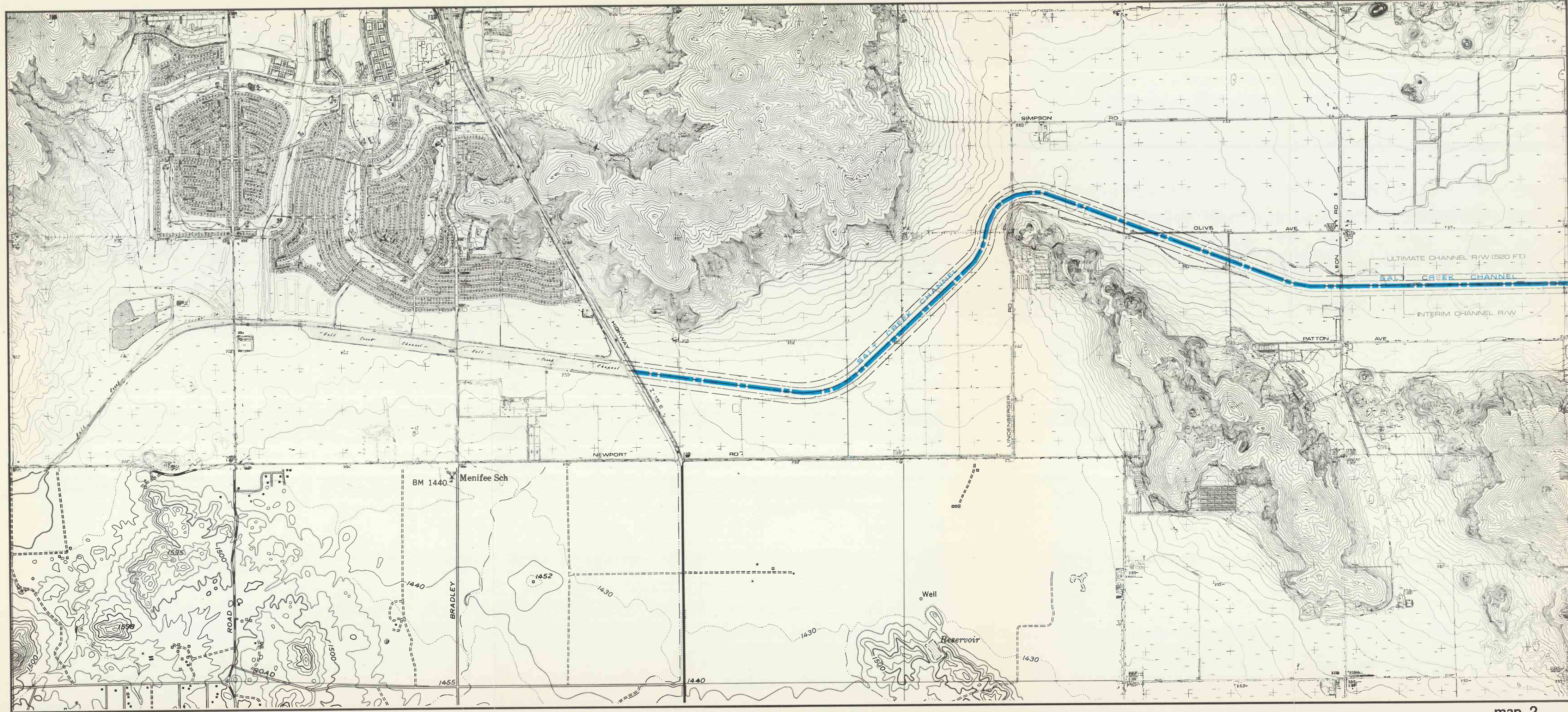
- (f) The problem of increased truck and heavy equipment movements in the construction area can be minimized by effective advance planning of construction phasing so that a minimum of "moving about" of heavy equipment will be required.
- (g) Stored equipment, supplies, materials and machines can become a problem unless appropriate protective measures are implemented. Concrete pipe stored on the street must be placed so that it cannot roll or be made to roll. Machines that must be stored in the street must be left in a position that will not be a hazard. Fenced-in and locked areas should be established for storage of all but the most immobile equipment. Night watchmen may be necessary in some instances.

EIR
**Hemet Area Drainage
& Salt Creek Channel
Improvements**

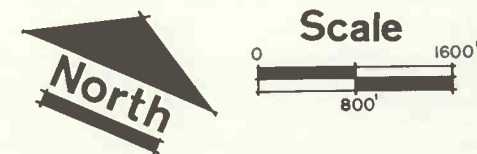


— — — — — proposed open channel

**Flood Control Facilities
(Project 1)**
plate A



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**Hemet Area Drainage
 & Salt Creek Channel
 Improvements**

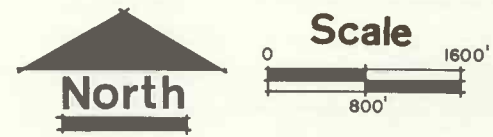


- Hemet drainage area boundary
- existing storm drain facilities
- upgrading of existing channel
- proposed storm drains
- - - proposed open channel

**Flood Control Facilities
 (Project 1)**
 plate B

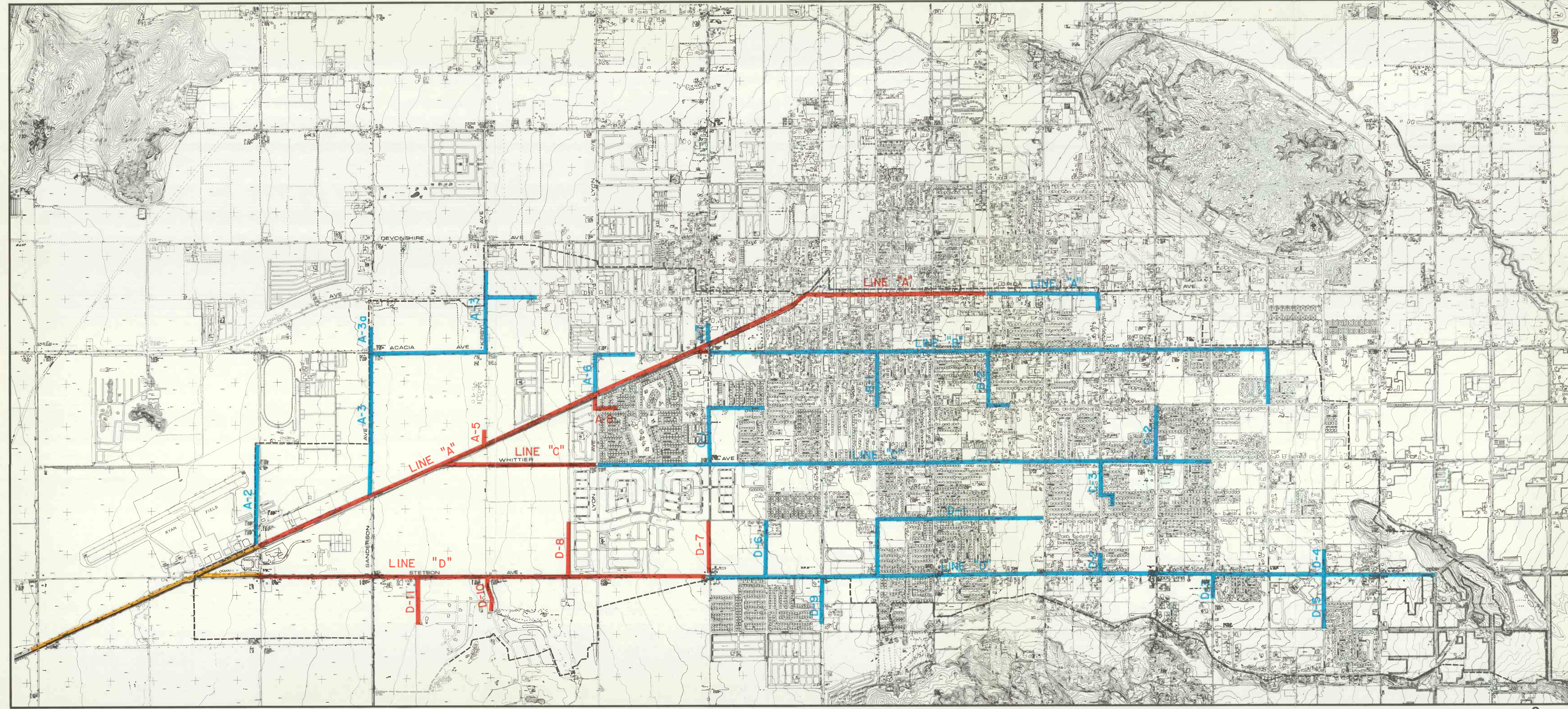


EIR
**Hemet Area Drainage
 & Salt Creek Channel
 Improvements**

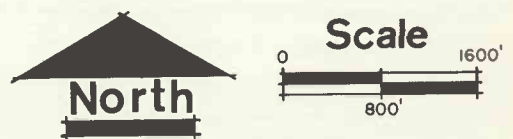


- Hemet drainage area boundary
- existing storm drain facilities
- upgrading of existing channel
- proposed storm drains

**Flood Control Facilities
 (Project 1)**
 plate C

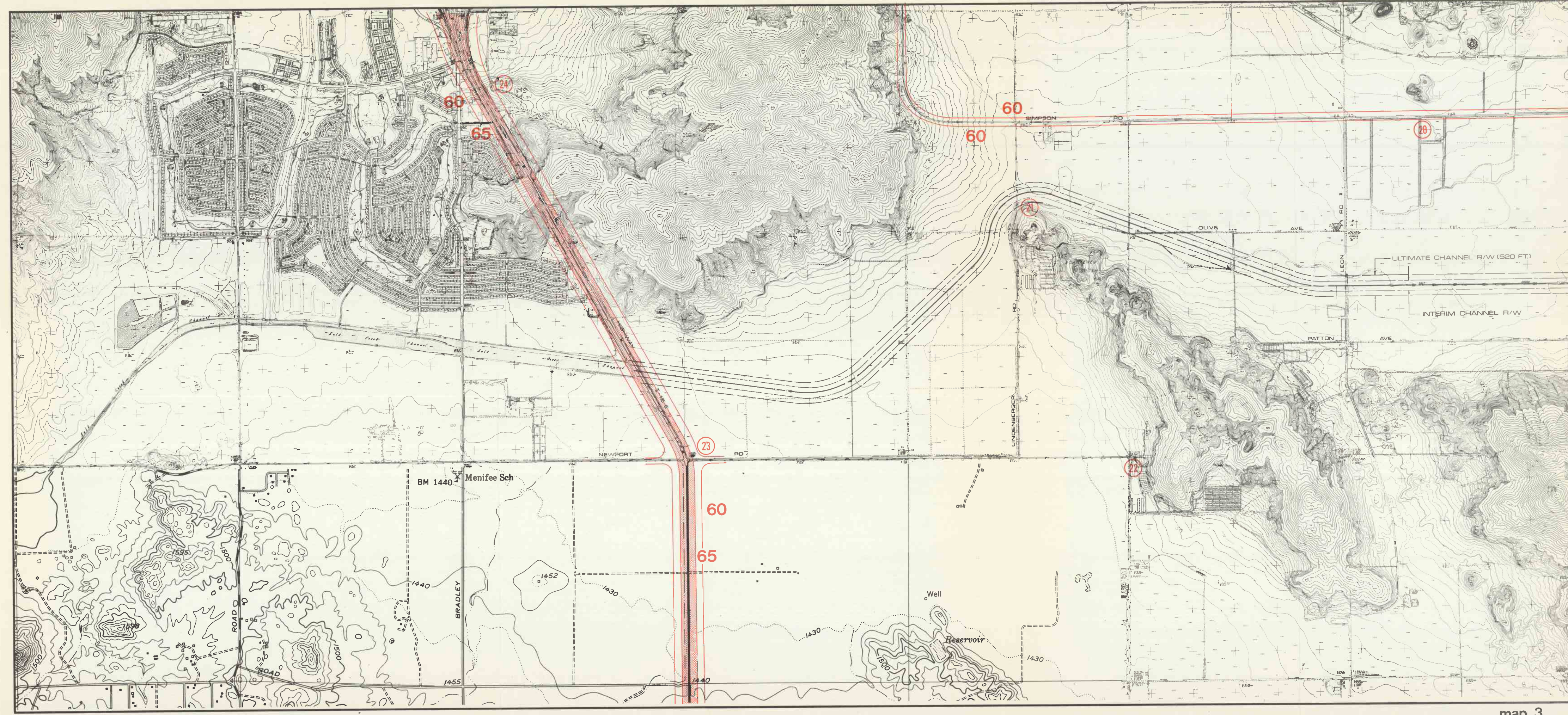


EIR
**Hemet Area Drainage
 & Salt Creek Channel
 Improvements**

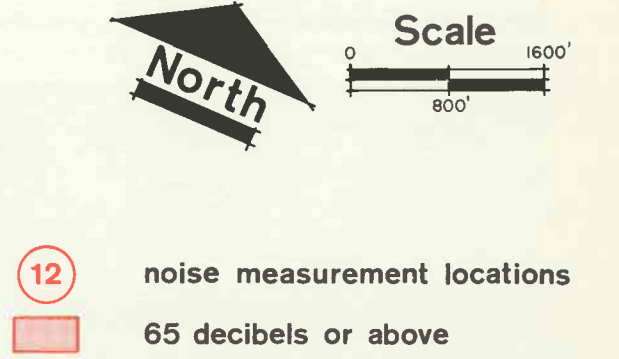


- 12 noise measurement locations
- 65 decibels or above

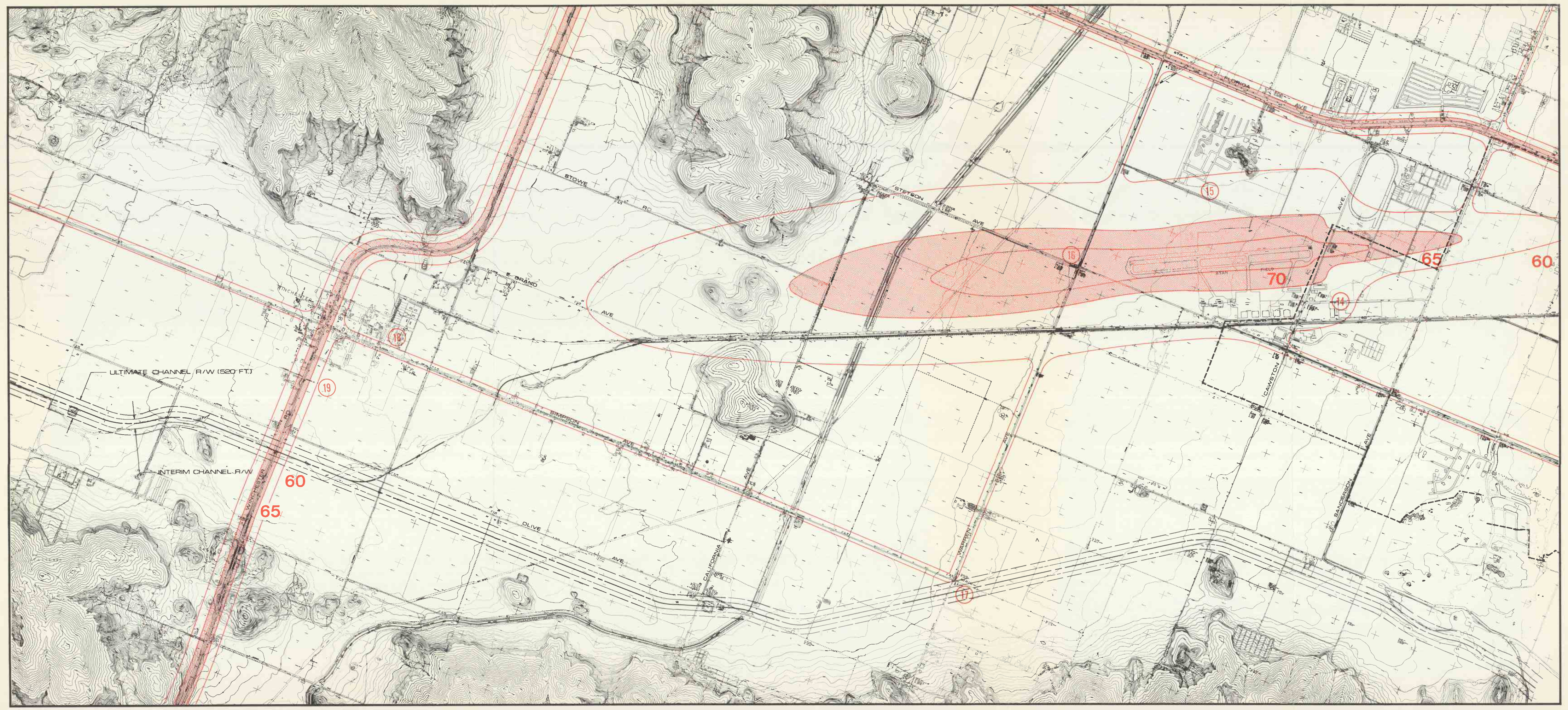
**Projected (1990)
 Community Noise Equivalent
 Level (CNEL) Contours**
 plate A



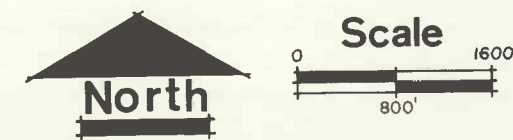
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**Hemet Area Drainage
& Salt Creek Channel
Improvements**





**Projected (1990)
Community Noise Equivalent
Level (CNEL) Contours**
plate B

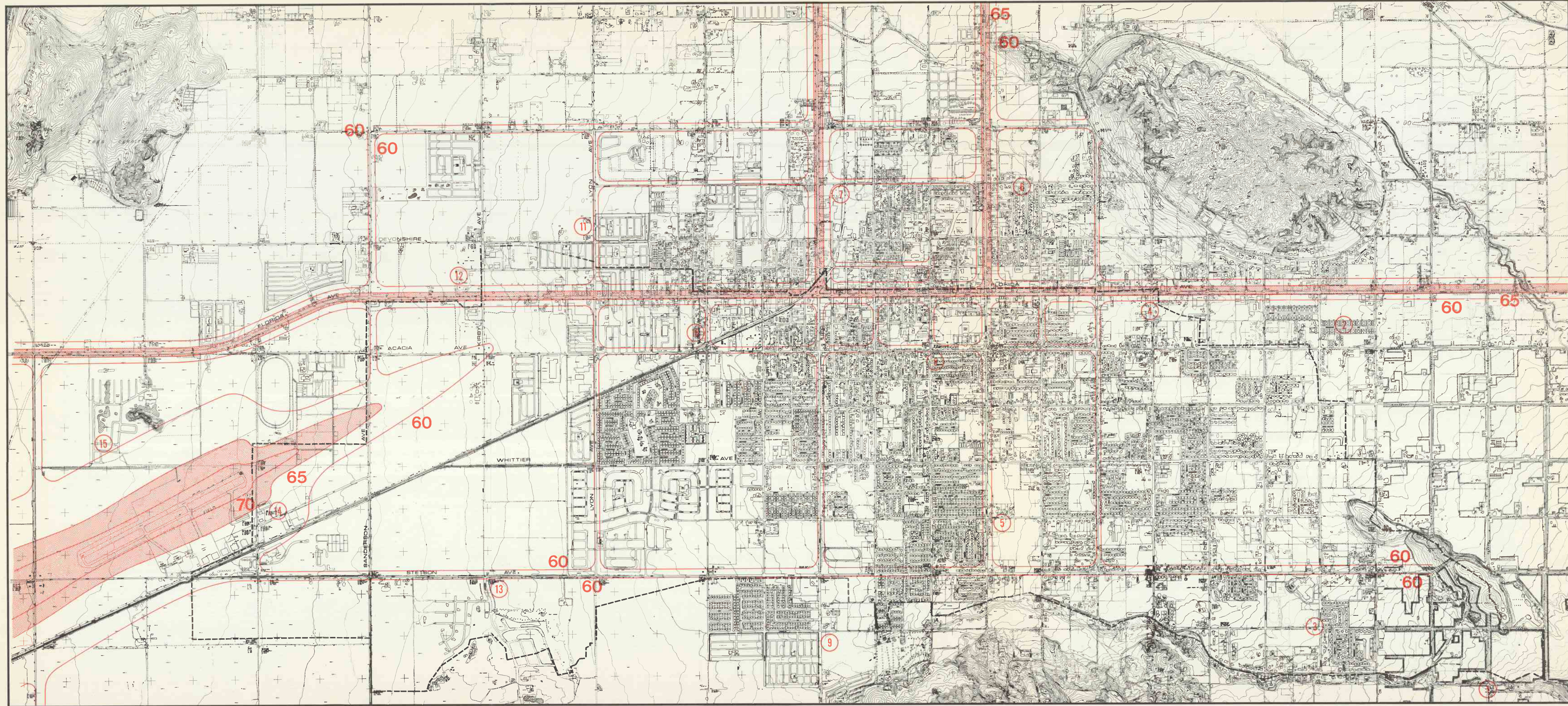


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Hemet Area Drainage
& Salt Creek Channel
Improvements



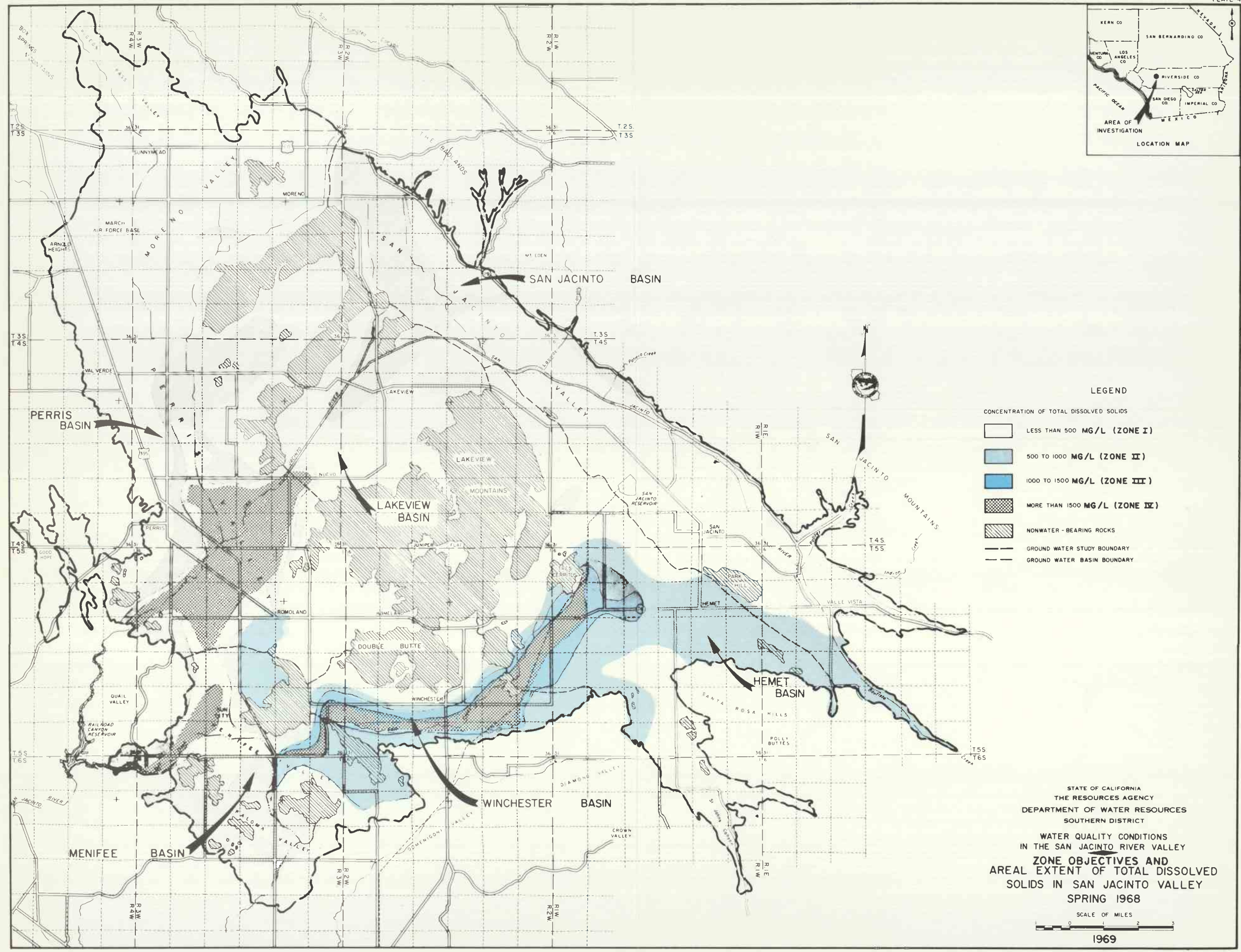
-  noise measurement locations
-  65 decibels or above

**Projected (1990)
Community Noise Equivalent
Level (CNEL) Contours**
plate C



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**Hemet Area Drainage
 & Salt Creek Channel
 Improvements**

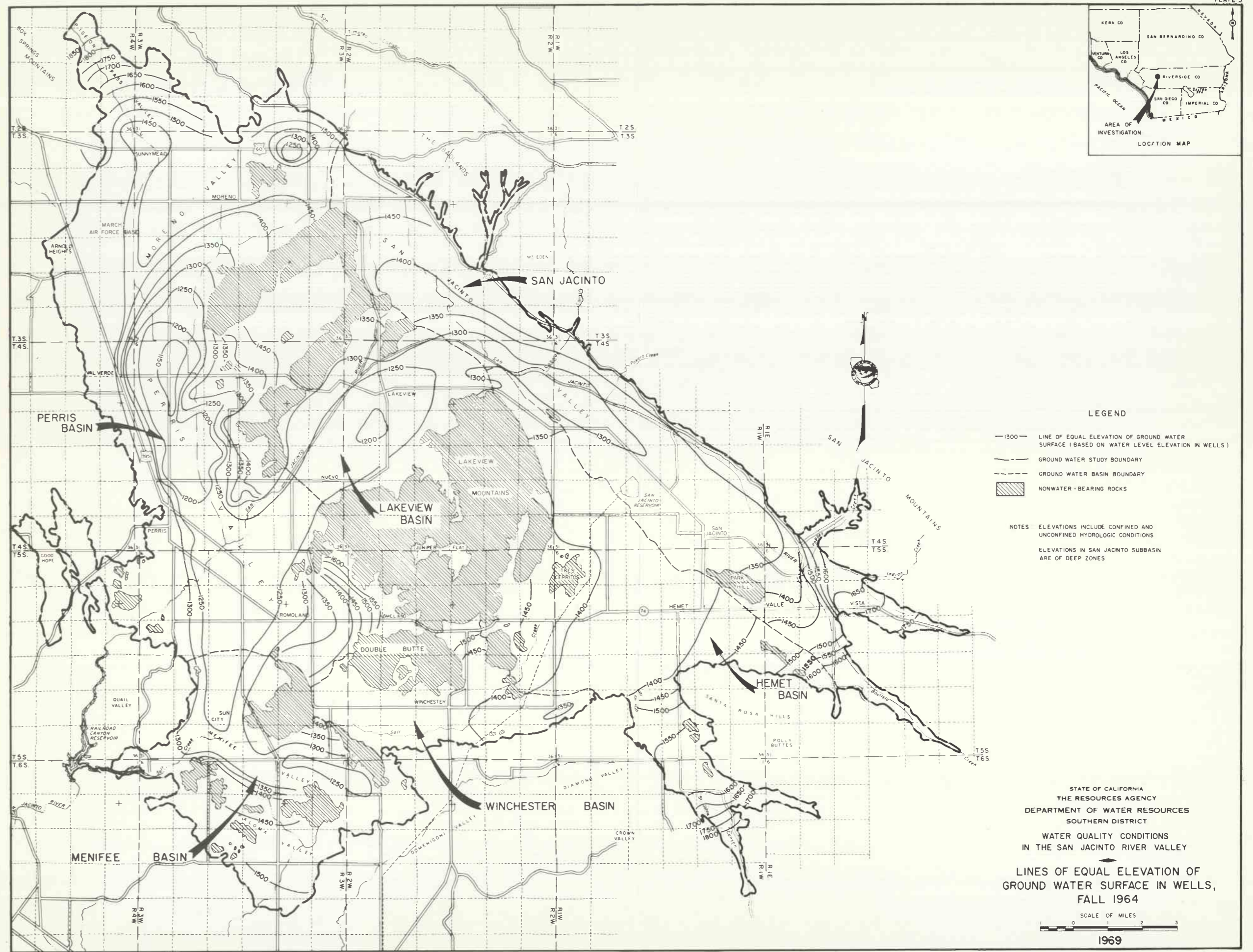
Ground Water



STATE OF CALIFORNIA
 THE RESOURCES AGENCY
 DEPARTMENT OF WATER RESOURCES
 SOUTHERN DISTRICT
 WATER QUALITY CONDITIONS
 IN THE SAN JACINTO RIVER VALLEY
 ZONE OBJECTIVES AND
 AREAL EXTENT OF TOTAL DISSOLVED
 SOLIDS IN SAN JACINTO VALLEY
 SPRING 1968
 SCALE OF MILES
 1969

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**Hemet Area Drainage
 & Salt Creek Channel
 Improvements**

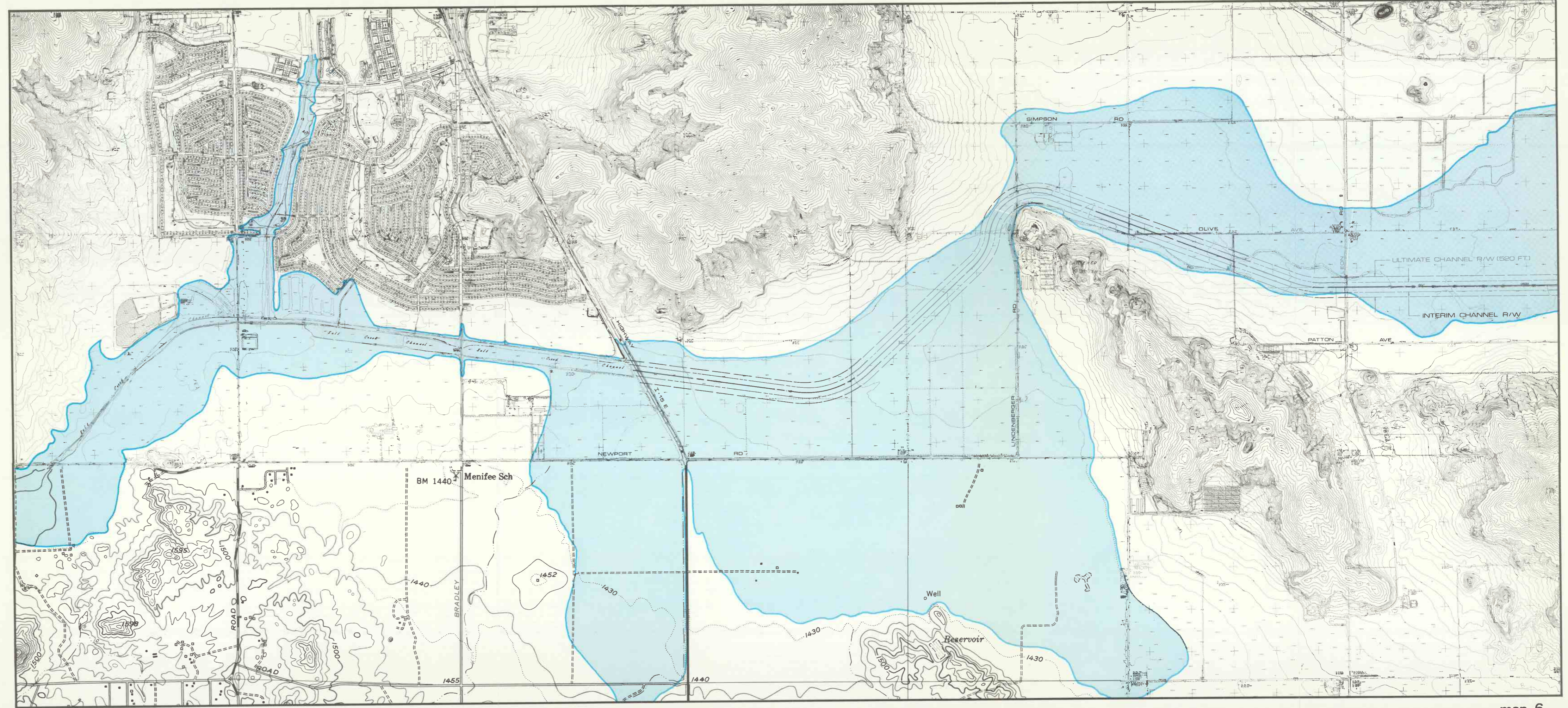
Ground Water



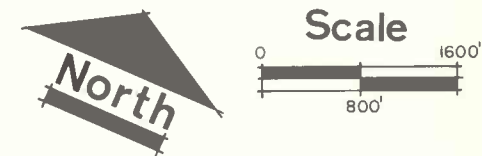
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**Hemet Area Drainage
& Salt Creek Channel
Improvements**



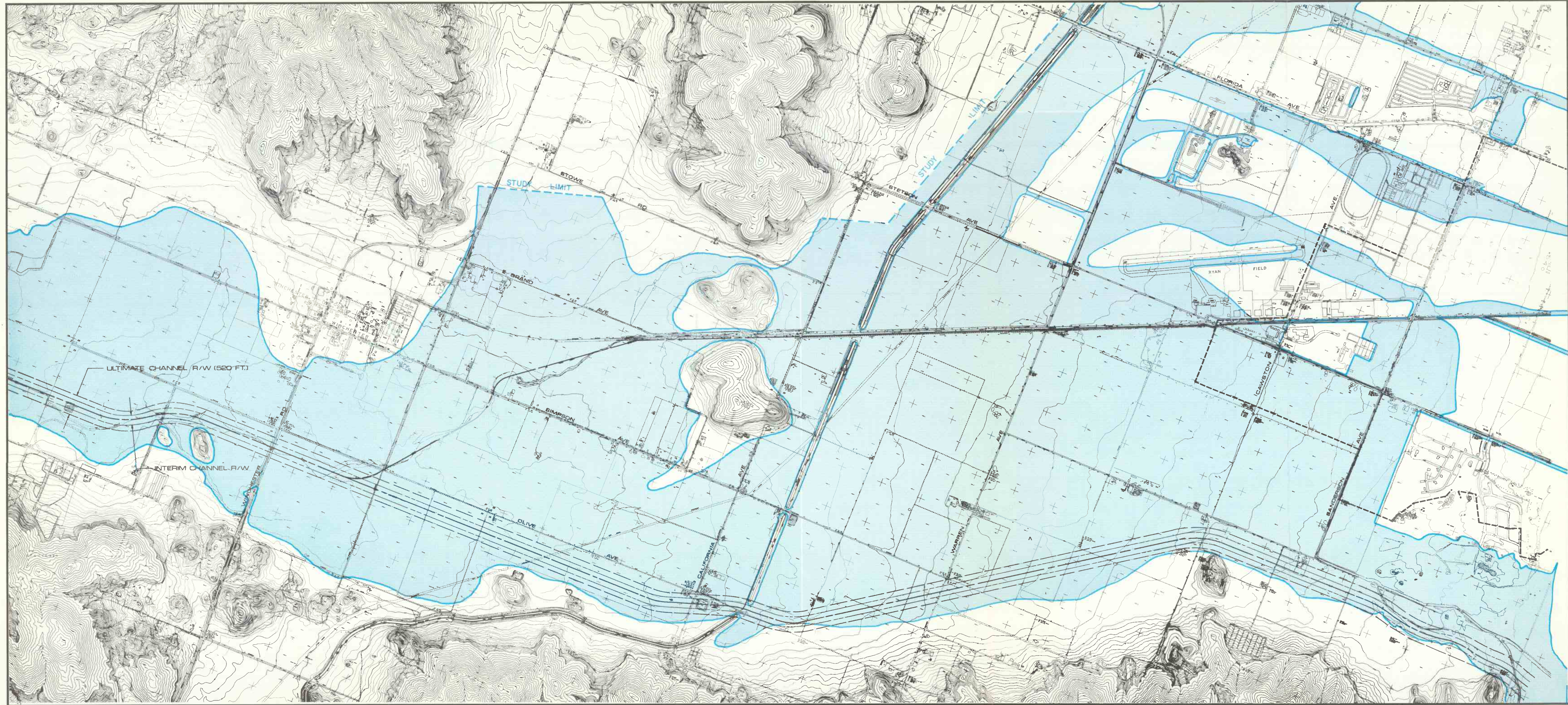
Flood Plain
plate A



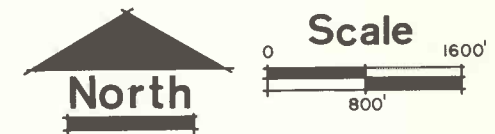
EIR
Hemet Area Drainage
& Salt Creek Channel
Improvements



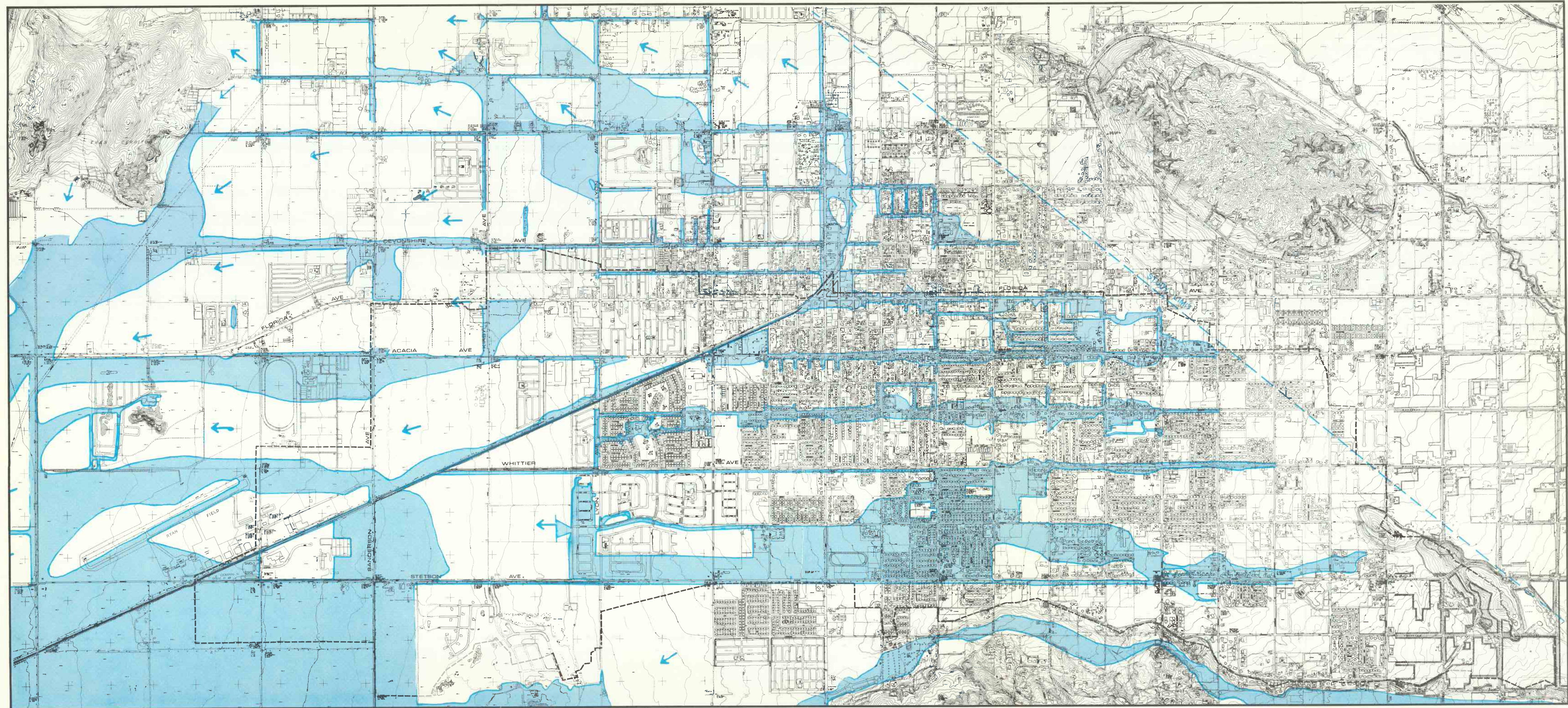
Flood Plain
plate B



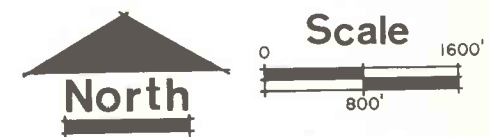
EIR
**Hemet Area Drainage
& Salt Creek Channel
Improvements**



Flood Plain
plate C

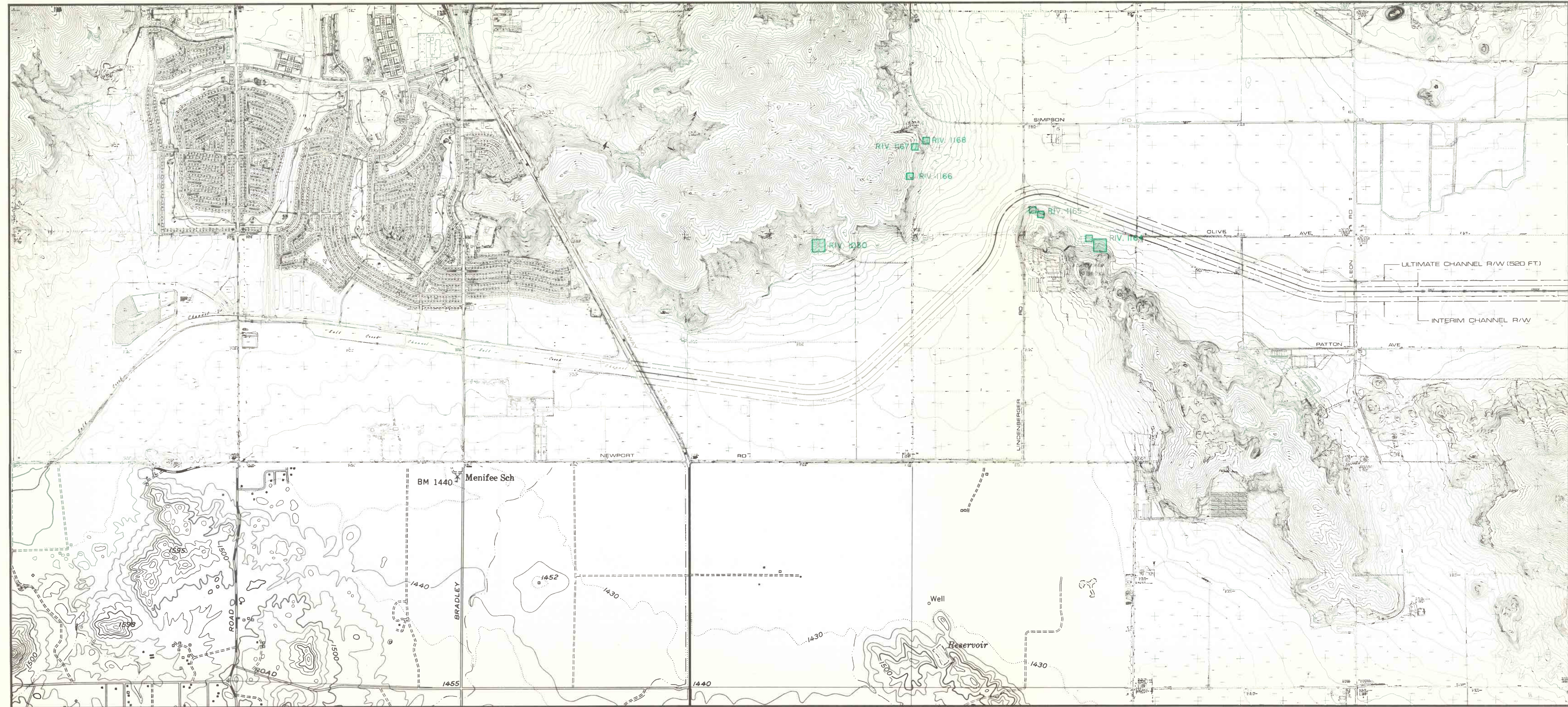


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**Hemet Area Drainage
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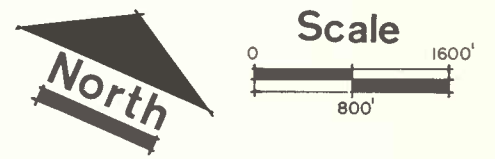


 paleontological site

**Paleontological
Discoveries**
plate A



EIR
Hemet Area Drainage
& Salt Creek Channel
Improvements

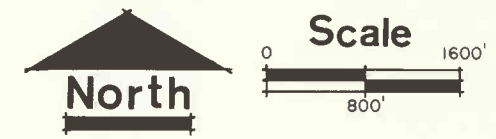


■ paleontological site

**Paleontological
Discoveries**
plate B

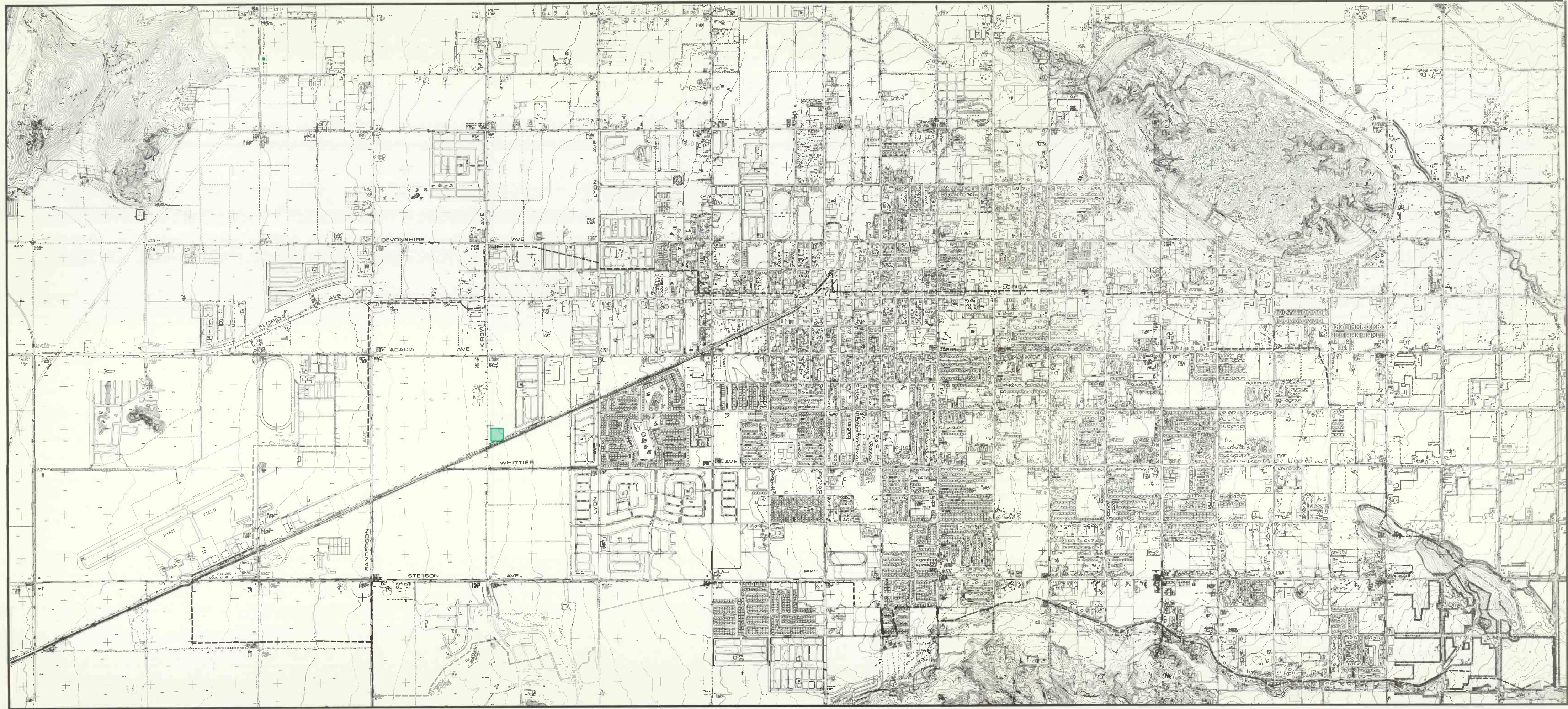


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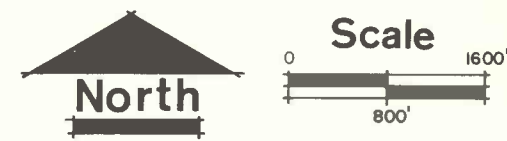


 paleontological site

**Paleontological
Discoveries**
plate C

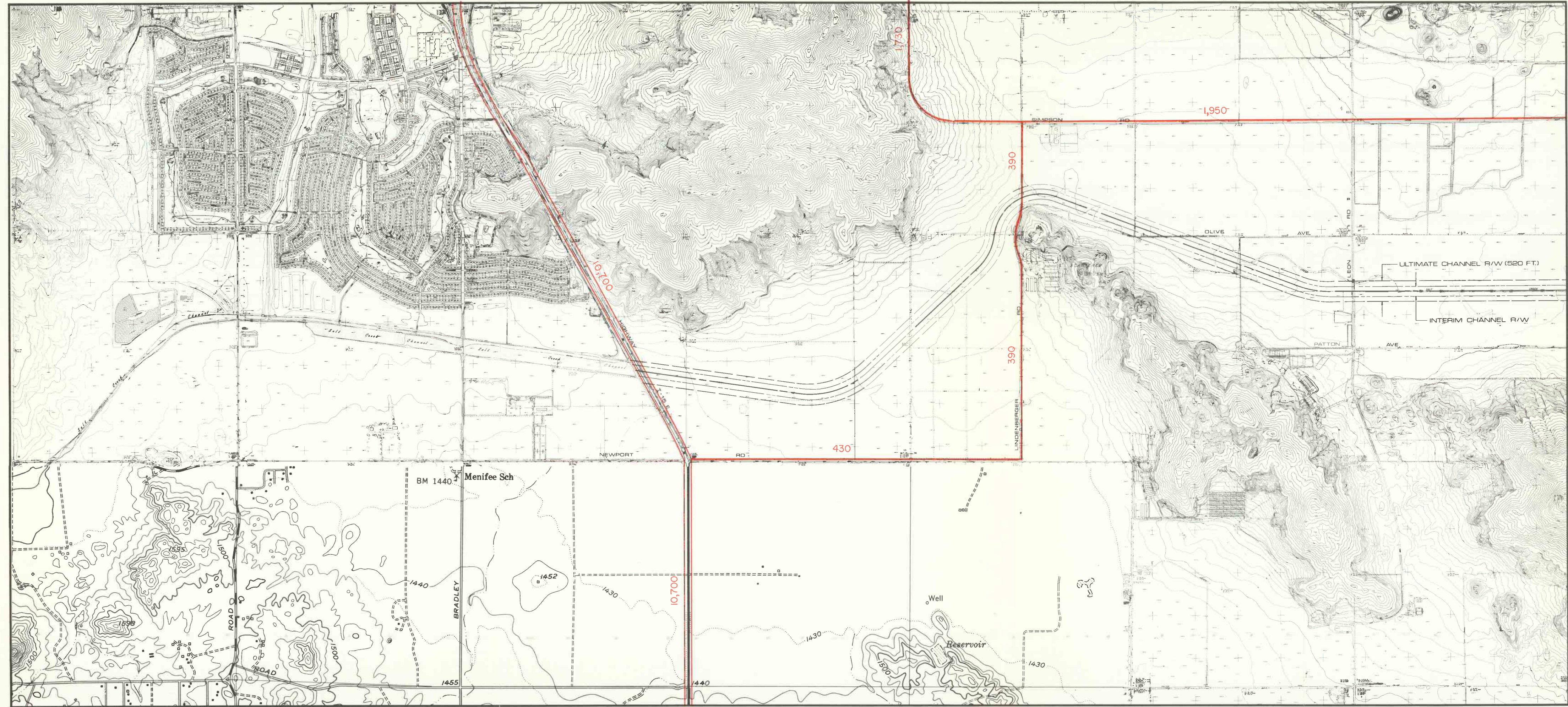


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 Improvements**

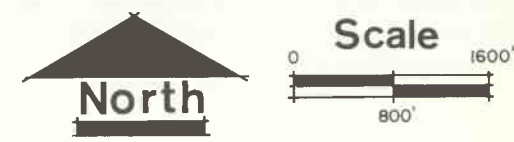















1,200 no. of cars per day

Traffic Flow
 plate A

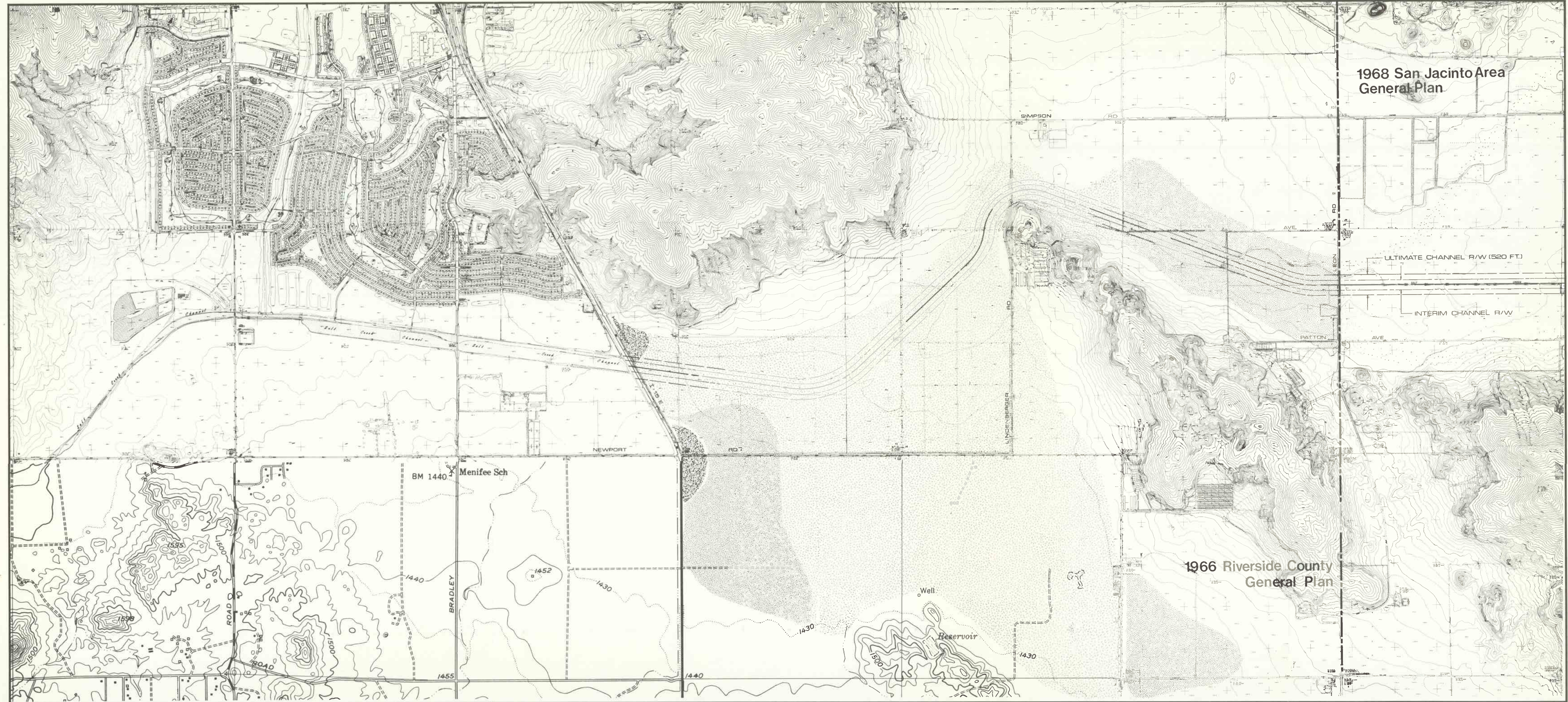


EIR
**Hemet Area Drainage
 & Salt Creek Channel
 Improvements**

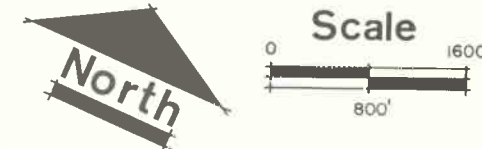








-  rural estate
-  single family
-  low medium density
-  medium density
-  highway commercial
-  neighborhood center
-  industrial
-  public & quasi public
-  fire station
-  agricultural
-  predominantly heavy urban
-  predominantly light urban
-  agricultural reserve
-  open space & other agricultural lands

Land Use
 plate A



EIR
**Hemet Area Drainage
 & Salt Creek Channel
 Improvements**

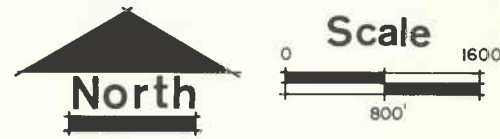


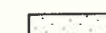
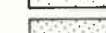


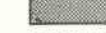





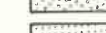



-  rural estate
-  single family
-  low medium density
-  medium density
-  highway commercial
-  neighborhood center
-  industrial
-  public & quasi public
-  fire station
-  agricultural
-  predominantly heavy urban
-  predominantly light urban
-  agricultural reserve
-  open space & other agricultural lands

Land Use
 plate B

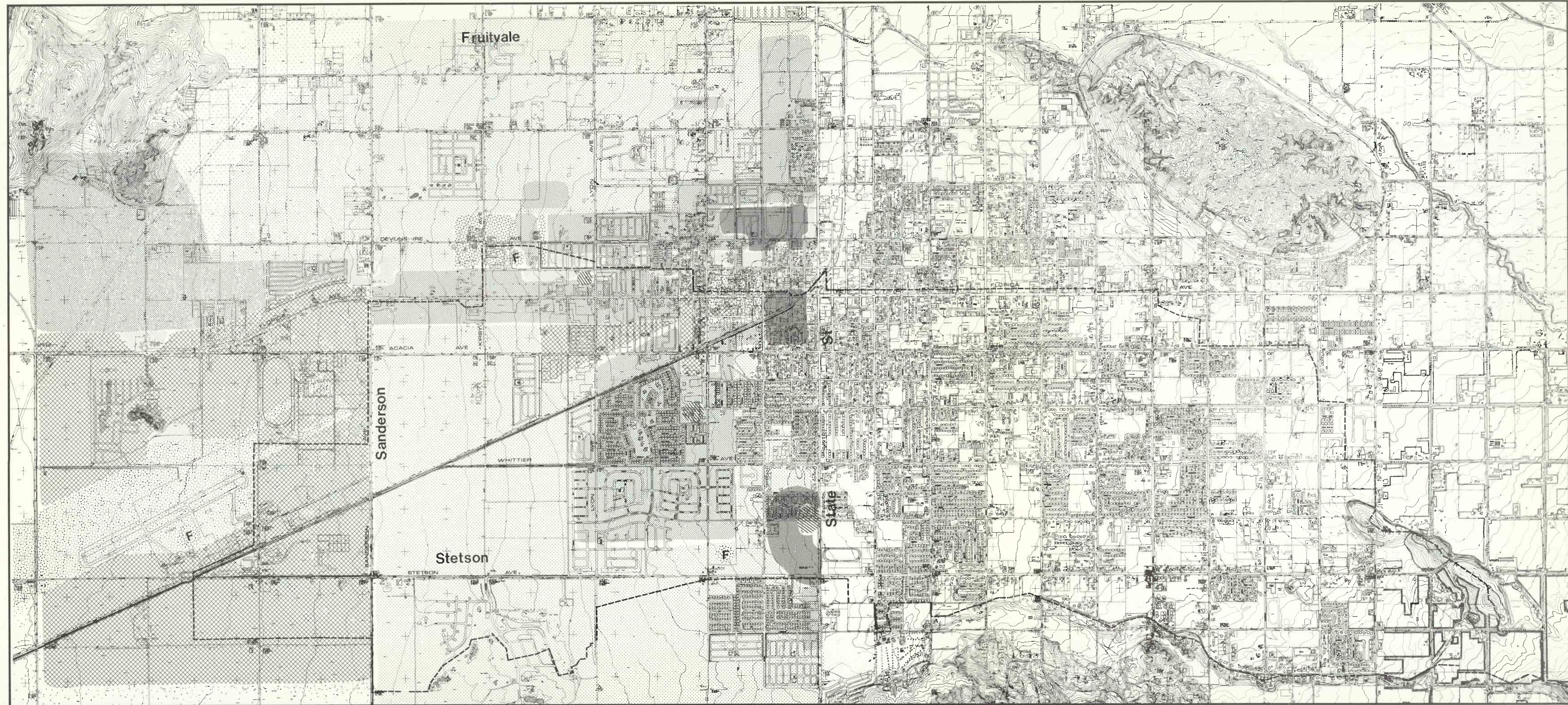


EIR
**Hemet Area Drainage
 & Salt Creek Channel
 Improvements**



-  rural estate
-  single family
-  low medium density
-  medium density
-  highway commercial
-  neighborhood center
-  industrial
-  public & quasi public
-  fire station
-  agricultural
-  predominantly heavy urban
-  predominantly light urban
-  agricultural reserve
-  open space & other agricultural lands

Land Use
 plate C







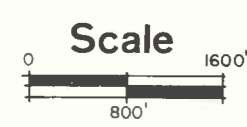
EIR
**Hemet Area Drainage
 & Salt Creek Channel
 Improvements**

EXPLANATION

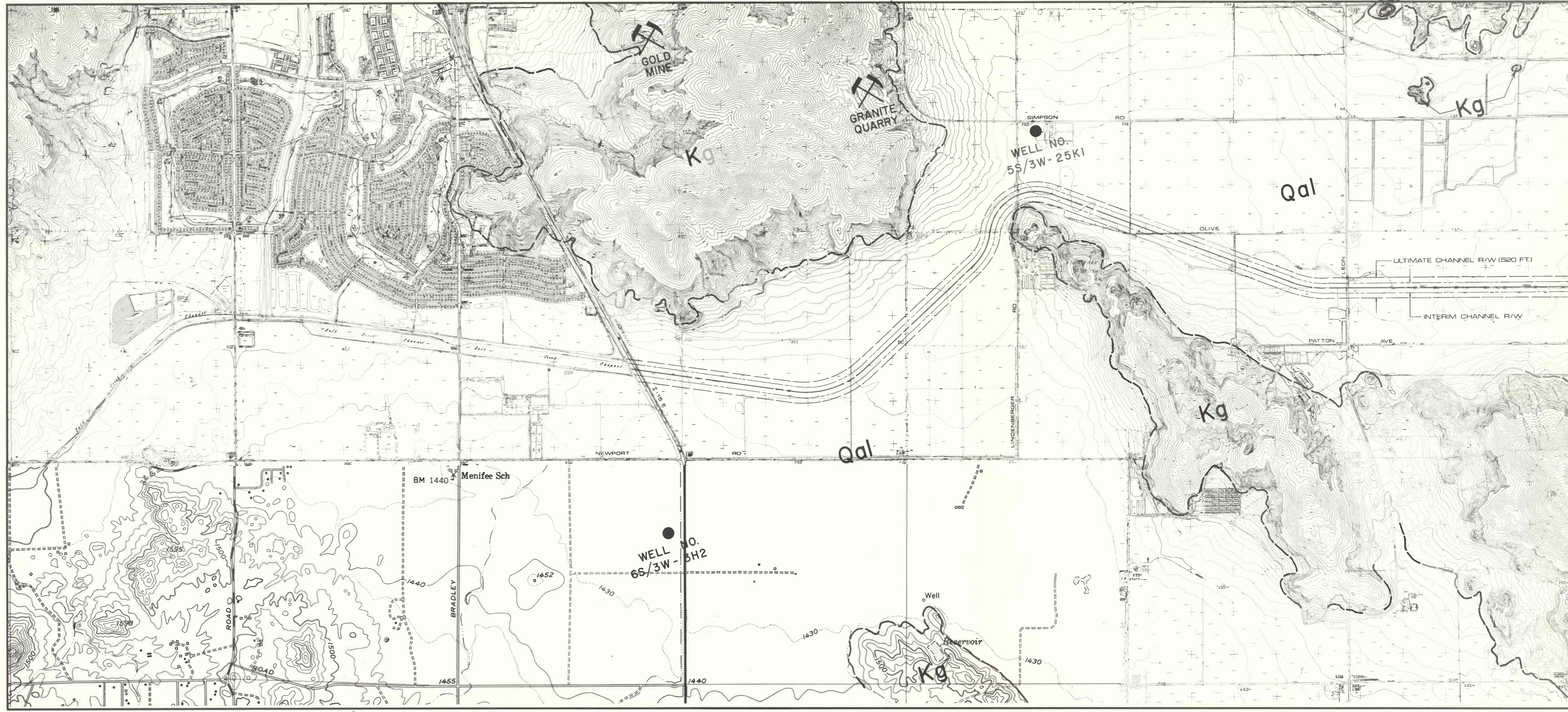
TERTIARY TO QUATERNARY	Qal	PREDOMINANTLY UNCONSOLIDATED, GRAY TO BROWN, SILTY TO SANDY, AND LOCALLY CLAY-RICH ALLUVIUM
	Ts	PREDOMINANTLY NON-MARINE SEDIMENTARY ROCKS
JURASSIC TO CRETACEOUS	Kg	PREDOMINANTLY QUARTZ MONZONITE, GRANITE, QUARTZ DIORITE, GRANODIORITE AND GABBRO
	Jm	PREDOMINANTLY BIOTITE SCHIST, GNEISS, AND MARINE METASEDIMENTARY ROCKS

SYMBOLS

-  GEOLOGIC CONTACT, APPROXIMATELY LOCATED
-  FAULT, ACTIVE DURING QUATERNARY TIME. SOLID LINE INDICATES ACCURATE LOCATION, DASHED LINE INDICATES APPROXIMATE LOCATION, DOTTED PORTION INDICATES CONCEALMENT, QUERY INDICATES UNCERTAINTY (SPECIAL STUDY ZONES, 1973).
-  WELL NO. 6S/3W-3H2
STATE WATER WELL, APPROXIMATELY LOCATED (RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT).
-  GRANITE QUARRY
MINES AND MINERAL RESOURCES, APPROXIMATELY LOCATED (SAUL, 1968).



**Geology, Seismicity
 and Minerals**
 plate A



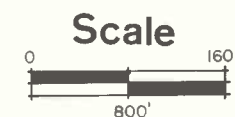
EIR
**Hemet Area Drainage
 & Salt Creek Channel
 Improvements**

EXPLANATION

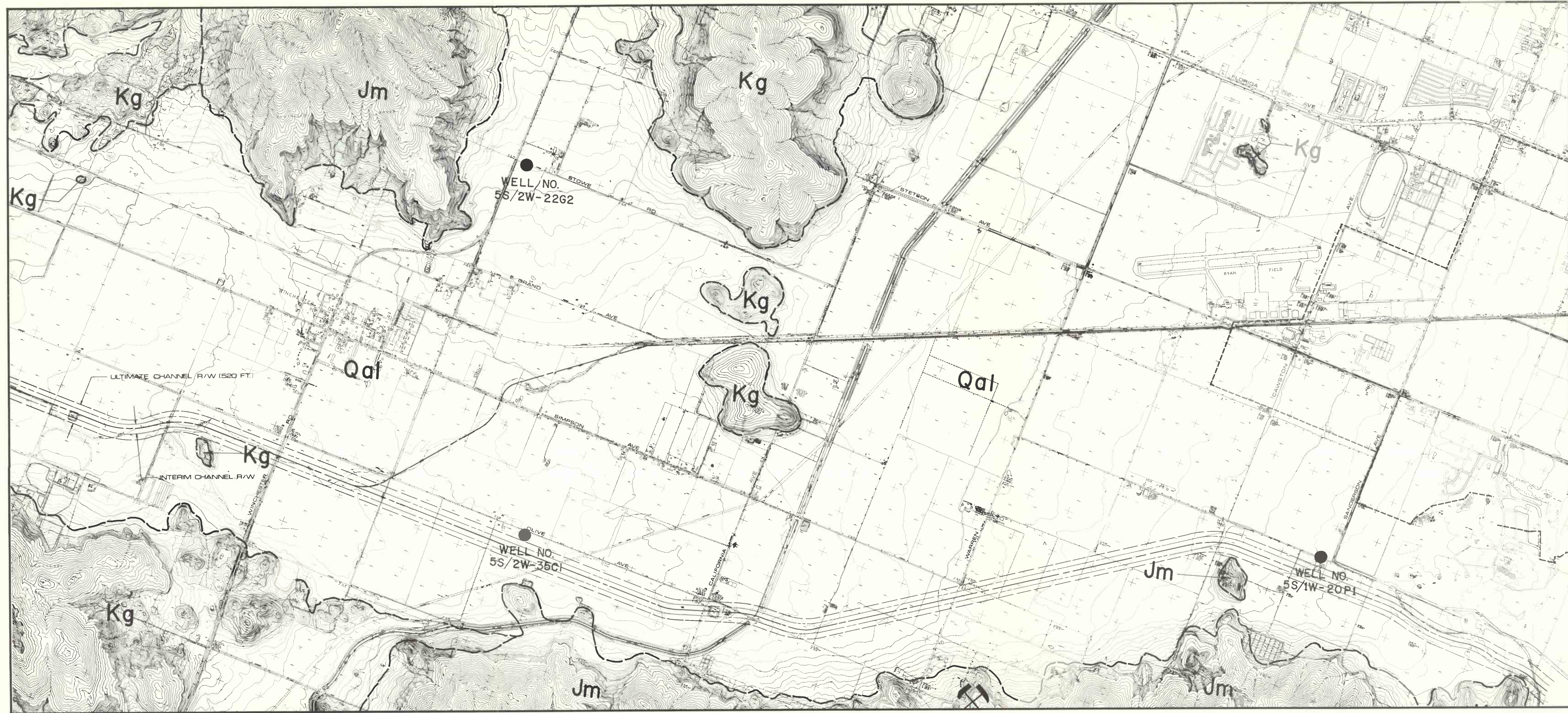
TERTIARY TO QUATERNARY	Qal	PREDOMINANTLY UNCONSOLIDATED, GRAY TO BROWN, SILTY TO SANDY, AND LOCALLY CLAY-RICH ALLUVIUM.
	Ts	PREDOMINANTLY NON-MARINE SEDIMENTARY ROCKS.
JURASSIC TO CRETACEOUS	Kg	PREDOMINANTLY QUARTZ MONZONITE, GRANITE, QUARTZ DIORITE, GRANODIORITE AND GABBRO.
	Jm	PREDOMINANTLY BIOTITE SCHIST, GNEISS, AND MARINE METASEDIMENTARY ROCKS.

SYMBOLS

- GEOLOGIC CONTACT, APPROXIMATELY LOCATED
- FAULT, ACTIVE DURING QUATERNARY TIME, SOLID LINE INDICATES ACCURATE LOCATION, DASHED LINE INDICATES APPROXIMATE LOCATION, DOTTED PORTION INDICATES CONCEALMENT, QUERY INDICATES UNCERTAINTY (SPECIAL STUDY ZONES, 1973).
- STATE WATER WELL, APPROXIMATELY LOCATED (RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT).
- MINES AND MINERAL RESOURCES, APPROXIMATELY LOCATED (SAUL, 1968).
- GRANITE QUARRY



**Geology, Seismicity
 and Minerals**
 plate B



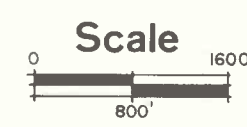
EIR
**Hemet Area Drainage
 & Salt Creek Channel
 Improvements**

EXPLANATION

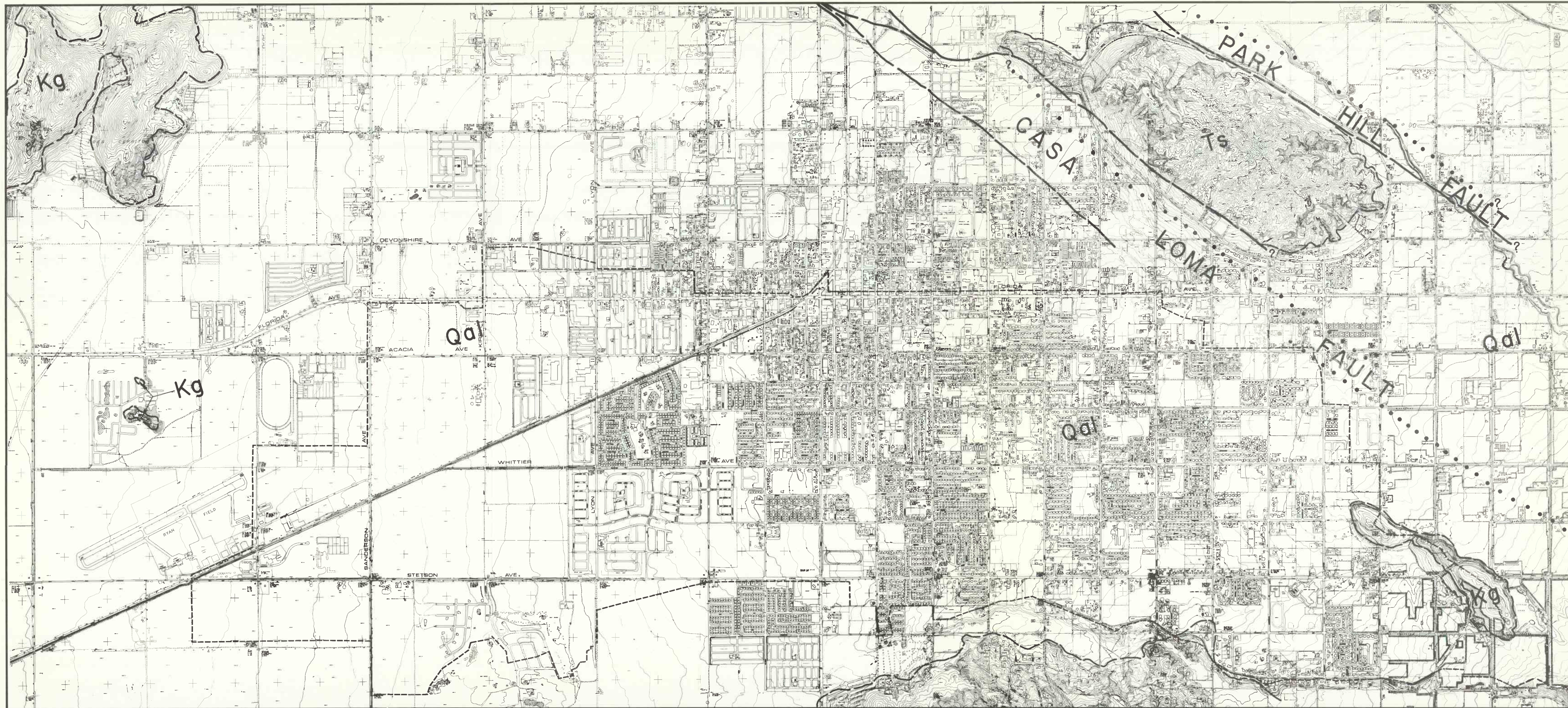
TERTIARY TO QUATERNARY	Qal	PREDOMINANTLY UNCONSOLIDATED, GRAY TO BROWN, SILTY TO SANDY, AND LOCALLY CLAY-RICH ALLUVIUM.
	Ts	PREDOMINANTLY NON-MARINE SEDIMENTARY ROCKS.
JURASSIC TO CRETACEOUS	Kg	PREDOMINANTLY QUARTZ MONZONITE, GRANITE, QUARTZ DIORITE, GRANODIORITE AND GABBRO.
	Jm	PREDOMINANTLY BIOTITE SCHIST, GNEISS, AND MARINE METASEDIMENTARY ROCKS.

SYMBOLS

- GEOLGIC CONTACT, APPROXIMATELY LOCATED.
- . . . ? FAULT, ACTIVE DURING QUATERNARY TIME, SOLID LINE INDICATES ACCURATE LOCATION, DASHED LINE INDICATES APPROXIMATE LOCATION, DOTTED PORTION INDICATES CONCEALMENT, QUERY INDICATES UNCERTAINTY (SPECIAL STUDY ZONES, 1973).
- WELL NO. 65/3W-3H2 STATE WATER WELL, APPROXIMATELY LOCATED (RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT).
- ⚒ GRANITE QUARRY MINES AND MINERAL RESOURCES, APPROXIMATELY LOCATED (SAUL, 1968).



**Geology, Seismicity
 and Minerals**
 plate C



4.0 Project Alternatives

4.0 PROJECT ALTERNATIVES

Project alternatives are described in this section. For each alternative the level of protection provided and the project cost are shown. The environmental impact of each alternative is compared with the proposed project.

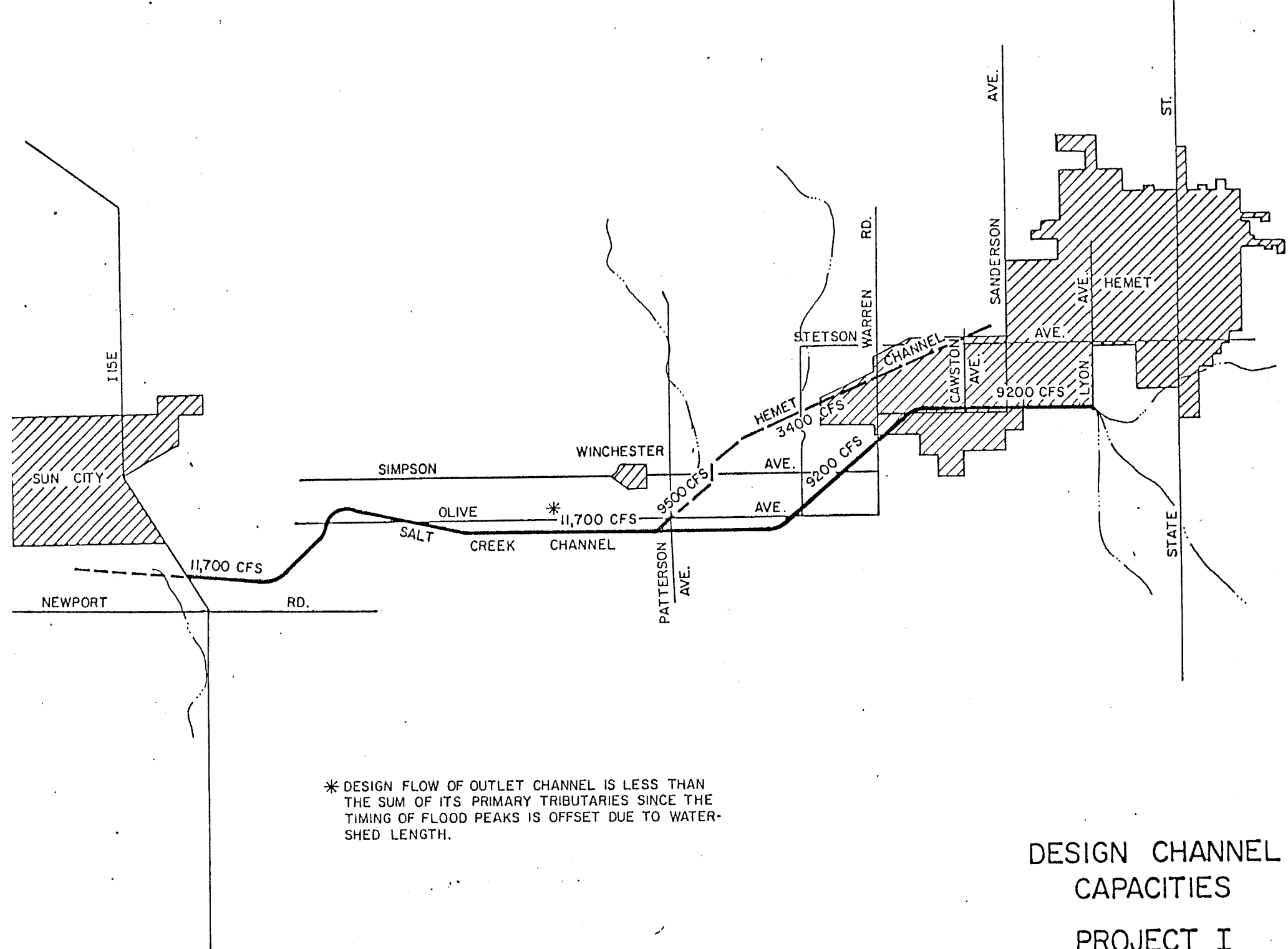
4.1 Project I (Proposed Project)

4.1.1 Project Objectives

As a prelude to the presentation and discussion of project alternatives it will be helpful for comparison purposes to briefly restate the principal features and objectives of the proposed project here. For ease of identification the entire project as described in detail in Section 2.0 is designated as Project I.

4.1.2 Level of Protection

Project I is designed to provide protection against 100 year frequency storms upon complete development of the Hemet area watershed. However, where underground storm drains are proposed, they would be designed to carry the predicted runoff from 10 year frequency storms. The balance between 10 year and 100 year frequency storm runoff is carried in the streets. The street flows are discharged with the flow in the underground drains into open channels which are designed to accept 100 year storm runoff. The principal design flows for Project I are shown on map 11. While Project I facilities are designed to accept and discharge the design flows shown, unimproved tributaries to the Salt Creek Channel would cause overland sheet flows wherever natural channels cannot accommodate the 100 year storm flows. Except for these overland sheet flows the flood hazard of 100 year storms would be eliminated from the flood plain shown in blue on map 6. The more prominent of the unimproved tributaries are the unnamed washes northeasterly of Winchester and adjacent to the California Aqueduct at California and Stetson Avenues.



* DESIGN FLOW OF OUTLET CHANNEL IS LESS THAN THE SUM OF ITS PRIMARY TRIBUTARIES SINCE THE TIMING OF FLOOD PEAKS IS OFFSET DUE TO WATERSHED LENGTH.

DESIGN CHANNEL
CAPACITIES
PROJECT I

4.1.3 Project Cost

The estimated construction cost of the facilities proposed under Project I is as follows:

Salt Creek Channel *

Channel Excavation	4,983,000 c.y. @ 0.58	\$2,890,140
Highway and Road Crossings		483,160
Engineering and Contingencies @ 15%		506,000
Utility Relocation Cost		65,400
Channel Right of Way		2,443,500
Legal and Administration @ 7.5%		<u>183,300</u>
		\$6,571,500

Master Drainage Plan for Hemet Area **

Line "A" System		\$ 5,716,000
Line "B" System		1,891,000
Line "C" System		2,636,000
Line "D" System		<u>4,457,000</u>
		\$14,700,000

Total Project I Cost \$21,271,500

* 1973 Costs from NBS Report, p. 13, Salt Creek Channel -
Conceptual and Engineering Plan, Updated to 1977 by ENR
Construction Cost Index $2941 \div 2034 = 1.45$

** Report on Master Drainage Plan for the Hemet Area (Addendum)
Zone Four 1969 (Rev. July 1977)

4.2 PROJECT I (INTERIM)

Project I (Interim) is a scaled down version of Project I. It represents from a flood protection standpoint the minimum size project which should be considered. It is a logical interim stage project enroute to eventually achieving the full extent of Project I.

4.2.1 Project Description

Under this alternative Salt Creek Channel would be constructed from Highway 115E to Patterson Avenue only to accept a reduced or interim discharge from Line "A" (Hemet Channel). The reach of Salt Creek from Patterson Avenue to Lyon Avenue would be left in its present unimproved state.

The interim Salt Creek Channel improvement would consist of an unlined trapezoidal channel with a base width of 15 feet and 4:1 side slopes within 230 feet of right-of-way. Channel excavation would be placed in spoil banks adjacent to the channel. Openings would be provided in the spoil banks at appropriate intervals to permit flows to enter and leave the channel during periods of lower or higher than channel capacity runoff.

All lines proposed in the Hemet Area Master Drainage Plan would be constructed. Line "A", however, would only be improved to an interim configuration from its confluence with Salt Creek Channel at Patterson Avenue to Cawston Avenue. Construction would be limited to an unlined trapezoidal channel varying in base width from 20 feet to 30 feet within existing rights of way varying in width from 30 feet to 175 feet. Two span bridges would be constructed where Olive and Simpson Avenues and future Aqueduct Road cross over the Line "A" Channel.

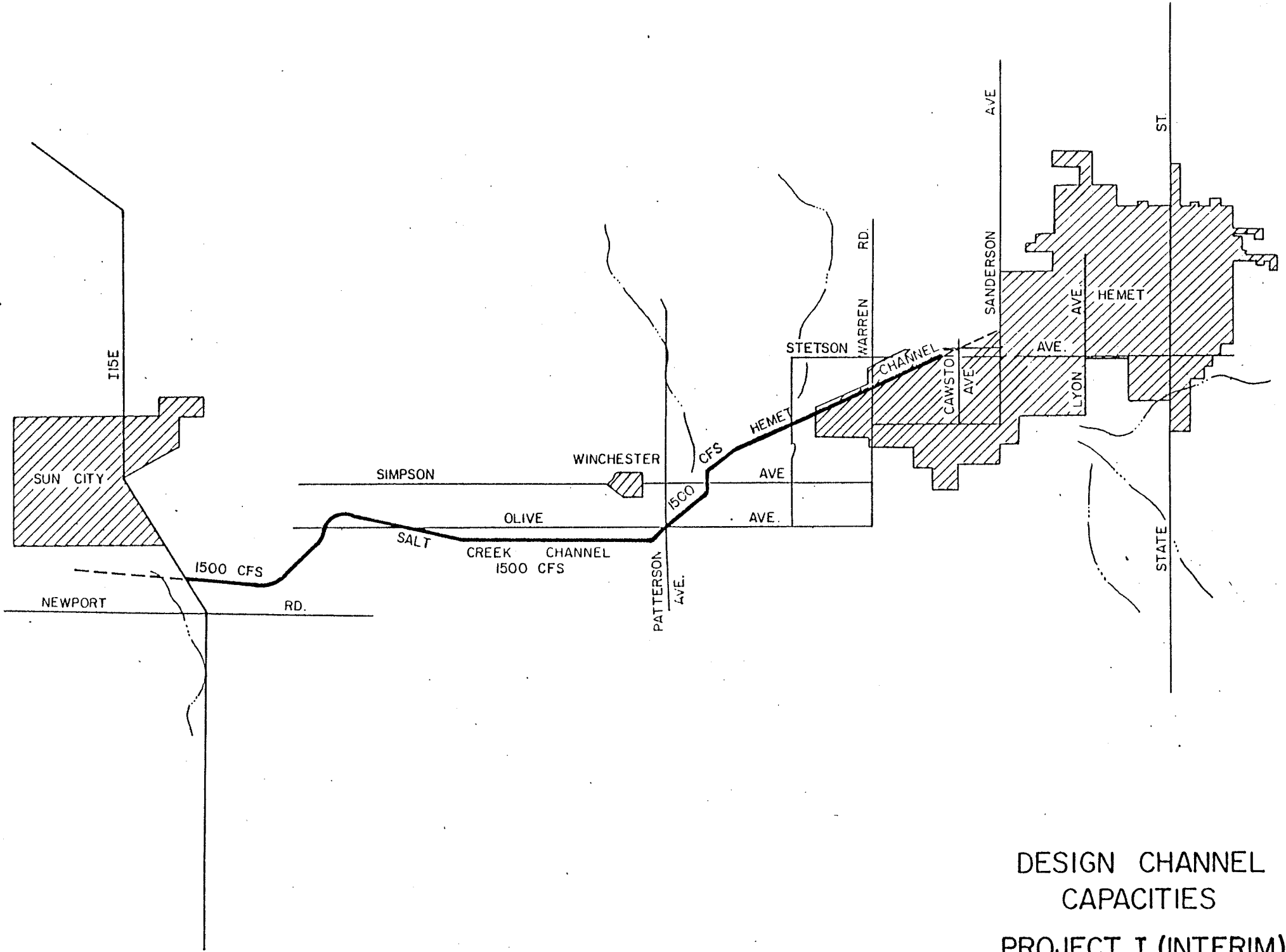
The reach of Line "D" (Stetson Channel) downstream of Cawston Avenue would be left unlined since it has the capacity necessary to accept the runoff from the present level of development of the tributary area.

4.2.2 Level of Protection

The Hemet Channel portion of Project I (Interim) would not provide the same degree of flood protection as Project I. Project I is designed to accept the runoff

from a fully developed drainage area. In the interim project which is proposed, the capacity of Line "A", the Hemet Channel, downstream of Stetson Avenue would be limited to 1500 CFS.¹ See map 12. 100 year frequency storm runoff at this point with ultimate watershed development would yield 3400 CFS or 127% more than the interim channel outlet capacity. At present, approximately 60% of the tributary area is developed and the Line "A" interim channel capacity is considered to be adequate to accept the approximate 10 year frequency storm runoff from present development. Since the underground portions of Lines B, C & D are designed to accept 10 year frequency storm runoff, their capacity would approximately match that provided by the interim size Line "A" Channel. Their level of protection provided to adjacent development when coupled with street capacities will be 100 year frequency protection. Any flows in excess of the underground drain capacities would travel parallel with the drainage system in the streets and flood downstream reaches near Line "A" as they do now.

The improvement of the Salt Creek Channel to the interim capacity of 1500 CFS for the reach from Highway 115E to the Hemet Channel confluence would obviously not provide the flood protection Project I can provide. While this reach would primarily provide the outlet for Line "A" (Hemet Channel) it would also provide some flood protection for the downstream areas. For the downstream Salt Creek watershed the degree of protection would vary considerably with the intensity, location and size of the storm. For severe short duration storms, highly localized thunderstorms and long duration storms of only moderate intensity the interim Salt Creek Channel improvement would provide considerable protection throughout its entire length. For very short duration storms virtually the entire 1500



DESIGN CHANNEL
CAPACITIES
PROJECT I (INTERIM)

CFS capacity can be available to accept runoff from adjacent lands. Only when longer storms of above moderate intensity are experienced would the interim channel section fill to overflow and flood adjacent lands. The resulting overland flooding however would be less severe by the quantity of 1500 CFS.

The segment of Salt Creek upstream of Patterson Avenue would be left unimproved under Project I (Interim). The protection in this reach would be limited to the present meager capacity of the natural channel. See map 6 for limits of flood plain inundation during 100 year frequency storms.

The drains proposed for the Hemet Area Master Drainage Plan would provide the degree of flood protection for which they are designed even when the Interim Salt Creek Channel capacity has been preempted by downstream runoff. Under these conditions the downstream segments of Line "A" would overflow into the Salt Creek flood plain as before.

4.2.3 Project Cost

Estimated Project I (Interim) cost is \$12,240,000 as shown in the "Report on Master Drainage Plan for the Hemet Area, (Addendum) Zone Four, July 1969 (Rev. July 1977)." The cost as shown in the above report includes right of way, contingencies and engineering.

4.2.4 Environmental Impact Comparison

Project I (Interim) represents a smaller project as far as the Salt Creek Channel improvements proposed under Project I are concerned.

No improvement to Salt Creek is proposed under Project I (Interim) between Patterson and Lyon Avenues. Downstream of Patterson Avenue the interim Salt Creek Channel improvements involve only 44% of the land area affected

under Project I. The direct impacts associated with the channel construction are even more diminished since the interim channel is only 15 feet wide at its base while the ultimate channel has a base width of 230 feet.

Any impacts associated with the construction of the drains in the Hemet area would be virtually the same as under Project I except for the enlargement of Lines "A" and "D" to ultimate size downstream of Cawston Avenue which is not proposed under Project I (Interim).

In terms of secondary impacts, Project I (Interim) would have considerably less impact than Project I. Flooding in the Salt Creek Flood Plain would be unaffected between Patterson and Lyon Avenues by the interim project and any flood hazard obstacles to development which exist now will remain. Downstream of Patterson Avenue the Salt Creek Flood Plain would have some relief during less than moderate storms or very short duration storms because, by the channelization of the Salt Creek, flooding would be limited in breadth. The reduction in breadth of flood flows during 100 year frequency storms would be very limited and would probably not exceed 20% of the area presently subject to inundation. Thus, for approximately 780 acres of irregularly shaped land along the edges of the Salt Creek flood plain flooding would be diminished. Whether this fact alone would stimulate a change from present land use is speculative.

No adverse secondary impacts would be associated with the construction of the interim size Salt Creek and Line "A" channels. The level of protection which the interim improvements to Line "A" and the Salt Creek Channel can provide would only be adequate for present developments and then only at the approximate 10 year frequency level.

Since the Riverside County standard protection level for developments, specified in the Subdivision Ordinance, is for protection against 100 year frequency storms, the major obstacle to development will remain essentially unchanged by Project I (Interim) in the reaches downstream of Stetson Avenue. By contrast, completion of the storm drains in the Hemet area as proposed in the plan is expected to remove some obstacles to development in a number of areas in the City. The level of protection provided by the 10 year frequency underground storm drains, when coupled with street capacities, is 100 year frequency storm protection. The project, therefore, is deemed to be growth inducing for the upstream Hemet area, especially in the undeveloped flood prone sections of the City but only to the extent that the removal of flood hazard is growth inducing.

Because of the flood hazard which now exists, development has continued in a spotty and scattered fashion. Some of this development has taken place in less desirable areas where public services are costly to provide. Removing the flood hazard may permit a "filling in" process and thus reduce public service costs and development pressures on other areas. To this extent the growth inducing impact may be a benefit to the area.

4.3 PROJECT II

4.3.1 Project Description

Project II is a proposal to provide the same degree of flood protection as Project I. Only the Salt Creek Channel improvements of Project II differ from those of Project I.

The principal difference between the two projects is the concept of temporarily storing the peak flood flows from the canyons to the south of Hemet and releasing these flows at a controlled rate.

The Salt Creek Channel portion of Project II would consist of a 165-acre retention basin bordering on Lyon Avenue.

Lyon Avenue, adjacent to the Seven Hills Golf Course, would be relocated on top of the 14-foot high levee. The area behind the levee would be excavated to provide for a storage depth of eleven and one half feet with two feet of freeboard at the levee as a safety factor. The middle 1600 feet of the levee would be two feet lower to serve as a spillway to overflow the basin during storms of greater than 100 year frequency. The banks of the levee in the spillway region would be protected against erosion with rock or similar material, and the spillway itself, being lined with concrete. See map 14.

Low flow channels approximately two feet deep and fifteen feet wide would be graded along the tributary washes leading to and through the retention basin to three culverts through the levee. These channels would help guide and contain the low flows from "St. Johns" and "Cactus" Canyons and "Unnamed Wash A". Also these low flow channels would minimize the frequency of flooding the acreage within much of the basin.

Flow, limited to a maximum of 800 CFS during a 100 year storm, would be released from the retention basin through these culverts into the Seven Hills Golf Course. Portions of the Course have been designed as channels and can convey approximately 970 CFS in low flow channels. West of the Golf Course an unlined trapezoidal channel with a base width of 30 feet would be constructed to accept the 800 CFS flow and route it to Sanderson Avenue.

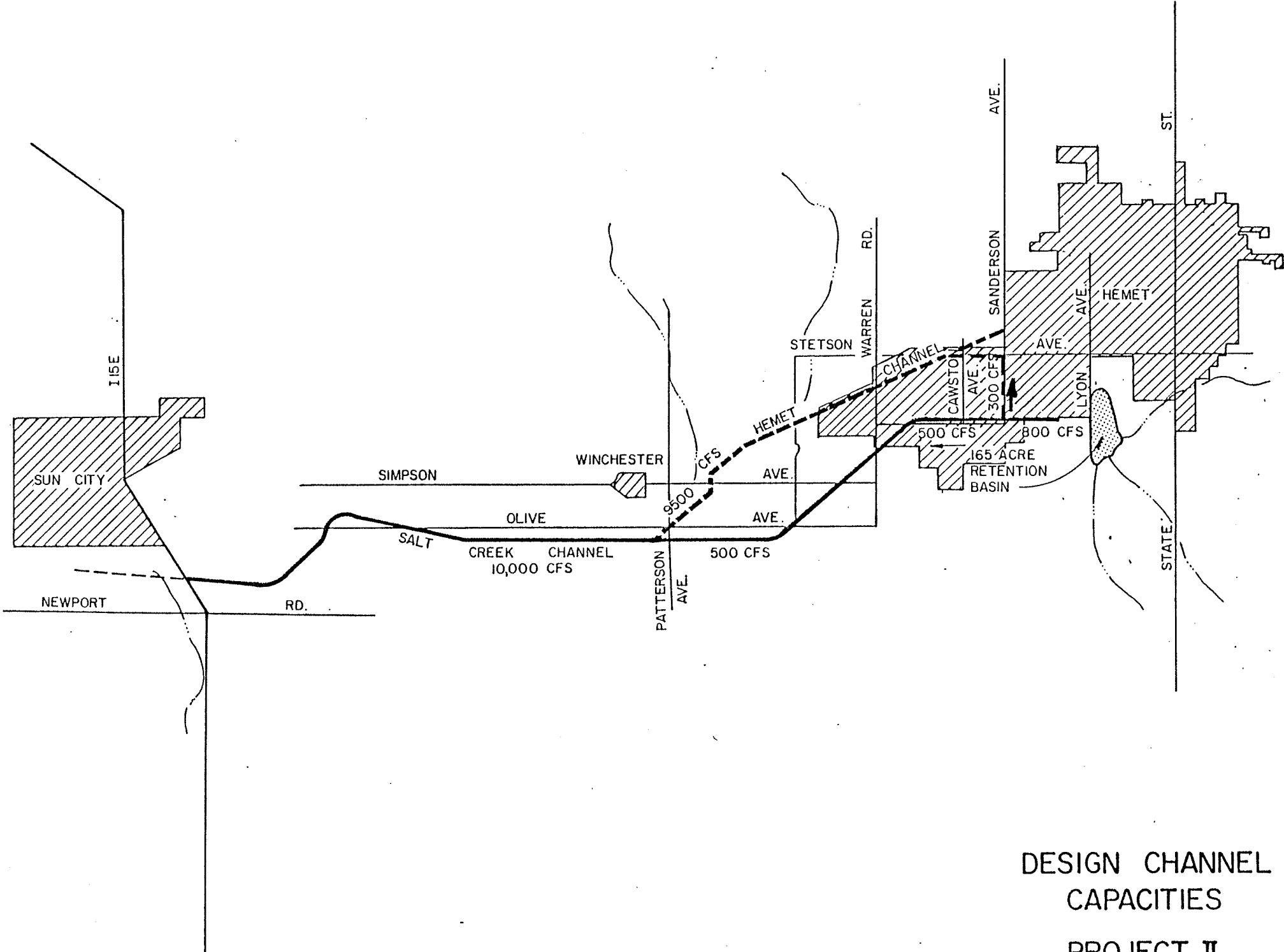
At Sanderson Avenue up to 300 CFS would be diverted north into the Stetson Channel. Under present conditions this flow quantity is also diverted to the Stetson Channel which has adequate capacity to accept it. The remaining 500 CFS of the 800 CFS retention basin release rate would be carried in a newly constructed unlined trapezoidal channel along the same alignment for the Salt Creek Channel proposed under Project I.

The channel would have a base width of 18 feet with 3:1 side slopes and a flow depth of four feet with one foot of freeboard. Earthwork would be balanced by the placement of excavated soil into spoil banks or levees adjacent to the channel. Periodically the levees would be broken to permit flow into the channel section from adjacent areas. Construction would be accomplished within a 108-foot wide right of way.

At its junction with Line "A" (Hemet Channel), the Salt Creek Channel would have to be enlarged to accommodate total peak discharges of 10,000 CFS. See map 13. To accommodate the 10,000 CFS requires a channel section roughly thirteen percent smaller than proposed under Project I.

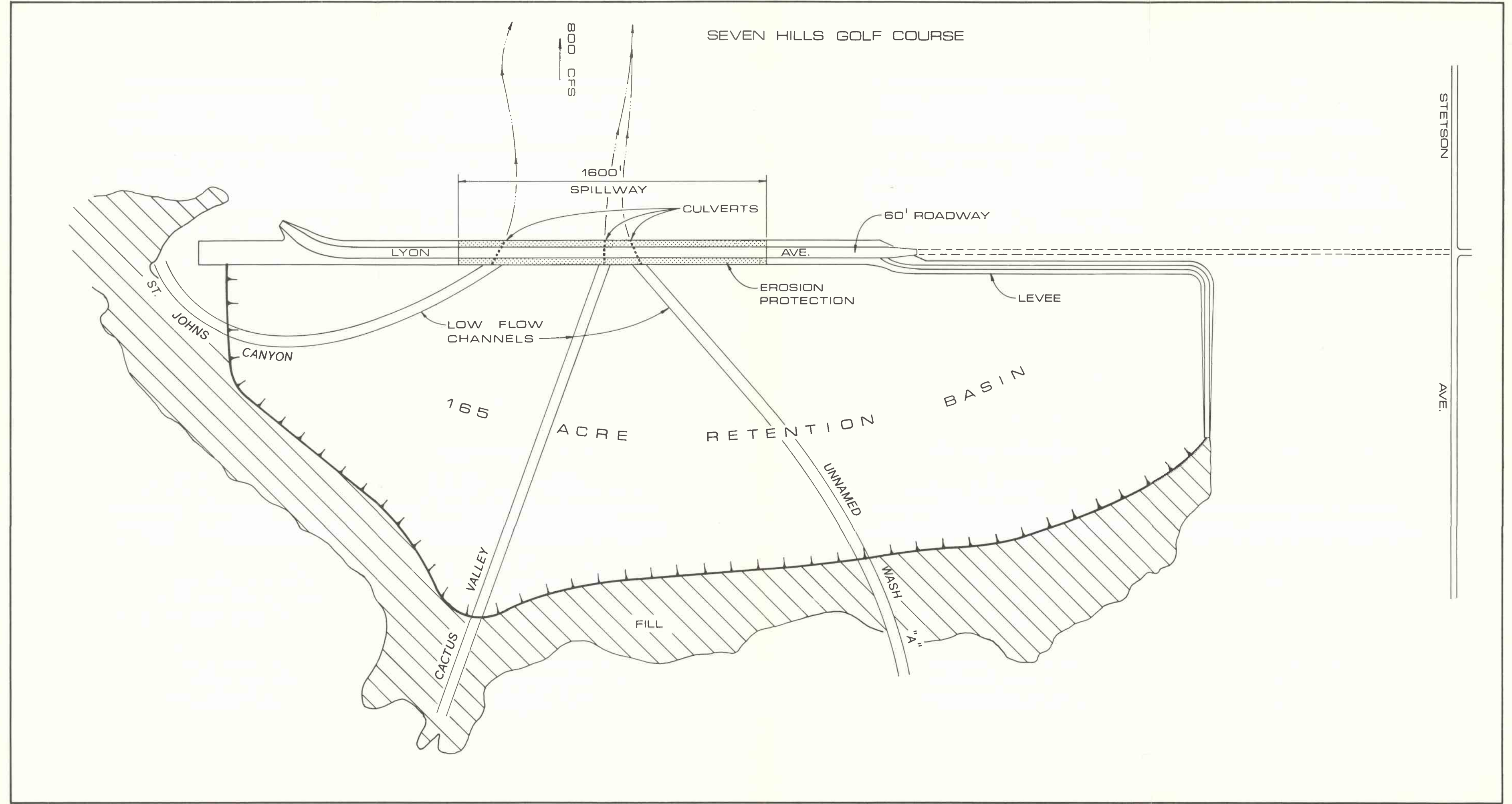
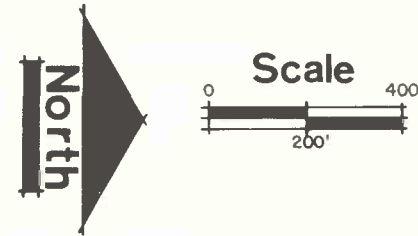
4.3.2 Level of Protection

Project II would provide the same degree of protection as Project I. The reach of the Salt Creek Channel upstream of the Line "A" junction would be sized to accept the local runoff. When the channel capacity is needed to accept the retention basin release, the local runoff would have diminished to a very small amount. The initial retention basin release of up to 300 CFS would always be diverted to the Stetson Channel. Any flow rate above 300 CFS would be routed into the Salt Creek Channel. When the local runoff to Salt Creek Channel peaks it is estimated that the discharge from the retention basin would be approximately 300 CFS. Since this amount is being diverted to the Stetson Channel, it can be seen that for design purposes the 500 CFS channel would also be available for local flows.



DESIGN CHANNEL
 CAPACITIES
 PROJECT II

Project II
Concept Sketch
for Retention Basin



4.3.3 Project Cost

Retention Basin

Excavation of Basin	1,400,000 c.y.	@ 0.58	\$ 812,000
Excavation of Low Flow Channels	35,000 c.y.	@ 0.58	20,300
Compacted Fill for Levee	192,000 c.y.	@ 1.50	288,000
Disposal of Excess Soil	1,243,000 c.y.	@ 0.30	372,900
Reconstruction of Lyon Avenue			160,000
Concrete Spillway and Erosion Protection	167,000 s.f.	@ 1.50	250,500
Culverts	300 l.f.	@ 80.00	24,000
Utility Relocation Cost		L.S.	51,000
Fencing	12,100 l.f.	@ 3.75	45,400
Engineering and Contingencies		@ 15%	<u>303,600</u>
			\$2,327,700

Right of Way	165 ac.	@ 4,500.	742,500
Legal and Administration		@ 7.5%	<u>55,700</u>
			\$ 798,200

Salt Creek Channel

Seven Hills Golf Course to Patterson Avenue Channel Excavation and Levee Construction	158,000 c.y.	@ 1.50	237,000
Patterson Avenue to Highway I15E	2,528,000 c.y.	@ 0.58	1,466,200
Utility Relocation Cost			65,400
Highway and Road Crossings			483,200
Engineering and Contingencies		@ 15%	<u>337,800</u>
			\$2,589,600
Right of Way - East of Winchester	64 ac.	@ 4000.	256,000
Right of Way - West of Winchester	331 ac.	@ 2500	827,500
Legal and Administration		@ 7.5%	<u>81,300</u>
			\$1,164,800

Master Drainage Plan

Line "A" System	\$ 5,716,000
Line "B" System	1,891,000
Line "C" System	2,636,000
Line "D" System	<u>4,457,000</u>
	\$ 14,700,000
 TOTAL PROJECT II COST	 \$ 21,580,300

4.3.4 Environmental Impact Comparison

Only the Salt Creek Channel improvements of Project II differ from those of Project I. The channel from Patterson Avenue downstream to Highway 115E is approximately 13% smaller than the Salt Creek Channel under Project I and therefore the direct impacts associated with the construction process would be only slightly less.

The direct impacts of constructing the reach from Patterson Avenue upstream to the Seven Hills Golf Course would be considerably less. The channel would be constructed within a 108-foot right of way versus a 520-foot right of way under Project I. Excavation volume for the 440 feet wide Project I Salt Creek Channel would be thirteen times greater than for the 48 feet wide Project II channel.

However, the savings in excavation quantities would be offset partially by the retention basin excavation of 1,400,000 cubic yards. This volume would be generated by excavating the retention basin area from 2 to 8 feet and disposing of the excess soil on adjacent properties or making the surplus soil available to those who can utilize it.

In summary, the total acreage involved in the construction process for the Salt Creek Channel and Retention Basin of Project II would be 557 acres versus 756 acres for the Salt Creek Channel portion of Project I. Total excavation quantities for these same project segments would

total 4,121,000 cubic yards for Project II and 4,983,000 cubic yards for Project I.

The construction of a 14-foot high levee adjacent to a residential neighborhood even when skillfully landscaped would have an adverse visual impact. This impact would be especially severe for the 1600 feet of the levee constructed as a spillway with either rock or concrete erosion protection on both levee slopes.

The secondary impacts associated with Project II would be equal to those for Project I except for the retention basin. The retention basin property would definitely be restricted to a land use which can tolerate flooding. Infrequent as this flooding may occur, it can produce standing water over the property for several hours to depths up to twelve feet. This flooding potential would relegate the land use to selective agricultural, open space or recreational uses.

4.4 PROJECT III

Project III is a variation of Project I wherein the Salt Creek Channel portion of the project would be a concrete lined facility instead of a broad, unlined channel. It would be designed to furnish the same flood protection as Project I and each element would have the same capacity as its counterpart under Project I.

4.4.1 Project Description

Under this alternative the entire drainage system with capacities as described in Project I would consist of enclosed, underground conduit or lined open channel. The natural drainage course as envisioned for Salt Creek in Project I would be replaced throughout its length with a concrete lined facility. The Salt Creek Channel would have a trapezoidal cross section with a base width varying from 65 feet to 60 feet and a depth which would range from 13 feet near the downstream limits to only 7.5 feet near Lyon Avenue. In order that the channel sides do not become levees to create new flooding problems the extreme downstream limits of the project would "fan out" to a broad shallow channel or natural drainage course as envisioned in Project I to match the existing channel configuration downstream of Highway 115E. With this project it would be necessary to either terminate local streets and roads at the channel or provide bridges over the channel since merely driving through the drainage course as anticipated at some locations in Project I would not be possible. At these crossings the channel would become a series of rectangular box sections or would be crossed with multi-span bridges.

4.4.2 Level of Protection

Project III would provide the same level of protection as Project I. The trapezoidal channel would vary in width and depth in its various reaches depending on gradient and other constraints so that 100 year frequency storm runoff could be accommodated. A one foot freeboard would be included in the channel design as a safety factor.

4.4.4 Project Cost

The cost data shown pertains to Salt Creek improvements only. The cost of the Hemet Area Master Drainage Plan would of course, remain unchanged and be added as below for total system cost. Total construction cost of Project III including Engineering and Contingencies is as follows:

Concrete Salt Creek Channel	\$11,926,000
Right of Way Costs	533,000
Utility Relocation Costs	<u>95,800</u>
	\$12,554,800
Master Drainage Plan, Hemet Area	<u>\$14,700,000</u>
Total	\$27,254,800

4.4.5 Environmental Impact Comparison

Environmental impacts associated with Project III would change as follows:

- A. The beneficial impacts resulting from the development of park-like areas and recreational facilities such as bike trails, etc. under Project I would be lost.
- B. The creation of new or additional habitat for small animals and birds, and inherent positive impact of Project I, would be substantially diminished.
- C. Fencing required for safety in Project III but not required in Project I would have a definite negative visual impact.
- D. The concrete lined channel and its bridges would be obtrusive, visible, man made structures imposed upon an otherwise natural environment.
- E. The construction of channel lining and bridges would likely require additional energy consumption, add another measure of air pollution in the area and consume additional resources during construction.
- F. Opportunities for groundwater replenishment would be lost in a concrete lined channel. However, maintenance costs would be reduced for a concrete channel.

4.5 PROJECT IV

Project IV would be a completely open channel version of Project I. Like Project I it would be designed to furnish the same level of flood protection and each element of the system would have the same capacity as its counterpart in Project I. Those portions of the drainage system which are open channels in Project I would remain basically unchanged in Project IV.

4.5.1 Project Description

Under this alternative the entire drainage system with capacities for carrying away storm water as described in Project I would be an all open channel system. The cross sections of the various open channels would be designed to meet existing conditions and to provide the required hydraulic features. Lined channels would replace all proposed underground drains. All of the Salt Creek Channel would of course remain as planned in Project I as would all of the existing improved open channels. New underground drains would be replaced by a concrete lined channel adjacent to the roadway in reaches where flows are small. As flow quantities increased separate right of way outside the roadway would have to be provided. At all driveways to properties and roadway crossings the open channels would be bridged to allow for the movement of traffic.

For the larger channel sections a mid block location in its own right of way would minimize bridging and severance. For safety reasons, the channels would have to be secured against unauthorized or accidental entry. Channels programmed for well developed areas would have to be realigned to minimize their disruptive impact.

4.5.2 Level of Protection

Basically the level of protection of Project IV is equal

to that of Project I. Since open channels are designed with freeboard or added depth as a safety factor, some additional or reserve capacity is inherent in the system.

4.5.3 Project Cost

The project cost of all open channels included in Project I would remain the same. For the conversion of underground drains to open channels some very broad assumptions must be made for the sake of simplicity, consistency and manageability of the project concept here. It is assumed that for all open channels, right of way must be purchased even though many of the smaller channels would be constructed within existing road right of way. To partially offset this we have neglected any costs associated with severance. Twelve percent of all channel reaches are assumed to be covered for local access and roadway bridging.

Salt Creek Channel*

Channel Excavation	4,983,000 C.Y.	@ 0.58	\$ 2,890,140
Highway and Road Crossings			483,160
Engineering and Contingencies	@ 15%		506,000
Utility Relocation Cost			65,400
Channel Right of Way			2,443,500
Legal and Administration	@ 7.5%		183,300
			<hr/>
			\$ 6,571,500

* 1973 Costs from NBS Report, p. 13, Salt Creek Channel Conceptual and Engineering Plan, Updated to 1977 by ENR Construction Cost Index 2941 ÷ 2034 = 1.45

Master Drainage Plan for Hemet Area

Line A System	\$ 6,297,000
Line B System	2,040,000
Line C System	2,637,000
Line D System	<u>4,353,000</u>
	\$ 15,327,000

Total Project IV Cost \$21,898,000*

* Cost for reconstructing streets to route flows to channels is not included but would be substantial. True cost of Project IV would therefore be much higher than shown above.

4.5.4 Environmental Impact Comparison

Direct adverse impacts associated with the construction of Project IV are very similar to those of Project I.

Some elements of Lines A, B, C & D which would be constructed within streets, would now occupy separate flood control right of way corridors. Additional land so occupied would be permanently committed to this use.

Streets collect the drainage and serve as flood control channels to contain the excess above 10 year frequency storm flows. Storm waters so collected have to be conveyed to the open channels at frequent intervals. This will require regrading many existing street sections and/or the construction of numerous culverts and flow intercepting structures. Substantial alteration of the street sections will degrade their primary utility which is to handle traffic safely.

The frequent bridging of open channels presents a potential hazard especially in areas of dense development. Culverts which handle gutter flow are of a particular hazard to pedestrians, especially the elderly and so are higher than normal curbs which will be necessary to contain the flow in the streets.

Unless well maintained, open channels can detract significantly from property values. In highly urbanized areas they tend to become the receptacles for trash and all else that is not wanted. In a wet environment foul odors are not uncommon. These negative impacts can be substantially mitigated by concealing these channels behind attractive landscaping. The cost and resources expended to maintain these amenities need to be considered in light of the more practical alternative available, namely underground drains.

4.6

PROJECT V

Project V is the "NO PROJECT" alternative.

This last alternative would be to retain the status quo and construct no further flood control facilities. Under this alternative the already completed portions of the Hemet Channel and certain of its tributaries would continue in service.

4.6.1 Description of the "NO PROJECT" alternative.

The description of not building any project is the description of the status quo, namely the environmental setting as documented in Section 3.0. Under Section 2.0, existing storm drain facilities are described.

4.6.2 Level of Protection

Section 3.2.1.1 dealing with drainage of surface waters and Photo Plates 1-13 amply illustrate the flooding which occurred during storms experienced in 1952 and 1969. Unfortunately, the 1969 photographs were taken almost a full day after the peak of the storm when flood levels had receded substantially. Even at the peak of the 1969 storm, flooding levels did not nearly reach the heights which can be expected during a 100 year frequency storm. Now, in 1977, after eight additional years of development the situation is worse due to the increased frequency which runoff reaches downstream areas. Map 6, Plates A, B and C graphically illustrate the level of flooding which could be experienced when 100 year frequency storm runoff collects and flows through the Salt Creek Watershed.

Present development in the immediate Hemet area has reached the sixty percent level. As development increases the inundation levels shown on map 6, Plate C in the Hemet area will expand in area and depth.

Conversely the hills and canyons comprising a large part of the Salt Creek watershed are assumed to remain in an undeveloped state and therefore, contribute their runoff at the full rate now. This means that the extent of flooding illustrated on map 6, Plates A and B can occur now. This is especially true since these flooding limits reflect the peak discharge of the remote canyons to the south of Hemet. Peak runoff from the greater Hemet area will pass through the Salt Creek flood plain ahead of the remote canyon peak discharge. Since the peak discharge from the Hemet area is approximately 19% less than the peak flow produced by the remote canyons any further development in the Hemet area will not increase the inundation limits in the Salt Creek flood plain. However, any further development in the Hemet area will increase the frequency with which runoff from the Hemet area reaches Salt Creek flood plain downstream of Patterson Avenue and thereby increases the potential for damage.

The extent and severity of potential flooding is best illustrated by comparison with previous floods. In the 1969 floods the damage was extensive and the storms were considerably less than 100 year frequency storms. Add to this the increase in development since 1969 and one should have little difficulty visualizing the damage potential of such an occurrence.

During such a storm the level of protection provided by present facilities will be limited to the immediate area which they serve. Even then their effectiveness will be diminished because outlet works are inadequate or upstream facilities are not constructed to collect or intercept the flow. In the absence of such facilities the flood flows take the path

of least resistance and form a flood plain demonstrated on map 6. During 100 year frequency storms the severity of flooding can be illustrated by citing the depths of flood flows at the following locations:⁴

Railroad Canyon Road at Reservoir	7.0 feet
Lindenberger Road and Olive Avenue	8.5 feet
State Street 0.5 mile south of Stetson Avenue	3.5 feet

Depth of flows from 1 to 2 feet will be common occurrences throughout the flood plain area shown in blue on map 6.

4.6.3 Project Cost

The "NO PROJECT" alternative obviously has no implementation cost. The true cost of doing nothing could, however, be quite expensive. The damage caused by previous storms was considerable although accurate dollar figures are not available. The damage potential of future storms in terms of cost is even greater today because more development value is exposed to the flood damage risk. Admittedly these are costs of impacts but it will be beneficial to the decision making process to keep these costs in focus.

4.6.4 Environmental Impacts

The impact on the present population within the project area has been, and will be, substantial during periods of intense rainfall. It ranges from mere inconvenience of street closures due to flooded streets, to distinct hazards to health and safety. For properties within the 100 year flood limits it can mean widespread damage, interruption in communications, isolation from transportation and other vital services. When over half the population within the project area is of retirement age the adverse impact during flood occurrences is accentuated. For many of retirement age, access to health care services is paramount. With the growth in senior citizen population, the elimination of flood hazard in this area has become of vital concern.

Flooding was not a significant problem as long as the area was primarily devoted to agricultural activity. Now that con-

siderable portions of the project area are developed into residential and supporting commercial land uses flood control measures have become necessary. This fact was recognized some time ago by Riverside County Flood Control and Water Conservation District and City officials. Systematic construction of elements of a coordinated flood control system was begun in 1970. Completion of an effective flood control system is now of vital concern and the "NO PROJECT" alternative must be considered least desirable and not a politically viable course of action for the rapidly urbanizing Hemet area.

4.7 SUMMARY OF PROJECT ALTERNATIVES

4.7.1 Project Alternatives and Their Costs

A total of four alternatives to the proposed project were investigated. Additionally, a scaled down version of Project I was evaluated. Project I (Interim), from a flood protection standpoint, represents the minimum size project which should be considered. It is a logical interim stage project enroute to eventually achieving the full extent of Project I.

<u>Project Number</u>	<u>Estimated Cost</u>
Project I For project scope see map 2, plates A, B and C.	\$21,271,500
Project I (Interim) Modifies Project I scope by eliminating the improvement of Salt Creek upstream of the Line A (Hemet Channel) outlet. Proposes the improvement of Line A and Salt Creek into unlined channels westerly to Highway 115E for 1500 cubic feet per second capacity.	\$12,240,000
Project II Only the Salt Creek Channel improvements differ from those of Project I. Peak flows from the headwaters are temporarily stored in a 165 acre retention basin and released at a controlled rate into a 48 feet wide unlined Salt Creek Channel. Downstream of the Line A (Hemet Channel) confluence the Salt Creek Channel improvement would be thirteen percent smaller than under Project I. See map 14.	\$21,580,300
Project III The unlined Salt Creek Channel portion of Project I is considered concrete lined under Project III.	\$27,254,800

Project IV

\$21,898,000 *

This alternative represents a completely open channel version of Project I.

* Cost for remodeling of streets to route flows to channels is not included.

Project V

\$ **

Project V represents the "NO PROJECT" alternative.

** The "NO PROJECT" alternative obviously has no implementation cost. The true cost of doing nothing could, however, be quite expensive. The damage caused by previous storms was considerable although accurate dollar figures are not available. The damage potential of future storms in terms of cost is even greater today because more development value is exposed to the flood damage risk. Admittedly these are costs of impacts but it will be beneficial to the decision making process to keep these costs in focus.

4.7.2 Analysis of Project Alternatives

Because of the severeness of the flood hazards within the project area, see map 1 and Photo Plates 1-13, the community, as evidenced through projects already initiated by elected community leaders have already indicated that the "NO PROJECT" alternative, Project V is not a viable course of action for this rapidly urbanizing area.

Project Alternatives III and IV represent substantially greater financial investments than Project I. Additionally these projects would create significantly greater adverse environmental impacts than Project I. Fenced concrete channels and structures would be built instead of broad unlined channels developable into park-like areas and recreational facilities such as bike and riding trails.

Project II, although slightly higher in estimated construction cost (1.5%) than Project I, can be viewed as a viable alternate project. Nearly 200 acres less in private pro-

perty will have to be committed for flood control purposes under Project II and a reduction of 860,000 cubic yards in earthwork could be achieved over Project I. Additionally, the large parcel of land developed into the retention basin would offer opportunities for selective agricultural, open space or recreational uses.

Project II, however, has some negative impacts as well. There is the adverse visual impact of a 6,100 feet long, 14-foot high levee adjacent to a residential neighborhood and the potential for liabilities associated with impoundment of flood waters, even if only infrequently and for very short durations. Implementation of Project II requires early acquisition of the properties necessary for the retention basin. To minimize the acquisition costs, these properties would have to be purchased before further encroachments by development occur. Initial financial outlay for right of way acquisition is estimated at \$800,000 which by itself does not provide any flood protection whatsoever. A minimum of another \$960,000 in construction dollars would have to be spent before any significant partial flood protection would be realized. The option of being able to select Project II over Project I is therefore tied entirely to funding.

Both Project I and II permit the option to build an interim project described as Project I (Interim) first. However delays in acquiring right of way necessary for the retention basin will result in an even higher Project II cost.

Financing for any of these alternatives would have to come from County and/or federal sources. Financing for the Project I (Interim) portion of the project has been analyzed by the Bank of America (see Financing Plan for the Master Drainage Plan Zone 4, Improvement District No. 1). This report was developed for the Riverside County Flood Control and Water Conservation District in April, 1976.

5.0 References

5.1 CREDITS

This Report has been prepared for Riverside County Flood Control and Water Conservation District by Alderman, Swift & Lewis Consulting Engineers with offices at 721 Fair Oaks Avenue, South Pasadena, California. This document was prepared under the direction of William D. Lewis, President of Alderman, Swift and Lewis, and includes major work contributed by the following specialists and consultants:

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5.2

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Riverside County Flood Control and Water Conservation District

COUNTY OF RIVERSIDE, STATE OF CALIFORNIA
OFFICE OF THE CLERK OF THE BOARD OF SUPERVISORS

7.5a On motion of Supervisor Record, seconded by Supervisor Younglove
b and duly carried, IT WAS ORDERED that the Board hereby accepts the Final
Environmental Impact Report for the Hemet Area Drainage, and Salt Creek
Improvements, certifying that they have reviewed and considered the
information preparatory to adoption of these Master Drainage Plans, together
with the comments submitted by the Planning Staff in their letter dated
June 7, 1978.

Roll Call resulted as follows:

Ayes: Schroeder, Record, Younglove and Abraham

Noes: None.

Absent: McCandless.

*Hemet Master
Salt Creek*
x

I hereby certify that the foregoing is a full, true and correct copy of an order made and entered on
the 27th day of June, 1978, in Book 5
of Minutes, at page 79 thereof, records of Riverside County Flood Control and Water Conservation
District.

WITNESS my hand and the seal of the Board of Supervisors

Dated: June 27, 1978

DONALD D. SULLIVAN, Clerk of the Board of Supervisors

By *Agnes Douglas*, Deputy

(SEAL)