

**UPPER ETIWANDA CREEK AND
SAN SEVAINE CREEK
AREA DRAINAGE PLANS**

City of Fontana

and

San Bernardino County

Department of Transportation/Flood Control

Environmental Public Works Agency

September 1989

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1
2 AN ORDINANCE OF THE COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA,
3 AMENDING SECTIONS 811.0105, 811.0110, 811.0115,
4 811.0120, 811.0125, AND 811.0130 OF CHAPTER 1,
5 DIVISION 11, TITLE 8 OF THE SAN BERNARDINO
6 COUNTY CODE RELATING TO THE ESTABLISHMENT OF
7 AREA DRAINAGE PLANS AND DRAINAGE FEES

8 The Board of Supervisors of the County of San Bernardino,
9 State of California, ordains as follows:

10 SECTION 1. Section 811.0105 of the San Bernardino
11 County Code is amended to read, as follows:

12 **811.0105 Establishment of Area Drainage Plans.**

13
14 (a) The provisions of this chapter shall only affect those
15 unincorporated portions of the County that are within the
16 boundaries of an adopted Area Drainage Plan.

17
18 (b) The Board of Supervisors in adopting an Area Drainage
19 Plan shall find and determine that development or redevelopment
20 of the property in the Plan Area will require the construction of
21 the facilities described in the Plan and that the drainage fees
22 are fairly apportioned within the drainage area.

23 (c) The drainage fees shall be fairly apportioned based on
24 one of the following: (1) on the basis of benefits conferred on
25 property proposed to be developed or redeveloped (2) on the need
26 for drainage facilities created by such development and the
27 development of other property in the drainage area, or (3) on the
28 basis of the proportionate storm water run-off from each
29 parcel. Fees to be paid shall not exceed the pro rata share of
30 the amount of the total actual or estimated costs of all
31 facilities within such area which would be assessable on such
32 property if such costs were apportioned uniformly on a per acre
33 basis.

34 (d) The Board of Supervisors, in adopting or amending the
35 Area Drainage Plan, shall do all of the following:

- 36 (1) Identify the purpose of the fee.

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1
2 (2) Identify the use to which the fee is to be put. If
3 the use is financing public facilities, then the facilities
4 should be identified. The facilities may be identified by refer-
5 ence to any public document which identifies the facilities for
6 which the fee is charged.

7 (3) Determine how there is a reasonable relationship
8 between the fee's use and the type of development project on
9 which the fee is imposed.

10 (4) Determine how there is a reasonable relationship
11 between the need for the public facility and the type of develop-
12 ment project on which the fee is imposed.

13 (5) Determine how there is a relationship between the
14 amount of the fees and the cost of the flood control facilities,
15 or portion thereof, attributable to the development on which the
16 fee is imposed.

17 (e) Area Drainage Plans and/or the drainage fee may be
18 adopted by the board, and thereafter amended at any time, only
19 after holding a public hearing. The requirements of Government
20 Code Section 66004 shall be followed prior to holding a public
21 hearing establishing or modifying a fee for an Area Drainage
22 Plan.

23
24 SECTION 2. Section 811.0110 of the San Bernardino
25 County Code is amended to read, as follows:

26 **811.0110 Fee Collection and Accounting.**

27 (a) Except as otherwise provided in Section 811.0120(c),
28 whenever a building permit, grading permit, or other County
29 approval in connection with new construction is requested within
30 the boundaries of an Area Drainage Plan, the specified drainage
31 fee shall be deposited to the appropriate Planned Drainage
32 Facilities Fund. Any interest income earned by the money in the
33 fund shall also be deposited in the fund. The amount of the
34 drainage fee shall be specified within the schedule of fees for
35 each Area Drainage Plan. The established fee shall be paid to
36 the County prior to the issuance of building permits, grading

1 permits, or other County approvals in connection with new con-
2 struction.

3 (b) Drainage fees required by this chapter shall be paid to
4 the County and deposited into a Drainage Facilities Fund. A
5 separate fund shall be established for each Drainage Area.
6 Monies in such funds shall be expended solely for the con-
7 struction and reimbursement for the construction of drainage
8 facilities, including related administration expenses, within the
9 area from which the fees comprising the fund were collected,
10 and/or to reimburse the local agency for the cost of engineering,
11 right-of-way acquisition and administrative services required to
12 design and construct facilities within the Area Drainage Plan.

13 (c) Money may be advanced by a local agency to design and
14 construct drainage facilities, related administrative services or
15 to acquire necessary right-of-way within the area of an adopted
16 Area Drainage Plan. Money so advanced shall be reimbursed to the
17 local agency from the appropriate Planned Drainage Facilities
18 Fund.

19
20 SECTION 3. Section 811.0115 of the San Bernardino
21 County Code is amended to read, as follows:
22

23 **811.0115 Drainage Fee Calculation.**

24 (a) Fees assessed at the time of the issuance of a building
25 permit, grading permit or other County approval related to new
26 construction shall be based upon the total area of the parcel
27 provided said parcel has a net area of less than one acre.

28 (b) Fees assessed at the time a building permit, grading
29 permit or other County approval related to new construction is
30 issued on a parcel which has a net area of one acre or more shall
31 be based on:

32 (1) The area of the developed portion of the parcel or
33 one (1) acre whichever is greater. As used in this chapter, the
34 phrase "area of developed portion of the parcel" means the area
35 of that portion of the parcel lying within a single rectangle
36 which encloses all improvements, landscaped areas, storage areas

1 and parking areas; plus the area of all improvements related to
2 the required access that are outside the area of the described
3 rectangle.

4 (c) The amount of fees assessed and the area on which said
5 fee is based shall be determined by the building official. The
6 building official may require an applicant to submit all infor-
7 mation necessary to calculate said fee(s).

8
9 SECTION 4. Section 811.0120 of the San Bernardino
10 County Code is amended to read, as follows:

11
12 **811.0120 Credit and Exceptions.**

13 (a) (1) When required for the implementation of an adopted
14 Area Drainage Plan, an agreement may be entered into between a
15 developer and the County whereby the developer may advance money
16 for the construction of facilities, or design of such facilities
17 within an Area Drainage Plan. Subject to the restrictions in
18 subsection (a)(2), the sole security to the developer for repay-
19 ment of money or other consideration advanced shall be money
20 subsequently accruing in the appropriate Planned Drainage
21 Facilities Fund. Reimbursement shall be for the amount agreed
22 upon in advance only and shall not include interest or other
23 charges. The agreement shall expire fifteen years after the date
24 it was entered into, and any subsequent money paid into the fund
25 shall accrue to the fund without obligation to a developer whose
26 agreement has expired.

27 (2) The County may designate that up to twenty-five
28 percent (25%) of the funds collected in a Planned Drainage
29 Facilities Fund be utilized for reimbursement for any agreement
30 entered into pursuant to subsection (a)(1). Other than the
31 amount so designated by the County, Planned Drainage Facilities
32 Funds shall not be used as reimbursement for any agreements
33 authorized by subsection (a)(1).

34 (b) An agreement may be entered into between a developer and
35 the County whereby considerations such as dedication of right-of-
36 way, actual construction, or design work by a civil engineer may

1 be accepted in lieu of part or all of the payment of drainage
2 fees, the Board of Supervisors shall find that the alternative is
3 acceptable and is equal to or greater in value than the required
4 fee, prior to approving such an agreement.

5 (c) Drainage fees shall not be required as a condition of
6 building permits on existing developed parcels for:

7 (1) Maintenance and repair of existing improvements.

8 (2) Reconstruction, when permits are issued within two
9 years of the destruction of a structure due to fire, vandalism,
10 wind, earthquakes or other natural or man-made disasters.

11 (3) Construction of garages, carports, storage
12 buildings, patio covers, swimming pools, and similar structures,
13 accessory to a single-family residence.

14 (4) Other construction or reconstruction which does not
15 involve grading causing an increased rate of runoff when such
16 construction or reconstruction falls within the boundaries of the
17 rectangle described in Section 811.0115 as the "area of the
18 developed portion of the parcel," as it existed prior to the
19 effective date of an applicable area drainage plan. Applicant
20 shall be responsible for providing sufficient information to
21 establish that the proposed grading would not increase the rate
22 of runoff. Assessment of fees due to such grading shall apply to
23 only the portion of the parcel on which grading would contribute
24 to an increased rate of runoff.

25 (d) If a drainage fee for a parcel, or portion thereof, has
26 been previously paid, credit shall be given for such prior
27 payment toward any fee payment required by this chapter.

28 (e) The provisions of this chapter shall not be applicable
29 to property subject to other assessments for the same drainage
30 facilities.

31
32 SECTION 5. Section 811.0125 of the San Bernardino
33 County Code is amended to read, as follows:

34
35 **811.0125 Surplus and Refunds.**

36 (a) After completion of facilities and the payment of all

1 claims from any Planned Drainage Facilities Fund, the Board of
2 Supervisors shall determine by resolution or other legislative
3 action the amount of the surplus, if any, remaining in any of
4 these funds. Any surplus shall be used, in those amounts as the
5 Board may determine, for one or more of the following purposes.

6 (1) For transfer to the general fund of the County,
7 provided that the amount of the transfer shall not exceed five
8 percent (5%) of the total amount expended from the particular
9 fund, and provided that the funds transferred are used to support
10 the operation and maintenance of those facilities for which the
11 fees were collected.

12 (2) For the construction of additional or modified
13 facilities within the same Area Drainage Plan.

14 (3) As a refund in the manner provided in subsection
15 (b), below.

16 (b) Any surplus remaining shall be refunded as follows:

17 (1) There shall be refunded to the current owners of
18 property for which a fee was previously collected, the balance of
19 such moneys in the same proportion which each individual fee
20 collected bears to the total of all individual fees collected
21 from the particular drainage area;

22 (2) Where property for which a fee was previously col-
23 lected has subsequently been subdivided into more than one lot,
24 each current owner of a lot shall share in the refund payable to
25 the owners of the property for which a fee was previously col-
26 lected in the same proportion which the area of each individual
27 lot bears to the total area of the property for which a fee was
28 previously collected; and

29 (3) There shall be transferred to the general fund of
30 the County any remaining portion of the surplus which has not
31 been paid to or claimed by the persons entitled thereto within
32 two years from the date either of the completion of the improve-
33 ments, or the adoption by the Board of Supervisors of a resolu-
34 tion declaring a surplus, whichever is later to occur.

35 (c) Subject to the provisions of subsections (a) and (b)
36 above, commencing on the fifth year after imposition of a fee for

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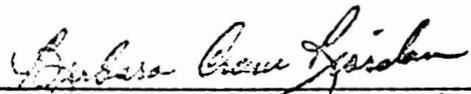
1 a Area Drainage Plan and annually thereafter, the Board shall
2 hold a hearing with respect to any portion of the fee remaining
3 unexpended or uncommitted five or more years, and shall refund to
4 the then owners of lots or units in development projects within
5 the Area Drainage Plan on a pro rata basis any such unexpended or
6 uncommitted fees plus interest accrued thereon, for which the
7 Board is unable to demonstrate a reasonable relationship between
8 the need for the fee and the purpose for which it was charged.
9 When applicable, refunds shall be made in accordance with Govern-
10 ment Code Section 66001.

11
12 SECTION 6. Section 811.0130 of the San Bernardino
13 County code is amended to read, as follows:

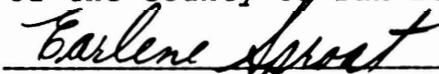
14
15 **811.0130 Subject Areas**

16 The provisions of this chapter shall be applied only to areas
17 within the boundaries of Area Drainage Plans that have been
18 adopted by the Board of Supervisors, and shall have no force or
19 effect in any other portion of the County. The rules, regula-
20 tions, fees and plan areas are contained in the associated texts
21 of each Area Drainage Plan.

22
23 SECTION 7. This ordinance shall take effect thirty (30)
24 days from the date of adoption.

25
26 
27 BARBARA CRAM RIORDAN, Chairman
28 Board of Supervisors

29 SIGNED AND CERTIFIED THAT A COPY OF THIS
30 DOCUMENT HAS BEEN DELIVERED TO THE
31 CHAIRMAN OF THE BOARD
32 EARLENE SPROAT
33 Clerk of the Board of Supervisors
34 of the County of San Bernardino

35 
36 _____

37 STATE OF CALIFORNIA)
38) ss.
39 COUNTY OF SAN BERNARDINO)

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I, EARLENE SPROAT, Clerk of the Board of Supervisors of the County of San Bernardino, State of California, hereby certify that at a regular meeting of the Board of Supervisors of said County and State, held on the 18th day of September, 1989, at which meeting were present Supervisors: Marsha Turoci, Jon D. Mikels, Larry Walker, Robert L. Hammock, Barbara Cram Riordan

and the Clerk, the foregoing ordinance was passed and adopted by the following vote, to wit:

AYES: SUPERVISORS: Turoci, Mikels, Walker, Hammock
Riordan

NOES: SUPERVISORS: None

ABSENT: SUPERVISORS: None

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the official seal of the Board of Supervisors this 18th day of September, 1989.

EARLENE SPROAT, Clerk of the Board of Supervisors of the County of San Bernardino, State of California

Stephanie White-Soto
Deputy

County Counsel
Approved 9-7-89
Amelia...

OFFICE
COUNTY JENSEL
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ORDINANCE NO. 3358

1
2 AN ORDINANCE OF THE COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA,
3 ESTABLISHING THE UPPER ETIWANDA AND SAN
4 SEVAINE CREEK'S AREA DRAINAGE PLANS, ADDING
5 SUBSECTION 16.0212(j) TO THE SAN BERNARDINO
6 COUNTY CODE RELATING TO DRAINAGE FEES TO
7 ASSIST THE FINANCING AND CONSTRUCTION OF
8 DRAINAGE FACILITIES, AND PROVIDING FOR THE
9 COLLECTION OF SAID FEES IN THE UNINCORPORATED
10 TERRITORY INCLUDED WITHIN THE BOUNDARIES OF
11 THE AREA DRAINAGE PLANS FOR UPPER ETIWANDA AND
12 SAN SEVAINE DRAINAGE AREAS

13
14 The Board of Supervisors of the County of San Bernardino,
15 State of California, ordains as follows:

16 SECTION 1. The Board of Supervisors of the County of
17 San Bernardino finds:

18 1. Area Drainage Plans (hereinafter "Plans") for Upper
19 Etiwanda and San Sevaime Creek drainage areas have been prepared
20 in accordance with the requirements of law and are on file with
21 the Clerk of this Board.

22 2. The combined Upper Etiwanda and San Sevaime Creek's
23 drainage areas will experience growth which will increase the
24 need for flood control facilities to protect against the
25 increased potential flood hazards caused by such growth. This
26 financing mechanism is necessary to achieve an equitable method
27 of payment for the construction of flood control facilities
28 required to accommodate new development or redevelopment and to
29 prevent potential flood hazards to existing and proposed
30 development.

31 3. The drainage fees will be used to build and improve
32 the flood control facilities identified in the Plans. The need
33 for said flood control facilities is related to new development
34 because such new development will contribute to the flood waters
35 and drainage in the Plan Areas which will cause an increased
36 potential for flood hazards in the Plan Areas.

4. There is a reasonable relationship between the
amount of the fees and the cost of the flood control facilities

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1 attributable to the developments on which the fees are imposed
2 because the fees have been calculated based upon the estimated
3 costs of the facilities that will be required to mitigate the
4 flood hazards created by new development. The estimated total
5 costs of the flood control facilities necessary to accommodate
6 new development in the Plan Areas have been apportioned uniformly
7 over the acreage, capable of being developed, contributing to the
8 need for the new facilities.

9 5. Prior to implementation, accounts will be
10 established for the fees specified herein, and the funds from
11 each account will be appropriated for the flood control
12 facilities identified in the Plans. A proposed construction
13 schedule has been prepared as part of the Plans.

14 6. Failure to mitigate the growth impact on flood
15 control facilities within the Plan Areas and the new development
16 therein will place occupants of the Plan Areas in conditions
17 perilous to their health, safety and welfare.

18 7. Flood control facilities contained in the Plans are
19 in addition to, or reconstruction of, existing flood control
20 facilities serving the Plan Areas.

21
22 SECTION 2. The Board of Supervisors hereby establishes
23 the Upper Etiwanda Area Drainage Plan and the San Sevaine Creek
24 Area Drainage Plan pursuant to the authority of Title 8, Division
25 11, Chapter 1 of the San Bernardino County Code. The Plans are
26 on file in the Office of the Clerk of the Board of Supervisors.
27 The legal descriptions of said plans are attached as
28 Attachment A - San Sevaine Creek Drainage Plan and Attachment B -
29 Upper Etiwanda Creek Drainage Plan.

30
31 SECTION 3. The drainage fee for the Plan Areas shall be
32 subject to periodic adjustments for project revisions and
33 inflation. The time and method of payment, fee account, credits,
34 reimbursement agreements and exemptions are specified by Title 8,
35 Division 11, Chapter 1 of the San Bernardino County Code.

36 The drainage facilities to be financed, their location,

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1 the boundaries of the Plan Areas and an estimate of the total
2 cost of construction of each drainage facility are listed in the
3 respective Plans. In that the Plans are based upon schematic
4 engineering maps, the drainage facilities eligible for funding or
5 reimbursement and the phasing of said facilities shall be subject
6 to possible revisions to the systems as they become evident
7 during the design phase. All descriptions, figures, maps and
8 provisions and standards contained in the Plans and referred to
9 herein are made a part of this ordinance and shall be followed in
10 the financing and construction of the drainage facilities.

11
12 SECTION 4. Any property within the boundary of the
13 Plans which, after being developed, does not drain into or derive
14 protection from the Plan Areas shall be exempt from payment of
15 the applicable drainage fees. The decision as to whether
16 developed property drains into or derives protection from a
17 particular Plan Area rests solely with the County. If it is
18 found that a particular parcel of property does not drain into or
19 derive protection from a particular Plan Area, then it shall not
20 be a part of said Plan Area but will be included in any other
21 Area Drainage Plan into which it drains or derives protection, if
22 any, and shall pay the applicable fee.

23
24 SECTION 5. Subsection 16.0212(j) of the San Bernardino
25 County Code is added as follows:

26
27 **16.0212 Flood Control**

28 . . .

29 (j) Area Drainage Plan Fees.

- 30 (1) Upper Etiwanda Drainage Area.....\$9,790/acre
31 (2) San Sevaine Creek Drainage Area.....\$4,405/acre

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33 ///
34 ///
35 ///
36 ///

UPPER ETIWANDA CREEK AND SAN SEVAINE CREEK
AREA DRAINAGE PLANS
EXECUTIVE SUMMARY

The San Sevaire Creek Water Project consists of regional mainline flood control facilities in the Upper Etiwanda Creek and San Sevaire Creek watersheds. The project will provide a backbone system of channels and basins to assist in the protection of properties that are being developed or planned for future development or redevelopment. It will also provide a means for mitigation of drainage impacts of such new development by providing flood control and percolation improvements for the control of the increased rate of runoff that results from development. Several basins are included in the project to assist in the attenuation of the increased flows.

The project drainage area is shown on Exhibit "A". It covers a total area of approximately 51 square miles and includes areas within the Cities of Rancho Cucamonga and Fontana, as well as unincorporated areas of the County of San Bernardino. The project includes two major drainage areas, the Upper Etiwanda Creek and the San Sevaire Creek. The flows from each of these primary drainage areas are separated in the areas north of Foothill Boulevard but are proposed to be handled in a combined system from Foothill Boulevard south to the Riverside County line.

The planned regional mainline improvements are also shown on Exhibit "A". They were sized during the preparation of the "Report on the Day, Etiwanda and Sevaire Creeks System Drainage Plan," dated March, 1983 prepared by Bill Mann and Associates.

Only the Regional Mainline improvements are covered by the plans; however, major secondary or subregional, as well as master plan and local drains, will be needed to collect the runoff and carry the flows to the Regional Mainline improvements. It is anticipated that additional fees will be adopted to help fund these drains. When sufficient planning to define the secondary, master plan and local drains is completed, a report similar to this one will be prepared and reviewed with the public.

All improvements proposed in this report have been sized to convey the projected surface runoff resulting from a 100-year frequency storm upon full development of the area as currently envisioned by the general plans of the county and the cities.

The San Bernardino County Flood Control District has operated certain flood control facilities for the past several decades within the Upper Etiwanda and San Sevaire Creeks watershed areas. These facilities, consisting of partially excavated basins, rock and railroad rail and wire revetted channels and levees and natural creek banks, have handled the flood flows over the years and provided basic flood protection for the existing developments in the watershed area. During the 1969 storms which produced flows approximating a 100 year event, these facilities sustained severe damage, but generally did provide flood protection to the existing public and private properties within the watershed area.

Had the watershed been more substantially developed, the facilities would not have sustained the flood waters because development causes the flood and storm waters to concentrate and run off faster. It is for this reason that the proposed drainage fee is to be applied to parcels when they are developed or redeveloped in the future and not applied to existing development. Existing development has helped to provide for and has been relatively protected by the existing flood control facilities.

Since the overall project includes two major distinct drainage areas which are combined into a single system south of Foothill Boulevard, it is appropriate to establish separate plan areas for the properties benefiting from the respective systems. For the purpose of calculation of the appropriate fees in each of the areas, it has been assumed that in the areas where the systems are separate (generally north of Foothill Boulevard) that each area will be responsible for the cost of the improvements to handle its flows. South of Foothill Boulevard where the two flows are proposed to be combined, each area will be responsible for a portion of the improvement costs based on the percentage of its drainage area to the total project drainage area.

Separate accounts will be established by the City of Fontana and the County for the deposit of fees collected from each of the jurisdictions for their portions of the respective drainage areas. Accounts will be interest bearing and reserved for construction of improvements serving their respective drainage areas. The County Building and Safety Department adds a \$25.00 charge per transaction for collection of the fee for developments in the unincorporated areas.

The cost estimates for the improvements are detailed in the February, 1988 "Facility Fee Study" by Bill Mann and Associates as revised January, 1989. The breakdown of the distribution of costs for the improvements are shown on Exhibits "B" and "C". The improvement cost distribution and recommended fee is as follows.

IMPROVEMENT COST DISTRIBUTION AND RECOMMENDED FEES

<u>Drainage Area</u>	<u>Estimated Cost</u>	<u>Developable Acres</u>	<u>Recommended Fees (Cost per Net Acre) (\$/AC)</u>
Upper Etiwanda	21,039,949	2,150	9,790
San Sevaine	46,088,407	10,472	4,405
Totals	\$67,128,356	12,622 acres	

FUNDING OF PROJECT

The preparation of a fair share cost allocation analysis and adoption of a fee program is necessary to help insure that properties benefitting from the project improvements will ultimately pay their fair share. However, since fees will not be collected and available for use until building permits are issued, a fee program by itself is insufficient to fund construction of all the planned improvements within a reasonable time period.

Construction of the project is anticipated to occur over a number of years and involve a number of individual construction projects, each of which would provide a meaningful level of improved flood/drainage protection to new development or mitigate its flows. As each construction project is defined, agreements will be needed between the jurisdictions and other parties (i.e. developers) which may be involved to cooperatively fund the costs of the project.

In some cases, developers may be required, as a condition of development, to construct improvements in excess of their fair share of project costs as determined by the fees applicable to their development. In such cases, water project fees may be used to reimburse developers for these excess costs in accordance with applicable City or County ordinances.

The County and the Cities of Fontana and Rancho Cucamonga are currently exploring other sources of funds and financing methods to help expedite construction of needed improvements. Methods of financing being considered include formation of assessment and Mello-Roos Community Facility Districts which could issue bonds, and applying for a Federal Bureau of Reclamation loan for up to \$29,600,000. In case such financing methods are used, revenues from fees would probably be used to repay the bonds/loans.

DRAINAGE PLAN

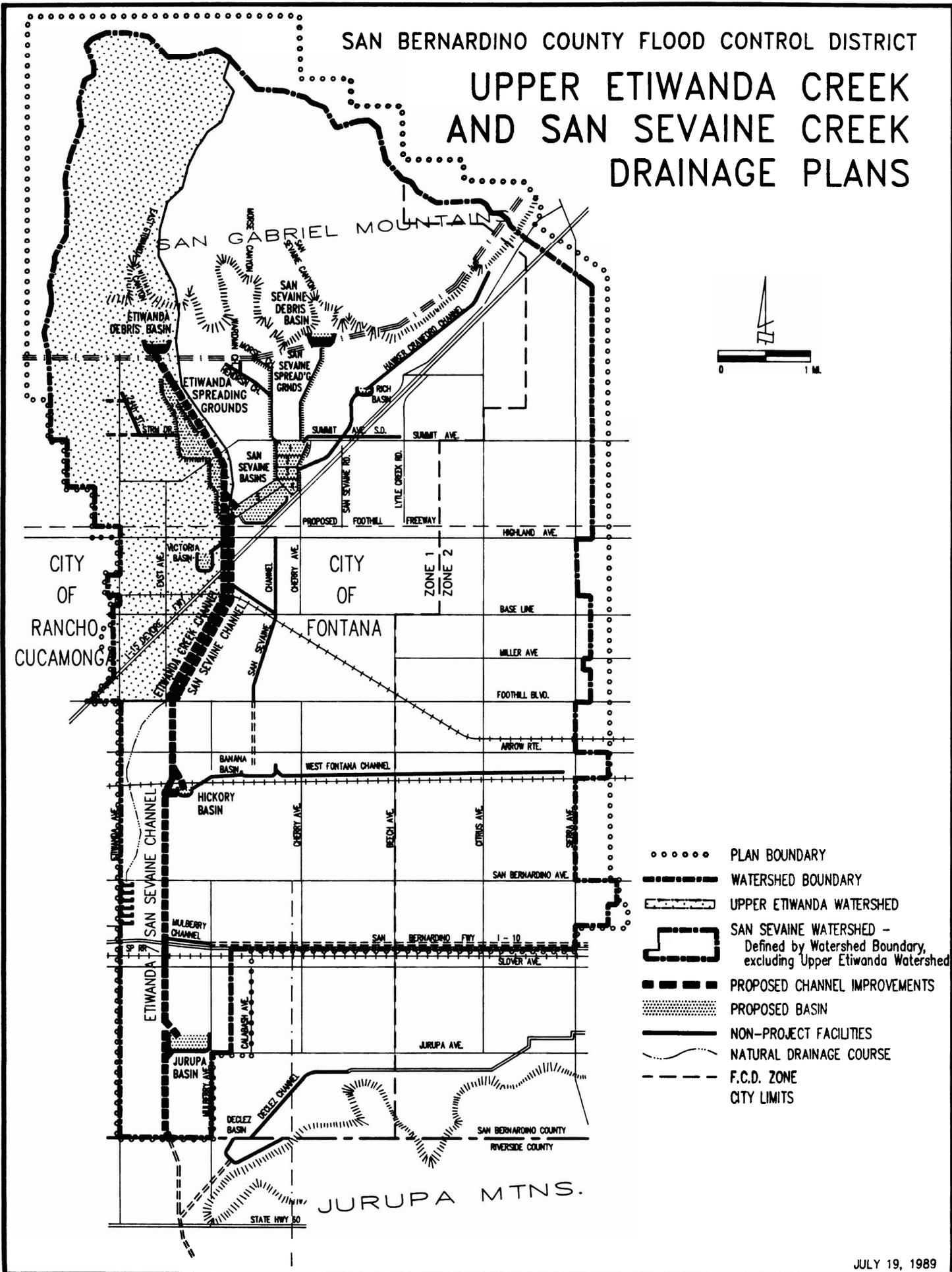
This drainage plan report covers both the Upper Etiwanda Creek and the San Sevaine Creek portions of the combined project (see Exhibits B and C). The Cities of Fontana and Rancho Cucamonga have worked closely with the County in developing the fee plan. Thus, the "IMPROVEMENT COST DISTRIBUTION AND RECOMMENDED FEE" (see page 2) represents the fair share cost allocation recommended by the staff representatives involved. However, since each jurisdiction may fund its share of the project using different mechanisms and sources of funds, all jurisdictions need not have identical fee plans.

The City of Fontana and the County are planning to consider adopting the same basic fees as indicated on page 2 for the respective drainage areas within their jurisdiction.

The City of Rancho Cucamonga adopted Resolution No. 89-379, establishing updated drainage improvement fees for all developments within the Etiwanda/San Sevaine drainage areas within the City on August 16, 1989. An implemented ordinance was adopted by the City Council on September 6, 1989.

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

UPPER ETIWANDA CREEK
AND SAN SEVAINE CREEK
DRAINAGE PLANS



- PLAN BOUNDARY
- WATERSHED BOUNDARY
- UPPER ETIWANDA WATERSHED
- SAN SEVAINE WATERSHED -
Defined by Watershed Boundary,
excluding Upper Etiwanda Watershed
- PROPOSED CHANNEL IMPROVEMENTS
- PROPOSED BASIN
- NON-PROJECT FACILITIES
- NATURAL DRAINAGE COURSE
- F.C.D. ZONE
- CITY LIMITS

JULY 19, 1989

EXHIBIT A

**UPPER ETIWANDA CREEK AND
SAN SEVAINE CREEK AREA DRAINAGE PLANS**

DISTRIBUTION OF COMBINED FACILITIES COSTS

TOTAL WATERSHED GROSS ACREAGE = 32,800 Ac.

UPPER ETIWANDA WATERSHED = 6,016 Acres (18.34%)
North of Foothill Boulevard

SAN SEVAINE WATERSHED = 26,784 Acres (81.66%)

COMBINED FACILITIES COST ESTIMATES:

HICKORY BASIN	\$ 1,498,768
JURUPA BASIN	\$ 4,194,032
CHANNEL CONSTRUCTION	
Foothill Blvd. to West Fontana Channel	\$ 4,716,860
West Fontana Channel to I-10 Freeway	\$ 7,912,850
I-10 Freeway to Jurupa Avenue	\$ 9,652,719
Jurupa Avenue to County Line	\$ 2,840,491

TOTAL **\$ 30,815,720**

UPPER ETIWANDA WATERSHED PROPORTION:

\$30,815,720 x 18.34% = \$ 5,651,603

SAN SEVAINE WATERSHED PROPORTION:

\$30,815,720 x 81.66% = \$ 25,164,117

TOTAL **\$ 30,815,720**

UPPER ETIWANDA CREEK AND SAN SEVAINE CREEK AREA DRAINAGE PLANS

SUMMARY AND COSTS

PROJECTED NET DEVELOPABLE ACRES

Upper Etiwanda Drainage Area	2,150 Acres
San Sevaime Drainage Area	<u>10,472 Acres</u>
TOTAL	12,622 Acres

ESTIMATED PROJECT COSTS: \$ 67,128,356

UPPER ETIWANDA SYSTEM

Etiwanda Debris Basin and Dam	\$ 3,216,780
Etiwanda Channel (I-15 to Debris Basin)	\$ 7,285,628
Etiwanda Channel (I-15 to Foothill Boulevard)	\$ 4,885,938
Share of Combined Facilities Costs (South of Foothill Boulevard)	\$ 5,651,603
TOTAL	<u>\$ 21,039,949</u>

SAN SEVAINE SYSTEM

San Sevaime Debris Basin and Dam	\$ 2,197,125
San Sevaime Spreading Ground and Levees	\$ 4,435,096
San Sevaime Basins 1 through 5	\$ 9,406,131
San Sevaime Channel (I-15 to Foothill Boulevard)	\$ 4,885,938
Share of Combined Facilities Costs (South of Foothill Boulevard)	\$ 25,164,117
TOTAL	<u>\$ 46,088,407</u>

RELATIONSHIP BETWEEN FEE AND DEVELOPMENT PROPERTY:

<p>UPPER ETIWANDA SYSTEM</p> $\frac{\$21,039,949}{2,150 \text{ Acres}} = \$ 9,790 \text{ per Acre}$	<p>SAN SEVAINE SYSTEM</p> $\frac{\$ 46,088,407}{10,472 \text{ Acres}} = \$ 4,405 \text{ per Acre}$
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UPPER ETIWANDA CREEK AND SAN SEVAINE CREEK
AREA DRAINAGE PLANS

FIVE YEAR PROJECT SCHEDULE -
PRIORITY LIST AND CONSTRUCTION
COST ESTIMATE BASED ON
JANUARY 1989 ENGINEERING NEWS RECORD
CONSTRUCTION COST INDEX (CCI) OF 5771

<u>PRIORITY</u>	<u>FIRST YEAR</u>	<u>ESTIMATED COST - \$</u>
1. San Sevaine Etiwanda Double Channel I-15 downstream to Foothill Boulevard		9,771,876
	TOTAL FIRST YEAR	9,771,876
	<u>SECOND YEAR</u>	
1. San Sevaine Basins Nos 1-5		9,406,131
2. San Sevaine Spreading Ground East and West Levees		4,435,096
3. Etiwanda Channel 1-15 Upstream to Debris Dam		7,285,628
4. Etiwanda Debris Basin and Dam		3,216,780
5. San Sevaine Debris Basin and Dam		2,197,125
	TOTAL SECOND YEAR	26,540,760
	<u>THIRD YEAR</u>	
1. Jurupa Basin		4,194,032
2. San Sevaine Channel I-10 to Jurupa Avenue		9,652,719
3. San Sevaine Channel Jurupa Avenue to Riverside County Line		2,840,491
	TOTAL THIRD YEAR	16,687,242
	<u>FOURTH YEAR</u>	
1. Hickory Basin		1,498,768
2. San Sevaine Channel AT&SF Railway (West Fontana Channel) Downstream to I-10		7,912,850
	TOTAL FOURTH YEAR	9,411,618
	<u>FIFTH YEAR</u>	
1. San Sevaine Channel Foothill Boulevard Downstream to AT&SF Railway		4,716,860
	TOTAL FIFTH YEAR	4,716,860
	<u>GRAND TOTAL</u>	<u>\$67,128,356</u>

UPPER ETIWANDA CREEK AND SAN SEVAINE CREEK

AREA DRAINAGE PLANS

ENGINEERS REPORT

DESCRIPTION

The San Sevaine Creek Water Project consisting of Upper Etiwanda Creek and San Sevaine Creek watershed area of approximately 51 square miles is bounded by the Riverside County line and the Decluz Channel watershed on the south, the Day Creek System on the west, the San Gabriel Mountains on the north, and Sierra Boulevard and Mango Avenue on the east. The drainage area includes portions of the Cities of Rancho Cucamonga and Fontana, as well as unincorporated areas of the County of San Bernardino. The San Sevaine Creek Water Project serves both the Upper Etiwanda Creek System and the San Sevaine Creek System. When funds become available and after certain features of the project are constructed, the two systems will be combined at Foothill Boulevard and flow south to the Riverside County line in combined facilities.

PURPOSE

The area is experiencing rapid growth and the needed flood control facilities can not be fully funded by traditional revenue sources. Supplemental funding sources must be developed if the major components of an adequate flood control system for the watershed are to be constructed.

The District's funding comes from property taxes, state aid on specific projects, rents and royalties, and local water agencies. The funding for existing flood control and water conservation facilities associated with the Upper Etiwanda and San Sevaine Creek's systems have been funded by the existing development. In addition, the ongoing operation and maintenance functions, paid out of the District's budget, have kept the flood hazards to a minimum. The funds generated from the past Zone 1 budget to acquire lands, easements, and rights-of-way, the construction of the existing facilities as well as the past expenditure for operation and maintenance of those facilities was generated by existing development

and is considered their contribution to the costs of the overall system. Many of the grading requirements of the existing Uniform Building Code did not apply to the existing development. In many cases, the natural catchment areas and flowpaths were left relatively undisturbed by development. Runoff rates were very different than exists under conditions of today's requirements.

This plan is a mechanism for financing improvements which will provide Regional Mainline Facilities necessary for flood protection in the watershed of San Bernardino County. All types of development will benefit from the construction of these facilities. The properties will not only be protected by the upstream canyon mouth and channel improvements but the lower channel and basins improvements will provide an outlet to convey and attenuate the higher peak flows from new development without adversely impacting downstream properties.

PROJECT DESIGN

In March 1983, a study entitled "Report on the Day, Etiwanda, and San Sevaine Creeks System Drainage Plan" was prepared by the engineering firm of Bill Mann and Associates for the San Bernardino County Flood Control District. That report, attached as Appendix "E-1", is in two volumes. Volume I is the text of the study and involves sections on hydrology, hydraulic design criteria, debris dam criteria, discussion of the proposed plan, and construction cost estimates.

The hydrological analysis sized the facilities necessary to provide 100 year capacity for the storm flows from the watersheds of these systems to the Riverside County Line. Volume II provides a preliminary plan and profile for the proposed improvements. The ultimate San Sevaine Creek Water Project will convey a 100 year attenuated peak flow of 12,100 cubic feet per second to the Riverside County line.

A report entitled "San Sevaine Creek System Facility Fee Study" was prepared by Bill Mann and Associates in February 1988. The purpose of that report, attached as Appendix "E-1c", was to develop cost data on which to base recommendations for development fees to fund the San Sevaine Creek Water Project. The unit prices used in the preliminary construction cost estimates of that report were updated to January of 1989 by Bill Mann and Associates in a letter, dated February 17, 1989, (see Appendix "E-1d").

BACKGROUND

The San Bernardino County Flood Control District has operated and maintained the majority of the existing facilities for several decades. These interim facilities consist of partially excavated basins, rock, and rail revetted channels and earth levees.

The United States Army Corps of Engineers prepared a "Report on Floods of January and February 1969" which described damages in portions of the West Valley of San Bernardino County following a storm approximately equal to a 100-year event. The properties immediately adjacent to the main stem of San Sevaine Creek was relatively undeveloped at the time of the event. Flood flows on the San Sevaine Creek channel eroded the earth channel along most of its length and damaged agricultural, residential, and highway properties. Flood flows on the Upper and East Etiwanda portion of San Sevaine Creek damaged property along the entire length of the stream.

Subsequent to the storms of 1969, additional improvements were made to the flood control facilities to provide interim protection to developed properties. Today's existing Flood Control District facilities, water conservation basins, and natural catchment areas of the watershed have been adequate during the interim to convey modest storm flows with little damage to private or public lands. They are not considered adequate to handle the flows from the higher runoff rates anticipated from additional development.

Currently Upper Etiwanda Creek dewaterers through an existing box culvert under Foothill Boulevard into an existing natural flowpath and flows from severe storms have historically inundated a wide area. The existing Etiwanda Creek facilities south of Foothill Boulevard are not operated or maintained by the Flood Control District. The area east of Etiwanda Avenue is included in the plan boundary. The City of Ontario, in conjunction with developers, has recently constructed a reach of Lower Etiwanda Channel which will serve the area to the west of Etiwanda Avenue and eventually be connected to Wineville Basin, a part of the Day Creek System.

New development changes the characteristics of the watershed. Natural catchment areas are eliminated or altered to insure adequate drainage of development areas. Recontouring and compaction during grading for development and the addition of streets, paved areas, buildings, and other facilities in the development substantially reduces the percolation capabilities of the soils. The alteration of the natural characteristics of the watershed generally results in increased rates of runoff and higher peak flows.

In the last few years, major developers have been conditionally required to improve portions of the flood control system to the ultimate design outlined in the Bill Mann report and mitigate any increased flows. The majority of the flood control facilities serving the area are, however, still interim facilities such as earth channels, rail and wire revetted channels, and unimproved basins. These interim facilities will not be adequate to convey the higher rates of runoff generated by additional development much less major storm events such as experienced in 1969.

WATERSHED DYNAMICS

In accordance with the existing San Bernardino Hydrology Manual, in estimating loss rates for design hydrology, a watershed curve number (CN) is determined for each soil-cover complex within the area. The working range of CN values is between 0 and 98, where a low CN indicates low runoff potential (high infiltration). Selection of a CN takes into account the major factors affecting loss rates on pervious surfaces including the hydrologic soil group, cover type and quality, and antecedent moisture condition (AMC).

Also, included in the CN selection are the affects of "initial abstraction" (IA) which represents the combined effects of other effective rainfall losses including depression storage, vegetation interception, evaporation, and transpiration among other factors.

The permeable portions of a watershed experience an initial soil-moisture storage identified as Upper Zone Tension which must be totally filled before moisture becomes available to enter other storages. Tension water is the water that is closely bound to the soil particles. Upper Zone Tension represents that volume

of precipitation which would be required to meet all the interception requirements and to provide sufficient moisture to the upper soil mantle so that percolation to deeper zones can begin. In undeveloped watersheds this action is generally uniform, based on soil types in the watershed. The addition of impervious areas such as parking lots, rooftops, and adjacent concreted areas inhibits this natural penetration. Compaction and the nature of the top soil brought into an area for landscaping also varies the ability of the soils in the Upper Zone to provide percolation to lower levels.

When the Upper Zone Tension has been filled, excess moisture is temporarily accumulated in the Upper Zone Free Water. Free Water is that which is not bound to soil particles and it is free to descend vertically to deeper portions of the soil mantle or to move laterally through the soil (inter-flow).

The rate of vertical drainage, i.e. the percolation to deeper soils is controlled by the contents of the Upper Zone Free Water and the deficiency of the lower zone moisture volumes. The preferred path for moisture in Upper Zone Free Water is considered to be downward as percolation. Lateral flow in the form of inter-flow occurs only when the rate of precipitation exceeds the rate at which downward motion can occur from the Upper Zone Free Water. When the precipitation rate exceeds the rate of vertical percolation and lateral drainage (inter-flow), surface runoff occurs. Under this synopsis, surface runoff is a highly rate dependent on the volume of rainfall with the rate of runoff being determined by the rate of precipitation application and the degree of dryness of the various zones.

REASONABLE COST DISTRIBUTION

The general plans for additional open space for new developments will dictate the amount of pervious area (open space) each type of development will have. Studies based on the existing San Bernardino County Hydrology Manual for different development types in the San Sevaine Watershed have shown the rate of surface runoff to be different for the different anticipated intense land uses but not to a substantial degree (within 11%). Typically, the ratio of public street rights-of-way to gross acreage being developed is greater for most residential types of development than for commercial and industrial developments. The fee is to be

charged on a per net developable acreage exclusive of required public street offers, dedications, and lands granted for District Flood Control improvements. Therefore, these development requirements also tend to compensate for the recognized differences in runoff from the different types of developments.

The facilities to be constructed are sized to convey the flows from a 100 year event similar to the one experienced in 1969 in an adjacent watershed. In the 1969 event, the rain persisted for 30 days and the ground was nearly totally saturated, unable to accept additional moisture to the soil zones even in the pervious areas.

Existing developed properties have provided the majority of the funds for the existing channels, levees, basins, and road crossings which have been adequate to handle flows from recent storm events. The value of the lands, easements, and rights-of-way acquired for the construction of the existing facilities, ultimate improvements, and maintenance debris disposal areas. The acquisition of these lands is a significant contribution to area flood protection and water conservation costs. The contributions by existing development is considered as their share of the overall water project costs.

The single greatest contributor to the increased rate of runoff is the alteration of the topographics of the watershed regardless of the type of development. The grading requirements dictated by Chapter 70 of the Uniform Building Code (UBC) as well as compaction requirements for developments greatly alter the natural characteristics and ability of the soil zones to absorb moisture. For this reason and the overall area benefit from the improvements, to accommodate the higher peak flows, it was determined that a per acre fee on developing lands within the watershed is reasonable regardless of the development type.

THE PLAN AREA

The boundary of the drainage plan depicted on Exhibit "A" conforms to the general watershed boundary. The boundary between the Upper Etiwanda Creek and the San Sevaine Creek subareas reflects the anticipated routing of drainage in the fully developed condition. All areas that will drain to the San Sevaine Creek facilities are intended to be within the plan area boundary. Development may result in minor

changes to the drainage pattern through the installation of local storm drains and streets. The Cities and the County will be responsible for reviewing all developments within their jurisdictions. Appropriate facilities should be conditionally required to protect the proposed development and to insure that mitigation measures are provided to protect downstream properties from the impacts of upstream development.

At the time of development, properties lying within the area drainage plan should contribute to the costs of the mainline improvements as well as comply with improvement standards imposed as a condition of development. If a developer of a property lying within the boundary can clearly show that their development is not contributing flows to the San Sevaine Creek Project they may apply for a waiver of the fee through the Building Official's Office.

Drainage plans are being developed for adjacent Day Creek drainage area to the west and Rialto channel to the east. The final design of the developments and road patterns will determine in which plan a development should participate.

Once again, the reviewing agency will make a determination of conformance with current and future hydrology as the watersheds are developed. Upon annual review of the plans, adjustments to the boundaries may be recommended to the Board of Supervisors if determined to be appropriate.

ESTIMATION OF DEVELOPABLE LANDS

The consultant firm of Flory, Olson, and Van Osdel, Inc. (FOVO), prepared a report, dated March 1989, providing an analysis of anticipated net developable acres for the project drainage area. The purpose of the report was to provide an estimate of net developable acreage in the drainage area as a basis for allocating the costs of the San Sevaine Creek Water Project drainage facilities. A copy of this report is included as Appendix "E-2" of this report.

On March 30, 1989, a meeting with the Cities and the County was held to discuss a recent master plan of drainage for a development in the City of Rancho Cucamonga which would redirect approximately 105 acres of the Upper Etiwanda Creek drainage to the San Sevaine Creek side of the system. The net developable acreage figures have been revised from the FOVO report to reflect the changes. A copy of the letter from Rancho Cucamonga explaining the change, is attached as Appendix "E-3".

COMMUNITY REVIEW

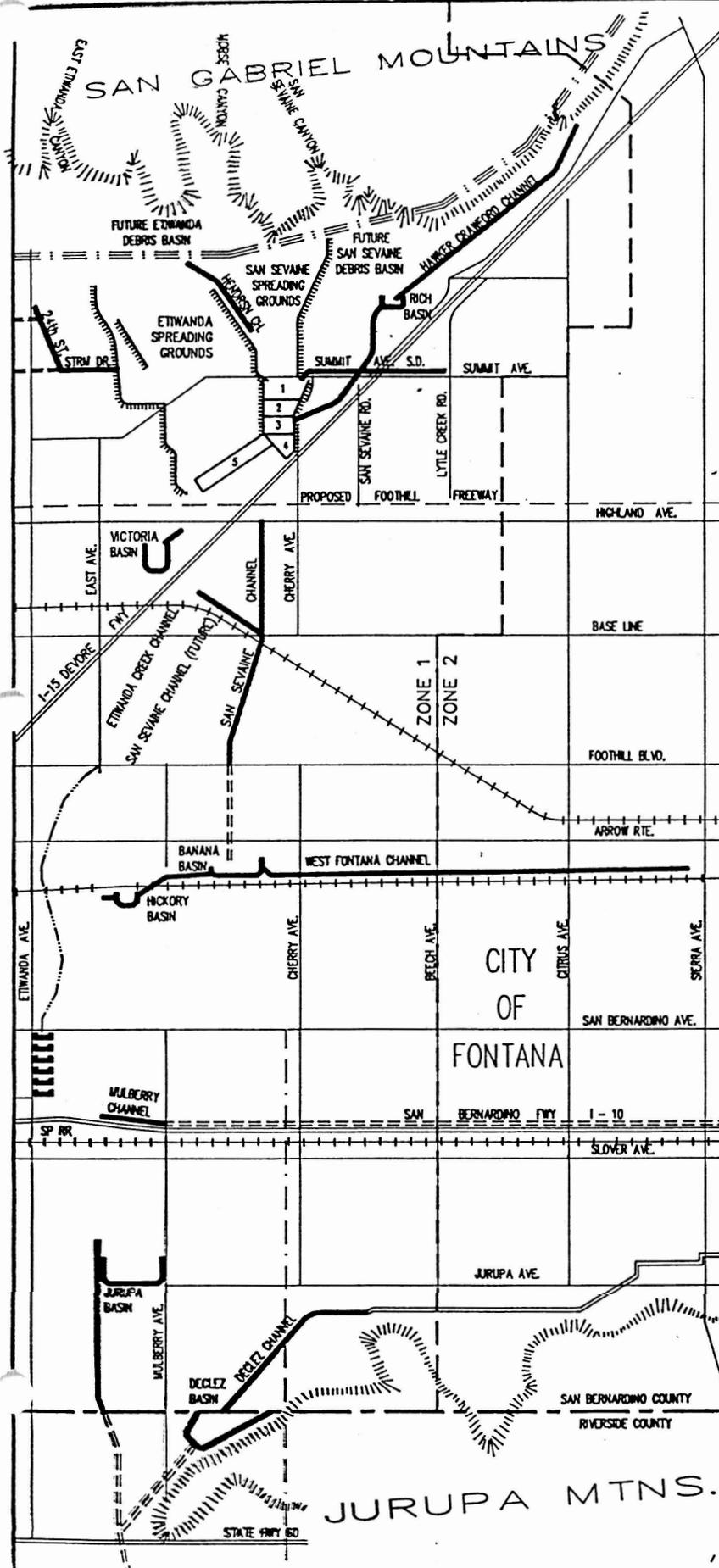
Steering and Technical committees consisting of major property owners and representatives of the Cities and County have met periodically to discuss the study results and make recommendations for construction and financing of the proposed improvements. The plan was presented in a preliminary form at a public meeting on April 27, 1989 and to the County Planning Commission on May 4, 1989. A public hearing before the San Bernardino County Board of Supervisors is scheduled for September 11, 1989.

ENVIRONMENTAL ANALYSIS

An Environmental Impact Report was prepared by Planning Network and Bill Mann and Associates for Day Creek Water Project; Day, Etiwanda, and San Sevaine Creeks Drainage Plan; and Master Plan for the San Sevaine Channel (SCH #84082015) and is attached as "Appendix 4". The EIR was certified by the Board of Supervisors on June 10, 1985 and the projects it addressed were approved by the Board of Supervisors on February 24, 1986. The Environmental Analysis Team of the County reviewed the proposed Area Drainage Facilities Plans and determined that the EIR adequately describes the impacts of the adoption of the Drainage Plans and fee ordinance. A copy of their findings is attached as "Appendix 4-a". (Note that at the time of their review, the Upper Etiwanda Creek was included under the name of "San Sevaine Creek Local Area Drainage Plan" but two distinct plans and associated fees were reviewed).

SAN BERNARDINO COUNTY
FLOOD CONTROL DISTRICT

SAN SEVAINNE CREEK
ENGINEER'S REPORT



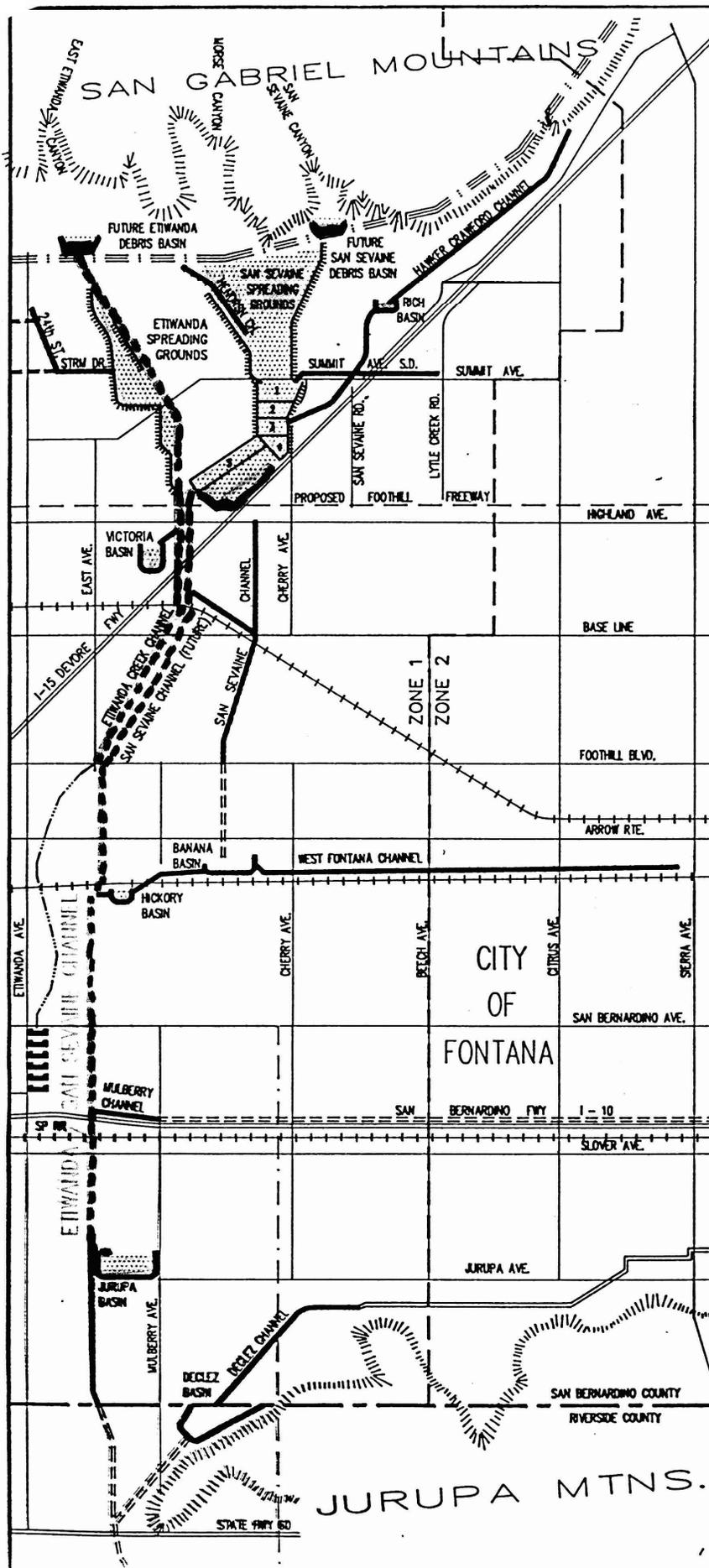
APPROXIMATE COSTS IN MILLION DOLLARS

ETIWANDA		SAN SEVAINE	
CHANNEL	WATER CONSERVATION	CHANNEL	WATER CONSERVATION
3.1 DAM TO BASINS	3.2 DAM	5.9 U/S OF FOOTHILL	8.2 DAM
1.6 BASINS TO FOOTHILL	.3 SPREAD. GROUNDS	3.3 FOOTHILL TO SFRR	1.7 SPREAD. GROUNDS
	.1 VICTORIA BASIN	5.4 SFRR TO 1-10 FWY	.1 RICH BASIN
		1.8 1-10 FWY TO JURUPA	1.6 BASINS
			1-4
			3.0 BASIN 5
			.7 HICKORY BASIN
			2.0 JURUPA BASIN
4.7 TOTAL	3.6 TOTAL	16.4 TOTAL	17.3 TOTAL

BUREAU OF RECLAMATION
 LOW INTEREST LOAN \$28,100,000
 LOCAL INTEREST PORTION \$14,000,000
 ESTIMATED GRAND TOTAL \$42,100,000

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT
SAN SEVAINE CREEK WATER PROJECT

- PROPOSED FACILITIES
- PROPOSED WATER CONSERVATION FACILITIES
- EXISTING FACILITIES
- NATURAL DRAINAGE COURSE



APPROXIMATE COSTS IN MILLION DOLLARS

ETIWANDA		SAN SEVAIME	
CHANNEL	WATER CONSERVATION	CHANNEL	WATER CONSERVATION
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		1.8 1-10 FWY TO JURUPA	1.6 BASINS 1-4
			3.0 BASIN 5
			.7 HICKORY BASIN
			2.0 JURUPA BASIN
4.7 TOTAL	3.6 TOTAL	16.4 TOTAL	17.3 TOTAL

BUREAU OF RECLAMATION
 LOW INTEREST LOAN \$28,100,000
 LOCAL INTEREST PORTION \$14,000,000

ESTIMATED GRAND TOTAL \$42,100,000

SAN BERNARDINO COUNTY FLOOD CONTROL DISTRICT

SAN SEVAIME CREEK WATER PROJECT

- PROPOSED FACILITIES
- PROPOSED WATER CONSERVATION FACILITIES
- EXISTING FACILITIES
- NATURAL DRAINAGE COURSE

ETIWANDA/SAN SEVAINE PROP OWNERS
 (HUNTER'S RIDGE SHOWN)

10F

W1-43d

