

**RIVERSIDE COUNTY FLOOD CONTROL
AND WATER CONSERVATION DISTRICT
Riverside, California**

REPORT ON

**DAY CREEK
MASTER DRAINAGE PLAN**

Zone One

Date of Report

**Original Plan – June 1977
Revision No. 1 – November 1987
Revision No. 2 – January 1998**

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**DAY CREEK
MASTER DRAINAGE PLAN
(Revision No. 2)**

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SECTION I

PURPOSE

The purpose of this report is to investigate and evaluate the drainage problems within the Day Creek drainage area. Presently, this area is served by a report entitled "Day Creek Master Drainage Plan", prepared by the Riverside County Flood Control and Water Conservation District (District) in June 1977 and its revision of January 1988. The report presented here is a re-evaluation and expansion of that 1977 report and its 1988 revision, and is meant to replace it. This revision will provide adequate flood protection to the community when implemented and will serve as a guide for the long term scheduling for construction of the proposed major drainage facilities. It will also act as a planning guide for the location and size of local drainage facilities to be constructed by developers and others within the area.

SECTION II

SCOPE

The drainage area covered by this plan is approximately 8.0 square miles in size. It covers unincorporated lands of the County of Riverside. The plan area is bounded roughly by Philadelphia Street on the north (County Line), 68th Street and Holmes Avenue on the south, Interstate 15 Freeway on the west, and Marlatt Street on the east. The extent of the studies establishing this master plan includes:

1. Determination of the quantity and points of concentration of storm runoff in the area.
2. Preparation of a drainage facility map.
3. Determination of the location, size and capacity of the proposed drainage structures.
4. Investigation of alternatives as a basis for selecting the most effective plan.
5. Preparation of supporting cost estimates.

SECTION III

GENERAL DISCUSSION

The proposed drainage plan involves the construction of several detention basins, one major open channel, and a network of underground storm drains. The drainage system will collect flows from local runoff and transport the flows to the Santa Ana River. This plan can generally be divided into two separate study areas divided by Wineville Road.

East of Wineville Road, a significant degree of flood protection presently exists since the construction of Day Creek Channel from the Riverside Basin (owned and operated by the San Bernardino County Flood Control District) located to the west of the Mira Loma Space Center, down to Limonite Avenue. Several facilities have been built by developers and connected to Day Creek Channel. Notable among them are:

1. Mira Loma Ventures (PM 23836)
2. Ford Mira Loma (PP 10689)
3. Industrial Park Mira Loma (PP 14689)
4. Lateral "A" (Tract 7309)
5. Parkhurst Street Storm Drain (PM 23738)

The Price/Costco (PP 14420) and Watkins Motorlines, Inc. (PP 14480) drainage systems are presently under construction.

Only two major facilities in the 1977 report were proposed to partially service the area west of Wineville road (Laterals "C" and "D"). Since development within this area is expected to increase within the next several years, additional facilities will be needed. The area has been studied to reflect the most recent projected land use. Proposed facilities include two detention basins and the addition of two backbone storm drains.

The Master Drainage Plan (MDP) presented herein provides an economical method of collecting and conveying storm runoff through the study area. When completed, the facilities will provide the area with improved drainage and a high level of flood protection.

It should be noted that this report is a master plan, and therefore, should be read and used with this in mind. Simply stated, this plan is an overview; a study of the drainage problems that exist in a specific geographical area and provides a conceptual solution to those problems. As stated elsewhere in this report, the selection of the facilities presented in this plan is based on engineering and economic considerations but is by no means the only solution.

The alignment and location of the facilities proposed in this MDP are general; precise facility locations will be determined at the time of design. Similarly, the sizing information shown on the enclosed map is preliminary. A more detailed analysis performed at the design stage will determine final sizing.

SECTION IV

CRITERIA

All underground storm drains proposed in this plan are intended to collect local urban runoff and, with few exceptions, are located either in existing or proposed street rights of way. Runoff from a 10-year frequency storm is assumed to be conveyed in the streets until flow depths reach the top of curbs. At this point, the plan proposes the initiation of an underground drain, which will intercept and convey the entire 10-year storm runoff to an outlet downstream. Flows exceeding the 10-year frequency storm will generally be carried within curb faces of the street. If the runoff from the 100-year storm exceeds the right of way capacity of the street/storm drain combination, then the plan increases the size of the 10-year storm drain to capture and convey the entire 100-year storm runoff.

The alignments of all drains and channels are based on existing and proposed development, street patterns, flow paths, the ability to drain problem areas, and economics. Insofar as possible, the existing system should be utilized as part of the ultimate system in order to avoid duplication and unnecessary costs.

In addition to the criteria mentioned above, flood control facilities are proposed when:

1. Relief for an overload existing drain is necessary
2. Economic consideration dictates a diversion from the normal path of storm flows
3. Cross flows at major road intersections need to be minimized

SECTION V

HYDROLOGY

The hydrology for the plan was developed by two methods: the Modified Rational Method and the Synthetic Unit Hydrograph Method. The Modified Rational Method was used to determine the peak discharges generated from small watersheds (generally less than 300 to 500 acres in size). The Synthetic Unit Hydrograph Method was used for larger areas in generating the peak discharge rates for sizing major drainage facilities, and for the routing of the proposed detention basins.

Methodology and supportive data for the Rational and Synthetic hydrology can be found in the "Riverside County Flood Control and Water Conservation District Hydrology Manual", dated April 1978. The design discharges used in sizing all future appurtenant facilities in the study area were determined by one of these two methods. A map showing the complete drainage plan and location of major existing and all proposed facilities is included in the rear of this report.

New hydrology was generated for this plan to reflect currently projected land use. The projected land use was based on the Jurupa Community Plan as amended through May 1995, certain specific plan developments and overall development pattern assumed by the District.

SECTION VI

EXISTING FACILITIES

Several existing storm drains and a concrete lined channel are located within the Day Creek area watershed. These lines have been constructed by various agencies during the past decades. Those that are utilized directly by the plan were assigned "names" for ease of reference in this report. A brief description of these existing lines, which are an integral part of the master plan, is presented in this section. All major existing facilities are shown on the MDP map in the rear of this report.

DAY CREEK CHANNEL – STAGES 1 THROUGH 5 – This is a concrete lined open channel and is the main facility through the study area. This channel conveys flood flows through the area and provides an outlet for the existing local drainage projects. It begins as a trapezoidal channel at the Riverside Basin, located to the west of the Mira Loma Space Center north of

Mission Boulevard. The channel then proceeds southeasterly, running parallel to the Union Pacific Railroad tracks, to a transition to a rectangular channel with a splitter wall, 1,300 feet west of Etiwanda Avenue, at the northwest corner of Mission Boulevard and the Pomona 60 Freeway. This rectangular channel then transitions to a double cell RCB that passes under Union Pacific Railroad tracks, Pomona 60 Freeway, and Mission Boulevard.

South of Mission Boulevard the double RCB transitions to a trapezoidal concrete channel. This trapezoidal channel then runs southerly, following approximately what was Day Creek's natural watercourse, down to and across Limonite Avenue, where it transitions to an improved earthen swale that ends in the Santa Ana River. The reach between Limonite Avenue and Lucretia Avenue has not yet been constructed and is included in the recommended improvement discussion on Page 7. Day Creek Channel from Riverside Basin down to Limonite Avenue has been designed to carry the 100-year frequency runoff from local drainage.

CALTRANS FACILITIES – To protect the Pomona 60 Freeway from being overtopped by floodwaters that may pond to the north of the freeway, Caltrans built several culverts passing under the highway. There is a 6'W x 4'H reinforced concrete box (RCB) located approximately 550 feet west of Wineville Road draining an area of approximately 98 acres. This drain discharges its waters north of Riverside Drive.

Between Wineville Road and Day Creek Channel there are two single 5'W x 2'H RCB's both draining a total area of about 104 acres. These two RCB's pass under Riverside Drive dumping their floodwaters into the open field.

Just east of Day Creek Channel a double 5'W x 5'H RCB carries water from the Mira Loma Space Center under the freeway where it joins with a 60-inch RCP that drains the property at the northeasterly corner of Etiwanda Avenue north of the freeway. These combined flows then enter a triple 5'W x 5'H RCB under Van Buren Boulevard that transitions to a single 10'W x 6'H RCB before outletting in Day Creek Channel.

There is a 12'W x 6'H RCB at the northeast corner intersection of Interstate 15 Freeway and 68th Street that receives runoff from a 1,686 acre watershed. This watershed is roughly bounded by Wineville Road to the east, I-15 to the west, and Mission Boulevard to the north. Storm flows from this watershed pass under 68th Street via this RCB, outletting into a trapezoidal concrete-lined channel that runs parallel to the freeway toward the Santa Ana River. The RCB and channel were designed to handle the 100-year storm flows.

LATERAL "A" – This is an unlined trapezoidal channel that was constructed by developers in 1979. This earthen channel begins at the southwest corner of the intersection of Etiwanda Avenue and 54th street, and runs southerly along the west side of Etiwanda Avenue to the northern boundary of Tract 5923, where it extends westerly along an alignment between Tracts 7309 and 5923 to Day Creek Channel. This channel was designed to be used jointly as a flood control facility and an equestrian trail. It is maintained by the Jurupa Community Services District and is not considered adequate to carry the 100-year frequency runoff from local drainage. District's evaluation of this channel indicates that floods larger than the 10-year frequency storm could exceed its capacity.

LATERAL "B" – This is a storm drain built in 1979 by the developers of Sky Country (tract 5923), ranging in size from 36" to 54" RCP. This drain runs from Etiwanda Avenue west along Milky Way Drive, then southerly along Sunny Circle until it outlets into a double 36" CMP culvert under Limonite Avenue. This storm drain is considered inadequate to carry the onsite plus offsite 100-year frequency runoff. District's evaluation of this facility indicates that floods larger than the 10-year frequency storm could exceed its capacity. Jurupa Community Services District owns and maintains this portion of the line. Downstream of Limonite Avenue, a small detention basin was constructed to regulate runoff from frequent low intensity storms. In 1983, a 60" RCP was constructed along the south side of Limonite Avenue to replace the small detention basin and to connect Lateral "B" with Day Creek Channel. This 60" RCP is owned and maintained by Riverside County Flood Control and Water Conservation District.

FORD MIRA LOMA DRAINS – This facility drains all the onsite and tributary offsite flows from the Ford auto distribution center to Day Creek Channel. Ford Mira Loma is located on the northeast corner of the intersection of Galena Street and Etiwanda Avenue. This facility was built by developers in 1990 and is divided into two reaches: Galena Street Storm Drain and Etiwanda Avenue Storm Drain. These two reaches were designed to convey the 100-year frequency runoff. Galena Street Storm Drain collects all the onsite runoff through a system that varies from a 24-inch RCP to a 14'W x 7'H RCB and extends along Galena Street from a collecting point about 2,000 feet east of Etiwanda Avenue to Day Creek Channel. Etiwanda Avenue Storm Drain captures all the tributary offsite runoff. This reach begins about 700 feet east of Etiwanda Avenue with a 60-inch RCP and extends westerly along the north property line to Etiwanda Avenue, where it turns south to join Galena Street Storm Drain system with a 66-inch RCP.

PARKHURST STREET – This facility was built by developers in 1990 and drains a 77-acre industrial park (PM 23738) located on the west side of Etiwanda Avenue between Harrel Street and Galena Street. This storm drain begins at the northeast corner of the intersection of Parkhurst Street and Thurston Lane and traverses downstream along Parkhurst Street and joins Galena Street Storm Drain. This facility ranges in size from 48" to 54" RCP and was designed to carry the 100-year frequency storm.

INLAND AVENUE – STAGES 1 AND 2 – This storm drain/channel system carries the 100-year frequency onsite runoff from the northeast portion of the Mira Loma Space Center down to Day Creek Channel. Inland Avenue Stage 1 was built in 1990 by developers of PM 23836-1 and varies in size from 30" to 72" RCP. This facility is aligned within the east portion of Venture Drive, then extends easterly along Inland Avenue to Progress Circle where it turns south to the tract boundary.

Inland Avenue Stage 2 was recently constructed by the developer of PP 14759. It picks up the flows from Stage 1, plus onsite runoff in a 72" RCP and extends southerly along Space Center Court outletting into an interim earthen channel some 950 feet south of Hopkins Street. This channel continues approximately 1,000 feet south, then joins an old dilapidated dirt ditch that continues southwesterly to Day Creek Channel. Both channels will be abandoned when the adjacent land is developed. Proposed Line N will carry the flows to Day Creek Channel.

VENTURE DRIVE – This storm drain/channel system with laterals carries the 100-year frequency onsite runoff of the northwest portion of the Mira Loma Space Center down to Day Creek Channel. This facility was built in 1990 by developers of PM 23836, Phases 2 and 3, and ranges in size from 36” to 78” RCP. It is aligned within the west portion of Venture Drive, stretching westerly to Universe Drive where it continues southerly to the tract boundary. This facility outlets into an interim earthen channel that extends southwesterly to join an old run-down dirt ditch that continues south to Day Creek Channel. These channels will be abandoned at the time the adjacent land is developed. Proposed Line P will carry the flows to Day Creek Channel. Universe Drive Lateral runs 630 feet in a north-south direction along Universe Drive, joining Venture Drive storm drain at Venture Drive.

PARK MIRA LOMA – This recently constructed facility drains 25-year onsite and tributary offsite storm flows from the Park Mira Loma Industrial Facility directly into Day Creek Channel. Park Mira Loma is located at the southwest corner of Riverside Drive and Day Creek Channel, approximately 1,000 feet south of the Pomona 60 Freeway. This facility is divided into two reaches. An 18” to 42” RCP storm drain at the northerly property limits conveys the tributary offsite runoff to Day Creek Channel. The other 18” to 42” RCP storm drain reach at the southerly portion of the site drains the onsite flows to Day Creek Channel.

To eliminate project runoff from spilling over onto the property to the south during an extreme event, adequate onsite storage (parking area) is available to pond the difference in runoff between the 100-year and 25-year events without inundating the buildings or contributing to offsite runoff.

SECTION VII

MAINTENANCE AND PROTECTION OF EXISTING FACILITIES

Caltrans presently owns and maintains all culverts crossing under both the Pomona 60 Freeway and Interstate 15 Freeway. Concrete-lined channels paralleling both freeways collect the corresponding tributary storm flows and deliver the runoff to these culverts. A vital part of the Day Creek MDP relies upon continued maintenance of these facilities, especially the 12’W x 6’H RCB under 68th Street that will operate as outlet of all the flows west of Wineville Road.

Jurupa Community Services District owns and maintains Lateral “A”, portions of Lateral “B”, and several small storm drain facilities draining directly to Day Creek Channel from the Sky Country development. Flow capacities have been analyzed in relation to the 100-year frequency discharges and upon completion of the MDP as proposed, Lateral “A” will be relieved of the overtaxing flows by Lateral “A-1”.

Mira Loma Space Center owns and maintains certain old and dilapidated facilities that will be abandoned or improved by the new MDP proposed facilities at the time of new development occurs.

SECTION VIII

RECOMMENDED IMPROVEMENTS

It should be noted that the recommended improvements discussed below are designed according to the criteria in Section IV of this report. These proposed facilities are shown on the MDP map in the rear of this report. Pertinent details and calculations for each facility are on file at the District.

DAY CREEK CHANNEL – STAGE 6 – This is the last segment extension of Day Creek Channel and runs southerly from Limonite Avenue to Lucretia Avenue. It will replace the existing earthen swale with a trapezoidal concrete lined section. The downstream portion of this channel from Lucretia Avenue to the river will be the existing low flow earth channel as this area is within the 100-year flood plain of the Santa Ana River.

LATERAL A-1 – This new facility initiates on the north side of Bellegrave Avenue at Martin Street. It is completely designed for 10-year frequency storm flows. The 100-year flow in excess of the 10-year storm will continue west on Bellegrave past Etiwanda Avenue to Day Creek Channel. It extends south along Martin Street to 54th Street, then west along 54th and Lucretia Avenue to Rigel Way where it turns northwest for some 200 feet before heading southwest to Day Creek Channel. This underground drain helps to relieve a serious insufficient drainage capacity in Lateral A.

LATERAL A-1.1 – Lateral A-1.1 is a storm drain that extends south from just north of 50th Street down to 54th Street where it joins Lateral A-1. Its purpose is to intercept all sheet flows west of Martin Street and to relieve flows on Etiwanda Avenue, a large traffic carrying street.

LATERAL A-1.2 – Lateral A-1.2 is an underground drain that extends westerly on 54th Street from the intersection of 54th and Ridgeview Avenue to Martin Street where it joins Lateral A-1.

LATERAL A-1.3 – Lateral A-1.3 is a storm drain that begins at Jurupa Road and goes 400 feet easterly to outlet into Lateral A-1 at Martin Street.

LATERAL A-1.4 – Lateral A-1.4 is an underground drain that begins at the intersection of 48th Street and Troth Street, extends southerly in Troth Street to 50th Street, and continues west in 50th Street to confluence with Lateral A-1 at Martin Street.

LATERAL A-2 – Lateral A-2 drains the intersection of 54th Street and Troth Street between Lateral A-1 and Line B. This lateral is an underground drain that extends southwesterly in a zigzag way following the natural low to Mechanics Way, where it joins Lateral A across Etiwanda Avenue.

LATERAL B – Lateral B will service the southeast portion of the master drainage area from Troth Street to Day Creek Channel. This line will be a major trunk line through the area and will serve as the outlet for an existing and proposed lateral facilities. At present time, existing Lateral B segment in Limonite Avenue drains the southeast corner of Sky Country development.

Lateral B is an underground drain that initiates on Troth Street picking up the 100-year storm flows in a sag on the street, then continues downstream closely following the existing natural low in a zigzag route down to Wagon Train lane. From here it goes west to Etiwanda Avenue where it continues south to Limonite Avenue. In Limonite Avenue it travels west to join the existing Lateral B segment.

LATERAL B-1 – Lateral B-1 provides an outlet for the area tributary to the intersection of Ridgeview Avenue and 58th Street. This lateral is an underground drain that extends southwesterly along the existing natural low to the confluence with Lateral B just north of Wagon Train Lane.

LINE C – Line C and laterals are required to drain a 427 acre tributary area in the mid-west portion of the MDP to the proposed detention basin located at the southwest corner of the intersection of Wineville Road and Bellegrave Avenue.

This line is an underground drain that initiates as the outlet pipe for the Watkins Motorlines, Inc., detention basin (PP 14480), and extends southerly along an assumed street down to Bellegrave Avenue, then easterly to the proposed basin mentioned above.

LATERAL C-1 – This storm drain collects the flows south of the realignment of Galena Street, between Wineville Road and Line C, and continues south to Bellegrave Avenue where it joins Line C.

LATERAL C-2 – This drain will help relieve the local drainage problem at the northwest corner of the intersection of Bellegrave Avenue and the I-15 Freeway. Lateral C-2 is an underground drain that extends 540 feet southerly to Bellegrave Avenue, then easterly some 700 feet to the junction with Line C.

LATERAL C-3 – Lateral C-3 storm drain will collect runoff flows north of the realignment of Galena Street between the I-15 Freeway and Line C, and convey them downstream some 980 feet southerly, then some 600 feet easterly to the junction with Line C.

LATERAL C-4 – Lateral C-4 will intercept runoff flows north of the existing Galena Street. This storm drain extends 520 feet westerly in Galena Street to its junction with Line C.

LATERAL C-5 – Lateral C-5 will intercept runoff flows north of the existing Galena Street. This underground drain extends 620 feet easterly in Galena Street to join Line C.

LATERAL C-6 – Lateral C-6 will intercept runoff flows north of the assumed extension of Inglebrook Street. This storm drain extends 520 feet westerly in Inglebrook Street to its confluence with Line C.

LATERAL C-7 – Lateral C-7 will catch runoff flows north of the assumed extension of Inglebrook Street. This underground facility extends 620 feet easterly to its junction with Line C.

LINE D – This storm drain begins as the outlet pipe for Turner Development detention basin (PM 25317), extending 1,190 feet southerly along an easement to the District, then 1,270 feet easterly along Galena Street to an outlet at Day Creek channel.

Line D is an important element of the overall plan, servicing 584 acres of drainage area in the northern central portion of this MDP. This drainage area is currently experiencing very large and significant development through construction of major industrial structures. Line D was selected as the preferred alternative among several alternatives studied during the generation of this revision and presented somewhere else in this report.

LATERAL D-1 – Lateral D-1 is an underground drain collecting the runoff from a 74 acre drainage area north of Galena Street within Turner Development (PM 25317). This storm drain facility begins in a sag on the street and extends 2,050 feet easterly in Galena Street to its junction with Line D. Lateral D-1 is designed to carry the 100-year storm flows.

LATERAL D-2 – Lateral D-2 begins in Riverside Drive capturing the flows delivered by an existing Caltrans reinforced concrete box located west of Wineville Road. It continues downstream in Riverside Drive to Wineville Road, where it collects surface flows from this intersection. It turns southerly in Wineville and extends down to Inglenook Street. At this point it goes east to a point of discharge into the proposed Turner Development detention basin (PM 25317).

LATERAL D-3 – Lateral D-3 is an underground drain proposed to relieve the flooding problem in undeveloped PM 26331. It begins at the middle of the parcel and continues south to the property line where it turns easterly, along an assumed extension of Harrel Street, to join Line D-2 at the intersection with Wineville Road. The need for this drain will become increasingly apparent as this 81 acre property develops.

LINE E – Line E is a storm drain that relieves drainage problems in an 82 acre tributary area along Wineville Road south of Galena Street. This line traverses south in Wineville Road to a point of discharging into the proposed basin at the southwest corner intersection of Bellegrave Avenue and Wineville Road (Bellegrave Detention Basin).

LATERAL E-1 – This lateral serves as an outlet for a 113 acre drainage area southeast of Galena Street and Wineville Road. Lateral E-1 is an underground drain that extends along a proposed extension of Jurupa Road down to Bellegrave Avenue. From here it goes southwesterly along Bellegrave Avenue to its junction with Line E. This drain will become increasingly needed as its tributary area develops.

LINE F – Line F serves the Price/Costco new development (PP 14420) located north of Harrel Street and east of Wineville Road. This new proposed development in the area has prompted a specific drainage study as part of this report. Several alternatives to address the control of tributary onsite/offsite storm runoff were analyzed and are presented in Section X of this report.

The preferred alternative drains 221 acres of combined onsite/offsite storm flows. It initiates with a storm drain connected to an existing 5'W x 2'H Caltrans RCB located 1,000 feet east of Wineville Road on Riverside Drive. It continues southeast to the east property line where it is joined by flows collected from a second 5'W x 2'H Caltrans RCB, then it goes south across Harrel Street to a point of discharge into the proposed Turner Development detention basin (PM 25317).

LATERAL F-1 – Lateral F-1 operates to collect onsite storm flows from the west and south side of the Price/Costco new development. It is an underground drain extending some 900 feet southerly, then easterly some 1,950 feet to its junction with Line F.

LATERAL F-2 – Lateral F-2 carries runoff from an existing 5’W x 2’H Caltrans RCB, located on Riverside Drive 2,270 feet east of Wineville Road, downstream to Line F. This drain will help relieve the local drainage problem created by Caltrans outlet.

LATERAL F-3 – Lateral F-3 is an underground drain collecting onsite runoff from the mid area of Price/Costco new development. It extends easterly some 800 feet, then northerly some 400 feet to its junction with Line F.

LATERAL F-4 – Lateral F-4 will capture onsite runoff between buildings. This storm drain runs easterly some 800 feet to its junction with Line F.

LATERAL F-5 – Lateral F-5 will help relieve drainage problems in the northwest corner of the Price/Costco new development. This storm drain extends some 500 feet easterly to its junction with Line F.

LINE G – Line G is an underground drain which services the tributary area between Harrel Street and north Galena Street and runs 1,150 feet easterly to its junction with Day Creek Channel.

LINE H – Line H is an underground drain intercepting runoff flows from an area between Bellegrave Avenue and Galena Street, east of Temporary Parcel Map 26346. It begins just south in Galena Street and extends downstream along the east property line of TPM 26356 (proposed Lucretia Avenue) to Bellegrave Avenue, then goes northeasterly about 1,200 feet along Bellegrave to an outlet into Day Creek Channel.

LATERAL H-1 – Lateral H-1 is an underground drain that helps relieve a sump condition in Bellegrave Avenue. This lateral extends about 600 feet northeasterly in Bellegrave Avenue to its junction with Line H.

LINE I – This is the outlet pipe for the existing Jurupa Valley High School detention basin. This storm drain begins at the northeast corner of the intersection of Etiwanda Avenue and Bellegrave Avenue, and extends about 1,950 feet southwesterly along Bellegrave Avenue to an outlet into Day Creek Channel.

LATERAL I-1 – Lateral I-1 is a storm drain located between Etiwanda Avenue and Day Creek Channel. It starts south in Galena street and runs about 1,700 feet southerly to a point in Bellegrave Avenue where it joins Line I.

LINE J – Line J is the most prominent facility in this MDP besides Day Creek Channel. By the time line J joins the existing 12’W x 6’H Caltrans RCB in 68th Street, some 1,150 acres of tributary drainage area is accumulated.

Line J follows the proposed alignment for Street “A” in I-15 Corridor Specific Plan (Specific Plan 266). This drain begins as the outlet pipe for the proposed detention basin at the southwest corner intersection of Wineville Road and Bellegrave Avenue (Bellegrave Detention Basin). Line J also services the tributary area to the west of Wineville Road between Bellegrave Avenue and 68th Street, east of the I-15 freeway. The need for this drain will be increasingly evident as its tributary area is developed. Nevertheless, land holdings in this area are large parcels, allowing flood protection improvements to take several alternative forms. These alternatives are discussed in Section X of this report.

LATERAL J-1 – This is an underground drain running some 700 feet westerly in 68th Street to its confluence with Line J. This drain will help to relieve a sump condition in 68th Street.

LATERAL J-2 – Lateral J-2 will intercept all runoff flows from the southeast corner of I-15 Corridor Specific Plan. This storm drain flows downstream some 1,000 feet westerly to its junction with Line J.

LATERAL J-3 – Lateral J-3 will collect the runoff flows in a low within a Southern California Edison easement in the southwest portion of I-15 Corridor. This storm drain flows some 250 feet southeasterly to its junction with Line J.

LATERAL J-4 – Lateral J-4 will collect the sheeting flows from an area south of the I-15 Freeway interchange with Limonite Avenue. This storm drain extends in an assumed street some 450 feet easterly to its confluence with Line J.

LATERAL J-5 – Lateral J-5 is a storm drain proposed to collect the runoff from an area north of the I-15 interchange with Limonite Avenue. This drain is located along Limonite Avenue and goes downstream some 950 feet easterly to its junction with Line J.

LATERAL J-6 – Lateral J-6 is an underground drain that begins in Wineville Road some 700 feet north of Limonite Avenue. This drain would collect the contributing runoff flows in Wineville and help to alleviate the flooding problem in the large traffic carrying intersection of Wineville Road and Limonite Avenue. This drain continues downstream along Limonite to its confluence with Line J.

LATERAL J-7 – Lateral J-7 is a storm drain that would relieve the flooding problem in a proposed street north of Limonite Avenue. This drain extends 900 feet easterly to its confluence with Line J.

LATERAL J-8 - Lateral J-8 will drain the northwest portion of I-15 Corridor Specific Plan. This storm drain begins south in Bellegrave Avenue and goes downstream to a future planned street, where it turns east to its confluence with Line J.

LINE K – Line K will intercept all the runoff flows in Wineville Road, south of Limonite Avenue. This storm drain begins at the intersection of Wineville Road and 64th Street and extends southerly along Wineville Road and across 68th Street to an outlet point in Santa Ana River flood plain.

LINE L – Line L storm drain would begin capturing runoff flows from an existing sump condition in Smith Avenue and go southerly downstream to 64th Street, then easterly to Dana Avenue where it turns south again to a low point in the street before outletting into Day Creek Channel just north of Holmes Avenue.

LINE M – Line M is an underground drain collecting surface flows at the intersection of Dana Avenue and Holmes Avenue. This drain goes southerly along Dana Avenue to a local low in the street before going easterly to an outlet in Day Creek Channel south of Holmes Avenue.

LINE N – Line N is a 72” underground drain to be connected with the existing Inland Avenue Stage 2 storm drain along Space Center Court. This drain will be collecting onsite runoff flows south of Hopkins Street, west of Etiwanda Avenue, and will outlet them into Day Creek Channel following the alignment of the existing interim channels.

LINE O – Line O will be an underground drain carrying onsite flows from the mid-southern portion of the Mira Loma Space Center down to Day Creek Channel. It varies in size from 36” to 45” diameter RCP.

LINE P – Line P is a 78” underground drain to be connected with the existing Venture Drive storm drain along Universe Drive. This drain will collect onsite runoff flows southwest of Venture Drive and will outlet them into Day Creek Channel following the alignment of the existing interim channels.

LATERAL P-1 – Lateral P-1 is an underground drain that will intercept runoff coming from TPM 26489-1 south of Venture Drive and east of Universe Drive. This storm drain will vary in size from 24” to 66” RCP and will join Line P at Universe Drive.

BELLEGRIVE DETENTION BASIN AT SPECIFIC PLAN 266 – This 110 acre-feet storage capacity detention basin is proposed to reduce the peak inflow of 977 cfs coming from Line C, Line E, and their respective laterals, down to 45 cfs and to provide additional flood protection for the proposed developments downstream. This basin requires a right of way take of 20 acres with a joint-use park/detention concept as a means to reduce the amount devoted to the exclusive use of storm water detention. This basin is proposed to be located at the southwest corner of Wineville Road and Bellegrave Avenue and is completely incised.

TURNER DETENTION BASIN AT PARCEL MAP 25317 – This 49 acre-feet storage capacity detention basin is projected to cut down the peak inflow of 779 cfs coming from Line F, Line D-2, and their respective laterals, down to 267 cfs to reduce the size of outlet Line D. This basin is not proposed as a joint use facility and requires a right of way take of 7 acres and is completely cut into the ground.

WATKINS DETENTION BASIN AT PLOT PLAN 14480 - This 8.5 acre-feet volume detention basin, located within Watkins Motor Lines Transfer facility (PP 14480) is being constructed to detain the peak differential between the undeveloped and developed condition

runoff in the 100-year, 24-hour storm event. Peak inflow of 122 cfs is dropped down to a pipe outflow of 20 cfs. This basin requires a right of way take of 2 acres and a maximum embankment height of 6 feet. The cost savings to proposed Line C downstream justify inclusion of this basin in the Master Drainage Plan.

SECTION IX

INLETS

Inlets and their proper locations are an integral part of any drainage or flood control system. Inlets provide the means of intercepting uncontrolled flows and directing them into channels and storm drains. Most of the inlets to be used in this master plan will be curb opening type catch basins. Field investigation and topographic information have been used to establish the general location of the proposed new inlets. Existing inlets have been also been identified which can be utilized in the proposed system. It should be noted that the catch basin openings proposed are intended to be used as a guide only. The precise location and size of the opening required for any system should be determined at the time of final design, and should reflect changes that may have already occurred during the intervening period.

SECTION X

ALTERNATIVE STUDIES

Several alternatives were developed and studied during the generation of this Revision to Day Creek Master Plan. These alternatives considered different alignment schemes for the major storm drains; different sizing of the proposed detention basins; and various hydraulic considerations. As the study progressed, alternates considered for the main facilities proposed in this plan were presented to the District management and staff. General concurrence with the plan selected was obtained based on cost differentials, accessibility to collector drains, and ease of construction.

Alternate studies for conveying together Line F, Line D-2 and lateral flows around the mid northern area of this plan were made. These studies involved the construction of different storm drains along differing alignments, with or without detention basin. The first of these alternatives considered using three independent major lines to intercept the local flows at Riverside Drive, Harrel Street and Wineville Road/Galena Street, and transport them easterly to Day Creek Channel. No detention basin was considered. This alternative was abandoned because of greater costs.

The second alternative contemplated two independent major lines to intercept the local flows at Harrel Street and Wineville Road/Galena Street and transport them easterly to Day Creek Channel. No detention basin was considered. This option was more costly than the proposed project and was abandoned.

The third alternative considered one separate line intercepting the local flood waters at Riverside Drive and conveying them easterly to Day Creek Channel, plus two independent lines capturing local flows at Harrel Street and Wineville Road and confluencing them at a detention basin in PM 25317. A fourth line serves as outlet, taking the regulated flows downstream to Day Creek Channel. This alternative was also abandoned in favor of the recommended project due to cost.

The final and selected alternative considered two independent lines capturing the runoff at Harrel Street/Riverside Drive (Line F) and Wineville Road (Line D-2), and confluencing them at Turner detention basin in PM 25317. A third line (Line D) is an outlet storm drain taking the regulated flows downstream to Day Creek Channel.

Alternate studies to solve the flooding problem in the west side of the MDP were also made. As in the previous system, several storm drains along different alignments, with and without a detention basin, were analyzed.

The first alternative consisted of capturing all storm flows to the west of Wineville Road and conveyed them southerly in a single major line (Line J) from Watkins Motor Lines Transfer facility down to the existing Caltrans RCB in 68th Street. The flows tributary to Wineville Road would be collected in another independent line (Line E) and the flows diverted at Limonite Avenue to Day Creek Channel. No detention basin is contemplated in this scenario. This alternative was abandoned due to hydraulic constraints and very high construction costs.

The second alternative is identical to the previous one but eliminates the diversion of Line E by connecting it to Line J at Limonite Avenue. In this scenario, the size of Line J is tremendously increased south of Limonite Avenue. No detention basin was considered in this alternative and it was abandoned due to greater costs.

In the third alternative, all flows north of Bellegrave Avenue are collected by Line C and Line E and routed through the proposed Bellegrave detention basin located at the southwest corner of Wineville Road and Bellegrave Avenue. The routed flows and local runoff tributary to Wineville Road are diverted at Limonite Avenue to Day Creek Channel. All runoff south of Bellegrave Avenue and to the west of Wineville Road would be collected by Line J and conveyed southerly to the existing Caltrans RCB in 68th Street. This alternative was also abandoned due to high construction costs.

The fourth alternative considered collecting the flows with Line C and Line E north of Bellegrave Avenue and routed them through the proposed Bellegrave detention basin located at the southwest corner of Wineville Road and Bellegrave Avenue. The routed flows and local tributary runoff north of Limonite Avenue are diverted to Day Creek Channel. Storm waters south of Limonite Avenue are conveyed by Line J downstream to the existing Caltrans RCB in 68th Street. This option was more costly than the proposed project and it was abandoned.

The fifth and selected alternative considered Line C and Line E collecting all flows to the north of Bellegrave Avenue and routing them through the proposed Bellegrave detention basin situated at the southwest corner of Wineville Road and Bellegrave Avenue. The routed flows and all

tributary runoff of the area south of Bellegrave Avenue are conveyed by Line J downstream to the existing Caltrans RCB in 68th Street. No diversion is considered in this scenario. Not only is this alternative slightly more economical but the lack of a diversion makes construction of this alternative easier to stage.

SECTION XI

ESTIMATED COST

The Revision to the Day Creek Master Drainage Plan presented herein is an accumulation of the preferred features of all the alternative studies. This revision to the plan presents an economical drainage facility system while also effecting the least impact on the existing character of development within the study area.

The majority of the facilities are proposed as underground and aligned within existing or proposed street right of way. Property acquisitions will be required for any proposed detention basin or storm drain constructed on private land.

Storm drain facility costs were developed from current construction cost data researched by the District.

All prices tabulated herein were adjusted to reflect present 1997 cost levels and are shown in Table 1 "COST SUMMARY". These costs include necessary rights of way and 31% for engineering, administration, and contingencies.

SECTION XII

CONCLUSIONS

Based on the studies and investigations made for this report, it is concluded that:

1. The Day Creek area has experienced serious flooding problems in the past. As the area continues to industrialize and urbanize, these damages are expected to increase. A more orderly growth pattern can safely occur with the construction of these proposed facilities.
2. A drainage system is required to safely convey storm runoff through Day Creek area to Santa Ana River. This Revision to the Day Creek Master Drainage Plan presented in this report is the most feasible of the alternatives studied.
3. The Revision to the Day Creek Master Drainage Plan indicated therein will lend itself to a stage construction program as funds are available.
4. The total cost of the recommended improvements, including right of way, engineering, contingencies, and administration is estimated to be \$29,717,000.

SECTION XIII

RECOMMENDATIONS

It is recommended that:

1. The Revision to the Day Creek Master Drainage Plan, as set forth herein, be adopted by the Riverside County Flood Control and Water Conservation District's Board of Supervisors.
2. The Revision to the Day Creek Master Drainage Plan, as set forth herein, shall replace the Master Drainage Plan adopted in November 1977.
3. The Revision to the Day Creek Master Drainage Plan, as set forth herein, shall be used as a guide for all future developments in the study area and that such developments be required to conform to the plan insofar as much as possible.

TABLE 1
DAY CREEK MASTER DRAINAGE PLAN
COST SUMMARY

<u>FACILITY</u>	<u>CONSTRUCTION*</u>	<u>RIGHT OF WAY</u>	<u>TOTAL COST</u>
Lateral A-1	\$ 1,760,000	6,000	1,766,000
A-1.1	403,000		403,000
A-1.2	50,000		50,000
A-1.3	50,000		50,000
A-1.4	335,000		335,000
A-2	554,000	26,000	580,000
Lateral B	1,289,000	51,000	1,340,000
Lateral B-1	268,000	18,000	286,000
Line C	1,946,000		1,946,000
Lateral C-1	364,000		364,000
C-2	239,000		239,000
C-3	261,000	15,000	276,000
C-4	79,000		79,000
C-5	108,000		108,000
C-6	81,000		81,000
C-7	115,000		115,000
Line D	736,000	20,000	756,000
Lateral D-1	465,000		465,000
D-2	1,661,000		1,661,000
D-3	502,000		502,000
Line E	641,000		641,000
Lateral E-1	731,000		731,000
Line F	1,303,000	84,000	1,387,000
Lateral F-1	453,000	25,000	478,000
F-2	138,000	13,000	151,000
F-3	171,000	20,000	191,000
F-4	110,000	15,000	125,000
F-5	124,000	15,000	139,000
Line G	334,000		334,000
Line H	727,000		727,000
Lateral H-1	94,000		94,000

TABLE 1
DAY CREEK MASTER DRAINAGE PLAN
COST SUMMARY
(Continued)

<u>FACILITY</u>	<u>CONSTRUCTION*</u>	<u>RIGHT OF WAY</u>	<u>TOTAL COST</u>
Line I	418,000		418,000
Lateral I-1	290,000		290,000
Line J	\$ 3,921,000		3,921,000
Lateral J-1	166,000		166,000
J-2	188,000		188,000
J-3	51,000		51,000
J-4	78,000		78,000
J-5	135,000		135,000
J-6	251,000		251,000
J-7	190,000		190,000
J-8	503,000		503,000
Line K	544,000	7,000	551,000
Line L	305,000		305,000
Line M	103,000		103,000
Line N	586,000		586,000
Line O	507,000		507,000
Line P	590,000		590,000
Lateral P-1	758,000		758,000
Day Creek Ch. Stage 6	814,000		814,000
DETENTION BASINS:			
Bellegrave (SP 266)	1,230,000	850,000	2,080,000
Turner (PM 25317)	342,000	350,000	692,000
Watkins (PP 14480)	110,000	100,000	210,000
TOTALS	<u>\$28,102,000</u>	<u>\$1,615,000</u>	<u>\$29,717,000</u>

* Includes 31% for Engineering, Administration and Contingencies.

**RIVERSIDE COUNTY FLOOD CONTROL
AND WATER CONSERVATION DISTRICT
Riverside, California**

REPORT ON

**DAY CREEK
MASTER DRAINAGE PLAN**

Zone One

Date of Report

**Original Plan – June 1977
Revision No. 1 – November 1987
Revision No. 2 – January 1998**

**Date of Approval By
RCFC&WCD
Board of Supervisors**

**November 27, 1977
January 19, 1988
April 14, 1998**

**DAVID P. ZAPPE
General Manager-Chief Engineer**

**DAY CREEK
MASTER DRAINAGE PLAN
(Revision No. 2)**

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MAP

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SECTION I

PURPOSE

The purpose of this report is to investigate and evaluate the drainage problems within the Day Creek drainage area. Presently, this area is served by a report entitled "Day Creek Master Drainage Plan", prepared by the Riverside County Flood Control and Water Conservation District (District) in June 1977 and its revision of January 1988. The report presented here is a re-evaluation and expansion of that 1977 report and its 1988 revision, and is meant to replace it. This revision will provide adequate flood protection to the community when implemented and will serve as a guide for the long term scheduling for construction of the proposed major drainage facilities. It will also act as a planning guide for the location and size of local drainage facilities to be constructed by developers and others within the area.

SECTION II

SCOPE

The drainage area covered by this plan is approximately 8.0 square miles in size. It covers unincorporated lands of the County of Riverside. The plan area is bounded roughly by Philadelphia Street on the north (County Line), 68th Street and Holmes Avenue on the south, Interstate 15 Freeway on the west, and Marlatt Street on the east. The extent of the studies establishing this master plan includes:

1. Determination of the quantity and points of concentration of storm runoff in the area.
2. Preparation of a drainage facility map.
3. Determination of the location, size and capacity of the proposed drainage structures.
4. Investigation of alternatives as a basis for selecting the most effective plan.
5. Preparation of supporting cost estimates.

SECTION III

GENERAL DISCUSSION

The proposed drainage plan involves the construction of several detention basins, one major open channel, and a network of underground storm drains. The drainage system will collect flows from local runoff and transport the flows to the Santa Ana River. This plan can generally be divided into two separate study areas divided by Wineville Road.

East of Wineville Road, a significant degree of flood protection presently exists since the construction of Day Creek Channel from the Riverside Basin (owned and operated by the San Bernardino County Flood Control District) located to the west of the Mira Loma Space Center, down to Limonite Avenue. Several facilities have been built by developers and connected to Day Creek Channel. Notable among them are:

1. Mira Loma Ventures (PM 23836)
2. Ford Mira Loma (PP 10689)
3. Industrial Park Mira Loma (PP 14689)
4. Lateral "A" (Tract 7309)
5. Parkhurst Street Storm Drain (PM 23738)

The Price/Costco (PP 14420) and Watkins Motorlines, Inc. (PP 14480) drainage systems are presently under construction.

Only two major facilities in the 1977 report were proposed to partially service the area west of Wineville road (Laterals "C" and "D"). Since development within this area is expected to increase within the next several years, additional facilities will be needed. The area has been studied to reflect the most recent projected land use. Proposed facilities include two detention basins and the addition of two backbone storm drains.

The Master Drainage Plan (MDP) presented herein provides an economical method of collecting and conveying storm runoff through the study area. When completed, the facilities will provide the area with improved drainage and a high level of flood protection.

It should be noted that this report is a master plan, and therefore, should be read and used with this in mind. Simply stated, this plan is an overview; a study of the drainage problems that exist in a specific geographical area and provides a conceptual solution to those problems. As stated elsewhere in this report, the selection of the facilities presented in this plan is based on engineering and economic considerations but is by no means the only solution.

The alignment and location of the facilities proposed in this MDP are general; precise facility locations will be determined at the time of design. Similarly, the sizing information shown on the enclosed map is preliminary. A more detailed analysis performed at the design stage will determine final sizing.

SECTION IV

CRITERIA

All underground storm drains proposed in this plan are intended to collect local urban runoff and, with few exceptions, are located either in existing or proposed street rights of way. Runoff from a 10-year frequency storm is assumed to be conveyed in the streets until flow depths reach the top of curbs. At this point, the plan proposes the initiation of an underground drain, which will intercept and convey the entire 10-year storm runoff to an outlet downstream. Flows exceeding the 10-year frequency storm will generally be carried within curb faces of the street. If the runoff from the 100-year storm exceeds the right of way capacity of the street/storm drain combination, then the plan increases the size of the 10-year storm drain to capture and convey the entire 100-year storm runoff.

The alignments of all drains and channels are based on existing and proposed development, street patterns, flow paths, the ability to drain problem areas, and economics. Insofar as possible, the existing system should be utilized as part of the ultimate system in order to avoid duplication and unnecessary costs.

In addition to the criteria mentioned above, flood control facilities are proposed when:

1. Relief for an overload existing drain is necessary
2. Economic consideration dictates a diversion from the normal path of storm flows
3. Cross flows at major road intersections need to be minimized

SECTION V

HYDROLOGY

The hydrology for the plan was developed by two methods: the Modified Rational Method and the Synthetic Unit Hydrograph Method. The Modified Rational Method was used to determine the peak discharges generated from small watersheds (generally less than 300 to 500 acres in size). The Synthetic Unit Hydrograph Method was used for larger areas in generating the peak discharge rates for sizing major drainage facilities, and for the routing of the proposed detention basins.

Methodology and supportive data for the Rational and Synthetic hydrology can be found in the "Riverside County Flood Control and Water Conservation District Hydrology Manual", dated April 1978. The design discharges used in sizing all future appurtenant facilities in the study area were determined by one of these two methods. A map showing the complete drainage plan and location of major existing and all proposed facilities is included in the rear of this report.

New hydrology was generated for this plan to reflect currently projected land use. The projected land use was based on the Jurupa Community Plan as amended through May 1995, certain specific plan developments and overall development pattern assumed by the District.

SECTION VI

EXISTING FACILITIES

Several existing storm drains and a concrete lined channel are located within the Day Creek area watershed. These lines have been constructed by various agencies during the past decades. Those that are utilized directly by the plan were assigned "names" for ease of reference in this report. A brief description of these existing lines, which are an integral part of the master plan, is presented in this section. All major existing facilities are shown on the MDP map in the rear of this report.

DAY CREEK CHANNEL – STAGES 1 THROUGH 5 – This is a concrete lined open channel and is the main facility through the study area. This channel conveys flood flows through the area and provides an outlet for the existing local drainage projects. It begins as a trapezoidal channel at the Riverside Basin, located to the west of the Mira Loma Space Center north of

Mission Boulevard. The channel then proceeds southeasterly, running parallel to the Union Pacific Railroad tracks, to a transition to a rectangular channel with a splitter wall, 1,300 feet west of Etiwanda Avenue, at the northwest corner of Mission Boulevard and the Pomona 60 Freeway. This rectangular channel then transitions to a double cell RCB that passes under Union Pacific Railroad tracks, Pomona 60 Freeway, and Mission Boulevard.

South of Mission Boulevard the double RCB transitions to a trapezoidal concrete channel. This trapezoidal channel then runs southerly, following approximately what was Day Creek's natural watercourse, down to and across Limonite Avenue, where it transitions to an improved earthen swale that ends in the Santa Ana River. The reach between Limonite Avenue and Lucretia Avenue has not yet been constructed and is included in the recommended improvement discussion on Page 7. Day Creek Channel from Riverside Basin down to Limonite Avenue has been designed to carry the 100-year frequency runoff from local drainage.

CALTRANS FACILITIES – To protect the Pomona 60 Freeway from being overtopped by floodwaters that may pond to the north of the freeway, Caltrans built several culverts passing under the highway. There is a 6'W x 4'H reinforced concrete box (RCB) located approximately 550 feet west of Wineville Road draining an area of approximately 98 acres. This drain discharges its waters north of Riverside Drive.

Between Wineville Road and Day Creek Channel there are two single 5'W x 2'H RCB's both draining a total area of about 104 acres. These two RCB's pass under Riverside Drive dumping their floodwaters into the open field.

Just east of Day Creek Channel a double 5'W x 5'H RCB carries water from the Mira Loma Space Center under the freeway where it joins with a 60-inch RCP that drains the property at the northeasterly corner of Etiwanda Avenue north of the freeway. These combined flows then enter a triple 5'W x 5'H RCB under Van Buren Boulevard that transitions to a single 10'W x 6'H RCB before outletting in Day Creek Channel.

There is a 12'W x 6'H RCB at the northeast corner intersection of Interstate 15 Freeway and 68th Street that receives runoff from a 1,686 acre watershed. This watershed is roughly bounded by Wineville Road to the east, I-15 to the west, and Mission Boulevard to the north. Storm flows from this watershed pass under 68th Street via this RCB, outletting into a trapezoidal concrete-lined channel that runs parallel to the freeway toward the Santa Ana River. The RCB and channel were designed to handle the 100-year storm flows.

LATERAL "A" – This is an unlined trapezoidal channel that was constructed by developers in 1979. This earthen channel begins at the southwest corner of the intersection of Etiwanda Avenue and 54th street, and runs southerly along the west side of Etiwanda Avenue to the northern boundary of Tract 5923, where it extends westerly along an alignment between Tracts 7309 and 5923 to Day Creek Channel. This channel was designed to be used jointly as a flood control facility and an equestrian trail. It is maintained by the Jurupa Community Services District and is not considered adequate to carry the 100-year frequency runoff from local drainage. District's evaluation of this channel indicates that floods larger than the 10-year frequency storm could exceed its capacity.

LATERAL "B" – This is a storm drain built in 1979 by the developers of Sky Country (tract 5923), ranging in size from 36" to 54" RCP. This drain runs from Etiwanda Avenue west along Milky Way Drive, then southerly along Sunny Circle until it outlets into a double 36" CMP culvert under Limonite Avenue. This storm drain is considered inadequate to carry the onsite plus offsite 100-year frequency runoff. District's evaluation of this facility indicates that floods larger than the 10-year frequency storm could exceed its capacity. Jurupa Community Services District owns and maintains this portion of the line. Downstream of Limonite Avenue, a small detention basin was constructed to regulate runoff from frequent low intensity storms. In 1983, a 60" RCP was constructed along the south side of Limonite Avenue to replace the small detention basin and to connect Lateral "B" with Day Creek Channel. This 60" RCP is owned and maintained by Riverside County Flood Control and Water Conservation District.

FORD MIRA LOMA DRAINS – This facility drains all the onsite and tributary offsite flows from the Ford auto distribution center to Day Creek Channel. Ford Mira Loma is located on the northeast corner of the intersection of Galena Street and Etiwanda Avenue. This facility was built by developers in 1990 and is divided into two reaches: Galena Street Storm Drain and Etiwanda Avenue Storm Drain. These two reaches were designed to convey the 100-year frequency runoff. Galena Street Storm Drain collects all the onsite runoff through a system that varies from a 24-inch RCP to a 14'W x 7'H RCB and extends along Galena Street from a collecting point about 2,000 feet east of Etiwanda Avenue to Day Creek Channel. Etiwanda Avenue Storm Drain captures all the tributary offsite runoff. This reach begins about 700 feet east of Etiwanda Avenue with a 60-inch RCP and extends westerly along the north property line to Etiwanda Avenue, where it turns south to join Galena Street Storm Drain system with a 66-inch RCP.

PARKHURST STREET – This facility was built by developers in 1990 and drains a 77-acre industrial park (PM 23738) located on the west side of Etiwanda Avenue between Harrel Street and Galena Street. This storm drain begins at the northeast corner of the intersection of Parkhurst Street and Thurston Lane and traverses downstream along Parkhurst Street and joins Galena Street Storm Drain. This facility ranges in size from 48" to 54" RCP and was designed to carry the 100-year frequency storm.

INLAND AVENUE – STAGES 1 AND 2 – This storm drain/channel system carries the 100-year frequency onsite runoff from the northeast portion of the Mira Loma Space Center down to Day Creek Channel. Inland Avenue Stage 1 was built in 1990 by developers of PM 23836-1 and varies in size from 30" to 72" RCP. This facility is aligned within the east portion of Venture Drive, then extends easterly along Inland Avenue to Progress Circle where it turns south to the tract boundary.

Inland Avenue Stage 2 was recently constructed by the developer of PP 14759. It picks up the flows from Stage 1, plus onsite runoff in a 72" RCP and extends southerly along Space Center Court outletting into an interim earthen channel some 950 feet south of Hopkins Street. This channel continues approximately 1,000 feet south, then joins an old dilapidated dirt ditch that continues southwesterly to Day Creek Channel. Both channels will be abandoned when the adjacent land is developed. Proposed Line N will carry the flows to Day Creek Channel.

VENTURE DRIVE – This storm drain/channel system with laterals carries the 100-year frequency onsite runoff of the northwest portion of the Mira Loma Space Center down to Day Creek Channel. This facility was built in 1990 by developers of PM 23836, Phases 2 and 3, and ranges in size from 36” to 78” RCP. It is aligned within the west portion of Venture Drive, stretching westerly to Universe Drive where it continues southerly to the tract boundary. This facility outlets into an interim earthen channel that extends southwesterly to join an old run-down dirt ditch that continues south to Day Creek Channel. These channels will be abandoned at the time the adjacent land is developed. Proposed Line P will carry the flows to Day Creek Channel. Universe Drive Lateral runs 630 feet in a north-south direction along Universe Drive, joining Venture Drive storm drain at Venture Drive.

PARK MIRA LOMA – This recently constructed facility drains 25-year onsite and tributary offsite storm flows from the Park Mira Loma Industrial Facility directly into Day Creek Channel. Park Mira Loma is located at the southwest corner of Riverside Drive and Day Creek Channel, approximately 1,000 feet south of the Pomona 60 Freeway. This facility is divided into two reaches. An 18” to 42” RCP storm drain at the northerly property limits conveys the tributary offsite runoff to Day Creek Channel. The other 18” to 42” RCP storm drain reach at the southerly portion of the site drains the onsite flows to Day Creek Channel.

To eliminate project runoff from spilling over onto the property to the south during an extreme event, adequate onsite storage (parking area) is available to pond the difference in runoff between the 100-year and 25-year events without inundating the buildings or contributing to offsite runoff.

SECTION VII

MAINTENANCE AND PROTECTION OF EXISTING FACILITIES

Caltrans presently owns and maintains all culverts crossing under both the Pomona 60 Freeway and Interstate 15 Freeway. Concrete-lined channels paralleling both freeways collect the corresponding tributary storm flows and deliver the runoff to these culverts. A vital part of the Day Creek MDP relies upon continued maintenance of these facilities, especially the 12’W x 6’H RCB under 68th Street that will operate as outlet of all the flows west of Wineville Road.

Jurupa Community Services District owns and maintains Lateral “A”, portions of Lateral “B”, and several small storm drain facilities draining directly to Day Creek Channel from the Sky Country development. Flow capacities have been analyzed in relation to the 100-year frequency discharges and upon completion of the MDP as proposed, Lateral “A” will be relieved of the overtaxing flows by Lateral “A-1”.

Mira Loma Space Center owns and maintains certain old and dilapidated facilities that will be abandoned or improved by the new MDP proposed facilities at the time of new development occurs.

SECTION VIII

RECOMMENDED IMPROVEMENTS

It should be noted that the recommended improvements discussed below are designed according to the criteria in Section IV of this report. These proposed facilities are shown on the MDP map in the rear of this report. Pertinent details and calculations for each facility are on file at the District.

DAY CREEK CHANNEL – STAGE 6 – This is the last segment extension of Day Creek Channel and runs southerly from Limonite Avenue to Lucretia Avenue. It will replace the existing earthen swale with a trapezoidal concrete lined section. The downstream portion of this channel from Lucretia Avenue to the river will be the existing low flow earth channel as this area is within the 100-year flood plain of the Santa Ana River.

LATERAL A-1 – This new facility initiates on the north side of Bellegrave Avenue at Martin Street. It is completely designed for 10-year frequency storm flows. The 100-year flow in excess of the 10-year storm will continue west on Bellegrave past Etiwanda Avenue to Day Creek Channel. It extends south along Martin Street to 54th Street, then west along 54th and Lucretia Avenue to Rigel Way where it turns northwest for some 200 feet before heading southwest to Day Creek Channel. This underground drain helps to relieve a serious insufficient drainage capacity in Lateral A.

LATERAL A-1.1 – Lateral A-1.1 is a storm drain that extends south from just north of 50th Street down to 54th Street where it joins Lateral A-1. Its purpose is to intercept all sheet flows west of Martin Street and to relieve flows on Etiwanda Avenue, a large traffic carrying street.

LATERAL A-1.2 – Lateral A-1.2 is an underground drain that extends westerly on 54th Street from the intersection of 54th and Ridgeview Avenue to Martin Street where it joins Lateral A-1.

LATERAL A-1.3 – Lateral A-1.3 is a storm drain that begins at Jurupa Road and goes 400 feet easterly to outlet into Lateral A-1 at Martin Street.

LATERAL A-1.4 – Lateral A-1.4 is an underground drain that begins at the intersection of 48th Street and Troth Street, extends southerly in Troth Street to 50th Street, and continues west in 50th Street to confluence with Lateral A-1 at Martin Street.

LATERAL A-2 – Lateral A-2 drains the intersection of 54th Street and Troth Street between Lateral A-1 and Line B. This lateral is an underground drain that extends southwesterly in a zigzag way following the natural low to Mechanics Way, where it joins Lateral A across Etiwanda Avenue.

LATERAL B – Lateral B will service the southeast portion of the master drainage area from Troth Street to Day Creek Channel. This line will be a major trunk line through the area and will serve as the outlet for an existing and proposed lateral facilities. At present time, existing Lateral B segment in Limonite Avenue drains the southeast corner of Sky Country development.

Lateral B is an underground drain that initiates on Troth Street picking up the 100-year storm flows in a sag on the street, then continues downstream closely following the existing natural low in a zigzag route down to Wagon Train lane. From here it goes west to Etiwanda Avenue where it continues south to Limonite Avenue. In Limonite Avenue it travels west to join the existing Lateral B segment.

LATERAL B-1 – Lateral B-1 provides an outlet for the area tributary to the intersection of Ridgeview Avenue and 58th Street. This lateral is an underground drain that extends southwesterly along the existing natural low to the confluence with Lateral B just north of Wagon Train Lane.

LINE C – Line C and laterals are required to drain a 427 acre tributary area in the mid-west portion of the MDP to the proposed detention basin located at the southwest corner of the intersection of Wineville Road and Bellegrave Avenue.

This line is an underground drain that initiates as the outlet pipe for the Watkins Motorlines, Inc., detention basin (PP 14480), and extends southerly along an assumed street down to Bellegrave Avenue, then easterly to the proposed basin mentioned above.

LATERAL C-1 – This storm drain collects the flows south of the realignment of Galena Street, between Wineville Road and Line C, and continues south to Bellegrave Avenue where it joins Line C.

LATERAL C-2 – This drain will help relieve the local drainage problem at the northwest corner of the intersection of Bellegrave Avenue and the I-15 Freeway. Lateral C-2 is an underground drain that extends 540 feet southerly to Bellegrave Avenue, then easterly some 700 feet to the junction with Line C.

LATERAL C-3 – Lateral C-3 storm drain will collect runoff flows north of the realignment of Galena Street between the I-15 Freeway and Line C, and convey them downstream some 980 feet southerly, then some 600 feet easterly to the junction with Line C.

LATERAL C-4 – Lateral C-4 will intercept runoff flows north of the existing Galena Street. This storm drain extends 520 feet westerly in Galena Street to its junction with Line C.

LATERAL C-5 – Lateral C-5 will intercept runoff flows north of the existing Galena Street. This underground drain extends 620 feet easterly in Galena Street to join Line C.

LATERAL C-6 – Lateral C-6 will intercept runoff flows north of the assumed extension of Inglenook Street. This storm drain extends 520 feet westerly in Inglenook Street to its confluence with Line C.

LATERAL C-7 – Lateral C-7 will catch runoff flows north of the assumed extension of Inglenook Street. This underground facility extends 620 feet easterly to its junction with Line C.

LINE D – This storm drain begins as the outlet pipe for Turner Development detention basin (PM 25317), extending 1,190 feet southerly along an easement to the District, then 1,270 feet easterly along Galena Street to an outlet at Day Creek channel.

Line D is an important element of the overall plan, servicing 584 acres of drainage area in the northern central portion of this MDP. This drainage area is currently experiencing very large and significant development through construction of major industrial structures. Line D was selected as the preferred alternative among several alternatives studied during the generation of this revision and presented somewhere else in this report.

LATERAL D-1 – Lateral D-1 is an underground drain collecting the runoff from a 74 acre drainage area north of Galena Street within Turner Development (PM 25317). This storm drain facility begins in a sag on the street and extends 2,050 feet easterly in Galena Street to its junction with Line D. Lateral D-1 is designed to carry the 100-year storm flows.

LATERAL D-2 – Lateral D-2 begins in Riverside Drive capturing the flows delivered by an existing Caltrans reinforced concrete box located west of Wineville Road. It continues downstream in Riverside Drive to Wineville Road, where it collects surface flows from this intersection. It turns southerly in Wineville and extends down to Inglenook Street. At this point it goes east to a point of discharge into the proposed Turner Development detention basin (PM 25317).

LATERAL D-3 – Lateral D-3 is an underground drain proposed to relieve the flooding problem in undeveloped PM 26331. It begins at the middle of the parcel and continues south to the property line where it turns easterly, along an assumed extension of Harrel Street, to join Line D-2 at the intersection with Wineville Road. The need for this drain will become increasingly apparent as this 81 acre property develops.

LINE E – Line E is a storm drain that relieves drainage problems in an 82 acre tributary area along Wineville Road south of Galena Street. This line traverses south in Wineville Road to a point of discharging into the proposed basin at the southwest corner intersection of Bellegrave Avenue and Wineville Road (Bellegrave Detention Basin).

LATERAL E-1 – This lateral serves as an outlet for a 113 acre drainage area southeast of Galena Street and Wineville Road. Lateral E-1 is an underground drain that extends along a proposed extension of Jurupa Road down to Bellegrave Avenue. From here it goes southwesterly along Bellegrave Avenue to its junction with Line E. This drain will become increasingly needed as its tributary area develops.

LINE F – Line F serves the Price/Costco new development (PP 14420) located north of Harrel Street and east of Wineville Road. This new proposed development in the area has prompted a specific drainage study as part of this report. Several alternatives to address the control of tributary onsite/offsite storm runoff were analyzed and are presented in Section X of this report.

The preferred alternative drains 221 acres of combined onsite/offsite storm flows. It initiates with a storm drain connected to an existing 5'W x 2'H Caltrans RCB located 1,000 feet east of Wineville Road on Riverside Drive. It continues southeast to the east property line where it is joined by flows collected from a second 5'W x 2'H Caltrans RCB, then it goes south across Harrel Street to a point of discharge into the proposed Turner Development detention basin (PM 25317).

LATERAL F-1 – Lateral F-1 operates to collect onsite storm flows from the west and south side of the Price/Costco new development. It is an underground drain extending some 900 feet southerly, then easterly some 1,950 feet to its junction with Line F.

LATERAL F-2 – Lateral F-2 carries runoff from an existing 5’W x 2’H Caltrans RCB, located on Riverside Drive 2,270 feet east of Wineville Road, downstream to Line F. This drain will help relieve the local drainage problem created by Caltrans outlet.

LATERAL F-3 – Lateral F-3 is an underground drain collecting onsite runoff from the mid area of Price/Costco new development. It extends easterly some 800 feet, then northerly some 400 feet to its junction with Line F.

LATERAL F-4 – Lateral F-4 will capture onsite runoff between buildings. This storm drain runs easterly some 800 feet to its junction with Line F.

LATERAL F-5 – Lateral F-5 will help relieve drainage problems in the northwest corner of the Price/Costco new development. This storm drain extends some 500 feet easterly to its junction with Line F.

LINE G – Line G is an underground drain which services the tributary area between Harrel Street and north Galena Street and runs 1,150 feet easterly to its junction with Day Creek Channel.

LINE H – Line H is an underground drain intercepting runoff flows from an area between Bellegrave Avenue and Galena Street, east of Temporary Parcel Map 26346. It begins just south in Galena Street and extends downstream along the east property line of TPM 26356 (proposed Lucretia Avenue) to Bellegrave Avenue, then goes northeasterly about 1,200 feet along Bellegrave to an outlet into Day Creek Channel.

LATERAL H-1 – Lateral H-1 is an underground drain that helps relieve a sump condition in Bellegrave Avenue. This lateral extends about 600 feet northeasterly in Bellegrave Avenue to its junction with Line H.

LINE I – This is the outlet pipe for the existing Jurupa Valley High School detention basin. This storm drain begins at the northeast corner of the intersection of Etiwanda Avenue and Bellegrave Avenue, and extends about 1,950 feet southwesterly along Bellegrave Avenue to an outlet into Day Creek Channel.

LATERAL I-1 – Lateral I-1 is a storm drain located between Etiwanda Avenue and Day Creek Channel. It starts south in Galena street and runs about 1,700 feet southerly to a point in Bellegrave Avenue where it joins Line I.

LINE J – Line J is the most prominent facility in this MDP besides Day Creek Channel. By the time line J joins the existing 12’W x 6’H Caltrans RCB in 68th Street, some 1,150 acres of tributary drainage area is accumulated.

Line J follows the proposed alignment for Street "A" in I-15 Corridor Specific Plan (Specific Plan 266). This drain begins as the outlet pipe for the proposed detention basin at the southwest corner intersection of Wineville Road and Bellegrave Avenue (Bellegrave Detention Basin). Line J also services the tributary area to the west of Wineville Road between Bellegrave Avenue and 68th Street, east of the I-15 freeway. The need for this drain will be increasingly evident as its tributary area is developed. Nevertheless, land holdings in this area are large parcels, allowing flood protection improvements to take several alternative forms. These alternatives are discussed in Section X of this report.

LATERAL J-1 – This is an underground drain running some 700 feet westerly in 68th Street to its confluence with Line J. This drain will help to relieve a sump condition in 68th Street.

LATERAL J-2 – Lateral J-2 will intercept all runoff flows from the southeast corner of I-15 Corridor Specific Plan. This storm drain flows downstream some 1,000 feet westerly to its junction with Line J.

LATERAL J-3 – Lateral J-3 will collect the runoff flows in a low within a Southern California Edison easement in the southwest portion of I-15 Corridor. This storm drain flows some 250 feet southeasterly to its junction with Line J.

LATERAL J-4 – Lateral J-4 will collect the sheeting flows from an area south of the I-15 Freeway interchange with Limonite Avenue. This storm drain extends in an assumed street some 450 feet easterly to its confluence with Line J.

LATERAL J-5 – Lateral J-5 is a storm drain proposed to collect the runoff from an area north of the I-15 interchange with Limonite Avenue. This drain is located along Limonite Avenue and goes downstream some 950 feet easterly to its junction with Line J.

LATERAL J-6 – Lateral J-6 is an underground drain that begins in Wineville Road some 700 feet north of Limonite Avenue. This drain would collect the contributing runoff flows in Wineville and help to alleviate the flooding problem in the large traffic carrying intersection of Wineville Road and Limonite Avenue. This drain continues downstream along Limonite to its confluence with Line J.

LATERAL J-7 – Lateral J-7 is a storm drain that would relieve the flooding problem in a proposed street north of Limonite Avenue. This drain extends 900 feet easterly to its confluence with Line J.

LATERAL J-8 - Lateral J-8 will drain the northwest portion of I-15 Corridor Specific Plan. This storm drain begins south in Bellegrave Avenue and goes downstream to a future planned street, where it turns east to its confluence with Line J.

LINE K – Line K will intercept all the runoff flows in Wineville Road, south of Limonite Avenue. This storm drain begins at the intersection of Wineville Road and 64th Street and extends southerly along Wineville Road and across 68th Street to an outlet point in Santa Ana River flood plain.

LINE L – Line L storm drain would begin capturing runoff flows from an existing sump condition in Smith Avenue and go southerly downstream to 64th Street, then easterly to Dana Avenue where it turns south again to a low point in the street before outletting into Day Creek Channel just north of Holmes Avenue.

LINE M – Line M is an underground drain collecting surface flows at the intersection of Dana Avenue and Holmes Avenue. This drain goes southerly along Dana Avenue to a local low in the street before going easterly to an outlet in Day Creek Channel south of Holmes Avenue.

LINE N – Line N is a 72” underground drain to be connected with the existing Inland Avenue Stage 2 storm drain along Space Center Court. This drain will be collecting onsite runoff flows south of Hopkins Street, west of Etiwanda Avenue, and will outlet them into Day Creek Channel following the alignment of the existing interim channels.

LINE O – Line O will be an underground drain carrying onsite flows from the mid-southern portion of the Mira Loma Space Center down to Day Creek Channel. It varies in size from 36” to 45” diameter RCP.

LINE P – Line P is a 78” underground drain to be connected with the existing Venture Drive storm drain along Universe Drive. This drain will collect onsite runoff flows southwest of Venture Drive and will outlet them into Day Creek Channel following the alignment of the existing interim channels.

LATERAL P-1 – Lateral P-1 is an underground drain that will intercept runoff coming from TPM 26489-1 south of Venture Drive and east of Universe Drive. This storm drain will vary in size from 24” to 66” RCP and will join Line P at Universe Drive.

BELLEGRAVE DETENTION BASIN AT SPECIFIC PLAN 266 – This 110 acre-feet storage capacity detention basin is proposed to reduce the peak inflow of 977 cfs coming from Line C, Line E, and their respective laterals, down to 45 cfs and to provide additional flood protection for the proposed developments downstream. This basin requires a right of way take of 20 acres with a joint-use park/detention concept as a means to reduce the amount devoted to the exclusive use of storm water detention. This basin is proposed to be located at the southwest corner of Wineville Road and Bellegrave Avenue and is completely incised.

TURNER DETENTION BASIN AT PARCEL MAP 25317 – This 49 acre-feet storage capacity detention basin is projected to cut down the peak inflow of 779 cfs coming from Line F, Line D-2, and their respective laterals, down to 267 cfs to reduce the size of outlet Line D. This basin is not proposed as a joint use facility and requires a right of way take of 7 acres and is completely cut into the ground.

WATKINS DETENTION BASIN AT PLOT PLAN 14480 - This 8.5 acre-feet volume detention basin, located within Watkins Motor Lines Transfer facility (PP 14480) is being constructed to detain the peak differential between the undeveloped and developed condition

runoff in the 100-year, 24-hour storm event. Peak inflow of 122 cfs is dropped down to a pipe outflow of 20 cfs. This basin requires a right of way take of 2 acres and a maximum embankment height of 6 feet. The cost savings to proposed Line C downstream justify inclusion of this basin in the Master Drainage Plan.

SECTION IX

INLETS

Inlets and their proper locations are an integral part of any drainage or flood control system. Inlets provide the means of intercepting uncontrolled flows and directing them into channels and storm drains. Most of the inlets to be used in this master plan will be curb opening type catch basins. Field investigation and topographic information have been used to establish the general location of the proposed new inlets. Existing inlets have been also been identified which can be utilized in the proposed system. It should be noted that the catch basin openings proposed are intended to be used as a guide only. The precise location and size of the opening required for any system should be determined at the time of final design, and should reflect changes that may have already occurred during the intervening period.

SECTION X

ALTERNATIVE STUDIES

Several alternatives were developed and studied during the generation of this Revision to Day Creek Master Plan. These alternatives considered different alignment schemes for the major storm drains; different sizing of the proposed detention basins; and various hydraulic considerations. As the study progressed, alternates considered for the main facilities proposed in this plan were presented to the District management and staff. General concurrence with the plan selected was obtained based on cost differentials, accessibility to collector drains, and ease of construction.

Alternate studies for conveying together Line F, Line D-2 and lateral flows around the mid northern area of this plan were made. These studies involved the construction of different storm drains along differing alignments, with or without detention basin. The first of these alternatives considered using three independent major lines to intercept the local flows at Riverside Drive, Harrel Street and Wineville Road/Galena Street, and transport them easterly to Day Creek Channel. No detention basin was considered. This alternative was abandoned because of greater costs.

The second alternative contemplated two independent major lines to intercept the local flows at Harrel Street and Wineville Road/Galena Street and transport them easterly to Day Creek Channel. No detention basin was considered. This option was more costly than the proposed project and was abandoned.

The third alternative considered one separate line intercepting the local flood waters at Riverside Drive and conveying them easterly to Day Creek Channel, plus two independent lines capturing local flows at Harrel Street and Wineville Road and confluenting them at a detention basin in PM 25317. A fourth line serves as outlet, taking the regulated flows downstream to Day Creek Channel. This alternative was also abandoned in favor of the recommended project due to cost.

The final and selected alternative considered two independent lines capturing the runoff at Harrel Street/Riverside Drive (Line F) and Wineville Road (Line D-2), and confluenting them at Turner detention basin in PM 25317. A third line (Line D) is an outlet storm drain taking the regulated flows downstream to Day Creek Channel.

Alternate studies to solve the flooding problem in the west side of the MDP were also made. As in the previous system, several storm drains along different alignments, with and without a detention basin, were analyzed.

The first alternative consisted of capturing all storm flows to the west of Wineville Road and conveyed them southerly in a single major line (Line J) from Watkins Motor Lines Transfer facility down to the existing Caltrans RCB in 68th Street. The flows tributary to Wineville Road would be collected in another independent line (Line E) and the flows diverted at Limonite Avenue to Day Creek Channel. No detention basin is contemplated in this scenario. This alternative was abandoned due to hydraulic constraints and very high construction costs.

The second alternative is identical to the previous one but eliminates the diversion of Line E by connecting it to Line J at Limonite Avenue. In this scenario, the size of Line J is tremendously increased south of Limonite Avenue. No detention basin was considered in this alternative and it was abandoned due to greater costs.

In the third alternative, all flows north of Bellegrave Avenue are collected by Line C and Line E and routed through the proposed Bellegrave detention basin located at the southwest corner of Wineville Road and Bellegrave Avenue. The routed flows and local runoff tributary to Wineville Road are diverted at Limonite Avenue to Day Creek Channel. All runoff south of Bellegrave Avenue and to the west of Wineville Road would be collected by Line J and conveyed southerly to the existing Caltrans RCB in 68th Street. This alternative was also abandoned due to high construction costs.

The fourth alternative considered collecting the flows with Line C and Line E north of Bellegrave Avenue and routed them through the proposed Bellegrave detention basin located at the southwest corner of Wineville Road and Bellegrave Avenue. The routed flows and local tributary runoff north of Limonite Avenue are diverted to Day Creek Channel. Storm waters south of Limonite Avenue are conveyed by Line J downstream to the existing Caltrans RCB in 68th Street. This option was more costly than the proposed project and it was abandoned.

The fifth and selected alternative considered Line C and Line E collecting all flows to the north of Bellegrave Avenue and routing them through the proposed Bellegrave detention basin situated at the southwest corner of Wineville Road and Bellegrave Avenue. The routed flows and all

tributary runoff of the area south of Bellegrave Avenue are conveyed by Line J downstream to the existing Caltrans RCB in 68th Street. No diversion is considered in this scenario. Not only is this alternative slightly more economical but the lack of a diversion makes construction of this alternative easier to stage.

SECTION XI

ESTIMATED COST

The Revision to the Day Creek Master Drainage Plan presented herein is an accumulation of the preferred features of all the alternative studies. This revision to the plan presents an economical drainage facility system while also effecting the least impact on the existing character of development within the study area.

The majority of the facilities are proposed as underground and aligned within existing or proposed street right of way. Property acquisitions will be required for any proposed detention basin or storm drain constructed on private land.

Storm drain facility costs were developed from current construction cost data researched by the District.

All prices tabulated herein were adjusted to reflect present 1997 cost levels and are shown in Table 1 "COST SUMMARY". These costs include necessary rights of way and 31% for engineering, administration, and contingencies.

SECTION XII

CONCLUSIONS

Based on the studies and investigations made for this report, it is concluded that:

1. The Day Creek area has experienced serious flooding problems in the past. As the area continues to industrialize and urbanize, these damages are expected to increase. A more orderly growth pattern can safely occur with the construction of these proposed facilities.
2. A drainage system is required to safely convey storm runoff through Day Creek area to Santa Ana River. This Revision to the Day Creek Master Drainage Plan presented in this report is the most feasible of the alternatives studied.
3. The Revision to the Day Creek Master Drainage Plan indicated therein will lend itself to a stage construction program as funds are available.
4. The total cost of the recommended improvements, including right of way, engineering, contingencies, and administration is estimated to be \$29,717,000.

SECTION XIII

RECOMMENDATIONS

It is recommended that:

1. The Revision to the Day Creek Master Drainage Plan, as set forth herein, be adopted by the Riverside County Flood Control and Water Conservation District's Board of Supervisors.
2. The Revision to the Day Creek Master Drainage Plan, as set forth herein, shall replace the Master Drainage Plan adopted in November 1977.
3. The Revision to the Day Creek Master Drainage Plan, as set forth herein, shall be used as a guide for all future developments in the study area and that such developments be required to conform to the plan insofar as much as possible.

TABLE 1
DAY CREEK MASTER DRAINAGE PLAN
COST SUMMARY

<u>FACILITY</u>	<u>CONSTRUCTION*</u>	<u>RIGHT OF WAY</u>	<u>TOTAL COST</u>
Lateral A-1	\$ 1,760,000	6,000	1,766,000
A-1.1	403,000		403,000
A-1.2	50,000		50,000
A-1.3	50,000		50,000
A-1.4	335,000		335,000
A-2	554,000	26,000	580,000
Lateral B	1,289,000	51,000	1,340,000
Lateral B-1	268,000	18,000	286,000
Line C	1,946,000		1,946,000
Lateral C-1	364,000		364,000
C-2	239,000		239,000
C-3	261,000	15,000	276,000
C-4	79,000		79,000
C-5	108,000		108,000
C-6	81,000		81,000
C-7	115,000		115,000
Line D	736,000	20,000	756,000
Lateral D-1	465,000		465,000
D-2	1,661,000		1,661,000
D-3	502,000		502,000
Line E	641,000		641,000
Lateral E-1	731,000		731,000
Line F	1,303,000	84,000	1,387,000
Lateral F-1	453,000	25,000	478,000
F-2	138,000	13,000	151,000
F-3	171,000	20,000	191,000
F-4	110,000	15,000	125,000
F-5	124,000	15,000	139,000
Line G	334,000		334,000
Line H	727,000		727,000
Lateral H-1	94,000		94,000

TABLE 1
DAY CREEK MASTER DRAINAGE PLAN
COST SUMMARY
(Continued)

<u>FACILITY</u>	<u>CONSTRUCTION*</u>	<u>RIGHT OF WAY</u>	<u>TOTAL COST</u>
Line I	418,000		418,000
Lateral I-1	290,000		290,000
Line J	\$ 3,921,000		3,921,000
Lateral J-1	166,000		166,000
J-2	188,000		188,000
J-3	51,000		51,000
J-4	78,000		78,000
J-5	135,000		135,000
J-6	251,000		251,000
J-7	190,000		190,000
J-8	503,000		503,000
Line K	544,000	7,000	551,000
Line L	305,000		305,000
Line M	103,000		103,000
Line N	586,000		586,000
Line O	507,000		507,000
Line P	590,000		590,000
Lateral P-1	758,000		758,000
Day Creek Ch. Stage 6	814,000		814,000
DETENTION BASINS:			
Bellegrave (SP 266)	1,230,000	850,000	2,080,000
Turner (PM 25317)	342,000	350,000	692,000
Watkins (PP 14480)	110,000	100,000	210,000
TOTALS	<u>\$28,102,000</u>	<u>\$1,615,000</u>	<u>\$29,717,000</u>

* Includes 31% for Engineering, Administration and Contingencies.