

CHAPTER FIFTEEN: STORM DRAINAGE AND FLOOD PROTECTION

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CHAPTER FIFTEEN: STORM DRAINAGE AND FLOOD PROTECTION

15.1 STORM DRAINAGE

15.1.1 Introduction

This section describes the storm drainage and flood protection system for the Specific Plan Area. The storm drainage facilities for the Specific Plan Area consist of temporary (interim) structures and portions of the permanent infrastructure which are presented in the Master Plan. The key storm drain facilities include piping, open channels and ditches, berms for flood protection, retention basins, and selected improvements to Mountain House Creek.

This section provides policies and implementation measures for the Specific Plan Area only. Storm drainage and flood control provisions in the Master Plan also apply to this Specific Plan Area.

15.1.2 Analysis and Design Criteria

See Master Plan document.

15.1.3 Off-Site Drainage

The Master Plan describes off-site watersheds and presents policies and implementation measures that apply to Specific Plan I. The major off-site watershed which impacts the Specific Plan Area is watershed A, Mountain House Creek watershed. To a very minor extent, runoff from watershed areas I, L, B, D, E and M also impact the Specific Plan Area. The runoff from these areas occurs primarily as sheet flow. Farmlands downstream of the Specific Plan Area flood infrequently, less than once every 10 years, and flooding is restricted to a small area along Byron Road.

The Master Plan and its appendices provide provisions for off-site drainage to be applied to the Specific Plan Area. Specific Plan I issues which require special consideration are as follows:

- a) Downstream Flooding. Farmlands downstream of the Specific Plan Area shall not be allowed to flood to any increased degree over that which would have occurred prior to the development of the Specific Plan Area.
- b) Interception of Off-Site Drainage. Pipes, ditches and/or open channels shall be used to control and direct off-site drainage at the Specific Plan boundary and transport the runoff with flood protection through the Specific Plan Area at the 100-year flow rates as specified in the Master Plan.
- c) Mountain House Business Park Requirements. Off-site runoff from watersheds D, E, and M near the Mountain House Business Park shall not impact the park. Any flows that might top and enter the 155 canal shall flow through the replacement pipeline to the existing drainage system east of Mountain House Parkway. Further drainage analysis shall be required

prior to the application of any Development Permit for the Mountain House Business Park.

15.1.4 Primary Storm Drain Collection System

The primary storm drain collection system includes trunk storm drain pipes (72 inches and larger), major open channels, and detention basins. A detailed description of the primary storm drain collection system and the analysis of the system is contained in the Master Plan and its technical appendices.

As shown in Figure 15.1: Storm Drainage Collection System, the Specific Plan Area is divided into a number of urban watersheds which drain to trunklines, open channels, and retention/treatment facilities. Figure 15.2: Specific Plan I Retention/Detention Basins illustrates the approximate location and area of basins, subject to final design.

For the Specific Plan, the limits of improvements to Mountain House Creek begin approximately 1,000 feet downstream of the Alameda/San Joaquin County Line and continue to a point approximately 800 feet upstream of Byron Road. The limits of creek construction are shown in Figure 15.1. Downstream of the most northeasterly creek improvement, the creek flow is conveyed to Old River by the existing creek and farm drain system.

The watershed analysis provided in the Master Plan illustrates that impacts to the Specific Plan Area by the minor watersheds are most likely limited to the following:

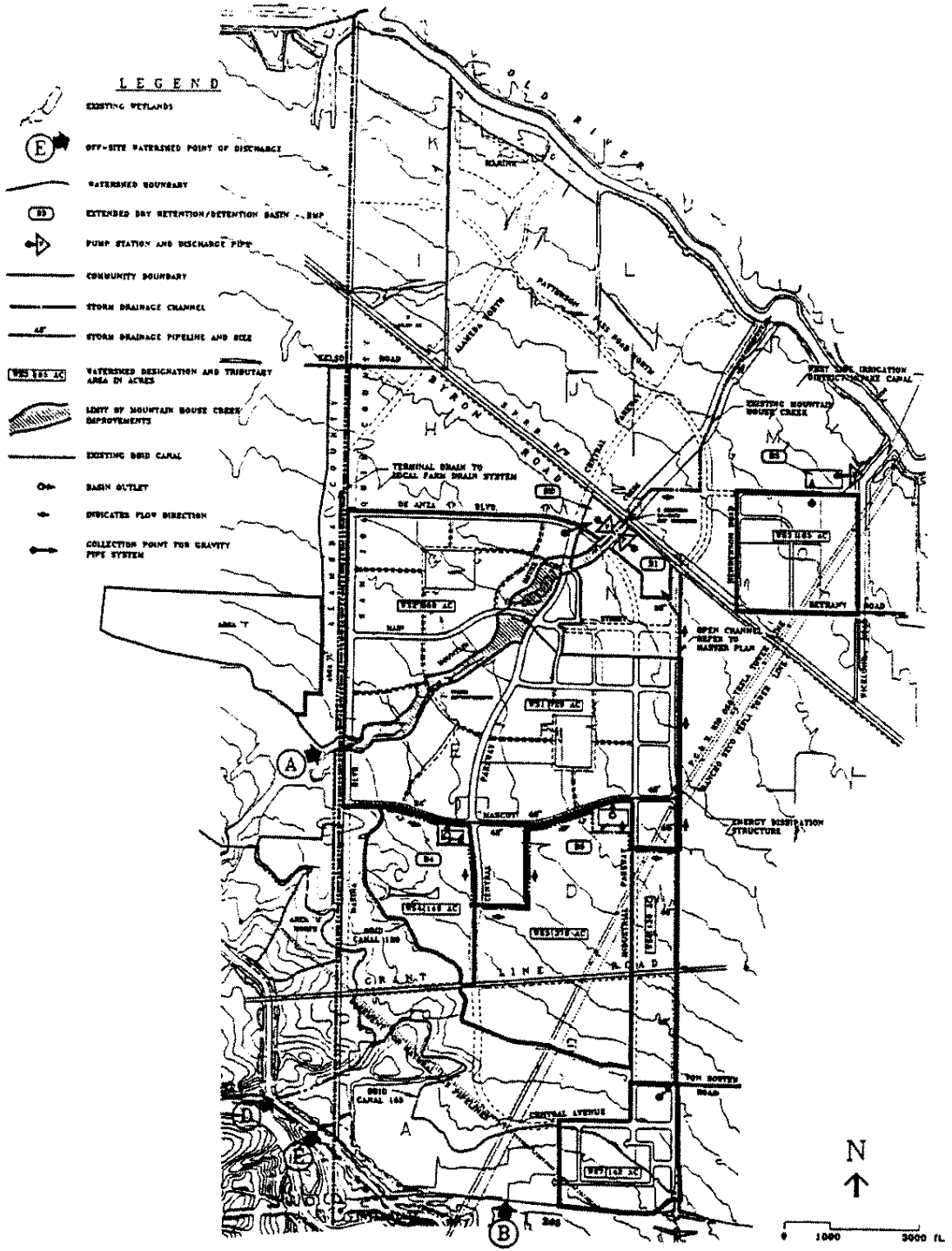
Watershed I and L:

As indicated in Figure 15.1, runoff from watersheds areas I and L is intercepted by a ditch constructed along the Alameda/San Joaquin County line. The terminal drain for this ditch is the local farm drain system to the north of the Specific Plan Area. These watersheds flow perpendicular to the boundary of the Central Mountain House area of Specific Plan I. The small amount of lateral flow will be easily controlled by the farm ditch system.

Localized Runoff:

As shown in Figure 15.1, localized runoff from land adjacent to the south Specific Plan Area boundary, denoted by areas WS4 and WS5, is intercepted by a ditch system which drains to retention basins B4 and B5. These basins discharge to the storm piping system on Mascot Drive.

In Figure 15.1, runoff from area WS1 drains by a gravity pipe system to an open channel along Mountain House Parkway. Runoff from areas WS6 and WS7 also drain directly to the open channel along Mountain House Parkway. This channel empties into retention basin B1. Runoff from area WS2 drains by a gravity pipe system to retention basin B2. Storm runoff from area WS3 is collected by a gravity piping system which empties into retention basin B3. Basins B1 and B2 are temporary facilities used to provide BMP treatment and flood control Basins B1, B2 and B3 are emptied by pumps over a period of 24 hours.



NOTE:
SEE MHCSD PLANS FOR
CURRENT COLLECTION
SYSTEM.

FIGURE 15.1 – STORM DRAINAGE COLLECTION SYSTEM

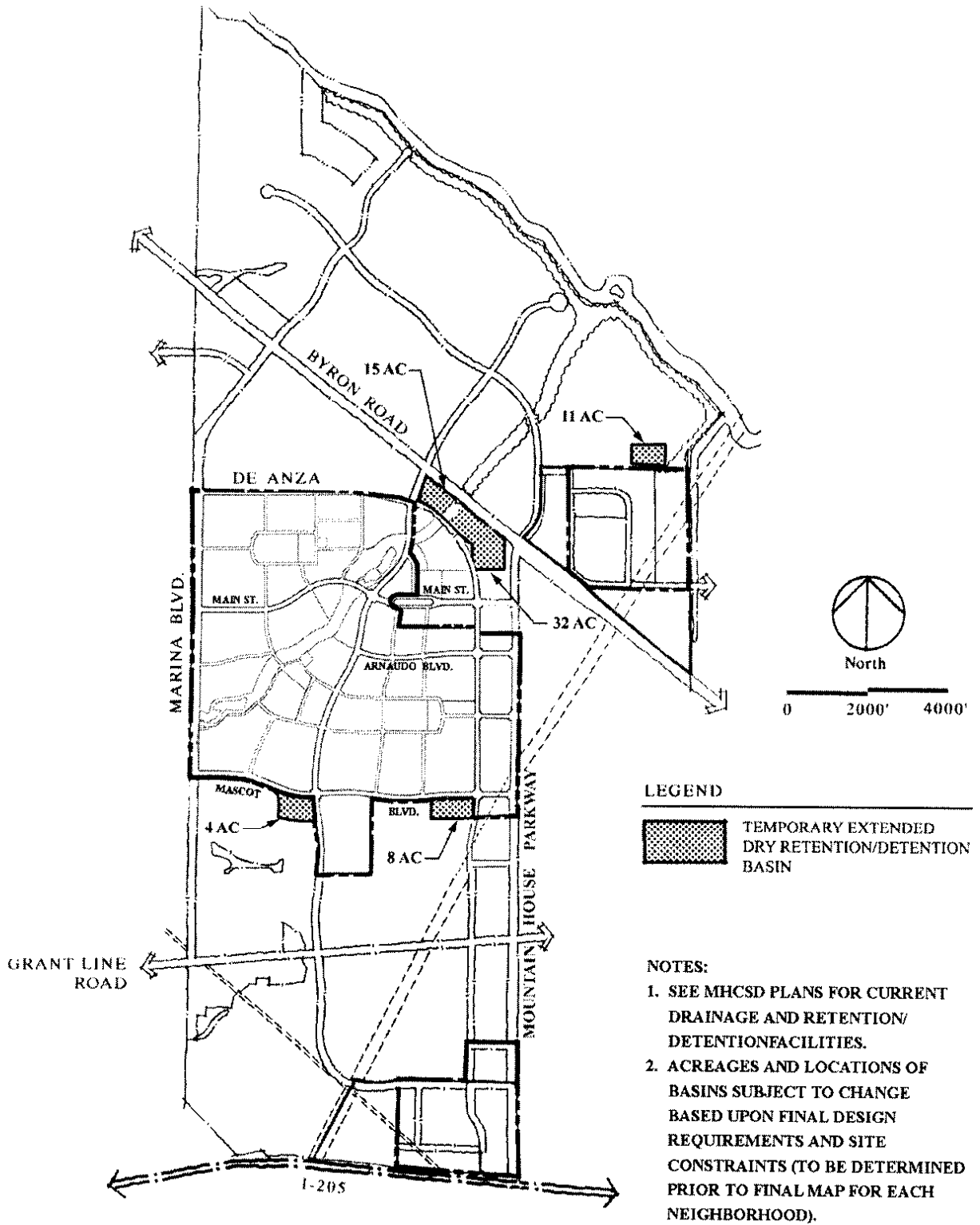


FIGURE 15.2 – SPECIFIC PLAN I RETENTION/DETENTION BASINS

The point of terminal discharge for Basins B1 and B2 is Mountain House Creek and the combined pumping capacity for these basins is limited by the capacity of the three existing 36-inch culverts which pass under Byron Road. The point of terminal discharge for Basin B3 is the West Side Irrigation District Intake Canal which flows to Old River.

- a) Storm Improvements. The Specific Plan Area storm improvements shall be constructed as shown in Figure 15.1: Storm Drainage Collection System. Best Management Practice (BMP) treatment processes referred to in this section are discussed in Section 15.1.7: Best Management Practices (BMP's). Actual size, locations and configuration of improvements shall be determined during the design of the facilities prior to the approval of the first Final Map.
- b) Basins. Retention/detention basins shall be used for flood control and BMP treatment. Neighborhood F flows crossing under Byron Road shall be controlled in a detention basin north of Byron Road to a degree adequate to control 100-year flow rates.
- c) Terminal Drainage. No permanent storm drain conveyance facilities are necessary down stream of Specific Plan I, subject to concurrence by the MHCSD that impacts to down stream areas within the community can be mitigated by up stream improvements or temporary down stream improvements.
- d) Existing Pump Stations. The existing farm pump station(s) may be used for terminal drainage to Old River. If used, these pumps shall be maintained, as required, to match the capacity of the three existing 36-inch culverts under Byron Road, if needed. Actual locations and configuration of pump stations shall be determined during the design of the facilities prior to the approval of the first Final Map.
- e) Ditches. New farm ditches located along the west boundary of the Specific Plan Area shall intercept off-site sheet flow adjacent to the Specific Plan Area. The terminal drain for these ditches shall continue to be the local farm drain system.

15.1.5 Secondary Storm Drain Collection System

See the Master Plan for a plan of the secondary storm drain collection system.

15.1.6 Mountain House Creek Flood Plain Improvements

A preliminary design of Mountain House Creek Flood Plain is described in the Master Plan document and its technical appendices. As indicated in Figure 15.1, Mountain House Creek will be improved. The improvements to Mountain House Creek will protect the Specific Plan Area from flooding.

Chapter Seven: Recreation and Open Space, provides additional provisions related to Mountain House Creek.

- a) Basins. Interim or temporary retention/detention basins located within the flood plain of the unimproved Mountain House Creek channel shall be separated from the flood flows to prevent flood waters originating in the creek from entering the basin(s).
- b) Freeboard Requirements. All berms or flood control channels shall be constructed below the finish grade of the surrounding development sufficient to meet County freeboard requirements. Analysis of facilities, improvements, and flow rates for the down-stream section of Mountain House Creek shall be provided prior to approval of the first Final Map.
- c) Full Creek Design for the Segment Within Specific Plan I. Prior to the approval of the first Final Map for Specific Plan I, analysis shall be completed to show that the full creek design within Specific Plan I boundaries will function when completed as a stand alone drainage system.
- d) Phased Storm Drainage Plan. In addition to the full creek design specified in d), above, interim storm drainage plans shall be approved for Neighborhood F and the south half of Neighborhood E prior to approval of the first Final Map in each neighborhood. Furthermore, prior to the approval of any Final Map outside of F and the south half of E, a detailed storm drainage plan for the Mountain House community shall be approved. This study shall include a plan for the improvements to Mountain House Creek sufficient to determine the final creek design and open space boundaries and an engineering report and schematic plan for all community-wide drainage improvements.
- e) Downstream Flooding. Prior to submittal of the first Final Map for Specific Plan I, the extent of flooding of downstream areas must be identified, and mitigation measures provided including deed restrictions.
- f) Streambed Modification. Any streambed modification proposals within the boundaries of Specific Plan I shall be approved prior to approval of the first Final Map. Actual streambed alteration agreements will be required as specified in Section 7.2.3: Wetlands.

15.1.7 Best Management Practices (BMP's)

The storm drainage system for the Specific Plan Area incorporates the Best Management Practices (BMP's) described in the Master Plan document. In addition to these items, the following policies and implementations apply to the Specific Plan.

- a) Channeling of Flows. After BMP treatment, the flows shall be channeled into Mountain House Creek and to Old River as are the pre-development flows.
- b) Interim Detention Basins. Figure 15.2: Specific Plan I Retention/Detention Basins, illustrates the approximate size and locations of interim detention basins required to comply with the storm flow conditions of this Specific Plan I. Actual size, locations and configuration shall be determined during the design of the facilities and approval prior to the approval of the first Final Map.
- c) Mosquito Abatement Implementation and Maintenance Schedules. Implementation and maintenance schedules, as specified in Appendix 6-A of the Master Plan, shall be approved by the Mosquito Abatement District prior to construction of any storm drainage improvements involving open bodies of water within the Specific Plan Area.

15.2 FLOOD PROTECTION

See the Master Plan for provisions on flood protection.

15.3 PHASING OF STORM DRAIN COLLECTION SYSTEM

- a) Phasing. Phasing shall be implemented according to Master Plan provisions.
- b) Incremental Construction. The storm drain collection system, BMP treatment facilities and flood protection improvements shall be constructed in increments to match the needs and financial capabilities of each phase of Specific Plan I.