

# **CHAPTER FIFTEEN: STORM DRAINAGE AND FLOOD PROTECTION**

## **15.1 Introduction**

This chapter summarizes Master Plan provisions related to the community's storm drain collection system and states implementation for Specific Plan III (SP III).

The analysis and preliminary design of the storm drain collection system is based on the Mountain House Community Services District (MHCSD) Development Standards and the California Storm Water Quality Best Management Practice Handbook. The watershed and primary storm drain facilities are analyzed using the United States Army Corps of Engineers rainfall/runoff model HEC-1.

All storm drainage, flood protection and terminal discharge improvements necessary for each development phase will be approved by the MHCSD, with applicable review and approval as necessary by San Joaquin County Flood Control and any State or Federal agencies having jurisdiction over any of the improvements.

MHCSD may elect to construct improvements, update any plan including the Master Plan or any Specific Plan, or require that a developer construct improvements or create/reuse drainage plans.

## **15.2 Off-Site Watersheds**

### **15.2.1 Master Plan Summary**

To the southwest of Mountain House are several watersheds that drain through the community. The Master Plan requires that drainage from these off-site watersheds is considered in the design of the community storm system and is safely conveyed through the community.

Adequate storm transport systems shall be provided to ensure that all off-site drainage from watersheds shall be safely conveyed to terminal drains. Off-site drainage may be merged with urban runoff as a means of conveyance to terminal drains providing that the urban runoff has been treated according to Best Management Practices (BMP) as provided for by applicable water quality control regulations.

Detailed studies for each watershed area shall be prepared and utilized in the design of each segment of storm facilities required for SP III, and shall be completed and approved prior to the approval of the Plan.

### **15.2.2 Specific Plan III Description**

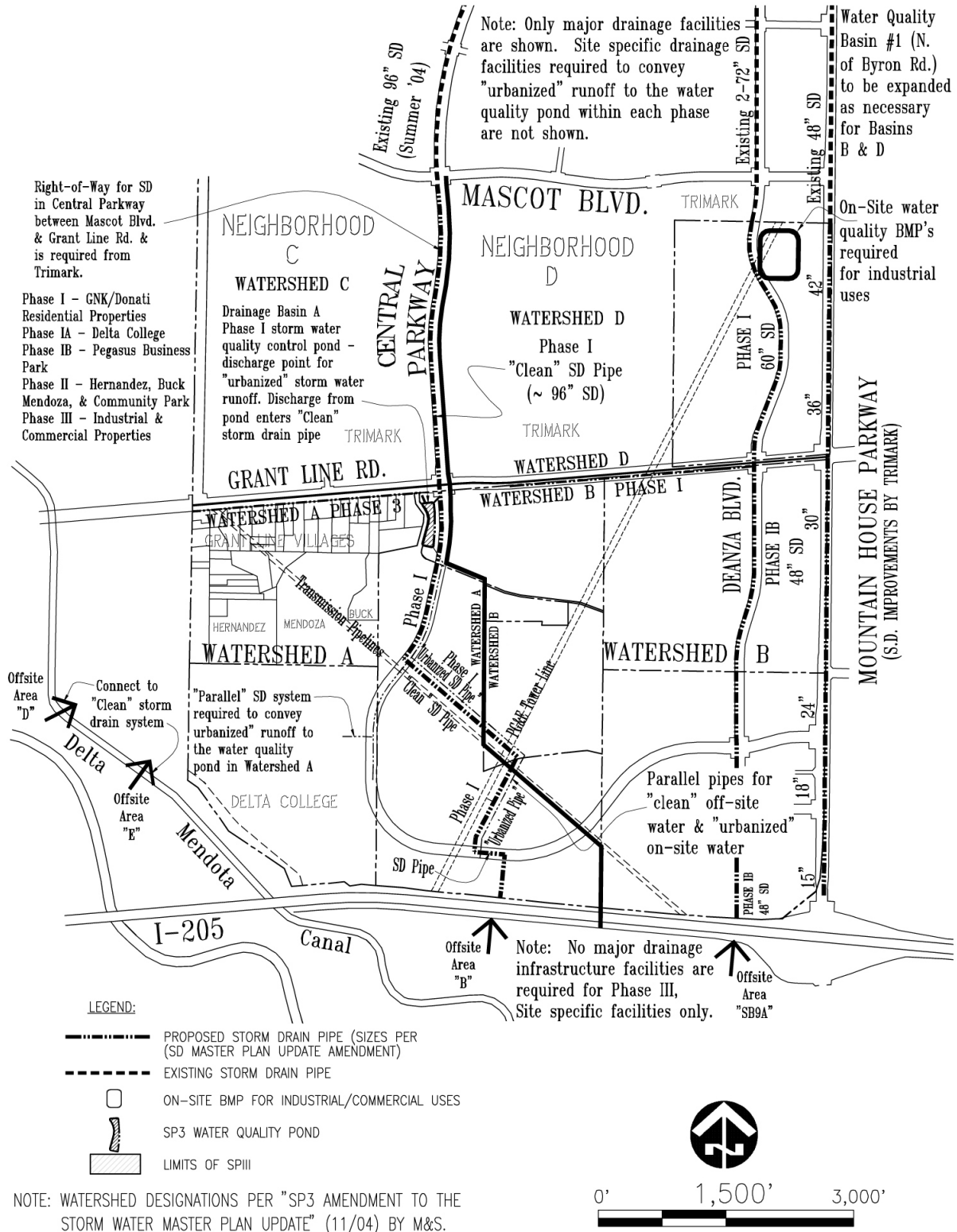
Neighboring offsite watersheds have been defined previously by the Master Plan and the MHCSO Storm Water Master Plan and updates. The definitions of these watersheds contained in these documents have been reviewed by MHCSO and are still valid for utilization as the basis for all off-site watershed and on-site conveyance systems. The runoff from neighboring off-site basins designated B, D, and E is considered “clean” water since the runoff is generated from undeveloped lands or is treated prior to entry into Mountain House (see Figure 15-1: Storm Drain Trunk System). Should development occur within these off-site watersheds, the MHCSO will work with the permitting agencies with jurisdiction to require BMP’s prior to releasing runoff from such areas which may enter into Mountain House. The existing “clean” runoff from these off-site basins will be conveyed through Neighborhood A north to Grant Line Road. It is proposed to convey urban runoff from within the SP III area in a “parallel” pipe system and to provide a water quality control pond to capture and treat the low flows and “first flush” runoff volume. After the urban runoff from the SP III area is treated in the water quality control pond, the onsite flows will be combined with “clean” runoff from the offsite basins and will be conveyed north through Neighborhood C and thence to Mountain House Creek.

- a. The conveyance system through Neighborhood A carrying the “clean” flow from off-site Basin B will be sized to convey the 100-year, 24-hour runoff. The separate pipe system to carry “urbanized” runoff to the water quality control pond will be sized to carry the 10-year, 24-hour runoff.
- b. The conveyance system through Neighborhoods B and D is designed to convey the 10-year, 24-hour design storm with runoff in excess of the pipe capacity flowing within the street right-of-way as overland release.
- c. The storm water runoff from Neighborhoods B & D, as well as offsite water from south of Watershed B, flows through existing Water Quality Basin #1 (WQB1), located north of Byron Road. WQB1 may require enlargement, depending on the criteria adopted for storm water quality volume requirements to be adopted by the MHCSO.

### **15.2.3 Implementation Measures**

- a. Each segment of the storm drainage system shall be designed as needed to provide protection for each phase of development.
- b. The MHCSO shall coordinate with the agencies having jurisdiction over Mountain House off-site watersheds areas to ensure that any future development projects do not alter the existing volume, velocity and quality of storm water runoff discharged downstream to the Mountain House Project.

All implementing projects shall comply with the applicable provisions of the MHCSO Storm Water Master Plan Update and addenda and the Development Standards.



**FIGURE 15-1: STORM DRAIN TRUNK SYSTEM**

## **15.3 Primary Storm Drain Collection System**

### **15.3.1 Master Plan Summary**

The primary storm drainage system at Mountain House provides for the conveyance of all off-site and on-site precipitation, plus any urban runoff, to Old River as a terminal drain. The primary storm drain collection system includes trunk storm drain lines, secondary storm drain lines, major open-channels (Mountain House Creek) and water quality basins.

The Master Plan requires that on-site and off-site drainage generated by precipitation and urban runoff be jointly considered and conveyed safely through the community. On-site drainage shall not impact property owners adjacent or within the community, or downstream property owners. Discharge of sediments to creeks, ditches and Old River shall be minimized.

Trunk line pipes, the water quality basin, and major open-channels within Neighborhood A shall be designed and constructed to transport the 100-year volumetric flow rate. Trunk pipe lines within Neighborhoods B and D shall be designed to transport the 10-year runoff flows, with the 100-year storm runoff to be conveyed within the street right-of-way (DeAnza Boulevard). Trunk line pipes shall be designed for gravity flow conditions.

Should temporary open channels be required for construction phasing, erosion shall be minimized by designing and constructing open-channels to convey storm water runoff at or below the allowable maximum velocity, and by using appropriate streambed protection and/or energy dissipaters at transitions from supercritical to sub critical flow, at the confluence of channels, at the downstream location of culverts, and at channel transitions. Streambed protection shall include appropriate species of plants.

The ultimate point of terminal discharge for all drainage shall be Old River. Terminal discharge will occur by gravity flow.

### **15.3.2 Specific Plan III Description**

The existing storm water master plan describes how the entire Mountain House Project, including SP III, is divided into watersheds. Runoff from these watersheds is to be collected and conveyed by underground pipe systems and flow to Mountain House Creek and thence ultimately to Old River. For the southerly part of Mountain House, the design of the underground drainage system is comprised of essentially two north-south arteries: Central Parkway and DeAnza Boulevard. This overall drainage concept governs the design of the drainage infrastructure for the SP III area. The SP III area is broken up into east and west watersheds, similar to the Mountain House Master Plan Neighborhoods A and B and the eastern third of Neighborhood D. The western area, corresponding to Neighborhood A, is designed to flow northward to a piped system in Central Parkway. The eastern area, or Neighborhood B and the eastern portion of Neighborhood D, are designed to flow northward to pipe systems in DeAnza Boulevard and Mountain House Parkway. The preferred land use plan resulting from the SP III planning process is divided into drainage areas that closely resemble those already identified in the earlier drainage studies. Also, the amount of runoff from the SP III areas must be limited to less than or equal to that previously determined for the areas.

Therefore, the storm water runoff from the land uses proposed for SP III closely resembles the quality and quantity indicated in the MHCS D Storm Water Master Plan Update.

### **15.3.3 Implementation Measures**

- a. Where the facility is exclusively used for storm drainage purposes, the site shall be fenced per MHCS D Development Standards in order to bar entry to the facility by the public. Where ponds interface with public streets or adjacent land developments, a buffer of landscaping shall be installed that will visually hide the facility from the adjacent land uses.
- b. Temporary storm drainage retention/detention basins shall be exempt from the siting criteria noted above, except for those relating to health and safety.
- c. Prior to submittal of any development permit a will-serve letter for storm drainage and flood control, will be obtained from the MHCS D. The MHCS D will condition the will serve letter to require the construction of necessary drainage facilities prior to occupancy of any structure or facility within the proposed development.
- d. All implementing storm drain projects shall comply with the applicable provisions of the:
  - MHCS D Development Standards.
  - Mountain House Storm Water Master Plan Update and addenda.
  - Best Management Practices Handbook.

## **15.4 Secondary Storm Drain Collection System**

### **15.4.1 Master Plan Summary**

The Master Plan requires that on-site drainage occurring over the community be safely conveyed by the secondary storm drain collection system to the primary storm drain collection system. The secondary storm drain collection system shall be used to collect and convey on-site drainage to the primary storm system safely with adequate flood protection. The design and construction of the secondary storm drain collection system shall be based on the 10-year storm event.

### **15.4.2 Specific Plan III Description**

The secondary storm drain collection system is primarily located within the local and collector streets and consists of local private property BMP site collection and conveyance facilities, localized drainage swales, street gutters, field inlets, catch basins, catch basin laterals and underground pipes. These facilities transport on-site drainage to trunk lines or to water quality basins. The secondary storm drain collection system will be designed and constructed per the requirements of the MHCS D.

### **15.4.3 Implementation Measures**

All storm drain improvement projects shall comply with the MHCS D Development Standards.

## **15.5 Mountain House Creek Improvements**

### **15.5.1 Master Plan Summary**

The Master Plan requires that Mountain House Creek be developed as a multi-use corridor for conveyance of off-site and on-site drainage through the community and for a wildlife habitat and recreation corridor (see Chapter Seven for recreational and park requirements). Mountain House Creek shall be used as an open channel to convey off-site and on-site drainage through the community with adequate flood protection. The creek shall discharge into Old River, but the deposition of sediment into the river shall be minimized by causing sediment deposition to occur in the Mountain House Creek channel. Mountain House Creek shall be designed to minimize erosion.

### **15.5.2 Specific Plan III Description**

Mountain House Creek, constructed as part of Specific Plan I, was designed and constructed according to the design criteria contained within the Community Approvals, as well as a Nationwide 27 Permit issued by the United States Army Corps of Engineers under the Federal Clean Water Act. These improvements were sized to convey the 100 year flood.

Outfalls to the improved Mountain House Creek channel were constructed as part of the Specific Plan I project by Trimark. Existing trunk storm drain lines in Central Parkway and DeAnza Boulevard that ultimately drain to Mountain House Creek are “stubbed” to the south side of Mascot Boulevard to accept runoff from the southerly areas of the project, Neighborhoods A through D, which includes all of the SP III area. Therefore, SP III does not contemplate further improvements to Mountain House Creek.

## **15.6 Best Management Practices**

### **15.6.1 Master Plan Summary**

The Master Plan requires that the storm drain system be designed to reduce the quantity of storm water pollutants as close to the point of origin as possible, and to incorporate cost effective BMP treatment processes. To this end, site specific and regional treatment BMP’s shall be incorporated into the design of all improvements including all structures and infrastructure.

### **15.6.2 Specific Plan III Description**

A water quality control pond is proposed for the developments within Neighborhood A/B area. The proposed pond will be located at the southwest corner of the intersection of Grant Line Road and Central Parkway. This will be an area-wide facility for the western watershed. Existing Water Quality Basin, WQB1, north of Byron Road treats runoff from Neighborhoods B and D, the areas that drain to DeAnza Boulevard and Mountain House Parkway.

In addition, per the requirements of the MHCS D Storm Water Master Plan, Manual for Best Management Practices and applicable ordinances, all private property runoff from non-residential areas will be pretreated on-site prior to discharge into the MHCS D public storm water collection

system. All such non-residential users will be required to demonstrate compliance with all applicable MHCS D requirements as part of building permit issuance.

### **15.6.3 Implementation Measures**

All implementing projects shall comply with the applicable provisions of the MHCS D Development Standards.

All implementing projects shall comply with the applicable provisions of the MHCS D Storm Water Master Plan Update and addenda and Manual for Best Management Practices.

A material management plan for each business with potential pollutants shall be approved by the MHCS D prior to the issuance of building permits for commercial or industrial uses to control the use, storage and disposal of chemicals that could pollute runoff.

An illicit connection regulation shall be enforced by the MHCS D to prevent connections to the storm drainage system that discharges material except rainfall runoff into the drainage system. All connections to the storm drainage system shall be approved by MHCS D.

## **15.7 Flood Protection**

### **15.7.1 Master Plan Summary**

The Master Plan requires that the entire Mountain House community be protected from a 100-year flood. On-site dams, levees and berms protecting the County and the Mountain House community from flooding shall be monitored by the MHCS D to identify potential problems.

The Master Plan also provided a design for a levee system to be constructed immediately adjacent to but structurally separate from any existing substandard levees. Both the existing substandard levees and the proposed levee would be developed as regional public recreational parks and/or wildlife habitat areas subject to levee encroachment standards established by the agency responsible for the operation and maintenance of the new levee system.

### **15.7.2 Specific Plan III Description**

All work associated with the levees is considered to be a part of the scope of work for Specific Plan II. In the event that Specific Plan II does not move forward, SP III must then be amended to cover the scope of work related to levee improvements.

## **15.8 Siting Criteria**

### **15.8.1 Master Plan Summary**

The Master Plan requires that drainage facilities be sited to perform efficiently while minimizing visual, safety, or other impacts.

### **15.8.2 Specific Plan III Description**

A water quality pond is proposed for the western portion of the SP III area. The basin is to be located at the southwest corner of the intersection of Central Parkway and Grant Line Road. The basin will be designed to have a perimeter berm to obscure views into the basin. For safety concerns, the basin will be required to be completely fenced and will not be accessible to the public. The berm and fence will be screened by appropriate landscape planting. Full maintenance access to the basin perimeter and basin bottom will be required.

### **15.8.3 Implementation Measures**

- a. All implementing projects shall comply with the applicable provisions of the MHCS Development Standards.
- b. All implementing projects shall comply with the applicable provisions of the MHCS Storm Water Master Plan Update and Manual for Best Management Practices.