

**APPENDIX 15-B**



**Description of Mt. House Watersheds;  
Proposed Drainage Patterns; and Regulatory Permits**

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**DESCRIPTION OF MOUNTAIN HOUSE WATERSHEDS, PROPOSED**  
**DRAINAGE PATTERNS, AND REGULATORY PERMITS**

**DESCRIPTION OF WATERSHED AREAS**

**Watershed Area A**

The boundary of this watershed extends to the Altamont Pass and the principal drainage channel from the area is Mountain House Creek. Mountain House Creek passes through culverts under both the California Aqueduct and the Delta-Mendota Canal and drains in a northeasterly direction through the community to Old River. The watershed varies in elevation from 1,800 to 200 feet. The portion of the creek from the Delta-Mendota Canal to the Alameda/San Joaquin County line varies in depth from ten to twenty-five feet. Within this reach of the creek, two small dams exist which impound runoff water for agricultural uses.

**Watershed Area B**

This watershed is adjacent to the southern end of Watershed Area A. Within this watershed the elevation varies from 2,100 to 160 feet. The major drainage channel in this watershed is Patterson Run Creek which follows Patterson Pass Road from the westerly boundary of the watershed to the PG&E Tesla Substation near the rural area of Midway. Thereafter, the creek flows through culverts under the California Aqueduct and the Delta-Mendota Canal and enters the southern edge of the community along Interstate 205 approximately 3,800 feet west of the intersection of Patterson Pass Road and Interstate 205.

**Watershed Area C**

This watershed is immediately north of the Mountain House Creek watershed. This watershed and its main creek are shown but not labeled on the USGS quad maps covering the area. For purposes of this document, the watershed and creek are referred to as Dry Creek watershed and Dry Creek, respectively. Runoff from this basin follows a well defined course down to Mountain House Road near the Delta-Mendota Canal siphon. Downstream from this point the flow path of Dry Creek has been altered by farming activities. Inspection of aerial photographs and USGS quad maps reveals that the original path of Dry Creek flowed in a northeasterly direction toward Old River. A remnant of Dry Creek, now disconnected from the main watershed course, exists on each side of Byron Road near the Alameda/San Joaquin County Line. Presently, the runoff appears to follow the ditch adjacent to Mountain House Road until intersecting Byron Road. At this point the flow ponds in the vicinity of this intersection and appears to drain in the northwesterly direction away from the Mountain House Community.

#### **Watershed Area D**

Watershed Area D is located adjacent to the southeasterly boundary of Watershed Area A. The elevation in this watershed ranges from 500 feet to 200 feet. The main watershed course passes under the California Aqueduct and Delta-Mendota Canal, through culverts, and enters the southwest corner of the project site. Thereafter, the water course appears to follow a natural drainage swale which intersects BBID 155 Canal. The determination of the exact drainage course is subject to further field investigation.

#### **Watershed Area E**

Watershed Area E is located adjacent to the western boundary of Watershed Area D. This watershed ranges in elevation from about 400 feet to 200 feet. The primary drainage creek for this basin passes through culverts under the California Aqueduct and the Delta-Mendota Canal. On the east side of the Delta-Mendota Canal the runoff follows a natural swale for about 1,000 feet and then flows into a large borrow pit that was created to provide earth material for the construction of Interstate 205. Runoff from the borrow pit appears to drain to BBID 155 Canal, although further field investigations are required to verify this conjecture.

#### **Watershed Area F**

The eastern edge of Watershed Areas F1, F2 and F3 are adjacent to the Delta-Mendota Canal. Runoff from these small basins flows directly into the Delta-Mendota Canal and does not impact the community.

#### **Watershed Area G**

This watershed covers 2.08 square miles of farmland in Alameda County. A preliminary field investigation of this area indicates that drainage is conveyed away from the proposed community by the existing farm drain system. The terminal point of discharge appears to be the Delta-Mendota Canal near Byron road. The runoff from the Dry Creek Watershed (Area C) appear to ultimately combine with this runoff.

#### **Watershed Area H**

Watershed Area H consists of 0.59 square miles of farm land in Alameda County. The local farm drain system serving this area appears to drain toward the remnant of Dry Creek which crosses Byron Road near the Alameda/San Joaquin County line.

#### **Watershed Area I**

This watershed consists of 0.32 square miles of farm land in alameda County which ultimately drains through the community via the local farm drainage system toward Byron Road. The runoff then appears to flow northwest and discharge into the remnant of Dry Creek.

### **Watershed Areas J, K, L and M**

The 0.84 square miles of Watershed Area J are adjacent to Mountain House Creek and drain directly to the creek. Watershed Areas K, L and M appears to drain by sheet flow through the local farm drainage system toward the east impacting the community site.

## **DESCRIPTION OF PROPOSED DRAINAGE PATTERNS**

As shown in Figure 15.2 of the Master Plan, the community is divided into a number of urban watersheds which drain to trunklines, open channels, and detention/treatment facilities. Internal urban watershed boundaries are approximate and may change as the community develops. The trunk lines and channels are sized assuming that flood control storage is not available, except in the golf course areas. In regions WS25 and WS31, it is anticipated that a series of interconnected golf water features will serve as treatment BMPs. Depressed fairways within the golf courses may be designed as detention basin flood control volume.

Untreated off-site drainage enters in the community at five points (A, B, D, E, H) indicated in Figure 15.2. These drainage patterns are described as follows.

Watershed Area A runoff is contained within Mountain House Creek and discharges to Old River. Watershed Area B runoff is conveyed through a trunk line flowing generally north until intersecting Grant Line Road at which point the trunk line flows east to Patterson Pass Road and then turns north and ultimately discharges to Mountain House Creek. Runoff from Watershed Areas D and E also flows into the trunk line which parallels Grant Line Road.

Thereafter, Watersheds B, D, E and WS01 to WS20 drain to a trunk line and open channel along Patterson Pass Road. The trunk lines are single or double cast-in-place concrete pipes which discharge into an open channel near point CH13. Downstream of CH13, an energy dissipator structure is required to reduce the high flow velocity discharging from the pipe(s) into the open channel. At point CH10, runoff from Watersheds WS01 to WS11 is treated in the first flush basin DB1 which discharges to the trunk line along Patterson Pass Road. At point CH22, the first flush of storm water for Watershed WS12A through WS20 is diverted to the golf course area in WS25 for treatment. Flood flows at point CH22 discharge into Mountain House Creek.

Watershed Area H runoff is conveyed for approximately 2,000 feet in the remnant of Dry Creek and then flows northeast in an open channel before discharging into the community marina. Upon further study, this channel may be replaced with a pipe at the specific plan stage. Runoff from Watershed Areas I and L are intercepted by a ditch which parallels the Alameda/San Joaquin County Line. The ditch flows north

discharging into either the existing irrigation line adjacent to Byron Road or discharging into the remnant of Dry Creek.

Runoff from Watershed Area K is intercepted by a ditch which parallels the Alameda/San Joaquin County Line north of Byron Road. This ditch flows north and discharges into Old River. Runoff from Watershed Area J, and a portion of Watershed Area M, shown in Figure 15.2 discharges directly to Mountain House Creek and runoff from the remaining portion of Watershed Area M is conveyed by the local storm drain collection system for WS07.

Watershed WS21 runoff discharges to Mountain House Creek at point CH20 and is treated in a series of tiered first flush basins, denoted DB3, located within the floodplain of the creek. Watershed WS22 runoff is treated in basin DB4 and discharged to Mountain House Creek at point CH21. Runoff from WS23 is conveyed to WS25 and treated in the golf course (DB2) and pumped into Old River. Runoff from WS24 is treated in basin DB5 and pumped to Old River.

Runoff from Watersheds WS28, WS29 and WS30 is conveyed to Watershed WS31 and treated in the golf course area and pumped into Old River. Runoff from Watersheds WS26 and WS27 is treated in basin DB7 which discharges to the remnant of Dry Creek. Runoff from Watersheds WS32 and WS33 are treated in basins DB8 and DB9, respectively, and pumped into the Marina. Runoff from Watershed WS34 is treated in basin DB10 and pumped into Old River.

## **REGULATORY PERMITS FOR STORM DRAINAGE AND FLOOD PROTECTION**

### **Corps of Engineers**

The Corps of Engineers administers two Federal laws which may require that Department of the Army Permit(s) be obtained for certain aspects of the project. These laws are Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act.

Section 10 of the Rivers and Harbors Act requires that a Department of the Army Permit be obtained prior to performing work in, over, or under navigable waters of the United States. All waters subject to the ebb and flood of the tide are considered to be navigable waters of the United States. Since Old River is tidally influenced, any work conducted in, over or under Old River would required prior authorization from the Corps of Engineers. The term "work" includes erection of structures, dredging, filling and similar activities.

Section 404 of the Clean Water Act requires that a Department of the Army Permit be obtained prior to discharging dredged or fill material into any water of the United

States, including wetlands. Construction of culvert crossings, relocating a portion of Mountain House Creek, and the filling of any wetlands associated with development of the project would require authorization from the Corps of Engineers. This authorization would be either in the form of an individual permit or a nationwide permit.

Nationwide permits are categorical permits issued generically by the Corps of Engineers for certain types of activities subject to conditions. Nationwide permit number 26 authorizes discharges of dredged or fill material into isolated waters and other waters above their headwaters which would impact less than 10 acres of such waters (33 CFR 330, Appendix A). If a project would impact less than one acre of such waters, specific authorization from the Corps is not required. Where a project would impact more than one acre but less than 10 acres of such waters, the Corps of Engineers must be notified and they then have 30-days to either require an individual permit or allow the work to proceed under the authority of the nationwide permit. Nationwide Permit number 14 authorizes fills for roads crossing waters of the United States, including wetlands, provided: (a) the width of the fill is limited to the minimum necessary for the actual crossing; (b) the area of fill in waters of the United States is limited to no more than 1/3-acre and no more than a total of 200 feet of fill can occur in wetlands; (c) the crossing is culverted, bridged or otherwise designed to prevent the restriction of low flows and the movement of aquatic organisms; (d) the crossing, including all attendant features, both temporary and permanent, is part of a single and complete project for crossing a water of the United States; and (e) for fills in wetlands, the Corps must be notified the same as in Nationwide Permit number 26, above. Nationwide Permit number 12 authorizes fill placed for backfill or bedding for utility lines, including outfall or intake structures, provided there is no change in pre-construction contours. If a proposed utility line crossing would conform with the provisions of this Nationwide Permit, no notification to the Corps of Engineers is required.

The Mountain House Master Plan avoids any placement of dredged or fill material into any waters of the United States, including wetlands, except for construction of the proposed raw water conveyance pipeline within the initial Specific Plan area. The construction of this pipeline is proposed to conform with the conditions of Nationwide Permit number 12 as described above. Therefore, neither an individual permit nor a pre-discharge notification would be required within the Master Plan area.

#### **California Department of Fish & Game**

In addition to any required dredge and fill permits issued by the Corps of Engineers, a Streambed alteration Agreement (also known as a 1603 Agreement) pursuant to Sections 1601-1607 of the California Fish and Game Code would be required prior to any alteration of a lake, river, or streambed bottom or margin. Stream Alteration Agreements are issued by the California Department of Fish and Game. Work in or

adjacent to Old River, Mountain House Creek and Dry Creek will require Streambed Alteration Agreement(s). The construction of bridges over Mountain House Creek and Dry Creek will require Stream Alteration Agreements even though no culverts or fill will be placed in the creeks. Likewise construction of the raw water conveyance pipeline will require a Stream Alteration agreement where it crosses Dry Creek.

#### **Central Valley Regional Water Quality Control Board**

In addition to Streambed Alteration Agreements or Corps of Engineers permits, it is further required that water quality certification, or a waiver thereof, be obtained pursuant to Section 401 of the Clean Water Act. Water quality certifications and waivers of certification are obtained from the Regional Water Quality Control Board. If authorization from the Corps of Engineers is not required as described in 15.10.1, above, water quality certification is likewise, not required.