

## HYDROLOGY AND WATER QUALITY

This chapter describes existing drainage and water quality conditions in the Specific Plan area, presents standards of significance for surface water-related impacts, and describes potential impacts of Specific Plan development on hydrology and water quality.

### 13.1 SETTING

Annual rainfall in the plan area is approximately 16 inches, with about 95 percent of the total annual occurring during the period October through April. Rainfall results almost exclusively from cyclonic systems originating in the northern Pacific Ocean during winter. Monthly rainfall may be considered heavy between December and February and is highest in January when it approaches 3.5 inches.

#### Regulatory Framework

In the Specific Plan area, water resources policies are administered by several agencies. They include the:

- California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB or “Regional Board”),
- State Water Resources Control Board (SWRCB), and the
- U.S. Environmental Protection Agency (U.S. EPA).

Development proposed in the Specific Plan is subject to the Federal Clean Water Act, the California Porter-Cologne Water Quality Control Act (Porter-Cologne Act), applicable Water Code sections, i.e. plans and policies adopted by the RWQCB and SWRCB, and permitting and licensing requirements that may be required during project design/development review by either the City of Pittsburg or Contra Costa County, depending on which agency has land use authority for the project under review.

#### San Francisco Bay Basin Water Quality Control Plan (Basin Plan)

The RWQCB regulates surface water and groundwater quality in San Francisco Bay through its San Francisco Bay Water Quality Control Plan (Basin Plan). The Basin Plan is the master policy, legal, and technical document for water quality regulation in the San Francisco Bay region. The Basin Plan specifies beneficial uses of receiving waters, water quality objectives imposed to protect the designated beneficial uses, and strategies and schedules for achieving water quality objectives. The Regional Board also issues permits of waste discharges, and implements monitoring programs of pollutant effects.

State policy for water quality control in California is directed toward achieving the highest water quality consistent with maximum benefit to the people of the State. Therefore all water resources must be protected from pollution and nuisance that may occur as a result of waste discharges. Beneficial uses of surface waters, ground waters, marshes, and mud flats serve as a basis for establishing water quality standards and discharge prohibitions to attain this goal. Beneficial uses that have been identified for Suisun Bay include:

- Water contact and non-contact water recreation
- Navigation
- Ocean, commercial and sport fishing
- Wildlife habitat
- Estuarine habitat
- Fish spawning and migration
- Industrial service supply
- Preservation of rare and endangered species

### **National Pollutant Discharge Elimination System**

Part of the Clean Water Act provides for the National Pollutant Discharge Elimination System (NPDES), in which discharges into navigable waters from point and non-point sources are prohibited except in compliance with specified requirements and authorizations. Municipal and industrial facilities are required to obtain a NPDES permit that specifies allowable limits for pollutant levels in their effluent based on available wastewater treatment technologies. The U.S. EPA has delegated the implementation of this program to the SWRCB and to the Regional Boards.

Surface runoff is also regulated to protect water quality. NPDES permits are issued for stormwater runoff in urban areas, and are administered by the California Regional Water Quality Control Board (RWQCB). Non-point source pollutants in stormwater may include suspended sediment, hydrocarbons, metals and nutrients (e.g., nitrogen and phosphorus compounds) deriving from exposed soils, roads, rooftops and other surfaces.

The RWQCB has issued general NPDES permits to individual jurisdictions such as Contra Costa County and the City of Pittsburg. These permits require the jurisdiction to enact ordinances and programs to control stormwater pollution from various sources including new urban or suburban development. The County has adopted stormwater pollution prevention ordinance provisions that contain general prohibitions against stormwater pollution and specific requirements pertaining to construction activities.

The RWQCB has adopted a separate *NPDES General Permit for Stormwater Discharge Associated with Construction Activity*. This permit applies to construction projects that would disturb five acres or more of land. Project developers are required to file a Notice of Intent with the RWQCB to obtain coverage under the General Permit. The permit applicant is required to prepare a Stormwater Pollution Prevention Plan (SWPPP) to address potential grading and erosion impacts and non-point source pollution impacts that may occur during and after project construction.

The County and the City of Pittsburg participate in the NPDES process by requiring that Best Management Practices (BMPs) be implemented in the design of a project's storm drainage system to reduce or eliminate stormwater pollution. These BMPs are to be implemented during project construction and included in long-term operation and maintenance of facility infrastructure. For both the County and City, a project developer must submit a copy of the Notice of Intent filed with the RWQCB, and obtain County or City approval of the SWPPP. SWPPP approval is required prior to issuance of local building permits.

## **Groundwater**

The Specific Plan area is within the Pittsburg Plain groundwater basin, a 30-square mile elongated basin which runs east-west along and parallel to State Route 4 in the plan area. Water movement in the aquifer is to the north and recharges the Sacramento/San Joaquin River system. Geotechnical reports prepared for sites in the Pittsburg area indicate that groundwater levels vary considerably. Groundwater depth within upland areas of the Pittsburg Plain has been documented to be between 18 to 28 feet, whereas shallow groundwater may be encountered in low-lying areas near Suisun Bay and in ravines and creek channels.

Intense pumping of groundwater in the period between the 1930s and the 1950s resulted in overdraft and intrusion of saline water into the aquifer. These problems were alleviated by widespread use of surface water from the Contra Costa Canal. The City of Pittsburg currently extracts groundwater to supplement its surface water supply.

## **Contra Costa Canal**

The Contra Costa Canal is owned by the U.S. Bureau of Reclamation and operated and maintained by the Contra Costa Water District (CCWD). The canal provides the conveyance of Central Valley Project water from the San Joaquin Delta to the CCWD. The canal traverses through the Specific Plan area. Further discussion of the canal is provided in Chapter 8: Community Services and Utilities.

## Potentially Affected Receiving Waters

### Suisun Bay

Of the water bodies that form the San Francisco Bay Estuary –Delta system, Suisun Bay is the first water body that receives flow from the Sacramento and San Joaquin rivers and their tributaries. The drainage areas that contribute flows to the rivers comprise about 37 percent of the land area of the State.<sup>1</sup> Much of the land area is devoted to agricultural and forestry land uses, with major urban centers also contributing discharges into the rivers. Pollutants produced by these activities reach the San Francisco Bay through discharge from wastewater treatment plants, stormwater runoff, agricultural drainage and disposal of dredged materials. Salinity in Suisun Bay is generally lower than in downstream waters such as the San Pablo Bay, because of the fresh water inflow from the rivers.

### Lawlor Creek

The Lawlor Creek watershed is one of two major watersheds within the Pittsburg planning area. Most of the Lawlor Creek watershed south of Bay Point is undeveloped, though some residential development exists south of State Route 4. Surface runoff is conveyed by natural channels with exception of storm drains located in developed areas, and culverts under State Route 4. The sections of Lawlor Creek downstream of the plan area generally flood during the 100-year storm events as indicated on the Flood Insurance Rate Map dated 1987 issued by the Federal Emergency Management Agency (FEMA). The County requires all developments tributary to Lawlor Creek to mitigate their adverse drainage impacts on the natural creek.

### Floodplains

Official Flood Insurance Rate Maps have been issued for the Specific Plan area by the Federal Flood Insurance Administration. The special flood hazard area is termed Zone A (i.e., the area subject to inundation by the 100-year flood). The FEMA map indicates areas subject to inundation as follows:

- **City of Pittsburg.** One portion of Lawlor Creek immediately upstream from West Leland Road is identified as flood-prone by FEMA. The area subject to flooding according to FEMA criteria is limited to the lands within approximately 100 feet of the channel.
- **Contra Costa County.** The County map indicates that the channel of Lawlor Creek is inadequate from the Contra Costa Canal downstream to Willow Pass Road, a distance of approximately 0.85 mile. During peak discharge, lands adjacent to the creek are subject to flooding.

The FEMA Flood Rate Insurance Maps designate several areas within the plan area vicinity as within the 100-year flood zone limit. These areas primarily include the areas associated with Lawlor Creek north of State Route 4 and east of Bel Air School and the portion of the creek south of West Leland Road. The 100-year flood zone associated with Lawlor Creek east of the

interchange and north of State Route 4 extends from Canal Road north along the length of the stream to the Suisun Bay. The flood zone is primarily restricted to the stream channel.

## **Existing Specific Plan Area Drainage Patterns**

The Specific Plan area includes several surface water drainage features within the Lawlor Creek watershed. Stormwater runoff generally flows north within the planning area via natural and channelized creek sections and an underground stormwater sewer system. Runoff leaving the area eventually discharges into Suisun Bay. Within the incorporated portions of the planning area, the City of Pittsburg maintains the storm sewer system. Major channels and creeks in both incorporated and unincorporated portions of the County are maintained by Contra Costa County's Department of Public Works and Flood Control and Water Conservation District.

### **Drainage Area Fees**

Within adopted drainage areas in Contra Costa County's jurisdiction, fees are required from developers to offset the cost of storm sewer system improvements necessitated by the addition of impervious surfaces in the watershed. Where storm drain improvements are needed within parcels under development, the construction of such facilities is designated as a condition of project approval. For projects within the City of Pittsburg, developers are required to verify the adequacy of downstream storm drain facilities to convey runoff from proposed development.

Portions of the Specific Plan area lie within Drainage Areas 48B and 48D as designated by the Contra Costa County Flood Control and Water Conservation District. Drainage Areas 48B and 48D have drainage fees based on \$0.27 per square foot and \$0.54 per square foot, respectively, for newly created impervious surface area. The County requires payment of fees prior to the filing of final maps, parcel maps, or the issuance of building permits, whichever the case may be within the above drainage areas. For the purposes of this discussion, two primary stormwater systems within these areas are of concern. The system draining the majority of the Specific Plan area is served by Line 'A' of Drainage Area 48D while a smaller portion of the planning area including most of the block along Willow Pass Road is served by Line 'B' of Drainage Area 48B. Additional detail regarding these systems is provided below.

### **Drainage Area 48D: West of Bailey Road**

From West Leland Road west of the BART station (the southern boundary of the Specific Plan area), stormwater runoff is diverted to a 42-inch storm drain which carries runoff north and under State Route 4. From West Leland Road in the vicinity of the BART property, stormwater is diverted to an open channel which conveys runoff northward to a 36-inch storm drain under State Route 4. Stormwater runoff from the shopping center located along Bailey Road is transported north to drainage facilities located along the south side of State Route 4 which carry the runoff west to a culvert under State Route 4. This culvert is located just west of the end of the State Route 4 / Bailey Road interchange on- and off-ramps.

Flows from the upper watershed area (i.e., south of State Route 4) are constricted by the capacity of the existing culverts at State Route 4. Since the Specific Plan would involve increasing runoff from the area south of State Route 4, drainage facility improvements may be required to mitigate the effect of runoff reaching these culverts. However, a drainage area has not been established south of State Route 4, which would trigger the fee requirement for addition of impervious surfaces.

North of State Route 4, stormwater runoff flows northward via two main routes. The first route conveys runoff from the Oak Hills Shopping Center south of State Route 4 under the highway to a small open channel between State Route 4 and Canal Road. From this point, stormwater is diverted under Canal Road to an open drainage channel north of Canal Road. This open drainage channel outflows via a 48-inch storm drain and connects to a 72-inch storm drain north of Mims Avenue.

The second drainage system north of State Route 4 combines the two storm drainage systems south of State Route 4 and west of the shopping center into one drainage just north of Canal Road. From Canal Road, stormwater is conveyed through a series of culverts and open channels northward to the 72-inch storm drain north of Mims Avenue.

The storm drainage system west of Bailey Road has a maximum design capacity of 190 cubic feet per second (cfs) due to downstream capacity constraints.<sup>2</sup>

#### **Drainage Area 48D: East of Bailey Road**

Stormwater runoff from areas east of Bailey Road and north of West Leland Road flows via Lawlor Creek to a 72-inch culvert under West Leland Road north of Ambrose Park. Runoff is then diverted into a 24-inch storm drain that runs under Ambrose Park to a box culvert measuring 4.0 by 4.5 feet which carries stormwater under the Contra Costa Canal. From this point, runoff is carried under State Route 4 via a 72-inch and 48-inch parallel pipe system to an open channel north of State Route 4 (Lawlor Creek). This system is generally adequate to carry flows from a storm of 25-year return frequency as required by the Contra Costa County Flood Control District. The storm drain under Ambrose Park is undersized in comparison to these facilities.<sup>3</sup>

Stormwater runoff from areas further to the east generally flows via above-ground drainage north toward State Route 4. Runoff is directed to a 30-inch culvert, which carries it under State Route 4 to Lawlor Creek north of Canal Road. These drainage facilities are considered adequate to accommodate 25-year storm flows.<sup>4</sup>

As part of the EIR for the State Route 4 / Bailey Road Interchange Improvement Project, runoff was modeled for the area surrounding the interchange. The study identified the area between West Leland Road and State Route 4 as generating greater runoff from a storm of 10-year

return frequency than the capacity of the storm sewer system. Proposed mitigation included the construction of detention basins to reduce outflow to downstream drainage facilities.

### **Drainage Area 48B**

The northwest portion of the Specific Plan area lies along Willow Pass Road and includes a block north of Willow Pass. This area is served for stormwater drainage by Line 'B' along its western margin and Line 'B-3.' Line 'B-3' proceeds toward Suisun Bay at a point roughly centered in the east-west direction along the planning area's northern margin. Line 'B' and Line 'B-3' meet to the north of the Specific Plan area and feed the 'Earth Channel Junction' drainage facility at the railroad tracks.

### **Water Pollutants**

Urban stormwater can represent a significant component of the wastewater stream. Pollutants may include the same types identified above for municipal wastewater although the concentrations of oxygen-demanding substances, nutrients, and pathogenic microorganisms are generally much lower compared to untreated municipal wastewater. Sources of urban stormwater pollutants include vehicles, build-up of oil and grease on impervious surfaces during dry periods, landscaping and maintenance activities, construction and industrial activities, and illegal or accidental connections from non-stormwater sources such as system cross connections, spills, and illegal dumping.

Heavy metals, and organic and inorganic compounds may also occur through atmospheric deposition of these pollutants.

### **City of Pittsburg Policies Related to Flooding and Stormwater**

The following City of Pittsburg General Plan policies related to flooding and stormwater runoff conveyance apply to all Specific Plan projects in the City limits:

- Locate development outside flood-prone areas unless mitigation of flood risk is assured.
- Ensure that new development will not add storm runoff exceeding a proportional share of designed storm-drainage capacity.
- Evaluate storm-drainage needs for each project in the context of demand and capacity when the drainage area is fully developed. Require drainage improvements or other mitigation of the project's impacts on the storm drainage system appropriate to the project's share of cumulative effect.
- Require assessment of potential downstream flood impacts and drainage of all major new developments. When significant impacts are identified, require the project sponsor to provide adequate mitigation or assume the costs of necessary facilities to be constructed by public agencies.

The *City of Pittsburg Stormwater Management Plan* identifies Suisun Bay as a resource of special recreational and habitat value. The plan seeks to protect this resource from pollution contained in stormwater runoff by reducing contamination of stormwater through a set of BMPs. BMPs applicable to development proposed under the Specific Plan should be enforced, and include:

- **Construction Sites and New Development.** BMPs for this category include erosion and sedimentation controls, construction practices, and new development controls. These practices aim to mitigate water quality problems and eliminate future stormwater pollution.
- **Illicit Connections and Discharges.** There are two types of illicit discharges – illicit connections to the storm drain system and the illegal dumping of materials into the system. The objective of practices in this category is to prevent non-stormwater discharges from entering the storm drain system. BMPs include above and below ground facility inspections and household hazardous waste programs.
- **Commercial Areas.** Examples of pollutants from commercial areas include oil and grease from parking lots, grease and other wastes from restaurants, and materials from automotive service areas. BMPs such as the installation of pervious pavement in downstream sections of major parking lots, street sweeping and facility inspections address this issue.
- **Industrial Areas and Facilities.** Discharges from metal plating industries and auto-related facilities are among the pollutants found in the category. BMPs targeting this category include assisting industries to comply with general permits, obtaining the legal authority for inspectors to issue citations, street sweeping, and catch basin cleaning.
- **Transportation Facilities.** These include runoff from roads and parking lots. BMPs addressing water quality problems associated with transportation facilities include encouraging public employees to take public transportation, diverting and treating runoff, and City participation in regional transportation management programs.

- **Agency Activities and Facilities.** Sources of stormwater pollution can be corporation yards, flood control channels, and City streets. Structural controls and source controls can both be used to correct this problem. BMPs include field inspections, reduction of herbicide and pesticide use, and targeted catch basin cleaning (City of Pittsburg 1998).

Other relevant City of Pittsburg policies related to water quality are contained in the General Plan including<sup>5</sup>:

- creek setback standards,
- discouraging the culverting of significant creeks, and
- buffers or landscaped setbacks and storm runoff interception.

Also, the City of Pittsburg Zoning Ordinance forbids the discharge of liquids into a watercourse, sewage system, or the ground, except in compliance with applicable law and regulations. These RWQCB regulations and the California Water Code should be enforced.

## **Contra Costa County General Plan Policies Related to Water Quality, Flooding, and Stormwater**

The following County Water Resources goals and policies apply<sup>6</sup>:

### ***Water Resources Goals***

- 8-T. To conserve, enhance and manage water resources, protect their quality, and assure an adequate long-term supply of water for domestic, fishing, industrial and agricultural use.
- 8-U. To maintain the ecology and hydrology of creeks and streams and provide an amenity to the public, while at the same time preventing flooding, erosion, and danger to life and property.
- 8-V. To preserve and restore remaining natural waterways in the County which have been identified as important and irreplaceable natural resources.
- 8-W. To employ alternative drainage system improvements which rely on increased retention capacity to lessen or eliminate the need for structural modifications to watercourses, whenever economically possible.
- 8-X. To enhance opportunities for public accessibility and recreational use of creeks, streams, drainage channels, and other drainage system improvements.

***General Water Resources Policies***

- 8-74. Preserve watersheds and groundwater recharge areas by avoiding the placement of potential pollution sources in areas with high percolation rates.
- 8-75. Preserve and enhance the quality of surface and groundwater resources.
- 8-76. Ensure that land uses in rural areas be consistent with the availability of groundwater resources.
- 8-77. Provide development standards in recharge areas to maintain and protect the quality of groundwater supplies.

***Policies for New Development Along Natural Watercourses***

- 8-86. Existing native riparian habitat shall be preserved and enhanced by new development unless public safety concerns require removal of habitat for flood control or other public purposes.
- 8-87. On-site water control shall be required of major new developments so that no increase in peak flows occurs relative to the site's pre-development condition, unless the Planning Agency determines that off-site measures can be employed which are equally effective in preventing adverse downstream impacts.
- 8-88. New development which modifies or destroys riparian habitat because of needed flood control shall be responsible for restoring and enhancing an equivalent amount of habitat within or near the project area.
- 8-89. Setback areas shall be provided along natural creeks and streams in areas planned for urbanization. The setback areas shall be of a width adequate to allow maintenance and to prevent damage to adjacent structures, the natural channel, and associated riparian vegetation. The setback area shall be a minimum of 100 feet; 50 feet on each side of the centerline of the creek.
- 8-91. Grading, filling and construction activity near watercourses shall be conducted in such a manner as to minimize impacts from increased runoff, erosion, sedimentation, biochemical degradation, or thermal pollution.
- 8-92. Revegetation of a watercourse shall employ native vegetation, providing the type of vegetation is compatible with the watercourse's maintenance program and does not adversely alter channel capacity.

The following *Contra Costa County General Plan* implementation measures related to water quality, drainage and flood hazard apply to all Specific Plan projects in the unincorporated areas of the County<sup>7</sup>:

- New development should be required to finance its legal share of the full costs of drainage improvements necessary to accommodate projected peak flows due to the project. Reimbursement from subsequent developments which benefit from the added capacity may be provided. (Public Facilities/Services Element, Policy 7-44, page 7-33)
- Regional detention basins shall be favored over smaller, on-site detention basins. (Policy 7-46, page 7-33)
- Open bypass channels, detention and all drainage facility rights-of-way which are provided at different locations in order to supplement existing natural creeks should be developed as an asset to the development; e.g., as a secondary recreation use. (Policy 7-48, page 7-33)
- Natural streams and channels which have been structurally modified shall be evaluated for potential use as urban open spaces, linear parks, and trails. Cities and other agencies responsible for recreation shall be encouraged to undertake this evaluation. (Policy 7-49, page 7-33)
- Detention basins shall be designed for multiple uses such as parks and playing fields when not used for holding water, if liability and maintenance issues can be satisfactorily resolve. (Policy 7-51, page 7-33)
- As appropriate and to the extent allowed by law, assess all new development projects at least \$0.35 per square foot of impervious surface created. This drainage fee is to be collected through existing County Flood Control drainage area fee ordinances, newly adopted drainage area fee ordinances, existing and new assessment districts, or other financial entities. The fee may be applied to the cost of any developer-sponsored regional flood control improvements on- or off-site which mitigate the project's flooding impacts. Regional facilities are defined as systems sized to handle at least 15 cubic feet per second and suitable for public agency maintenance; i.e., 24-inch diameter and larger storm drains. (Public Facilities/Services Element, Policy 7-55, page 7-34)
- Applications of toxic pesticides and herbicides shall be kept at a minimum and applied in accordance with the strictest standards designed to conserve all the living resources of the County. The use of biological and other non-toxic controls shall be encouraged (Policy 8-22, page 8-29)

- Runoff of pollutants and siltation into marsh and wetland areas from outfalls serving nearby urban development shall be discouraged. Where permitted, development plans shall be designed in such a manner that no such pollutant and siltation will significantly adversely affect the value or function of wetlands. In addition, berms, gutters, or other structures should be required at the outer boundary of the buffer zones to divert runoff to sewer systems for transport out of the area. (Policy 8-23, page 8-30)
- Ensure that additional new drainage facilities, including road culverts and bridges, are designed to pass the flow specified in County Ordinance Code.
- Through the environmental review process, ensure that potential flooding impacts, due to new development, including on-site and downstream flood damage . . . are adequately assessed. Impose appropriate mitigation measures.

### **Contra Costa County Subdivision Ordinance**

Developments within County-designated drainage areas are also required to comply with the flood control improvement requirements of the Contra Costa County Subdivision Ordinance. The pertinent sections of this ordinance are:

- All portions of the subdivision shall be protected from flood hazard, inundation, sheet overflow, and ponding of storm waters, springs and all other surface waters. All finished floors shall be above the water surface of a 100-year frequency storm runoff. (Section 914-2.002)
- The design of all improvements within the subdivision shall be constructed such that all surface waters occurring within the subdivision, as well as surface waters flowing onto and/or through the subdivision, are conveyed without damage to any improvement, building site, or dwelling which may be constructed within the subdivision. Storm drainage facilities within the subdivision shall be designed to adequately convey the stormwater runoff from the ultimate development of the drainage basin or watershed. (Section 914-2.004)
- Surface waters flowing from the subdivision in any form or manner shall be conveyed without damage to any improvement, building, or dwelling to a natural water course having a definable bed and banks, or to an existing adequate storm drainage facility. Storm drainage facilities to be constructed outside of the subdivision shall be designed to adequately convey the storm water runoff from the ultimate development of the drainage basin or watershed lying within and above the subdivision. (Section 914-2.006)

## Conditions for a 21st Century Community

Contra Costa County's *Conditions for a 21st Century Community* contains the following policies and conditions of approval that relate to drainage, flooding, and water quality:

- Require project development to finance the full cost of drainage improvements necessary to accommodate peak flows from the project. (Flood Control section, Policy 1)
- Establish a storm drainage system that protects property and ensures public safety while maintaining the natural resource values of the creeks. (Flood Control section, Policy 2)
- Mitigate the project storm water runoff so that peak storm water flows, under existing conditions, are not exceeded. (Flood Control section, Policy 3)
- Mitigate the project storm water runoff in those areas with downstream flooding by providing downstream drainage improvements commensurate with project impacts. (Flood Control section, Policy 4)
- The project proponents shall construct on-site detention basins to Flood Control District standards. The detention basins shall reduce post-project peak floodflows to predicted pre-project levels. Each phase of development shall be reviewed to ensure compliance with this condition. NOTE: Any detention basins or flood control facilities constructed as part of an adopted Drainage Area Plan shall be subject to the review and approval of the Contra Costa County Flood Control District. (Flood Control section, Condition of Approval 1)
- Construct a storm drain infrastructure system throughout the proposed project that safely conveys runoff from individual homes, lots, and streets to the major creeks via a system of culverts, gutters, and swales constructed to jurisdictional standards. (Flood Control section, Condition of Approval 2)
- During project construction, or to satisfy the NPDES requirements, the project proponents shall construct, as appropriate, on-site retention or detention facilities or install silt or grease traps in the storm drain system for the proposed project drainages. (Flood Control section, Condition of Approval 3)
- The project proponents shall develop a hazardous materials control program for construction activities to reduce potentially significant impacts on water quality caused by a chemical spill. This program should require safe collection and disposal of hazardous materials generated during construction activities, and should include an emergency response program to ensure quick and safe cleanup of accidental spills. (Flood control section, Condition of Approval 4)

- Bridges shall be designed to jurisdictional standards such that they do not constrict flows, including the 100-year flood flow. Design of bridges must be reviewed by a registered civil engineer. (Flood Control section, Condition of Approval 5)
- The project proponents shall form a Benefit Assessment District, or other funding mechanism with a guaranteed revenue source, to fund the maintenance of the detention basins and flood control structures. The funding mechanism shall be of a type acceptable to the fee-title owner and the entity responsible for maintaining other facilities. (Flood Control section, Condition of Approval 6)
- The project proponents may propose joint use of the detention basins for drainage purposes and for recreational, golf course, or passive uses, if the land rights, maintenance, and liability issues are addressed in an agreement with the fee-title owner and the entity responsible for maintaining the basin. (Flood Control section, Condition of Approval 7)
- Where appropriate, the project proponents shall design stormwater detention facilities to fit the area's natural landform patterns and be curvilinear in form and with undulating sideslopes averaging 3:1 or less in steepness, use natural-appearing materials and colors for drainage facility structures, and screen all drainage facility structures from important viewpoints using native vegetation. (Flood Control section, Condition of Approval 8)
- All storm drainage facilities shall be designed to accommodate the ultimate development of the watershed. (Flood Control section, Condition of Approval 9)

## **13.2 STANDARDS OF SIGNIFICANCE**

The Specific Plan would be considered to have a significant effect on hydrology or water quality if it would result in one or more of the following:

- substantially degrade water quality;
- contaminate a public water supply; or
- cause substantial flooding, erosion, or siltation.

Criteria for evaluating surface and ground water quality in the San Francisco Bay Area are based on beneficial uses and water quality objectives established by the RWQCB, as authorized by the Porter-Cologne Act.

## 13.3 IMPACTS AND MITIGATION MEASURES

The primary impact of development related to the Specific Plan on hydrology and water quality would be from increased amounts of impervious surface area, thereby increasing runoff and the demand on downstream stormwater runoff drainage facilities.

**IMPACT 13-1. Development associated with the Specific Plan would increase runoff from the plan area and could lead to exceeding the capacities of existing storm sewer facilities. This impact is considered potentially significant.**

Where portions of the planning area are currently covered with pervious surfaces, the potential exists for increased surface runoff due to increases in the amount of impervious surface area typically associated with development projects. In the short term, possible expansion of BART parking by 380 spaces in an adjacent vacant parcel would replace the existing pervious surface of soil, grasses, and ruderal (weedy) plant species with impervious asphalt paving. Runoff from development of the parking lot would be conveyed to existing storm sewer facilities that serve the existing parking lot. No significant impacts to hydrology would occur from development of this parking lot.

In the long term, the amount of additional runoff expected to result from a specific development project would depend on the nature of the existing surface cover and that proposed in the development. Runoff coefficients, or “C” values, may approach 100 percent in urban environments, depending on the presence or absence of desirable design features intended to ameliorate the effects of impervious surfaces on downstream storm sewer facilities.

### MITIGATION MEASURE 13-1

- (a) Individual projects would be required to consider the effects of additional runoff on existing storm sewer facilities. The developer will be required to demonstrate the adequacy of the system to convey flows as required by the drainage plan. Where existing facilities are inadequate to convey additional runoff, the developer will be required to construct necessary storm sewer system improvements and/or participate in an established Drainage Area program. Improvements needed within individual project boundaries and off site to satisfy project collection and conveyance requirements would be included as conditions of approval.
- (b) To the extent feasible and where appropriate, projects should include design techniques to reduce off-site stormwater conveyance requirements. Such elements may include limiting impermeable outdoor surfaces, the use of permeable hard surfaces, and on-site detention basins or drainage to vegetated swales.

**IMPACT 13-2. During construction, developments associated with the Specific Plan would cause increased pollutant loads in stormwater runoff from project sites including suspended sediment and hydrocarbons. This impact is considered potentially significant.**

As described earlier, urban stormwater runoff has the potential to contain a wide range of pollutants, especially suspended solids and hydrocarbons. These pollutants, if not managed properly, can accumulate in concentrations that are harmful to aquatic environments. It is essential that new development under the Specific Plan be required to prepare and submit for approval, a SWPPP and implement related BMPs.

**MITIGATION MEASURE 13-2.** Developments associated with the Specific Plan shall include a site-specific erosion control plan. In addition, projects greater than 5 acres in area must include a Stormwater Pollution Prevention Plan (SWPPP) and implement control measures (or Best Management Practices) to control discharges of pollutants from the project sites. Implementation of project SWPPPs should be monitored by a designated monitor.

**IMPACT 13-3. Specific Plan development would lead to long-term increases in contamination of stormwater runoff from pollutants such as hydrocarbons, metals and nutrients associated with residential and commercial land uses. This impact is considered potentially significant.**

**MITIGATION MEASURE 13-3**

- (a) Pollution control measures contained in the SWPPP shall be implemented until the project site has stabilized following construction.
- (b) Developments should implement, whenever feasible, a stormwater protection program including but not limited to long-term measures to: control discharge of pollutants to storm drains, such as labeling storm drains; minimizing the use of fertilizers and pesticides on landscaping; street and/or parking area sweeping programs and/or filtering runoff from such areas to prevent hydrocarbons from entering runoff; increasing the use of pervious surfaces; and education/training programs for residents and employees. (Additional BMPs are cited in the discussion under the heading “Surface Water Quality” above.)

**NOTES: Hydrology and Water Quality**

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<sup>1</sup> Flegal, A.R., Gill, G.A., Smith, G.J., Sanudo-Wilhelmy, S. Trace Element Cycles in the San

Francisco Bay Estuary: Results From a Preliminary Study in 1989-1990, Final Report to the State Water Resources Control Board. Institute of Marine Sciences, University of California, Santa Cruz, 1990.

<sup>2</sup> Contra Costa County, *Environmental Impact Report on the State Route 4 / Bailey Road Interchange Improvement Project*, June 1991.

<sup>3</sup> Ibid.

<sup>4</sup> Ibid.

<sup>5</sup> City of Pittsburg, *Pittsburg General Plan, Safety Element*, 1988.

<sup>6</sup> *Contra Costa County General Plan, Circulation Element*, 1996.

<sup>7</sup> Contra Costa County Community Development Department, *Contra Costa County General Plan 1995–2010*, July 1996.

