

## **2.2.2 Water Quality and Storm Water Runoff**

### **2.2.2.1 Regulatory Setting**

#### **A Federal**

The primary federal law governing water quality is the Clean Water Act (CWA) of 1972. This act provides for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters. The CWA emphasizes technology-based (end-of-pipe) control strategies and requires discharge permits to use public resources for waste discharge. The Act also limits the amount of pollutants that may be discharged and requires wastewater to be treated with the best treatment technology economically achievable regardless of receiving water conditions.

Section 401 of the CWA requires a water quality certification from the State Water Resources Control Board (SWRCB) or from a Regional Water Quality Control Board (RWQCB) when water is discharged into an existing waterway or when the project requires a CWA Section 404 permit to dredge or fill within a water of the United States. The Section 401 water quality certification attests to the acceptability of the resultant water quality in the affected waterway.

The 1987 amendments to the CWA included Section 402(p), which establishes a framework for regulating municipal and industrial storm water discharges, which includes the requirements for a National Pollutant Discharge Elimination System (NPDES) permit for the discharge of any pollutant into waters of the United States. The amendment also provides a framework for regulating storm water runoff from construction sites. On November 16, 1990, the United States Environmental Protection Agency (EPA) published final regulations that established requirements for storm water permits.

In 1998, Section 303(d) was amended to the CWA, requiring the state to identify and maintain a list of waterbodies that do not meet water quality standards and implement a Total Maximum Daily Load (TMDL) program for impaired waterbodies.

#### **B State**

The Porter-Cologne Water Quality Control Act of 1969 (Porter-Cologne Act) is the basic water quality control law for California. The Porter-Cologne Act authorizes the state to implement the provisions of the CWA. The Porter-Cologne Act establishes a regulatory program to protect the water quality of the state and the beneficial uses of state waters. Under this act, the SWRCB provides policy guidance and review for the RWQCBs, and the RWQCBs implement and enforce the provisions of the Porter-Cologne Act. The SWRCB and RWQCB also regulate other waste discharges to land within California through the issuance of waste discharge requirements under authority of the Porter-Cologne Water Quality Act.

Establishment of the NPDES regulations in 1987, under Section 402(p) of the CWA, required that EPA delegate the responsibility of the NPDES program to the State. As such, the federal EPA has delegated administration of the NPDES program to the

SWRCB and nine RWQCBs. The SWRCB was given the responsibility to enforce the regulations of the NPDES program and did so in the form of the NPDES Permit for General Construction Activities (Order No. 99-08-DWQ), which was adopted in 1992 and amended in August of 1999 and 2001. On December 2, 2002, the SWRCB approved the “Modification of Water Quality Order 99-08-DWQ State Water Resources Control Board (SWRCB) NPDES General Permit for Construction Activity (One to Five Acres).” The Permit requires that all owners of land within the State with construction activities resulting in more than 0.4-hectares (1-acre) of soil disturbance (e.g., clearing, grubbing, grading, trenching, stockpile, utility relocation, temporary haul roads) to apply for the General Permit. The purpose of the Permit is to ensure that the landowners:

- Eliminate or reduce non-storm water discharges to storm drains and receiving waters of the U.S.;
- Develop and implement a Storm Water Pollution Prevention Plan (SWPPP);
- Inspect the Water Pollution Controls (WPCs) specified in the SWPPP; and
- Monitor storm water runoff from construction sites to ensure that the Best Management Practices (BMPs) specified in the SWPPP are effective.

The SWRCB has developed and issued a statewide NPDES permit to regulate storm water discharges from all Department activities on its highways and facilities. Department construction projects are regulated under the Statewide permit, and projects performed by other entities on Department right-of-way (encroachments) are regulated by the SWRCB’s Statewide General Construction Permit. All construction projects require a SWPPP to be prepared and implemented during construction.

## **C Regional (Regional Water Quality Control Board)**

The proposed project is located within the jurisdiction of the San Diego RWQCB (Region 9). All projects within the San Diego region are subject to the requirements of the San Diego RWQCB. The San Diego RWQCB has prepared the *1994 Water Quality Control Plan for the San Diego Basin (9)* to help preserve and enhance water quality and to protect the beneficial uses of state waters. The Plan designates beneficial uses for surface and ground waters and sets qualitative and quantitative objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state’s anti-degradation policy. The Plan also describes implementation programs to protect the beneficial uses of all waters in the region and surveillance and monitoring activities to evaluate the effectiveness of the Basin Plan (SDRWQCB, 1994).

### **2.2.2.2 Affected Environment**

#### **A Applicable Technical Reports**

A Summary Floodplain Encroachment Report was prepared in September, 2006 as part of the Water Quality and Storm Water Runoff analysis for this project; the findings of this study have been incorporated into this section.

## **B Regional and Local Climate and Precipitation**

Orange County's climate is classified as Mediterranean, which is characterized by warm, dry summers and mild, wet winters. The major contributors to the climate are the Eastern Pacific High and the moderating effects of the Pacific Ocean. The mean high winter temperature is 65 degrees Fahrenheit (°F), and the mean high summer temperature is 77°F.

The current rainy season in the project area, as defined by the San Diego RWQCB, is from October 1 through May 1; however, most rainfall occurs during the winter season, December through February. Annual rainfall in the project area averages approximately 13 inches (33 centimeters). The peak monthly rainfall in the project vicinity generally occurs between January and February, with an average peak rainfall intensity of approximately 5.5 inches (14 centimeters) in 24 hours.

## **C Population and Land Use**

The proposed project is located in a commercial zone of the City. Land uses within and adjacent to the northwest quadrant of the project area include the Mission Inn, restaurant, San Juan Elementary School and playground, and the San Juan Capistrano Mission. Within and adjacent to the southwest quadrant of the project area, land uses include a Chevron gasoline station, Jack-in-the-Box, Taco Bell, Arby's, McDonald's, and the Camino Real Playhouse. The northeast quadrant of the project area includes a vacant parcel, which was a former Shell gasoline station. The southeast quadrant includes another Chevron gasoline station, a Unocal (76) station, Denny's restaurant, Best Western Inn, and the Capistrano Business Center.

## **D Surface Water Features**

Surface runoff in the I-5/Ortega Highway project area is directed by sheet flow to storm drain systems along Ortega Highway, Del Obispo Street, and I-5 that outlet into Horno Creek. Refer to Figure 2.2.1-1 for locations of major waterways in the project vicinity. The northern portion of Horno Creek, which bisects the San Juan Elementary School playground, is not channelized; however, Horno Creek is channelized just south of the San Juan Elementary School playground, where it flows into a box culvert under Ortega Highway. The creek continues southeast, where it flows underground beneath I-5 and the business complex east of the freeway. Eventually, Horno Creek discharges its flows into the lower reaches of San Juan Creek just beyond the business complex. Horno Creek and San Juan Creek are part of Hydrologic Sub-Area (HSA) 901.27 within the San Juan Creek Watershed.

The San Juan Creek Watershed covers 347.8 square kilometers (133.9 square miles) and includes portions of the cities of Dana Point, Laguna Hills, Laguna Niguel, Mission Viejo, Rancho Santa Margarita, and San Juan Capistrano. Its main tributary, San Juan Creek, originates in the Santa Ana Mountains district of the Cleveland National Forest in the easternmost part of Orange County. Arroyo Trabuco and Oso Creek are smaller tributaries.

## **E Groundwater**

The project is located in the lower San Juan Division of the San Juan Valley Groundwater Basin. On the eastern side of the project area, groundwater can be anticipated at 9 meters (27 feet) below ground surface (bgs) at the Chevron Station (Group Delta, 2000). On the western side of the project area at the Chevron Station, groundwater has been monitored at 10 meters (30 feet) bgs [Elevation 24 meters (72 feet)]. The direction of the groundwater gradient is south-southwest, but it may vary depending on rainfall conditions, faulting, and subsurface construction interference (Group Delta, 2000).

Groundwater in the San Juan Creek Watershed exists unconfined in a generally narrow, shallow, alluvium-filled valley in the San Juan Canyon area and its tributaries. The depths of the alluvial fill range from 200 feet (61 meters ) at the coast to ground surface at the end of the main canyon tributaries in the Santa Ana Mountains.

The Cristianitos Fault is the main structural feature influencing the movement of groundwater within the watershed. The fault travels through the watershed in a north-south direction approximately 3.5 miles (5.6 kilometers) upstream from the confluence of San Juan and Trabuco Creeks. The fault separates the groundwater alluvium into an upper and lower basin. Current total groundwater storage capacity is estimated at 63,220 acre-feet – 21,620 acre-feet for the Upper San Juan Basin and 41,600 acre-feet for the Lower San Juan Basin (NBS/Lowry, 1994).

A study conducted for the San Juan Basin Authority (SJBA), by NBS/Lowry (1994), revealed that the major inflow and outflow components to the San Juan Basin are subsurface flow and well extractions, respectively. Recharge for the groundwater basins consists of subsurface inflow from the tributary alluvial riverbed areas, streambed percolation from San Juan and Trabuco Creeks, rainfall infiltration and percolation, and percolation from landscape and agricultural irrigation. The total basin inflow is estimated at 4,284 acre-feet per year. Outflow from the basins consists of well extractions, extractions from deep-rooted plants, and subterranean outflow at the river mouth. The total basin outflow of groundwater is estimated at 4,819 acre-feet per year. The study indicated that the basin's sustained yield was approximately 5,200 acre-feet per year and that the watershed may have been overdrafted by an average of 2,000 acre-feet per year during the 1979 to 1990 study period.

### **2.2.2.3 Environmental Consequences**

#### **A Temporary Impacts**

**Alternatives 3 and 5.** Erosion and siltation in the drainage area could be increased during construction of the proposed project. Runoff from the proposed project is not anticipated to channelize or cause gully and scour. The amount of sediments entering the San Juan Creek watershed in the project area is expected to be minimal with implementation of the SWPPP. This would include development of an SWPPP and implementation of Construction Site BMPs.

In addition to erosion and siltation, another temporary impact associated with construction activities is the potential for construction related pollutants to enter receiving waters. There are potential non-storm water pollutant sources such as dewatering, paving and grinding operations, and vehicle and equipment fueling and maintenance. Additional sources of pollutants are also generated from waste management activities and materials pollution control such as stockpiling, hazardous waste, contaminated soil, and concrete waste. The SWPPP would include Construction Site BMPs to address the potential sources of pollutants.

## **B Permanent Impacts**

**Alternative 3.** The proposed project is anticipated to increase the volume of downstream flow because of the addition of impervious surface area. Alternative 3 would require the conversion of 4,280 square meters (46,070 square feet) of unpaved area into impervious surfaces. Note that the total watershed area for Horno Creek, which is the receiving water body of this runoff, is approximately 2,800 acres (1,130 hectares). The additional impervious area within the watershed makes up only 0.3 to 0.9 percent of this area. This can be expected to translate into minor localized increases in urban runoff within the storm drain system, which will be analyzed during final design. Because of the lag time between the peak runoff from Horno Creek and that from the freeway runoff, the peak flow from the freeway would have substantially subsided by the time the watershed peak occurs. This, coupled with the minor increase in impervious surface, would result in an insignificant increase in peak flow in the overall flow regime for Horno Creek because of this project. The total paved area has been reduced as much as possible.

With the minor increase in the volume of downstream flow associated with the proposed additional impervious area, the potential for highway related pollutants to enter receiving waters also increases. Typical pollutants generated from highway surfaces include lead, copper, zinc, and various petroleum products. Vehicles are the primary source of these roadway pollutants since they contain oil and grease that can leak onto roadway surfaces, and they contain elements such as copper, which is used to make automotive brake pads. The Caltrans Storm Water Management Plan (SWMP) describes BMPs and practices to reduce the discharge of pollutants associated with the storm water drainage systems of State highways, facilities, and activities. Studies have shown that Caltrans approved permanent water quality treatment BMPs are efficient in the removal of typical roadway pollutants. Permanent water quality treatment BMPs recommended for this alternative include extended detention basins and biofiltration swales. Wetlands and retention basins were deemed inappropriate because of vector control issues. Infiltration basins and infiltration trenches were deemed inappropriate because of poor infiltration characteristics of the underlying soil.

Climate conditions and site conditions are favorable for vegetation required for biofiltration swales, and areas are adequate within the ROW. Where possible, biofiltration swales would be used for this alternative. A preliminary evaluation indicates that three swales could be used for Alternatives 3.

Adequate area does exist for the placement of detention basins at certain locations within the ROW. A cursory review of proposed fill slopes and ROW constraints indicate that only one detention basin is viable in the project area for Alternative 3. This is located adjacent to Horno Creek on the south side of Ortega Highway west of I-5. The proposed basin would meet the standard guidelines set forth in the Caltrans Storm Water Quality Manual.

The Department District 12 Storm Water Advisory Team would evaluate the project plans during the future project design phase before determining final BMP requirements. The completed project plans would incorporate all necessary Maintenance BMPs (Category IA), Design Pollution BMPs (Category IB), and Treatment BMPs (Category III) to meet the maximum extent practicable (MEP) requirements. With adherence to these requirements, permanent adverse effects would be avoided.

**Alternative 5.** The proposed project is anticipated to increase the volume of downstream flow because of the addition of impervious surface area. Alternative 5 would require the conversion of 10,670 square meters (114,851 square feet) of unpaved area into impervious surfaces. Note that the total watershed area for Horno Creek, which is the receiving water body of this runoff, is approximately 2,800 acres (1,130 hectares). The additional impervious area within the watershed makes up only 0.3 to 0.9 percent of this area. This can be expected to translate into minor localized increases in urban runoff within the storm drain system, which will be analyzed during final design. Because of the lag time between the peak runoff from Horno Creek and that from the freeway runoff, the peak flow from the freeway would have substantially subsided by the time the watershed peak occurs. This, coupled with the minor increase in impervious surface, would result in an insignificant increase in peak flow in the overall flow regime for Horno Creek because of this project. The total paved area has been reduced as much as possible.

With the minor increase in the volume of downstream flow associated with the proposed additional impervious area, the potential for highway related pollutants to enter receiving waters also increases. The Caltrans SWMP describes BMPs and practices to reduce the discharge of pollutants associated with the storm water drainage systems of State highways, facilities, and activities. Studies have shown that Caltrans approved permanent water quality treatment BMPs are efficient in the removal of typical roadway pollutants. Permanent water quality treatment BMPs recommended for this alternative include extended detention basins and biofiltration swales. Wetlands and retention basins were deemed inappropriate because of vector control issues. Infiltration basins and infiltration trenches were deemed inappropriate because of poor infiltration characteristics of the underlying soil.

Climate conditions and site conditions are favorable for vegetation required for biofiltration swales, and areas are adequate within the ROW. Where possible, biofiltration swales would be used for this alternative. A preliminary evaluation indicates that three swales could be used for Alternatives 5.

Adequate area does exist for the placement of detention basins at certain locations within the ROW. A cursory review of proposed fill slopes and ROW constraints indicate that for

Alternative 5, one detention basin is viable adjacent to Horno Creek on the south side of Ortega Highway west of I-5, and an additional basin could be located adjacent to Horno Creek on the north side of Ortega Highway west of I-5. Proposed basins would meet the standard guidelines set forth in the Caltrans Storm Water Quality Manual.

The Department District 12 Storm Water Advisory Team would evaluate the project plans during the future project design phase before determining final BMP requirements. The completed project plans would incorporate all necessary Maintenance BMPs (Category IA), Design Pollution BMPs (Category IB), and Treatment BMPs (Category III) to meet the MEP requirements. With adherence to these requirements, permanent adverse effects would be avoided.

#### **2.2.2.4 Required Permits**

The following permits, reviews, and approvals would be required for project implementation and construction:

- Encroachment permit from the Department
- Grading and construction permits from the City
- General NPDES Permit for construction activities from the SWRCB. *Order No. 99-08-DWQ, NPDES No. CAS000002*
- Section 401 CWA Certification from San Diego RWQCB
- Since dewatering is anticipated, a dewatering permit (*Order No. 2001-96, General Waste Discharge Requirements for Groundwater Extraction and Similar Waste Discharges from Construction, Remediation, and Permanent Groundwater Extraction Projects to Surface Waters within the San Diego Region Except for San Diego Bay*) must be obtained from the San Diego RWQCB
- Section 404 CWA Permit from the United States Army Corps of Engineers
- Section 1602 Agreement for Streambed Alteration from the California Department of Fish and Game

#### **2.2.2.5 Avoidance, Minimization, and/or Mitigation Measures**

##### **A Temporary Measures**

As described in the Caltrans SWMP, BMPs are required as part of the project's design and implementation to reduce the discharge of pollutants from the Department's storm drain system to the MEP. The following standard practice measures would minimize temporary impacts to water quality during construction. A complete list of all applicable BMPs is provided in the latest version of the Caltrans SWMP (May 2003).

**MM WQ-SW-1** Construction activities must give special attention to storm water pollution control during the "Rainy Season" (defined by the RWQCB as October 1 through May 1). The proposed project construction shall

be scheduled and phased to minimize soil-disturbing work during the rainy season to the maximum extent practical. To the extent practical, earth-moving activities shall be avoided whenever rain is predicted. Water Pollution Control BMPs must be used to minimize impacts to receiving waters. Measures must be incorporated to contain all vehicle loads and avoid any tracking of materials, which may fall or blow onto Department ROW.

- MM WQ-SW-2** The Contractor shall conform to the requirements of the Caltrans Statewide NPDES Storm Water Permit, Order No. 99-06-DWQ, NPDES No. CAS000003, adopted by the SWRCB on July 15, 1999, in addition to the BMPs specified in the Caltrans SWMP. When applicable, the Contractor shall also conform to the requirements of the General NPDES Permit for Construction Activities, Order No. 99-08-DWQ, NPDES No. CAS000002, and any subsequent General Permit in effect at the time of project construction.
- MM WQ-SW-3** A SWPPP shall be prepared by the Contractor and reviewed by the Department for approval prior to the commencement of any soil-disturbing activities. The SWPPP shall address all state and federal storm water control requirements and regulations. The SWPPP shall address all construction-related activities, equipment, and materials that have the potential to impact water quality. The SWPPP shall include BMPs to control pollutants, sediment from erosion, storm water runoff, and other construction-related impacts. In addition, the SWPPP shall include the provisions of *SWRCB Resolution No. 2001-046*, which requires implementation of specific Sampling Analysis Procedures (SAP) to ensure that the implemented BMPs are effective in preventing exceedance of any water quality standards.
- MM WQ-SW-4** A Notice of Construction (NOC) will be filed with the RWQCB at least 30 days prior to any soil-disturbing activities.
- MM WQ-SW-5** All work must conform to the Construction Site BMPs (Category II) requirements specified in the latest edition of the Caltrans SWMP to control and minimize the impacts of construction and construction-related activities, materials, and pollutants on the watershed. These include, but are not limited to, temporary sediment control, temporary soil stabilization, scheduling, waste management, materials handling, and other non-storm water BMPs.
- MM WQ-SW-6** If dewatering were required during construction, the Department must fully conform to the requirements of the San Diego RWQCB. A Dewatering/ Deminimus Permit would be obtained, and the RWQCB would be notified at least 60 days prior to any dewatering discharges. Dewatering BMPs must be used to control sediments and pollutants.

An EPA-certified laboratory would test and monitor the discharge for compliance with the requirements of the RWQCB.

## **B Permanent Measures**

As described in the Caltrans SWMP, BMPs are required as part of the project's design and implementation to reduce the discharge of pollutants from the Department's storm drain system to the MEP. The following standard practice measures would minimize permanent impacts to water quality during project operation. A complete list of all applicable BMPs is provided in the latest version of the Caltrans SWMP (May 2003).

**MM WQ-SW-7** The proposed project must be designed to minimize erosion by incorporating retaining walls to reduce the steepness of slopes or to shorten slopes; providing cut and fill slopes flat enough to allow revegetation and limit erosion to preconstruction rates; and by collecting concentrated flows in stabilized drains and channels.

**MM WQ-SW-8** Erosion control measures shall also be used to address site soil stabilization and reduce deposition of sediments in the adjacent surface waters. Typical measures include the application of soil stabilizers, such as hydroseeding, netting, erosion control mats, rock slope protection, velocity dissipation devices, and flared end sections for culverts.

**MM WQ-SW-9** An onsite drainage system shall be designed with a BMP concept in place that maximizes pollutant removal while taking into account economic constraints related to maintenance, right-of-way (ROW), and construction costs.

**MM WQ-SW-10** Long-term Maintenance BMPs shall be implemented, including requirements for routine maintenance work, such as litter pickup, toxics control, street sweeping, drainage, and channel cleaning. Final determination regarding the selection of Long-term Maintenance BMPs shall occur during the project's Plans, Specifications, and Estimates (PS&E) phase.

**MM WQ-SW-11** Design Pollution Prevention BMPs shall be implemented, including requirements for permanent soil stabilization systems, such as preservation of existing vegetation, concentrated flow conveyance systems (e.g., drainage ditches, dikes, berms, swales), and slope/surface protection systems that use either vegetated or hard surfaces. Extended detention basins and biofiltration swales shall be incorporated, where appropriate, into the project design. Final determination regarding the selection of Design Pollution Prevention BMPs shall occur during the project's Plans, Specifications, and Estimates (PS&E) phase.

**MM WQ-SW-12** Permanent Treatment BMPs shall be implemented, including requirements for permanent treatment devices and facilities, such as biofiltration strips/swales, infiltration basins, detention devices, traction sand traps, dry weather flow diversion, and Gross Solids Removal Devices. Final determination regarding the selection of Treatment BMPs shall occur during the project's Plans, Specifications, and Estimates (PS&E) phase.

**MM WQ-SW-13** If the proposed detention basins are incorporated into the project's final design, the basins shall be designed to meet the standard guidelines set forth in the Caltrans Storm Water Quality Manual. Access roads to basin(s) must be provided as part of the final design plans for the project.