

Fresno Metropolitan Flood Control District

Guidance for Addressing Stormwater Quality for CEQA Review

Introduction

The document will provide information about the Fresno/Clovis stormwater system, issues to address during California Environmental Quality Act (CEQA) review and potential mitigation measures.

Regional Stormwater Management Basin System

The Fresno Metropolitan Flood Control District (FMFCD) operates the Regional Stormwater Management Basin System, which consists of storm drains, retention/detention basins, pump stations, and outfalls, to handle stormwater runoff and non-stormwater discharges in the FMFCD service area, which include the City of Fresno, the City of Clovis and parts of the County of Fresno.

The FMFCD Storm Drainage and Flood Control Master Plan identifies 165 drainage areas, which collect and treat stormwater and non-stormwater runoff for areas of approximately one to two square miles. Currently, FMFCD's Regional Stormwater Mitigation System treats 95% of the average annual stormwater runoff discharged to receiving waters. Individual Urban Drainage Master Plans for each drainage area were developed to provide a comprehensive assessment of proposed land uses, roadway and railway alignments, canals or other waterways, topography, and other significant features. All but five of the drainage areas are served by stormwater detention/retention basins (stormwater management basins). The detention basins capture stormwater runoff for treatment prior to discharge to the receiving water. The retention basins capture stormwater runoff for infiltration. Stormwater runoff in excess of the design capacity for the retention basins is either pumped to another basin or discharged into a receiving water or canal. The five drainage areas that are not served by the stormwater management basins discharge directly to the San Joaquin River or irrigation canals.

The stormwater management basins are designed to accept six (6) inches of rainfall, or 52 percent of the average annual rainfall (11.47 inches) in the Fresno area. FMFCD estimates that approximately 17,000 acre-feet of stormwater runoff from the Regional Stormwater Management Basin System is infiltrated into the local aquifer each year.

National Pollutant Discharge Elimination System Municipal Separate Storm Sewer System Permit

On May 31, 2013, the Central Valley Regional Water Quality Control Board (Regional Water Board) issued a National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit (CAS0083500, Order No. R5-2013-0080), referred to in this document as the MS4 Permit, which regulates stormwater and non-stormwater discharges from the MS4 Permit area to Waters of the United States.

As part of the MS4 Permit (Provision D.14), each Permittee is required to incorporate into its CEQA process, procedures for considering potential stormwater quality impacts and providing for appropriate mitigation when preparing and reviewing CEQA documents.

The procedures require consideration of the following:

- a. Potential impact of project construction on stormwater runoff.
- b. Potential impact of project post-construction activity on stormwater runoff.
- c. Potential for discharge of stormwater from areas from material storage, vehicle or equipment fueling, vehicle or equipment maintenance (including washing), waste handling, hazardous materials handling or storage, delivery areas or loading docks, or other outdoor work areas.
- d. Potential for discharge of stormwater to impair the beneficial uses of the receiving waters or areas that provide water quality benefit.
- e. Potential for the discharge of stormwater to cause significant harm on the biological integrity of the waterways and water bodies.
- f. Potential for significant changes in the flow velocity or volume of stormwater runoff that can cause environmental harm.
- g. Potential for significant increases in erosion of the project site or surrounding areas.

Environmental Background

Historically, stormwater management consisted of a network of impervious surfaces that directly convey stormwater runoff to curb and gutter systems, the storm drain conveyance system, and downstream receiving waters. The FMFCD Regional Stormwater Mitigation System was initially built to mitigate flood flows. In addition to flood control, the stormwater management basins work as an excellent form of stormwater runoff mitigation by holding the water and allowing pollutants to settle and the water to infiltrate into the local aquifer. In most other municipalities, conventional storm drain and flood control systems were designed to convey stormwater away from developed areas as quickly as possible to manage the risk of floods for homes and development.

In a natural setting, the following hydrologic functions occur:

- Rainfall interception: In a vegetated watershed, the surfaces of trees, shrubs, and grasses capture initial light precipitation before it reaches the ground. The interception of precipitation can delay the start and reduce the volume of stormwater runoff.
- Shallow surface storage: Shallow pockets present in natural terrain store rainfall and stormwater runoff, filter it, and allow it to infiltrate. This shallow surface storage can delay the start and reduce the volume of stormwater runoff.
- Evaporation and transpiration: Evaporation occurs when water changes from a liquid to a gas and moves into the air. Transpiration occurs when vegetation releases water vapor into the atmosphere. Both processes, collectively termed evapotranspiration, reduce the volume of stormwater runoff, locally return moisture into the atmosphere, and provide local cooling effects.
- Infiltration: Infiltration is the movement of surface water down through the soil into groundwater. Such movement filters and reduces the volume of stormwater runoff and replenishes groundwater supplies.
- Runoff: Runoff is the flow of water across the land surface that occurs after rainfall interception, surface storage, and infiltration reach capacity.

In natural settings, the majority of precipitation is either infiltrated into the soil or lost to evapotranspiration. The FMFCD stormwater management basins mimic the natural hydrologic functions by collecting and infiltrating the majority of stormwater runoff within a one to two square mile area, which replenishes the local aquifer.

Without the Regional Stormwater Mitigation System, urbanization and development convert pervious surfaces (such as forests and meadows) into impervious areas (i.e., building footprints, driveways, parking lots), and the percentage of precipitation that becomes stormwater runoff increases. The impacts of such conversion may include:

- Increased concentrations of nutrients, toxic pollutants, and bacteria in surface receiving waters, including adjacent land and creeks, estuaries, and storm drain outlets;
- Higher peak flow rates and stormwater runoff volumes produced by storms;
- Decreased wet season groundwater recharge due to a reduced infiltration area;
- Increased dry weather urban runoff due to outdoor irrigation;
- Introduction of base flows in ephemeral streams due to surface discharge of dry weather urban runoff (e.g. irrigation runoff);
- Increased stream and channel instability and erosion due to increased stormwater runoff volumes, flow durations, and higher stream velocities (i.e., hydromodification impacts); and

- Increased stream temperature, which decreases dissolved oxygen levels and adversely impacts temperature-sensitive aquatic life, due to loss of riparian vegetation as well as stormwater runoff warmed by impervious surfaces.

Ultimately, the increased stormwater pollutant load, if not managed properly, will adversely affect local water bodies.

Potential Stormwater Quality Impacts

Potential impact of project construction on stormwater runoff.

Stormwater runoff from construction activities can have a significant impact on water quality. As stormwater flows over a construction site, it can pick up pollutants like sediment, masonry debris, trash and chemicals, and transport these to a nearby stormwater basin, irrigation canal or directly to the San Joaquin River. Polluted stormwater runoff can harm or kill fish and other wildlife. High volumes of runoff can cause stream bank erosion. Debris can clog waterways where it can kill marine wildlife and impact habitat.

To build on sites with over one acre of disturbed soil, property owners must obtain coverage under the California Construction General Permit (Construction Permit). This permit is issued by the State Water Resources Control Board (SWRCB). The SWRCB site offers Construction Permit guidance. For sites that disturb less than one acre, property owners are still required to implement site controls to minimize soil erosion and sediment runoff and follow FMFCD's urban stormwater ordinance.

FMFCD, the Cities of Clovis and Fresno, and Fresno County are collectively responsible to ensure MS4 Permit compliance within the boundaries of our region's National Pollutant Discharge Elimination System (NPDES) Permit boundary. FMFCD's focus is on ensuring that construction sites are managed to minimize the amount of sediment discharged off-site and into FMFCD's local storm drain system. FMFCD has produced outreach materials and Action Alert fact sheets designed to acquaint builders and subcontractors with acceptable methods of sediment control and will provide oversight inspections based on their proximity to the San Joaquin River. To view the outreach materials go to www.fresnofloodcontrol.org.

Potential impact of project post-construction activity on stormwater runoff.

FMFCD operates the Regional Stormwater Mitigation System, which consists of facilities to handle stormwater runoff and non-stormwater discharges in FMFCD service area. Only five of the drainage areas and two areas outside the FMFCD service area. These areas are not served

by the stormwater management basins and discharge directly to the San Joaquin River or agricultural irrigation canals.

Development and redevelopment projects can result in discharge of pollutants to receiving waters. Pollutants of concern for a project site depend on the following factors:

- Project location;
- Land use and activities that have occurred on the project site in the past;
- Land use and activities that are likely to occur in the future; and
- Receiving water impairments.

As land use activities and site design practices evolve, particularly with increased incorporation of stormwater quality BMPs, characteristic stormwater runoff concentrations and pollutants of concern from various land use types are also likely to change.

Typical Pollutants of Concern and Sources for Post-Development Areas

Pollutant	Potential Sources
Sediment (total suspended solids and turbidity), trash and debris (gross solids and floatables)	Streets, landscaped areas, driveways, roads, construction activities, atmospheric deposition, soil erosion (channels and slopes)
Pesticides and herbicides	Residential lawns and gardens, roadsides, utility right-of-ways, commercial and industrial landscaped areas, soil wash-off
Organic materials/oxygen demanding substances	Residential laws and gardens, commercial landscaping, animal waste
Metals	Automobiles, bridges, atmospheric deposition, industrial areas, soil erosion, metal surfaces, combustion processes
Oil and grease, organics associated with petroleum	Roads, driveways, parking lots, vehicle maintenance areas, gas stations, illicit dumping to storm drains, automobile emissions, and fats, oils, and grease from restaurants
Bacteria and viruses	Lawns, roads, leaking sanitary sewer lines, sanitary sewer cross-connections, animal waste (domestic and wild), septic systems, homeless encampments, sediments/biofilms in storm drain system
Nutrients	Landscape fertilizers, atmospheric deposition, automobile exhaust, soil erosion, animal waste, detergents

Source: Adapted from USEPA, 1999 (Preliminary Data Summary of Urban Storm Water BMPs)

The Post-Development Standards Technical Manual provides guidance for implementing stormwater quality Best Management Practices (BMPs) for drainage areas that do not drain to the Regional Stormwater Mitigation System, with the intention of improving water quality and mitigating potential water quality impacts from stormwater and non-stormwater discharges.

The Post-Development Standards Technical Manual addresses the following objectives and goals:

- Minimize impervious surfaces and directly connect impervious surfaces in areas of new development and redevelopment, and where feasible, to maximize on-site infiltration of stormwater runoff;
- Implement pollution prevention methods supplemented by pollutant source controls and treatment, and where practical, use strategies that control the sources of pollutants or constituents (i.e., where water initially meets the ground) to minimize the transport of runoff and pollutants offsite and into MS4s;
- Preserve, and where possible create or restore, areas that provide important water quality benefits, such as riparian corridors, wetlands, or buffer zones
- Limit disturbances of natural water bodies and natural drainage systems by development, including roads, highways, and bridges;
- Identify and avoid development in areas that are particularly susceptible to erosion and sediment loss or establish guidance that protects areas from erosion and sediment loss;
- Implement source and structural controls as necessary and appropriate to protect downstream receiving water quality from increased pollutant loadings and flows (hydromodification concepts) from new development and significant redevelopment;
- Control the post-development peak stormwater runoff discharge rates and velocities to maintain or reduce pre-development downstream erosion and to protect downstream habitat; and
- Consider integration of Low Impact Development (LID) principles into project design.

The Post-Development Standards Technical Manual describes the stormwater management requirements for Priority Projects, which are identified as meeting one or more of the following and do not discharge into the Regional Stormwater Mitigation System:

- Home subdivisions of 10 housing units or more;
- Commercial developments greater than 100,000 square feet;
- Automotive repair shops;
- Restaurants;
- Parking lots 5,000 square feet or greater with 25 or more parking spaces and potentially exposed to urban runoff;
- Streets and roads;
- Retail gasoline outlets (RGOs); and
- Significant redevelopment projects, which are developments that result in creation or addition of at least 5,000 square feet of impervious surface on an already developed

site. Significant redevelopment includes, but is not limited to, expansion of a building footprint or addition or replacement of a structure, structural developing including an increase in gross floor area and/or exterior construction or remodeling, replacement of impervious surface that is not part of a routine maintenance activity, and land disturbing activities related with structural or impervious surfaces. Where significant redevelopment results in an increase of less than 50 percent of the impervious surfaces of a previously existing development and the existing development was not subject to Post-Construction Standards, only the proposed alteration must meet the requirements of the Post-Development Standards Technical Manual.

The County of Fresno drainage design standards that apply to permit areas not covered by the FMFCD Storm Drainage and Flood Control Master Plan are based on the difference in stormwater runoff volume between the pre- and post-development 100-year, 48-hour storm (approximately six inches of rainfall on the valley floor). The County of Fresno standards exceed the 2013 MS4 Permit requirement that new development be designed to mitigate (infiltrate or treat) stormwater runoff from an 85th percentile, 24-hour storm event or equivalent criteria. Because the County of Fresno drainage design standards are more stringent than the requirements of the 2013 MS4 Permit, the County of Fresno drainage design standards should be used for designing stormwater quality BMPs.

All Priority Projects must mitigate the Stormwater Quality Design Volume (SWQDV) or Stormwater Quality Design Flow (SWQDF) through LID- or treatment-based stormwater quality BMPs or a combination thereof. Projects that discharge into the Regional Stormwater Management Basin System meet LID - or treatment-based requirements.

For new development or significant redevelopment projects for restaurants with less than 5,000 square feet, the project applicant must meet all the requirements of the Post-Development Standards Technical Manual except for mitigating the SWQDV or SWQDF and implementing stormwater quality BMPs.

Potential for discharge of stormwater from areas from material storage, vehicle or equipment fueling, vehicle or equipment maintenance (including washing), waste handling, hazardous materials handling or storage, delivery areas or loading docks, or other outdoor work areas.

Your project may create potential impacts to stormwater from non-stormwater discharge from areas with material storage, vehicle or equipment fueling, vehicle or equipment maintenance (including washing), waste handling, hazardous materials handling or storage, delivery areas or loading docks, or other outdoor work area.

Some materials, such as those containing heavy metals or toxic compounds, are of more concern than other materials. Toxic and hazardous materials must be prevented from coming in

contact with stormwater runoff. Non-toxic or non-hazardous materials, such as debris and sediment, can also have significant impacts on receiving waters. Contact between non-toxic or non-hazardous materials and stormwater runoff should be limited, and such materials prevented from being discharged with stormwater runoff. To help mitigate these potential impacts, BMPs should be included to prevent discharges from leaving the property.

Refer to the Post-Development Standards Technical Manual for more information or go to <http://water.epa.gov/polwaste/nps/urban.cfm>.

Potential for discharge of stormwater to impair the beneficial uses of the receiving waters or areas that provide water quality benefits.

Five drainage areas within the FMFCD Storm Drainage and Flood Control Master Plan service areas and two areas outside of the Master Plan service areas do not drain into regional stormwater management basins. Targeted development in these areas is required to meet specific numeric standards for stormwater runoff outlined in the new development standards. The map above shows the areas not served by the Basin System.

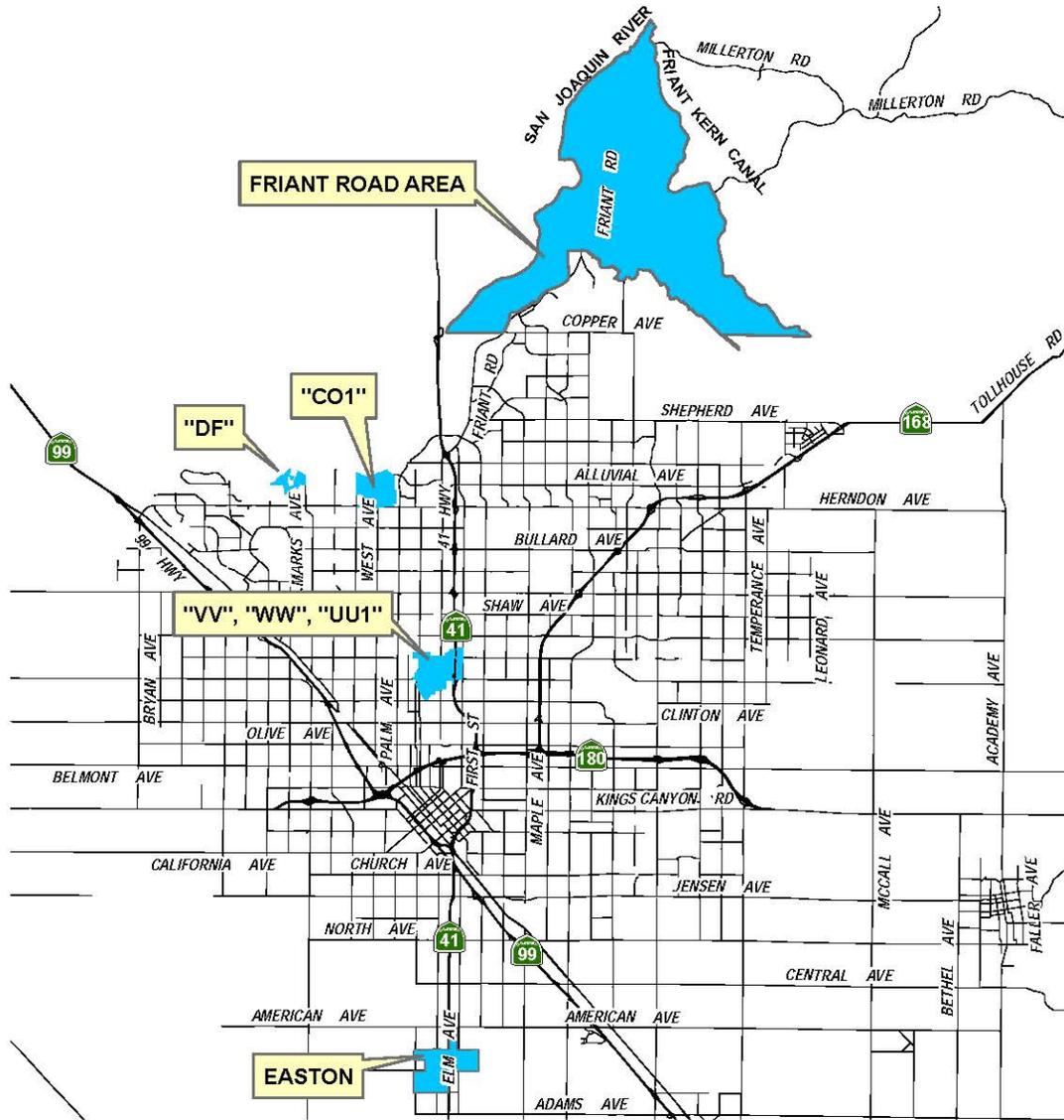
The Post-Development Standards Technical Manual applies to priority development in drainage areas not discharging to a stormwater management basin. Go to www.fresnofloodcontrol.org to view the manual and detailed maps.

Potential for the discharge of stormwater to cause significant harm on the biological integrity of the waterways and water bodies.

Conservation of natural areas, soils, and vegetation helps to retain numerous functions of pre-development hydrology, including rainfall interception, infiltration, and evapotranspiration. Each project site possesses unique topographic, hydrologic, and vegetative features, some of which are more suitable for development than others. Sensitive areas, such as streams and their buffers, floodplains, wetlands, steep slopes, and highly-permeable soils, should be protected and/or restored. Slopes can be a major source of sediment and should be properly protected and stabilized. Locating development in less sensitive areas of a project site and conserving naturally vegetated areas can minimize environmental impacts from stormwater runoff.

The evaluation of a project's effect on sensitive natural communities should encompass aquatic and wetland habitats. Consider "aquatic and wetland habitat" as examples of sensitive habitat.

NOTE:
THIS MAP IS SCHEMATIC
DISTANCES ARE APPROXIMATE.



1 " = 17249 '



FRESNO METROPOLITAN FLOOD CONTROL DISTRICT

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Overview of Potential Development Areas Without Basin Service

Potential for significant changes in the flow velocity or volume of storm water runoff that can cause environmental harm.

The evaluation of a project’s effect on drainage patterns should refer to the FMFCD’s Storm Drainage and Flood Control Master Plan and have their project reviewed by FMFCD to assess the significance of altering existing drainage patterns and to develop any mitigation measures in addition to our stormwater mitigation system. The evaluation should also consider any potential for streambed or bank erosion downstream from the project.

Potential for significant increases in erosion of the project site or surrounding areas.

The evaluation of a project’s effect on drainage patterns should refer to the FMFCD’s Storm Drainage and Flood Control Master Plan and have their project reviewed by FMFCD to assess the significance of altering existing drainage patterns and to develop any mitigation measures in addition to our stormwater mitigation system. The evaluation should also consider any potential for streambed or bank erosion downstream from the project.

CEQA Guidelines Topics with Possible Stormwater Quality Concerns

The following table provides supplemental guidance to project applicants in completing the CEQA initial study checklist to address urban runoff water considerations during project environmental review. Incorporating these revisions into the initial study analysis will assist to streamline both the local agency and Water Board’s review of the CEQA document.

Within the existing CEQA Guidelines framework, the following issues should be considered when determining levels of project impacts.

EQA Guidelines Question	Additional Issues to Address Stormwater Quality Concerns Within the CEQA Initial Study Checklist
Checklist Chapter IV: Biological Resources	
<i>IV. b) Will the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, polices, regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?</i>	The evaluation of a project’s effect on sensitive natural communities should encompass aquatic and wetland habitats. Consider “aquatic and wetland habitat” as examples of sensitive habitat.
Checklist Chapter IX: Hydrology and Water Quality	
<i>IX. a) Will the project violate any water quality standards or waste discharge requirements?</i>	The evaluation of a project’s compliance with water quality standards should consider the project’s potential effect on water bodies on the Impaired Water Bodies Section 303(d) List, as well as the potential for

	<p>conflict with applicable surface or groundwater receiving water quality objectives or degradation of beneficial uses. For more information on the Section 303(d) list go to http://www.waterboards.ca.gov/centralvalley/water_issues/tmdl/index.shtml.</p>
<p><i>IX. c) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?</i></p>	<p>The evaluation of a project's effect on drainage patterns should refer to the Fresno Metropolitan Flood Control District's Storm Drainage and Flood Control Master Plan and have their project reviewed by FMFCD to assess the significance of altering existing drainage patterns and to develop any mitigation measures. The evaluation should also consider any potential for streambed or bank erosion downstream from the project.</p>
<p><i>IX. d) Will the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on-or off-site?</i></p>	<p>The evaluation of a project's effect on drainage patterns should refer to the Fresno Metropolitan Flood Control District's Storm Drainage and Flood Control Master Plan and have their project reviewed by FMFCD to assess the significance of altering existing drainage patterns and to develop any mitigation measures. The evaluation should also consider any potential for streambed or bank erosion downstream from the project.</p>
<p><i>IX. e) Will the project create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?</i></p>	<p>The evaluation of a project's effect on the capacity of existing or planned stormwater drainage systems should refer to the Fresno Metropolitan Flood Control District's Storm Drainage and Flood Control Master Plan and have their project reviewed by FMFCD to assess the capacity of the system in the project's drainage area and to develop any additional mitigation measures.</p>
<p><i>IX. f) Would the project otherwise substantially degrade water quality?</i></p>	<p>The evaluation of a project's potential to degrade water quality should consider whether a project has the potential to result in a significant impact to surface water quality, fresh, or wetland waters, or to groundwater quality. As with every category of environmental impact, effects must be considered both during and after construction. The evaluation of water quality impacts should include a description of how the project will comply with the requirements of the MS4 Permit and the State's Construction General Permit.</p>