I. NPDES Municipal General Permit* requirements apply to County

II. P&D authority and practice
   a. Policy and policy interpretation*
   b. LUDC* (35.30.180; 35.430.140 Montecito)
   c. CEQA Checklist
   d. Envt’l Thresholds & Guidelines Manual*
   e. Planner’s Guide to Conditions of Approval and Mitigation Measures*
   f. Procedures Manual

III. Need to provide “early certainty” to applicants
    a. Three step process*
    b. Pre-application meetings
    c. Application requirements (Item N on application)
    d. Application completeness* treatment control

IV. Address Hillside Watershed Protection Policy #7 in Initial Study. MUST BE VERY CLEAR.
    a. Conserve natural areas (cluster, limit clearing, maximize vegetation, use vegetation for infiltration, preserve riparian/wetlands)
    b. Minimize pollutants (source control measures)
    c. Maintain hydrologic character (low impact development)
    d. Protect slopes and channels (convey safely, use natural drainage, stabilize channel, vegetate slopes, dissipate energy at outlets)
    e. Storm drain marking
    f. Proper design requirements (restaurants, commercial, vehicle maintenance, parking areas, loading docks, material storage, retail gasoline, equipment wash, trash storage)

V. Role of Public Works staff during dev review
   a. Flood Control addresses peak runoff
   b. Water Resources addresses treatment control

VI. Defining “Maximum Extent Practicable”
   a. Some Attachment 4 requirements are subjective
   b. Definition* is always changing, evolving
c. How state defines MEP for construction activities and new development (LID, minimum construction BMPs, examples of enforcement*)
d. P&D’s directive to require projects meet MEP

VII. Defining Low Impact Development*
a. Design approach to mimic pre-development hydrology
b. Currently a goal, not requirement, albeit directly addresses Attachment 4 requirements and County policy to protect resources.
c. Projects should always: minimize overall impervious, disconnect impervious, lengthen flow path (Tc), use vegetation to maximize infiltration
d. Recognize importance of landscaping and fine grading.

VIII. Planning Review Process common questions
a. When do I require a Stormwater Quality Management Plan? A: Projects that are “Significant”
c. Where can I find examples of our expectations, i.e., pictures, design guidance documentation, manuals, etc. A: www.sbprojectcleanwater.org

IX. Construction BMPs
a. Always provide for construction phase BMPs (See Ten Basic Principles*)
b. DRev augments the ESCP of Grading Permit by mitigating for potential impacts that might not be covered in standard construction BMP practices (e.g. proximity to natural drainage feature, sensitive species protection, upkeep and maintenance requirements, specifying on plans an area suitable for construction material cleaning)
c. Protection of storm drains during construction. Storm drains often installed first while construction activity continues. Also, vegetated systems (bioswales, bioretention) are highly sensitive during construction. Notes on plans must be specific: “protection until soils are stabilized”.
FACT SHEET
FOR
STATE WATER RESOURCES CONTROL BOARD (SWRCB)
WATER QUALITY ORDER NO. 2003 – 0005 – DWQ

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT NO. CAS000004

WASTE DISCHARGE REQUIREMENTS (WDRS)
FOR
STORM WATER DISCHARGES FROM
SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS (GENERAL PERMIT)

BACKGROUND

In 1972, the federal Water Pollution Control Act (also referred to as the Clean Water Act [CWA]) was amended to provide that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with a NPDES permit. The 1987 amendments to CWA added section 402(p), which established a framework for regulating storm water discharges under the NPDES Program. Subsequently, in 1990, the U.S. Environmental Protection Agency (U.S. EPA) promulgated regulations for permitting storm water discharges from industrial sites (including construction sites that disturb five acres or more) and from municipal separate storm sewer systems (MS4s) serving a population of 100,000 people or more. These regulations, known as the Phase I regulations, require operators of medium and large MS4s to obtain storm water permits. On December 8, 1999, U.S. EPA promulgated regulations, known as Phase II, requiring permits for storm water discharges from Small MS4s and from construction sites disturbing between one and five acres of land. This General Permit regulates storm water discharges from Small MS4s.

An “MS4” is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains): (i) designed or used for collecting or conveying storm water; (ii) which is not a combined sewer; and (iii) which is not part of a Publicly Owned Treatment Works (POTW). [See Title 40, Code of Federal Regulations (40 CFR) §122.26(b)(8).]

A “Small MS4” is an MS4 that is not permitted under the municipal Phase I regulations, and which is “owned or operated by the United States, a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity....” (40 CFR §122.26(b)(16)). Small MS4s include systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares, but do not include separate storm sewers in
Areas subject to high growth or serving a population of at least 50,000 must comply with the following provisions (for counties this threshold population applies to the population within the permit area).

A. RECEIVING WATER LIMITATIONS

1. Discharges shall not cause or contribute to an exceedance of water quality standards contained in a Statewide Water Quality Control Plan, the California Toxics Rule (CTR), or in the applicable RWQCB Basin Plan.

2. The permittees shall comply with Receiving Water Limitations A.1 through timely implementation of control measures and other actions to reduce pollutants in the discharges in accordance with the SWMP and other requirements of this permit including any modifications. The SWMP shall be designed to achieve compliance with Receiving Water Limitations A.1. If exceedance(s) of water quality objectives or water quality standards (collectively, WQS) persist notwithstanding implementation of the SWMP and other requirements of this permit, the permittees shall assure compliance with Receiving Water Limitations A.1 by complying with the following procedure:

   a. Upon a determination by either the permittees or the RWQCB that discharges are causing or contributing to an exceedance of an applicable WQS, the permittees shall promptly notify and thereafter submit a report to the RWQCB that describes BMPs that are currently being implemented and additional BMPs that will be implemented to prevent or reduce any pollutants that are causing or contributing to the exceedance of WQSs. The report may be incorporated in the annual update to the SWMP unless the RWQCB directs an earlier submittal. The report shall include an implementation schedule. The RWQCB may require modifications to the report.

   b. Submit any modifications to the report required by the RWQCB within 30 days of notification.

   c. Within 30 days following approval of the report described above by the RWQCB, the permittees shall revise the SWMP and monitoring program to incorporate the approved modified BMPs that have been and will be implemented, implementation schedule, and any additional monitoring required.

   d. Implement the revised SWMP and monitoring program in accordance with the approved schedule.

So long as the permittees have complied with the procedures set forth above and are implementing the revised SWMP, the permittees do not have to repeat the same procedure for continuing or recurring exceedances of the same receiving water limitations unless directed by the RWQCB to develop additional BMPs.

B. DESIGN STANDARDS
Regulated Small MS4s subject to this requirement must adopt an ordinance or other document to ensure implementation of the Design Standards included herein or a functionally equivalent program that is acceptable to the appropriate RWQCB. The ordinance or other document must be adopted and effective prior to the expiration of this General Permit or, for Small MS4s designated subsequent to the Permit adoption, within five years of designation as a regulated Small MS4.

All discretionary development and redevelopment projects that fall into one of the following categories are subject to these Design Standards. These categories are:

- Single-Family Hillside Residences
- 100,000 Square Foot Commercial Developments
- Automotive Repair Shops
- Retail Gasoline Outlets
- Restaurants
- Home Subdivisions with 10 or more housing units
- Parking lots 5,000 square feet or more or with 25 or more parking spaces and potentially exposed to storm water runoff

1. Conflicts With Local Practices
   Where provisions of the Design Standards conflict with established local codes or other regulatory mechanism, (e.g., specific language of signage used on storm drain stenciling), the Permittee may continue the local practice and modify the Design Standards to be consistent with the code or other regulatory mechanism, except that to the extent that the standards in the Design Standards are more stringent than those under local codes or other regulatory mechanism, such more stringent standards shall apply.

2. Design Standards Applicable to All Categories

   a. Peak Storm Water Runoff Discharge Rates
      Post-development peak storm water runoff discharge rates shall not exceed the estimated pre-development rate for developments where the increased peak storm water discharge rate will result in increased potential for downstream erosion.

   b. Conserve Natural Areas
      If applicable, the following items are required and must be implemented in the site layout during the subdivision design and approval process, consistent with applicable General Plan and Local Area Plan policies:

      1) Concentrate or cluster Development on portions of a site while leaving the remaining land in a natural undisturbed condition.
      2) Limit clearing and grading of native vegetation at a site to the minimum amount needed to build lots, allow access, and provide fire protection.
      3) Maximize trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native and/or drought tolerant plants.
4) Promote natural vegetation by using parking lot islands and other landscaped areas.
5) Preserve riparian areas and wetlands.

c. Minimize Storm Water Pollutants of Concern
Storm water runoff from a site has the potential to contribute oil and grease, suspended solids, metals, gasoline, pesticides, and pathogens to the storm water conveyance system. The development must be designed so as to minimize, to the maximum extent practicable, the introduction of pollutants of concern that may result in significant impacts, generated from site runoff of directly connected impervious areas (DCIA), to the storm water conveyance system as approved by the building official. Pollutants of concern consist of any pollutants that exhibit one or more of the following characteristics: current loadings or historic deposits of the pollutant are impacting the beneficial uses of a receiving water, elevated levels of the pollutant are found in sediments of a receiving water and/or have the potential to bioaccumulate in organisms therein, or the detectable inputs of the pollutant are at concentrations or loads considered potentially toxic to humans and/or flora and fauna.

In meeting this specific requirement, “minimization of the pollutants of concern” will require the incorporation of a BMP or combination of BMPs best suited to maximize the reduction of pollutant loadings in that runoff to the Maximum Extent Practicable. Those BMPs best suited for that purpose are those listed in the California Storm Water Best Management Practices Handbooks; Caltrans Storm Water Quality Handbook: Planning and Design Staff Guide; Manual for Storm Water Management in Washington State; The Maryland Stormwater Design Manual; Florida Development Manual: A Guide to Sound Land and Water Management; Denver Urban Storm Drainage Criteria Manual, Volume 3 – Best Management Practices and Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, USEPA Report No. EPA-840-B-92-002, as “likely to have significant impact” beneficial to water quality for targeted pollutants that are of concern at the site in question. However, it is possible that a combination of BMPs not so designated, may in a particular circumstance, be better suited to maximize the reduction of the pollutants.

d. Protect Slopes and Channels
Project plans must include BMPs consistent with local codes, ordinances, or other regulatory mechanism and the Design Standards to decrease the potential of slopes and/or channels from eroding and impacting storm water runoff:

1) Convey runoff safely from the tops of slopes and stabilize disturbed slopes.
2) Utilize natural drainage systems to the maximum extent practicable.
3) Stabilize permanent channel crossings.
4) Vegetate slopes with native or drought tolerant vegetation, as appropriate.
5) Install energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable specifications to minimize erosion, with the approval of all agencies
with jurisdiction, e.g., the U.S. Army Corps of Engineers and the California Department of Fish and Game.

e. Provide Storm Drain System Stenciling and Signage

Storm drain stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets. The stencil contains a brief statement that prohibits the dumping of improper materials into the storm water conveyance system. Graphical icons, either illustrating anti-dumping symbols or images of receiving water fauna, are effective supplements to the anti-dumping message. All storm drain inlets and catch basins within the project area must be stenciled with prohibitive language (such as: “NO DUMPING – DRAINS TO OCEAN”) and/or graphical icons to discourage illegal dumping. Signs and prohibitive language and/or graphical icons, which prohibit illegal dumping, must be posted at public access points along channels and creeks within the project area. Legibility of stencils and signs must be maintained.

f. Properly Design Outdoor Material Storage Areas

Outdoor material storage areas refer to storage areas or storage facilities solely for the storage of materials. Improper storage of materials outdoors may provide an opportunity for toxic compounds, oil and grease, heavy metals, nutrients, suspended solids, and other pollutants to enter the storm water conveyance system. Where proposed project plans include outdoor areas for storage of materials that may contribute pollutants to the storm water conveyance system, the following Structural or Treatment BMPs are required:

1) Materials with the potential to contaminate storm water must be: (1) placed in an enclosure such as, but not limited to, a cabinet, shed, or similar structure that prevents contact with runoff or spillage to the storm water conveyance system; or (2) protected by secondary containment structures such as berms, dikes, or curbs.
2) The storage area must be paved and sufficiently impervious to contain leaks and spills.
3) The storage area must have a roof or awning to minimize collection of storm water within the secondary containment area.

g. Properly Design Trash Storage Areas

A trash storage area refers to an area where a trash receptacle or receptacles (dumpsters) are located for use as a repository for solid wastes. Loose trash and debris can be easily transported by the forces of water or wind into nearby storm drain inlets, channels, and/or creeks. All trash container areas must meet the following Structural or Treatment Control BMP requirements (individual single family residences are exempt from these requirements):

1) Trash container areas must have drainage from adjoining roofs and pavement diverted around the area(s).
2) Trash container areas must be screened or walled to prevent off-site transport of trash.

h. Provide Proof of Ongoing BMP Maintenance
Improper maintenance is one of the most common reasons why water quality controls will not function as designed or which may cause the system to fail entirely. It is important to consider who will be responsible for maintenance of a permanent BMP, and what equipment is required to perform the maintenance properly. As part of project review, if a project applicant has included or is required to include, Structural or Treatment Control BMPs in project plans, the Permittee shall require that the applicant provide verification of maintenance provisions through such means as may be appropriate, including, but not limited to legal agreements, covenants, CEQA mitigation requirements and/or Conditional Use Permits.

For all properties, the verification will include the developer’s signed statement, as part of the project application, accepting responsibility for all structural and treatment control BMP maintenance until the time the property is transferred and, where applicable, a signed agreement from the public entity assuming responsibility for Structural or Treatment Control BMP maintenance. The transfer of property to a private or public owner must have conditions requiring the recipient to assume responsibility for maintenance of any Structural or Treatment Control BMP to be included in the sales or lease agreement for that property, and will be the owner’s responsibility. The condition of transfer shall include a provision that the property owners conduct maintenance inspection of all Structural or Treatment Control BMPs at least once a year and retain proof of inspection. For residential properties where the Structural or Treatment Control BMPs are located within a common area which will be maintained by a homeowner’s association, language regarding the responsibility for maintenance must be included in the project’s conditions, covenants and restrictions (CC&Rs). Printed educational materials will be required to accompany the first deed transfer to highlight the existence of the requirement and to provide information on what storm water management facilities are present, signs that maintenance is needed, how the necessary maintenance can be performed, and assistance that the Permittee can provide. The transfer of this information shall also be required with any subsequent sale of the property.

If Structural or Treatment Control BMPs are located within a public area proposed for transfer, they will be the responsibility of the developer until they are accepted for transfer by the County or other appropriate public agency. Structural or Treatment Control BMPs proposed for transfer must meet design standards adopted by the public entity for the BMP installed and should be approved by the County or other appropriate public agency prior to its installation.

i. Design Standards for Structural or Treatment Control BMPs
The Permittees shall require that post-construction treatment control BMPs incorporate, at a minimum, either a volumetric or flow-based treatment control design standard, or both, as identified below to mitigate (infiltrate, filter or treat) storm water runoff:

1) Volumetric Treatment Control BMP
a) The 85th percentile 24-hour runoff event determined as the maximized capture storm water volume for the area, from the formula recommended in Urban Runoff Quality Management, WEF Manual of Practice No. 23/ASCE Manual of Practice No. 87, (1998); or
b) The volume of annual runoff based on unit basin storage water quality volume, to achieve 80 percent or more volume treatment by the method recommended in California Stormwater Best Management Practices Handbook – Industrial/Commercial, (2003); or
c) The volume of runoff produced from a historical-record based reference 24-hour rainfall criterion for "treatment" that achieves approximately the same reduction in pollutant loads achieved by the 85th percentile 24-hour runoff event.

2) Flow Based Treatment Control BMP
   a) The flow of runoff produced from a rain event equal to at least two times the 85th percentile hourly rainfall intensity for the area; or
   b) The flow of runoff produced from a rain event that will result in treatment of the same portion of runoff as treated using volumetric standards above.

Limited Exclusion
Restaurants and Retail Gasoline Outlets, where the land area for development or redevelopment is less than 5,000 square feet, are excluded from the numerical Structural or Treatment Control BMP design standard requirement only.

3. Provisions Applicable to Individual Priority Project Categories

a. 100,000 Square Foot Commercial Developments

1) Properly Design Loading/Unloading Dock Areas
   Loading/unloading dock areas have the potential for material spills to be quickly transported to the storm water conveyance system. To minimize this potential, the following design criteria are required:
   a) Cover loading dock areas or design drainage to minimize run-on and runoff of storm water.
   b) Direct connections to storm drains from depressed loading docks (truck wells) are prohibited.

2) Properly Design Repair/Maintenance Bays
   Oil and grease, solvents, car battery acid, coolant and gasoline from the repair/maintenance bays can negatively impact storm water if allowed to come into contact with storm water runoff. Therefore, design plans for repair bays must include the following:
a) Repair/maintenance bays must be indoors or designed in such a way that
doesn’t allow storm water runoff or contact with storm water runoff.
b) Design a repair/maintenance bay drainage system to capture all washwater,
leaks and spills. Connect drains to a sump for collection and disposal. Direct
connection of the repair/maintenance bays to the storm drain system is
prohibited. If required by local jurisdiction, obtain an Industrial Waste
Discharge Permit.

3) Properly Design Vehicle/Equipment Wash Areas
The activity of vehicle/equipment washing/steam cleaning has the potential to
contribute metals, oil and grease, solvents, phosphates, and suspended solids to
the storm water conveyance system. Include in the project plans an area for
washing/steam cleaning of vehicles and equipment. The area in the site design
must be:

a) Self-contained and/or covered, equipped with a clarifier, or other
pretreatment facility, and
b) Properly connected to a sanitary sewer or other appropriately permitted
disposal facility.

b. Restaurants

1) Properly Design Equipment/Accessory Wash Areas
The activity of outdoor equipment/accessory washing/steam cleaning has the
potential to contribute metals, oil and grease, solvents, phosphates, and suspended
solids to the storm water conveyance system. Include in the project plans an area
for the washing/steam cleaning of equipment and accessories. This area must be:

a) Self-contained, equipped with a grease trap, and properly connected to a
sanitary sewer.
b) If the wash area is to be located outdoors, it must be covered, paved, have
secondary containment, and be connected to the sanitary sewer or other
appropriately permitted disposal facility.

c. Retail Gasoline Outlets

1) Properly Design Fueling Area
Fueling areas have the potential to contribute oil and grease, solvents, car battery
acid, coolant and gasoline to the storm water conveyance system. The project
plans must include the following BMPs:

a) The fuel dispensing area must be covered with an overhanging roof structure
or canopy. The canopy’s minimum dimensions must be equal to or greater
than the area within the grade break. The canopy must not drain onto the fuel
dispensing area, and the canopy downspouts must be routed to prevent
drainage across the fueling area.
b) The fuel dispensing area must be paved with Portland cement concrete (or equivalent smooth impervious surface), and the use of asphalt concrete shall be prohibited.

c) The fuel dispensing area must have a 2% to 4% slope to prevent ponding, and must be separated from the rest of the site by a grade break that prevents run-on of storm water to the extent practicable.

d) At a minimum, the concrete fuel dispensing area must extend 6.5 feet (2.0 meters) from the corner of each fuel dispenser, or the length at which the hose and nozzle assembly may be operated plus 1 foot (0.3 meter), whichever is less.

d. Automotive Repair Shops

1) Properly Design Fueling Area
Fueling areas have the potential to contribute oil and grease, solvents, car battery acid, coolant and gasoline to the storm water conveyance system. Therefore, design plans, which include fueling areas, must contain the following BMPs:

a. The fuel dispensing area must be covered with an overhanging roof structure or canopy. The canopy's minimum dimensions must be equal to or greater than the area within the grade break. The canopy must not drain onto the fuel dispensing area, and the canopy downspouts must be routed to prevent drainage across the fueling area.

b. The fuel dispensing area must be paved with Portland cement concrete (or equivalent smooth impervious surface), and the use of asphalt concrete shall be prohibited.

c. The fuel dispensing area must have a 2% to 4% slope to prevent ponding, and must be separated from the rest of the site by a grade break that prevents run-on of storm water to the extent practicable.

d. At a minimum, the concrete fuel dispensing area must extend 6.5 feet (2.0 meters) from the corner of each fuel dispenser, or the length at which the hose and nozzle assembly may be operated plus 1 foot (0.3 meter), whichever is less.

2) Properly Design Repair/Maintenance Bays
Oil and grease, solvents, car battery acid, coolant and gasoline from the repair/maintenance bays can negatively impact storm water if allowed to come into contact with storm water runoff. Therefore, design plans for repair bays must include the following:

a) Repair/maintenance bays must be indoors or designed in such a way that doesn’t allow storm water run-on or contact with storm water runoff.

b) Design a repair/maintenance bay drainage system to capture all wash-water, leaks and spills. Connect drains to a sump for collection and disposal. Direct connection of the repair/maintenance bays to the storm drain system is
prohibited. If required by local jurisdiction, obtain an Industrial Waste Discharge Permit.

3) Properly Design Vehicle/Equipment Wash Areas
The activity of vehicle/equipment washing/steam cleaning has the potential to contribute metals, oil and grease, solvents, phosphates, and suspended solids to the storm water conveyance system. Include in the project plans an area for washing/steam cleaning of vehicles and equipment. This area must be:

a) Self-contained and/or covered, equipped with a clarifier, or other pretreatment facility, and properly connected to a sanitary sewer or other appropriately permitted disposal facility.

4) Properly Design Loading/Unloading Dock Areas
Loading/unloading dock areas have the potential for material spills to be quickly transported to the storm water conveyance system. To minimize this potential, the following design criteria are required:

a) Cover loading dock areas or design drainage to minimize run-on and runoff of storm water.

b) Direct connections to storm drains from depressed loading docks (truck wells) are prohibited.

e. Parking Lots

1) Properly Design Parking Area
Parking lots contain pollutants such as heavy metals, oil and grease, and polycyclic aromatic hydrocarbons that are deposited on parking lot surfaces by motor-vehicles. These pollutants are directly transported to surface waters. To minimize the offsite transport of pollutants, the following design criteria are required:

a) Reduce impervious land coverage of parking areas.

b) Infiltrate or treat runoff.

2) Properly Design To Limit Oil Contamination and Perform Maintenance
Parking lots may accumulate oil, grease, and water insoluble hydrocarbons from vehicle drippings and engine system leaks:

a) Treat to remove oil and petroleum hydrocarbons at parking lots that are heavily used (e.g. fast food outlets, lots with 25 or more parking spaces, sports event parking lots, shopping malls, grocery stores, discount warehouse stores).

b) Ensure adequate operation and maintenance of treatment systems particularly sludge and oil removal, and system fouling and plugging prevention control.
4. Waiver
A Permittee may, through adoption of an ordinance, code, or other regulatory mechanism incorporating the treatment requirements of the Design Standards, provide for a waiver from the requirement if impracticability for a specific property can be established. A waiver of impracticability shall be granted only when all other Structural or Treatment Control BMPs have been considered and rejected as infeasible. Recognized situations of impracticability include, (i) extreme limitations of space for treatment on a redevelopment project, (ii) unfavorable or unstable soil conditions at a site to attempt infiltration, and (iii) risk of ground water contamination because a known unconfined aquifer lies beneath the land surface or an existing or potential underground source of drinking water is less than 10 feet from the soil surface. Any other justification for impracticability must be separately petitioned by the Permittee and submitted to the appropriate RWQCB for consideration. The RWQCB may consider approval of the waiver justification or may delegate the authority to approve a class of waiver justifications to the RWQCB EO. The supplementary waiver justification becomes recognized and effective only after approval by the RWQCB or the RWQCB EO. A waiver granted by a Permittee to any development or redevelopment project may be revoked by the RWQCB EO for cause and with proper notice upon petition.

5. Limitation on Use of Infiltration BMPs

Three factors significantly influence the potential for storm water to contaminate ground water. They are (i) pollutant mobility, (ii) pollutant abundance in storm water, (iii) and soluble fraction of pollutant. The risk of contamination of groundwater may be reduced by pretreatment of storm water. A discussion of limitations and guidance for infiltration practices is contained in, Potential Groundwater Contamination from Intentional and Non-Intentional Stormwater Infiltration, Report No. EPA/600/R-94/051, USEPA (1994).

In addition, the distance of the groundwater table from the infiltration BMP may also be a factor determining the risk of contamination. A water table distance separation of ten feet depth in California presumptively poses negligible risk for storm water not associated with industrial activity or high vehicular traffic.

Site specific conditions must be evaluated when determining the most appropriate BMP. Additionally, monitoring and maintenance must be provided to ensure groundwater is protected and the infiltration BMP is not rendered ineffective by overload. This is especially important for infiltration BMPs for areas of industrial activity or areas subject to high vehicular traffic [25,000 or greater average daily traffic (ADT) on main roadway or 15,000 or more ADT on any intersecting roadway]. In some cases pretreatment may be necessary.

6. Alternative Certification for Storm Water Treatment Mitigation

In lieu of conducting detailed BMP review to verify Structural or Treatment Control BMP adequacy, a Permittee may elect to accept a signed certification from a Civil Engineer or a Licensed Architect registered in the State of California, that the plan meets
the criteria established herein. The Permittee is encouraged to verify that certifying
person(s) have been trained on BMP design for water quality, not more than two years
prior to the signature date. Training conducted by an organization with storm water BMP
design expertise (e.g., a University, American Society of Civil Engineers, American
Society of Landscape Architects, American Public Works Association, or the California
Water Environment Association) may be considered qualifying.
LAND USE ELEMENT HILLSIDE AND WATERSHED PROTECTION POLICIES 7, 3, 4, AND 5 (COASTAL PLAN POLICIES 3-19, 3-15, 3-16 AND 3-17)

POLICY INTERPRETIVE AND IMPLEMENTATION GUIDELINES

The purpose of these guidelines is to promote consistent implementation of the Santa Barbara County Comprehensive Plan’s water-quality related policies by providing clear interpretation of the Comprehensive Plan, and addressing the requirements of U.S. Environmental Protection Agency’s National Pollutant Discharge Elimination System (NPDES) Phase II Municipal Storm Water Regulations. These guidelines apply to all new development and redevelopment projects proposed in the urban and rural unincorporated areas of the County. These guidelines apply to any project that has the potential to generate point source discharges, or storm water runoff that is directly or indirectly discharged to storm drains, creeks, streams, rivers, the ocean, or other receiving water bodies in Santa Barbara County.

Land Use Element Hillside and Watershed Protection Policy 7 & Coastal Plan Policy 3-19:

“Degradation of the water quality of groundwater basins, nearby streams, or wetlands shall not result from development of the site. Pollutants, such as chemicals, fuels, lubricants, raw sewage, and other harmful waste shall not be discharged into or alongside coastal streams or wetlands either during or after construction.”

Interpretive and Implementation Guidelines

The following definitions shall be used to interpret this policy:

A. “Degradation” of water quality means a negative alteration to the physical, chemical, or biological qualities of surface water (including storm water runoff) or groundwater compared to existing conditions. Degradation includes detrimental impacts to aquatic and terrestrial organisms, adverse effects on aesthetic qualities (due to sheens, sediment, floatable material, etc.), or other negative impacts to the beneficial uses of receiving water.

B. “Pollutant” means any chemical or substance that degrades the physical, chemical, or biological properties of the environment. Water pollutants include those listed in the policy, and as defined by the State Water Resources Control Board include but are not limited to: paints, varnishes, and solvents; hydrocarbons and metals from vehicle use or business operations; non-hazardous solid wastes; yard wastes; sediment from construction activities (including silts, clays, slurries, concrete rinsates, etc.); ongoing sedimentation due to changes in land cover or land use; nutrients, pesticides, herbicides, and fertilizers (e.g., from landscape maintenance); hazardous substances and wastes; sewage, fecal coliform, animal wastes, and pathogens;

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1 Beneficial uses for Santa Barbara County are identified by the Regional Water Quality Control Board in the Water Quality Control Plan for the Central Coastal Basin or Basin Plan, and include (among others) recreation, agricultural supply, groundwater recharge, fresh water habitat, estuarine habitat, support for rare, threatened or endangered species, preservation of biological habitats of special significance.
dissolved and particulate metals; sediments, floatables; metals and acidity from mining operations; heat; discarded equipment.

C. "Discharge" as addressed by this policy includes point source discharges (i.e., from outfall pipes) and non-point source discharges (i.e., overland runoff or sheetflow) that flow directly or indirectly into receiving waters (e.g., creeks, streams, rivers, the ocean or other receiving water bodies), or into storm drains that subsequently flow into receiving waters. The term includes both construction and post-construction discharges.

To be consistent with this policy the discharge of pollutants from newly developed and redeveloped sites must be reduced to the "maximum extent feasible". This can be achieved through the implementation of non-structural or structural best management practices (BMPs) and maintenance of the BMPs over the life of the project. BMPs are methods, activities, maintenance procedures, or other management practices for reducing the amount of pollution entering a water body. Non-structural BMPs include but are not limited to site designs that reduce the area and connectivity of impervious surfaces, protection or restoration of native vegetation, wetlands and riparian corridors, and where applicable, parking lot sweeping programs to remove accumulated debris, oil and grease. Structural BMPs include but are not limited to storm water treatment facilities, grassed swales, bio-swales, porous pavement and storm drain treatment systems (e.g., catch basin filters).

A. In order of preference, the following BMPs shall be used to minimize water quality impacts associated with new development and redevelopment projects in urban and rural areas:

- site planning to avoid, protect, and restore sensitive areas (e.g., wetlands and riparian corridors);
- minimizing impervious surfaces and directly connected impervious surfaces, using existing natural features to allow for on-site infiltration of water;
- vegetative treatment (e.g., bio-swales, vegetative buffers, constructed or artificial wetlands);
- mechanical or structural treatment (e.g., storm drain filters and inserts).

B. Combinations of BMPs listed above may be required to reduce runoff and water quality impacts to achieve consistency with this policy.

C. Adequate space on each project site shall be reserved to incorporate the BMPs.

D. Provisions shall be made for maintenance of BMPs over the life of the project.

*Land Use Element Hillside and Watershed Protection Policy 3 & Coastal Plan Policy 3-15:*

"For necessary grading operations on hillsides, the smallest practical area of land shall be exposed at any one time during development, and the length of exposure shall be kept to the shortest practicable amount of time. The clearing of land should be avoided during the winter rainy season and all measures for removing sediments and stabilizing slopes should be in place before the beginning of the rainy season."
Land Use Element Hillside and Watershed Protection Policy 4 & Coastal Plan Policy 3-16:

“Sediment basins (including debris basins, desilting basins, or silt traps) shall be installed on the project site in conjunction with the initial grading operations and maintained through the development process to remove sediment from runoff waters. All sediment shall be retained on-site unless removed to an appropriate dumping location.”

Land Use Element Hillside and Watershed Protection Policy 5 & Coastal Plan Policy 3-17:

“Temporary vegetation, seeding, mulching, or other suitable stabilization method shall be used to protect soils subject to erosion that have been disturbed during grading or development. All cut and fill slopes shall be stabilized as rapidly as possible with planting of native grasses and shrubs, appropriate non-native plants, or with accepted landscaping practices.”

Interpretive and Implementation Guidelines

The following definitions shall be used to interpret these policies:

A. “Grading” is defined in the Grading Ordinance Chapter 14, Section 7 (Definitions).

B. “Necessary grading” is grading associated with, and integral to, the proposed development required to establish reasonable use of a legal lot. Only necessary grading shall be permitted on hillsides. (This policy is best understood when read in conjunction with Hillside and Watershed Protection Policies 1 and 2.) For example, necessary grading does not include grading conducted for the purposes of enhancing views or for accessory uses not associated with the reasonable use of the lot.

C. “Hillsides” means land with slopes exceeding 20%.

D. “Clearing of land” means the removal of vegetation, structures or other objects.

E. As defined in the Grading Ordinance, the rainy season is the period from November 1 through April 15.

F. “Appropriate non-native plants” means drought tolerant species that may not be native to Santa Barbara County, but are not invasive species.²

These policies address the discharge of pollutants (including, but not limited to, soil, sediment, and construction waste) from grading and construction activities. To be consistent with these policies, the discharge of pollutants must be reduced to the maximum extent feasible through the

² A list of invasive exotic species of concern in California can be obtained at the California Exotic Pest Plant Council (CalEPPC) - Internet address: http://www.caleppc.org/info/plantlist.html. The Sunset Western Garden Book has examples of drought tolerant non-native plants suitable for the climatic, edaphic, and hydrologic conditions in Santa Barbara County. However, proposed non-native plants should not appear on the CalEPPC list and should not be used.
implementation of BMPs and maintenance of the BMPs throughout and, if necessary, after the grading and construction period.

A. In addition to structural erosion and sediment control measures (e.g., hay bales, silt fences, sediment basins, etc.), the following BMPs shall be used to the maximum extent feasible to reduce storm water pollution from construction sites:

- site planning to avoid grading or vegetation removal on slopes over 20%;
- site planning to avoid grading in areas containing soils with a high erosion hazard or in geologically unstable areas;
- site planning to minimize grading or vegetation removal where slopes over 20% cannot be avoided to allow reasonable use of a legal lot;
- avoidance of grading on slopes over 20% during the rainy season;
- protection of existing native vegetation and enhancement of sensitive areas (e.g., wetlands and riparian corridors);
- prohibitions of non-storm water discharges (e.g., concrete truck washout, slurry cuts, etc.) into storm drains or other water bodies;
- good housekeeping practices (e.g., designated waste collection areas, designated areas for vehicle maintenance and washing, proper vehicle maintenance to avoid leaks, elimination of connections to storm drains, immediate clean up of spills, recycling and reuse of materials, etc.).

B. Adequate room shall be made available on the construction site to accommodate the best management practices throughout and after construction.

C. All best management practices shall be maintained in working order.
a. Less than 30 inches high, or

b. Covers an area of 50 square feet or less and is less than either six feet in height and, if located within a vision clearance area, is consistent with the regulations of Subsection 35.430.080.1 (Vision Clearance).

4. Decks less than 32 inches in vertical distance as measured from finished grade to the top of the decking material may be located within the front or side setback unless located in a designated Environmentally Sensitive Habitat Area.

5. Non-habitable structures may be located in the side setback provided that the structures comply with all of the following:
   a. Cumulatively the structures do not occupy an area greater than 10 percent of the side setback in which they are located, or 120 square feet, which ever is less.
   b. Do not contain any utilities.
   c. Are screened from view from abutting properties by a wall or fence at least as tall as the structure.
   d. Are located no closer than five feet to any other structure located on the same lot.

6. Pedestals supporting utility meters no greater than four feet in height and 24 square feet in area may be located in a front or side setback provided they are completely screened from view from any public or private street and adjoining lots.

35.430.130 - Solar Panels

A. Solar heating systems shall be required for the heating of any new swimming pool, spa, or hot tub as specified under the Primary Plumbing Code and the Solar Energy requirements of County Code Chapter 10.

B. Solar panels located on the roof of an existing structure do not require planning permit approval.

C. Solar panels located on the ground shall be classified as accessory structures, and shall require Land Use Permit approval.

35.430.140 - Storm Water Runoff Requirements

A. Applicability. The following development redevelopment is subject to the requirement that project-appropriate controls are in place to prevent or minimize water quality impacts:

1. Residential subdivisions with 10 or more dwelling units.
2. Commercial development of 0.5 acres or greater.
3. Parking lots of 5,000 square feet or more or have 25 or more parking spaces and are potentially exposed to storm water runoff.

4. Automobile repair shops.

5. Retail gasoline outlets.

6. Restaurants.

7. One-family residences located on slopes of 20 percent or greater.

8. Any new development or redevelopment exceeding one acre.

B. Processing. No permit for any development listed in Subsection A. (Applicability) above, shall be approved except in compliance with the Comprehensive Plan, and the California Environmental Quality Act if applicable.

35.430.150 - Solid Waste and Recycling Storage Facilities

A. Purpose. This Section provides standards which recognize County support for and compliance with the California Solid Waste Reuse and Recycling Access Act (Public Resources Code Section 42900 through 42911).

B. Applicability. These requirements apply to the following projects:

1. Non-residential development. Any new, non-residential development including commercial, industrial, or institutional building, or marina or any changes to such an existing non-residential development which requires a building permit.

2. Residential building. Any new residential building having five or more dwelling units or any changes to such an existing residential building which requires a building permit.

3. Residential development. Any new residential project where solid waste is collected and loaded in a location serving five or more dwelling units, or any changes to an existing residential project which requires a building permit.

4. Single-family subdivision. Any subdivision of single-family detached homes if, within such subdivisions there is an area where solid waste is collected and loaded in a location which serves five or more dwelling units. In such instances, recycling areas as specified in this Section are only required to serve the needs of the dwelling units which utilize the solid waste collection and loading area.

5. Public facility. Any new public facility where solid waste is collected and loaded and any improvements for areas of a public facility used for collecting and loading solid waste.

C. Standards for storage areas. All projects identified in Subsection B. (Applicability) above, shall be required to provide solid waste areas specifically identified for the storage of both trash and recycling containers in compliance with the following.
16. SURFACE AND STORM WATER QUALITY GUIDELINES

A. INTRODUCTION

The following information is excerpted from several EPA publications including the preamble to the NPDES Phase II rules as published in the Federal Register\(^1\) and EPA storm water fact sheets and guidance documents\(^2\).

Storm water runoff from lands modified by human activities can harm surface water resources and, in turn, cause or contribute to an exceedance of water quality standards by changing natural hydrologic patterns, accelerating stream flows, destroying aquatic habitat, and elevating pollutant concentrations. Such runoff may contain or mobilize high levels of contaminants, such as sediment, suspended solids, nutrients (phosphorous and nitrogen), heavy metals and other toxic pollutants, pathogens, oxygen-demanding substances, and floatables. After a rain, storm water runoff carries these pollutants into nearby streams, rivers, lakes, estuaries, wetlands, and oceans. The highest concentrations of these contaminants often are contained in “first flush” discharges, which occur during the first major storm after an extended dry period. Individually and combined, these pollutants impair water quality, threatening designated beneficial uses and causing habitat alteration or destruction. Uncontrolled storm water discharges from areas of urban development and construction activity negatively impact receiving waters by changing the physical, biological, and chemical composition of the water, resulting in an unhealthy environment for aquatic organisms, wildlife, and humans. Although water quality problems also can occur from agricultural storm water discharges and return flows from irrigated agriculture, this area of concern is statutorily exempted from regulation as a point source under the Clean Water Act and is not addressed in these guidelines.

Urbanization alters the natural infiltration capability of the land and generates a host of pollutants that are associated with the activities of dense populations, thus causing an increase in storm water runoff volumes and pollutant loading in storm water that is discharged to receiving waterbodies. Urban development increases the amount of impervious surface in a watershed as farmland, forests, and other natural vegetation with natural infiltration characteristics are converted into buildings with rooftops, driveways, sidewalks, roads, and parking lots with virtually no ability to absorb storm water. Storm water runoff washes over these impervious areas, picking up pollutants along the way while gaining speed and volume because of their inability to disperse and filter into the ground. What results are storm water flows that are higher in volume, pollutants, and temperature than the flows from more pervious areas, which have more natural vegetation and soil to filter the runoff. Studies reveal that the level of imperviousness in an area strongly correlates with decreased quality of the nearby receiving waters. Research conducted in numerous geographical areas, concentrating on various variables and employing widely differing methods, has revealed that stream degradation occurs at relatively low levels of imperviousness, such as 10 to 20 percent (even as low as 5 to 10 percent). Furthermore, research has indicated that few, if any, urban streams can support diverse benthic communities at imperviousness levels of 25 percent or more. An area of medium density single

\(^1\) 64 FR 68722
\(^2\) Available on the Internet at www.epa.gov/npdes.
family homes can be anywhere from 25 percent to nearly 60 percent impervious, depending on
the design of the streets and parking.

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a. salinity; pH, temperature; b. pesticides, herbicides, PCBs; c. oil, grease, solvents; d. lead, copper, zinc, cadmium; e. plant debris, animal waste.

In addition to impervious areas, urban development creates new pollution sources as population density increases and brings with it proportionately higher levels of car emissions, car maintenance wastes, pet waste, litter, pesticides, and household hazardous wastes, which may be washed into receiving waters by storm water or dumped directly into storm drains designed to discharge to receiving waters. More people in less space results in a greater concentration of pollutants that can be mobilized by storm water discharges into storm sewer systems.

The first national assessment of urban runoff characteristics was completed for the Nationwide Urban Runoff Program (NURP) study. The NURP study is the largest nationwide evaluation of storm water discharges undertaken to date. EPA conducted the NURP study to facilitate understanding of the nature of urban runoff from residential, commercial, and industrial areas. One objective of the study was to characterize the water quality of discharges from separate storm sewer systems that drain residential, commercial, and light industrial (industrial parks) sites. Storm water samples from 81 residential and commercial properties in 22 urban/suburban areas nationwide were collected and analyzed during the 5-year period between 1978 and 1983.
The majority of samples collected in the study were analyzed for eight conventional pollutants and three heavy metals. Data collected under the NURP study indicated that discharges from separate storm sewer systems draining runoff from residential, commercial, and light industrial areas carried more than 10 times the annual loading of total suspended solids (TSS) than discharges from municipal sewage treatment plants that provide secondary treatment. The NURP study also indicated that runoff from residential and commercial areas carried somewhat higher annual loadings of chemical oxygen demand (COD), total lead, and total copper than effluent from secondary treatment plants. Study findings showed that fecal coliform counts in urban runoff typically range from tens to hundreds of thousands of most probable number (MPN) per hundred milliliters (ml) of runoff during warm weather conditions, with the median for all sites being around 21,000 MPN/100 ml.

B. CONSTRUCTION SITE RUNOFF

Polluted storm water runoff from construction sites often flows to storm drains and ultimately is discharged into local rivers and streams. Of the pollutants listed below, sediment is usually the main pollutant of concern. Sediment runoff rates from construction sites are typically 10 to 20 times greater than those of agricultural lands, and 1,000 to 2,000 times greater than those of forest lands. During a short period of time, construction sites can contribute more sediment to streams than can be deposited naturally during several decades. The resulting siltation, and the contribution of other pollutants from construction sites, can cause physical, chemical, and biological harm to our nation’s waters. The siltation process described previously can (1) deposit high concentrations of pollutants in public water supplies; (2) decrease the depth of a waterbody, which can reduce the volume of a reservoir or result in limited use of a water body by boaters, swimmers, and other recreational enthusiasts; and (3) directly impair the habitat of fish and other aquatic species, which can limit their ability to reproduce. Excess sediment can cause a number of other problems for waterbodies. It is associated with increased turbidity and reduced light penetration in the water column, as well as more long-term effects associated with habitat destruction and increased difficulty in filtering drinking water.

Pollutants Commonly Discharged From Construction Sites

- Sediment
- Solid and sanitary wastes
- Nitrogen (fertilizer)
- Phosphorous (fertilizer)
- Pesticides
- Concrete truck washout
- Construction chemicals
- Construction debris

C. POST CONSTRUCTION RUNOFF

There are generally two forms of substantial impacts of post-construction runoff. The first is caused by an increase in the type and quantity of pollutants in storm water runoff. As runoff flows over areas altered by development, it picks up harmful sediment and chemicals such as oil and grease, pesticides, heavy metals, and nutrients (e.g., nitrogen and phosphorus). These pollutants often become suspended in runoff and are carried to receiving waters, such as lakes, ponds, and streams. Once deposited, these pollutants can enter the food chain through small aquatic life, eventually entering the tissues of fish and humans. The second kind of post-construction runoff impact occurs by increasing the quantity of water delivered to the waterbody
during storms. Increased impervious surfaces interrupt the natural cycle of gradual percolation of water through vegetation and soil. Instead, water is collected from surfaces such as asphalt and concrete and routed to drainage systems where large volumes of runoff quickly flow to the nearest receiving water. The effects of this process include stream bank scouring and downstream flooding, which often lead to a loss of aquatic life and damage to property.

D. **FEDERAL AND STATE REGULATIONS**

The Federal Water Pollution Prevention and Control Act (i.e., the Clean Water Act or CWA) requires that discharges do not substantially degrade the physical, chemical or biological integrity of the Nation's waters. Specifically Section 402 established the National Pollutant Discharge Elimination System (NPDES) Regulations for wastewater and other pollutant discharges.

Congress amended the CWA in 1987 to require the implementation of a two-phased program to address storm water discharges. Phase I, promulgated by the U.S. Environmental Protection Agency (EPA) in November 1990, requires NPDES permits for storm water discharges from municipal separate storm sewer systems (MS4s) serving populations of 100,000 or greater, construction sites disturbing greater than 5 acres of land, and ten categories of industrial activities.

Despite the comprehensiveness of the NPDES Phase I program, the EPA recognized that smaller construction projects (disturbing less than 5 acres) and small municipal separate storm sewers (MS4s\(^3\)) were also contributing substantially to pollutant discharges nationwide. Therefore, in order to further improve storm water quality, the EPA promulgated the NPDES Phase II program (Federal Register Vol. 64, No. 235, December 8, 1999). The Phase II regulations became effective on February 7, 2000, and require NPDES permits for storm water discharges from regulated small MS4s and for construction sites disturbing more than 1 acre of land. The Phase II regulations published by the EPA designated the urbanized areas\(^4\) of Santa Barbara County as a regulated small MS4.

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\(^3\) Those generally serving less than 100,000 people and located in an urbanized area as defined by the Bureau of the Census.

\(^4\) An urbanized area is a land area comprising one or more places (central place(s)) and the adjacent densely settled surrounding area (the urban fringe) that together have a residential population of at least 50,000 and an overall population density of at least 1,000 people per square mile.
In addition, Section 401 and 404 established regulations for the discharge of dredged or fill material into waters of the United States and water quality impacts associated with these discharges. In California, the Porter-Cologne Water Quality Control Act establishes waste discharge standards pursuant to the Federal NPDES program, and the state has the authority to issue NPDES permits to individuals, businesses, and municipalities.

E. COUNTY WATER QUALITY ISSUES

Because the EPA has determined that the urbanized areas of Santa Barbara County are subject to the Phase II NPDES regulations, it is presumed that the county has a general urban runoff water quality problem. In addition to this general presumption, over the last three years Project Clean Water has collected analytical water quality data and identified the water quality concerns in county streams, creeks and beach areas. These concerns include:

- Bacteria levels consistently above applicable standards during storm events,
- Levels of metals (copper, chromium, zinc, and lead) approaching or exceeding Regional Water Quality Control Board Basin Plan objectives,
- Elevated levels of nitrogen and phosphorus in all creeks during storm events, and
- Detection of pesticides in all watersheds.

The Regional Water Quality Control Board has also identified that the quality of several important recreational water bodies and water supplies have been impaired. These water bodies and their contaminants include:

- San Antonio Creek (northern) – sediments.
- Santa Ynez River – nutrients (e.g., phosphorus and nitrogen), salinity, total dissolved solids, chlorides and sediments.
- Goleta Slough – metals, pathogens, and sediment.
- Arroyo Burro Creek – pathogens (e.g., bacteria).
• Mission Creek – pathogens.
• Carpinteria Salt Marsh – nutrients and sediment.
• Carpinteria Creek - pathogens
• Rincon Creek – pathogens and sediment.

F. COUNTY WATER QUALITY PROTECTION POLICIES

Policies regarding the protection of water quality in the unincorporated areas of Santa Barbara County are provided in the Comprehensive Plan Land Use Element, various Community Plans, and the Local Coastal Plan. The overarching policy which applies to both construction and post-construction is Land Use Element Hillside and Watershed Protection Policy 7 (Coastal Plan Policy 3-19), which states:

Degradation of the water quality of groundwater basins, nearby streams, or wetlands shall not result from development of the site. Pollutants, such as chemicals, fuels, lubricants, raw sewage, and other harmful waste shall not be discharged into or alongside coastal streams or wetlands either during or after construction.

Project approval requires a finding of consistency with this and all other applicable water quality policies in the Comprehensive and Community Plans.

G. SIGNIFICANCE GUIDELINES FOR ASSESSMENT OF WATER QUALITY IMPACTS

Guidelines for assessing project-specific and cumulative water quality impacts are presented below. The assessment of impacts must account for construction-related impacts (i.e., vegetation removal, erosion, use of construction materials on the site, and staging of construction activities) and post-construction (or post-development) impacts (i.e., increases in impervious surfaces and increased runoff, entrainment of pollutants, and effects of discharges on aquatic habitats and biota).

G.1 Project Specific Potential Significance Impacts

(a) A significant water quality impact is presumed to occur if the project:

• Is located within an urbanized area of the county and the project construction or redevelopment individually or as a part of a larger common plan of development or sale would disturb one (1) or more acres of land;
• Increases the amount of impervious surfaces on a site by 25% or more;
• Results in channelization or relocation of a natural drainage channel;
• Results in removal or reduction of riparian vegetation or other vegetation (excluding non-native vegetation removed for restoration projects) from the buffer zone of any streams, creeks or wetlands;
• Is an industrial facility that falls under one or more of categories of industrial activity regulated under the NPDES Phase I industrial storm water regulations (facilities with effluent limitation; manufacturing; mineral, metal, oil and gas, hazardous waste,
treatment or disposal facilities; landfills; recycling facilities; steam electric plants; transportation facilities; treatment works; and light industrial activity); 

- Discharges pollutants that exceed the water quality standards set forth in the applicable NPDES permit, the Regional Water Quality Control Board's (RWQCB) Basin Plan or otherwise impairs the beneficial uses of a receiving waterbody; or

- Results in a discharge of pollutants into an "impaired" waterbody that has been designated as such by the State Water Resources Control Board or the RWQCB under Section 303 (d) of the Federal Water Pollution Prevention and Control Act (i.e., the Clean Water Act).

- Results in a discharge of pollutants of concern to a receiving water body, as identified in by the RWQCB.

(b) Projects that are not specifically identified on the above list or are located outside of the "urbanized areas" may also have a project-specific storm water quality impact. Storm water quality impacts associated with these projects must be evaluated on a project by project basis for a determination of significance. The potential impacts of these projects should be determined in consultation with the county Water Agency, Flood Control Division, and RWQCB. The issues that should be considered are:

- the size of the development;
- the location (proximity to sensitive waterbodies, location on hillsides, etc.);
- the timing and duration of the construction activity;
- the nature and extent of directly connected impervious areas;
- the extent to which the natural runoff patterns are altered;
- disturbance to riparian corridors or other native vegetation on or off-site;
- the type of storm water pollutants expected; and
- the extent to which water quality best management practices are included in the project design.

(c) All projects determined to have a potentially significant storm water quality impact must prepare and implement a Storm Water Quality Management Plan (SWQMP) to reduce the impact to the maximum extent practicable. The SWQMP shall include the following elements:

- identification of potential pollutant sources that may affect the quality of the discharges to storm water;
- the proposed design and placement of structural and non-structural BMPs to address identified pollutants;

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5 Beneficial uses for Santa Barbara County are identified by the Regional Water Quality Control Board in the Water Quality Control Plan for the Central Coastal Basin, or Basin Plan, and include (among others) recreation, agricultural supply, groundwater recharge, fresh water habitat, estuarine habitat, support for rare, threatened or endangered species, preservation of biological habitats of special significance.
• a proposed inspection and maintenance program; and
• a method of ensuring maintenance of all BMPs over the life of the project.

Implementation of best management practices identified in the SWQMP will generally be considered to reduce the storm water quality impact to a less than significant level.

G.2 Less than Significant Impacts

The following land uses and projects are generally presumed to have a less than significant project-specific water quality impact. These include:

• Redevelopment projects that do not increase the amount of impervious surfaces on the site nor change the land use or potential pollutants;

• New development and redevelopment projects that incorporate into the project design construction BMPs for erosion, sediment and construction waste control and incorporate post-construction BMPs to protect sensitive riparian or wetland resources, reduce the quantity of runoff, and treat runoff generated by the project to pre-project levels;

• Lot line adjustments that do not alter the development potential of the lots involved;

• Development of a single family dwelling (and associated accessory uses including but not limited to roads and driveways, septic systems, guesthouse, pool, etc.) disturbing less than one acre on existing legal lot.

G.3 Cumulative Impacts

Because of the county’s designation under the Phase II NPDES regulations, all discretionary projects (except those that do not result in a physical change to the environment) within the urbanized area whose contributions are cumulatively considerable must implement one or more best management practices to reduce their contribution to the cumulative impact.

H. General Mitigation Guidelines for Water Quality Impacts

If water quality impacts are considered from the beginning stages of a project more opportunities are available for water quality protection. Best management practices (mitigation measures) chosen for a project should minimize water quality impacts and attempt to maintain pre-development runoff conditions. Best management practices are divided into two main categories, non-structural BMPs and structural BMPs.

Non-structural BMPs are preventative actions that involve management and source controls such as protecting and restoring sensitive areas such as wetlands and riparian corridors, maintaining and/or increasing open space, providing buffers along sensitive water bodies, minimizing impervious surfaces and directly connected impervious areas, and minimizing disturbance of soils and vegetation. Structural BMPs include: storage practices such as wet ponds and extended-detention outlet structures; filtration practices such as grassed swales, sand filters and filter strips; and infiltration practices such as infiltration basins and infiltration trenches. In many
cases combinations of non-structural and structural measures will be required to reduce water quality impacts.

Non-structural and structural BMPs most applicable to the development projects in the county are included in “A Planner’s Guide to Conditions of Approval and Standard Mitigation Measures” and the county’s adopted BMP manuals for construction site runoff control. Additional guidance on best management practices is available from the State\(^5\), the EPA\(^7\) and from other sources such as BASMAA “Starting at the Source”\(^8\). Storm water technologies are constantly being improved, and staff and developers must be responsive to any changes, developments or improvements in control technologies.

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\(^{5}\) *California Storm Water Best Management Practice Handbooks* (California Stormwater Quality Task Force, 1993).
\(^{6}\) On the Internet at [www.epa.gov/npdes/menuofbmps/menu.htm](http://www.epa.gov/npdes/menuofbmps/menu.htm).
\(^{7}\) *Start at the Source: Design Guidance Manual for Stormwater Quality Protection* (Bay Area Stormwater Management Agencies Association, 1999).
WATER RESOURCES

Wat-1 Outdoor water use shall be limited through the measures listed below.

The following is a menu; select only those conditions that apply. Some of these measures may also be used as water conservation conditions without requiring a landscape and irrigation plan.

a. Landscaping shall be with [native and/or drought tolerant] species.

b. Drip irrigation or other water-conserving irrigation shall be installed.

c. Plant material shall be grouped by water needs.

d. Turf shall constitute less than 20% of the total landscaped area.

e. No turf shall be allowed on slopes of over 4%.

f. Extensive mulching (2" minimum) shall be used in all landscaped areas to improve the water holding capacity of the soil by reducing evaporation and soil compaction.

g. Soil moisture sensing devices shall be installed to prevent unnecessary irrigation.

h. Permeable surfaces such as turf block or intermittent permeable surfaces such as french drains shall be used for all parking areas and driveways.

i. The applicant shall plumb each lot for a grey water system. Each dwelling shall contain a grey water system plumbed to front and rear yard irrigation systems.

j. The applicant shall contract with an agency that sells reclaimed water to provide water for all exterior landscaping. Non-reclaimed water shall not be used to water exterior landscape. The applicant shall renew the contract annually and send copies of the contract and all receipts for reclaimed water received to P&D staff. These documents shall be due on [specify month] of every year commencing [specify starting point].

k. Separate landscape meters shall be installed.

Plan Requirements: Prior to [insert timing], a landscape and irrigation plan shall be submitted to P&D for review and approval. Planner: For i,
show on building plans and require approval or plumbing permit. The applicant/owner shall enter into an agreement with the County to install required landscaping/irrigation and maintain required landscaping for the life of the project.

**Timing:** The applicant shall implement all aspects of the landscape and irrigation plan prior to occupancy clearance.

**MONITORING:** Permit Compliance shall conduct site visits to ensure installation and maintenance of landscape and irrigation. Any part of irrigation plan requiring a plumbing permit shown on building plans shall be inspected by Building Inspectors.

Indoor water use shall be limited through the following measures:

*Planner: This is a menu; select only those conditions that apply:*

a. All hot water lines shall be insulated.

b. Recirculating, point-of-use, or on-demand water heaters shall be installed.

c. Water efficient clothes washers and dishwashers shall be installed.

d. Self regenerating water softening shall be prohibited in all structures. *(Required in Laguna Sanitation District.)*

e. Lavatories and drinking fountains shall be equipped with self-closing valves *(Commercial only)*

f. Pool(s) shall have pool cover(s).

**Plan Requirements:** Prior to approval of Land Use Permits/Coastal Development Permits, indoor water-conserving measures shall be graphically depicted on building plans, subject to P&D review and approval. **Timing:** Indoor water-conserving measures shall be implemented prior to occupancy clearance.

**MONITORING:** P&D shall inspect for all requirements prior to occupancy clearance.

The existing facility shall be retrofitted with water conserving showerheads (2 gallons per minute) and toilets (1.6 gallons per flush). **Timing:** Prior to approval of Land Use Permits/Coastal Development Permits, the retrofitting shall be completed by the applicant.
**MONITORING:** Planning and Development shall inspect to confirm retrofitting prior to approval of Land Use Permits\Coastal Development Permits.

High water consumption businesses (defined by P&D), including [specify types], shall be prohibited from operating on the subject property. **Plan Requirements and Timing:** Prior to approval of Land Use Permits\Coastal Development Permits, the applicant shall record a covenant agreeing to the prohibition with P&D for County Counsel review and approval to be included as a note on building plans, on lease agreements and in CC&R's.

**MONITORING:** P&D shall ensure no such businesses occupy building, by site inspection, prior to occupancy clearance and through any subsequent permitting for the site.

Reclaimed water shall be used for all dust suppression activities during grading and construction. **Plan Requirements and Timing:** This measure shall be included as a note on the grading plan. Prior to the commencement of earth movement, the applicant shall submit to Planning and Development an agreement/contract with a company providing reclaimed water stating that reclaimed water shall be supplied to the project site during all ground disturbances when dust suppression is required.

**MONITORING:** P&D staff shall inspect activities in the field to ensure non-potable water is being used in water trucks.

The project shall provide for on-site retention of storm water runoff, infiltration, and recharge where feasible. Feasibility shall be determined by the P&D Registered Geologist and Flood Control District engineer. Retention basin(s) shall be maintained for the life of the project by [a Homeowners' Association or landowner for commercial/industrial sites.]

Recharge systems shall be developed in conjunction with the Flood Control District and P&D. **Plan Requirements:** A drainage plan showing the location and design parameters of the retention basin shall be submitted to P&D and Flood Control for review and approval. Installation and maintenance for five years shall be ensured through a performance security provided by the applicant. Long term maintenance requirements shall be specified in [homeowner association CC&Rs or in a maintenance program submitted by the landowner of commercial/industrial sites.]

**Timing:** Retention and/or recharge basins shall be installed (landscaped and irrigated subject to P&D and Flood Control District approval) prior to occupancy clearance.

**MONITORING:** Planning and Development shall site inspect for installation and maintenance of landscaping. Flood Control sign off is
required on final grading/drainage plans, and Permit Compliance sign off is required for release of the performance security.

**Wat-7**

*Planner: Goleta only for properties overlying the North Central Subbasin and not a party to the Wright judgment.* In order for the proposed project to be found consistent with County water policies which require that adequate public and private services be available to serve the project, the applicant is required to petition the court and receive a determination that the applicant has the right to extract additional water from the north-central subbasin prior to the approval of [Land Use/Coastal Development] Permit.

**MONITORING:** P&D shall review determination prior to approval of Land Use Permits/Coastal Development Permits.

**Wat-8**

*Planner: For sites where disturbance involves one or more acres, the following will apply.* The applicant shall submit proof of exemption or a copy of the Notice of Intent to obtain coverage under the Construction General Permit of the National Pollutant Discharge Elimination System issued by the California Regional Water Quality Control Board. **Plan Requirements and Timing:** Prior to approval of Land Use Permits/Coastal Development Permits the applicant shall submit proof of exemption or a copy of the Notice of Intent and shall provide a copy of the required Storm Water Pollution Prevention Plan (SWPPP) to P&D. A copy of the SWPPP must be maintained on the project site during grading and construction activities.

**MONITORING** P&D shall review the documentation prior to approval of Land Use Permits/Coastal Development Permits. P&D shall site inspect during construction for compliance with the SWPPP.

*Planner: Use only for AHO or other qualified projects.*

**Wat-9**

Prior to [final map clearance/approval of [Land Use/Coastal Development] Permit] the applicant shall provide a can and will serve letter from the [specify water district] indicating that adequate water is available to serve the project.

**NOTE:** The following conditions/measures address storm water quality from construction, new development, and redevelopment as required by the EPA's NPDES Phase II municipal storm water regulations. Some of these measures should be considered during the initial design phase of a project as they might require significant land area to implement. Consideration of these measures after the initial design phase could result in substantial redesign and project delay.

**Wat-10**

*Planner: For all new development and redevelopment projects.* To prevent illegal discharges to the storm drains, all on-site storm drain inlets, whether new or existing shall be labeled to advise the public that the storm
drain discharges to the ocean (or other waterbody, as appropriate) and that dumping waste is prohibited (e.g., “Don’t Dump – Drains to Ocean”). The information shall be provided in English and Spanish. **Plan Requirements and Timing:** Location of storm drain inlets shall be shown on site, building and grading plans prior to approval of grading and land use permits. Labels shall be installed prior to occupancy clearance. Standard labels are available from Public Works, Project Clean Water, or other label designs shall be shown on the plans and submitted to P&D for approval prior to approval of grading and land use permits.

**MONITORING:** Planning and Development shall site inspect prior to occupancy clearance.

**Wat-11**

*Planner: Use this measure separately if there will be grading but an erosion and sediment control plan is not being required.* To prevent sediment from being tracked off of the construction site, stabilized entrances shall be installed. Stabilizing measures may include but are not limited to use of gravel pads, steel rumble plates, temporary paving, etc. Any sediment or other materials tracked off site shall be removed the same day as they are tracked using dry cleaning methods. **Plan Requirements:** The stabilized entrances/exits shall be located and detailed on the grading and drainage plan. Dry cleaning methods shall be enumerated in the project specifications and included on grading and drainage plans. **Timing:** The plans shall be submitted to P&D for approval prior to approval of Land Use Permit/Coastal Development Permits. The stabilized entrances/exits shall be installed prior to initiation of grading and maintained for the duration of the grading period and until graded areas have been stabilized by structures, long-term erosion control measures or landscaping.

**MONITORING:** P&D shall site inspect during construction.

**Wat-12**

*Planner: this measure is appropriate for small, medium, or large subdivisions (5 or more lots) or commercial/industrial developments and as an alternative to underground or aboveground impermeable drainage channels, however sufficient land area must be set aside onsite to accommodate the system. This measure can be combined with Wat-13 and Wat-14 where appropriate.* A permanent biofiltration system shall be constructed to treat storm water runoff from the site. Biofiltration includes vegetated swales, channels, buffer strips, retention, rain gardens, and shall be designed in accordance with the California Stormwater BMP Handbook for New Development and Redevelopment (California Storm Water Quality Association) or other approved method. The biofilter system shall be designed by a registered civil engineer specializing in water quality or other qualified professional to ensure that the filtration properties and the plants selected are adequate to reduce concentrations of the target pollutants including *Planner: list likely pollutants*. Where
feasible, local plants sources (i.e., collected from the watershed or propagated from cuttings or seed collected from the watershed) shall be used in the biofiltration system. Invasive plants shall not be used. Biofilters shall not replace existing riparian vegetation or native vegetation unless otherwise approved by P&D. **Plan Requirements and Timing:**

The applicant shall include the biofilter design, including the plant palette and the source of plant material, on the grading and drainage and landscape plans, and depict it graphically. The applicant shall submit a maintenance plan for the biofilter system to P&D for review and approval. A performance security will be required to ensure installation and long-term maintenance, including maintenance inspections at least once/year. Long-term maintenance and proof of inspections shall be the responsibility of the [HOA (for residential projects) or the landowner (for commercial/industrial projects).] Maintenance requirements shall be specified in the CC&Rs or in a maintenance program submitted by the landowner of the commercial/industrial site and recorded with the Clerk of the Board. The plans and a copy of the long-term maintenance program shall be submitted to P&D, and Public Works, Water Resources Division staff, for review prior to approval of Land Use Permits/Coastal Development Permits. Biofilter maintenance is required for the life of the project and transfer of this responsibility is required for any subsequent sale of the property. The condition of transfer shall include a provision that the property owners conduct maintenance inspection at least once/year and retain proof of inspections.

**MONITORING:** Planning and Development shall site inspect for installation and periodically inspect for maintenance throughout a five-year performance period. Performance security release requires P&D approval. The [HOA (for residential projects) or the landowner (for commercial/industrial projects)] shall be responsible for maintenance inspections at least once/year for the life of the project. Proof of maintenance inspections shall be maintained and made available to County of Santa Barbara upon request.

**Planner:** This measure may be used for small projects where the drainage area is divided into smaller, individually treated units less than an acre, or projects such as small residential developments (4 or fewer lots), small commercial areas (with buildings or structures less than 5,000 square feet), and parking lots less than 25 stall. This measure can be combined with Wat-12 and Wat-14 where appropriate. To allow for infiltration and treatment, sheet flow runoff from the site shall be directed to a permanent vegetated buffer strip. A registered civil engineer or other qualified professional shall design the buffer strip. Only non-invasive perennial grass or other drought tolerant vegetation species shall be used. Vegetated buffer strips shall be designed in accordance with the California Stormwater BMP Handbook for New Development and Redevelopment (California Storm Water Quality Association) or other approved method.
**Plan Requirements and Timing:** Buffer strip design, including the plant palette and the source of plant material, shall be described and detailed on the site, grading and drainage and landscape plans, and depicted graphically. A maintenance program shall be specified in an inspection and maintenance plan and include maintenance inspections at least once/year. Long term maintenance shall be the responsibility of the [HOA (for residential projects) or the landowner (for commercial/industrial projects).] A maintenance program shall be specified in the CC&Rs or in a maintenance program submitted by the landowner for commercial/industrial sites and recorded with the Clerk of the Board. The plans and a copy of the long-term maintenance program shall be submitted to P&D and Public Works, Water Resources Division staff for review prior to approval of Land Use Permits/Coastal Development Permits. Buffer strip maintenance is required for the life of the project and transfer of this responsibility is required for any subsequent sale of the property. The condition of transfer shall include a provision that the property owners conduct maintenance inspection at least once/year and retain proof of inspections.

**Monitoring:** Planning and Development shall site inspect for installation of the swale and periodically thereafter to ensure long-term maintenance. The [HOA (for residential projects) or the landowner (for commercial/industrial projects)] shall be responsible for maintenance inspections at least once/year for the life of the project. Proof of maintenance inspections shall be maintained and made available to County of Santa Barbara upon request.

**Planner:** the following shall be used where possible to treat and infiltrate stormwater from impervious surfaces at commercial, residential, and industrial sites. Small drainages between 0.25 and 1.0 acres (larger drainages may require multiple bioretention areas). Bioretention is a soil and plant-based filtration device that removes pollutants through a combination of physical, biological, and chemical processes. The facility combines vegetation with a planting soil matrix of sand and organics. Runoff is distributed evenly through the ponding area for infiltration through the soil matrix. Underdrains may be required. To allow for infiltration and treatment, drainage shall be directed to a bioretention filter. A registered civil engineer or other qualified professional shall design the bioretention filter in accordance with the California Stormwater BMP Handbook for New Development and Redevelopment (California Storm Water Quality Association) or other approved method. **Plan Requirements and Timing:** Bioretention design, including the selected plant material, shall be described and detailed on the site, grading and drainage and landscape plans, and depicted graphically. A maintenance program shall be specified in an inspection and maintenance plan and include maintenance inspections at least once/year. Long term maintenance shall be the responsibility of the [HOA (for
residential projects) or the landowner (for commercial/industrial projects).] A maintenance program shall be specified in the CC&Rs or in a maintenance program submitted by the landowner for commercial/industrial sites and recorded with the Clerk of the Board. The plans and a copy of the long-term maintenance program shall be submitted to P&D and Public Works, Water Resources Division staff, for review prior to approval of Land Use Permits/Coastal Development Permits. Bioretention maintenance is required for the life of the project and transfer of this responsibility is required for any subsequent sale of the property. The condition of transfer shall include a provision that the property owners conduct maintenance inspection at least once/year and retain proof of inspections.

**MONITORING:** Planning and Development shall site inspect for installation of the bioretention facility and periodically thereafter to ensure long-term maintenance. The [HOA (for residential projects) or the landowner (for commercial/industrial projects)] shall be responsible for maintenance inspections at least once/year for the life of the project. Proof of maintenance inspections shall be maintained and made available to County of Santa Barbara upon request.

**Plan Requirements and Timing:** Pervious surfaces shall be described and depicted graphically on the site, building, grading and landscape plans. The plans shall be submitted to P&D for review prior to approval of Land Use Permits/Coastal Development Permits.

**MONITORING:** P&D shall site inspect for installation.

**Plan Requirements and Timing:** The following measure can be used for single family dwellings and commercial/industrial development on permeable soils and can be used on larger projects in conjunction with other measures. Work with Building and Safety to ensure that building foundations are adequately protected from site drainage when using this measure. The applicant shall install a roof runoff collection and disposal system to infiltrate storm water runoff. Runoff shall be directed to either a subsurface infiltration trench, French drains, planter boxes, landscaped areas or connected to the site’s irrigation system. An overflow or high flow bypass system will be provided. The roof runoff collection system shall be shown on grading, building and landscape plans. The
plans shall be submitted to P&D for review prior to approval Land Use Permits/Coastal Development Permits. The system shall be installed prior to occupancy clearance.

**MONITORING:** P&D shall site inspect for installation of the system.

Wat-16 A Homeowners’ Association or the landowner (for commercial/industrial projects) \{planner choose the appropriate\} shall be responsible for the long-term maintenance of the water quality conditions of approval \{planner list conditions here\}. **Plan Requirements and Timing:** The proposed maintenance responsibilities and schedule shall be included in the CC&Rs or in a maintenance program submitted by the landowner for commercial/industrial sites. The CC&Rs/maintenance program shall be submitted for review by P&D and Public Works, Water Resources Division staff, prior to approval of Land Use Permits/Coastal Development Permits. Annual records of the maintenance activities shall be maintained by the HOA/landowner and submitted to P&D upon request.

**MONITORING:** P&D shall review the maintenance records or site inspect, as needed. Costs shall be borne by the Homeowners Association.

Wat-17 **Planner:** The following measure can be used for single family dwellings where conditions allow. To reduce storm water runoff, one of the following driveway designs shall be used: paving only under wheels, flared driveway, or use of permeable surfaces for temporary or non-permanent parking areas. **Plan Requirements and Timing:** The driveway shall be shown on the site, grading, landscape and building plans. The plans shall be submitted to P&D for review prior to approval of Land Use Permits/Coastal Development Permits.

**MONITORING:** P&D shall site inspect to ensure installation.

Wat-18 To prevent storm water contamination during roadwork or pavement construction, concrete, asphalt, and seal coat shall be applied during dry weather. Storm drains and manholes within the construction area shall be covered when paving or applying seal coat, slurry, fog seal, etc. **Plan Requirements and Timing:** These requirements shall be specified on the grading and building plans submitted to P&D prior to approval of Land Use Permits/Coastal Development Permits.

**MONITORING:** P&D shall site inspect, as needed during construction.

Wat-19 **Planner:** This measure must be applied to new or redeveloped fueling stations (NPDES Permit Requirement). The fuel dispensing area shall extend 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus 1 foot, whichever is less. The fuel dispensing areas shall be paved with Portland cement concrete (or
equivalent smooth impervious surface), with a 2% to 4% slope to prevent ponding, and shall be separated from the rest of the site by a grade break that prevents run-on of storm water. The paving around the fuel dispensing area may exceed the minimum dimensions of the "fuel dispensing area" stated above. Plan Requirements and Timing: These requirements shall be specified on the grading and building plans submitted to P&D. The plans shall be reviewed and detailed prior to approval of Land Use Permits/Coastal Development Permits.

MONITORING: P&D shall site inspect prior to occupancy clearance.

Wat-20 Planner: Use this measure on parking lots associated with shopping centers or large commercial or industrial developments (with buildings or structures totaling 5,000 square feet or more). A parking lot cleaning program shall be developed and implemented. The program shall include the following elements: removal of litter; spot cleaning of oil, fuel, and other automotive leaks; vacuum sweeping on a [Specify weekly, monthly, quarterly, or semi-annual] basis; inspection and cleaning of storm drain inlets and catch basins before November 1 and in January of each year; and posting of signs prohibiting littering, oil changing, and other automotive repairs. Debris removed from the catch basins shall be analyzed and disposed of accordingly. Plan Requirements and Timing: The cleaning program shall be submitted to P&D for review prior to approval of Land Use Permits/Coastal Development Permits. The location of the signs and the requirement for storm drain cleaning shall be included on the site and building plans submitted to P&D. The plans shall be reviewed prior to approval of Land Use Permits/Coastal Development Permits.

MONITORING: P&D shall site inspect prior to occupancy clearance and shall respond to complaints. The landowner shall maintain annual records of the storm drain cleaning and make them available for review by P&D on request.

Wat-21 Planner: Use this measure for parking areas with 5-25 spaces. Parking areas greater than 25 spaces shall be conditioned by Public Works for treatment of runoff from the design storm event (NPDES Permit Requirement). The parking area and associated driveways shall be designed to minimize degradation of storm water quality. Best Management Practices (BMPs) such as landscaped areas for infiltration (vegetated filter strips, bioswales, or bioretention areas), designed in accordance with the California Stormwater BMP Handbook for New Development and Redevelopment (California Storm Water Quality Association) or other approved method shall be installed to intercept and remove pollutants prior to discharging to the storm drain system. The BMPs selected shall be maintained in working order. The landowner is responsible for the maintenance and operation of all improvements and
shall maintain annual maintenance records. The BMPs shall be described and detailed on the site, grading and drainage and landscape plans, and depicted graphically. A maintenance program shall be specified in an inspection and maintenance plan and include maintenance inspections at least once/year. Long term maintenance shall be the responsibility of the [HOA (for residential projects) or the landowner (for commercial/industrial projects).] A maintenance program shall be specified in the CC&Rs or in a maintenance program submitted by the landowner for commercial/industrial sites and recorded with the Clerk of the Board. The plans and a copy of the long-term maintenance program shall be submitted to P&D and Public Works, Water Resources Division staff, for review prior to approval of Land Use Permits/Coastal Development Permits. BMP maintenance is required for the life of the project and transfer of this responsibility is required for any subsequent sale of the property. The condition of transfer shall include a provision that the property owners conduct maintenance inspection at least once/year and retain proof of inspections. **Plan Requirements and Timing:** The location and type of BMP shall be shown on the site, building and grading plans [select plans as appropriate based on type of BMP]. The plans and maintenance program shall be submitted to P&D for approval prior to land use clearance.

**MONITORING:** P&D shall site inspect for installation prior to occupancy clearance. The landowner shall make annual maintenance records available for review by P&D upon request.

**Planner:** Use this measure for any project identified as having a significant storm water quality impact and, if appropriate, identify and include the minimum BMPs to be implemented (see above measures). A combination of structural and non-structural Best Management Practices (BMPs) from the California Stormwater BMP Handbook for New Development and Redevelopment (California Storm Water Quality Association), or other approved methods, shall be installed to effectively prevent the entry of pollutants from the project site into the storm drain system after development. **Plan Requirements:** The applicant/owner shall submit and implement a Storm Water Quality Management Plan (SWQMP). The SWQMP shall include the following elements: identification of potential pollutant sources that may affect the quality of the storm water discharges; the proposed design and placement of structural and non-structural BMPs to address identified pollutants; a proposed inspection and maintenance program; and a method for ensuring maintenance of all BMPs over the life of the project. The approved measures shall also be shown on site, building and grading plans. Records of maintenance shall be maintained by the HOA for residential developments or landowners for commercial/industrial developments. **Timing:** Prior to approval of Land Use Permits/Coastal Development Permits, the SWQMP shall be submitted to P&D and Public Works.
Department, Water Resources Division. All measures specified in the plan shall be constructed and operational prior to occupancy clearance. Maintenance records shall be submitted to P&D on an annual basis prior to the start of the rainy season and for five years thereafter. After the fifth year the records shall be maintained by the landowner or HOA and be made available to P&D or Public Works on request.

**MONITORING:** P&D and Public Works, Water Resources Division shall site inspect prior to occupancy clearance to ensure measures are constructed in accordance with the approved plan and periodically thereafter to ensure proper maintenance.

**Wat-23**

Construction materials and waste such as paint, mortar, concrete slurry, fuels, etc. shall be stored, handled, and disposed of in a manner which minimizes the potential for storm water contamination. **Plan Requirements and Timing:** Bulk storage locations for construction materials and any measures proposed to contain the materials shall be shown on the grading plans submitted to P&D for review prior to approval of Land Use Permits/Coastal Development Permits.

**MONITORING** P&D shall site inspect prior to the commencement of, and as needed during all, grading and construction activities.

**Wat-24**

**Planner: This measure must be applied where there is storage of outdoor materials (NPDES Permit Requirement).** An outdoor material storage area refers to storage areas or facilities solely for the storage of materials. Improper storage of materials out of doors may provide an opportunity for toxic compounds, oil and grease, heavy metals, nutrients, suspended solids, and other pollutants to enter the storm water conveyance system. Where proposed project plans include outdoor material storage areas that could contribute pollutants to the storm water conveyance system, the following measures are required:

1) Materials with the potential to contaminate storm water must either be (a) placed in an enclosure such as, but not limited to, a cabinet, shed, or similar structure that prevents contact with runoff or spillage to the storm water conveyance system; or (b) protected by a secondary containment structure such as berm, dike, or curb and covered with a roof or awning.

2) The storage area must be paved and sufficiently impervious to contain leaks and spill or otherwise be designed to prevent discharge of leaks or spills into the storm water conveyance system.

**MONITORING:** P&D shall site inspect prior to occupancy clearance to ensure measures are constructed in accordance with the approved plan and periodically thereafter to ensure proper maintenance.
**Planner:** This measure must be applied where there is a trash storage area (NPDES Permit Requirement). A trash storage area is an area where a trash receptacle(s) or dumpsters are located. Loose trash and debris can be transported by forces of water or wind into storm water conveyance system. All trash container areas must meet the following requirements:

1) Trash container areas must divert drainage from adjoining paved areas.

2) Trash container areas must be protected and regularly maintained to prevent off-site transport of trash.

**MONITORING:** P&D shall site inspect prior to occupancy clearance to ensure measures are constructed in accordance with the approved plan and periodically thereafter to ensure proper maintenance.

**Wat-26**

**Planner:** This measure must be applied for all automotive repair shops and maintenance bays (NPDES Permit Requirement). All automotive repair shops and maintenance bays shall meet the following requirements:

1) Repair/maintenance bays must be indoors or designed in such a way that doesn’t allow storm water run-on or contact with storm water runoff.

2) Design a repair/maintenance bay drainage system to capture all wash-water, leaks and spills. Connect drains to a sump for collection and disposal. Direct connection of the repair/maintenance bays to the storm drain system is prohibited. If required by local Sanitary District, obtain an Industrial Waste Discharge Permit.

**MONITORING:** P&D shall site inspect prior to occupancy clearance to ensure measures are constructed in accordance with the approved plan and periodically thereafter to ensure proper maintenance.

**Wat-27**

**Planner:** This measure must be applied for all commercial vehicle/equipment wash areas (NPDES Permit Requirement). All vehicle/equipment washing/steam cleaning areas must be self-contained and/or covered, equipped with a clarifier or other pretreatment facility, and properly connected to a sanitary sewer or other appropriately permitted disposal facility.

**MONITORING:** P&D shall site inspect prior to occupancy clearance to ensure measures are constructed in accordance with the approved plan and periodically thereafter to ensure proper maintenance.

**Wat-28**

**Planner:** This measure must be applied for all restaurants and commercial food handling facilities (NPDES Permit Requirement). All outdoor equipment/accessory washing/steam cleaning must provide an
area for the washing/steam cleaning of equipment and accessories. The area must be self contained, equipped with a grease trap, and properly connected to a sanitary sewer. If the wash area is located outdoors, it must be covered, paved, have secondary containment, and be connected to the sanitary sewer or other appropriately permitted disposal facility.

**MONITORING:** P&D shall site inspect prior to occupancy clearance to ensure measures are constructed in accordance with the approved plan and periodically thereafter to ensure proper maintenance.

**Planner:** This measure **must be applied for all loading/unloading dock areas including commercial and automotive repair shops (NPDES Permit Requirement).** The following design criteria are required for all loading/unloading dock areas:

1) Cover loading dock areas or design drainage to minimize run-on and runoff of storm water.

2) Direct connections to storm drains from depressed loading docks (truck wells) are prohibited.

**MONITORING:** P&D shall site inspect prior to occupancy clearance to ensure measures are constructed in accordance with the approved plan and periodically thereafter to ensure proper maintenance.
Three Step Process

**STEP 1: Identify Project Type (per General Permit)**

1. Residential development equal to or greater than 1.0 acre
2. Commercial, industrial, and transportation / vehicle facilities which are 0.5 acres or greater
3. Single-Family Hillside Residences
4. Automotive Repair Shops
5. Retail Gasoline Outlets
6. Restaurants
7. Home Subdivisions with 10 or more housing units
8. Parking lots 5,000 square feet or more or with 25 or more parking spaces and potentially exposed to storm water runoff

**STEP 2: Identify SOURCE CONTROL / SITE DESIGN BMPs**

<table>
<thead>
<tr>
<th>Trash storage</th>
<th>Adjoining drainage shall be redirected, trash container areas screened or walled.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material storage</td>
<td>Materials placed in enclosure, storage area paved and impervious, covered with roof or awning.</td>
</tr>
<tr>
<td>Loading docks</td>
<td>Cover loading dock, design drainage to minimize run-on and runoff, direct connections to storm drains from truck wells prohibited.</td>
</tr>
<tr>
<td>Vehicle maintenance / repair</td>
<td>Repair bays must be indoors or otherwise prevent storm water contact.</td>
</tr>
<tr>
<td>Vehicle or equipment wash</td>
<td>Repair bays must capture all washwater, leaks and spills, drain to sump for collection and proper disposal.</td>
</tr>
<tr>
<td>Vehicle or equipment wash</td>
<td>Wash areas self-contained and/or covered, equipped w clarifier or pretreatment facility, proper connection to sanitary.</td>
</tr>
<tr>
<td>Vehicle or equipment wash</td>
<td>Wash areas self-contained, equipped with grease trap, properly connected to sanitary. If outdoors, must be covered, paved, secondary containment, and connected to sanitary or other approved disposal.</td>
</tr>
<tr>
<td>Fueling</td>
<td>Fueling areas covered with overhanging roof structure or canopy, canopy minimum dimension equal to or greater than dispensing area within grade break, canopy cannot drain onto fuel dispensing area, canopy downspouts prevent drainage across fueling area,</td>
</tr>
<tr>
<td>Fueling</td>
<td>Dispensing area paved with Portland cement concrete or equivalent, 2% to 4% slope to prevent ponding, separated from rest of site by grade break. Dispensing area must be 6.5 feet from corner each fuel dispenser or length at which hose and nozzle assembly operated plus 1 foot, whichever is less.</td>
</tr>
<tr>
<td>Runoff from impervious areas:</td>
<td>Conserve natural areas (concentrate or cluster development, limit clearing and grading to minimum amount needed, maximize trees and vegetation, plant additional vegetation, cluster tree areas, promote use native or drought tolerant plants, promote landscaped areas, preserve wetlands and riparian areas)</td>
</tr>
<tr>
<td>Runoff from impervious areas:</td>
<td>Minimize pollutants of concern</td>
</tr>
<tr>
<td>Runoff from impervious areas:</td>
<td>Protect slopes and channels (convey runoff safely, use natural drainage, stabilize channel crossings, vegetate slopes, install energy dissipators to minimize erosion)</td>
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<tr>
<td>Runoff from impervious areas:</td>
<td>Provide storm drain stencil</td>
</tr>
<tr>
<td>Runoff from impervious areas:</td>
<td>Post-development peak Q shall not exceed pre-development peak Q (Flood Control Conditions)</td>
</tr>
</tbody>
</table>

**STEP 3: Treat and detain/retain remaining runoff**

Per Public Works Water Resources (Flood Control / Cleanwater)
DATE: November 27, 2006

MEMO TO: Steve Mason, Deputy Director, Planning and Development
Zoraida Abresch, Deputy Director, Planning and Development

FROM: Tom Fayram, Deputy Public Works Director

CC: Phil Demery, Public Works Director
Ron Cortez, Deputy County Executive Officer
Michael Ledbetter, Deputy County Counsel

RE: Coordination on Water Quality BMPs

As you know, the County is required to regulate new development and redevelopment projects under the NPDES Storm Water General Permit. Most of the NPDES requirements are addressed directly by your staff through standard conditions of approval (Attachment 1). One NPDES requirement not addressed by P&D is the treatment of runoff from certain categories of development (Attachment 2). This requirement is addressed by Public Works through the County of Santa Barbara’s Standard Conditions for Project Plan Approval for Water Quality BMPs (Attachment 3).

Since June, 2004, Water Resources staff has issued the conditions and provided review and approval of project submittals. In order to improve the implementation of these conditions, I would like your staff to implement the following practice:

Prior to issuing the completeness letter to the applicant, the treatment control measures must be adequately addressed on the project Grading & Drainage Plans or other appropriate submittal, by demonstrating how the project will meet our Standard Conditions.

To do this, the applicant must calculate runoff from the design storm and define how the project will treat that runoff. For example, if the proposal includes use of bioswales, bioretention, or detention, then the location of those areas would have to be identified and sized accordingly. Similarly, if the proposal includes a manufacturer’s control device, the location and type of the filter should be identified.

25. Application Completeness
This clarification on a completeness item will prevent applicants from waiting until after decision maker hearings when it often too late to adequately address this condition. These measures are best addressed up-front during plan check and will, in the long run, make the process easier for both the applicant and the County.
Example for Completeness Letter

**Stormwater Runoff.** The County Board of Supervisors has adopted new interpretive and implementation guidelines for County policies to protect water quality from the long-term impacts of development. New projects must incorporate appropriate Best Management Practices (BMPs) into the project design to minimize water quality impacts to the maximum extent practical. In order of preference these BMPs are:

- site planning to avoid, protect, and restore sensitive areas (e.g., wetlands and riparian corridors);
- minimizing impervious surfaces and directly connected impervious surfaces, using existing natural features to allow for on-site infiltration of water;
- use of vegetative treatment (e.g., bio-swales, vegetative buffers, constructed or artificial wetlands);
- mechanical or structural treatment (e.g., storm drain filters and inserts).
- Combinations of the measures listed above.

In order to assure that adequate space is reserved to incorporate the necessary treatment control measures, please submit project Grading & Drainage Plans (or other appropriate submittal) that address how the project will meet the Santa Barbara County Standard Conditions for Project Plan Approval – Water Quality BMPs consistent with these policy objectives. These plans or submittals shall be provided to Santa Barbara County Public Works, Water Resources Division, for review and approval of completeness. More information, including level of detail needed for application completeness, can be found at: [http://www.sbprojectcleanwater.org/post_construction.html](http://www.sbprojectcleanwater.org/post_construction.html) Please contact Cathleen Garnand at (805) 568-3561 if you have any questions about these requirements.
Phase II Small MS4 General Permit
Questions and Answer Document

1. What is MEP? How is it defined?

MEP is the acronym for Maximum Extent Practicable. The federal Clean Water Act (CWA) provides that National Pollutant Discharge Elimination System (NPDES) permits for Municipal Separate Storm Sewer Systems (MS4) must require municipalities to reduce pollutants in their storm water discharges to the MEP. (CWA §402(p)(3)(B).) MS4 permits "shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods." (Id.)

The MEP standard involves applying best management practices (BMPs) that are effective in reducing the discharge of pollutants in storm water runoff. In discussing the MEP standard, the State Board has said the following: "There must be a serious attempt to comply, and practical solutions may not be lightly rejected. If, from the list of BMPs, a permittee chooses only a few of the least expensive methods, it is likely that MEP has not been met. On the other hand, if a permittee employs all applicable BMPs except those where it can show that they are not technically feasible in the locality, or whose cost would exceed any benefit to be derived, it would have met the standard. MEP requires permittees to choose effective BMPs, and to reject applicable BMPs only where other effective BMPs will serve the same purpose, the BMPs would not be technically feasible, or the cost would be prohibitive." (Order No. WQ 2000-11, at p.20.) MEP is the result of the cumulative effect of implementing, continuously evaluating, and making corresponding changes to a variety of technically and economically feasible BMPs that ensures the most appropriate controls are implemented in the most effective manner. This process of implementing, evaluating, revising, or adding new BMPs is commonly referred to as the iterative approach (see question 4). For Small MS4s, EPA has stated that pollutant reductions to the MEP will be realized by implementing BMPs through the six minimum measures described in the permit. (64 Federal Register 68753.)

Source: SWRCB (updated 8/5/04)
http://www.swrcb.ca.gov/stormwtr/smallms4faq.html
Low Impact Development (LID)
A Sensible Approach to Land Development and Stormwater Management

What is Low Impact Development (LID)?

LID is an alternative method of land development that seeks to maintain the natural hydrologic character of the site or region. The natural hydrology, or movement of water through a watershed, is shaped over centuries under location-specific conditions to form a balanced and efficient system. When hardened surfaces such as roads, parking lots, and rooftops are constructed, the movement of water is altered; in particular, the amount of runoff increases and infiltration decreases. This results in increased peak flow rate and volume, and pollution levels in stormwater runoff. LID designs with nature in mind: working with the natural landscape and hydrology to minimize these changes. LID accomplishes this through source control, retaining more water on the site where it falls, rather than using traditional methods of funneling water via pipes into local waterways. Both improved site design and specific management measures are utilized in LID designs. LID has been applied to government, residential, and commercial development and redevelopment, and has proven to be a cost-efficient and effective method for managing runoff and protecting the environment.

Using LID Tools in Residential Development

**Natural Drainage Flow**
Reduces need for grading and constructed drainage systems by building houses in a location that permits preservation of natural pattern of stormwater drainage.

**Bioretention Cell or Rain Garden**
Depressions that contain soil amendments that promote infiltration of stormwater.

**Amended Soil**
Soil enriched with sand and organic materials increases the capacity of soil to infiltrate water.

**Reduced Hardscape**
Narrower streets, sidewalks, and driveways increases pervious areas and open spaces.

**Preserved Native Vegetation**
Enhances the aesthetic quality of community and improves the evaporation-transpiration rate.

**Porous Pavement**
Concrete that allows rain to infiltrate, thereby reducing runoff and promoting groundwater recharge.

**Grassy Swale**
Vegetated channels that slow stormwater runoff and promotes infiltration, traps sediment, and helps treat pollutants.

Diagram adapted from Prince George's County Maryland Low-Impact Development Design Strategies
Historically, in the U.S., the motto for stormwater management has been "conveyance": move water away from the site where it falls as quickly and efficiently as possible. Traditional management tools include street gutters and curbs, pipes, and canals to remove water from the developed areas. To receive this increased volume, creeks and rivers are re-shaped and lined with concrete. Detention ponds, some with water quality filtration devices, regulate discharge to reduce peak flow impacts on receiving waters. For the most part, these practices reduce flood impacts, but do not completely address water quality, and aquatic and riparian habitat degradation issues.

In contrast with the traditional approaches, the guiding principle of low impact development approaches is not conveyance; it is "source control and infiltration". LID techniques seek to maximize the area available for infiltration so that runoff volume and pollutant concentrations are reduced. This is achieved through a variety of site design and engineered infiltration techniques. Site design techniques include locating open spaces in low-lying areas to serve as a detention/retention basin and avoid development on permeable soils to promote infiltration and groundwater recharge. Engineered techniques include the use of grassy swales, bioretention cells, and porous pavement.

### LID Benefits

**Water Quality**
- Contributes to groundwater recharge through infiltration
- Improves surface water quality
- Protects stream and lake quality from large volumes of polluted runoff

**Meets Clean Water Act Requirements**
- Source control reduces the pollutant level and volume of runoff entering a water body, complying with National Pollutant Discharge Elimination System (NPDES) and anti-degradation policy.
- This also aids in complying with 401 certification requirements

**Flood Control**
- Reduces frequency & severity of floods
- Reduces peak flow volume & velocity

**Habitat Protection**
- Preserves stream & riparian habitats
- Preserves regional trees & vegetation
- Reduces eroded sediment loading into streams & lakes

**Community Value**
- Increases aesthetics and recreational opportunities in protected riparian habitats
- Increases land value by having a cleaner environment
- Increases public/private collaborative partnerships

### LID Challenges

**Lack of Information**
- Many municipal planners, consultants and the general public are unfamiliar with the benefits of LID practices and how to utilize them in different environments.

**Inflexible Regulations/Ordinances**
- Existing rules often lack the flexibility to implement LID solutions

**Maintenance**
- Some LID tools require maintenance by homeowners and local public works departments to function properly

**Presence of Contaminants**
- Use of filtration practices can threaten groundwater quality if high levels of soil contaminants are present.

The economic benefits of LID include:

- Reduced costs of stormwater infrastructure, including curbs and gutters
- Reduced stormwater utility fees
- Increased land value
- Decreased spending on current and future environmental conservation programs

Specific cost savings vary on a case by case basis. There can be additional costs:

- Higher installation costs for certain soil types and gradients
- Increased landscape maintenance costs

### Economic Issues

<table>
<thead>
<tr>
<th>Issue</th>
<th>Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher Lot Value</td>
<td>$3000 more per lot</td>
</tr>
<tr>
<td>Lower Cost Per Lot</td>
<td>$4800 less cost per lot</td>
</tr>
<tr>
<td>Enhanced Marketability</td>
<td>80% of lots sold in first year</td>
</tr>
<tr>
<td>Added Amenities</td>
<td>23.5 acres of green-space/parks</td>
</tr>
<tr>
<td>Recognition</td>
<td>National, state, and professional</td>
</tr>
<tr>
<td>Total Economic Benefit</td>
<td>Over $2,200,000 added to profit</td>
</tr>
</tbody>
</table>

The above table, from **Gap Creek residential subdivision**, Sherwood, AR, illustrates the financial benefits of using LID methods. **Tyne & Associates, North Little Rock, AR**
Addressing LID Implementation Challenges

Solutions

Clay Soils/Limited Space
The combination of clay soils and small lot sizes can work well together. As clays are naturally less pervious, less engineering and land is required to achieve predevelopment infiltration rates. Use integrated stormwater management techniques, a combination of traditional and LID approaches. Significant stormwater runoff reduction can still be achieved.

Local Codes Aren't LID-friendly
Revise local codes & ordinances to support use of LID techniques. Check out the Center for Watershed Protection's website for suggested guidelines (www.cwp.org/COW_worksheet.htm).

Don't know what would work and where
Educate planning & public works staff. Numerous references are available on the use of LID in a variety of settings (see Online References).

Some communities that have found solutions

Hercules has modified stormwater management guidelines that fit LID principles, city codes that allow administrative approval for LID projects, and limited street lengths.

Contra Costa incorporated LID measures into their Standard Urban Stormwater Management Plan (SUSMP) for new development (http://www.cccleanwater.org/ construction/nd.php). Sacramento, likewise, is publishing their own design manual in Fall, 2006 that includes LID measures.

San Diego has new parking standards for intensive commercial zones that include smaller parking spaces and driveways, plus new guidelines requiring reduced imperviousness for parking spaces.

Santa Monica encourages LID by requiring that all new developments and substantial remodels submit an "Urban Runoff Mitigation Plan", and reduce projected runoff for the site by 20%. The city recommends LID technologies.

LID as a Re-design Strategy

Retrofit a Parking Lot to Increase permeability. Over sixty-five percent of impervious areas are associated with "habitat for cars". Using porous pavement in parking lots is a simple way to increase infiltration and reduce runoff. When the US Navy Yard in Washington, D.C. needed to repave its parking lot, they used porous pavers. They also added bioretention cells to the landscaped areas and disconnected downspouts. The re-design did not alter the amount of parking spots, but reduced peak runoff and pollution, thus protecting and helping to restore the Anacostia and Potomac Rivers and the Chesapeake Bay.

Porous pavement covers about 1/3 of each parking space in the D.C. Navy Yard parking lot.

Alter street design to increase infiltration. In a landmark project in Seattle, the Street Edge Alternative or SEA project involved building vegetated swales, bioretention cells, and narrower streets without curbs to promote an effective drainage and filtration system. The system reduced peak runoff for the 2 year flood event by 98%, and is capable of conveying the 25 year flood event. The local watershed provides spawning habitat for endangered salmon. The project was so successful that similar ones are being planned throughout the city.

LID street design: vegetated swales, no curbs, and narrower streets promote infiltration of stormwater.

Replace lawns with rain gardens. Rain gardens are small bioretention cells landscaped with plants, trees, and grasses. They are a particularly good way for individual homeowners to enhance their landscaping while protecting water quality. By planting easy-care native wildflowers, hardy perennials and grasses, attractive gardens can be constructed that have the added environmental benefits. More information on rain gardens is available at: http://www.healthylandscapes.org/raingarden.htm. Information on plants compatible for use in a California rain garden is posted at: http://www.bbg.org/gar2/topics/design/2004sp_raingardens.html.

Rain garden in a small backyard that collects runoff from roof and patio.

30. Low Impact Development
LID is more than a collection of engineered tools. It is a comprehensive design technique incorporating site planning and integrated management measures.

LID design principles include:
- Extensive site assessment of hydrology, topography, soils, vegetation and water features;
- Higher density, clustered housing, preserving open spaces to facilitate infiltration and protect habitats;
- Street layout that minimizes road length and width, calming traffic while allowing safe access of emergency vehicles.

In this example, LID design reduces imperviousness by changing the cul-de-sac design, reducing street width and lot size, and instead clustering houses around common green spaces that also serve as infiltration sites and preserving natural features.

**Examples of LID**

**Basic Components of a Bioretention Cell**
To see how to engineer bioretention cells with the proper gradient and components visit:
www.lowimpactdevelopment.org/epa03/biospec.htm

**Curb Cuts** permit stormwater to flow into grassy swales to reduce roadway contaminants that flow into nearby waterways. They can also be used in existing landscaped areas.

**Rain Gardens** and grass swales between houses are used at Douglas Ranch, Granby Bay, CA to catch and filter runoff from roofs and driveways before entering a local stream.

**Hollywood Driveways** have a dividing strip of grass in order to reduce the amount of impervious surface. Another way to reduce driveway space is to share one with a neighbor.

**Online Resources**
- Low Impact Development Center: www.lowimpactdevelopment.org
- U.S. Environmental Protection Agency: www.epa.gov/owow/wps/urban.html
- Stormwater Manager's Resource Center: www.stormwatercenter.net
- National NEMO Network: www.nemonet.edu
- LID Urban Design Tools: www.lid.stormwater.net
- California Stormwater Quality Association: www.cabmphandbooks.com

Prepared by Office of Environmental Health Hazard Assessment & the California Water & Land Use Partnership (CA WALUP)
Written by E. Ruby & D. Gillespie, student interns, OEHHA. For more information contact Barbara Washburn: bwashburn@oehha.ca.gov.

CA WALUP is an educational program for land use decision makers addressing the relationship between land use and natural resource protection. The CA WALUP is a Charter Member of the National NEMO Network. CA WALUP website: http://cawalup.usc.edu
How Urbanization Affects the Water Cycle

Why is the Water Cycle Important?

The water cycle, also known as the hydrological cycle, is the continuous exchange of water between land, waterbodies, and the atmosphere. Approximately 97% of the earth’s water is stored in the oceans, and only a fraction of the remaining portion is usable freshwater. When precipitation falls over the land, it follows various routes. Some of it evaporates, returning to the atmosphere, some seeps into the ground, and the remainder becomes surface water, traveling to oceans and lakes by way of rivers and streams. Impervious surfaces associated with urbanization alter the natural amount of water that takes each route. The consequences of this change are a decrease in the volume of water that percolates into the ground, and a resulting increase in volume and decrease in quality of surface water. These hydrological changes have significant implications for the quantity of fresh, clean water that is available for use by humans, fish and wildlife.

MORE WATER FASTER

DEVELOPED LANDS
Rain pours more quickly off of city and suburban landscapes, which have high levels of impervious cover.

NATURAL LANDS
Trees, brush, and soil help soak up rain and slow runoff in undeveloped landscapes.

**Figure 1** (left) illustrates how impervious cover and urban drainage systems increase runoff to creeks and rivers. The larger volume, velocity and duration of flow acts like sandpaper on stream banks, intensifying the erosion and sediment transport from the landscape and stream banks. This often causes channel erosion, clogged stream channels, and habitat damage.

Channelized rivers and streams exhibit similar problems accommodating large peak runoff volumes and supporting aquatic ecosystems.

Graphic Sacramento Bee

**Figure 2** The hydrograph (left) illustrates stormwater peak discharges in a urban watershed (red line) and a less developed watershed (yellow line). In watersheds with large amounts of impervious cover, there is a larger volume and faster rate of discharge than in less developed watersheds, often resulting in more flooding and habitat damage.

Adapted from Santa Clara Hydromodification Management Plan

31. Low Impact Development
Figure 2. How impervious cover affects the water cycle.

With natural ground cover, 25% of rain infiltrates into the aquifer and only 10% runs off as runoff. As imperviousness increases, less water infiltrates and more and more runs off. In highly urbanized areas, over 90% of all rain becomes surface runoff, and deep infiltration is only a fraction of what it was naturally.

The increased surface runoff requires more infrastructure to minimize flooding. Natural waterways end up being used as drainage channels, and are frequently lined with rocks or concrete to move water more quickly and prevent erosion.

In addition, as deep infiltration decreases, the water table drops, reducing groundwater for wetlands, human vegetation, wells, and other uses.

Figure 3. Relationship between imperviousness and stream quality.

In most cases, when impervious cover (IC) is less than 10% of a watershed, streams remain healthy. Above 10% impervious cover, common signs of stream degradation are evident, they include:

- Excessive stream channel erosion (bed and bank)
- Reduced groundwater recharge
- Increased size and frequency of 1-2 year floods
- Decreased movement of groundwater to surface water
- Loss of streambank tree cover
- Increased contaminants in water
- Increased fine sediment in stream bed
- Overall degradation of the aquatic habitat

Pictures from different reaches of Secret Ravine Creek, Placer County, California.
Figure 4. Conceptual relationship between IC and stream habitat quality.

Between 10 – 25% imperviousness, major alterations in stream morphology occur that significantly reduce habitat quality. At greater than 25% impervious cover, streams suffer from loss of habitat, floodplain connectivity, and bank stability, as well as decreased water quality.

California Examples

Studies on urban streams across California have consistently found similar patterns of degradation. For example, in Los Penasquitos Creek in San Diego County, watershed development grew from 9% to 37% urbanization between 1966-2000. From 1973-2000, the total annual urban runoff in the upper watershed increased by 4% per year, resulting in more than a 100% increase in runoff for the measured time period. The flood magnitude for the 1-2 year storm also increased by more than 5 fold from 1965-2000.

Figure 5. Comparison of Pre- and Post-Development Flow Conditions, Thompson Creek, Santa Clara Valley, CA.

The impact of 44% impervious cover on a variety of hydrological parameters on Thompson Creek were predicted during a random seven-day period. 50 years worth of data was used in the modeling process. The most obvious difference between the pre and post development conditions is the significantly greater volume of runoff generated after development, as seen in the above graph. Whereas pre-development flows were typically at flow rates that would not cause bank erosion (green line), post-development flows mainly exceeded the flow needed to destabilize stream banks. Further, post-development flows, in contrast to pre-development flows, would regularly exceed the historic 2-year storm event.

The impacts of these altered conditions are degradation of the aquatic habitat and increased frequency of flood events. In the Thompson Creek sub-watershed, hydrologists also found that the increased imperviousness associated with development approximately doubled stormwater runoff for peak discharges for 2, 5, and 10-year storm event. Results in this watershed and elsewhere have shown that the 0 – 10 year storms are the events that overwhelmingly alter the shape and size of streams. Thus, doubling of the rate of runoff will have significant impacts on aquatic resources as well as the risk of flooding.
Resources on the Web

**Center for Watershed Protection**
www.cwp.org

**State Water Resources Control Board** *(NPS Encyclopedia)*
www.waterboards.ca.gov/nps/encyclopedia.html

**National NEMO Network**
http://nemone.uconn.edu/

**Low Impact Development Center**
www.lowimpactdevelopment.org/

**EPA Information on hydrological cycle**
www.epa.gov/seahome/groundwater/src/cycle.htm

**The Stormwater Manager’s Resource Center**
www.stormwatercenter.net

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**References**

TEN BASIC PRINCIPLES

(From Erosion & Sediment Control Handbook by Goldman, Jackson and Bursztynsky, 1986, McGraw-Hill)

☑ FIT DEVELOPMENT TO THE TERRAIN

☑ TIME GRADING AND CONSTRUCTION TO MINIMIZE SOIL EXPOSURE

☑ RETAIN EXISTING VEGETATION WHEREVER FEASIBLE

☑ VEGETATE AND MULCH DENUDED AREAS

☑ DIVERT RUNOFF AWAY FROM DENUDED AREAS

☑ MINIMIZE LENGTH AND STEEPNESS OF SLOPES

☑ KEEP RUNOFF VELOCITIES LOW

☑ PREPARE DRAINAGE WAYS AND OUTLETS TO HANDLE CONCENTRATED OR INCREASED RUNOFF

☑ TRAP SEDIMENT ON SITE

☑ INSPECT AND MAINTAIN EROSION CONTROL MEASURES DURING CONSTRUCTION
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD - SAN DIEGO REGION
Watershed Management Program

Facility Inspection Report

Inspection Date: October 5, 2007
Time: 9 am
WDID: 937C322900

Facility Representative(s) Present During Inspection: none

North County Transit District
Name of Owner, Agency or Party Responsible for Discharge

Sprinter Rail Project
Facility or Developer Name (if different from owner)

808 Rancheros Drive
Facility Street Address

San Marcos, CA
Facility City and State

Applicable Water Quality Licensing Requirements
- MS4 Urban Runoff Requirements NPDES Nos. CAS0108758, CAS0108740 or CAS0108766
- General Permit Order No. 99-08-DWQ, NPDES No. CAS000002 – Construction
- General Permit Order No. 99-06-DWQ, NPDES No. CAS000003 - Caltrans
- General or Individual Waste Discharge Requirements
- General or Individual Waiver of Waste Discharge Requirements
- Section 401 Water Quality Certification
- CWC Section 13264

Inspection Type (Check One)

A1. "A" type compliance—Comprehensive inspection in which samples are taken. (EPA Type S)
B1. "B" type compliance—A routine nonsampling inspection. (EPA Type C)
02. Noncompliance follow-up—Inspection made to verify correction of a previously identified violation.
03. Enforcement follow-up—Inspection made to verify that conditions of an enforcement action are being met.
04. Complaint—Inspection made in response to a complaint.
05. Pre-requirement—Inspection made to gather info. relative to preparing, modifying, or rescinding requirements.
06. No Exposure Certification (NEC) - verification that there is no exposure of industrial activities to storm water.
07. Notice of termination request for industrial facilities or construction sites - verification that the facility or construction site is not subject to permit requirements (Type, NOT I or NOT C - circle one).
08. Compliance Assistance Inspection - Outreach inspection due to discharger's request for compliance assistance.

Inspection Findings

Y. Were violations noted during this inspection? (Yes/No/Pending Sample Results)
N. Were samples taken? (N=no) If YES then, G= grab or C= Composite and attach a copy of the sample results/chain of custody form

I. Compliance History:

Notice of Violation (NOV) No. R9-2007-0065 was issued on March 19, 2007 for construction storm water permit violations including discharge of sediment, and inadequate BMPs.
NOV No. R9-2007-0063 was issued on April 3, 2007 for construction storm water permit violations including discharge of sediment and inadequate BMPs.
Administrative Civil Liability No. R9-2007-0093 was issued on August 31, 2007 for construction storm water permit violations including discharge of sediment, inadequate BMPs, and inadequate inspections.

34. Enforcement
II. FINDINGS

On October 5, 2007, Ben Neill, Peter Peuron, and Lee Shenk of the Regional Board's Central Watershed Unit inspected the North County Transit District's (NCTD) construction of the Sprinter Rail. The inspection observed construction activities along:

1. Washington Avenue, Escondido
2. Nordahl Road Station and along Barham Drive, Escondido
3. Barham Drive, near Shelley Drive, San Marcos,
4. Palomar station, San Marcos
5. Mar Vista drive storage yard, Vista
6. Melrose Drive station, Oceanside
7. Rancho del Oro station, Oceanside and
8. College Blvd station, Oceanside.

The National Weather Service's website for the San Diego Region forecast a 20% chance of rainfall on the day of the inspection. Weather was gray and overcast with some light sprinkles in the morning. Later after noon, the skies were partly cloudy with no rainfall. No notice was given on the inspection and NCTD representatives were not present during the inspection.

1. Washington Avenue in Escondido - The Sprinter tracks are south of and parallel to Washington Avenue from Hale Avenue, going west under I-15 to Mission Road. A low drainage ditch runs along the north side of the tracks between Washington Avenue and the rail line. Marlin landscaping was busy applying hydroseed for erosion control along this drainage ditch (Photo 1). At several locations, the drainage ditch has storm drain inlets that were not protected with sediment controls (Photos 2, 3, 4, 5, 9). The drainage ditch also had trash accumulated near the inlets (Photos 2, 4, 5). At the intersection of Washington Avenue and Mission Road, a large area of soil was exposed with no sediment control BMPs or soil stabilization (Photo 6). Along Washington Avenue, two storm drain inlets were observed with broken up gravel bags that have not been maintained (Photos 7, 8).

2. Nordahl Road Station and along Barham Drive in Escondido - This station construction is on the southwest corner of the intersection of Citracado Parkway and Mission Boulevard. The disturbed area is from Citracado Parkway extending west to Barham Drive. The tracks run along the south side of Mission Boulevard. The construction site entrance/exit to north Citracado Parkway was without best management practices (BMPs) such as gravel or shaker plates to prevent sediment tracking (Photo 10). A storm drain inlet south of the tracks and just west of Citracado Parkway had gravel bags that were broken and not maintained (Photo 11). Along the south side of the tracks, a silt fence was in disrepair in part and missing in some areas (Photos 12, 13, 14, 15). Construction material trash and debris was stored outside with no cover or containment south of the tracks (Photos 14, 15). Along the north side of the tracks next to Mission Boulevard, disturbed soil did not have sediment controls or soil stabilization (Photo 16). At Barham Drive, more construction trash and debris was stored outside without cover or containment (Photo 17). Along the southeast side of Barham Drive, fiber rolls and silt fences were destroyed beyond usefulness (Photos 18, 19). A row of gravel bags on the northwest side of Barham Drive had deteriorated to the point of being ineffective (Photo 20).

3. Barham Drive near Shelley Drive in San Marcos - This was one of the sites containing previous violations noticed in NOV R9-2007-0050 issued on March 19, 2007. A large area of disturbed soil was without any sediment controls or soil stabilization (Photo 21). In the middle of this disturbed area there was an unprotected storm drain (Photo 22).

4. Palomar College Station – This was one of the sites containing previous violations noticed in NOV R9-2007-0050 issued on March 19, 2007. This station is south of W. Mission Rd. and north of Armorlite Dr. in San Marcos, across Mission Rd., from Palomar College. The site houses trailers for NCTD and their contractors. A storm drain inlet at the Armorlite Drive entrance to the trailers has gravel bags that are destroyed to the point that the gravel appears to be entering the inlet (Photo 23). A portable toilet is nearby and silt fencing has been partially removed (Photo 24).

5. Mar Vista drive storage yard in Vista - This was one of the sites containing previous violations noticed in NOV R9-2007-0050 issued on March 19, 2007. This storage yard has a large soil stockpile that was not covered or contained to protect storm water runoff. Silt fence was not maintained around this stockpile. The silt fence was falling down on one side of the stockpile (Photo 25).
6. Melrose Drive station in Oceanside - This station is on the southwest corner of Melrose Drive and Oceanside Boulevard next to a convenience store. The headwaters to Loma Alta Creek flow adjacent to the south side of the tracks. This site did not have any erosion controls on slopes and fiber rolls were not implemented properly (Photos 28, 27, 28). The fiber rolls were not trenched in properly on a slope north of the tracks. A slope south of the tracks did not have the fiber rolls overlapping at the ends. The construction exit through the convenience store parking lot did not have any BMPs to prevent sediment tracking (Photo 29). At this exit a storm drain inlet was in the bare soil with no BMPs to protect it (Photo 30). The inlet has been repeatedly driven over tracking sediment into the inlet. At the western edge of the Melrose station construction, trash and debris was stored outside without cover or containment (Photo 31).

7. Rancho del Oro station in Oceanside - This station is bordered by Rancho del Oro Road to the east. Loma Alta Creek runs through the north of the station. A pedestrian bridge is being built over the creek to access the station. The construction site entrance/exit from Rancho del Oro Road does not have large gravel or shaker plates or a tire wash station to prevent sediment tracking onto the adjacent paved public road (Photo 32). The southern bank of Loma Alta creek does not have any erosion controls (Photo 33). This exposed bank appears to be vulnerable during high flow rates and volume. A storm drain along the west side of Rancho del Oro Road had a single gravel bag which appears to be inadequate to trap sediment from entering the inlet (Photo 34). Along the east side of Rancho del Oro Road, a fiber roll had not been maintained and was flattened from repeatedly being run over (Photo 35).

8. College Blvd Station in Oceanside - This station is next to Loma Alta Creek in a shopping center on the southwest corner of College Boulevard and Oceanside Boulevard. A pedestrian bridge is being built over Loma Alta creek. The creek’s banks on either side of the pedestrian bridge have a silt fence at the base to provide sediment controls but is without erosion controls on the slope such as hydroseed or erosion control blankets (Photos 36, 39). These exposed banks appear to be vulnerable during post storm high flow rates. A portion of the shopping center’s parking lot is used as a staging and storage area for construction activities. Significant sediment tracking was observed on the shopping center’s paved parking lot (Photo 37). Soil stockpiles and construction trash storage was without cover and without containment (Photo 38).

The lack of erosion controls, sediment controls, sediment tracking BMPs, trash storage BMPs, and soil stockpile BMPs are all violations that were previously noticed in NOV No. R9-2007-0050 on March 19, 2007 and NOV No. R9-2007-0063 on April 3, 2007. The August 31, 2007 ACL was also assessed in part for these same BMP violations.

III. SIGNATURE SECTION

Peter Peurone
STAFF INSPECTOR
October 5, 2007

Ben Neill
STAFF INSPECTOR
October 5, 2007

IV. (For internal use only)

Reviewed by Supervisor: J. Johnstone (EPA), John Norton (SWRBC), City Storm Drain Enforcers: Date 1/17/07

Inter-office Referral: 1) 2) 3) 4) 5)
All photos taken by Ben Neill, Water Resource Control Engineer.

1. Crew hydroseeding drainage ditch. Photo looking north across the tracks.

Photos 1 through 9 were taken along West Washington Avenue in Escondido.

2. Storm drain inlet along the north side of the tracks is without sediment controls such as gravel bags. White trash is near the inlet. The drainage ditch was recently hydroseeded. Photo looking west.

3. Another storm drain inlet along the north side of the tracks is without sediment controls such as gravel bags. Photo looking west.

NCTD Sprinter Rail
9 37C322900

October 5, 2007
4. Another storm drain inlet along the north side of the tracks is without sediment controls such as gravel bags. Trash in the drainage ditch. Photo looking west.

5. Another storm drain inlet along the north side of the tracks is without sediment controls such as gravel bags. Trash is in the drainage ditch. Photo looking east.

6. A large area of bare dirt has no sediment protections or soil stabilization. Photo is looking north.

NCTD Sprinter Rail 9 37C322900

October 5, 2007
7. Storm drain inlet along the south side of Washington Avenue is without adequate storm drain inlet protection. The existing BMP has not been maintained. Photo looking south.

8. Storm drain inlet along the south side of Washington Avenue has BMPs that have not been maintained. Photo looking south.

9. Storm drain inlet on the north side of the tracks without any sediment protections. Photo is looking north.

NCTD Sprinter Rail
9 37C322900
October 5, 2007
10. Construction site exit has no BMPs to prevent sediment tracking. Tracking is observed onto the adjacent paved public street, North Citracado Parkway. Photo looking north.

Photos 10 through 16 were taken at the Nordahl Road station construction in Escondido.

11. Storm drain inlet south of the tracks has BMPs that have not been maintained. Photo looking south.

12. Silt fencing has not been maintained along the south side of the tracks. Photo looking west.

NCTD Sprinter Rail
9 37C322900

October 5, 2007
13. Silt fence south of the tracks is torn down and unmaintained. Photo looking south east.

14. Silt fence is unmaintained. Construction debris and trash is not protected from storm water. Photo looking south.

15. No silt fence is implemented in this area. Construction debris and trash is not protected from storm water. Photo looking south.

NCTD Sprinter Rail
9 37C322900
October 5, 2007
16. Bare soil north of the tracks does not have sediment controls or soil stabilization. Photo looking east.

Photos 17 through 20 were taken along Barham Dr. near the Mission Rd intersection on the border of the cities of San Marcos and Escondido.

17. Construction trash is not protected with BMPs from storm water. Photo looking east.

18. Sediment controls along the perimeter of south Barham drive have not been maintained. Photo looking north east.

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9 37C322900
October 5, 2007
19. A closer view of the poorly maintained BMPs in photo 18 shows that the silt fence and fiber roll are flattened. Photo looking north.

20. Gravel bags along north Barham Drive have not been maintained. Photo looking north.

Photos 21 and 22 were taken at the southeast corner of Barham drive and Shelly drive.

21. A large area of bare soil is without soil stabilization. A storm drain inlet sits in the middle of this bare area.

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9 37C322900

October 5, 2007
22. A closer examination of the storm drain inlet in photo 21 shows that the inlet has no sediment controls protecting the inlet. Photo looking north east.

Photos 23 and 24 were taken at the Palomar station construction along Armorlite drive in San Marcos.

23. Storm drain inlet just north of Armorlite drive has unmaintained BMPs. Photo looking west.

24. Another view of the inlet in photo 23 shows the proximity of a portable toilet and silt fencing that has been partially removed. Photo looking north.
25. Silt fence around the soil stockpiles has not been maintained and has fallen down. Photo looking south.

Photos 26 through 31 were taken at the Melrose Drive station construction in Oceanside.

26. This slope north of the tracks does not have erosion controls in place. Fiber roll is not trenched in place. Photo looking west.

27. Slope south of the tracks does not have erosion controls. Photo looking north.
28. Fiber rolls on the slope in photo 27 are not overlapped. No erosion controls in place. Photo looking west.

29. Construction exit is without BMPs to prevent sediment tracking onto the adjacent paved area of the convenience store. Photo looking northwest.

30. A storm drain inlet near the construction exit in photo 29 is without BMPs and sediment is falling into the drain. Photo looking west.

NCTD Sprinter Rail
9 37C322900

October 5, 2007
31. Construction trash is stored outside with no cover or containment to prevent contact with storm water. Photo looking south.

Photos 32 through 35 were taken at the Rancho del Oro station construction in Oceanside.

32. Construction exit is without BMPs to prevent sediment tracking onto the adjacent paved street. Photo looking west.

33. Slope adjacent to Loma Alta Creek is without erosion controls such as bonded fiber matrix or erosion control blankets. Silt fence does not extend the length of the slope. Photo looking southwest.

NCTD Sprinter Rail
9 37C322900

October 5, 2007
34. A storm drain inlet on the west side of Rancho del Oro Blvd. does not have adequate sediment controls and is not being maintained. Photo looking south.

35. Fiber rolls along the east of Rancho del Oro Blvd have not been maintained and are flattened. Disturbed soil has not been stabilized. Photo looking north.

Photos 36 through 39 were taken at the College Blvd Station in Oceanside.

36. Slope next to Loma Alta Creek does not have erosion controls implemented. Photo looking east.

NCTD Sprinter Rail
9 37C322900

October 5, 2007
37. Sediment tracking from the College Station construction onto the paved parking lot of the shopping center. Photo looking east.

38. Material stockpiles and construction trash are stored without cover or containment. Photo looking north west.

39. Slope next to Loma Alta Creek pedestrian bridge abutment is without erosion controls. Photo looking west.

NCTD Sprinter Rail
9 37C322900

October 5, 2007
Dev Rev Staff Training 2008

CLEAN WATER REQUIREMENTS
Construction and Post-Construction

*See packet for details

I. NPDES Municipal General Permit* requirements apply to County

II. P&D authority and practice
   a. Policy and policy interpretation*
   b. LUDC* (35.30.180; 35.430.140 Montecito)
   c. CEQA Checklist
   d. Env'l Thresholds & Guidelines Manual*
   e. Planner's Guide to Conditions of Approval and Mitigation Measures*
   f. Procedures Manual

III. Need to provide "early certainty" to applicants
   a. Three step process*
   b. Pre-application meetings
   c. Application requirements (Item N on application)
   d. Application completeness* treatment control

IV. Address Hillside Watershed Protection Policy #7 in Initial Study. MUST BE VERY CLEAR.
   a. Conserve natural areas (cluster, limit clearing, maximize vegetation, use vegetation for infiltration, preserve riparian/wetlands)
   b. Minimize pollutants (source control measures)
   c. Maintain hydrologic character (low impact development)
   d. Protect slopes and channels (convey safely, use natural drainage, stabilize channel, vegetate slopes, dissipate energy at outlets)
   e. Storm drain marking
   f. Proper design requirements (restaurants, commercial, vehicle maintenance, parking areas, loading docks, material storage, retail gasoline, equipment wash, trash storage)

V. Role of Public Works staff during dev review
   a. Flood Control addresses peak runoff
   b. Water Resources addresses treatment control

VI. Defining "Maximum Extent Practicable"
   a. Some Attachment 4 requirements are subjective
   b. Definition* is always changing, evolving
c. How state defines MEP for construction activities and new development (LID, minimum construction BMPs, examples of enforcement*)
d. P&D’s directive to require projects meet MEP

VII. Defining Low Impact Development*
   a. Design approach to mimic pre-development hydrology
   b. Currently a goal, not requirement, albeit directly addresses Attachment 4 requirements and County policy to protect resources.
   c. Projects should always: minimize overall impervious, disconnect impervious, lengthen flow path (Tc), use vegetation to maximize infiltration
   d. Recognize importance of landscaping and fine grading.

VIII. Planning Review Process common questions
   a. When do I require a Stormwater Quality Management Plan? A: Projects that are “Significant”
   c. Where can I find examples of our expectations, i.e., pictures, design guidance documentation, manuals, etc. A: www.sbprojectcleanwater.org

IX. Construction BMPs
   a. Always provide for construction phase BMPs (See Ten Basic Principles*)
   b. DRev augments the ESCP of Grading Permit by mitigating for potential impacts that might not be covered in standard construction BMP practices (e.g. proximity to natural drainage feature, sensitive species protection, upkeep and maintenance requirements, specifying on plans an area suitable for construction material cleaning)
   c. Protection of storm drains during construction. Storm drains often installed first while construction activity continues. Also, vegetated systems (bioswales, bioretention) are highly sensitive during construction. Notes on plans must be specific: “protection until soils are stabilized”.
FACT SHEET
FOR
STATE WATER RESOURCES CONTROL BOARD (SWRCB)
WATER QUALITY ORDER NO. 2003 – 0005 – DWQ
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT NO. CAS000004
WASTE DISCHARGE REQUIREMENTS (WDRS)
FOR
STORM WATER DISCHARGES FROM
SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS (GENERAL PERMIT)

BACKGROUND

In 1972, the federal Water Pollution Control Act (also referred to as the Clean Water Act [CWA]) was amended to provide that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with a NPDES permit. The 1987 amendments to CWA added section 402(p), which established a framework for regulating storm water discharges under the NPDES Program. Subsequently, in 1990, the U.S. Environmental Protection Agency (U.S. EPA) promulgated regulations for permitting storm water discharges from industrial sites (including construction sites that disturb five acres or more) and from municipal separate storm sewer systems (MS4s) serving a population of 100,000 people or more. These regulations, known as the Phase I regulations, require operators of medium and large MS4s to obtain storm water permits. On December 8, 1999, U.S. EPA promulgated regulations, known as Phase II, requiring permits for storm water discharges from Small MS4s and from construction sites disturbing between one and five acres of land. This General Permit regulates storm water discharges from Small MS4s.

An “MS4” is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains): (i) designed or used for collecting or conveying storm water; (ii) which is not a combined sewer; and (iii) which is not part of a Publicly Owned Treatment Works (POTW). [See Title 40, Code of Federal Regulations (40 CFR) §122.26(b)(8).]

A “Small MS4” is an MS4 that is not permitted under the municipal Phase I regulations, and which is “owned or operated by the United States, a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity....” (40 CFR §122.26(b)(16)). Small MS4s include systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares, but do not include separate storm sewers in
Areas subject to high growth or serving a population of at least 50,000 must comply with the following provisions (for counties this threshold population applies to the population within the permit area).

A. RECEIVING WATER LIMITATIONS

1. Discharges shall not cause or contribute to an exceedance of water quality standards contained in a Statewide Water Quality Control Plan, the California Toxics Rule (CTR), or in the applicable RWQCB Basin Plan.

2. The permittees shall comply with Receiving Water Limitations A.1 through timely implementation of control measures and other actions to reduce pollutants in the discharges in accordance with the SWMP and other requirements of this permit including any modifications. The SWMP shall be designed to achieve compliance with Receiving Water Limitations A.1. If exceedance(s) of water quality objectives or water quality standards (collectively, WQS) persist notwithstanding implementation of the SWMP and other requirements of this permit, the permittees shall assure compliance with Receiving Water Limitations A.1 by complying with the following procedure:

   a. Upon a determination by either the permittees or the RWQCB that discharges are causing or contributing to an exceedance of an applicable WQS, the permittees shall promptly notify and thereafter submit a report to the RWQCB that describes BMPs that are currently being implemented and additional BMPs that will be implemented to prevent or reduce any pollutants that are causing or contributing to the exceedance of WQSs. The report may be incorporated in the annual update to the SWMP unless the RWQCB directs an earlier submittal. The report shall include an implementation schedule. The RWQCB may require modifications to the report.

   b. Submit any modifications to the report required by the RWQCB within 30 days of notification.

   c. Within 30 days following approval of the report described above by the RWQCB, the permittees shall revise the SWMP and monitoring program to incorporate the approved modified BMPs that have been and will be implemented, implementation schedule, and any additional monitoring required.

   d. Implement the revised SWMP and monitoring program in accordance with the approved schedule.

So long as the permittees have complied with the procedures set forth above and are implementing the revised SWMP, the permittees do not have to repeat the same procedure for continuing or recurring exceedances of the same receiving water limitations unless directed by the RWQCB to develop additional BMPs.

B. DESIGN STANDARDS
Regulated Small MS4s subject to this requirement must adopt an ordinance or other
document to ensure implementation of the Design Standards included herein or a functionally
equivalent program that is acceptable to the appropriate RWQCB. The ordinance or other
document must be adopted and effective prior to the expiration of this General Permit or, for
Small MS4s designated subsequent to the Permit adoption, within five years of designation
as a regulated Small MS4.

All discretionary development and redevelopment projects that fall into one of the following
categories are subject to these Design Standards. These categories are:

- Single-Family Hillside Residences
- 100,000 Square Foot Commercial Developments
- Automotive Repair Shops
- Retail Gasoline Outlets
- Restaurants
- Home Subdivisions with 10 or more housing units
- Parking lots 5,000 square feet or more or with 25 or more parking spaces and
  potentially exposed to storm water runoff

1. Conflicts With Local Practices
   Where provisions of the Design Standards conflict with established local codes or other
   regulatory mechanism, (e.g., specific language of signage used on storm drain stenciling),
   the Permittee may continue the local practice and modify the Design Standards to be
   consistent with the code or other regulatory mechanism, except that to the extent that the
   standards in the Design Standards are more stringent than those under local codes or
   other regulatory mechanism, such more stringent standards shall apply.

2. Design Standards Applicable to All Categories

   a. Peak Storm Water Runoff Discharge Rates
      Post-development peak storm water runoff discharge rates shall not exceed the
      estimated pre-development rate for developments where the increased peak storm
      water discharge rate will result in increased potential for downstream erosion.

   b. Conserve Natural Areas
      If applicable, the following items are required and must be implemented in the site
      layout during the subdivision design and approval process, consistent with applicable
      General Plan and Local Area Plan policies:

      1) Concentrate or cluster Development on portions of a site while leaving the
         remaining land in a natural undisturbed condition.
      2) Limit clearing and grading of native vegetation at a site to the minimum amount
         needed to build lots, allow access, and provide fire protection.
      3) Maximize trees and other vegetation at each site by planting additional vegetation,
         clustering tree areas, and promoting the use of native and/or drought tolerant plants.
4) Promote natural vegetation by using parking lot islands and other landscaped areas.
5) Preserve riparian areas and wetlands.

c. Minimize Storm Water Pollutants of Concern
Storm water runoff from a site has the potential to contribute oil and grease, suspended solids, metals, gasoline, pesticides, and pathogens to the storm water conveyance system. The development must be designed so as to minimize, to the maximum extent practicable, the introduction of pollutants of concern that may result in significant impacts, generated from site runoff of directly connected impervious areas (DCIA), to the storm water conveyance system as approved by the building official. Pollutants of concern consist of any pollutants that exhibit one or more of the following characteristics: current loadings or historic deposits of the pollutant are impacting the beneficial uses of a receiving water, elevated levels of the pollutant are found in sediments of a receiving water and/or have the potential to bioaccumulate in organisms therein, or the detectable inputs of the pollutant are at concentrations or loads considered potentially toxic to humans and/or flora and fauna.

In meeting this specific requirement, “minimization of the pollutants of concern” will require the incorporation of a BMP or combination of BMPs best suited to maximize the reduction of pollutant loadings in that runoff to the Maximum Extent Practicable. Those BMPs best suited for that purpose are those listed in the California Storm Water Best Management Practices Handbooks; Caltrans Storm Water Quality Handbook: Planning and Design Staff Guide; Manual for Storm Water Management in Washington State; The Maryland Stormwater Design Manual; Florida Development Manual: A Guide to Sound Land and Water Management; Denver Urban Storm Drainage Criteria Manual, Volume 3 – Best Management Practices and Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, USEPA Report No. EPA-840-B-92-002, as “likely to have significant impact” beneficial to water quality for targeted pollutants that are of concern at the site in question. However, it is possible that a combination of BMPs not so designated, may in a particular circumstance, be better suited to maximize the reduction of the pollutants.

d. Protect Slopes and Channels
Project plans must include BMPs consistent with local codes, ordinances, or other regulatory mechanism and the Design Standards to decrease the potential of slopes and/or channels from eroding and impacting storm water runoff:

1) Convey runoff safely from the tops of slopes and stabilize disturbed slopes.
2) Utilize natural drainage systems to the maximum extent practicable.
3) Stabilize permanent channel crossings.
4) Vegetate slopes with native or drought tolerant vegetation, as appropriate.
5) Install energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable specifications to minimize erosion, with the approval of all agencies.
with jurisdiction, e.g., the U.S. Army Corps of Engineers and the California Department of Fish and Game.

e. Provide Storm Drain System Stenciling and Signage
Storm drain stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets. The stencil contains a brief statement that prohibits the dumping of improper materials into the storm water conveyance system. Graphical icons, either illustrating anti-dumping symbols or images of receiving water fauna, are effective supplements to the anti-dumping message. All storm drain inlets and catch basins within the project area must be stenciled with prohibitive language (such as: “NO DUMPING – DRAINS TO OCEAN”) and/or graphical icons to discourage illegal dumping. Signs and prohibitive language and/or graphical icons, which prohibit illegal dumping, must be posted at public access points along channels and creeks within the project area. Legibility of stencils and signs must be maintained.

f. Properly Design Outdoor Material Storage Areas
Outdoor material storage areas refer to storage areas or storage facilities solely for the storage of materials. Improper storage of materials outdoors may provide an opportunity for toxic compounds, oil and grease, heavy metals, nutrients, suspended solids, and other pollutants to enter the storm water conveyance system. Where proposed project plans include outdoor areas for storage of materials that may contribute pollutants to the storm water conveyance system, the following Structural or Treatment BMPs are required:

1) Materials with the potential to contaminate storm water must be: (1) placed in an enclosure such as, but not limited to, a cabinet, shed, or similar structure that prevents contact with runoff or spillage to the storm water conveyance system; or (2) protected by secondary containment structures such as berms, dikes, or curbs.
2) The storage area must be paved and sufficiently impervious to contain leaks and spills.
3) The storage area must have a roof or awning to minimize collection of storm water within the secondary containment area.

g. Properly Design Trash Storage Areas
A trash storage area refers to an area where a trash receptacle or receptacles (dumpsters) are located for use as a repository for solid wastes. Loose trash and debris can be easily transported by the forces of water or wind into nearby storm drain inlets, channels, and/or creeks. All trash container areas must meet the following Structural or Treatment Control BMP requirements (individual single family residences are exempt from these requirements):

1) Trash container areas must have drainage from adjoining roofs and pavement diverted around the area(s).
2) Trash container areas must be screened or walled to prevent off-site transport of trash.

h. Provide Proof of Ongoing BMP Maintenance
Improper maintenance is one of the most common reasons why water quality controls will not function as designed or which may cause the system to fail entirely. It is important to consider who will be responsible for maintenance of a permanent BMP, and what equipment is required to perform the maintenance properly. As part of project review, if a project applicant has included or is required to include, Structural or Treatment Control BMPs in project plans, the Permittee shall require that the applicant provide verification of maintenance provisions through such means as may be appropriate, including, but not limited to legal agreements, covenants, CEQA mitigation requirements and/or Conditional Use Permits.

For all properties, the verification will include the developer’s signed statement, as part of the project application, accepting responsibility for all structural and treatment control BMP maintenance until the time the property is transferred and, where applicable, a signed agreement from the public entity assuming responsibility for Structural or Treatment Control BMP maintenance. The transfer of property to a private or public owner must have conditions requiring the recipient to assume responsibility for maintenance of any Structural or Treatment Control BMP to be included in the sales or lease agreement for that property, and will be the owner’s responsibility. The condition of transfer shall include a provision that the property owners conduct maintenance inspection of all Structural or Treatment Control BMPs at least once a year and retain proof of inspection. For residential properties where the Structural or Treatment Control BMPs are located within a common area which will be maintained by a homeowner’s association, language regarding the responsibility for maintenance must be included in the project’s conditions, covenants and restrictions (CC&Rs). Printed educational materials will be required to accompany the first deed transfer to highlight the existence of the requirement and to provide information on what storm water management facilities are present, signs that maintenance is needed, how the necessary maintenance can be performed, and assistance that the Permittee can provide. The transfer of this information shall also be required with any subsequent sale of the property.

If Structural or Treatment Control BMPs are located within a public area proposed for transfer, they will be the responsibility of the developer until they are accepted for transfer by the County or other appropriate public agency. Structural or Treatment Control BMPs proposed for transfer must meet design standards adopted by the public entity for the BMP installed and should be approved by the County or other appropriate public agency prior to its installation.

i. Design Standards for Structural or Treatment Control BMPs
The Permittees shall require that post-construction treatment control BMPs incorporate, at a minimum, either a volumetric or flow based treatment control design standard, or both, as identified below to mitigate (infiltrate, filter or treat) storm water runoff:

1) Volumetric Treatment Control BMP
a) The 85th percentile 24-hour runoff event determined as the maximized capture storm water volume for the area, from the formula recommended in Urban Runoff Quality Management, WEF Manual of Practice No. 23/ASCE Manual of Practice No. 87, (1998); or
b) The volume of annual runoff based on unit basin storage water quality volume, to achieve 80 percent or more volume treatment by the method recommended in California Stormwater Best Management Practices Handbook – Industrial/ Commercial, (2003); or
c) The volume of runoff produced from a historical-record based reference 24-hour rainfall criterion for “treatment” that achieves approximately the same reduction in pollutant loads achieved by the 85th percentile 24-hour runoff event.

2) Flow Based Treatment Control BMP
   a) The flow of runoff produced from a rain event equal to at least two times the 85th percentile hourly rainfall intensity for the area; or
   b) The flow of runoff produced from a rain event that will result in treatment of the same portion of runoff as treated using volumetric standards above.

Limited Exclusion
Restaurants and Retail Gasoline Outlets, where the land area for development or redevelopment is less than 5,000 square feet, are excluded from the numerical Structural or Treatment Control BMP design standard requirement only.

3. Provisions Applicable to Individual Priority Project Categories
   a. 100,000 Square Foot Commercial Developments

1) Properly Design Loading/Unloading Dock Areas
   Loading/unloading dock areas have the potential for material spills to be quickly transported to the storm water conveyance system. To minimize this potential, the following design criteria are required:
   a) Cover loading dock areas or design drainage to minimize run-on and runoff of storm water.
   b) Direct connections to storm drains from depressed loading docks (truck wells) are prohibited.

2) Properly Design Repair/Maintenance Bays
   Oil and grease, solvents, car battery acid, coolant and gasoline from the repair/maintenance bays can negatively impact storm water if allowed to come into contact with storm water runoff. Therefore, design plans for repair bays must include the following:
a) Repair/maintenance bays must be indoors or designed in such a way that
doesn’t allow storm water runon or contact with storm water runoff.
b) Design a repair/maintenance bay drainage system to capture all washwater,
leaks and spills. Connect drains to a sump for collection and disposal. Direct
connection of the repair/maintenance bays to the storm drain system is
prohibited. If required by local jurisdiction, obtain an Industrial Waste
Discharge Permit.

3) Properly Design Vehicle/Equipment Wash Areas
The activity of vehicle/equipment washing/steam cleaning has the potential to
contribute metals, oil and grease, solvents, phosphates, and suspended solids to
the storm water conveyance system. Include in the project plans an area for
washing/steam cleaning of vehicles and equipment. The area in the site design
must be:

a) Self-contained and/or covered, equipped with a clarifier, or other
pretreatment facility, and
b) Properly connected to a sanitary sewer or other appropriately permitted
disposal facility.

b. Restaurants

1) Properly Design Equipment/Accessory Wash Areas
The activity of outdoor equipment/accessory washing/steam cleaning has the
potential to contribute metals, oil and grease, solvents, phosphates, and suspended
solids to the storm water conveyance system. Include in the project plans an area
for the washing/steam cleaning of equipment and accessories. This area must be:

a) Self-contained, equipped with a grease trap, and properly connected to a
sanitary sewer.
b) If the wash area is to be located outdoors, it must be covered, paved, have
secondary containment, and be connected to the sanitary sewer or other
appropriately permitted disposal facility.

c. Retail Gasoline Outlets

1) Properly Design Fueling Area
Fueling areas have the potential to contribute oil and grease, solvents, car battery
acid, coolant and gasoline to the storm water conveyance system. The project
plans must include the following BMPs:

a) The fuel dispensing area must be covered with an overhanging roof structure
or canopy. The canopy’s minimum dimensions must be equal to or greater
than the area within the grade break. The canopy must not drain onto the fuel
dispensing area, and the canopy downspouts must be routed to prevent
drainage across the fueling area.
b) The fuel dispensing area must be paved with Portland cement concrete (or equivalent smooth impervious surface), and the use of asphalt concrete shall be prohibited.

c) The fuel dispensing area must have a 2% to 4% slope to prevent ponding, and must be separated from the rest of the site by a grade break that prevents run-on of storm water to the extent practicable.

d) At a minimum, the concrete fuel dispensing area must extend 6.5 feet (2.0 meters) from the corner of each fuel dispenser, or the length at which the hose and nozzle assembly may be operated plus 1 foot (0.3 meter), whichever is less.

d. Automotive Repair Shops

1) Properly Design Fueling Area
Fueling areas have the potential to contribute oil and grease, solvents, car battery acid, coolant and gasoline to the storm water conveyance system. Therefore, design plans, which include fueling areas, must contain the following BMPs:

a. The fuel dispensing area must be covered with an overhanging roof structure or canopy. The canopy's minimum dimensions must be equal to or greater than the area within the grade break. The canopy must not drain onto the fuel dispensing area, and the canopy downspouts must be routed to prevent drainage across the fueling area.

b. The fuel dispensing area must be paved with Portland cement concrete (or equivalent smooth impervious surface), and the use of asphalt concrete shall be prohibited.

c. The fuel dispensing area must have a 2% to 4% slope to prevent ponding, and must be separated from the rest of the site by a grade break that prevents run-on of storm water to the extent practicable.

d. At a minimum, the concrete fuel dispensing area must extend 6.5 feet (2.0 meters) from the corner of each fuel dispenser, or the length at which the hose and nozzle assembly may be operated plus 1 foot (0.3 meter), whichever is less.

2) Properly Design Repair/Maintenance Bays
Oil and grease, solvents, car battery acid, coolant and gasoline from the repair/maintenance bays can negatively impact storm water if allowed to come into contact with storm water runoff. Therefore, design plans for repair bays must include the following:

a) Repair/maintenance bays must be indoors or designed in such a way that doesn’t allow storm water run-on or contact with storm water runoff.

b) Design a repair/maintenance bay drainage system to capture all wash-water, leaks and spills. Connect drains to a sump for collection and disposal. Direct connection of the repair/maintenance bays to the storm drain system is
prohibited. If required by local jurisdiction, obtain an Industrial Waste Discharge Permit.

3) Properly Design Vehicle/Equipment Wash Areas
   The activity of vehicle/equipment washing/steam cleaning has the potential to contribute metals, oil and grease, solvents, phosphates, and suspended solids to the storm water conveyance system. Include in the project plans an area for washing/steam cleaning of vehicles and equipment. This area must be:

   a) Self-contained and/or covered, equipped with a clarifier, or other pretreatment facility, and properly connected to a sanitary sewer or other appropriately permitted disposal facility.

4) Properly Design Loading/Unloading Dock Areas
   Loading/unloading dock areas have the potential for material spills to be quickly transported to the storm water conveyance system. To minimize this potential, the following design criteria are required:

   a) Cover loading dock areas or design drainage to minimize run-on and runoff of storm water.
   b) Direct connections to storm drains from depressed loading docks (truck wells) are prohibited.

e. Parking Lots

1) Properly Design Parking Area
   Parking lots contain pollutants such as heavy metals, oil and grease, and polycyclic aromatic hydrocarbons that are deposited on parking lot surfaces by motor-vehicles. These pollutants are directly transported to surface waters. To minimize the offsite transport of pollutants, the following design criteria are required:

   a) Reduce impervious land coverage of parking areas.
   b) Infiltrate or treat runoff.

2) Properly Design To Limit Oil Contamination and Perform Maintenance
   Parking lots may accumulate oil, grease, and water insoluble hydrocarbons from vehicle drippings and engine system leaks:

   a) Treat to remove oil and petroleum hydrocarbons at parking lots that are heavily used (e.g. fast food outlets, lots with 25 or more parking spaces, sports event parking lots, shopping malls, grocery stores, discount warehouse stores).
   b) Ensure adequate operation and maintenance of treatment systems particularly sludge and oil removal, and system fouling and plugging prevention control.
4. Waiver

A Permittee may, through adoption of an ordinance, code, or other regulatory mechanism incorporating the treatment requirements of the Design Standards, provide for a waiver from the requirement if impracticability for a specific property can be established. A waiver of impracticability shall be granted only when all other Structural or Treatment Control BMPs have been considered and rejected as infeasible. Recognized situations of impracticability include, (i) extreme limitations of space for treatment on a redevelopment project, (ii) unfavorable or unstable soil conditions at a site to attempt infiltration, and (iii) risk of groundwater contamination because a known unconfined aquifer lies beneath the land surface or an existing or potential underground source of drinking water is less than 10 feet from the soil surface. Any other justification for impracticability must be separately petitioned by the Permittee and submitted to the appropriate RWQCB for consideration. The RWQCB may consider approval of the waiver justification or may delegate the authority to approve a class of waiver justifications to the RWQCB EO. The supplementary waiver justification becomes recognized and effective only after approval by the RWQCB or the RWQCB EO. A waiver granted by a Permittee to any development or redevelopment project may be revoked by the RWQCB EO for cause and with proper notice upon petition.

5. Limitation on Use of Infiltration BMPs

Three factors significantly influence the potential for storm water to contaminate groundwater. They are (i) pollutant mobility, (ii) pollutant abundance in storm water, (iii) and soluble fraction of pollutant. The risk of contamination of groundwater may be reduced by pretreatment of storm water. A discussion of limitations and guidance for infiltration practices is contained in, Potential Groundwater Contamination from Intentional and Non-Intentional Stormwater Infiltration, Report No. EPA/600/R-94/051, USEPA (1994).

In addition, the distance of the groundwater table from the infiltration BMP may also be a factor determining the risk of contamination. A water table distance separation of ten feet depth in California presumptively poses negligible risk for storm water not associated with industrial activity or high vehicular traffic.

Site specific conditions must be evaluated when determining the most appropriate BMP. Additionally, monitoring and maintenance must be provided to ensure groundwater is protected and the infiltration BMP is not rendered ineffective by overload. This is especially important for infiltration BMPs for areas of industrial activity or areas subject to high vehicular traffic [25,000 or greater average daily traffic (ADT) on main roadway or 15,000 or more ADT on any intersecting roadway]. In some cases pretreatment may be necessary.

6. Alternative Certification for Storm Water Treatment Mitigation

In lieu of conducting detailed BMP review to verify Structural or Treatment Control BMP adequacy, a Permittee may elect to accept a signed certification from a Civil Engineer or a Licensed Architect registered in the State of California, that the plan meets
the criteria established herein. The Permittee is encouraged to verify that certifying person(s) have been trained on BMP design for water quality, not more than two years prior to the signature date. Training conducted by an organization with storm water BMP design expertise (e.g., a University, American Society of Civil Engineers, American Society of Landscape Architects, American Public Works Association, or the California Water Environment Association) may be considered qualifying.
LAND USE ELEMENT HILLSIDE AND WATERSHED PROTECTION POLICIES 7, 3, 4, AND 5 (COASTAL PLAN POLICIES 3-19, 3-15, 3-16 AND 3-17)

POLICY INTERPRETIVE AND IMPLEMENTATION GUIDELINES

The purpose of these guidelines is to promote consistent implementation of the Santa Barbara County Comprehensive Plan’s water-quality related policies by providing clear interpretation of the Comprehensive Plan, and addressing the requirements of U.S. Environmental Protection Agency’s National Pollutant Discharge Elimination System (NPDES) Phase II Municipal Storm Water Regulations. These guidelines apply to all new development and redevelopment projects proposed in the urban and rural unincorporated areas of the County. These guidelines apply to any project that has the potential to generate point source discharges, or storm water runoff that is directly or indirectly discharged to storm drains, creeks, streams, rivers, the ocean, or other receiving water bodies in Santa Barbara County.

Land Use Element Hillside and Watershed Protection Policy 7 & Coastal Plan Policy 3-19:

“Degradation of the water quality of groundwater basins, nearby streams, or wetlands shall not result from development of the site. Pollutants, such as chemicals, fuels, lubricants, raw sewage, and other harmful waste shall not be discharged into or alongside coastal streams or wetlands either during or after construction.”

Interpretive and Implementation Guidelines

The following definitions shall be used to interpret this policy:

A. “Degradation” of water quality means a negative alteration to the physical, chemical, or biological qualities of surface water (including storm water runoff) or groundwater compared to existing conditions. Degradation includes detrimental impacts to aquatic and terrestrial organisms, adverse effects on aesthetic qualities (due to sheens, sediment, floatable material, etc.), or other negative impacts to the beneficial uses of receiving water.

B. “Pollutant” means any chemical or substance that degrades the physical, chemical, or biological properties of the environment. Water pollutants include those listed in the policy, and as defined by the State Water Resources Control Board include but are not limited to: paints, varnishes, and solvents; hydrocarbons and metals from vehicle use or business operations; non-hazardous solid wastes; yard wastes; sediment from construction activities (including silts, clays, slurries, concrete rinsates, etc.); ongoing sedimentation due to changes in land cover or land use; nutrients, pesticides, herbicides, and fertilizers (e.g., from landscape maintenance); hazardous substances and wastes; sewage, fecal coliform, animal wastes, and pathogens;

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1 Beneficial uses for Santa Barbara County are identified by the Regional Water Quality Control Board in the Water Quality Control Plan for the Central Coastal Basin, or Basin Plan, and include (among others) recreation, agricultural supply, groundwater recharge, fresh water habitat, estuarine habitat, support for rare, threatened or endangered species, preservation of biological habitats of special significance.
dissolved and particulate metals; sediments, floatables; metals and acidity from mining operations; heat; discarded equipment.

C. "Discharge" as addressed by this policy includes point source discharges (i.e., from outfall pipes) and non-point source discharges (i.e., overland runoff or sheetflow) that flow directly or indirectly into receiving waters (e.g., creeks, streams, rivers, the ocean or other receiving water bodies), or into storm drains that subsequently flow into receiving waters. The term includes both construction and post-construction discharges.

To be consistent with this policy the discharge of pollutants from newly developed and redeveloped sites must be reduced to the "maximum extent feasible". This can be achieved through the implementation of non-structural or structural best management practices (BMPs) and maintenance of the BMPs over the life of the project. BMPs are methods, activities, maintenance procedures, or other management practices for reducing the amount of pollution entering a water body. Non-structural BMPs include but are not limited to site designs that reduce the area and connectivity of impervious surfaces, protection or restoration of native vegetation, wetlands and riparian corridors, and where applicable, parking lot sweeping programs to remove accumulated debris, oil and grease. Structural BMPs include but are not limited to storm water treatment facilities, grassed swales, bio-swales, porous pavement and storm drain treatment systems (e.g., catch basin filters).

A. In order of preference, the following BMPs shall be used to minimize water quality impacts associated with new development and redevelopment projects in urban and rural areas:

- site planning to avoid, protect, and restore sensitive areas (e.g., wetlands and riparian corridors);
- minimizing impervious surfaces and directly connected impervious surfaces, using existing natural features to allow for on-site infiltration of water;
- vegetative treatment (e.g., bio-swales, vegetative buffers, constructed or artificial wetlands);
- mechanical or structural treatment (e.g., storm drain filters and inserts).

B. Combinations of BMPs listed above may be required to reduce runoff and water quality impacts to achieve consistency with this policy.

C. Adequate space on each project site shall be reserved to incorporate the BMPs.

D. Provisions shall be made for maintenance of BMPs over the life of the project.

Land Use Element Hillside and Watershed Protection Policy 3 & Coastal Plan Policy 3-15:

"For necessary grading operations on hillsides, the smallest practical area of land shall be exposed at any one time during development, and the length of exposure shall be kept to the shortest practicable amount of time. The clearing of land should be avoided during the winter rainy season and all measures for removing sediments and stabilizing slopes should be in place before the beginning of the rainy season."
Land Use Element Hillside and Watershed Protection Policy 4 & Coastal Plan Policy 3-16:

"Sediment basins (including debris basins, desilting basins, or silt traps) shall be installed on the project site in conjunction with the initial grading operations and maintained through the development process to remove sediment from runoff waters. All sediment shall be retained on-site unless removed to an appropriate dumping location."

Land Use Element Hillside and Watershed Protection Policy 5 & Coastal Plan Policy 3-17:

"Temporary vegetation, seeding, mulching, or other suitable stabilization method shall be used to protect soils subject to erosion that have been disturbed during grading or development. All cut and fill slopes shall be stabilized as rapidly as possible with planting of native grasses and shrubs, appropriate non-native plants, or with accepted landscaping practices."

Interpretive and Implementation Guidelines

The following definitions shall be used to interpret these policies:

A. "Grading" is defined in the Grading Ordinance Chapter 14, Section 7 (Definitions).

B. "Necessary grading" is grading associated with, and integral to, the proposed development required to establish reasonable use of a legal lot. Only necessary grading shall be permitted on hillsides. (This policy is best understood when read in conjunction with Hillside and Watershed Protection Policies 1 and 2.) For example, necessary grading does not include grading conducted for the purposes of enhancing views or for accessory uses not associated with the reasonable use of the lot.

C. "Hillsides" means land with slopes exceeding 20%.

D. "Clearing of land" means the removal of vegetation, structures or other objects.

E. As defined in the Grading Ordinance, the rainy season is the period from November 1 through April 15.

F. "Appropriate non-native plants" means drought tolerant species that may not be native to Santa Barbara County, but are not invasive species.

These policies address the discharge of pollutants (including, but not limited to, soil, sediment, and construction waste) from grading and construction activities. To be consistent with these policies, the discharge of pollutants must be reduced to the maximum extent feasible through the

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2 A list of invasive exotic species of concern in California can be obtained at the California Exotic Pest Plant Council (CalEPPC) - Internet address: http://www.caleppc.org/info/plantlist.html. The Sunset Western Garden Book has examples of drought tolerant non-native plants suitable for the climatic, edaphic, and hydrologic conditions in Santa Barbara County. However, proposed non-native plants should not appear on the CalEPPC list and should not be used.
implementation of BMPs and maintenance of the BMPs throughout and, if necessary, after the grading and construction period.

A. In addition to structural erosion and sediment control measures (e.g., hay bales, silt fences, sediment basins, etc.), the following BMPs shall be used to the maximum extent feasible to reduce storm water pollution from construction sites:

- site planning to avoid grading or vegetation removal on slopes over 20%;
- site planning to avoid grading in areas containing soils with a high erosion hazard or in geologically unstable areas;
- site planning to minimize grading or vegetation removal where slopes over 20% cannot be avoided to allow reasonable use of a legal lot;
- avoidance of grading on slopes over 20% during the rainy season;
- protection of existing native vegetation and enhancement of sensitive areas (e.g., wetlands and riparian corridors);
- prohibitions of non-storm water discharges (e.g., concrete truck washout, slurry cuts, etc.) into storm drains or other water bodies;
- good housekeeping practices (e.g., designated waste collection areas, designated areas for vehicle maintenance and washing, proper vehicle maintenance to avoid leaks, elimination of connections to storm drains, immediate clean up of spills, recycling and reuse of materials, etc.).

B. Adequate room shall be made available on the construction site to accommodate the best management practices throughout and after construction.

C. All best management practices shall be maintained in working order.
35.430.140 Standards for All Development and Land Uses

a. Less than 30 inches high, or

b. Covers an area of 50 square feet or less and is less than either six feet in height and, if located within a vision clearance area, is consistent with the regulations of Subsection 35.430.080.1 (Vision Clearance).

4. Decks less than 32 inches in vertical distance as measured from finished grade to the top of the decking material may be located within the front or side setback unless located in a designated Environmentally Sensitive Habitat Area.

5. Non-habitable structures may be located in the side setback provided that the structures comply with all of the following:

a. Cumulatively the structures do not occupy an area greater than 10 percent of the side setback in which they are located, or 120 square feet, whichever is less.

b. Do not contain any utilities.

c. Are screened from view from abutting properties by a wall or fence at least as tall as the structure.

d. Are located no closer than five feet to any other structure located on the same lot.

6. Pedestals supporting utility meters no greater than four feet in height and 24 square feet in area may be located in a front or side setback provided they are completely screened from view from any public or private street and adjoining lots.

35.430.130 - Solar Panels

A. Solar heating systems shall be required for the heating of any new swimming pool, spa, or hot tub as specified under the Primary Plumbing Code and the Solar Energy requirements of County Code Chapter 10.

B. Solar panels located on the roof of an existing structure do not require planning permit approval.

C. Solar panels located on the ground shall be classified as accessory structures, and shall require Land Use Permit approval.

35.430.140 - Storm Water Runoff Requirements

A. Applicability. The following development redevelopment is subject to the requirement that project-appropriate controls are in place to prevent or minimize water quality impacts:

1. Residential subdivisions with 10 or more dwelling units.

2. Commercial development of 0.5 acres or greater.
3. Parking lots of 5,000 square feet or more or have 25 or more parking spaces and are potentially exposed to storm water runoff.

4. Automobile repair shops.

5. Retail gasoline outlets.

6. Restaurants.

7. One-family residences located on slopes of 20 percent or greater.

8. Any new development or redevelopment exceeding one acre.

B. Processing. No permit for any development listed in Subsection A. (Applicability) above, shall be approved except in compliance with the Comprehensive Plan, and the California Environmental Quality Act if applicable.

35.430.150 - Solid Waste and Recycling Storage Facilities

A. Purpose. This Section provides standards which recognize County support for and compliance with the California Solid Waste Reuse and Recycling Access Act (Public Resources Code Section 42900 through 42911).

B. Applicability. These requirements apply to the following projects:

1. Non-residential development. Any new, non-residential development including commercial, industrial, or institutional building, or marina or any changes to such an existing non-residential development which requires a building permit.

2. Residential building. Any new residential building having five or more dwelling units or any changes to such an existing residential building which requires a building permit.

3. Residential development. Any new residential project where solid waste is collected and loaded in a location serving five or more dwelling units, or any changes to an existing residential project which requires a building permit.

4. Single-family subdivision. Any subdivision of single-family detached homes if, within such subdivisions there is an area where solid waste is collected and loaded in a location which serves five or more dwelling units. In such instances, recycling areas as specified in this Section are only required to serve the needs of the dwelling units which utilize the solid waste collection and loading area.

5. Public facility. Any new public facility where solid waste is collected and loaded and any improvements for areas of a public facility used for collecting and loading solid waste.

C. Standards for storage areas. All projects identified in Subsection B. (Applicability) above, shall be required to provide solid waste areas specifically identified for the storage of both trash and recycling containers in compliance with the following.
16. SURFACE AND STORM WATER QUALITY GUIDELINES

A. INTRODUCTION

The following information is excerpted from several EPA publications including the preamble to the NPDES Phase II rules as published in the Federal Register\(^1\) and EPA storm water fact sheets and guidance documents\(^2\).

Storm water runoff from lands modified by human activities can harm surface water resources and, in turn, cause or contribute to an exceedance of water quality standards by changing natural hydrologic patterns, accelerating stream flows, destroying aquatic habitat, and elevating pollutant concentrations. Such runoff may contain or mobilize high levels of contaminants, such as sediment, suspended solids, nutrients (phosphorous and nitrogen), heavy metals and other toxic pollutants, pathogens, oxygen-demanding substances, and floatables. After a rain, storm water runoff carries these pollutants into nearby streams, rivers, lakes, estuaries, wetlands, and oceans. The highest concentrations of these contaminants often are contained in “first flush” discharges, which occur during the first major storm after an extended dry period. Individually and combined, these pollutants impair water quality, threatening designated beneficial uses and causing habitat alteration or destruction. Uncontrolled storm water discharges from areas of urban development and construction activity negatively impact receiving waters by changing the physical, biological, and chemical composition of the water, resulting in an unhealthy environment for aquatic organisms, wildlife, and humans. Although water quality problems also can occur from agricultural storm water discharges and return flows from irrigated agriculture, this area of concern is statutorily exempted from regulation as a point source under the Clean Water Act and is not addressed in these guidelines.

Urbanization alters the natural infiltration capability of the land and generates a host of pollutants that are associated with the activities of dense populations, thus causing an increase in storm water runoff volumes and pollutant loading in storm water that is discharged to receiving waterbodies. Urban development increases the amount of impervious surface in a watershed as farmland, forests, and other natural vegetation with natural infiltration characteristics are converted into buildings with rooftops, driveways, sidewalks, roads, and parking lots with virtually no ability to absorb storm water. Storm water runoff washes over these impervious areas, picking up pollutants along the way while gaining speed and volume because of their inability to disperse and filter into the ground. What results are storm water flows that are higher in volume, pollutants, and temperature than the flows from more pervious areas, which have more natural vegetation and soil to filter the runoff. Studies reveal that the level of imperviousness in an area strongly correlates with decreased quality of the nearby receiving waters. Research conducted in numerous geographical areas, concentrating on various variables and employing widely differing methods, has revealed that stream degradation occurs at relatively low levels of imperviousness, such as 10 to 20 percent (even as low as 5 to 10 percent). Furthermore, research has indicated that few, if any, urban streams can support diverse benthic communities at imperviousness levels of 25 percent or more. An area of medium density single

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\(^1\) 64 FR 68722
\(^2\) Available on the Internet at www.epa.gov/npdes.
family homes can be anywhere from 25 percent to nearly 60 percent impervious, depending on the design of the streets and parking.

**Relationship of Sources to Primary Pollutants of Concern**

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<th>Pollutant Source/Activity</th>
<th>Physical Parameters</th>
<th>Synthetic Organics</th>
<th>Petroleum Hydrocarbons</th>
<th>Heavy Metals</th>
<th>Nutrients</th>
<th>Pathogens</th>
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In addition to impervious areas, urban development creates new pollution sources as population density increases and brings with it proportionately higher levels of car emissions, car maintenance wastes, pet waste, litter, pesticides, and household hazardous wastes, which may be washed into receiving waters by storm water or dumped directly into storm drains designed to discharge to receiving waters. More people in less space results in a greater concentration of pollutants that can be mobilized by storm water discharges into storm sewer systems.

The first national assessment of urban runoff characteristics was completed for the *Nationwide Urban Runoff Program (NURP)* study. The NURP study is the largest nationwide evaluation of storm water discharges undertaken to date. EPA conducted the NURP study to facilitate understanding of the nature of urban runoff from residential, commercial, and industrial areas. One objective of the study was to characterize the water quality of discharges from separate storm sewer systems that drain residential, commercial, and light industrial (industrial parks) sites. Storm water samples from 81 residential and commercial properties in 22 urban/suburban areas nationwide were collected and analyzed during the 5-year period between 1978 and 1983.
The majority of samples collected in the study were analyzed for eight conventional pollutants and three heavy metals. Data collected under the NURP study indicated that discharges from separate storm sewer systems draining runoff from residential, commercial, and light industrial areas carried more than 10 times the annual loading of total suspended solids (TSS) than discharges from municipal sewage treatment plants that provide secondary treatment. The NURP study also indicated that runoff from residential and commercial areas carried somewhat higher annual loadings of chemical oxygen demand (COD), total lead, and total copper than effluent from secondary treatment plants. Study findings showed that fecal coliform counts in urban runoff typically range from tens to hundreds of thousands of most probable number (MPN) per hundred milliliters (ml) of runoff during warm weather conditions, with the median for all sites being around 21,000 MPN/100 ml.

B. CONSTRUCTION SITE RUNOFF

Polluted storm water runoff from construction sites often flows to storm drains and ultimately is discharged into local rivers and streams. Of the pollutants listed below, sediment is usually the main pollutant of concern. Sediment runoff rates from construction sites are typically 10 to 20 times greater than those of agricultural lands, and 1,000 to 2,000 times greater than those of forest lands. During a short period of time, construction sites can contribute more sediment to streams than can be deposited naturally during several decades. The resulting siltation, and the contribution of other pollutants from construction sites, can cause physical, chemical, and biological harm to our nation’s waters. The siltation process described previously can (1) deposit high concentrations of pollutants in public water supplies; (2) decrease the depth of a waterbody, which can reduce the volume of a reservoir or result in limited use of a water body by boaters, swimmers, and other recreational enthusiasts; and (3) directly impair the habitat of fish and other aquatic species, which can limit their ability to reproduce. Excess sediment can cause a number of other problems for waterbodies. It is associated with increased turbidity and reduced light penetration in the water column, as well as more long-term effects associated with habitat destruction and increased difficulty in filtering drinking water.

**Pollutants Commonly Discharged From Construction Sites**

- Sediment
- Solid and sanitary wastes
- Nitrogen (fertilizer)
- Phosphorous (fertilizer)
- Pesticides
- Concrete truck washout
- Construction chemicals
- Construction debris

C. POST CONSTRUCTION RUNOFF

There are generally two forms of substantial impacts of post-construction runoff. The first is caused by an increase in the type and quantity of pollutants in storm water runoff. As runoff flows over areas altered by development, it picks up harmful sediment and chemicals such as oil and grease, pesticides, heavy metals, and nutrients (e.g., nitrogen and phosphorus). These pollutants often become suspended in runoff and are carried to receiving waters, such as lakes, ponds, and streams. Once deposited, these pollutants can enter the food chain through small aquatic life, eventually entering the tissues of fish and humans. The second kind of post-construction runoff impact occurs by increasing the quantity of water delivered to the waterbody.
during storms. Increased impervious surfaces interrupt the natural cycle of gradual percolation of water through vegetation and soil. Instead, water is collected from surfaces such as asphalt and concrete and routed to drainage systems where large volumes of runoff quickly flow to the nearest receiving water. The effects of this process include stream bank scouring and downstream flooding, which often lead to a loss of aquatic life and damage to property.

D. FEDERAL AND STATE REGULATIONS

The Federal Water Pollution Prevention and Control Act (i.e., the Clean Water Act or CWA) requires that discharges do not substantially degrade the physical, chemical or biological integrity of the Nation’s waters. Specifically Section 402 established the National Pollutant Discharge Elimination System (NPDES) Regulations for wastewater and other pollutant discharges.

Congress amended the CWA in 1987 to require the implementation of a two-phased program to address storm water discharges. Phase I, promulgated by the U.S. Environmental Protection Agency (EPA) in November 1990, requires NPDES permits for storm water discharges from municipal separate storm sewer systems (MS4s) serving populations of 100,000 or greater, construction sites disturbing greater than 5 acres of land, and ten categories of industrial activities.

Despite the comprehensiveness of the NPDES Phase I program, the EPA recognized that smaller construction projects (disturbing less than 5 acres) and small municipal separate storm sewers (MS4s) were also contributing substantially to pollutant discharges nationwide. Therefore, in order to further improve storm water quality, the EPA promulgated the NPDES Phase II program (Federal Register Vol. 64, No. 235, December 8, 1999). The Phase II regulations became effective on February 7, 2000, and require NPDES permits for storm water discharges from regulated small MS4s and for construction sites disturbing more than 1 acre of land. The Phase II regulations published by the EPA designated the urbanized areas of Santa Barbara County as a regulated small MS4.

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3 Those generally serving less than 100,000 people and located in an urbanized area as defined by the Bureau of the Census.

4 An urbanized area is a land area comprising one or more places (central place(s)) and the adjacent densely settled surrounding area (the urban fringe) that together have a residential population of at least 50,000 and an overall population density of at least 1,000 people per square mile.
In addition, Section 401 and 404 established regulations for the discharge of dredged or fill material into waters of the United States and water quality impacts associated with these discharges. In California, the Porter-Cologne Water Quality Control Act establishes waste discharge standards pursuant to the Federal NPDES program, and the state has the authority to issue NPDES permits to individuals, businesses, and municipalities.

E. COUNTY WATER QUALITY ISSUES

Because the EPA has determined that the urbanized areas of Santa Barbara County are subject to the Phase II NPDES regulations, it is presumed that the county has a general urban runoff water quality problem. In addition to this general presumption, over the last three years Project Clean Water has collected analytical water quality data and identified the water quality concerns in county streams, creeks and beach areas. These concerns include:

- Bacteria levels consistently above applicable standards during storm events,
- Levels of metals (copper, chromium, zinc, and lead) approaching or exceeding Regional Water Quality Control Board Basin Plan objectives,
- Elevated levels of nitrogen and phosphorus in all creeks during storm events, and
- Detection of pesticides in all watersheds.

The Regional Water Quality Control Board has also identified that the quality of several important recreational water bodies and water supplies have been impaired. These water bodies and their contaminants include:

- San Antonio Creek (northern) – sediments.
- Santa Ynez River – nutrients (e.g., phosphorus and nitrogen), salinity, total dissolved solids, chlorides and sediments.
- Goleta Slough – metals, pathogens, and sediment.
- Arroyo Burro Creek – pathogens (e.g., bacteria).
• Mission Creek – pathogens.
• Carpinteria Salt Marsh – nutrients and sediment.
• Carpinteria Creek - pathogens
• Rincon Creek – pathogens and sediment.

F. COUNTY WATER QUALITY PROTECTION POLICIES

Policies regarding the protection of water quality in the unincorporated areas of Santa Barbara County are provided in the Comprehensive Plan Land Use Element, various Community Plans, and the Local Coastal Plan. The overarching policy which applies to both construction and post-construction is Land Use Element Hillside and Watershed Protection Policy 7 (Coastal Plan Policy 3-19), which states:

Degradation of the water quality of groundwater basins, nearby streams, or wetlands shall not result from development of the site. Pollutants, such as chemicals, fuels, lubricants, raw sewage, and other harmful waste shall not be discharged into or alongside coastal streams or wetlands either during or after construction.

Project approval requires a finding of consistency with this and all other applicable water quality policies in the Comprehensive and Community Plans.

G. SIGNIFICANCE GUIDELINES FOR ASSESSMENT OF WATER QUALITY IMPACTS

Guidelines for assessing project-specific and cumulative water quality impacts are presented below. The assessment of impacts must account for construction-related impacts (i.e., vegetation removal, erosion, use of construction materials on the site, and staging of construction activities) and post-construction (or post-development) impacts (i.e., increases in impervious surfaces and increased runoff, entrainment of pollutants, and effects of discharges on aquatic habitats and biota).

G.1 Project Specific Potential Significance Impacts

(a) A significant water quality impact is presumed to occur if the project:
• Is located within an urbanized area of the county and the project construction or redevelopment individually or as a part of a larger common plan of development or sale would disturb one (1) or more acres of land;
• Increases the amount of impervious surfaces on a site by 25% or more;
• Results in channelization or relocation of a natural drainage channel;
• Results in removal or reduction of riparian vegetation or other vegetation (excluding non-native vegetation removed for restoration projects) from the buffer zone of any streams, creeks or wetlands;
• Is an industrial facility that falls under one or more of categories of industrial activity regulated under the NPDES Phase I industrial storm water regulations (facilities with effluent limitation; manufacturing; mineral, metal, oil and gas, hazardous waste,
treatment or disposal facilities; landfills; recycling facilities; steam electric plants; transportation facilities; treatment works; and light industrial activity); 

- Discharges pollutants that exceed the water quality standards set forth in the applicable NPDES permit, the Regional Water Quality Control Board's (RWQCB) Basin Plan or otherwise impairs the beneficial uses of a receiving waterbody; or 

- Results in a discharge of pollutants into an “impaired” waterbody that has been designated as such by the State Water Resources Control Board or the RWQCB under Section 303 (d) of the Federal Water Pollution Prevention and Control Act (i.e., the Clean Water Act). 

- Results in a discharge of pollutants of concern to a receiving water body, as identified in by the RWQCB.

(b) Projects that are not specifically identified on the above list or are located outside of the “urbanized areas” may also have a project-specific storm water quality impact. Storm water quality impacts associated with these projects must be evaluated on a project by project basis for a determination of significance. The potential impacts of these projects should be determined in consultation with the county Water Agency, Flood Control Division, and RWQCB. The issues that should be considered are:
  - the size of the development; 
  - the location (proximity to sensitive waterbodies, location on hillsides, etc.); 
  - the timing and duration of the construction activity; 
  - the nature and extent of directly connected impervious areas; 
  - the extent to which the natural runoff patterns are altered; 
  - disturbance to riparian corridors or other native vegetation on or off-site; 
  - the type of storm water pollutants expected; and 
  - the extent to which water quality best management practices are included in the project design.

(c) All projects determined to have a potentially significant storm water quality impact must prepare and implement a Storm Water Quality Management Plan (SWQMP) to reduce the impact to the maximum extent practicable. The SWQMP shall include the following elements:
  - identification of potential pollutant sources that may affect the quality of the discharges to storm water; 
  - the proposed design and placement of structural and non-structural BMPs to address identified pollutants;

5 Beneficial uses for Santa Barbara County are identified by the Regional Water Quality Control Board in the Water Quality Control Plan for the Central Coastal Basin, or Basin Plan, and include (among others) recreation, agricultural supply, groundwater recharge, fresh water habitat, estuarine habitat, support for rare, threatened or endangered species, preservation of biological habitats of special significance.
• a proposed inspection and maintenance program; and
• a method of ensuring maintenance of all BMPs over the life of the project.

Implementation of best management practices identified in the SWQMP will generally be considered to reduce the storm water quality impact to a less than significant level.

G.2 Less than Significant Impacts

The following land uses and projects are generally presumed to have a less than significant project-specific water quality impact. These include:

• Redevelopment projects that do not increase the amount of impervious surfaces on the site nor change the land use or potential pollutants;
• New development and redevelopment projects that incorporate into the project design construction BMPs for erosion, sediment and construction waste control and incorporate post-construction BMPs to protect sensitive riparian or wetland resources, reduce the quantity of runoff, and treat runoff generated by the project to pre-project levels;
• Lot line adjustments that do not alter the development potential of the lots involved;
• Development of a single family dwelling (and associated accessory uses including but not limited to roads and driveways, septic systems, guesthouse, pool, etc.) disturbing less than one acre on existing legal lot.

G.3 Cumulative Impacts

Because of the county’s designation under the Phase II NPDES regulations, all discretionary projects (except those that do not result in a physical change to the environment) within the urbanized area whose contributions are cumulatively considerable must implement one or more best management practices to reduce their contribution to the cumulative impact.

H. General Mitigation Guidelines for Water Quality Impacts

If water quality impacts are considered from the beginning stages of a project more opportunities are available for water quality protection. Best management practices (mitigation measures) chosen for a project should minimize water quality impacts and attempt to maintain pre-development runoff conditions. Best management practices are divided into two main categories, non-structural BMPs and structural BMPs.

Non-structural BMPs are preventative actions that involve management and source controls such as protecting and restoring sensitive areas such as wetlands and riparian corridors, maintaining and/or increasing open space, providing buffers along sensitive water bodies, minimizing impervious surfaces and directly connected impervious areas, and minimizing disturbance of soils and vegetation. Structural BMPs include: storage practices such as wet ponds and extended-detention outlet structures; filtration practices such as grassed swales, sand filters and filter strips; and infiltration practices such as infiltration basins and infiltration trenches. In many
cases combinations of non-structural and structural measures will be required to reduce water quality impacts.

Non-structural and structural BMPs most applicable to the development projects in the county are included in “A Planner’s Guide to Conditions of Approval and Standard Mitigation Measures” and the county’s adopted BMP manuals for construction site runoff control. Additional guidance on best management practices is available from the State, the EPA and from other sources such as BASMAA “Starting at the Source”. Storm water technologies are constantly being improved, and staff and developers must be responsive to any changes, developments or improvements in control technologies.

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* California Storm Water Best Management Practice Handbooks (California Stormwater Quality Task Force, 1993).
WATER RESOURCES

Wat-1 Outdoor water use shall be limited through the measures listed below.

_The following is a menu; select only those conditions that apply. Some of these measures may also be used as water conservation conditions without requiring a landscape and irrigation plan._

a. Landscaping shall be with [native and/or drought tolerant] species.

b. Drip irrigation or other water-conserving irrigation shall be installed.

c. Plant material shall be grouped by water needs.

d. Turf shall constitute less than 20% of the total landscaped area.

e. No turf shall be allowed on slopes of over 4%.

f. Extensive mulching (2" minimum) shall be used in all landscaped areas to improve the water holding capacity of the soil by reducing evaporation and soil compaction.

g. Soil moisture sensing devices shall be installed to prevent unnecessary irrigation.

h. Permeable surfaces such as turf block or intermittent permeable surfaces such as french drains shall be used for all parking areas and driveways.

i. The applicant shall plumb each lot for a grey water system. Each dwelling shall contain a grey water system plumbed to front and rear yard irrigation systems.

j. The applicant shall contract with an agency that sells reclaimed water to provide water for all exterior landscaping. Non-reclaimed water shall not be used to water exterior landscape. The applicant shall renew the contract annually and send copies of the contract and all receipts for reclaimed water received to P&D staff. These documents shall be due on [specify month] of every year commencing [specify starting point].

k. Separate landscape meters shall be installed.

**Plan Requirements:** Prior to [insert timing], a landscape and irrigation plan shall be submitted to P&D for review and approval. **Planner: For i,**
show on building plans and require approval or plumbing permit. The applicant/owner shall enter into an agreement with the County to install required landscaping/irrigation and maintain required landscaping for the life of the project.

**Timing:** The applicant shall implement all aspects of the landscape and irrigation plan prior to occupancy clearance.

**MONITORING:** Permit Compliance shall conduct site visits to ensure installation and maintenance of landscape and irrigation. Any part of irrigation plan requiring a plumbing permit shown on building plans shall be inspected by Building Inspectors.

Indoor water use shall be limited through the following measures: **Planner: This is a menu; select only those conditions that apply:**

a. All hot water lines shall be insulated.

b. Recirculating, point-of-use, or on-demand water heaters shall be installed.

c. Water efficient clothes washers and dishwashers shall be installed.

d. Self regenerating water softening shall be prohibited in all structures.  
   [Required in Laguna Sanitation District.]

e. Lavatories and drinking fountains shall be equipped with self-closing valves

   [Commercial only]

f. Pool(s) shall have pool cover(s).

**Plan Requirements:** Prior to approval of Land Use Permits/Coastal Development Permits, indoor water-conserving measures shall be graphically depicted on building plans, subject to P&D review and approval. **Timing:** Indoor water-conserving measures shall be implemented prior to occupancy clearance.

**MONITORING:** P&D shall inspect for all requirements prior to occupancy clearance.

The existing facility shall be retrofitted with water conserving showerheads (2 gallons per minute) and toilets (1.6 gallons per flush). **Timing:** Prior to approval of Land Use Permits/Coastal Development Permits, the retrofitting shall be completed by the applicant.
**MONITORING:** Planning and Development shall inspect to confirm retrofitting prior to approval of Land Use Permits Coastal Development Permits.

Wat-4 High water consumption businesses (defined by P&D), including [specify types], shall be prohibited from operating on the subject property. **Plan Requirements and Timing:** Prior to approval of Land Use Permits Coastal Development Permits, the applicant shall record a covenant agreeing to the prohibition with P&D for County Counsel review and approval to be included as a note on building plans, on lease agreements and in CC&R's.

**MONITORING:** P&D shall ensure no such businesses occupy building, by site inspection, prior to occupancy clearance and through any subsequent permitting for the site.

Wat-5 Reclaimed water shall be used for all dust suppression activities during grading and construction. **Plan Requirements and Timing:** This measure shall be included as a note on the grading plan. Prior to the commencement of earth movement, the applicant shall submit to Planning and Development an agreement/contract with a company providing reclaimed water stating that reclaimed water shall be supplied to the project site during all ground disturbances when dust suppression is required.

**MONITORING:** P&D staff shall inspect activities in the field to ensure non-potable water is being used in water trucks.

Wat-6 The project shall provide for on-site retention of storm water runoff, infiltration, and recharge where feasible. Feasibility shall be determined by the P&D Registered Geologist and Flood Control District engineer. Retention basin(s) shall be maintained for the life of the project by [a Homeowners' Association or landowner for commercial/industrial sites.]

Recharge systems shall be developed in conjunction with the Flood Control District and P&D. **Plan Requirements:** A drainage plan showing the location and design parameters of the retention basin shall be submitted to P&D and Flood Control for review and approval. Installation and maintenance for five years shall be ensured through a performance security provided by the applicant. Long term maintenance requirements shall be specified in [homeowner association CC&Rs or in a maintenance program submitted by the landowner of commercial/industrial sites.] **Timing:** Retention and/or recharge basins shall be installed (landscaped and irrigated subject to P&D and Flood Control District approval) prior to occupancy clearance.

**MONITORING:** Planning and Development shall site inspect for installation and maintenance of landscaping. Flood Control sign off is
required on final grading/drainage plans, and Permit Compliance sign off is required for release of the performance security.

**Planner: Goleta only for properties overlying the North Central Subbasin and not a party to the Wright judgment.** In order for the proposed project to be found consistent with County water policies which require that adequate public and private services be available to serve the project, the applicant is required to petition the court and receive a determination that the applicant has the right to extract additional water from the north-central subbasin prior to the approval of [Land Use/Coastal Development] Permit

**MONITORING:** P&D shall review determination prior to approval of Land Use Permits/Coastal Development Permits.

**Planner: For sites where disturbance involves one or more acres, the following will apply.** The applicant shall submit proof of exemption or a copy of the Notice of Intent to obtain coverage under the Construction General Permit of the National Pollutant Discharge Elimination System issued by the California Regional Water Quality Control Board. **Plan Requirements and Timing:** Prior to approval of Land Use Permits/Coastal Development Permits the applicant shall submit proof of exemption or a copy of the Notice of Intent and shall provide a copy of the required Storm Water Pollution Prevention Plan (SWPPP) to P&D. A copy of the SWPPP must be maintained on the project site during grading and construction activities.

**MONITORING** P&D shall review the documentation prior to approval of Land Use Permits/Coastal Development Permits. P&D shall site inspect during construction for compliance with the SWPPP.

**Planner: Use only for AHO or other qualified projects.**

**Wat-9** Prior to [final map clearance/approval of [Land Use/Coastal Development] Permit] the applicant shall provide a can and will serve letter from the [specify water district] indicating that adequate water is available to serve the project.

**NOTE:** The following conditions/measures address storm water quality from construction, new development, and redevelopment as required by the EPA's NPDES Phase II municipal storm water regulations. Some of these measures should be considered during the initial design phase of a project as they might require significant land area to implement. Consideration of these measures after the initial design phase could result in substantial redesign and project delay.

**Wat-10** **Planner: For all new development and redevelopment projects.** To prevent illegal discharges to the storm drains, all on-site storm drain inlets, whether new or existing shall be labeled to advise the public that the storm
drain discharges to the ocean (or other waterbody, as appropriate) and that dumping waste is prohibited (e.g., “Don’t Dump – Drains to Ocean”). The information shall be provided in English and Spanish. **Plan Requirements and Timing:** Location of storm drain inlets shall be shown on site, building and grading plans prior to approval of grading and land use permits. Labels shall be installed prior to occupancy clearance. Standard labels are available from Public Works, Project Clean Water, or other label designs shall be shown on the plans and submitted to P&D for approval prior to approval of grading and land use permits.

**MONITORING:** Planning and Development shall site inspect prior to occupancy clearance.

**Planner:** Use this measure separately if there will be grading but an erosion and sediment control plan is not being required. To prevent sediment from being tracked off of the construction site, stabilized entrances shall be installed. Stabilizing measures may include but are not limited to use of gravel pads, steel rumble plates, temporary paving, etc. Any sediment or other materials tracked off site shall be removed the same day as they are tracked using dry cleaning methods. **Plan Requirements:** The stabilized entrances/exits shall be located and detailed on the grading and drainage plan. Dry cleaning methods shall be enumerated in the project specifications and included on grading and drainage plans. **Timing:** The plans shall be submitted to P&D for approval prior to approval of Land Use Permit/Coastal Development Permits. The stabilized entrances/exits shall be installed prior to initiation of grading and maintained for the duration of the grading period and until graded areas have been stabilized by structures, long-term erosion control measures or landscaping.

**MONITORING:** P&D shall site inspect during construction.

**Planner:** this measure is appropriate for small, medium, or large subdivisions (5 or more lots) or commercial/industrial developments and as an alternative to underground or aboveground impermeable drainage channels, however sufficient land area must be set aside onsite to accommodate the system. This measure can be combined with Wat-13 and Wat-14 where appropriate. A permanent biofiltration system shall be constructed to treat storm water runoff from the site. Biofiltration includes vegetated swales, channels, buffer strips, retention, rain gardens, and shall be designed in accordance with the California Stormwater BMP Handbook for New Development and Redevlopment (California Storm Water Quality Association) or other approved method. The biofilter system shall be designed by a registered civil engineer specializing in water quality or other qualified professional to ensure that the filtration properties and the plants selected are adequate to reduce concentrations of the target pollutants including [Planner: list likely pollutants]. Where
feasible, local plants sources (i.e., collected from the watershed or propagated from cuttings or seed collected from the watershed) shall be used in the biofiltration system. Invasive plants shall not be used. Biofilters shall not replace existing riparian vegetation or native vegetation unless otherwise approved by P&D. **Plan Requirements and Timing:**

The applicant shall include the biofilter design, including the plant palette and the source of plant material, on the grading and drainage and landscape plans, and depict it graphically. The applicant shall submit a maintenance plan for the biofilter system to P&D for review and approval. A performance security will be required to ensure installation and long-term maintenance, including maintenance inspections at least once/year. Long-term maintenance and proof of inspections shall be the responsibility of the [HOA (for residential projects) or the landowner (for commercial/industrial projects).] Maintenance requirements shall be specified in the CC&Rs or in a maintenance program submitted by the landowner of the commercial/industrial site and recorded with the Clerk of the Board. The plans and a copy of the long-term maintenance program shall be submitted to P&D, and Public Works, Water Resources Division staff, for review prior to approval of Land Use Permits/Coastal Development Permits. Biofilter maintenance is required for the life of the project and transfer of this responsibility is required for any subsequent sale of the property. The condition of transfer shall include a provision that the property owners conduct maintenance inspection at least once/year and retain proof of inspections.

**MONITORING:** Planning and Development shall site inspect for installation and periodically inspect for maintenance throughout a five-year performance period. Performance security release requires P&D approval. The [HOA (for residential projects) or the landowner (for commercial/industrial projects)] shall be responsible for maintenance inspections at least once/year for the life of the project. Proof of maintenance inspections shall be maintained and made available to County of Santa Barbara upon request.

**Planner:** This measure may be used for small projects where the drainage area is divided into smaller, individually treated units less than an acre, or projects such as small residential developments (4 or fewer lots), small commercial areas (with buildings or structures less than 5,000 square feet), and parking lots less than 25 stall. This measure can be combined with Wat-12 and Wat-14 where appropriate. To allow for infiltration and treatment, sheet flow runoff from the site shall be directed to a permanent vegetated buffer strip. A registered civil engineer or other qualified professional shall design the buffer strip. Only non-invasive perennial grass or other drought tolerant vegetation species shall be used. Vegetated buffer strips shall be designed in accordance with the California Stormwater BMP Handbook for New Development and Redevelopment (California Storm Water Quality Association) or other approved method.
Plan Requirements and Timing: Buffer strip design, including the plant palette and the source of plant material, shall be described and detailed on the site, grading and drainage and landscape plans, and depicted graphically. A maintenance program shall be specified in an inspection and maintenance plan and include maintenance inspections at least once/year. Long term maintenance shall be the responsibility of the [HOA (for residential projects) or the landowner (for commercial/industrial projects).] A maintenance program shall be specified in the CC&Rs or in a maintenance program submitted by the landowner for commercial/industrial sites and recorded with the Clerk of the Board. The plans and a copy of the long-term maintenance program shall be submitted to P&D and Public Works, Water Resources Division staff for review prior to approval of Land Use Permits/Coastal Development Permits. Buffer strip maintenance is required for the life of the project and transfer of this responsibility is required for any subsequent sale of the property. The condition of transfer shall include a provision that the property owners conduct maintenance inspection at least once/year and retain proof of inspections.

MONITORING: Planning and Development shall site inspect for installation of the swale and periodically thereafter to ensure long-term maintenance. The [HOA (for residential projects) or the landowner (for commercial/industrial projects)] shall be responsible for maintenance inspections at least once/year for the life of the project. Proof of maintenance inspections shall be maintained and made available to County of Santa Barbara upon request.

Planner: the following shall be used where possible to treat and infiltrate stormwater from impervious surfaces at commercial, residential, and industrial sites. Small drainages between 0.25 and 1.0 acres (larger drainages may require multiple bioretention areas). Bioretention is a soil and plant-based filtration device that removes pollutants through a combination of physical, biological, and chemical processes. The facility combines vegetation with a planting soil matrix of sand and organics. Runoff is distributed evenly through the ponding area for infiltration through the soil matrix. Underdrains may be required. To allow for infiltration and treatment, drainage shall be directed to a bioretention filter. A registered civil engineer or other qualified professional shall design the bioretention filter in accordance with the California Stormwater BMP Handbook for New Development and Redevelopment (California Storm Water Quality Association) or other approved method. Plan Requirements and Timing: Bioretention design, including the selected plant material, shall be described and detailed on the site, grading and drainage and landscape plans, and depicted graphically. A maintenance program shall be specified in an inspection and maintenance plan and include maintenance inspections at least once/year. Long term maintenance shall be the responsibility of the [HOA (for
residential projects) or the landowner (for commercial/industrial projects).] A maintenance program shall be specified in the CC&Rs or in a maintenance program submitted by the landowner for commercial/industrial sites and recorded with the Clerk of the Board. The plans and a copy of the long-term maintenance program shall be submitted to P&D and Public Works, Water Resources Division staff, for review prior to approval of Land Use Permits/Coastal Development Permits. Bioretention maintenance is required for the life of the project and transfer of this responsibility is required for any subsequent sale of the property. The condition of transfer shall include a provision that the property owners conduct maintenance inspection at least once/year and retain proof of inspections.

**MONITORING:** Planning and Development shall site inspect for installation of the bioretention facility and periodically thereafter to ensure long-term maintenance. The [HOA (for residential projects) or the landowner (for commercial/industrial projects)] shall be responsible for maintenance inspections at least once/year for the life of the project. Proof of maintenance inspections shall be maintained and made available to County of Santa Barbara upon request.

**Wat-15 Planner:** To the maximum extent practicable, the following shall be used in parking areas (for overflow or low traffic areas), patios, sidewalks (consistent with ADA requirements) emergency roads, around buildings, driveways, etc. where soil conditions allow (NPDES Permit Requirement). This measure can be combined with Wat-16 and Wat-17 where appropriate. To reduce runoff from impervious areas and allow for infiltration, the applicant shall incorporate pervious materials or surfaces (e.g., porous pavement or unit pavers on sand) into the project design.

**Plan Requirements and Timing:** Pervious surfaces shall be described and depicted graphically on the site, building, grading and landscape plans. The plans shall be submitted to P&D for review prior to approval of Land Use Permits/Coastal Development Permits.

**MONITORING:** P&D shall site inspect for installation.

**Wat-16 Planner:** The following measure can be used for single family dwellings and commercial/industrial development on permeable soils and can be used on larger projects in conjunction with other measures. Work with Building and Safety to ensure that building foundations are adequately protected from site drainage when using this measure. The applicant shall install a roof runoff collection and disposal system to infiltrate storm water runoff. Runoff shall be directed to either a subsurface infiltration trench, French drains, planter boxes, landscaped areas or connected to the site’s irrigation system. An overflow or high flow bypass system will be provided. **Plan Requirements and Timing:** The roof runoff collection system shall be shown on grading, building and landscape plans. The
plans shall be submitted to P&D for review prior to approval Land Use Permits/Coastal Development Permits. The system shall be installed prior to occupancy clearance.

**MONITORING:** P&D shall site inspect for installation of the system.

A Homeowners' Association or the landowner (for commercial/industrial projects)  *{planner choose the appropriate}* shall be responsible for the long-term maintenance of the water quality conditions of approval  *{planner list conditions here}*.

**Plan Requirements and Timing:** The proposed maintenance responsibilities and schedule shall be included in the CC&Rs or in a maintenance program submitted by the landowner for commercial/industrial sites. The CC&Rs/maintenance program shall be submitted for review by P&D and Public Works, Water Resources Division staff, prior to approval of Land Use Permits/Coastal Development Permits. Annual records of the maintenance activities shall be maintained by the HOA/landowner and submitted to P&D upon request.

**MONITORING:** P&D shall review the maintenance records or site inspect, as needed. Costs shall be borne by the Homeowners Association.

**Wat-17 Planner:** The following measure can be used for single family dwellings where conditions allow. To reduce storm water runoff, one of the following driveway designs shall be used: paving only under wheels, flared driveway, or use of permeable surfaces for temporary or non-permanent parking areas.

**Plan Requirements and Timing:** The driveway shall be shown on the site, grading, landscape and building plans. The plans shall be submitted to P&D for review prior to approval of Land Use Permits/Coastal Development Permits.

**MONITORING:** P&D shall site inspect to ensure installation.

**Wat-18 To** prevent storm water contamination during roadwork or pavement construction, concrete, asphalt, and seal coat shall be applied during dry weather. Storm drains and manholes within the construction area shall be covered when paving or applying seal coat, slurry, fog seal, etc.

**Plan Requirements and Timing:** These requirements shall be specified on the grading and building plans submitted to P&D prior to approval of Land Use Permits/Coastal Development Permits.

**MONITORING:** P&D shall site inspect, as needed during construction.

**Wat-19 Planner:** This measure must be applied to new or redeveloped fueling stations  *(NPDES Permit Requirement)*. The fuel dispensing area shall extend 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus 1 foot, whichever is less. The fuel dispensing areas shall be paved with Portland cement concrete (or
equivalent smooth impervious surface), with a 2% to 4% slope to prevent ponding, and shall be separated from the rest of the site by a grade break that prevents run-on of storm water. The paving around the fuel dispensing area may exceed the minimum dimensions of the "fuel dispensing area" stated above. **Plan Requirements and Timing:** These requirements shall be specified on the grading and building plans submitted to P&D. The plans shall be reviewed and detailed prior to approval of Land Use Permits/Coastal Development Permits.

**MONITORING:** P&D shall site inspect prior to occupancy clearance.

*Wat-20* **Planner:** *Use this measure on parking lots associated with shopping centers or large commercial or industrial developments (with buildings or structures totaling 5,000 square feet or more).* A parking lot cleaning program shall be developed and implemented. The program shall include the following elements: removal of litter; spot cleaning of oil, fuel, and other automotive leaks; vacuum sweeping on a [Specify weekly, monthly, quarterly, or semi-annual] basis; inspection and cleaning of storm drain inlets and catch basins before November 1 and in January of each year; and posting of signs prohibiting littering, oil changing, and other automotive repairs. Debris removed from the catch basins shall be analyzed and disposed of accordingly. **Plan Requirements and Timing:** The cleaning program shall be submitted to P&D for review prior to approval of Land Use Permits/Coastal Development Permits. The location of the signs and the requirement for storm drain cleaning shall be included on the site and building plans submitted to P&D. The plans shall be reviewed prior to approval of Land Use Permits/Coastal Development Permits.

**MONITORING:** P&D shall site inspect prior to occupancy clearance and shall respond to complaints. The landowner shall maintain annual records of the storm drain cleaning and make them available for review by P&D on request.

*Wat-21* **Planner:** *Use this measure for parking areas with 5-25 spaces. Parking areas greater than 25 spaces shall be conditioned by Public Works for treatment of runoff from the design storm event (NPDES Permit Requirement).* The parking area and associated driveways shall be designed to minimize degradation of storm water quality. Best Management Practices (BMPs) such as landscaped areas for infiltration (vegetated filter strips, bioswales, or bioretention areas), designed in accordance with the California Stormwater BMP Handbook for New Development and Redevelopment (California Storm Water Quality Association) or other approved method shall be installed to intercept and remove pollutants prior to discharging to the storm drain system. The BMPs selected shall be maintained in working order. The landowner is responsible for the maintenance and operation of all improvements and
shall maintain annual maintenance records. The BMPs shall be described and detailed on the site, grading and drainage and landscape plans, and depicted graphically. A maintenance program shall be specified in an inspection and maintenance plan and include maintenance inspections at least once/year. Long term maintenance shall be the responsibility of the [HOA (for residential projects) or the landowner (for commercial/industrial projects).] A maintenance program shall be specified in the CC&Rs or in a maintenance program submitted by the landowner for commercial/industrial sites and recorded with the Clerk of the Board. The plans and a copy of the long-term maintenance program shall be submitted to P&D and Public Works, Water Resources Division staff, for review prior to approval of Land Use Permits/Coastal Development Permits. BMP maintenance is required for the life of the project and transfer of this responsibility is required for any subsequent sale of the property. The condition of transfer shall include a provision that the property owners conduct maintenance inspection at least once/year and retain proof of inspections. **Plan Requirements and Timing:** The location and type of BMP shall be shown on the site, building and grading plans [select plans as appropriate based on type of BMP]. The plans and maintenance program shall be submitted to P&D for approval prior to land use clearance.

**MONITORING:** P&D shall site inspect for installation prior to occupancy clearance. The landowner shall make annual maintenance records available for review by P&D upon request.

**Planner:** Use this measure for any project identified as having a significant storm water quality impact and, if appropriate, identify and include the minimum BMPs to be implemented (see above measures). A combination of structural and non-structural Best Management Practices (BMPs) from the California Stormwater BMP Handbook for New Development and Redevelopment (California Storm Water Quality Association), or other approved methods, shall be installed to effectively prevent the entry of pollutants from the project site into the storm drain system after development. **Plan Requirements:** The applicant/owner shall submit and implement a Storm Water Quality Management Plan (SWQMP). The SWQMP shall include the following elements: identification of potential pollutant sources that may affect the quality of the storm water discharges; the proposed design and placement of structural and non-structural BMPs to address identified pollutants; a proposed inspection and maintenance program; and a method for ensuring maintenance of all BMPs over the life of the project. The approved measures shall also be shown on site, building and grading plans. Records of maintenance shall be maintained by the HOA for residential developments or landowners for commercial/industrial developments. **Timing:** Prior to approval of Land Use Permits/Coastal Development Permits, the SWQMP shall be submitted to P&D and Public Works.
Department, Water Resources Division. All measures specified in the plan shall be constructed and operational prior to occupancy clearance. Maintenance records shall be submitted to P&D on an annual basis prior to the start of the rainy season and for five years thereafter. After the fifth year the records shall be maintained by the landowner or HOA and be made available to P&D or Public Works on request.

**MONITORING:** P&D and Public Works, Water Resources Division shall site inspect prior to occupancy clearance to ensure measures are constructed in accordance with the approved plan and periodically thereafter to ensure proper maintenance.

Wat-23

Construction materials and waste such as paint, mortar, concrete slurry, fuels, etc. shall be stored, handled, and disposed of in a manner which minimizes the potential for storm water contamination. **Plan Requirements and Timing:** Bulk storage locations for construction materials and any measures proposed to contain the materials shall be shown on the grading plans submitted to P&D for review prior to approval of Land Use Permits/Coastal Development Permits.

**MONITORING** P&D shall site inspect prior to the commencement of, and as needed during all, grading and construction activities.

Wat-24

**Planner: This measure must be applied where there is storage of outdoor materials (NPDES Permit Requirement).** An outdoor material storage area refers to storage areas or facilities solely for the storage of materials. Improper storage of materials out of doors may provide an opportunity for toxic compounds, oil and grease, heavy metals, nutrients, suspended solids, and other pollutants to enter the storm water conveyance system. Where proposed project plans include outdoor material storage areas that could contribute pollutants to the storm water conveyance system, the following measures are required:

1) Materials with the potential to contaminate storm water must either be (a) placed in an enclosure such as, but not limited to, a cabinet, shed, or similar structure that prevents contact with runoff or spillage to the storm water conveyance system; or (b) protected by a secondary containment structure such as berm, dike, or curb and covered with a roof or awning.

2) The storage area must be paved and sufficiently impervious to contain leaks and spill or otherwise be designed to prevent discharge of leaks or spills into the storm water conveyance system.

**MONITORING:** P&D shall site inspect prior to occupancy clearance to ensure measures are constructed in accordance with the approved plan and periodically thereafter to ensure proper maintenance.
Planner: This measure must be applied where there is a trash storage area (NPDES Permit Requirement). A trash storage area is an area where a trash receptacle(s) or dumpsters are located. Loose trash and debris can be transported by forces of water or wind into storm water conveyance system. All trash container areas must meet the following requirements:

1) Trash container areas must divert drainage from adjoining paved areas.

2) Trash container areas must be protected and regularly maintained to prevent off-site transport of trash.

**MONITORING:** P&D shall site inspect prior to occupancy clearance to ensure measures are constructed in accordance with the approved plan and periodically thereafter to ensure proper maintenance.

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Planner: This measure must be applied for all automotive repair shops and maintenance bays (NPDES Permit Requirement). All automotive repair shops and maintenance bays shall meet the following requirements:

1) Repair/maintenance bays must be indoors or designed in such a way that doesn’t allow storm water run-on or contact with storm water runoff.

2) Design a repair/maintenance bay drainage system to capture all wash-water, leaks and spills. Connect drains to a sump for collection and disposal. Direct connection of the repair/maintenance bays to the storm drain system is prohibited. If required by local Sanitary District, obtain an Industrial Waste Discharge Permit.

**MONITORING:** P&D shall site inspect prior to occupancy clearance to ensure measures are constructed in accordance with the approved plan and periodically thereafter to ensure proper maintenance.

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Planner: This measure must be applied for all commercial vehicle/equipment wash areas (NPDES Permit Requirement). All vehicle/equipment washing/steam cleaning areas must be self-contained and/or covered, equipped with a clarifier or other pretreatment facility, and properly connected to a sanitary sewer or other appropriately permitted disposal facility.

**MONITORING:** P&D shall site inspect prior to occupancy clearance to ensure measures are constructed in accordance with the approved plan and periodically thereafter to ensure proper maintenance.

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Planner: This measure must be applied for all restaurants and commercial food handling facilities (NPDES Permit Requirement). All outdoor equipment/accessory washing/steam cleaning must provide an
area for the washing/steam cleaning of equipment and accessories. The area must be self contained, equipped with a grease trap, and properly connected to a sanitary sewer. If the wash area is located outdoors, it must be covered, paved, have secondary containment, and be connected to the sanitary sewer or other appropriately permitted disposal facility.

**MONITORING:** P&D shall site inspect prior to occupancy clearance to ensure measures are constructed in accordance with the approved plan and periodically thereafter to ensure proper maintenance.

*Planner: This measure must be applied for all loading/unloading dock areas including commercial and automotive repair shops (NPDES Permit Requirement).* The following design criteria are required for all loading/unloading dock areas:

1) Cover loading dock areas or design drainage to minimize run-on and runoff of storm water.

2) Direct connections to storm drains from depressed loading docks (truck wells) are prohibited.

**MONITORING:** P&D shall site inspect prior to occupancy clearance to ensure measures are constructed in accordance with the approved plan and periodically thereafter to ensure proper maintenance.
Three Step Process

**STEP 1: Identify Project Type (per General Permit)**
1. Residential development equal to or greater than 1.0 acre
2. Commercial, industrial, and transportation / vehicle facilities which are 0.5 acres or greater
3. Single-Family Hillside Residents
4. Automotive Repair Shops
5. Retail Gasoline Outlets
6. Restaurants
7. Home Subdivisions with 10 or more housing units
8. Parking lots 5,000 square feet or more or with 25 or more parking spaces and potentially exposed to storm water runoff

**STEP 2: Identify SOURCE CONTROL / SITE DESIGN BMPs**

| Trash storage | • Adjoining drainage shall be redirected, trash container areas screened or walled. |
| Material storage | • Materials placed in enclosure, storage area paved and impervious, covered with roof or awning. |
| Loading docks | • Cover loading dock, design drainage to minimize run-on and runoff, direct connections to storm drains from truck wells prohibited. |
| Vehicle maintenance / repair | • Repair bays must be indoors or otherwise prevent storm water contact. |
| | • Repair bays must capture all washwater, leaks and spills, drain to sump for collection and proper disposal. |
| Vehicle or equipment wash | • Wash areas self-contained and/or covered, equipped w clarifier or pretreatment facility, proper connection to sanitary. |
| | • Wash areas self-contained, equipped with grease trap, properly connected to sanitary. If outdoors, must be covered, paved, secondary containment, and connected to sanitary or other approved disposal. |
| Fueling | • Fueling areas covered with overhanging roof structure or canopy, canopy minimum dimension equal to or greater than dispensing area within grade break, canopy cannot drain onto fuel dispensing area, canopy downsputs prevent drainage across fueling area, |
| | • Dispensing area paved with Portland cement concrete or equivalent, 2% to 4% slope to prevent ponding, separated from rest of site by grade break. Dispensing area must be 6.5 feet from corner each fuel dispenser or length at which hose and nozzle assembly operated plus 1 foot, whichever is less. |
| Runoff from impervious areas: | • Conserve natural areas (concentrate or cluster development, limit clearing and grading to minimum amount needed, maximize trees and vegetation, plant additional vegetation, cluster tree areas, promote use native or drought tolerant plants, promote landscaped areas, preserve wetlands and riparian areas) |
| >1.0 ac residential | • Minimize pollutants of concern |
| >10 units residential | • Protect slopes and channels (convey runoff safely, use natural drainage, stabilize channel crossings, vegetate slopes, install energy dissipators to minimize erosion) |
| >0.5 ac commercial | • Provide storm drain stencil |
| >25 or more parking stalls | • Post-development peak Q shall not exceed pre-development peak Q (Flood Control Conditions) |
| >5,000 sf parking on erodable slopes (>20%) | |

**STEP 3: Treat and detain/retain remaining runoff**
Per Public Works Water Resources (Flood Control / Cleanwater)
DATE: November 27, 2006

MEMO TO: Steve Mason, Deputy Director, Planning and Development
        Zorida Abresch, Deputy Director, Planning and Development

FROM: Tom Fayram, Deputy Public Works Director

CC: Phil Demery, Public Works Director
    Ron Cortez, Deputy County Executive Officer
    Michael Ledbetter, Deputy County Counsel

RE: Coordination on Water Quality BMPs

As you know, the County is required to regulate new development and redevelopment projects under the NPDES Storm Water General Permit. Most of the NPDES requirements are addressed directly by your staff through standard conditions of approval (Attachment 1). One NPDES requirement not addressed by P&D is the treatment of runoff from certain categories of development (Attachment 2). This requirement is addressed by Public Works through the County of Santa Barbara's Standard Conditions for Project Plan Approval for Water Quality BMPs (Attachment 3).

Since June, 2004, Water Resources staff has issued the conditions and provided review and approval of project submittals. In order to improve the implementation of these conditions, I would like your staff to implement the following practice:

Prior to issuing the completeness letter to the applicant, the treatment control measures must be adequately addressed on the project Grading & Drainage Plans or other appropriate submittal, by demonstrating how the project will meet our Standard Conditions.

To do this, the applicant must calculate runoff from the design storm and define how the project will treat that runoff. For example, if the proposal includes use of bioswales, bioretention, or detention, then the location of those areas would have to be identified and sized accordingly. Similarly, if the proposal includes a manufacturer's control device, the location and type of the filter should be identified.

25. Application Completeness
This clarification on a completeness item will prevent applicants from waiting until after decision maker hearings when it often too late to adequately address this condition. These measures are best addressed up-front during plan check and will, in the long run, make the process easier for both the applicant and the County.
Example for Completeness Letter

Stormwater Runoff. The County Board of Supervisors has adopted new interpretive and implementation guidelines for County policies to protect water quality from the long-term impacts of development. New projects must incorporate appropriate Best Management Practices (BMPs) into the project design to minimize water quality impacts to the maximum extent practical. In order of preference these BMPs are:

- site planning to avoid, protect, and restore sensitive areas (e.g., wetlands and riparian corridors);
- minimizing impervious surfaces and directly connected impervious surfaces, using existing natural features to allow for on-site infiltration of water;
- use of vegetative treatment (e.g., bio-swales, vegetative buffers, constructed or artificial wetlands);
- mechanical or structural treatment (e.g., storm drain filters and inserts).
- Combinations of the measures listed above.

In order to assure that adequate space is reserved to incorporate the necessary treatment control measures, please submit project Grading & Drainage Plans (or other appropriate submittal) that address how the project will meet the Santa Barbara County Standard Conditions for Project Plan Approval – Water Quality BMPs consistent with these policy objectives. These plans or submittals shall be provided to Santa Barbara County Public Works, Water Resources Division, for review and approval of completeness. More information, including level of detail needed for application completeness, can be found at: http://www.sbprojectcleanwater.org/post_construction.html Please contact Cathleen Garnand at (805) 568-3561 if you have any questions about these requirements.
1. What is MEP? How is it defined?

MEP is the acronym for Maximum Extent Practicable. The federal Clean Water Act (CWA) provides that National Pollutant Discharge Elimination System (NPDES) permits for Municipal Separate Storm Sewer Systems (MS4) must require municipalities to reduce pollutants in their storm water discharges to the MEP. (CWA §402(p)(3)(B).) MS4 permits "shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods." (Id.)

The MEP standard involves applying best management practices (BMPs) that are effective in reducing the discharge of pollutants in storm water runoff. In discussing the MEP standard, the State Board has said the following: "There must be a serious attempt to comply, and practical solutions may not be lightly rejected. If, from the list of BMPs, a permittee chooses only a few of the least expensive methods, it is likely that MEP has not been met. On the other hand, if a permittee employs all applicable BMPs except those where it can show that they are not technically feasible in the locality, or whose cost would exceed any benefit to be derived, it would have met the standard. MEP requires permittees to choose effective BMPs, and to reject applicable BMPs only where other effective BMPs will serve the same purpose, the BMPs would not be technically feasible, or the cost would be prohibitive." (Order No. WQ 2000-11, at p.20.) MEP is the result of the cumulative effect of implementing, continuously evaluating, and making corresponding changes to a variety of technically and economically feasible BMPs that ensures the most appropriate controls are implemented in the most effective manner. This process of implementing, evaluating, revising, or adding new BMPs is commonly referred to as the iterative approach (see question 4). For Small MS4s, EPA has stated that pollutant reductions to the MEP will be realized by implementing BMPs through the six minimum measures described in the permit. (64 Federal Register 68753.)

Source: SWRCB (updated 8/5/04)
http://www.swrcb.ca.gov/stormwtr/smallms4faq.html
Low Impact Development (LID)
A Sensible Approach to Land Development and Stormwater Management

What is Low Impact Development (LID)?

LID is an alternative method of land development that seeks to maintain the natural hydrologic character of the site or region. The natural hydrology, or movement of water through a watershed, is shaped over centuries under location-specific conditions to form a balanced and efficient system. When hardened surfaces such as roads, parking lots, and rooftops are constructed, the movement of water is altered; in particular, the amount of runoff increases and infiltration decreases. This results in increased peak flow rate and volume, and pollution levels in stormwater runoff. LID designs with nature in mind: working with the natural landscape and hydrology to minimize these changes. LID accomplishes this through source control, retaining more water on the site where it falls, rather than using traditional methods of funneling water via pipes into local waterways. Both improved site design and specific management measures are utilized in LID designs. LID has been applied to government, residential, and commercial development and redevelopment, and has proven to be a cost-efficient and effective method for managing runoff and protecting the environment.

Using LID Tools in Residential Development

**Natural Drainage Flow**
Reduces need for grading and constructed drainage systems by building houses in a location that permits preservation of natural pattern of stormwater drainage.

**Preserved Native Vegetation**
Enhances the aesthetic quality of community and improves the evapotranspiration rate.

**Bioretention Cell or Rain Garden**
Depressions that contain soil amendments that promote infiltration of stormwater.

**Porous Pavement**
Concrete that allows rain to infiltrate, thereby reducing runoff and promoting groundwater recharge.

**Amended Soil**
Soil enriched with sand and organic materials increases the capacity of soil to infiltrate water.

**Reduced Hardscape**
Narrower streets, sidewalks, and driveways increases pervious areas and open spaces.

**Grassy Swale**
Vegetated channels that slow stormwater runoff and promotes infiltration, traps sediment, and helps treat pollutants.

Diagram adapted from Prince George’s County Maryland Low-Impact Development Design Strategies
Historically, in the U.S., the motto for stormwater management has been “conveyance,” move water away from the site where it falls as quickly and efficiently as possible. Traditional management tools include street gutters and curbs, pipes, and canals to remove water from the developed areas. To receive this increased volume, creeks and rivers are re-shaped and lined with concrete. Detention ponds, some with water quality filtration devices, regulate discharge to reduce peak flow impacts on receiving waters. For the most part, these practices reduce flood impacts, but do not completely address water quality, and aquatic and riparian habitat degradation issues.

In contrast with the traditional approaches, the guiding principle of low impact development approaches is not conveyance; it is “source control and Infiltration”. LID techniques seek to maximize the area available for infiltration so that runoff volume and pollutant concentrations are reduced. This is achieved through a variety of site design and engineered infiltration techniques. Site design techniques include locating open spaces in low-lying areas to serve as a detention/retention basin and avoid development on permeable soils to promote infiltration and groundwater recharge. Engineered techniques include the use of grassy swales, bioretention cells, and porous pavement.

### LID Benefits

**Water Quality**
- Contributes to groundwater recharge through infiltration
- Improves surface water quality
- Protects stream and lake quality from large volumes of polluted runoff

**Meets Clean Water Act Requirements**
- Source control reduces the pollutant level and volume of runoff entering a water body, complying with National Pollutant Discharge Elimination System (NPDES) and anti-degradation policy.
- This also aids in complying with 401 certification requirements

**Flood Control**
- Reduces frequency & severity of floods
- Reduces peak flow volume & velocity

**Habitat Protection**
- Preserves stream & riparian habitats
- Preserves regional trees & vegetation
- Reduces eroded sediment loading into streams & lakes

**Community Value**
- Increases aesthetics and recreational opportunities in protected riparian habitats
- Increases land value by having a cleaner environment
- Increases public/private collaborative partnerships

### LID Challenges

**Lack of Information**
- Many municipal planners, consultants and the general public are unfamiliar with the benefits of LID practices and how to utilize them in different environments.

**Inflexible Regulations/Ordinances**
- Existing rules often lack the flexibility to implement LID solutions

**Maintenance**
- Some LID tools require maintenance by homeowners and local public works departments to function properly

**Presence of Contaminants**
- Use of filtration practices can threaten groundwater quality if high levels of soil contaminants are present.

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The **economic benefits** of LID include:
- Reduced costs of stormwater infrastructure, including curbs and gutters
- Reduced stormwater utility fees
- Increased land value
- Decreased spending on current and future environmental conservation programs

Specific cost savings vary on a case by case basis. There can be **additional costs**:
- Higher installation costs for certain soil types and gradients
- Increased landscape maintenance costs

<table>
<thead>
<tr>
<th>Issue</th>
<th>Savings</th>
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</thead>
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<tr>
<td>Higher Lot Value</td>
<td>$3000 more per lot</td>
</tr>
<tr>
<td>Lower Cost Per Lot</td>
<td>$4800 less cost per lot</td>
</tr>
<tr>
<td>Enhanced Marketability</td>
<td>80% of lots sold in first year</td>
</tr>
<tr>
<td>Added Amenities</td>
<td>23.5 acres of green-space/parks</td>
</tr>
<tr>
<td>Recognition</td>
<td>National, state, and professional</td>
</tr>
<tr>
<td>Total Economic Benefit</td>
<td>Over $2,200,000 added to profit</td>
</tr>
</tbody>
</table>

The above table, from Gap Creek residential subdivision, Sherwood, AR, illustrates the financial benefits of using LID methods. Tyne & Associates, North Little Rock, AR
Addressing LID Implementation Challenges

Solutions

Clay Soils/Limited Space
The combination of clay soils and small lot sizes can work well together. As clays are naturally less pervious, less engineering and land is required to achieve predevelopment infiltration rates. Use integrated stormwater management techniques, a combination of traditional and LID approaches. Significant stormwater runoff reduction can still be achieved.

Local Codes Aren’t LID-friendly
Revise local codes & ordinances to support use of LID techniques. Check out the Center for Watershed Protection’s website for suggested guidelines (www.cwp.org/COW_worksheet.hmt).

Don’t know what would work and where
Educate planning & public works staff. Numerous references are available on the use of LID in a variety of settings (see Online References).

Some communities that have found solutions

Hercules has modified stormwater management guidelines that fit LID principles, city codes that allow administrative approval for LID projects, and limited street lengths.

Contra Costa incorporated LID measures into their Standard Urban Stormwater Management Plan (SUSMP) for new development (http://www.ccleanwater.org/construction/nd.php). Sacramento, likewise, is publishing their own design manual in Fall, 2006 that includes LID measures.

San Diego has new parking standards for intensive commercial zones that include smaller parking spaces and driveways, plus new guidelines requiring reduced imperviousness for parking spaces.

Santa Monica encourages LID by requiring that all new developments and substantial remodels submit an "Urban Runoff Mitigation Plan", and reduce projected runoff for the site by 20%. The city recommends LID technologies.

LID as a Re-design Strategy

Retrofit a Parking Lot to increase permeability.
Over sixty-five percent of impervious areas are associated with "habitat for cars". Using porous pavement in parking lots is a simple way to increase infiltration and reduce runoff. When the US Navy Yard in Washington, D.C. needed to repave its parking lot, they used porous pavers. They also added bioretention cells to the landscaped areas and disconnected downsprouts. The re-design did not alter the amount of parking spots, but reduced peak runoff and pollution, thus protecting and helping to restore the Anacostia and Potomac Rivers and the Chesapeake Bay.

Porous pavement covers about 1/3 of each parking space in the D.C. Navy Yard parking lot.

Alter street design to increase infiltration.
In a landmark project in Seattle, the Street Edge Alternative or SEA project involved building vegetated swales, bioretention cells, and narrower streets without curbs to promote an effective drainage and filtration system. The system reduced peak runoff for the 2 year flood event by 98%, and is capable of conveying the 25 year flood event. The local watershed provides spawning habitat for endangered salmon. The project was so successful that similar ones are being planned throughout the city.

LID street design: vegetated swales, no curbs, and narrower streets promote infiltration of stormwater.

Replace lawns with rain gardens.
Rain gardens are small bioretention cells landscaped with plants, trees, and grasses. They are a particularly good way for individual homeowners to enhance their landscaping while protecting water quality. By planting easy-care native wildflowers, hardy perennials and grasses, attractive gardens can be constructed that have the added environmental benefits. More information on rain gardens is available at: http://www.healthylandscapes.org/raingarden.htm. Information on plants compatible for use in a California rain garden is posted at: http://www.bbg.org/gar2/topics/design/2004sp_raingardens.html.

Rain garden in a small backyard that collects runoff from roof and patio.

30. Low Impact Development
LID is more than a collection of engineered tools. It is a comprehensive design technique incorporating site planning and integrated management measures. LID design principles include:

- Extensive site assessment of hydrology, topography, soils, vegetation and water features;
- Higher density, clustered housing preserving open spaces to facilitate infiltration and protect habitats;
- Street layout that minimizes road length and width, calms traffic while allowing safe access of emergency vehicles.

In this example, LID design reduces imperviousness by changing the cul-de-sac design, reducing street width and lot size, and instead clustering houses around common green spaces that also serve as infiltration sites and preserving natural features.

Examples of LID

- **Filter strip**
  - Water flow
  - Detention & infiltration zone
  - Amended soil
  - Under-drainage pipe

- **Rain Gardens** and grass swales between houses are used at Doughies Ranch, Granite Bay, CA to catch and filter runoff from roofs and driveways before entering a local stream.

- **Curb Cuts** permit stormwater to flow into grassy swales to reduce roadway contaminants that flow into nearby waterways. They can also be used in existing landscaped areas.

- **Hollywood Driveways** have a dividing strip of grass in order to reduce the amount of impervious surface. Another way to reduce driveway space is to share one with a neighbor.

Online Resources

- Low Impact Development Center: [www.lowimpactdevelopment.org](http://www.lowimpactdevelopment.org)
- U.S. Environmental Protection Agency: [www.epa.gov/owow/nps/urban.html](http://www.epa.gov/owow/nps/urban.html)
- Stormwater Manager's Resource Center: [www.stormwatercenter.net](http://www.stormwatercenter.net)
- National NEMO Network: [www.remonet.uconn.edu](http://www.remonet.uconn.edu)
- LID Urban Design Tools: [www.lidstormwater.net](http://www.lidstormwater.net)
- California Stormwater Quality Association: [www.cabmpoffandbooks.com](http://www.cabmpoffandbooks.com)

Prepared by Office of Environmental Health Hazard Assessment & the California Water & Land Use Partnership (CA WALUP)

Written by E. Ruby & D. Gillespie, student interns, OEHHA. For more information contact Barbara Washburn: bwashburn@oehha.ca.gov.

CA WALUP is an educational program for land use decision makers addressing the relationship between land use and natural resource protection. The CA WALUP is a Charter Member of the National NEMO Network. CA WALUP website: [http://cawalup.usc.edu](http://cawalup.usc.edu)
How Urbanization Affects the Water Cycle

Why is the Water Cycle Important?

The water cycle, also known as the hydrological cycle, is the continuous exchange of water between land, waterbodies, and the atmosphere. Approximately 97% of the earth's water is stored in the oceans, and only a fraction of the remaining portion is usable freshwater. When precipitation falls over the land, it follows various routes. Some of it evaporates, returning to the atmosphere, some seeps into the ground, and the remainder becomes surface water, traveling to oceans and lakes by way of rivers and streams. Impervious surfaces associated with urbanization alter the natural amount of water that takes each route. The consequences of this change are a decrease in the volume of water that percolates into the ground, and a resulting increase in volume and decrease in quality of surface water. These hydrological changes have significant implications for the quantity of fresh, clean water that is available for use by humans, fish and wildlife.

MORE WATER FASTER

DEVELOPED LANDS
Rain pours more quickly off of city and suburban landscapes, which have high levels of impervious cover

NATURAL LANDS
Trees, brush, and soil help soak up rain and slow runoff in undeveloped landscapes

Figure 1 (left) illustrates how impervious cover and urban drainage systems increase runoff to creeks and rivers. The larger volume, velocity and duration of flow acts like sandpaper on stream banks, intensifying the erosion and sediment transport from the landscape and stream banks. This often causes channel erosion, clogged stream channels, and habitat damage.

Channelized rivers and streams exhibit similar problems accommodating large peak runoff volumes and supporting aquatic ecosystems.

Graphic Sacramento Bee

Figure 2 The hydrograph (left) illustrates stormwater peak discharges in a urban watershed (red line) and a less developed watershed (yellow line). In watersheds with large amounts of impervious cover, there is a larger volume and faster rate of discharge than in less developed watersheds, often resulting in more flooding and habitat damage.

Adapted from Santa Clara Hydromodification Management Plan

31. Low Impact Development
Figure 2: How impervious cover affects the water cycle

With natural ground cover, 25% of rain infiltrates into the soil for evaporation and transpiration, and only 10% goes as runoff. As imperviousness increases, less water infiltrates and more ends up as runoff. In highly urbanized areas, over one-half of all rain becomes surface runoff and deep infiltration is only a fraction of what it was naturally.

The increase in surface runoff requires increased infrastructure to minimize flooding. Natural waterways end up being used as drainage channels, which are frequently lined with rocks or concrete to move water faster and prevent erosion.

In addition, as deep infiltration decreases, the water table drops, reducing groundwater for wetlands, riparian vegetation, wells, and other uses.

Figure 3: Relationship between imperviousness and stream quality

In most cases, when impervious cover (IC) is less than 10% of a watershed, streams remain healthy. Above 10% impervious cover, common signs of stream degradation are evident. They include:

- Excessive stream channel erosion (bed and bank)
- Reduced groundwater recharge
- Increased size and frequency of 1-2 year floods
- Decreased movement of groundwater to surface water
- Loss of streambank tree cover
- Increased contaminants in water
- Increased fine sediment in stream bed
- Overall degradation of the aquatic habitat

Pictures from different reaches of Secret Ravine Creek, Placer County, California
Figure 4. Conceptual relationship between IC and stream habitat quality.

Between 10 – 25% imperviousness, major alterations in stream morphology occur that significantly reduce habitat quality. At greater than 25% impervious cover, streams suffer from loss of habitat, floodplain connectivity, and bank stability, as well as decreased water quality.

California Examples

Studies on urban streams across California have consistently found similar patterns of degradation. For example, in Los Penasquitos Creek in San Diego County, watershed development grew from 9% to 37% urbanization between 1966-2000. From 1973-2000, the total annual urban runoff in the upper watershed increased by 4% per year, resulting in more than a 100% increase in runoff for the measured time period. The flood magnitude for the 1-2 year storm also increased by more than 5 fold from 1965-2000.

Figure 5. Comparison of Pre- and Post-Development Flow Conditions, Thompson Creek, Santa Clara Valley, CA.

The impact of 44% impervious cover on a variety of hydrological parameters on Thompson Creek were predicted during a random seven-day period. 50 years worth of data was used in the modeling process. The most obvious difference between the pre and post development conditions is the significantly greater volume of runoff generated after development, as seen in the above graph. Whereas pre-development flows were typically at flow rates that would not cause bank erosion (green line), post-development flows mainly exceeded the flow needed to destabilize stream banks. Further, post-development flows, in contrast to pre-development flows, would regularly exceed the historic 2-year storm event.

The impacts of these altered conditions are degradation of the aquatic habitat and increased frequency of flood events. In the Thompson Creek sub-watershed, hydrologists also found that the increased imperviousness associated with development approximately doubled stormwater runoff for peak discharges for 2, 5, and 10-year storm event. Results in this watershed and elsewhere have shown that the 0 – 10 year storms are the events that overwhelmingly alter the shape and size of streams. Thus, doubling of the rate of runoff will have significant impacts on aquatic resources as well as the risk of flooding.

-3-

32. Low Impact Development
Increased impervious cover associated with urbanization alters the natural cycling of water. Changes in the shape and size of urban streams, followed by decreased water quality, are the most visible effects of increased imperviousness. Greater frequency and severity of flooding, channel erosion, and destruction of aquatic habitat commonly follow watershed urbanization. Alterations in the aquatic environment associated with these hydrological changes greatly compromise the normal functioning of our waterways.

Resources on the Web

Center for Watershed Protection
www.cwp.org

State Water Resources Control Board (NPS Encyclopedia)
www.waterboards.ca.gov/nps/encyclopedia.html

National NEMO Network
http://nemonet.uconn.edu/

Low Impact Development Center
www.lowimpactdevelopment.org/

EPA information on hydrological cycle
www.epa.gov/seahome/groundwater/src/cycle.htm

The Stormwater Manager’s Resource Center
www.stormwatercenter.net

References
TEN BASIC PRINCIPLES

(From Erosion & Sediment Control Handbook by Goldman, Jackson and Bursztynsky, 1986, McGraw-Hill)

☑ FIT DEVELOPMENT TO THE TERRAIN

☑ TIME GRADING AND CONSTRUCTION TO MINIMIZE SOIL EXPOSURE

☑ RETAIN EXISTING VEGETATION WHEREVER FEASIBLE

☑ VEGETATE AND MULCH DENUDED AREAS

☑ DIVERT RUNOFF AWAY FROM DENUDED AREAS

☑ MINIMIZE LENGTH AND STEEPNESS OF SLOPES

☑ KEEP RUNOFF VELOCITIES LOW

☑ PREPARE DRAINAGE WAYS AND OUTLETS TO HANDLE CONCENTRATED OR INCREASED RUNOFF

☑ TRAP SEDIMENT ON SITE

☑ INSPECT AND MAINTAIN EROSION CONTROL MEASURES DURING CONSTRUCTION
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD - SAN DIEGO REGION
WATERSHED MANAGEMENT PROGRAM

FACILITY INSPECTION REPORT

INSPECTION DATE: October 5, 2007 TIME: 9 am WDID: 9 37C322900

FACILITY REPRESENTATIVE(S) PRESENT DURING INSPECTION: none

North County Transit District
NAME OF OWNER, AGENCY OR PARTY RESPONSIBLE FOR DISCHARGE

Sprinter Rail Project
FACILITY OR DEVELOPER NAME (if different from owner)

808 Rancheros Drive
FACILITY STREET ADDRESS

APPPLICABLE WATER QUALITY LICENSING REQUIREMENTS
☐ MS4 URBAN RUNOFF REQUIREMENTS NPDES NOS. CAS0108758, CAS0108740 or CAS0108756
☒ GENERAL PERMIT ORDER NO. 99-08-DWQ, NPDES NO. CAS000002 - CONSTRUCTION
☐ GENERAL PERMIT ORDER NO. 99-06-DWQ, NPDES NO. CAS000003 - CALTRANS
☐ GENERAL OR INDIVIDUAL WASTE DISCHARGE REQUIREMENTS
☐ GENERAL OR INDIVIDUAL WAIVER OF WASTE DISCHARGE REQUIREMENTS
☐ SECTION 401 WATER QUALITY CERTIFICATION
☐ CWC SECTION 13264

INSPECTION TYPE (Check One)

A1 ☐ “A” type compliance—Comprehensive inspection in which samples are taken. (EPA Type S)
B1 ☒ “B” type compliance—A routine nonsampling inspection. (EPA Type C)
02 ☐ Noncompliance follow-up—Inspection made to verify correction of a previously identified violation.
03 ☒ Enforcement follow-up—Inspection made to verify that conditions of an enforcement action are being met.
04 ☒ Complaint—Inspection made in response to a complaint.
05 ☐ Pre-requisite—Inspection made to gather info. relative to preparing, modifying, or rescinding requirements.
06 ☐ No Exposure Certification (NEC) - verification that there is no exposure of industrial activities to storm water.
07 ☐ Notice of termination request for industrial facilities or construction sites - verification that the facility or construction site is not subject to permit requirements (Type, NOT I or NOT C - circle one).
08 ☐ Compliance Assistance Inspection - Outreach inspection due to discharger's request for compliance assistance.

INSPECTION FINDINGS

☐ Y Were violations noted during this inspection? (Yes/No/Pending Sample Results)
☐ N Were samples taken? (N=no) IF YES then, G= grab or C= Composite and attach a copy of the sample results/chain of custody form

I. COMPLIANCE HISTORY:

Notice of Violation (NOV) No. R9-2007-0050 was issued on March 19, 2007 for construction storm water permit violations including discharge of sediment, and inadequate BMPs.

NOV No. R9-2007-0063 was issued on April 3, 2007 for construction storm water permit violations including discharge of sediment and inadequate BMPs.

Administrative Civil Liability No. R9-2007-0093 was issued on August 31, 2007 for construction storm water permit violations including discharge of sediment, inadequate BMPs, and inadequate inspections.
II. FINDINGS

On October 5, 2007, Ben Neill, Peter Peuron, and Lee Shenk of the Regional Board’s Central Watershed Unit inspected the North County Transit District’s (NCTD) construction of the Sprinter Rail. The inspection observed construction activities along:

1. Washington Avenue, Escondido
2. Nordahl Road Station and along Barham Drive, Escondido
3. Barham Drive, near Shelley Drive, San Marcos,
4. Palomar station, San Marcos
5. Mar Vista drive storage yard, Vista
6. Melrose Drive station, Oceanside
7. Rancho del Oro station, Oceanside and
8. College Blvd station, Oceanside.

The National Weather Service’s website for the San Diego Region forecast a 20% chance of rainfall on the day of the inspection. Weather was gray and overcast with some light sprinkles in the morning. Later after noon, the skies were partly cloudy with no rainfall. No notice was given on the inspection and NCTD representatives were not present during the inspection.

1. Washington Avenue in Escondido - The Sprinter tracks are south of and parallel to Washington Avenue from Hale Avenue, going west under I-15 to Mission Road. A low drainage ditch runs along the north side of the tracks between Washington Avenue and the rail line. Marin landscaping was busy applying hydroseed for erosion control along this drainage ditch (Photo 1). At several locations, the drainage ditch has storm drain inlets that were not protected with sediment controls (Photos 2, 3, 4, 5, 9). The drainage ditch also had trash accumulated near the inlets (Photos 2, 4, 5). At the intersection of Washington Avenue and Mission Road, a large area of soil was exposed with no sediment control BMPs or soil stabilization (Photo 6). Along Washington Avenue, two storm drain inlets were observed with broken up gravel bags that have not been maintained (Photos 7, 8).

2. Nordahl Road Station and along Barham Drive in Escondido - This station construction is on the southwest corner of the intersection of Citracado Parkway and Mission Boulevard. The disturbed area is from Citracado Parkway extending west to Barham Drive. The tracks run along the south side of Mission Boulevard. The construction site entrance/exit to north Citracado Parkway was without best management practices (BMPs) such as gravel or shaker plates to prevent sediment tracking (Photo 10). A storm drain inlet south of the tracks and just west of Citracado Parkway had gravel bags that were broken and not maintained (Photo 11). Along the south side of the tracks, a silt fence was in disrepair in part and missing in some areas (Photos 12, 13, 14, 15). Construction material trash and debris was stored outside with no cover or containment south of the tracks (Photos 14, 15). Along the north side of the tracks next to Mission Boulevard, disturbed soil did not have sediment controls or soil stabilization (Photo 16). At Barham Drive, more construction trash and debris was stored outside without cover or containment (Photo 17). Along the southeast side of Barham Drive, fiber rolls and silt fences were destroyed beyond usefulness (Photos 18, 19). A row of gravel bags on the northwest side of Barham Drive had deteriorated to the point of being ineffective (Photo 20).

3. Barham Drive near Shelley Drive in San Marcos - This was one of the sites containing previous violations noticed in NOV R9-2007-0050 issued on March 19, 2007. A large area of disturbed soil was without any sediment controls or soil stabilization (Photo 21). In the middle of this disturbed area there was an unprotected storm drain (Photo 22).

4. Palomar College Station – This was one of the sites containing previous violations noticed in NOV R9-2007-0050 issued on March 19, 2007. This station is south of W. Mission Rd, and north of Armorlite Dr. in San Marcos, across Mission Rd, from Palomar College. The site houses trailers for NCTD and their contractors. A storm drain inlet at the Armorlite Drive entrance to the trailers has gravel bags that are destroyed to the point that the gravel appears to be entering the inlet (Photo 23). A portable toilet is nearby and silt fencing has been partially removed (Photo 24).

5. Mar Vista drive storage yard in Vista - This was one of the sites containing previous violations noticed in NOV R9-2007-0050 issued on March 19, 2007. This storage yard has a large soil stockpile that was not covered or contained to protect storm water runoff. Silt fence was not maintained around this stockpile. The silt fence was falling down on one side of the stockpile (Photo 25).
6. Melrose Drive station in Oceanside- This station is on the southwest corner of Melrose Drive and Oceanside Boulevard next to a convenience store. The headwaters to Loma Alta Creek flow adjacent to the south side of the tracks. This site did not have any erosion controls on slopes and fiber rolls were not implemented properly (Photos 26, 27, 28). The fiber rolls were not trenched in properly on a slope north of the tracks. A slope south of the tracks did not have the fiber rolls overlapping at the ends. The construction exit through the convenience store parking lot did not have any BMPs to prevent sediment tracking (Photo 29). At this exit a storm drain inlet was in the bare soil with no BMPs to protect it (Photo 30). The inlet has been repeatedly driven over tracking sediment into the inlet. At the western edge of the Melrose station construction, trash and debris was stored outside without cover or containment (Photo 31).

7. Rancho del Oro station in Oceanside - This station is bordered by Rancho del Oro Road to the east. Loma Alta Creek runs through the north of the station. A pedestrian bridge is being built over the creek to access the station. The construction site entrance/exit from Rancho del Oro Road does not have large gravel or shaker plates or a tire wash station to prevent sediment tracking onto the adjacent paved public road (Photo 32). The southern bank of Loma Alta creek does not have any erosion controls (Photo 33). This exposed bank appears to be vulnerable during high flow rates and volume. A storm drain along the west side of Rancho del Oro Road had a single gravel bag which appears to be inadequate to trap sediment from entering the inlet (Photo 34). Along the east side of Rancho del Oro Road, a fiber roll had not been maintained and was flattened from repeatedly being run over (Photo 35).

8. College Blvd Station in Oceanside - This station is next to Loma Alta Creek in a shopping center on the southwest corner of College Boulevard and Oceanside Boulevard. A pedestrian bridge is being built over Loma Alta creek. The creek's banks on either side of the pedestrian bridge have a silt fence at the base to provide sediment controls but is without erosion controls on the slope such as hydroseed or erosion control blankets (Photos 36, 39). These exposed banks appear to be vulnerable during post storm high flow rates. A portion of the shopping center's parking lot is used as a staging and storage area for construction activities. Significant sediment tracking was observed on the shopping center's paved parking lot (Photo 37). Soil stockpiles and construction trash storage was without cover and without containment (Photo 38).

The lack of erosion controls, sediment controls, sediment tracking BMPs, trash storage BMPs, and soil stockpile BMPs are all violations that were previously noticed in NOV No. R9-2007-0050 on March 19, 2007 and NOV No. R9-2007-0063 on April 3, 2007. The August 31, 2007 ACL was also assessed in part for these same BMP violations.

III. SIGNATURE SECTION

Peter Proun
STAFF INSPECTOR

October 5, 2007

Ben Neill
STAFF INSPECTOR

October 5, 2007

IV. (For internal use only)

Reviewed by Supervisor: ________________________ Date: 10/17/07

cc: Jeremy Johnstone (EPA), John Norton (SWRCB), City Storm Drain Enforcer

Inter-office Referral: 1) 2) 3) 4) 5)

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CIWQS

35. Enforcement
1. Crew hydroteeding drainage ditch. Photo looking north across the tracks.

Photos 1 through 9 were taken along West Washington Avenue in Escondido.

2. Storm drain inlet along the north side of the tracks is without sediment controls such as gravel bags. White trash is near the inlet. The drainage ditch was recently hydroteeded. Photo looking west.

3. Another storm drain inlet along the north side of the tracks is without sediment controls such as gravel bags. Photo looking west.

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4. Another storm drain inlet along the north side of the tracks is without sediment controls such as gravel bags. Trash in the drainage ditch. Photo looking west.

5. Another storm drain inlet along the north side of the tracks is without sediment controls such as gravel bags. Trash is in the drainage ditch. Photo looking east.

6. A large area of bare dirt has no sediment protections or soil stabilization. Photo is looking north.

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7. Storm drain inlet along the south side of Washington Avenue is without adequate storm drain inlet protection. The existing BMP has not been maintained. Photo looking south.

8. Storm drain inlet along the south side of Washington Avenue has BMPs that have not been maintained. Photo looking south.

9. Storm drain inlet on the north side of the tracks without any sediment protections. Photo is looking north.

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10. Construction site exit has no BMPs to prevent sediment tracking. Tracking is observed onto the adjacent paved public street, North Citracado Parkway. Photo looking north.

Photos 10 through 16 were taken at the Nordahl Road station construction in Escondido.

11. Storm drain inlet south of the tracks has BMPs that have not been maintained. Photo looking south.

12. Silt fencing has not been maintained along the south side of the tracks. Photo looking west.

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13. Silt fence south of the tracks is torn down and unmaintained. Photo looking south east.

14. Silt fence is unmaintained. Construction debris and trash is not protected from storm water. Photo looking south.

15. No silt fence is implemented in this area. Construction debris and trash is not protected from storm water. Photo looking south.
16. Bare soil north of the tracks does not have sediment controls or soil stabilization. Photo looking east.

Photos 17 through 20 were taken along Barham Dr. near the Mission Rd intersection on the border of the cities of San Marcos and Escondido.

17. Construction trash is not protected with BMPs from storm water. Photo looking east.

18. Sediment controls along the perimeter of south Barham drive have not been maintained. Photo looking north east.
19. A closer view of the poorly maintained BMPs in photo 18 shows that the silt fence and fiber roll are flattened. Photo looking north.

20. Gravel bags along north Barham Drive have not been maintained. Photo looking north.

Photos 21 and 22 were taken at the southeast corner of Barham drive and Shelly drive.

21. A large area of bare soil is without soil stabilization. A storm drain inlet sits in the middle of this bare area.

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22. A closer examination of the storm drain inlet in photo 21 shows that the inlet has no sediment controls protecting the inlet. Photo looking north east.

Photos 23 and 24 were taken at the Palomar station construction along Armorlite drive in San Marcos.

23. Storm drain inlet just north of Armorlite drive has unmaintained BMPs. Photo looking west.

24. Another view of the inlet in photo 23 shows the proximity of a portable toilet and silt fencing that has been partially removed. Photo looking north.
25. Silt fence around the soil stockpiles has not been maintained and has fallen down. Photo looking south.

Photos 26 through 31 were taken at the Melrose Drive station construction in Oceanside.

26. This slope north of the tracks does not have erosion controls in place. Fiber roll is not trenched in place. Photo looking west.

27. Slope south of the tracks does not have erosion controls. Photo looking north.
28. Fiber rolls on the slope in photo 27 are not overlapped. No erosion controls in place. Photo looking west.

29. Construction exit is without BMPs to prevent sediment tracking onto the adjacent paved area of the convenience store. Photo looking north west.

30. A storm drain inlet near the construction exit in photo 29 is without BMPs and sediment is falling into the drain. Photo looking west.

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31. Construction trash is stored outside with no cover or containment to prevent contact with storm water. Photo looking south.

32. Construction exit is without BMPs to prevent sediment tracking onto the adjacent paved street. Photo looking west.

33. Slope adjacent to Loma Alta Creek is without erosion controls such as bonded fiber matrix or erosion control blankets. Silt fence does not extend the length of the slope. Photo looking south west.
34. A storm drain inlet on the west side of Rancho del Oro Blvd. does not have adequate sediment controls and is not being maintained. Photo looking south.

35. Fiber rolls along the east of Rancho del Oro Blvd have not been maintained and are flattened. Disturbed soil has not been stabilized. Photo looking north.

Photos 36 through 39 were taken at the College Blvd Station in Oceanside.

36. Slope next to Loma Alta Creek does not have erosion controls implemented. Photo looking east.

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37. Sediment tracking from the College Station construction onto the paved parking lot of the shopping center. Photo looking east.

38. Material stockpiles and construction trash are stored without cover or containment. Photo looking north west.

39. Slope next to Loma Alta Creek pedestrian bridge abutment is without erosion controls. Photo looking west.
I. NPDES Municipal General Permit* requirements apply to County

II. P&D authority and practice
   a. Policy and policy interpretation*
   b. LUDEC* (35.30.180; 35.430.140 Montecito)
   c. CEQA Checklist
   d. Envt'l Thresholds & Guidelines Manual*
   e. Planner’s Guide to Conditions of Approval and Mitigation Measures*
   f. Procedures Manual

III. Need to provide “early certainty”* to applicants
   a. Three step process*
   b. Pre-application meetings
   c. Application requirements (Item N on application)
   d. Application completeness* treatment control

IV. Address Hillside Watershed Protection Policy #7 in Initial Study. MUST BE VERY CLEAR.
   a. Conserve natural areas (cluster, limit clearing, maximize vegetation, use vegetation for infiltration, preserve riparian/wetlands)
   b. Minimize pollutants (source control measures)
   c. Maintain hydrologic character (low impact development)
   d. Protect slopes and channels (convey safely, use natural drainage, stabilize channel, vegetate slopes, dissipate energy at outlets)
   e. Storm drain marking
   f. Proper design requirements (restaurants, commercial, vehicle maintenance, parking areas, loading docks, material storage, retail gasoline, equipment wash, trash storage)

V. Role of Public Works staff during dev review
   a. Flood Control addresses peak runoff
   b. Water Resources addresses treatment control

VI. Defining “Maximum Extent Practicable”
   a. Some Attachment 4 requirements are subjective
   b. Definition* is always changing, evolving
c. How state defines MEP for construction activities and new development (LID, minimum construction BMPs, examples of enforcement*)

d. P&D’s directive to require projects meet MEP

VII. Defining Low Impact Development*

a. Design approach to mimic pre-development hydrology

b. Currently a goal, not requirement, albeit directly addresses Attachment 4 requirements and County policy to protect resources.

C. Projects should always: minimize overall impervious, disconnect impervious, lengthen flow path (Tc), use vegetation to maximize infiltration

d. Recognize importance of landscaping and fine grading.

VIII. Planning Review Process common questions

a. When do I require a Stormwater Quality Management Plan? A: Projects that are “Significant”


c. Where can I find examples of our expectations, i.e., pictures, design guidance documentation, manuals, etc. A: www.sbprojectcleanwater.org


IX. Construction BMPs

a. Always provide for construction phase BMPs (See Ten Basic Principles*)

b. DRev augments the ESCP of Grading Permit by mitigating for potential impacts that might not be covered in standard construction BMP practices (e.g. proximity to natural drainage feature, sensitive species protection, upkeep and maintenance requirements, specifying on plans an area suitable for construction material cleaning)

c. Protection of storm drains during construction. Storm drains often installed first while construction activity continues. Also, vegetated systems (bioswales, bioretention) are highly sensitive during construction. Notes on plans must be specific: “protection until soils are stabilized”.

FACT SHEET
FOR
STATE WATER RESOURCES CONTROL BOARD (SWRCB)
WATER QUALITY ORDER NO. 2003 – 0005 – DWQ
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT NO. CAS000004
WASTE DISCHARGE REQUIREMENTS (WDRS)
FOR
STORM WATER DISCHARGES FROM
SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS (GENERAL PERMIT)

BACKGROUND

In 1972, the federal Water Pollution Control Act (also referred to as the Clean Water Act [CWA]) was amended to provide that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with a NPDES permit. The 1987 amendments to CWA added section 402(p), which established a framework for regulating storm water discharges under the NPDES Program. Subsequently, in 1990, the U.S. Environmental Protection Agency (U.S. EPA) promulgated regulations for permitting storm water discharges from industrial sites (including construction sites that disturb five acres or more) and from municipal separate storm sewer systems (MS4s) serving a population of 100,000 people or more. These regulations, known as the Phase I regulations, require operators of medium and large MS4s to obtain storm water permits. On December 8, 1999, U.S. EPA promulgated regulations, known as Phase II, requiring permits for storm water discharges from Small MS4s and from construction sites disturbing between one and five acres of land. This General Permit regulates storm water discharges from Small MS4s.

An “MS4” is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains): (i) designed or used for collecting or conveying storm water; (ii) which is not a combined sewer; and (iii) which is not part of a Publicly Owned Treatment Works (POTW). [See Title 40, Code of Federal Regulations (40 CFR) §122.26(b)(8).]

A “Small MS4” is an MS4 that is not permitted under the municipal Phase I regulations, and which is “owned or operated by the United States, a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity…” (40 CFR §122.26(b)(16)). Small MS4s include systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares, but do not include separate storm sewers in
Areas subject to high growth or serving a population of at least 50,000 must comply with the following provisions (for counties this threshold population applies to the population within the permit area).

A. RECEIVING WATER LIMITATIONS

1. Discharges shall not cause or contribute to an exceedance of water quality standards contained in a Statewide Water Quality Control Plan, the California Toxics Rule (CTR), or in the applicable RWQCB Basin Plan.

2. The permittees shall comply with Receiving Water Limitations A.1 through timely implementation of control measures and other actions to reduce pollutants in the discharges in accordance with the SWMP and other requirements of this permit including any modifications. The SWMP shall be designed to achieve compliance with Receiving Water Limitations A.1. If exceedance(s) of water quality objectives or water quality standards (collectively, WQS) persist notwithstanding implementation of the SWMP and other requirements of this permit, the permittees shall assure compliance with Receiving Water Limitations A.1 by complying with the following procedure:

a. Upon a determination by either the permittees or the RWQCB that discharges are causing or contributing to an exceedance of an applicable WQS, the permittees shall promptly notify and thereafter submit a report to the RWQCB that describes BMPs that are currently being implemented and additional BMPs that will be implemented to prevent or reduce any pollutants that are causing or contributing to the exceedance of WQSs. The report may be incorporated in the annual update to the SWMP unless the RWQCB directs an earlier submittal. The report shall include an implementation schedule. The RWQCB may require modifications to the report.

b. Submit any modifications to the report required by the RWQCB within 30 days of notification.

c. Within 30 days following approval of the report described above by the RWQCB, the permittees shall revise the SWMP and monitoring program to incorporate the approved modified BMPs that have been and will be implemented, implementation schedule, and any additional monitoring required.

d. Implement the revised SWMP and monitoring program in accordance with the approved schedule.

So long as the permittees have complied with the procedures set forth above and are implementing the revised SWMP, the permittees do not have to repeat the same procedure for continuing or recurring exceedances of the same receiving water limitations unless directed by the RWQCB to develop additional BMPs.

B. DESIGN STANDARDS
Regulated Small MS4s subject to this requirement must adopt an ordinance or other document to ensure implementation of the Design Standards included herein or a functionally equivalent program that is acceptable to the appropriate RWQCB. The ordinance or other document must be adopted and effective prior to the expiration of this General Permit or, for Small MS4s designated subsequent to the Permit adoption, within five years of designation as a regulated Small MS4.

All discretionary development and redevelopment projects that fall into one of the following categories are subject to these Design Standards. These categories are:

- Single-Family Hillside Residences
- 100,000 Square Foot Commercial Developments
- Automotive Repair Shops
- Retail Gasoline Outlets
- Restaurants
- Home Subdivisions with 10 or more housing units
- Parking lots 5,000 square feet or more or with 25 or more parking spaces and potentially exposed to storm water runoff

1. Conflicts With Local Practices
   Where provisions of the Design Standards conflict with established local codes or other regulatory mechanism, (e.g., specific language of signage used on storm drain stenciling), the Permittee may continue the local practice and modify the Design Standards to be consistent with the code or other regulatory mechanism, except that to the extent that the standards in the Design Standards are more stringent than those under local codes or other regulatory mechanism, such more stringent standards shall apply.

2. Design Standards Applicable to All Categories
   a. Peak Storm Water Runoff Discharge Rates
      Post-development peak storm water runoff discharge rates shall not exceed the estimated pre-development rate for developments where the increased peak storm water discharge rate will result in increased potential for downstream erosion.

   b. Conserve Natural Areas
      If applicable, the following items are required and must be implemented in the site layout during the subdivision design and approval process, consistent with applicable General Plan and Local Area Plan policies:

      1) Concentrate or cluster Development on portions of a site while leaving the remaining land in a natural undisturbed condition.
      2) Limit clearing and grading of native vegetation at a site to the minimum amount needed to build lots, allow access, and provide fire protection.
      3) Maximize trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native and/or drought tolerant plants.
4) Promote natural vegetation by using parking lot islands and other landscaped areas.
5) Preserve riparian areas and wetlands.

c. Minimize Storm Water Pollutants of Concern
Storm water runoff from a site has the potential to contribute oil and grease, suspended solids, metals, gasoline, pesticides, and pathogens to the storm water conveyance system. The development must be designed so as to minimize, to the maximum extent practicable, the introduction of pollutants of concern that may result in significant impacts, generated from site runoff of directly connected impervious areas (DCIA), to the storm water conveyance system as approved by the building official. Pollutants of concern consist of any pollutants that exhibit one or more of the following characteristics: current loadings or historic deposits of the pollutant are impacting the beneficial uses of a receiving water, elevated levels of the pollutant are found in sediments of a receiving water and/or have the potential to bioaccumulate in organisms therein, or the detectable inputs of the pollutant are at concentrations or loads considered potentially toxic to humans and/or flora and fauna.

In meeting this specific requirement, “minimization of the pollutants of concern” will require the incorporation of a BMP or combination of BMPs best suited to maximize the reduction of pollutant loadings in that runoff to the Maximum Extent Practicable. Those BMPs best suited for that purpose are those listed in the *California Storm Water Best Management Practices Handbooks*; *Caltrans Storm Water Quality Handbook: Planning and Design Staff Guide; Manual for Storm Water Management in Washington State; The Maryland Stormwater Design Manual; Florida Development Manual: A Guide to Sound Land and Water Management*; *Denver Urban Storm Drainage Criteria Manual, Volume 3 – Best Management Practices and Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters*, USEPA Report No. EPA-840-B-92-002, as “likely to have significant impact” beneficial to water quality for targeted pollutants that are of concern at the site in question. However, it is possible that a combination of BMPs not so designated, may in a particular circumstance, be better suited to maximize the reduction of the pollutants.

d. Protect Slopes and Channels
Project plans must include BMPs consistent with local codes, ordinances, or other regulatory mechanism and the Design Standards to decrease the potential of slopes and/or channels from eroding and impacting storm water runoff:

1) Convey runoff safely from the tops of slopes and stabilize disturbed slopes.
2) Utilize natural drainage systems to the maximum extent practicable.
3) Stabilize permanent channel crossings.
4) Vegetate slopes with native or drought tolerant vegetation, as appropriate.
5) Install energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable specifications to minimize erosion, with the approval of all agencies.
with jurisdiction, e.g., the U.S. Army Corps of Engineers and the California Department of Fish and Game.

e. Provide Storm Drain System Stenciling and Signage
Storm drain stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets. The stencil contains a brief statement that prohibits the dumping of improper materials into the storm water conveyance system. Graphical icons, either illustrating anti-dumping symbols or images of receiving water fauna, are effective supplements to the anti-dumping message. All storm drain inlets and catch basins within the project area must be stenciled with prohibitive language (such as: “NO DUMPING – DRAINS TO OCEAN”) and/or graphical icons to discourage illegal dumping. Signs and prohibitive language and/or graphical icons, which prohibit illegal dumping, must be posted at public access points along channels and creeks within the project area. Legibility of stencils and signs must be maintained.

f. Properly Design Outdoor Material Storage Areas
Outdoor material storage areas refer to storage areas or storage facilities solely for the storage of materials. Improper storage of materials outdoors may provide an opportunity for toxic compounds, oil and grease, heavy metals, nutrients, suspended solids, and other pollutants to enter the storm water conveyance system. Where proposed project plans include outdoor areas for storage of materials that may contribute pollutants to the storm water conveyance system, the following Structural or Treatment BMPs are required:

1) Materials with the potential to contaminate storm water must be: (1) placed in an enclosure such as, but not limited to, a cabinet, shed, or similar structure that prevents contact with runoff or spillage to the storm water conveyance system; or (2) protected by secondary containment structures such as berms, dikes, or curbs.
2) The storage area must be paved and sufficiently impervious to contain leaks and spills.
3) The storage area must have a roof or awning to minimize collection of storm water within the secondary containment area.

g. Properly Design Trash Storage Areas
A trash storage area refers to an area where a trash receptacle or receptacles (dumpsters) are located for use as a repository for solid wastes. Loose trash and debris can be easily transported by the forces of water or wind into nearby storm drain inlets, channels, and/or creeks. All trash container areas must meet the following Structural or Treatment Control BMP requirements (individual single family residences are exempt from these requirements):

1) Trash container areas must have drainage from adjoining roofs and pavement diverted around the area(s).
2) Trash container areas must be screened or walled to prevent off-site transport of trash.

h. Provide Proof of Ongoing BMP Maintenance
Improper maintenance is one of the most common reasons why water quality controls will not function as designed or which may cause the system to fail entirely. It is important to consider who will be responsible for maintenance of a permanent BMP, and what equipment is required to perform the maintenance properly. As part of project review, if a project applicant has included or is required to include, Structural or Treatment Control BMPs in project plans, the Permittee shall require that the applicant provide verification of maintenance provisions through such means as may be appropriate, including, but not limited to legal agreements, covenants, CEQA mitigation requirements and/or Conditional Use Permits.

For all properties, the verification will include the developer’s signed statement, as part of the project application, accepting responsibility for all structural and treatment control BMP maintenance until the time the property is transferred and, where applicable, a signed agreement from the public entity assuming responsibility for Structural or Treatment Control BMP maintenance. The transfer of property to a private or public owner must have conditions requiring the recipient to assume responsibility for maintenance of any Structural or Treatment Control BMP to be included in the sales or lease agreement for that property, and will be the owner’s responsibility. The condition of transfer shall include a provision that the property owners conduct maintenance inspection of all Structural or Treatment Control BMPs at least once a year and retain proof of inspection. For residential properties where the Structural or Treatment Control BMPs are located within a common area which will be maintained by a homeowner’s association, language regarding the responsibility for maintenance must be included in the project’s conditions, covenants and restrictions (CC&Rs). Printed educational materials will be required to accompany the first deed transfer to highlight the existence of the requirement and to provide information on what storm water management facilities are present, signs that maintenance is needed, how the necessary maintenance can be performed, and assistance that the Permittee can provide. The transfer of this information shall also be required with any subsequent sale of the property.

If Structural or Treatment Control BMPs are located within a public area proposed for transfer, they will be the responsibility of the developer until they are accepted for transfer by the County or other appropriate public agency. Structural or Treatment Control BMPs proposed for transfer must meet design standards adopted by the public entity for the BMP installed and should be approved by the County or other appropriate public agency prior to its installation.

i. Design Standards for Structural or Treatment Control BMPs
The Permittees shall require that post-construction treatment control BMPs incorporate, at a minimum, either a volumetric or flow based treatment control design standard, or both, as identified below to mitigate (infiltrate, filter or treat) storm water runoff:

1) Volumetric Treatment Control BMP
a) The 85th percentile 24-hour runoff event determined as the maximized capture storm water volume for the area, from the formula recommended in Urban Runoff Quality Management, WEF Manual of Practice No. 23/ASCE Manual of Practice No. 87, (1998); or
b) The volume of annual runoff based on unit basin storage water quality volume, to achieve 80 percent or more volume treatment by the method recommended in California Stormwater Best Management Practices Handbook – Industrial/Commercial, (2003); or
c) The volume of runoff produced from a historical-record based reference 24-hour rainfall criterion for "treatment" that achieves approximately the same reduction in pollutant loads achieved by the 85th percentile 24-hour runoff event.

2) Flow Based Treatment Control BMP
   a) The flow of runoff produced from a rain event equal to at least two times the 85th percentile hourly rainfall intensity for the area; or
   b) The flow of runoff produced from a rain event that will result in treatment of the same portion of runoff as treated using volumetric standards above.

Limited Exclusion
Restaurants and Retail Gasoline Outlets, where the land area for development or redevelopment is less than 5,000 square feet, are excluded from the numerical Structural or Treatment Control BMP design standard requirement only.

3. Provisions Applicable to Individual Priority Project Categories
   a. 100,000 Square Foot Commercial Developments
      1) Properly Design Loading/Unloading Dock Areas
         Loading/unloading dock areas have the potential for material spills to be quickly transported to the storm water conveyance system. To minimize this potential, the following design criteria are required:
            a) Cover loading dock areas or design drainage to minimize run-on and runoff of storm water.
            b) Direct connections to storm drains from depressed loading docks (truck wells) are prohibited.
      2) Properly Design Repair/Maintenance Bays
         Oil and grease, solvents, car battery acid, coolant and gasoline from the repair/maintenance bays can negatively impact storm water if allowed to come into contact with storm water runoff. Therefore, design plans for repair bays must include the following:
a) Repair/maintenance bays must be indoors or designed in such a way that
doesn't allow storm water runoff or contact with storm water runoff.
b) Design a repair/maintenance bay drainage system to capture all washwater,
leaks and spills. Connect drains to a sump for collection and disposal. Direct
connection of the repair/maintenance bays to the storm drain system is
prohibited. If required by local jurisdiction, obtain an Industrial Waste
Discharge Permit.

3) Properly Design Vehicle/Equipment Wash Areas
The activity of vehicle/equipment washing/steam cleaning has the potential to
contribute metals, oil and grease, solvents, phosphates, and suspended solids to
the storm water conveyance system. Include in the project plans an area for
washing/steam cleaning of vehicles and equipment. The area in the site design
must be:

a) Self-contained and/or covered, equipped with a clarifier, or other
pretreatment facility, and
b) Properly connected to a sanitary sewer or other appropriately permitted
disposal facility.

b. Restaurants

1) Properly Design Equipment/Accessory Wash Areas
The activity of outdoor equipment/accessory washing/steam cleaning has the
potential to contribute metals, oil and grease, solvents, phosphates, and suspended
solids to the storm water conveyance system. Include in the project plans an area
for the washing/steam cleaning of equipment and accessories. This area must be:

a) Self-contained, equipped with a grease trap, and properly connected to a
sanitary sewer.
b) If the wash area is to be located outdoors, it must be covered, paved, have
secondary containment, and be connected to the sanitary sewer or other
appropriately permitted disposal facility.

c. Retail Gasoline Outlets

1) Properly Design Fueling Area
Fueling areas have the potential to contribute oil and grease, solvents, car battery
acid, coolant and gasoline to the storm water conveyance system. The project
plans must include the following BMPs:

a) The fuel dispensing area must be covered with an overhanging roof structure
or canopy. The canopy's minimum dimensions must be equal to or greater
than the area within the grade break. The canopy must not drain onto the fuel
dispensing area, and the canopy downspouts must be routed to prevent
drainage across the fueling area.
b) The fuel dispensing area must be paved with Portland cement concrete (or equivalent smooth impervious surface), and the use of asphalt concrete shall be prohibited.

c) The fuel dispensing area must have a 2% to 4% slope to prevent ponding, and must be separated from the rest of the site by a grade break that prevents run-on of storm water to the extent practicable.

d) At a minimum, the concrete fuel dispensing area must extend 6.5 feet (2.0 meters) from the corner of each fuel dispenser, or the length at which the hose and nozzle assembly may be operated plus 1 foot (0.3 meter), whichever is less.

d. Automotive Repair Shops

1) Properly Design Fueling Area

Fueling areas have the potential to contribute oil and grease, solvents, car battery acid, coolant and gasoline to the storm water conveyance system. Therefore, design plans, which include fueling areas, must contain the following BMPs:

a. The fuel dispensing area must be covered with an overhanging roof structure or canopy. The canopy's minimum dimensions must be equal to or greater than the area within the grade break. The canopy must not drain onto the fuel dispensing area, and the canopy downspouts must be routed to prevent drainage across the fueling area.

b. The fuel dispensing area must be paved with Portland cement concrete (or equivalent smooth impervious surface), and the use of asphalt concrete shall be prohibited.

c. The fuel dispensing area must have a 2% to 4% slope to prevent ponding, and must be separated from the rest of the site by a grade break that prevents run-on of storm water to the extent practicable.

d. At a minimum, the concrete fuel dispensing area must extend 6.5 feet (2.0 meters) from the corner of each fuel dispenser, or the length at which the hose and nozzle assembly may be operated plus 1 foot (0.3 meter), whichever is less.

2) Properly Design Repair/Maintenance Bays

Oil and grease, solvents, car battery acid, coolant and gasoline from the repair/maintenance bays can negatively impact storm water if allowed to come into contact with storm water runoff. Therefore, design plans for repair bays must include the following:

a) Repair/maintenance bays must be indoors or designed in such a way that doesn't allow storm water run-on or contact with storm water runoff.

b) Design a repair/maintenance bay drainage system to capture all wash-water, leaks and spills. Connect drains to a sump for collection and disposal. Direct connection of the repair/maintenance bays to the storm drain system is
prohibited. If required by local jurisdiction, obtain an Industrial Waste Discharge Permit.

3) Properly Design Vehicle/Equipment Wash Areas
The activity of vehicle/equipment washing/steam cleaning has the potential to contribute metals, oil and grease, solvents, phosphates, and suspended solids to the storm water conveyance system. Include in the project plans an area for washing/steam cleaning of vehicles and equipment. This area must be:

a) Self-contained and/or covered, equipped with a clarifier, or other pretreatment facility, and properly connected to a sanitary sewer or other appropriately permitted disposal facility.

4) Properly Design Loading/Unloading Dock Areas
Loading/unloading dock areas have the potential for material spills to be quickly transported to the storm water conveyance system. To minimize this potential, the following design criteria are required:

a) Cover loading dock areas or design drainage to minimize run-on and runoff of storm water.
b) Direct connections to storm drains from depressed loading docks (truck wells) are prohibited.

e. Parking Lots

1) Properly Design Parking Area
Parking lots contain pollutants such as heavy metals, oil and grease, and polycyclic aromatic hydrocarbons that are deposited on parking lot surfaces by motor-vehicles. These pollutants are directly transported to surface waters. To minimize the offsite transport of pollutants, the following design criteria are required:

a) Reduce impervious land coverage of parking areas.
b) Infiltrate or treat runoff.

2) Properly Design To Limit Oil Contamination and Perform Maintenance
Parking lots may accumulate oil, grease, and water insoluble hydrocarbons from vehicle drippings and engine system leaks:

a) Treat to remove oil and petroleum hydrocarbons at parking lots that are heavily used (e.g., fast food outlets, lots with 25 or more parking spaces, sports event parking lots, shopping malls, grocery stores, discount warehouse stores).
b) Ensure adequate operation and maintenance of treatment systems particularly sludge and oil removal, and system fouling and plugging prevention control.
4. Waiver

A Permittee may, through adoption of an ordinance, code, or other regulatory mechanism incorporating the treatment requirements of the Design Standards, provide for a waiver from the requirement if impracticability for a specific property can be established. A waiver of impracticability shall be granted only when all other Structural or Treatment Control BMPs have been considered and rejected as infeasible. Recognized situations of impracticability include, (i) extreme limitations of space for treatment on a redevelopment project, (ii) unfavorable or unstable soil conditions at a site to attempt infiltration, and (iii) risk of ground water contamination because a known unconfined aquifer lies beneath the land surface or an existing or potential underground source of drinking water is less than 10 feet from the soil surface. Any other justification for impracticability must be separately petitioned by the Permittee and submitted to the appropriate RWQCB for consideration. The RWQCB may consider approval of the waiver justification or may delegate the authority to approve a class of waiver justifications to the RWQCB EO. The supplementary waiver justification becomes recognized and effective only after approval by the RWQCB or the RWQCB EO. A waiver granted by a Permittee to any development or redevelopment project may be revoked by the RWQCB EO for cause and with proper notice upon petition.

5. Limitation on Use of Infiltration BMPs

Three factors significantly influence the potential for storm water to contaminate ground water. They are (i) pollutant mobility, (ii) pollutant abundance in storm water, (iii) and soluble fraction of pollutant. The risk of contamination of groundwater may be reduced by pretreatment of storm water. A discussion of limitations and guidance for infiltration practices is contained in, Potential Groundwater Contamination from Intentional and Non-Intentional Stormwater Infiltration, Report No. EPA/600/R-94/051, USEPA (1994).

In addition, the distance of the groundwater table from the infiltration BMP may also be a factor determining the risk of contamination. A water table distance separation of ten feet depth in California presumptively poses negligible risk for storm water not associated with industrial activity or high vehicular traffic.

Site specific conditions must be evaluated when determining the most appropriate BMP. Additionally, monitoring and maintenance must be provided to ensure groundwater is protected and the infiltration BMP is not rendered ineffective by overload. This is especially important for infiltration BMPs for areas of industrial activity or areas subject to high vehicular traffic [25,000 or greater average daily traffic (ADT) on main roadway or 15,000 or more ADT on any intersecting roadway]. In some cases pretreatment may be necessary.

6. Alternative Certification for Storm Water Treatment Mitigation

In lieu of conducting detailed BMP review to verify Structural or Treatment Control BMP adequacy, a Permittee may elect to accept a signed certification from a Civil Engineer or a Licensed Architect registered in the State of California, that the plan meets
the criteria established herein. The Permittee is encouraged to verify that certifying person(s) have been trained on BMP design for water quality, not more than two years prior to the signature date. Training conducted by an organization with storm water BMP design expertise (e.g., a University, American Society of Civil Engineers, American Society of Landscape Architects, American Public Works Association, or the California Water Environment Association) may be considered qualifying.
LAND USE ELEMENT HILLSIDE AND WATERSHED PROTECTION POLICIES 7, 3, 4, AND 5 (COASTAL PLAN POLICIES 3-19, 3-15, 3-16 AND 3-17)

POLICY INTERPRETIVE AND IMPLEMENTATION GUIDELINES

The purpose of these guidelines is to promote consistent implementation of the Santa Barbara County Comprehensive Plan's water-quality related policies by providing clear interpretation of the Comprehensive Plan, and addressing the requirements of U.S. Environmental Protection Agency's National Pollutant Discharge Elimination System (NPDES) Phase II Municipal Storm Water Regulations. These guidelines apply to all new development and redevelopment projects proposed in the urban and rural unincorporated areas of the County. These guidelines apply to any project that has the potential to generate point source discharges, or storm water runoff that is directly or indirectly discharged to storm drains, creeks, streams, rivers, the ocean, or other receiving water bodies in Santa Barbara County.

Land Use Element Hillside and Watershed Protection Policy 7 & Coastal Plan Policy 3-19:

“Degradation of the water quality of groundwater basins, nearby streams, or wetlands shall not result from development of the site. Pollutants, such as chemicals, fuels, lubricants, raw sewage, and other harmful waste shall not be discharged into or alongside coastal streams or wetlands either during or after construction.”

Interpretive and Implementation Guidelines

The following definitions shall be used to interpret this policy:

A. “Degradation” of water quality means a negative alteration to the physical, chemical, or biological qualities of surface water (including storm water runoff) or groundwater compared to existing conditions. Degradation includes detrimental impacts to aquatic and terrestrial organisms, adverse effects on aesthetic qualities (due to sheens, sediment, floatable material, etc.), or other negative impacts to the beneficial uses1 of receiving water.

B. “Pollutant” means any chemical or substance that degrades the physical, chemical, or biological properties of the environment. Water pollutants include those listed in the policy, and as defined by the State Water Resources Control Board include but are not limited to: paints, varnishes, and solvents; hydrocarbons and metals from vehicle use or business operations; non-hazardous solid wastes; yard wastes; sediment from construction activities (including silts, clays, slurries, concrete rinsates, etc.); ongoing sedimentation due to changes in land cover or land use; nutrients, pesticides, herbicides, and fertilizers (e.g., from landscape maintenance); hazardous substances and wastes; sewage, fecal coliform, animal wastes, and pathogens;

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1 Beneficial uses for Santa Barbara County are identified by the Regional Water Quality Control Board in the Water Quality Control Plan for the Central Coastal Basin, or Basin Plan, and include (among others) recreation, agricultural supply, groundwater recharge, fresh water habitat, estuarine habitat, support for rare, threatened or endangered species, preservation of biological habitats of special significance.
dissolved and particulate metals; sediments, floatables; metals and acidity from mining operations; heat; discarded equipment.

C. "Discharge" as addressed by this policy includes point source discharges (i.e., from outfall pipes) and non-point source discharges (i.e., overland runoff or sheetflow) that flow directly or indirectly into receiving waters (e.g., creeks, streams, rivers, the ocean or other receiving water bodies), or into storm drains that subsequently flow into receiving waters. The term includes both construction and post-construction discharges.

To be consistent with this policy the discharge of pollutants from newly developed and redeveloped sites must be reduced to the "maximum extent feasible". This can be achieved through the implementation of non-structural or structural best management practices (BMPs) and maintenance of the BMPs over the life of the project. BMPs are methods, activities, maintenance procedures, or other management practices for reducing the amount of pollution entering a water body. Non-structural BMPs include but are not limited to site designs that reduce the area and connectivity of impervious surfaces, protection or restoration of native vegetation, wetlands and riparian corridors, and where applicable, parking lot sweeping programs to remove accumulated debris, oil and grease. Structural BMPs include but are not limited to storm water treatment facilities, grassed swales, bio-swales, porous pavement and storm drain treatment systems (e.g., catch basin filters).

A. In order of preference, the following BMPs shall be used to minimize water quality impacts associated with new development and redevelopment projects in urban and rural areas:

- site planning to avoid, protect, and restore sensitive areas (e.g., wetlands and riparian corridors);
- minimizing impervious surfaces and directly connected impervious surfaces, using existing natural features to allow for on-site infiltration of water;
- vegetative treatment (e.g., bio-swales, vegetative buffers, constructed or artificial wetlands);
- mechanical or structural treatment (e.g., storm drain filters and inserts).

B. Combinations of BMPs listed above may be required to reduce runoff and water quality impacts to achieve consistency with this policy.

C. Adequate space on each project site shall be reserved to incorporate the BMPs.

D. Provisions shall be made for maintenance of BMPs over the life of the project.

**Land Use Element Hillside and Watershed Protection Policy 3 & Coastal Plan Policy 3-15:**

"For necessary grading operations on hillsides, the smallest practical area of land shall be exposed at any one time during development, and the length of exposure shall be kept to the shortest practicable amount of time. The clearing of land should be avoided during the winter rainy season and all measures for removing sediments and stabilizing slopes should be in place before the beginning of the rainy season."
**Land Use Element Hillside and Watershed Protection Policy 4 & Coastal Plan Policy 3-16:**

"Sediment basins (including debris basins, desilting basins, or silt traps) shall be installed on the project site in conjunction with the initial grading operations and maintained through the development process to remove sediment from runoff waters. All sediment shall be retained on-site unless removed to an appropriate dumping location."

**Land Use Element Hillside and Watershed Protection Policy 5 & Coastal Plan Policy 3-17:**

"Temporary vegetation, seeding, mulching, or other suitable stabilization method shall be used to protect soils subject to erosion that have been disturbed during grading or development. All cut and fill slopes shall be stabilized as rapidly as possible with planting of native grasses and shrubs, appropriate non-native plants, or with accepted landscaping practices."

**Interpretive and Implementation Guidelines**

The following definitions shall be used to interpret these policies:

A. "Grading" is defined in the Grading Ordinance Chapter 14, Section 7 (Definitions).

B. "Necessary grading" is grading associated with, and integral to, the proposed development required to establish reasonable use of a legal lot. Only necessary grading shall be permitted on hillsides. (This policy is best understood when read in conjunction with Hillside and Watershed Protection Policies 1 and 2.) For example, necessary grading does not include grading conducted for the purposes of enhancing views or for accessory uses not associated with the reasonable use of the lot.

C. "Hillsides" means land with slopes exceeding 20%.

D. "Clearing of land" means the removal of vegetation, structures or other objects.

E. As defined in the Grading Ordinance, the rainy season is the period from November 1 through April 15.

F. "Appropriate non-native plants" means drought tolerant species that may not be native to Santa Barbara County, but are not invasive species\(^2\).

These policies address the discharge of pollutants (including, but not limited to, soil, sediment, and construction waste) from grading and construction activities. To be consistent with these policies, the discharge of pollutants must be reduced to the maximum extent feasible through the

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\(^2\) A list of invasive exotic species of concern in California can be obtained at the California Exotic Pest Council (CalEPPC) - Internet address: http://www.caleppc.org/info/plantlist.html. The Sunset Western Garden Book has examples of drought tolerant non-native plants suitable for the climatic, edaphic, and hydrologic conditions in Santa Barbara County. However, proposed non-native plants should not appear on the CalEPPC list and should not be used.
implementation of BMPs and maintenance of the BMPs throughout and, if necessary, after the grading and construction period.

A. In addition to structural erosion and sediment control measures (e.g., hay bales, silt fences, sediment basins, etc.), the following BMPs shall be used to the maximum extent feasible to reduce storm water pollution from construction sites:

- site planning to avoid grading or vegetation removal on slopes over 20%;
- site planning to avoid grading in areas containing soils with a high erosion hazard or in geologically unstable areas;
- site planning to minimize grading or vegetation removal where slopes over 20% cannot be avoided to allow reasonable use of a legal lot;
- avoidance of grading on slopes over 20% during the rainy season;
- protection of existing native vegetation and enhancement of sensitive areas (e.g., wetlands and riparian corridors);
- prohibitions of non-storm water discharges (e.g., concrete truck washout, slurry cuts, etc.) into storm drains or other water bodies;
- good housekeeping practices (e.g., designated waste collection areas, designated areas for vehicle maintenance and washing, proper vehicle maintenance to avoid leaks, elimination of connections to storm drains, immediate clean up of spills, recycling and reuse of materials, etc.).

B. Adequate room shall be made available on the construction site to accommodate the best management practices throughout and after construction.

C. All best management practices shall be maintained in working order.
Standards for All Development and Land Uses 35.430.140

a. Less than 30 inches high, or

b. Covers an area of 50 square feet or less and is less than either six feet in height and, if located within a vision clearance area, is consistent with the regulations of Subsection 35.430.080.1 (Vision Clearance).

4. Decks less than 32 inches in vertical distance as measured from finished grade to the top of the decking material may be located within the front or side setback unless located in a designated Environmentally Sensitive Habitat Area.

5. Non-habitable structures may be located in the side setback provided that the structures comply with all of the following:

a. Cumulatively the structures do not occupy an area greater than 10 percent of the side setback in which they are located, or 120 square feet, which ever is less.

b. Do not contain any utilities.

c. Are screened from view from abutting properties by a wall or fence at least as tall as the structure.

d. Are located no closer than five feet to any other structure located on the same lot.

6. Pedestals supporting utility meters no greater than four feet in height and 24 square feet in area may be located in a front or side setback provided they are completely screened from view from any public or private street and adjoining lots.

35.430.130 - Solar Panels

A. Solar heating systems shall be required for the heating of any new swimming pool, spa, or hot tub as specified under the Primary Plumbing Code and the Solar Energy requirements of County Code Chapter 10.

B. Solar panels located on the roof of an existing structure do not require planning permit approval.

C. Solar panels located on the ground shall be classified as accessory structures, and shall require Land Use Permit approval.

35.430.140 - Storm Water Runoff Requirements

A. Applicability. The following development redevelopment is subject to the requirement that project-appropriate controls are in place to prevent or minimize water quality impacts:

1. Residential subdivisions with 10 or more dwelling units.

2. Commercial development of 0.5 acres or greater.
3. Parking lots of 5,000 square feet or more or have 25 or more parking spaces and are potentially exposed to storm water runoff.

4. Automobile repair shops.

5. Retail gasoline outlets.

6. Restaurants.

7. One-family residences located on slopes of 20 percent or greater.

8. Any new development or redevelopment exceeding one acre.

B. Processing. No permit for any development listed in Subsection A. (Applicability) above, shall be approved except in compliance with the Comprehensive Plan, and the California Environmental Quality Act if applicable.

35.430.150 - Solid Waste and Recycling Storage Facilities

A. Purpose. This Section provides standards which recognize County support for and compliance with the California Solid Waste Reuse and Recycling Access Act (Public Resources Code Section 42900 through 42911).

B. Applicability. These requirements apply to the following projects:

1. Non-residential development. Any new, non-residential development including commercial, industrial, or institutional building, or marina or any changes to such an existing non-residential development which requires a building permit.

2. Residential building. Any new residential building having five or more dwelling units or any changes to such an existing residential building which requires a building permit.

3. Residential development. Any new residential project where solid waste is collected and loaded in a location serving five or more dwelling units, or any changes to an existing residential project which requires a building permit.

4. Single-family subdivision. Any subdivision of single-family detached homes if, within such subdivisions there is an area where solid waste is collected and loaded in a location which serves five or more dwelling units. In such instances, recycling areas as specified in this Section are only required to serve the needs of the dwelling units which utilize the solid waste collection and loading area.

5. Public facility. Any new public facility where solid waste is collected and loaded and any improvements for areas of a public facility used for collecting and loading solid waste.

C. Standards for storage areas. All projects identified in Subsection B. (Applicability) above, shall be required to provide solid waste areas specifically identified for the storage of both trash and recycling containers in compliance with the following.
16. SURFACE AND STORM WATER QUALITY GUIDELINES

A. INTRODUCTION

The following information is excerpted from several EPA publications including the preamble to the NPDES Phase II rules as published in the Federal Register\(^1\) and EPA storm water fact sheets and guidance documents\(^2\).

Storm water runoff from lands modified by human activities can harm surface water resources and, in turn, cause or contribute to an exceedance of water quality standards by changing natural hydrologic patterns, accelerating stream flows, destroying aquatic habitat, and elevating pollutant concentrations. Such runoff may contain or mobilize high levels of contaminants, such as sediment, suspended solids, nutrients (phosphorous and nitrogen), heavy metals and other toxic pollutants, pathogens, oxygen-demanding substances, and floatables. After a rain, storm water runoff carries these pollutants into nearby streams, rivers, lakes, estuaries, wetlands, and oceans. The highest concentrations of these contaminants often are contained in "first flush" discharges, which occur during the first major storm after an extended dry period. Individually and combined, these pollutants impair water quality, threatening designated beneficial uses and causing habitat alteration or destruction. Uncontrolled storm water discharges from areas of urban development and construction activity negatively impact receiving waters by changing the physical, biological, and chemical composition of the water, resulting in an unhealthy environment for aquatic organisms, wildlife, and humans. Although water quality problems also can occur from agricultural storm water discharges and return flows from irrigated agriculture, this area of concern is statutorily exempted from regulation as a point source under the Clean Water Act and is not addressed in these guidelines.

Urbanization alters the natural infiltration capability of the land and generates a host of pollutants that are associated with the activities of dense populations, thus causing an increase in storm water runoff volumes and pollutant loading in storm water that is discharged to receiving waterbodies. Urban development increases the amount of impervious surface in a watershed as farmland, forests, and other natural vegetation with natural infiltration characteristics are converted into buildings with rooftops, driveways, sidewalks, roads, and parking lots with virtually no ability to absorb storm water. Storm water runoff washes over these impervious areas, picking up pollutants along the way while gaining speed and volume because of their inability to disperse and filter into the ground. What results are storm water flows that are higher in volume, pollutants, and temperature than the flows from more pervious areas, which have more natural vegetation and soil to filter the runoff. Studies reveal that the level of imperviousness in an area strongly correlates with decreased quality of the nearby receiving waters. Research conducted in numerous geographical areas, concentrating on various variables and employing widely differing methods, has revealed that stream degradation occurs at relatively low levels of imperviousness, such as 10 to 20 percent (even as low as 5 to 10 percent). Furthermore, research has indicated that few, if any, urban streams can support diverse benthic communities at imperviousness levels of 25 percent or more. An area of medium density single

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\(^1\) 64 FR 68722
\(^2\) Available on the Internet at [www.epa.gov/npdes](http://www.epa.gov/npdes)
family homes can be anywhere from 25 percent to nearly 60 percent impervious, depending on
the design of the streets and parking.

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In addition to impervious areas, urban development creates new pollution sources as population
density increases and brings with it proportionately higher levels of car emissions, car
maintenance wastes, pet waste, litter, pesticides, and household hazardous wastes, which may be
washed into receiving waters by storm water or dumped directly into storm drains designed to
discharge to receiving waters. More people in less space results in a greater concentration of
pollutants that can be mobilized by storm water discharges into storm sewer systems.

The first national assessment of urban runoff characteristics was completed for the Nationwide
Urban Runoff Program (NURP) study. The NURP study is the largest nationwide evaluation of
storm water discharges undertaken to date. EPA conducted the NURP study to facilitate
understanding of the nature of urban runoff from residential, commercial, and industrial areas.
One objective of the study was to characterize the water quality of discharges from separate
storm sewer systems that drain residential, commercial, and light industrial (industrial parks)
sites. Storm water samples from 81 residential and commercial properties in 22 urban/suburban
areas nationwide were collected and analyzed during the 5-year period between 1978 and 1983.
The majority of samples collected in the study were analyzed for eight conventional pollutants and three heavy metals. Data collected under the NURP study indicated that discharges from separate storm sewer systems draining runoff from residential, commercial, and light industrial areas carried more than 10 times the annual loading of total suspended solids (TSS) than discharges from municipal sewage treatment plants that provide secondary treatment. The NURP study also indicated that runoff from residential and commercial areas carried somewhat higher annual loadings of chemical oxygen demand (COD), total lead, and total copper than effluent from secondary treatment plants. Study findings showed that fecal coliform counts in urban runoff typically range from tens to hundreds of thousands of most probable number (MPN) per hundred milliliters (ml) of runoff during warm weather conditions, with the median for all sites being around 21,000 MPN/100 ml.

B. CONSTRUCTION SITE RUNOFF

Polluted storm water runoff from construction sites often flows to storm drains and ultimately is discharged into local rivers and streams. Of the pollutants listed below, sediment is usually the main pollutant of concern. Sediment runoff rates from construction sites are typically 10 to 20 times greater than those of agricultural lands, and 1,000 to 2,000 times greater than those of forest lands. During a short period of time, construction sites can contribute more sediment to streams than can be deposited naturally during several decades. The resulting siltation, and the contribution of other pollutants from construction sites, can cause physical, chemical, and biological harm to our nation’s waters. The siltation process described previously can (1) deposit high concentrations of pollutants in public water supplies; (2) decrease the depth of a waterbody, which can reduce the volume of a reservoir or result in limited use of a water body by boaters, swimmers, and other recreational enthusiasts; and (3) directly impair the habitat of fish and other aquatic species, which can limit their ability to reproduce. Excess sediment can cause a number of other problems for waterbodies. It is associated with increased turbidity and reduced light penetration in the water column, as well as more long-term effects associated with habitat destruction and increased difficulty in filtering drinking water.

Pollutants Commonly Discharged From Construction Sites

- Sediment
- Solid and sanitary wastes
- Nitrogen (fertilizer)
- Phosphorous (fertilizer)
- Pesticides
- Concrete truck washout
- Construction chemicals
- Construction debris

C. POST CONSTRUCTION RUNOFF

There are generally two forms of substantial impacts of post-construction runoff. The first is caused by an increase in the type and quantity of pollutants in storm water runoff. As runoff flows over areas altered by development, it picks up harmful sediment and chemicals such as oil and grease, pesticides, heavy metals, and nutrients (e.g., nitrogen and phosphorus). These pollutants often become suspended in runoff and are carried to receiving waters, such as lakes, ponds, and streams. Once deposited, these pollutants can enter the food chain through small aquatic life, eventually entering the tissues of fish and humans. The second kind of post-construction runoff impact occurs by increasing the quantity of water delivered to the waterbody
during storms. Increased impervious surfaces interrupt the natural cycle of gradual percolation of water through vegetation and soil. Instead, water is collected from surfaces such as asphalt and concrete and routed to drainage systems where large volumes of runoff quickly flow to the nearest receiving water. The effects of this process include stream bank scouring and downstream flooding, which often lead to a loss of aquatic life and damage to property.

D. FEDERAL AND STATE REGULATIONS

The Federal Water Pollution Prevention and Control Act (i.e., the Clean Water Act or CWA) requires that discharges do not substantially degrade the physical, chemical or biological integrity of the Nation’s waters. Specifically Section 402 established the National Pollutant Discharge Elimination System (NPDES) Regulations for wastewater and other pollutant discharges.

Congress amended the CWA in 1987 to require the implementation of a two-phased program to address storm water discharges. Phase I, promulgated by the U.S. Environmental Protection Agency (EPA) in November 1990, requires NPDES permits for storm water discharges from municipal separate storm sewer systems (MS4s) serving populations of 100,000 or greater, construction sites disturbing greater than 5 acres of land, and ten categories of industrial activities.

Despite the comprehensiveness of the NPDES Phase I program, the EPA recognized that smaller construction projects (disturbing less than 5 acres) and small municipal separate storm sewers (MS4s\(^3\)) were also contributing substantially to pollutant discharges nationwide. Therefore, in order to further improve storm water quality, the EPA promulgated the NPDES Phase II program (Federal Register Vol. 64, No. 235, December 8, 1999). The Phase II regulations became effective on February 7, 2000, and require NPDES permits for storm water discharges from regulated small MS4s and for construction sites disturbing more than 1 acre of land. The Phase II regulations published by the EPA designated the urbanized areas\(^4\) of Santa Barbara County as a regulated small MS4.

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\(^{3}\) Those generally serving less than 100,000 people and located in an urbanized area as defined by the Bureau of the Census.

\(^{4}\) An *urbanized area* is a land area comprising one or more places (central place(s)) and the adjacent densely settled surrounding area (the urban fringe) that together have a residential population of at least 50,000 and an overall population density of at least 1,000 people per square mile.
In addition, Section 401 and 404 established regulations for the discharge of dredged or fill material into waters of the United States and water quality impacts associated with these discharges. In California, the Porter-Cologne Water Quality Control Act establishes waste discharge standards pursuant to the Federal NPDES program, and the state has the authority to issue NPDES permits to individuals, businesses, and municipalities.

E. County Water Quality Issues

Because the EPA has determined that the urbanized areas of Santa Barbara County are subject to the Phase II NPDES regulations, it is presumed that the county has a general urban runoff water quality problem. In addition to this general presumption, over the last three years Project Clean Water has collected analytical water quality data and identified the water quality concerns in county streams, creeks and beach areas. These concerns include:

- Bacteria levels consistently above applicable standards during storm events,
- Levels of metals (copper, chromium, zinc, and lead) approaching or exceeding Regional Water Quality Control Board Basin Plan objectives.
- Elevated levels of nitrogen and phosphorus in all creeks during storm events, and
- Detection of pesticides in all watersheds.

The Regional Water Quality Control Board has also identified that the quality of several important recreational water bodies and water supplies have been impaired. These water bodies and their contaminants include:

- San Antonio Creek (northern) – sediments.
- Santa Ynez River – nutrients (e.g., phosphorus and nitrogen), salinity, total dissolved solids, chlorides and sediments.
- Goleta Slough – metals, pathogens, and sediment.
- Arroyo Burro Creek – pathogens (e.g., bacteria).
• Mission Creek – pathogens.
• Carpinteria Salt Marsh – nutrients and sediment.
• Carpinteria Creek - pathogens
• Rincon Creek – pathogens and sediment.

F. COUNTY WATER QUALITY PROTECTION POLICIES

Policies regarding the protection of water quality in the unincorporated areas of Santa Barbara County are provided in the Comprehensive Plan Land Use Element, various Community Plans, and the Local Coastal Plan. The overarching policy which applies to both construction and post-construction is Land Use Element Hillside and Watershed Protection Policy 7 (Coastal Plan Policy 3-19), which states:

Degradation of the water quality of groundwater basins, nearby streams, or wetlands shall not result from development of the site. Pollutants, such as chemicals, fuels, lubricants, raw sewage, and other harmful waste shall not be discharged into or alongside coastal streams or wetlands either during or after construction.

Project approval requires a finding of consistency with this and all other applicable water quality policies in the Comprehensive and Community Plans.

G. SIGNIFICANCE GUIDELINES FOR ASSESSMENT OF WATER QUALITY IMPACTS

Guidelines for assessing project-specific and cumulative water quality impacts are presented below. The assessment of impacts must account for construction-related impacts (i.e., vegetation removal, erosion, use of construction materials on the site, and staging of construction activities) and post-construction (or post-development) impacts (i.e., increases in impervious surfaces and increased runoff, entrainment of pollutants, and effects of discharges on aquatic habitats and biota).

G.1 Project Specific Potential Significance Impacts

(a) A significant water quality impact is presumed to occur if the project:

• Is located within an urbanized area of the county and the project construction or redevelopment individually or as a part of a larger common plan of development or sale would disturb one (1) or more acres of land;
• Increases the amount of impervious surfaces on a site by 25% or more;
• Results in channelization or relocation of a natural drainage channel;
• Results in removal or reduction of riparian vegetation or other vegetation (excluding non-native vegetation removed for restoration projects) from the buffer zone of any streams, creeks or wetlands;
• Is an industrial facility that falls under one or more of categories of industrial activity regulated under the NPDES Phase I industrial storm water regulations (facilities with effluent limitation; manufacturing; mineral, metal, oil and gas, hazardous waste,
treatment or disposal facilities; landfills; recycling facilities; steam electric plants; transportation facilities; treatment works; and light industrial activity); 

- Discharges pollutants that exceed the water quality standards set forth in the applicable NPDES permit, the Regional Water Quality Control Board’s (RWQCB) Basin Plan or otherwise impairs the beneficial uses\(^5\) of a receiving waterbody; or 

- Results in a discharge of pollutants into an “impaired” waterbody that has been designated as such by the State Water Resources Control Board or the RWQCB under Section 303 (d) of the Federal Water Pollution Prevention and Control Act (i.e., the Clean Water Act).

- Results in a discharge of pollutants of concern to a receiving water body, as identified in by the RWQCB.

(b) Projects that are not specifically identified on the above list or are located outside of the “urbanized areas” may also have a project-specific storm water quality impact. Storm water quality impacts associated with these projects must be evaluated on a project by project basis for a determination of significance. The potential impacts of these projects should be determined in consultation with the county Water Agency, Flood Control Division, and RWQCB. The issues that should be considered are:

- the size of the development;
- the location (proximity to sensitive waterbodies, location on hillsides, etc.);
- the timing and duration of the construction activity;
- the nature and extent of directly connected impervious areas;
- the extent to which the natural runoff patterns are altered;
- disturbance to riparian corridors or other native vegetation on or off-site;
- the type of storm water pollutants expected; and
- the extent to which water quality best management practices are included in the project design.

(c) All projects determined to have a potentially significant storm water quality impact must prepare and implement a Storm Water Quality Management Plan (SWQMP) to reduce the impact to the maximum extent practicable. The SWQMP shall include the following elements:

- identification of potential pollutant sources that may affect the quality of the discharges to storm water;
- the proposed design and placement of structural and non-structural BMPs to address identified pollutants;

\(^5\) Beneficial uses for Santa Barbara County are identified by the Regional Water Quality Control Board in the Water Quality Control Plan for the Central Coastal Basin, or Basin Plan, and include (among others) recreation, agricultural supply, groundwater recharge, fresh water habitat, estuarine habitat, support for rare, threatened or endangered species, preservation of biological habitats of special significance.
• a proposed inspection and maintenance program; and
• a method of ensuring maintenance of all BMPs over the life of the project.

Implementation of best management practices identified in the SWQMP will generally be considered to reduce the storm water quality impact to a less than significant level.

G.2 Less than Significant Impacts

The following land uses and projects are generally presumed to have a less than significant project-specific water quality impact. These include:

• Redevelopment projects that do not increase the amount of impervious surfaces on the site nor change the land use or potential pollutants;
• New development and redevelopment projects that incorporate into the project design construction BMPs for erosion, sediment and construction waste control and incorporate post-construction BMPs to protect sensitive riparian or wetland resources, reduce the quantity of runoff, and treat runoff generated by the project to pre-project levels;
• Lot line adjustments that do not alter the development potential of the lots involved;
• Development of a single family dwelling (and associated accessory uses including but not limited to roads and driveways, septic systems, guesthouse, pool, etc.) disturbing less than one acre on existing legal lot.

G.3 Cumulative Impacts

Because of the county’s designation under the Phase II NPDES regulations, all discretionary projects (except those that do not result in a physical change to the environment) within the urbanized area whose contributions are cumulatively considerable must implement one or more best management practices to reduce their contribution to the cumulative impact.

H. GENERAL MITIGATION GUIDELINES FOR WATER QUALITY IMPACTS

If water quality impacts are considered from the beginning stages of a project more opportunities are available for water quality protection. Best management practices (mitigation measures) chosen for a project should minimize water quality impacts and attempt to maintain pre-development runoff conditions. Best management practices are divided into two main categories, non-structural BMPs and structural BMPs.

Non-structural BMPs are preventative actions that involve management and source controls such as protecting and restoring sensitive areas such as wetlands and riparian corridors, maintaining and/or increasing open space, providing buffers along sensitive water bodies, minimizing impervious surfaces and directly connected impervious areas, and minimizing disturbance of soils and vegetation. Structural BMPs include: storage practices such as wet ponds and extended-detenetion outlet structures; filtration practices such as grassed swales, sand filters and filter strips; and infiltration practices such as infiltration basins and infiltration trenches. In many
cases combinations of non-structural and structural measures will be required to reduce water quality impacts.

Non-structural and structural BMPs most applicable to the development projects in the county are included in "A Planner's Guide to Conditions of Approval and Standard Mitigation Measures" and the county's adopted BMP manuals for construction site runoff control. Additional guidance on best management practices is available from the State\(^6\), the EPA\(^7\) and from other sources such as BASMAA "Starting at the Source"\(^8\). Storm water technologies are constantly being improved, and staff and developers must be responsive to any changes, developments or improvements in control technologies.

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\(^6\) California Storm Water Best Management Practice Handbooks (California Stormwater Quality Task Force, 1993).
\(^7\) On the Internet at www.epa.gov/npdes/menuofbmps/menu.htm.
\(^8\) Start at the Source: Design Guidance Manual for Stormwater Quality Protection (Bay Area Stormwater Management Agencies Association, 1999).

16. Environmental Thresholds
WATER RESOURCES

Wat-1

Outdoor water use shall be limited through the measures listed below.

_The following is a menu; select only those conditions that apply. Some of these measures may also be used as water conservation conditions without requiring a landscape and irrigation plan._

a. Landscaping shall be with [native and/or drought tolerant] species.

b. Drip irrigation or other water-conserving irrigation shall be installed.

c. Plant material shall be grouped by water needs.

d. Turf shall constitute less than 20% of the total landscaped area.

e. No turf shall be allowed on slopes of over 4%.

f. Extensive mulching (2" minimum) shall be used in all landscaped areas to improve the water holding capacity of the soil by reducing evaporation and soil compaction.

g. Soil moisture sensing devices shall be installed to prevent unnecessary irrigation.

h. Permeable surfaces such as turf block or intermittent permeable surfaces such as french drains shall be used for all parking areas and driveways.

i. The applicant shall plumb each lot for a grey water system. Each dwelling shall contain a grey water system plumbed to front and rear yard irrigation systems.

j. The applicant shall contract with an agency that sells reclaimed water to provide water for all exterior landscaping. Non-reclaimed water shall not be used to water exterior landscape. The applicant shall renew the contract annually and send copies of the contract and all receipts for reclaimed water received to P&D staff. These documents shall be due on [specify month] of every year commencing [specify starting point].

k. Separate landscape meters shall be installed.

**Plan Requirements:** Prior to [insert timing], a landscape and irrigation plan shall be submitted to P&D for review and approval. **Planner: For i,**
show on building plans and require approval or plumbing permit. The applicant/owner shall enter into an agreement with the County to install required landscaping/irrigation and maintain required landscaping for the life of the project.

Timing: The applicant shall implement all aspects of the landscape and irrigation plan prior to occupancy clearance.

MONITORING: Permit Compliance shall conduct site visits to ensure installation and maintenance of landscape and irrigation. Any part of irrigation plan requiring a plumbing permit shown on building plans shall be inspected by Building Inspectors.

Indoor water use shall be limited through the following measures: Planner: This is a menu; select only those conditions that apply:

a. All hot water lines shall be insulated.

b. Recirculating, point-of-use, or on-demand water heaters shall be installed.

c. Water efficient clothes washers and dishwashers shall be installed.

d. Self regenerating water softening shall be prohibited in all structures.
[Required in Laguna Sanitation District.]

e. Lavatories and drinking fountains shall be equipped with self-closing valves

[Commercial only]

f. Pool(s) shall have pool cover(s).

Plan Requirements: Prior to approval of Land Use Permits\Coastal Development Permits, indoor water-conserving measures shall be graphically depicted on building plans, subject to P&D review and approval. Timing: Indoor water-conserving measures shall be implemented prior to occupancy clearance.

MONITORING: P&D shall inspect for all requirements prior to occupancy clearance.

The existing facility shall be retrofitted with water conserving showerheads (2 gallons per minute) and toilets (1.6 gallons per flush). Timing: Prior to approval of Land Use Permits\Coastal Development Permits, the retrofitting shall be completed by the applicant.
MONITORING: Planning and Development shall inspect to confirm retrofitting prior to approval of Land Use Permits/Coastal Development Permits.

Wat-4 High water consumption businesses (defined by P&D), including [specify types], shall be prohibited from operating on the subject property. Plan Requirements and Timing: Prior to approval of Land Use Permits/Coastal Development Permits, the applicant shall record a covenant agreeing to the prohibition with P&D for County Counsel review and approval to be included as a note on building plans, on lease agreements and in CC&R's.

MONITORING: P&D shall ensure no such businesses occupy building, by site inspection, prior to occupancy clearance and through any subsequent permitting for the site.

Wat-5 Reclaimed water shall be used for all dust suppression activities during grading and construction. Plan Requirements and Timing: This measure shall be included as a note on the grading plan. Prior to the commencement of earth movement, the applicant shall submit to Planning and Development an agreement/contract with a company providing reclaimed water stating that reclaimed water shall be supplied to the project site during all ground disturbances when dust suppression is required.

MONITORING: P&D staff shall inspect activities in the field to ensure non-potable water is being used in water trucks.

Wat-6 The project shall provide for on-site retention of storm water runoff, infiltration, and recharge where feasible. Feasibility shall be determined by the P&D Registered Geologist and Flood Control District engineer. Retention basin(s) shall be maintained for the life of the project by [a Homeowners’ Association or landowner for commercial/industrial sites.] Recharge systems shall be developed in conjunction with the Flood Control District and P&D. Plan Requirements: A drainage plan showing the location and design parameters of the retention basin shall be submitted to P&D and Flood Control for review and approval. Installation and maintenance for five years shall be ensured through a performance security provided by the applicant. Long term maintenance requirements shall be specified in [homeowner association CC&Rs or in a maintenance program submitted by the landowner of commercial/industrial sites.] Timing: Retention and/or recharge basins shall be installed (landscaped and irrigated subject to P&D and Flood Control District approval) prior to occupancy clearance.

MONITORING: Planning and Development shall site inspect for installation and maintenance of landscaping. Flood Control sign off is
required on final grading/drainage plans, and Permit Compliance sign off is required for release of the performance security.

**Planner: Goleta only for properties overlying the North Central Subbasin and not a party to the Wright judgment.** In order for the proposed project to be found consistent with County water policies which require that adequate public and private services be available to serve the project, the applicant is required to petition the court and receive a determination that the applicant has the right to extract additional water from the north-central subbasin prior to the approval of [Land Use/Coastal Development] Permit

**MONITORING:** P&D shall review determination prior to approval of Land Use Permits/Coastal Development Permits.

**Planner: For sites where disturbance involves one or more acres, the following will apply.** The applicant shall submit proof of exemption or a copy of the Notice of Intent to obtain coverage under the Construction General Permit of the National Pollutant Discharge Elimination System issued by the California Regional Water Quality Control Board. **Plan Requirements and Timing:** Prior to approval of Land Use Permits/Coastal Development Permits the applicant shall submit proof of exemption or a copy of the Notice of Intent and shall provide a copy of the required Storm Water Pollution Prevention Plan (SWPPP) to P&D. A copy of the SWPPP must be maintained on the project site during grading and construction activities.

**MONITORING** P&D shall review the documentation prior to approval of Land Use Permits/Coastal Development Permits. P&D shall site inspect during construction for compliance with the SWPPP.

**Planner: Use only for AHO or other qualified projects.**

**Prior to [final map clearance/approval of [Land Use/Coastal Development] Permit] the applicant shall provide a can and will serve letter from the [specify water district] indicating that adequate water is available to serve the project.

**NOTE:** The following conditions/measures address storm water quality from construction, new development, and redevelopment as required by the EPA's NPDES Phase II municipal storm water regulations. Some of these measures should be considered during the initial design phase of a project as they might require significant land area to implement. Consideration of these measures after the initial design phase could result in substantial redesign and project delay.

**Planner: For all new development and redevelopment projects.** To prevent illegal discharges to the storm drains, all on-site storm drain inlets, whether new or existing shall be labeled to advise the public that the storm
drain discharges to the ocean (or other waterbody, as appropriate) and that dumping waste is prohibited (e.g., “Don’t Dump – Drains to Ocean”). The information shall be provided in English and Spanish. **Plan Requirements and Timing:** Location of storm drain inlets shall be shown on site, building and grading plans prior to approval of grading and land use permits. Labels shall be installed prior to occupancy clearance. Standard labels are available from Public Works, Project Clean Water, or other label designs shall be shown on the plans and submitted to P&D for approval prior to approval of grading and land use permits.

**MONITORING:** Planning and Development shall site inspect prior to occupancy clearance.

**Wat-11**

**Planner:** Use this measure separately if there will be grading but an erosion and sediment control plan is not being required. To prevent sediment from being tracked off of the construction site, stabilized entrances shall be installed. Stabilizing measures may include but are not limited to use of gravel pads, steel rumble plates, temporary paving, etc. Any sediment or other materials tracked off site shall be removed the same day as they are tracked using dry cleaning methods. **Plan Requirements:** The stabilized entrances/exits shall be located and detailed on the grading and drainage plan. Dry cleaning methods shall be enumerated in the project specifications and included on grading and drainage plans. **Timing:** The plans shall be submitted to P&D for approval prior to approval of Land Use Permit/Coastal Development Permits. The stabilized entrances/exits shall be installed prior to initiation of grading and maintained for the duration of the grading period and until graded areas have been stabilized by structures, long-term erosion control measures or landscaping.

**MONITORING:** P&D shall site inspect during construction.

**Wat-12**

**Planner:** this measure is appropriate for small, medium, or large subdivisions (5 or more lots) or commercial/industrial developments and as an alternative to underground or aboveground impermeable drainage channels, however sufficient land area must be set aside onsite to accommodate the system. This measure can be combined with Wat-13 and Wat-14 where appropriate. A permanent biofiltration system shall be constructed to treat storm water runoff from the site. Biofiltration includes vegetated swales, channels, buffer strips, retention, rain gardens, and shall be designed in accordance with the California Stormwater BMP Handbook for New Development and Redevelopment (California Storm Water Quality Association) or other approved method. The biofilter system shall be designed by a registered civil engineer specializing in water quality or other qualified professional to ensure that the filtration properties and the plants selected are adequate to reduce concentrations of the target pollutants including [Planner: list likely pollutants].
feasible, local plants sources (i.e., collected from the watershed or propagated from cuttings or seed collected from the watershed) shall be used in the biofiltration system. Invasive plants shall not be used. Biofilters shall not replace existing riparian vegetation or native vegetation unless otherwise approved by P&D. **Plan Requirements and Timing:**

The applicant shall include the biofilter design, including the plant palette and the source of plant material, on the grading and drainage and landscape plans, and depict it graphically. The applicant shall submit a maintenance plan for the biofilter system to P&D for review and approval. A performance security will be required to ensure installation and long-term maintenance, including maintenance inspections at least once/year. Long-term maintenance and proof of inspections shall be the responsibility of the [HOA (for residential projects) or the landowner (for commercial/industrial projects).] Maintenance requirements shall be specified in the CC&Rs or in a maintenance program submitted by the landowner of the commercial/industrial site and recorded with the Clerk of the Board. The plans and a copy of the long-term maintenance program shall be submitted to P&D, and Public Works, Water Resources Division staff, for review prior to approval of Land Use Permits/Coastal Development Permits. Biofilter maintenance is required for the life of the project and transfer of this responsibility is required for any subsequent sale of the property. The condition of transfer shall include a provision that the property owners conduct maintenance inspection at least once/year and retain proof of inspections.

**MONITORING:** Planning and Development shall site inspect for installation and periodically inspect for maintenance throughout a five-year performance period. Performance security release requires P&D approval. The [HOA (for residential projects) or the landowner (for commercial/industrial projects)] shall be responsible for maintenance inspections at least once/year for the life of the project. Proof of maintenance inspections shall be maintained and made available to County of Santa Barbara upon request.

*Wat-13*

**Planner: This measure may be used for small projects where the drainage area is divided into smaller, individually treated units less than an acre, or projects such as small residential developments (4 or fewer lots), small commercial areas (with buildings or structures less than 5,000 square feet), and parking lots less than 25 stall. This measure can be combined with Wat-12 and Wat-14 where appropriate.** To allow for infiltration and treatment, sheet flow runoff from the site shall be directed to a permanent vegetated buffer strip. A registered civil engineer or other qualified professional shall design the buffer strip. Only non-invasive perennial grass or other drought tolerant vegetation species shall be used. Vegetated buffer strips shall be designed in accordance with the California Stormwater BMP Handbook for New Development and Redevelopment (California Storm Water Quality Association) or other approved method.
Plan Requirements and Timing: Buffer strip design, including the plant palette and the source of plant material, shall be described and detailed on the site, grading and drainage and landscape plans, and depicted graphically. A maintenance program shall be specified in an inspection and maintenance plan and include maintenance inspections at least once/year. Long term maintenance shall be the responsibility of the [HOA (for residential projects) or the landowner (for commercial/industrial projects).] A maintenance program shall be specified in the CC&Rs or in a maintenance program submitted by the landowner for commercial/industrial sites and recorded with the Clerk of the Board. The plans and a copy of the long-term maintenance program shall be submitted to P&D and Public Works, Water Resources Division staff for review prior to approval of Land Use Permits/Coastal Development Permits. Buffer strip maintenance is required for the life of the project and transfer of this responsibility is required for any subsequent sale of the property. The condition of transfer shall include a provision that the property owners conduct maintenance inspection at least once/year and retain proof of inspections.

MONITORING: Planning and Development shall site inspect for installation of the swale and periodically thereafter to ensure long-term maintenance. The [HOA (for residential projects) or the landowner (for commercial/industrial projects)] shall be responsible for maintenance inspections at least once/year for the life of the project. Proof of maintenance inspections shall be maintained and made available to County of Santa Barbara upon request.

Planner: the following shall be used where possible to treat and infiltrate stormwater from impervious surfaces at commercial, residential, and industrial sites. Small drainages between 0.25 and 1.0 acres (larger drainages may require multiple bioretention areas). Bioretention is a soil and plant-based filtration device that removes pollutants through a combination of physical, biological, and chemical processes. The facility combines vegetation with a planting soil matrix of sand and organics. Runoff is distributed evenly through the ponding area for infiltration through the soil matrix. Underdrains may be required. To allow for infiltration and treatment, drainage shall be directed to a bioretention filter. A registered civil engineer or other qualified professional shall design the bioretention filter in accordance with the California Stormwater BMP Handbook for New Development and Redevelopment (California Storm Water Quality Association) or other approved method. Plan Requirements and Timing: Bioretention design, including the selected plant material, shall be described and detailed on the site, grading and drainage and landscape plans, and depicted graphically. A maintenance program shall be specified in an inspection and maintenance plan and include maintenance inspections at least once/year. Long term maintenance shall be the responsibility of the [HOA (for
residential projects) or the landowner (for commercial/industrial projects).] A maintenance program shall be specified in the CC&R's or in a maintenance program submitted by the landowner for commercial/industrial sites and recorded with the Clerk of the Board. The plans and a copy of the long-term maintenance program shall be submitted to P&D and Public Works, Water Resources Division staff, for review prior to approval of Land Use Permits/Coastal Development Permits. Bioretention maintenance is required for the life of the project and transfer of this responsibility is required for any subsequent sale of the property. The condition of transfer shall include a provision that the property owners conduct maintenance inspection at least once/year and retain proof of inspections.

**MONITORING:** Planning and Development shall site inspect for installation of the bioretention facility and periodically thereafter to ensure long-term maintenance. The [HOA (for residential projects) or the landowner (for commercial/industrial projects)] shall be responsible for maintenance inspections at least once/year for the life of the project. Proof of maintenance inspections shall be maintained and made available to County of Santa Barbara upon request.

**Planner:** To the maximum extent practicable, the following shall be used in parking areas (for overflow or low traffic areas), patios, sidewalks (consistent with ADA requirements) emergency roads, around buildings, driveways, etc. where soil conditions allow (NPDES Permit Requirement). This measure can be combined with Wat-16 and Wat-17 where appropriate. To reduce runoff from impervious areas and allow for infiltration, the applicant shall incorporate pervious materials or surfaces (e.g., porous pavement or unit pavers on sand) into the project design.

**Plan Requirements and Timing:** Pervious surfaces shall be described and depicted graphically on the site, building, grading and landscape plans. The plans shall be submitted to P&D for review prior to approval of Land Use Permits/Coastal Development Permits.

**MONITORING:** P&D shall site inspect for installation.

**Wat-16 Planner:** The following measure can be used for single family dwellings and commercial/industrial development on permeable soils and can be used on larger projects in conjunction with other measures. Work with Building and Safety to ensure that building foundations are adequately protected from site drainage when using this measure. The applicant shall install a roof runoff collection and disposal system to infiltrate storm water runoff. Runoff shall be directed to either a subsurface infiltration trench, french drains, planter boxes, landscaped areas or connected to the site's irrigation system. An overflow or high flow bypass system will be provided. **Plan Requirements and Timing:** The roof runoff collection system shall be shown on grading, building and landscape plans. The
plans shall submitted to P&D for review prior to approval Land Use Permits/Coastal Development Permits. The system shall be installed prior to occupancy clearance.

**MONITORING:** P&D shall site inspect for installation of the system.

**Wat-16** A Homeowners' Association or the landowner (for commercial/industrial projects) *planner choose the appropriate* shall be responsible for the long-term maintenance of the water quality conditions of approval *planner list conditions here*. **Plan Requirements and Timing:** The proposed maintenance responsibilities and schedule shall be included in the CC&Rs or in a maintenance program submitted by the landowner for commercial/industrial sites. The CC&Rs/maintenance program shall be submitted for review by P&D and Public Works, Water Resources Division staff, prior to approval of Land Use Permits/Coastal Development Permits. Annual records of the maintenance activities shall be maintained by the HOA/landowner and submitted to P&D upon request.

**MONITORING:** P&D shall review the maintenance records or site inspect, as needed. Costs shall be borne by the Homeowners Association.

**Wat-17** *Planner: The following measure can be used for single family dwellings where conditions allow.* To reduce storm water runoff, one of the following driveway designs shall be used: paving only under wheels, flared driveway, or use of permeable surfaces for temporary or non-permanent parking areas. **Plan Requirements and Timing:** The driveway shall be shown on the site, grading, landscape and building plans. The plans shall be submitted to P&D for review prior to approval of Land Use Permits/Coastal Development Permits.

**MONITORING:** P&D shall site inspect to ensure installation.

**Wat-18** To prevent storm water contamination during roadwork or pavement construction, concrete, asphalt, and seal coat shall be applied during dry weather. Storm drains and manholes within the construction area shall be covered when paving or applying seal coat, slurry, fog seal, etc. **Plan Requirements and Timing:** These requirements shall be specified on the grading and building plans submitted to P&D prior to approval of Land Use Permits/Coastal Development Permits.

**MONITORING:** P&D shall site inspect, as needed during construction.

**Wat-19** *Planner: This measure must be applied to new or redeveloped fueling stations (NFDES Permit Requirement).* The fuel dispensing area shall extend 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus 1 foot, whichever is less. The fuel dispensing areas shall be paved with Portland cement concrete (or
equivalent smooth impervious surface), with a 2% to 4% slope to prevent ponding, and shall be separated from the rest of the site by a grade break that prevents run-on of storm water. The paving around the fuel dispensing area may exceed the minimum dimensions of the "fuel dispensing area" stated above. **Plan Requirements and Timing:** These requirements shall be specified on the grading and building plans submitted to P&D. The plans shall be reviewed and detailed prior to approval of Land Use Permits/Coastal Development Permits.

**MONITORING:** P&D shall site inspect prior to occupancy clearance.

**Wat-20 Planner: Use this measure on parking lots associated with shopping centers or large commercial or industrial developments (with buildings or structures totaling 5,000 square feet or more).** A parking lot cleaning program shall be developed and implemented. The program shall include the following elements: removal of litter; spot cleaning of oil, fuel, and other automotive leaks; vacuum sweeping on a [Specify weekly, monthly, quarterly, or semi-annual] basis; inspection and cleaning of storm drain inlets and catch basins before November 1 and in January of each year; and posting of signs prohibiting littering, oil changing, and other automotive repairs. Debris removed from the catch basins shall be analyzed and disposed of accordingly. **Plan Requirements and Timing:** The cleaning program shall be submitted to P&D for review prior to approval of Land Use Permits/Coastal Development Permits. The location of the signs and the requirement for storm drain cleaning shall be included on the site and building plans submitted to P&D. The plans shall be reviewed prior to approval of Land Use Permits/Coastal Development Permits.

**MONITORING:** P&D shall site inspect prior to occupancy clearance and shall respond to complaints. The landowner shall maintain annual records of the storm drain cleaning and make them available for review by P&D on request.

**Wat-21 Planner: Use this measure for parking areas with 5-25 spaces. Parking areas greater than 25 spaces shall be conditioned by Public Works for treatment of runoff from the design storm event (NPDES Permit Requirement).** The parking area and associated driveways shall be designed to minimize degradation of storm water quality. Best Management Practices (BMPs) such as landscaped areas for infiltration (vegetated filter strips, bioswales, or bioretention areas), designed in accordance with the California Stormwater BMP Handbook for New Development and Redevelopment (California Storm Water Quality Association) or other approved method shall be installed to intercept and remove pollutants prior to discharging to the storm drain system. The BMPs selected shall be maintained in working order. The landowner is responsible for the maintenance and operation of all improvements and
shall maintain annual maintenance records. The BMPs shall be described and detailed on the site, grading and drainage and landscape plans, and depicted graphically. A maintenance program shall be specified in an inspection and maintenance plan and include maintenance inspections at least once/year. Long term maintenance shall be the responsibility of the [HOA (for residential projects) or the landowner (for commercial/industrial projects).] A maintenance program shall be specified in the CC&Rs or in a maintenance program submitted by the landowner for commercial/industrial sites and recorded with the Clerk of the Board. The plans and a copy of the long-term maintenance program shall be submitted to P&D and Public Works, Water Resources Division staff, for review prior to approval of Land Use Permits/Coastal Development Permits. BMP maintenance is required for the life of the project and transfer of this responsibility is required for any subsequent sale of the property. The condition of transfer shall include a provision that the property owners conduct maintenance inspection at least once/year and retain proof of inspections. Plan Requirements and Timing: The location and type of BMP shall be shown on the site, building and grading plans [select plans as appropriate based on type of BMP]. The plans and maintenance program shall be submitted to P&D for approval prior to land use clearance.

MONITORING: P&D shall site inspect for installation prior to occupancy clearance. The landowner shall make annual maintenance records available for review by P&D upon request.

Planner: Use this measure for any project identified as having a significant storm water quality impact and, if appropriate, identify and include the minimum BMPs to be implemented (see above measures). A combination of structural and non-structural Best Management Practices (BMPs) from the California Stormwater BMP Handbook for New Development and Redevelopment (California Storm Water Quality Association), or other approved methods, shall be installed to effectively prevent the entry of pollutants from the project site into the storm drain system after development. Plan Requirements: The applicant/owner shall submit and implement a Storm Water Quality Management Plan (SWQMP). The SWQMP shall include the following elements: identification of potential pollutant sources that may affect the quality of the storm water discharges; the proposed design and placement of structural and non-structural BMPs to address identified pollutants; a proposed inspection and maintenance program; and a method for ensuring maintenance of all BMPs over the life of the project. The approved measures shall also be shown on site, building and grading plans. Records of maintenance shall be maintained by the HOA for residential developments or landowners for commercial/industrial developments. Timing: Prior to approval of Land Use Permits/Coastal Development Permits, the SWQMP shall be submitted to P&D and Public Works.
Department, Water Resources Division. All measures specified in the plan shall be constructed and operational prior to occupancy clearance. Maintenance records shall be submitted to P&D on an annual basis prior to the start of the rainy season and for five years thereafter. After the fifth year the records shall be maintained by the landowner or HOA and be made available to P&D or Public Works on request.

**MONITORING:** P&D and Public Works, Water Resources Division shall site inspect prior to occupancy clearance to ensure measures are constructed in accordance with the approved plan and periodically thereafter to ensure proper maintenance.

**Construction materials and waste such as paint, mortar, concrete slurry, fuels, etc. shall be stored, handled, and disposed of in a manner which minimizes the potential for storm water contamination.**

**Plan Requirements and Timing:** Bulk storage locations for construction materials and any measures proposed to contain the materials shall be shown on the grading plans submitted to P&D for review prior to approval of Land Use Permits/Coastal Development Permits.

**MONITORING** P&D shall site inspect prior to the commencement of, and as needed during all, grading and construction activities.

**Plan:**

*This measure must be applied where there is storage of outdoor materials (NPDES Permit Requirement).*

An outdoor material storage area refers to storage areas or facilities solely for the storage of materials. Improper storage of materials out of doors may provide an opportunity for toxic compounds, oil and grease, heavy metals, nutrients, suspended solids, and other pollutants to enter the storm water conveyance system. Where proposed project plans include outdoor material storage areas that could contribute pollutants to the storm water conveyance system, the following measures are required:

1) Materials with the potential to contaminate storm water must either be (a) placed in an enclosure such as, but not limited to, a cabinet, shed, or similar structure that prevents contact with runoff or spillage to the storm water conveyance system; or (b) protected by a secondary containment structure such as berm, dike, or curb and covered with a roof or awning.

2) The storage area must be paved and sufficiently impervious to contain leaks and spill or otherwise be designed to prevent discharge of leaks or spills into the storm water conveyance system.

**MONITORING:** P&D shall site inspect prior to occupancy clearance to ensure measures are constructed in accordance with the approved plan and periodically thereafter to ensure proper maintenance.
**Planner:** This measure must be applied where there is a trash storage area (NPDES Permit Requirement). A trash storage area is an area where a trash receptacle(s) or dumpsters are located. Loose trash and debris can be transported by forces of water or wind into storm water conveyance system. All trash container areas must meet the following requirements:

1) Trash container areas must divert drainage from adjoining paved areas.

2) Trash container areas must be protected and regularly maintained to prevent off-site transport of trash.

**MONITORING:** P&D shall site inspect prior to occupancy clearance to ensure measures are constructed in accordance with the approved plan and periodically thereafter to ensure proper maintenance.

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**Planner:** This measure must be applied for all automotive repair shops and maintenance bays (NPDES Permit Requirement). All automotive repair shops and maintenance bays shall meet the following requirements:

1) Repair/maintenance bays must be indoors or designed in such a way that doesn’t allow storm water run-on or contact with storm water runoff.

2) Design a repair/maintenance bay drainage system to capture all wash-water, leaks and spills. Connect drains to a sump for collection and disposal. Direct connection of the repair/maintenance bays to the storm drain system is prohibited. If required by local Sanitary District, obtain an Industrial Waste Discharge Permit.

**MONITORING:** P&D shall site inspect prior to occupancy clearance to ensure measures are constructed in accordance with the approved plan and periodically thereafter to ensure proper maintenance.

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**Planner:** This measure must be applied for all commercial vehicle/equipment wash areas (NPDES Permit Requirement). All vehicle/equipment washing/steam cleaning areas must be self-contained and/or covered, equipped with a clarifier or other pretreatment facility, and properly connected to a sanitary sewer or other appropriately permitted disposal facility.

**MONITORING:** P&D shall site inspect prior to occupancy clearance to ensure measures are constructed in accordance with the approved plan and periodically thereafter to ensure proper maintenance.

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**Planner:** This measure must be applied for all restaurants and commercial food handling facilities (NPDES Permit Requirement). All outdoor equipment/accessory washing/steam cleaning must provide an
area for the washing/steam cleaning of equipment and accessories. The area must be self contained, equipped with a grease trap, and properly connected to a sanitary sewer. If the wash area is located outdoors, it must be covered, paved, have secondary containment, and be connected to the sanitary sewer or other appropriately permitted disposal facility.

**MONITORING:** P&D shall site inspect prior to occupancy clearance to ensure measures are constructed in accordance with the approved plan and periodically thereafter to ensure proper maintenance.

*Planner: This measure must be applied for all loading/unloading dock areas including commercial and automotive repair shops (NPDES Permit Requirement).* The following design criteria are required for all loading/unloading dock areas:

1) Cover loading dock areas or design drainage to minimize run-on and runoff of storm water.

2) Direct connections to storm drains from depressed loading docks (truck wells) are prohibited.

**MONITORING:** P&D shall site inspect prior to occupancy clearance to ensure measures are constructed in accordance with the approved plan and periodically thereafter to ensure proper maintenance.
Three Step Process

**STEP 1: Identify Project Type (per General Permit)**

1. Residential development equal to or greater than 1.0 acre
2. Commercial, industrial, and transportation / vehicle facilities which are 0.5 acres or greater
3. Single-Family Cliffside Residences
4. Automotive Repair Shops
5. Retail Gasoline Outlets
6. Restaurants
7. Home Subdivisions with 10 or more housing units
8. Parking lots 5,000 square feet or more or with 25 or more parking spaces and potentially exposed to storm water runoff

**STEP 2: Identify SOURCE CONTROL / SITE DESIGN BMPs**

<table>
<thead>
<tr>
<th>Category</th>
<th>BMP Description</th>
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<tbody>
<tr>
<td>Trash storage</td>
<td>Adjoining drainage shall be redirected, trash container areas screened or walled.</td>
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<tr>
<td>Material storage</td>
<td>Materials placed in enclosure, storage area paved and impervious, covered with</td>
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<td></td>
<td>roof or awning.</td>
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<tr>
<td>Loading docks</td>
<td>Cover loading dock, design drainage to minimize run-on and runoff, direct</td>
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<td>connections to storm drains from truck wells prohibited.</td>
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<tr>
<td>Vehicle maintenance / repair</td>
<td>Repair bays must be indoors or otherwise prevent storm water contact.</td>
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<td></td>
<td>Repair bays must capture all washwater, leaks and spills, drain to sump for</td>
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<td>collection and proper disposal.</td>
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<tr>
<td>Vehicle or equipment wash</td>
<td>Wash areas self-contained and/or covered, equipped w clarifier or pretreatment</td>
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<td>facility, proper connection to sanitary.</td>
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<td></td>
<td>Wash areas self-contained, equipped with grease trap, properly connected to</td>
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<td></td>
<td>sanitary. If outdoors, must be covered, paved, secondary containment, and</td>
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<td></td>
<td>connected to sanitary or other approved disposal.</td>
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<tr>
<td>Fueling</td>
<td>Fueling areas covered with overhanging roof structure or canopy, canopy</td>
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<td></td>
<td>minimum dimension equal to or greater than dispensing area within grade break,</td>
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<td></td>
<td>canopy cannot drain onto fuel dispensing area, canopy downspouts prevent</td>
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<td></td>
<td>drainage across fueling area,</td>
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<td></td>
<td>Dispensing area paved with Portland cement concrete or equivalent, 2% to 4%</td>
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<td></td>
<td>slope to prevent ponding, separated from rest of site by grade break.</td>
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<td></td>
<td>Dispensing area must be 6.5 feet from corner each fuel dispenser or length at</td>
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<td>which hose and nozzle assembly operated plus 1 foot, whichever is less.</td>
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<tr>
<td>Runoff from impervious areas:</td>
<td>Conserve natural areas (concentrate or cluster development, limit clearing and</td>
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<tr>
<td>&gt;1.0 ac residential</td>
<td>grading to minimum amount needed, maximize trees and vegetation, plant</td>
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<tr>
<td>&gt;10 units residential</td>
<td>additional vegetation, cluster tree areas, promote use native or drought tolerant</td>
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<tr>
<td>&gt;0.5 ac commercial</td>
<td>plants, promote landscaped areas, preserve wetlands and riparian areas)</td>
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<tr>
<td>&gt;25 or more parking stalls</td>
<td>Minimize pollutants of concern</td>
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<tr>
<td>&gt;5,000 sf parking</td>
<td>Protect slopes and channels (convey runoff safely, use natural drainage, stabilize</td>
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<tr>
<td>on erodable slopes</td>
<td>channel crossings, vegetate slopes, install energy dissipators to minimize erosion</td>
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<tr>
<td>(&gt;20%)</td>
<td>Provide storm drain stencil</td>
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<td></td>
<td>Post-development peak Q shall not exceed pre-development peak Q (Flood</td>
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<td></td>
<td>Control Conditions)</td>
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</tbody>
</table>

**STEP 3: Treat and detain/retain remaining runoff**

Per Public Works Water Resources (Flood Control / Cleanwater)
DATE: November 27, 2006

MEMO TO: Steve Mason, Deputy Director, Planning and Development
         Zoraida Abresch, Deputy Director, Planning and Development

FROM: Tom Fayram, Deputy Public Works Director

CC: Phil Demery, Public Works Director
    Ron Cortez, Deputy County Executive Officer
    Michael Ledbetter, Deputy County Counsel

RE: Coordination on Water Quality BMPs

As you know, the County is required to regulate new development and redevelopment projects under the NPDES Storm Water General Permit. Most of the NPDES requirements are addressed directly by your staff through standard conditions of approval (Attachment 1). One NPDES requirement not addressed by P&D is the treatment of runoff from certain categories of development (Attachment 2). This requirement is addressed by Public Works through the County of Santa Barbara’s Standard Conditions for Project Plan Approval for Water Quality BMPs (Attachment 3).

Since June, 2004, Water Resources staff has issued the conditions and provided review and approval of project submittals. In order to improve the implementation of these conditions, I would like your staff to implement the following practice:

Prior to issuing the completeness letter to the applicant, the treatment control measures must be adequately addressed on the project Grading & Drainage Plans or other appropriate submittal, by demonstrating how the project will meet our Standard Conditions.

To do this, the applicant must calculate runoff from the design storm and define how the project will treat that runoff. For example, if the proposal includes use of bioswales, bioretention, or detention, then the location of those areas would have to be identified and sized accordingly. Similarly, if the proposal includes a manufacturer’s control device, the location and type of the filter should be identified.
This clarification on a completeness item will prevent applicants from waiting until after decision maker hearings when it often too late to adequately address this condition. These measures are best addressed up-front during plan check and will, in the long run, make the process easier for both the applicant and the County.
Example for Completeness Letter

Stormwater Runoff. The County Board of Supervisors has adopted new interpretive and implementation guidelines for County policies to protect water quality from the long-term impacts of development. New projects must incorporate appropriate Best Management Practices (BMPs) into the project design to minimize water quality impacts to the maximum extent practical. In order of preference these BMPs are:

- site planning to avoid, protect, and restore sensitive areas (e.g., wetlands and riparian corridors);
- minimizing impervious surfaces and directly connected impervious surfaces, using existing natural features to allow for on-site infiltration of water;
- use of vegetative treatment (e.g., bio-swales, vegetative buffers, constructed or artificial wetlands);
- mechanical or structural treatment (e.g., storm drain filters and inserts).
- Combinations of the measures listed above.

In order to assure that adequate space is reserved to incorporate the necessary treatment control measures, please submit project Grading & Drainage Plans (or other appropriate submittal) that address how the project will meet the Santa Barbara County Standard Conditions for Project Plan Approval – Water Quality BMPs consistent with these policy objectives. These plans or submittals shall be provided to Santa Barbara County Public Works, Water Resources Division, for review and approval of completeness. More information, including level of detail needed for application completeness, can be found at: http://www.sbprojectcleanwater.org/post_construction.html Please contact Cathleen Garnand at (805) 568-3561 if you have any questions about these requirements.
Phase II Small MS4 General Permit
Questions and Answer Document

1. What is MEP? How is it defined?

MEP is the acronym for Maximum Extent Practicable. The federal Clean Water Act (CWA) provides that National Pollutant Discharge Elimination System (NPDES) permits for Municipal Separate Storm Sewer Systems (MS4) must require municipalities to reduce pollutants in their storm water discharges to the MEP. (CWA §402(p)(3)(B).) MS4 permits "shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods." (Id.)

The MEP standard involves applying best management practices (BMPs) that are effective in reducing the discharge of pollutants in storm water runoff. In discussing the MEP standard, the State Board has said the following: "There must be a serious attempt to comply, and practical solutions may not be lightly rejected. If, from the list of BMPs, a permittee chooses only a few of the least expensive methods, it is likely that MEP has not been met. On the other hand, if a permittee employs all applicable BMPs except those where it can show that they are not technically feasible in the locality, or whose cost would exceed any benefit to be derived, it would have met the standard. MEP requires permittees to choose effective BMPs, and to reject applicable BMPs only where other effective BMPs will serve the same purpose, the BMPs would not be technically feasible, or the cost would be prohibitive." (Order No. WQ 2000-11, at p.20.) MEP is the result of the cumulative effect of implementing, continuously evaluating, and making corresponding changes to a variety of technically and economically feasible BMPs that ensures the most appropriate controls are implemented in the most effective manner. This process of implementing, evaluating, revising, or adding new BMPs is commonly referred to as the iterative approach (see question 4). For Small MS4s, EPA has stated that pollutant reductions to the MEP will be realized by implementing BMPs through the six minimum measures described in the permit. (64 Federal Register 68753.)

Source: SWRCB (updated 8/5/04)
http://www.swrcb.ca.gov/stormwtr/smallms4faq.html
Low Impact Development (LID)
A Sensible Approach to Land Development and Stormwater Management

What is Low Impact Development (LID)?

LID is an alternative method of land development that seeks to maintain the natural hydrologic character of the site or region. The natural hydrology, or movement of water through a watershed, is shaped over centuries under location-specific conditions to form a balanced and efficient system. When hardened surfaces such as roads, parking lots, and rooftops are constructed, the movement of water is altered; in particular, the amount of runoff increases and infiltration decreases. This results in increased peak flow rate and volume, and pollution levels in stormwater runoff. LID designs with nature in mind: working with the natural landscape and hydrology to minimize these changes. LID accomplishes this through source control, retaining more water on the site where it falls, rather than using traditional methods of funnelling water via pipes into local waterways. Both improved site design and specific management measures are utilized in LID designs. LID has been applied to government, residential, and commercial development and redevelopment, and has proven to be a cost-efficient and effective method for managing runoff and protecting the environment.

Using LID Tools in Residential Development

**Natural Drainage Flow**
Reduces need for grading and constructed drainage systems by building houses in a location that permits preservation of natural pattern of stormwater drainage.

**Preserved Native Vegetation**
Enhances the aesthetic quality of community and improves the evaporation-transpiration rate.

**Bioretention Cell or Rain Garden**
Depressions that contain soil amendments that promote infiltration of stormwater.

**Porous Pavement**
Concrete that allows rain to infiltrate, thereby reducing runoff and promoting groundwater recharge.

**Amended Soil**
Soil enriched with sand and organic materials increases the capacity of soil to infiltrate water.

**Reduced Hardscape**
Narrower streets, sidewalks, and driveways increases pervious areas and open spaces.

**Grassy Swale**
Vegetated channels that slow stormwater runoff and promotes infiltration, traps sediment, and helps treat pollutants.

Diagram adapted from Prince George's County Maryland Low-Impact Development Design Strategies.
Historically, in the U.S., the motto for stormwater management has been “conveyance”: move water away from the site where it falls as quickly and efficiently as possible. Traditional management tools include street gutters and curbs, pipes, and canals to remove water from the developed areas. To receive this increased volume, creeks and rivers are re-shaped and lined with concrete. Detention ponds, some with water quality filtration devices, regulate discharge to reduce peak flow impacts on receiving waters. For the most part, these practices reduce flood impacts, but do not completely address water quality, and aquatic and riparian habitat degradation issues.

In contrast with the traditional approaches, the guiding principle of low impact development approaches is not conveyance; it is “source control and infiltration”. LID techniques seek to maximize the area available for infiltration so that runoff volume and pollutant concentrations are reduced. This is achieved through a variety of site design and engineered infiltration techniques. Site design techniques include locating open spaces in low-lying areas to serve as a detention/retention basin and avoid development on permeable soils to promote infiltration and groundwater recharge. Engineered techniques include the use of grassy swales, bioretention cells, and porous pavement.

### LID Benefits

**Water Quality**
- Contributes to groundwater recharge through infiltration
- Improves surface water quality
- Protects stream and lake quality from large volumes of polluted runoff

**Meets Clean Water Act Requirements**
- Source control reduces the pollutant level and volume of runoff entering a water body, complying with National Pollutant Discharge Elimination System (NPDES) and anti-degradation policy.
- This also aids in complying with 401 certification requirements

**Flood Control**
- Reduces frequency & severity of floods
- Reduces peak flow volume & velocity

**Habitat Protection**
- Preserves stream & riparian habitats
- Preserves regional trees & vegetation
- Reduces eroded sediment loading into streams & lakes

**Community Value**
- Increases aesthetics and recreational opportunities in protected riparian habitats
- Increases land value by having a cleaner environment
- Increases public/private collaborative partnerships

### LID Challenges

**Lack of Information**
- Many municipal planners, consultants and the general public are unfamiliar with the benefits of LID practices and how to utilize them in different environments.

**Inflexible Regulations/Ordinances**
- Existing rules often lack the flexibility to implement LID solutions

**Maintenance**
- Some LID tools require maintenance by homeowners and local public works departments to function properly

**Presence of Contaminants**
- Use of filtration practices can threaten groundwater quality if high levels of soil contaminants are present.

![Storm drain leading to bioretention cell](https://www.main.nc.us/riverlink/content/12chap/chap12.htm)

**Roof runoff drains to grassy swale**

### Economic Issues

The **economic benefits** of LID include:

- Reduced costs of stormwater infrastructure, including curbs and gutters
- Reduced stormwater utility fees
- Increased land value
- Decreased spending on current and future environmental conservation programs

Specific cost savings vary on a case by case basis. There can be **additional costs:**

- Higher installation costs for certain soil types and gradients
- Increased landscape maintenance costs

<table>
<thead>
<tr>
<th>Issue</th>
<th>Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher Lot Value</td>
<td>$3000 more per lot</td>
</tr>
<tr>
<td>Lower Cost Per Lot</td>
<td>$4800 less cost per lot</td>
</tr>
<tr>
<td>Enhanced Marketability</td>
<td>80% of lots sold in first year</td>
</tr>
<tr>
<td>Added Amenities</td>
<td>23.5 acres of green-space/parks</td>
</tr>
<tr>
<td>Recognition</td>
<td>National, state, and professional</td>
</tr>
<tr>
<td>Total Economic Benefit</td>
<td>Over $2,200,000 added to profit</td>
</tr>
</tbody>
</table>

The above table, from **Gap Creek residential subdivision**, Sherwood, AR, illustrates the financial benefits of using LID methods. **Tyne & Associates, North Little Rock, AR**
Addressing LID Implementation Challenges

Solutions

Clay Soils/Limited Space
The combination of clay soils and small lot sizes can work well together. As clays are naturally less pervious, less engineering and land is required to achieve predvelopment infiltration rates. Use integrated stormwater management techniques, a combination of traditional and LID approaches. Significant stormwater runoff reduction can still be achieved.

Local Codes Aren’t LID-friendly
Revise local codes & ordinances to support use of LID techniques. Check out the Center for Watershed Protection’s website for suggested guidelines (www.cwp.org/COW_worksheet.htm).

Don’t know what would work and where
Educate planning & public works staff. Numerous references are available on the use of LID in a variety of settings (see Online References).

Some communities that have found solutions

Hercules has modified stormwater management guidelines that fit LID principles, city codes that allow administrative approval for LID projects, and limited street lengths.

Contra Costa incorporated LID measures into their Standard Urban Stormwater Management Plan (SUSMP) for new development (http://www.cccleanwater.org/construction/nd.php). Sacramento, likewise, is publishing their own design manual in Fall, 2006 that includes LID measures.

San Diego has new parking standards for intensive commercial zones that include smaller parking spaces and driveways, plus new guidelines requiring reduced imperviousness for parking spaces.

Santa Monica encourages LID by requiring that all new developments and substantial remodels submit an “Urban Runoff Mitigation Plan”, and reduce projected runoff for the site by 20%. The city recommends LID technologies.

LID as a Re-design Strategy

Retrofit a Parking Lot to Increase permeability. Over sixty-five percent of impervious areas are associated with “habitat for cars”. Using porous pavement in parking lots is a simple way to increase infiltration and reduce runoff. When the US Navy Yard in Washington, D.C. needed to repave its parking lot, they used porous pavers. They also added bioretention cells to the landscaped areas and disconnected downspouts. The re-design did not alter the amount of parking spots, but reduced peak runoff and pollution, thus protecting and helping to restore the Anacostia and Potomac Rivers and the Chesapeake Bay.

Porous pavement covers about 1/3 of each parking space in the D.C. Navy Yard parking lot.

LID street design: vegetated swales, no curbs, and narrower streets promote infiltration of stormwater.

Alter street design to increase infiltration. In a landmark project in Seattle, the Street Edge Alternative or SEA project involved building vegetated swales, bioretention cells, and narrower streets without curbs to promote an effective drainage and filtration system. The system reduced peak runoff for the 2 year flood event by 98%, and is capable of conveying the 25 year flood event. The local watershed provides spawning habitat for endangered salmon. The project was so successful that similar ones are being planned throughout the city.

Rain garden in a small backyard that collects runoff from roof and patio.

Replace lawns with rain gardens. Rain gardens are small bioretention cells landscaped with plants, trees, and grasses. They are a particularly good way for individual homeowners to enhance their landscaping while protecting water quality. By planting easy-care native wildflowers, hardy perennials and grasses, attractive gardens can be constructed that have the added environmental benefits. More information on rain gardens is available at: http://www.healthylandscapes.org/raingarden.htm. Information on plants compatible for use in a California rain garden is posted at: http://www.bbg.org/gar2/topics/design/2004sp_raingardens.html.

30. Low Impact Development
LID is more than just a collection of engineered tools. It is a comprehensive design technique incorporating site planning and integrated management measures.

**LID design principles include:**

- Extensive site assessment of hydrology, topography, soils, vegetation and water features;
- Higher density, clustered housing preserving open spaces to facilitate infiltration and protect habitats;
- Street layout that minimizes road length and width, calming traffic while allowing safe access of emergency vehicles,

LID Technical Guidance Manual for Puget Sound

**Examples of LID**

- **Basic Components of a Bioretention Cell**
  To: see how to engineer bioretention cells with the proper gradient and components visit: www.lowimpactdevelopment.org/epa03/biospec.htm

- **Curb Cuts** permit stormwater to flow into grassy swales to reduce roadway contaminants that flow into nearby waterways. They can also be used in existing landscaped areas.

- **Rain Gardens and grass swales between houses are used at Douglas Ranch, Granite Bay, CA to catch and filter runoff from roofs and driveways before entering a local stream.**

- **Hollywood Driveways** have a dividing strip of grass in order to reduce the amount of impervious surface. Another way to reduce driveway space is to share one with a neighbor.

**Online Resources**

- Low Impact Development Center
- U.S. Environmental Protection Agency
- Stormwater Manager’s Resource Center
- National NEMO Network
- LID Urban Design Tool
- National Association of Home Builders
- California Stormwater Quality Association
- www.lowimpactdevelopment.org
- www.epa.gov/owowinpsurban
- www.stormwatercenter.net
- www.nemonet.ucdavis.edu
- www.lid-stormwater.net
- www.toolbase.org/index-toolbase.asp
- www.cabmphandbooks.com

Prepared by Office of Environmental Health Hazard Assessment & the California Water & Land Use Partnership (CA WALUP)

Written by E. Ruby & D. Gillespie, student interns, OEHHA. For more information contact Barbara Washburn: bwashburn@oehha.ca.gov.

CA WALUP is an educational program for land use decision makers addressing the relationship between land use and natural resource protection. The CA WALUP is a Charter Member of the National NEMO Network. CA WALUP website: http://cawalup.usc.edu
How Urbanization Affects the Water Cycle

Why is the Water Cycle Important?

The water cycle, also known as the hydrological cycle, is the continuous exchange of water between land, waterbodies, and the atmosphere. Approximately 97% of the earth's water is stored in the oceans, and only a fraction of the remaining portion is usable freshwater. When precipitation falls over the land, it follows various routes. Some of it evaporates, returning to the atmosphere, some seeps into the ground, and the remainder becomes surface water, traveling to oceans and lakes by way of rivers and streams. Impervious surfaces associated with urbanization alter the natural amount of water that takes each route. The consequences of this change are a decrease in the volume of water that percolates into the ground, and a resulting increase in volume and decrease in quality of surface water. These hydrological changes have significant implications for the quantity of fresh, clean water that is available for use by humans, fish and wildlife.

MORE WATER FASTER

DEVELOPED LANDS
Rain pours more quickly off of city and suburban landscapes, which have high levels of impervious cover

NATURAL LANDS
Trees, brush, and soil help soak up rain and slow runoff in undeveloped landscapes

Pavement & rooftops shed water
Storm drains deliver water directly to waterways
Streets act as streams, collecting stormwater and channeling it into waterways
Pollutants collected on impervious surfaces are washed into streams, rivers, and lakes

Trees & other vegetation break the momentum of rain and help reduce surface erosion
Water pools in indentations and filters into the soil
Roots anchor soil, minimizing erosion
Vegetation helps build organic, absorbent soil

RUNOFF

Figure 1 (left) illustrates how impervious cover and urban drainage systems increase runoff to creeks and rivers. The larger volume, velocity and duration of flow acts like sandpaper on stream banks, intensifying the erosion and sediment transport from the landscape and stream banks. This often causes channel erosion, clogged stream channels, and habitat damage.

Channelized rivers and streams exhibit similar problems accommodating large peak runoff volumes and supporting aquatic ecosystems.

Graphic Sacramento Bee

Figure 2. The hydrograph (left) illustrates stormwater peak discharges in an urban watershed (red line) and a less developed watershed (yellow line). In watersheds with large amounts of impervious cover, there is a larger volume and faster rate of discharge than in less developed watersheds, often resulting in more flooding and habitat damage.

Adapted from Santa Clara Hydromodification Management Plan

31. Low Impact Development
Figure 2: How impervious cover affects the water cycle.

With natural ground cover, 25% of rain infiltrates into the aquifer and only 10% evaporates as runoff. As imperviousness increases, less water infiltrates and more runs off. In highly urbanized areas, over one half of total rain becomes surface runoff and deep infiltration is only a fraction of what it was naturally.

The increased surface runoff requires more infrastructure to minimize flooding. Undisturbed rainwater is today being used as drainage channels, and are frequently linear with concrete or asphalt. Low permeable surfaces maake run-off quick and prevent evaporation.

Infiltration at deep infiltration decreases the water table drops, reducing groundwater to wetlands, riparian vegetation, and urban areas.

Figure 3: Relationship between imperviousness and stream quality.

In most cases, when impervious cover (IC) is less than 10% of a watershed, streams remain healthy. Above 10% impervious cover, common signs of stream degradation are evident. They include:

- Excessive stream channel erosion (bed and bank)
- Reduced groundwater recharge
- Increased size and frequency of 1-2 year floods
- Decreased movement of groundwater to surface water
- Loss of streambank tree cover
- Increased contaminants in water
- Increased fine sediment in stream bed
- Overall degradation of the aquatic habitat

Pictures from different reaches of Secret Ravine Creek, Placer County, California.
Figure 4. Conceptual relationship between IC and stream habitat quality.

Between 10 – 25% imperviousness, major alterations in stream morphology occur that significantly reduce habitat quality. At greater than 25% impervious cover, streams suffer from loss of habitat, floodplain connectivity, and bank stability, as well as decreased water quality.

California Examples

Studies on urban streams across California have consistently found similar patterns of degradation. For example, in Los Penasquitos Creek in San Diego County, watershed development grew from 9% to 37% urbanization between 1966-2000. From 1973-2000, the total annual urban runoff in the upper watershed increased by 4% per year, resulting in more than a 100% increase in runoff for the measured time period. The flood magnitude for the 1-2 year storm also increased by more than 5 fold from 1965-2000.

Figure 5. Comparison of Pre- and Post-Development Flow Conditions, Thompson Creek, Santa Clara Valley, CA.

The impact of 44% impervious cover on a variety of hydrological parameters on Thompson Creek were predicted during a random seven-day period. 50 years worth of data was used in the modeling process. The most obvious difference between the pre and post development conditions is the significantly greater volume of runoff generated after development, as seen in the above graph. Whereas pre-development flows were typically at flow rates that would not cause bank erosion (green line), post-development flows mainly exceeded the flow needed to destabilize stream banks. Further, post-development flows, in contrast to pre-development flows, would regularly exceed the historic 2-year storm event.

The impacts of these altered conditions are degradation of the aquatic habitat and increased frequency of flood events. In the Thompson Creek sub-watershed, hydrologists also found that the increased imperviousness associated with development approximately doubled stormwater runoff for peak discharges for 2, 5, and 10-year storm event. Results in this watershed and elsewhere have shown that the 0 – 10 year storms are the events that overwhelmingly alter the shape and size of streams. Thus, doubling of the rate of runoff will have significant impacts on aquatic resources as well as the risk of flooding.
In a Nutshell

Increased impervious cover associated with urbanization alters the natural cycling of water. Changes in the shape and size of urban streams, followed by decreased water quality, are the most visible effects of increased imperviousness. Greater frequency and severity of flooding, channel erosion, and destruction of aquatic habitat commonly follow watershed urbanization. Alterations in the aquatic environment associated with these hydrological changes greatly compromise the normal functioning of our waterways.

Resources on the Web

Center for Watershed Protection
www.cwp.org

State Water Resources Control Board(NPS Encyclopedia)
www.waterboards.ca.gov/nps/encyclopedia.html

National NEMO Network
http://nemonet.uconn.edu/

Low Impact Development Center
www.lowimpactdevelopment.org/

EPA Information on hydrological cycle
www.epa.gov/seahome/greenwater/src/cycle.htm

The Stormwater Manager’s Resource Center
www.stormwatercenter.net

References:
TEN BASIC PRINCIPLES

(From Erosion & Sediment Control Handbook by Goldman, Jackson and Bursztynsky, 1986, McGraw-Hill)

☑ FIT DEVELOPMENT TO THE TERRAIN

☑ TIME GRADING AND CONSTRUCTION TO MINIMIZE SOIL EXPOSURE

☑ RETAIN EXISTING VEGETATION WHEREVER FEASIBLE

☑ VEGETATE AND MULCH DENUDED AREAS

☑ DIVERT RUNOFF AWAY FROM DENUDED AREAS

☑ MINIMIZE LENGTH AND STEEPNESS OF SLOPES

☑ KEEP RUNOFF VELOCITIES LOW

☑ PREPARE DRAINAGE WAYS AND OUTLETS TO HANDLE CONCENTRATED OR INCREASED RUNOFF

☑ TRAP SEDIMENT ON SITE

☑ INSPECT AND MAINTAIN EROSION CONTROL MEASURES DURING CONSTRUCTION
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD - SAN DIEGO REGION
WATERSHED MANAGEMENT PROGRAM

FACILITY INSPECTION REPORT

INSPECTION DATE: October 5, 2007       TIME: 9 am       WDID: 8 37C322900

FACILITY REPRESENTATIVE(S) PRESENT DURING INSPECTION: none

North County Transit District
NAME OF OWNER, AGENCY OR PARTY RESPONSIBLE FOR DISCHARGE

Don Bullock, (760) 737-8625
OWNER CONTACT NAME AND PHONE #

Sprinter Rail Project
FACILITY OR DEVELOPER NAME (if different from owner)

Steven Hoyle, (760) 737-8625 x254
FACILITY OR DEVELOPER CONTACT NAME AND PHONE #

808 Rancheros Drive
FACILITY STREET ADDRESS

San Marcos, CA
FACILITY CITY AND STATE

APPLICABLE WATER QUALITY LICENSING REQUIREMENTS
☐ MS4 URBAN RUNOFF REQUIREMENTS NPDES NOS. CAS0108758, CAS0108740 or CAS0108766
☒ GENERAL PERMIT ORDER NO. 99-06-DWQ, NPDES NO. CAS000002 – CONSTRUCTION
☐ GENERAL PERMIT ORDER NO. 99-06-DWQ, NPDES NO. CAS000003 - CALTRANS
☐ GENERAL OR INDIVIDUAL WASTE DISCHARGE REQUIREMENTS
☐ GENERAL OR INDIVIDUAL WAIVER OF WASTE DISCHARGE REQUIREMENTS
☐ SECTION 401 WATER QUALITY CERTIFICATION
☐ CWC SECTION 13264

INSPECTION TYPE (Check One)

A1 ☐ "A" type compliance—Comprehensive inspection in which samples are taken. (EPA Type S)
B1 ☒ "B" type compliance—A routine nonsampling inspection. (EPA Type C)
02 ☐ Noncompliance follow-up—Inspection made to verify correction of a previously identified violation.
03 ☒ Enforcement follow-up—Inspection made to verify that conditions of an enforcement action are being met.
04 ☒ Complaint—Inspection made in response to a complaint.
05 ☐ Pre-requirement—Inspection made to gather info. relative to preparing, modifying, or rescinding requirements.
06 ☐ No Exposure Certification (NEC) - verification that there is no exposure of industrial activities to storm water.
07 ☐ Notice of termination request for industrial facilities or construction sites - verification that the facility or construction site is not subject to permit requirements (Type, NOT I or NOT C - circle one).
08 ☐ Compliance Assistance Inspection - Outreach inspection due to discharger's request for compliance assistance.

INSPECTION FINDINGS

☐ Y ☐ N Were violations noted during this inspection? (Yes/No/Pending Sample Results)
☐ Y ☐ N Were samples taken? (No/Yes) If YES then, G= grab or C= Composite and attach a copy of the sample results/chain of custody form

I. COMPLIANCE HISTORY:

Notice of Violation (NOV) No. R9-2007-0050 was issued on March 19, 2007 for construction storm water permit violations including discharge of sediment, and inadequate BMPs.

NOV No. R9-2007-0063 was issued on April 3, 2007 for construction storm water permit violations including discharge of sediment and inadequate BMPs.

Administrative Civil Liability No. R9-2007-0093 was issued on August 31, 2007 for construction storm water permit violations including discharge of sediment, inadequate BMPs, and inadequate inspections.
II. FINDINGS

On October 5, 2007, Ben Neill, Peter Peuron, and Lee Shenk of the Regional Board’s Central Watershed Unit inspected the North County Transit District’s (NCTD) construction of the Sprinter Rail. The inspection observed construction activities along:

1. Washington Avenue, Escondido
2. Nordahl Road Station and along Barham Drive, Escondido
3. Barham Drive, near Shelley Drive, San Marcos,
4. Palomar station, San Marcos
5. Mar Vista drive storage yard, Vista
6. Melrose Drive station, Oceanside
7. Rancho del Oro station, Oceanside and
8. College Blvd station, Oceanside.

The National Weather Service’s website for the San Diego Region forecast a 20% chance of rainfall on the day of the inspection. Weather was gray and overcast with some light sprinkles in the morning. Later after noon, the skies were partly cloudy with no rainfall. No notice was given on the inspection and NCTD representatives were not present during the inspection.

1. Washington Avenue in Escondido - The Sprinter tracks are south of and parallel to Washington Avenue from Hale Avenue, going west under I-15 to Mission Road. A low drainage ditch runs along the north side of the tracks between Washington Avenue and the rail line. Marin landscaping was busy applying hydroseed for erosion control along this drainage ditch (Photo 1). At several locations, the drainage ditch has storm drain inlets that were not protected with sediment controls (Photos 2, 3, 4, 5, 9). The drainage ditch also had trash accumulated near the inlets (Photos 2, 4, 5). At the intersection of Washington Avenue and Mission Road, a large area of soil was exposed with no sediment control BMPs or soil stabilization (Photo 6). Along Washington Avenue, two storm drain inlets were observed with broken up gravel bags that have not been maintained (Photos 7, 8).

2. Nordahl Road Station and along Barham Drive in Escondido - This station construction is on the southwest corner of the intersection of Citracado Parkway and Mission Boulevard. The disturbed area is from Citracado Parkway extending west to Barham Drive. The tracks run along the south side of Mission Boulevard. The construction site entrance/exit to north Citracado Parkway was without best management practices (BMPs) such as gravel or shaker plates to prevent sediment tracking (Photo 10). A storm drain inlet south of the tracks and just west of Citracado Parkway had gravel bags that were broken and not maintained (Photo 11). Along the south side of the tracks, a silt fence was in disrepair in part and missing in some areas (Photos 12, 13, 14, 15). Construction material trash and debris was stored outside with no cover or containment south of the tracks (Photos 14, 15). Along the north side of the tracks next to Mission Boulevard, disturbed soil did not have sediment controls or soil stabilization (Photo 16). At the intersection of Barham Drive, more construction trash and debris was stored outside without cover or containment (Photo 17). Along the southeast side of Barham Drive, fiber rolls and silt fences were destroyed beyond usefulness (Photos 18, 19). A row of gravel bags on the northwest side of Barham Drive had deteriorated to the point of being ineffective (Photo 20).

3. Barham Drive near Shelley Drive in San Marcos - This was one of the sites containing previous violations noticed in NOV R9-2007-0050 issued on March 19, 2007. A large area of disturbed soil was without any sediment controls or soil stabilization (Photo 21). In the middle of this disturbed area there was an unprotected storm drain (Photo 22).

4. Palomar College Station – This was one of the sites containing previous violations noticed in NOV R9-2007-0050 issued on March 19, 2007. This station is south of W. Mission Rd, and north of Armorlite Dr. in San Marcos, across Mission Rd, from Palomar College. The site houses trailers for NCTD and their contractors. A storm drain inlet at the Armorlite Drive entrance to the trailers has gravel bags that are destroyed to the point that the gravel appears to be entering the inlet (Photo 23). A portable toilet is nearby and silt fencing has been partially removed (Photo 24).

5. Mar Vista drive storage yard in Vista - This was one of the sites containing previous violations noticed in NOV R9-2007-0050 issued on March 19, 2007. This storage yard has a large soil stockpile that was not covered or contained to protect storm water runoff. Silt fence was not maintained around this stockpile. The silt fence was falling down on one side of the stockpile (Photo 25).
6. Melrose Drive station in Oceanside - This station is on the southwest corner of Melrose Drive and Oceanside Boulevard next to a convenience store. The headwaters to Loma Alta Creek flow adjacent to the south side of the tracks. This site did not have any erosion controls on slopes and fiber rolls were not implemented properly (Photos 26, 27, 28). The fiber rolls were not trenched in properly on a slope north of the tracks. A slope south of the tracks did not have the fiber rolls overlapping at the ends. The construction exit through the convenience store parking lot did not have any BMPs to prevent sediment tracking (Photo 29). At this exit a storm drain inlet was in the bare soil with no BMPs to protect it (Photo 30). The inlet has been repeatedly driven over tracking sediment into the inlet. At the western edge of the Melrose station construction, trash and debris was stored outside without cover or containment (Photo 31).

7. Rancho del Oro station in Oceanside - This station is bordered by Rancho del Oro Road to the east. Loma Alta Creek runs through the north of the station. A pedestrian bridge is being built over the creek to access the station. The construction site entrance/exit from Rancho del Oro Road does not have large gravel or shaker plates or a tire wash station to prevent sediment tracking onto the adjacent paved public road (Photo 32). The southern bank of Loma Alta creek does not have any erosion controls (Photo 33). This exposed bank appears to be vulnerable during high flow rates and volume. A storm drain along the west side of Rancho del Oro Road had a single gravel bag which appears to be inadequate to trap sediment from entering the inlet (Photo 34). Along the east side of Rancho del Oro Road, a fiber roll had not been maintained and was flattened from repeatedly being run over (Photo 35).

8. College Blvd Station in Oceanside - This station is next to Loma Alta Creek in a shopping center on the southwest corner of College Boulevard and Oceanside Boulevard. A pedestrian bridge is being built over Loma Alta creek. The creek’s banks on either side of the pedestrian bridge have a silt fence at the base to provide sediment controls but is without erosion controls on the slope such as hydroseed or erosion control blankets (Photos 36, 39). These exposed banks appear to be vulnerable during post storm high flow rates. A portion of the shopping center’s parking lot is used as a staging and storage area for construction activities. Significant sediment tracking was observed on the shopping center’s paved parking lot (Photo 37). Soil stockpiles and construction trash storage was without cover and without containment (Photo 38).

The lack of erosion controls, sediment controls, sediment tracking BMPs, trash storage BMPs, and soil stockpile BMPs are all violations that were previously noticed in NOV No. R9-2007-0050 on March 19, 2007 and NOV No. R9-2007-0063 on April 3, 2007. The August 31, 2007 ACL was also assessed in part for these same BMP violations.

III. SIGNATURE SECTION

Peter Peuron
STAFF INSPECTOR

Ben Nellir
STAFF INSPECTOR

IV. (For internal use only)

Reviewed by Supervisor: ________________________ Date 10/17/07

cc: Jeremy Johnstone (EPA), John Norton (SWRCB),

Inter-office Referral: 1) 2) 3) 4) 5)

D:\Construction\Sprinter Rail10-5-07\FIR.doc

35. Enforcement
All photos taken by Ben Neill, Water Resource Control Engineer.

1. Crew hydroseeding drainage ditch. Photo looking north across the tracks.

Photos 1 through 9 were taken along West Washington Avenue in Escondido.

2. Storm drain inlet along the north side of the tracks is without sediment controls such as gravel bags. White trash is near the inlet. The drainage ditch was recently hydroseeded. Photo looking west.

3. Another storm drain inlet along the north side of the tracks is without sediment controls such as gravel bags. Photo looking west.

NCTD Sprinter Rail 9 37C322900

October 5, 2007
4. Another storm drain inlet along the north side of the tracks is without sediment controls such as gravel bags. Trash in the drainage ditch. Photo looking west.

5. Another storm drain inlet along the north side of the tracks is without sediment controls such as gravel bags. Trash is in the drainage ditch. Photo looking east.

6. A large area of bare dirt has no sediment protections or soil stabilization. Photo is looking north.

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2
7. Storm drain inlet along the south side of Washington Avenue is without adequate storm drain inlet protection. The existing BMP has not been maintained. Photo looking south.

8. Storm drain inlet along the south side of Washington Avenue has BMPs that have not been maintained. Photo looking south.

9. Storm drain inlet on the north side of the tracks without any sediment protections. Photo is looking north.

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10. Construction site exit has no BMPs to prevent sediment tracking. Tracking is observed onto the adjacent paved public street, North Citracado Parkway. Photo looking north.

Photos 10 through 16 were taken at the Nordahl Road station construction in Escondido.

11. Storm drain inlet south of the tracks has BMPs that have not been maintained. Photo looking south.

12. Silt fencing has not been maintained along the south side of the tracks. Photo looking west.

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13. Silt fence south of the tracks is torn down and unmaintained. Photo looking south east.

14. Silt fence is unmaintained. Construction debris and trash is not protected from storm water. Photo looking south.

15. No silt fence is implemented in this area. Construction debris and trash is not protected from storm water. Photo looking south.
16. Bare soil north of the tracks does not have sediment controls or soil stabilization. Photo looking east.

Photos 17 through 20 were taken along Barham Dr. near the Mission Rd intersection on the border of the cities of San Marcos and Escondido.

17. Construction trash is not protected with BMPs from storm water. Photo looking east.

18. Sediment controls along the perimeter of south Barham drive have not been maintained. Photo looking north east.
19. A closer view of the poorly maintained BMPs in photo 18 shows that the silt fence and fiber roll are flattened. Photo looking north.

20. Gravel bags along north Barham Drive have not been maintained. Photo looking north.

Photos 21 and 22 were taken at the southeast corner of Barham drive and Shelly drive.

21. A large area of bare soil is without soil stabilization. A storm drain inlet sits in the middle of this bare area.
22. A closer examination of the storm drain inlet in photo 21 shows that the inlet has no sediment controls protecting the inlet. Photo looking north east.

Photos 23 and 24 were taken at the Palomar station construction along Armorlite drive in San Marcos.

23. Storm drain inlet just north of Armorlite drive has unmaintained BMPs. Photo looking west.

24. Another view of the inlet in photo 23 shows the proximity of a portable toilet and silt fencing that has been partially removed. Photo looking north.
25. Silt fence around the soil stockpiles has not been maintained and has fallen down. Photo looking south.

Photos 26 through 31 were taken at the Melrose Drive station construction in Oceanside.

26. This slope north of the tracks does not have erosion controls in place. Fiber roll is not trenched in place. Photo looking west.

27. Slope south of the tracks does not have erosion controls. Photo looking north.
28. Fiber rolls on the slope in photo 27 are not overlapped. No erosion controls in place. Photo looking west.

29. Construction exit is without BMPs to prevent sediment tracking onto the adjacent paved area of the convenience store. Photo looking north west.

30. A storm drain inlet near the construction exit in photo 29 is without BMPs and sediment is falling into the drain. Photo looking west.

NCTD Sprinter Rail
9 37C322900

October 5, 2007  10
31. Construction trash is stored outside with no cover or containment to prevent contact with storm water. Photo looking south.

Photos 32 through 35 were taken at the Rancho del Oro station construction in Oceanside.

32. Construction exit is without BMPs to prevent sediment tracking onto the adjacent paved street. Photo looking west.

33. Slope adjacent to Loma Alta Creek is without erosion controls such as bonded fiber matrix or erosion control blankets. Silt fence does not extend the length of the slope. Photo looking south west.

NCTD Sprinter Rail
9 37C322900

October 5, 2007   11
34. A storm drain inlet on the west side of Rancho del Oro Blvd. does not have adequate sediment controls and is not being maintained. Photo looking south.

35. Fiber rolls along the east of Rancho del Oro Blvd have not been maintained and are flattened. Disturbed soil has not been stabilized. Photo looking north.

Photos 36 through 39 were taken at the College Blvd Station in Oceanside.

36. Slope next to Loma Alta Creek does not have erosion controls implemented. Photo looking east.

NCTD Sprinter Rail
9 37C322900

October 5, 2007
37. Sediment tracking from the College Station construction onto the paved parking lot of the shopping center. Photo looking east.

38. Material stockpiles and construction trash are stored without cover or containment. Photo looking north west.

39. Slope next to Loma Alta Creek pedestrian bridge abutment is without erosion controls. Photo looking west.
Dev Rev Staff Training 2008

CLEAN WATER REQUIREMENTS
Construction and Post-Construction

*See packet for details

I. NPDES Municipal General Permit* requirements apply to County

II. P&D authority and practice
   a. Policy and policy interpretation*
   b. LUQC* (35.30.180; 35.430.140 Montecito)
   c. CEQA Checklist
   d. Envt’ll Thresholds & Guidelines Manual*
   e. Planner’s Guide to Conditions of Approval and Mitigation Measures*
   f. Procedures Manual

III. Need to provide “early certainty” to applicants
   a. Three step process*
   b. Pre-application meetings
   c. Application requirements (Item N on application)
   d. Application completeness* treatment control

IV. Address Hillside Watershed Protection Policy #7 in Initial Study. MUST BE VERY CLEAR.
   a. Conserve natural areas (cluster, limit clearing, maximize vegetation, use vegetation for infiltration, preserve riparian/wetlands)
   b. Minimize pollutants (source control measures)
   c. Maintain hydrologic character (low impact development)
   d. Protect slopes and channels (convey safely, use natural drainage, stabilize channel, vegetate slopes, dissipate energy at outlets)
   e. Storm drain marking
   f. Proper design requirements (restaurants, commercial, vehicle maintenance, parking areas, loading docks, material storage, retail gasoline, equipment wash, trash storage)

V. Role of Public Works staff during dev review
   a. Flood Control addresses peak runoff
   b. Water Resources addresses treatment control

VI. Defining “Maximum Extent Practicable”
   a. Some Attachment 4 requirements are subjective
   b. Definition* is always changing, evolving

Page 1 of 2
c. How state defines MEP for construction activities and new development (LID, minimum construction BMPs, examples of enforcement*)
d. P&D’s directive to require projects meet MEP

VII. Defining Low Impact Development*
   a. Design approach to mimic pre-development hydrology
   b. Currently a goal, not requirement, albeit directly addresses Attachment 4 requirements and County policy to protect resources.
   c. Projects should always: minimize overall impervious, disconnect impervious, lengthen flow path (Tc), use vegetation to maximize infiltration
   d. Recognize importance of landscaping and fine grading.

VIII. Planning Review Process common questions
   a. When do I require a Stormwater Quality Management Plan? A: Projects that are “Significant”
   c. Where can I find examples of our expectations, i.e., pictures, design guidance documentation, manuals, etc. A: www.sbprojectcleanwater.org

IX. Construction BMPs
   a. Always provide for construction phase BMPs (See Ten Basic Principles*)
   b. DRev augments the ESCP of Grading Permit by mitigating for potential impacts that might not be covered in standard construction BMP practices (e.g. proximity to natural drainage feature, sensitive species protection, upkeep and maintenance requirements, specifying on plans an area suitable for construction material cleaning)
   c. Protection of storm drains during construction. Storm drains often installed first while construction activity continues. Also, vegetated systems (bioswales, bioretention) are highly sensitive during construction. Notes on plans must be specific: “protection until soils are stabilized”. 
FACT SHEET
FOR
STATE WATER RESOURCES CONTROL BOARD (SWRCB)
WATER QUALITY ORDER NO. 2003 – 0005 – DWQ

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT NO. CAS000004

WASTE DISCHARGE REQUIREMENTS (WDRS)
FOR
STORM WATER DISCHARGES FROM
SMALL MUNICIPAL SEPARATE STORM SEWER SYSTEMS (GENERAL PERMIT)

BACKGROUND
In 1972, the federal Water Pollution Control Act (also referred to as the Clean Water Act [CWA]) was amended to provide that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with a NPDES permit. The 1987 amendments to CWA added section 402(p), which established a framework for regulating storm water discharges under the NPDES Program. Subsequently, in 1990, the U.S. Environmental Protection Agency (U.S. EPA) promulgated regulations for permitting storm water discharges from industrial sites (including construction sites that disturb five acres or more) and from municipal separate storm sewer systems (MS4s) serving a population of 100,000 people or more. These regulations, known as the Phase I regulations, require operators of medium and large MS4s to obtain storm water permits. On December 8, 1999, U.S. EPA promulgated regulations, known as Phase II, requiring permits for storm water discharges from Small MS4s and from construction sites disturbing between one and five acres of land. This General Permit regulates storm water discharges from Small MS4s.

An “MS4” is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains): (i) designed or used for collecting or conveying storm water; (ii) which is not a combined sewer; and (iii) which is not part of a Publicly Owned Treatment Works (POTW). [See Title 40, Code of Federal Regulations (40 CFR) §122.26(b)(8).]

A “Small MS4” is an MS4 that is not permitted under the municipal Phase I regulations, and which is “owned or operated by the United States, a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity....” (40 CFR §122.26(b)(16)). Small MS4s include systems similar to separate storm sewer systems in municipalities, such as systems at military bases, large hospital or prison complexes, and highways and other thoroughfares, but do not include separate storm sewers in
Areas subject to high growth or serving a population of at least 50,000 must comply with the following provisions (for counties this threshold population applies to the population within the permit area).

A. RECEIVING WATER LIMITATIONS

1. Discharges shall not cause or contribute to an exceedance of water quality standards contained in a Statewide Water Quality Control Plan, the California Toxics Rule (CTR), or in the applicable RWQCB Basin Plan.

2. The permittees shall comply with Receiving Water Limitations A.1 through timely implementation of control measures and other actions to reduce pollutants in the discharges in accordance with the SWMP and other requirements of this permit including any modifications. The SWMP shall be designed to achieve compliance with Receiving Water Limitations A.1. If exceedance(s) of water quality objectives or water quality standards (collectively, WQS) persist notwithstanding implementation of the SWMP and other requirements of this permit, the permittees shall assure compliance with Receiving Water Limitations A.1 by complying with the following procedure:

   a. Upon a determination by either the permittees or the RWQCB that discharges are causing or contributing to an exceedance of an applicable WQS, the permittees shall promptly notify and thereafter submit a report to the RWQCB that describes BMPs that are currently being implemented and additional BMPs that will be implemented to prevent or reduce any pollutants that are causing or contributing to the exceedance of WQSs. The report may be incorporated in the annual update to the SWMP unless the RWQCB directs an earlier submittal. The report shall include an implementation schedule. The RWQCB may require modifications to the report.

   b. Submit any modifications to the report required by the RWQCB within 30 days of notification.

   c. Within 30 days following approval of the report described above by the RWQCB, the permittees shall revise the SWMP and monitoring program to incorporate the approved modified BMPs that have been and will be implemented, implementation schedule, and any additional monitoring required.

   d. Implement the revised SWMP and monitoring program in accordance with the approved schedule.

So long as the permittees have complied with the procedures set forth above and are implementing the revised SWMP, the permittees do not have to repeat the same procedure for continuing or recurring exceedances of the same receiving water limitations unless directed by the RWQCB to develop additional BMPs.

B. DESIGN STANDARDS
Regulated Small MS4s subject to this requirement must adopt an ordinance or other document to ensure implementation of the Design Standards included herein or a functionally equivalent program that is acceptable to the appropriate RWQCB. The ordinance or other document must be adopted and effective prior to the expiration of this General Permit or, for Small MS4s designated subsequent to the Permit adoption, within five years of designation as a regulated Small MS4.

All discretionary development and redevelopment projects that fall into one of the following categories are subject to these Design Standards. These categories are:

- Single-Family Hillside Residences
- 100,000 Square Foot Commercial Developments
- Automotive Repair Shops
- Retail Gasoline Outlets
- Restaurants
- Home Subdivisions with 10 or more housing units
- Parking lots 5,000 square feet or more or with 25 or more parking spaces and potentially exposed to storm water runoff

1. Conflicts With Local Practices
   Where provisions of the Design Standards conflict with established local codes or other regulatory mechanism, (e.g., specific language of signage used on storm drain stenciling), the Permittee may continue the local practice and modify the Design Standards to be consistent with the code or other regulatory mechanism, except that to the extent that the standards in the Design Standards are more stringent than those under local codes or other regulatory mechanism, such more stringent standards shall apply.

2. Design Standards Applicable to All Categories
   a. Peak Storm Water Runoff Discharge Rates
      Post-development peak storm water runoff discharge rates shall not exceed the estimated pre-development rate for developments where the increased peak storm water discharge rate will result in increased potential for downstream erosion.

   b. Conserve Natural Areas
      If applicable, the following items are required and must be implemented in the site layout during the subdivision design and approval process, consistent with applicable General Plan and Local Area Plan policies:

      1) Concentrate or cluster Development on portions of a site while leaving the remaining land in a natural undisturbed condition.
      2) Limit clearing and grading of native vegetation at a site to the minimum amount needed to build lots, allow access, and provide fire protection.
      3) Maximize trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native and/or drought tolerant plants.
4) Promote natural vegetation by using parking lot islands and other landscaped areas.
5) Preserve riparian areas and wetlands.

c. Minimize Storm Water Pollutants of Concern
Storm water runoff from a site has the potential to contribute oil and grease, suspended solids, metals, gasoline, pesticides, and pathogens to the storm water conveyance system. The development must be designed so as to minimize, to the maximum extent practicable, the introduction of pollutants of concern that may result in significant impacts, generated from site runoff of directly connected impervious areas (DCIA), to the storm water conveyance system as approved by the building official. Pollutants of concern consist of any pollutants that exhibit one or more of the following characteristics: current loadings or historic deposits of the pollutant are impacting the beneficial uses of a receiving water, elevated levels of the pollutant are found in sediments of a receiving water and/or have the potential to bioaccumulate in organisms therein, or the detectable inputs of the pollutant are at concentrations or loads considered potentially toxic to humans and/or flora and fauna.

In meeting this specific requirement, “minimization of the pollutants of concern” will require the incorporation of BMP or combination of BMPs best suited to maximize the reduction of pollutant loadings in that runoff to the Maximum Extent Practicable. Those BMPs best suited for that purpose are those listed in the California Storm Water Best Management Practices Handbooks; Caltrans Storm Water Quality Handbook: Planning and Design Staff Guide; Manual for Storm Water Management in Washington State; The Maryland Stormwater Design Manual; Florida Development Manual: A Guide to Sound Land and Water Management; Denver Urban Storm Drainage Criteria Manual, Volume 3 – Best Management Practices and Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, USEPA Report No. EPA-840-B-92-002, as “likely to have significant impact” beneficial to water quality for targeted pollutants that are of concern at the site in question. However, it is possible that a combination of BMPs not so designated, may in a particular circumstance, be better suited to maximize the reduction of the pollutants.

d. Protect Slopes and Channels
Project plans must include BMPs consistent with local codes, ordinances, or other regulatory mechanism and the Design Standards to decrease the potential of slopes and/or channels from eroding and impacting storm water runoff:

1) Convey runoff safely from the tops of slopes and stabilize disturbed slopes.
2) Utilize natural drainage systems to the maximum extent practicable.
3) Stabilize permanent channel crossings.
4) Vegetate slopes with native or drought tolerant vegetation, as appropriate.
5) Install energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable specifications to minimize erosion, with the approval of all agencies.
with jurisdiction, e.g., the U.S. Army Corps of Engineers and the California Department of Fish and Game.

e. Provide Storm Drain System Stenciling and Signage
Storm drain stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets. The stencil contains a brief statement that prohibits the dumping of improper materials into the storm water conveyance system. Graphical icons, either illustrating anti-dumping symbols or images of receiving water fauna, are effective supplements to the anti-dumping message. All storm drain inlets and catch basins within the project area must be stenciled with prohibitive language (such as: "NO DUMPING – DRAINS TO OCEAN") and/or graphical icons to discourage illegal dumping. Signs and prohibitive language and/or graphical icons, which prohibit illegal dumping, must be posted at public access points along channels and creeks within the project area. Legibility of stencils and signs must be maintained.

f. Properly Design Outdoor Material Storage Areas
Outdoor material storage areas refer to storage areas or storage facilities solely for the storage of materials. Improper storage of materials outdoors may provide an opportunity for toxic compounds, oil and grease, heavy metals, nutrients, suspended solids, and other pollutants to enter the storm water conveyance system. Where proposed project plans include outdoor areas for storage of materials that may contribute pollutants to the storm water conveyance system, the following Structural or Treatment BMPs are required:

1) Materials with the potential to contaminate storm water must be: (1) placed in an enclosure such as, but not limited to, a cabinet, shed, or similar structure that prevents contact with runoff or spillage to the storm water conveyance system; or (2) protected by secondary containment structures such as berms, dikes, or curbs.
2) The storage area must be paved and sufficiently impervious to contain leaks and spills.
3) The storage area must have a roof or awning to minimize collection of storm water within the secondary containment area.

g. Properly Design Trash Storage Areas
A trash storage area refers to an area where a trash receptacle or receptacles (dumpsters) are located for use as a repository for solid wastes. Loose trash and debris can be easily transported by the forces of water or wind into nearby storm drain inlets, channels, and/or creeks. All trash container areas must meet the following Structural or Treatment Control BMP requirements (individual single family residences are exempt from these requirements):

1) Trash container areas must have drainage from adjoining roofs and pavement diverted around the area(s).
2) Trash container areas must be screened or walled to prevent off-site transport of trash.

h. Provide Proof of Ongoing BMP Maintenance
Improper maintenance is one of the most common reasons why water quality controls will not function as designed or which may cause the system to fail entirely. It is important to consider who will be responsible for maintenance of a permanent BMP, and what equipment is required to perform the maintenance properly. As part of project review, if a project applicant has included or is required to include, Structural or Treatment Control BMPs in project plans, the Permittee shall require that the applicant provide verification of maintenance provisions through such means as may be appropriate, including, but not limited to legal agreements, covenants, CEQA mitigation requirements and/or Conditional Use Permits.

For all properties, the verification will include the developer’s signed statement, as part of the project application, accepting responsibility for all structural and treatment control BMP maintenance until the time the property is transferred and, where applicable, a signed agreement from the public entity assuming responsibility for Structural or Treatment Control BMP maintenance. The transfer of property to a private or public owner must have conditions requiring the recipient to assume responsibility for maintenance of any Structural or Treatment Control BMP to be included in the sales or lease agreement for that property, and will be the owner’s responsibility. The condition of transfer shall include a provision that the property owners conduct maintenance inspection of all Structural or Treatment Control BMPs at least once a year and retain proof of inspection. For residential properties where the Structural or Treatment Control BMPs are located within a common area which will be maintained by a homeowner’s association, language regarding the responsibility for maintenance must be included in the project’s conditions, covenants and restrictions (CC&Rs). Printed educational materials will be required to accompany the first deed transfer to highlight the existence of the requirement and to provide information on what storm water management facilities are present, signs that maintenance is needed, how the necessary maintenance can be performed, and assistance that the Permittee can provide. The transfer of this information shall also be required with any subsequent sale of the property.

If Structural or Treatment Control BMPs are located within a public area proposed for transfer, they will be the responsibility of the developer until they are accepted for transfer by the County or other appropriate public agency. Structural or Treatment Control BMPs proposed for transfer must meet design standards adopted by the public entity for the BMP installed and should be approved by the County or other appropriate public agency prior to its installation.

i. Design Standards for Structural or Treatment Control BMPs
The Permittees shall require that post-construction treatment control BMPs incorporate, at a minimum, either a volumetric or flow based treatment control design standard, or both, as identified below to mitigate (infiltrate, filter or treat) storm water runoff:

1) Volumetric Treatment Control BMP
a) The 85\textsuperscript{th} percentile 24-hour runoff event determined as the maximized capture storm water volume for the area, from the formula recommended in Urban Runoff Quality Management, WEF Manual of Practice No. 23/ASCE Manual of Practice No. 87, (1998); or

b) The volume of annual runoff based on unit basin storage water quality volume, to achieve 80 percent or more volume treatment by the method recommended in California Stormwater Best Management Practices Handbook – Industrial/Commercial, (2003); or

c) The volume of runoff produced from a historical-record based reference 24-hour rainfall criterion for “treatment” that achieves approximately the same reduction in pollutant loads achieved by the 85\textsuperscript{th} percentile 24-hour runoff event.

2) Flow Based Treatment Control BMP
   a) The flow of runoff produced from a rain event equal to at least two times the 85\textsuperscript{th} percentile hourly rainfall intensity for the area; or
   b) The flow of runoff produced from a rain event that will result in treatment of the same portion of runoff as treated using volumetric standards above.

Limited Exclusion
Restaurants and Retail Gasoline Outlets, where the land area for development or redevelopment is less than 5,000 square feet, are excluded from the numerical Structural or Treatment Control BMP design standard requirement only.

3. Provisions Applicable to Individual Priority Project Categories

a. 100,000 Square Foot Commercial Developments

1) Properly Design Loading/Unloading Dock Areas
   Loading/unloading dock areas have the potential for material spills to be quickly transported to the storm water conveyance system. To minimize this potential, the following design criteria are required:

   a) Cover loading dock areas or design drainage to minimize run-on and runoff of storm water.
   b) Direct connections to storm drains from depressed loading docks (truck wells) are prohibited.

2) Properly Design Repair/Maintenance Bays
   Oil and grease, solvents, car battery acid, coolant and gasoline from the repair/maintenance bays can negatively impact storm water if allowed to come into contact with storm water runoff. Therefore, design plans for repair bays must include the following:
a) Repair/maintenance bays must be indoors or designed in such a way that doesn’t allow storm water runoff or contact with storm water runoff.

b) Design a repair/maintenance bay drainage system to capture all washwater, leaks and spills. Connect drains to a sump for collection and disposal. Direct connection of the repair/maintenance bays to the storm drain system is prohibited. If required by local jurisdiction, obtain an Industrial Waste Discharge Permit.

3) Properly Design Vehicle/Equipment Wash Areas
The activity of vehicle/equipment washing/steam cleaning has the potential to contribute metals, oil and grease, solvents, phosphates, and suspended solids to the storm water conveyance system. Include in the project plans an area for washing/steam cleaning of vehicles and equipment. The area in the site design must be:

a) Self-contained and/or covered, equipped with a clarifier, or other pretreatment facility, and

b) Properly connected to a sanitary sewer or other appropriately permitted disposal facility.

b. Restaurants

1) Properly Design Equipment/Accessory Wash Areas
The activity of outdoor equipment/accessory washing/steam cleaning has the potential to contribute metals, oil and grease, solvents, phosphates, and suspended solids to the storm water conveyance system. Include in the project plans an area for the washing/steam cleaning of equipment and accessories. This area must be:

a) Self-contained, equipped with a grease trap, and properly connected to a sanitary sewer.

b) If the wash area is to be located outdoors, it must be covered, paved, have secondary containment, and be connected to the sanitary sewer or other appropriately permitted disposal facility.

c. Retail Gasoline Outlets

1) Properly Design Fueling Area
Fueling areas have the potential to contribute oil and grease, solvents, car battery acid, coolant and gasoline to the storm water conveyance system. The project plans must include the following BMPs:

a) The fuel dispensing area must be covered with an overhanging roof structure or canopy. The canopy’s minimum dimensions must be equal to or greater than the area within the grade break. The canopy must not drain onto the fuel dispensing area, and the canopy downspouts must be routed to prevent drainage across the fueling area.
b) The fuel dispensing area must be paved with Portland cement concrete (or equivalent smooth impervious surface), and the use of asphalt concrete shall be prohibited.

c) The fuel dispensing area must have a 2% to 4% slope to prevent ponding, and must be separated from the rest of the site by a grade break that prevents run-on of storm water to the extent practicable.

d) At a minimum, the concrete fuel dispensing area must extend 6.5 feet (2.0 meters) from the corner of each fuel dispenser, or the length at which the hose and nozzle assembly may be operated plus 1 foot (0.3 meter), whichever is less.

d. Automotive Repair Shops

1) Properly Design Fueling Area

Fueling areas have the potential to contribute oil and grease, solvents, car battery acid, coolant and gasoline to the storm water conveyance system. Therefore, design plans, which include fueling areas, must contain the following BMPs:

a. The fuel dispensing area must be covered with an overhanging roof structure or canopy. The canopy’s minimum dimensions must be equal to or greater than the area within the grade break. The canopy must not drain onto the fuel dispensing area, and the canopy downspouts must be routed to prevent drainage across the fueling area.

b. The fuel dispensing area must be paved with Portland cement concrete (or equivalent smooth impervious surface), and the use of asphalt concrete shall be prohibited.

c. The fuel dispensing area must have a 2% to 4% slope to prevent ponding, and must be separated from the rest of the site by a grade break that prevents run-on of storm water to the extent practicable.

d. At a minimum, the concrete fuel dispensing area must extend 6.5 feet (2.0 meters) from the corner of each fuel dispenser, or the length at which the hose and nozzle assembly may be operated plus 1 foot (0.3 meter), whichever is less.

2) Properly Design Repair/Maintenance Bays

Oil and grease, solvents, car battery acid, coolant and gasoline from the repair/maintenance bays can negatively impact storm water if allowed to come into contact with storm water runoff. Therefore, design plans for repair bays must include the following:

a) Repair/maintenance bays must be indoors or designed in such a way that doesn’t allow storm water run-on or contact with storm water runoff.

b) Design a repair/maintenance bay drainage system to capture all wash-water, leaks and spills. Connect drains to a sump for collection and disposal. Direct connection of the repair/maintenance bays to the storm drain system is
prohibited. If required by local jurisdiction, obtain an Industrial Waste Discharge Permit.

3) Properly Design Vehicle/Equipment Wash Areas
   The activity of vehicle/equipment washing/steam cleaning has the potential to contribute metals, oil and grease, solvents, phosphates, and suspended solids to the storm water conveyance system. Include in the project plans an area for washing/steam cleaning of vehicles and equipment. This area must be:

   a) Self-contained and/or covered, equipped with a clarifier, or other pretreatment facility, and properly connected to a sanitary sewer or other appropriately permitted disposal facility.

4) Properly Design Loading/Unloading Dock Areas
   Loading/unloading dock areas have the potential for material spills to be quickly transported to the storm water conveyance system. To minimize this potential, the following design criteria are required:

   a) Cover loading dock areas or design drainage to minimize run-on and runoff of storm water.
   b) Direct connections to storm drains from depressed loading docks (truck wells) are prohibited.

e. Parking Lots

1) Properly Design Parking Area
   Parking lots contain pollutants such as heavy metals, oil and grease, and polycyclic aromatic hydrocarbons that are deposited on parking lot surfaces by motor-vehicles. These pollutants are directly transported to surface waters. To minimize the offsite transport of pollutants, the following design criteria are required:

   a) Reduce impervious land coverage of parking areas.
   b) Infiltrate or treat runoff.

2) Properly Design To Limit Oil Contamination and Perform Maintenance
   Parking lots may accumulate oil, grease, and water insoluble hydrocarbons from vehicle drippings and engine system leaks:

   a) Treat to remove oil and petroleum hydrocarbons at parking lots that are heavily used (e.g. fast food outlets, lots with 25 or more parking spaces, sports event parking lots, shopping malls, grocery stores, discount warehouse stores).
   b) Ensure adequate operation and maintenance of treatment systems particularly sludge and oil removal, and system fouling and plugging prevention control.
4. Waiver

A Permittee may, through adoption of an ordinance, code, or other regulatory mechanism incorporating the treatment requirements of the Design Standards, provide for a waiver from the requirement if impracticability for a specific property can be established. A waiver of impracticability shall be granted only when all other Structural or Treatment Control BMPs have been considered and rejected as infeasible. Recognized situations of impracticability include, (i) extreme limitations of space for treatment on a redevelopment project, (ii) unfavorable or unstable soil conditions at a site to attempt infiltration, and (iii) risk of ground water contamination because a known unconfined aquifer lies beneath the land surface or an existing or potential underground source of drinking water is less than 10 feet from the soil surface. Any other justification for impracticability must be separately petitioned by the Permittee and submitted to the appropriate RWQCB for consideration. The RWQCB may consider approval of the waiver justification or may delegate the authority to approve a class of waiver justifications to the RWQCB EO. The supplementary waiver justification becomes recognized and effective only after approval by the RWQCB or the RWQCB EO. A waiver granted by a Permittee to any development or redevelopment project may be revoked by the RWQCB EO for cause and with proper notice upon petition.

5. Limitation on Use of Infiltration BMPs

Three factors significantly influence the potential for storm water to contaminate ground water. They are (i) pollutant mobility, (ii) pollutant abundance in storm water, (iii) and soluble fraction of pollutant. The risk of contamination of groundwater may be reduced by pretreatment of storm water. A discussion of limitations and guidance for infiltration practices is contained in, Potential Groundwater Contamination from Intentional and Non-Intentional Stormwater Infiltration, Report No. EPA/600/R-94/051, USEPA (1994).

In addition, the distance of the groundwater table from the infiltration BMP may also be a factor determining the risk of contamination. A water table distance separation of ten feet depth in California presumptively poses negligible risk for storm water not associated with industrial activity or high vehicular traffic.

Site specific conditions must be evaluated when determining the most appropriate BMP. Additionally, monitoring and maintenance must be provided to ensure groundwater is protected and the infiltration BMP is not rendered ineffective by overload. This is especially important for infiltration BMPs for areas of industrial activity or areas subject to high vehicular traffic [25,000 or greater average daily traffic (ADT) on main roadway or 15,000 or more ADT on any intersecting roadway]. In some cases pretreatment may be necessary.

6. Alternative Certification for Storm Water Treatment Mitigation

In lieu of conducting detailed BMP review to verify Structural or Treatment Control BMP adequacy, a Permittee may elect to accept a signed certification from a Civil Engineer or a Licensed Architect registered in the State of California, that the plan meets
the criteria established herein. The Permittee is encouraged to verify that certifying person(s) have been trained on BMP design for water quality, not more than two years prior to the signature date. Training conducted by an organization with storm water BMP design expertise (e.g., a University, American Society of Civil Engineers, American Society of Landscape Architects, American Public Works Association, or the California Water Environment Association) may be considered qualifying.
LAND USE ELEMENT HILLSIDE AND WATERSHED PROTECTION POLICIES 7, 3, 4, AND 5 (COASTAL PLAN POLICIES 3-19, 3-15, 3-16 AND 3-17)

POLICY INTERPRETIVE AND IMPLEMENTATION GUIDELINES

The purpose of these guidelines is to promote consistent implementation of the Santa Barbara County Comprehensive Plan's water-quality related policies by providing clear interpretation of the Comprehensive Plan, and addressing the requirements of U.S. Environmental Protection Agency's National Pollutant Discharge Elimination System (NPDES) Phase II Municipal Storm Water Regulations. These guidelines apply to all new development and redevelopment projects proposed in the urban and rural unincorporated areas of the County. These guidelines apply to any project that has the potential to generate point source discharges, or storm water runoff that is directly or indirectly discharged to storm drains, creeks, streams, rivers, the ocean, or other receiving water bodies in Santa Barbara County.

Land Use Element Hillside and Watershed Protection Policy 7 & Coastal Plan Policy 3-19:

"Degradation of the water quality of groundwater basins, nearby streams, or wetlands shall not result from development of the site. Pollutants, such as chemicals, fuels, lubricants, raw sewage, and other harmful waste shall not be discharged into or alongside coastal streams or wetlands either during or after construction."

Interpretive and Implementation Guidelines

The following definitions shall be used to interpret this policy:

A. "Degradation" of water quality means a negative alteration to the physical, chemical, or biological qualities of surface water (including storm water runoff) or groundwater compared to existing conditions. Degradation includes detrimental impacts to aquatic and terrestrial organisms, adverse effects on aesthetic qualities (due to sheens, sediment, floatable material, etc.), or other negative impacts to the beneficial uses\(^1\) of receiving water.

B. "Pollutant" means any chemical or substance that degrades the physical, chemical, or biological properties of the environment. Water pollutants include those listed in the policy, and as defined by the State Water Resources Control Board include but are not limited to: paints, varnishes, and solvents; hydrocarbons and metals from vehicle use or business operations; non-hazardous solid wastes; yard wastes; sediment from construction activities (including silts, clays, slurries, concrete rinsates, etc.); ongoing sedimentation due to changes in land cover or land use; nutrients, pesticides, herbicides, and fertilizers (e.g., from landscape maintenance); hazardous substances and wastes; sewage, fecal coliform, animal wastes, and pathogens;

\(^1\) Beneficial uses for Santa Barbara County are identified by the Regional Water Quality Control Board in the Water Quality Control Plan for the Central Coastal Basin, or Basin Plan, and include (among others) recreation, agricultural supply, groundwater recharge, fresh water habitat, estuarine habitat, support for rare, threatened or endangered species, preservation of biological habitats of special significance.
dissolved and particulate metals; sediments, floatables; metals and acidity from mining operations; heat; discarded equipment.

C. "Discharge" as addressed by this policy includes point source discharges (i.e., from outfall pipes) and non-point source discharges (i.e., overland runoff or sheetflow) that flow directly or indirectly into receiving waters (e.g., creeks, streams, rivers, the ocean or other receiving water bodies), or into storm drains that subsequently flow into receiving waters. The term includes both construction and post-construction discharges.

To be consistent with this policy the discharge of pollutants from newly developed and redeveloped sites must be reduced to the "maximum extent feasible". This can be achieved through the implementation of non-structural or structural best management practices (BMPs) and maintenance of the BMPs over the life of the project. BMPs are methods, activities, maintenance procedures, or other management practices for reducing the amount of pollution entering a water body. Non-structural BMPs include but are not limited to site designs that reduce the area and connectivity of impervious surfaces, protection or restoration of native vegetation, wetlands and riparian corridors, and where applicable, parking lot sweeping programs to remove accumulated debris, oil and grease. Structural BMPs include but are not limited to storm water treatment facilities, grassed swales, bioswales, porous pavement and storm drain treatment systems (e.g., catch basin filters).

A. In order of preference, the following BMPs shall be used to minimize water quality impacts associated with new development and redevelopment projects in urban and rural areas:

- site planning to avoid, protect, and restore sensitive areas (e.g., wetlands and riparian corridors);
- minimizing impervious surfaces and directly connected impervious surfaces, using existing natural features to allow for on-site infiltration of water;
- vegetative treatment (e.g., bio-swales, vegetative buffers, constructed or artificial wetlands);
- mechanical or structural treatment (e.g., storm drain filters and inserts).

B. Combinations of BMPs listed above may be required to reduce runoff and water quality impacts to achieve consistency with this policy.

C. Adequate space on each project site shall be reserved to incorporate the BMPs.

D. Provisions shall be made for maintenance of BMPs over the life of the project.

**Land Use Element Hillside and Watershed Protection Policy 3 & Coastal Plan Policy 3-15:**

"For necessary grading operations on hillsides, the smallest practical area of land shall be exposed at any one time during development, and the length of exposure shall be kept to the shortest practicable amount of time. The clearing of land should be avoided during the winter rainy season and all measures for removing sediments and stabilizing slopes should be in place before the beginning of the rainy season."
Land Use Element Hillside and Watershed Protection Policy 4 & Coastal Plan Policy 3-16:

"Sediment basins (including debris basins, desilting basins, or silt traps) shall be installed on the project site in conjunction with the initial grading operations and maintained through the development process to remove sediment from runoff waters. All sediment shall be retained on-site unless removed to an appropriate dumping location."

Land Use Element Hillside and Watershed Protection Policy 5 & Coastal Plan Policy 3-17:

"Temporary vegetation, seeding, mulching, or other suitable stabilization method shall be used to protect soils subject to erosion that have been disturbed during grading or development. All cut and fill slopes shall be stabilized as rapidly as possible with planting of native grasses and shrubs, appropriate non-native plants, or with accepted landscaping practices."

Interpretive and Implementation Guidelines

The following definitions shall be used to interpret these policies:

A. “Grading” is defined in the Grading Ordinance Chapter 14, Section 7 (Definitions).

B. “Necessary grading” is grading associated with, and integral to, the proposed development required to establish reasonable use of a legal lot. Only necessary grading shall be permitted on hillsides. (This policy is best understood when read in conjunction with Hillside and Watershed Protection Policies 1 and 2.) For example, necessary grading does not include grading conducted for the purposes of enhancing views or for accessory uses not associated with the reasonable use of the lot.

C. “Hillsides” means land with slopes exceeding 20%.

D. “Clearing of land” means the removal of vegetation, structures or other objects.

E. As defined in the Grading Ordinance, the rainy season is the period from November 1 through April 15.

F. “Appropriate non-native plants” means drought tolerant species that may not be native to Santa Barbara County, but are not invasive species.²

These policies address the discharge of pollutants (including, but not limited to, soil, sediment, and construction waste) from grading and construction activities. To be consistent with these policies, the discharge of pollutants must be reduced to the maximum extent feasible through the

² A list of invasive exotic species of concern in California can be obtained at the California Exotic Pest Plant Council (CalEPPC) - Internet address: http://www.caleppc.org/info/plantlist.html. The Sunset Western Garden Book has examples of drought tolerant non-native plants suitable for the climatic, edaphic, and hydrologic conditions in Santa Barbara County. However, proposed non-native plants should not appear on the CalEPPC list and should not be used.
implementation of BMPs and maintenance of the BMPs throughout and, if necessary, after the grading and construction period.

A. In addition to structural erosion and sediment control measures (e.g., hay bales, silt fences, sediment basins, etc.), the following BMPs shall be used to the maximum extent feasible to reduce storm water pollution from construction sites:

- site planning to avoid grading or vegetation removal on slopes over 20%;
- site planning to avoid grading in areas containing soils with a high erosion hazard or in geologically unstable areas;
- site planning to minimize grading or vegetation removal where slopes over 20% cannot be avoided to allow reasonable use of a legal lot;
- avoidance of grading on slopes over 20% during the rainy season;
- protection of existing native vegetation and enhancement of sensitive areas (e.g., wetlands and riparian corridors);
- prohibitions of non-storm water discharges (e.g., concrete truck washout, slurry cuts, etc.) into storm drains or other water bodies;
- good housekeeping practices (e.g., designated waste collection areas, designated areas for vehicle maintenance and washing, proper vehicle maintenance to avoid leaks, elimination of connections to storm drains, immediate clean up of spills, recycling and reuse of materials, etc.).

B. Adequate room shall be made available on the construction site to accommodate the best management practices throughout and after construction.

C. All best management practices shall be maintained in working order.
a. Less than 30 inches high, or

b. Covers an area of 50 square feet or less and is less than either six feet in height and, if located within a vision clearance area, is consistent with the regulations of Subsection 35.430.080.1 (Vision Clearance).

4. Decks less than 32 inches in vertical distance as measured from finished grade to the top of the decking material may be located within the front or side setback unless located in a designated Environmentally Sensitive Habitat Area.

5. Non-habitable structures may be located in the side setback provided that the structures comply with all of the following:

a. Cumulatively the structures do not occupy an area greater than 10 percent of the side setback in which they are located, or 120 square feet, which ever is less.

b. Do not contain any utilities.

c. Are screened from view from abutting properties by a wall or fence at least as tall as the structure.

d. Are located no closer than five feet to any other structure located on the same lot.

6. Pedestals supporting utility meters no greater than four feet in height and 24 square feet in area may be located in a front or side setback provided they are completely screened from view from any public or private street and adjoining lots.

35.430.130 - Solar Panels

A. Solar heating systems shall be required for the heating of any new swimming pool, spa, or hot tub as specified under the Primary Plumbing Code and the Solar Energy requirements of County Code Chapter 10.

B. Solar panels located on the roof of an existing structure do not require planning permit approval.

C. Solar panels located on the ground shall be classified as accessory structures, and shall require Land Use Permit approval.

35.430.140 - Storm Water Runoff Requirements

A. Applicability. The following development redevelopment is subject to the requirement that project-appropriate controls are in place to prevent or minimize water quality impacts:

1. Residential subdivisions with 10 or more dwelling units.

2. Commercial development of 0.5 acres or greater.
3. Parking lots of 5,000 square feet or more or have 25 or more parking spaces and are potentially exposed to storm water runoff.

4. Automobile repair shops.

5. Retail gasoline outlets.

6. Restaurants.

7. One-family residences located on slopes of 20 percent or greater.

8. Any new development or redevelopment exceeding one acre.

B. Processing. No permit for any development listed in Subsection A. (Applicability) above, shall be approved except in compliance with the Comprehensive Plan, and the California Environmental Quality Act if applicable.

35.430.150 - Solid Waste and Recycling Storage Facilities

A. Purpose. This Section provides standards which recognize County support for and compliance with the California Solid Waste Reuse and Recycling Access Act (Public Resources Code Section 42900 through 42911).

B. Applicability. These requirements apply to the following projects:

1. Non-residential development. Any new, non-residential development including commercial, industrial, or institutional building, or marina or any changes to such an existing non-residential development which requires a building permit.

2. Residential building. Any new residential building having five or more dwelling units or any changes to such an existing residential building which requires a building permit.

3. Residential development. Any new residential project where solid waste is collected and loaded in a location serving five or more dwelling units, or any changes to an existing residential project which requires a building permit.

4. Single-family subdivision. Any subdivision of single-family detached homes if, within such subdivisions there is an area where solid waste is collected and loaded in a location which serves five or more dwelling units. In such instances, recycling areas as specified in this Section are only required to serve the needs of the dwelling units which utilize the solid waste collection and loading area.

5. Public facility. Any new public facility where solid waste is collected and loaded and any improvements for areas of a public facility used for collecting and loading solid waste.

C. Standards for storage areas. All projects identified in Subsection B. (Applicability) above, shall be required to provide solid waste areas specifically identified for the storage of both trash and recycling containers in compliance with the following.
16. SURFACE AND STORM WATER QUALITY GUIDELINES

A. INTRODUCTION

The following information is excerpted from several EPA publications including the preamble to the NPDES Phase II rules as published in the Federal Register\(^1\) and EPA storm water fact sheets and guidance documents\(^2\).

Storm water runoff from lands modified by human activities can harm surface water resources and, in turn, cause or contribute to an exceedance of water quality standards by changing natural hydrologic patterns, accelerating stream flows, destroying aquatic habitat, and elevating pollutant concentrations. Such runoff may contain or mobilize high levels of contaminants, such as sediment, suspended solids, nutrients (phosphorus and nitrogen), heavy metals and other toxic pollutants, pathogens, oxygen-demanding substances, and floatables. After a rain, storm water runoff carries these pollutants into nearby streams, rivers, lakes, estuaries, wetlands, and oceans. The highest concentrations of these contaminants often are contained in "first flush" discharges, which occur during the first major storm after an extended dry period. Individually and combined, these pollutants impair water quality, threatening designated beneficial uses and causing habitat alteration or destruction. Uncontrolled storm water discharges from areas of urban development and construction activity negatively impact receiving waters by changing the physical, biological, and chemical composition of the water, resulting in an unhealthy environment for aquatic organisms, wildlife, and humans. Although water quality problems also can occur from agricultural storm water discharges and return flows from irrigated agriculture, this area of concern is statutorily exempted from regulation as a point source under the Clean Water Act and is not addressed in these guidelines.

Urbanization alters the natural infiltration capability of the land and generates a host of pollutants that are associated with the activities of dense populations, thus causing an increase in storm water runoff volumes and pollutant loading in storm water that is discharged to receiving waterbodies. Urban development increases the amount of impervious surface in a watershed as farmland, forests, and other natural vegetation with natural infiltration characteristics are converted into buildings with rooftops, driveways, sidewalks, roads, and parking lots with virtually no ability to absorb storm water. Storm water runoff washes over these impervious areas, picking up pollutants along the way while gaining speed and volume because of their inability to disperse and filter into the ground. What results are storm water flows that are higher in volume, pollutants, and temperature than the flows from more pervious areas, which have more natural vegetation and soil to filter the runoff. Studies reveal that the level of imperviousness in an area strongly correlates with decreased quality of the nearby receiving waters. Research conducted in numerous geographical areas, concentrating on various variables and employing widely differing methods, has revealed that stream degradation occurs at relatively low levels of imperviousness, such as 10 to 20 percent (even as low as 5 to 10 percent). Furthermore, research has indicated that few, if any, urban streams can support diverse benthic communities at imperviousness levels of 25 percent or more. An area of medium density single

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\(^1\) 64 FR 68722

family homes can be anywhere from 25 percent to nearly 60 percent impervious, depending on the design of the streets and parking.

### Relationship of Sources to Primary Pollutants of Concern

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<th>Pollutant Source/Activity</th>
<th>Physical Parameters</th>
<th>Synthetic Organics</th>
<th>Petroleum Hydrocarbons</th>
<th>Heavy Metals</th>
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In addition to impervious areas, urban development creates new pollution sources as population density increases and brings with it proportionately higher levels of car emissions, car maintenance wastes, pet waste, litter, pesticides, and household hazardous wastes, which may be washed into receiving waters by storm water or dumped directly into storm drains designed to discharge to receiving waters. More people in less space results in a greater concentration of pollutants that can be mobilized by storm water discharges into storm sewer systems.

The first national assessment of urban runoff characteristics was completed for the *Nationwide Urban Runoff Program (NURP)* study. The NURP study is the largest nationwide evaluation of storm water discharges undertaken to date. EPA conducted the NURP study to facilitate understanding of the nature of urban runoff from residential, commercial, and industrial areas. One objective of the study was to characterize the water quality of discharges from separate storm sewer systems that drain residential, commercial, and light industrial (industrial parks) sites. Storm water samples from 81 residential and commercial properties in 22 urban/suburban areas nationwide were collected and analyzed during the 5-year period between 1978 and 1983.
The majority of samples collected in the study were analyzed for eight conventional pollutants and three heavy metals. Data collected under the NURP study indicated that discharges from separate storm sewer systems draining runoff from residential, commercial, and light industrial areas carried more than 10 times the annual loading of total suspended solids (TSS) than discharges from municipal sewage treatment plants that provide secondary treatment. The NURP study also indicated that runoff from residential and commercial areas carried somewhat higher annual loadings of chemical oxygen demand (COD), total lead, and total copper than effluent from secondary treatment plants. Study findings showed that fecal coliform counts in urban runoff typically range from tens to hundreds of thousands of most probable number (MPN) per hundred milliliters (ml) of runoff during warm weather conditions, with the median for all sites being around 21,000 MPN/100 ml.

B. **Construction Site Runoff**

Polluted storm water runoff from construction sites often flows to storm drains and ultimately is discharged into local rivers and streams. Of the pollutants listed below, sediment is usually the main pollutant of concern. Sediment runoff rates from construction sites are typically 10 to 20 times greater than those of agricultural lands, and 1,000 to 2,000 times greater than those of forest lands. During a short period of time, construction sites can contribute more sediment to streams than can be deposited naturally during several decades. The resulting siltation, and the contribution of other pollutants from construction sites, can cause physical, chemical, and biological harm to our nation’s waters. The siltation process described previously can (1) deposit high concentrations of pollutants in public water supplies; (2) decrease the depth of a waterbody, which can reduce the volume of a reservoir or result in limited use of a water body by boaters, swimmers, and other recreational enthusiasts; and (3) directly impair the habitat of fish and other aquatic species, which can limit their ability to reproduce. Excess sediment can cause a number of other problems for waterbodies. It is associated with increased turbidity and reduced light penetration in the water column, as well as more long-term effects associated with habitat destruction and increased difficulty in filtering drinking water.

**Pollutants Commonly Discharged From Construction Sites**

- Sediment
- Solid and sanitary wastes
- Nitrogen (fertilizer)
- Phosphorous (fertilizer)
- Pesticides
- Concrete truck washout
- Construction chemicals
- Construction debris

C. **Post Construction Runoff**

There are generally two forms of substantial impacts of post-construction runoff. The first is caused by an increase in the type and quantity of pollutants in storm water runoff. As runoff flows over areas altered by development, it picks up harmful sediment and chemicals such as oil and grease, pesticides, heavy metals, and nutrients (e.g., nitrogen and phosphorus). These pollutants often become suspended in runoff and are carried to receiving waters, such as lakes, ponds, and streams. Once deposited, these pollutants can enter the food chain through small aquatic life, eventually entering the tissues of fish and humans. The second kind of post-construction runoff impact occurs by increasing the quantity of water delivered to the waterbody.
during storms. Increased impervious surfaces interrupt the natural cycle of gradual percolation of water through vegetation and soil. Instead, water is collected from surfaces such as asphalt and concrete and routed to drainage systems where large volumes of runoff quickly flow to the nearest receiving water. The effects of this process include stream bank scouring and downstream flooding, which often lead to a loss of aquatic life and damage to property.

**D. Federal and State Regulations**

The Federal Water Pollution Prevention and Control Act (i.e., the Clean Water Act or CWA) requires that discharges do not substantially degrade the physical, chemical or biological integrity of the Nation’s waters. Specifically Section 402 established the National Pollutant Discharge Elimination System (NPDES) Regulations for wastewater and other pollutant discharges.

Congress amended the CWA in 1987 to require the implementation of a two-phased program to address storm water discharges. Phase I, promulgated by the U.S. Environmental Protection Agency (EPA) in November 1990, requires NPDES permits for storm water discharges from municipal separate storm sewer systems (MS4s) serving populations of 100,000 or greater, construction sites disturbing greater than 5 acres of land, and ten categories of industrial activities.

Despite the comprehensiveness of the NPDES Phase I program, the EPA recognized that smaller construction projects (disturbing less than 5 acres) and small municipal separate storm sewers (MS4s\(^3\)) were also contributing substantially to pollutant discharges nationwide. Therefore, in order to further improve storm water quality, the EPA promulgated the NPDES Phase II program *(Federal Register* Vol. 64, No. 235, December 8, 1999). The Phase II regulations became effective on February 7, 2000, and require NPDES permits for storm water discharges from regulated small MS4s and for construction sites disturbing more than 1 acre of land. The Phase II regulations published by the EPA designated the urbanized areas\(^4\) of Santa Barbara County as a regulated small MS4.

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\(^3\) Those generally serving less than 100,000 people and located in an urbanized area as defined by the Bureau of the Census.

\(^4\) An urbanized area is a land area comprising one or more places (central place(s)) and the adjacent densely settled surrounding area (the urban fringe) that together have a residential population of at least 50,000 and an overall population density of at least 1,000 people per square mile.
In addition, Section 401 and 404 established regulations for the discharge of dredged or fill material into waters of the United States and water quality impacts associated with these discharges. In California, the Porter-Cologne Water Quality Control Act establishes waste discharge standards pursuant to the Federal NPDES program, and the state has the authority to issue NPDES permits to individuals, businesses, and municipalities.

E. **County Water Quality Issues**

Because the EPA has determined that the urbanized areas of Santa Barbara County are subject to the Phase II NPDES regulations, it is presumed that the county has a general urban runoff water quality problem. In addition to this general presumption, over the last three years Project Clean Water has collected analytical water quality data and identified the water quality concerns in county streams, creeks and beach areas. These concerns include:

- Bacteria levels consistently above applicable standards during storm events,
- Levels of metals (copper, chromium, zinc, and lead) approaching or exceeding Regional Water Quality Control Board Basin Plan objectives,
- Elevated levels of nitrogen and phosphorus in all creeks during storm events, and
- Detection of pesticides in all watersheds.

The Regional Water Quality Control Board has also identified that the quality of several important recreational water bodies and water supplies have been impaired. These water bodies and their contaminants include:

- San Antonio Creek (northern) – sediments.
- Santa Ynez River – nutrients (e.g., phosphorus and nitrogen), salinity, total dissolved solids, chlorides and sediments.
- Goleta Slough – metals, pathogens, and sediment.
- Arroyo Burro Creek – pathogens (e.g., bacteria).
• Mission Creek – pathogens.
• Carpinteria Salt Marsh – nutrients and sediment.
• Carpinteria Creek - pathogens
• Rincon Creek – pathogens and sediment.

F. COUNTY WATER QUALITY PROTECTION POLICIES

Policies regarding the protection of water quality in the unincorporated areas of Santa Barbara County are provided in the Comprehensive Plan Land Use Element, various Community Plans, and the Local Coastal Plan. The overarching policy which applies to both construction and post-construction is Land Use Element Hillside and Watershed Protection Policy 7 (Coastal Plan Policy 3-19), which states:

Degradation of the water quality of groundwater basins, nearby streams, or wetlands shall not result from development of the site. Pollutants, such as chemicals, fuels, lubricants, raw sewage, and other harmful waste shall not be discharged into or alongside coastal streams or wetlands either during or after construction.

Project approval requires a finding of consistency with this and all other applicable water quality policies in the Comprehensive and Community Plans.

G. SIGNIFICANCE GUIDELINES FOR ASSESSMENT OF WATER QUALITY IMPACTS

Guidelines for assessing project-specific and cumulative water quality impacts are presented below. The assessment of impacts must account for construction-related impacts (i.e., vegetation removal, erosion, use of construction materials on the site, and staging of construction activities) and post-construction (or post-development) impacts (i.e., increases in impervious surfaces and increased runoff, entrainment of pollutants, and effects of discharges on aquatic habitats and biota).

G.1 Project Specific Potential Significance Impacts

(a) A significant water quality impact is presumed to occur if the project:
• Is located within an urbanized area of the county and the project construction or redevelopment individually or as a part of a larger common plan of development or sale would disturb one (1) or more acres of land;
• Increases the amount of impervious surfaces on a site by 25% or more;
• Results in channelization or relocation of a natural drainage channel;
• Results in removal or reduction of riparian vegetation or other vegetation (excluding non-native vegetation removed for restoration projects) from the buffer zone of any streams, creeks or wetlands;
• Is an industrial facility that falls under one or more of categories of industrial activity regulated under the NPDES Phase I industrial storm water regulations (facilities with effluent limitation; manufacturing; mineral, metal, oil and gas, hazardous waste,
treatment or disposal facilities; landfills; recycling facilities; steam electric plants; transportation facilities; treatment works;; and light industrial activity);  

- Discharges pollutants that exceed the water quality standards set forth in the applicable NPDES permit, the Regional Water Quality Control Board’s (RWQCB) Basin Plan or otherwise impairs the beneficial uses\(^5\) of a receiving waterbody; or  

- Results in a discharge of pollutants into an “impaired” waterbody that has been designated as such by the State Water Resources Control Board or the RWQCB under Section 303 (d) of the Federal Water Pollution Prevention and Control Act (i.e., the Clean Water Act).  

- Results in a discharge of pollutants of concern to a receiving water body, as identified in by the RWQCB.  

(b) Projects that are not specifically identified on the above list or are located outside of the “urbanized areas” may also have a project-specific storm water quality impact. Storm water quality impacts associated with these projects must be evaluated on a project by project basis for a determination of significance. The potential impacts of these projects should be determined in consultation with the county Water Agency, Flood Control Division, and RWQCB. The issues that should be considered are:  

- the size of the development;  
- the location (proximity to sensitive waterbodies, location on hillsides, etc.);  
- the timing and duration of the construction activity;  
- the nature and extent of directly connected impervious areas;  
- the extent to which the natural runoff patterns are altered;  
- disturbance to riparian corridors or other native vegetation on or off-site;  
- the type of storm water pollutants expected; and  
- the extent to which water quality best management practices are included in the project design.  

(c) All projects determined to have a potentially significant storm water quality impact must prepare and implement a Storm Water Quality Management Plan (SWQMP) to reduce the impact to the maximum extent practicable. The SWQMP shall include the following elements:  

- identification of potential pollutant sources that may affect the quality of the discharges to storm water;  
- the proposed design and placement of structural and non-structural BMPs to address identified pollutants;  

\(^5\) Beneficial uses for Santa Barbara County are identified by the Regional Water Quality Control Board in the Water Quality Control Plan for the Central Coastal Basin, or Basin Plan, and include (among others) recreation, agricultural supply, groundwater recharge, fresh water habitat, estuarine habitat, support for rare, threatened or endangered species, preservation of biological habitats of special significance.

15. Environmental Thresholds
- a proposed inspection and maintenance program; and
- a method of ensuring maintenance of all BMPs over the life of the project.

Implementation of best management practices identified in the SWQMP will generally be considered to reduce the storm water quality impact to a less than significant level.

G.2 *Less than Significant Impacts*

The following land uses and projects are generally presumed to have a less than significant project-specific water quality impact. These include:

- Redevelopment projects that do not increase the amount of impervious surfaces on the site nor change the land use or potential pollutants;
- New development and redevelopment projects that incorporate into the project design construction BMPs for erosion, sediment and construction waste control and incorporate post-construction BMPs to protect sensitive riparian or wetland resources, reduce the quantity of runoff, and treat runoff generated by the project to pre-project levels;
- Lot line adjustments that do not alter the development potential of the lots involved;
- Development of a single family dwelling (and associated accessory uses including but not limited to roads and driveways, septic systems, guesthouse, pool, etc.) disturbing less than one acre on existing legal lot.

G.3 *Cumulative Impacts*

Because of the county’s designation under the Phase II NPDES regulations, all discretionary projects (except those that do not result in a physical change to the environment) within the urbanized area whose contributions are cumulatively considerable must implement one or more best management practices to reduce their contribution to the cumulative impact.

H. **General Mitigation Guidelines for Water Quality Impacts**

If water quality impacts are considered from the beginning stages of a project more opportunities are available for water quality protection. Best management practices (mitigation measures) chosen for a project should minimize water quality impacts and attempt to maintain pre-development runoff conditions. Best management practices are divided into two main categories, non-structural BMPs and structural BMPs.

Non-structural BMPs are preventative actions that involve management and source controls such as protecting and restoring sensitive areas such as wetlands and riparian corridors, maintaining and/or increasing open space, providing buffers along sensitive water bodies, minimizing impervious surfaces and directly connected impervious areas, and minimizing disturbance of soils and vegetation. Structural BMPs include: storage practices such as wet ponds and extended-detention outlet structures; filtration practices such as grassed swales, sand filters and filter strips; and infiltration practices such as infiltration basins and infiltration trenches. In many
cases combinations of non-structural and structural measures will be required to reduce water quality impacts.

Non-structural and structural BMPs most applicable to the development projects in the county are included in "A Planner’s Guide to Conditions of Approval and Standard Mitigation Measures" and the county’s adopted BMP manuals for construction site runoff control. Additional guidance on best management practices is available from the State\(^6\), the EPA\(^7\) and from other sources such as BASMAA "Starting at the Source"\(^8\). Storm water technologies are constantly being improved, and staff and developers must be responsive to any changes, developments or improvements in control technologies.

\(^6\) California Storm Water Best Management Practice Handbooks (California Stormwater Quality Task Force, 1993).
\(^7\) On the Internet at www.epa.gov/npdes/menuofbmps/menu.htm.
\(^8\) Start at the Source: Design Guidance Manual for Stormwater Quality Protection (Bay Area Stormwater Management Agencies Association, 1999).
WATER RESOURCES

Wat-1 Outdoor water use shall be limited through the measures listed below.

_The following is a menu; select only those conditions that apply. Some of these measures may also be used as water conservation conditions without requiring a landscape and irrigation plan._

a. Landscaping shall be with _[native and/or drought tolerant]_ species.

b. Drip irrigation or other water-conserving irrigation shall be installed.

c. Plant material shall be grouped by water needs.

d. Turf shall constitute less than 20% of the total landscaped area.

e. No turf shall be allowed on slopes of over 4%.

f. Extensive mulching (2" minimum) shall be used in all landscaped areas to improve the water holding capacity of the soil by reducing evaporation and soil compaction.

g. Soil moisture sensing devices shall be installed to prevent unnecessary irrigation.

h. Permeable surfaces such as turf block or intermittent permeable surfaces such as french drains shall be used for all parking areas and driveways.

i. The applicant shall plumb each lot for a grey water system. Each dwelling shall contain a grey water system plumbed to front and rear yard irrigation systems.

j. The applicant shall contract with an agency that sells reclaimed water to provide water for all exterior landscaping. Non-reclaimed water shall not be used to water exterior landscape. The applicant shall renew the contract annually and send copies of the contract and all receipts for reclaimed water received to P&D staff. These documents shall be due on _[specify month]_ of every year commencing _[specify starting point]_.

k. Separate landscape meters shall be installed.

**Plan Requirements:** Prior to _[insert timing]_, a landscape and irrigation plan shall be submitted to P&D for review and approval._Planner: For i,
show on building plans and require approval or plumbing permit. The applicant/owner shall enter into an agreement with the County to install required landscaping/irrigation and maintain required landscaping for the life of the project.

Timing: The applicant shall implement all aspects of the landscape and irrigation plan prior to occupancy clearance.

MONITORING: Permit Compliance shall conduct site visits to ensure installation and maintenance of landscape and irrigation. Any part of irrigation plan requiring a plumbing permit shown on building plans shall be inspected by Building Inspectors.

Indoor water use shall be limited through the following measures:

Planner: This is a menu; select only those conditions that apply:

a. All hot water lines shall be insulated.

b. Recirculating, point-of-use, or on-demand water heaters shall be installed.

c. Water efficient clothes washers and dishwashers shall be installed.

d. Self regenerating water softening shall be prohibited in all structures. [Required in Laguna Sanitation District.]

e. Lavatories and drinking fountains shall be equipped with self-closing valves

[Commercial only]

f. Pool(s) shall have pool cover(s).

Plan Requirements: Prior to approval of Land Use Permits\Coastal Development Permits, indoor water-conserving measures shall be graphically depicted on building plans, subject to P&D review and approval. Timing: Indoor water-conserving measures shall be implemented prior to occupancy clearance.

MONITORING: P&D shall inspect for all requirements prior to occupancy clearance.

The existing facility shall be retrofitted with water conserving showerheads (2 gallons per minute) and toilets (1.6 gallons per flush). Timing: Prior to approval of Land Use Permits\Coastal Development Permits, the retrofitting shall be completed by the applicant.
**MONITORING:** Planning and Development shall inspect to confirm retrofitting prior to approval of Land Use Permits\Coastal Development Permits.

High water consumption businesses (defined by P&D), including [specify types], shall be prohibited from operating on the subject property. **Plan Requirements and Timing:** Prior to approval of Land Use Permits\Coastal Development Permits, the applicant shall record a covenant agreeing to the prohibition with P&D for County Counsel review and approval to be included as a note on building plans, on lease agreements and in CC&R's.

**MONITORING:** P&D shall ensure no such businesses occupy building, by site inspection, prior to occupancy clearance and through any subsequent permitting for the site.

Reclaimed water shall be used for all dust suppression activities during grading and construction. **Plan Requirements and Timing:** This measure shall be included as a note on the grading plan. Prior to the commencement of earth movement, the applicant shall submit to Planning and Development an agreement/contract with a company providing reclaimed water stating that reclaimed water shall be supplied to the project site during all ground disturbances when dust suppression is required.

**MONITORING:** P&D staff shall inspect activities in the field to ensure non-potable water is being used in water trucks.

The project shall provide for on-site retention of storm water runoff, infiltration, and recharge where feasible. Feasibility shall be determined by the P&D Registered Geologist and Flood Control District engineer. Retention basin(s) shall be maintained for the life of the project by [a Homeowners' Association or landowner for commercial/industrial sites.] Recharge systems shall be developed in conjunction with the Flood Control District and P&D. **Plan Requirements:** A drainage plan showing the location and design parameters of the retention basin shall be submitted to P&D and Flood Control for review and approval. Installation and maintenance for five years shall be ensured through a performance security provided by the applicant. Long term maintenance requirements shall be specified in [homeowner association CC&Rs or in a maintenance program submitted by the landowner of commercial/industrial sites.]

**Timing:** Retention and/or recharge basins shall be installed (landscaped and irrigated subject to P&D and Flood Control District approval) prior to occupancy clearance.

**MONITORING:** Planning and Development shall site inspect for installation and maintenance of landscaping. Flood Control sign off is
required on final grading/drainage plans, and Permit Compliance sign off is required for release of the performance security.

**Planner: Goleta only for properties overlaying the North Central Subbasin and not a party to the Wright judgment.** In order for the proposed project to be found consistent with County water policies which require that adequate public and private services be available to serve the project, the applicant is required to petition the court and receive a determination that the applicant has the right to extract additional water from the north-central subbasin prior to the approval of [Land Use/Coastal Development] Permit.

**MONITORING:** P&D shall review determination prior to approval of Land Use Permits/Coastal Development Permits.

**Planner: For sites where disturbance involves one or more acres, the following will apply.** The applicant shall submit proof of exemption or a copy of the Notice of Intent to obtain coverage under the Construction General Permit of the National Pollutant Discharge Elimination System issued by the California Regional Water Quality Control Board. **Plan Requirements and Timing:** Prior to approval of Land Use Permits/Coastal Development Permits the applicant shall submit proof of exemption or a copy of the Notice of Intent and shall provide a copy of the required Storm Water Pollution Prevention Plan (SWPPP) to P&D. A copy of the SWPPP must be maintained on the project site during grading and construction activities.

**MONITORING** P&D shall review the documentation prior to approval of Land Use Permits/Coastal Development Permits. P&D shall site inspect during construction for compliance with the SWPPP.

**Planner: Use only for AHO or other qualified projects.**

Prior to [final map clearance/approval of [Land Use/Coastal Development] Permit] the applicant shall provide a can and will serve letter from the [specify water district] indicating that adequate water is available to serve the project.

**NOTE:** The following conditions/measures address storm water quality from construction, new development, and redevelopment as required by the EPA's NPDES Phase II municipal storm water regulations. Some of these measures should be considered during the initial design phase of a project as they might require significant land area to implement. Consideration of these measures after the initial design phase could result in substantial redesign and project delay.

**Planner: For all new development and redevelopment projects.** To prevent illegal discharges to the storm drains, all on-site storm drain inlets, whether new or existing shall be labeled to advise the public that the storm
Drain discharges to the ocean (or other waterbody, as appropriate) and that dumping waste is prohibited (e.g., “Don’t Dump – Drains to Ocean”). The information shall be provided in English and Spanish. **Plan Requirements and Timing:** Location of storm drain inlets shall be shown on site, building and grading plans prior to approval of grading and land use permits. Labels shall be installed prior to occupancy clearance. Standard labels are available from Public Works, Project Clean Water, or other label designs shall be shown on the plans and submitted to P&D for approval prior to approval of grading and land use permits.

**MONITORING:** Planning and Development shall site inspect prior to occupancy clearance.

**Wat-11**

**Planner:** Use this measure separately if there will be grading but an erosion and sediment control plan is not being required. To prevent sediment from being tracked off of the construction site, stabilized entrances shall be installed. Stabilizing measures may include but are not limited to use of gravel pads, steel rumble plates, temporary paving, etc. Any sediment or other materials tracked off site shall be removed the same day as they are tracked using dry cleaning methods. **Plan Requirements:** The stabilized entrances/exits shall be located and detailed on the grading and drainage plan. Dry cleaning methods shall be enumerated in the project specifications and included on grading and drainage plans. **Timing:** The plans shall be submitted to P&D for approval prior to approval of Land Use Permit/Coastal Development Permits. The stabilized entrances/exits shall be installed prior to initiation of grading and maintained for the duration of the grading period and until graded areas have been stabilized by structures, long-term erosion control measures or landscaping.

**MONITORING:** P&D shall site inspect during construction.

**Wat-12**

**Planner:** this measure is appropriate for small, medium, or large subdivisions (5 or more lots) or commercial/industrial developments and as an alternative to underground or aboveground impermeable drainage channels, however sufficient land area must be set aside onsite to accommodate the system. This measure can be combined with Wat-13 and Wat-14 where appropriate. A permanent biofiltration system shall be constructed to treat storm water runoff from the site. Biofiltration includes vegetated swales, channels, buffer strips, retention, rain gardens, and shall be designed in accordance with the California Stormwater BMP Handbook for New Development and Redevelopment (California Storm Water Quality Association) or other approved method. The biofilter system shall be designed by a registered civil engineer specializing in water quality or other qualified professional to ensure that the filtration properties and the plants selected are adequate to reduce concentrations of the target pollutants including [Planner: list likely pollutants]. Where
feasible, local plants sources (i.e., collected from the watershed or propagated from cuttings or seed collected from the watershed) shall be used in the biofiltration system. Invasive plants shall not be used. Biofilters shall not replace existing riparian vegetation or native vegetation unless otherwise approved by P&D. **Plan Requirements and Timing:** The applicant shall include the biofilter design, including the plant palette and the source of plant material, on the grading and drainage and landscape plans, and depict it graphically. The applicant shall submit a maintenance plan for the biofilter system to P&D for review and approval. A performance security will be required to ensure installation and long-term maintenance, including maintenance inspections at least once/year. Long-term maintenance and proof of inspections shall be the responsibility of the [HOA (for residential projects) or the landowner (for commercial/industrial projects)]. Maintenance requirements shall be specified in the CC&Rs or in a maintenance program submitted by the landowner of the commercial/industrial site and recorded with the Clerk of the Board. The plans and a copy of the long-term maintenance program shall be submitted to P&D, and Public Works, Water Resources Division staff, for review prior to approval of Land Use Permits/Coastal Development Permits. Biofilter maintenance is required for the life of the project and transfer of this responsibility is required for any subsequent sale of the property. The condition of transfer shall include a provision that the property owners conduct maintenance inspection at least once/year and retain proof of inspections.

**MONITORING:** Planning and Development shall site inspect for installation and periodically inspect for maintenance throughout a five-year performance period. Performance security release requires P&D approval. The [HOA (for residential projects) or the landowner (for commercial/industrial projects)] shall be responsible for maintenance inspections at least once/year for the life of the project. Proof of maintenance inspections shall be maintained and made available to County of Santa Barbara upon request.

**Planner:** This measure may be used for small projects where the drainage area is divided into smaller, individually treated units less than an acre, or projects such as small residential developments (4 or fewer lots), small commercial areas (with buildings or structures less than 5,000 square feet), and parking lots less than 25 stall. This measure can be combined with Wat-12 and Wat-14 where appropriate. To allow for infiltration and treatment, sheet flow runoff from the site shall be directed to a permanent vegetated buffer strip. A registered civil engineer or other qualified professional shall design the buffer strip. Only non-invasive perennial grass or other drought tolerant vegetation species shall be used. Vegetated buffer strips shall be designed in accordance with the California Stormwater BMP Handbook for New Development and Redevelopment (California Storm Water Quality Association) or other approved method.
Plan Requirements and Timing: Buffer strip design, including the plant palette and the source of plant material, shall be described and detailed on the site, grading and drainage and landscape plans, and depicted graphically. A maintenance program shall be specified in an inspection and maintenance plan and include maintenance inspections at least once/year. Long term maintenance shall be the responsibility of the [HOA (for residential projects) or the landowner (for commercial/industrial projects).] A maintenance program shall be specified in the CC&Rs or in a maintenance program submitted by the landowner for commercial/industrial sites and recorded with the Clerk of the Board. The plans and a copy of the long-term maintenance program shall be submitted to P&D and Public Works, Water Resources Division staff for review prior to approval of Land Use Permits/Coastal Development Permits. Buffer strip maintenance is required for the life of the project and transfer of this responsibility is required for any subsequent sale of the property. The condition of transfer shall include a provision that the property owners conduct maintenance inspection at least once/year and retain proof of inspections.

MONITORING: Planning and Development shall site inspect for installation of the swale and periodically thereafter to ensure long-term maintenance. The [HOA (for residential projects) or the landowner (for commercial/industrial projects)] shall be responsible for maintenance inspections at least once/year for the life of the project. Proof of maintenance inspections shall be maintained and made available to County of Santa Barbara upon request.

Planner: the following shall be used where possible to treat and infiltrate stormwater from impervious surfaces at commercial, residential, and industrial sites. Small drainages between 0.25 and 1.0 acres (larger drainages may require multiple bioretention areas). Bioretention is a soil and plant-based filtration device that removes pollutants through a combination of physical, biological, and chemical processes. The facility combines vegetation with a planting soil matrix of sand and organics. Runoff is distributed evenly through the ponding area for infiltration through the soil matrix. Underdrains may be required. To allow for infiltration and treatment, drainage shall be directed to a bioretention filter. A registered civil engineer or other qualified professional shall design the bioretention filter in accordance with the California Stormwater BMP Handbook for New Development and Redevelopment (California Storm Water Quality Association) or other approved method. Plan Requirements and Timing: Bioretention design, including the selected plant material, shall be described and detailed on the site, grading and drainage and landscape plans, and depicted graphically. A maintenance program shall be specified in an inspection and maintenance plan and include maintenance inspections at least once/year. Long term maintenance shall be the responsibility of the [HOA (for
residential projects) or the landowner (for commercial/industrial projects).] A maintenance program shall be specified in the CC&Rs or in a maintenance program submitted by the landowner for commercial/industrial sites and recorded with the Clerk of the Board. The plans and a copy of the long-term maintenance program shall be submitted to P&D and Public Works, Water Resources Division staff, for review prior to approval of Land Use Permits/Coastal Development Permits. Bioretention maintenance is required for the life of the project and transfer of this responsibility is required for any subsequent sale of the property. The condition of transfer shall include a provision that the property owners conduct maintenance inspection at least once/year and retain proof of inspections.

**MONITORING:** Planning and Development shall site inspect for installation of the bioretention facility and periodically thereafter to ensure long-term maintenance. The [HOA (for residential projects) or the landowner (for commercial/industrial projects)] shall be responsible for maintenance inspections at least once/year for the life of the project. Proof of maintenance inspections shall be maintained and made available to County of Santa Barbara upon request.

**Wat-15**

**Planer: To the maximum extent practicable, the following shall be used in parking areas (for overflow or low traffic areas), patios, sidewalks (consistent with ADA requirements) emergency roads, around buildings, driveways, etc. where soil conditions allow (NPDES Permit Requirement). This measure can be combined with Wat-16 and Wat-17 where appropriate.** To reduce runoff from impervious areas and allow for infiltration, the applicant shall incorporate pervious materials or surfaces (e.g., porous pavement or unit pavers on sand) into the project design.

**Plan Requirements and Timing:** Pervious surfaces shall be described and depicted graphically on the site, building, grading and landscape plans. The plans shall be submitted to P&D for review prior to approval of Land Use Permits/Coastal Development Permits.

**MONITORING:** P&D shall site inspect for installation.

**Wat-16**

**Planer: The following measure can be used for single family dwellings and commercial/industrial development on permeable soils and can be used on larger projects in conjunction with other measures. Work with Building and Safety to ensure that building foundations are adequately protected from site drainage when using this measure.** The applicant shall install a roof runoff collection and disposal system to infiltrate storm water runoff. Runoff shall be directed to either a subsurface infiltration trench, french drains, planter boxes, landscaped areas or connected to the site's irrigation system. An overflow or high flow bypass system will be provided.

**Plan Requirements and Timing:** The roof runoff collection system shall be shown on grading, building and landscape plans. The
plans shall submitted to P&D for review prior to approval Land Use Permits/Coastal Development Permits. The system shall be installed prior to occupancy clearance.

**MONITORING:** P&D shall site inspect for installation of the system.

A Homeowners’ Association or the landowner (for commercial/industrial projects) {planner choose the appropriate} shall be responsible for the long-term maintenance of the water quality conditions of approval {planner list conditions here}. **Plan Requirements and Timing:** The proposed maintenance responsibilities and schedule shall be included in the CC&R's or in a maintenance program submitted by the landowner for commercial/industrial sites. The CC&R's/maintenance program shall be submitted for review by P&D and Public Works, Water Resources Division staff, prior to approval of Land Use Permits/Coastal Development Permits. Annual records of the maintenance activities shall be maintained by the HOA/landowner and submitted to P&D upon request.

**MONITORING:** P&D shall review the maintenance records or site inspect, as needed. Costs shall be borne by the Homeowners Association.

**Planner: The following measure can be used for single family dwellings where conditions allow.** To reduce storm water runoff, one of the following driveway designs shall be used: paving only under wheels, flared driveway, or use of permeable surfaces for temporary or non-permanent parking areas. **Plan Requirements and Timing:** The driveway shall be shown on the site, grading, landscape and building plans. The plans shall be submitted to P&D for review prior to approval of Land Use Permits/Coastal Development Permits.

**MONITORING:** P&D shall site inspect to ensure installation.

**Wat-18** To prevent storm water contamination during roadwork or pavement construction, concrete, asphalt, and seal coat shall be applied during dry weather. Storm drains and manholes within the construction area shall be covered when paving or applying seal coat, slurry, fog seal, etc. **Plan Requirements and Timing:** These requirements shall be specified on the grading and building plans submitted to P&D prior to approval of Land Use Permits/Coastal Development Permits.

**MONITORING:** P&D shall site inspect, as needed during construction.

**Wat-19** **Planner: This measure must be applied to new or redeveloped fueling stations (NPDES Permit Requirement).** The fuel dispensing area shall extend 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus 1 foot, whichever is less. The fuel dispensing areas shall be paved with Portland cement concrete (or

equivalent smooth impervious surface), with a 2% to 4% slope to prevent ponding, and shall be separated from the rest of the site by a grade break that prevents run-on of storm water. The paving around the fuel dispensing area may exceed the minimum dimensions of the "fuel dispensing area" stated above. **Plan Requirements and Timing:** These requirements shall be specified on the grading and building plans submitted to P&D. The plans shall be reviewed and detailed prior to approval of Land Use Permits/Coastal Development Permits.

**MONITORING:** P&D shall site inspect prior to occupancy clearance.

**Wat-20 Planner:** *Use this measure on parking lots associated with shopping centers or large commercial or industrial developments (with buildings or structures totaling 5,000 square feet or more).* A parking lot cleaning program shall be developed and implemented. The program shall include the following elements: removal of litter; spot cleaning of oil, fuel, and other automotive leaks; vacuum sweeping on a *[Specify weekly, monthly, quarterly, or semi-annual]* basis; inspection and cleaning of storm drain inlets and catch basins before November 1 and in January of each year; and posting of signs prohibiting littering, oil changing, and other automotive repairs. Debris removed from the catch basins shall be analyzed and disposed of accordingly. **Plan Requirements and Timing:** The cleaning program shall be submitted to P&D for review prior to approval of Land Use Permits/Coastal Development Permits. The location of the signs and the requirement for storm drain cleaning shall be included on the site and building plans submitted to P&D. The plans shall be reviewed prior to approval of Land Use Permits/Coastal Development Permits.

**MONITORING:** P&D shall site inspect prior to occupancy clearance and shall respond to complaints. The landowner shall maintain annual records of the storm drain cleaning and make them available for review by P&D on request.

**Wat-21 Planner:** *Use this measure for parking areas with 5-25 spaces. Parking areas greater than 25 spaces shall be conditioned by Public Works for treatment of runoff from the design storm event (NPDES Permit Requirement).* The parking area and associated driveways shall be designed to minimize degradation of storm water quality. Best Management Practices (BMPs) such as landscaped areas for infiltration (vegetated filter strips, bioswales, or bioretention areas), designed in accordance with the California Stormwater BMP Handbook for New Development and Redevelopment (California Storm Water Quality Association) or other approved method shall be installed to intercept and remove pollutants prior to discharging to the storm drain system. The BMPs selected shall be maintained in working order. The landowner is responsible for the maintenance and operation of all improvements and
shall maintain annual maintenance records. The BMPs shall be described and detailed on the site, grading and drainage and landscape plans, and depicted graphically. A maintenance program shall be specified in an inspection and maintenance plan and include maintenance inspections at least once/year. Long term maintenance shall be the responsibility of the [HOA (for residential projects) or the landowner (for commercial/industrial projects).] A maintenance program shall be specified in the CC&R's or in a maintenance program submitted by the landowner for commercial/industrial sites and recorded with the Clerk of the Board. The plans and a copy of the long-term maintenance program shall be submitted to P&D and Public Works, Water Resources Division staff, for review prior to approval of Land Use Permits/Coastal Development Permits. BMP maintenance is required for the life of the project and transfer of this responsibility is required for any subsequent sale of the property. The condition of transfer shall include a provision that the property owners conduct maintenance inspection at least once/year and retain proof of inspections. **Plan Requirements and Timing:** The location and type of BMP shall be shown on the site, building and grading plans [*select plans as appropriate based on type of BMP*]. The plans and maintenance program shall be submitted to P&D for approval prior to land use clearance.

**MONITORING:** P&D shall site inspect for installation prior to occupancy clearance. The landowner shall make annual maintenance records available for review by P&D upon request.

**Planner:** *Use this measure for any project identified as having a significant storm water quality impact and, if appropriate, identify and include the minimum BMPs to be implemented (see above measures).* A combination of structural and non-structural Best Management Practices (BMPs) from the California Stormwater BMP Handbook for New Development and Redevelopment (California Storm Water Quality Association), or other approved methods, shall be installed to effectively prevent the entry of pollutants from the project site into the storm drain system after development. **Plan Requirements:** The applicant/owner shall submit and implement a Storm Water Quality Management Plan (SWQMP). The SWQMP shall include the following elements: identification of potential pollutant sources that may affect the quality of the storm water discharges; the proposed design and placement of structural and non-structural BMPs to address identified pollutants; a proposed inspection and maintenance program; and a method for ensuring maintenance of all BMPs over the life of the project. The approved measures shall also be shown on site, building and grading plans. Records of maintenance shall be maintained by the HOA for residential developments or landowners for commercial/industrial developments. **Timing:** Prior to approval of Land Use Permits/Coastal Development Permits, the SWQMP shall be submitted to P&D and Public Works...
Department, Water Resources Division. All measures specified in the plan shall be constructed and operational prior to occupancy clearance. Maintenance records shall be submitted to P&D on an annual basis prior to the start of the rainy season and for five years thereafter. After the fifth year the records shall be maintained by the landowner or HOA and be made available to P&D or Public Works on request.

**MONITORING:** P&D and Public Works, Water Resources Division shall site inspect prior to occupancy clearance to ensure measures are constructed in accordance with the approved plan and periodically thereafter to ensure proper maintenance.

Construction materials and waste such as paint, mortar, concrete slurry, fuels, etc. shall be stored, handled, and disposed of in a manner which minimizes the potential for storm water contamination. **Plan Requirements and Timing:** Bulk storage locations for construction materials and any measures proposed to contain the materials shall be shown on the grading plans submitted to P&D for review prior to approval of Land Use Permits/Coastal Development Permits.

**MONITORING** P&D shall site inspect prior to the commencement of, and as needed during all, grading and construction activities.

**Planner:** This measure must be applied where there is storage of outdoor materials (NPDES Permit Requirement). An outdoor material storage area refers to storage areas or facilities solely for the storage of materials. Improper storage of materials out of doors may provide an opportunity for toxic compounds, oil and grease, heavy metals, nutrients, suspended solids, and other pollutants to enter the storm water conveyance system. Where proposed project plans include outdoor material storage areas that could contribute pollutants to the storm water conveyance system, the following measures are required:

1) Materials with the potential to contaminate storm water must either be (a) placed in an enclosure such as, but not limited to, a cabinet, shed, or similar structure that prevents contact with runoff or spillage to the storm water conveyance system; or (b) protected by a secondary containment structure such as berm, dike, or curb and covered with a roof or awning.

2) The storage area must be paved and sufficiently impervious to contain leaks and spill or otherwise be designed to prevent discharge of leaks or spills into the storm water conveyance system.

**MONITORING:** P&D shall site inspect prior to occupancy clearance to ensure measures are constructed in accordance with the approved plan and periodically thereafter to ensure proper maintenance.
**Planner:** This measure must be applied where there is a trash storage area (NPDES Permit Requirement). A trash storage area is an area where a trash receptacle(s) or dumpsters are located. Loose trash and debris can be transported by forces of water or wind into storm water conveyance system. All trash container areas must meet the following requirements:

1) Trash container areas must divert drainage from adjoining paved areas.

2) Trash container areas must be protected and regularly maintained to prevent off-site transport of trash.

**MONITORING:** P&D shall site inspect prior to occupancy clearance to ensure measures are constructed in accordance with the approved plan and periodically thereafter to ensure proper maintenance.

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**Wat-26**

*Planner:* This measure must be applied for all automotive repair shops and maintenance bays (NPDES Permit Requirement). All automotive repair shops and maintenance bays shall meet the following requirements:

1) Repair/maintenance bays must be indoors or designed in such a way that doesn’t allow storm water run-on or contact with storm water runoff.

2) Design a repair/maintenance bay drainage system to capture all wash-water, leaks and spills. Connect drains to a sump for collection and disposal. Direct connection of the repair/maintenance bays to the storm drain system is prohibited. If required by local Sanitary District, obtain an Industrial Waste Discharge Permit.

**MONITORING:** P&D shall site inspect prior to occupancy clearance to ensure measures are constructed in accordance with the approved plan and periodically thereafter to ensure proper maintenance.

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**Wat-27**

*Planner:* This measure must be applied for all commercial vehicle/equipment wash areas (NPDES Permit Requirement). All vehicle/equipment washing/steam cleaning areas must be self-contained and/or covered, equipped with a clarifier or other pretreatment facility, and properly connected to a sanitary sewer or other appropriately permitted disposal facility.

**MONITORING:** P&D shall site inspect prior to occupancy clearance to ensure measures are constructed in accordance with the approved plan and periodically thereafter to ensure proper maintenance.

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**Wat-28**

*Planner:* This measure must be applied for all restaurants and commercial food handling facilities (NPDES Permit Requirement). All outdoor equipment/accessory washing/steam cleaning must provide an
area for the washing/steam cleaning of equipment and accessories. The area must be self contained, equipped with a grease trap, and properly connected to a sanitary sewer. If the wash area is located outdoors, it must be covered, paved, have secondary containment, and be connected to the sanitary sewer or other appropriately permitted disposal facility.

**MONITORING:** P&D shall site inspect prior to occupancy clearance to ensure measures are constructed in accordance with the approved plan and periodically thereafter to ensure proper maintenance.

Planner: **This measure must be applied for all loading/unloading dock areas including commercial and automotive repair shops (NPDES Permit Requirement).** The following design criteria are required for all loading/unloading dock areas:

1) Cover loading dock areas or design drainage to minimize run-on and runoff of storm water.

2) Direct connections to storm drains from depressed loading docks (truck wells) are prohibited.

**MONITORING:** P&D shall site inspect prior to occupancy clearance to ensure measures are constructed in accordance with the approved plan and periodically thereafter to ensure proper maintenance.
Three Step Process

**STEP 1: Identify Project Type (per General Permit)**

1. Residential development equal to or greater than 1.0 acre
2. Commercial, industrial, and transportation / vehicle facilities which are 0.5 acres or greater
3. Single-Family Hillside Residences
4. Automotive Repair Shops
5. Retail Gasoline Outlets
6. Restaurants
7. Home Subdivisions with 10 or more housing units
8. Parking lots 5,000 square feet or more or with 25 or more parking spaces and potentially exposed to storm water runoff

**STEP 2: Identify SOURCE CONTROL / SITE DESIGN BMPs**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trash storage</td>
<td>Adjoining drainage shall be redirected, trash container areas screened or walled.</td>
</tr>
<tr>
<td>Material storage</td>
<td>Materials placed in enclosure, storage area paved and impervious, covered with roof or awning.</td>
</tr>
<tr>
<td>Loading docks</td>
<td>Cover loading dock, design drainage to minimize run-on and runoff, direct connections to storm drains from truck wells prohibited.</td>
</tr>
<tr>
<td>Vehicle maintenance / repair</td>
<td>Repair bays must be indoors or otherwise prevent storm water contact. Repair bays must capture all washwater, leaks and spills, drain to sump for collection and proper disposal.</td>
</tr>
<tr>
<td>Vehicle or equipment wash</td>
<td>Wash areas self-contained and/or covered, equipped w clarifier or pretreatment facility, proper connection to sanitary. Wash areas self-contained, equipped with grease trap, properly connected to sanitary. If outdoors, must be covered, paved, secondary containment, and connected to sanitary or other approved disposal.</td>
</tr>
<tr>
<td>Fueling</td>
<td>Fueling areas covered with overhanging roof structure or canopy, canopy minimum dimension equal to or greater than dispensing area within grade break, canopy cannot drain onto fuel dispensing area, canopy downspouts prevent drainage across fueling area, Dispensing area paved with Portland cement concrete or equivalent, 2% to 4% slope to prevent ponding, separated from rest of site by grade break. Dispensing area must be 6.5 feet from corner each fuel dispenser or length at which hose and nozzle assembly operated plus 1 foot, whichever is less.</td>
</tr>
<tr>
<td>Runoff from impervious areas:</td>
<td>Conserve natural areas (concentrate or cluster development, limit clearing and grading to minimum amount needed, maximize trees and vegetation, plant additional vegetation, cluster tree areas, promote use native or drought tolerant plants, promote landscaped areas, preserve wetlands and riparian areas) Minimize pollutants of concern Protect slopes and channels (convey runoff safely, use natural drainage, stabilize channel crossings, vegetate slopes, install energy dissipators to minimize erosion) Provide storm drain stencil Post-development peak Q shall not exceed pre-development peak Q (Flood Control Conditions)</td>
</tr>
</tbody>
</table>

**STEP 3: Treat and detain/retain remaining runoff**

Per Public Works Water Resources (Flood Control / Cleanwater)
DATE: November 27, 2006

MEMO TO: Steve Mason, Deputy Director, Planning and Development
Zoraida Abresch, Deputy Director, Planning and Development

FROM: Tom Fayram, Deputy Public Works Director

CC: Phil Demery, Public Works Director
Ron Cortez, Deputy County Executive Officer
Michael Ledbetter, Deputy County Counsel

RE: Coordination on Water Quality BMPs

As you know, the County is required to regulate new development and redevelopment projects under the NPDES Storm Water General Permit. Most of the NPDES requirements are addressed directly by your staff through standard conditions of approval (Attachment 1). One NPDES requirement not addressed by P&D is the treatment of runoff from certain categories of development (Attachment 2). This requirement is addressed by Public Works through the County of Santa Barbara’s Standard Conditions for Project Plan Approval for Water Quality BMPs (Attachment 3).

Since June, 2004, Water Resources staff has issued the conditions and provided review and approval of project submittals. In order to improve the implementation of these conditions, I would like your staff to implement the following practice:

Prior to issuing the completeness letter to the applicant, the treatment control measures must be adequately addressed on the project Grading & Drainage Plans or other appropriate submittal, by demonstrating how the project will meet our Standard Conditions.

To do this, the applicant must calculate runoff from the design storm and define how the project will treat that runoff. For example, if the proposal includes use of bioswales, bioretention, or detention, then the location of those areas would have to be identified and sized accordingly. Similarly, if the proposal includes a manufacturer’s control device, the location and type of the filter should be identified.

25. Application Completeness
This clarification on a completeness item will prevent applicants from waiting until after decision maker hearings when it often too late to adequately address this condition. These measures are best addressed up-front during plan check and will, in the long run, make the process easier for both the applicant and the County.
Example for Completeness Letter

Stormwater Runoff. The County Board of Supervisors has adopted new interpretive and implementation guidelines for County policies to protect water quality from the long-term impacts of development. New projects must incorporate appropriate Best Management Practices (BMPs) into the project design to minimize water quality impacts to the maximum extent practical. In order of preference these BMPs are:

- site planning to avoid, protect, and restore sensitive areas (e.g., wetlands and riparian corridors);
- minimizing impervious surfaces and directly connected impervious surfaces, using existing natural features to allow for on-site infiltration of water;
- use of vegetative treatment (e.g., bio-swales, vegetative buffers, constructed or artificial wetlands);
- mechanical or structural treatment (e.g., storm drain filters and inserts).

In order to assure that adequate space is reserved to incorporate the necessary treatment control measures, please submit project Grading & Drainage Plans (or other appropriate submittal) that address how the project will meet the Santa Barbara County Standard Conditions for Project Plan Approval – Water Quality BMPs consistent with these policy objectives. These plans or submittals shall be provided to Santa Barbara County Public Works, Water Resources Division, for review and approval of completeness. More information, including level of detail needed for application completeness, can be found at: http://www.sbpjectcleanwater.org/post_construction.html. Please contact Cathleen Garnand at (805) 568-3561 if you have any questions about these requirements.
1. What is MEP? How is it defined?

MEP is the acronym for Maximum Extent Practicable. The federal Clean Water Act (CWA) provides that National Pollutant Discharge Elimination System (NPDES) permits for Municipal Separate Storm Sewer Systems (MS4) must require municipalities to reduce pollutants in their storm water discharges to the MEP. (CWA §402(p)(3)(B).) MS4 permits "shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods." (Id.)

The MEP standard involves applying best management practices (BMPs) that are effective in reducing the discharge of pollutants in storm water runoff. In discussing the MEP standard, the State Board has said the following: "There must be a serious attempt to comply, and practical solutions may not be lightly rejected. If, from the list of BMPs, a permittee chooses only a few of the least expensive methods, it is likely that MEP has not been met. On the other hand, if a permittee employs all applicable BMPs except those where it can show that they are not technically feasible in the locality, or whose cost would exceed any benefit to be derived, it would have met the standard. MEP requires permittees to choose effective BMPs, and to reject applicable BMPs only where other effective BMPs will serve the same purpose, the BMPs would not be technically feasible, or the cost would be prohibitive." (Order No. WQ 2000-11, at p.20.) MEP is the result of the cumulative effect of implementing, continuously evaluating, and making corresponding changes to a variety of technically and economically feasible BMPs that ensures the most appropriate controls are implemented in the most effective manner. This process of implementing, evaluating, revising, or adding new BMPs is commonly referred to as the iterative approach (see question 4). For Small MS4s, EPA has stated that pollutant reductions to the MEP will be realized by implementing BMPs through the six minimum measures described in the permit. (64 Federal Register 68753.)

Source: SWRCB (updated 8/5/04)
http://www.swrcb.ca.gov/stormwtr/smallms4faq.html
Low Impact Development (LID)
A Sensible Approach to Land Development and Stormwater Management

What is Low Impact Development (LID)?
LID is an alternative method of land development that seeks to maintain the natural hydrologic character of the site or region. The natural hydrology, or movement of water through a watershed, is shaped over centuries under location-specific conditions to form a balanced and efficient system. When hardened surfaces such as roads, parking lots, and rooftops are constructed, the movement of water is altered; in particular, the amount of runoff increases and infiltration decreases. This results in increased peak flow rate and volume, and pollution levels in stormwater runoff. LID designs with nature in mind: working with the natural landscape and hydrology to minimize these changes. LID accomplishes this through source control, retaining more water on the site where it falls, rather than using traditional methods of funneling water via pipes into local waterways. Both improved site design and specific management measures are utilized in LID designs. LID has been applied to government, residential, and commercial development and redevelopment, and has proven to be a cost-efficient and effective method for managing runoff and protecting the environment.

Using LID Tools in Residential Development

**Natural Drainage Flow**
Reduces need for grading and constructed drainage systems by building house in a location that permits preservation of natural pattern of stormwater drainage

**Bioretention Cell or Rain Garden**
Depressions that contain soil amendments that promote infiltration of stormwater

**Amended Soil**
Soil enriched with sand and organic materials increases the capacity of soil to infiltrate water

**Reduced Hardscape**
Narrower streets, sidewalks, and driveways increases pervious areas and open spaces

**Preserved Native Vegetation**
Enhances the aesthetic quality of community and improves the evaporation-transpiration rate

**Porous Pavement**
Concrete that allows rain to infiltrate, thereby reducing runoff and promoting groundwater recharge

**Grassy Swale**
Vegetated channels that slow stormwater runoff and promotes infiltration, traps sediment, and helps treat pollutants

Diagram adapted from Prince George’s County Maryland Low-Impact Development Design Strategies
Historically, in the U.S., the motto for stormwater management has been “conveyance”: move water away from the site where it falls as quickly and efficiently as possible. Traditional management tools include street gutters and curbs, pipes, and canals to remove water from the developed areas. To receive this increased volume, creeks and rivers are re-shaped and lined with concrete. Detention ponds, some with water quality filtration devices, regulate discharge to reduce peak flow impacts on receiving waters. For the most part, these practices reduce flood impacts, but do not completely address water quality, and aquatic and riparian habitat degradation issues.

In contrast with the traditional approaches, the guiding principle of low impact development approaches is not conveyance; it is “source control and infiltration”. LID techniques seek to maximize the area available for infiltration so that runoff volume and pollutant concentrations are reduced. This is achieved through a variety of site design and engineered infiltration techniques. Site design techniques include locating open spaces in low-lying areas to serve as a detention/retention basin and avoid development on permeable soils to promote infiltration and groundwater recharge. Engineered techniques include the use of grassy swales, bioretention cells, and porous pavement.

**LID Benefits**

**Water Quality**
- Contributes to groundwater recharge through infiltration
- Improves surface water quality
- Protects stream and lake quality from large volumes of polluted runoff

**Meets Clean Water Act Requirements**
- Source control reduces the pollutant level and volume of runoff entering a water body, complying with National Pollutant Discharge Elimination System (NPDES) and anti-degradation policy.
- This also aids in complying with 401 certification requirements

**Flood Control**
- Reduces frequency & severity of floods
- Reduces peak flow volume & velocity

**Habitat Protection**
- Preserves stream & riparian habitats
- Preserves regional trees & vegetation
- Reduces eroded sediment loading into streams & lakes

**Community Value**
- Increases aesthetics and recreational opportunities in protected riparian habitats
- Increases land value by having a cleaner environment
- Increases public/private collaborative partnerships

**LID Challenges**

**Lack of Information**
- Many municipal planners, consultants and the general public are unfamiliar with the benefits of LID practices and how to utilize them in different environments.

**Inflexible Regulations/Ordinances**
- Existing rules often lack the flexibility to implement LID solutions

**Maintenance**
- Some LID tools require maintenance by homeowners and local public works departments to function properly

**Presence of Contaminants**
- Use of filtration practices can threaten groundwater quality if high levels of soil contaminants are present.

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**Economic Issues**

The economic benefits of LID include:
- Reduced costs of stormwater infrastructure, including curbs and gutters
- Reduced stormwater utility fees
- Increased land value
- Decreased spending on current and future environmental conservation programs

Specific cost savings vary on a case by case basis. There can be additional costs:
- Higher installation costs for certain soil types and gradients
- Increased landscape maintenance costs

<table>
<thead>
<tr>
<th>Issue</th>
<th>Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher Lot Value</td>
<td>$3000 more per lot</td>
</tr>
<tr>
<td>Lower Cost Per Lot</td>
<td>$4800 less cost per lot</td>
</tr>
<tr>
<td>Enhanced Marketability</td>
<td>80% of lots sold in first year</td>
</tr>
<tr>
<td>Added Amenities</td>
<td>23.5 acres of green-space/parks</td>
</tr>
<tr>
<td>Recognition</td>
<td>National, state, and professional</td>
</tr>
<tr>
<td>Total Economic Benefit</td>
<td>Over $2,200,000 added to profit</td>
</tr>
</tbody>
</table>

The above table, from Gap Creek residential subdivision, Sherwood, AR, illustrates the financial benefits of using LID methods. Tyne & Associates, North Little Rock, AR
Addressing LID Implementation Challenges

Solutions

Clay Soils/Limited Space
The combination of clay soils and small lot sizes can work well together. As clays are naturally less pervious, less engineering and land is required to achieve predevelopment infiltration rates. Use integrated stormwater management techniques, a combination of traditional and LID approaches. Significant stormwater runoff reduction can still be achieved.

Local Codes Aren’t LID-friendly
Revise local codes & ordinances to support use of LID techniques. Check out the Center for Watershed Protection’s website for suggested guidelines (www.cwp.org/COW_worksheet.htm).

Don’t know what would work and where
Educate planning & public works staff. Numerous references are available on the use of LID in a variety of settings (see Online References).

Some communities that have found solutions

Hercules has modified stormwater management guidelines that fit LID principles, city codes that allow administrative approval for LID projects, and limited street lengths.

Contra Costa incorporated LID measures into their Standard Urban Stormwater Management Plan (SUSMP) for new development (http://www.cccleanupwater.org/construction/nd.php). Sacramento, likewise, is publishing their own design manual in Fall, 2006 that includes LID measures.

San Diego has new parking standards for intensive commercial zones that include smaller parking spaces and driveways, plus new guidelines requiring reduced imperviousness for parking spaces.

Santa Monica encourages LID by requiring that all new developments and substantial remodels submit an “Urban Runoff Mitigation Plan”, and reduce projected runoff for the site by 20%. The city recommends LID technologies.

LID as a Re-design Strategy

Retrofit a Parking Lot to increase permeability
Over sixty-five percent of impervious areas are associated with “habitat for cars”. Using porous pavement in parking lots is a simple way to increase infiltration and reduce runoff. When the US Navy Yard in Washington, D.C. needed to repave its parking lot, they used porous pavers. They also added bioretention cells to the landscaped areas and disconnected downspouts. The re-design did not alter the amount of parking spots, but reduced peak runoff and pollution, thus protecting and helping to restore the Anacostia and Potomac Rivers and the Chesapeake Bay.

Porous pavement covers about 1/3 of each parking space in the D.C. Navy Yard parking

Alter street design to increase infiltration
In a landmark project in Seattle, the Street Edge Alternative or SEA project involved building vegetated swales, bioretention cells, and narrower streets without curbs to promote an effective drainage and filtration system. The system reduced peak runoff for the 2 year flood event by 98%, and is capable of conveying the 25 year flood event. The local watershed provides spawning habitat for endangered salmon. The project was so successful that similar ones are being planned throughout the city.

LID street design: vegetated swales, no curbs, and narrower streets promote infiltration of stormwater.

Replace lawns with rain gardens
Rain gardens are small bioretention cells landscaped with plants, trees, and grasses. They are a particularly good way for individual homeowners to enhance their landscaping while protecting water quality. By planting easy-care native wildflowers, hardy perennials and grasses, attractive gardens can be constructed that have the added environmental benefits. More information on rain gardens is available at: http://www.healthylandscapes.org/raingarden.htm. Information on plants compatible for use in a California rain garden is posted at: http://www.bbq.org/gar2/topics/design/2004sp_raingardens.html.

Rain garden in a small backyard that collects runoff from roof and patio.

30. Low Impact Development
LID is more than a collection of engineered tools. It is a comprehensive design technique incorporating site planning and integrated management measures.

LID design principles include:
- Extensive site assessment of hydrology, topography, soils, vegetation and water features;
- Higher density, clustered housing, preserving open spaces to facilitate infiltration and protect habitats;
- Street layout that minimizes road length and width, calming traffic while allowing safe access of emergency vehicles.

In this example, LID design reduces imperviousness by changing the cul-de-sac design, reducing street width and lot size, and instead clustering houses around common green spaces that also serve as infiltration sites and preserving natural features.

Examples of LID

Rain Gardens and grass swales between houses are used at Douglas Ranch, Granite Bay, CA, to catch and filter runoff from roofs and driveways before entering a local stream.

Hollywood Driveways have a dividing strip of grass in order to reduce the amount of impervious surface. Another way to reduce driveway space is to share one with a neighbor.

Curb Cuts permit stormwater to flow into grassy swales to reduce roadway contaminants that flow into nearby waterways. They can also be used in existing landscaped areas.

Basic Components of a Bioretention Cell
To see how to engineer bioretention cells with the proper gradient and components visit www.lowimpactdevelopment.org/epa03/ biospec.htm

Online Resources
- Low Impact Development Center: www.lowimpactdevelopment.org
- U.S. Environmental Protection Agency: www.epa.gov/owow/ps/urban.html
- Stormwater Managers Resource Center: www.stormwatercenter.net
- National NEMO Network: www.nemone.net/ucan.edu
- LID Urban Design Tools: www.id-stormwater.net
- California Stormwater Quality Association: www.cabmphandbooks.com

Prepared by Office of Environmental Health Hazard Assessment & the California Water & Land Use Partnership (CA WALUP)
Written by E. Ruby & D. Gillespie, student interns, OEHHA. For more information contact Barbara Washburn: bwashburn@oehha.ca.gov.
CA WALUP is an educational program for land use decision makers addressing the relationship between land use and natural resource protection. The CA WALUP is a Charter Member of the National NEMO Network. CA WALUP website: http://cawalup.usc.edu
How Urbanization Affects the Water Cycle

Why is the Water Cycle Important?
The water cycle, also known as the hydrological cycle, is the continuous exchange of water between land, waterbodies, and the atmosphere. Approximately 97% of the earth's water is stored in the oceans, and only a fraction of the remaining portion is usable freshwater. When precipitation falls over the land, it follows various routes. Some of it evaporates, returning to the atmosphere, some seeps into the ground, and the remainder becomes surface water, traveling to oceans and lakes by way of rivers and streams. Impervious surfaces associated with urbanization alter the natural amount of water that takes each route. The consequences of this change are a decrease in the volume of water that percolates into the ground, and a resulting increase in volume and decrease in quality of surface water. These hydrological changes have significant implications for the quantity of fresh, clean water that is available for use by humans, fish and wildlife.

MORE WATER FASTER

DEVELOPED LANDS
Rain pours more quickly off of city and suburban landscapes, which have high levels of impervious cover.

- Pavement & rooftops shed water
- Storm drains deliver water directly to waterways
- Streets act as streams*, collecting stormwater and channeling it into waterways
- Pollutants collected on impervious surfaces are washed into streams, rivers, and lakes

NATURAL LANDS
Trees, brush, and soil help soak up rain and slow runoff in undeveloped landscapes.

- Trees & other vegetation break the momentum of rain and help reduce surface erosion
- Water pools in indentations and filters into the soil
- Roots anchor soil, minimizing erosion
- Vegetation helps build organic, absorbent soil

RUNOFF

Figure 1 (left) illustrates how impervious cover and urban drainage systems increase runoff to creeks and rivers. The larger volume, velocity and duration of flow acts like sandpaper on stream banks, intensifying the erosion and sediment transport from the landscape and stream banks. This often causes channel erosion, clogged stream channels, and habitat damage.

Channelized rivers and streams exhibit similar problems accommodating large peak runoff volumes and supporting aquatic ecosystems.

Figure 2 The hydrograph (left) illustrates stormwater peak discharges in a urban watershed (red line) and a less developed watershed (yellow line). In watersheds with large amounts of impervious cover, there is a larger volume and faster rate of discharge than in less developed watersheds, often resulting in more flooding and habitat damage.

Adapted from Santa Clara Hydromodification Management Plan

31. Low Impact Development
**Figure 2.** How impervious cover affects the water cycle.

With natural ground cover, 25% of rain infiltrates into the aquifer and only 10% ends up as runoff. As imperviousness increases, less water infiltrates, and more rain runs off. In highly urbanized areas, over 80% of rainfall becomes "surfaced" runoff and deep infiltration is only a fraction of what it was naturally.

The increased surface runoff requires more infrastructure to minimize flooding. Natural waterways end up being used as drainage channels, and are frequently lined with rock or concrete to move water more quickly and prevent infiltration.

In addition, as deep infiltration decreases, the water table drops, reducing groundwater for wetlands, riparian vegetation, wells, and other uses.

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**Figure 3.** Relationship between imperviousness and stream quality.

In most cases, when impervious cover (IC) is less than 10% of a watershed, streams remain healthy. Above 10% impervious cover, common signs of stream degradation are evident. They include:

- Excessive stream channel erosion (bed and bank)
- Reduced groundwater recharge
- Increased size and frequency of 1-2 year floods
- Decreased movement of groundwater to surface water
- Loss of streambank tree cover
- Increased contaminants in water
- Increased fine sediment in stream bed
- Overall degradation of the aquatic habitat

*Pictures from different reaches of Secret Ravine Creek, Placer County, California.*
**Figure 4.** Conceptual relationship between IC and stream habitat quality.

Between 10 – 25% imperviousness, major alterations in stream morphology occur that significantly reduce habitat quality. At greater than 25% impervious cover, streams suffer from loss of habitat, floodplain connectivity, and bank stability, as well as decreased water quality.

**California Examples**

Studies on urban streams across California have consistently found similar patterns of degradation. For example, in Los Penasquitos Creek in San Diego County, watershed development grew from 9% to 37% urbanization between 1966-2000. From 1973-2000, the total annual urban runoff in the upper watershed increased by 4% per year, resulting in more than a 100% increase in runoff for the measured time period. The flood magnitude for the 1-2 year storm also increased by more than 5 fold from 1965-2000.

**Figure 5.** Comparison of Pre- and Post-Development Flow Conditions, Thompson Creek, Santa Clara Valley, CA.

The impact of 44% impervious cover on a variety of hydrological parameters on Thompson Creek were predicted during a random seven-day period. 50 years worth of data was used in the modeling process. The most obvious difference between the pre and post development conditions is the significantly greater volume of runoff generated after development, as seen in the above graph. Whereas pre-development flows were typically at flow rates that would not cause bank erosion (green line), post-development flows mainly exceeded the flow needed to destabilize stream banks. Further, post-development flows, in contrast to pre-development flows, would regularly exceed the historic 2-year storm event.

The impacts of these altered conditions are degradation of the aquatic habitat and increased frequency of flood events. In the Thompson Creek sub-watershed, hydrologists also found that the increased imperviousness associated with development approximately doubled stormwater runoff for peak discharges for 2, 5, and 10-year storm event. Results in this watershed and elsewhere have shown that the 0 – 10 year storms are the events that overwhelmingly alter the shape and size of streams. Thus, doubling of the rate of runoff will have significant impacts on aquatic resources as well as the risk of flooding.
In a Nutshell

Increased impervious cover associated with urbanization alters the natural cycling of water. Changes in the shape and size of urban streams, followed by decreased water quality, are the most visible effects of increased imperviousness. Greater frequency and severity of flooding, channel erosion, and destruction of aquatic habitat commonly follow watershed urbanization. Alterations in the aquatic environment associated with these hydrological changes greatly compromise the normal functioning of our waterways.

Resources on the Web

Center for Watershed Protection
www.cwp.org

State Water Resources Control Board (NPS Encyclopedia)
www.waterboards.ca.gov/nps/encyclopedia.html

National NEMO Network
http://nemonet.uconn.edu/

Low Impact Development Center
www.lowimpactdevelopment.org/

EPA information on hydrological cycle
www.epa.gov/seahome/groundwater/src/cycle.htm

The Stormwater Manager’s Resource Center
www.stormwatercenter.net

References

nov05.pdf.
TEN BASIC PRINCIPLES

(From Erosion & Sediment Control Handbook by Goldman, Jackson and Bursztynsky, 1986, McGraw-Hill)

☑ FIT DEVELOPMENT TO THE TERRAIN

☑ TIME GRADING AND CONSTRUCTION TO MINIMIZE SOIL EXPOSURE

☑ RETAIN EXISTING VEGETATION WHEREVER FEASIBLE

☑ VEGETATE AND MULCH DENUDED AREAS

☑ DIVERT RUNOFF AWAY FROM DENUDED AREAS

☑ MINIMIZE LENGTH AND STEEPNESS OF SLOPES

☑ KEEP RUNOFF VELOCITIES LOW

☑ PREPARE DRAINAGE WAYS AND OUTLETS TO HANDLE CONCENTRATED OR INCREASED RUNOFF

☑ TRAP SEDIMENT ON SITE

☑ INSPECT AND MAINTAIN EROSION CONTROL MEASURES DURING CONSTRUCTION
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD - SAN DIEGO REGION
WATERSHED MANAGEMENT PROGRAM

FACILITY INSPECTION REPORT

INSPECTION DATE: October 5, 2007        TIME: 9 am         W Did: 9 37C322900

FACILITY REPRESENTATIVE(S) PRESENT DURING INSPECTION: none

North County Transit District
NAME OF OWNER, AGENCY OR PARTY RESPONSIBLE FOR DISCHARGE

Sprinter Rail Project
FACILITY OR DEVELOPER NAME (if different from owner)

808 Rancheros Drive
FACILITY STREET ADDRESS

Applicable Water Quality Licensing Requirements

☐ MS4 Urban Runoff Requirements NPDES NOS, CAS0108758, CAS0108740 or CAS0108766
☒ General Permit Order No. 99-08-DWQ, NPDES No. CAS000002 - Construction
☐ General Permit Order No. 99-06-DWQ, NPDES No. CAS000003 - Caltrans
☐ General or Individual Waste Discharge Requirements
☐ General or Individual Waiver of Waste Discharge Requirements
☐ Section 401 Water Quality Certification
☐ CWC Section 13264

Inspection Type (Check One)

A1 ☐ "A" type compliance—Comprehensive inspection in which samples are taken. (EPA Type S)
B1 ☒ "B" type compliance—A routine nonsampling inspection. (EPA Type C)
02 ☐ Noncompliance follow-up—Inspection made to verify correction of a previously identified violation.
03 ☒ Enforcement follow-up—Inspection made to verify that conditions of an enforcement action are being met.
04 ☒ Complaint—Inspection made in response to a complaint.
05 ☐ Pre-requisite—Inspection made to gather info. relative to preparing, modifying, or rescinding requirements.
06 ☐ No Exposure Certification (NEC) - verification that there is no exposure of industrial activities to storm water.
07 ☐ Notice of termination request for industrial facilities or construction sites - verification that the facility or construction site is not subject to permit requirements (Type, NOT I or NOT C - circle one).
08 ☐ Compliance Assistance Inspection - Outreach inspection due to discharger's request for compliance assistance.

Inspection Findings

☐ Y Were violations noted during this inspection? (Yes/No/Pending Sample Results)
☐ N Were samples taken? (N=no) If YES then, G= grab or C= Composite and attach a copy of the sample results/chain of custody form

I. Compliance History:

Notice of Violation (NOV) No. R9-2007-0050 was issued on March 19, 2007 for construction storm water permit violations including discharge of sediment, and inadequate BMPs.

NOV No. R9-2007-0063 was issued on April 3, 2007 for construction storm water permit violations including discharge of sediment and inadequate BMPs.

Administrative Civil Liability No. R9-2007-0093 was issued on August 31, 2007 for construction storm water permit violations including discharge of sediment, inadequate BMPs, and inadequate inspections.
II. FINDINGS

On October 5, 2007, Ben Neill, Peter Peuron, and Lee Shenk of the Regional Board's Central Watershed Unit inspected the North County Transit District's (NCTD) construction of the Sprinter Rail. The inspection observed construction activities along:

1. Washington Avenue, Escondido
2. Nordahl Road Station and along Barham Drive, Escondido
3. Barham Drive, near Shelley Drive, San Marcos,
4. Palomar station, San Marcos
5. Mar Vista drive storage yard, Vista
6. Melrose Drive station, Oceanside
7. Rancho del Oro station, Oceanside and
8. College Blvd station, Oceanside.

The National Weather Service's website for the San Diego Region forecast a 20% chance of rainfall on the day of the inspection. Weather was gray and overcast with some light sprinkles in the morning. Later after noon, the skies were partly cloudy with no rainfall. No notice was given on the inspection and NCTD representatives were not present during the inspection.

1. Washington Avenue in Escondido - The Sprinter tracks are south of and parallel to Washington Avenue from Hale Avenue, going west under I-15 to Mission Road. A low drainage ditch runs along the north side of the tracks between Washington Avenue and the rail line. Marin landscaping was busy applying hydroseed for erosion control along this drainage ditch (Photo 1). At several locations, the drainage ditch has storm drain inlets that were not protected with sediment controls (Photos 2, 3, 4, 5, 9). The drainage ditch also had trash accumulated near the inlets (Photos 2, 4, 5). At the intersection of Washington Avenue and Mission Road, a large area of soil was exposed with no sediment control BMPs or soil stabilization (Photo 6). Along Washington Avenue, two storm drain inlets were observed with broken up gravel bags that have not been maintained (Photos 7, 8).

2. Nordahl Road Station and along Barham Drive in Escondido - This station construction is on the southwest corner of the intersection of Citracado Parkway and Mission Boulevard. The disturbed area is from Citracado Parkway extending west to Barham Drive. The tracks run along the south side of Mission Boulevard. The construction site entrance/exit to north Citracado Parkway was without best management practices (BMPs) such as gravel or shaker plates to prevent sediment tracking (Photo 10). A storm drain inlet south of the tracks and just west of Citracado Parkway had gravel bags that were broken and not maintained (Photo 11). Along the south side of the tracks, a silt fence was in disrepair in part and missing in some areas (Photos 12, 13, 14, 15). Construction material trash and debris was stored outside with no cover or containment south of the tracks (Photos 14, 15). Along the north side of the tracks next to Mission Boulevard, disturbed soil did not have sediment controls or soil stabilization (Photo 16). At Barham Drive, more construction trash and debris was stored outside without cover or containment (Photo 17). Along the southeast side of Barham Drive, fiber rolls and silt fences were destroyed beyond usefulness (Photos 18, 19). A row of gravel bags on the northwest side of Barham Drive had deteriorated to the point of being ineffective (Photo 20).

3. Barham Drive near Shelley Drive in San Marcos - This was one of the sites containing previous violations noticed in NOV R9-2007-0050 issued on March 19, 2007. A large area of disturbed soil was without any sediment controls or soil stabilization (Photo 21). In the middle of this disturbed area there was an unprotected storm drain (Photo 22).

4. Palomar College Station – This was one of the sites containing previous violations noticed in NOV R9-2007-0050 issued on March 19, 2007. This station is south of W. Mission Rd, and north of Armorlite Dr. in San Marcos, across Mission Rd, from Palomar College. The site houses trailers for NCTD and their contractors. A storm drain inlet at the Armorlite Drive entrance to the trailers has gravel bags that are destroyed to the point that the gravel appears to be entering the inlet (Photo 23). A portable toilet is nearby and silt fencing has been partially removed (Photo 24).

5. Mar Vista drive storage yard in Vista - This was one of the sites containing previous violations noticed in NOV R9-2007-0050 issued on March 19, 2007. This storage yard has a large soil stockpile that was not covered or contained to protect storm water runoff. Silt fence was not maintained around this stockpile. The silt fence was falling down on one side of the stockpile (Photo 25).
6. Melrose Drive station in Oceanside - This station is on the southwest corner of Melrose Drive and Oceanside Boulevard next to a convenience store. The headwaters to Loma Alta Creek flow adjacent to the south side of the tracks. This site did not have any erosion controls on slopes and fiber rolls were not implemented properly (Photos 26, 27, 28). The fiber rolls were not trenched in properly on a slope north of the tracks. A slope south of the tracks did not have the fiber rolls overlapping at the ends. The construction exit through the convenience store parking lot did not have any BMPs to prevent sediment tracking (Photo 29). At this exit a storm drain inlet was in the bare soil with no BMPs to protect it (Photo 30). The inlet has been repeatedly driven over tracking sediment into the inlet. At the western edge of the Melrose station construction, trash and debris was stored outside without cover or containment (Photo 31).

7. Rancho del Oro station in Oceanside - This station is bordered by Rancho del Oro Road to the east. Loma Alta Creek runs through the north of the station. A pedestrian bridge is being built over the creek to access the station. The construction site entrance/exit from Rancho del Oro Road does not have large gravel or shaker plates or a tire wash station to prevent sediment tracking onto the adjacent paved public road (Photo 32). The southern bank of Loma Alta creek does not have any erosion controls (Photo 33). This exposed bank appears to be vulnerable during high flow rates and volume. A storm drain along the west side of Rancho del Oro Road had a single gravel bag which appears to be inadequate to trap sediment from entering the inlet (Photo 34). Along the east side of Rancho del Oro Road, a fiber roll had not been maintained and was flattened from repeatedly being run over (Photo 35).

8. College Blvd Station in Oceanside - This station is next to Loma Alta Creek in a shopping center on the southwest corner of College Boulevard and Oceanside Boulevard. A pedestrian bridge is being built over Loma Alta creek. The creek’s banks on either side of the pedestrian bridge have a silt fence at the base to provide sediment controls but is without erosion controls on the slope such as hydroteed or erosion control blankets (Photos 36, 39). These exposed banks appear to be vulnerable during post storm high flow rates. A portion of the shopping center’s parking lot is used as a staging and storage area for construction activities. Significant sediment tracking was observed on the shopping center’s paved parking lot (Photo 37). Soil stockpiles and construction trash storage was without cover and without containment (Photo 38).

The lack of erosion controls, sediment controls, sediment tracking BMPs, trash storage BMPs, and soil stockpile BMPs are all violations that were previously noticed in NOV No. R9-2007-0050 on March 19, 2007 and NOV No. R9-2007-0063 on April 3, 2007. The August 31, 2007 ACL was also assessed in part for these same BMP violations.

III. SIGNATURE SECTION

Peter Peuron
STAFF INSPECTOR

Ben Neil
STAFF INSPECTOR

IV. (For internal use only)

Reviewed by Supervisor:

cc: Jeremy Johnstone (EPA), John Norton (SWRCB), City

Inter-office Referral: 1) 2) 3) 4) 5)

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35. Enforcement
1. Crew hydroseeding drainage ditch. Photo looking north across the tracks.

Photos 1 through 9 were taken along West Washington Avenue in Escondido.

2. Storm drain inlet along the north side of the tracks is without sediment controls such as gravel bags. White trash is near the inlet. The drainage ditch was recently hydroseeded. Photo looking west.

3. Another storm drain inlet along the north side of the tracks is without sediment controls such as gravel bags. Photo looking west.

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4. Another storm drain inlet along the north side of the tracks is without sediment controls such as gravel bags. Trash in the drainage ditch. Photo looking west.

5. Another storm drain inlet along the north side of the tracks is without sediment controls such as gravel bags. Trash is in the drainage ditch. Photo looking east.

6. A large area of bare dirt has no sediment protections or soil stabilization. Photo is looking north.

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7. Storm drain inlet along the south side of Washington Avenue is without adequate storm drain inlet protection. The existing BMP has not been maintained. Photo looking south.

8. Storm drain inlet along the south side of Washington Avenue has BMPs that have not been maintained. Photo looking south.

9. Storm drain inlet on the north side of the tracks without any sediment protections. Photo is looking north.

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10. Construction site exit has no BMPs to prevent sediment tracking. Tracking is observed onto the adjacent paved public street, North Citracado Parkway. Photo looking north.

Photos 10 through 16 were taken at the Nordahl Road station construction in Escondido.

11. Storm drain inlet south of the tracks has BMPs that have not been maintained. Photo looking south.

12. Silt fencing has not been maintained along the south side of the tracks. Photo looking west.

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13. Silt fence south of the tracks is torn down and unmaintained. Photo looking south east.

14. Silt fence is unmaintained. Construction debris and trash is not protected from storm water. Photo looking south.

15. No silt fence is implemented in this area. Construction debris and trash is not protected from storm water. Photo looking south.

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16. Bare soil north of the tracks does not have sediment controls or soil stabilization. Photo looking east.

Photos 17 through 20 were taken along Barham Dr. near the Mission Rd intersection on the border of the cities of San Marcos and Escondido.

17. Construction trash is not protected with BMPs from storm water. Photo looking east.

18. Sediment controls along the perimeter of south Barham drive have not been maintained. Photo looking north east.

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19. A closer view of the poorly maintained BMPs in photo 18 shows that the silt fence and fiber roll are flattened. Photo looking north.

20. Gravel bags along north Barham Drive have not been maintained. Photo looking north.

Photos 21 and 22 were taken at the southeast corner of Barham drive and Shelly drive.

21. A large area of bare soil is without soil stabilization. A storm drain inlet sits in the middle of this bare area.
22. A closer examination of the storm drain inlet in photo 21 shows that the inlet has no sediment controls protecting the inlet. Photo looking north east.

Photos 23 and 24 were taken at the Palomar station construction along Armorlite drive in San Marcos.

23. Storm drain inlet just north of Armorlite drive has unmaintained BMPs. Photo looking west.

24. Another view of the inlet in photo 23 shows the proximity of a portable toilet and silt fencing that has been partially removed. Photo looking north.

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25. Silt fence around the soil stockpiles has not been maintained and has fallen down. Photo looking south.

26. This slope north of the tracks does not have erosion controls in place. Fiber roll is not trenched in place. Photo looking west.

27. Slope south of the tracks does not have erosion controls. Photo looking north.
28. Fiber rolls on the slope in photo 27 are not overlapped. No erosion controls in place. Photo looking west.

29. Construction exit is without BMPs to prevent sediment tracking onto the adjacent paved area of the convenience store. Photo looking northwest.

30. A storm drain inlet near the construction exit in photo 29 is without BMPs and sediment is falling into the drain. Photo looking west.

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31. Construction trash is stored outside with no cover or containment to prevent contact with storm water. Photo looking south.

Photos 32 through 35 were taken at the Rancho del Oro station construction in Oceanside.

32. Construction exit is without BMPs to prevent sediment tracking onto the adjacent paved street. Photo looking west.

33. Slope adjacent to Loma Alta Creek is without erosion controls such as bonded fiber matrix or erosion control blankets. Silt fence does not extend the length of the slope. Photo looking south west.

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34. A storm drain inlet on the west side of Rancho del Oro Blvd. does not have adequate sediment controls and is not being maintained. Photo looking south.

35. Fiber rolls along the east of Rancho del Oro Blvd have not been maintained and are flattened. Disturbed soil has not been stabilized. Photo looking north.

Photos 36 through 39 were taken at the College Blvd Station in Oceanside.

36. Slope next to Loma Alta Creek does not have erosion controls implemented. Photo looking east.

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37. Sediment tracking from the College Station construction onto the paved parking lot of the shopping center. Photo looking east.

38. Material stockpiles and construction trash are stored without cover or containment. Photo looking north west.

39. Slope next to Loma Alta Creek pedestrian bridge abutment is without erosion controls. Photo looking west.