

**EXHIBIT B.7.II**

**NEW DEVELOPMENT/SIGNIFICANT REDEVELOPMENT**

**PROJECT PLANNING AND DESIGN:  
ENVIRONMENTAL REVIEW, PLANNING & PERMITTING,  
AND WQMP DEVELOPMENT**



**Project Planning & Design:  
CEQA Review, Project  
Review, Approval & Permitting,  
and WQMP Development**

**Module B-7.II**




**Audience: Planners, Plan  
Checkers, Developers, Engineers**  
**Time: 6 hours**

**Project Planning and Design  
CEQA Review,  
Project Review, Approval &  
Permitting, and WQMP Development**

Name  
Affiliation  
Location  
Date



**Introduction**



*Introduction*

**Water Resources are  
Crucial to Orange County**



Water provides recreation for Orange County residents.




It attracts tourists, boosting the local economy.

It is home to many types of wildlife.

*Introduction*

**Potential Impacts**



- Urban runoff and stormwater pollution can impact the ocean, beaches and creeks, harming wildlife and impairing peoples' ability to enjoy the water.

*Introduction*

**Sources of Pollution**


- Homes
- Businesses
- Construction sites
- Municipal facilities



Introduction

## Path of Pollutants

- Potential pollutants may run off driveways, streets and gutters into stormdrains.
- The stormdrains lead to creeks and rivers, where pollutants can flow untreated into the ocean.




7

Introduction

## It's Everyone's Responsibility

- Urban runoff and stormwater pollution is not just a coastal issue-it starts in all regions of the community and affects water quality from the mountains to the ocean.



8

Introduction

## It's Your Responsibility

- Everyone should help to reduce urban runoff and stormwater pollution.
- This training will help explain what you can do while conducting project planning and design activities to help implement the Orange County Stormwater Program.

9

Introduction


## Clean Water Act

- Objective
  - "To restore and maintain the chemical, physical and biological integrity of the Nation's waters"
  - "Fishable" "Swimmable"*
- Permitting of Discharges
  - The CWA established the National Pollutant Discharge Elimination System (NPDES) program to regulate discharges, including urban runoff and stormwater

10

Introduction

## Two Municipal Stormwater NPDES Permits for Orange County



- Santa Ana Regional Water Quality Control Board
  - 8 Watersheds
  - 27 Permittees
- San Diego Regional Water Quality Control Board
  - 5 Watersheds
  - 13 Permittees

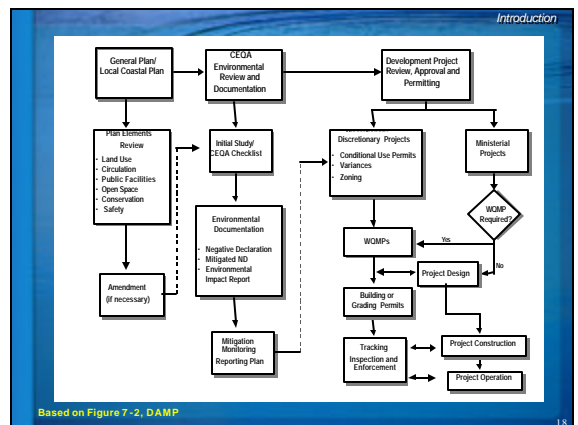
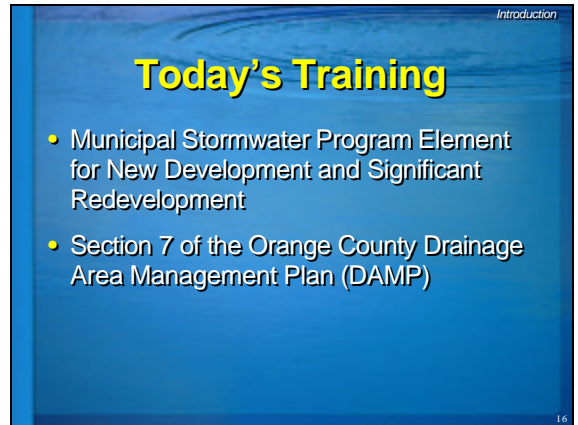
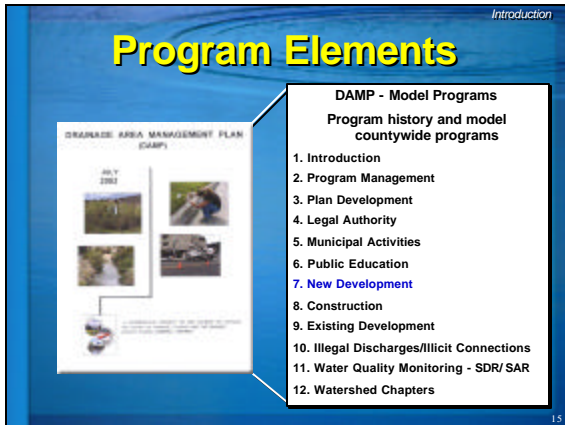
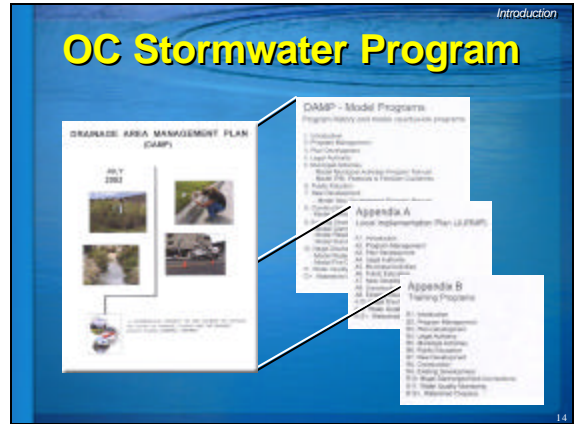
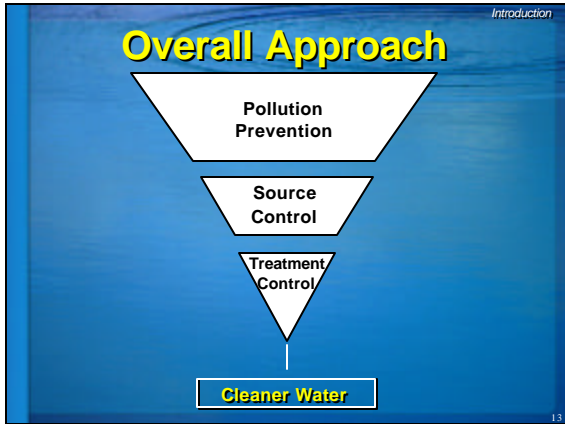
11

Introduction

## Municipal Stormwater NPDES Permits

- 5-Year Permit Terms 2002-07
  - Order No. R8-2002-0010 adopted by the Santa Ana Board on January 18, 2002
  - Order No. R9-2002-0001 adopted by the San Diego Board on February 13, 2002

12



*Introduction*

## Training Outline

<p><u>Morning</u></p> <ul style="list-style-type: none"> <li>• Introduction</li> <li>• General Plan &amp; Environmental Review Process</li> <li>• Project Review, Approval &amp; Permitting</li> <li>• Post Construction BMP Inspection &amp; Verification</li> <li>• Training &amp; Outreach</li> <li>• Program Effectiveness Assessment</li> </ul>	<p><u>Afternoon</u></p> <ul style="list-style-type: none"> <li>• WQMP Preparation</li> <li>• BMP Selection</li> <li>• Source Control BMPs</li> <li>• Site Design BMPs</li> <li>• Treatment Control BMPs</li> <li>• BMP Design</li> <li>• Reviewing a WQMP</li> <li>• Conclusion</li> </ul>
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19

*Introduction*

## Training Modules

Program Management (Module B-7.I)	Project Planning and Design: CEQA Review, Project Review, Approval & Permitting, and WQMP Development (Module B-7.II)
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20




*Introduction*

## Training Goals

- Planners & Stormwater Program Staff
  - How to prepare and/or review CEQA analysis and approve WQMPs
- Plan Checkers
  - What to look for in CEQA documents and WQMPs when checking plans
- Developers & Engineers
  - How to develop a good WQMP and design BMPs




21

## Questions ?

22

## General Plan Assessment and Amendment

23

*General Plan Assessment and Amendment*

**DAMP Section 7.4**  
 General Plan Assessment and Amendment

DAMP Section 7.5  
 CEQA Environmental Review Process Revisions

DAMP Section 7.6  
 Development Project Review, Approval, and Permitting

DAMP Section 7.7  
 Post Construction BMP Inspection and Verification

DAMP Section 7.8  
 Training and Outreach

DAMP Section 7.9  
 Program Effectiveness Assessment

24

General Plan Assessment and Amendment

## General Plan Assessment and Amendment



- Program fulfills requirements of
  - Sections XII.A.2 and XII.A.3 of Santa Ana Region Permit
  - Section F.1.a of San Diego Region Permit
- Permit/Program Goal
  - To ensure urban/stormwater runoff and water quality protection principles are properly considered in the land use decision-making process

25

General Plan Assessment and Amendment

## General Plan Assessment Process

- Assess General Plan Elements (and Local Coastal Plan if a coastal city) for inclusion of stormwater quality protection principles

- Consider Amendment, if needed
- Consider optional Amendment text

26

General Plan Assessment and Amendment

## Option for General Plan Amendment Text

- **New Policy:**
  - Ensure new development incorporates measures, to the maximum extent practicable, that reduce the quantity of storm flow and the discharge of pollutants in urban/stormwater runoff to protect water quality, biological habitats, and recreational uses of downstream receiving waters.
- **Policy Implementation:**
  - Future land development/redevelopment should adhere to the design standards set forth in the Orange County Drainage Area Management Plan and the city-specific Local Implementation Plan.

27


General Plan Assessment and Amendment



## General Plan Assessment and Amendment

- **Current Status**
  - Assessments completed. Most cities determined the need to amend General Plans
  - Santa Ana Region cities - amend by July, 2004
  - San Diego Region cities - amend according to workplan schedule submitted to Regional Board
- **Stormwater Program Result**
  - Protection of water quality from urban runoff/stormwater is now a recognized goal in the early planning and land use decision-making phases of new development

28


## Questions ?





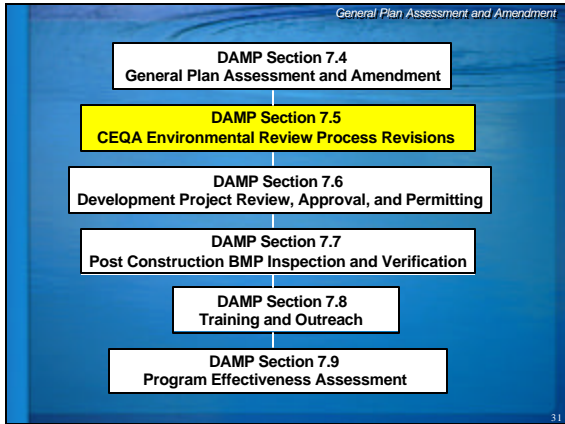
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## Environmental Review Process Revisions



30



*Environmental Review Process Revisions*

## Environmental Review Process Revisions

- Program fulfills requirements of
  - Sections XII.A.2 and XII.A.3 of Santa Ana Region Permit
  - Section F.1.c of San Diego Region Permit
- Permit/Program Goal
  - To ensure water quality effects of urban runoff/stormwater are considered in the environmental review process for new development/significant redevelopment

Continued... 32

*Environmental Review Process Revisions*

## Environmental Review Process Revisions (Continued)

- Cities have:
  - Reviewed existing Project Application Form and CEQA Initial Study Checklist
  - Considered potential revisions to incorporate urban and stormwater runoff issues
  - Considered use of environmental review guidance

33

*Environmental Review Process Revisions*

## Revised Project Application Form

12. Existing and proposed acreage of impervious surface coverage: (Impervious surface coverage includes all paved areas and building and/or structure footprints)

13. Attach project plans including preliminary grading plans, drainage plans, Water Quality Management Plans (WQMPs) for large-scale developments, construction site Best Management Practices (BMPs) Plans.

34

*Environmental Review Process Revisions*

## Revised CEQA Initial Study Checklist

- Cities may have added questions about water quality impacts of urban runoff/stormwater to Hydrology/Water Quality Section of checklist
- Questions extracted from Santa Ana Region and San Diego Region Permits

Continued... 35

*Environmental Review Process Revisions*

## Revised CEQA Checklist (Santa Ana Region)

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
k) Potentially impact stormwater runoff from construction activities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l) Potentially impact stormwater runoff from post-construction activities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
m) Result in a potential for discharge of stormwater pollutants from areas of material storage, vehicle or equipment fueling, vehicle or equipment maintenance (including washing), waste handling, hazardous materials handling or storage, delivery areas, loading docks or other outdoor work areas?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n) Result in the potential for discharge of stormwater to affect the beneficial uses of the receiving waters?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o) Create the potential for significant changes in the flow velocity or volume of stormwater runoff to cause environmental harm?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
p) Create significant increases in erosion of the project site or surrounding areas?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

36

*Environmental Review Process Revisions*

## Revised CEQA Checklist (San Diego Region)


37

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## Revised CEQA Initial Study Checklist (Continued)

Cities may have added question about effects of treatment control BMPs to Hazardous Materials section or Utilities and Service Systems section of checklist

(Concern about potential odors and vectors generated by standing water)



38

*Environmental Review Process Revisions*

## Six-Step Environmental Review Guidance

- Exhibit 7.I of DAMP
- Cities may utilize for:
  - Preparing CEQA Initial Studies
  - Preparing/reviewing Negative Declarations, Environmental Impact Reports

Continued... 39

*Environmental Review Process Revisions*

## Six-Step Environmental Review Guidance (Continued)

Consider project characteristics Step 1

Identify receiving waters Step 2

Determine sensitivity of receiving waters Step 3

Characterize potential water quality impacts Step 4

Identify hydrologic conditions of concern Step 5

Assess project impact significance Step 6

40

*Revisions to Environmental Process*

### Step 1: Consider Project Characteristics

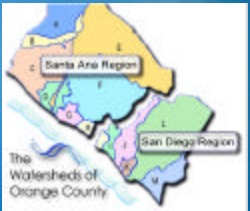
- Review project application form and draft plan submittals
- Consider location in watershed, site acreage, change in percent impervious surface area
- Consider construction and post-construction BMPs incorporated into project design
- Compare against list of priority projects

41

*Revisions to Environmental Process*

## Regional Board Boundaries within Orange County

Region	Watershed	Identifier
Region 8 Santa Ana	CoyoteCreek	A
	Carbon Canyon	B
	Westminster	C
	Talbert	D
	Santa Ana River	E
	San Diego Creek	F
	Newport Bay	G
	Los Trancos / Muddy Creek	H
Region 9 San Diego	Laguna Canyon	I
	Aliso Creek	J
	Salt Creek	K
	San Juan Creek	L
	Prima Deshecha & Segunda Deshecha	M



42



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## Priority Projects

(require treatment BMPs or participation in regional treatment program)

- Residential:  $\geq 10$  units
- Commercial/Industrial:  $> 100,000$  sq.ft.
- Automotive repair shops
- Restaurant:  $\geq 5,000$  sq.ft.
- Hillside Development
- Impervious surface  $\geq 2,500$  sq.ft. within, adjacent to, or discharging directly ESA
- Parking lots:  $\geq 5,000$  sq.ft. or with 15 or more parking spaces
- San Diego Region: streets, roads, highways, freeways creating  $\geq 5,000$  sq.ft. new paved surface.

43

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## Step 2: Identify Receiving Waters

Receiving waters may include:

- Canyon drainages
- Lined drainage channels
- Springs
- Estuaries and lagoons
- Surface reservoirs
- Natural open channels
- Creeks and rivers
- Lakes and bays
- Groundwater basins
- Oceans

Continued... 44

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## Step 2: (Continued)

Reference Maps available for review:

- USGS Topographic maps
- Regional Board Basin Plans
  - Santa Ana Region: [www.swrcb.ca.gov/~rwqcb8](http://www.swrcb.ca.gov/~rwqcb8)
  - San Diego Region: [www.swrcb.ca.gov/~rwqcb9](http://www.swrcb.ca.gov/~rwqcb9)
- NPDES/flood control maps
- Environmentally Sensitive Area maps
  - [www.ocwatersheds.com](http://www.ocwatersheds.com) (coming soon)
- Resources Element of General Plan

45

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## Step 3: Determine Sensitivity of Receiving Waters

- What are the Beneficial Uses & Water Quality Objectives in Regional Board Basin Plan?
- On 303(d) List of impaired water bodies? (see Table)
- Regulated under Total Maximum Daily Load (TMDL)?
- Subject to 13225 or 13267 Directive?
- Designated Area of Special Biological Significance (ASBS) or other Environmentally Sensitive Area (ESA)?

Continued... 46

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## Step 3: Determine Sensitivity of Receiving Waters (Continued)

Information available at:

- [www.swrcb.ca.gov/~rwqcb8](http://www.swrcb.ca.gov/~rwqcb8) (Santa Ana Regional Board)
- [www.swrcb.ca.gov/~rwqcb9](http://www.swrcb.ca.gov/~rwqcb9) (San Diego Regional Board)
- [www.ocwatersheds.com](http://www.ocwatersheds.com) (County of Orange)
- Also, see city/county NPDES coordinator

47

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### Summary of the 1998 303(d) Listed Water Bodies and Associated Pollutants of Concern for Orange County

Region	Water Body	Watershed	Pollutants										
			Fat/oil/grease/solids	Metals	Nutrients	Pesticides	Organic Compounds	Sediment	Salinity	TDS	Chlorides		
Region 8 Santa Ana	Anaheim Bay	C	X			X							
	Huntington Harbor	C	X	X			X						
	Santiago Creek, Reach 4	E								X	X	X	
	Silverado Creek	E	X							X	X	X	
	San Diego Creek, Reach 1	F		X	X	X			X				
	San Diego Creek, Reach 2	F		X	X	X			X				
	Newport Bay, Upper	G	X	X	X	X			X				
	Newport Bay, Lower	G	X	X	X	X		X					
Region 9 San Diego	Laguna Beach, Pacific Ocean	I	X										
	Aliso Creek, Pacific Ocean	J	X										
	Aliso Creek, Mouth of Orange	J	X										
	Aliso Creek, Lower One Mile	J	X										
	Dana Point, Pacific Ocean	K	X										
	San Juan Creek, Mouth	L	X										
	Lower San Juan, Pacific Ocean	L	X										
	San Juan Creek, Lower	L	X										
San Clemente	M	X											

Based on DAMP Table 7-2

48

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### Step 4: Characterize Potential Water Quality Impacts

- Review Table of Anticipated and Potential Pollutants Generated by Land Use Type
- Compare to anticipated pollutants under 303(d) listed impairments, existing or proposed TMDLs, RW/QCB Directives, water quality objectives
- Determine if potential stormwater quality impact
- Consider site-specific analysis

49

*Revisions to Environmental Process*

Priority Project Categories and/or Project Features	Anticipated and Potential Pollutants Generated by Land Use Type									
	Pathogens	Heavy Metals	Nutrients	Pesticides	Organic Compounds	Sediments	Turbidity & Debris	Oxygen Demanding Substances	Oil & Grease	
Detached Residential Development	X		X	X		X	X	X	X	X
Attached Residential Development	P		X	X		X	X	P(1)		
Commercial/Industrial Development > 100,000 ft <sup>2</sup>	P(3)		P(1)	P(5)	P(2)	P(1)	X	P(5)		X
Automotive Repair Shops		X			X(4)(5)				X	X
Restaurants	X						X	X	X	X
Hillside Development > 5,000ft <sup>2</sup> in SDRWQCB			X	X		X	X	X	X	X
Hillside Development > 10,000 ft <sup>2</sup> in SARWQCB			X	X		X	X	X	X	X
Parking Lots		X	P(1)	P(1)		P(1)	X	P(1)		X
Streets, Highways & Freeways		X	P(1)		X(4)	X	X	P(5)		X

X= anticipated  
 P= potential  
 (1) A potential pollutant if landscaping exists on-site  
 (2) A potential pollutant if the project includes uncovered parking areas  
 (3) A potential pollutant if land use involves food or animal waste products  
 (4) Including petroleum hydrocarbons  
 (5) Including solvents

Based on DAMP Table 7 -3

50

*Revisions to Environmental Process*

## Stormwater Impact Example

- Proposed 200 single-family residences on hillside draining to Aliso Creek
  - Priority project
  - Sensitive water body
    - Aliso Creek is impaired water body (on 303(d) List) for pathogens, coliform
    - Regulated under 13225 Directive for pathogens
  - Pathogens are anticipated stormwater pollutant from residential development

Conclusion: Potential storm water quality impact

51

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### Step 5: Identify Hydrologic Conditions of Concern:

- New development can:
  - Increase runoff volume and velocity
  - Reduce storm water infiltration
- Potential effects are:
  - Increased bank and bed erosion
  - Sedimentation in downstream receiving waters
  - Aquatic habitat impacts from water quality changes (increased dilution effects and increased sedimentation)

52

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### Step 5: (Continued)

- Consider whether downstream receiving waters are:
  - Natural channels (canyon drainages, creeks, rivers, etc.)
  - Partially-improved channels (open channels with lined and unlined portions)
  - Fully-improved channels (fully-lined channels or underground storm drains)

Compare against expected increase in impervious surface area and determine if potential impact

53



*Revisions to Environmental Process*

## Step 6: Assess Project Impact Significance to Water Quality

- Review Initial Study checklist questions in light of:
  - Sensitivity of receiving waters
  - Project characteristics, impervious surface areas
  - Expected pollutants to be generated
  - Downstream channel characteristics
  - Construction/post-construction BMPs (SWPPP & preliminary WQMP)

Determine if potential significant impact. Use best professional judgment. Consult city/county NPDES coordinator for assistance, as needed.

**Continued...**

*Environmental Review Process Revisions*

## Additional Considerations for EIRs

- Thresholds of Significance: use CEQA Initial Study Checklist questions
- Quantitative Water Quality Analysis: could be needed for large projects in watersheds with TMDLs
- Additional water quality mitigation could be imposed during the resource agency permitting process (Corps of Engineers, Ca. Dept. of Fish and Game, Regional Board)

*Environmental Review Process Revisions*


## Status of Environmental Review Process Revisions


- Most cities determined the need to revise checklists and forms
- Cities in Santa Ana Region revised by 12/19/02
- Cities in San Diego Region revised by 02/13/03

Stormwater Program Result

Now have documented procedures for obtaining information and assessing urban and stormwater runoff impacts to water quality during the CEQA process

## Questions ?

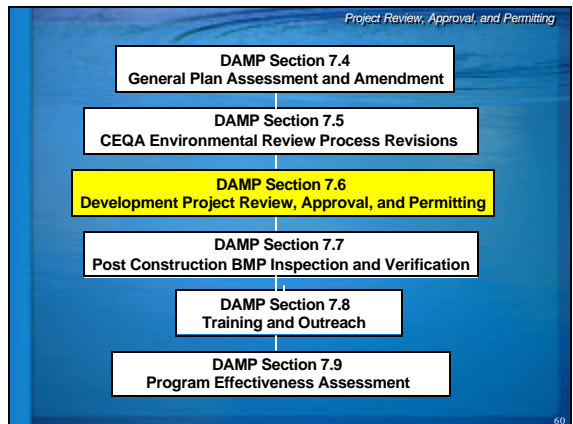


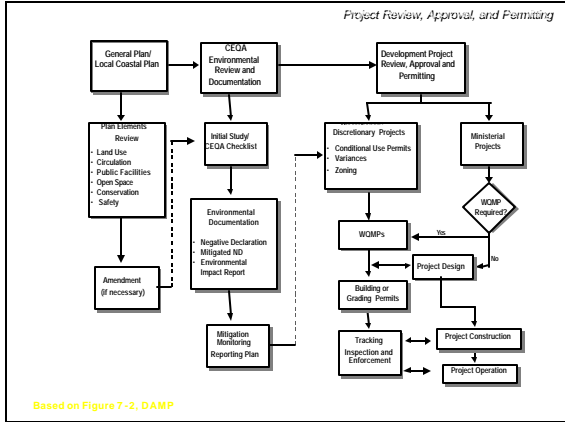


## Project Review, Approval, and Permitting





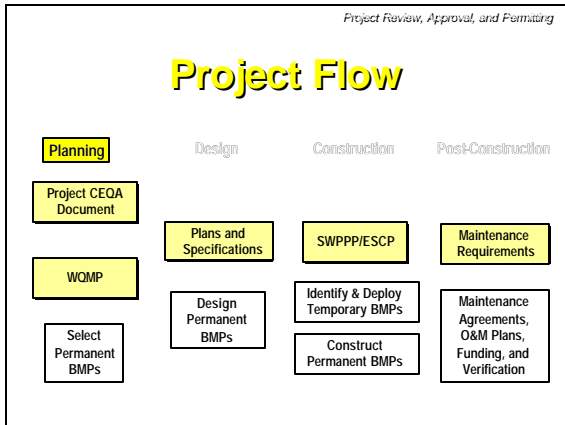




*Project Review, Approval, and Permitting*

## Review, Approval, and Permitting of Development Projects

- DAMP Section 7.6 fulfills requirements of
  - Sections XII.A.2(b), XII.A.6, and XII.A.7 of Santa Ana Region Permit
  - Section F.1.b of San Diego Region Permit



*Project Review, Approval, and Permitting*

## Projects Requiring A WQMP

- WQMPs required for new development or significant redevelopment projects that:
  - Qualify as one of the Priority Project Categories listed in the Municipal Stormwater Permits ("Priority Project")
  - Do not qualify as a Priority Project but do require discretionary action that will include a precise plan of development ("Non-Priority Project")
  - Do not qualify as a Priority Project but do require issuance of a non-residential plumbing permit ("Non-Priority Project")

*Project Review, Approval, and Permitting*

## Priority Projects

- Residential  $\geq 10$  units
- Commercial/Industrial  $> 100,000$  sq.ft.
- Automotive repair shops
- Restaurant  $\geq 5,000$  sq.ft.
- Hillside Development
- Impervious surface  $\geq 2,500$  sq.ft. within, adjacent to, or discharging directly ESA
- Parking lots  $\geq 5,000$  sq.ft. or with 15 or more parking spaces
- San Diego Region: streets, roads, highways, freeways creating  $\geq 5,000$  sq.ft. new paved surface

Based on Table 7-1, DAMP

*Project Review, Approval, and Permitting*

## Priority/Non-Priority Checklist

Figure A-7.2, Checklist for Categorizing Development and Redevelopment Projects as Priority or Non-Priority

Proposed Project Includes:	Yes	No
1. Residential development of 10 units or more		
2. Commercial/Industrial development of 100,000 sq. ft. or more including parking areas		
3. Automotive repair shops		
4. Restaurant development of 5,000 sq. ft. or more including parking areas (SDC code 04-02)		
5. Hillside development		
6. Impervious surface of 2,500 sq. ft. or more within, adjacent to, or discharging directly into an ESA		
7. Parking lots of 5,000 sq. ft. or more including parking spaces (SDC code 04-02)		
8. San Diego Region: streets, roads, highways, freeways creating 5,000 sq. ft. or more new paved surface		

Priority Project: All questions answered "YES"  
Non-Priority Project: All questions answered "NO"

DETERMINATION: This project is considered a PRIORITY PROJECT (Priority Project) and requires a WQMP.

Based on Figure A-7.2, Appendix A, DAMP

66

Project Review, Approval, and Permitting

## Requirements for Priority Projects

- Consider site design BMPs
- Routine structural and non-structural BMPs
- Treatment control BMPs, potentially including regional/watershed approach
- Mechanism for assuring long-term operation and maintenance of structural BMPs

67

Project Review, Approval, and Permitting

## Requirements for Non-Priority Projects

- Consider site design BMPs
- Routine structural and non-structural BMPs
- Mechanism for assuring long-term operation and maintenance of structural BMPs

68

Project Review, Approval, and Permitting

## Difference Between Priority and Non-Priority Projects

For Non-Priority Projects there is no requirement for WQMP to include Treatment Control BMPs.

69

Project Review, Approval, and Permitting

## Approach for Project BMPs

Based on Figure 7-1, DAMP

70

Project Review, Approval, and Permitting

Table 7-2. Summary of BMPs for Development/Redevelopment Projects

BMP Category	Applicable Projects	Pollution Prevention Objective
Source Control BMPs	Routine Non-Structural BMPs Required for all projects – as applicable	Prevent pollution by educating the public on proper disposal of hazardous or toxic wastes, regulatory approaches, street sweeping and facility maintenance, and detection and elimination of illicit connections and illegal dumping
	Routine Structural BMPs Required for all projects – as applicable. Includes incorporating requirements applicable to individual priority project categories: <ul style="list-style-type: none"> <li>• Private roads</li> <li>• Residential driveways and guest parking</li> <li>• Deck areas</li> <li>• Maintenance bays</li> <li>• Vehicle wash areas</li> <li>• Outdoor processing areas</li> <li>• Equipment wash areas</li> <li>• Parking areas</li> <li>• Roadways</li> <li>• Fueling areas</li> <li>• Hillside landscaping</li> <li>• Wash water control for food preparation areas</li> <li>• Community car wash racks</li> </ul>	Prevent potential pollutants from contacting rainwater or stormwater runoff or to prevent discharge of contaminated runoff to the storm drain system or receiving waters. Reduce the creation or severity of potential pollutant sources or to reduce the alteration of the project site's natural flow regime.
Site Design BMPs	All projects should consider implementation of Site Design BMPs	Minimize or prevent potential pollutants from contacting rainwater or stormwater runoff or to prevent discharge of contaminated runoff to the storm drain system or receiving waters.
Treatment Control BMPs or Regional Program	All priority projects – at least one Treatment Control BMP required	Remove pollutants from stormwater runoff prior to discharge to the storm drain system or receiving waters.

Based on Table 7-2, DAMP

71

Project Review, Approval, and Permitting

## Regional/Watershed Approach for Treatment Control BMPs

Project's requirement for Treatment Control BMPs may be met by regional or watershed approach if:

- Project incorporates all applicable Routine Source Control BMPs
- Regional program incorporates BMPs sized to treat appropriate volume or flow for all new development within watershed
- Implementation mechanism for regional program is identified, including funding, timing, and ability to execute

72

Project Review, Approval, and Permitting

## Private Development WQMP Submittal

- WQMPs may be “conceptual” during the discretionary approval process
- WQMPs shall be “final” before issuance of grading or building permits

73

Project Review, Approval, and Permitting

## Public Agency Projects

- Requirement for managing quality and quantity of urban runoff applies equally to private sector and public agency projects. (Initially required by 1993 Orange County DAMP, Section 7.1)
- WQMPs not required for public agency projects consisting of
  - Routine maintenance or emergency construction
  - Interior remodeling
  - Mechanical permit work
  - Electrical permit work
  - Sign permit work

Continued... 74

Project Review, Approval, and Permitting

## Public Agency Projects (Continued)

Some public agency projects should be considered Priority Projects—projects having similar functions and characteristics or conducting similar activities as “Priority Projects” listed in Municipal Stormwater Permits.

Examples:

- Corporation Yard = Vehicle and Equipment Maintenance Facility
- Civic Center = Commercial Office Building
- Community Center with Cafeteria = Restaurant

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Project Review, Approval, and Permitting

## Public Agency Projects (Continued)

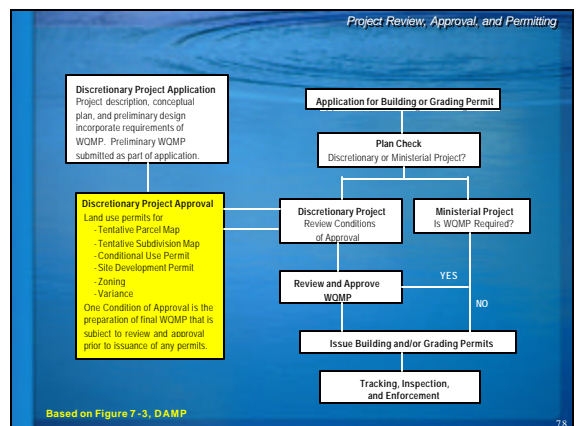
- Permittees may elect to not require WQMPs for their Non-Priority public agency projects if all Routine Structural BMPs are required to be incorporated into plans and Site Design BMPs are required to be included to the extent possible.
- WQMPs for Public Agency projects are not required to include Routine Non-Structural BMPs where those BMPs have been identified as part of the Permittee’s Municipal Activities Program.

76

## Questions?



77



Project Review, Approval, and Permitting

## Review Standard Conditions of Approval

- Review and revise standard conditions of approval to ensure not conflicting with:
  - Applicable municipal stormwater permit,
  - General Permits for Stormwater Discharges Associated with Industrial Activity or Construction Activity, or
  - Water quality initiatives (TMDLs, regional or watershed plans, etc.)

Continued... 79

Project Review, Approval, and Permitting

## Review Standard Conditions of Approval (Continued)

- Example requiring revision:
  - “Sweeping or washing public access points within 30 minutes of dirt deposition.”

Should exclude “washing” as an alternative, or specify that wash water shall be collected and properly disposed.

80

Project Review, Approval, and Permitting

## Standard Conditions of Approval

- Prior to the issuance of any grading or building permits, project applicant shall demonstrate coverage under the General Permit for Construction Stormwater Discharges, if applicable (soil disturbance = 1 acre).

**State Water Resources Control Board**  
Division of Water Quality

State Permit No. 44-2003

HERITAGE BAG COMPANY  
1448 DEBORAH LANE  
SHERBOURNE, IN 47886-0047

**RECEIPT FOR YOUR NOTICE OF VIOLATION**

The State Water Resources Control Board (State Water Board) has received and processed your NOTICE OF VIOLATION IN COMPLIANCE WITH THE TERMS OF THE GENERAL PERMIT TO DISCHARGE STORM WATER ASSOCIATED WITH CONSTRUCTION ACTIVITY. Accordingly, you are required to comply with the permit requirements.

For more information, please call 800-452-2096. Please use this number in any future communications regarding this permit.

Continued... 81

Project Review, Approval, and Permitting

## Standard Conditions of Approval (Continued)

- Prior to the issuance of any grading or building permits, project applicant shall submit a project WQMP for review and approval.
- Prior to grading or building permit closeout and/or issuance of certificates of use or occupancy, project applicant shall submit for review and approval an Operations & Maintenance Plan for structural BMPs.

**RESOLUTION No. 99899**

I. The Planning Commission of the City of Oz does hereby resolve as follows:

A. The Project is in conformance with the City of Oz General Plan, Zoning Code, and Subdivision Code; and the California Subdivision Map Act.

B. The site is physically suitable for the type of development and the proposed density.

II. The Planning Commission hereby recommends that the City Council approve Tentative Parcel Map 2003-998 subject to **Exhibit A, Conditions of Approval**

82

Project Review, Approval, and Permitting

## Optional Standard Conditions of Approval

- Projects Adjacent to Beaches
  - All construction materials, wastes, grading or demolition debris, and stockpiles of soil, aggregates, etc. shall be properly covered, stored, and secured to prevent transport into coastal waters by wind, rain, tracking, tidal erosion or dispersion.
  - Onsite surface drainage and subdrain systems shall not discharge over the blufftop.

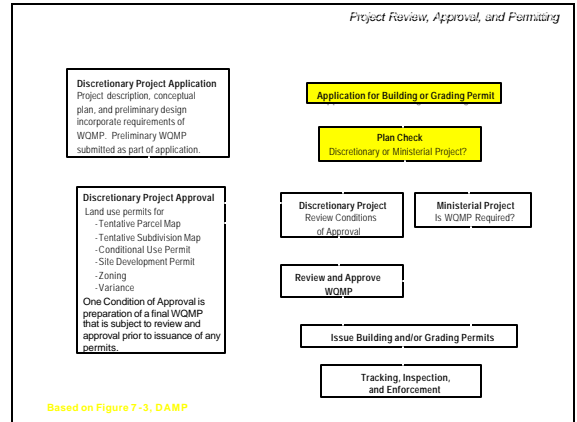
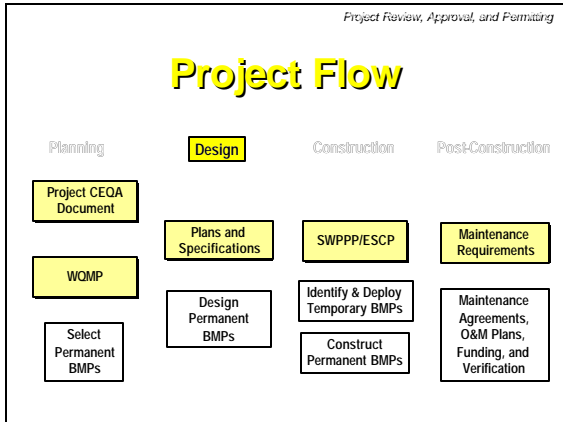
Continued... 83

Project Review, Approval, and Permitting

## Optional Standard Conditions of Approval (Continued)

- Projects in Hilly Areas
  - Drainage facilities discharging onto adjacent property shall be designed to imitate the manner in which runoff is presently crossing the adjacent property

84



*Project Review, Approval, and Permitting*

## Project: Discretionary or Ministerial?

- Discretionary projects are those that require the public agency to exercise judgment in deciding whether to approve or disapprove the project
- Ministerial projects are those where the public agency merely has to determine whether there has been conformity with applicable ordinances or other laws.

*Project Review, Approval, and Permitting*

## Plan Check

- Plan sheets submitted for all grading or building permits shall include standard notes for compliance with the minimum requirements applicable to all construction sites.
- Consider requiring approval of a project's "final" WQMP prior to submittal of construction plans for plan check.

*Project Review, Approval, and Permitting*

## Standard Notes for All Construction Sites

Examples

- Sediment from areas disturbed by construction shall be retained on site using structural drainage controls to the maximum extent practicable.
- Stockpiles of soil shall be properly contained to minimize sediment transport from the site to streets, drainage facilities or adjacent properties via runoff, vehicle tracking, or wind.

**Continued...**

*Project Review, Approval, and Permitting*

## Standard Notes for All Construction Sites

**(Continued)**

Examples

- Construction-related materials, wastes, spills or residues shall be retained on site to minimize transport from the site to streets, drainage facilities, or adjoining property by wind or runoff.
- Runoff from equipment and vehicle washing shall be contained at construction sites unless treated to remove sediment and other pollutants.



*Project Review, Approval, and Permitting*

## Plan Check: Discretionary Projects

Projects with Land Use Permits

- Review environmental documents, Conditions of Approval, and approved WQMP
- Review construction plans to assure all structural BMPs (including Treatment Control BMPs) from the approved WQMP have been incorporated
- Review BMP detail design for consistency with BMP design criteria and guidance

91

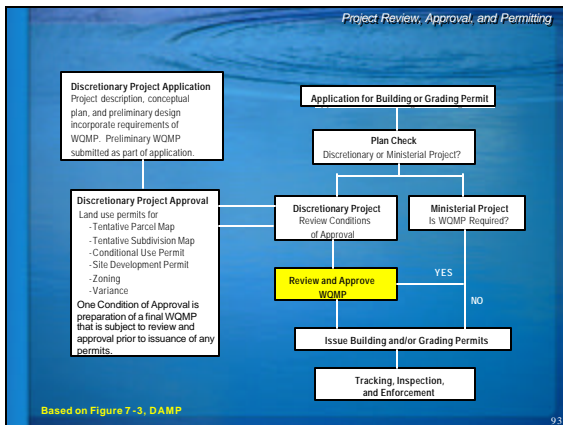
*Project Review, Approval, and Permitting*

## Plan Check: Ministerial Projects

Projects with By-Right Zoning

- Grading or building permit application includes proposed WQMP and construction plans
- First step is review and approval of the WQMP
- Revision and re-submittal of WQMP and construction plans may be necessary prior to permit issuance

92



*Project Review, Approval, and Permitting*

## Review WQMP

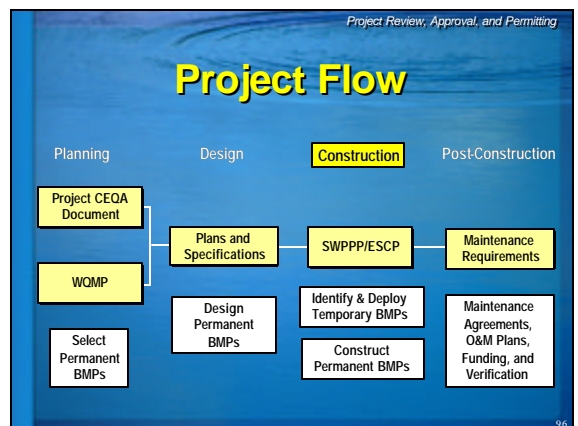
- Verify categorization of project as Priority or Non-Priority
- Utilize a checklist for WQMP review to assure thoroughness and consistency

94

*Project Review, Approval, and Permitting*

## WQMP Checklist

95



*Project Review, Approval, and Permitting*

## Construction Phase

- Project implements site's temporary BMPs
- If applicable, Project has SWPPP onsite and SWPPP is implemented
- Project constructs permanent structural BMPs
- Permittee inventories and inspects construction sites (DAMP Section 8)

97

*Project Review, Approval, and Permitting*

## Permit Closeout & Certificates of Use or Occupancy

Verify that:

- BMPs constructed and/or installed in accordance with plans and specifications
- Mechanism or agreement for long-term operation and maintenance of BMPs exists
- Operation and Maintenance Plan for BMPs has been prepared, reviewed, and approved

Continued... 98

*Project Review, Approval, and Permitting*

## Permit Closeout & Certificates of Use or Occupancy (Continued)

Verify that:

- Operator is prepared to implement all non-structural BMPs
- Approved WQMP is available onsite
- Industrial facilities have obtained coverage under General Industrial Stormwater Permit

99




*Project Review, Approval, and Permitting*

## O & M Plan for Structural BMPs

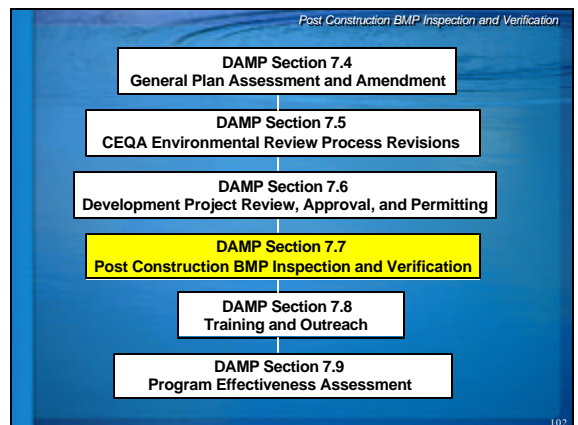
- Operating schedule
- Specific maintenance activities
- Maintenance frequency and schedule
- Documentation of maintenance activities
- Employee responsibilities and training for BMP operation and maintenance
- Copies of resource agency permits, if any

100

## Post-Construction BMP Inspection & Verification

101



Post-Construction BMP Inspection & Verification

## BMP Inspection & Verification

- Over 5-year period Permittees will verify BMP implementation and proper operation and maintenance for 90% of developments with approved WQMPs
- Verification of BMP implementation and proper ongoing operation and maintenance via inspection, self-certification, surveys, or other equally effective approaches
- Tracking of some permanent BMPs important for purposes of vector control monitoring

Continued... 103


Post-Construction BMP Inspection & Verification

## BMP Inspection & Verification (Continued)

Guidance for BMP inspection and verification will be developed in near future.

104


## Questions?



PROJECT  
PREVENTION

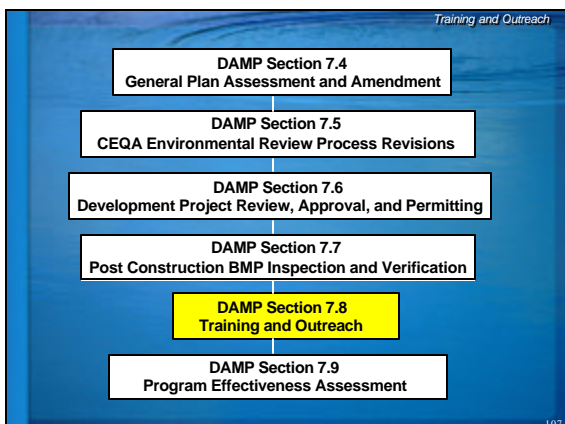
105

## Training and Outreach



PROJECT  
PREVENTION

106



Training and Outreach

## New Development and Significant Redevelopment Training Programs

- Current Training Programs
  - Program Manager Training (Overview)
  - Municipal Staff Training (Implementation)
- Future Training Programs
  - Refresher training
  - Outreach training to the private sector
  - Web-based training

108



WQMP Preparation


## WQMP Template

- I – Tract or Discretionary Permit Numbers, WQ Conditions (and numbers)
- II – Project Description
- III – Site Description
- IV – BMPs
- V – Inspection/Maintenance Responsibility for BMPs
- VI – Location Map, Plot Plan & BMP Details
- VII – Educational Materials

115

WQMP Preparation

## WQMP Section I




- Provide the condition number(s) and a description of the conditions of approval imposed by the City, including the condition that requires preparation and implementation of a WQMP
- List WQMP Condition(s) verbatim, if applicable

116

WQMP Preparation

## WQMP Section II




- Describes the project
  - Size
  - Percent impervious
  - Landscape areas
  - Paved areas
  - Ownership
  - Maintenance responsibility
  - Type(s) & size(s) of buildings
  - Etc.

117

WQMP Preparation

## WQMP Section III



- Describe the site - All projects
  - Planning area/Community Name
  - Zoning or land use designation
  - Specific location (address)
  - Soil types
  - Drainage characteristics
- Priority Projects Only
  - Downstream receiving water(s)
  - Known WQ impairments per 3030(d) list
  - Applicable TMDLs
  - Hydrologic Conditions of Concern

118

WQMP Preparation for Priority Projects

## Site Assessment

- Exhibit of subject and surrounding planning areas
- Site information
  - Location, address, and size
- Watershed name
- Site characteristics
  - Description of run-on and run-off site drainage
  - Plot Plan showing drainage flow arrows displaying drainage ties to surrounding properties (Sect. VI)

119

WQMP Preparation for Priority Projects

## Identification of Pollutants of Concern

- Identify Project Area
  - Detached Residential Development
  - Attached Residential Development
  - Commercial/Industrial Development greater than 100,000 ft<sup>2</sup>
  - Automotive Repair Shop
  - Restaurants
  - Hillside Development greater than 5,000 ft<sup>2</sup> (SDRWQCB)
  - Hillside Development greater than 10,000 ft<sup>2</sup> (SARWQCB)
  - Parking Lots
  - Streets, Highways and Freeways

Continued...  
120

WQMP Preparation for Priority Projects

## Identification of Pollutants of Concern

(Continued)

- Identify Potential Pollutants of Concern in Project Area
  - Pathogens/Coliforms
  - Metals
  - Nutrients
  - Pesticides
  - Organic Compounds
  - Sediments
  - Trash and Debris
  - Oxygen-Demanding Substances
  - Oil and Grease

121

WQMP Preparation for Priority Projects

**Table 7.II-2**

Priority Project Categories and/or Project Features	General Pollutant Categories								
	Pathogen	Heavy Metals	Nutrients	Pesticides	Organic Compounds	Sediments	Trash & Debris	Oxygen Demanding Substances	Oil & Grease
Detached Residential Development	X		X	X		X	X	X	X
Attached Residential Development	P		X	X		X	X	P(1)	
Commercial/Industrial Development > 100,000 ft <sup>2</sup>	P(3)		P(1)	P(5)	P(2)	P(1)	X	P(5)	X
Automotive Repair Shops		X			X(4)(5)		X		X
Restaurants	X						X	X	X
Hillside Development > 5,000ft <sup>2</sup> in SDR/WOCCB			X	X		X	X	X	X
Hillside Development > 10,000 ft <sup>2</sup> in SAR/WOCCB			X	X		X	X	X	X
Parking Lots		X	P(1)	P(1)		P(1)	X		P(1) X
Streets, Highways & Freeways		X	P(1)		X(4)	X	X	P(5)	X

X= anticipated  
 P= potential  
 (1) A potential pollutant if landscaping exists on-site  
 (2) A potential pollutant if the project includes uncovered parking areas  
 (3) A potential pollutant if land use involves food or animal waste products  
 (4) Including petroleum hydrocarbons  
 (5) Including solvents

Based on DAMP Table 7.II-2

122

WQMP Preparation for Priority Projects

## Identification of Receiving Waters

- For each proposed projects discharge points
  - Identify receiving waters
  - Identify hydrologic unit basin number
  - Identify if receiving water is on the Clean Water Act Section 303 (d) impaired bodies
  - List any pollutants from which the receiving waters are impaired

123

WQMP Preparation for Priority Projects

**Table 7.II-3**

Region	Water Body	Pollutant										
		Watershed	Inorganic Outfalls	Metals	Nutrients	Pesticides	Organic Compounds	Sediment Situation	Safety	TDS	Chlorides	
Region 8 Santa Ana	Anaheim Bay	C		X		X						
	Huntington Harbor	C	X	X		X						
	Santiago Creek, Reach 4	E							X	X	X	
	Silverado Creek	E	X						X	X	X	
	San Diego Creek, Reach 1	F		X	X	X		X				
	San Diego Creek, Reach 2	F		X	X			X				
	Newport Bay, Upper	G	X	X	X	X		X				
	Newport Bay, Lower	G	X	X	X	X	X					
Region 9 San Diego	Laguna Beach, Pacific Ocean	I	X									
	Aliso Creek, Pacific Ocean	J	X									
	Aliso Creek, Mouth of Orange	J	X									
	Aliso Creek, Lower One Mile	J	X									
	Dana Point, Pacific Ocean	K	X									
	San Juan Creek, Mouth	L	X									
	Lower San Juan, Pacific Ocean	L	X									
	San Juan Creek, Lower	L	X									
San Clemente	M	X										

Based on DAMP Table 7.II-3

124

WQMP Preparation for Priority Projects

## Identification of Hydrologic Conditions of Concern

- Determine if the downstream stream or channel
  - is fully natural or partially improved
  - has a significant potential for erosive conditions
  - has sensitive habitat

125

WQMP Preparation for Priority Projects

## Identification of Downstream Impact

- If the erosive conditions or sensitive habitat would be affected by upstream development, evaluate the project's conditions of concern in a Drainage Study Report including
  - Hydrologic Factors
  - Environmental Factors
  - Project Impact
  - Rainfall Runoff Characteristics
  - BMPs Required

126

WQMP Preparation for Priority Projects

## Drainage Study Report

- Hydrologic and Environmental Factors
  - Watershed Location
  - Topography
  - Soil and Vegetation Conditions
  - Percent Impervious Area
  - Natural and Infrastructure Drainage Features

Continued... 127

WQMP Preparation for Priority Projects

## Drainage Study Report (Continued)

- Project Impact - field reconnaissance of downstream conditions including
  - Undercutting Erosion
  - Undercutting Slope Stability
  - Areas susceptible to erosion or habitat alteration
  - Vegetative Stress
    - Flooding
    - Erosion
    - Water Quality Degradation
    - Loss of Water Supplies
    - Areas

Continued... 128

WQMP Preparation for Priority Projects

## Drainage Study Report (Continued)

- Rainfall Runoff Characteristics from Project Area\*
  - Peak Flow Rate
  - Peak Flow Velocity
  - Runoff Volume
  - Time of Concentration
  - Retention Volume Time

\* Developed for the two-year and ten-year frequency; or Type I storm, of six-hour or 24-hour duration

Continued... 129

WQMP Preparation for Priority Projects

## Drainage Study Report (Continued)

- Peak Flow BMPs Required\*
  - Site Design BMPs
  - Source Control BMPs
    - Routine Non-Structural
    - Routine Structural
  - Treatment Control BMPs
    - Or participation in Regional/Watershed Program

\* BMPs required to reduce downstream erosion or habitat degradation

130




WQMP Preparation for Priority Projects

## WQMP Preparation

- ✓ Section I – Tract or Discretionary Permit Numbers, WQ Conditions (and numbers)
- ✓ Section II – Project Description
- ✓ Section III – Site Description
- Section IV – BMPs
- Section V – Inspection/Maintenance Responsibility for BMPs
- Section VI – Location Map, Plot Plan & BMP Details
- Section VII – Educational Materials

131

## Questions ?

132

## BMP Selection






133

WQMP Preparation

## WQMP Section IV



- Identifies BMPs that will be used on-site
  - Countywide WQMP
  - DAMP
- Location(s) of structural BMPs

134

BMP Selection

## BMP Approach

**Consider BMP Approach**

**Project-based (on-site)**

**Regional Watershed**

135

BMP Selection

## Regional/Watershed Programs

- Encouraged if
  - Project incorporates all applicable routine source control BMPs
  - Regional program incorporates BMPs that are sized to treat at a minimum the volume or flow for the WQ design storm for the runoff from the project and effectively function to provide treatment of other flows from the watershed tributary to the regional BMP as determined by the planning for the regional program
  - An implementation mechanism is identified including funding, timing, and ability to implement
  - A master plan is conducted and adopted by a public agency to determine where on-site and community-wide facilities are appropriate

136




BMP Selection

## BMP Categories

- Site Design BMPs - consider for all projects
- Source Control BMPs – include in all projects
  - Routine Non-Structural
  - Routine Structural
- Treatment Control BMPs – include in Priority Projects
  - Or participation in Regional/Watershed Program

137

## Questions ?

138



## Source Control BMPs





139

Source Control BMPs

## Categories

- Routine Non-Structural BMPs
  - Post-development programs to educate the public on proper disposal of hazardous or toxic wastes, regulatory approaches, street sweeping and facility maintenance, and detection and elimination of illicit connections and illegal dumping
- Routine Structural BMPs
  - Economical, practicable, small-scale design measures or features, to reduce the creation or severity of potential pollutant sources or to reduce the alteration of the project site's natural flow regime

140

Source Control BMPs

## Routine Non-Structural BMPs

- N1 Education for Property Owners, Tenants and Occupants
- N2 Activity Restrictions
- N3 Common Area Landscape Management
- N4 BMP Maintenance
- N5 Title 22 CGR Compliance (How development will comply)
- N6 Local Industrial Permit Compliance
- N7 Spill Contingency Plan
- N8 Underground Storage Tank Compliance
- N9 Hazardous Materials Disclosure Compliance
- N10 Uniform Fire Code Implementation
- N11 Common Area Litter Control
- N12 Employee Training
- N13 Housekeeping of Loading Docks
- N14 Common Area Catch Basin Inspection
- N15 Street Sweeping Private Streets and Parking Lots
- N16 Commercial Vehicle Washing

141

Source Control BMPs

## Routine Structural BMPs

- Storm drain system stenciling and signage
- Outdoor material storage areas
- Trash and waste storage areas
- Efficient irrigation systems & landscape design, water conservation, smart controllers, and source control
- Slopes and channels protection and energy dissipation

**Continued...**  
142

Source Control BMPs

## Routine Structural BMPs (Continued)

- Requirements applicable to individual project features
  - Dock areas
  - Maintenance bays
  - Vehicle wash areas
  - Outdoor processing areas
  - Equipment wash areas
  - Fueling areas
  - Hillside landscaping
  - Wash water control for food preparation areas
  - Community car wash racks

143

Source Control BMPs

## Table 7.II-4

Priority Project Category	Source Control BMPs(1)	Requirements Applicable to Individual Project Features (or Priority Project Categories) (2)						Site Design BMPs(3)
		Dock Areas	Maintenance Bays	Vehicle Wash Areas	Outdoor Processing Areas	Equipment Wash Areas	Fueling Areas	
Detached Residential Development	R						R	C
Attached Residential Development	R			R				C
Commercial/Industrial Development > 100,000ft <sup>2</sup>	R	R	R	R	R	R		C
Automotive Repair Shop	R	R	R	R		R		C
Restaurants	R	R			R		R	C
Hillside Development > 5,000 ft <sup>2</sup> in SARWOCB	R						R	C
Hillside Development > 10,000 ft <sup>2</sup> in SARWOCB	R						R	C
Parking Lots	R							C
Streets, Highways & Freeways	R						R	C

R= Required; select BMPs as required from the applicable steps in Section 3.3.2 or equivalent  
C= Consider and select one or more applicable BMPs  
(1) Refer to Section 3.3.2.  
(2) Priority project categories should apply specific storm water BMP requirements, where applicable.  
(3) Projects are subject to the requirements of all priority project categories that apply.  
Refer to Section 3.3.1.

Based on DAMP Table 7.II-4

144

Source Control BMPs

## Routine Structural BMPs



Covered Trash Storage Area



145

Source Control BMPs

## Routine Structural BMPs



Protect Slopes & Channels



146



Source Control BMPs

## Routine Structural BMPs



147

## Questions ?



148

## Site Design BMPs



149

Site Design BMPs

## Objectives

- Create a hydrologically functional project design that attempts to mimic the natural hydrologic regime
- Provide urban storm water management that does not rely on conventional end-of-pipe or in-pipe structural methods
- Integrate stormwater controls throughout the urban landscape
- Reduce run-off rates, velocities and volumes from post-development

150

Site Design BMPs

## Techniques

- Practices designed to minimize or prevent the introduction of pollutants and conditions of concern

Minimize Impervious Area/Maximize Permeability (C-Factor Reduction)
Minimize Directly Connected Impervious Areas (DCIAs) (C-Factor Reduction)
Create Reduced or "Zero Discharge" Areas (Runoff Volume Reduction)
Conserve Natural Areas (C-Factor Reduction)

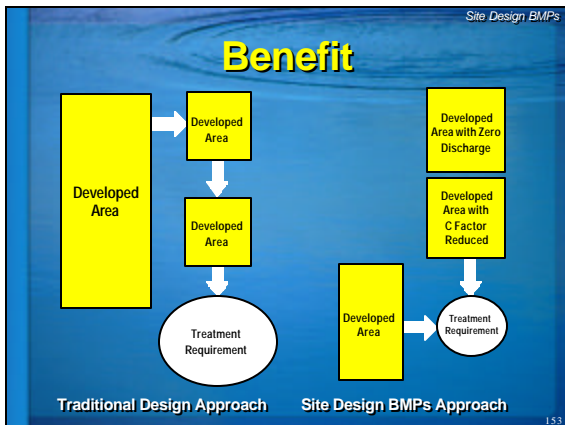
Based on DAMP Table A-7.4 151

Site Design BMPs

## How to Achieve

- Reducing imperviousness
- Conserving natural resources/areas
- Providing runoff storage measures throughout site
- Implementing on-lot hydrologically functional landscape design and management practices
- Minimizing directly connected impervious areas

152



Site Design BMPs

## Example

- Reduce imperviousness
- Conserve natural resources/areas
- Provide runoff storage measures throughout site
- Implement on-lot hydrologically functional landscape design and management practices
- Minimize directly connected impervious areas

154

Site Design BMPs

## Example

Runoff Storage/Filtration

155

Site Design BMPs


## Example

On-lot Filtration

156

Site Design BMPs

## Example



- ✓ Reduce imperviousness
- ✓ Provide runoff storage measures throughout site
- ✓ Implement on-lot hydrologically functional landscape design and management practices

On-lot Filtration

157

Site Design BMPs


## Reduce Imperviousness

- Construct low-traffic areas with open-jointed paving materials or permeable surfaces
  - pervious concrete
  - porous asphalt
  - unit pavers
  - granular materials
  - perforated pipes
  - gravel filtration pits
- Minimizing decorative concrete

158

Site Design BMPs

## Example




Modular Pavement

Depressed Grassed Area

159

Site Design BMPs

## Example




Modular Pavement

Grassed Parking Area Reinforced with Geotextile Fabric


160

Site Design BMPs

## References



BASMAA, 1999






CASQA, 2003

161

Site Design BMPs

## Questions ?

162

## Treatment Control BMPs



163

Treatment Control BMPs

## Treatment Control BMPs

- Objective is to treat any anticipated pollutants of concern which may impact receiving waters that were not prevented by Source Control BMPs or captured by Site Design BMPs
- should be implemented by priority projects unless a waiver is granted by the Permittee
- Shall be operational prior to the use of any dependent development
- Project-specific or regional/watershed based

164

Treatment Control BMPs

## Limited Exclusions

- Restaurants where land area of development <5,000 ft<sup>2</sup>
- Significant redevelopment
  - <50% increase in imperviousness
  - Existing development not subject to WQMP (SUSMP) requirements
  - Treatment should apply only to addition

165

Treatment Control BMPs

## Selecting

- Primary Pollutants
  - Identified in Table 3-1 of Model WQMP and
  - Causing impairment of receiving waters
- Secondary Pollutants
  - Identified in Table 3-1 of Model WQMP

Continued...  
166

Treatment Control BMPs

## Selecting (Continued)

- Use Tables 3-1 and 3-2
  - Determine pollutants anticipated to be generated by the project (Table 3-1)
  - Determine pollutants for which the downstream receiving waters are impaired (Table 3-2) and compare with the pollutants anticipated to be generated by the project
    - Any pollutants identified by Table 3-2, which are also causing a CWA section 303(d) impairment of receiving waters of the project, are considered *primary pollutants of concern*
- Select a single or combination of storm water treatment BMPs from Table 3-5
  - Addresses pollutant removal for the particular primary pollutant(s) of concern

Continued...  
167

Treatment Control BMPs

**Table 7.II-2**

Priority Project Categories and/or Project Features	General Pollutant Categories								
	Pathogens	Heavy Metals	Nutrients	Pesticides	Organic Compounds	Sediments	Turbidity & Debris	Oxygen Demanding Substances	Oil & Grease
Detached Residential Development	X		X	X		X	X	X	X
Attached Residential Development	P		X	X		X	X	P(1)	
Commercial/Industrial Development > 100,000 ft <sup>2</sup>	P(3)		P(1)	P(5)	P(2)	P(1)	X	P(5)	X
Automotive Repair Shops		X			X(4)(5)		X		X
Restaurants	X						X	X	X
Hillside Development > 5,000 ft <sup>2</sup> in SDRWOCB			X	X		X	X	X	X
Hillside Development > 10,000 ft <sup>2</sup> in SARWOCB			X	X		X	X	X	X
Parking Lots		X	P(1)	P(1)		P(1)	X	P(1)	X
Streets, Highways & Freeways		X	P(1)		X(4)	X	X	P(5)	X

X = anticipated  
P = potential  
(1) A potential pollutant if landscaping exists on site  
(2) A potential pollutant if the project includes uncovered parking areas  
(3) A potential pollutant if land use involves food or animal waste products  
(4) Including petroleum hydrocarbons  
(5) Including solvents

Based on DAMP Table 7.II-2

168

Treatment Control BMPs

### Table 7.II-3

Region	Water Body	Pollutant											
		Watershed	Pathogen/Coliforms	Metals	Nutrients	Pesticides	Organic Compounds	Sediment/Siltation	Salinity	TDS	Chlorides		
Region 8 Santa Ana	Anheim Bay	C		X			X						
	Huntington Harbor	C	X	X			X						
	Santiago Creek, Reach 4	E								X	X	X	
	Silverado Creek	E	X							X	X	X	
	San Diego Creek, Reach 1	F		X	X	X			X				
	San Diego Creek, Reach 2	F		X	X	X			X				
	Newport Bay, Upper	G	X	X	X	X			X				
	Newport Bay, Lower	G	X	X	X	X		X					
Region 9 San Diego	Laguna Beach, Pacific Ocean	I	X										
	Aliso Creek, Pacific Ocean	J	X										
	Aliso Creek, Mouth of Orange	J	X										
	Aliso Creek, Lower One Mile	J	X										
	Dana Point, Pacific Ocean	K	X										
	San Juan Creek, Mouth	L	X										
	Lower San Juan, Pacific Ocean	L	X										
	San Juan Creek, Lower	L	X										
San Clemente	M	X											

Based on DAMP Table 7.II-3 169

Treatment Control BMPs

### Table 7.II.6

Pollutant of Concern	Treatment Control BMP Categories					
	Biofilters	Detention Basins	Infiltration Basins(2)	Wet Ponds or Wetlands	Filtration	Hydrodynamic Separator Systems(3)
Sediment	X	X	X	X	X	X
Nutrients		X	X	X	X	
Organic Compounds	U	U	U	U	X	
Trash & Debris		X	U	U	X	X
Oxygen Demanding Substances		X	X	X	X	
Bacteria & Viruses	U	U	X	U	X	
Oil & Grease	X	X	U	U	X	
Pesticides	U	U	U	U	U	

(1) Cooperative periodic performance assessment may be necessary. This Treatment Control BMP table will be updated as needed and as knowledge of storm water treatment BMPs improves.  
 (2) Including trenches and porous pavement.  
 (3) Also known as hydrodynamic devices and baffle boxes.  
 U: Unknown in terms of removal efficiency.  
 Sources: Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters (1993), National Stormwater Best Management Practices Database (2001), and Guide for BMP Selection in Urban Developed Areas (2001).

Based on Model DAMP Table 7.II-6 170

Treatment Control BMPs

## Selecting (Continued)

- Site generates both primary and secondary pollutants of concern
  - Primary pollutants of concern receive priority for BMP selection
- Priority projects that are not anticipated to generate a primary pollutant should
  - Meet applicable standard requirements
  - Select any treatment BMP or combination of treatment BMPs that mitigate pollution, consistent with MEP standards

Continued... 171

Treatment Control BMPs

## Selecting (Continued)

- If during CEQA process, a more refined evaluation of the project identify that impacts on receiving waters may not be significant and that the project will not cause an exceedance of WQ objectives related to the pollutants for which the receiving water is impaired, the project shall not be obligated to use any pollutant-specific treatment BMP, but may use any treatment BMP or combination of storm water treatment BMPs that are designed to mitigate pollution

172

Treatment Control BMPs

## Locating

- Implement close to pollutant sources
- Locate on- or off-site, used singly or in combination, or shared by multiple new developments
  - Located so as to infiltrate, filter, and/or treat the required runoff volume or flow prior to its discharge to any receiving water body supporting beneficial uses

Continued... 173

Treatment Control BMPs

## Locating (Continued)

- Multiple post-construction treatment control BMPs for a single priority development project shall collectively be designed to comply with design standards
- Shared treatment BMPs shall be operational prior to the use of any dependent development or phase of development
- Interim stormwater BMPs that provide equivalent or greater treatment, may be implemented by a dependent development until each shared BMP is operational. Interim BMPs should remain in use until permanent BMPs are operational
- For regional/watershed BMP program in lieu of project-based BMPs, BMPs should be located in accordance with the approved regional BMP program

174

Treatment Control BMPs

## Examples

- Biofilters
  - Grass swales
  - Grass strips
  - Wetland vegetation swales
  - Bioretention
- Detention Basins
  - Extended/dry detention basins with grass lining
  - Extended/dry detention basins with impervious lining
- Infiltration Basins
  - Infiltration basins
  - Infiltration trenches

Continued... 175

Treatment Control BMPs


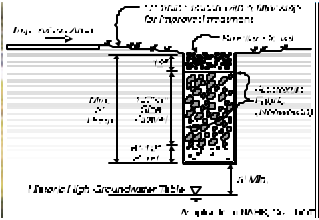
## Examples (Continued)

- Wet Ponds and Wetlands
  - Wet ponds (permanent pool)
  - Constructed wetlands
- Filtration Systems
  - Media filtration
  - Sand filtration
- Hydrodynamic Separation Systems
  - Swirl Concentrators
  - Cyclone Separators

176

Treatment Control BMPs

## Infiltration Trench

177

Treatment Control BMPs

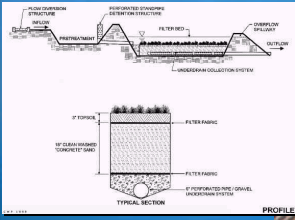

## Infiltration Basins



178

Treatment Control BMPs


## Sand Filter

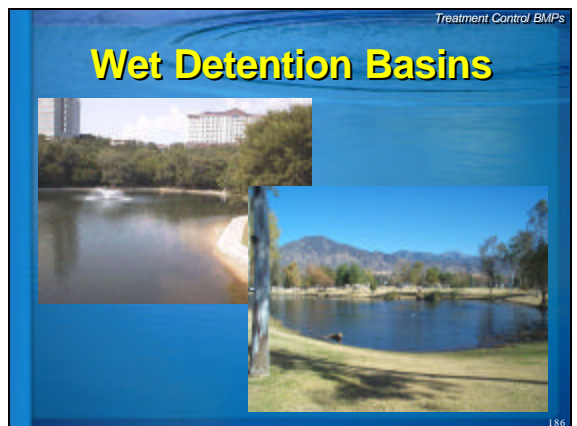
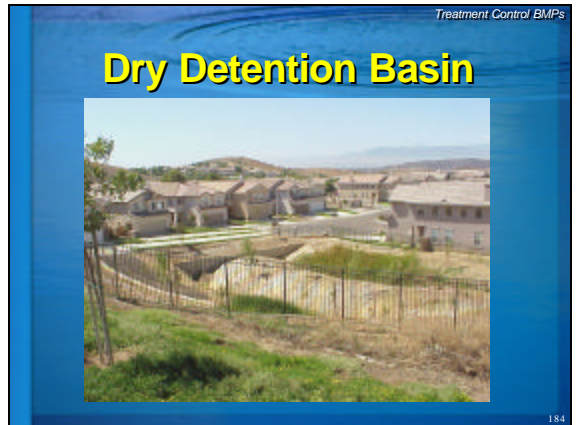
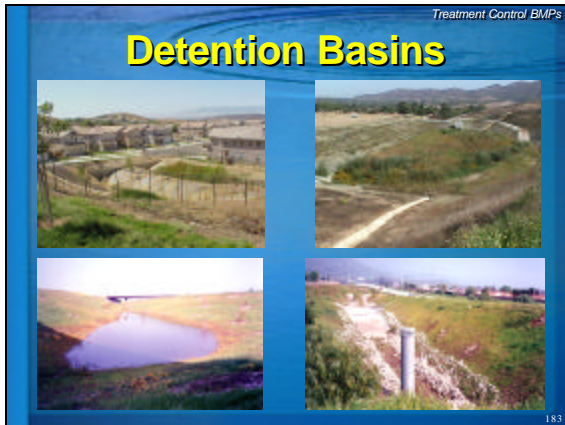
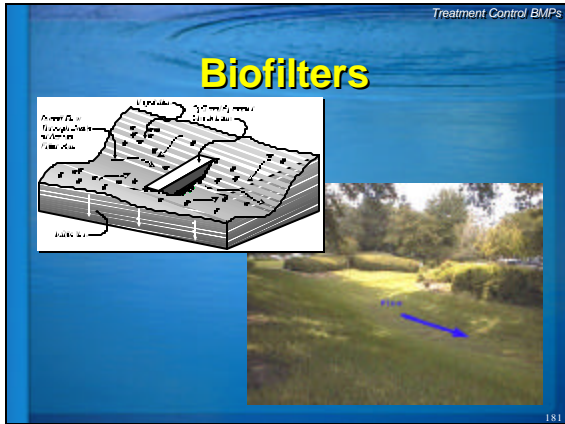
179

Treatment Control BMPs

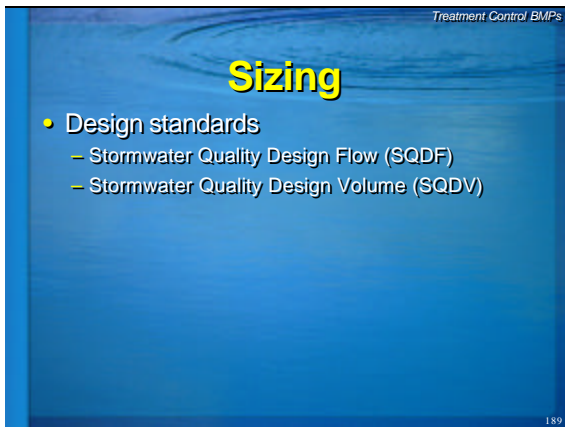
## Swales for Road and Parking Lot Drainage



180







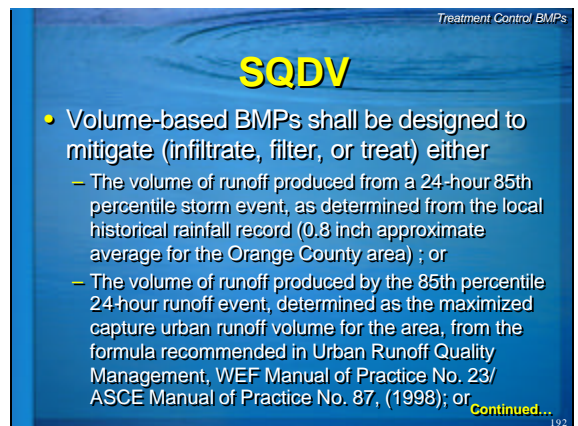
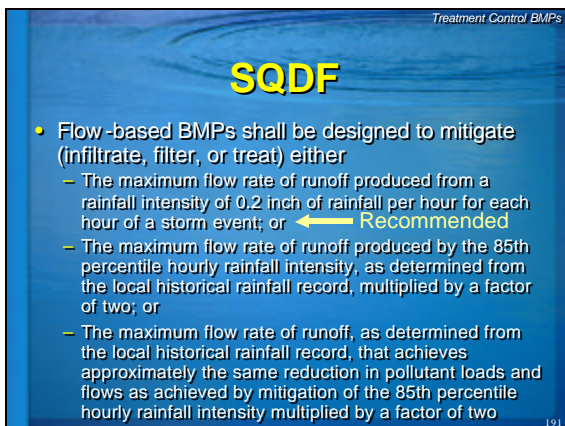
Treatment Control BMPs

## Basis of Design

Treatment Control BMP	Design Basis
Vegetated (Grass) Strips	SQDF
Vegetated (Grass) Swales	
Hydrodynamic Separators	
Dry Detention Basin	
Wet Detention Basin	SQDV
Constructed Wetland	
Detention Basin/Sand Filter	
Porous Pavement Detention	
Porous Landscape Detention	
Infiltration Basin	
Infiltration Trench	
Media Filter	SQDV
Hydrodynamic Separators	

Based on DAMP Table 7.II-5

190



Treatment Control BMPs

## SQDV (Continued)

- The volume of annual runoff based on unit basin storage volume, to achieve 80 percent (SA) (90% SD) or more volume treatment by the method recommended in California Stormwater Best Management Practices Handbook – Industrial/Commercial, (1993), or
- The volume of runoff, as determined from the local historical rainfall record, that achieves approximately the same reduction in pollutant loads and flows as achieved by mitigation of the 85th percentile 24-hour runoff event\*

\* This volume is not a single volume to be applied to all of Orange County. The size of the 85th percentile storm event is different for various parts of the County.

193

Treatment Control BMPs

## Exercise #1 SQDF Calculations

- Project
  - Located in the City of Irvine
  - 400 ft above sea level
  - Total project area,  $A_T$ , is 30 acres
  - 40% Impervious area
- Calculate SQDF to size vegetated swale

194

Treatment Control BMPs

## SQDF – Method I Solution

The maximum flow rate of runoff produced from a rainfall intensity of 0.2 inch of rainfall per hour for each hour of a storm event

- The Stormwater Quality Design Flow in Orange County is defined as  $Q_{P,SQDF}$
- Calculate the peak rate stormwater quality design flow for the site (or each sub-drainage area that will discharge to a separate BMP) produced by 0.2-inch/hour rainfall by using the rational method equation
- $Q_{P,SQDF} = C * I * A$ 
  - C = runoff coefficient obtained from Table A-1 = 0.45
  - I = rainfall intensity = 0.2 in/hr
  - A = area of the site or sub-drainage area in acres = 30
- $Q_{P,SQDF} = 0.45 \times 0.2 \times 30 = 2.7$  cfs

195

Treatment Control BMPs

## Exercise #2 SQDV Calculations

- Project
  - Located in the City of Irvine
  - 400 ft above sea level
  - Total project area,  $A_T$ , is 10 acres
  - Impervious area,  $A_I$ , is 6 acres
- Calculate SQDV to size dry detention basin

196

Treatment Control BMPs

## SQDV – Method I Solution

The volume of runoff produced from a 24-hour 85th percentile storm event, as determined from the local historical rainfall record (0.8 inch approximate average for the Orange County area)

- $(A_I/A_T) * 100 = (6/10) * 100 = 60\%$ .
- Use Table A-1 to determine the Runoff Coefficient "C" for the drainage area.
  - From Table A-1, for 60% impervious, C = 0.60
- Find the depth of rainfall in inches of the 85th percentile storm event
  - Use 0.80 inch for projects with 1000 ft or less in elevation
- Calculate the Water Quality Design Volume
  - $V_D = C * I * A_T = 0.60 * (0.8 \text{ in}) * (10 \text{ ac}) * (1 \text{ ft}^3/12 \text{ in}) = 43,560 \text{ ft}^3/\text{acre}$
- Size the BMP for  $V_D = 17,424 \text{ ft}^3$  and 48-hr drawdown

197

Treatment Control BMPs

## Table A-1

C Values Based on Impervious/Pervious Area Ratios

% Impervious	% Pervious	C
0	100	0.15
5	95	0.19
10	90	0.23
15	85	0.26
20	80	0.30
25	75	0.34
30	70	0.38
35	65	0.41
40	60	0.45
45	55	0.49
50	50	0.53
55	45	0.56
60	40	0.60
65	35	0.64
70	30	0.68
75	25	0.71
80	20	0.75
85	15	0.79
90	10	0.83
95	5	0.86
100	0	0.90

Based on DAMP Table A-1

198

### SQDV – Method II Solution

The volume of runoff produced by the 85th percentile 24-hour runoff event, determined as the maximized capture urban runoff 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)

- $P_0 = (a * C) * P_6$ 
  - C = Runoff Coefficient =  $0.858 i^3 - 0.78 i^2 + 0.774 i + 0.04$
  - i = Watershed imperviousness ratio = percent total imperviousness divided by 100 = 0.60
  - $P_6$  = mean storm precipitation volume, watershed inches. Using Figure 5.3 in the manual,  $P_6 = 0.65$  inches
  - a = Regression constant from least-square analysis. Using Table 5.4 in the manual for 48-hours drain time, a = 1.963
  - $P_0$  = Maximized detention volume using either the volume capture ratio as its basis, watershed inches
    - $C = 0.858 (0.60)^3 - 0.78 (0.60)^2 + 0.774 (0.60) + 0.04 = 0.409$
    - $P_0 = (1.963 * 0.409) * 0.65 = 0.522$  inches
    - $V_0 = 0.522 (10 \text{ acre}) (1 \text{ ft}/12 \text{ in}) (43,560 \text{ ft}^2/\text{acre})$
- Size the BMP for  $V_b = 18,949 \text{ ft}^3$  and 48-hour drawdown

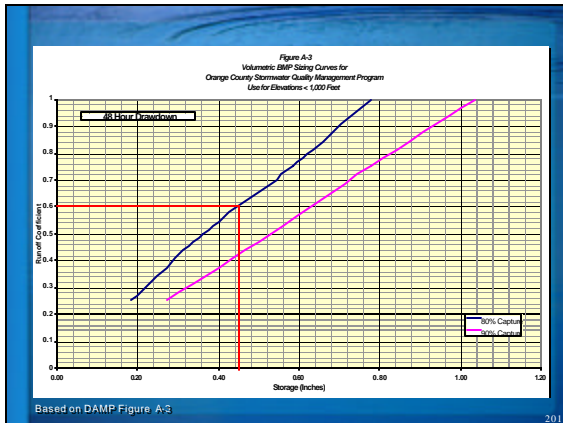
199

### SQDV – Method III Solution

The volume of annual runoff based on unit basin storage volume, to achieve 80% (SA [90% SD]) or more volume treatment by the method recommended in California Stormwater BMPs Handbook – Industrial/ Commercial, (1993)

- $(A/A_s) * 100 = (6/10) * 100 = 60\%$
- From Table A-1, for 60% impervious, C = 0.60
- Use figure A-3, and the line that provides a direct reading of Unit Basin Storage Volumes required for 80% (Santa Ana RWQCB region) annual capture of runoff for values of "C" determined from Table A-1, and for projects with elevations less than 1000 ft.
- $V_{01} = 0.46$  inches
- The volume of the basin is then  $V_b = V_{01} * A_t = (0.46 \text{ in}) (10 \text{ ac}) (1 \text{ ft}/12 \text{ in}) (43,560 \text{ ft}^2/\text{ac})$
- Size the BMP for  $V_b = 16,698 \text{ ft}^3$  and 48-hour drawdown

200



201

### SQDV – Method IV

The volume of runoff, as determined from the local historical rainfall record, that achieves approximately the same reduction in pollutant loads and flows as achieved by mitigation of the 85th percentile 24-hour runoff event

- Under this volume criterion, hourly rainfall data may be used to calculate the 85th percentile storm event, where each storm event is identified by its separation from other storm events by at least six hours of no rain. If hourly rainfall data is selected, the Permittees shall describe the method for using hourly rainfall data to calculate the 85th percentile storm event in their local WQMPs

202

### Restrictions on Use of Infiltration BMPs

- Grading permits may limit or prohibit the use of infiltration BMPs in hillside or other special situations where slope stability and subsurface stability are of concern
- Infiltration BMPs should not be implemented if the runoff poses a threat to groundwater contamination
- Coordinate with Orange County Water District

203

### Protection of Groundwater Quality

- Minimum conditions on use of infiltration devices
  - Not cause or contribute to an exceedance of groundwater WQ objectives
  - Implement pollution prevention and source control BMPs to protect groundwater quality
  - Not cause a nuisance or pollution, as defined in Water Code Section 13050
  - Pre-treat urban runoff from commercial developments prior to infiltration
  - Divert dry weather flows from infiltration devices except for NSW discharges authorized pursuant to 40 CFR 122.26(d)(2)(iv)(B)(1)

Continued...

204

Treatment Control BMPs

## Protection of Groundwater Quality

(Continued)

- Minimum distances from base of infiltration BMP
  - 10 ft min. vertical to the seasonal high groundwater mark
  - 100 ft min. horizontal to any water supply wells
- Soil physical and chemical characteristics are adequate for proper infiltration durations and treatment of urban runoff for the protection of groundwater beneficial uses
- Mitigate any groundwater contamination caused by the infiltration system

Continued... 205

Treatment Control BMPs

## Protection of Groundwater Quality

(Continued)

- Infiltration BMPs shall not be used in
  - areas of industrial or light industrial activity
  - areas subject to high vehicular traffic (25,000 or greater average daily traffic on main roadway or 15,000 or more average daily traffic on any intersecting roadway)
  - automotive repair shops
  - car washes
  - fleet or RV storage areas (bus, truck, etc.)
  - nurseries
  - other high threat to water quality land uses and activities as designated by the Permittee

206

Treatment Control BMPs

## Waiver of Treatment BMP Requirements

- Permittees may provide for a project to be waived from implementing treatment BMPs if infeasibility can be established
  - Waiver may be granted only when all available treatment BMPs have been considered and rejected as infeasible
    - Burden of proof is on the project proponent to demonstrate that all available measures are infeasible
- Waivers may only be granted for treatment BMPs and BMP sizing requirements
- Permittee that implements a waiver program may also develop a WQMP waiver impact fee program
  - Permittee shall notify the RWQCB if a WQMP waiver impact fee program is developed

207

Treatment Control BMPs

## Alternative Approaches

- Permittee may develop a regional Model Site Design Stormwater Treatment Credits program
  - Allows reductions in the volume or flow of storm water that should be captured or treated on a project in return for the inclusion of specified project design features in the project
  - Specify the conditions under which project proponents can be credited for the use of site design features and low impact development techniques that can reduce the volume of storm water runoff, preserve natural areas, and minimize the pollutant loads generated and potentially discharged from the site.
  - Approved by the Regional Board

208

## WQMP for Watershed Based Approach

- If a project is in a watershed where a Regional Program can be considered or has been adopted, the WQMP should
  - Describe or reference the Regional Program
  - Describe how the project will participate or contribute to the program



209

## WQMP Preparation

- ✓ Section I – Tract or Discretionary Permit Numbers, WQ Conditions (and numbers)
- ✓ Section II – Project Description
- ✓ Section III – Site Description
- ✓ Section IV – BMPs
- Section V – Inspection/Maintenance Responsibility for BMPs
- Section VI – Location Map, Plot Plan & BMP Details
- Section VII – Educational Materials

210

## Questions ?

211

## BREAK




212



## BMP Design




213

*BMP Design*

## CASQA Stormwater BMP Handbook - NDRD

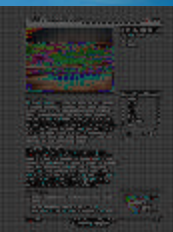
[www.cabmphandbooks.com](http://www.cabmphandbooks.com)

214

*BMP Design*

## BMP Design Guidance

- Source Control BMPs
  - Routine Non-Structural (N)
  - Routine Structural
- Site Design BMPs
  - SD Fact Sheets (Appendix A-7)
- Model WQMP Table 7.II-4
- Treatment Control BMPs
  - Table 7.II-5 – Basis of Design
  - TC Fact Sheets (Appendix A-7)



215

*BMP Design*

## SD Fact Sheets

- BMP Name and Number
- Description
- Approach
- Suitable Applications
- Design Considerations
- Supplemental Information

216

BMP Design

## SD Fact Sheets

**SD-20**

**Design Objectives**

- Reduce erosion
- Provide retention
- Slow runoff
- Minimize impaction and clogging
- Provide temporary water storage
- Lower hydrocarbons
- Stabilize and cleanse

**Description**

Pervious paving is used for light vehicle loading in parking areas. The term describes a system consisting of a load-bearing, durable surface together with an underlying layered structure that temporarily stores water prior to infiltration or drainage to a controlled outlet. The structure can be built by pervious earth that extends across the entire surface of the material (i.e., grass and gravel surfaces, porous concrete and porous asphalt), or can be built up of impervious blocks separated by spaces and joints, through which the water can drain. This latter system is termed "permeable" paving. Advantages of pervious pavements is that they reduce runoff volume while providing treatment, and are a substitute resulting in a high level of acceptability.

217

BMP Design

## TC Fact Sheets

- BMP Name and Number
- Description
- California Experience
- Advantages
- Limitations
- Design & Sizing Guidelines
- Performance
- Siting Criteria
- Design Guidance
- Maintenance
- Cost
- References & Sources of Additional Information

218

BMP Design

## TC Fact Sheets

**TC-11**

**Design Considerations**

- Soil for Infiltration
- Slope
- Aesthetics

**Targeted Constituents**

- Sediment
- Nutrients
- Trash
- Metals
- Oil and Grease
- Organics

**Legend (Sediment Effectiveness)**

- ▲ Low
- High

Continued...219

BMP Design

## TC Fact Sheets (Continued)

220

BMP Design

## Start at the Source - BASMAA

1999

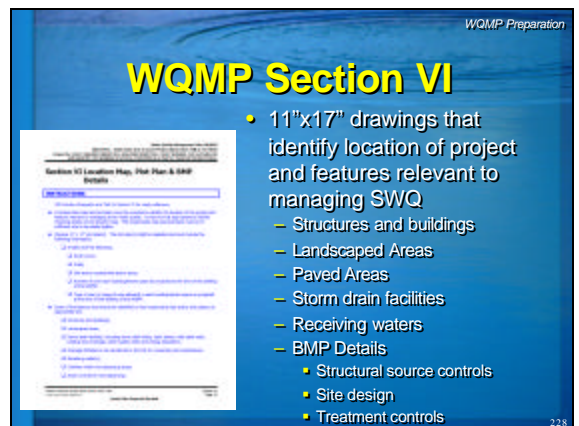
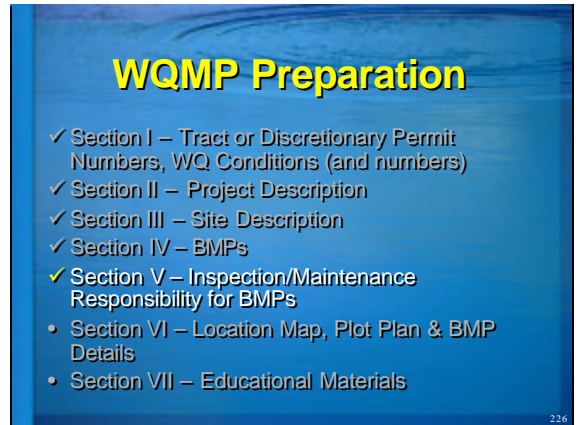
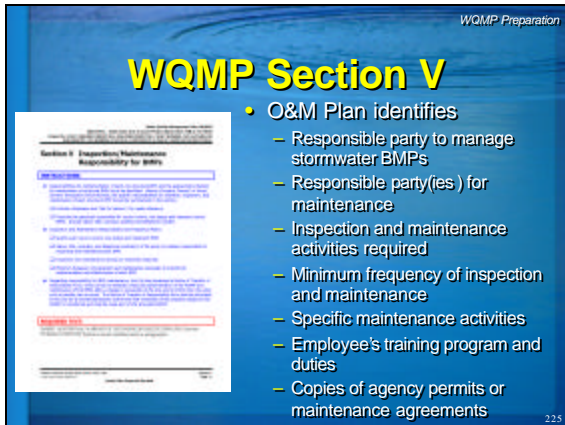
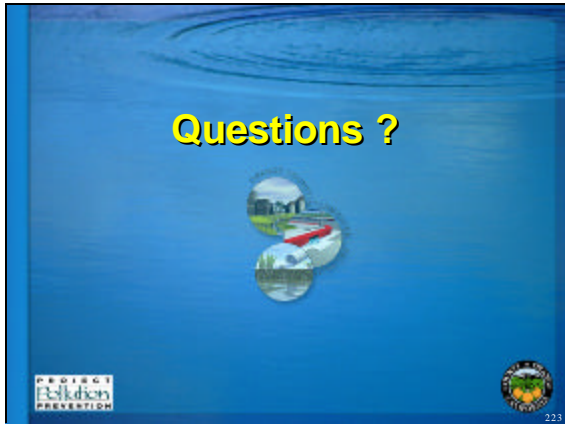
221

BMP Design

## The Joint ASCE/WEF Manual of Practice

1998


222



WQMP Preparation

## WQMP Section VI

- BMP Details
  - Structural source controls
  - Site design
  - Treatment controls





230

## WQMP Preparation

- ✓ Section I – Tract or Discretionary Permit Numbers, WQ Conditions (and numbers)
- ✓ Section II – Project Description
- ✓ Section III – Site Description
- ✓ Section IV – BMPs
- ✓ Section V – Inspection/Maintenance Responsibility for BMPs
- ✓ Section VI – Location Map, Plot Plan & BMP Details
- Section VII – Educational Materials

230

## Educational Materials





231

WQMP Preparation

## WQMP Section VII

- List of educational materials developed for various activities or structural BMPs
- Concepts that will be addressed by education and training of new owner(s)
- Include copies in Attachment A to WQMP



232

## WQMP Preparation

- ✓ Section I – Tract or Discretionary Permit Numbers, WQ Conditions (and numbers)
- ✓ Section II – Project Description
- ✓ Section III – Site Description
- ✓ Section IV – BMPs
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- ✓ Section VI – Location Map, Plot Plan & BMP Details
- ✓ Section VII – Educational Materials

233

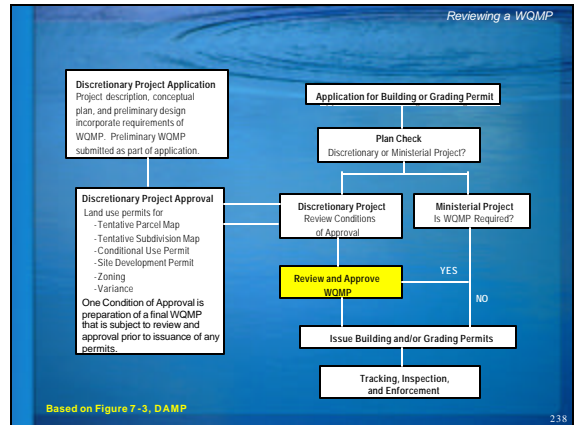
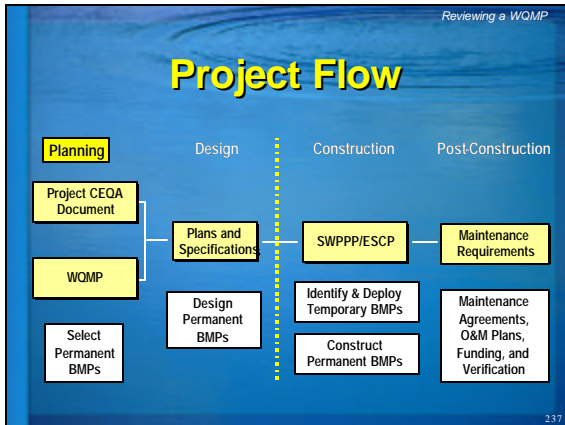
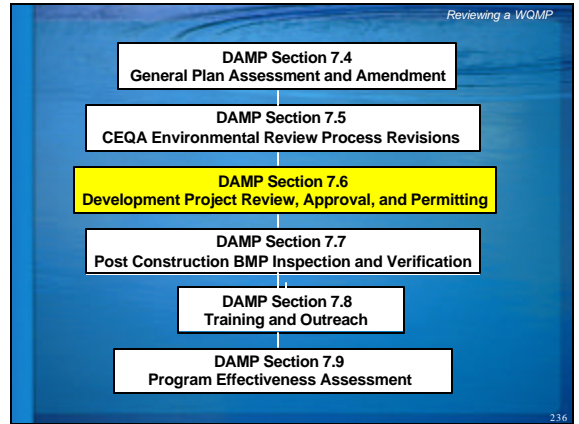
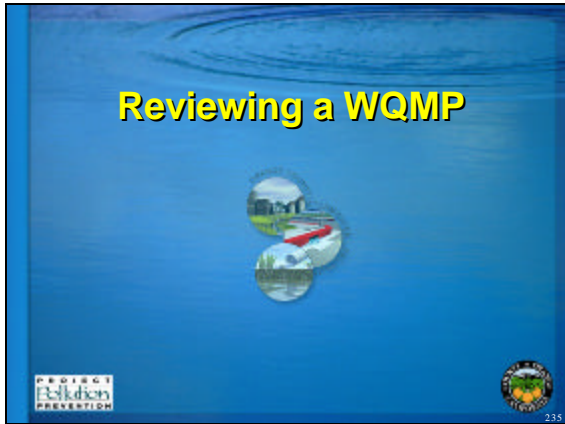
WQMPs for Non-Priority Projects

## BMP Requirements

- Incorporate and implement all applicable Source Control BMPs
  - Routine non-structural
  - Routine structural
  - BMPs for individual project features
- Consider implementation of Site Design BMPs

234





- Reviewing a WQMP
- ## WQMP Submittal
- WQMPs may be “conceptual” during the discretionary approval process
  - WQMPs shall be “final” before issuance of grading or building permits
- 239

Reviewing a WQMP

## Priority/Non-Priority Checklist

Figure A-7.2. Checklist for Categorizing Development and Significant Redevelopment Projects as Priority or Non-Priority

Proposed Project Includes:	Y	N	NA
1. Residential development of 10 units or more			
2. Commercial development of 10,000 sq ft or more, including parking areas			
3. Professional office or business building of 10,000 sq ft or more, including parking areas			
4. Office building of 10,000 sq ft or more, including parking areas			
5. Retail store of 10,000 sq ft or more, including parking areas			
6. Restaurant or food service building of 10,000 sq ft or more, including parking areas			
7. Hotel or transient lodging building of 10,000 sq ft or more, including parking areas			
8. Multi-story parking structure of 10,000 sq ft or more, including parking areas			
9. Office building of 10,000 sq ft or more, including parking areas			
10. Office building of 10,000 sq ft or more, including parking areas			
11. Office building of 10,000 sq ft or more, including parking areas			
12. Office building of 10,000 sq ft or more, including parking areas			
13. Office building of 10,000 sq ft or more, including parking areas			
14. Office building of 10,000 sq ft or more, including parking areas			
15. Office building of 10,000 sq ft or more, including parking areas			
16. Office building of 10,000 sq ft or more, including parking areas			
17. Office building of 10,000 sq ft or more, including parking areas			
18. Office building of 10,000 sq ft or more, including parking areas			
19. Office building of 10,000 sq ft or more, including parking areas			
20. Office building of 10,000 sq ft or more, including parking areas			

240

Based on Figure A-7.2, Appendix A, DAMP

Reviewing a WQMP

## Difference Between Priority and Non-Priority Projects

Requirement	Priority	Non-Priority
Consider Site Design BMPs	X	X
Routine Structural & Non-Structural BMPs	X	X
Treatment Control BMPs	X	
Long-Term O&M of Structural BMPs	X	X

For Non-Priority Projects there is no requirement for Treatment Control BMPs.

241

Reviewing a WQMP

## Review WQMP

- Verify categorization of project as Priority or Non-Priority
- Utilize a checklist for WQMP review to assure thoroughness and consistency

242

Reviewing a WQMP


## Dual Purpose of WQMP

- Clearly communicate to County/City the post-construction (operational phase) stormwater quality management program for a proposed project.
- Guidance document that assists owners, operators, tenants, and/or employees in implementing the BMPs upon which a project's approval was based.

243

Reviewing a WQMP

## WQMP Checklist



Based on Exhibit A-7.III, Appendix A, DAMP

244

Reviewing a WQMP

### Water Quality Management Plan Checklist

The purpose of this checklist is to provide a format for uniform, comprehensive, and well-documented reviews of the Water Quality Management Plans (WQMPs) submitted by project applicants. The completed checklist should be transmitted to the project applicant with the project WQMP. A copy of the completed checklist should be retained with the project planning/permitting file.

City Planning Project Number: \_\_\_\_\_

Project Name: \_\_\_\_\_

Project Address: \_\_\_\_\_

**First Review**

WQMP Received on: \_\_\_\_\_

Review Completed on: \_\_\_\_\_

**Second Review**

WQMP Received on: \_\_\_\_\_

Review Completed on: \_\_\_\_\_

**Third Review**

WQMP Received on: \_\_\_\_\_

Review Completed on: \_\_\_\_\_

Signature of Reviewer: \_\_\_\_\_ Date: \_\_\_\_\_

245

WQMP REQUIREMENT	Requirement Satisfied?		
	Yes	No	N/A
Title Page			
Name of project			
Application and/or Tract Number			
Lot number(s) if site is a portion of a Tract			
Site address (or address) and planning area number			
Owner/Developer name			
Owner/Developer address & telephone number			
Consulting/Engineering firm that prepared WQMP			
Consulting/Engineering firm address & phone number			
Date WQMP was prepared/revise			
<b>Owner's Certification</b>			
A signed certification statement, in which the project owner acknowledges and accepts the provisions of the WQMP, follows the title page.			
<b>Table of Contents</b>			
A Table of Contents, including a list of all figures and attachments is included			
<b>Section 1.0, Permit Numbers and Conditions of Approval</b>			
Lists the Discretionary Permit(s)			
The lot & fractional map number describing the subject property			
Lists, verbatim, the Water Quality Conditions, including condition requiring preparation of WQMP, if applicable.			
Final Resolution of Approval, Conditional Use Permit, etc. is included as an Attachment to the WQMP.			

Reviewing a WQMP

WQMP REQUIREMENT	Requirement Satisfied?		
	Yes	No	N/A
<b>Section 2.0, Project Description</b>			
<b>For All Projects</b>			
Identifies planning area or community name			X
Does the project description completely and accurately describe where facilities will be located, what activities will be conducted and where on the site, what kinds of materials and products will be used, how and where materials will be received and stored, and what kinds of areas will be generated?			X
Describes all paved areas, including the type of parking areas			X
Describes all landscaped areas			X
Describes ownership of all portions of project and site: - Will any infrastructure transfer to public agencies (City, County, Caltrans, etc.)? - Will a homeowners or property owners association will be formed? - Will the association will be included in long term maintenance?			X
Identifies the potential stormwater or urban runoff pollutants reasonably expected to be associated with the project			X
<b>For Commercial and Industrial Projects:</b>			
Provides Standard Industrial Classification (SIC) Code which best describes the facilities operation?			X
Describes the type of use (or uses) for each building or tenant space			X
Does project include food preparation, cooking, and eating areas (specify location and type of area)			X
Describes delivery areas and loading docks (specify location and design and if below grade and types of materials expected to be stored)			X
Describes outdoor materials storage areas (describe and depict location), specify type(s) of materials expected to be stored			X
Describes activities that will be routinely conducted outdoors			X
Describes any activities associated with equipment or vehicle maintenance and repair, including washing or cleaning. Indicates number of service bays or number of loading/unloading bays, if applicable.			X
<b>Residential Projects</b>			
Range of lot and home sizes			X
Describes all community facilities such as, laundry, car wash, swimming pool, leisure parks, open spaces, ball lots, etc.			X

247

Reviewing a WQMP

## Project Description

"The project site is bounded by Pico Boulevard to the north, Robertson Avenue to the east, Olympic Boulevard to the south, and Sepulveda Boulevard to the west. The proposed project includes the expansion of the existing onsite facilities including two new buildings, reconfigured parking facilities, landscape improvement, as well as modifications to the existing utility services including irrigation, water, sewer, and storm drain."

248

Reviewing a WQMP

WQMP REQUIREMENT	Requirement Satisfied?		
	Yes	No	N/A
<b>Section 2.0, Project Description</b>			
<b>For All Projects</b>			
Identifies planning area or community name			X
Does the project description completely and accurately describe where facilities will be located, what activities will be conducted and where on the site, what kinds of materials and products will be used, how and where materials will be received and stored, and what kinds of areas will be generated?			X
Describes all paved areas, including the type of parking areas			X
Describes all landscaped areas			X
Describes ownership of all portions of project and site: - Will any infrastructure transfer to public agencies (City, County, Caltrans, etc.)? - Will a homeowners or property owners association will be formed? - Will the association will be included in long term maintenance?			X
Identifies the potential stormwater or urban runoff pollutants reasonably expected to be associated with the project			X
<b>For Commercial and Industrial Projects:</b>			
Provides Standard Industrial Classification (SIC) Code which best describes the facilities operation?			X
Describes the type of use (or uses) for each building or tenant space			X
Does project include food preparation, cooking, and eating areas (specify location and type of area)			X
Describes delivery areas and loading docks (specify location and design and if below grade and types of materials expected to be stored)			X
Describes outdoor materials storage areas (describe and depict location), specify type(s) of materials expected to be stored			X
Describes activities that will be routinely conducted outdoors			X
Describes any activities associated with equipment or vehicle maintenance and repair, including washing or cleaning. Indicates number of service bays or number of loading/unloading bays, if applicable.			X
<b>Residential Projects</b>			
Range of lot and home sizes			X
Describes all community facilities such as, laundry, car wash, swimming pool, leisure parks, open spaces, ball lots, etc.			X

249

Reviewing a WQMP

WQMP REQUIREMENT	Requirement Satisfied?		
	Yes	No	N/A
<b>Section 3.0, Site Description</b>			
Describes project area and surrounding planning areas in sufficient detail to allow project location to be plotted on a base map			X
Provides site address and site size to nearest tenth acre.			X
Identifies the zoning or land use designation			X
Identifies soil types and the quantity and percentage of pervious and impervious surface for pre-project and project conditions.			X
Describes pre-project site drainage and how it ties into drainage of surrounding or adjacent areas and describes how planned project drainage and how it will tie into drainage of surrounding or adjacent areas.			X
Identifies the watershed in which the project is located and the : - downstream receiving waters - known water quality impairments as included in the 303(d) List - applicable Total Maximum Daily Loads (TMDLs) - hydrologic conditions of concern, if any.			X
Identifies known Environmentally Sensitive Areas (ESAs) and Areas of Special Biological Significance (ASBS) within the vicinity and their proximity to the project.			X

250

Reviewing a WQMP

## Site Description

"The project site is located on the east side of Badger Street between Elm and Hickory Avenues in the City of Oz. The site is flat and vacant and scraped of vegetation. Properties to each side of this site are developed as commercial buildings. The site, composed of one lot, drains in its existing condition from east to west to Badger Street. This sheet flow is to continue after development."

251

Reviewing a WQMP

WQMP REQUIREMENT	Requirement Satisfied?		
	Yes	No	N/A
<b>Section 3.0, Site Description</b>			
Describes project area and surrounding planning areas in sufficient detail to allow project location to be plotted on a base map	X		
Provides site address and site size to nearest tenth acre.		X	
Identifies the zoning or land use designation		X	
Identifies soil types and the quantity and percentage of pervious and impervious surface for pre-project and project conditions.		X	
Describes pre-project site drainage and how it ties into drainage of surrounding or adjacent areas and describes how planned project drainage and how it will tie into drainage of surrounding or adjacent areas.	X		
Identifies the watershed in which the project is located and the : - downstream receiving waters - known water quality impairments as included in the 303(d) List - applicable Total Maximum Daily Loads (TMDLs) - hydrologic conditions of concern, if any.		X	
Identifies known Environmentally Sensitive Areas (ESAs) and Areas of Special Biological Significance (ASBS) within the vicinity and their proximity to the project.		X	

252

Reviewing a WQMP

WQMP REQUIREMENT	Requirement Satisfied?		
	Yes	No	N/A
<b>Section 4.0, Best Management Practices</b>			
Includes narrative describing how site design concepts were considered and incorporated into project plans.			
Lists and describes all Routine Source Control BMPs (Non structural and Structural).			
Describes the implementation frequency and identifies the entity or party responsible for implementation of each Non-Structural BMP.			
If applicable Routine Source Control BMPs were not included, was a reasonable explanation provided?			
Lists and describes appropriate Treatment Control BMPs and identifies the design basis (SODF or SODV) for the Treatment Control BMPs.			
For Routine Non-Structural BMPs N1 (Education for Property Owners, Tenants, and Occupants) and N12 (Employee Training), does the WQMP describe the concepts that will be addressed by the education and training? Is a list of educational materials that will be used provided? Are copies of the educational materials included in an Attachment to the WQMP?			

253

Reviewing a WQMP

## Project BMPs

- Merely restating the BMP description from the Model WQMP is **not** sufficient.
- Description of BMP implementation should reflect the nature of the proposed project.
- For non-structural BMPs the frequency of implementation and the party responsible for implementation should be identified.

254

## Description of BMP Implementation

N11, Common Area Litter Control

- Two-Story Professional Office Building

Trash receptacles will be placed at both entrances of the building. Building maintenance staff will empty the trash receptacles each morning. On a weekly basis the landscape maintenance contractor will collect litter from the parking lot and landscaped areas.

Continued... 255

## Description of BMP Implementation (Continued)

- Convenience Food Mart

Two trash receptacles will be placed at the entrance of the building and one trash receptacle will be placed at two locations on the site perimeter adjacent to the walkways that connect to the public sidewalks. The approximate locations are denoted on the Site Plan. The facility manager will empty the trash receptacles and collect litter from the parking lot and landscaped areas each morning. The facility manager will inspect trash receptacles each afternoon and will empty as necessary.

Continued... 256

## Description of BMP Implementation (Continued)

Education and Training (N1 and N12)

- The educational or training materials described and included in the WQMP should reflect the facilities and activities to be conducted at the Project post-construction.
- Educational or training materials that are not directly relevant to a Project should not be included.

257

Reviewing a WQMP

WQMP REQUIREMENT	Requirement Satisfied?		
	Yes	No	N/A
<b>Section 4.0, Best Management Practices</b>			
Includes narrative describing how site design concepts were considered and incorporated into project plans.			
Lists and describes all Routine Source Control BMPs (Non structural and Structural).			
Describes the implementation frequency and identifies the entity or party responsible for implementation of each Non-Structural BMP.			
If applicable Routine Source Control BMPs were not included, was a reasonable explanation provided?			
Lists and describes appropriate Treatment Control BMPs and identifies the design basis (SODF or SODV) for the Treatment Control BMPs.			
For Routine Non-Structural BMPs N1 (Education for Property Owners, Tenants, and Occupants) and N12 (Employee Training), does the WQMP describe the concepts that will be addressed by the education and training? Is a list of educational materials that will be used provided? Are copies of the educational materials included in an Attachment to the WQMP?			

258

Reviewing a WQMP

WQMP REQUIREMENT	Requirement Satisfied?		
	Yes	No	N/A
<b>Section 4.0, Best Management Practices</b>			
Includes narrative describing how site design concepts were considered and incorporated into project plans.			
Lists and describes all Routine Source Control BMPs (Non-structural and Structural)			
Describes the implementation frequency and identifies the entity or party responsible for implementation of each Non-Structural BMP			
If applicable: Routine Source Control BMPs were not included, was a reasonable explanation provided?			
Lists and describes appropriate Treatment Control BMPs and identifies the design basis (SODF or SODV) for the Treatment Control BMPs.			
For Routine Non Structural BMPs N1 (Education for Property Owners, Tenants, and Occupants) and N12 (Employee Training), does the WQMP describe the concepts that will be addressed by the education and training? Is a list of educational materials that will be used provided? Are copies of the educational materials included in an Attachment to the WQMP?			

259

## Appropriate Treatment Control BMPs

Proposed Project: 300 unit condominium development in a moderate income neighborhood; one garage for each residential unit; limited guest parking; car washing prohibited by CC&Rs as proposed by developer. Developer proposes to install proprietary catch basin inserts in each Project catch basin. Manufacturer product information included in appendix.

Continued... 260

## Appropriate Treatment Control BMPs (Continued)

- Manufacturer information states that the catch basin insert "is recommended for areas with higher than normal amounts of sediment and debris and moderately high levels of petroleum hydrocarbons. Examples of appropriate applications are public streets, equipment storage and/or maintenance yards, and industrial facilities."

261

Reviewing a WQMP

WQMP REQUIREMENT	Requirement Satisfied?		
	Yes	No	N/A
<b>Section 5.0, Inspection and Maintenance Responsibility for BMPs</b>			
Identifies the entity (or entities) responsible for the long term inspection and maintenance of all structural source control BMPs and all Treatment Control BMPs, including name, title, company, address, and phone number.			
Describes the minimum frequency for inspection and maintenance to ensure the effectiveness of each structural source control BMP and each Treatment Control BMP.			
If ownership of the Treatment Control BMPs will be transferred to a public agency, does the WQMP include an Attachment indicating the public agency's intent to accept the Treatment Control BMPs as designed?			
Is an appropriate mechanism for the long term operation and maintenance, including funding, in place?			

262

## BMP Inspection & Maintenance

Proposed Project: Commercial Car Wash with Fueling Island

Developer proposes to install proprietary catch basin inserts in the one onsite catch basin. Manufacturer product information included in appendix.

Continued... 263

## BMP Inspection & Maintenance (Continued)

- WQMP states:
  - "Water quality inlets designed to remove free phase liquid petroleum compounds, grease, floatable debris, and sinking solids should be used in relation to the underground catch basin. The catch basin shall be monitored and cleaned regularly and shall be part of the written Spill Contingency Plan."
  - "The site manager shall be responsible for continuous inspection and maintenance of all required structural and non-structural measures."

Continued... 264

## BMP Inspection & Maintenance (Continued)

- Review Comments:
  - The description of inspection and maintenance for the “water quality inlet” is inadequate.
  - “Continuous” inspection and maintenance would be unusual.
  - Manufacturer information provided in appendix recommends maintenance by a certified maintenance provider.
  - If a maintenance contract will not be used, what criteria will be used for the inspection and maintenance performed by the site manager?
  - How will spent filter media be disposed?

*Reviewing a WQMP*

WQMP REQUIREMENT	Requirement Satisfied?		
	Yes	No	N/A
<b>Section 6.0, Location Map and Plot Plan</b>			
Has an 11" by 17" plot plan been included?			
Do all figures, maps, plot plans, etc. have a legend, including a North arrow and scale?			
Are all facilities labeled for the intended function?			
Are all areas of outdoor activity labeled?			
Are all structural BMPs indicated?			
Is drainage flow information, including general surface flow lines, concrete or other surface ditches or channels, as well as storm drain facilities such as catch basins and underground storm drain pipes depicted?			
Depicts where and how on-site drainage ties into the off-site drainage system.			

*Reviewing a WQMP*

### WQMP REVIEW SUMMARY




The following is a summary of major concerns relative to this WQMP submittal:

**The WQMP dated May 5, 2002 satisfies all of the requirements and is approved.**

*Reviewing a WQMP*

WQMP REVIEW SUMMARY	
The following is a summary of major concerns relative to this WQMP submittal:	
BMP	Reason for Non-Satisfactory Determination
<b>Routine Non-Structural</b>	
Education for Property Owners, Tenants, and Occupants	
Activity Restrictions	
Common Area Litter Control	
Catch Basin Inspection	
Parking Lot and Street Sweeping	
<b>Routine Structural</b>	
Storm Drain Inlet Stenciling	
Protection of Slopes and Channels	
Community Wash Rack	
<b>Treatment Control BMPs</b>	
Catch Basin Inserts	

## Conclusion






*Conclusion*

## Conclusion

- Developing and implementing appropriate WQMPs will achieve
  - Comply with requirements
    - New Municipal Permits
    - DAMP
  - Protect water quality by reducing urban runoff and long-term stormwater pollution

**Questions ?**



PROJECT  
Erosion  
PREVENTION

271

Conclusion

**Resources**

For more information:  
Visit [www.ocwatersheds.com](http://www.ocwatersheds.com)  
or  
Call 714-567-6363  
Orange County Stormwater Program  
for  
Chris Crompton, Richard Boone, or Grant Sharp

PROJECT  
Erosion  
PREVENTION

272

**Thank You!**

Thank you for attending and  
learning how you can help!

PROJECT  
Erosion  
PREVENTION

273

Conclusion


**Handouts**

- Meeting Agenda
- Revised Project Application Form
- Revised CEQA Checklist (Santa Ana region)
- Revised CEQA Checklist (San Diego region)
- Summary Table of 303(d) Listed Water Bodies
- Table of Anticipated Pollutants Generated by Land Use Type
- Example Conditions of Approval
- Priority/Non-Priority Checklist
- Exercises
- WQMP Checklist
- Hard copy of presentation
- Contact list

PROJECT  
Erosion  
PREVENTION

274

**WQMP Preparation  
Non-Priority Projects**



PROJECT  
Erosion  
PREVENTION

275

Conclusion

**Residential**



PROJECT  
Erosion  
PREVENTION

276



*Conclusion*

## Industrial

*Conclusion*

277

*Conclusion*

## Industrial

*Conclusion*

278

*WQMP Preparation*

## Why WQMPs?

- New Municipal Permits require BMPs for NDRD projects
- DAMP requires all NDRD projects to describe BMPs in a WQMP
- New SA Permit required updated Model WQMP
- New SD Permit required Model SUSMP (equivalent to WQMP)

*WQMP Preparation*

279

*WQMP Preparation*

## Model WQMP

- Developed to
  - Address post-construction urban runoff pollution from all NDRD Projects
  - Provide practicable and enforceable policies and procedures
  - Implement appropriate BMPs to prevent/reduce storm water pollutants in receiving waters
  - Comply with permits and DAMP
- Exhibit 7.II of the DAMP

*WQMP Preparation*

280



WQMP Preparation

## Priority Projects

(require treatment BMPs or participation in regional treatment program)

- Residential:  $\geq 10$  units
- Commercial/Industrial:  $> 100,000$  sq.ft.
- Automotive repair shops
- Restaurant:  $\geq 5,000$  sq.ft.
- Hillside Development
- Impervious surface  $\geq 2,500$  sq.ft. within, adjacent to, or discharging directly ESA
- Parking lots:  $\geq 5,000$  sq.ft. or with 15 or more parking spaces
- San Diego Region: streets, roads, highways, freeways creating  $\geq 5,000$  sq.ft. new paved surface.

283

Ongoing BMP Maintenance

## Proof of Ongoing BMP Maintenance

- BMPs not consider "effective," and not accepted as meeting MEP, unless long-term maintenance mechanism is in place for all structural BMPs
  - Permittee
  - Project proponent

284

Ongoing BMP Maintenance

## Maintenance Mechanisms

- Public Entity Maintenance
- Project proponent agreement to maintain storm water BMPs
- Assessment districts
- Lease provisions
- Conditional use permits
- Alternative mechanisms

285

Ongoing BMP Maintenance

## Verification Mechanisms & Maintenance Requirements

- Verification Mechanisms
  - Incorporate into project permit
  - Proponent's signed statement accepting responsibility for maintenance, repair and replacement
- Maintenance Requirements
  - Operation & Maintenance (O&M) Plan
  - Access Easement/Agreement

286