



SAN MATEO COUNTYWIDE
Water Pollution Prevention Program
Clean Water. Healthy Community.
www.flowstobay.org

**New Development Subcommittee
Proposed Agenda
February 3, 2009, 1:30 to 3:25 pm**

**Back to our Regular Location! - South San Francisco's Water Quality Control
Plant – Administration Building
195 Belle Air Road – South San Francisco**

- I. Introductions, Announcements, Minutes & Agree on Agenda, Matt Fabry, All (5 min.)**
Objective: Meet attendees, review and approve previous meeting summary, make announcements, and agree on agenda.

- II. Update on January TAC Meeting and Any Other Issues that Are Not Covered Elsewhere on the Agenda, Matt (5 min.)**
Objective: Obtain information from the TAC meeting.

- III. Municipal Regional Stormwater Permit, Matt, Everyone (10 min.)**
Objective: Receive update on status of the MRP for issues affecting new development.

- IV. Feedback on Field Visit to Brisbane City Hall Parking Lot Demonstration Project, Attendees at December New Development Subcommittee meeting and field visit (10 min.)**
Objective: Obtain information from attendees to help with planning future field visits.

- V. Completion of Sustainable Green Streets and Parking Lots Design Guidebook and Training on the Guidebook, Matt, Everyone (15 min.)**
Objective: Obtain information about the Guidebook, which is now available at www.flowstobay.org, and discuss ideas for training.

- VI. Update from the Proposition 84 Stormwater Funds Grant Application Work Group – Work Group members, Everyone (10 min.)**
Objective: Obtain information on the progress of the work group toward identifying demonstration projects and drafting Proposition 84 stormwater grant application.

- VII. Instructions for Completing Table of New Development Projects (Attachment F of Deliverable Forms)** - Laura Prickett, Everyone (5 min.)
Objective: The instructions were revised based on Subcommittee results and will be incorporated in the Annual Report deliverables.
- VIII. Review Draft Survey of C.3 Stormwater Guidance Users** - Laura (15 min.)
Objective: Review the draft survey. The results of the survey will inform future update of the C.3 Technical Guidance.
- IX. Update on San Francisco's Low Impact Design (LID) Technical Workshop** – Laura (5 min.)
Objective: Obtain information about this workshop, held on January 22-23 regarding LID techniques and San Francisco's Stormwater Design Guidelines.
- X. Low Impact Development in Spain** – Laura (20 min.)
Objective: Obtain information on low impact development designs in Spain.
- XI. Roundtable Discussion** - All (10 min.)
Objective: Obtain information about how municipalities are proceeding with erosion controls and implementation of Provision C.3.
- XII. Next Meeting** - Matt, All (5 min.)
Schedule next meeting for April 7.

DRAFT New Development Subcommittee Report

Meeting Date: December 2, 2008

Subcommittee Action:

1. Created a work group to help identify a Proposition 84 stormwater low impact development grant project or projects. Work group members who volunteered at the meeting included: Lizzy Claycomb, Jennifer Ng, Laura Russell, and Cassie Prudhel and others are welcome to join.
2. Agreed to try to have an erosion control workshop in San Mateo County next year if there is sufficient interest.

Requested Technical Advisory Committee Action or Feedback/Guidance (if any): None.

Other Information/Announcements:

1. **Tour of Demonstration Project.** City of Brisbane staff and Robert Dusenbury from Sherwood Design Engineers led a tour of the City Hall parking lot demonstration project. The demonstration project consists of a rain garden (bioretention area) and a grassy swale. The project is being constructed in two phases, and the second phase has not been constructed yet. The size of the rain garden is more than 4 percent of the parking lot and roof area that drains to this feature. The portion of the rain garden that provides treatment should be determined based on the area that is inundated at the water level that allows water to overflow into the storm drain inlet. The city hall and parking lot improvements were proceeding under contract prior to receiving funding for the demonstration project. Relying on the use of contract change orders to build the demonstration project may have increased its cost. The estimated cost of constructing rain gardens with underdrains is about \$25/ft.², and the cost for a vegetated swale without underdrains is about \$10/ft.² Potential issues are maintaining flows through the relatively narrow openings from the parking lot to the rain garden, and the one-half percent slope of the vegetated swale may result in excessively long (greater than 5 days) water detention.
2. **Municipal Regional Stormwater Permit.** The Water Board staff is planning on making the draft permit available for public comment in January. The Bay Area Stormwater Management Agencies Association will be meeting with Tom Mumley, the Water Board's Assistant Executive Officer, to obtain information on changes being proposed in the draft permit.
3. **November Erosion Control Workshop.** Two identical construction workshops were held in Cupertino on consecutive November days. SCVURPPP and SMCWPPP paid for the costs of their municipal staff to attend. SMCWPPP surveyed municipalities a few months ago about the level of interest in attending the workshop and only about 12 people were expected to attend. Forty-four people from San Mateo County municipalities actually attended. Workshop attendees reported that they liked the workshop. Scott Taylor does a nice job presenting factual information about the pros and cons of different erosion and sedimentation control methods. It was recommended that next year there be more information on gray areas of construction control implementation, offer an option for a streamlined 2-hour version of the workshop for people who need a refresher, and provide examples appropriate for denser building conditions, which are common in San Mateo County.
4. **Sustainable Green Streets and Parking Lots Design Guidebook.** Kevin Robert Perry plans on completing the guidebook this month.
5. **Inspection Practices Survey Results.** A copy of a summary of the survey results from the 12 municipalities that participated was distributed. Municipalities have more confidence that their staffs are trained about erosion and sediment control than about checking on the proper construction of stormwater treatment controls and O&M verification inspections.

6. **Table of New Development Projects.** A draft set of instructions for completing this table was distributed. One suggestion was to add check boxes with options for source control measures so that people did not fill in the wrong information or have to keep writing in the same information.

Subcommittee Work That Affects Other Subcommittees: Development of the Design Guidebook.

Next Steps: Have a Proposition 84 work group telephone conference call.

Dates of Next Meetings: Next regular meeting on February 3, at the usual meeting location at the South San Francisco Water Quality Control Plant.

San Mateo County Sustainable Green Streets and Parking Lots Design Guidebook

First Edition ~ January 2009



SAN MATEO COUNTYWIDE
**Water Pollution
Prevention Program**
Clean Water. Healthy Community.

Prepared by:

Nevue Ngan Associates
Sherwood Design Engineers

<< *El Camino Real*
Green Street Concept Sketch
San Mateo County, California

Executive Statement

In 2007, the City/County Association of Governments of San Mateo County (C/CAG) enthusiastically supported the recommendation from its San Mateo Countywide Water Pollution Prevention Program Technical Advisory Committee to develop this Sustainable Green Streets and Parking Lots Design Guidebook (guidebook).

The guidebook provides designers, builders, municipal staff, and other interested groups practical and state-of-the-art information on creating low-impact development roadways and parking lots within San Mateo County. Roads and parking lots provide important opportunities for managing stormwater because they constitute as much as 70 percent of the total impervious cover in ultra-urban landscapes.

Small amounts of rain throughout a watershed incrementally add up to large volumes of water downstream. Similarly, small changes to stormwater runoff treatment in a watershed can cumulatively result in significant improvements to overall watershed health. For this reason, the site-scale stormwater management strategies described in the guidebook are at the core of creating balanced watershed systems.

The guidebook encourages the use of low-impact development for new and retrofitted road and parking lot projects. Supporting use of low-impact development for stormwater management is an objective shared by the C/CAG, local communities, and the San Francisco Bay Regional Water Quality Control Board/State Water Resources Control Board, which has adopted low-impact development as one of its core values.

Funding for this guidebook and demonstration projects came from vehicle registration fees collected in San Mateo County for congestion and stormwater management. These fees were authorized by California Assembly Bill 1546, which was sponsored by Joseph Simitian and adopted in 2004. A continuation of this vehicle registration fee program for an additional four-year period starting in January 2009 was authorized by California Senate Bill 348 (also sponsored by Simitian and adopted in 2008).

*The Pacific Ocean at the Fitzgerald Marine Reserve >>
Moss Beach, California*

SOURCE: WWW.PANORAMIO.COM/PHOTOS/ORIGINAL/9869089.JPG

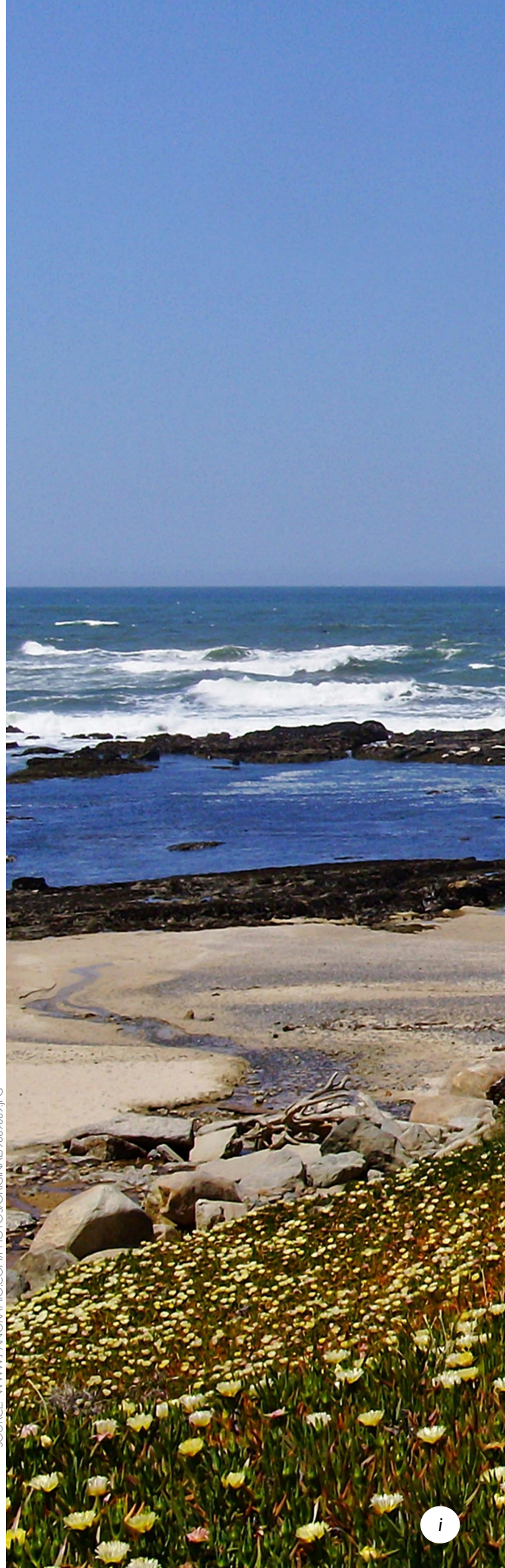


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Table of New Development Projects¹

[[= Enter Name of Municipality =]]

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Project Name; Location (cross streets); Street Address	Name of Developer; Project Phase No. ² ; Project Description	Status of Project	Project Type ³	Site Acreage	New or Replaced Impervious Surface Area	Source Control Measure BMPs	Site Design Measure BMPs	Post-Construction Treatment BMPs				Pesticide Reduction Measures Included in Project	Alternative Compliance ⁴		HMP ⁵
								Treatment BMPs Used	Hydraulic Sizing Criteria Used	Operation & Maintenance Responsibility Mechanism	Referred to O&M Inspection Team (y/n)?		Basis of Impracticability	Alternative Compliance Measures	
Private Projects															
<i>Enter Project Name and address</i>	<i>Enter Developer's name and a description of the project, including how many structures are proposed, what the structures will be used for, and any hardscape and landscape improvements.</i>	<i>Enter the project's status (e.g., in design review, under construction, etc.).</i>	<i>Enter the project's type (e.g., commercial, industrial, multi-family residential, etc.)</i>	<i>Enter the size of the lot or parcel(s) on which the project is located</i>	<i>Enter the total area (acres or square feet) of imper- vious surface created and/or replaced by the project.</i>	<i>Enter the permanent, post- construction source control measures that were or will be required. Refer to your city's Source Control Measures List or the projects conditions of approval.</i>	<i>Enter the site design measures that were or will be included in the project. BASMAA's Start at the Source and Chapter 4 of SMCWPPP's Provision C.3 Technical Guidance Manual (both are at www.flowstobay. org) describe site design measures.</i>	<i>Enter the post- construction stormwater treatment measure(s) that were or will be included. Chapter 6 of SMCWPPP's Provision C.3. Technical Guidance Manual (at www.flowstobay. org) describes stormwater treatment measures.</i>	<i>Enter the hydraulic sizing criteria that were or will be used to determine the size of the stormwater treatment measure(s) entered in the previous column. Sizing methods are listed in the NPDES permit's Provision C.3.d.</i>	<i>Enter the mechanism for assigning the responsibility for operation and maintenance (O&M), such as an O&M agreement. Refer to your municipality's or SMCWPPP's model O&M agreement, or the O&M requirements in Provision C.3.e of the NPDES permit's C.3 amendment.</i>	<i>Has project information been given to the municipal staff who will conduct ongoing, post- construction O&M inspections? Indicate yes or no.</i>	<i>Describe the various Integrated Pest Management techniques that were or will be incorporated into the project's landscape plan and landscape maintenance plan.</i>	<i>Were stormwater treatment measures NOT required based on impracticability? If no, enter Not Applicable. If yes, describe the basis for the impracticability determination; for example, geotechnical constraints.</i>	<i>Were storm- water treatment measures NOT required based on impracticability? If no, enter Not Applicable. If yes, describe how the project will achieve alternative compliance.</i>	<i>See SMCWPPP's HM permit amendment or the Stormwater Detention Require- ments brochure to determine if HM is required. If HM is not required, enter Not Applicable. If it is required, enter which HM measure was or will be used, and attach the pre- project and post- project hydrographs.</i>
EXAMPLE Nirvana Estates; Project #05- 122; Property bounded by Paradise Lane, Serenity Drive, Eternity Circle; Eden, CA	EXAMPLE: Heavenly Homes; Phase 1; Construction of 156 single- family- and 45 town-homes, commercial shops, under- ground parking.	EXAMPLE: Application filed 1/2/04, application deemed complete 1/30/04, approved 6/06/04. Grading began 10/31/04. Construction completed 6/30/05.	EXAMPLE Mixed use: residential and commercial	EXAMPLE 25 acres; 50,000 s.f.	EXAMPLE 20 acres	EXAMPLE: Mark an X next to all that apply: <input checked="" type="checkbox"/> Stenciled inlets/ <input type="checkbox"/> Pest- resistant landscaping/ <input type="checkbox"/> Drought tolerant landscaping/ <input checked="" type="checkbox"/> Roofed trash enclosure/ <input checked="" type="checkbox"/> Street sweeping/ <input checked="" type="checkbox"/> Other source controls (Describe: <u>car wash pad drains to sanitary sewer</u>)	EXAMPLE: Mark an X next to all that apply: <input type="checkbox"/> Disconnected down-spouts/ <input type="checkbox"/> Reduced impervious area/ <input type="checkbox"/> Tree preservation and planting/ <input checked="" type="checkbox"/> Pervious paving/ <input type="checkbox"/> Narrow streets/ <input type="checkbox"/> Other site designs (Describe: _____)	EXAMPLE: Mark an X next to all that apply: <input type="checkbox"/> Bioretention areas/ <input checked="" type="checkbox"/> Vegetated swales/ <input type="checkbox"/> Flow- through planters/ <input checked="" type="checkbox"/> Extended detention basins/ <input type="checkbox"/> Other treatment measures (Describe: _____)	EXAMPLE: WEF Method	EXAMPLE: Mark an X next to the mechanism used: <input checked="" type="checkbox"/> O&M agreement/ <input type="checkbox"/> Conditions in sales or lease agreement/ <input type="checkbox"/> Text in conditions, covenants and restrictions (CCRs)/ <input type="checkbox"/> Signed statement by public entity assuming responsibility/ <input type="checkbox"/> Other mechanism (Describe: _____)	EXAMPLE: Yes	EXAMPLE: Pest-resistant landscaping, pervious paving to reduce impervious surface, incorporate stormwater detention	EXAMPLE: Mark an X next to all that apply: <input checked="" type="checkbox"/> Not Applicable/ <input type="checkbox"/> Geotechnical constraints/ <input type="checkbox"/> Inadequate space/ <input type="checkbox"/> Geotechnical constraints/ <input type="checkbox"/> Excessive cost/ <input type="checkbox"/> Other basis of impracticability (Describe: _____)	EXAMPLE Not applicable.	EXAMPLE: Extended detention basin at Peace Park designed using BAHM.

Table of New Development Projects¹

[[= Enter Name of Municipality =]]

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Project Name; Location (cross streets); Street Address	Name of Developer; Project Phase No. ² ; Project Description	Status of Project	Project Type ³	Site Acreage	New or Replaced Impervious Surface Area	Source Control Measure BMPs	Site Design Measure BMPs	Post-Construction Treatment BMPs				Pesticide Reduction Measures Included in Project	Alternative Compliance ⁴		HMP ⁵
								Treatment BMPs Used	Hydraulic Sizing Criteria Used	Operation & Maintenance Responsibility Mechanism	Referred to O&M Inspection Team (y/n)?		Basis of Impracticability	Alternative Compliance Measures	
						Mark an X next to all that apply: __ Stenciled inlets/ __ Pest-resistant landscaping/ __ Drought tolerant landscaping/ __ Roofed trash enclosure/ __ Street sweeping/ __ Other source controls (Describe: _____)	Mark an X next to all that apply: __ Disconnected down-spouts/ __ Reduced impervious area/ __ Tree preservation and planting/ __ Pervious paving/ __ Narrow streets/ __ Other site designs (Describe: _____)	Mark an X next to all that apply: __ Bioretention areas/ __ Vegetated swales/ __ Flow-through planters/ __ Extended detention basins/ __ Other treatment measures (Describe: _____)		Mark an X next to the mechanism used: __ O&M agreement/ __ Conditions in sales or lease agreement/ __ Text in conditions, covenants and restrictions (CCRs)/ __ Signed statement by public entity assuming responsibility/ __ Other mechanism (Describe: _____)			Mark an X next to all that apply: __ Not Applicable/ __ Geotechnical constraints/ __ Inadequate space/ __ Geotechnical constraints/ __ Excessive cost/ __ Other basis of impracticability (Describe: _____)		
						Mark an X next to all that apply: __ Stenciled inlets/ __ Pest-resistant landscaping/ __ Drought tolerant landscaping/ __ Roofed trash enclosure/ __ Street sweeping/ __ Other source controls (Describe: _____)	Mark an X next to all that apply: __ Disconnected down-spouts/ __ Reduced impervious area/ __ Tree preservation and planting/ __ Pervious paving/ __ Narrow streets/ __ Other site designs (Describe: _____)	Mark an X next to all that apply: __ Bioretention areas/ __ Vegetated swales/ __ Flow-through planters/ __ Extended detention basins/ __ Other treatment measures (Describe: _____)		Mark an X next to the mechanism used: __ O&M agreement/ __ Conditions in sales or lease agreement/ __ Text in conditions, covenants and restrictions (CCRs)/ __ Signed statement by public entity assuming responsibility/ __ Other mechanism (Describe: _____)			Mark an X next to all that apply: __ Not Applicable/ __ Geotechnical constraints/ __ Inadequate space/ __ Geotechnical constraints/ __ Excessive cost/ __ Other basis of impracticability (Describe: _____)		
Public Projects															

Table of New Development Projects¹

[[= Enter Name of Municipality =]]

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								Treatment BMPs Used	Hydraulic Sizing Criteria Used	Operation & Maintenance Responsibility Mechanism	Referred to O&M Inspection Team (y/n)?		Basis of Impracticability	Alternative Compliance Measures	
EXAMPLE Waterville Downtown Plaza; Rushing Road and Bubbling Blvd; 123 Rushing Road, Waterville, CA	EXAMPLE: City of Waterville; Capital improvement project to build plaza on roof of existing parking structure.	EXAMPLE: Negative Declaration adopted 1/15/06. Advertised for construction bids 6/26/06. Construction scheduled to begin 9/06.	EXAMPLE: Redevelop- ment	EXAM- PLE: 1.5 acres	EXAM- PLE: 1 acre	EXAMPLE: Mark an X next to all that apply: __ Stenciled inlets/ __ Pest-resistant landscaping/ __ Drought tolerant landscaping/ __ X_Roofed trash enclosure/ __ Street sweeping/ __ Other source controls (Describe: Fountain recirculates water- no discharge to storm drain.)	EXAMPLE: Mark an X next to all that apply: __ X_Disconnected down-spouts/ __ Reduced impervious area/ __ Tree preservation and planting/ __ X_Pervious paving/ __ Narrow streets/ __ Other site designs (Describe: _____)	EXAMPLE: tree wells with bioretention; planter boxes with bioretention	EXAMPLE: WEF Method	EXAMPLE: Mark an X next to the mechanism used: __ O&M agreement/ __ Conditions in sales or lease agreement/ __ Text in conditions, covenants and restrictions (CCRs)/ __ X_Signed statement by public entity assuming responsibility/ __ Other mechanism (Describe: _____)	EXAMPLE: No	EXAMPLE: Pest-resistant landscaping, pervious paving to reduce impervious surface, incorporate stormwater detention	EXAMPLE: Mark an X next to all that apply: __ X_Not Applicable/ __ Geotechni-cal constraints/ __ Inadequate space/ __ Geotechni-cal constraints/ __ Excessive cost/ __ Other basis of impracticability (Describe: _____)	EXAMPLE Not Applicable	EXAMPLE: BAHM used to design and size stormwater treatment units so that increased runoff is detained.
						Mark an X next to all that apply: __ Stenciled inlets/ __ Pest-resistant landscaping/ __ Drought tolerant landscaping/ __ Roofed trash enclosure/ __ Street sweeping/ __ Other source controls (Describe: _____)	Mark an X next to all that apply: __ Disconnected down-spouts/ __ Reduced impervious area/ __ Tree preservation and planting/ __ Pervious paving/ __ Narrow streets/ __ Other site designs (Describe: _____)	Mark an X next to all that apply: __ Bioretention areas/ __ Vegetated swales/ __ Flow- through planters/ __ Extended detention basins/ __ Other treatment measures (Describe: _____)		Mark an X next to the mechanism used: __ O&M agreement/ __ Conditions in sales or lease agreement/ __ Text in conditions, covenants and restrictions (CCRs)/ __ Signed statement by public entity assuming responsibility/ __ Other mechanism (Describe: _____)			Mark an X next to all that apply: __ Not Applicable/ __ Geotechni-cal constraints/ __ Inadequate space/ __ Geotechni-cal constraints/ __ Excessive cost/ __ Other basis of impracticability (Describe: _____)		

Table of New Development Projects¹

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								Treatment BMPs Used	Hydraulic Sizing Criteria Used	Operation & Maintenance Responsibility Mechanism	Referred to O&M Inspection Team (y/n)?		Basis of Impracticability	Alterna-tive Com-pliance Measures	
						Mark an X next to all that apply: __ Stenciled inlets/ __ Pest-resistant landscaping/ __ Drought tolerant landscaping/ __ Roofed trash enclosure/ __ Street sweeping/ __ Other source controls (Describe: _____)	Mark an X next to all that apply: __ Disconnected down-spouts/ __ Reduced impervious area/ __ Tree preservation and planting/ __ Pervious paving/ __ Narrow streets/ __ Other site designs (Describe: _____)	Mark an X next to all that apply: __ Bioretention areas/ __ Vegetated swales/ __ Flow-through planters/ __ Extended detention basins/ __ Other treatment measures (Describe: _____)		Mark an X next to the mechanism used: __ O&M agreement/ __ Conditions in sales or lease agreement/ __ Text in conditions, covenants and restrictions (CCRs)/ __ Signed statement by public entity assuming responsibility/ __ Other mechanism (Describe: _____)			Mark an X next to all that apply: __ Not Applicable/ __ Geotechnical constraints/ __ Inadequate space/ __ Geotechnical constraints/ __ Excessive cost/ __ Other basis of impracticability (Describe: _____)		
						Mark an X next to all that apply: __ Stenciled inlets/ __ Pest-resistant landscaping/ __ Drought tolerant landscaping/ __ Roofed trash enclosure/ __ Street sweeping/ __ Other source controls (Describe: _____)	Mark an X next to all that apply: __ Disconnected down-spouts/ __ Reduced impervious area/ __ Tree preservation and planting/ __ Pervious paving/ __ Narrow streets/ __ Other site designs (Describe: _____)	Mark an X next to all that apply: __ Bioretention areas/ __ Vegetated swales/ __ Flow-through planters/ __ Extended detention basins/ __ Other treatment measures (Describe: _____)		Mark an X next to the mechanism used: __ O&M agreement/ __ Conditions in sales or lease agreement/ __ Text in conditions, covenants and restrictions (CCRs)/ __ Signed statement by public entity assuming responsibility/ __ Other mechanism (Describe: _____)			Mark an X next to all that apply: __ Not Applicable/ __ Geotechnical constraints/ __ Inadequate space/ __ Geotechnical constraints/ __ Excessive cost/ __ Other basis of impracticability (Describe: _____)		

¹ List on this table information for all Group 1 and Group 2 Projects, e.g. those that create and/or replace at least 10,000 square feet of impervious surface. Projects that create and/or replace less than 10,000 square feet of impervious surface are not required to be reported.

² If a project is being constructed in Phases, each Phase should have a separate entry.

³ Indicate project type, based on NPDES Permit Provision C.3.c categories: Commercial, Industrial, Residential, Streets/Road/Highways/Freeways, Significant Redevelopment.

⁴ If a project was granted Alternative Compliance (Provision C.3.g), report required information on the Interim Alternative Compliance Form (Attachment __).

⁵ If hydromodification (HM) control is not required, state why not. If HM control is required, describe the control method used and attach the pre- and post-project hydrographs.

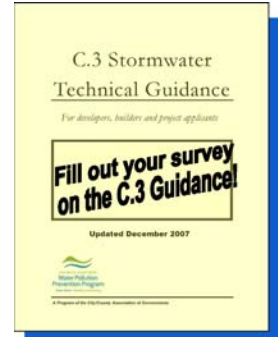


DRAFT

Help Improve the Provision C.3 Stormwater Guidance!

Survey of C.3 Guidance Users

Who should complete this survey? Please fill out this survey if you are a project applicant or sponsor, or a municipal staff member, who has used the San Mateo Countywide Water Pollution Prevention Program (SMCWPPP's) *Provision C.3 Stormwater Technical Guidance* ("C.3 Guidance") to design or review a development project. Your responses will help us update and improve this document. The C.3 Guidance provides step-by-step technical assistance for including permanent, post-construction sustainable stormwater controls in development projects, as required by Provision C.3 of the countywide National Pollutant Discharge Elimination System (NPDES) municipal stormwater permit. *Surveys are due **no later than March 28!***



For more information on sustainable stormwater controls, or to download the C.3 Guidance, visit www.flowstobay.org and click on "Business." If you would like to be notified about upcoming training opportunities on sustainable stormwater designs, please include your name and contact information on page 2 of your completed survey form.

Survey of C.3 Stormwater Technical Guidance ("C.3 Guidance") Users

1. Indicate the type(s) of development projects in which you referred to the Provision C.3 Stormwater Technical Guidance during project design or review (check all that apply).

- Residential subdivision
- One single-family home
- Commercial office or retail
- Mixed-use commercial/residential
- Other: _____

2. How helpful was the Provision C.3 Guidance in incorporating – or reviewing the incorporation of – permanent, post-construction stormwater controls in these project(s)?

- 1-Not helpful
- 2-A little helpful
- 3-Helpful
- 4-Very helpful

3. Identify issues with which the C.3 Guidance provided the greatest help (check all that apply).

- Permit application submittal requirements
- Site design guidance for reducing impervious surfaces
- Selecting stormwater treatment measures
- Stormwater treatment measure design
- Maintenance requirements
- Other: _____

4. Identify issues that you felt the C.3 Guidance did NOT offer sufficient help with (check all that apply), AND offer suggestions for improvement.

- | | | | |
|--|--|--|--|
| <input type="checkbox"/> Permit application submittal requirements | <input type="checkbox"/> Site design guidance for reducing impervious surfaces | <input type="checkbox"/> Selecting stormwater treatment measures | <input type="checkbox"/> Stormwater treatment measure design |
| <input type="checkbox"/> Maintenance requirements | <input type="checkbox"/> Lack of sufficient typical details | <input type="checkbox"/> Other: _____ | |

Suggestions for Improvement: _____

5. Rate how easy or difficult it was to use the Provision C.3 Stormwater Technical Guidance.

- 1-Hard to use 2-A little hard to use 3-Not hard, but not easy 4-Easy to use

6. Identify features of the document that helped make it EASIER to use (check all that apply).

- | | | | |
|---|--|---|---|
| <input type="checkbox"/> Step-by-step instructions | <input type="checkbox"/> Submittal checklists | <input type="checkbox"/> Photos of storm-water controls | <input type="checkbox"/> Design details |
| <input type="checkbox"/> Planting guidance (Appendix B) | <input type="checkbox"/> Example projects (Appendix C) | <input type="checkbox"/> Other: _____ | |

7. Identify features of the C.3 Technical Guidance that made it HARDER to use (check all that apply), AND offer your suggestions for improvement.

- | | | | |
|---|---|--|---|
| <input type="checkbox"/> Too much information | <input type="checkbox"/> Too little information | <input type="checkbox"/> Needs more graphics | <input type="checkbox"/> Graphics should better illustrate technical designs. |
| <input type="checkbox"/> Other: _____ | | | |

Suggestions for Improvement: _____

Please return this form no later than MARCH 28 to:
EOA, Inc., 1410 Jackson Street, Oakland, CA 94705, Attn: Christina Hovland

Provide contact information to receive notice of upcoming trainings!

Name: _____ Company: _____

Mailing address: _____

Phone Number: _____ Email address: _____



MEMORANDUM

TO: SMCWPPP New Development Subcommittee

FROM: Laura Prickett

DATE: January 27, 2009

SUBJECT: Summary of San Francisco's Low Impact Design Technical Workshop

The San Francisco Public Utilities Commission and the Port of San Francisco sponsored this workshop on January 22 and 23. The Port of San Francisco and other portions of San Francisco that are not connected to the City's combined stormwater-wastewater sewer system are covered by the statewide Phase II National Pollutant Discharge Elimination System (NPDES) municipal stormwater permit. In those areas development projects must meet the Phase II permits requirements for Low Impact Development (LID). Most of San Francisco is on a combined system, and the City now requires LID in the entire city, as part of its strategy to reduce combined sewer overflows. San Francisco has adopted the Leadership in Energy and Environmental Design (LEED) stormwater treatment sizing criteria as a citywide standard. This is more conservative than sizing criteria in the Phase I and Phase II NPDES permits.

San Francisco has hired Herrera Environmental Consultants, of Seattle, to develop Stormwater Design Guidelines to help project applicants design LID systems in development projects. The draft Guidelines are posted on the Public Utilities Commission's website, at www.sfwater.org (click on Wastewater (sewers), scroll down to Stormwater Design Guidelines).

The two-day workshop featured presentations by Robin Kirshbaum, P.E., and Alice Lancaster, P.E., of Herrera; Chris Webb, P.E., of Chris Webb and Associates (of Seattle); and Curtis Hinman, an ecologist with Washington State University Extension. Day One of the workshop focused on bioretention, and Day Two emphasized permeable paving. Presentations were also given on water quality treatment and hydrologic modeling.

Bioretention information that may be helpful to SMCWPPP municipalities includes:

- **Underdrains.** Several speakers urged municipalities to emphasize infiltration and avoid the use of underdrains where feasible. They are concerned about flows moving too quickly to the underdrain, a possibility that dissolved metals and emerging pollutants may not be adequately treated, and a possibility that even if peak post-development flows match pre-development peak flows, an overall increase in volume may degrade creek habitat. Speakers acknowledged that bioretention areas, when properly designed with appropriate soils, are effective at removing dissolved metals, even with an underdrain. Some of the speakers have had success using bioretention with no underdrain in very poor soils. This is

attributed to dispersing the water over a relatively large area, and the possibility that actual infiltration rates of on-site soils may vary throughout the site.

- **Geotextiles** are not recommended at the interface between bioretention soils and native soils. Geotextiles manage the migration of fine particles and can result in clogging problems. When using perforated pipe, do not wrap it in filter fabric. This has been found to clog in five years and led to early bioretention failures on the East Coast.
- **Setbacks.** Seattle requires a 5-foot setback between bioretention areas and buildings without basements. A greater setback is needed if there is a basement. Some municipalities require setbacks between bioretention areas and conventional paved areas in order to keep infiltrated water from undermining the roadbed. This could also be accomplished with plastic liners. Seattle requires a 5-foot setback between bioretention areas and the property line. However, two neighbors can sign an agreement to construct a joint rain garden in the setback area.
- **Mulch.** Project examples using rock mulch were shown. This can be useful where there are problems with floating wood chips (e.g., clogging of overflow outlet). Organic mulch is preferred where feasible, because it contributes to water quality treatment.
- **Groundwater separation.** Curtis Inman recommends a 1-foot vertical separation between the base of a bioretention area and the seasonally high groundwater table for bioretention areas with smaller contributing areas. A 3-foot separation is advised for larger contributing areas. This differs from the SF Bay Regional Water Board's required 10-foot separation from infiltration devices. Curtis accepts the smaller separations because infiltration from bioretention areas is more diffuse than that from dry wells and other infiltration devices.
- **Tree Well Filters.** Port of Tacoma is studying of Filterra tree well systems performance.
- **Getting Home Owners Involved.** Kansas City has a goal of 10,000 rain gardens (bioretention areas) by 2010. Seattle homeowners typically do basic maintenance of planting strip bioretention areas (trash removal, trimming vegetation, adding mulch), while the City handles bigger issues. Sometimes planting strip maintenance is done by landscape company, so Seattle is looking at training landscapers. Seattle is conducting the "Lakewood RainCatcher Project" to see how helping homeowners install bioretention and cisterns can offset the need for construction of CSO storage.

Permeable Paving Information that may be of interest includes:

- **Comparing Porous Asphalt to Porous Concrete.** The lifespan of pervious asphalt is comparable to that of standard asphalt (15 years or so). Pervious asphalt should be delivered quickly and kept at the proper temperature for good installation. The lifespan of pervious concrete is comparable to that of standard concrete (50 years or so). If contractors have been properly trained, the installation of pervious concrete should be no more difficult than installing regular concrete. In the Seattle area, the cost of pervious concrete construction is roughly the same as that for traditional concrete. It was described as the lowest cost permeable paving. The National Ready Mix Concrete Association offers certification of contractors for porous concrete installation. In the Puget Sound area, vendors will not sell porous concrete mix to contractors who lack this certification.

- **Construction Staging.** Each pervious pavement project includes challenges for how to stage and build the project while protecting the pervious paving subgrade from compaction, and protecting the finished pervious paving from landscaping activities that can clog it.
- **Interface between Pervious and Impervious Paving.** One speaker recommended that flows from standard paving not be directed to pervious paving without pretreatment, to prevent clogging. He allowed that this could be OK if the pervious paving was properly maintained (e.g., vacuum sweeping once or twice a year.)
- **Maintenance.** Curtis Inman described experience with permeable paving in Europe, where a cleaning method was developed to do a pressure wash followed by strong vacuuming. Chris Webb cautioned that pressure washing can force fines deeper into the paving.
- **Constraints.** Speakers did not think it necessary to use traditional paving in the lanes of travel of a parking lot, with pervious paving in the lanes only. Normally pervious paving is not used on slopes greater than 5 percent.
- **Pervious Paving as a Treatment Measure.** Curtis Inman presented data from the international BMP database showing that permeable paving has outperformed many other treatment measures in removing pollutants such as copper, zinc and phosphorus. Its results are comparable to bioretention. Seattle's stormwater guidance describes "pervious surface" as a surface that manages only the water falling on that surface. Seattle's stormwater guidance describes a "pervious facility" as a pervious area (including pervious paving) that manages runoff from elsewhere on site. To accomplish this, the aggregate subbase is hydraulically sized to treat runoff from the contributing area, usually resulting in a deeper aggregate subbase. In Seattle, pervious paving is counted as 50 percent pervious for the purpose of calculating impervious area.

Miscellaneous information that may be of interest includes the following:

- In San Francisco it is now legal to use rainwater for toilet flushing.
- Some builders in the Puget Sound area are installing low-impact foundations, anchoring the foundations with very strong pins, to reduce site disturbance. There was no discussion of the seismic safety of low-impact foundations.
- LEED is beginning a "Sustainable Sites" initiative, which will hopefully provide more credits for LID designs.

Resources on the Internet

- www.SoilsforSalmon.org and www.BuildingSoil.org offer information on soil specifications.
- Project examples are shown on Seattle's Natural Drainage webpage: (www.seattle.gov/util/About_SPU/Drainage_&_Sewer_System/Natural_Drainage_Systems)
- Puget Sound LID Technical Guidance: www.psp.wa.gov/downloads/LID/LID_manual2005.pdf
- Rain Garden Handbook for Homeowners shows how to build your own rain garden, www.pierce.wsu.edu/water_quality/LID/raingarden_handbook.pdf.
- Puget Sound Partnership's review and recommendations for water quality-related code revisions for 30+ municipalities: www.psparchives.com/our_work/stormwater/lid/lid_regs.htm.