



**Planning for**

## **SUSMP Revisions**

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*Presentation to the San Diego Region Co-permittees  
Hydromodification and SUSMP Workshop  
November 19, 2007*



### **Reissued NPDES Permit**

- Projects shall not increase runoff rates and durations
- Projects shall incorporate Low Impact Development BMPs
- Update the Countywide Model SUSMP



## **Model SUSMP Revisions**

- Integrate LID, treatment, and hydrograph modification management requirements
- Make it easier for applicants to prepare submittals
- Make it easier for municipal staff to review submittals for compliance
- Promote consistent and fair implementation countywide
- Complete by July 2008



## **By January 24, 2008**

- Review and update BMP requirements in local SUSMPs
  - Remove ineffective BMPs
  - Add LID BMPs for treatment
- Identify interim criteria for comparing pre-project to post-project runoff—applies to projects that disturb 50 acres or more

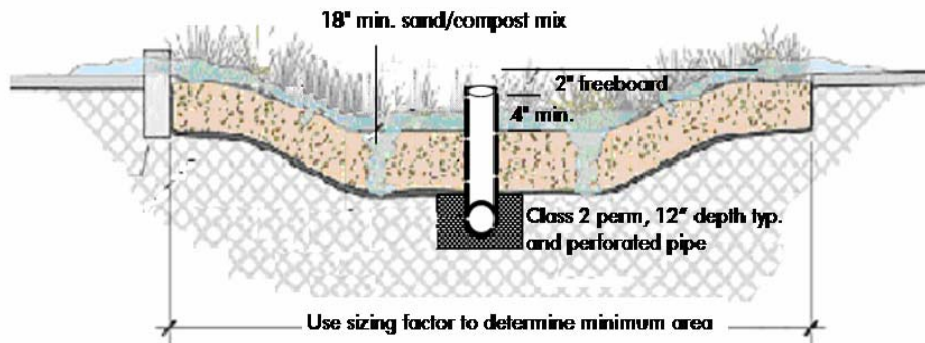


## Low Impact Development

- Design the site to mimic natural drainage.
- Disperse runoff to landscape where possible.
- Use Integrated Management Practices distributed around the site.

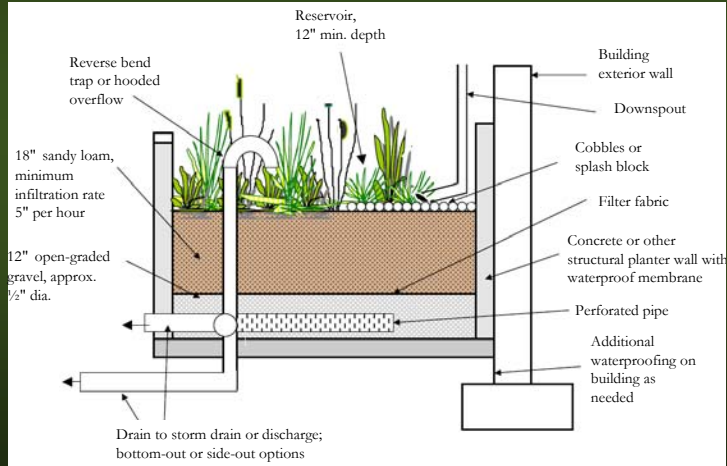


## Swale





## Planter Box



## Planter Box





## Small Residential Subdivision



## Large Hillside Subdivision





## Integrated Management Practices

### Advantages

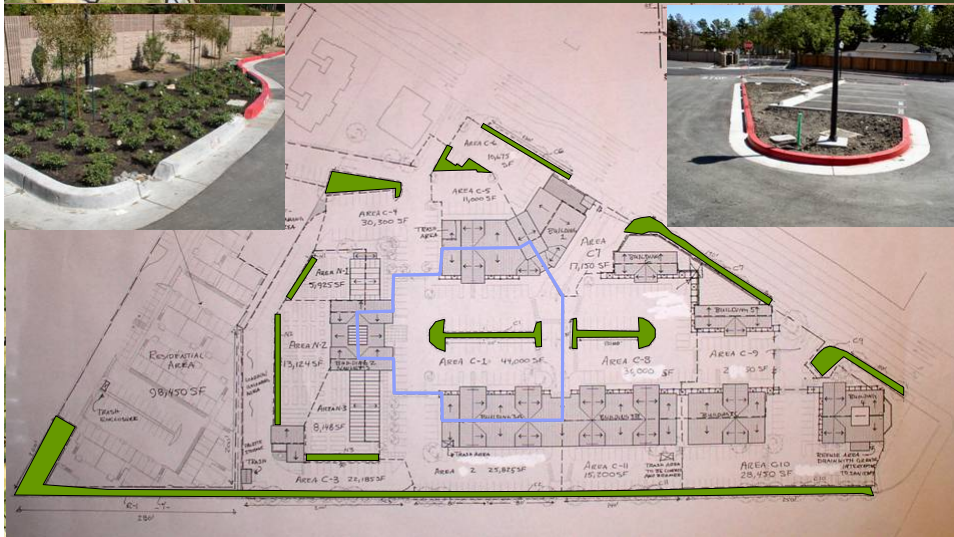
- Detain and treat runoff
- Typically fit into setbacks and landscaped areas
- Accommodate diverse plant palettes
- Low-maintenance
- Don't breed mosquitoes
- Can be attractive

### Challenges

- Soil surface must be 6-12" lower than surrounding pavement
- Require 3-4 feet of vertical "head"
- Can affect decisions about placement of buildings, roadways, and parking

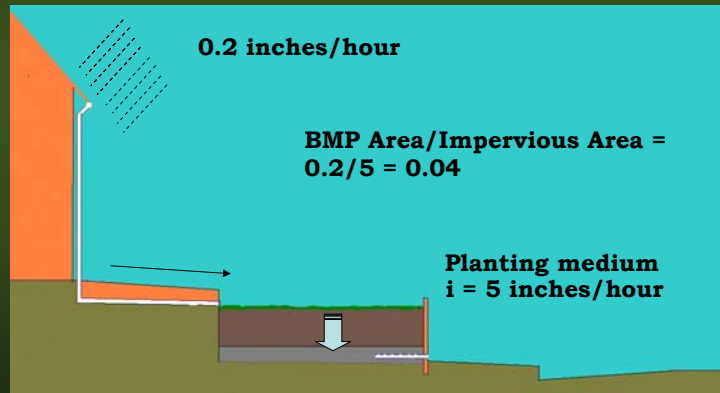


## Using Sizing Factors for Design





## Sizing criterion for treatment



## LID for flow control

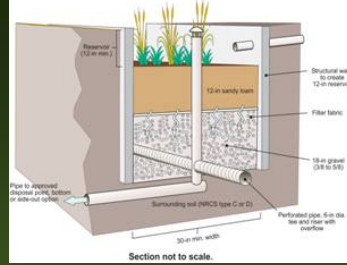


- Can LID facilities mitigate increased peaks and volumes of flows from impervious areas?
- How would we demonstrate that?
- What are the design criteria?

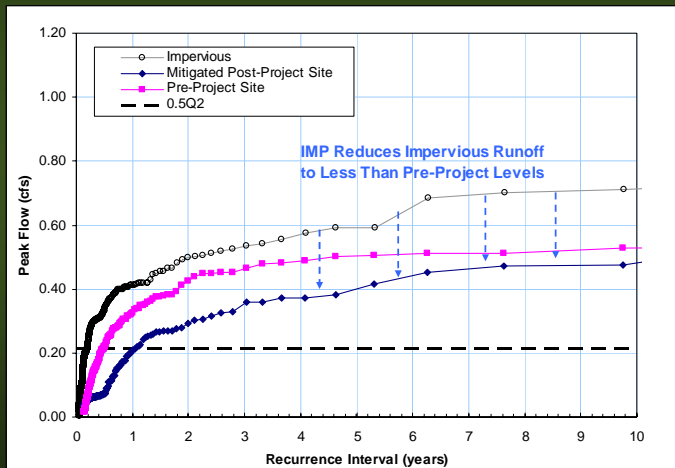


## HSPF analysis of unit-acre runoff

- 30+ years hourly rainfall
- Pre-project condition
- 100% impervious condition
- Underdrain with flow restrictor in Hydrologic Soil Group C&D
- Dry wells/infiltration facilities in Hydrologic Soil Group A&B

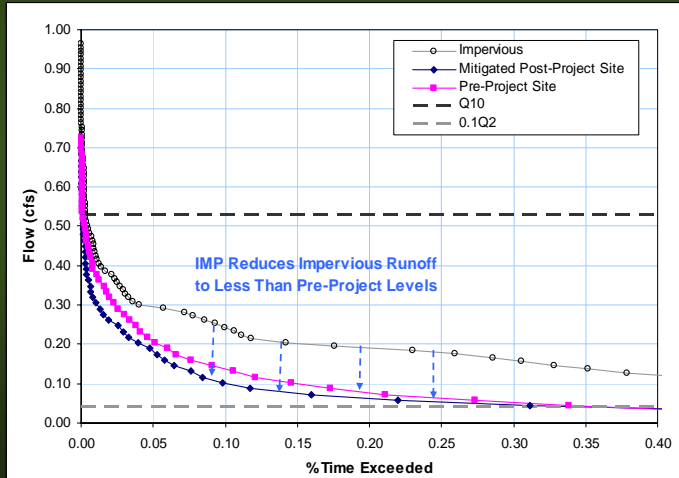


## Control of Peak Flows





## Flow Duration Control

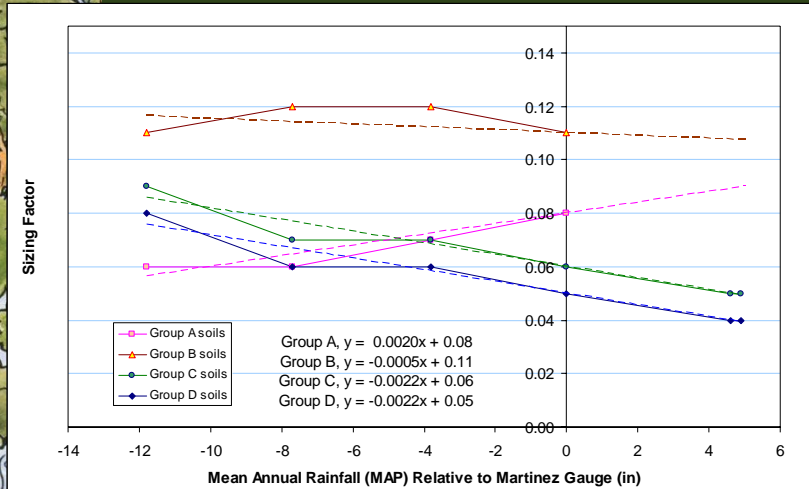


## Sizing Factors for Flow Control

IMP	Sizing Factors
In-Ground Planter	Group A: 0.08 Group B: 0.11 Group C: 0.06 Group D: 0.05
Flow-Through Planter	Group C: 0.06 Group D: 0.05
Vegetated/Grassy Swale	Group A: 0.10 to 0.14 Group B: 0.14 to 0.21 Group C: 0.10 to 0.15 Group D: 0.07 to 0.12
Bioretention Basin	Group A: 0.13 Group B: 0.15 Group C: 0.08 Group D: 0.06

IMP	Sizing Factors
Dry Well	Group A: 0.05 to 0.06 Group B: 0.06 to 0.09
Infiltration Trench	Group A: 0.05 to 0.06 Group B: 0.07 to 0.10
Infiltration Basin	Group A: 0.05 to 0.10 Group B: 0.06 to 0.16

## Adjustment to annual rainfall



## By January 24, 2008

### ■ Treatment Controls

- Remove obsolete or ineffective BMPs
- Add LID and source control BMPs
- Add treatment/LID BMPs
- Update pollutant removal efficiencies

## Pollutants of Concern

	Trash and coarse sediment	Pollutants that tend to associate with fine particles	Pollutants that tend to remain dissolved
Sediment	X	X	
Nutrients		X	X
Heavy Metals		X	
Organic Compounds		X	
Trash & Debris	X		
Oxygen Demanding		X	
Bacteria		X	
Oil & Grease		X	
Pesticides		X	

## Revisions to Table 3

### Treatment Control BMP Categories

Pollutants of Concern	Bio-retention Facilities (LID)	Settling Basins (Dry Ponds)	Wet Ponds and Wetlands	Infiltration Facilities or Practices (LID)	Media Filters	High-rate biofilters	High-rate media filters	Trash Racks & Hydro-dynamic Devices
Gross Pollutants	<b>H</b>	<b>H</b>	<b>H</b>	<b>H</b>	<b>H</b>	<b>H</b>	<b>H</b>	<b>H</b>
Pollutants that tend to associate with fine particles	<b>H</b>	<b>H</b>	<b>H</b>	<b>H</b>	<b>H</b>	<b>M</b>	<b>M</b>	<b>L</b>
Pollutants that tend to remain dissolved	<b>M</b>	<b>L</b>	<b>M</b>	<b>H</b>	<b>L</b>	<b>L</b>	<b>L</b>	<b>L</b>



## Other considerations

- Consistency with LID requirements
- Performance under adverse conditions
- Potential mosquito harborage
- Inspection and maintenance
- Aesthetics and ancillary benefits
- Hydrograph modification management



## Practically, for most sites...

1. Bioretention or infiltration
2. Bioretention with pumping
3. Conventional pond or sand filter
4. High-rate biofilter
5. High-rate media filter