

***Low Impact Development and
Municipal Stormwater Permits in
Southern California:
What, Where, Why, and How***

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**Coastal Coalition
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Objectives

- What is Low Impact Development?
 - **Development Tool**
- Where is LID Implemented?
- Why is LID Needed?
- How do we Implement LID?
 - **Development Process Problems may be More Difficult to Solve Than Technical Ones**

What is LID?

- **LID is a Site Planning Strategy That:**
 - **Matches post-development site hydrology with pre-development hydrology, and/or;**
 - **Targets watershed resource protection goals and objectives and regulatory requirements**
- **Not Just Infiltration**
- **Not Smart Growth**
- **Does Enhance Sustainability**

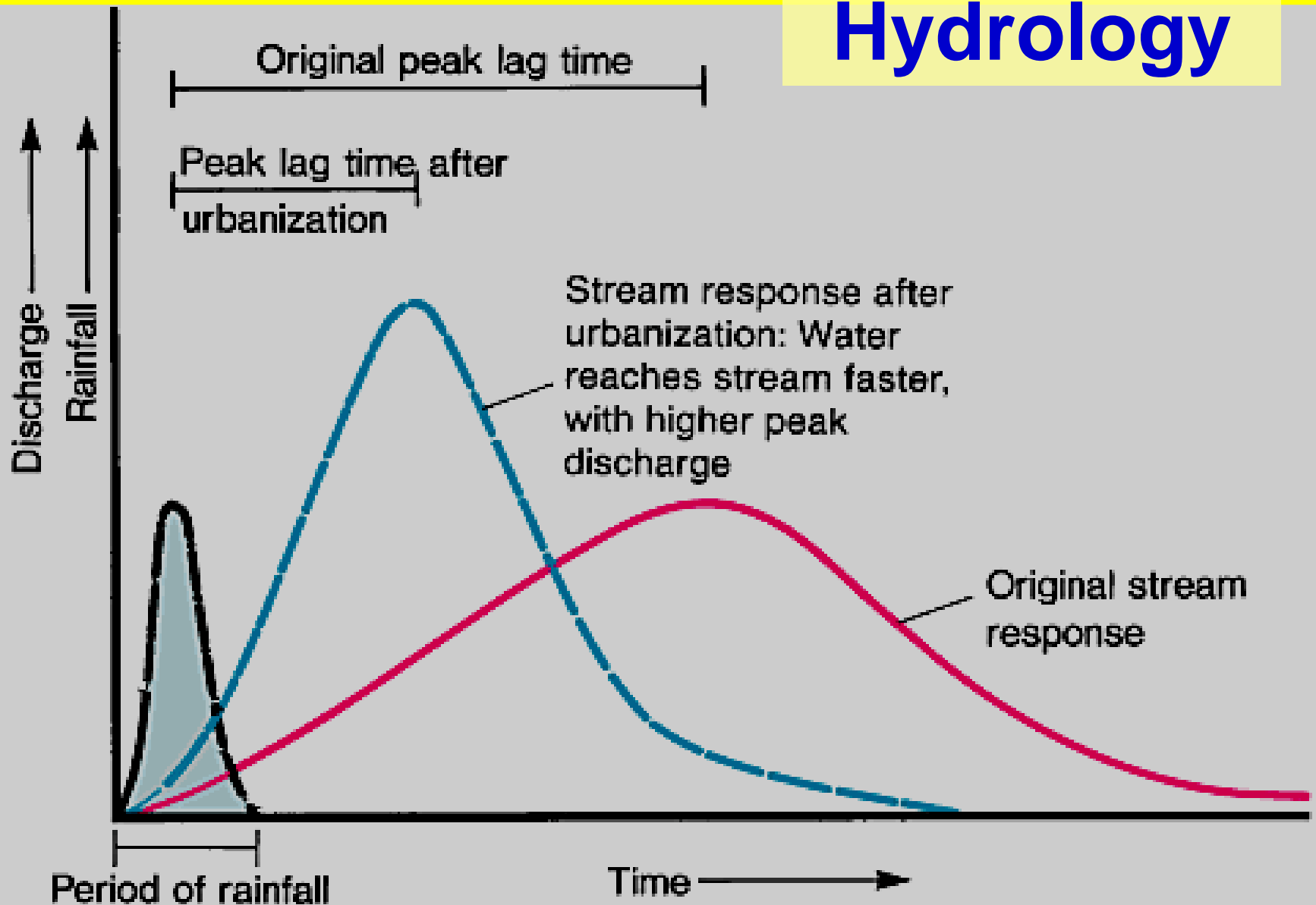
What is LID?

- **5-step Process**
 - **Preserve Sensitive or Critical Hydrologic Features**
 - **Maintain Runoff Flow Timing**
 - **Minimize Site Development Impacts**
 - **Integrate Distributed BMPs**
 - **Public Outreach for Pollution Prevention and BMP Maintenance**

What

What is LID

Hydrology



What

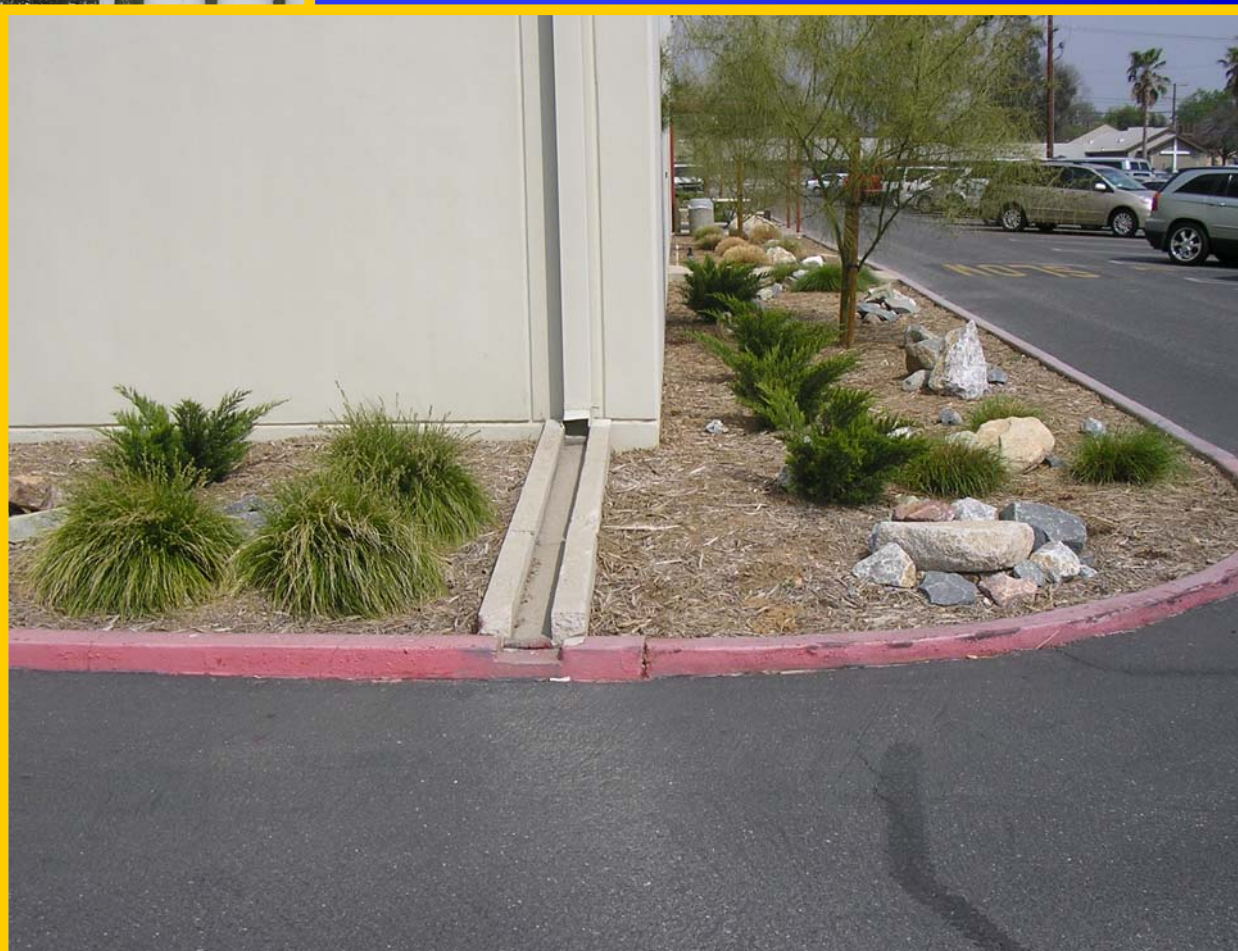
“Old” BMPs

- **Street Sweeping**
- **Catch Basins**
- **Trash Racks**
- **Filters**
- **CDS units**
- **Detention or Retention Basins**
- **Flood Control Basins**
- **Wetlands**

What



OLD



What



OLD

“New” BMPs

- Site Design or LID (Low Impact Development)
- Vegetated Swales
- Roof Drain Capture
 - Rain Barrels
 - Rain Gardens
- Green Roofs
- Infiltration Trenches
- Wetlands



What



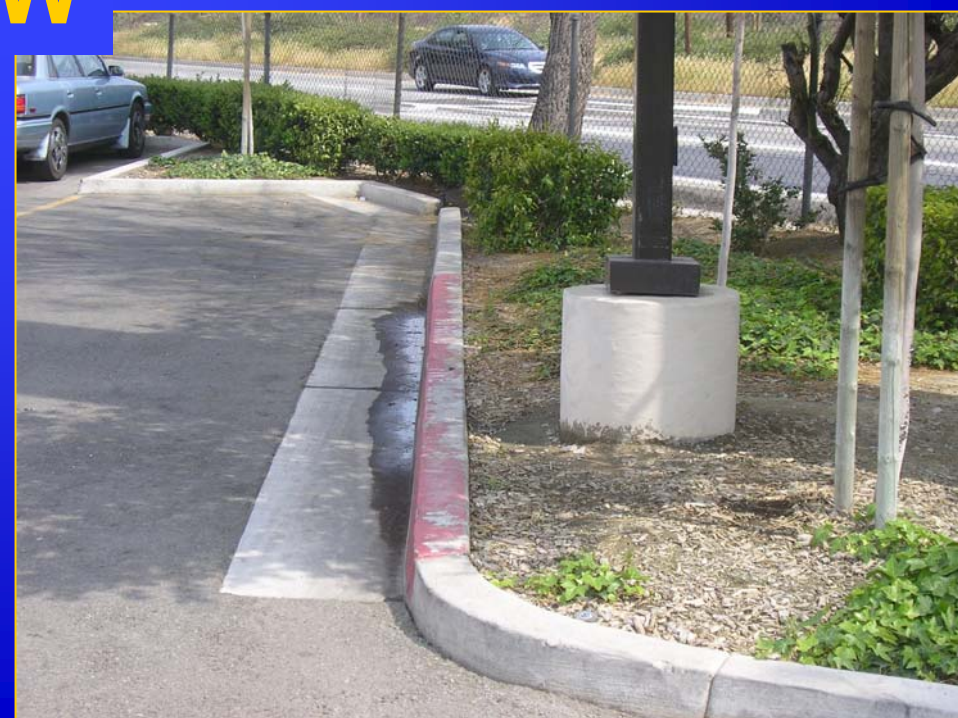
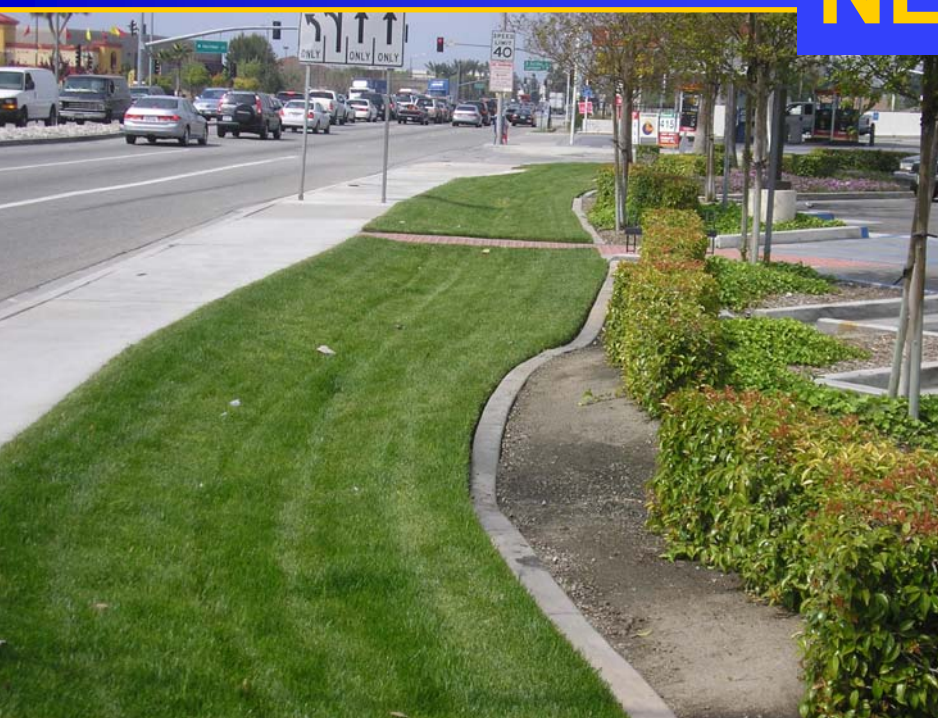
NEW



What



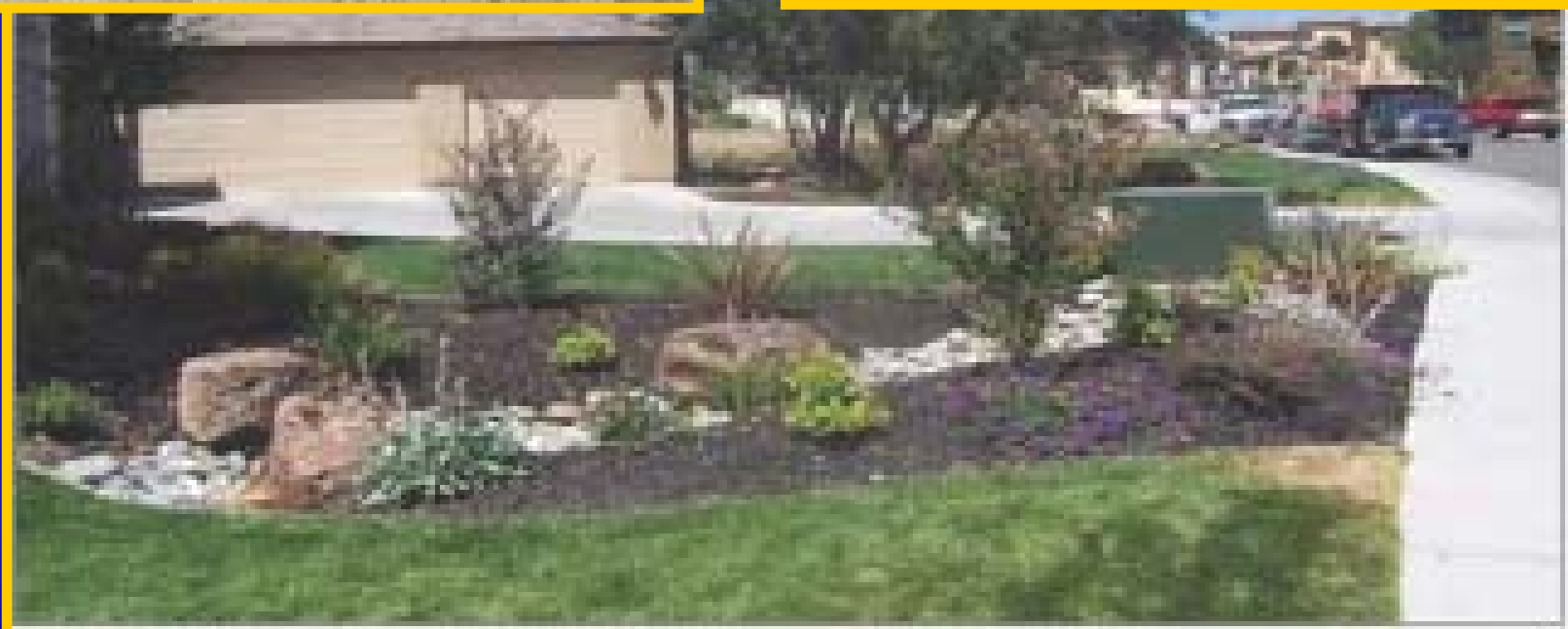
NEW



What



NEW



Why

Why is LID Needed?

- **Municipal Stormwater Permits**

 - Ventura County

 - San Diego County

 - Orange County

 - Riverside County

 - Los Angeles County

 - San Bernardino County

 - Northern CA (Bay Area, Sacramento, others)

 - Phase II General Permit

- **Construction SW General Permit**

- **NRDC**

- **Growing Sustainability Awareness**

 - **Green Building Movement**

Why

MS4 Permit Objectives

- Effectively Prohibit Non-Stormwater Discharges
- Reduce Pollutants to the Maximum Extent Practicable in all Discharges
 - Through BMP Implementation
- Achieve Water Quality Standards per Basin Plans
- Training Required for all Program Elements

Why **Where**
From Regulations to Implementation

**Federal
Clean Water
Act / USEPA**

**NPDES Permit
Authority**

**State and
Regional
Water Boards**

**LID Reqts.
In MS4
PERMITS**

LID Implementation

**Development
Projects**

**Project
Approvals**

**Local
Jurisdictions**

Why

Land Planning and Development in California MS4 Permits

- **Phase 1 Permits**
 - **Early** **1990**
 - **Middle** **1996 – 2000**
 - **Recent** **2007**
- **Phase 2 General Permit**
 - **2008 Renewal (?)**
- **Construction Stormwater General Permit**

Why

Early MS4s (50 pages)*

- Data Compilation
 - What BMPs
 - What Programs
- Prepare a DAMP
 - Proposed Modifications to existing BMPs/
Programs
 - Structural Controls—including infiltration devices, porous pavement, and grass swales
 - Non-Structural Controls

*Example from SB County

Why

Middle MS4s (70-85 p.)*

- ...shall include watershed and storm water management considerations in the ...
Permittee's General Plan... may include the following:
 - **i. Conservation; and/or**
 - **ii. Open space; and/or**
 - **iii. Land-use; and/or**
 - **iv. Public utilities; and/or**
 - **v. Infrastructure; and/or**
 - **vi. Other appropriate elements.**
- **Educate Developers: Maximization of pervious areas and storm water infiltration**

***LA County 96-054**

Why

Recent MS4s

- **San Diego County (2007, 119 p.)**
 - **More Specific Requirements**
 - **LID Specified (as LID)**
 - **Revise General Plan or Equivalent**
 - **Effective Water Quality and Watershed Protection Principles and Policies for Land-use Decisions**
 - **Implement Consistent Water Quality Protection Measures for Development Projects.**
 - **Review/Revise Environmental Review Process**

Why

Recent MS4s

- **Ventura Draft (2007-08; 122 p.)**
 - **Prioritize BMP “Suites”**
 - LID Strategies
 - Integrated Water Resource Management
 - Multi Benefit Landscape Feature BMPs
 - Modular/Proprietary BMPs
 - **LID Required for Specified Project Categories**
 - **Prescriptive Hydromod Requirements**
 - **LID Section for Technical Guidance Manual**
 - **Post-Construction BMP Tracking**

Why

Where

How

MS4 Project Categories

- **Size**
 - **1 Acre Disturbed Area**
 - **5,000 Sq Ft Project Surface Area**
 - **5,000 Sq Ft Road Projects**
- **Specific Conditions**
 - **Environmentally Sensitive Area Proximity**
- **Single Family Residential**
 - **May Be Exempt**

Why

Related Regulations

- **TMDLs**
- **DWR Landscape Ordinance (by 2010)**
 - **Water Conservation (AB 1881)**
- **State Water Board Resolution (May 6)**

Why How

LID Requirements in MS4s

- **LID Specified**
 - **We Must Implement LID**
- **Technical Manuals**
- **Planning Process Links**
- **Maintenance Plans**
- **Training**

From Regulations to Implementation

Federal
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How

LID Implementation

Development
Projects

Project
Approvals

Local
Jurisdictions

LID Reqts.
In MS4
PERMITS

How

Real-World Implementation

- **Local Agency Process**
 - **Interdepartmental Communication**
- **Design versus Built**
 - **Specifications**
 - **Inspections**
 - **Enforcement**
 - **Maintenance**
- **Acceptance**
 - **Process**
 - **Product**



**“You Don’t Understand
How Local Government Works”**

How

Real-World Implementation

- **Challenges/Barriers**
 - **Interdepartmental Cooperation**
 - **Lack of Training “Across the Board”**
 - **Difficult to Change Existing System**
 - **Education/Acceptance of/by Politicians**
 - **Conflicts with Codes**

How

Regulatory Objectives for LID

Pollutants

Hydrology

Habitat

From Regulations

Need a Square-to-Rounded Translator

To Implementation

Zoning

CEQA

Planning
Commission

General
Plan

Landscape
Ordinances

Fire
Codes

Local Jurisdiction Development Process

How

Regulatory Objectives for LID

Pollutants

Hydrology

Habitat

LID Guidance and Training

Zoning

CEQA

**Planning
Commission**

**General
Plan**

**Landscape
Ordinances**

**Fire
Codes**

Local Jurisdiction Development Process

How

Recognized Problems*

- **BMPs are Often Not Correctly Matched to the Site**
- **BMPs are Often Not Sized Correctly**
- **BMPs are Frequently Not Built Per Plans**
- **Maintenance is Typically Not Adequate**
- **Maintenance Responsibility is Often Unclear**
- **Local Jurisdictions Still Catching Up with the Requirements**

***My Prejudices**

Hope for the Future?

- **LID Techniques are Coming Via MS4 Permit Requirements**
- **Mostly Landscape-Oriented Surface Features**
 - **BMP Conditions More Obvious**
 - **Maintenance Linked to Landscape Appearance**
 - **Typically Doesn't Require Special Equipment**

How

LID Guidance and Training Project

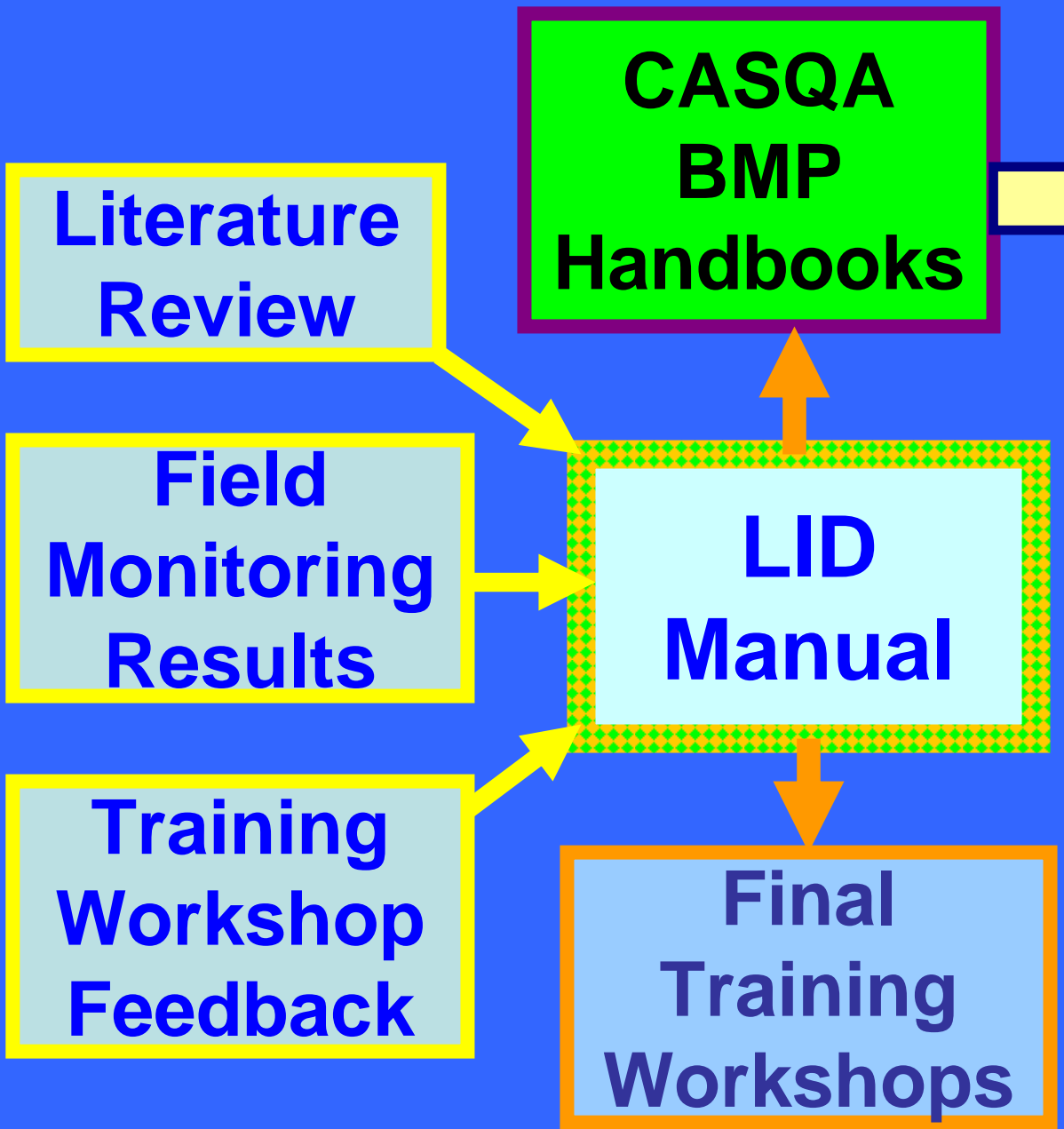
- **Project Developed By The SMC and CASQA**
 - **Training Workshops**
 - **LID Field Effectiveness Monitoring**
 - **Technical Guidance Manual Development**
 - **Should Serve MS4 Permit Needs**
 - **Coordinate with other LID efforts**
- **Prop 40 Urban Stormwater Grant (first 2-3 years)**

LID Project Timeline

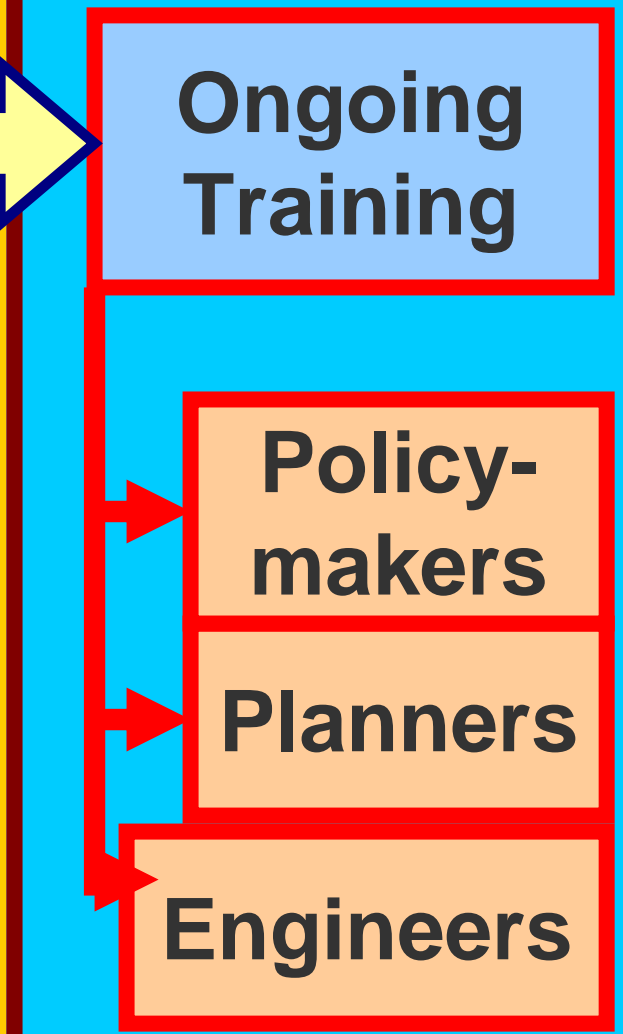
How

Year	2007	2008	2009	2010	2011
Background Info	Yellow				
Initial Training	Yellow	Yellow			
Field Monitoring		Yellow	Yellow	Yellow	Yellow
Technical Manual		Yellow	Yellow	Red	Red
Final Training			Yellow		
Ongoing Training				Red	Red
Funding Source	Prop 40		SMC + CASQA		

SMC/Grant-Funded Work



Work Needing Funding



Questions?

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