# Regional Perspective on LID Regulation and Implementation

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# Benefits of LID

- Protect water quality: More easily and effectively maintain stormwater pollutant and flow control over the long term
- Protect creeks: Maintain creek hydrology, including summer base flows
- Protect property: Reduce flood flows/peaks
- Enhance sustainable water supply
- Save water and energy
- Save money

# Climate Change and LID

- Reduce carbon footprint
- Respond to changing storm patterns
- Respond to reduced snow pack

Protect water quality while protecting air quality while addressing climate change while enhancing quality of life

# Regional Approach to LID

Goals: Re-engineer our infrastructure to be a functioning part of the ecosystem, and

Re-integrate our built environment into each watershed

How: Restore natural landscape and pre-development hydrologic regime

**Start by preserving it!**

# LID Strategies

- Store, infiltrate, and reuse runoff
- Integrate and distribute runoff retention and detention areas
- Minimize impervious surfaces
- Lengthen runoff flow paths, through vegetation and/or other disconnection – “slow and no go”
- Preserve/restore environmentally sensitive site features:

  Riparian buffers, wetlands, mature trees, flood plains, and permeable “natural” soils


Commercial Site in North Carolina


# Gap Headquarters, San Bruno

- 69,000 $ft^2$ green roof captures and stores ~70% of rainfall

$2^{nd}$ most energy-efficient building in CA

# Region 2 and LID

- Water quality certifications (mid-90s) – maintain floodplains, preserve buffers, maintain existing hydrology, treat runoff
- BASMAA's "Start at the Source" (1999) - on-line, contains major tools for LID design
- "C.3" (2001) – treatment to 10,000 $ft^2$ , includes Hydromodification Management Plan (HMP) for 1 acre and larger projects
- Contra Costa C.3 Guidebook approach: integrates treatment, HMP in distributed landscape-based features

# LID Requirements in Current Stormwater Permits

- Site designs that:
  - Maximize safe infiltration
  - Provide retention or detention
  - Slow runoff
  - Minimize impervious land cover
- Projects discharging to 303(d)-listed waterbodies - Post-project runoff must not exceed pre-project levels for pollutants impairing the waterbodies

# LID Requirements in Draft Municipal Regional Permit

**"Regulated Projects" must integrate LID principles into project design through:**

- **Source Control**
- **Site Design**
- **Stormwater Treatment**

# LID Source Control

- Covers and other precautions for outdoor material storage
- Landscaping that minimizes irrigation and runoff, promotes surface infiltration and minimizes use of pesticides and fertilizers (IPM)
- Efficient irrigation systems
- Storm drain system stenciling or signage

# LID Site Design

- Conserve natural areas and soils
- Minimize disturbances to natural drainages
- Minimize “effective impervious areas”
- Drain portion of impervious areas into pervious areas – construct pervious areas to infiltrate or treat
- Construct a portion of walkways, trails, parking lots with permeable surfaces, such as pervious concrete and porous pavers


# Stanford Medical Center

- Reduced impervious area
- Roof garden provides aesthetic benefits and large area for stormwater infiltration

# LID Stormwater Treatment

**Stormwater treatment systems in order of preference:**

- **Systems that reduce runoff, store stormwater for beneficial reuse, and enhance infiltration**
- **Multi-benefit natural feature systems, such as landscaped-based bioretention systems, vegetated swales, tree wells, planter boxes and green roofs**
- **Prefabricated and/or proprietary systems last option**

# Other Current LID Efforts

- Increased implementation flexibility
- State Board's Sustainability Resolution
- Ocean Protection Council LID Support
- Bay Area/North Coast/Central Coast Sustainability Group

# Future LID Efforts

- Higher priorities for grants
- Fee credits for reduced impervious surface
- Streamlined permit issuance
- Increased education and assistance
- More watershed focus
- Legislative support
- Improved agency coordination

# We all need help!

- Identify/address conflicting regulatory drivers
- Share lessons-learned
- Work together on sustainable funding
- Work together to educate decision-makers and public


## Frank Ogawa Plaza, Downtown Oakland

- Reduced impervious surface
- Reduced runoff

# Challenges – and Opportunity

- Expand current implementation of LID
- Build on LID successes
- Tackle the obstacles
- Work together