

Update on Navy's Storm Water Best Management Practices Model and Nationwide Low Impact Development Policy

U.S. Navy
Water Compliance Program Office
July 23, 2012

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Overview

- **Navy Stormwater Policies**
- **LID Projects Implemented**
- **WinSLAMM Model Validation**

Navy Stormwater Policies

Navy Low Impact Development (LID) Policy for Stormwater Management (Nov 2007)

- Requirements based on project **cost**
- This policy sets a goal of no net increase in storm water volume and sediment or nutrient loading from major renovation (>\$5M) and construction (>\$750K) projects.

DoD Implementation of Storm Water Requirements under Section 438 of EISA (Jan 2010)

- Requirements based on project **footprint**
- Requires the sponsor of any development or redevelopment project exceeding 5,000 square feet to use site planning, design, construction and maintenance strategies to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property in regards to temperature, rate, volume, and duration of flow.



Types of LID Projects Implemented

- Infiltration Basins/Trenches
- Bioretention
- Rainwater Harvesting (Rain Barrels & Cisterns)
- Filter Strips/Vegetated Buffers
- Grassed Swales
- Permeable Pavers
- Inlet Pollution Removal Devices
- Tree Box Filters
- Vegetated Roofs
- Soil Amendments

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Naval Base San Diego



Chollas Creek

2424 ft

Date: 8/24/2010 1994

lat 32.682885° lon -117.120550° elev 14 ft

Eye alt

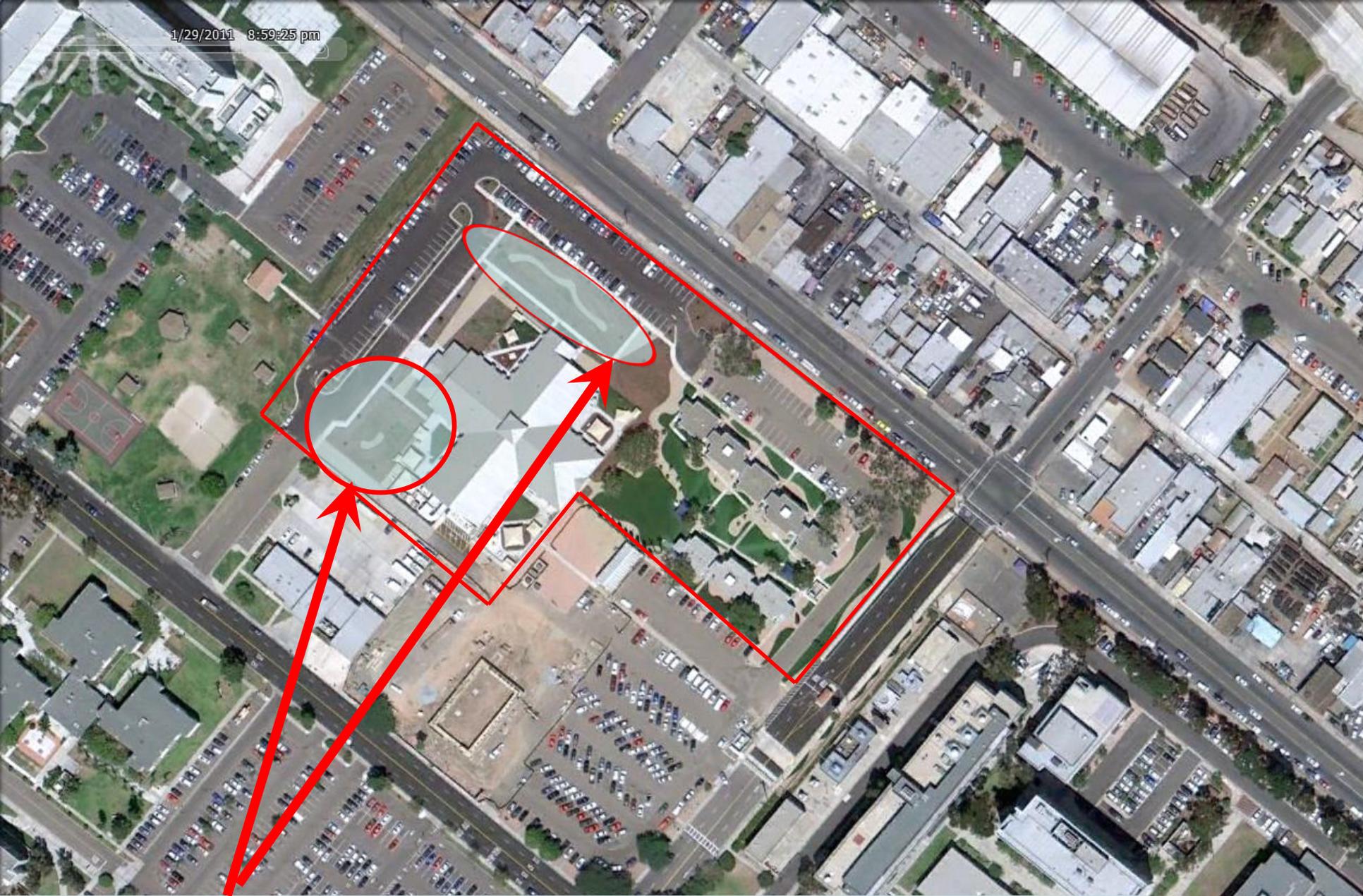
Pacific Beacon Detention Basin



681 ft



Pacific Beacon Detention Basin



Child Development Center Bioswales



Child Development Center Bioswale

WinSLAMM Model Validation

- WinSLAMM (Source Loading and Management Model for Windows) was developed to evaluate nonpoint source pollutant loadings in urban areas using small storm hydrology. <http://winslamm.com/>
- Navy's model validation project started in 2011 for two areas at Naval Base San Diego and several areas at other Navy bases.
- **GOAL:** Identify and quantify the relative contributions of metals to storm water runoff from various sources at Navy bases.
- **INPUTS:** Rainfall data, storm water sampling data, existing BMPs including low impact development, and site characteristics (roofs, parking lots, undeveloped land, etc.)

WinSLAMM Components

Contaminant Source Loading Data

- Residential
- Institutional
- Commercial
- Industrial
- Freeway
- Other*

Site Characterization Data

- Driveways
- Paved Parking
- Roofs
- Sidewalks
- Streets
- Undeveloped
- Landscaped
- Unpaved Parking
- Other Pervious
- Other Impervious*

Detailed Rainfall Data

- Hourly Data
- Duration
- Intensity

Runoff Coefficient Data

- Particle Loading
- Particle Washoff
- Particle Size

BMP Controls

- Catchbasin Cleaning
- Biofiltration
- Infiltration
- Street Cleaning
- Detention Ponds
- Grass Swales
- Hydrodynamic Devices

Focus is on the Other*
(Navy Specific
Characteristics)

WinSLAMM Model Validation Cont.

- **OUTPUTS:** Recommended BMPs & expected pollutant reductions.
- **RESULT:** WinSLAMM model calibration shows success in identifying relative source areas at Navy bases.
- **LIMITATIONS:** High variability of first flush concentration data, limited full storm concentration data, and lack of localized rain data.
- **NEXT STEP:** Identify the leaching potential of commonly found materials on Navy bases to improve model predictions.
- **CHOLLAS CREEK APPLICABILITY:** Evaluate potential use to predict storm water outfall concentrations and optimize BMP selection as we move into Phase II.

The background features a series of horizontal, wavy bands in various shades of blue, ranging from light cyan to deep navy. The bands are layered and curved, creating a sense of motion and depth. The overall effect is a modern, abstract design.

Questions?