

# LID in the Site Design Process & Other Opportunities

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## Key Questions:

Do we understand the site and its setting or relationship within the regional setting or context?

Are we choosing the correct design goals and criteria?

Storm water projects need to consider many factors:

- Regional Hydrology
- Biotic Resource considerations
- Operation and maintenance requirements
- Historical use
- Project Coordination
- Ancillary benefits:
  - Wildlife habitat
  - Passive Recreation
  - open space
  - Carbon sequestering



# Design Sequence

## Designing for site conditions

(not for architects)

- Effective LID starts at the source and at the beginning of the site planning stage of a project..
- Many projects attempt to overlay LID concepts onto a pre-developed site plan – this commonly leads to expensive and difficult solutions – commonly referred to as “greening a project”
- Integrating the LID designs into the site design upfront will typically would reduce costs, enhance the project design, achieving higher pollution load reductions, improved water quality, and provide ancillary benefits to the project.

# Multi-Disciplinary Approach

The motivation for storm water management or LID approaches from different disciplines may be different and when combined can lead to a more successful, exciting, and sustainable project:

**Civil engineering** – stability, hydrology, function, and compliance with minimum standards

**Environmental engineering** – hydrology, water quality, water reclamation, restoring or preserving ecologic function

**Architect** – form, function and art

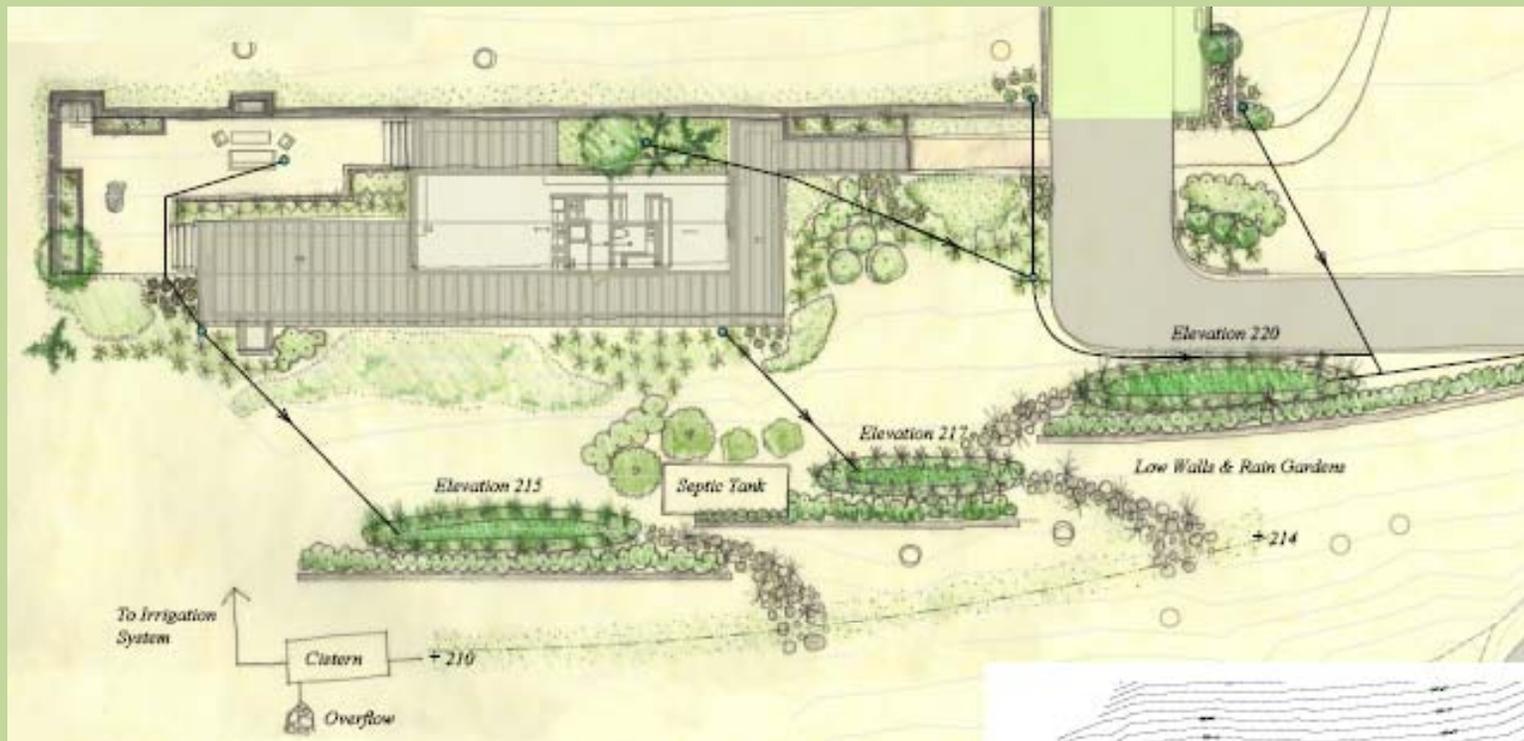
**Landscape Architect** – form, function, landscape, restoring or preserving ecologic function





## Case 3 – Landscape Architect Approach

Rain garden integrated with native landscaping, passive drainage, and rainwater harvesting



# Multiple Benefits for LID Projects

- Water quality enhancement
- Improved site planning and development
- Reduction of heat island effects
- Water harvesting/reclamation
- Carbon sequestering
- Wildlife habitat
- Flood control
- Groundwater Recharge
- Creation of open space
- Environmental justice

## Creation of Open Space

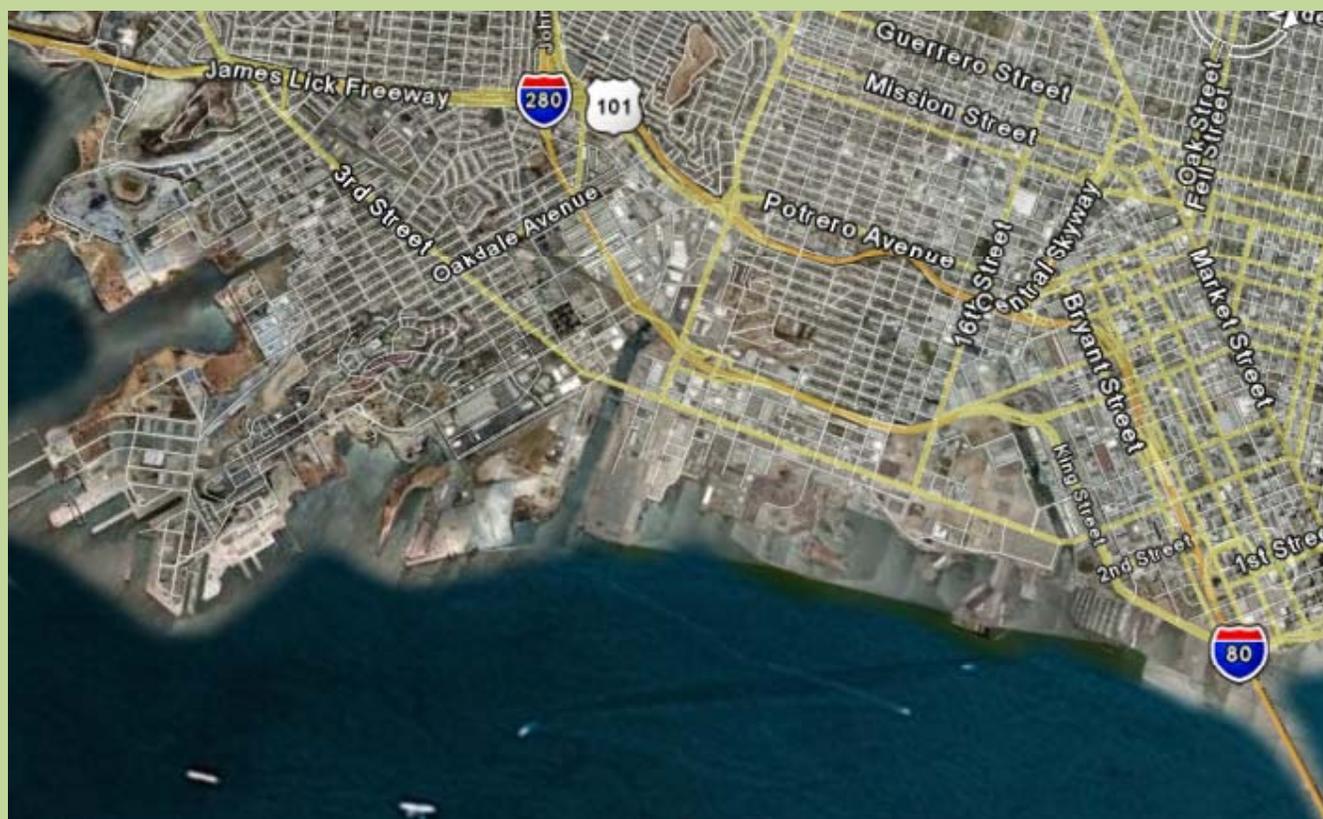
LID can lead to creation of valuable open space opportunities that can be difficult to create in urban settings.

Redevelopment projects can present unique opportunities



## City of San Francisco Southern Waterfront Storm Water Management Plan

A LID/storm water management project initiated by the SF Environmental Alliance and Bay View community leaders/groups to confront environmental justice issues related to the relocation of industries as a result of Mission Bay redevelopment.



# Project Goals

**Develop an regional storm water management plan to achieve multiple objectives:**

- Create open space for:
  - passive recreation
  - bay access
  - wildlife habitat
- Buffer residential community from industrial tenants
- Improve water quality
- Create a demonstration project(s) for replicability or emulation in other areas

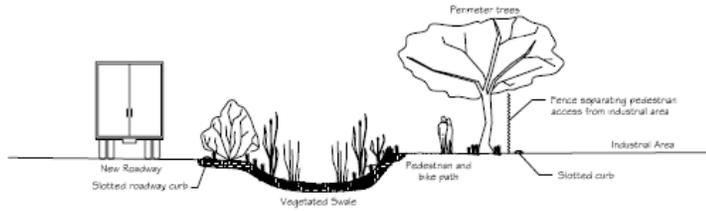




Figure 6.15. Conceptual Storm Water Plan for Future Port Development

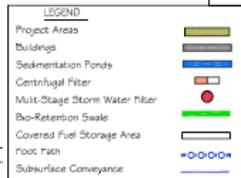
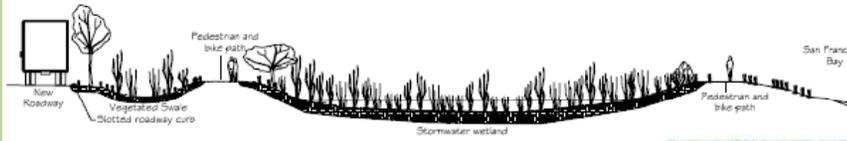


STORMWATER WETLAND DETAIL

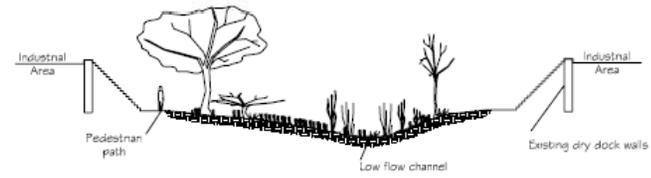


DETAIL A-A (NTS)  
VEGETATED SWALE AND PEDESTRIAN PATH ALONG ROADWAY

Figure 6.4. Conceptual Stormwater Management Plan  
Industry Group Project - Details

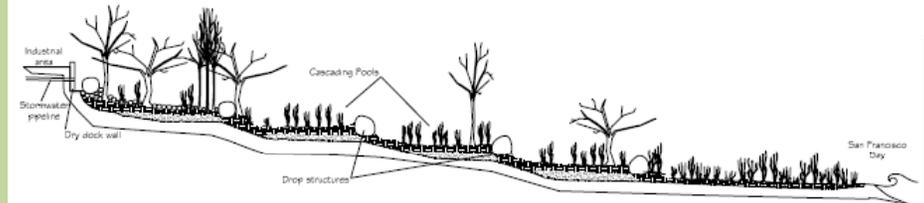


STORMWATER WETLAND DETAIL

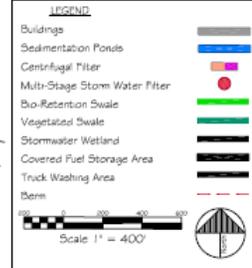


CROSS SECTION WITH FOOTPATH (NTS)

Figure 6.6. Conceptual Stormwater Management Plan  
Industry Group Project - Details



PROFILE WITH DROP STRUCTURES (NTS)



NOTE: THESE PLANS ARE CONCEPTUAL AND NOT BE REPLIED  
BASED ON PLANNING SITE ANALYSIS, PLANNING AND DESIGN.

# Conclusions

1. We are finding that LID provides an opportunity for creative and multi-objective solutions.
2. Historical and conventional development practices have and continue to degrade the environment, which is a substantial cost to the community at large.
3. Therefore, the cost of doing business is rising to pay for environmental protection, open space, water resource management and other factors.
4. Effective LID design should occur at the site planning stage of a project not after.
5. Taking a multidisciplinary approach will likely create a more viable and long-term solution.