

Low Impact Development in the Carson River Watershed

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What is Low Impact Development (LID)?

- An approach to land development or redevelopment that works with nature to manage stormwater as close to its source as possible. Examples include:
 - Vegetated swales and buffer strips
 - Permeable/pervious/porous pavement
 - Bioretention Systems (detention basins, rain gardens)
- Per EPA, *the goal of any construction project is to design a hydrologically functional site that mimics predevelopment conditions.*

Local Examples of LID



Renown rock-lined swale



United
Construction
parking lot swale

Local Examples of LID



Cabela's curb cuts and parking lot islands



Carson City Community Center infiltration feature with curb cut



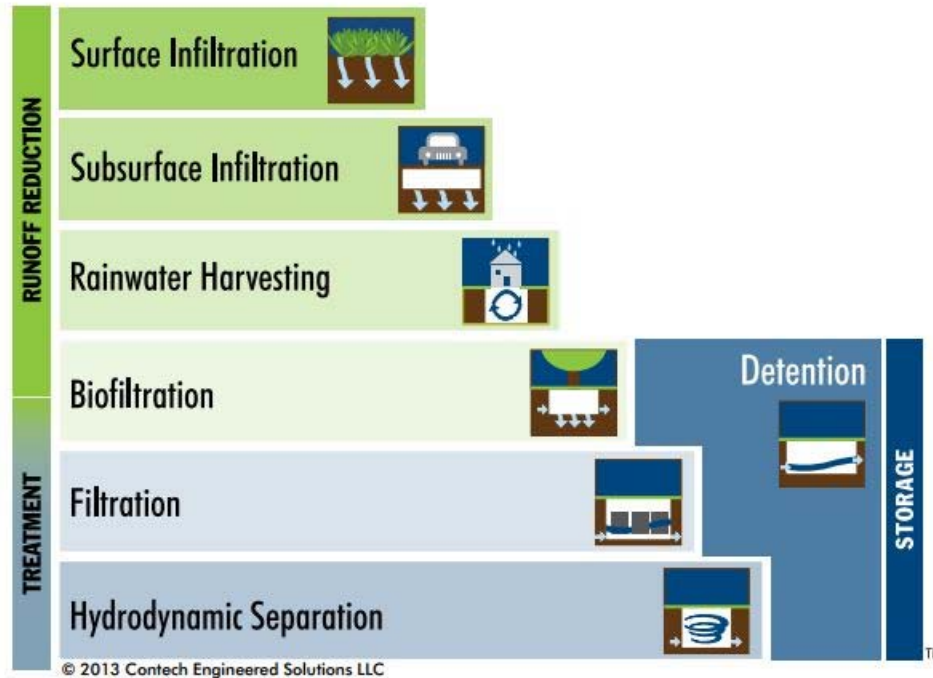
Patagonia porous pavers



LID & Green Infrastructure

- US EPA intends the term **Green Infrastructure (GI)** to generally refer to “systems and practices that use or mimic natural processes to infiltrate, evapotranspire, or reuse stormwater or runoff on the site where it was generated.”
- For stormwater, GI is an umbrella term under which some LID practices fit (swales, porous pavement, etc.)
- GI has also been used in other contexts such as open / green space planning.

LID vs. BMPs





Why LID?

- Improves water quality
- Restores aquatic habitat
- Improves groundwater recharge
- Reduces number of costly flooding events
- Enhances neighborhood beauty/aesthetics

Challenges for LID Implementation

- Site constraints (surface water, confining layers, shallow groundwater etc.)
- Paradigm shift (conveyance to infiltration)
- Required ongoing maintenance
- Private property issues
- Financing
 - Public Private Partnerships
 - Stormwater Control District Tax

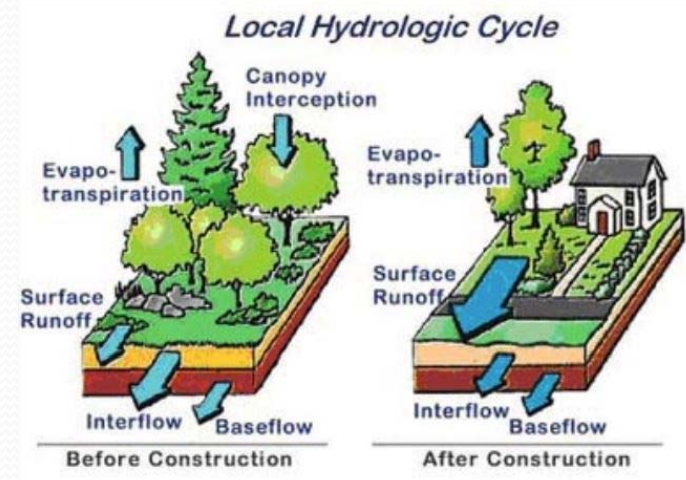


Photo courtesy of Maryland Dept of Environment



LID in the Carson River Watershed

- RCI Scope & Timeframes:
 - **April 2014:** Gather information on existing LID
 - In watershed
 - **July 2014:** Gather information on existing LID
 - Surrounding watersheds (Truckee Meadows, Tahoe)
 - **October 2014:** Develop a strategy to promote LID in the Carson River Watershed
 - **January 2015:** Final Report, including promotional and training programs, materials, etc.



LID in the Carson River Watershed

- Existing LID Programs & Stormwater Challenges:
 - Draft Ordinance → No Ordinance
 - Primarily Voluntary LID Implementation
 - Planning and Implementation across: industrial, commercial & residential (target audiences)
 - Infrastructure & Development
 - Existing vs. new
 - Redevelopment
 - Rural vs. Urban Areas
 - MS-4 Program
 - Funding, Implementation and Maintenance



Keys for LID for the Carson River Watershed?

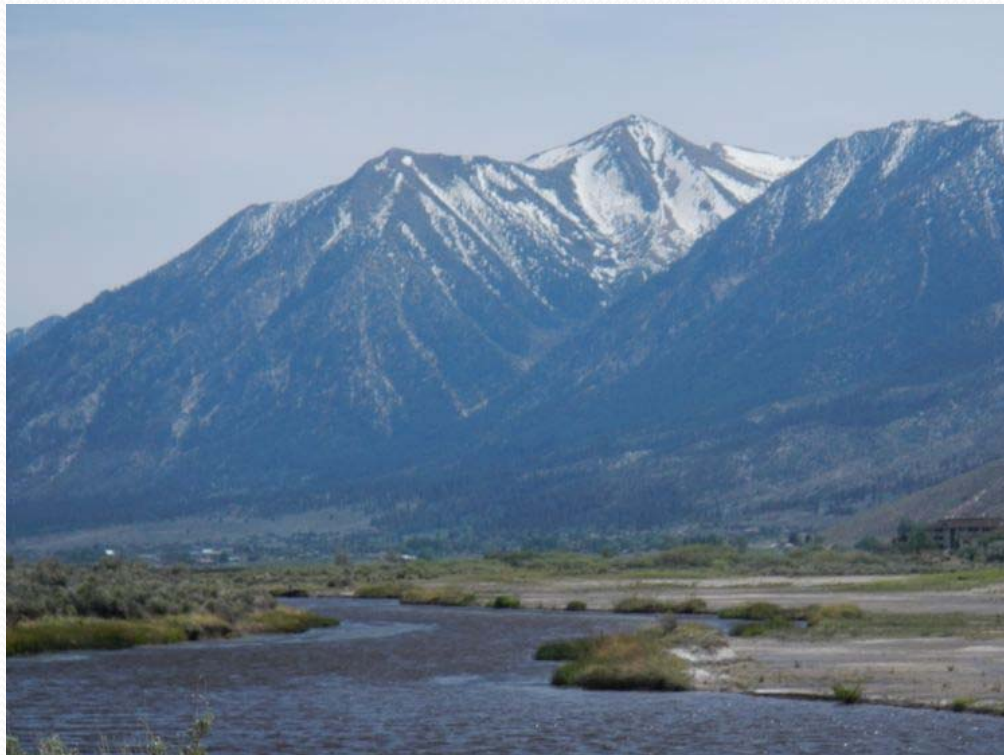
- Improved water quality:
 - Provides a way to look at stormwater as a resource rather than a nuisance
 - Helps meet the goals of reducing non-point source pollution
- Cost savings to the municipalities:
 - Reduce the need for conveyance infrastructure
 - Can be more discreet by establishing stormwater controls within landscaping
- What works best for us?



Approaches to Encourage LID Practices

- Water bill flyers
- Community design competition
- Small Municipal Separate Storm Sewer System (MS4)
- National Flood Insurance Program's Community Rating System
- Education to contractors, engineers, & municipal officials
- Outreach through nurseries and landscaping companies

Questions?



Thank you!

Photo courtesy of CWSD