



## Low-Impact Development Techniques

The permit requires that MS4's consider Low Impact Developments (LID's) for your community referenced in 4.2.5.3.2, 4.2.6.4, and 4.2.4.3.3. The following 7 categories with associated links are intended to assist communities in proper planning and Construction to encourage LID practices.

**Bio-Retention areas:** designed for site specific conditions to optimize the effectiveness of water filtration and retention. There is no standard. Creativity, ingenuity and dedication are the key to success.

- Aquatic Buffers
- Green Parking Lots
- Bioretention
- Soil Amendments
- Soil Restoration
- Created Wetlands
- Dispersal Trench
- Conveyance Furrow
- Urban Forestry
- Vegetation Restoration
- Biofiltration
- Stormwater Planters

**Green Roofs:** A bio retention area as well as a form of rain water collection; it also adds a public place and social element.

- Green Roofs
- Biofiltration

**Permeable Pavements:** allow for water to permeate through the surface, yet still give a hard surface for pedestrian and vehicular traffic.

- Break Up Flow Directions From Paved Surfaces
- Use Alternative Surfaces
- Green Parking Lots

**Rain water collection:** Utah law allows for re-use on site. For larger buildings such as offices and malls this is an impact that could greatly reduce storm drain usage in the area.

- Water Harvesting and Reuse
- Parking Lot and Street Storage
- Dispersal Trench
- Pop-Up Emitter

**Riparian Buffers:** Applied along a watershed by restricting development along creeks, streams, washes, etc. This keeps the natural flow of water, mitigates erosion and contamination, as well as provides an interconnected habitat for animals, and recreation opportunities.

- Protect Natural Site Functions
- Preserve Natural Corridors
- Aquatic Buffers



**Green Street System:** Includes the different aspects of rain gardens and swales along roads into an incorporated system for retention and filtration of storm water.

- Reduced Clearing and Grading
- Functional Grading
- Locate Impervious Surfaces to Drain to Natural Systems
- Minimize Directly Connected Impervious Areas
- Break Up Flow Directions From Paved Surfaces
- Trail and Path Network
- Narrow Roadways
- Reconfigure Driveways
- Alternative Turnarounds
- Green Parking Lots
- Stormwater Planters
- Urban Forestry
- Alternative Street Layouts
- Eliminate Curb and Gutter

**Zoning/Alternative Development Configurations and Standards:** creative zoning and development standards directed towards minimizing disturbances of the natural habitat and hydrology of the area.

- Site Fingerprinting
- Fit Development to Natural Gradient
- Alternative Development Configurations
- Define Development Envelope
- Identify Sensitive Areas
- Alternative Lot Configuration
- Reconfigure Driveways
- Alternative Turnarounds
- Reduced Sidewalk Application
- Alternative Street Layouts
- Eliminate Curb and Gutter
- Large lot sizes – higher impervious area percentage
- Cluster Zoning – consolidating development – fewer impacted areas
- Development credits – limiting overall development in a community
- Considering conservation easements
- Limit maximum Directly Connected Impervious Areas (DCIA)

References:

[www.lid-stormwater.net](http://www.lid-stormwater.net) (Tool created through Cooperative Assistance Agreement under the US EPA Office of Water 104b(3) Program)

<http://www.epa.gov/owow/NPS/lid/lid.pdf>

[http://www.deq.idaho.gov/water/data\\_reports/storm\\_water/catalog/sec\\_3/text.pdf](http://www.deq.idaho.gov/water/data_reports/storm_water/catalog/sec_3/text.pdf)

Permit Reference #: 4.2.5.3.2, 4.2.6.4, 4.2.4.3.3