

Key Principles of LID

Environmental Protection

Natural features, such as wetlands, woodlands, and stream buffers are protected. By preserving these features, natural drainage patterns can be identified and used as green infrastructure, biodiversity is retained, and wildlife habitat is protected.

Storm Water Management

Rather than flowing off site, water is directed to infiltration-based storm water management practices and absorbed

Benefits of Low Impact Development

to residents:

- increases community character
- improves quality of life
- increases open space
- promotes pedestrian-friendly landscaping

to developers:

- reduces land clearing and grading costs
- reduces infrastructure costs (streets, curbs, gutters, sidewalks)
- increases lot values and community marketability

to communities:

- balances growth needs with environmental protection
- reduces infrastructure and utility maintenance costs

to the environment:

- protects environmentally-sensitive areas
- increases wildlife habitat by preserving trees and vegetation
- protects water quality by reducing pollutant loads
- reduces stream bank and channel erosion by reducing peak flows and moderating the frequent bounce associated with lower intensity storms
- reduces flooding potential

on site. Keeping water on site reduces pollutant loads, moderates peak stream flow rates and volume, and enhances base flows.

Community Character

In residential settings, homes typically open up to open space and feature recreational trails. Native landscaping provides aesthetic value, adequate storm water conveyance, distribution of water flow, and filtration of pollutants.



The parking lot of the Northern Plains Resource Council building in Billings, Montana consists of a grid of rings (recycled plastic) over a geotextile fabric that holds the small gravels in place. 100% recycled glass cullet was used instead of gravel in the top layer.

More Information About Low Impact Development

www.lowimpactdevelopment.org

www.cwp.org

www.stormwatercenter.org

www.montana.edu/www/pb/pubs/mt9707.html

www.epa.gov/owow/nps/lid



United States
Department of
Agriculture

Natural
Resources
Conservation
Service

Montana
2007



Low Impact Development

... absorbs rainwater, protects water quality,
minimizes flooding

The Impacts of Storm Water Runoff on Water Resources

Historically, much of Montana's rainwater and snowmelt stayed where it fell, soaking into healthy grassland and forest soils to replenish groundwater and, eventually, making its way to our rivers and streams. Today, rainwater in developed areas is often sent directly into storm sewers where it is flushed into our streams and rivers along with pollution from roads, parking lots, or yards. As we add more roofs, pavement, and compacted turf to our communities, it is more important than ever to help rainwater infiltrate the soil to minimize flooding and protect water quality.

In typical urban settings, soils are heavily compacted from the development process. Land is also covered with impervious surfaces, such as roofs, streets, and

sidewalks. Consequently, land is unable to absorb storm water. Instead, storm water is collected and conveyed as quickly and efficiently as possible to surface waters. This speeded-up process concentrates and delivers urban pollutants such as sediment, hydrocarbons, metals, bacteria, and fertilizers to our streams, rivers, and lakes. These waters serve many uses including drinking water and recreation.

What is Low Impact Development?

There is a changing trend in land development and storm water management throughout the United States. It has been called many things, including smart growth, conservation development, and low impact development (LID).

LID is an alternative, ecologically-sensitive design that mimics the way natural areas store and infiltrate rainwater. The LID approach protects local and regional water quality by decentralizing storm water management and absorbing rainfall throughout the landscape.

Low impact development minimizes the amount of impervious surfaces and mitigates the impact of necessary impervious surfaces. There are a variety of conservation practices that work together to mitigate these effects, such as pervious paving, rain gardens, bioretention cells, bioswales, native landscaping, and soil quality restoration.



A bioretention cell manages runoff from the imperviousness of a commercial parking lot. A bioretention cell is a low impact development practice because it allows rainwater to infiltrate, minimizes flooding and protects water quality.

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The LID Approach to Storm Water Management

