



Minnesota
Pollution
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Agency

Low Impact Development

An Introduction for Minnesota Businesses

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Low impact development (LID) is a type of stormwater management that strives to mimic the natural hydrology of the watershed by allowing water to filter through soil before entering ground water. LID techniques capture stormwater runoff, including rain and snowmelt, from paved and developed surfaces, and can reduce the amount of nutrients, sediments, heavy metals, and other pollutants that enter Minnesota's waters.

How does LID benefit the environment and my business?

Using LID can have a positive impact on the environment and your business by providing the following benefits.

Environmental benefits of LID:

- reduce erosion
- improve water quality
- decrease stormwater runoff volume
- improve air quality
- provide wildlife habitat
- protect public health

Business benefits of LID:

- can help demonstrate environmental stewardship
- can be used to achieve regulatory requirements
- may reduce stormwater utility fees
- may cost less to install than conventional stormwater management systems

- may reduce long term maintenance costs
- may increase property value
- increases aesthetics and employee morale



Curb cuts allow water to enter vegetated areas.

What LID Techniques can be used in business developments?

Typical practices include:

- rain gardens, vegetated filter strips, grass swales
- permeable pavement or pavers, narrower streets, curb cuts
- rain barrels and green roofs

For more detailed information about these techniques, visit the links under 'Resources' at the end of this document.

Can I use LID if my site is fully developed?

Absolutely. LID can be applied to new development as well as redeveloped sites for existing or expanding businesses. Retrofitting your property to incorporate

LID can be as easy as disconnecting your downspouts and directing water into a rain barrel or onto the landscaping, or using porous pavers on your parking lot or sidewalks.



Rain garden at Bank West, Hanover, MN

What LID techniques can be used at my type of business or industry?

LID works almost everywhere, so regardless of the type of business you have there is something that can work for your site. Using LID gives you the ability to tailor stormwater management to your site characteristics like soil type and space availability. Use caution if your business is in an area where ground water contamination is a concern, like karst regions or areas with a high water table. Also, be sure to follow city and state regulations for stormwater management. LID may still be used, but the installation and technique used may take some extra planning.

Does LID work in cold-weather climates?

Studies at the University of Minnesota have shown that, if properly constructed and maintained, low impact development techniques have worked very well in cold-weather climates. Rain gardens and porous pavers have been shown to work well in cold climates, and pervious asphalt allows water to filter through the pavement and into the soil rather than flowing off-site. This lessens the chance of re-freeze, and may require less salting.

How much does LID cost?

Low impact development techniques can be more cost effective than conventional stormwater controls like curbs, gutters, storm drains, piping and stormwater ponds which, according to the Center for Watershed Protection, can cost two-to-three times more than engineered grass swales and other LID techniques. The cost of LID techniques is site-specific and depends on soil types and other factors, so it is a good idea to ask your architect or engineering firm how low impact development could work for you. For more information about cost, visit www.lid-stormwater.net/background.htm.

What financial help is available?

Some soil and water conservation districts (SWCD) offer cost-share programs, up to 75 percent of the total cost of the project, to help businesses offset the costs of installing conservation practices that protect and improve water quality. Visit www.maswcd.org/index.htm to find your local SWCD. Some cities subsidize rain gardens and the purchase of rain barrels, so check with your city to see if assistance is available. Watershed districts and water management organizations may also offer grants or other financial assistance.

Will I really make a difference?

Yes! Low-impact development practices are flexible and do not need to be large or complicated to be effective.

Visit this Web site to learn about some businesses in Minnesota that have successfully incorporated LID into urban landscapes: www.pca.state.mn.us/publications/p-gen3-04.pdf.



Intersection of impervious asphalt (left) and pervious asphalt (right)

Where do I start?

For help getting started with low impact development for your business, call the MPCA's Small Business Environmental Assistance Program at 651-282-6143.

Resources

MPCA's LID Web page:

www.pca.state.mn.us/water/stormwater/stormwater-lid.html

Low Impact Development Center:

www.lowimpactdevelopment.org/

Minnesota Stormwater Manual:

www.pca.state.mn.us/water/stormwater/stormwater-manual.html

Environmental Protection Agency LID page:

www.epa.gov/nps/lid/