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This Assistance Bulletin only applies to property within unincorporated Snohomish County and does not apply to property within incorporated city limits.

# Low Impact Development (LID) Best Management Practices (BMPs)

Assistance Bulletin

# # 22

Revised February 2016

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**Keyword: Assistance Bulletins**

## **Q:** Why do we need Low Impact Development (LID)?

**A:** Stormwater runoff is a significant cause of water quality problems in the state of Washington. Stormwater runoff from roofs, paved and graveled roadways, highways, parking lots, lawns, playfields and other surfaces is often polluted with toxic metals, organic compounds, and bacterial and viral pathogens that can harm human health, drinking water, and fish habitat. LID is a stormwater management and land development strategy that can be applied to projects at the individual parcel or subdivision scale. This strategy emphasizes conservation and the use of on-site natural features combined with engineered, small-scale hydrologic controls to closely mimic pre-development hydrology.

LID BMPs provide stormwater management alternatives that may be used instead of, or in conjunction with conventional stormwater management techniques to meet stormwater management regulations. Use of LID stormwater management options can help prevent measurable harm to streams, lakes, wetlands and other natural aquatic systems resulting from commercial, residential, or industrial development.

In order to comply with the County's Phase I Municipal Stormwater Permit, Chapter 30.63A SCC (Drainage) requires the use of LID site planning principles and on-site management BMPs that could be considered LID for all projects that must meet minimum requirements 1-5 or 1-9 in Chapter 30.63A SCC. The LID BMPs and minimum requirements are described in greater detail in the Snohomish County Drainage Manual, Volumes I-V (Drainage Manual).

## **Q:** What are LID site planning principles?

**A:** The main principle behind LID is to utilize natural processes to the greatest extent possible to manage stormwater. This means that site disturbance during development should be minimized. The natural conditions of the site should influence the development design to minimize the need for grading, vegetation removal and impervious surfaces.

## **Q:** Where can I find the County's LID regulations?

**A:** Chapter 30.63A SCC, the Drainage Manual and the Engineering Design and Development Standards (EDDS) contain the County's drainage regulations. Use of LID BMPs is required where feasible for projects vested on or after January 22, 2016.

Additional helpful information is available here:

<http://www.snohomishcountywa.gov/1489/NPDES-Permit-Reissue-Project>

## **Q:** Where can I find the County's LID BMPs?

**A:** The LID BMPs are located in the Snohomish County Drainage Manual, Volumes III and V. Volume V, Chapter 5 describes the on-site LID BMPs. The Drainage Manual can be reviewed on-line at: <http://www.snohomishcountywa.gov/1130/Drainage-Manual>.

This bulletin is intended only as an information guide. The information may not be complete and is subject to change. For complete legal information, refer to Snohomish County Code.

## Q: Are LID BMPs ever required?

**A:** Use of LID BMPs is required where feasible in accordance with SCC 30.63A.010. In some cases, a feasibility analysis may document that use of LID BMPs would not be effective for stormwater management. Also, some projects may be exempt from the drainage requirements in accordance with SCC 30.63A.200, or an exception may apply where most LID BMPs will not be required (see SCC 30.63A.210).

## Q: What categories of LID BMPs are there?

**A:** There are three categories of LID BMPs described in the Drainage Manual. They are:

- Hydrologic analysis and flow control BMPs (Volume III)
- Source control BMPs (Volume IV)
- Runoff treatment BMPs (Volume V)

In addition, there are BMPs required during the construction process to prevent or minimize adverse stormwater impacts from construction activities (i.e., sedimentation, on-site pollutants and erosion) on downstream resources and on-site stormwater facilities. These BMPs must be documented in a Stormwater Pollution Prevention Plan (SWPPP). SWPPP BMPs are contained in the Drainage Manual, Volume II. For small projects meeting criteria in SCC 30.63A.810, see Drainage Manual, Volume I, Appendix I-F for SWPPP requirements.

## Q: Which LID BMPs are required by Chapter [30.63A](#) SCC?

**A:** LID BMP requirements are determined based on which minimum requirements (MRs) are applicable to your project. Each MR has its own requirements and/or associated BMPs. Provided that your project is not exempt from the County's drainage requirements per SCC 30.63A.200, MR and LID BMP requirements are applied based on criteria and thresholds set forth in SCC 30.63A.300 (new development), SCC 30.63A.310 (redevelopment), SCC 30.63A.810 (small projects), or SCC 30.63A.700 (road maintenance redevelopment). There are some helpful flow charts in the Drainage Manual, Volume I, pages 12-14, to help determine which MRs will apply to your project (see also [Bulletin #89](#)). In general, most projects will be subject to one of the following scenarios:

- MR 2 (SWPPP) only;
- MRs 1 through 5; or
- MRs 1 through 9

The MRs are described in the Drainage Manual, Volume I, Chapter 2, and include:

- MR 1: Preparation of Stormwater Site Plans
- MR 2: Stormwater Pollution Prevention Plans (SWPPPs)
- MR 3: Source Control of Pollution
- MR 4: Preservation of Natural Drainage Systems and Outfalls
- MR 5: On-site Stormwater Management
- MR 6: Runoff Treatment
- MR 7: Flow Control
- MR 8: Wetlands Protection
- MR 9: Operation and Maintenance

Each of these MRs is associated with specific LID BMPs to accomplish the desired outcome (i.e. on-site stormwater management, flow control, treatment of runoff, etc.). The LID BMPs are described in the Drainage Manual, Volumes I-V, organized by functional category. Volume V, Chapter 5 describes the on-site stormwater LID BMPs. Required BMPs for MR 5 are listed in Volume I, Chapter 2, Section 2.5.5 and described in greater detail in Volume V, Chapter 5, or elsewhere in the Drainage Manual as specified.

## Q: What are some examples of LID BMPs?

**A:** Some LID BMPs are used during the construction phase while others provide permanent stormwater management. Commonly used LID BMPs include site planning, tree and vegetation retention and planting, rain gardens, bioretention swales, concentrated or sheet flow dispersion through native vegetation or landscaped areas, vegetated filter strips, post construction soil quality and depth (see [Bulletin #94](#)), vegetated roofs and permeable pavement.

BMPs for stormwater management during construction can be reviewed in the Drainage Manual, Volume II, or Volume I, Appendix I-F for small projects. More detail for on-site stormwater LID BMPs can be reviewed in Volume III, Section 3.1 and Volume V, Chapter 5.

**Q: What is permeable pavement and where are the standards for it?**

**A:** Permeable pavement is a collective term for pervious concrete, porous asphalt and permeable pavers (concrete or plastic). Permeable pavement is gaining wider usage as its characteristics become better understood. Standards for permeable pavement are included in Chapter 11 of the Engineering Design and Development Standards (EDDS). Permeable pavement is also discussed in the Drainage Manual, Volume V, Chapter 5 (BMP T5.15, pg. 68-71).

**Q: What is a vegetated roof and where are the standards for it?**

**A:** Vegetated roofs are thin layers of engineered soils and vegetation constructed on top of conventional flat or sloped roofs. Vegetated roofs can provide stormwater volume reduction and flow attenuation. The range of benefits for a green roof depends on a number of design factors such as plant selection, depth and composition of soil mix, location of the roof, orientation and slope, weather patterns, and the maintenance plan. Applicants are not required to consider using vegetated roofs, however, they are an option available to project designers who want to use other methods to meet the LID Performance Standard option of Minimum Requirement #5. Structural design must consider the weight of the soil and vegetation as well as the weight of retained stormwater. Standards can be reviewed in the Drainage Manual, Volume V, Chapter 5 (BMP T5.17). Building codes for vegetated roofs are addressed in the 2015 International Building Code, Section 202.

**Q: Can I modify drainage regulations or deviate from stormwater-applicable requirements of the Engineering Design and Development Standards (EDDS)?**

**A:** Yes, modifications and waivers are allowed subject to the requirements in SCC 30.63A.170, SCC 30.63A.830 and 30.63A.840. Requests for modifications from Snohomish County Code and any deviation required from the EDDS shall be submitted under one proposal as a comprehensive site analysis.

**Q: Are there special conditions of approval?**

**A:** As a condition of approval for applications under this chapter, the County may require adoption of covenants and restrictions and the granting of necessary easements to preserve and maintain LID BMPs. Special construction sequencing may also be required.

**Q: How do I determine if LID is feasible on my property?**

**A:** Under certain conditions such as steep slopes, clay soils or in areas of high groundwater table, LID BMPs cannot function properly. In other situations LID BMPs may function but may not have design capacity to fully manage the expected volume of stormwater. In both cases, the efficacy of the LID BMPs must be determined through a feasibility analysis and hydrologic modeling. The Drainage Manual, Volume I, Chapter 2, Section 2.5.5 provides prioritized lists of BMPs and LID performance standards for meeting requirements under MR 5. Volume V, Chapter 5 describes the LID BMPs and identifies infeasibility criteria for each BMP. Where LID BMPs cannot provide the necessary level of stormwater management, conventional stormwater facilities may be constructed. In some cases it may be possible to utilize both LID BMPs and conventional facilities.

**Q: Can the size of conventional stormwater facilities be reduced with LID?**

**A:** The Snohomish County Drainage Manual explains how individuals can obtain credits to help them reduce the size of their stormwater facilities by using LID techniques.

**Q: Do LID facilities and techniques require maintenance?**

**A:** Yes. In order to maintain stormwater management functions over the long term some of the LID BMPs require maintenance. Maintenance requirements, where needed, are identified in the Drainage Manual along with the specific descriptions and standards for each individual BMP. Lack of maintenance could result in localized flooding and property damage. Section 30.63A.575 SCC requires as part of MR 9 that owners inspect and maintain stormwater facilities on their property as described in an operation and maintenance manual. Property owners need to be familiar with the location, function and maintenance requirements of any stormwater facility located on their property to ensure long term efficacy and to avoid inadvertent damage to or destruction of the facility.

**Q: How do LID techniques protect critical areas?**

**A:** Stormwater management techniques can complement regulations protecting critical areas by protecting water quality and controlling sedimentation and erosion.

**Q: What if my project was vested prior to January 22, 2016?**

**A:** Projects vested prior to January 22, 2016, may be subject to the previous LID requirements in chapter 30.63C SCC. Chapter 30.63C SCC determined that use of LID BMPs was optional except in the Little Bear Creek Basin where LID BMPs were required. Prior to September 30, 2010, there was an earlier set of regulations that projects may still be vested to.

**Q: How can I get more information on Low Impact Development?**

**A:** Call (425) 388-3311 or submit questions online at [AskPermitTech@snoco.org](mailto:AskPermitTech@snoco.org). Remember, asking questions first can save lots of headaches, heartaches and money!