

Sean Darcy

Comments to the Draft Low Impact Development Minimum Requirements for New Development and Redevelopment presented August 12, 2010.

1) Rainwater Harvesting

Rainwater harvest for irrigation in rain gardens, green roofs, and general landscaping should be included as a conservation tool available for satisfying the minimum LID requirements. As such, additional updates in Volume III, section 3.1 Roof Downspout Controls in the Stormwater Management Manual for Western Washington, other than “approved by the reviewing authority” are needed. In addition, some commercial and industrial sites may be able to have a daily usage volume that is fairly significant to reduce stormwater discharges from coming into contact with pollution generating sources (e.g. source control measure).

2) Attachment #1 Feasibility Review Criteria – Site/Engineering Constraints

In general, local condition exemptions should be included into the feasibility process. It is probably safe to say that the site/engineering constraints list will grow over time as more experience is obtained. A few additions for your consideration are below.

A. Bioretention/Rain Gardens

1. Conflicts with Americans with Disability Accessibility and/or Pedestrian Accessibility Requirements.
2. Areas that contain a high risk and/or liability associated with flooding.
3. Avoid arterials, major intersections, and high traffic areas.
 - a. Road Sand - Just a single snowfall event results in the formation of curb inlet debris dams from the traction sand. Street sweeping does assist, but not enough to minimize formation of the debris dams in the inlet. Examples are available per request showing accumulated traction sand blocking curb inlets after 60 - 90 days from a snow event.
 - b. Rain gardens with deciduous trees - As the leaves fall, the leaves can act as a debris dam, blocking inlets from the road surface, as well as from inside the system. Biomass buildup from decayed, matted leaves can also diminish surface infiltration rates. Examples are available per request showing accumulated leaves blocking curb inlets and causing water to buildup into the roadway for small rainfall events.
4. Avoid industrial areas – adequate pretreatment should be required for any water quality facility in an industrialized area.
5. Soil Infiltration rates to be less than 0.15 in/hr.

- a. If a facility is expected to obtain a water quality credit, it is imperative that this infiltration rate be achievable for an extended period of time without continual maintenance.
 - b. Biomass buildup, gross pollutant buildup, sediment loading, etc. must be accounted for in the determination of this rate. The infiltration rate should be no less than 0.5 in/hr after correction factors are applied to obtain a water quality credit for residential, and no less than 1.0 in/hr for other land uses where higher loads are anticipated.
 - c. Suggest that the review agency is allowed to determine an acceptable infiltration rate after correction factors are applied as they are ultimately responsible party for inspection and maintenance.
6. Expand the definition of not compatible with surrounding drainage systems to include conflicts with satisfying Minimum Requirement #4 (preservation), possibly Minimum Requirement #5, as well as on-site conservation measures (rainwater harvesting, living walls, etc.).
 7. Suggest increasing the minimum vertical separation from the seasonal high water table from 3 feet to 6 feet.
 8. Slopes – If bioretention or rain garden systems are getting a water quality credit, then there must be assurance that runoff actually enters into the facility. Areas with slight or moderate slope are more susceptible to “flow slipping” or “inlet jumping” where the water bypasses the facility’s inlet. Curb inlets are susceptible to uneven paving, settling of pavement and curb, debris buildup, and at times poor design or construction.

B. Permeable Pavements

1. Conflicts with Americans with Disability Accessibility and Pedestrian Accessibility Requirements.
2. Areas that contain a high risk and/or liability associated with flooding.
3. Water quality credits – Suggest not including a six inch layer of media for permeable pavement that is poured. Poured permeable pavement facilities can not easily inspect the media layer without substantial equipment. Inspection and maintenance are more accessible for pavers.
4. Incompatible with Minimum Requirement #4 (preservation), a building or its surroundings that cause shading. The intent is to minimize permeable materials in areas that are prone to shading and moss build-up that may increase siltation and maintenance. This could also be considered a safety concern as moss tends to be rather slippery. Examples are available per request showing moss overtaking permeable materials.

5. Suggest omitting “regular and heavy” from “Sites that receive regular, heavy applications of sand to maintain traction during winter.” Even small amounts of sand can cause pooling on the surface.
- 3) “Ecology may be able to concur with a municipal decision to grant relief on a case-by-case basis using the variance/exception provisions.” pg 7

If the LID performance standard and the mandatory list can not be utilized, and the project does not meet the feasibility review criteria (site/engineering constraints, Attachment 1) than use of the variance/exception process is implied.

A site developer would than have to go through a similar process as the one below.

- A. Legal Public Notice
- B. Findings of Fact
- C. Record Keeping
- D. Project specific design exceptions, Ecology needed for jurisdiction wide exceptions.
- E. Exceptions
 - a. Economic hardship
 - b. Restrictions of the proposed use vs. existed to prior adoption of the minimum requirements.
 - c. Possible remaining uses that would have been allowed prior to adoption of the minimum requirements.
 - d. Comparison of the estimated amount and percent of value loss as a result of minimum requirements versus the estimated amount and percent of value loss as a result of requirements that existed prior to adoption of the minimum requirements.
 - e. Feasibility for the owner to alter the project to apply the minimum requirements.
- F. Exceptions must meet the following criteria:
 - a. The exception will not increase risk to the public health and welfare, nor injurious to other properties in the vicinity and/or downstream, and the quality of waters of the state; and
 - b. The exception is the leas possible exception that could be granted to comply with the intent of the minimum requirements.

In the event that Ecology’s site/engineering constraints are not broad enough to cover a local condition or project specific conflict, Ecology should consent to the review agency to allow exceptions for determining LID feasibility. The local agency should be able to have an acceptable LID feasibility adjustment process without triggering an exception/variance process. If local conditions are not incorporated into the process, Ecology will run the risk of having a policy that implements LID for the sake of LID, but not where it is practical and functional. The end result may be failed LID facilities due to policy rather than reasonableness, because everyone will typically attempt to avoid an arduous exception and/or variance process.