

XIV.1. Hydrologic Source Control Fact Sheets (HSC)

HSC-1: Localized On-Lot Infiltration

‘Localized on-lot infiltration’ refers to the practice of collecting on-site runoff from small distributed areas within a catchment and diverting it to a dedicated on-site infiltration area. This technique can include disconnecting downspouts and draining sidewalks and patios into french drains, trenches, small rain gardens, or other surface depressions. For downspout disconnections and other impervious area disconnection involving dispersion over pervious surfaces, but without intentional ponding, see HSC-2: Impervious Area Dispersion.

Also known as:

- Downspout infiltration
- Retention grading
- French drains
- On-lot rain gardens



On-lot rain garden
Source: lowimpactdevelopment.org

Feasibility Screening Considerations

- ‘Localized on-lot infiltration’ shall meet infiltration infeasibility screening criteria to be considered for use.

Opportunity Criteria

- Runoff can be directed to and temporarily pond in pervious area depressions, rock trenches, or similar.
- Soils are adequate for infiltration or can be amended to provide an adequate infiltration rate.
- Shallow utilities are not present below infiltration areas.

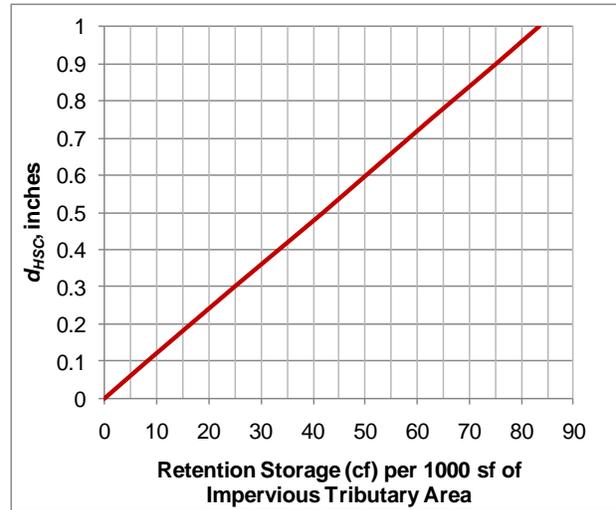
OC-Specific Design Criteria and Considerations

- A single on-lot infiltration area should not be sized to retain runoff from impervious areas greater than 4,000 sq. ft.; if the drainage area exceeds this criteria, sizing should be based on calculations for bioretention areas or infiltration trenches.
- Soils should be sufficiently permeable to eliminate ponded water within 24 hours following a 85th percentile, 24-hour storm event.
- Maximum ponding depth should be should be less than 3 inches and trench depth should be less than 1.5 feet.
- Infiltration should not be used when the depth to the mounded seasonally high table is within 5 feet of the bottom of infiltrating surface.
- Infiltration via depression storage, french drains, or rain gardens should be located greater than 8 feet from building foundations.
- Site slope should be less than 10%.
- Infiltration unit should not be located within 50 feet of slopes greater than 15 percent.
- Side slopes of rain garden or depression storage should not exceed 3H:1V.
- Effective energy dissipation and uniform flow spreading methods should be employed to prevent erosion resulting fromwater entering infiltration areas.

- Overflow should be located such that it does not cause erosion or and is conveyed away from structures toward the downstream conveyance and treatment system. .

Calculating HSC Retention Volume

- The retention volume provided by localized on-lot infiltration can be computed as the storage volume provided by surface ponding and the pore space within an amended soil layer or gravel trench.
- Estimate the average retention volume per 1000 square feet impervious tributary area provided by on-lot infiltration.
- Look up the storm retention depth, d_{HSC} from the chart to the right.
- The max d_{HSC} is equal to the design capture storm depth for the project site.



Configuration for Use in a Treatment Train

- Localized on-lot infiltration would typically serve as the first in a treatment train and should only be used where tributary areas do not generate significant sediment that would require pretreatment to mitigate clogging.
- The use of impervious area disconnection reduces the sizing requirement for downstream LID and/or conventional treatment control BMPs.

Additional References for Design Guidance

- LID Center – Rain Garden Design Template.
http://www.lowimpactdevelopment.org/raingarden_design/
- University of Wisconsin Extension. Rain Gardens: A How-To Manual for Homeowners.
<http://learningstore.uwex.edu/assets/pdfs/GWQ037.pdf>