

RESIDENTIAL SIMPLIFIED DRAINAGE REVIEW - SUBMITTAL EXAMPLE

Published: 2/1/2018

The purpose of this section is to illustrate the application of simplified drainage requirements to a house being built on an existing lot. The example illustrates the drainage assessment, site plan and Small Site CSWPP plan. Although the example was written for an existing lot in King County, the level of detail included is an example of what could be used for a single lot in the City of Renton.

The written drainage assessment is as follows:

Drainage Assessment

Malene McResident Residence
7519 NE Q Street

The project is located east of Duvall on a 1.69-acre lot that is zoned RA. The lot is mostly forested with a wetland on the northeast corner of the property. The lot slopes down from Q Street on the south to P Street on the north. The slope on the south portion of the property is 6-14%. The house and yard are proposed on the southern portion of the lot. The driveway will be approximately 10 feet by 120 feet (1,200 square feet) of impervious surface, the parking area 1,200 square feet, and the house 3,750 square feet (SF). The total proposed impervious surface is 6,150 square feet. The total proposed clearing for the house, yard, and driveway is 0.84 acres (36,590 square feet).

The wetland is a Category III wetland with a minimum required buffer width of 60 feet as determined in meetings with CED. By definition, the wetland is also a flood hazard area for which a floodplain and base flood elevation must be determined. Subject to CED review and approval, an approximate base flood elevation of 452 has been estimated based on a downstream overflow elevation of 450 (see attached notes from the project's land surveyor). This elevation is well below the proposed house and driveway location.

The portion of the lot that is on a 40-50% slope is a steep slope hazard area as determined in meetings with CED. A 15-foot building setback as shown on the on-site BMP plan is required. Dispersion and infiltrative BMPs are not allowed within 200 feet of a steep slope hazard area without approval by a geotechnical engineer unless approved by the CED. The CED determined that dispersing of the roof runoff toward the steep slope was acceptable, as shown on the plan.

Because the lot is larger than 22,000 square feet, it is subject to the Large Lot BMP Requirements in Appendix C of the *Renton Surface Water Design Manual*. As mandated by these requirements, all proposed impervious surface (6,150 square feet) is targeted for application of on-site BMPs. As for new pervious surface (totaling 30,440 square feet), it is less than 3/4 acre; therefore, no on-site BMPs are required for this surface beyond the requirement that the existing native topsoil be retained to the maximum extent practicable. Soil amendments will be provided to mitigate for lost moisture holding capacity where compaction or removal of underlying topsoil occurs.

On-Site BMP Analysis for Feasibility

To address the requirements for mitigation of target impervious surface, the applicability and feasibility of the on-site BMPs were evaluated based on the order described per Section C.1.3. The following summarizes the feasibility analysis:

- (1) Full Dispersion – Infeasible – After subtracting out the wetland and the portion of the lot that may be cleared, about 34,000 square feet of the lot will remain as unsubmerged native vegetated surface. This means that full dispersion could be applicable to up to 5,100 square feet of the target impervious surface (15% of 34,000). However, because of the lot's topography and the location of proposed clearing, there is no way to achieve the minimum required 100 feet of native vegetated flowpath segment that has a slope of 15% or flatter. Therefore, full dispersion is not feasible.
- (2) Full Infiltration – Infeasible – According to the attached soils report, the soil on the project site is a sandy loam underlain by dense glacial till. Therefore, full infiltration is not applicable.
- (3) Limited Infiltration/ Rain Gardens/Bioretenion/Permeable Pavement – Infeasible – These On-site BMPs were considered for the driveway and parking area, but the geotechnical report recommended against this since the underlying soils do not have properties considered adequate to protect groundwater nor does it have the minimum required 0.3 in/hr measured infiltration rate below the on-site BMP.
- (4) Basic Dispersion – Feasible – To implement basic dispersion, the roof downspouts of the proposed house will discharge via splash blocks to minimum 50-foot vegetated flowpath segments located on slopes no steeper than 15% as shown on the site plan. No more than 700 square feet of roof area will discharge to any one splash block and vegetated flowpath segment.

The northern portion of the driveway will be discharged via sheet flow over a 10-foot vegetated flowpath segment to the north, as shown on the site plan. Runoff from approximately 700 square feet of the southern portion of the driveway will be collected by a rock-lined ditch and a concrete driveway berm and discharged to a 12-foot-long dispersion trench with notch board and then over a 25-foot vegetated flowpath segment toward the north. The 30-foot wide parking area will be discharged via sheet flow over a 2-foot-wide crushed rock strip and a vegetated flowpath segment of 15 feet as shown on the site plan.

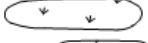
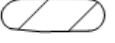

Erosion Control Evaluation

In order to prevent erosion and trap sediments within the project site, the following BMPs will be used approximately as shown in the ESC details on the CSWPP plan:

- Clearing limits will be marked by fencing or other means on the ground.
- The driveway will be constructed and graveled immediately. A rocked construction entrance will be placed at the end of the driveway. Dispersion trenches will be placed according to flow control requirements. Cleared areas accepting sheet flow from the driveway and parking area will be seeded and mulched.
- Runoff will not be allowed to concentrate and no water will be allowed to point discharge onto the slopes.
- Silt fencing will be placed along slope contours at the downslope limit of clearing.
- Mulch will be spread over all cleared areas of the site when they are not being worked. Mulch will consist of air-dried straw and chipped site vegetation.

EXHIBIT A - ON-SITE BMP SITE PLAN

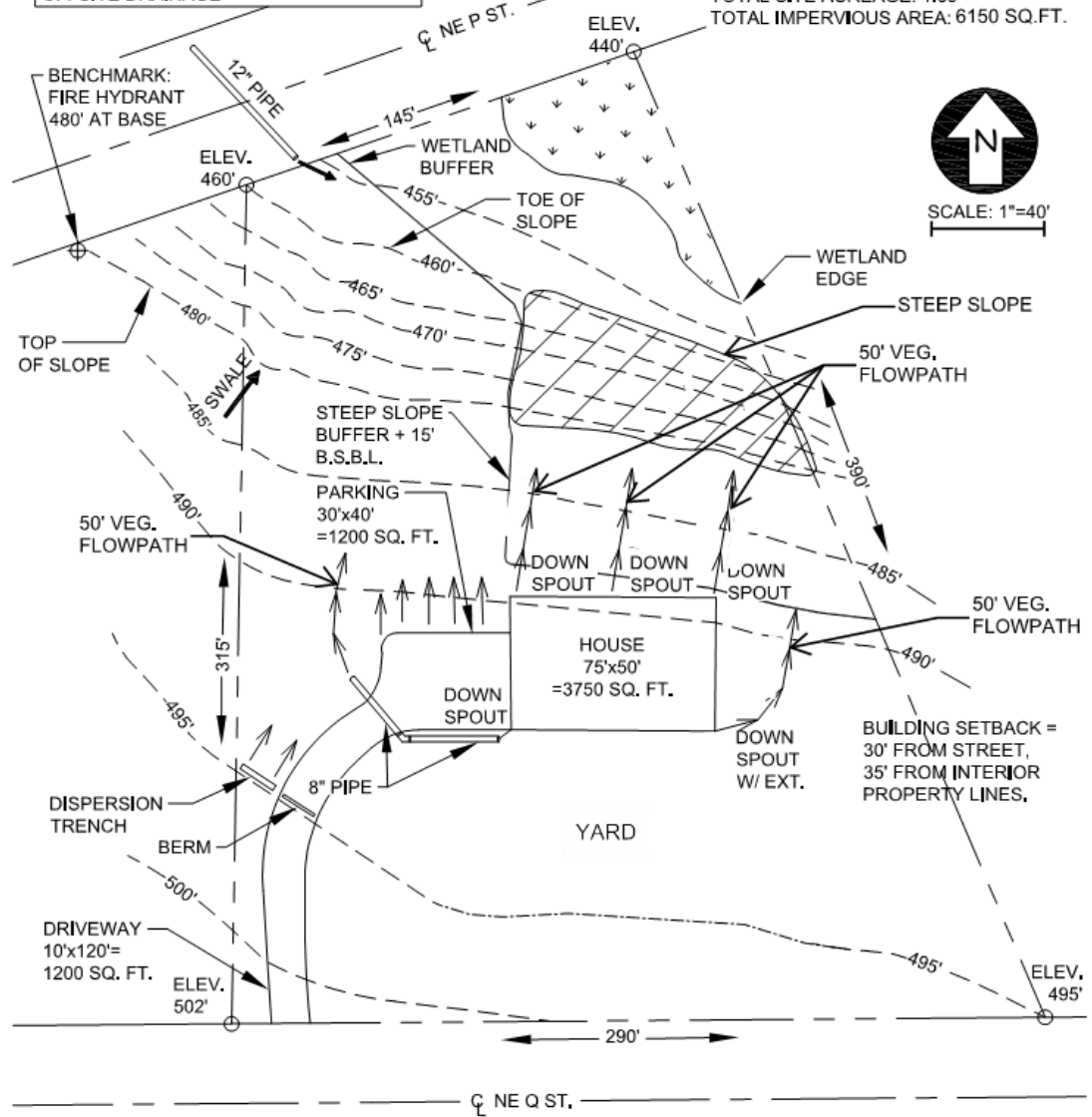
TOTAL LOT/SITE AREA:	73,616 SQ. FT./1.69 AC	PERMIT NO.:	
ADDRESS:	7519 NE Q Street, Renton, WA 98111	PARCEL NO.:	322708-0001
NEW/ REPLACED IMPERV. AREA (SF):	6,150	DISTURBED AREA (SF):	36,590
ON-SITE BMP(S) USED:	Basic Dispersion with Splash Blocks, Gravel Filled Trenches, and Sheet Flow		
MAX. IMPERVIOUS SURFACE ALLOWED (SF):	18,404		

LEGEND:
 PROPERTY LINE - - - - -
 ST. CENTERLINE - - - - -
 CONTOUR - - - - -
 WETLAND 
 STEEP SLOPE (40%+) 
 OFFSITE DRAINAGE 

APPLICANT: Malene McResident
 600 NE Z Street
 Sometown, WA. 98111
 (206) 555-1212

PROJECT PARCEL NO.= 322708-0001
 PROJECT ADDRESS= 7519 NE Q Street
 (proposed) RENTON, WA. 98111
 SECTION/TOWNSHIP/RANGE: 32-27-08

TOTAL SITE ACREAGE: 1.69
 TOTAL IMPERVIOUS AREA: 6150 SQ.FT.

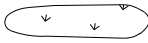





 SCALE: 1"=40'

SMALL SITE CSWPP PLAN (EROSION CONTROL PLAN)

TOTAL LOT/SITE AREA:	73,616 SF. SQ./1.69 AC	PERMIT #:	
ADDRESS:	7519 NE Q Street, Renton, WA 98111	PARCEL NUMBER:	322708-0001

LEGEND:

- PROPERTY LINE ————
- ST. CENTERLINE ————
- CONTOUR ————
- WETLAND 
- STEEP SLOPE (40%+) 
- OFFSITE DRAINAGE 
- S.A.S.B. = SENSITIVE AREA SETBACK

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 TOTAL IMPERVIOUS AREA: 6150 SQ. FT.

CSWPP/ESC CONTACT:
 Malene McResident (206) 555-1212
 DISTURBED ACREAGE: APPROX. 0.84

