



Rural Stormwater Solutions

MANAGING STORMWATER RUNOFF FOR RURAL LANDOWNERS

Understanding Your Site Conditions

Do you have ponding water in your driveway, water coursing through your yard, or do your downspouts overflow? If so, you have a stormwater management challenge! This fact sheet will get you on your way to finding solutions that could help you protect your property and local waterways and groundwater.

Rainfall flowing off rooftops, lawns, cleared lots, gravel roads or parking lots all produce stormwater runoff. When left unmanaged, this runoff can cause flooding and erosion on your property and can transport pollutants from the landscape to nearby streams, rivers, lakes or marine waters and harm aquatic ecosystems.

Most stormwater management efforts have focused on urban watersheds due to the high densities of people, pollutant sources and impervious areas. However, rural stormwater runoff can harm rural properties and roadways and degrade water quality.



Figure 1. Rural runoff can lead to flooding and property damage. Credit C. Thompson.

Rural areas have many high-quality natural resources such as clear, clean streams, wild salmon, healthy forests, open pastures, and abundant wildlife. Poor stormwater management can harm water quality and impact these resources. Rural areas lack the stormwater management infrastructure found in cities. Curbs, gutters, and storm drains are often absent on country roads, rural properties, or smaller subdivisions. Rural areas can flood, even with fewer paved surfaces, fewer homes, and less traffic. Compacted gravel roads, buildings, and farm structures are susceptible to runoff problems without the benefit of big-city solutions.

What to do?

This fact sheet provides guidance for understanding your property and instructions for developing your own site and drainage map. Once you have created your map, check out the fact sheet [Options for Managing Surface Water Drainage](#). It provides ideas for resolving your specific drainage issues.

Making a site map of your property

A site map is a simple diagram that shows how water flows on your parcel of land. Drawing a site map will help you identify ways to solve your drainage problems as you review your options for managing stormwater on your property. Even a very basic drawing can be quite helpful and informative. A detailed version, as described below, will be something that will likely also be valuable to you in the future.

The available space, soil type, the type and amount of vegetation, the gradient of the landscape, and presence of adjacent sensitive areas such as wetlands, bluffs, or steep slopes, are all important factors to be considered when developing a plan to manage stormwater.

What to include on your map?

A site drainage map should include the following.¹

1. Scale at which site plan is drawn (for example 1" = 20')
2. North arrow so you can orient the map
3. Names and location of adjacent roads
4. Adjacent land uses (such as forest, residential lawn, pasture, etc.)
5. Property lines and dimensions
6. Buried utility lines (phone, electric, water, sewer, cable, etc.)
7. Slopes, bluffs, streams, wetland areas, ponds, or waterfront, if present
8. Existing structures and their dimensions, such as your house, garage, pumphouse, or shop
9. Driveways, garden areas, patios, and decks
10. Septic tank, drain field, and well, if present
11. Large trees, areas of native or natural vegetation
12. Building and property line setback distances, if known
13. Existing drainage pathways

Below is an example of a site map drawn to scale on graph paper.

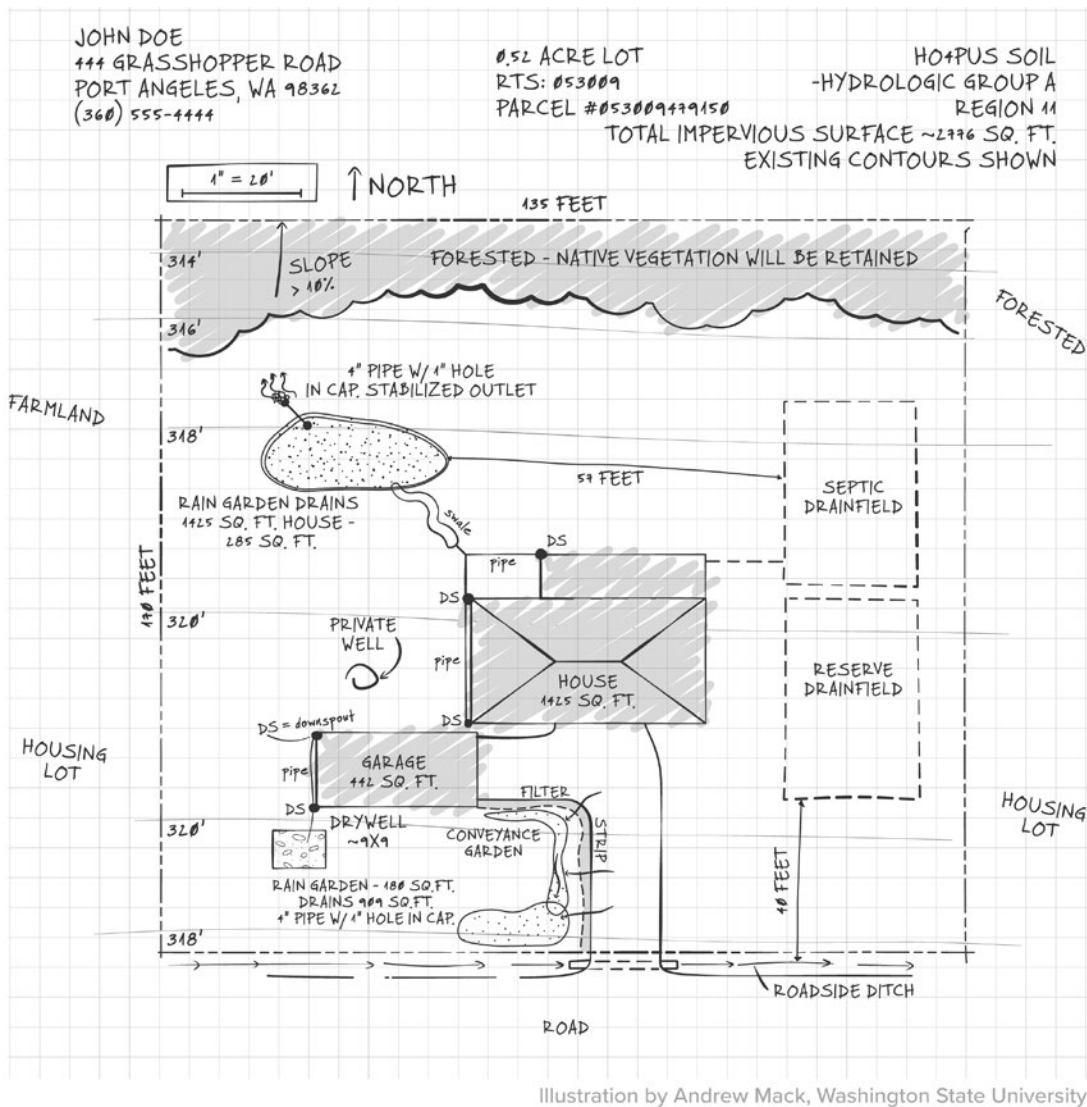


Figure 2. Example of a site map drawn to scale²

Materials needed to prepare your site map:

- ▶ Measuring tape (100' suggested)
- ▶ Clipboard
- ▶ Ruler
- ▶ Pencil and eraser
- ▶ Graph paper

You might also find a right-angle triangle, french curve and a circle template helpful.

Before you begin you might visit an online mapping program such as Google maps to find your property; or see if your county has a GeoData or GIS website. Zooming in and printing out an aerial image of your property can improve your accuracy and help identify drainage issues in the vicinity. You might also visit your county's community development webpage. Most counties have maps that show drainage infrastructure, zoning, Critical Areas, and soil types.

Begin by taking a quick walk around the yard and noticing the location of the house, other structures, trees, property lines, and other features listed above. Then get to work taking measurements and add those onto your plot plan³.

Determine your soil types

Next, you'll want to determine the soil types on your property so you'll understand the areas where water may infiltrate into the soil. Most of the strategies available for drainage in rural areas rely on infiltration.

A good start to determining your soil type is to look at the information compiled by the **Natural Resources Conservation Service (NRCS)** (<https://www.nrcs.usda.gov/wps/portal/nrcs/main/wa/soils/>). Note that the NRCS soils maps cannot be relied upon for site-scale accuracy, so you will need to verify your soil types. The maps do provide a good idea of how the soils vary in your area, as well as the characteristics of soils. Many counties have GIS-based maps with satellite views, parcels, soils, slopes, waterways, etc. available online. You should evaluate your soils yourself, focusing on the soil texture; this video (https://puyallup.wsu.edu/soils/video_soiltexture/) provides guidance. A simple perc test will provide even more information, and is necessary for some of the water management strategies (directions can be found on pages 15-16 of the **Rain Garden Handbook for Western Washington** [<https://apps.ecology.wa.gov/publications/publications/1310027.pdf>]).

Add the soil information to your site map. To complete your map, show where water flows through your property and where it ponds, as best you can. Show any water that leaves your property. Figures 3 and 4 are examples of maps illustrating the flow of water and potential solutions.

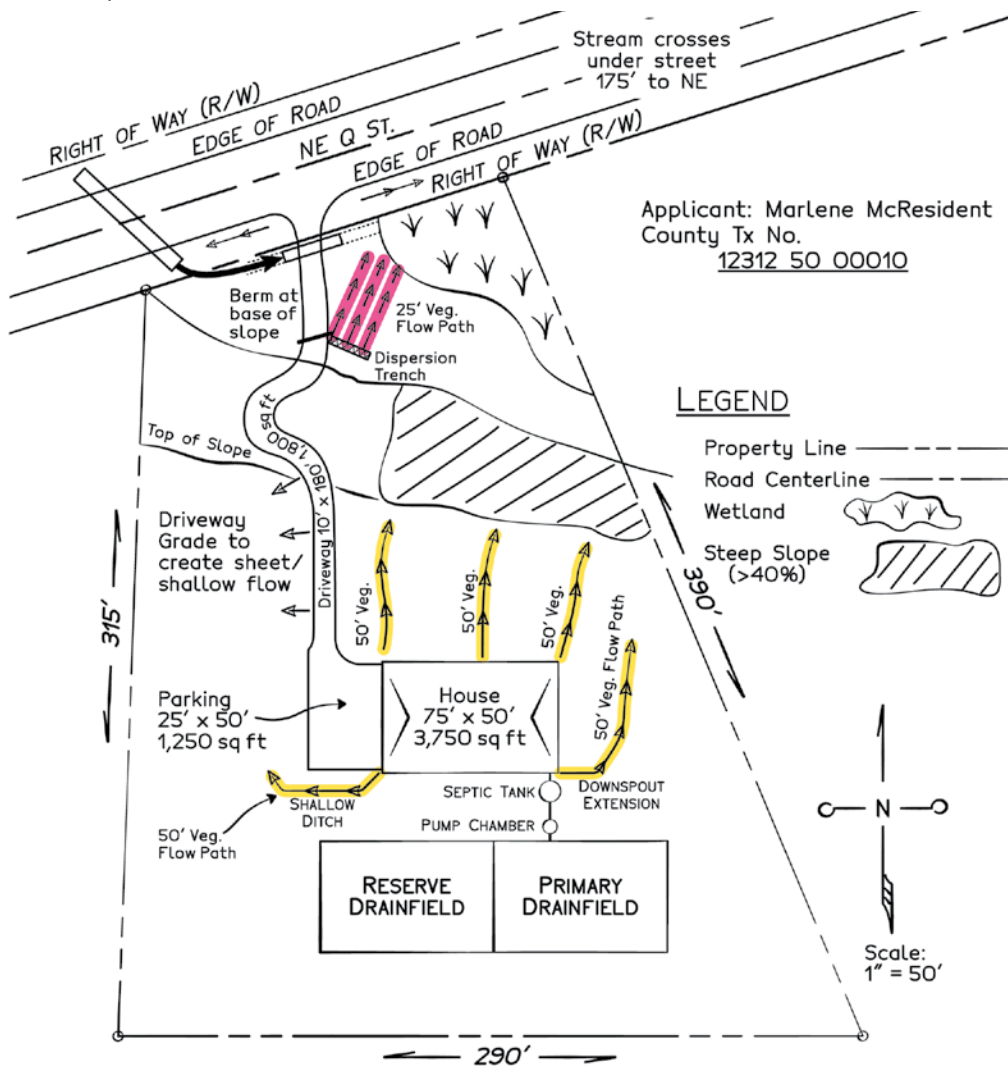
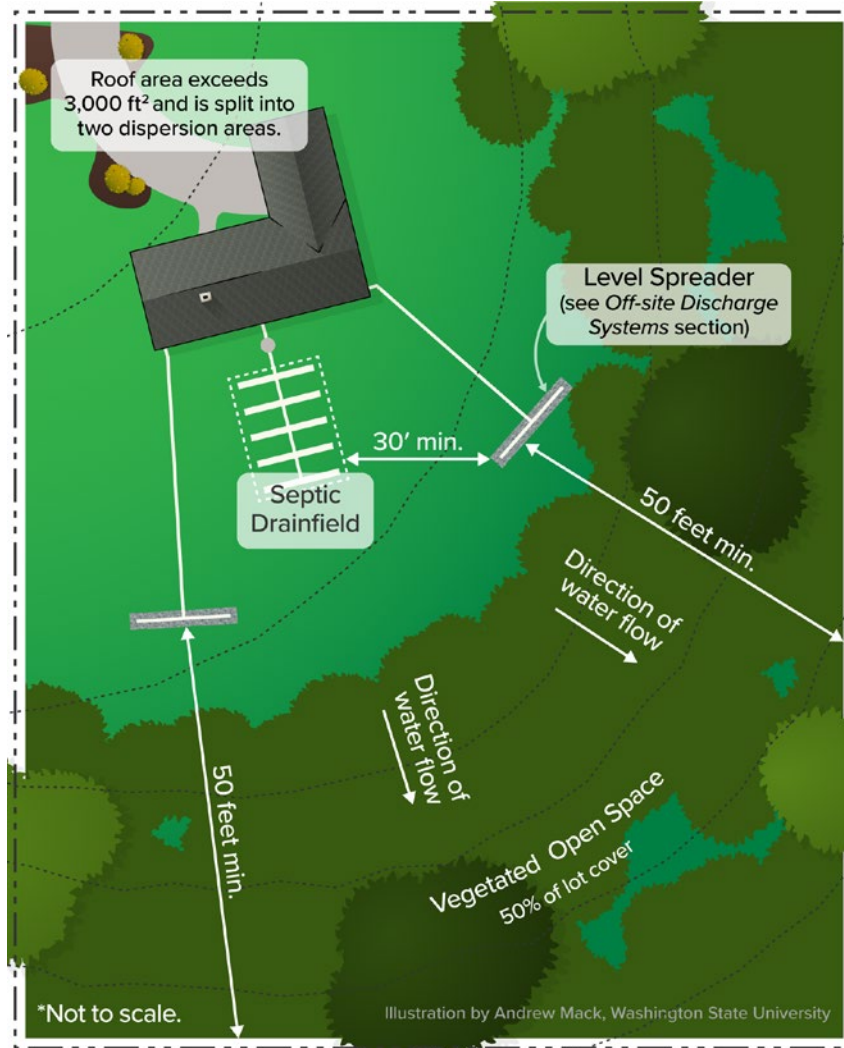


Figure 3. Example of a waterflow plan⁴



■ *Figure 4. An example of a water flow plan²*

What's Next?

Now your site map is ready to use! It will help you figure out the next steps to manage stormwater on your property. See the fact sheet [Options for Managing Surface Water Drainage](#) to get an overview of some of the strategies available to you and resources to learn more.

A word of caution

Determining which best management practice (BMP) is most appropriate to manage stormwater on a parcel of land may require consultation with an expert or knowledge gained through attending some basic training offered by the local county, Extension, or conservation district. Altering the flow of water can have unintended consequences, so please consult with your local planning department and be familiar with the stormwater ordinances in place in your area.

Resources

For more information, visit Rural Stormwater Solutions (<https://ruralstormwater.wsu.edu/resources/>).

References

For links to these references, visit Rural Stormwater Solutions (<https://extension.wsu.edu/ruralstormwater/references/>).

1. Fairbanks North Star Borough, Department of Community Planning. *How to Draw a Residential Site Plan (2017)*.
2. Clallam County. *Clallam County Small Drainage Manual*.
3. Keane, T. 1995. *Water-wise Landscaping; Guide for Water Management Planning*. Utah State University Extension Service. [accessed Dec 15, 2021]
4. Mason County. *Managing Storm Drainage on Small Sites*.

How to cite this fact sheet

Simmons, Robert, C. Thompson, D. McNamara, A. D. Jayakaran, B. Boyd, E. Guttman, and A. Mack. 2022. *Understanding Your Site Conditions*. Washington State University Extension.



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April 2022. Rural Property Surface Water Management Tools and Training: WQNEP-2020-WaStUn-00063

This project has been funded wholly or in part by the United States Environmental Protection Agency under assistance agreement PC-01J18101 to the Washington State Department of Ecology. The contents of this document do not necessarily reflect the views and policies of the Environmental Protection Agency, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.