



Rain arden Handbook

FOR WESTERN WASHINGTON

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INTRODUCTION

- A rain garden is a landscaped area that collects, absorbs and filters stormwater runoff.
- It can be constructed with soil mixes that allow water to soak in rapidly, treat runoff and support plant growth.
- A rain garden can be landscaped with a large variety of plants to fit its surroundings.

BENEFITS OF A RAIN GARDEN

- Enhance the appearance of gardens and yards.
- Provide important habitat for native insects and birds.
- Filter pesticides, oil, fertilizers and other pollutants from runoff.
- Reduce flooding and overflow.
- Increases water absorption into local groundwater.

FOUR STAGES TO CREATE AND SUSTAIN A RAIN GARDEN

1. *Plan*

- Check local requirements for your project
- Determine how much contributing area will drain to your rain garden
- Pick a location based on runoff patterns of contributing areas
- Test soil drainage
- Identify a safe overflow location

2. *Build*

- Lay out the rain garden (stakes, rope, etc.)
- Excavate the soil
- Create an entry for water
- Level the bottom of the rain garden
- Build a rock-lined overflow
- Get rain garden soil or mix compost into your existing soil—place mix into rain garden
- Level soil and make sure not to compact it

3. *Plant*

- Use a variety of small trees, shrubs, groundcover and grass
- Cover exposed soil with mulch to minimize erosion and weeds

4. *Maintain*

- Keep inlet and overflow clear of debris
- Avoid fertilizer, pesticides and herbicides
- Mulch and water as needed

1. Plan

RECOMMENDED TIMELINE

- The best time to build a rain garden is in fall or spring when the ground is moist but not soaking wet.
- The best time to plant is in the fall (to allow new plants to establish during wetter winter months)
- Test soil drainage and ground water level in the winter months.
- Avoid major excavation work in the winter—disturbing the ground may cause serious erosion during rain storms.

WHERE TO LOCATE A RAIN GARDEN

- Where it improves the appearance of your home
- Where you have enough space
- Where the overflow can direct water safely away from the home and neighboring property
- Water flows to the garden by gravity

WHERE NOT TO LOCATE A RAIN GARDEN

- Within 10 feet of a building foundation
- Over utilities
- Near the edge of steep slopes or bluffs
- Near a septic tank, septic drain field or reserve drain field area
- In low spots that do not drain well
- In areas that would require disturbing healthy native soils, plants and trees
- Where there is high groundwater during the winter
- Near wells (a rain garden must be set back a minimum of 100 feet from drinking water wells)

TEST YOUR SOIL

1. Dig a test hole
 - Dig a hole about 2 feet deep and 1 to 2 feet wide
2. Evaluate soil texture
 - Check clay content by squeezing into a ball-- if it stays in a ball-shape, it has high clay content.
 - If it is gritty and falls apart or can be broken up easily, that suggests a sandier, well-draining soil.
 - If the soil is smooth but not sticky, it is likely a silty soil with moderate to poor draining.
3. Determine ponding depth

- 6 to 12-inch depth is recommended depending on the amount of water you need stored and your aesthetic goals.
- 4. Fill the hole with water and observe drainage
 - Fill the hole with the depth of water you settled on
 - Secure a yardstick in the hole to measure water depth over time.
 - Time how long it takes for the water to drain out completely.
 - Divide total inches by total hours to determine soil drainage rate.
 - If the drainage rate is less than .25 inches/hour, but more than .1 inches/hour, the location may be OK for a rain garden.
 - If drainage is less than .1/hour, consider switching location.

DETERMINE THE SIZE OF YOUR RAIN GARDEN

1. How well does your soil drain?
 - Higher drainage rate could support a larger rain garden
2. How much area will drain to the rain garden?
 - Measure the driveway, rooftop, landscape areas and other surfaces that will drain to your rain garden.
3. How much rain does the location get?
 - Look at rainfall maps to determine this
4. How much water do you want the rain garden to hold?
 - Decide whether you want 6 or 12-inch depth
 - Determine the size of the top surface of the rain garden ponding area
 - Refer to the rain garden sizing chart and rainfall charts to determine your best match
 - Choose which performance level you want (good, better, best)
 - Identify the row with the rainfall region where your rain garden will be installed with the maps. Match the color and region number shown in the map to the color and number in the sizing chart.
 - Use the chart to find your soil drainage rate based on your test.
 - Using these variables, find the “sizing factor” to determine the area of the top surface of the ponding area.
 - **Total Contributing Area x Sizing Factor Percentage = Top Surface of Ponding Area**
5. How much room do you have for your rain garden? If these calculations make the rain garden too big you can:
 - Reduce the size of the rain garden by reducing the size of the contributing area.
 - Reduce your performance level
 - Consider a different shape
 - Divide the rain garden into two

Rain Garden Sizing Chart

	Rainfall Region	Ponding Depth	SOIL DRAINAGE RATES				
			0.10 - 0.24* Inches/Hour	0.25 - 0.49 Inches/Hour	0.50 - 0.99 Inches/Hour	1.00 - 2.49 Inches/Hour	2.50 + Inches/Hour
<i>Recommended Sizing Factor: Size the top surface of the ponding area for your rain garden by multiplying the contributing area by this percentage.</i>							
GOOD (80%)	REGION 1	6" to 12"	8%	7%	7%	6%	6%
	REGION 2	6" to 12"	14%	10%	8%	6%	6%
	REGION 3	6" to 12"	16%	11%	8%	7%	6%
	REGION 4	6" to 12"	19%	12%	10%	7%	6%
	REGION 5	6" to 12"	23%	15%	11%	9%	6%
	REGION 6	6" to 12"	28%	18%	13%	10%	7%
BETTER (95%)	REGION 1	6" to 12"	9%	9%	8%	8%	7%
	REGION 2	6" to 12"	20%	14%	11%	9%	7%
	REGION 3	6" to 12"	22%	15%	12%	10%	7%
	REGION 4	6" to 12"	29%	18%	14%	11%	8%
	REGION 5	6" to 12"	34%	22%	16%	13%	9%
	REGION 6	6" to 12"	42%	27%	19%	15%	10%
BEST (Most All the Water)	REGION 1	6"	13%	10%	9%	9%	8%
		12"	N/A*	10%	9%	8%	8%
	REGION 2	6"	39%	32%	26%	21%	15%
		12"	N/A*	27%	23%	20%	15%
	REGION 3	6"	45%	36%	30%	25%	17%
		12"	N/A*	31%	26%	22%	17%
	REGION 4	6"	54%	43%	34%	27%	18%
		12"	N/A*	36%	31%	25%	17%
	REGION 5	6"	75%	47%	35%	26%	17%
		12"	N/A*	45%	31%	25%	17%
	REGION 6	6"	72%	56%	42%	30%	19%
		12"	N/A*	48%	39%	29%	19%

SIZING FACTORS

*At these low drainage rates, a 12-inch pond will not drain down within 3 days. Use a 6-inch ponding depth.

Notes to Guide the Use of this Chart

Choose one of three performance levels you want to achieve with your rain garden—**GOOD**, **BETTER**, or **BEST**.

GOOD performance will capture about 80 percent of the water that flows to your rain garden.

BETTER performance will capture about 95 percent of the water from the contributing areas.

BEST performance will capture most all the water from the contributing areas.

When sizing your rain garden to achieve either "Good" or "Better" performance, the top surface of the ponding area will be the same for rain gardens with 6-inch or 12-inch ponding depths. For "Best" performance, areas with 6-inch ponding depths will generally need to be bigger than areas with 12-inch ponding depths.

Rain gardens built over slower draining soils and with deeper ponding levels may hold water for longer periods of time (possibly several days), and may overflow more frequently, especially after heavy rainfall and frequent storms. These conditions will happen more often if you choose "Good" performance instead of "Better" or "Best." Be sure to choose plants that can tolerate longer periods of water for the bottom of the rain garden in these situations.

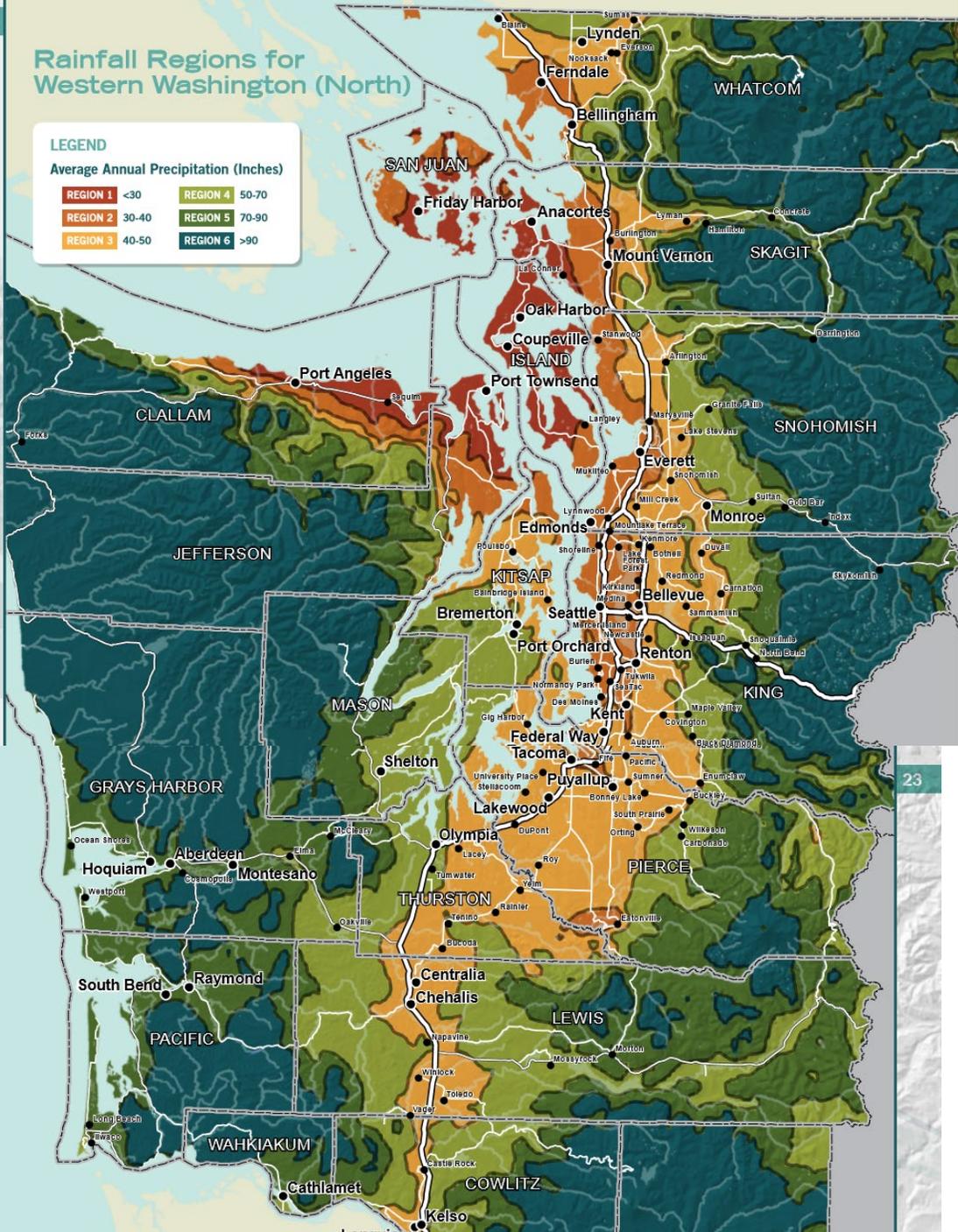
Keep in mind that rainfall patterns and other factors influencing stormwater runoff are complex and variable within these regions. This sizing chart is meant to be a tool to help you meet your goals for managing runoff. The sizing chart should not be used to meet regulatory requirements such as the Washington State Department of Ecology's stormwater regulations.

Rainfall Regions for Western Washington (North)

LEGEND

Average Annual Precipitation (Inches)

REGION 1	<30	REGION 4	50-70
REGION 2	30-40	REGION 5	70-90
REGION 3	40-50	REGION 6	>90



Rainfall Regions for Western Washington (South)

LEGEND

Average Annual Precipitation (Inches)

REGION 1	<30	REGION 4	50-70
REGION 2	30-40	REGION 5	70-90
REGION 3	40-50	REGION 6	>90



DETERMINE THE PERIMETER – WHERE TO START DIGGING

- The sizing chart on page 4 provides the sizing factor. Multiply the sizing factor by the total contributing area to calculate the top surface of the pond (where the rain garden will pond and drain).
- Provide an upper rim for extra height around the perimeter to direct water to the designated overflow location. This should be a minimum of 6 inches.
- Start digging your ponding area at where your 6-inch overflow would begin. This will depend on your slope (eg. if it's 2:1 – start digging 12 inches out from the edge).

Example Sizing Calculations		
SOIL DRAINAGE RATE	0.50 Inches per Hour	<i>Per test described on pages 15-17</i>
CONTRIBUTING AREA	1,150 SF	<i>As calculated in the example on page 19</i>
DESIRED PONDING DEPTH	6 Inches	<i>Based on installer's preference</i>
DESIRED PERFORMANCE LEVEL	Best	<i>Based on installer's preference</i>
RAINFALL REGION	Region 4, Maple Valley, Washington	<i>Location for this example, from map on page 22</i>
SIZING FACTOR	34% (.34)	<i>Using the Rain Garden Sizing Chart on page 21</i>
Results:		
REQUIRED SIZE OF TOP SURFACE OF PONDING AREA	391 SF (1,150 SF x 0.34 = 391 SF)	<i>Multiply contributing area by sizing factor</i>
DESIGN DIMENSIONS FOR TOP SURFACE OF PONDING AREA	16' Width x 24.5' Length = 392 SF (Rounding Up from 391 SF)	<i>Dimensions that fit in available space and based on installer's preference</i>
OVERFLOW CONTAINMENT AREA	18' Width x 26.5' Length = 477 SF	<i>Calculated by adding 1 foot horizontal to all sides for the 6-inch vertical depth required on a 2:1 slope</i>



DETERMINE THE SHAPE OF YOUR RAIN GARDEN

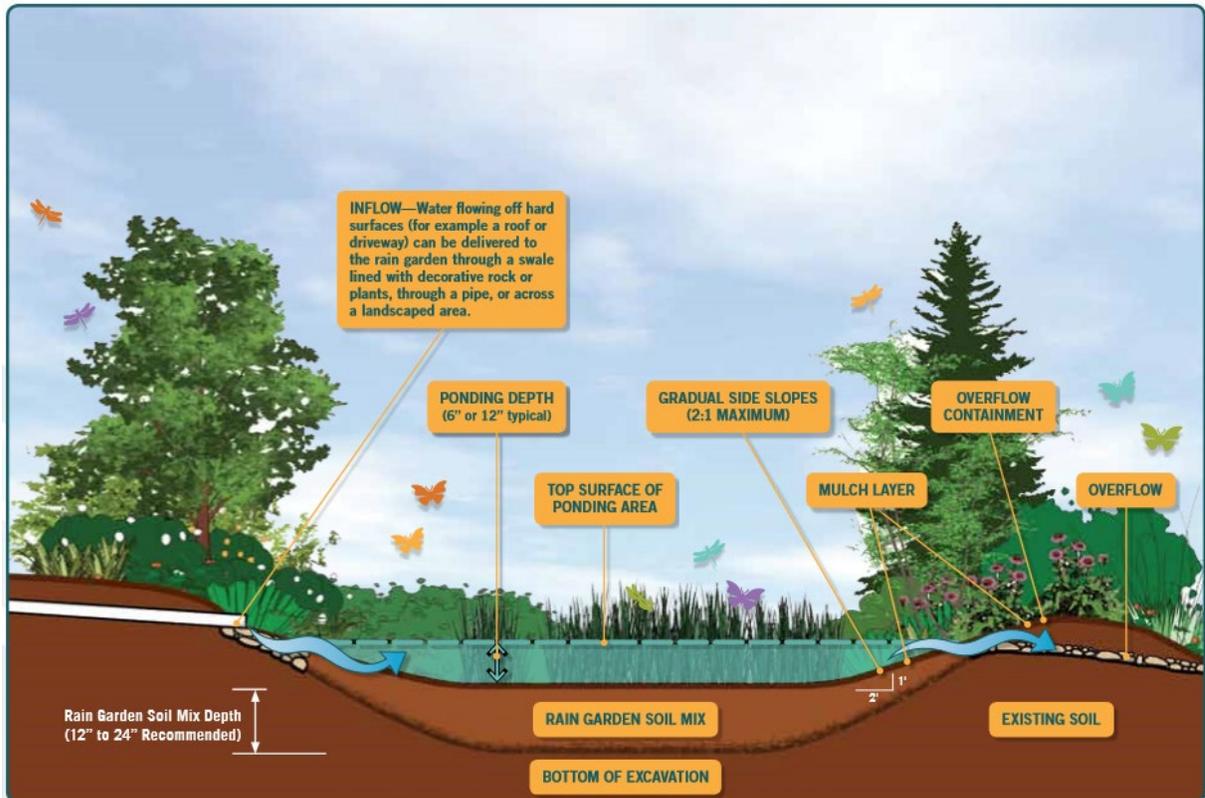
- The shape will be affected by structures you have to avoid (like utilities, buildings and trees).
- The rain garden can be shaped to fit available space and site conditions.

2. Build

PREPARE FOR CONSTRUCTION

- Gather tools and materials
- Check drainage surrounding and within the proposed location
- Confirm best locations for inflow and overflow
- Lay out the garden using rope/paint/etc.
- Excavate the ponding area
- Install ant piping/downspouts from contributing areas that will deliver water
- Dig making sure to leave space for overflow
- Place soil mix if you chose to use one
- Rock-line inflow and overflow

Rain Garden Cross Section



RAIN GARDEN SOIL

1. Excavate and replace soil
2. Excavate and amend soil for reuse
 - Mix in compost and replace
3. Amend soil in place
 - Mix in compost once you've excavated the proper depth

CHOOSING YOUR COMPOST

Compost should be stable and mature and made from organic waste materials such as yard debris or wood waste. Don't use mushroom compost, uncomposted manure, pure bark, or sawdust.

Your compost should be:

- Earthy smell that is not sour, sweet or ammonia-like
- Brown to black in color
- Crumbly with mixed particle size
- Stable temperature that doesn't get hot when rewetted

AVOID SOIL COMPACTION IN THE GARDEN

- If using a minioexcavator or other machinery for excavation, keep equipment away from the bottom of the rain garden to avoid soil compaction and drainage issues.

EXCAVATING

On flat ground:

- If the rain garden is installed on ground that is a slope of 5 degrees or less, simply excavate the soil and replace, mend or mix it and use for planting.

On a slope (2 methods):

- Dig the downhill side to the desired depth and create a flat bottom. This means the uphill side will be a taller wall than downhill.
- Excavate soil from the uphill end and use it to create and fill a **berm** (a raised bank) to get the desired depth at the downhill end.

PROTECT THE INFLOW AND OVERFLOW

- Place a layer of rock at the inflow and overflow to avoid erosion and to slow the water.
- Use round rock that is minimum 2 inches in diameter.

EDGING

- This will help separate the rain garden from other surrounding landscapes and reduce encroachment of lawn into the rain garden.
- This can be through concrete curbing, unit pavers, flagstone, or metal.

3. Plant

PREPARE TO LANDSCAPE YOUR RAINGARDEN!

- Obtain your plants and gather the tools and materials you'll need to begin landscaping.

PLANTING ZONES

- Zone 1 – the bottom of the rain garden, the wettest area
- Zone 2 – the side slopes, are occasionally wet
- Zone 3 – perimeter of the rain garden and/or the berm, where plants will grow in drier soil

GENERAL GUIDELINES AND SUGGESTIONS

- Preserve as much existing vegetation as possible.
- Consult with an expert (landscape architect, arborist, garden designer, etc.) if you need assistance with planting design.

PLANT SELECTION, SITING AND SPACING

- Consider a mix of deciduous and ever-green plants to provide all-season interest
- Keep the eventual mature size of your plants in mind while planting. Space them according to their predicted mature size.
- Avoid planting within the root zones of existing trees and shrubs.

AESTHETICS

- Incorporate a diversity of plants to add interesting differences in height and texture
- Consider the context of the surrounding landscape, including your neighborhood, and choose plants that compliment your existing and surrounding landscape

MAINTENANCE

- Maintain access to the bottom of the rain garden for weeding and other tasks (this can be achieved by placing a few flat rocks)
- Edging around the raingarden will facilitate access for maintenance.



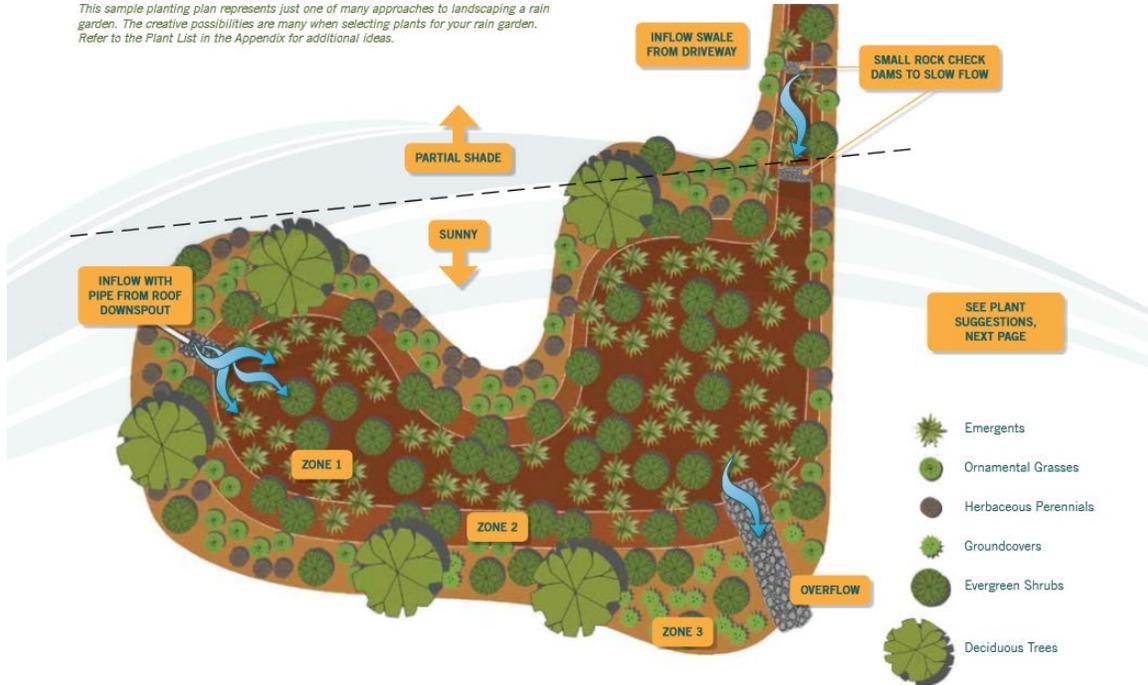
Tools and Materials Checklist

- PLANTS**
(Emergents, Perennials, Grasses, Groundcovers, Shrubs, and Trees)
- SHOVEL(S)**
- SMALL HAND TOOLS**
(Dibbles, Planting Bars, Weeding Knives— for Planting Tubes and Bare-Root Emergents)
- WHEEL BARROW**
- RAKE**
- MULCH**
(Shredded Wood or Chipped Wood)
- WATER**
- STONES/ROCK**

Sample Planting Plans

Large Rain Garden with Two Inflows

This sample planting plan represents just one of many approaches to landscaping a rain garden. The creative possibilities are many when selecting plants for your rain garden. Refer to the Plant List in the Appendix for additional ideas.



SEE PLANT SUGGESTIONS, NEXT PAGE

- Emergents
- Ornamental Grasses
- Herbaceous Perennials
- Groundcovers
- Evergreen Shrubs
- Deciduous Trees

Sample Planting Plans

Rain Garden in the Shade

This sample planting plan represents just one of many approaches to landscaping a rain garden. The creative possibilities are many when selecting plants for your rain garden. Refer to the Plant List in the Appendix for additional ideas.



EXISTING TALL TREES TO BE PRESERVED

- Emergents
- Ferns
- Herbaceous Perennials
- Deciduous Shrubs
- Evergreen Shrubs
- Deciduous Trees

SUGGESTED PLANTS

ZONE 1

- Emergents** Slough sedge (*Carex obnupta*) and small-fruited bulrush (*Scirpus microcarpus*)
- Ferns** Lady fern (*Athyrium filix-femina*) and deer fern (*Blechnum spicant*)
- Deciduous Shrubs** Dwarf red-twig dogwood (*Cornus sericea* 'Kelsey') and if your garden is large enough add black twinberry (*Lonicera involucrata*)

ZONE 2

- Ferns** Sword fern (*Polystichum munitum*) and lady fern (*Athyrium filix-femina*)
- Deciduous Shrubs** Snowberry (*Symphoricarpos albus*)
- Evergreen Shrubs** Salal (*Gaultheria shallon*) and boxwood honeysuckle (*Lonicera pileata*)

ZONE 3

- Herbaceous Perennials** Wild ginger (*Asarum caudatum*), inside-out flower (*Vancouveria hexandra*), and western bleeding heart (*Dicentra formosa*)
- Ferns** Sword fern (*Polystichum munitum*)
- Evergreen Shrubs** Evergreen huckleberry (*Vaccinium ovatum*) and low Oregon grape (*Mahonia nervosa*)
- Deciduous Trees and Large Shrubs** Vine maple (*Acer circinatum*), cascara (*Frangula purshiana*), and Indian plum (*Oemleria cerasiformis*)

Sample planting plan suggestions by Erica Guttman, WSU; originally created for the 2007 handbook and updated for this edition.

Sample Planting Plans

Large Rain Garden in Sunny Area with Native Plants for Habitat

This sample planting plan represents just one of many approaches to landscaping a rain garden. The creative possibilities are many when selecting plants for your rain garden. Refer to the Plant List in the Appendix for additional ideas.



SUGGESTED PLANTS

ZONE 1

Emergents	Dagger-leaf rush (<i>Juncus ensifolius</i>), and taper-tipped rush (<i>Juncus acuminatus</i>)
Herbaceous Perennials	Henderson's checker-mallow (<i>Sidalcea hendersonii</i>)
Deciduous Shrubs	Dwarf red-twig dogwood (<i>Cornus sericea</i> 'Kelseyi'), Pacific ninebark (<i>Physocarpus capitatus</i>), and Bloodtwig dogwood (<i>Cornus sanguinea</i> 'Midwinter Fire')

ZONE 2

Herbaceous Perennials	Daylily (<i>Hemerocallis</i> spp.) and giant camas (<i>Camassia leichtlinii</i>)
Deciduous Shrubs	Dwarf red-twig dogwood (<i>Cornus sericea</i> 'Kelseyi'), snowberry (<i>Symphoricarpos albus</i>), and Hancock coralberry (<i>Symphoricarpos x chenaultii</i> 'Hancock')
Evergreen Shrubs	Boxwood honeysuckle (<i>Lonicera pileata</i>) and dwarf tall Oregon grape (<i>Mahonia aquifolium</i> 'Compacta')

ZONE 3

Ornamental Grasses	<i>Miscanthus sinensis</i> 'Morning Light' and switch grasses (<i>Panicum virgatum</i> 'Heavy Metal,' and 'Shenandoah')
Deciduous Shrubs	Oceanspray (<i>Holodiscus discolor</i>), red-flowering currant (<i>Ribes sanguineum</i>), and snowberry (<i>Symphoricarpos albus</i>) set back from the grasses to fill in
Evergreen Shrubs	Tall Oregon grape (<i>Mahonia aquifolium</i>)
Deciduous and Evergreen Trees and Large Shrubs	Western serviceberry (<i>Amelanchier alnifolia</i>), Oceanspray (<i>Holodiscus discolor</i>), and dwarf strawberry tree (<i>Arbutus unedo</i> 'Compacta')

Sample planting plan suggestions by Erica Guttman, WSU; originally created for the 2007 handbook and updated for this edition.

4. Maintain

KEEP THE WATER FLOWING

- After heavy storms, check the inflow and overflow areas. Remove any debris.
- Keep inflow pipe accessible

MINIMIZE EXPOSED SOIL AND EROSION

- Replenish mulch areas whenever they look low
- Maintain a healthy cover of plants
- Stabilize eroding areas with rocks

WATERING

- For the first 1-3 years, your plants will need deep watering during dry seasons to establish healthy root systems
- Watering may be necessary during prolonged dry periods even if plants are established

PLANT CARE

Maintaining healthy plants will minimize weed seed germination, improve drainage and reduce erosion.

- If certain plants continue to do poorly or fail, they may be in the wrong location. Consider sun exposure, soil moisture and adjacent plants. Replace them with better suited varieties for the area.
- You may need to thin out some plants – plants tend to grow rapidly in rain gardens due to healthy soil.
- Clear vegetation from inflow and outflow areas.
- Avoid herbicides, pesticides and fertilizers

MAINTENANCE CHECKLIST

RAIN GARDEN LOCATION	CONDITION	MAINTENANCE ACTIVITY
Side Slopes	Persistent soil erosion on slopes	See “Minimize Exposed Soil and Erosion.”
Rain Garden Bottom Area	Visible sediment in the rain garden that reduces drainage rate	<ul style="list-style-type: none"> • Remove sediment accumulation. • If sediment is deposited from water entering the rain garden, determine the source and stabilize the area. See “Minimize Exposed Soil and Erosion.”
	Matted accumulation of leaves reducing drainage rate	Remove leaves.
Ponded Water	Ponded water remains in the basin more than 3 days after the end of a storm	<p>Confirm leaf, debris or sediment buildup is not reducing drainage rate. If necessary, remove leaf litter, debris or sediment. If this does not solve the problem, consult a professional with rain garden expertise to evaluate the following:</p> <ul style="list-style-type: none"> • Check for other water inputs (e.g., groundwater). • Verify that the rain garden is sized appropriately for the contributing area. Confirm that the contributing area has not increased. • Determine if the soil is clogged by sediment or if the soil is compacted.
Pipe Inlet/Outlet	Water is backing up in pipe	Clear pipes of sediment and debris with snake and/or flush with water.
	Damaged or cracked drain pipes	Repair or seal cracks, or replace if repair is insufficient.
Water Inlet	Rock or cobble is removed or missing and flow is eroding soil.	Maintain a cover of rock or cobbles to protect the ground where water flows into the rain garden from a pipe or swale.
Weeds	Problem weeds are present.	<ul style="list-style-type: none"> • Remove weeds by hand, especially in spring when the soil is moist and the weeds are small. • Dig or pull weeds out by the roots before they go to seed. • Apply mulch after weeding (see “Mulch”).

Other Resources and Websites

WESTERN WASHINGTON RESOURCES

• Washington State University Extension Rain Gardens Website:
<http://raingarden.wsu.edu/>

• 12,000 Rain Gardens in Puget Sound Campaign:
<http://www.12000raingardens.org/index.phtml>

OTHERS IN ALPHABETICAL ORDER BY TOPIC OR SOURCE:

• Building Healthy Soil and Erosion Control, Washington Organic Recycling Council:
<http://www.buildingsoil.org>

• Compost Sources for Protecting Water Resources, Washington Organic Recycling Council: <http://www.soilsforsalmon.org>

• Conservation Districts Contact Information:
<http://www.scc.wa.gov/contacts/conservation-districts/>

• Great Plant Picks—Unbeatable Plants for Your Maritime Northwest Garden:
<http://www.greatplantpicks.org/>

• Native Plant Salvage Project Websites:
<http://county.wsu.edu/thurston/nrs/nativeplants/Pages/default.aspx> and
<http://www.nativeplantsalvage.org/>

• Natural Yard Care (King County):
<http://your.kingcounty.gov/solidwaste/naturalyardcare/>

• Natural Yard Care Information and Information on Organic Materials Management (Washington State Department of Ecology):
<http://www.ecy.wa.gov/programs/swfa/organics/soil.html>

• Noxious Weed Control: <http://www.kingcounty.gov/weeds>

• Master Gardeners, Washington State University Extension:
<http://mastergardener.wsu.edu/>

• Pierce County Rain Gardens Webpage: <http://www.co.pierce.wa.us/index.aspx?NID=2812>

• Puget Sound Partnership Website/Low Impact Development in Puget Sound:
<http://www.psp.wa.gov/> and <http://www.pierce.wsu.edu>

RAIN GARDENS—LOCAL AGENCY WEBSITES:

City of Olympia Rain Gardens Webpage: <http://olympiawa.gov/city-utilities/storm-and-surface-water/rain-gardens>

City of Tacoma Rain Gardens Webpage:

<http://www.cityoftacoma.org/cms/One.aspx?portalId=169&pageId=7123>

Kitsap County Rain Gardens Webpage:

http://www.kitsapgov.com/sswm/rain_gardens.htm

• Rain Garden Network: <http://www.raingardennetwork.com/>

• Rain Gardens as Low Impact Development:

http://www.lowimpactdevelopment.org/raingarden_design/whatisaraingarden.htm

Seattle Public Utilities RainWise Program and Build a Rain Garden brochure:

<http://www.seattle.gov/util/MyServices/DrainageSewer/Projects/GreenStormwaterInfrastructure/ResidentialRainWise/index.htm> and

http://www.seattle.gov/util/groups/public/@spu/@usm/documents/webcontent/spuoi_o06287.pdf

Stewardship Partners (Rain Gardens Information):

• Washington Native Plant Society Website: <http://www.wnps.org/>

• Washington State Department of Ecology Stormwater Homepage:

<http://www.ecy.wa.gov/programs/wq/stormwater/>

OTHER RAIN GARDEN HANDBOOKS, MANUALS, BOOKS, AND REFERENCES

• A Rain Garden Manual for South Carolina. Giacalone, Katie 2008. Carolina CLEAR, Clemson University Public Service. <http://www.clemson.edu/public/carolinaclear/>

• Build Your Own Rain Garden. Student BaySavers Projects. Chesapeake Bay Foundation. http://www.lowimpactdevelopment.org/raingarden_design/downloads/BaysaversRainGardenGuide.pdf

• Creating Rain Gardens: Capturing the Rain for Your Own Water-Efficient Garden. Woelfle-Erskine, Cleo and Uncapher, Apryl. 2012. Timber Press

• Portland METRO Rain Gardens Website:

<http://www.oregonmetro.gov/index.cfm/go/by.web/id=25102>

• Rain Garden Design and Construction, A Northern Virginia Homeowner's Guide. Fairfax County and Northern Virginia Soil and Water Conservation District. 2009.

<http://www.fairfaxcounty.gov/nvswcd/raingardenbk.pdf>

- Rain Gardens: Managing Water Sustainably in the Garden and Designed Landscape. Dunnett, Nigel, and Andy Clayden. 2007. Timber Press.
- Rain Gardens for Nashville, A Resource Guide for Planning, Designing, and Maintaining a Beautiful Rain Garden. Metro Water Services Stormwater NPDES Department. Ashworth Environmental Design, LLC. <http://www.raingardensfornashville.com/>
- Rain Gardens: A How-to Manual for Homeowners. UWEX Publication GWQ037 1-06-5M-100-S. University of Wisconsin Extension. Bannerman, Roger, and Ellen Considine. 2003. <http://learningstore.uwex.edu/assets/pdfs/GWQ037.pdf>
- The Oregon Rain Garden Guide, A Step-by-Step Guide to Landscaping for Clean Water and Healthy Streams. Emanuel, Robert and Godwin, Derek. 2010. Oregon Sea Grant Extension, Oregon State University. <http://seagrant.oregonstate.edu/sgpubs/onlinepubs/h10001.pdf>
- The Vermont Rain Garden Manual: Gardening to Absorb the Storm. Andreoletti, Jessica. 2008. Winooski Natural Resources Conservation District. <http://www.uvm.edu:8889/~seagrant/communications/assets/VtRainGardenManual.pdf>
- University of Connecticut NEMO Rain Garden App: <http://nemo.uconn.edu/>
- West Michigan Environmental Action Council Rain Gardens Website: <https://www.raingardens.org/>

This is a summary of the Rain Garden Handbook for Western Washington

Hinman, Curtis. Rain Garden Handbook for Western Washington: a Guide for Design, Installation and Maintenance. WSU Extension, 2013.