RAIN GARDEN

Rain Garden Design and Installation Checklist

The following are typical best practices for rain garden design. Adapt design to fit your site!

1. Feasibility

- Identify/measure stormwater runoff sources such as:
  a. Rooftop downspouts
  b. Hard/paved surfaces
  c. Uphill landscapes
- Identify a landscape area on your site for the rain garden that is:
  a. A gentle down slope from one or more runoff source
  b. A minimum of 10' away from buildings and property lines
- Understand your site's soils:
  a. Determine your site's soil types and characteristics using: https://websoilsurvey.sc.egov.usda.gov.
  b. The best soils for rain gardens are well draining (not clayey).
- Perform a percolation test:
  a. Follow steps at: https://greywateraction.org/how-do-percolation-test/
  b. Ideal percolation rate is greater than 0.5 inches/hour.

2. Design

- Calculate potential runoff volume:
  a. How many square feet is your rooftop or other source catchment area?
  b. Use 0.14 ft. / 24-hour storm for Ventura County
  c. [Runoff source sq. ft.] x [0.14 ft./storm] x [7.48 gal./cubic ft.] = Design Runoff Volume (gal.)
- **Determine the size and shape of your rain garden to match Design Runoff Volume:** Minimum depth of 6" and maximum of 18".
- **Plan bioswales to convey stormwater to the rain garden.**
- **Determine path for overflow of rain garden in large storms:** An overflow drain pipe, a perforated underdrain, or a reinforced low point to an existing drainage path.

3. Planting

- **Use climate appropriate plants** that don't need irrigation after establishment. Species that grow natively in dry creeks are well-suited to rain gardens.
- **Place plants that prefer more moisture at the bottom of the rain garden basin:** Plant species with a lower water demand but that can tolerate occasional saturation along edges of rain garden slopes. Group plants according to their size/space and sun/shade requirements.
- **Minimize soil compaction from walking:** Consider pathway locations you will use to weed and maintain the garden.
- **Use mostly evergreen plant materials:** Make sure that the majority of your plants are active all year rather than deciduous/dormant.
- **Arrange to cover at least 80% of the rain garden in the first year of growth:** This will help stabilize soil during storm flows.

4. Build It!

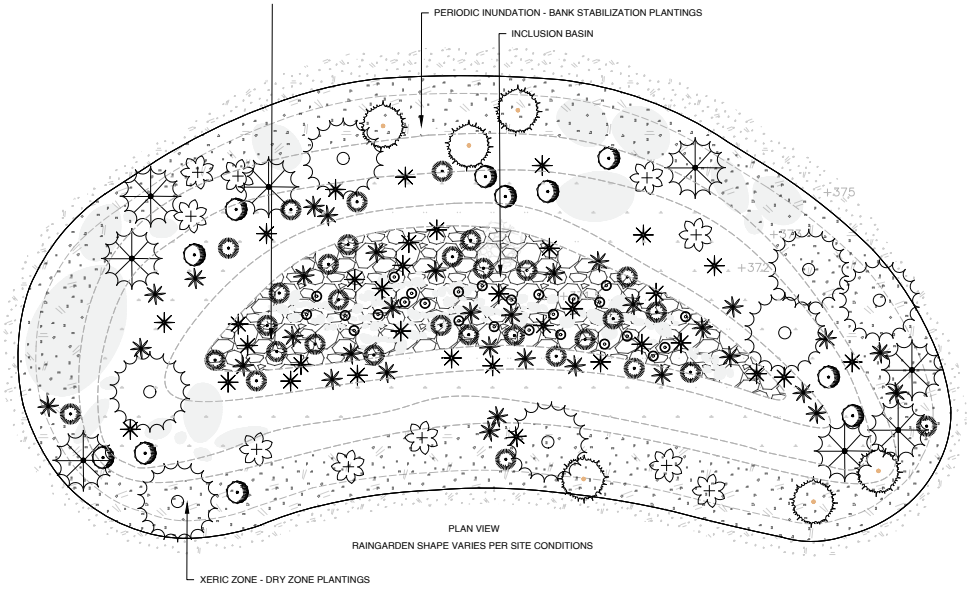
- **Call 811:** Always call first to identify underground utilities before you dig. Avoid existing tanks, pipes, and other utilities during construction.
- **Dig bioswales:** Start from downspout or other water source to rain garden, maintaining a minimum 2% slope away from all buildings.
- **Dig rain garden basin:** Designed depth (6-18" at lowest point), accounting for a minimum of 3" of mulch on top of soil as finished grade.
- **Dig a deeper basin:** In areas with space constraints, lower infiltration rates, or where additional volume is needed, deepen basin depth and backfill with gravel.
- **Grade at a maximum of 3:1 slope** (3 foot horizontal to 1 foot vertical angle) to reduce erosion unless side slopes are retained with rock. See Detail on next page for more information.
- **Layer the rain garden with 4-6 inches of coarse, woody mulch:** This prevents standing water and mosquitoes, as well as encourages healthy soil and reduce weeds. River rock or gravel may also be used to cover the base of the rain garden but has less soil and plant benefit.
- **Include a compacted, raised berm:** This "wall" must be constructed around the low side of the rain garden to prevent uncontrolled overflow on a sloped site. See photos for example.

A large-scale rain garden planted with native trees, shrubs, and grasses that tolerate a range of soil saturations. Plants that thrive in high saturated soils are planted at the bottom of the rain garden, while more saturation averse plants and trees are planted on the edges.

Source: Watershed Progressive

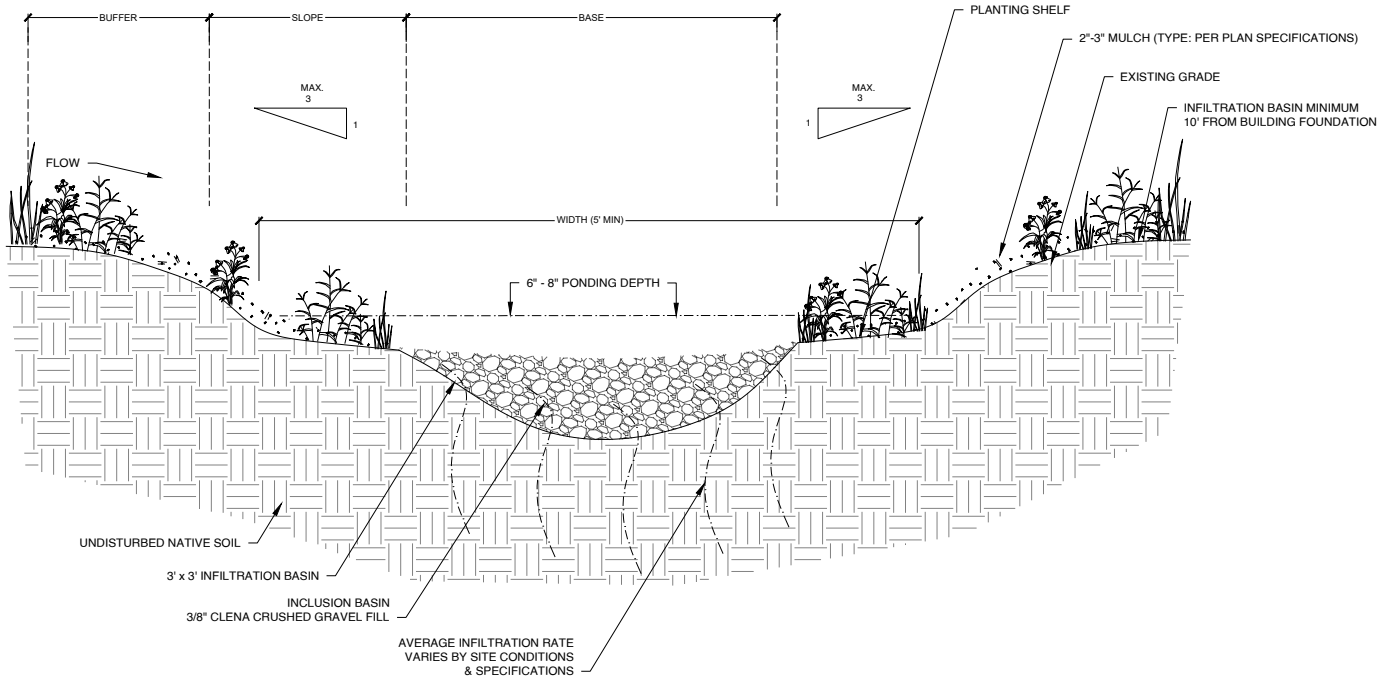
Rain Garden with Inclusion Basin - Typical Detail

These drawings illustrate best practices for on-site rainwater harvesting systems. Adapt the designs shown to your specific site as needed.



PLANT LEGEND (VARIES PER REGION)

SHRUBS	CODE	BOTANICAL NAME	COMMON NAME
	CEA DA2	Ceanothus x `Dark Star`	Dark Star Wild Lilac
	ACH FYC	Achillea x `Citronella`	Citronella Yarrow
	LUP ARB	Lupinus arboreus	Yellow Tree Lupine
	MIM AUR	Mimulus aurantiacus	Sticky Monkey Flower
	SAL SON	Salvia sonomensis	Creeping Sage
	ZAU CA9	Zauschneria californica	California Fuchsia
GRASSES	**CODE**	**BOTANICAL NAME**	**COMMON NAME**
	ELY CON	Elymus condensatus	Giant Wild Rye
	STI PUL	Stipa pulchra	Purple Needle Grass
	JUN CAR	Juncus patens `Carman`s Grey`	Spreading Rush



SECTION VIEW

1 RAINGARDEN SECTION DETAIL (TYP)
NTS

Rain Garden Plant Palette Tuolumne County

Place Medium Water Use Plants at Low Point in Rain Garden, Medium Water Use on Lower Slopes, and Low Water Use on Edges of Rain Garden (Water Use: 💧💧💧 = High, 💧💧 = Medium, 💧 = Low; 🌼 = Native, 🦋 = Edible)

Trees

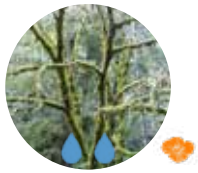
Aesculus californica
California Buckeye

Platanus racemosa
Sycamore

Calocedrus decurrens
Incense Cedar

Quercus lobata
Valley Oak

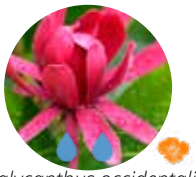
Juglan Californica
California Black Walnut



Acer macrophyllum
Big Leaf maple

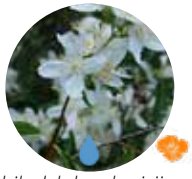
Prunus ilicifolia
Hollyleaf Cherry

Small Trees/ Large Shrubs

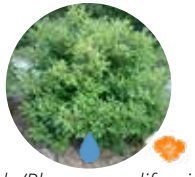


Calycanthus occidentalis
Spice Bush

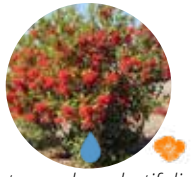
Cercis occidentalis
Western Redbud



Philadelphus lewisii
Mock Orange

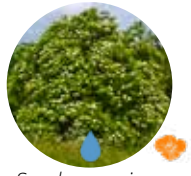


Frangula/Rhamnus californica
Coffeeberry



Heteromeles arbutifolia
Toyon

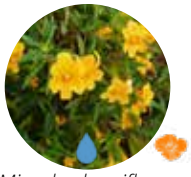
Cornus sericea
Creek Dogwood



Sambucus nigra
Black Elderberry

Shrubs

Ceanothus sp.
California Lilac



Mimulus longiflorus
Sticky Monkeyflower

Ribes aureum
Golden Currant

Rosa californica
California Wild Rose

Rubus ursinus
California Blackberry

Symphoricarpos albus
Common Snowberry

Spiraea splendens
Meadow Sweet

Perennials, Wildflowers

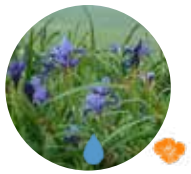
Achillea millefolium
Yarrow

Penstemon sp.
Penstemon

Eriogonum umbellatum
Sulphur Buckwheat

Eschscholzia californica
California Poppy

Heuchera maxima
Coral Bells



Iris douglasiana
Douglas Iris

Monardella villosa
Coyote Mint

Grasses, Sedges, Rushes

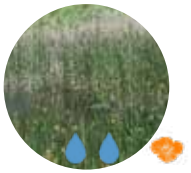
Muhlenbergia rigens
Deer Grass

Carex praegracilis
California Field Sedge

Festuca glauca
Blue Fescue

Festuca rubra
Red Fescue

Juncus patens
California Gray Rush



Juncus textilis
Basket Rush

Sisyrinchium bellum
Blue Eyed Grass