

Marin County Stormwater Pollution Prevention Program
Bioretention Facility Plant Matrix

June 4, 2014

Scientific name	Common name	Plant Categories	Light Preference			Size (feet)		Watering				Tolerances					High Performers		CA Native	Notes	
			Sun	Part	Shade	Ht.	Width	L	M	H	Summer	Heat	Coast	Wind	Zone 1	Zone 2	Best for irrigated sites	Best for non-irrigated sites			
Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9	Column10	Column11	Column12	Column13	Column14	Column15	Column16	Column17	Column18	Column19	Column20	Column21	
<i>Agrostis exarata</i>	Spike bentgrass	Grasses and Grass-like Plants	✓	✓		1	1.25		✓	✓	✓				✓	✓					Moist sand dunes ;adapts to shady woodlands from San Diego to Sonoma County
<i>Bouteloua gracilis</i>	blue grama	Grasses and Grass-like Plants	✓			1.5	1	✓					✓		✓						Tolerates no summer water , good for non-irrigated remote sites. AKA= Mosquito Grass
<i>Bromus carinatus</i>	California brome	Grasses and Grass-like Plants	✓			2	1	✓			ok		✓		✓				✓		Good for erosion control ; not a good meadow grass
<i>Carex barbarea</i>	Santa Barbara sedge	Grasses and Grass-like Plants	✓	✓		3	2	✓	✓		✓		✓		✓				✓		Stays green w/ summer H2O, moist to drought tolerant, spreading large statured sedge
<i>Carex divulsa</i>	grassland sedge	Grasses and Grass-like Plants	✓	✓	✓	1	1		✓		ok		✓		✓						Widely sold in CA as Carex tumulicola (Berkeley sedge). Native to Eurasia. Full sun along coast. Tolerates drought once established. Needs regular water in sun.
<i>Carex nudata</i>	California black sedge	Grasses and Grass-like Plants	✓	✓		2	2	✓	✓		✓		✓		✓				✓		Turns orange in frost, showy black flower spikes
<i>Carex obnupta</i>	slough sedge	Grasses and Grass-like Plants	✓	✓		2	1		✓	✓	✓		✓		✓				✓		Some salt tolerance, drought tolerant once established. Thick, graceful, bright green stands in wetlands.
<i>Carex pansa</i>	dune sedge	Grasses and Grass-like Plants	✓	✓		2	2		✓		✓		✓		✓				✓		Native to Asilomar; Plug not seed planting; mow end of summer if desired.
<i>Carex praegracilis</i>	clustered field sedge	Grasses and Grass-like Plants	✓	✓		1.5	1.5		✓	✓	✓		✓		✓				✓		Lawn alternative, tolerates some foot traffic; summer dormant in warmer areas
<i>Chondropetalum tectorum</i>	small cape rush	Grasses and Grass-like Plants	✓	✓		4	3			✓	✓		✓		✓						Native to S. Africa, drought tolerant
<i>Danthonia californica</i>	California oat grass	Grasses and Grass-like Plants	✓	✓		1.5	1.5		✓		✓		✓		✓				✓		Bunch grass, recommend plugs not seed to start, tolerates some foot traffic
<i>Distichlis spicata</i>	salt grass	Grasses and Grass-like Plants	✓			0.3	3		✓	✓	✓		✓		✓				✓		Looks like bermuda grass, withstands foot traffic, for soils with high salt
<i>Festuca californica</i>	California fescue	Grasses and Grass-like Plants	✓	✓	✓	2	2	✓			ok		✓		✓				✓		Use only in driest areas of basin
<i>Festuca idahoensis</i>	Idaho fescue	Grasses and Grass-like Plants	✓	✓		1	1	✓	✓		ok		✓		✓				✓		Can mow. Needs light summer water at hot sites
<i>Festuca rubra</i>	red fescue	Grasses and Grass-like Plants	✓	✓		1	1.5		✓	✓	ok		✓		✓				✓		Can mow. Lawn alternative; Water conservation LDS; Bio Strips; Infiltration basins
<i>Festuca rubra 'molate'</i>	molate fescue	Grasses and Grass-like Plants	✓	✓		1	1.5	✓	✓		ok		✓		✓				✓		Can mow. Lawn alternative
<i>Juncus effusus</i>	common rush	Grasses and Grass-like Plants	✓	✓		2.5	2.5		✓		ok		✓		✓				✓		Forms dense clumps
<i>Juncus pallidus</i>	giant rush	Grasses and Grass-like Plants	✓			4	2	✓			ok		✓		✓						Evergreen, heat and drought tolerant.
<i>Juncus patens</i>	blue rush	Grasses and Grass-like Plants	✓			2	1		✓	✓	✓		✓		✓				✓		Plant from plugs; Irrigate occasionally summer
<i>Leymus triticoides</i>	creeping wildrye	Grasses and Grass-like Plants	✓	✓		3	1	✓	✓		ok		✓		✓				✓		Can mow 4 x yr. Sub-surface H2O best. Can be aggressive in moist areas.
<i>Muhlenbergia rigens</i>	degrass	Grasses and Grass-like Plants	✓			3	3	✓	✓		ok		✓		✓				✓		Evergreen, forms mounds.
<i>Sisyrinchium bellum</i>	blue eyed grass	Grasses and Grass-like Plants	✓	✓		1	1		✓		ok		✓		✓				✓		Needs occasional summer water, tolerates some foot traffic
<i>Achillea millefolium</i>	common yarrow	Herbaceous Perennials and Groundcovers	✓			1.5	1	✓			ok		✓		✓				✓		Good for hot sites. Tolerates mowing, and can be used in a lawn replacement mix.
<i>Artemisia douglasiana</i>	mugwort	Herbaceous Perennials and Groundcovers	✓	✓	✓	3	3	✓	✓		ok		✓		✓				✓		Rhizomatous
<i>Artemisia ludoviciana</i>	white sagebrush	Herbaceous Perennials and Groundcovers	✓	✓	✓	1.5	2	✓	✓		✓		✓		✓				✓		Aromatic. Tolerates foot traffic and wide range of conditions
<i>Asclepias fascicularis</i>	narrowleaf milkweed	Herbaceous Perennials and Groundcovers	✓			3	2	✓	✓		ok		✓		✓				✓		Monarch butterfly host plant, deciduous
<i>Darmera peltata</i>	Indian rhubarb	Herbaceous Perennials and Groundcovers		✓	✓	3	5			✓	✓				✓				✓		Prefers cool summers. Native to N CA, S OR; found on stream banks and in woodlands.
<i>Epilobium canum</i>	California fuchsia	Herbaceous Perennials and Groundcovers	✓	✓		1	4	✓			ok		✓		✓				✓		dormant in winter, best with winter mowing
<i>Epipactis gigantea</i>	stream orchid	Herbaceous Perennials and Groundcovers	✓	✓	✓	3	1.5		✓	✓			✓		✓				✓		Goes dormant with drought, salt tolerant
<i>Fragaria chiloensis</i>	beach strawberry	Herbaceous Perennials and Groundcovers	✓	✓	✓	0.3	2	✓	✓		ok		✓		✓				✓		Evergreen groundcover, performs well as filler at the upper edges of facility.
<i>Heuchera micrantha</i>	alum root	Herbaceous Perennials and Groundcovers		✓	✓	2	1.5	✓	✓		✓		✓		✓				✓		Dainty white flowers
<i>Heuchera pilosissima</i>	hairy alum root	Herbaceous Perennials and Groundcovers		✓	✓	1.5	1.5	✓	✓		✓		✓		✓				✓		Tolerates sand, best at basin edges
<i>Iris douglasiana</i>	Douglas iris	Herbaceous Perennials and Groundcovers	✓	✓		1.5	2	✓	✓		ok		✓		✓				✓		Also, Iris hybrids
<i>Lilium pardalinum</i>	leopard lily	Herbaceous Perennials and Groundcovers	✓	✓		6	4	✓	✓				✓		✓				✓		Native to dry summer areas, deciduous
<i>Lobelia cardinalis</i>	cardinal flower	Herbaceous Perennials and Groundcovers		✓	✓	2	2		✓				✓		✓						Not drought tolerant, requires regular water
<i>Lotus scoparius</i>	deerweed	Herbaceous Perennials and Groundcovers	✓			4	3	✓					✓		✓				✓		Short-lived, nitrogen fixer
<i>Mimulus aurantiacus</i>	common monkeyflower	Herbaceous Perennials and Groundcovers	✓	✓		3	3	✓			ok		✓		✓				✓		Drought tolerant, stress deciduous
<i>Mimulus cardinalis</i>	scarlet monkeyflower	Herbaceous Perennials and Groundcovers	✓	✓	✓	3	3		✓	✓	✓		✓		✓				✓		Aggressive seeder, needs summer water
<i>Mimulus guttatus</i>	seep monkeyflower	Herbaceous Perennials and Groundcovers	✓	✓		3	3		✓	✓	✓		✓		✓				✓		Attracts Bees, stress deciduous, needs summer water
<i>Mirabilis multiflora</i>	Giant four o'clock	Herbaceous Perennials and Groundcovers		✓	✓	2	4	✓			✓		✓		✓				✓		Best for hot sites, native to Southern California
<i>Oenothera hookeri</i>	Hooker's evening primrose	Herbaceous Perennials and Groundcovers	✓	✓		3	2	✓			ok		✓		✓				✓		Easy to establish biennial, self seeds
<i>Polypodium californicum</i>	California Polypody fern	Herbaceous Perennials and Groundcovers		✓	✓	2	2	✓			✓		✓								Summer dormant except at coast, spreads slowly by rhizomes, frost tender
<i>Prunella vulgaris</i>	self heal	Herbaceous Perennials and Groundcovers	✓	✓		0.5	2'	✓	✓		ok		✓		✓				✓		Somewhat drought tolerant, long flowering
<i>Rudbeckia californica</i>	California coneflower	Herbaceous Perennials and Groundcovers	✓			3	2	✓	✓		ok		✓		✓				✓		Native to dry summer areas, deciduous
<i>Scaevola 'mauve clusters'</i>	fan flower	Herbaceous Perennials and Groundcovers	✓	✓		1	4	✓			✓		✓		✓						Native to Australia, sensitive to frost
<i>Scutellaria austinae</i>	skullcap	Herbaceous Perennials and Groundcovers	✓			1	2	✓	✓		✓		✓		✓				✓		Dies back in drought
<i>Sisyrinchium californicum</i>	yellow eyed grass	Herbaceous Perennials and Groundcovers	✓	✓		1	1		✓		✓		✓		✓				✓		Can be drought tolerant
<i>Verbena lasiostachys</i>	Western vervain	Herbaceous Perennials and Groundcovers	✓	✓		2	2	✓			ok		✓		✓				✓		Attracts butterflies, can be weedy pioneer species
<i>Verbena lilacina</i>	Cedros Island verbena	Herbaceous Perennials and Groundcovers	✓	✓		2	4	✓			ok		✓		✓						Drought tolerant, best with minimal irrigation, native to Baja CA
<i>Alyogyne huegelii</i>	blue hibiscus	Shrubs	✓			8	7	✓			✓		✓		✓						Very low water after second year, Sunset zones 15-17 & 20-24, prune to encourage flowering
<i>Baccharis pilularis consanguinea</i>	bush baccharis	Shrubs	✓			6	6	✓	✓		ok		✓		✓				✓		Fast-growing, somewhat short-lived; deer proof
<i>Calycanthus occidentalis</i>	western spicebush	Shrubs	✓	✓		8	8	✓			✓		✓		✓				✓		Deer resistant, deciduous. Bright green leaves, good for hedgerow/screen. Riparian areas.
<i>Carpenteria californica</i>	bush anemone	Shrubs	✓	✓		6	4	✓	✓		u		✓		✓				u		Interior climate with occasional water otherwise low water needs

Marin County Stormwater Pollution Prevention Program
Bioretention Facility Plant Matrix

June 4, 2014

Scientific name	Common name	Plant Categories	Light Preference			Size (feet)		Watering					Tolerances					High Performers		CA Native	Notes
			Sun	Part	Shade	Ht.	Width	L	M	H	Summer	Heat	Coast	Wind	Zone 1	Zone 2	Best for irrigated sites	Best for non-irrigated sites			
<i>Cornus sericera</i>	redtwig dogwood	Shrubs	✓	✓		5	4	✓			✓	✓	✓		✓	✓		✓	Deciduous, red stems for winter color, best with afternoon shade. Can cut to ground to maintain small size and red stems.		
<i>Erigeron glaucus</i>	seaside daisy	Shrubs	✓			1	1.5				ok		✓	✓		✓		✓	Not good for dusty sites		
<i>Lonicera hispidula</i>	California honeysuckle	Shrubs	✓	✓	✓	4	2		✓	✓	✓		✓			✓		✓	Climbing vine-like. Best in part shade. Attracts birds		
<i>Lonicera involucrata</i>	twinberry honeysuckle	Shrubs	✓	✓	✓	6	3		✓	✓	✓		✓			✓		✓	Needs good drainage, Best in part shade. Attracts birds		
<i>Mahonia pinnata</i>	California holly grape	Shrubs	✓	✓	✓	4	4	✓	✓			✓	✓	✓	✓	✓		✓	Slow but easy to grow		
<i>Physocarpus capitatus</i>	pacific ninebark	Shrubs	✓	✓		8	8	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	Part shade and summer water required in hot locations		
<i>Rhamnus californica</i>	California coffeeberry	Shrubs	✓	✓		12	8	✓			✓	✓	✓		✓	✓	✓	✓	'Eve Case' is compact with broad foliage. Syn. <i>Frangula californica</i>		
<i>Rhamnus crocea</i>	redberry	Shrubs	✓	✓	✓	5	5	✓				✓	✓	✓	✓	✓		✓	Pea sized fruits attract birds, stain concrete		
<i>Rhododendron occidentale</i>	western azalea	Shrubs	✓	✓	✓	8	8		✓	✓	✓		✓		✓	✓		✓	Summer deciduous		
<i>Ribes aureum gracillimum</i>	golden current	Shrubs	✓	✓		4	3	✓	✓	✓	ok	✓	✓	✓	✓	✓		✓	Easy, fall color, deciduous		
<i>Ribes diversiatum</i>	coast black gooseberry	Shrubs		✓	✓	5	5	✓	✓		ok		✓	✓		✓		✓	Thorny, good for discouraging entry, deciduous		
<i>Ribes sanguineum</i>	red flowering currant	Shrubs		✓	✓	5	5	✓	✓		✓	✓	✓	✓	✓	✓		✓	Needs good air movement to avoid white fly, more drought tolerant at coast		
<i>Ribes speciosum</i>	fuchsia-flowered gooseberry	Shrubs	✓	✓	✓	4	4	✓	✓			✓	✓		✓	✓		✓	Prefers only light summer water after 2nd year, stress deciduous		
<i>Rosa californica</i>	California wild rose	Shrubs	✓	✓		3	6			✓	ok	✓	✓	✓	✓	✓		✓	Hooked thorns, good for discouraging entry. Shade in interior, sun at coast		
<i>Rosa gymnocarpa</i>	wood rose	Shrubs	✓	✓	✓	2	3			✓	ok	✓	✓	✓	✓	✓		✓	Easy to grow, thorny		
<i>Rubus parviflorus</i>	thimbleberry	Shrubs	✓	✓		8	5			✓	✓	✓	✓	✓	✓	✓		✓	Spreads readily in wet areas, prefers regular water		
<i>Rubus spectabilis</i>	salmonberry	Shrubs		✓	✓	8	5		✓	✓	✓		✓	✓	✓	✓		✓	deciduous, soft spiny stems		
<i>Rubus ursinus</i>	California blackberry	Shrubs		✓	✓	3	5		✓	✓	ok	✓	✓	✓	✓	✓		✓	Thorny, good for discouraging entry. Harbors beneficial insects		
<i>Symphoricarpos albus</i>	common snowberry	Shrubs	✓	✓	✓	4	4	✓	✓	✓	ok	✓			✓	✓		✓	Adaptable to many conditions, try <i>Symphoricarpos mollis</i> at coast		
<i>Whipplea modesta</i>	whipplevine	Shrubs		✓	✓	0.5	3		✓	✓	✓		✓		✓			✓	Best for moist shady spots near coast		
<i>Acer circinatum</i>	vine maple	Small Trees		✓	✓	20	10		✓	✓	✓				✓			✓	In wide riparian areas; top of slope. Avoid hot inland climates and coastal conditions/salt spray.		
<i>Baccharis viminea</i>	seep-willow	Small Trees	✓			8	5	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	Important plant for butterflies and beneficial insects.		
<i>Chilopsis linearis</i>	desert-willow	Small Trees	✓			15	15		✓		✓	✓			✓	✓		✓	Does best inland		
<i>Corylus cornuta v. californica</i>	California hazel	Small Trees		✓	✓	10	10		✓						✓	✓		✓	Deciduous, edible nut		
<i>Fraxinus dipetala</i>	California ash	Small Trees	✓	✓		20	20				ok	✓			✓	✓		✓	drought tolerant, slow to establish, then fast		
<i>Garrya elliptica</i>	coast silktassel	Small Trees	✓	✓		12	12	✓	✓		ok	✓	✓	✓	✓	✓		✓	Winter blooms. 'Evie' is compact variety. Best at coast. Afternoon shade inland, deer resistant		
<i>Heteromeles arbutifolia</i>	toyon	Small Trees	✓	✓	✓	8	5	✓	✓		✓	✓	✓			✓		✓	Doesn't respond well to pruning low branches, no summer water at coast		
<i>Laurus nobilis 'Saratoga'</i>	Grecian bay	Small Trees	✓	✓		20	20	✓				✓	✓		✓			✓	Specify 'standard' and prune for tree form, easy		
<i>Myrica californica</i>	Pacific wax myrtle	Small Trees	✓	✓	✓	25	12	✓	✓				✓	✓		✓		✓	Best at coast		
<i>Sambucus mexicana</i>	elderberry	Small Trees	✓	✓		20	15	✓	✓						✓	✓		✓	Deciduous, edible fruit, attracts bees and birds, unripe fruits are poisonous but useful and common landscape plant		
<i>Acer negundo</i>	box elder	Trees	✓	✓	✓	35	35	✓	✓		ok	✓	✓	✓	✓	✓		✓	Tough shade tree, deciduous		
<i>Fraxinus latifolia</i>	Oregon ash	Trees	✓	✓	✓	70	40			✓	✓	✓	✓	✓	✓	✓		✓	Plant in moist areas with rich soil.		
<i>Fraxinus velutina</i>	velvet ash	Trees	✓	✓		30	45	✓	✓		ok	✓			✓	✓			Withstands poor drainage and drought		
<i>Pittosporum eugenioides</i>	tarata	Trees	✓	✓		40	15	✓	✓		✓	✓	✓		✓	✓			Shear to control height		
<i>Platanus acerifolia</i>	London plane tree	Trees	✓	✓		80	30			✓		✓			✓				Large tree, aggressive roots will lift pavement		
<i>Platanus racemosa</i>	California sycamore	Trees	✓	✓		80	30		✓	✓	ok	✓			✓			✓	Asymmetrical shape and wide trunk when mature. Give lots of room.		
<i>Populus fremontii</i>	cottonwood	Trees	✓	✓		80	30		✓			✓			✓			✓	Riparian species with limited drought tolerance. Aggressive roots will lift pavement. Give lots of room.		
<i>Quercus agrifolia</i>	coast live oak	Trees	✓	✓		60	60	✓				✓	✓	✓	✓			✓	Large evergreen tree, tolerant and widespread, important for wildlife, no summer water		
<i>Vitis californica</i>	California grape	Vine	✓	✓		10	1-3	✓	✓		✓	✓	✓	✓	✓	✓		✓	Climbing vine. Best in full sun. Can be aggressive in moist area.		

Plant Categories	
Grasses and Grass-like Plants	Grass refer to those species that are monocotyledonous plants with slender-leaved herbage.
Herbaceous Perennials and Groundcovers	Herbaceous refers to those species with soft upper growth rather than woody growth. Some species will die back to the roots at the end of the growing season and grow again at the start of the next season. This list only includes those that are perennial, i.e. live for several years.
Shrubs	Shrub is a horticultural distinction that refers to those species of woody plants which are distinguished from trees by their multiple stems and lower height. A large number of plants can be either shrubs or trees, depending on the growing conditions they experience.
Small Tree	Small trees refers to those species of woody plants with one main trunk and a distinct and elevated head with a maximum size of 25' tall and wide.
Tree	Tree refers to those species of woody plants with one main trunk and a rather distinct and elevated head with a size greater than 25' tall or wide.
Water Preference	
Water Preference-Low/Moderate/High	We have provided recommendations for irrigation. All plants should be watered with more frequency during the first two years after planting. After this establishment period, Low water use plants will only need supplemental irrigation at the hottest and driest sites. Plants with Moderate irrigation needs will be best with occasional supplemental water (once per week to once per month) and plants with High irrigation needs will be best with more frequent watering especially during periods of drought in the cooler seasons.
Water Preference-Summer Irrigation	Plants with a check in this column will not withstand a long period of summer drought without irrigation. Plants with an 'ok' in this column are tolerant of, but do not require, frequent summer irrigation. Plants with nothing in this column may not tolerate summer irrigation after establishment.
Stress Tolerance	
Tolerates Heat	A check in the heat column indicates that the plant will tolerate hot sites. It should not be confused with a plants preference for sun. Absence of the check indicates it should only be used in areas close to the Bay or other cool sites.
Tolerates Coast	The coast column indicates plants that perform well within 1,000 feet of the ocean or bay. Most of these plants tolerate some amount of salt air, fog, and wind.
Tolerates Wind	A check in the wind column means that the plant will tolerate winds of ten miles per hour or more.
Zone 1	Plants that tolerate Zone 1 are common riparian, wetland and bog plants capable of surviving in saturated soils for long durations throughout the year. Most of these plants are not drought tolerant and require some water throughout the growing season.
Zone 2	Plants that tolerate Zone 2 are common in riparian/upland transition areas, moist woodlands, and seasonal wetlands. They are capable of surviving in saturated soils for shorter durations especially in the winter or spring. Many of these plants tolerate summer drought but could benefit from some year-round moisture.
High Performers	
Best for irrigated sites	These plants have been used successfully in irrigated bioretention areas in the Bay Area.
Best for non-irrigated sites	These plants have been used successfully in non-irrigated bioretention areas in the Bay Area. Temporary irrigation for establishment is highly recommended.
Origin	
CA Native	Indicates native or cultivar of California native. Cultivars offer habitat benefits to native wildlife and are adapted to the local climate but have reduced genetic diversity.