

DFG Mapping Units and Plant Alliances Comprising BDCP Natural Communities¹

Mapping Unit (Hickson and Keeler-Wolf 2007) ²	Plant Alliance (Sawyer and Keeler-Wolf 1995)
Tidal Perennial Aquatic	
<i>Egeria-Cabomba-Myriophyllum</i> <i>spp.</i>	Brazilian Waterweed (<i>Egeria - Myriophyllum</i>) Submerged
<i>Eichhornia crassipes</i>	Water Hyacinth (<i>Eichhornia crassipes</i>)
<i>Potamogeton pectinatus</i>	Pondweed (<i>Potamogeton sp.</i>)
<i>Ludwigia peploides</i>	Floating Primrose (<i>Ludwigia peploides</i>)
<i>Ludwigia peploides</i>	<i>Ludwigia peploides</i>
<i>Hydrocotyle ranunculoides</i>	<i>Hydrocotyle ranunculoides</i>
-	Milfoil - Waterweed (generic submerged aquatics)
-	Generic Floating Aquatics
-	Algae
-	Tidal Mudflats
-	Water
Undetermined ³	Undetermined ³
Tidal Freshwater Emergent Wetland	
<i>Schoenoplectus</i> (formerly <i>Scirpus</i>) <i>californicus</i> - <i>Schoenoplectus acutus</i>	Mixed Scirpus Mapping Unit
-	Mixed Scirpus / Floating Aquatics (<i>Hydrocotyle -</i> <i>Eichhornia</i>) Complex
-	Mixed Scirpus / Submerged Aquatics (<i>Egeria-</i> <i>Cabomba-Myriophyllum spp.</i>) complex
<i>Schoenoplectus acutus</i> - (<i>Schoenoplectus</i> <i>tabernaemontani</i>)	Hard-stem Bulrush (<i>Scirpus acutus</i>)
<i>Schoenoplectus acutus</i>	<i>Scirpus acutus</i> Pure
<i>Schoenoplectus acutus-Typha angustifolia</i>	<i>Scirpus acutus - Typha angustifolia</i>
<i>Schoenoplectus acutus-Typha latifolia</i>	<i>Scirpus acutus -Typha latifolia</i>
<i>Schoenoplectus acutus-Phragmites australis</i>	<i>Scirpus acutus - (Typha latifolia) - Phragmites</i> <i>australis</i>
<i>Schoenoplectus californicus</i>	California Bulrush (<i>Scirpus californicus</i>)
<i>Schoenoplectus californicus-Eichhornia crassipes</i>	<i>Scirpus californicus - Eichhornia crassipes</i>
<i>Schoenoplectus californicus- Schoenoplectus acutus</i>	<i>Scirpus californicus – Scirpus acutus</i>
<i>Schoenoplectus americanus</i>	American Bulrush (<i>Scirpus americanus</i>)
<i>Typha angustifolia, T. domingensis</i> Tidal Herbaceous	Narrow-leaf Cattail (<i>Typha angustifolia</i>)
<i>Typha angustifolia-Distichlis spicata</i>	<i>Typha angustifolia - Distichlis spicata</i>
<i>Deschampsia caespitosa</i> Tidal Herbaceous	California Hair-grass (<i>Deschampsia caespitosa</i>)
<i>Deschampsia caespitosa-Lilaeopsis masonii</i>	<i>Deschampsia caespitosa - Lilaeopsis masonii</i>
<i>Phragmites australis</i>	Common Reed (<i>Phragmites australis</i>)
Undetermined ³	Undetermined ³

Mapping Unit (Hickson and Keeler-Wolf 2007) ²	Plant Alliance (Sawyer and Keeler-Wolf 1995)
Tidal Brackish Emergent Wetland⁴	
<i>Salicornia</i>	
<i>Distichlis</i>	
<i>Atriplex triangularis</i>	
<i>Lepidium</i>	
Valley Riparian	
Temporarily or Seasonally Flooded - Deciduous Forests	Temporarily flooded cold-deciduous forest
White Alder (<i>Alnus rhombifolia</i>)	<i>Alnus rhombifolia</i>
White Alder (<i>Alnus rhombifolia</i>) - Arroyo willow (<i>Salix lasiolepis</i>) restoration	-
<i>Alnus rhombifolia</i> / <i>Salix exigua</i> (<i>Rosa californica</i>)	<i>Alnus rhombifolia</i> / <i>Salix exigua</i> (<i>Rosa californica</i>)
<i>Alnus rhombifolia</i> / <i>Cornus sericea</i>	<i>Alnus rhombifolia</i> / <i>Cornus sericea</i>
Oregon Ash (<i>Fraxinus latifolia</i>)	<i>Fraxinus latifolia</i>
Box Elder (<i>Acer negundo</i>)	<i>Acer negundo</i>
<i>Acer negundo</i> - <i>Salix gooddingii</i>	<i>Acer negundo</i> - <i>Salix gooddingii</i>
Hinds walnut (<i>Juglans hindsii</i>)	<i>Juglans X hindsii</i>
Fremont Cottonwood (<i>Populus fremontii</i>)	<i>Populus fremontii</i>
Black Willow (<i>Salix gooddingii</i>)	<i>Salix gooddingii</i>
Black Willow (<i>Salix gooddingii</i>) -Valley Oak (<i>Quercus lobata</i>) restoration	-
<i>Salix gooddingii</i> / wetland herbs	<i>Salix gooddingii</i> /wetland herb
<i>Salix gooddingii</i> - <i>Populus fremontii</i> - (<i>Quercus lobata</i> - <i>Salix exigua</i> - <i>Rubus discolor</i>)	<i>Salix gooddingii</i> - <i>Populus fremontii</i>
<i>Salix gooddingii</i> - <i>Quercus lobata</i> / Wetland Herbs	<i>Salix gooddingii</i> - <i>Quercus lobata</i> /wetland herb
<i>Salix gooddingii</i> / <i>Rubus discolor</i>	
Coast Live Oak (<i>Quercus agrifolia</i>)	<i>Quercus agrifolia</i>
Valley Oak (<i>Quercus lobata</i>)	<i>Quercus lobata</i>
Valley Oak (<i>Quercus lobata</i>) restoration	-
<i>Quercus lobata</i> / <i>Rosa californica</i> (<i>Rubus discolor</i> - <i>Salix lasiolepis</i> / <i>Carex spp.</i>)	<i>Quercus lobata</i> / <i>Rubus discolor</i>
<i>Quercus lobata</i> - <i>Acer negundo</i>	<i>Quercus lobata</i> - <i>Acer negundo</i>
<i>Quercus lobata</i> - <i>Alnus rhombifolia</i> (<i>Salix lasiolepis</i> - <i>Populus fremontii</i> - <i>Quercus agrifolia</i>)	<i>Quercus lobata</i> - <i>Alnus rhombifolia</i>
<i>Quercus lobata</i> - <i>Fraxinus latifolia</i>	<i>Quercus lobata</i> - <i>Fraxinus latifolia</i> / <i>Vitis californica</i>
Coyotebush (<i>Baccharis pilularis</i>)	<i>Baccharis pilularis</i>
<i>Baccharis pilularis</i> / Annual Grasses & Herbs	<i>Baccharis pilularis</i> /Annual Grass-Herb
Intermittently or Temporarily Flooded Deciduous Shrublands	Intermittently flooded cold-deciduous shrubland
Blackberry (<i>Rubus discolor</i>)	<i>Rubus discolor</i>
California Wild Rose (<i>Rosa californica</i>)	<i>Rosa californica</i>
Mexican Elderberry (<i>Sambucus mexicana</i>)	<i>Sambucus mexicana</i>
California Dogwood (<i>Cornus sericea</i>)	<i>Cornus sericea</i>
<i>Cornus sericea</i> - <i>Salix exigua</i>	<i>Cornus sericea</i> - <i>Salix exigua</i>

Mapping Unit (Hickson and Keeler-Wolf 2007) ²	Plant Alliance (Sawyer and Keeler-Wolf 1995)
<i>Cornus sericea</i> - <i>Salix lasiolepis</i> / (<i>Phragmites australis</i>)	<i>Cornus sericea</i> - <i>Salix lasiolepis</i>
Buttonbush (<i>Cephalanthus occidentalis</i>)	<i>Cephalanthus occidentalis</i>
Arroyo Willow (<i>Salix lasiolepis</i>)	<i>Salix lasiolepis</i> Great Valley
<i>Salix lasiolepis</i> - Mixed brambles (<i>Rosa californica</i> - <i>Vitis californica</i> - <i>Rubus discolor</i>)	-
<i>Salix lasiolepis</i> - (<i>Cornus sericea</i>) / <i>Scirpus</i> spp.- (<i>Phragmites australis</i> - <i>Typha</i> spp.) complex unit	-
Shining Willow (<i>Salix lucida</i>)	<i>Salix lucida</i>
Narrow-leaf Willow (<i>Salix exigua</i>)	<i>Salix exigua</i>
<i>Salix exigua</i> - (<i>Salix lasiolepis</i> - <i>Rubus discolor</i> - <i>Rosa californica</i>)	<i>Salix exigua</i> -(<i>Salix lasiolepis</i>)- <i>Rubus discolor</i>
Pampas Grass (<i>Cortaderia selloana</i> - <i>C. jubata</i>)	<i>Cortaderia (selloana, jubata)</i>
Giant Cane (<i>Arundo donax</i>)	<i>Arundo donax</i>
Horsetail (<i>Equisetum</i> spp.)	<i>Equisetum (arvense, variegatum, hyemale)</i>
Tree tobacco (<i>Nicotiana glauca</i>) mapping unit	-
<i>Acacia</i> - <i>Robinia</i>	<i>Robinia pseudoacacia</i>
-	Restoration Sites
Undetermined ³	Undetermined ³
Non-Tidal Perennial Aquatic	
<i>Ludwigia peploides</i>	Floating primrose (<i>Ludwigia peploides</i>)
<i>Ludwigia peploides</i>	<i>Ludwigia peploides</i>
<i>Eichhornia crassipes</i>	Water hyacinth (<i>Eichhornia crassipes</i>)
<i>Egeria</i> - <i>Cabomba</i> - <i>Myriophyllum</i> spp.	Brazilian waterweed (<i>Egeria</i> - <i>Myriophyllum</i>) Submerged
-	Algae
-	Water
-	Generic floating aquatics
-	Milfoil-waterweed (generic submerged aquatics)
Undetermined ³	Undetermined ³
Non-Tidal Freshwater Permanent Emergent	
<i>Typha latifolia</i> -pure	Broad-leaf Cattail (<i>Typha latifolia</i>)
Undetermined ³	Undetermined ³
Natural Seasonal Wetland	
<i>Distichlis spicata</i> Alliance	Saltgrass (<i>Distichlis spicata</i>)
<i>Distichlis spicata</i> -Annual grasses Provisional	<i>Distichlis spicata</i> - Annual Grasses
<i>Distichlis spicata</i> - <i>Salicornia virginica</i> Provisional	<i>Distichlis spicata</i> - <i>Salicornia virginica</i>
<i>Distichlis spicata</i> - <i>Juncus balticus</i>	<i>Distichlis spicata</i> - <i>Juncus balticus</i>
<i>Carex barbarae</i> Alliance	Santa Barbara Sedge (<i>Carex barbarae</i>) Stands
<i>Leymus triticoides</i> Alliance	Creeping Wild Rye Grass (<i>Leymus triticoides</i>)
Seasonally flooded temperate or subpolar grassland	Seasonally Flooded Grasslands
<i>Juncus bufonius</i> non-classified stands	<i>Juncus bufonius</i> (salt grasses)
Vernal Pool stands	Vernal Pools
-	<i>Juncus balticus</i> - meadow vegetation
-	Temporarily Flooded Perennial Forbs
-	Alkaline vegetation mapping unit

Mapping Unit (Hickson and Keeler-Wolf 2007)²	Plant Alliance (Sawyer and Keeler-Wolf 1995)
<i>Allenrolfea occidentalis</i> Alliance	<i>Allenrolfea occidentalis</i> mapping unit
<i>Suaeda moquini</i> Alliance	<i>Suaeda moquini</i> - (<i>Lasthenia californica</i>) mapping unit
<i>Frankenia salina</i> Alliance	Alkali Heath (<i>Frankenia salina</i>)
<i>Frankenia salina</i> Alliance	<i>Frankenia salina</i> - <i>Distichlis spicata</i>
<i>Salicornia virginica</i> Alliance	Pickleweed (<i>Salicornia virginica</i>)
<i>Salicornia virginica</i> - <i>Distichlis spicata</i> Provisional	<i>Salicornia virginica</i> - <i>Distichlis spicata</i>
<i>Salicornia virginica</i> - <i>Cotula coronopifolia</i> Provisional	<i>Salicornia virginica</i> - <i>Cotula coronopifolia</i>
-	Salt scalds and associated sparse vegetation
Undetermined ³	Undetermined ³
Managed Seasonal Wetland	
Temporarily flooded temperate or subpolar grassland	Temporarily Flooded Grasslands
-	Rabbitfoot grass (<i>Polypogon monspeliensis</i>)
-	Poison Hemlock (<i>Conium maculatum</i>)
-	Intermittently Flooded Perennial Forbs
-	Managed Annual Wetland Vegetation (Non-specific grasses & forbs)
-	Shallow flooding with minimal vegetation at time of photography
-	Seasonally flooded undifferentiated annual grasses and forbs
-	Managed alkali wetland (<i>Crypsis</i>)
-	Intermittently or temporarily flooded undifferentiated annual grasses and forbs
-	<i>Scirpus</i> spp. in managed wetlands
-	Smartweed <i>Polygonum</i> spp. - Mixed Forbs
<i>Polygonum amphibium</i> (<i>lapathifolium</i>) Provisional	<i>Polygonum amphibium</i>
<i>Lepidium latifolium</i> Alliance	Perennial Pepperweed (<i>Lepidium latifolium</i>)
<i>Lepidium latifolium</i> - <i>Salicornia virginica</i> - <i>Distichlis spicata</i> Provisional	<i>Lepidium latifolium</i> - <i>Salicornia virginica</i> - <i>Distichlis spicata</i>
Undetermined ³	Undetermined ³
Grassland	
<i>Cynodon dactylon</i> Alliance	Ruderal Herbaceous Grasses & Forbs
California Annual Grassland/Herbaceous Alliance	California Annual Grasslands - Herbaceous
<i>Bromus diandrus</i> - <i>Bromus hordeaceus</i> Provisional	<i>Bromus diandrus</i> - <i>Bromus hordeaceus</i>
<i>Lolium multiflorum</i> Alliance only	Italian Rye-grass (<i>Lolium multiflorum</i>)
<i>Lolium multiflorum</i> - <i>Convolvulus arvensis</i> Provisional	<i>Lolium multiflorum</i> - <i>Convolvulus arvensis</i>
-	Tall & Medium Upland Grasses
Undetermined ³	Undetermined ³
Inland Dune Scrub	
<i>Lupinus albifrons</i> Antioch Dunes	<i>Lupinus albifrons</i> - Antioch Dunes
<i>Lotus scoparius</i> Antioch Dunes	<i>Lotus scoparius</i> - Antioch Dunes

Mapping Unit (Hickson and Keeler-Wolf 2007) ²	Plant Alliance (Sawyer and Keeler-Wolf 1995)
Agricultural Land	
-	Agriculture
-	Exotic Vegetation Stands
Eucalyptus Alliance (includes multiple species)	Eucalyptus
<i>Ailanthus altissima</i> Alliance only	Tree-of-Heaven (<i>Ailanthus altissima</i>)
-	Sparsely or Unvegetated Areas; Abandoned orchards
Undetermined ³	Undetermined ³

¹ From draft BDCP Chapter 2, *Existing Ecological Conditions*.

² Some of the mapping units provided here are newly described associations or alliances. For more detailed information on these map units, as well as on methods of classification used, see Hickson and Keeler-Wolf (2007).

³ Extent of this natural community present in the Planning Area for which DFG did not delineate plant alliances. As described in Section 2.3.1, *Data Sources and Mapping Methods*, these areas were delineated as this natural community type from aerial photography interpretation.

⁴ Tidal brackish emergent wetland polygons (Vaghti and Keeler-Wolf 2003, SFEI 2005) were identified using San Francisco Estuary Institute mapping of tidal lands in Suisun Marsh. These areas were intersected with an elevation range of 6 to 8 feet to capture elevations 2 feet below intertidal to the upper limit of intertidal (i.e. the upper limit of the intertidal range was estimated at 8 feet, NAVD88; Siegel estimated the intertidal range in Suisun to occur between 1 to 8 feet, NAVD88 [Siegel, 2007]). This elevation band was then intersected and unioned with vegetation classifications that were dominated by: *Salicornia* and *Distichlis*, *Atriplex triangularis*, and *Lepidium* within the 6 to 8 feet elevation range.