

Technical Memo

**Western Stege Marsh Restoration Project Monitoring
Richmond Field Station
Spring 2007**

**Prepared for the University of California, Berkeley
By the Watershed Project**

This memorandum presents the findings from the ecotone vegetation monitoring surveys conducted in June 2007. The Watershed Project, at the request of U.C. Berkeley monitored 14 quadrats (located within 8 transects) within the Western Stege Marsh Restoration Project Site.

The vegetation monitoring was performed using the methods specified within the Western Stege Marsh Restoration Project Monitoring Plan (BBL, 2004). A one-meter quadrat was placed at the southwestern¹ corner of each monitoring point (demarcated by either a metal t-stake or wooden survey stake). Ecotone monitoring points were confirmed with U.C. Berkeley staff prior to conducting surveys (Hans, pers. comm., 2007). All native and non-native plant species found within each quadrat was recorded. Additionally, cover was noted and vigor was assessed for the dominant planted species. Appendix 1 includes all of the original datasheets. Table 1 summarizes the survey results.

While some of the ecotone monitoring points had not been previously surveyed, transect points A-1 – A-3, A'-1' – A'-3', B-1, C-0, D-0, and E-0 were monitored as a part of the Year 2 monitoring surveys conducted during September 2006. A preliminary review of the 2007 survey results reveals both an overall increase in species richness and vigor within these areas. A more detailed comparative analysis should be performed following the collection of the fall data set.

The Watershed Project also conducted photomonitoring within the project site. Methods were consistent with those outlined in the Western Stege Marsh Restoration Project Monitoring Plan; however staff also recorded exact compass bearings for each image taken. Images from each photo point are illustrated in Appendix 2.

Other Observations:

Vegetation composition, richness and vigor vary throughout the ecotone habitat within the marsh project site. While the exact cause of the variation is not fully understood, it is possibly linked to localized changes in soil compaction and the large presence of un-natural fill (e.g. cement pieces, gravel, etc.) within some transect points. Previous soil constituent testing did not reveal a high variance in chemical composition between areas.

It should be noted that the current ecotone monitoring plot locations do not appear to capture data reflecting the zone's overall richness, composition and vigor. Many of the survey points are arranged in areas supporting less richness and vigor. While this is not a significant finding, U.C. Berkeley may want to

¹ Note for monitoring points A'-1', A'-2' and A'-3' the quadrat was inadvertently placed at the southeastern corner of the monitoring stake. Upon review of the data (3 weeks following the monitoring activities), it was determined that there was minimal variance in both the richness and cover between the southeastern and southwestern placements in this area, therefore data collection was not repeated. It is recommended that future surveying of these points be conducted using the southeastern corner for consistency.

and vigor. Many of the survey points are arranged in areas supporting less richness and vigor. While this is not a significant finding, U.C. Berkeley may want to consider adding 3-4 additional monitoring points within this zone.

TABLE 1: Vegetation Survey Results and Vigor of Planted Stock for the Western Stege marsh Restoration Project Site
 Ecotone Quadrat Monitoring - June 2007

Location	Vigor of Plantings		Scientific Name	Common Name	% Cover																	
	Transect	Quadrat			Height (in)	Health	<1	1 - 5	6 - 15	16 - 25	26 - 45	46 - 75	76 - 90	> 90								
A	A-1	2"	P	<i>Artemisia californica</i>	Common sagebrush	X																
				<i>Distichlis spicata</i>	Saltgrass		X															
				<i>Epilobium ciliatum</i>	Fireweed,	X																
				<i>Grindelia hirsutula</i> var. <i>angustifolia</i>	Marsh gumplant		X															
				<i>Lolium multiflorum</i>	Italian wildrye grass	X																
				<i>Lotus corniculatus</i>	Birdsfoot trefoil	X						X										
				<i>Medicago polymorpha</i>	Bur clover	X																
				<i>Picris echioides</i>	Bristly ox tongue	X																
				<i>Polygonum monspeliensis</i>	Rabbits foot grass	X			X													
				<i>Salicornia virginica</i>	Pickleweed	X				X												
				<i>Salsola</i>	Russian thistle	X																
					Bare ground					X												
					Dead plant material					X												
				A-2				<i>Cotula coronopifolia</i>	Brass buttons		X											
<i>Distichlis spicata</i>	Saltgrass	X																				
<i>Polygonum monspeliensis</i>	Rabbits foot grass		X																			
<i>Salicornia virginica</i>	Pickleweed											X										
<i>Spergula marina</i>	Annual sand spurry		X																			
	Bare ground												X									
A-3	18"	G		<i>Achillea millefolium</i>	Yarrow	X																
				<i>Aster chilensis</i>	California aster			X														
				<i>Eriophyllum staechadifolium</i>	Lizard tail								X									
				<i>Lolium multiflorum</i>	Italian wildrye grass	X																
				<i>Lotus corniculatus</i>	Birdsfoot trefoil						X											
				<i>Medicago polymorpha</i>	Bur clover	X																
				<i>Picris echioides</i>	Bristly ox tongue		X															
				<i>Polygonum monspeliensis</i>	Rabbits foot grass	X																
					Bare ground		X															
A-4	4"			<i>Achillea millefolium</i>	Yarrow		X															
				<i>Artemisia californica</i>	Common sagebrush		X															

Location		Vigor of Plantings		% Cover											
Transect	Quadrat	Height (in)	Health	Scientific Name	Common Name	<1	1-5	6-15	16-25	26-45	46-75	76-90	>90		
B	A-3'	7"	G	<i>Grindelia hirsutula</i> var. <i>angustifolia</i>	Marsh gumplant		X								
				<i>Jaumea carnosa</i>	Salty susan	X									
				<i>Lotus corniculatus</i>	Birdsfoot trefoil					X					
				<i>Polygogon monspeliensis</i>	Rabbits foot grass	X									
				<i>Salicornia virginica</i>	Pickleweed	X									
				<i>Sonchus asper</i>	Prickly sow thistle	X									
				<i>Spergula marina</i>	Annual sand spurry	X									
				Bare ground											
				<i>Distichlis spicata</i>	Saltgrass					X					
				<i>Grindelia hirsutula</i> var. <i>angustifolia</i>	Marsh gumplant						X				
<i>Polygogon monspeliensis</i>	Rabbits foot grass					X									
<i>Salicornia virginica</i>	Pickleweed							X							
Bare ground						X									
B	B-1	14"	E	<i>Artemisia californica</i>	Common sagebrush	X									
				<i>Baccharis pilularis</i>	Coyote brush	X									
				<i>Distichlis spicata</i>	Saltgrass	X									
				<i>Epilobium ciliatum</i>	fireweed, willow herb	X									
				<i>Gnaphalium</i>	Cud weed					X					
				<i>Grindelia hirsutula</i> var. <i>angustifolia</i>	Marsh gumplant							X			
				<i>Heteromeles arbutifolia</i>	Toyon	X									
				<i>Medicago polymorpha</i>	Bur clover	X					X				
				<i>Melilotus</i>	Sweet clover	X									
				<i>Picris echioides</i>	Bristly ox tongue	X									
C	C-0	7"	E	<i>Polygogon monspeliensis</i>	Rabbits foot grass	X									
				<i>Sonchus asper</i>	Prickly sow thistle	X									
				<i>Achillea millefolium</i>	Yarrow							X			
				<i>Aster chilensis</i>	California aster						X				
				Bare ground							X				
				<i>Bromus diandrus</i>	Rip gut brome						X				
				<i>Gnaphalium</i>	Cud weed										
				<i>Lotus corniculatus</i>	Birdsfoot trefoil	X									

Location		Vigor of Plantings		% Cover										
Transect	Quadrat	Height (in)	Health	Scientific Name	Common Name	<1	1 - 5	6 - 15	16 - 25	26 - 45	46 - 75	76 - 90	> 90	
				<i>Picris echinoides</i>	Bristly ox tongue	X								
				<i>Polygonum monspeliensis</i>	Rabbits foot grass	X								
				<i>Salicornia virginica</i>	Pickleweed		X							
				<i>Vulpis myuros</i>	Rat tail grass	X								
D	D-0	9"	G	<i>Achillea millefolium</i>	Yarrow		X							
				<i>Baccharis pitularis</i>	Coyote brush		X							
				<i>Eriophyllum staechadifolium</i>	Lizard tail			X						
				<i>Lolium multiflorum</i>	Italian wildrye grass			X						
				<i>Picris echinoides</i>	bristly ox tongue	X								
				<i>Polygonum monspeliensis</i>	Rabbits foot grass	X								
				<i>Salicornia virginica</i>	Pickleweed		X							
				Dead plant material			X							
				Bare ground					X					
E	E-0	15"	F	<i>Achillea millefolium</i>	Yarrow			X						
				<i>Artemisia californica</i>	Common sagebrush			X						
				<i>Baccharis pitularis</i>	Coyote brush		X							
				<i>Bromus diandrus</i>	rip gut brome		X							
				<i>Elymus glaucus</i>	Blue wild rye	X								
				<i>Epilobium ciliatum</i>	fireweed, willow herb	X								
				<i>Eriophyllum staechadifolium</i>	Lizard tail				X					
				<i>Lolium multiflorum</i>	Italian wildrye grass	X								
				<i>Medicago polymorpha</i>	bur clover	X								
				<i>Medicago</i>	sweet clover		X							
				<i>Mimulus aurantiacus</i>	Sticky monkeyflower		X							
				<i>Picris echinoides</i>	bristly ox tongue	X								
F	F-0	15"	G	<i>Achillea millefolium</i>	Yarrow		X							
				<i>Aster chilensis</i>	California aster	X								
				<i>Eriogonum latifolium</i>	Coastal buckwheat		X							
				<i>Grindelia hirsutula</i> var. <i>hirsutula</i>	Gumplant				X					
				<i>Lolium multiflorum</i>	Italian wildrye grass	X								
				<i>Malva sp.</i>	Cheese weed	X								
				<i>Mimulus aurantiacus</i>	Sticky monkeyflower	X								

Location		Vigor of Plantings		% Cover										
Transect	Quadrat	Height (in)	Health	Scientific Name	Common Name	<1	1 - 5	6 - 15	16 - 25	26 - 45	46 - 75	76 - 90	> 90	
				<i>Picris echioides</i>	Bristly ox tongue	X								
				<i>Plantago dissectum</i>	Cut leaf plantain	X								
				<i>Polypogon monspeliensis</i>	Rabbits foot grass	X					X			
				Bare ground										
G	G-1	26"	E	<i>Artemisia californica</i>	Common sagebrush		X							
				<i>Distichlis spicata</i>	Saltgrass				X					
				<i>Grindelia hirsutula</i> var. <i>angustifolia</i>	Marsh gumplant					X				
				<i>Limonium californicum</i>	Marsh rosemary	X								
				<i>Melilotus</i>	sweet clover	X								
				<i>Salicornia virginica</i>	Pickleweed	X								
				<i>Stellaria arvensis</i>	chickweed	X								
				<i>Toxicodendron diversiloba</i>	poison oak			X						
				Drift material (trash)			X							
				Bare ground			X							

Appendix 1: Original Data Sheets

UC Berkeley RFS Western Stege Marsh Restoration Project
Vegetation Monitoring Data

Quadrat #: A1 Survey Date: 6/8/07 Surveyed by: S Farrell, M Berthel

Height (inches, average of dominant species): _____

Percent cover within quadrat (if present)

Scientific Name	Common Name	< 1	1- 5	6- 15	16-25	26 - 45	46 -75	76 -90	> 90	Vigor
<i>Achillea millefolium</i>	Yarrow									
<i>Artemisia californica</i>	Common sagebrush	X								
<i>Artemisia douglasiana</i>	Mugwort									
<i>Aster chilensis</i>	California aster									
<i>Atriplex triangularis</i>	Saltbush, Spearscale									
<i>Baccharis pilularis</i>	Coyote brush									
<i>Bromus carinatus</i>	California brome									
<i>Castilleja affinis</i>	Coast Indian paintbrush									
<i>Castilleja ambigua</i>	Johnny nip									
<i>Cotula coronopifolia</i>	Brass buttons									
<i>Danthonia California</i>	California oatgrass									
<i>Distichlis spicata</i>	Saltgrass			X						P 2"
<i>Elymus glaucus</i>	Blue wild rye									
<i>Eriophyllum staechadifolium</i>	Lizard tail									
<i>Grindelia hirsutula</i> var. <i>hirsutula</i>	Gumplant									
<i>Grindelia hirsutula</i> var. <i>angustifolia</i>	Marsh gumplant		X							
<i>Heliotropium curassavicum</i>	Marsh heliotrope									
<i>Hordeum brachyantherum</i>	Meadow barley									
<i>Jaumea carnosa</i>	Salty susan									
<i>Limonium californicum</i>	Marsh rosemary									
<i>Lotus corniculatus</i>	Birdsfoot trefoil					X				
<i>Lupinus albifrons</i>	Silver lupine									
<i>Mimulus aurantiacus</i>	Sticky monkeyflower									
<i>Nasella pulchra</i>	Purple needlegrass									
<i>Polypogon monspeliensis</i>	Rabbits foot grass		X							
<i>Rhamnus californica</i>	Coffeeberry									
<i>Salicornia virginica</i>	Pickleweed			X						
<i>Sonchus asper</i>	Prickly sow thistle									
<i>Sisyrinchium bellum</i>	Blue-eyed grass									
<i>Spartina foliosa</i>	Pacific cord grass									
<i>Spergula marina</i>	Annual sand spurry									
Algal mat										
Dead plant material			X							
Drift material										
Bare ground			X							
<i>Picris</i>		X								
<i>Lolium</i>		X								
<i>Medicago</i>		X								
<i>Epilobium</i>	five weed	X								
<i>Salsola</i>		X								

Qualitative Score for Assessing the Vigor of Planted Stock

Score	Description of Score
E- Excellent	No evidence of stress. Minor pest or pathogen damage may be present
G- Good	Some evidence of stress. Pest or pathogen damage present.
F- Fair	Moderate level of stress. High levels of pest or pathogen damage.
P- Poor	High level of stress. High levels or pest or pathogen damage.

Other Wildlife Observations (insects, birds, etc.) & Notes:

UC Berkeley RFS Western Stege Marsh Restoration Project
Vegetation Monitoring Data

Quadrat #: A3 Survey Date: 6/8/07 Surveyed by: S. Farrell & M. Berthelsen

Height (inches, average of dominant species): 18"

Percent cover within quadrat (if present)

Scientific Name	Common Name	< 1	1- 5	6- 15	16-25	26 - 45	46 -75	76 -90	> 90	Vigor
<i>Achillea millefolium</i>	Yarrow	X								
<i>Artemisia californica</i>	Common sagebrush									
<i>Artemisia douglasiana</i>	Mugwort									
<i>Aster chilensis</i>	California aster			X						
<i>Atriplex triangularis</i>	Saltbush, Spearscale									
<i>Baccharis pilularis</i>	Coyote brush									
<i>Bromus carinatus</i>	California brome									
<i>Castilleja affinis</i>	Coast Indian paintbrush									
<i>Castilleja ambigua</i>	Johnny nip									
<i>Cotula coronopifolia</i>	Brass buttons									
<i>Danthonia California</i>	California oatgrass									
<i>Distichlis spicata</i>	Saltgrass									
<i>Elymus glaucus</i>	Blue wild rye									
<i>Eriophyllum staechadifolium</i>	Lizard tail					X				G 18"
<i>Grindelia hirsutula</i> var. <i>hirsutula</i>	Gumplant									
<i>Grindelia hirsutula</i> var. <i>angustifolia</i>	Marsh gumplant									
<i>Heliotropium curassavicum</i>	Marsh heliotrope									
<i>Hordeum brachyantherum</i>	Meadow barley									
<i>Jaumea carnosa</i>	Salty susan									
<i>Limonium californicum</i>	Marsh rosemary									
<i>Lotus corniculatus</i>	Birdsfoot trefoil				X					
<i>Lupinus albifrons</i>	Silver lupine									
<i>Mimulus aurantiacus</i>	Sticky monkeyflower									
<i>Nasella pulchra</i>	Purple needlegrass									
<i>Polypogon monspiliensis</i>	Rabbits foot grass	X								
<i>Rhamnus californica</i>	Coffeeberry									
<i>Salicornia virginica</i>	Pickleweed									
<i>Sonchus asper</i>	Prickly sow thistle									
<i>Sisyrinchium bellum</i>	Blue-eyed grass									
<i>Spartina foliosa</i>	Pacific cord grass									
<i>Spergula marina</i>	Annual sand spurry									
Algal mat										
Dead plant material										
Drift material										
Bare ground		X								
<i>Picris</i>			X							
<i>Lolium multiflorum</i>		X								
<i>Medicago</i>		X								

Qualitative Score for Assessing the Vigor of Planted Stock

Score	Description of Score
E- Excellent	No evidence of stress. Minor pest or pathogen damage may be present
G- Good	Some evidence of stress. Pest or pathogen damage present.
F- Fair	Moderate level of stress. High levels of pest or pathogen damage.
P- Poor	High level of stress. High levels or pest or pathogen damage.

Other Wildlife Observations (insects, birds, etc.) & Notes:

UC Berkeley RFS Western Stege Marsh Restoration Project
Vegetation Monitoring Data

Quadrat #: A4 Survey Date: 6/8/07 Surveyed by: S Farrell & M Barthelsen

Height (inches, average of dominant species): 4"

Percent cover within quadrat (if present)

Scientific Name	Common Name	< 1	1- 5	6- 15	16-25	26 - 45	46 -75	76 -90	> 90	Vigor
<i>Achillea millefolium</i>	Yarrow		X							
<i>Artemisia californica</i>	Common sagebrush									
<i>Artemisia douglasiana</i>	Mugwort		X							64"
<i>Aster chilensis</i>	California aster									
<i>Atriplex triangularis</i>	Saltbush, Spearscale									
<i>Baccharis pilularis</i>	Coyote brush									
<i>Bromus carinatus</i>	California brome									
<i>Castilleja affinis</i>	Coast Indian paintbrush									
<i>Castilleja ambigua</i>	Johnny nip									
<i>Cotula coronopifolia</i>	Brass buttons									
<i>Danthonia California</i>	California oatgrass									
<i>Distichlis spicata</i>	Saltgrass									
<i>Elymus glaucus</i>	Blue wild rye	X								
<i>Eriophyllum staechadifolium</i>	Lizard tail	X								
<i>Grindelia hirsutula</i> var. <i>hirsutula</i>	Gumplant									
<i>Grindelia hirsutula</i> var. <i>angustifolia</i>	Marsh gumplant									
<i>Heliotropium curassavicum</i>	Marsh heliotrope									
<i>Hordeum brachyantherum</i>	Meadow barley									
<i>Jaumea carnosa</i>	Salty susan									
<i>Limonium californicum</i>	Marsh rosemary									
<i>Lotus corniculatus</i>	Birdsfoot trefoil					X				4"
<i>Lupinus albifrons</i>	Silver lupine									
<i>Mimulus aurantiacus</i>	Sticky monkeyflower									
<i>Nasella pulchra</i>	Purple needlegrass									
<i>Polypogon monspiliensis</i>	Rabbits foot grass									
<i>Rhamnus californica</i>	Coffeeberry									
<i>Salicornia virginica</i>	Pickleweed									
<i>Sonchus asper</i>	Prickly sow thistle	X								
<i>Sisyrinchium bellum</i>	Blue-eyed grass									
<i>Spartina foliosa</i>	Pacific cord grass									
<i>Spergula marina</i>	Annual sand spurry		X							
Algal mat										
Dead plant material										
Drift material										
Bare ground						X				
<i>Medicago</i>	bir clover			X						
	fennel	X								
<i>Picris</i>		X								
<i>Gnaphalium</i>		X								

Qualitative Score for Assessing the Vigor of Planted Stock

Score	Description of Score
E- Excellent	No evidence of stress. Minor pest or pathogen damage may be present
G- Good	Some evidence of stress. Pest or pathogen damage present.
F- Fair	Moderate level of stress. High levels of pest or pathogen damage.
P- Poor	High level of stress. High levels of pest or pathogen damage.

Other Wildlife Observations (insects, birds, etc.) & Notes:

UC Berkeley RFS Western Stege Marsh Restoration Project
Vegetation Monitoring Data

Quadrat #: AS Survey Date: 6/8/07 Surveyed by: S Farrell & M Berthelsen

Height (inches, average of dominant species): 24"

Percent cover within quadrat (if present)

Scientific Name	Common Name	< 1	1- 5	6- 15	16-25	26 - 45	46 -75	76 -90	> 90	Vigor
<i>Achillea millefolium</i>	Yarrow									
<i>Artemisia californica</i>	Common sagebrush									
<i>Artemisia douglasiana</i>	Mugwort									
<i>Aster chilensis</i>	California aster									
<i>Atriplex triangularis</i>	Saltbush, Spearscale									
<i>Baccharis pilularis</i>	Coyote brush									
<i>Bromus carinatus</i>	California brome									
<i>Castilleja affinis</i>	Coast Indian paintbrush									
<i>Castilleja ambigua</i>	Johnny nip									
<i>Cotula coronopifolia</i>	Brass buttons									
<i>Danthonia California</i>	California oatgrass									
<i>Distichlis spicata</i>	Saltgrass		X							
<i>Elymus glaucus</i>	Blue wild rye									
<i>Eriophyllum staechadifolium</i>	Lizard tail	X								
<i>Grindelia hirsutula</i> var. <i>hirsutula</i>	Gumplant									
<i>Grindelia hirsutula</i> var. <i>angustifolia</i>	Marsh gumplant									
<i>Heliotropium curassavicum</i>	Marsh heliotrope									
<i>Hordeum brachyantherum</i>	Meadow barley									
<i>Jaumea carnosa</i>	Salty susan									
<i>Limonium californicum</i>	Marsh rosemary									
<i>Lotus corniculatus</i>	Birdsfoot trefoil	X								
<i>Lupinus albus</i> var. <i>arborescens</i>	Silver lupine								X	24" E
<i>Mimulus aurantiacus</i>	Sticky monkeyflower									
<i>Nasella pulchra</i>	Purple needlegrass									
<i>Polypogon monspeliensis</i>	Rabbits foot grass	X								
<i>Rhamnus californica</i>	Coffeeberry									
<i>Salicornia virginica</i>	Pickleweed									
<i>Sonchus asper</i>	Prickly sow thistle									
<i>Sisyrinchium bellum</i>	Blue-eyed grass									
<i>Spartina foliosa</i>	Pacific cord grass									
<i>Spergula marina</i>	Annual sand spurry									
Algal mat										
Dead plant material										
Drift material										
Bare ground										
<i>Melilotus</i>			X							
	bur clover	X								
	end weed	X								

Qualitative Score for Assessing the Vigor of Planted Stock

Score	Description of Score
E- Excellent	No evidence of stress. Minor pest or pathogen damage may be present
G- Good	Some evidence of stress. Pest or pathogen damage present.
F- Fair	Moderate level of stress. High levels of pest or pathogen damage.
P- Poor	High level of stress. High levels of pest or pathogen damage.

Other Wildlife Observations (insects, birds, etc.) & Notes:

UC Berkeley RFS Western Stege Marsh Restoration Project
Vegetation Monitoring Data

Quadrat #: A1 Survey Date: June 1, 2007 Surveyed by: MBerthelsen, S Farrell

Height (inches, average of dominant species): 9"

Percent cover within quadrat (if present)

Scientific Name	Common Name	< 1	1-5	6-15	16-25	26-45	46-75	76-90	> 90	Vigor
<i>Achillea millefolium</i>	Yarrow									
<i>Artemisia californica</i>	Common sagebrush									
<i>Artemisia douglasiana</i>	Mugwort									
<i>Aster chilensis</i>	California aster									
<i>Atriplex triangularis</i>	Saltbush, Spearscale									
<i>Baccharis pilularis</i>	Coyote brush									
<i>Bromus carinatus</i>	California brome									
<i>Castilleja affinis</i>	Coast Indian paintbrush									
<i>Castilleja ambigua</i>	Johnny nip									
<i>Cotula coronopifolia</i>	Brass buttons									
<i>Danthonia California</i>	California oatgrass									
<i>Distichlis spicata</i>	Saltgrass	-		X						4-5" G
<i>Elymus glaucus</i>	Blue wild rye									
<i>Eriophyllum staechadifolium</i>	Lizard tail									
<i>Grindelia hirsutula</i> var. <i>hirsutula</i>	Gumplant									
<i>Grindelia hirsutula</i> var. <i>angustifolia</i>	Marsh gumplant			X						9" E
<i>Heliotropium curassavicum</i>	Marsh heliotrope									
<i>Hordeum brachyantherum</i>	Meadow barley									
<i>Jaumea carnosa</i>	Salty susan	X								
<i>Limonium californicum</i>	Marsh rosemary									
<i>Lotus corniculatus</i>	Birdsfoot trefoil									
<i>Lupinus albifrons</i>	Silver lupine									
<i>Mimulus aurantiacus</i>	Sticky monkeyflower									
<i>Nasella pulchra</i>	Purple needlegrass									
<i>Polypogon monspeliensis</i>	Rabbits foot grass		X							
<i>Rhamnus californica</i>	Coffeeberry									
<i>Salicornia virginica</i>	Pickleweed	X								
<i>Sonchus asper</i>	Prickly sow thistle									
<i>Sisyrinchium bellum</i>	Blue-eyed grass									
<i>Spartina foliosa</i>	Pacific cord grass									
<i>Spergula marina</i>	Annual sand spurry									
Algal mat										
Dead plant material										
Drift material										
Bare ground						X				
<i>Stellaria arvensis</i>	chickweed		X							
<i>Medicago polymorpha</i>	burr clover (comm)	X								
<i>Lolium multiflorum</i>	rye grass	X								
<i>Vulpia myuros</i>	rat-tail grass	X								
<i>Picris echinoides</i>	bristly ox-tongue	X								

Qualitative Score for Assessing the Vigor of Planted Stock

Score	Description of Score
E- Excellent	No evidence of stress. Minor pest or pathogen damage may be present
G- Good	Some evidence of stress. Pest or pathogen damage present.
F- Fair	Moderate level of stress. High levels of pest or pathogen damage.
P- Poor	High level of stress. High levels of pest or pathogen damage.

Other Wildlife Observations (insects, birds, etc.) & Notes:

Jack rabbit - pictures taken
(juveniles?)

UC Berkeley RFS Western Stege Marsh Restoration Project
Vegetation Monitoring Data

Quadrat #: A'2' Survey Date: June 1, 2001 Surveyed by: M Bartheliza, S Farrell

Height (inches, average of dominant species): _____

Percent cover within quadrat (if present)

Scientific Name	Common Name	< 1	1- 5	6- 15	16-25	26 - 45	46 -75	76 -90	> 90	Vigor
<i>Achillea millefolium</i>	Yarrow									
<i>Artemisia californica</i>	Common sagebrush									
<i>Artemisia douglasiana</i>	Mugwort									
<i>Aster chilensis</i>	California aster			X						7" G
<i>Atriplex triangularis</i>	Saltbush, Spearscale									
<i>Baccharis pilularis</i>	Coyote brush									
<i>Bromus carinatus</i>	California brome									
<i>Castilleja affinis</i>	Coast Indian paintbrush									
<i>Castilleja ambigua</i>	Johnny nip									
<i>Cotula coronopifolia</i>	Brass buttons									
<i>Danthonia California</i>	California oatgrass									
<i>Distichlis spicata</i>	Saltgrass			X						8" G
<i>Elymus glaucus</i>	Blue wild rye									
<i>Eriophyllum staechadifolium</i>	Lizard tail									
<i>Grindelia hirsutula</i> var. <i>hirsutula</i>	Gumplant									
<i>Grindelia hirsutula</i> var. <i>angustifolia</i>	Marsh gumplant		X							11" G
<i>Heliotropium curassavicum</i>	Marsh heliotrope									
<i>Hordeum brachyantherum</i>	Meadow barley									
<i>Jaumea carnosa</i>	Salty susan	X								
<i>Limonium californicum</i>	Marsh rosemary									
<i>Lotus corniculatus</i>	Birdsfoot trefoil					X				10"
<i>Lupinus albifrons</i>	Silver lupine									
<i>Mimulus aurantiacus</i>	Sticky monkeyflower									
<i>Nasella pulchra</i>	Purple needlegrass									
<i>Polypogon monspeliensis</i>	Rabbits foot grass		X							
<i>Rhamnus californica</i>	Coffeeberry									
<i>Salicornia virginica</i>	Pickleweed	X								
<i>Sonchus asper</i>	Prickly sow thistle	X								
<i>Sisyrinchium bellum</i>	Blue-eyed grass									
<i>Spartina foliosa</i>	Pacific cord grass									
<i>Spergula marina</i>	Annual sand spurry	X								
Algal mat										
Dead plant material										
Drift material										
Bare ground			X							

Qualitative Score for Assessing the Vigor of Planted Stock

Score	Description of Score
E- Excellent	No evidence of stress. Minor pest or pathogen damage may be present
G- Good	Some evidence of stress. Pest or pathogen damage present.
F- Fair	Moderate level of stress. High levels of pest or pathogen damage.
P- Poor	High level of stress. High levels of pest or pathogen damage.

Other Wildlife Observations (insects, birds, etc.) & Notes:

UC Berkeley RFS Western Stege Marsh Restoration Project
Vegetation Monitoring Data

Quadrat #: A31 Survey Date: June 1 2007 Surveyed by: M Berthelsen, S Farwell

Height (inches, average of dominant species): 7"

Percent cover within quadrat (if present)

Scientific Name	Common Name	< 1	1- 5	6- 15	16-25	26 - 45	46 -75	76 -90	> 90	Vigor
<i>Achillea millefolium</i>	Yarrow									
<i>Artemisia californica</i>	Common sagebrush									
<i>Artemisia douglasiana</i>	Mugwort									
<i>Aster chilensis</i>	California aster									
<i>Atriplex triangularis</i>	Saltbush, Spearscale									
<i>Baccharis pilularis</i>	Coyote brush									
<i>Bromus carinatus</i>	California brome									
<i>Castilleja affinis</i>	Coast Indian paintbrush									
<i>Castilleja ambigua</i>	Johnny nip									
<i>Cotula coronopifolia</i>	Brass buttons									
<i>Danthonia California</i>	California oatgrass									
<i>Distichlis spicata</i>	Saltgrass			X						5" F
<i>Elymus glaucus</i>	Blue wild rye									
<i>Eriophyllum staechadifolium</i>	Lizard tail									
<i>Grindelia hirsutula</i> var. <i>hirsutula</i>	Gumplant									
<i>Grindelia hirsutula</i> var. <i>angustifolia</i>	Marsh gumplant			X						8" G
<i>Heliotropium curassavicum</i>	Marsh heliotrope									
<i>Hordeum brachyantherum</i>	Meadow barley									
<i>Jaumea carnosa</i>	Salty susan									
<i>Limonium californicum</i>	Marsh rosemary									
<i>Lotus corniculatus</i>	Birdsfoot trefoil									
<i>Lupinus albifrons</i>	Silver lupine									
<i>Mimulus aurantiacus</i>	Sticky monkeyflower									
<i>Nasella pulchra</i>	Purple needlegrass									
<i>Polypogon monspeliensis</i>	Rabbits foot grass			X						
<i>Rhamnus californica</i>	Coffeeberry									
<i>Salicornia virginica</i>	Pickleweed				X					7" G
<i>Sonchus asper</i>	Prickly sow thistle									
<i>Sisyrinchium bellum</i>	Blue-eyed grass									
<i>Spartina foliosa</i>	Pacific cord grass									
<i>Spergula marina</i>	Annual sand spurry									
Algal mat										
Dead plant material										
Drift material										
Bare ground			X							

Qualitative Score for Assessing the Vigor of Planted Stock

Score	Description of Score
E- Excellent	No evidence of stress. Minor pest or pathogen damage may be present
G- Good	Some evidence of stress. Pest or pathogen damage present.
F- Fair	Moderate level of stress. High levels of pest or pathogen damage.
P- Poor	High level of stress. High levels or pest or pathogen damage.

Other Wildlife Observations (insects, birds, etc.) & Notes: Goose scat

UC Berkeley RFS Western Stege Marsh Restoration Project
Vegetation Monitoring Data

Quadrat #: B1 Survey Date: June 1 2007 Surveyed by: M Berthelsen, S Farrell

Height (inches, average of dominant species): 14"

Percent cover within quadrat (if present)

Scientific Name	Common Name	< 1	1- 5	6- 15	16-25	26 - 45	46 -75	76 -90	> 90	Vigor
<i>Achillea millefolium</i>	Yarrow									
<i>Artemisia californica</i>	Common sagebrush									
<i>Artemisia douglasiana</i>	Mugwort	X								
<i>Aster chilensis</i>	California aster									
<i>Atriplex triangularis</i>	Saltbush, Spearscale									
<i>Baccharis pilularis</i>	Coyote brush	X								
<i>Bromus carinatus</i>	California brome									
<i>Castilleja affinis</i>	Coast Indian paintbrush									
<i>Castilleja ambigua</i>	Johnny nip									
<i>Cotula coronopifolia</i>	Brass buttons									
<i>Danthonia California</i>	California oatgrass									
<i>Distichlis spicata</i>	Saltgrass	X								
<i>Elymus glaucus</i>	Blue wild rye									
<i>Eriophyllum staechadifolium</i>	Lizard tail									
<i>Grindelia hirsutula</i> var. <i>hirsutula</i>	Gumplant									
<i>Grindelia hirsutula</i> var. <i>angustifolia</i>	Marsh gumplant				X					14" E
<i>Heliotropium curassavicum</i>	Marsh heliotrope									
<i>Hordeum brachyantherum</i>	Meadow barley									
<i>Jaumea carnosa</i>	Salty susan									
<i>Limonium californicum</i>	Marsh rosemary									
<i>Lotus corniculatus</i>	Birdsfoot trefoil									
<i>Lupinus albifrons</i>	Silver lupine									
<i>Mimulus aurantiacus</i>	Sticky monkeyflower									
<i>Nasella pulchra</i>	Purple needlegrass									
<i>Polypogon monspeliensis</i>	Rabbits foot grass		X							
<i>Rhamnus californica</i>	Coffeeberry									
<i>Salicornia virginica</i>	Pickleweed									
<i>Sonchus asper</i>	Prickly sow thistle	X								
<i>Sisyrinchium bellum</i>	Blue-eyed grass									
<i>Spartina foliosa</i>	Pacific cord grass									
<i>Spergula marina</i>	Annual sand spurry									
Algal mat										
Dead plant material										
Drift material <i>Picris</i>	Bristly ox tongue	X								
Bare ground				X						
<i>Epilobium ciliatum</i>	Fireweed	X								
<i>Heteromeles arbutifolia</i>	Togon	X								
<i>Medicago polymorpha</i>	bur clover				X					
<i>Grappallium</i>	Chd weed			X						
<i>Melilotus</i>		X								

Qualitative Score for Assessing the Vigor of Planted Stock

Score	Description of Score
E- Excellent	No evidence of stress. Minor pest or pathogen damage may be present
G- Good	Some evidence of stress. Pest or pathogen damage present.
F- Fair	Moderate level of stress. High levels of pest or pathogen damage.
P- Poor	High level of stress. High levels or pest or pathogen damage.

Other Wildlife Observations (insects, birds, etc.) & Notes:

UC Berkeley RFS Western Stege Marsh Restoration Project
Vegetation Monitoring Data

Quadrat #: C 0 Survey Date: 6/1/07 Surveyed by: M Berthelsen, S Farrell

Height (inches, average of dominant species): _____

Percent cover within quadrat (if present)

Scientific Name	Common Name	< 1	1- 5	6- 15	16-25	26 - 45	46 -75	76 -90	> 90	Vigor
<i>Achillea millefolium</i>	Yarrow					X				7 ⁿ E
<i>Artemisia californica</i>	Common sagebrush									
<i>Artemisia douglasiana</i>	Mugwort									
<i>Aster chilensis</i>	California aster					X				9 ⁿ F
<i>Atriplex triangularis</i>	Saltbush, Spearscale									
<i>Baccharis pilularis</i>	Coyote brush									
<i>Bromus carinatus</i>	California brome									
<i>Castilleja affinis</i>	Coast Indian paintbrush									
<i>Castilleja ambigua</i>	Johnny nip									
<i>Cotula coronopifolia</i>	Brass buttons									
<i>Danthonia California</i>	California oatgrass									
<i>Distichlis spicata</i>	Saltgrass									
<i>Elymus glaucus</i>	Blue wild rye									
<i>Eriophyllum staechadifolium</i>	Lizard tail									
<i>Grindelia hirsutula</i> var. <i>hirsutula</i>	Gumplant									
<i>Grindelia hirsutula</i> var. <i>angustifolia</i>	Marsh gumplant									
<i>Heliotropium curassavicum</i>	Marsh heliotrope									
<i>Hordeum brachyantherum</i>	Meadow barley									
<i>Jaumea carnosa</i>	Salty susan									
<i>Limonium californicum</i>	Marsh rosemary									
<i>Lotus corniculatus</i>	Birdsfoot trefoil		X							
<i>Lupinus albifrons</i>	Silver lupine									
<i>Mimulus aurantiacus</i>	Sticky monkeyflower									
<i>Nasella pulchra</i>	Purple needlegrass									
<i>Polypogon monspeliensis</i>	Rabbits foot grass	X								
<i>Rhamnus californica</i>	Coffeeberry									
<i>Salicornia virginica</i>	Pickleweed		X							
<i>Sonchus asper</i>	Prickly sow thistle									
<i>Sisyrinchium bellum</i>	Blue-eyed grass									
<i>Spartina foliosa</i>	Pacific cord grass									
<i>Spergula marina</i>	Annual sand spurry									
Algal mat										
Dead plant material										
Drift material										
Bare ground			X							
<i>Bromus diandrus</i>	Rip gut brome		X							
<i>Picris echioides</i>	bristly ox tongue	X								
<i>Gnaphalium</i>	cutweed	X								
<i>Vulpia myuros</i>	rat-tail grass	X								

Qualitative Score for Assessing the Vigor of Planted Stock

Score	Description of Score
E- Excellent	No evidence of stress. Minor pest or pathogen damage may be present
G- Good	Some evidence of stress. Pest or pathogen damage present.
F- Fair	Moderate level of stress. High levels of pest or pathogen damage.
P- Poor	High level of stress. High levels of pest or pathogen damage.

Other Wildlife Observations (insects, birds, etc.) & Notes:

3 photos taken of slope from C1 (2 meters away towards C0 east)

photos taken of slope

UC Berkeley RFS Western Stege Marsh Restoration Project
Vegetation Monitoring Data

Quadrat #: D0 Survey Date: June 1, 2007 Surveyed by: M Berthelson, C Farrell

Height (inches, average of dominant species): 9"

Percent cover within quadrat (if present)

Scientific Name	Common Name	< 1	1- 5	6- 15	16-25	26 - 45	46 -75	76 -90	> 90	Vigor
<i>Achillea millefolium</i>	Yarrow		X							5' F
<i>Artemisia californica</i>	Common sagebrush									
<i>Artemisia douglasiana</i>	Mugwort									
<i>Aster chilensis</i>	California aster									
<i>Atriplex triangularis</i>	Saltbush, Spearscale									
<i>Baccharis pilularis</i>	Coyote brush		X							6' F
<i>Bromus carinatus</i>	California brome									
<i>Castilleja affinis</i>	Coast Indian paintbrush									
<i>Castilleja ambigua</i>	Johnny nip									
<i>Cotula coronopifolia</i>	Brass buttons									
<i>Danthonia California</i>	California oatgrass									
<i>Distichlis spicata</i>	Saltgrass									
<i>Elymus glaucus</i>	Blue wild rye									
<i>Eriophyllum staechadifolium</i>	Lizard tail			X						9' G
<i>Grindelia hirsutula</i> var. <i>hirsutula</i>	Gumplant									
<i>Grindelia hirsutula</i> var. <i>angustifolia</i>	Marsh gumplant									
<i>Heliotropium curassavicum</i>	Marsh heliotrope									
<i>Hordeum brachyantherum</i>	Meadow barley									
<i>Jaumea carnosa</i>	Salty susan									
<i>Limonium californicum</i>	Marsh rosemary									
<i>Lotus corniculatus</i>	Birdsfoot trefoil									
<i>Lupinus albifrons</i>	Silver lupine									
<i>Mimulus aurantiacus</i>	Sticky monkeyflower									
<i>Nasella pulchra</i>	Purple needlegrass									
<i>Polypogon monspeliensis</i>	Rabbits foot grass	X								
<i>Rhamnus californica</i>	Coffeeberry									
<i>Salicornia virginica</i>	Pickleweed		X							
<i>Sonchus asper</i>	Prickly sow thistle									
<i>Sisyrinchium bellum</i>	Blue-eyed grass									
<i>Spartina foliosa</i>	Pacific cord grass									
<i>Spergula marina</i>	Annual sand spurry									
Algal mat										
Dead plant material			X							
Drift material										
Bare ground					X					
<i>Lolium multiflorum</i>	rye grass			X						
<i>Pices echinoides</i>	bristly ox tongue	X								

Qualitative Score for Assessing the Vigor of Planted Stock

Score	Description of Score
E- Excellent	No evidence of stress. Minor pest or pathogen damage may be present
G- Good	Some evidence of stress. Pest or pathogen damage present.
F- Fair	Moderate level of stress. High levels of pest or pathogen damage.
P- Poor	High level of stress. High levels or pest or pathogen damage.

Other Wildlife Observations (insects, birds, etc.) & Notes: Goose scat

UC Berkeley RFS Western Stege Marsh Restoration Project
Vegetation Monitoring Data

Quadrat #: F0 Survey Date: June 1, 2003 Surveyed by: M. Derthelsen, S. Fuvrek

Height (inches, average of dominant species): 15"

Percent cover within quadrat (if present)

Scientific Name	Common Name	< 1	1-5	6-15	16-25	26-45	46-75	76-90	> 90	Vigor
<i>Achillea millefolium</i>	Yarrow		X							8 ^A F
<i>Artemisia californica</i>	Common sagebrush									
<i>Artemisia douglasiana</i>	Mugwort									
<i>Aster chilensis</i>	California aster	X								P
<i>Atriplex triangularis</i>	Saltbush, Spearscale									
<i>Baccharis pilularis</i>	Coyote brush									
<i>Bromus carinatus</i>	California brome									
<i>Castilleja affinis</i>	Coast Indian paintbrush									
<i>Castilleja ambigua</i>	Johnny nip									
<i>Cotula coronopifolia</i>	Brass buttons									
<i>Danthonia California</i>	California oatgrass									
<i>Distichlis spicata</i>	Saltgrass									
<i>Elymus glaucus</i>	Blue wild rye									
<i>Eriophyllum staechadifolium</i>	Lizard tail									
<i>Grindelia hirsutula</i> var. <i>hirsutula</i>	Gumplant				X					15 ^G
<i>Grindelia hirsutula</i> var. <i>angustifolia</i>	Marsh gumplant									
<i>Heliotropium curassavicum</i>	Marsh heliotrope									
<i>Hordeum brachyantherum</i>	Meadow barley									
<i>Jaumea carnosa</i>	Salty susan									
<i>Limonium californicum</i>	Marsh rosemary									
<i>Lotus corniculatus</i>	Birdsfoot trefoil									
<i>Lupinus albifrons</i>	Silver lupine									
<i>Mimulus aurantiacus</i>	Sticky monkeyflower	X								
<i>Nasella pulchra</i>	Purple needlegrass									
<i>Polypogon monspeliensis</i>	Rabbits foot grass	X								
<i>Rhamnus californica</i>	Coffeeberry									
<i>Salicornia virginica</i>	Pickleweed									
<i>Sonchus asper</i>	Prickly sow thistle									
<i>Sisyrinchium bellum</i>	Blue-eyed grass									
<i>Spartina foliosa</i>	Pacific cord grass									
<i>Spergula marina</i>	Annual sand spurry									
Algal mat										
Dead plant material										
Drift material										
Bare ground							X			
<i>Eriogonum latifolium</i>	back wheat natural recruitment		X							F
<i>Pennisetum</i>	bristly oatgrass	X								
<i>Lolium multiflorum</i>	rye grass	X								
<i>Plantago dissectum</i>	cut leaf plantain	X								
<i>Malva</i>	cheese weed	X								

Qualitative Score for Assessing the Vigor of Planted Stock

Score	Description of Score
E- Excellent	No evidence of stress. Minor pest or pathogen damage may be present
G- Good	Some evidence of stress. Pest or pathogen damage present.
F- Fair	Moderate level of stress. High levels of pest or pathogen damage.
P- Poor	High level of stress. High levels of pest or pathogen damage.

Other Wildlife Observations (insects, birds, etc.) & Notes:

back wheat seedlings present, indicating natural recruitment

UC Berkeley RFS Western Stege Marsh Restoration Project
Vegetation Monitoring Data

Quadrat #: G1 Survey Date: June 1 2007 Surveyed by: M Barthelsen, S Farvell

Height (inches, average of dominant species): _____

Percent cover within quadrat (if present)

Scientific Name	Common Name	< 1	1- 5	6- 15	16-25	26 - 45	46 -75	76 -90	> 90	Vigor
<i>Achillea millefolium</i>	Yarrow									
<i>Artemisia californica</i>	Common sagebrush			X						15" E
<i>Artemisia douglasiana</i>	Mugwort									
<i>Aster chilensis</i>	California aster									
<i>Atriplex triangularis</i>	Saltbush, Sparscale									
<i>Baccharis pilularis</i>	Coyote brush									
<i>Bromus carinatus</i>	California brome									
<i>Castilleja affinis</i>	Coast Indian paintbrush									
<i>Castilleja ambigua</i>	Johnny nip									
<i>Cotula coronopifolia</i>	Brass buttons									
<i>Danthonia California</i>	California oatgrass									
<i>Distichlis spicata</i>	Saltgrass				X					10" G
<i>Elymus glaucus</i>	Blue wild rye									
<i>Eriophyllum staechadifolium</i>	Lizard tail									
<i>Grindelia hirsutula</i> var. <i>hirsutula</i>	Gumplant									
<i>Grindelia hirsutula</i> var. <i>angustifolia</i>	Marsh gumplant				X					26" E
<i>Heliotropium curassavicum</i>	Marsh heliotrope									
<i>Hordeum brachyantherum</i>	Meadow barley									
<i>Jaumea carnosa</i>	Salty susan									
<i>Limonium californicum</i>	Marsh rosemary	X								G
<i>Lotus corniculatus</i>	Birdsfoot trefoil									
<i>Lupinus albifrons</i>	Silver lupine									
<i>Mimulus aurantiacus</i>	Sticky monkeyflower									
<i>Nasella pulchra</i>	Purple needlegrass									
<i>Polypogon monspeliensis</i>	Rabbits foot grass									
<i>Rhamnus californica</i>	Coffeeberry									
<i>Salicornia virginica</i>	Pickleweed	X								
<i>Sonchus asper</i>	Prickly sow thistle									
<i>Sisyrinchium bellum</i>	Blue-eyed grass									
<i>Spartina foliosa</i>	Pacific cord grass									
<i>Spergula marina</i>	Annual sand spurry									
Algal mat										
Dead plant material										
Drift material (litter-trash)			X							
Bare ground			X							
<i>Toxicodendron</i>	poison oak			X						F
<i>Stellaria</i>	chickweed	X								
<i>Melo lotus</i>		X								

Qualitative Score for Assessing the Vigor of Planted Stock

Score	Description of Score
E- Excellent	No evidence of stress. Minor pest or pathogen damage may be present
G- Good	Some evidence of stress. Pest or pathogen damage present.
F- Fair	Moderate level of stress. High levels of pest or pathogen damage.
P- Poor	High level of stress. High levels or pest or pathogen damage.

Other Wildlife Observations (insects, birds, etc.) & Notes:

Appendix 2: Photomonitoring