Section 4.0 Land Management Appendices **Land Management Appendix 1**

LIFE FORM	SPECIES	SCIENTIFIC NAME	COMMON NAME
Forb	AMAL	Amaranthus albus	prostrate pigweed
	AMARA	Amaranthus sp.	pigweed
	ANCA10	Anemopsis californica	yerba mansa
	APCA	Apocynum cannabinum	dogbane
	ARLU	Artemisia ludoviciana	white sagebrush
	ASTRA	Astragalus sp.	mllkvetch
	ATPH	Atriplex phyllostegia	leafcover saltweed
	ATRIP	Atriplex sp.	saltbush species
	ATSES	Atriplex serenana var. serenana	bractscale
	ATTR	Atriplex truncata	wedgescale saltbush
	BAHY	Bassia hyssopifolia	fivehorn smotherweed
	CALI4	Castilleja lineriifolia	Wyoming Indian paintbrush
	CAMIS	Camissonia sp.	suncup species
	CHBR	Chorizanthe brevicornu	brittle spineflower
	CHENO	Chenopodium sp.	goosefoot species
	CHHI	Chenopodium hians	hians goosefoot
	CHIN2	Chenopodium incanum	mealy goosefoot
	CHLE4	Chenopodium leptophyllum	narrowleaf goosefoot
	CHST	Chaenactis stevioides	Steve's duskymaiden
	CIMO	Cirsium mohavense	Mojave thistle
	CLEOM2	Cleomella sp.	stinkweed species
	CLOB	Cleomella obtusifolia	bluntleaf stinkweed
	CLPA4	Cleomella parviflora	slender cleomella
	COMAC	Cordylanthus maritimus var. canescens	alkali bird's beak
	CORA5	Cordylanthus ramosus	bushy bird's beak
	CRCI2	Cryptantha circumscissa	cushion cryptantha
	CRTR5	Cressa truxillensis	spreading alkaliweed
	CRYPT	Cryptantha	cryptantha
	CUSCU	Cuscuta sp.	dodder species
	DESO2	Descurainia sophia	herb sophia
	ERAM2	Eriogonum ampullaceum	Mono buckwheat
	ERIAS	Eriastrum sp.	woollystar species
	ERIOG	Eriogonum sp	buckwheat
	ERMA2	Eriogonum maculatum	spotted buckwheat
	ERPR4	Eriophyllum pringlei	Pringle's wooly sunflower
	ERSP3	Eriastrum sparsiflorum	Great Basin woollystar
	ERWI	Eriastrum wilcoxii	Wilcox's woolystar
	FRSA	Frankenia salina	alkali seaheath
	GILIA	Gilia sp.	gilia species
	GITR	Gilia transmontana	transmontane gilia
	GLLE3	Glycyrrhiza lepidota	American licorice
	GRIND	Grindelia sp.	gumweed species
	HEAN3	Helianthus annuus	common sunflower
	HECU3	Heliotropium curassavicum	salt heliotrope
	LACO13	Laennecia coulteri	conyza

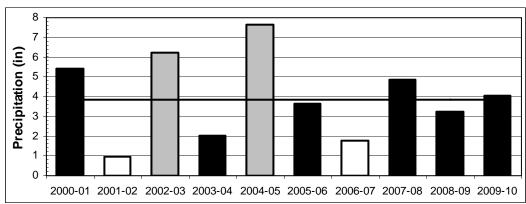
LIFE FORM	SPECIES	SCIENTIFIC NAME	COMMON NAME
Forb	LASE	Lactuca serriola	prickly lettuce
	LEFL2	Lepidium flavum	yellow pepperweed
	LOCO6	Lotus corniculatus	birdsfoot deervetch
	MACA2	Machaeranthera canescens	hoary tansyaster
	MACA2	Machaeranthera leptophylla	hoary tansyaster
	MALAC3	Malacothrix	desert dandelion
	MALE3	Malvella leprosa	alkali-mallow
	MEAL6	Mentzelia albicaulis	little blazing star
	MENTZ	Mentzelia sp.	blazingstar species
	MEOF	Melilotus officinalis	white sweetclover
	MEOF	Melilotus officinalis	yellow sweetclover
	NADE	Nama demissum	purplemat
	NIOC2	Nitrophila occidentalis	boraxweed
	OENOT	Oenothera	evening primrose
	PHFR2	Phacelia fremontii	Fremont's phacelia
	POAR11	Polygonum aviculare var. arenastrum	common knotweet
	PSATH	Psathyrotes ramosissima	velvet turtleback
	PSRA	Psathyrotes ramosissima	velvet turtleback
	PYRA	Pyrrocoma racemosa	clustered goldenweed
	SATR12	Salsola tragus	tumbleweed
	SEVE2	Sesuvium verrucosum	verrucose seapurslane
	SICO2	Sidalcea covillei	Owens Valley sidalcea
	SMST	Smilacina stellata	starry false lily of the valley
	STEPH	Stephanomeria sp.	wirelettuce species
	STEX	Stephanomeria exigua	small wirelettuce
	STPA4	Stephanomeria pauciflora	brownplume wirelettuce
	STPI	Stanleya pinnata	desert princesplume
	SUMO	Suaeda moquinii	inkweed
	TRFR2	Trifolium fragiferum	strawberry clover
	XAST	Xanthium strumarium	rough cockleburr
	2FORB	herbaceous forb sp.	unidentified forb
Graminoid	AGEL3	Agropyron elongatum	tall wheatgrass
Grammoid	ARPU9	Aristida purpurea	purple threeawn
	BRRU2	Bromus rubens	red brome
	BRTE	Bromus tectorum	cheatgrass
	CADO2	Carex douglasii	Douglas' sedge
	CAPR5	Carex praegracilis	clustered field sedge
	CAREX	Carex sp.	sedge species
	CYDA	Cynodon dactylon	bermuda grass
	DISP	Distichlis spicata	saltgrass
	ELEL5	Elymus elymoides	bottlebrush squirreltail
	ELEOC	Eleocharis sp.	spikerush species
	FESTU	Festuca sp.	fescue species
	HOJU	Hordeum jubatum	foxtail barley
	JUBA	Juncus balticus	baltic rush
	LECI4	Leymus cinereus	basin wildrye

Life form	Species	Scientific name	Common name
Graminoid	LETR5	Leymus triticoides	beardless wildrye
	LOLIU	Lolium sp.	ryegrass species
	MUAS	Muhlenbergia asperifolia	alkali muhly
	PADI6	Paspalum distichum	knotgrass
	POA	Poa sp.	bluegrass species
	POMO5	Polypogon monspeliensis	annual rabbitsfoot grass
	POSE	Poa secunda	sandberg bluegrass
	SCAM6	Schoenoplectus americanus	chairmaker's bulrush
	SCAR	Schismus arabicus	Arabian schismus
	SCPH	Schedonorus phoenix	reed fescue
	SCPH	Schedonorus phoenix	tall fescue
	SPAI	Sporobolus airoides	alkali sacaton
	SPGR	Spartina gracilis	alkali cordgrass
	STIPA	Stipa sp.	needlegrass species
	THPO7	Thinopyrum ponticum	rush wheatgrass
	TYLA	Typha latifolia	broadleaf cattail
	2GRAM	graminoid sp.	unidentified graminoid
		,	
Shrub	ALOC2	Allenrolfea occidentalis	iodinebush
	ARTR2	Artemisia tridentata	big sagebrush
	ATCA	Atriplex canescens	fourwing saltbush
	ATCO	Atriplex confertifolia	shadscale
	ATPA3	Atriplex parryi	Parry's saltbush
	ATPO	Atriplex polycarpa	cattle saltbush
	ATRIP	Atriplex sp.	saltbush species
	ATTO	Atriplex torreyi	Nevada saltbush
	EPNE	Ephedra nevadensis	Nevada jointfir
	EPVI	Ephedra viridis	green mormon-tea
	ERNA10	Ericameria nauseosus	rubber rabbitbrush
	FOPU2	Forestiera pubescens	desert olive
	GUSA2	Gutierrezia sarothrae	broom snakeweed
	HYSA	Hymenoclea salsola	burrobrush
	LEFR2	Lepidium fremontii	desert lepidium
	MACA2	Machaeranthera canescens	hoary tansyaster
	MACA17	Machaeranthera carnosa	shrubby alkali aster
	PSAR4	Psorothamnus aborescens	Mojave indigobush
	ROWO	Rosa woodsii	Woods' Rose
	SAEX	Salix exigua	coyote willow
	SALIX	Salix sp.	willow species
	SAVE4	Sarcobatus vermiculatus	greasewood
	STEPH	Stephanomeria sp.	wirelettuce species
	SUMO	Suaeda moquinii	inkweed
	TARA	Tamarisk ramosissima	tamarisk
	77.0.01	- amanar ramodioanna	tarrianor.

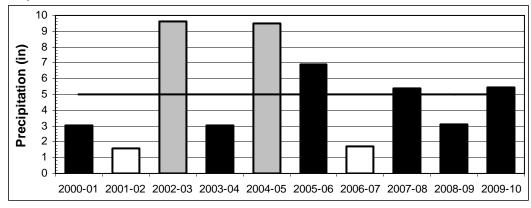
Land Management Appendix 2

Figure 1. Annual precipitation (October through September) at a) Lone Pine, (b) Independence, and (c) Intake between 2000 and 2010. Black indicates precipitations falling within 50% of a historical value. Gray indicates precipitations 50% greater than a historical value. White indicates precipitations 50% less than a historical value. Black lines indicate mean values.

a) Lone Pine



b) Independence



c) Intake

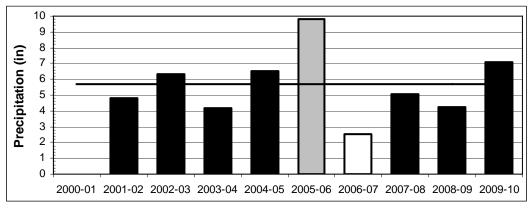
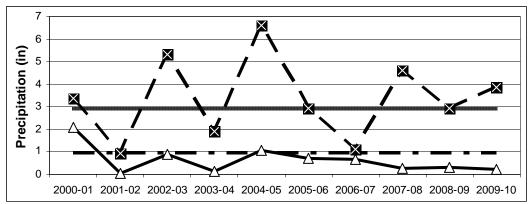
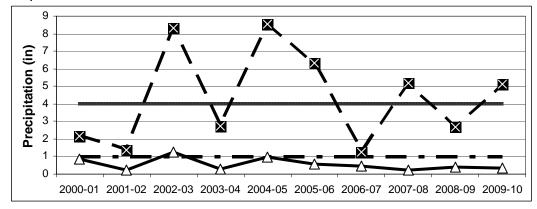


Figure 2. Mean precipitations for cold and warm seasons at a) Lone Pine, (b) Independence, and (c) Intake between 2000 and 2010.

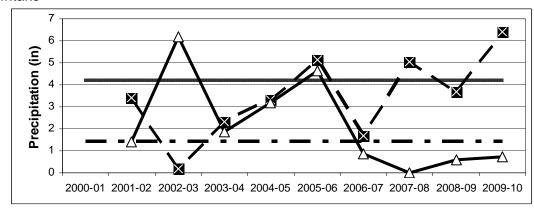
a) Lone Pine

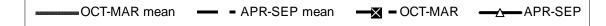


b) Independence



c) Intake





LAND MANAGEMENT APPENDIX 3

LOWER OWENS RIVER PROJECT

Range Trend Monitoring Site Photos

LOWER OWENS RIVER PROJECT

Range Trend Monitoring Site Photos

Intake Lease (RLI-475)

2009-2010



Pasture Upper Blackrock Field

Ecological SiteSaline Meadow

Sampling Date September 3, 2002





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100 - 0 meters







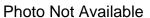
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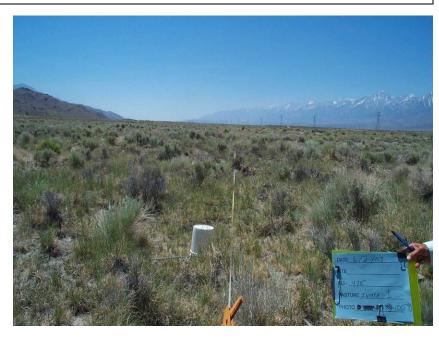
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Transect INTAKE_01 **Pasture** Upper Blackrock Field **Ecological Site** Saline Meadow

Sampling Date June 2, 2003







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Transect INTAKE_01

Pasture Upper Blackrock Field

Ecological Site Saline Meadow

Sampling Date May 24, 2004





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Transect
INTAKE_01

Pasture Upper Blackrock Field

Ecological Site Saline Meadow

Sampling Date August 2, 2007





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Transect INTAKE_01

Pasture Upper Blackrock Field

Ecological Site Saline Meadow

Sampling Date August 5, 2010





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LOWER OWENS RIVER PROJECT

Range Trend Monitoring Site Photos

Stewart Lease (RLI-475)

2009-2010

Transect STEWART_01

Pasture Intake Field

Ecological SiteMoist Floodplain

Sampling Date August 6, 2009





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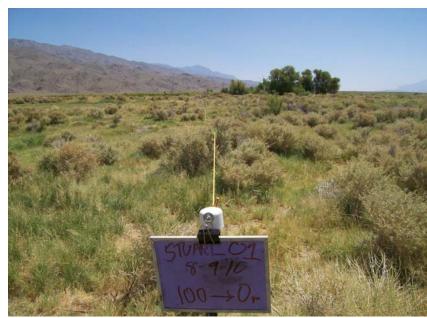
Transect STEWART_01

Pasture Intake Field

Ecological Site Moist Floodplain

Sampling Date August 9, 2010

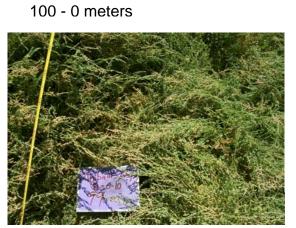




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LOWER OWENS RIVER PROJECT

Range Trend Monitoring Site Photos

Twin Lakes Lease (RLI - 491)

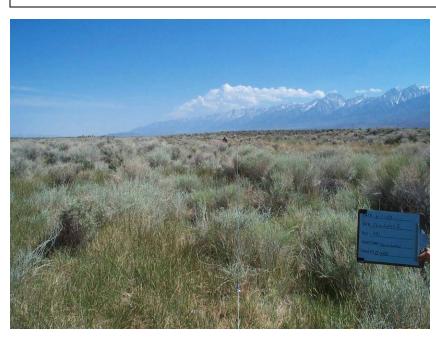
2002-2010

Transect TWINLAKES_02

Pasture Lower Blackrock Field

Ecological SiteSaline Bottom Wetland

Sampling Date June 1, 2003





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Transect TWINLAKES_02

Pasture Lower Blackrock Field

Ecological SiteSaline Bottom Wetland

Sampling Date June 29, 2004





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Transect TWINLAKES_02

Pasture Lower Blackrock Field

Ecological SiteSaline Bottom Wetland

Sampling Date July 25, 2007





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Transect TWINLAKES_02

Pasture Lower Blackrock Field

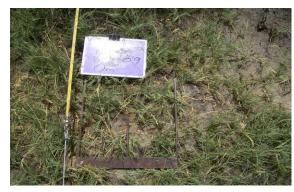
Ecological SiteSaline Bottom Wetland

Sampling Date August 4, 2009





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Transect TWINLAKES_03

Ecological SiteMoist Floodplain

Sampling Date August 31, 2002





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Transect TWINLAKES_03

Pasture Lower Blackrock Riparian Field

Ecological Site Moist Floodplain

Sampling Date June 1, 2003





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Transect TWINLAKES_03

Ecological Site Moist Floodplain

Sampling Date July 25, 2007





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Transect TWINLAKES_03

PastureLower Blackrock Riparian Field

Ecological Site Moist Floodplain

Sampling Date August 27, 2009





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Transect TWINLAKES_03

Pasture Lower Blackrock Riparian Field

Ecological Site Moist Floodplain

Sampling Date August 9, 2010





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Sampling Date August 30, 2002





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Transect TWINLAKES_04

Ecological Site Moist Floodplain

Sampling Date June 4, 2003





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Transect	
TWINLAKES_	_04

Ecological Site Moist Floodplain Sampling Date May 25, 2004

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Transect TWINLAKES_04

Pasture Lower Blackrock Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 9, 2007





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Transect TWINLAKES_04

Pasture Lower Blackrock Riparian Field

Ecological Site Moist Floodplain

Sampling Date August 5, 2009





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Pasture Lower Blackrock Riparian Field **Ecological Site**Moist Floodplain

Sampling Date August 9, 2010





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Transect TWINLAKES_05

Pasture Lower Blackrock Field

Ecological Site Saline Meadow

Sampling Date September 3, 2002





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Pasture Lower Blackrock Field

Ecological Site Saline Meadow

Sampling Date June 4, 2003





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Transect TWINLAKES_05

Pasture Lower Blackrock Field

Ecological Site Saline Meadow

Sampling Date July 9, 2004





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Pasture Lower Blackrock Field

Ecological Site Saline Meadow

Sampling Date August 6, 2007



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Transect	Pasture	Ecological Site	Sampling Date
TWINLAKES_05	Lower Blackrock Field	Saline Meadow	

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Transect TWINLAKES_06

Pasture Lower Blackrock Riparian Field

Ecological SiteMoist Floodplain

Sampling Date July 11, 2006





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Transect TWINLAKES_06

PastureLower Blackrock Riparian Field

Ecological Site Moist Floodplain

Sampling Date August 6, 2007





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Transect TWINLAKES_06

Pasture Lower Blackrock Riparian Field

Ecological Site Moist Floodplain

Sampling Date August 5, 2009





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Transect TWINLAKES_06

Pasture Lower Blackrock Riparian Field

Ecological SiteMoist Floodplain

Sampling Date August 9, 2010





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LOWER OWENS RIVER PROJECT

Range Trend Monitoring Site Photos

Blackrock Lease (RLI-428)

2002 - 2010

(Part 1 of 3)

Transect BLKROC_01

Pasture White Meadow Field

Ecological Site Saline Bottom

Sampling Date August 30, 2002





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Transect BLKROC_01

Pasture White Meadow Field

Ecological Site Saline Bottom

Sampling Date June 4, 2003





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Transect BLKROC_01

Pasture White Meadow Field

Ecological Site Saline Bottom

Sampling Date July 9, 2004





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Transect BLKROC_01

Pasture White Meadow Field

Ecological Site Saline Bottom

Sampling Date July 30, 2007





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Transect BLKROC_01

Pasture White Meadow Field

Ecological Site Saline Bottom

Sampling Date August 4, 2009





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Pasture White Meadow Field

Ecological Site Saline Bottom

Sampling Date July 28, 2010





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Transect BLKROC_02

PastureReservation Field

Ecological Site Saline Meadow

Sampling Date August 30, 2002





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PastureReservation Field

Ecological Site Saline Meadow

Sampling Date June 5, 2003



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Transect BLKROC_02

PastureReservation Field

Ecological Site Saline Meadow

Sampling Date July 12, 2004





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PastureReservation Field

Ecological Site Saline Meadow

Sampling Date July 30, 2007





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PastureReservation Field

Ecological Site Saline Meadow

Sampling Date July 29, 2009





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PastureReservation Field

Ecological Site Saline Meadow

Sampling Date July 27, 2010





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Pasture Reservation Field

Ecological Site Saline Meadow

Sampling Date August 29, 2002





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Transect BLKROC_03

PastureReservation Field

Ecological Site Saline Meadow

Sampling Date June 09, 2003





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Transect BLKROC_03

PastureReservation Field

Ecological Site Saline Meadow

Sampling Date June 30, 2004





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Transect BLKROC_03

PastureReservation Field

Ecological Site Saline Meadow

Sampling Date July 30, 2007





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Transect BLKROC_03

PastureReservation Field

Ecological Site Saline Meadow

Sampling Date July 30, 2009





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Transect BLKROC_03

PastureReservation Field

Ecological Site Saline Meadow

Sampling Date July 27, 2010

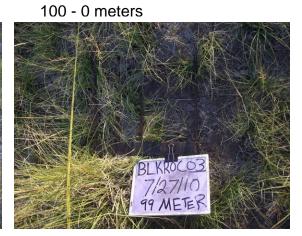




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BLKROC_04

Transect BLKROC_04

PastureRobinson Field

Ecological Site Saline Meadow

Sampling Date August 29, 2002





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Transect BLKROC_04

PastureRobinson Field

Ecological Site Saline Meadow Sampling Date June 9, 2003



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Transect BLKROC_04

PastureRobinson Field

Ecological Site Saline Meadow

Sampling Date June 21, 2004





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Transect BLKROC_04

PastureRobinson Field

Ecological Site Saline Meadow

Sampling Date July 27, 2007





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Transect BLKROC_04

PastureRobinson Field

Ecological Site Saline Meadow

Sampling Date July 29, 2009





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BLKROC_04

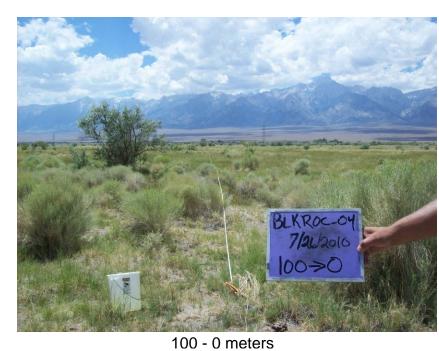


PastureRobinson Field

Ecological SiteSaline Meadow

Sampling Date July 26, 2010





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Transect BLKROC_05

Pasture Russel Field

Ecological Site Saline Meadow

Sampling Date August 29, 2002





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Transect BLKROC_05

Pasture Russel Field

Ecological Site Saline Meadow

Sampling Date June 12, 2003





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TransectPastureEcological SiteSampling DateBLKROC_05Russel FieldSaline MeadowJune 22, 2004





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Transect BLKROC_05

Pasture Russel Field

Ecological Site Saline Meadow

Sampling Date July 31, 2007





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Transect BLKROC_05

Pasture Russel Field

Ecological Site Saline Meadow

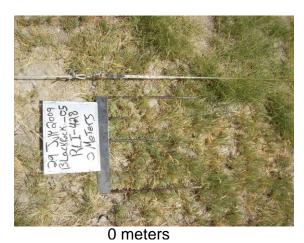
Sampling Date July 29, 2009





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 Transect BLKROC_05
 Pasture Russel Field
 Ecological Site Saline Meadow
 Sampling Date July 26, 2010







0 meters 51 meters 99 meters BLKROC_06



Pasture Locust Field

Ecological Site Saline Meadow

Sampling Date August 29, 2002





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TransectPastureEcological SiteSampling DateBLKROC_06Locust FieldSaline MeadowJune 10, 2003





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Transect BLKROC_06

Pasture Locust Field

Ecological Site Saline Meadow

Sampling Date June 22, 2004





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Transect BLKROC_06

Pasture Locust Field

Ecological Site Saline Meadow

Sampling Date July 27, 2007





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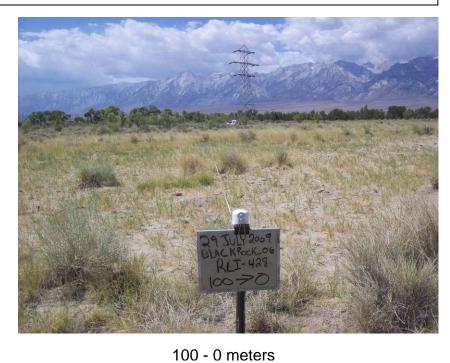
Transect BLKROC_06

Pasture Locust Field

Ecological Site Saline Meadow

Sampling Date July 29, 2009





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BLKROC_06

TransectPastureEcological SiteSampling DateBLKROC_06Locust FieldSaline MeadowJuly 26, 2010





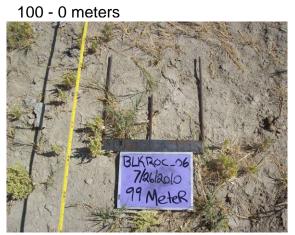
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Transect BLKROC_07

Pasture Wrinkle Field **Ecological Site**Saline Meadow

Sampling Date June 10, 2003



Photo Not Available

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Transect BLKROC 07

Pasture Wrinkle Field

Ecological Site Saline Meadow

Sampling Date June 22, 2004





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Transect BLKROC_07

Pasture Wrinkle Field

Ecological Site Saline Meadow

Sampling Date July 27, 2007





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0 meters 51 meters 99 meters

Transect BLKROC_07

Pasture Wrinkle Field

Ecological Site Saline Meadow

Sampling Date July 29, 2009





0 - 100 meters



100 - 0 meters



0 meters

51 meters

99 meters

Pasture Wrinkle Field **Ecological Site** Saline Meadow

Sampling Date July 22, 2010





0-100 meters



100 - 0 meters



0 meters

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99 meters

Transect BLKROC_08

Pasture Springer Field

Ecological Site Saline Meadow

Sampling Date August 28, 2002





0 – 100 meters 100 - 0 meters







0 meters 50 meters 95 meters

Transect BLKROC_08

Pasture Springer Field

Ecological Site Saline Meadow

Sampling Date June 10, 2003





0 – 100 meters

DATE 6-10-03
SITE BLK ROC 8
RILL 172 B
PASTURE Springer
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0 meters 51 meters 99 meters



Pasture Springer Field

Ecological Site Saline Meadow

Sampling Date June 23, 2004





0 – 100 meters

100 - 0 meters







0 meters 51 meters 99 meters

Transect BLKROC_08

Pasture Springer Field

Ecological Site Saline Meadow

Sampling Date August 06, 2007





0 - 100 meters



100 - 0 meters



0 meters

51 meters

99 meters

Transect BLKROC_08 discontinued in 2009

Site not representative of saline meadow due to influence of adjacent ditch

Transect BLKROC_09

Pasture Horse Holding

Ecological Site Sodic Fan

Sampling Date August 27, 2002





0 – 100 meters 100 - 0 meters







0 meters 50 meters 95 meters

Transect BLKROC_09

Pasture Horse Holding

Ecological Site Sodic Fan

Sampling Date June 12, 2003





0 – 100 meters 100 - 0 meters







0 meters 51 meters 99 meters



Pasture Horse Holding

Ecological Site Sodic Fan

Sampling Date July 31, 2007





0 - 100 meters





0 meters 51 meters 99 meters

Transect	
BLKROC_	_09

Pasture Horse Holding **Ecological Site** Sodic Fan Sampling Date July 28, 2009

Photo Not Available



0 - 100 meters 100 - 0 meters







0 meters 51 meters 99 meters

Pasture Horse Holding **Ecological Site** Sodic Fan Sampling Date July 22, 2010





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Transect BLKROC_10

PastureWhite Meadow Riparian Field

Ecological Site Moist Floodplain

Sampling Date September 2, 2002





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0 meters 50 meters 95 meters

Transect BLKROC_10

PastureWhite Meadow Riparian Field

Ecological Site Moist Floodplain

Sampling Date June 4, 2003





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Transect BLKROC_10

PastureWhite Meadow Riparian Field

Ecological SiteMoist Floodplain

Sampling Date May 25, 2004





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Transect BLKROC_10

PastureWhite Meadow Riparian Field

Ecological SiteMoist Floodplain

Sampling Date August 4, 2009





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Transect BLKROC_10

Pasture White Meadow Riparian Field

Ecological Site Moist Floodplain

Sampling Date August 9, 2010





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0 meters 51 meters 99 meters

Transect BLKROC_11

PastureWhite Meadow Riparian Field

Ecological Site Moist Floodplain

Sampling Date September 2, 2002





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0 meters 51 meters 99 meters

Transect BLKROC_11

PastureWhite Meadow Riparian Field

Ecological SiteMoist Floodplain

Sampling Date June 5, 2003





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Transect BLKROC_11

PastureWhite Meadow Riparian Field

Ecological Site Moist Floodplain

Sampling Date May 26, 2004





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Transect BLKROC_11

PastureWhite Meadow Riparian Field

Ecological SiteMoist Floodplain

Sampling Date July 10, 2007





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Transect BLKROC_11

PastureWhite Meadow Riparian Field

Ecological SiteMoist Floodplain

Sampling Date August 4, 2009





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Transect BLKROC_11

PastureWhite Meadow Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 29, 2010





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Transect BLKROC_12

Pasture
North Riparian Field

Ecological Site Moist Floodplain

Sampling Date September 3, 2002





0 – 100 meters 100 - 0 meters







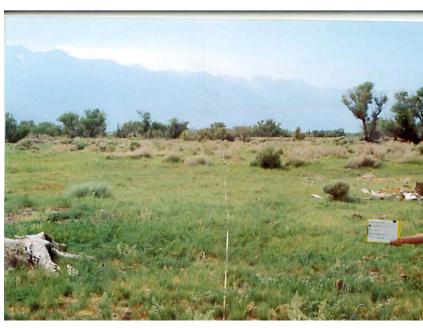
0 meters 51 meters 95 meters



PastureNorth Riparian Field

Ecological Site Moist Floodplain

Sampling Date August 26, 2003





0 – 100 meters 100 - 0 meters



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0 meters

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Transect Pasture
BLKROC_12 North Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 13, 2004





0 – 100 meters 100 - 0 meters







0 meters 51 meters 99 meters

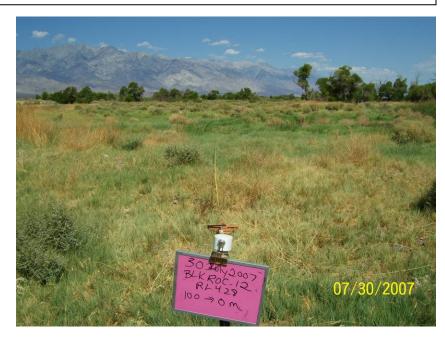
Transect BLKROC_12

Pasture
North Riparian Field

Ecological SiteMoist Floodplain

Sampling Date July 30, 2007





0 – 100 meters

100 - 0 meters







0 meters

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99 meters

Transect BLKROC_12

Pasture North Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 30, 2009





0 – 100 meters 100 - 0 meters







0 meters 51 meters 99 meters

Transect BLKROC_012 not sampled in 2010

Site not accessible due to river.

LOWER OWENS RIVER PROJECT

Range Trend Monitoring Site Photos

Blackrock Lease (RLI-428)

2002 - 2010

(Part 2 of 3)

Transect BLKROC_13

PastureSouth Riparian Field

Ecological Site Moist Floodplain

Sampling Date September 3, 2002





0 – 100 meters

100 - 0 meters



Photo not Available



0 meters 51 meters 95 meters

Transect BLKROC_13

Pasture South Riparian Field

Ecological Site Moist Floodplain

Sampling Date June 9, 2003





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99 meters 0 meters 51 meters

Transect BLKROC_13

PastureSouth Riparian Field

Ecological Site Moist Floodplain

Sampling Date June 1, 2004





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Transect BLKROC_13

PastureSouth Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 12, 2007





0 - 100 meters







0 meters 51 meters 99 meters

Transect BLKROC_13

PastureSouth Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 30, 2009





0 – 100 meters

100 - 0 meters







0 meters 51 meters 99 meters

Transect BLKROC_13

PastureSouth Riparian Field

Ecological SiteMoist Floodplain

Sampling Date July 26, 2010





0 – 100 meters

100 - 0 meters







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Transect BLKROC_14

PastureWhite Meadow Riparian Field

Ecological Site Moist Floodplain

Sampling Date August 24, 2002





0 – 100 meters 100 - 0 meters







0 meters 50 meters 95 meters

Transect BLKROC_14

PastureWhite Meadow Riparian Field

Ecological Site Moist Floodplain

Sampling Date June 5, 2003





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Transect BLKROC_14

PastureWhite Meadow Riparian Field

Ecological Site Moist Floodplain

Sampling Date May 26, 2004





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0 meters 51 meters 99 meters

Transect BLKROC_14

PastureWhite Meadow Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 11, 2007





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Transect BLKROC_14

Pasture White Meadow Riparian Field

Ecological Site Moist Floodplain

Sampling Date August 4, 2009





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99 meters

Transect BLKROC_14

PastureWhite Meadow Riparian Field

Ecological SiteMoist Floodplain

Sampling Date August 6, 2010





0 – 100 meters







0 meters 51 meters 99 meters

Transect BLKROC_15

PastureReservation Riparian Field

Ecological SiteMoist Floodplain

Sampling Date June 20, 2003





0 – 100 meters

100 - 0 meters







Transect BLKROC_15

PastureReservation Riparian Field

Ecological Site Moist Floodplain

Sampling Date June 1, 2004





0 - 100 meters



100 - 0 meters



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Transect BLKROC_15

Pasture Reservation Riparian Field

Ecological Site Moist Floodplain

Sampling Date May 24, 2005





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Transect BLKROC_15

Pasture
Reservation Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 11, 2007





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0 meters 51 meters 99 meters



PastureReservation Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 31, 2009



0 - 100 meters



100 - 0 meter



Photo not Available



0 meters 51 meters 99 meters

Transect BLKROC_15

Pasture Reservation Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 29, 2010





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TransectBLKROC_16

Pasture
Reservation Riparian Field

Ecological Site Moist Floodplain

Sampling Date June 20, 2003





0 – 100 meters 100 - 0 meters







0 meters 51 meters 99 meters

Transect BLKROC_16

PastureReservation Riparian Field

Ecological Site Moist Floodplain

Sampling Date June 1, 2004





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100 - 0 meters







0 meters 51 meters 99 meters

Transect BLKROC_16

Pasture Reservation Riparian Field

Ecological Site Moist Floodplain

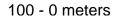
Sampling Date May 25, 2005





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Transect BLKROC_16

PastureReservation Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 31, 2007





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Transect BLKROC_16

PastureReservation Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 30, 2009





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BLKROC_16

Transect BLKROC_16

PastureReservation Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 29, 2010





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Transect BLKROC_17

PastureReservation Riparian Field

Ecological Site Moist Floodplain

Sampling Date June 20, 2003





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Transect BLKROC_17

PastureReservation Riparian Field

Ecological Site Moist Floodplain

Sampling Date May 27, 2004





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Transect BLKROC_17

PastureReservation Riparian Field

Ecological Site Moist Floodplain

Sampling Date May 25, 2005





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TransectBLKROC_17

PastureReservation Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 31, 2007





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Transect BLKROC_17

PastureReservation Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 30, 2009





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Transect BLKROC_17

PastureReservation Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 26, 2010





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Transect BLKROC_18

PastureWrinkle Riparian Field

Ecological Site Moist Floodplain

Sampling Date June 23, 2003





0 – 100 meters 100 - 0 meters







0 meters 51 meters 99 meters

Transect BLKROC_18

PastureWrinkle Riparian Field

Ecological Site Moist Floodplain

Sampling Date June 2, 2004





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0 meters 51 meters 99 meters

Transect BLKROC_18

PastureWrinkle Riparian Field

Ecological Site Moist Floodplain

Sampling Date May 25, 2005





0 - 100 meters





BLKRC_18 25 may 2005 19 meters

0 meters 51 meters 99 meters

Transect BLKROC_18

PastureWrinkle Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 12, 2007





0 – 100 meters 100 - 0 meters







0 meters 51 meters 99 meters

Transect BLKROC_18

Pasture Wrinkle Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 30, 2009





0 – 100 meters 100 - 0 meters







0 meters 51 meters 99 meters





0 – 100 meters







0 meters 51 meters 99 meters

Transect BLKROC_19

Pasture Wrinkle Riparian Field

Ecological Site Moist Floodplain

Sampling Date June 23, 2003





0 - 100 meters



100 - 0 meters



0 meters

51 meters

99 meters

Transect BLKROC_19

Pasture Wrinkle Riparian Field

Ecological SiteMoist Floodplain

Sampling Date June 2, 2004





0 – 100 meters







0 meters 51 meters 99 meters

Transect BLKROC_19

PastureWrinkle Riparian Field

Ecological Site Moist Floodplain

Sampling Date May 31, 2005





0 - 100 meters



100 - 0 meters



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99 meters

Transect BLKROC_19

Pasture Wrinkle Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 13, 2007





0 – 100 meters 100 - 0 meters







0 meters 51 meters 99 meters

Transect BLKROC_19

PastureWrinkle Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 29, 2009





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0 meters 51 meters 99 meters

Transect BLKROC_19

Pasture Wrinkle Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 22, 2010





0 – 100 meters

100 - 0 meters



0 meters

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99 meters

Transect BLKROC_20

PastureWrinkle Riparian Field

Ecological Site Moist Floodplain

Sampling Date June 20, 2003





0 – 100 meters 100 - 0 meters







0 meters 51 meters 99 meters

Transect BLKROC_20

PastureWrinkle Riparian Field

Ecological SiteMoist Floodplain

Sampling Date June 2, 2004





0 – 100 meters 100 - 0 meters







0 meters 51 meters 99 meters

Transect BLKROC_20

PastureWrinkle Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 13, 2007





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0 meters

51 meters

99 meters

Transect BLKROC_20

PastureWrinkle Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 29, 2009





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51 meters

99 meters

Transect BLKROC_20

Pasture Wrinkle Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 22, 2010





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100 - 0 meters



0 meters

51 meters

99 meters

Transect BLKROC_21

PastureWrinkle Riparian Field

Ecological Site Moist Floodplain

Sampling Date June 2, 2004





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100 - 0 meters







0 meters 51 meters 99 meters

Transect BLKROC_21

PastureWrinkle Riparian Field

Ecological Site Moist Floodplain

Sampling Date May 31, 2005





0 - 100 meters

100 - 0 meters







0 meters 51 meters 99 meters

Transect BLKROC_21

Pasture Wrinkle Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 13, 2007





0 - 100 meters



100 - 0 meters



0 meters

51 meters

99 meters

Transect BLKROC_21

PastureWrinkle Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 29, 2009





0 – 100 meters







0 meters 51 meters 99 meters





0 - 100 meters



0 meters





51 meters 99 meters

Transect BLKROC_22

Pasture
North Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 11, 2006





0 - 100 meters

100 - 0 meters







0 meters 51 meters 99 meters

Transect BLKROC_22

Pasture
North Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 18, 2007





0 – 100 meters 100 - 0 meters







0 meters 51 meters 99 meters

Transect BLKROC_22

Pasture
North Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 30, 2009





0 – 100 meters 100 - 0 meters







0 meters 51 meters 99 meters

Transect BLKROC_22

Pasture North Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 26, 2010





0 – 100 meters



100 - 0 meters



0 meters

51 meters

99 meters

Transect BLKROC_23

PastureSouth Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 12, 2006





0 - 100 meters







0 meters 51 meters 99 meters

Transect BLKROC_23

PastureSouth Riparian Field

Ecological SiteMoist Floodplain

Sampling Date July 30, 2009





0 – 100 meters 100 - 0 meters







0 meters 51 meters 99 meters

Transect BLKROC_23

PastureSouth Riparian Field

Ecological SiteMoist Floodplain

Sampling Date July 26, 2010

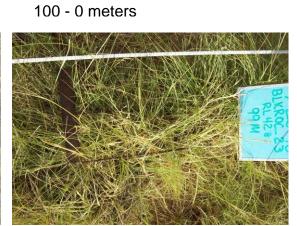




0 – 100 meters







0 meters 51 meters 99 meters

LOWER OWENS RIVER PROJECT

Range Trend Monitoring Site Photos

Blackrock Lease (RLI-428)

2002 - 2010

(Part 3 of 3)



Pasture Lower Blackrock Field

Ecological Site Saline Bottom

Sampling Date August 20, 2002





0 – 100 meters 100 - 0 meters







0 meters 50 meters 95 meters

Transect BLKROC_37

Pasture Lower Blackrock Field

Ecological Site Saline Bottom

Sampling Date June 3, 2003





0 - 100 meters

100 - 0 meters







0 meters 51 meters 99 meters

Transect BLKROC_37

Pasture Lower Blackrock Field

Ecological SiteSaline Bottom

Sampling Date July 23, 2004





0 - 100 meters

100 - 0 meters







0 meters 51 meters

99 meters

Transect BLKROC_37

Pasture Lower Blackrock Field

Ecological SiteSaline Bottom

Sampling Date July 25, 2007





0 - 100 meters

100 - 0 meters







0 meters

51 meters

99 meters

Transect BLKROC_37

Pasture Lower Blackrock Field

Ecological Site Saline Bottom

Sampling Date August 4, 2009





0 - 100 meters





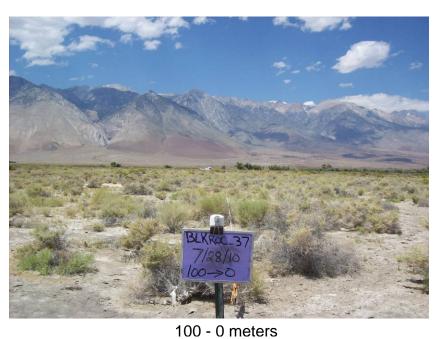


0 meters 51 meters 99 meters

Pasture Lower Blackrock Field **Ecological Site** Saline Bottom

Sampling Date July 28, 2010





0 - 100 meters





0 meters

51 meters

99 meters

Transect BLKROC_39

Pasture
White Meadow Field

Ecological SiteSaline Meadow

Sampling Date August 20, 2002





0 - 100 meters

100 - 0 meters







0 meters 51 meters 95 meters

Transect BLKROC_39

Pasture White Meadow Field

Ecological Site Saline Meadow

Sampling Date June 24, 2003





0 – 100 meters 100 - 0 meters







0 meters 51 meters 99 meters



Pasture White Meadow Field

Ecological Site Saline Meadow

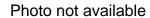
Sampling Date July 12, 2004

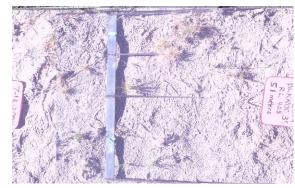




0 – 100 meters

100 - 0 meters





99 meters



0 meters 51 meters BLKROC_39

Transect BLKROC_39

Pasture White Meadow Field

Ecological Site Saline Bottom

Sampling Date August 4, 2009





0 – 100 meters 100 - 0 meters







0 meters 51 meters 99 meters

Transect BLKROC_39

Pasture White Meadow Field

Ecological Site Saline Bottom

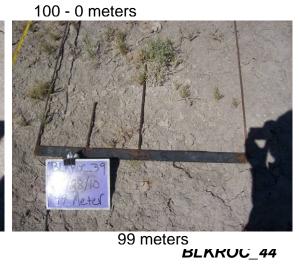
Sampling Date July 28, 2010





0 - 100 meters

BLKROC_39



0 meters

51 meters

Transect BLKROC_44

PastureReservation Field

Ecological Site Saline Meadow

Sampling Date August 20, 2002





0 – 100 meters

100 - 0 meters







0 meters

51 meters

95 meters

Transect BLKROC_44

PastureReservation Field

Ecological Site Saline Meadow

Sampling Date June 24, 2003





0-100 meters 100-0 meters







0 meters 51 meters 99 meters

Transect	
BLKROC_	_44

Pasture Reservation Field **Ecological Site** Saline Meadow Sampling Date July 12, 2004

Photo not available



0 – 100 meters 100 - 0 meters







0 meters 51 meters 99 meters

Transect BLKROC_44

PastureReservation Field

Ecological SiteSaline Meadow

Sampling Date August 10, 2007





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100 - 0 meters







0 meters

51 meters

99 meters

Transect BLKROC_44

Pasture Reservation Field

Ecological Site Saline Meadow

Sampling Date July 29, 2009





0 – 100 meters

100 - 0 meters







0 meters 51 meters 99 meters



PastureReservation Field

Ecological Site Saline Meadow

Sampling Date July 27, 2010





0 - 100 meters

100 - 0 meters







0 meters

51 meters

99 meters



PastureReservation Field

Ecological Site Sandy Terrace

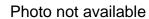
Sampling Date August 20, 2002





0 - 100 meters

100 - 0 meters







0 meters 51 meters 95 meters

Transect BLKROC_49

Pasture Reservation Field

Ecological Site Sandy Terrace

Sampling Date June 3, 2003





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100 - 0 meters







0 meters 51 meters 99 meters

Transect BLKROC_49

PastureReservation Field

Ecological Site Sandy Terrace

Sampling Date July 12, 2004





0 – 100 meters 100 - 0 meters







0 meters 51 meters 99 meters

Transect BLKROC_49

PastureReservation Field

Ecological Site Sandy Terrace

Sampling Date July 18, 2007





0 – 100 meters 100 - 0 meters







0 meters 51 meters 99 meters

Transect BLKROC_49

PastureReservation Field

Ecological Site Sandy Terrace

Sampling Date July 29, 2009





0 – 100 meters

100 - 0 meters







0 meters

51 meters

99 meters



Pasture Reservation Field

Ecological Site Sandy Terrace

Sampling Date July 27, 2010





0 - 100 meters

100 - 0 meters



TransectPastureEcological SiteSampling DateBLKROC_51Reservation FieldSodic FanAugust 20, 2002





0 – 100 meters 100 - 0 meters







0 meters 51 meters 95 meters

Transect BLKROC_51

PastureReservation Field

Ecological Site Sodic Fan

Sampling Date June 3, 2003





0 – 100 meters

100 - 0 meters







0 meters

51 meters

99 meters

Transect BLKROC_51

PastureReservation Field

Ecological Site Sodic Fan

Sampling Date July 13, 2004





0 – 100 meters

100 - 0 meters







0 meters 51 meters 99 meters

Transect BLKROC_51

PastureReservation Field

Ecological Site Sodic Fan

Sampling Date July 12, 2007





0 – 100 meters 100 - 0 meters







0 meters 51 meters 99 meters



PastureReservation Field

Ecological Site Sodic Fan

Sampling Date July 30, 2009





0 - 100 meters

100 - 0 meters







0 meters

51 meters

99 meters





0 – 100 meters



100 - 0 meters



0 meters

51 meters

99 meters

LOWER OWENS RIVER PROJECT

Range Trend Monitoring Site Photos

Thibaut Lease (RLI – 430)

2002 - 2010

Transect THIBAUT_01

Pasture
Waterfowl Management Area

Ecological Site Saline Meadow

Sampling Date August 26, 2002





0 – 100 meters 100 - 0 meters







0 meters 50 meters 95 meters



Pasture
Waterfowl Management Area

Ecological Site Saline Meadow Sampling Date June 11, 2003





0 – 100 meters

100 - 0 meters

Photo not available

Photo not available



0 meters 51 meters

99 meters

Transect THIBAUT_01

Pasture
Waterfowl Management Area

Ecological Site Saline Meadow

Sampling Date June 16, 2004





0 – 100 meters 100 - 0 meters







0 meters 51 meters 99 meters

Transect rotated in 2008 and renamed THIBAUT_1A.

The previous end point was retained as the new start point.

Transect THIBAUT_01A

Pasture
Waterfowl Management Area

Ecological Site Saline Meadow

Sampling Date August 9, 2007





0 – 100 meters 100 - 0 meters







0 meters 51 meters 99 meters



Pasture
Waterfowl Management Area

Ecological Site Saline Meadow

Sampling Date August 5, 2009





0 – 100 meters

100 - 0 meters





Photo not available

99 meters

0 meters 51 meters

Transect THIBAUT_01A

Pasture
Waterfowl Management Area

Ecological Site Saline Meadow

Sampling Date July 29, 2010





0 – 100 meters

100 - 0 meters







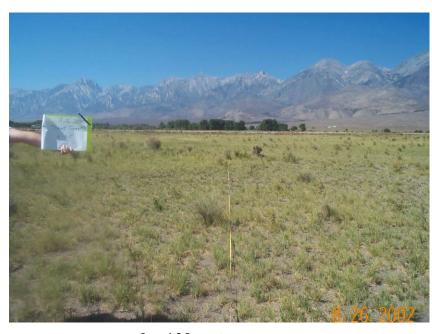
0 meters 51 meters



PastureRare Plant Management Area

Ecological Site Saline Meadow

Sampling Date August 26, 2002





0 – 100 meters

100 - 0 meters







0 meters

50 meters

95 meters

TransectPastureEcological SiteTHIBAUT_02Rare Plant Management AreaSaline Meadow





0 – 100 meters 100 - 0 meters







Sampling Date June 11, 2003

0 meters 51 meters 99 meters

Transect THIBAUT_02

Pasture Rare Plant Management Area

Ecological Site Saline Meadow

Sampling Date July 14, 2004





0 – 100 meters 100 - 0 meter







0 meters 51 meters 99 meters

Transect THIBAUT_02

Pasture
Rare Plant Management Area

Ecological Site Saline Meadow

Sampling Date August 9, 2007





0 – 100 meters 100 - 0 meter







0 meters 51 meters 99 meters

Transect THIBAUT_02

Pasture
Rare Plant Management Area

Ecological Site Saline Meadow

Sampling Date August 5, 2009





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0 meters 51 meters 99 meters

Transect THIBAUT_02

Pasture
Rare Plant Management Area

Ecological SiteSaline Meadow

Sampling Date July 29, 2010





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Transect THIBAUT_03

Pasture Thibaut Field

Ecological Site Saline Meadow

Sampling Date August 26, 2002





0 – 100 meters 100 - 0 meters







0 meters 50 meters 95 meters



PastureThibaut Field

Ecological Site Saline Meadow

Sampling Date June 11, 2003





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TransectPastureEcological SiteSampling DateTHIBAUT_03Thibaut FieldSaline MeadowJune 21, 2004





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TransectPastureEcological SiteSampling DateTHIBAUT_03Thibaut FieldSaline MeadowAugust 21, 2007





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Transect THIBAUT_03

PastureThibaut Field

Ecological Site Saline Meadow

Sampling Date August 5, 2009





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TransectPastureEcological SiteSampling DateTHIBAUT_03Thibaut FieldSaline MeadowJuly 29, 2010





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Transect THIBAUT_04

PastureThibaut Riparian Exclosure

Ecological Site Moist Floodplain

Sampling Date August 24, 2002





0 – 100 meters 100 - 0 meters





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0 meters

50 meters

95 meters

Transect THIBAUT_04

PastureThibaut Riparian Exclosure

Ecological Site Moist Floodplain

Sampling Date June 5, 2003





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0 meters 51 meters 99 meters

Transect THIBAUT_04

PastureThibaut Riparian Exclosure

Ecological Site Moist Floodplain

Sampling Date May 27, 2004





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Transect THIBAUT_04

PastureThibaut Riparian Exclosure

Ecological Site Moist Floodplain

Sampling Date August 10, 2007





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Transect	
THIBAUT_	_04

PastureThibaut Riparian Exclosure

Ecological Site Moist Floodplain

Sampling Date August 3, 2009

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Transect THIBAUT_04

PastureThibaut Riparian Exclosure

Ecological Site Moist Floodplain

Sampling Date August 6, 2010





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Pasture Thibaut Riparian Exclosure

Ecological Site Moist Floodplain

Sampling Date June 23, 2003





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Transect THIBAUT_05

PastureThibaut Riparian Exclosure

Ecological Site Moist Floodplain

Sampling Date May 27, 2004





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0 meters 51 meters 99 meters



PastureThibaut Riparian Exclosure

Ecological Site Moist Floodplain

Sampling Date May 23, 2005





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PastureThibaut Riparian Exclosure

Ecological Site Moist Floodplain

Sampling Date August 6, 2007





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PastureThibaut Riparian Exclosure

Ecological Site Moist Floodplain

Sampling Date August 3, 2009





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TransectPastureEcological SiteSampling DateTHIBAUT_05Thibaut Riparian ExclosureMoist FloodplainAugust 6, 2010





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Transect THIBAUT_06

PastureThibaut Riparian Exclosure

Ecological Site Moist Floodplain

Sampling Date June 23, 2003





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0 meters 51 meters 99 meters



PastureThibaut Riparian Exclosure

Ecological Site Moist Floodplain

Sampling Date May 26, 2004





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Transect THIBAUT_06

PastureThibaut Riparian Exclosure

Ecological Site Moist Floodplain

Sampling Date May 23, 2005





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Transect THIBAUT_06

PastureThibaut Riparian Exclosure

Ecological Site Moist Floodplain

Sampling Date July 11, 2007





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Transect THIBAUT_06

PastureThibaut Riparian Exclosure

Ecological Site Moist Floodplain

Sampling Date August 3, 2009





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Transect THIBAUT_07

PastureThibaut Riparian Exclosure

Ecological Site Moist Floodplain

Sampling Date June 23, 2003





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Transect THIBAUT_07

PastureThibaut Riparian Exclosure

Ecological Site Moist Floodplain

Sampling Date May 26, 2004





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Transect THIBAUT_07

PastureThibaut Riparian Exclosure

Ecological Site Moist Floodplain

Sampling Date May 23, 2005





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Transect THIBAUT_07

PastureThibaut Riparian Exclosure

Ecological Site Moist Floodplain

Sampling Date July 11, 2007





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Transect THIBAUT_07

PastureThibaut Riparian Exclosure

Ecological Site Moist Floodplain

Sampling Date August 3, 2009





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Transect THIBAUT_07

PastureThibaut Riparian Exclosure

Ecological SiteMoist Floodplain

Sampling Date August 6, 2010





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TransectPastureEcological SiteSampling DateTHIBAUT_08Thibaut FieldSaline BottomAugust 21, 2007





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Transect THIBAUT_08

Pasture Thibaut Field

Ecological SiteSaline Botom

Sampling Date July 30, 2009





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Transect THIBAUT_08

PastureThibaut Field

Ecological SiteSaline Botom

Sampling Date July 28, 2010





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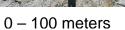
Transect THIBAUT_09

PastureThibaut Field

Ecological Site Saline Bottom

Sampling Date August 21, 2007







100 - 0 meters





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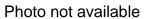
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THIBAUT_	_09

Pasture Thibaut Field **Ecological Site** Saline Bottom

Sampling Date July 30, 2009





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0 meters 51 meters 99 meters

Transect THIBAUT_09

Pasture Thibaut Field

Ecological Site Saline Bottom

Sampling Date July 28, 2010





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LOWER OWENS RIVER PROJECT

Range Trend Monitoring Site Photos

Islands Lease (RLI-489)

2002 - 2010

Transect ISLAND_06

PastureCarasco Riparian Field South

Ecological Site Saline Meadow

Sampling Date August 27, 2002





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0 meters 50 meters 95 meters

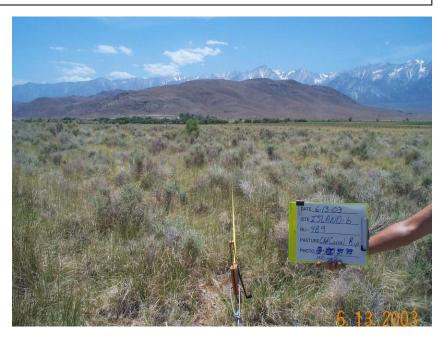
Transect ISLAND_06

PastureCarasco Riparian Field South

Ecological Site Saline Meadow

Sampling Date June 13, 2003





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0 meters 51 meters 99 meters



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Ecological Site Saline Meadow Sampling Date August 25, 2008



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Ecological Site Saline Meadow Sampling Date August 1, 2007



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PastureCarasco Riparian Field South

Ecological Site Saline Meadow

Sampling Date July 27, 2009





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Transect ISLAND_06

PastureCarasco Riparian Field South

Ecological Site Saline Meadow

Sampling Date July 22, 2010





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0 meters 51 meters 99 meters

TransectPastureEcological SiteSampling DateISLAND_07River FieldMoist FloodplainAugust 29, 2002





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Transect ISLAND_07

Pasture River Field

Ecological Site Moist Floodplain

Sampling Date June 13, 2003





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Pasture River Field

Ecological Site Moist Floodplain

Sampling Date June 15, 2004





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TransectPastureEcological SiteSampling DateISLAND_07River FieldMoist FloodplainAugust 3, 2007





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Transect ISLAND_07

Pasture River Field

Ecological Site Moist Floodplain

Sampling Date July 28, 2009





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TransectPastureEcological SiteSampling DateISLAND_07River FieldMoist FloodplainJuly 22, 2010





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0 meters 51 meters 99 meters

Transect ISLAND_08

PastureDepot Riparian Field

Ecological Site Moist Floodplain

Sampling Date August 28, 2002





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Pasture Depot Riparian Field

Ecological Site Moist Floodplain

Sampling Date June 16, 2003





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51 meters 0 meters 99 meters



Pasture
Depot Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 26, 2007





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Transect ISLAND_08

Pasture River Field

Ecological Site Moist Floodplain

Sampling Date August 27, 2008





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Pasture River Field

Ecological Site Moist Floodplain

Sampling Date July 27, 2009





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TransectPastureEcological SiteSampling DateISLAND_08River FieldMoist FloodplainJuly 21, 2010





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Transect ISLAND_09

PastureDepot Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 12, 2006





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Pasture
Depot Riparian Field

Ecological Site Moist Floodplain

Sampling Date July 31, 2007





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0 meters 51 meters 99 meters



Pasture River Field

Ecological Site Moist Floodplain

Sampling Date August 27, 2008





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99 meters

Transect ISLAND_09

Pasture River Field

Ecological Site Moist Floodplain

Sampling Date July 24, 2009





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TransectPastureEcological SiteSampling DateISLAND_09River FieldMoist FloodplainJuly 21, 2010





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TransectPastureEcological SiteSampling DateISLAND_10River FieldMoist FloodplainJuly 13, 2006





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Transect ISLAND_10

Pasture River Field

Ecological Site Moist Floodplain

Sampling Date July 26, 2007





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Transect ISLAND_10

Pasture River Field

Ecological Site Moist Floodplain

Sampling Date July 27, 2009





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TransectPastureEcological SiteSampling DateISLAND_10River FieldMoist FloodplainJuly 21, 2010





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TransectPastureEcological SiteSampling DateISLAND_11River FieldMoist FloodplainJuly 13, 2006





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TransectPastureEcological SiteSampling DateISLAND_11River FieldMoist FloodplainJuly 26, 2007





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TransectPastureEcological SiteISLAND_11River FieldMoist Floodplain





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Sampling Date August 27, 2008

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Transect ISLAND_11

Pasture River Field

Ecological Site Moist Floodplain

Sampling Date July 23, 2009





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99 meters

TransectPastureEcological SiteSampling DateISLAND_11River FieldMoist FloodplainJuly 21, 2010





0 – 100 meters 100 - 0 meters







0 meters 51 meters 99 meters

LOWER OWENS RIVER PROJECT

Range Trend Monitoring Site Photos

Lone Pine Lease (RLI - 456)

2002 - 2010

Transect LONEPINE_01

Pasture River Field

Ecological Site Moist Floodplain

Sampling Date August 23, 2002





0 – 100 meters 100 - 0 meters







0 meters 50 meters 95 meters

Transect LONEPINE_01

Pasture River Field

Ecological Site Moist Floodplain

Sampling Date June 16, 2003





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0 meters 51 meters 99 meters

Transect LONEPINE_01

Pasture River Field

Ecological Site Moist Floodplain

Sampling Date June 7, 2004





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0 meters 51 meters 99 meters

TransectPastureEcological SiteSampling DateLONEPINE_01River FieldMoist FloodplainJuly 31, 2007





0 – 100 meters 100 - 0 meters







0 meters 51 meters 99 meters

Transect LONEPINE_01

Pasture River Field

Ecological Site Moist Floodplain

Sampling Date July 28, 2009





0 – 100 meters 100 - 0 meters







0 meters 51 meters 99 meters

Transect LONEPINE_01

Pasture River Field

Ecological Site Moist Floodplain

Sampling Date July 20, 2010





0 - 100 meters





100 - 0 meters



0 meters 51 meters 99 meters



Pasture River Field

Ecological Site Moist Floodplain

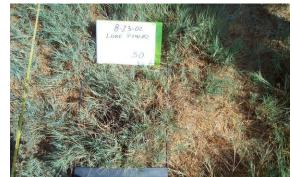
Sampling Date August 23, 2002





0 – 100 meters 100 - 0 meters







0 meters 50 meters 95 meters



Pasture River Field

Ecological Site Moist Floodplain

Sampling Date June 17, 2003





0 – 100 meters 100 - 0 meters







0 meters 51 meters 99 meters

Transect LONEPINE_02

Pasture River Field

Ecological SiteMoist Floodplain

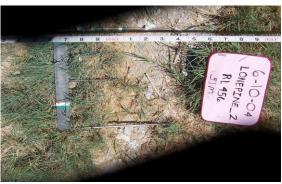
Sampling Date June 10, 2004





0 – 100 meters 100 - 0 meter







0 meters 51 meters 99 meters

TransectPastureEcological SiteSampling DateLONEPINE_02River FieldMoist FloodplainAugust 1, 2007





0 – 100 meters 100 - 0 meter







0 meters 51 meters 99 meters



Pasture River Field

Ecological SiteMoist Floodplain

Sampling Date July 28, 2009





100 - 0 meter

0 - 100 meters





99 meters

0 meters 51 meters



Pasture River Field

Ecological SiteMoist Floodplain

Sampling Date July 20, 2010





0 – 100 meters 100 - 0 meter







0 meters 51 meters 99 meters

Transect LONEPINE_03

Pasture River Field

Ecological Site Moist Floodplain

Sampling Date August 23, 2002





0 – 100 meters 100 - 0 meters







0 meters 50 meters 95 meters



Pasture River Field

Ecological Site Moist Floodplain

Sampling Date June 17, 2003





0 – 100 meters 100 - 0 meter







0 meters 51 meters 99 meters

Transect	
LONEPINE_	_03

Pasture River Field

Ecological Site Moist Floodplain

Sampling Date June 9, 2004





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100 - 0 meter



Photo Not Available



0 meters

51 meters

99 meters

Transect LONEPINE_03

Pasture River Field

Ecological Site Moist Floodplain

Sampling Date August 1, 2007





0 – 100 meters 100 - 0 meters







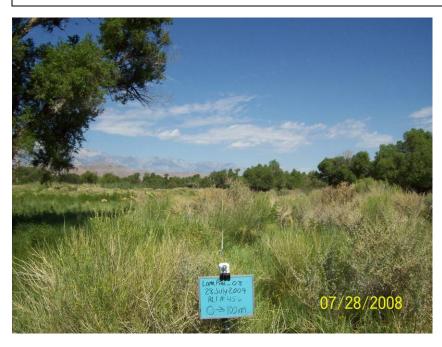
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Transect LONEPINE_03

Pasture River Field

Ecological SiteMoist Floodplain

Sampling Date July 28, 2009





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100 - 0 meters







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99 meters



Pasture River Field

Ecological Site Moist Floodplain

Sampling Date July 20, 2010





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100 - 0 meters







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51meters

99 meters

Transect LONEPINE_04

Pasture River Field

Ecological Site Moist Floodplain

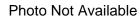
Sampling Date August 23, 2002





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100 - 0 meters







0 meters 50 meters 95 meters

Transect LONEPINE_04

Pasture River Field

Ecological Site Moist Floodplain

Sampling Date June 17, 2003





0 – 100 meters 100 - 0 meters







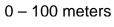
0 meters 51 meters 99 meters

Transect LONEPINE_04 **Pasture** River Field

Ecological Site Moist Floodplain Sampling Date June 10, 2004











100 - 0 meters



0 meters 51 meters 99 meters

Transect LONEPINE_04

Pasture River Field

Ecological Site Moist Floodplain

Sampling Date August 1, 2007





0 – 100 meters

100 - 0 meters







0 meters 51 meters

99 meters

Transect LONEPINE_04

Pasture River Field

Ecological Site Moist Floodplain

Sampling Date July 28, 2009





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99 meters

Transect LONEPINE_04

Pasture River Field

Ecological Site Moist Floodplain

Sampling Date July 20, 2010





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99 meters

Transect LONEPINE_05

PastureJohnson Pasture

Ecological Site Sodic Fan

Sampling Date August 23, 2002





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Transect LONEPINE_05

Pasture Johnson Pasture

Ecological Site Sodic Fan

Sampling Date June 17, 2003





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Transect LONEPINE_05

Pasture
Johnson Pasture

Ecological Site Sodic Fan

Sampling Date August 1, 2007





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Transect LONEPINE_05

Pasture Johnson Pasture

Ecological Site Sodic Fan

Sampling Date July 28, 2009





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Transect LONEPINE_05

Pasture
Johnson Pasture

Ecological Site Sodic Fan

Sampling Date July 20, 2010





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Transect LONEPINE_06

Pasture River Field

Ecological Site Moist Floodplain

Sampling Date June 19, 2003





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51 meters 99 meters

Transect LONEPINE_06

Pasture River Field

Ecological Site Moist Floodplain

Sampling Date June 10, 2004





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Transect LONEPINE_06

Pasture River Field

Ecological Site Moist Floodplain

Sampling Date June 4, 2005





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Transect LONEPINE_06

Pasture River Field

Ecological Site Moist Floodplain

Sampling Date July 30, 2007





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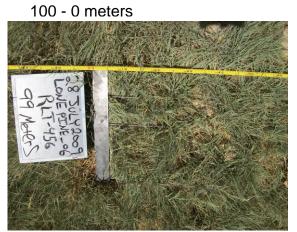
TransectPastureEcological SiteSampling DateLONEPINE_06River FieldMoist FloodplainJuly 28, 2009





0 – 100 meters





0 meters 51 meters 99 meters

Transect LONEPINE_06

Pasture River Field

Ecological Site Moist Floodplain

Sampling Date July 20, 2010





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Transect LONEPINE_07

Pasture River Field

Ecological Site Moist Floodplain

Sampling Date August 7, 2007





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0 meters 51 meters 99 meters

Transect LONEPINE_07

Pasture River Field

Ecological Site Moist Floodplain

Sampling Date July 28, 2009





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Transect LONEPINE_07

Pasture River Field

Ecological Site Moist Floodplain

Sampling Date July 20, 2010





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7-20-(0 Louishane-on) RL 455 STM

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99 meters

LOWER OWENS RIVER PROJECT

Range Trend Monitoring Site Photos

Delta Lease (RLI-490)

2002 - 2010

TransectPastureEcological SiteSampling DateDELTA_01Delta FieldMoist FloodplainAugust 22, 2002





0 – 100 meters 100 - 0 meters







Transect	Pasture	Ecological Site	Sampling Date
DELTA_01	Delta Field	Moist Floodplain	June 16, 2003











0 meters 51 meters 99 meters









0 meters 51 meters 99 meters

TransectPastureEcological SiteSampling DateDELTA_01Delta FieldMoist FloodplainJuly 17, 2007

















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TransectPastureEcological SiteSampling DateDELTA_01Delta FieldMoist FloodplainJuly 20, 2010





Note- Transect name corrected on photos.

0 – 100 meters 100 - 0 meters







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TransectPastureEcological SiteSampling DateDELTA_02Delta FieldMoist FloodplainJune 18, 2003





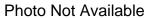


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Transect	
DELTA_02	

PastureDelta Field

Ecological Site Moist Floodplain **Sampling Date** June 9, 2004





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Photo Not Available





TransectPastureEcological SiteSampling DateDELTA_02Delta FieldMoist FloodplainJuly 24, 2007





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TransectPastureEcological SiteSampling DateDELTA_02Delta FieldMoist FloodplainJuly 20, 2010





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0 meters 51 meters 99 meters

TransectPastureEcological SiteSampling DateDELTA_03Delta FieldMoist FloodplainAugust 22, 2002





















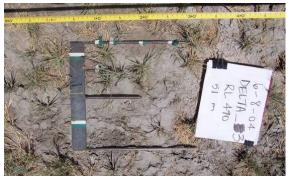


TransectPastureEcological SiteSampling DateDELTA_03Delta FieldMoist FloodplainJune 8, 2004











TransectPastureEcological SiteSampling DateDELTA_03Delta FieldMoist FloodplainJuly 24, 2007











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Transect DELTA_03

Pasture Delta Field

Ecological Site Moist Floodplain

Sampling Date July 23, 2009





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TransectPastureEcological SiteSampling DateDELTA_03Delta FieldMoist FloodplainJuly 19, 2010





Note- Transect name corrected on photos.

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TransectPastureEcological SiteSampling DateDELTA_04Delta FieldMoist FloodplainAugust 22, 2002





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TransectPastureEcological SiteSampling DateDELTA_04Delta FieldMoist FloodplainJune 8, 2004











TransectPastureEcological SiteSampling DateDELTA_04Delta FieldMoist FloodplainJuly 24, 2007











Transect DELTA_04

Pasture Delta Field

Ecological Site Moist Floodplain

Sampling Date July 23, 2009





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TransectPastureEcological SiteSampling DateDELTA_04Delta FieldMoist FloodplainJuly 18, 2010





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TransectPastureEcological SiteSampling DateDELTA_05Delta FieldMoist FloodplainAugust 21, 2002





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0 meters 50 meters 95 meters

TransectPastureEcological SiteSampling DateDELTA_05Delta FieldMoist FloodplainJune 19, 2003











TransectPastureEcological SiteSampling DateDELTA_05Delta FieldMoist FloodplainJune 7, 2004





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0 meters 51 meters 99 meters

TransectPastureEcological SiteSampling DateDELTA_05Delta FieldMoist FloodplainJuly 17, 2007











Transect DELTA_05

PastureDelta Field

Ecological Site Moist Floodplain

Sampling Date July 23, 2009





0 – 100 meters 100 - 0 meters







0 meters 51 meters 99 meters

TransectPastureEcological SiteSampling DateDELTA_05Delta FieldMoist FloodplainJuly 19, 2010





0 – 100 meters 100 - 0 meters







0 meters 51 meters 99 meters

TransectPastureEcological SiteSampling DateDELTA_06Delta FieldMoist FloodplainAugust 21, 2002











TransectPastureEcological SiteSampling DateDELTA_06Delta FieldMoist FloodplainJune 19, 2003











TransectPastureEcological SiteSampling DateDELTA_06Delta FieldMoist FloodplainJune 4, 2004











TransectPastureEcological SiteSampling DateDELTA_06Delta FieldMoist FloodplainJuly 23, 2007







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TransectPastureEcological SiteSampling DateDELTA_06Delta FieldMoist FloodplainJuly 24, 2009





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TransectPastureEcological SiteSampling DateDELTA_07Delta FieldMoist FloodplainAugust 21, 2002











TransectPastureEcological SiteSampling DateDELTA_07Delta FieldMoist FloodplainJune 18, 2003





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0 meters 51 meters 99 meters

Transect DELTA_07

PastureDelta Field

Ecological Site Moist Floodplain

Sampling Date June 7, 2004





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TransectPastureEcological SiteSampling DateDELTA_07Delta FieldMoist FloodplainJuly 23, 2009





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TransectPastureEcological SiteSampling DateDELTA_07Delta FieldMoist FloodplainJuly 19, 2010





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0 meters 51 meters 99 meters

Land Management Appendix 4

Streamside Monitoring Protocol for Woody Species and Other Riparian Conditions within the LORP

Summary

This document outlines a methodology designed to provide managers with measurable long-term trend monitoring of riparian vegetation, woody species and other conditions on stream banks. A multi-disciplinary team including LADWP staff, the MOU Consultants and respective lessees will select Designated Monitoring Areas (DMAs) at which belt transects will be established. Transects will measure vegetation composition and woody species condition at 40 plots along each transect. This protocol will be able to measure trends through time for stream side habitat in the LORP.

Purpose

Monitoring riparian conditions, especially woody species development, is essential to determining progress toward LORP goals within riparian areas. Existing vegetation monitoring transects are primarily located away from stream banks. As a consequence, the MOU Parties and the MOU Consultants made an adaptive management recommendation in 2009 to include additional monitoring along stream banks within the LORP to pick up information on woody recruitment that was otherwise being missed. Additional information on riparian development near the river's edge will aid in evaluating the effectiveness of LORP management strategies.

Goal

Provide managers with measurable long-term trend monitoring of riparian conditions including woody species regeneration on stream banks within the LORP.

Objectives:

Within each riparian pasture, measure and track trends through time for:

- 1) Vegetation community composition and changes
- 2) Bank Condition
- 3) Woody Species recruitment and changes over time

Approach

A multi-disciplinary team including LADWP, Lessees, and the MOU Consultants will select up to two designated monitoring areas (DMAs) on each side of the river within each riparian pasture. Every riparian pasture will have at least one DMA on each side of the river. Proper site selection is critical to the success of this protocol. Reference DMAs may be selected within exclosures or other control areas. Monitoring procedures are compatible with accepted methods tested over time by agencies (BLM and Forest Service) for long-term monitoring. The effort encompasses only key habitat development indicators, as other monitoring efforts in the LORP will supply managers with the important indicators of range condition and riparian development (e.g. stubble height, in-stream substrate and geometry, riparian and wetland development). The approach uses 3 meter wide belt transects extending from the summer base flow water's edge into the riparian area.

Selecting Designated Monitoring Areas (DMAs)

A designated monitoring area (DMA) is the location, or stream reach, where monitoring occurs. These are where the transects will be located. Essentially, there are two types of DMAs:

1. Representative DMA: A reach chosen to be representative of a larger area. Representative DMAs should be located within an identified riparian complex. Riparian complexes are defined by Winward (2000) as "a unit of land with a unique set of biotic and abiotic factors. Complexes are identified on the basis of their overall geomorphology, substrate characteristics, stream gradient and associated water flow features, and general vegetation patterns." Representative DMAs should be located in areas representative of the riparian area being assessed. Winward (2000) suggests that

monitoring should be located at sites within the complex that "best represent influences of major activities in that complex." Generally, more than one riparian complex occurs in a management unit; therefore, the DMA should be placed in the riparian complex that is the most sensitive to management influences. The premise is that if the DMA is placed in the most sensitive complex, and that complex is being monitored and managed to achieve desired conditions, the other less sensitive complexes will also be managed appropriately. However, it is inappropriate to place Representative DMAs in water gaps or other specific concentration zones.

The following criteria should be used to select Representative DMAs:

- Representative DMAs should only be selected by an interdisciplinary team of qualified personnel with a good understanding of stream functions and riparian ecology and a detailed knowledge of the area.
- Representative DMAs should occur within riparian complexes that best characterize major influences in that complex.
- Where multiple riparian complexes occur in a management unit and it is not possible to establish DMAs in all complexes, select the one that is most sensitive to management influences.
- Representative DMAs should be placed in areas where it is clear that the achievement of established resource objectives can be monitored and measured. The site should have the potential to respond to and demonstrate measurable trends in condition resulting from changes in those management activities influencing stream channels and riparian vegetation (e.g., stream flows, plant competition, limited grazing, invasive species, and channel changes).
- Do not place representative DMAs near bridges, culverts, tributary confluences, at water gaps or locations intended for livestock concentration, or areas where riparian vegetation and stream bank impacts are the result of site-specific conditions (such as flow measurement stations, along fences where use is not *representative* of the riparian area).
- **3. Reference DMA:** A reach chosen to obtain reference data useful for identifying potential condition, and for establishing initial desired condition objectives for a similar riparian complex. A common example is an exclosure or other areas where land and water uses are minimal.

Establishing the Belt Transect

After the DMA is selected, a line transect is established on each side of the stream. The line transect at the DMA extends at least 110 meters (361 feet) along the stream. Longer reaches may be needed in areas with extreme variability or site complexity. Mark the upstream and downstream limits of the transect with a GPS unit and record the projection system and UTM coordinates.

Skills, Training, Collection Time, and Equipment

Skills

Individuals must have a basic understanding of riparian ecology and stream function. This requires knowledge of riparian species identification and basic gps operation.

Collection Time

Sample time is estimated at approximately 1-2 hours per site. There will be up to four sites (transects) per selected area.

Equipment

Handheld GPS Units, digital camera, PVC quadrat frame (0.5 m x 1.5 m doubled to create a 0.5 m x 3 m survey area), dry erase board and marker, data sheets, pencil, clipboard.

Monitoring Procedures

Timing

These procedures were designed to be completed mid-to late summer or early fall. Monitoring data will be gathered the first three years of this protocol, and then spaced out to three year intervals. The first three years of monitoring are designed to establish initial conditions and determine initial ecological response to natural and induced influences. Following this initial period, the three year interval between sampling allows vegetation and stream banks time to respond. In some cases, the period may be extended because of slower recovery rates.

Systematic Procedure

- 1. Upon locating the preestablished GPS points for representative and reference DMAs in the field, photographs will be taken before data is collected. Four photos will be taken at each of three locations along the transect (beginning, middle, and end at quadrats 0, 20, and 40, respectively). There will be an upriver shot (UP on dry erase board), downriver (DWN), towards opposite bank across river (H2O), and towards bank (BNK) capturing vegetation along the streambank. Photo Boards shall be labeled with transect name, date, transect location, and photo direction (i.e., Delta_Belt1a, 9/17/10, MID-UP). At a minimum there will be 12 photos for each side of the riverbank. Take additional photographs as needed to document specific site conditions or to demonstrate trends across sites (i.e., wildlife use, vegetation communities, etc.).
- 2. Monitoring should begin at the downstream end of the transect and work upstream. When establishing the transect, take a GPS point 3m away from waters edge at downstream marker and 3m away from waters edge at upstream marker on both sides of the river. These four points will be used to draw a polygon and analyze the macroplot using repeat aerial imagery.
- 3. Determine a random number between 1 and 10; begin the transect that number of meters along the stream bank to the first plot location. Place the monitoring frame down with the 50 cm edge along the stream bank with the 3m sides of the quadrat perpendicular to the stream channel. Continue the procedure at predetermined intervals so that 40 plots are read within each transect. In some cases, this may need to be shortened to capture the entire transect within exclosures. If this is the case, shorten the distance between plots so that 40 sampling points are recorded. Additional plots may be required in large and heavily variable sites.
- 4. Once the first plot has been located five site attributes will be estimated:
 - a) bank condition
 - b) vegetation/ground cover composition
 - c) woody species regeneration
 - d) canopy over hang
 - e) woody species use

Bank Condition

Conduct an ocular evaluation of bank condition along the bank within the quadrat and give a dot tally using one of the following categories:

- a) Barren
- b) Vegetated
- c) Broken/Actively Eroding
- d) Root Stabilized
- e) Litter

The total number of sample points for bank condition should equal 40.

Point Intercept for Ground Cover

In addition, five point intercepts along each 0.5 meter edge (12.5 cm apart) were recorded for ground cover. Ground cover attributes were recorded as vegetation by species, litter, wood (>1cm), dung, fine/silty soil, sandy soil, gravelly soil, cobble, or water. The total number of sample points for ground cover should equal 200.

Woody Species Condition

Woody species condition is modified from Winward (2000). The original procedure developed by Winward is a six-foot wide by 110-meter belt transect with the center of the six-foot belt over the greenline. Within each 0.5 meter by 3 m meter plot woody plants will be counted by species and age classed.

Identify the plant by species as possible; count the number of plants rooted in the plot, and determine the age class (according to Table 1 below) of each woody plant within the plot.

- 1. The woody species regeneration plot is the same 0.5 meter wide by 3 meter survey plot used for point intercept data collection.
- 2. Place the 0.5 m end of the monitoring frame (quadrat) on and perpendicular to the summer baseflow water's edge, and count the number of woody plants by species *rooted* within the monitoring frame. If one stem at ground level is within the plot and several other stems are immediately outside the plot, determine if the stem within the plot is actually connected to those outside the plot. If it is, record the age of the entire plant to which the stem is connected. Generally, stems at ground level within 1 foot of each other are considered the same plant. If it is not connected, consider the stem as an individual plant and record the age class appropriately. Record by species and age class. (Do not count woody species canopy cover as woody species.) Tables 1 and 2 provide descriptions of woody species age classes. It is difficult to age class rhizomatous species such as coyote willow (*S. exigua*) and wild rose (*Rosa* spp.). Their use as an indicator must be viewed in this context.

Canopy Overhang

Identify any woody species which intersect the vertical projection of the quadrat which are not rooted in the quadrat, assign an age class to each individual plant.

Woody Species Use

Describe any use of woody species located within the vertical projection of the quadrat (this will include both rooted and overhanging plants).

Categories of use are:

- **f)** Browsing (must be during this growing season)
- **g)** High lining
- h) Antler rubs

Table 1. Woody Species Age Classes for Multiple Stem Species Includes clumped willow (*Salix* spp.) species and shrubby forms of mountain alder (*Alnus incana*), and water birch (*Betula occidentalis*).

Number of Stems at the Ground Surface	Age Class
1 stem	Seedling
2 to 10 stems	Young
>10 stems	Mature
0 stems alive	Dead

Table 2. Woody Species Age Class for Single Stemmed Species. Single stemmed species include cottonwoods and tree willows.

Age Class	Cottonwood	Other Broadleaf Species
Seedling	Stem is < 4.5 ft. tall or or < 1 in. diameter at breast height (dbh)	Stem is < 3ft. Tall and less than 1 in. in diameter at the base
Young	Stem is \geq 4.5 ft. tall and 1 to <5 in. dbh, or stem is < 4.5 ft. tall and 1 to < 5 in. dbh	Stem is ≥ 3 ft. tall and < 3 in. dbh
Mature	≥ 5 in. dbh	Stem is ≥ 6 ft. tall and ≥ 3 in. dbh, or <6 ft. tall and ≥ 3 in. dbh, or <3 ft. tall with multiple branching (hedged) near the top of the stem
Decadent	> 50 percent of the canopy is dead	
Dead		

Adapted from (Thompson et al. 1998)

2010 LORP Streamside Monitoring Transect			Site Name:			Lease:				
Start: Photos: Q1□ Q20□ Q4			l0□ Personnel:				Date:			
Ban	k Condition	n	(Summary of 0.5 meter band- total 40)				Notes			
Barr	en			-			-			
Brok	ken/Actively	y Eroding								
	etated									
Roo	t Stabilized	l Bank								
Litter										
Gro	und Cover	•		(Point	Intercept - tota	al 200)				
Species										
ec										
ies										
Litte	er									
Wood (>1 cm)										
Dun										
Soil	Fine									
=:	Sandy									
	Gravelly									
Cob										
Woo	ody Specie	es Conditio	n				Wo	ody Spe		
							Browsing	High	Antler	Other
	Species	Seedling	Juvenile	Mature	Decadent	Dead	Browning	Lining	Rubs	(Describe)
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Rooted										
ä										
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Canopy										
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