

Marcial Fire
BURNED AREA REHABILITATION PLAN

UNIT: BOSQUE del APACHE NATIONAL WILDLIFE REFUGE and ADJACENT LANDS

LOCATION: Socorro County, New Mexico

DATE: September 14, 2007

PREPARED BY: Bosque del Apache NWR, and Socorro Soil and Water Conservation District

EXECUTIVE SUMMARY

Introduction

This Burned Area Rehabilitation (BAR) Plan has been prepared in accordance with Department of the Interior and U.S. Fish and Wildlife Service (FWS) policy, Bosque del Apache National Wildlife Refuge (Refuge) Comprehensive Conservation, Habitat Management, and FWS Fire Management Planning documents. It is also developed in accordance of Department of Agriculture Conservation Planning documents and the Socorro County Community Wildfire Protection Plan (CWPP). This plan provides a short summary of 2007 BAR accomplishments for the Marcial Fire both on private and federal lands and outlines proposed 2008 and 2009 rehabilitation efforts in two parts; on federal and private properties. The primary objectives are to:

- Control re-growth and spread of invasive, noxious, and exotic species, particularly saltcedar, in order to mitigate future threats to Threatened, Endangered, and Candidate species, and important watershed and wildlife resources.
- Rehabilitate native vegetation that is more suitable for Threatened and Endangered species, wildlife, watershed and ecosystem function, and less prone to wildfire impacts.
- Collect and evaluate current site condition data to inform future planning for rehabilitation alternatives to enhance cost efficient and successful rehabilitation treatments.

This report is a companion report to the **Marcial Fire Burned Area Emergency Stabilization Plan and the Marcial Fire Burned Area Rehabilitation Plan for 2007**. This report describes recommended actions that can be accomplished from now until the end of the federal fiscal year (September 30, 2008). This plan also outlines the actions proposed for Fiscal Year 2009. The original ES Plan was drafted by the Albuquerque, New Mexico office of Parametrix, Inc. Final preparation of all subsequent plans were completed by Bosque del Apache NWR (Refuge) and the Socorro Soil and Water Conservation District (SWCD). Support was provided by USFWS Southwest Region Fire Management and Water Resources Programs staff, the Armendaris Ranch and the Hunter family representatives, New Mexico State Forestry, and the Natural Resources Conservation Service.

Fire Background

The Marcial Fire ignited on May 3, 2006 near the historic town-site of San Marcial, Socorro County, New Mexico. Values immediately in danger included 4 structures, a Bureau of Reclamation storage yard, a railroad trellis, 2 railroad bridges, and Critical Habitat and established territories for the federally-endangered Southwestern willow flycatcher [SWWF] (*Empidonax trailii extimus*). Suppression actions consisted of burnout and holding with engine crews on established roads and indirect fire-line construction with bulldozers. Containment was problematic due to limited access, heavy fuel loading; herbicide treated dead-standing tamarisk stands and associated extreme fire behavior, including spotting and flame lengths greater than 200 feet. The fire was contained on May 6 and controlled on May 11. Cooperators included more than 60 firefighters from the FWS, San Antonio (NM) Volunteer Fire Department, New Mexico State Forestry Division, Bureau of Land Management, U.S. Forest Service, and contractors. The fire burned 4,857 acres with an estimated suppression cost of \$265,000.

Fire Damages and Threats to Human Safety and Natural and Cultural Resources

The burn area is within the historic floodplain of the Rio Grande in rural Socorro County. Land ownership is a mix of public and private, with large portions managed by the Refuge, New Mexico Ranch Properties, and other land-owners. There are no human habitations and very few structures within the affected area.

The fire burned a mosaic of non-native and native floodplain forest (bosque) vegetation. Overstory vegetation at the burn site was dominated by non-native saltcedar (*Tamarix ramossissima*) with large patches of native Rio Grande cottonwood (*Populus deltoides* var. *wislenzii*), and Goodding's willow (*Salix gooddingii*). Understory vegetation was dominated by native willows (*Salix exigua*), honey mesquite (*Prosopis glandulosa*), and other native and non-native shrubs, forbs, and grasses.

The general area contains or is adjacent to Critical Habitat and/or known nesting areas for two federally-listed Endangered species; the SWWF (USFWS 2005) and the Rio Grande silvery minnow [RGSM] (*Hybognathus amarus*) (USFWS 2003). The Refuge implements comprehensive maintenance, rehabilitation, and restoration to habitat for these species, including converting non-native saltcedar and Russian olive stands to native riparian-wetland habitat. The SWWF Critical Habitat near the Refuge is immediately adjacent to the Marcial Fire burned area and the SWWF likely utilized habitat within the burned area. The RGSM is present in the Rio Grande adjacent to the entire project area, although habitat for this species was likely not adversely affected.

The greatest post-fire threats to resources are:

- Continued exotic saltcedar (a Class C noxious weed) resprouting, seeding, and invasion within burned area and to adjacent habitat.
- Increased cover and density of exotic species and noxious weeds within the burned area and adjacent Critical Habitat for the SWWF (USFWS 2002). Two New Mexico Class-A noxious weeds, Russian knapweed (*Acroptilon repens*) and perennial pepperweed (*Lepidium latifolium*) are present and spreading on and off the Refuge. Other species such as camelthorn (*Alhagi pseudalhagi*) and Russian olive are also present and may invade newly exposed soils if not actively monitored and promptly treated.

Much of the area that burned was in saltcedar-dominated habitat. This species is fire adapted and root-sprouts vigorously following a fire, forming impenetrable stands if not treated. Given these ecological traits saltcedar typically will crowd out native riparian and wetland vegetation that is beneficial for native wildlife. The bare, disturbed soil present over most of the burned area also provides an opportunity for invasion by several classes of exotic and noxious invasive species.

The following BAR activities and treatments are recommended for the Marcial Fire on Bosque del Apache National Wildlife Refuge and a portion of the adjacent private lands. Activities and treatments are separated by fiscal year of implementation.

Rehabilitation Approach

The Bosque del Apache NWR BAR approach has consisted of site assessment, planning and initial control. Accomplishments from 2006 and 2007 include gathering information on soils, topography and groundwater from both federal and private lands. This information will further refine the site treatment planning on all BAR acres. Very little of this work remains to be done. Site preparation and implementation of rehabilitation also started in 2006 with Emergency Stabilization funds and continued

in 2007 with Rehabilitation funds. Establishment of both mesic and xeric grasslands has been accomplished in priority areas of the burn. Planting of native trees started in 2007. Monitoring on all treatment areas started immediately post-fire and will continue for the next two years at a minimum. The rehabilitation tasks for the next two years are summarized below.

2008

- Herbicide treatment of exotic and noxious weeds in priority areas where resprouting is prevalent on the Refuge and private lands.
- Root plow, rake, pile and burn salt cedar in priority areas on the Refuge and private lands where resprouting is prevalent. Other techniques including extraction and/or mastication will be used as well where most appropriate.
- Establish native plants including grasses, forbs and trees in appropriate locations on the Refuge and private lands based on the soil survey done in 2007.
- Contour areas to prepare sites for native tree species establishment close to groundwater table. Locations for these “swales” will be determined by soils, topographic and groundwater information gathered in 2007.
- Plant native tree species to benefit the SWWF in areas determined suitable for pole or trenched plantings on the Refuge and private lands over three years.
- Monitor and quantify invasive exotic and native species response in burned area to guide subsequent rehabilitation treatments in 2009.
- Establish additional groundwater monitoring wells on both Refuge and private lands to further define floodplain characteristics. This information is used to determine species planted.
- Complete topographic survey on private lands.
- Complete soil survey on additional private lands burned in Marcial Fire (Hunter Property, 300 acres).
- Monitor groundwater levels and vegetation response throughout year.

2009

- Herbicide treatment of exotic and noxious weeds in priority areas where resprouting is prevalent on the Refuge and private lands. Final application necessary to obtain effective control.
- Root plow, rake, pile and burn salt cedar in priority areas on the Refuge and private lands where resprouting is prevalent. Other techniques including extraction and/or mastication will be used as well where most appropriate.
- Establish native plants including grasses, forbs and trees in appropriate locations based on the soils survey information gathered in 2007. Native species establishment on both Refuge and private lands will be based on groundwater, topographic, and soils information gathered in two previous years.
- Contour areas to prepare planting area for native tree species close to groundwater table. Locations for these “swales” will be determined by soils, topographic and groundwater information gathered in 2007 and 2008.
- Plant native tree species to benefit the SWWF in areas determined suitable for pole or trenched

plantings on the Refuge (10 acres) and private lands (10 acres) over three years.

- Monitor and quantify invasive exotic and planted native species response in burned area.
- Monitor groundwater levels throughout year.

No BAR activities are proposed on the remaining private lands in the Marcial Fire area due to the fragmented land ownership, unknown land tenure, and uncertain future of these lands. These lands are located in the southern 1/3-1/4 of this burned area (2,101 acres).

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PART A - FIRE LOCATION AND BACKGROUND INFORMATION

Fire Name	Marcial Fire
Fire Number	9142-CJ83
Region	2
County and State	Socorro County, New Mexico
Ignition Date/Cause	May 3, 2006 / Unknown
Date Contained	May 6, 2006
Date Controlled	May 11, 2006
Jurisdiction	FWS 802 acres
Other jurisdictions	Private 4,055 acres
Total Acres	4,857

PART B - NATURE OF PLAN

Type of Action: (check one box below)

X	Initial Submission
	Amendment to the Initial Submission

PART C – REHABILITATION ASSESSMENT

Rehabilitation Accomplishments 2007 (combined federal and private lands)

- Completed topographic survey of Refuge lands (800 acres).
- Completed first pass of mechanical control of salt cedar on 800 acres as needed.
- Completed salt cedar and noxious weed control using herbicide on 1,350 acres as needed.
- Completed soil survey of 1,500 acres.
- Completed priority groundwater well installation.
- Planted xeric grasses, forbs and shrubs on 412 acres.
- Installed required infrastructure to provide water to mesic grassland establishment area.
- Established mesic grasses and trees on 125 acres.
- Established southwestern willow flycatcher habitat on 4 acres.
- Monitored initial and transition plots on Marcial Fire area treated.

Rehabilitation Objectives for 2008 and 2009

- Continued control of re-growth and spread of invasive, noxious, and exotic species, particularly saltcedar, in order to mitigate future threats to Threatened, Endangered, and Candidate species, and important watershed and wildlife resources.
- Rehabilitate native vegetation including that suitable for Threatened and Endangered species, wildlife, watershed and ecosystem function, and less prone to wildfire impacts.
- Collect and evaluate current site condition data to inform future planning for rehabilitation alternatives to enhance cost efficient and successful rehabilitation treatments.

PART D - TEAM ORGANIZATION, MEMBERS, AND RESOURCE ADVISORS

I. Burned Area Emergency Response Team Members:

Position	Team Member (Agency)
Team Leaders, Plan editing	Gina Dello Russo, Bosque del Apache NWR; Nancy Baczek, Partners for Fish & Wildlife Program, Nyleen Troxel Stowe, Socorro Soil and Water Conservation District
Operations	Chris Wilcox, NM State FMO (FWS)
Vegetation Specialist	Eugene Adkins, Jornada RC&D, NRCS Gina Dello Russo, Bosque del Apache NWR
Resource Advisors	Will Kolbensschlag, Range Technician, Socorro SWCD Merry Jo Fahl, District Manager, Sierra SWCD Mark Kaib, Fire Ecologist, U.S. Fish & Wildlife Service, Region 2 Paul Tashjian, Hydrologist, U.S. Fish & Wildlife Service, Region 2

PART E - SUMMARY OF ACTIVITIES AND COSTS

The following two tables summarize activities are proposed:

Table 1. List of rehabilitation tasks.

Year	Step	Activities	Timing	Coverage Area
FY '08	Site Preparation	Irrigation delivery improvements	Fall 2007 - Fall 2008	150 acres
		Chemical and mechanical Saltcedar/noxious weed control as needed. Contouring of plant establishment sites.	Fall 2007 – Spring 2008	Chemical 550 acres Mechanical 500 acres
	Site Analysis	Topographic survey of private lands	Winter 2007	1,954 acres
		Install supplementary groundwater observation wells	Fall 2007 – Winter 2007	2,756 acres
	Site Treatment Planning	Finalize treatment plan for 2008-2009	Winter 2007	2,756 acres
	Implementation	Plant establishment	Winter-Summer 2008	1,020 acres
	Treatment Effectiveness Monitoring	Saltcedar/noxious weed monitoring Groundwater monitoring Plant establishment monitoring	Fall 2007 – Fall 2008	2,756 acres
FY '09	Site Preparation	Irrigation delivery improvements	Fall 2008 – Fall 2009	70 acres
		Chemical and saltcedar/noxious weed control. Mechanical control of non-native plants and contouring of plant establishment sites.	Fall 2008 – Spring 2009	Chemical 1,400 acres Mechanical 400 acres
	Site Treatment Planning	Review monitoring results and existing plan for necessary changes to plan	Fall 2008	2,756 acres
	Implementation	Plant establishment	Winter – Summer 2009	870 acres
	Treatment Effectiveness Monitoring	Saltcedar/noxious weed monitoring Groundwater monitoring Plant establishment monitoring	Fall 2008 – Fall 2009	2,756 acres

Table 2. Marcial Fire burned area rehabilitation activities for 2008 & 2009.

Spec #	Title	Unit	# of Units	Work Agent
1.	Saltcedar and noxious weed control-herbicide	Acre	1850 ac	FA, S
2.	Salt Cedar control-mechanical site preparation	Acre	500 ac 400 ac	FA, S
3.	Soil assessment	Acre	300 ac	S
4.	Project monitoring	Acre	802 ac 1,954 ac	FA, S
5.	Topographic Survey	Acre	1,954 ac	FA
6.	Groundwater Assessment/Mapping	Well	12 wells	S
7.	Riparian tree establishment	Acre	120 ac 60 ac	FA S
8.	Planting mesic grass species	Acre	150 ac	FA
9.	Seeding xeric native grasses, forbs and shrubs	Acre	600 1000	FA S
10.	Implementation Leaders – FWS	Year	2	FA
	Implementation Leader - SWCD	Year	2	S

PART F - INDIVIDUAL SPECIFICATION 2008-2009 - HERBICIDE TREATMENTS – (1)

TREATMENT/ACTIVITY NAME	Herbicide Treatments	PART E SPECIFICATION #	1
NFPORS TREATMENT CATEGORY*	Other Treatment	FISCAL YEAR(S) (list each year):	2008, 2009
NFPORS TREATMENT TYPE *	Chemical	WUI? Y / N	
IMPACTED COMMUNITIES AT RISK		IMPACTED T&E SPECIES	

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>Number and Describe Each Task:</p> <p>A. General Description: Spot treat noxious weeds and Salt Cedar resprouts with herbicide.</p> <p>B. Location/ (Suitable) Sites: Floodplain areas within BDA-NWR (350 ac) and Armendaris Ranch and Hunter Property (1500 ac) previously treated with aerial herbicide or mechanical methods.</p> <p>C. Design/Construction Specifications:</p> <ol style="list-style-type: none"> 1. Use ATV mounted herbicide sprayer tank to spot treat Salt Cedar resprouts and noxious weeds, such as Russian knapweed and Perennial pepperweed 2. Apply appropriate herbicides to all Salt Cedar regrowth in late summer months for two growing seasons 3. Apply appropriate herbicides to all noxious weeds (Russian knapweed, Perennial pepperweed, etc.) 4. All herbicide applications will be consistent with existing noxious weed management plans (BDA-NWR 2006; SSWCD 2006) <p>D. Purpose of Treatment Specifications: Control Salt Cedar regrowth and new invasions of noxious weeds.</p> <p>E. Treatment Effectiveness Monitoring Proposed: Visual inspection following procedures specified in existing noxious weed management plans (BDA-NWR 2006; SSWCD 2006). Plant transects to determine control success.</p>

PART F - INDIVIDUAL SPECIFICATION - MECHANICAL TREATMENTS – (2)

TREATMENT/ACTIVITY NAME	Mechanical Treatment	PART E SPECIFICATION #	2
NFPORS TREATMENT CATEGORY*	Other Treatment	FISCAL YEAR(S) (list each year):	2008, 2009
NFPORS TREATMENT TYPE *	Mechanical	WUI? Y / N	
IMPACTED COMMUNITIES AT RISK		IMPACTED T&E SPECIES	

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>Number and Describe Each Task:</p> <p>A. General Description: Mechanically treat Salt Cedar</p> <p>B. Location/ (Suitable) Sites: 350 acres of burned saltcedar monoculture on Refuge lands, 200 acres on Armendaris Ranch, and 50 acres on Hunter Property would be treated mechanically in 2008.</p> <p>C. Design/Construction Specifications:</p> <ol style="list-style-type: none"> 1. Bulldoze standing biomass into burn piles (D7 minimum) 2. Root plow, rake, and stack Salt Cedar roots into burn piles (D8 minimum for root rake, D7 for root plow) 3. Burn piles 4. Follow up with spot herbicide treatments (specification 1) 5. Alternatively, an excavator with mulch and grapple attachment will be used in areas of mixed native and nonnative forest. Steps 3 & 4 would apply. <p>D. Purpose of Treatment Specifications: Remove live roots of Salt Cedar from burned area</p> <p>E. Treatment Effectiveness Monitoring Proposed: Visual inspection following procedures specified in existing noxious weed management plans (BDA-NWR 2006).</p>

PART F - INDIVIDUAL SPECIFICATION – PLAN DEVELOPMENT (3)

TREATMENT/ACTIVITY NAME	Plan Development	PART E SPECIFICATION #	3
NFPORS TREATMENT CATEGORY*	Other Treatment	FISCAL YEAR(S) (list each year):	2008
NFPORS TREATMENT TYPE *	Soil Survey	WUI? Y / N	
IMPACTED COMMUNITIES AT RISK		IMPACTED T&E SPECIES	

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>Number and Describe Each Task:</p> <p>A. General Description: Collect soils information required for developing rehabilitation plan</p> <p>B. Location/(Suitable) Sites: Floodplain areas within Hunter Property (300 ac)</p> <p>C. Design/Construction Specifications:</p> <p>1. Perform soil salinity survey and Level 1 soil survey.</p> <p>2. Place salinity and soil data into a landform context by utilizing existing geomorphology maps. Establish relationships between geomorphic features, salinity and soil texture. Test predictive capabilities of using landforms to determine soil salinity.</p> <p>D. Purpose of Treatment Specifications: Gather essential information required for site rehabilitation planning</p> <p>E. Treatment Effectiveness Monitoring Proposed: n/a</p>
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PART F - INDIVIDUAL SPECIFICATION – PLAN DEVELOPMENT (4)

TREATMENT/ACTIVITY NAME	Plan Development	PART E SPECIFICATION #	4
NFPORS TREATMENT CATEGORY*	Other Treatment	FISCAL YEAR(S) (list each year):	2008, 2009
NFPORS TREATMENT TYPE *	Project Monitoring	WUI? Y / N	
IMPACTED COMMUNITIES AT RISK		IMPACTED T&E SPECIES	

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>Number and Describe Each Task:</p> <p>A. General Description: Collect information required for evaluating rehabilitation implementation</p> <p>B. Location/(Suitable) Sites: Floodplain areas within BDA-NWR (802 ac) and Armendaris Ranch (1,654 ac), and Hunter Property (300 ac)</p> <p>C. Design/Construction Specifications:</p> <p>1. Collect field information from by performing plant transects, measuring groundwater monitoring, waterfowl use (Refuge only), and taking photo points at all rehabilitation sites.</p> <p>D. Purpose of Treatment Specifications: Gather essential information required for rehabilitation success.</p> <p>E. Treatment Effectiveness Monitoring Proposed: consolidated under this treatment</p>
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PART F - INDIVIDUAL SPECIFICATION – PLAN DEVELOPMENT (5)

TREATMENT/ACTIVITY NAME	Plan Development	PART E SPECIFICATION #	5
NFPORS TREATMENT CATEGORY*	Other Treatment	FISCAL YEAR(S) (list each year):	2008
NFPORS TREATMENT TYPE *	Topographic Survey	WUI? Y / N	
IMPACTED COMMUNITIES AT RISK		IMPACTED T&E SPECIES	

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>Number and Describe Each Task:</p> <p>A. General Description: Map surface elevations to support developing rehabilitation plan for Hunter Property</p> <p>B. Location/(Suitable) Sites: Floodplain areas within Hunter Property (300 ac)</p> <p>C. Design/Construction Specifications:</p> <p>1. Map surface elevations to assist rehabilitation planning. Establish benchmarks where necessary for rehabilitation implementation.</p> <p>D. Purpose of Treatment Specifications: Gather essential information required for site rehabilitation planning</p> <p>E. Treatment Effectiveness Monitoring Proposed: n/a</p>
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PART F - INDIVIDUAL SPECIFICATION – PLAN DEVELOPMENT (6)

TREATMENT/ACTIVITY NAME	Plan Development	PART E SPECIFICATION #	6
NFPORS TREATMENT CATEGORY*	Other Treatment	FISCAL YEAR(S) (list each year):	2008
NFPORS TREATMENT TYPE *	Groundwater Survey	WUI? Y / N	
IMPACTED COMMUNITIES AT RISK		IMPACTED T&E SPECIES	

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>Number and Describe Each Task:</p> <p>A. General Description: Monitor and map groundwater levels to support developing rehabilitation plan</p> <p>B. Location/(Suitable) Sites: Floodplain areas within BDA-NWR (760 ac), Armendaris Ranch (1,654 ac) , and Hunter Property (300 ac)</p> <p>C. Design/Construction Specifications:</p> <p>1. Monitor and map groundwater levels to assist rehabilitation planning. Establish three transects with 4 groundwater observation wells. Automate data collection using pressure transducers.</p> <p>D. Purpose of Treatment Specifications: Gather essential information required for site rehabilitation planning</p> <p>E. Treatment Effectiveness Monitoring Proposed: Monitor groundwater levels throughout the year, See #4</p>
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PART F - INDIVIDUAL SPECIFICATION – REHABILITATION (7)

TREATMENT/ACTIVITY NAME	Rehabilitation	PART E SPECIFICATION #	7
NFPORS TREATMENT CATEGORY*	Other Treatment	FISCAL YEAR(S) (list each year):	2008, 2009
NFPORS TREATMENT TYPE *	Riparian Tree Establishment	WUI? Y / N	
IMPACTED COMMUNITIES AT RISK		IMPACTED T&E SPECIES	

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>Number and Describe Each Task:</p> <p>A. General Description: Establish native tree and grass species in suitable sites within burn area</p> <p>B. Location/(Suitable) Sites: Floodplain areas within BDA-NWR (118 ac) and Private lands (2 ac)</p> <p>C. Design/Construction Specifications:</p> <ol style="list-style-type: none"> 1. Rehabilitate delivery ditch to two planting sites – Refuge only 2. Contour ground to within 3 feet of water table 3. Harvest and store plant materials 4. Trench in plant materials <p>D. Purpose of Treatment Specifications: Establish native forest and grassland patches</p> <p>E. Treatment Effectiveness Monitoring Proposed: measure survival and growth rates of native stands yearly – see #4</p>

PART F - INDIVIDUAL SPECIFICATION – REHABILITATION (8)

TREATMENT/ACTIVITY NAME	Rehabilitation	PART E SPECIFICATION #	8
NFPORS TREATMENT CATEGORY*	Other Treatment	FISCAL YEAR(S) (list each year):	2008
NFPORS TREATMENT TYPE *	Mesic Grassland Establishment	WUI? Y / N	
IMPACTED COMMUNITIES AT RISK		IMPACTED T&E SPECIES	

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>Number and Describe Each Task:</p> <p>A. General Description: Seed native grasses and forbs in suitable sites in the burn area</p> <p>B. Location/(Suitable) Sites: Floodplain areas within BDA-NWR (760 ac)</p> <p>C. Design/Construction Specifications:</p> <ol style="list-style-type: none"> 1. Control annual weeds in seeding area by mowing or disking with farm tractor 2. Seed native seeds using a broadcast seeder <p>D. Purpose of Treatment Specifications: Re-establish native grasses and forbs in burned area</p> <p>E. Treatment Effectiveness Monitoring Proposed: Plant transects to determine % cover and species diversity, survival, see #4</p>

PART F - INDIVIDUAL SPECIFICATION – REHABILITATION (9)

TREATMENT/ACTIVITY NAME	Rehabilitation	PART E SPECIFICATION #	9
NFPORS TREATMENT CATEGORY*	Other Treatment	FISCAL YEAR(S) (list each year):	2008, 2009
NFPORS TREATMENT TYPE *	Upland (Xeric) Grass, Forb, and Shrub Establishment	WUI? Y / N	
IMPACTED COMMUNITIES AT RISK		IMPACTED T&E SPECIES	

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>Number and Describe Each Task:</p> <p>A. General Description: Seed native grasses and forbs in suitable sites in the burn area</p> <p>B. Location/(Suitable) Sites: Floodplain areas within BDA-NWR (760 ac), Armendaris Ranch 1,654 ac) and Hunter Property (300 ac)</p> <p>C. Design/Construction Specifications:</p> <ol style="list-style-type: none"> Control annual weeds in seeding area by mowing or disking with farm tractor Seed native seeds using pitter/seeder or comparable seeding machinery <p>D. Purpose of Treatment Specifications: Re-establish native grasses and forbs in burned area</p> <p>E. Treatment Effectiveness Monitoring Proposed: Plant transects to determine % cover and species diversity, survival, see #4</p>

PART F - INDIVIDUAL SPECIFICATION - BAER IMPLEMENTATION LEADER (10)

TREATMENT/ACTIVITY NAME	BAER Implementation Leaders	PART E SPECIFICATION #	10
NFPORS TREATMENT CATEGORY*	Other Treatment	FISCAL YEAR(S) (list each year):	2008, 2009
NFPORS TREATMENT TYPE *	Contract Management	WUI? Y / N	
IMPACTED COMMUNITIES AT RISK		IMPACTED T&E SPECIES	

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>Number and Describe Each Task:</p> <p>A. General Description: Implement BAER Plan tasks</p> <p>B. Location/(Suitable) Sites: Floodplain areas within BDA-NWR (760 ac), Armendaris Ranch (1,654 ac) and Hunter Property (300 ac)</p> <p>C. Design/Construction Specifications: n/a</p> <p>D. Purpose of Treatment Specifications: Co-Leads to ensure implementation of BAER Plan on Refuge and Private Lands; Partners program environmental compliance and oversight of private lands work</p> <p>E. Treatment Effectiveness Monitoring Proposed: n/a</p>
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PART G - POST-EMERGENCY STABILIZATION AND REHABILITATION REQUIREMENTS

The following are post-emergency stabilization, implementation, operation, maintenance, monitoring, and evaluation actions after three years from the control of the fire to ensure the effectiveness of initial investments. Estimated annual cost and funding source is indicated.

1. Monitor and treat invasive weeds through seasonal visual inspections each year.
2. Monitor for species diversity within the fire perimeter as a part of an overall biomonitoring program (Refuge only).
3. Manage surface water on Refuge Lands to promote mesic grassland establishment and provide flooded areas for wintering birds. Every 5 to 8 years, disk area to set back succession and promote greater annual plant diversity.
4. There will be the need to continue native plant establishment on the private property portion of the Marcial Fire area. The collaboration between the FWS, Armendaris Ranch and the Socorro and Sierra Soil and Water Conservation Districts will hopefully allow this project to be completed to assure successful replacement of nonnative vegetation and fire control.

PART H – CONSULTATIONS/CONTACT INFORMATION

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APPENDIX I

BURNED AREA ASSESSMENT REPORT MARCIAL FIRE (21550-9141-CF3G)

Prepared by Parametrix
May 15-19, 2006

I. Objectives

The objectives of this burned area assessment are:

- Report background information on the fire, including the cause, fuels, and impacts to infrastructure and cultural resources.
- Create an accurate map of the area affected by the fire.
- Discuss the site history and land use.
- Determine the fire's impacts to vegetation, wildlife and other natural resources, including rare, Threatened, and Endangered species.
- Compile site characteristics pertinent to emergency stabilization and rehabilitation treatments.
- Provide specific recommendations for emergency stabilization, monitoring, and management of natural resources at the site.
- Estimate costs associated with the recommended specifications.

II. Background Information and Site Description

1. Fire History and Marcial Fire Background

The Marcial Fire was not the first fire to have occurred in the area (Boykin, pers. comm.).

- In 1992 a fire occurred on Easter Sunday that burned approximately 350 acres west of the Elmendorf Drain. This was a fairly complete burn that consumed mostly saltcedar.
- In March, 1994 a fire above San Marcial and Road 178 consumed approximately 300 acres of mixed vegetation (mostly saltcedar).
- In 1997, approximately 2,000 acres of saltcedar and other vegetation burned in the northern portion of the Armendaris Ranch. This fire was similar to the Marcial Fire, although it did not burn 100% "clean" and there was considerable dead standing vegetation remaining.
- In 2005 a fire north of the LFCC channel near Tiffany burned approximately 20 acres.

The Marcial Fire was reported at 7:15 p.m. on May 3, 2006 near the historic town-site of San Marcial (Figure 1). First responding fire units from San Antonio Volunteer Fire Department and FWS arrived on scene at 7:40. The Fire Management Officer from the FWS assumed command of the fire and additional resources were ordered through the New Mexico State Forestry Division. Values immediately in danger included: 4 structures, a Bureau of Reclamation storage yard containing miscellaneous equipment, a railroad trellis, 2 railroad bridges, and Critical Habitat for the Southwestern willow flycatcher. Initial Suppression actions consisted of burnout and holding operations using fire engine crews along established roads and fire line construction at the head of the fire with bulldozers.

Containment of the fire proved problematic due to extreme fire behavior, including profuse spotting and flame lengths greater than 200 feet. Fire fighters attempted to stop the head of the fire at a previously established fuel break on the southern boundary of Bosque del Apache National Wildlife Refuge. The fuel break was initially successful in halting the fire spread, but due to severe spotting of the fire ahead of the main body, the fire jumped the fire line. The fuel break was successful in reducing the fire's intensity and slowing the fire at the head, which ultimately allowed a successful burnout operation that stopped the fire. Containment was achieved on May 6, 2006 at 6:00 p.m. Fire Crews secured the fire perimeter and mopped up until the fire was fully controlled on May 11. Personnel assisting in fire suppression included 60 firefighters from the FWS, San Antonio Volunteer Fire Department, New Mexico State Forestry Division, Bureau of Land Management, U.S. Forest Service and Contract resources. Equipment used included 16 fire engines, 2 water tenders, 2 bulldozers, and 1 heavy helicopter. The fire burned 4,857 acres with an estimated suppression cost of \$265,000.

2. Site Description

The project area lies within the historic floodplain of the Middle Rio Grande in central New Mexico. Temperatures at the Refuge range from an average high of 55.6 in January to an average high of 96.2 in July. Precipitation averages 8.9 inches of rain and 4.8 inches of snow per year, with the majority coming during December and January storms and July – September monsoons.

Soils in the area are dominated by the Anthony-Gila soil complex, which covers approximately 84% of the site (Figure 2). The Anthony-Gila complex is a mixture of fine sand, fine sandy loam, silty loam, and clay loam, the latter two especially on the surface. These soils were formed by relatively recent Rio Grande river alluvium. In general, these soils are moderately to strongly saline, deep and well-drained, and subject to drought and wind erosion. They are present on very shallow slopes (generally <1%) with slow runoff. Permeability is most rapid in the top 2 inches (2.0-20.0 inches per hour) and more moderate below this (0.6 - 6.0 inches per hour) (Natural Resources Conservation Service 1988). Other soils include Riverwash (approximately 5%) and Arizo-Riverwash (4%), the remnant of former river channels; Armijo Clay (2%); Typic Ustifluvents (2%); Belen Clay (1%); and Nickel-Caliza (1%). With the exception of the upland Nickel Caliza soil along the western perimeter of the burn, these soils were formed by relatively recent river alluvium, and demonstrate a variety of textures, permeabilities, salinities, and other characteristics.



MAP SCALE = 1:55,000

Parametrix

0 500 1,000 2,000 3,000
Meters



MARCIAL FIRE PRE-FIRE SOIL TYPES

LEGEND

- SOIL MAP UNIT
- MARCIAL FIRE PERIMETER

SOIL DATA FROM NM664 (SOCORRO COUNTY)
NRCS SSURGO DATASET

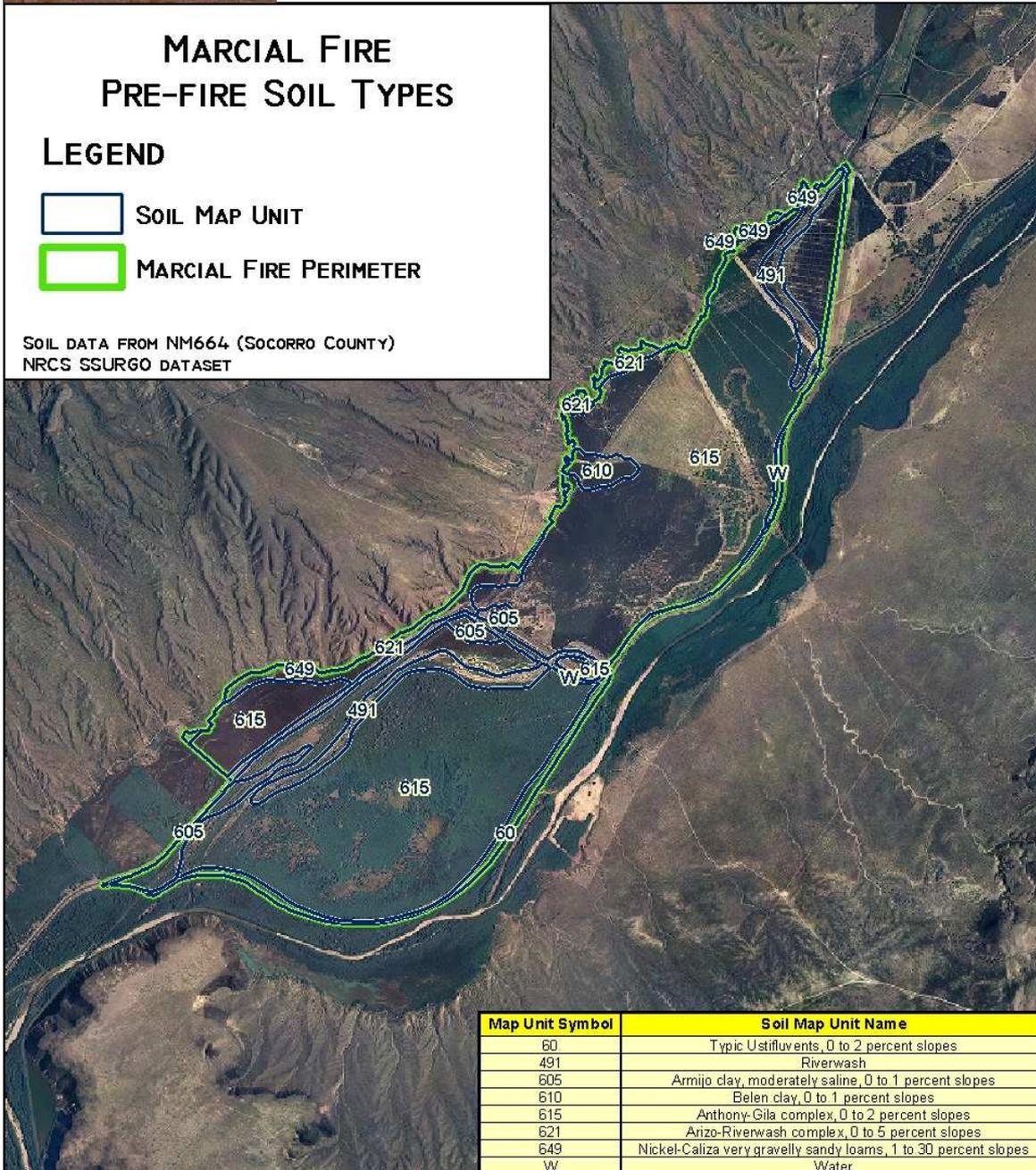


Figure 2. Soils within the burn area. *Note: A more detailed soils survey will be available by December, 2007.*

The Rio Grande and its diverse riparian-wetland habitats is one of the most important migratory corridors for birds in North America. However, flood control and channelization along the Rio Grande since the early part of the 20th century have greatly altered the river and its habitats. Elephant Butte Dam, 72 river-miles downstream of the burn site, was constructed from 1911-1916. By the time the dam was completed, the river reach near the burn area had begun to aggrade sediment, slowing water delivery. The 68-mile Low Flow Conveyance Channel (LFCC), which bisects the burn area, was constructed between 1951 and 1959 to deliver water more efficiently to the Reservoir.

The Rio Grande has continued to aggrade through this reach to the point where the basin elevation over much of the Marcial Fire area is approximately 10-12 feet lower than the adjacent river bed. Though overbank flooding is restricted by levees, rising groundwater may occur at or near the surface in some locations during high river flows.

Prior to the fire, the site was dominated by 15-25 foot saltcedar interspersed with mixed stands of native Rio Grande cottonwood and Gooding's willow. Understory included coyote willow (*Salix exigua*), four-wing saltbush (*Atriplex canescens*), honey mesquite, and native and non-native forbs and grasses (Figure 3, Table 1).



MARCIAL FIRE PRE-FIRE VEGETATION TYPES

Parametrix

LEGEND

 MARCIAL FIRE PERIMETER

PRE-FIRE VEGETATION TYPE

 COTTONWOOD GALLERY FOREST WITH SALTCEDAR UNDERSTORY

 NATIVE UPLAND

 NATIVE WILLOW STAND

 NATIVE AND EXOTIC RIPARIAN SHRUBS

 SALTCEDAR MONOCULTURE

 SPARSE VEGETATION

 WATER

 WETLAND

VEGETATION DATA INTERPRETED FROM
2006 USFWS RLGIS VEGETATION
COVERAGE AND 1998 USBOR
VEGETATION MAP

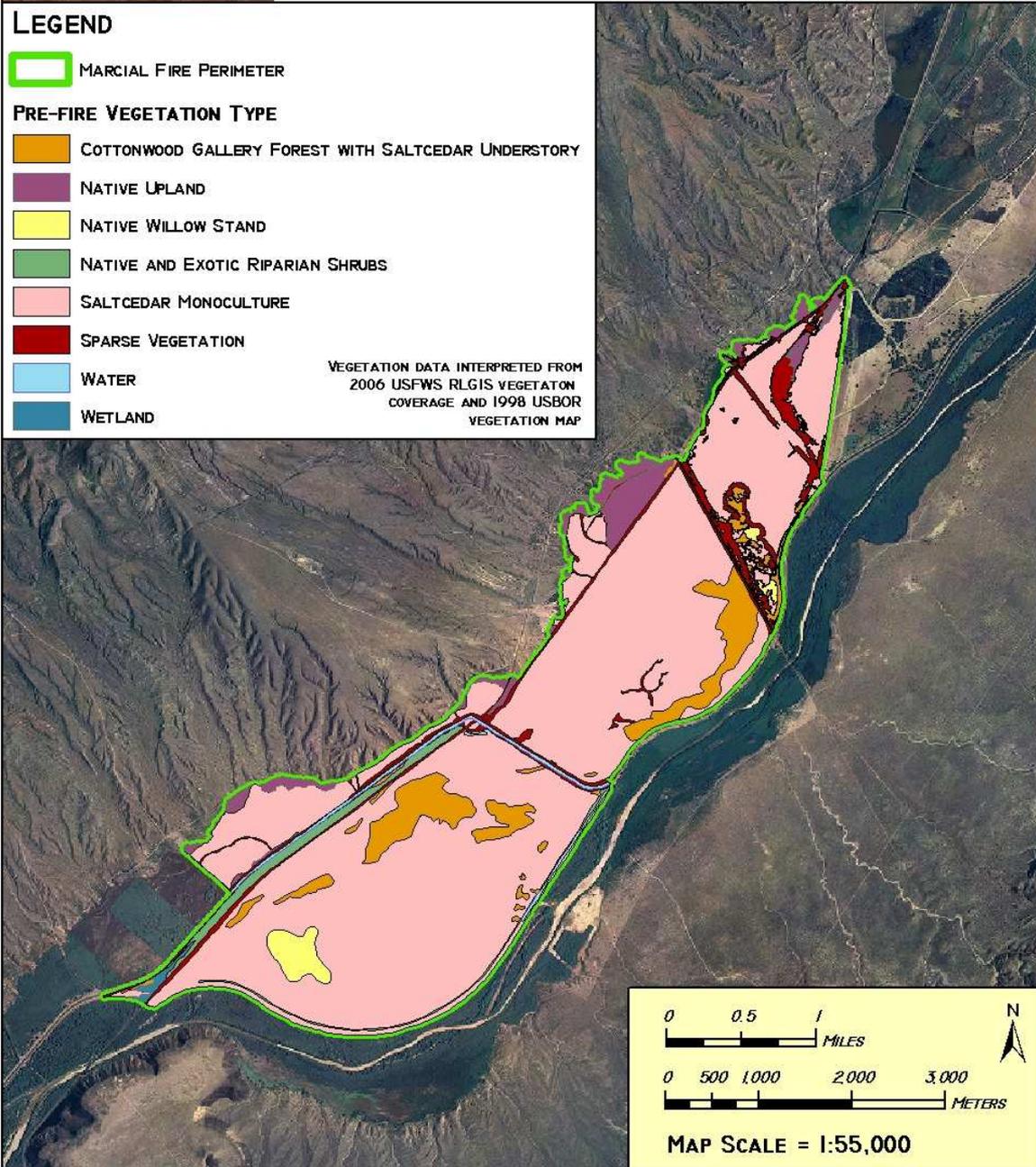


Figure 3. Pre-fire Vegetation Types

Most of the standing vegetation was consumed by the fire, but aggressive vegetative reproduction (via root-sprouting) is expected in large portions of the area.

Table 1. Pre-fire Vegetation, by land owner

Owner	Vegetation	Appx. Acres
Bosque del Apache NWR	Cottonwood Gallery Forest w Saltcedar Understory	46
	Native Upland	38
	Native Willow Stand	14
	Saltcedar Monoculture	549
	Sparse Vegetation	151
	Water	4
	Subtotal	802
Armendaris (Main Block) And Hunter Property	Cottonwood Gallery Forest w Saltcedar Understory	127
	Native and Exotic Riparian Shrubs	0
	Native Upland	108
	Saltcedar Monoculture	1,326
	Sparse Vegetation	82
	Water	11
	Subtotal	1,954
Armendaris Plus Other Private	Cottonwood Gallery Forest w Saltcedar Understory	210
	Native and Exotic Riparian Shrubs	98
	Native Upland	44
	Native Willow Stand	64
	Saltcedar Monoculture	1,856
	Sparse Vegetation	79
	Water	36
	Wetland	15
Subtotal	2,102	
Grand Total		4,857

3. Land Use and Management

The fire-affected area is nearly surrounded by levees, canals, and berms associated with Rio Grande flood control (near the eastern boundary of the burn), the Low Flow Conveyance Channel (LFCC), the Elmendorf irrigation drain, and the Santa Fe railroad (near the western boundary of the burn). The Elmendorf drain within the burned area serves as the effective dividing line between the southern boundary of the Refuge and the northern boundary of Armendaris Ranch. This drain flows southeast into the LFCC where the Bureau of Reclamation stages pumping operations to supplemental water to the Rio Grande to sustain the federally Endangered RGSM during low river flows.

The northern extent of the Marcial Fire occurred within southern boundary of the Refuge. Bosque del Apache NWR was established in 1939 primarily as a refuge and breeding ground for migratory birds, and is one of the most important migratory stopovers along the Central and Rocky Mountain Flyways. It is used annually by tens of thousands of snow geese, Canada geese, sandhill crane, and other waterfowl. In total, more than 340 species of birds and numerous species of mammals, reptiles, and amphibians are also found on the Refuge.

The 360,000 acre Armendaris Ranch, owned and managed by Turner Enterprises, is located in the central portion of the burn and is part of the southern portion of the Marcial Fire perimeter. The property is managed for bison ranching, hunting, scientific research and conservation. The property within the burn is primarily managed for wildlife. As many as 154 other land owners have property within the perimeter of the burn adjacent to the Ranch. These are mostly small property owners who are the heirs of land-owners from the historic town-site of San Marcial. The fire affected parcels ranging from <0.1 acres to approximately 325 acres in this area).

Because of the changes that have occurred in the Rio Grande ecosystem over the past century and the negative effect these have had for native wildlife (including Endangered species), considerable resources have been focused on restoring native riparian and wetland communities in the Middle Rio Grande Bosque. Both the Refuge and the Armendaris Ranch have programs of saltcedar (and other non-native plant) removal with conversion back to native riparian and wetland communities. The Refuge focuses considerable effort in monitoring and restoring habitat for the federally Endangered SWWF and RGSM.

Due to the recurring saltcedar fires in the area, approximately half of the saltcedar acreage occupying the burned area received aerial herbicide treatments prior to the fire (Figure 4). Saltcedar on the Refuge (582-acres) received aerial herbicide treatments in September of 2003, 2004, and 2005. Saltcedar occupying Armendaris Ranch lands between the Elmendorf drain and the LFCC (1,358-acres) received aerial treatments in 2003 and 2004. Saltcedar occupying the private lands southwest of the LFCC received no aerial herbicide treatments before the fire.



USDA NRCS



Parametrix

MARCIAL FIRE PRE-FIRE SALT CEDAR TREATMENTS



LEGEND

 MARCIAL FIRE PERIMETER

SALT CEDAR CONTROL METHOD

 MECHANICALLY TREATED

 CHEMICALLY TREATED

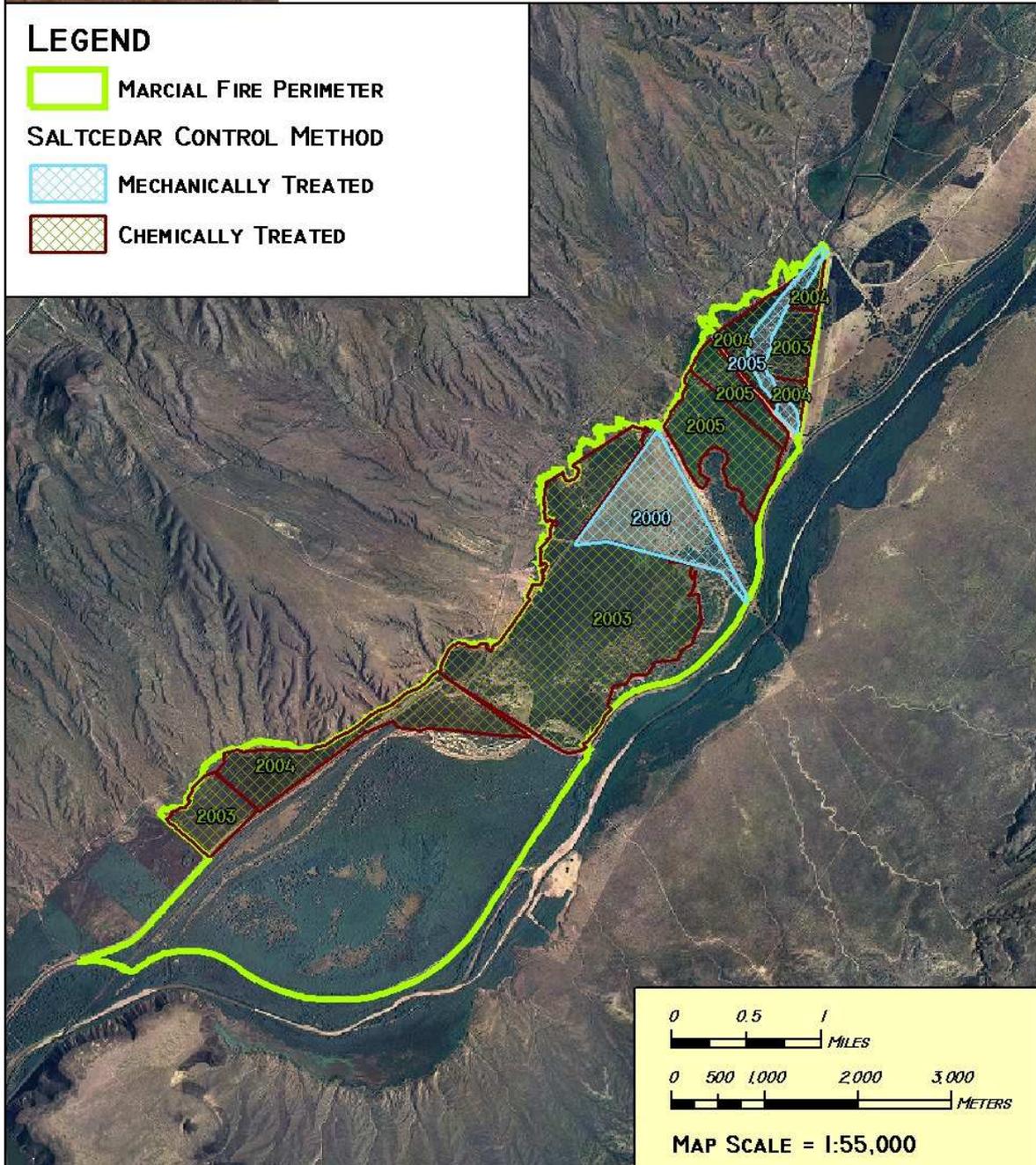


Figure 4. Pre-fire vegetation treatments.

Table 2. Summary of pre-fire saltcedar treatments

Land Owner	Year	Treatment	Acres
Armendaris	2000	Mechanical	284
	2003	Herbicide	977
	2004	Herbicide	97
Armendaris Total			1,358
Bosque del Apache	2003	Herbicide	78
	2004	Herbicide	108
	2005	Herbicide	316
	2005	Mechanical	80
Bosque del Apache Total			582
Armendaris and Other Private Lands	2000	Mechanical	5
	2003	Herbicide	172
	2004	Herbicide	178
Other Private Total			355
Grand Total			2,294

5. Impacts to Natural, Cultural and Historic Resources

Impacts to Vegetation and Wildlife Habitat

The Marcial Fire consumed considerable acreage of current or potential high-quality wildlife habitat. Prior to the Marcial Fire, both the Refuge and the Armendaris Ranch were working towards restoring wildlife habitat over much of the area. Some of this habitat was expected to benefit the federally-Endangered SWWF. Consumption of saltcedar was variable. Most large stands were nearly completely consumed while in other areas saltcedar was either scorched but remained standing, or partially burned with green foliage remaining (Photo #1).



Photo 1. The fire contained a mosaic of fully and partially consumed habitat, largely depending on land treatments prior to the fire. Areas in this photo that appear to be bare fields are actually saltcedar stands that were fully consumed by fire.

Saltcedar is expected to aggressively recolonize the Marcial Fire area. Stands south of the LFCC that did not receive pre-fire herbicide treatments are expected to achieve pre-fire heights and canopy cover in 5-10 years. Although saltcedar stands north of the LFCC had been sprayed by herbicides prior to the fire, manufacturers state that disturbance sooner than 3-years following treatment (such as that which occurred as a result of the fire) result in sub-optimal control (Taylor & McDaniel 1998, McDaniel and Taylor 2003).

Impacts to Threatened and Endangered Wildlife

Although comprehensive surveys had not been conducted over the entire burn area, several Threatened, Endangered, and rare wildlife and plant species were known to be present in or very near the burn (Appendices III and IV).

The species of greatest concern is the federally-Endangered **Southwestern willow flycatcher**. At least 34 nests and/or pair territories (and numerous single birds) have been recorded within a mile of the burn perimeter since 1994. An additional 37 nests and/or pairs have been recorded within 5 miles of the burn perimeter over the same period. Although no known active nests were burned in the fire, SWWFs have been detected in the past in areas that were burned. In addition, several areas of what has been classified as “highly suitable habitat” were damaged.

Critical Habitat has been designated for the SWWF and encompasses this portion of the middle Rio Grande (Figure 5). The Refuge was excluded from the Critical Habitat designation because it has an approved Southwestern willow flycatcher habitat management plan and actively promotes improved habitat for this species.

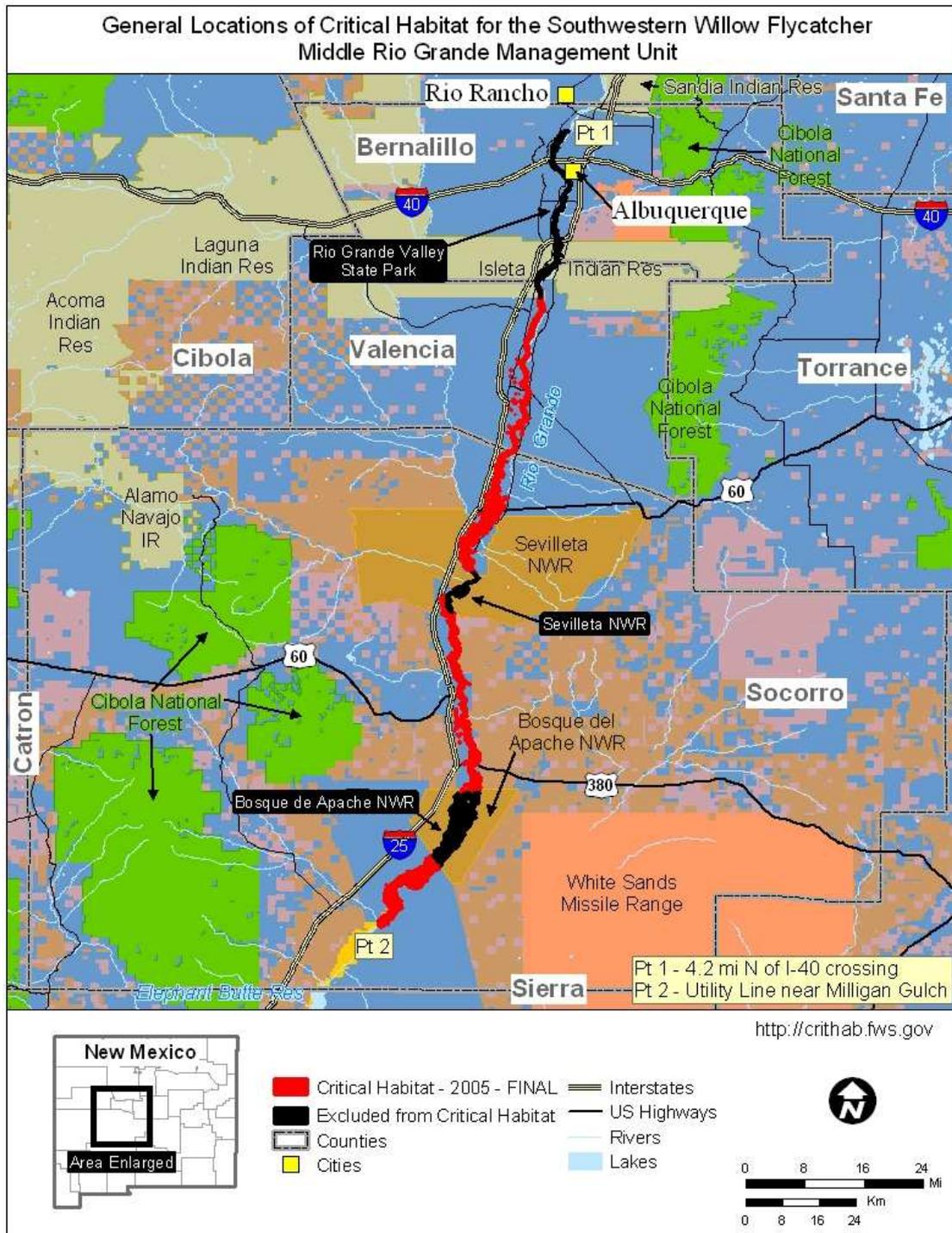


Figure 5. Critical Habitat for the Southwestern willow flycatcher in the Middle Rio Grande.

Another federally-Endangered species, the **Rio Grande silvery minnow**, is present in the Rio Grande near the burn area, although the fire did not burn to the banks of the river. A section of RGSM habitat in the Rio Grande near the burn is kept watered via pumping from the LFCC. Although the perimeter of the burn is several hundred meters from this habitat on the river, the pump intake is only 50 meters away. However, there is very little chance that ash will affect this area used by the RGSM for three reasons: (1) The fire surrounding the LFCC burned so hot that there was relatively little ash; (2) The slope at the site is nearly flat and sheet and rill erosion is unlikely; and (3) the LFCC and the burned area are surrounded by berms that would prevent lateral transport of ash into the LFCC during rain events.

The **bald eagle** (*Haliaeetus leucocephalus*) (Federally Threatened) is also present along the Rio Grande through this reach. However, by the time the fire began, the birds had migrated north. Because bald eagles spend most of their time along the river corridor, the fire is not expected to have significant negative impacts to this species or its habitat. Any stabilization or rehabilitation of the site, especially it involves improvement of riparian habitat, will benefit this species.

Impacts from Weed Invasion

Several Class A, B, C noxious weeds are present in Socorro County and spreading in areas surrounding the burn site (Figure 6).¹ With the surface vegetation greatly denuded after the fire, the bare, disturbed soil presents opportunity for encroachment by several noxious weed species. Given the flammability of some prevalent species (particularly saltcedar) and the danger that weeds pose to hinder habitat restoration, weed control is an essential factor in emergency site stabilization. Special attention should be focused on the species listed below.

¹ Class A weeds are non-native species with limited distribution. A high priority is placed on preventing new infestations and eliminating existing infestations. Class B weeds are non-native species that are presently limited to portions of the County and have been designated for control in areas where they are not yet widespread. Class C weeds are non-native species that are widespread and which long-term programs are necessary to control. Currently, Socorro County recognizes 28 Class A, 5 Class B, and 3 Class C weeds.

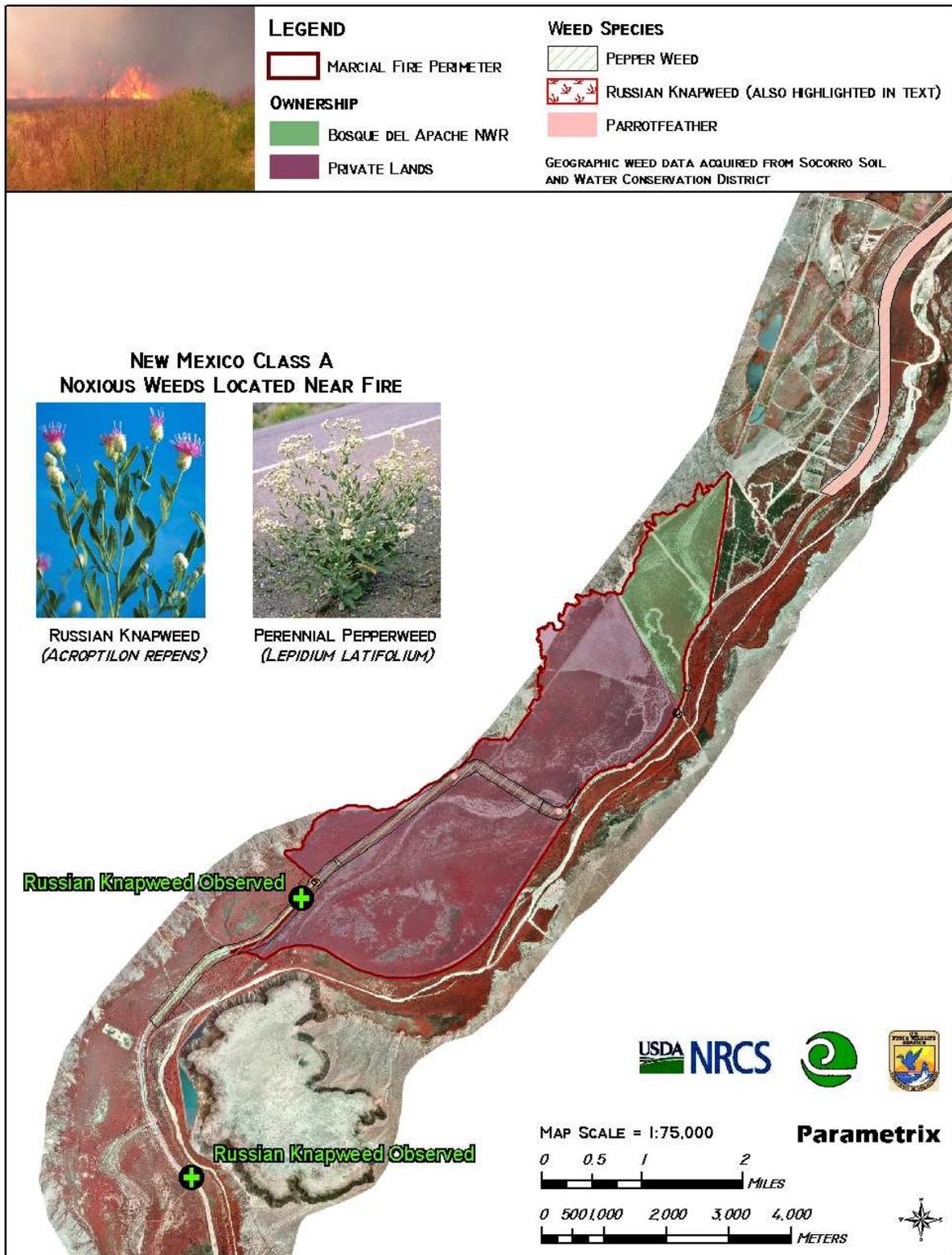


Figure 6. Noxious weed distribution in and around the burn site.

Saltcedar is a N.M. Class C noxious weed introduced from Asia in the early part of the last century and has invaded many riparian and wetland areas in the Southwest. It thrives in disturbed areas, eventually crowding out native vegetation. It responds to cutting or burning by vigorously re-sprouting. It also aggressively colonizes new areas by wind and water transported seed. It has been shown to provide lower value for most native wildlife (Ellis 1993), and transpires large amounts of groundwater (Cleverly et al. 2002). More importantly for the purposes of this report, saltcedar is more fire prone than native species (Sogge et al. 1997). If left uncontrolled, saltcedar will recolonize the burned area and, within a few years, present another severe fire hazard. Approximately 77% of the area that burned during this fire was saltcedar-dominated. The same was true of the previous fires noted in the Fire History Section above. Saltcedar has been targeted for management by the Socorro County Integrated Weed Management Plan and the Bosque del Apache Integrated Pest Management Plan (U.S. Fish and Wildlife Service 2006), and is a central management focus of the Refuge.

Russian Knapweed, a N.M. Class A Weed, is a member of the Sunflower family native to Eurasia. It was introduced into North America in about 1898 and grows in a variety of soil types. Recent spread of seed can be attributed to several means including hay bales, vehicles, irrigation infrastructure, farm equipment, humans, and animals. Russian knapweed is difficult to control because it spreads by long underground roots, and it produces a chemical that inhibits other nearby plant species (allelopathy). If left uncontrolled, Russian knapweed forms dense stands, displacing native plants. Control should be aimed at stressing the plant to deplete nutrients in the root system. Russian knapweed has been targeted for eradication in Socorro County and at Bosque del Apache (U.S. Fish and Wildlife Service 2006).

Perennial Pepperweed is a N.M. Class A Weed introduced from southeastern Europe and Asia that generally establishes in floodplains, irrigation structures, pastures, wetlands, and riparian areas. Populations form dense monocultures that are easily spread by root fragments and seed. Roots can grow to more than 10' and store large amounts of energy. Perennial pepperweed has been targeted for management by the Socorro County Integrated Weed Management Plan and the Bosque del Apache Integrated Pest Management Plan (U.S. Fish and Wildlife Service 2006).

Other weeds of concern include the Class A camelthorn and Class C Russian olive (*Elaeagnus angustifolia*).

Cultural and Historic Resources

The remains of the town-site of San Marcial is one of the very few known cultural or historical resources within the perimeter of the fire. The Rio Grande flood of 1866 wiped out the community, but it was rebuilt and, when the Santa Fe Railroad arrived in the 1880's, the communities of New San Marcial and Midway were established nearby. By the 1920's, the three communities together had become the second largest community in Socorro County. In 1929 the Rio Grande flooded the communities again and this time they were not rebuilt. Subsequently the whole area was flooded to create Lake San Marcial, and only a few ruins and the cemetery remain today. Most of the historic remains of the area are buried under river sediment and were likely not harmed by the fire.

III. Summary Recommendations for 2008 and 2009 Rehabilitation

We have addressed initial aggressive root-sprouting by saltcedar in areas that have not had previous herbicide treatment and at least three years of rest (see 2007 Rehabilitation Accomplishments). In addition, without treatment, all areas are in danger of encroachment by noxious weeds. So far, we have seen limited establishment of other noxious weeds. For management and jurisdictional purposes, we had divided the burn area into three sections in 2007. Those management areas apply for 2008 and 2009 rehabilitation recommendations.

Treatment recommendations are based on a variety of factors, including: land ownership, the ability of the land-owner to implement and monitor treatments, cost, and land management before the fire, and future land management goals for the property.

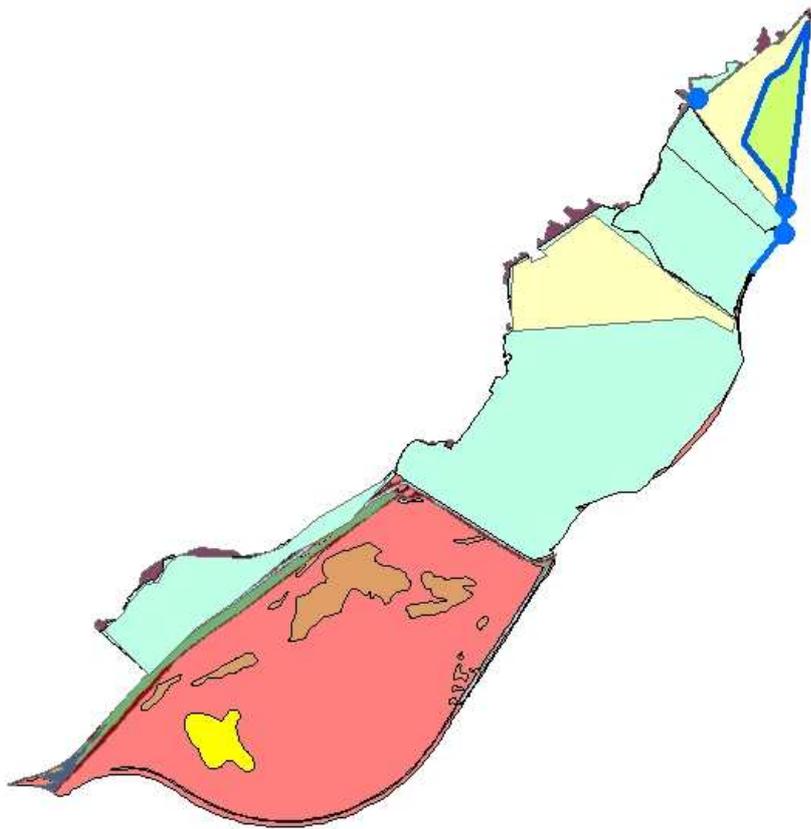
Following further saltcedar control, treatment areas evaluated in 2007 that show potential for both xeric and mesic grassland and shrubland establishment on large portions of the burned area will be worked. Techniques to establish these wildlife habitat types will focus on surface water and groundwater manipulation. On Refuge, surface water application will provide the environmental conditions necessary to promote mesic grassland establishment. In other areas on the Refuge, dryland seeding of native grass, forb, and shrub species (started in 2007) will continue. Limited plantings of plant stock will be done only in areas with shallow groundwater table.

On private lands, zeolite will be placed in the ground to draw the groundwater up to plant stock planting sites. This experimental technique has shown promise for reestablishing native plants in areas where no flooding or irrigation is possible. This technique was applied in 2007 and will be done in 2008 and 2009 in specific areas. Other plant stock will be established in areas where contouring of the ground elevation and groundwater elevation makes plant success.

Burn Area Rehabilitation Planning & Implementation Oversight

- Topographic and soil surveys will be completed and groundwater wells will be installed to provide important information for planning specific rehabilitation species composition (seeding) and planting location (pole planting).
- Oversight on lands will consist of project management and monitoring of site conditions.
- Coordination with Partners for Fish & Wildlife to assure environmental compliance and quality control for private lands work.

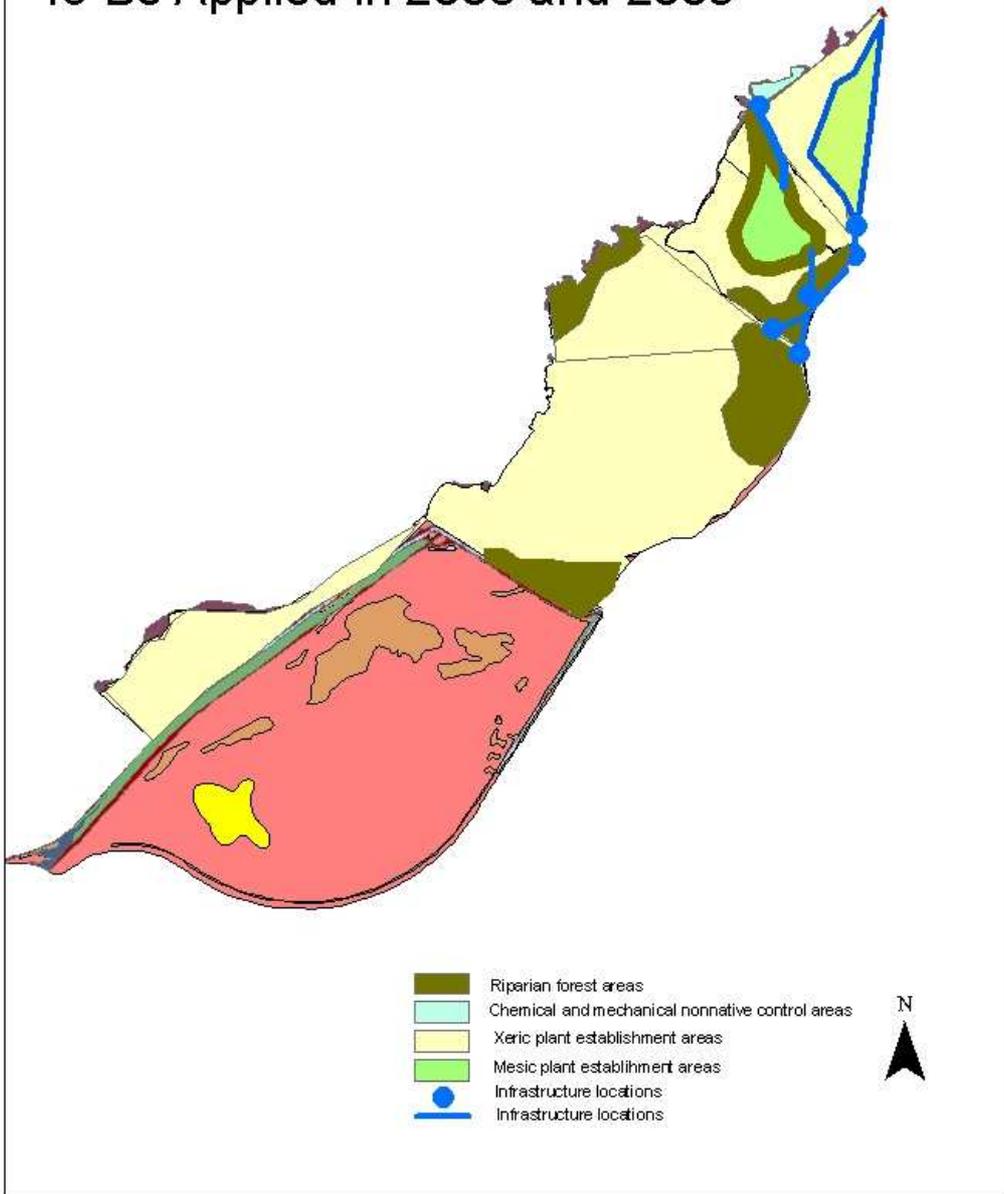
Treatments Applied in 2007



-  Chemical and mechanical nonnative control areas
-  Xeric plant establishment areas
-  Mesic plant establishment areas
-  Infrastructure locations
-  Infrastructure locations



Treatments To Be Applied in 2008 and 2009



IV. References

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APPENDIX II ENVIRONMENTAL COMPLIANCE

Federal, State, and Private Lands Environmental Compliance Responsibilities

All projects proposed in the Marcial Emergency Response Plan that are prescribed, funded, or implemented by Federal agencies on Federal, State, or private lands are subject to compliance with the National Environmental Policy Act (NEPA) in accordance with 40 CFR 1500-1508, and Department of the Interior and FWS regulations. This Appendix documents the Burned Area Emergency Response team considerations of NEPA compliance requirements for prescribed rehabilitation and monitoring actions described in this plan for all jurisdictions affected by the Marcial Emergency Response Plan.

Related Plans and Cumulative Impact Analysis

The Bosque del Apache NWR has completed all environmental compliance necessary (Bosque del Apache NWR 2001). No further consultation is necessary.

The Marcial Emergency Response Plan was reviewed and it was determined that actions proposed within the boundary of the Fire are consistent with the management objectives of the Refuge and the Armendaris Ranch, including management of and impact to the following resources:

- Biological Resources
- Air Quality
- Water Quality
- Wetland Preservation and Enhancement
- Compatibility and Service Policy on Recreational Uses
- Cultural Resources
- Socioeconomics

Cumulative Impact Analysis

Cumulative impacts are the environmental impacts resulting from the proposed action when added to other past, present, and reasonably foreseeable future actions, both Federal and non-Federal. Cumulative impacts can result from individually minor but collectively significant actions.

The emergency stabilization treatments for areas affected by Marcial Fire, as proposed in the Marcial Emergency Response Plan, do not result in an intensity of impact that would cumulatively constitute a significant impact on the quality of the environment. The treatments are consistent with the above jurisdictional management plans and associated environmental compliance documents and categorical exclusions listed below.

Applicable and Relevant Categorical Exclusions

The individual actions proposed in this plan for the Marcial Fire burned area have been given Categorically Excluded status from further environmental analysis as provided for in the Department of Interior and FWS categorical exclusions. All applicable and relevant Department and Agency Categorical Exclusions are listed below. Categorical Exclusion decisions were made with consideration

given to the results of required consultations completed by the Burned area emergency response team and documented below.

Applicable Department of Interior Categorical Exclusions

516 DM 2 App; 2, 1.6

516 DM 6 App. 7.4 L (3)

Applicable FWS Categorical Exclusions

516 DM 6 App. 1.4 B (1)

516 DM 6 App. 1.4 B (3) iii

516 DM 6 App. 1.4 B (5)

Statement of Compliance for the Marcial Fire Burned Area Rehabilitation Plan.

This section documents consideration given to the requirements of specific environmental laws in the development of the Marcial Emergency Response Plan. Specific consultations initiated or completed during development and implementation of this plan are also cited below. The following executive orders and legislative acts have been reviewed as they apply to the Marcial Emergency Response Plan:

- National Historic Preservation Act (NHPA)
- Executive Order 11988. Flood plain Management.
- Executive Order 11990. Protection of Wetlands
- Executive Order 12372. Intergovernmental Review
- Executive Order 12892. Federal Actions to Address Environmental Justice in Minority and Low-income Populations
- Endangered Species Act
- Secretarial Order 3127. Federal Contaminated
- Clean Water Act
- Clean Air Act
- Completed and approved Environmental Assessment for the “Southend Development on Bosque del Apache NWR” (1999) including archaeological clearances, Endangered Species surveys, and completion of requirements under NEPA.
- Completed and approved Categorical Exclusion of Armendaris Ranch lands through the Partners for Fish & Wildlife Service (2007)
- Initiated Environmental Clearance for the Hunter Property through the Partners for Fish & Wildlife Service (2008)
- Cultural clearance survey and submittal to the NM SHPO for private lands (2007).

Below is an example of a categorical exclusion. The Partners for Fish & Wildlife Program will be assisting the Private Lands partners with completion of all environmental compliance documentation prior to work proceeding with funding secured by this proposal.

NEPA Checklist

If any of the following exception applies, the Burned Area Emergency Response Plan cannot be Categorically Excluded and an Environmental Assessment (EA) is required.

(Yes) (No)

- Adversely affect Public Health and Safety
- Adversely affect historic or cultural resources, wilderness, wild and scenic rivers aquifers, prime farmlands, wetlands, floodplains, ecologically important areas, or natural landmarks.
- Have highly controversial environmental effects.
- Have highly uncertain environmental effects or involve unique or unknown environmental risks.
- Establish a precedent resulting in significant environmental effects.
- Relates to other actions with individually insignificant but cumulatively significant environmental effects.
- Adversely effects properties listed or eligible for listing in the National Register of Historic Places
- Adversely affect a species listed or proposed to be listed as Threatened or Endangered.
- Threaten to violate any laws or requirements imposed for the "protection of the environment" such as Executive Order 1-1-988 (Floodplain Management) or Executive Order 1-1-990 (Protection of Wetlands).

National Historic Preservation Act

Ground Disturbance:

- None
- Ground disturbance did occur and an archeologist survey, required under section 110 of the NHPA will be prepared. A report will be prepared as specified by the Burned Area Emergency Response Plan.

NHPA Clearance Form:

- Is required because the project may have affected a site that is eligible or on the national register. The clearance form is attached. SHPO has been consulted under Section 106.
- Is not required because the Burned Area Emergency Response Plan has no potential to affect cultural resources (initial of cultural resource specialist).

Other Requirements

(Yes) (No)

- Does the Burned Area Emergency Response Plan have potential to affect any Native American uses? If so, consultation with affiliated tribes is needed.
- Are any toxic chemicals, including pesticides or treated wood, proposed for use? If so, local agency integrated pest management specialists must be consulted.

I have reviewed the proposals in the Marcial Emergency Response Plan in accordance with the criteria above and have determined that the proposed actions would not involve any significant environmental effect. Therefore it is categorically excluded from further NEPA review and documentation. Burned area emergency response team technical specialists have completed necessary coordination and consultation to insure compliance with the National Historic Preservation Act, Endangered Species Act, Clean Water Act and other Federal, State and local environment review requirements.

Burned Area Emergency Response Team Environmental Protection Specialist Date

Project Leader Date

APPENDIX III
Threatened, Endangered Possibly Present Near the Burn Area

Species	Federal Status	NM State Status	Present During...	Potential Numbers in Vicinity of Fire*	Affected by Fire?
Southwestern Willow Flycatcher	Endangered w/ Proposed Critical Habitat	Endangered	Migration, Breeding	10-20 pairs	Yes
Interior Least Tern	Endangered	Endangered	Migration	10 migrants	No
Bald Eagle	Threatened	Threatened	Migration, Wintering	30 migrants, wintering	Yes
Mountain Plover	Proposed Endangered	Endangered	Migration	10 migrants	No
Rio Grande Silvery Minnow	Endangered w/ Proposed Critical Habitat	Endangered	Breeding	unknown	No
Yellow-billed cuckoo	Candidate	Sensitive	Breeding	5 pairs	Unlikely
Neotropic Cormorant		Threatened	Migration, Breeding	10-20 pair	No
Peregrine Falcon	De-listed	Threatened	Migration	5 migrants	No
Bell's Vireo		Threatened	Migration, Breeding	30 migrants, 5 pair breeding	Unlikely
Gray Vireo		Threatened	Migration, Breeding	20 migrants, 3 pair breeding	Unlikely
NM Meadow Jumping Mouse		Threatened	Breeding	unknown	No

**Potential numbers are based on approximate numbers of animals that have been recorded in the vicinity of the fire*

APPENDIX IV

Rare Plants of Socorro County and Their Possible Impacts from the Fire

Scientific name	Habitat	Federal Status	State Status	Affected by Fire?
<i>Amsonia fugatei</i>	Limy conglomerate ridges and associated outwash slopes in Chihuahuan desert scrub; 5,000-5,900 ft.	Species of Concern	Species of Concern	No
<i>Cirsium wrightii</i>	Wet, alkaline soils in spring seeps and marshy edges of streams and ponds; 3,450-8,500 ft.	Species of Concern	Species of Concern	No
<i>Dalea scariosa</i>	Open sandy clay banks and bluffs, often along roadsides, at about 4,750-4,900 ft.	Species of Concern	Species of Concern	Possibly
<i>Draba mogollonica</i>	Cool, moist northern slopes of mountains, ravines and canyons on volcanic rocks and soil in montane forests; 5,000-9,000 ft.	Species of Concern	Species of Concern	No
<i>Draba standleyi</i>	Igneous rock faces, bases of overhanging cliffs, clefts of porphyritic and andesitic rocks and soil; 5,500-6,500 ft.	Species of Concern	Species of Concern	No
<i>Ephedra coryi</i>	On limestone, in dry sandy soils, and on dunes; below 5,000 ft.	Species of Concern	Species of Concern	No
<i>Erigeron scopulinus</i>	Crevices in cliff faces of rhyolitic rock in lower montane coniferous forest; 6,000-9,000 ft.	Species of Concern	Species of Concern	No
<i>Helianthus paradoxus</i>	Saturated saline soils of desert wetlands. Usually associated with desert springs or wetlands; 3,300-6,600 ft. Requires saturated soils.	Threatened	Endangered	Possibly
<i>Hymenoxys brachyactis</i>	Dry sites with coarse soils in piñon-juniper woodland and lower montane coniferous forest; 6,900-8,200 ft.	Species of Concern	Species of Concern	No
<i>Opuntia arenaria</i>	Sandy areas, esp. sand dunes in open Chihuahuan desert scrub, often w/ honey mesquite and a sparse grasses; 3,800-4,300 ft.	Species of Concern	Endangered	No
<i>Panicum mohavense</i>	Limestone terraces and cliffs in Great Basin desert scrub in Arizona and piñon-juniper woodland in New Mexico; 1,300-2,400 ft.	Species of Concern	Species of Concern	No
<i>Penstemon deaveri</i>	Slopes and rocky areas from ponderosa pine forest to above timberline (in Arizona); 6,500-11,280 ft.	Species of Concern	Species of Concern	No
<i>Penstemon pseudoparvus</i>	Open ponderosa pine or spruce-fir forests and high montane meadows; 9,000-10,000 ft.	Species of Concern	Species of Concern	No
<i>Perityle staurophylla</i> var. <i>homoflora</i>	Crevices in limestone cliffs, usually on protected north and east exposures at about 6,400-7,000 ft.	Species of Concern	Species of Concern	No
<i>Silene plankii</i>	Igneous cliffs and rocky outcrops; 5,000-9,200 ft.	Species of Concern	Species of Concern	No
<i>Silene wrightii</i>	Cliffs and rocky outcrops in Rocky Mountain montane and subalpine conifer forests; about 6,800-8,000 ft.	Species of Concern	Species of Concern	No
<i>Talinum brachypodium</i>	Calcareous silt/clay soils on limestone or travertine; fine silty sand on calcareous sandstones; open p-j woodland or Chihuahuan scrub.	Species of Concern	Species of Concern	No

**APPENDIX V
Seeding Calculations**

Species	Local Cultivars	Common Name	Season	Adapted To		Seeds/ Sq. Ft.	PLS. Pounds/ Acre	Approx. Cost Per PLS/Pound	Comments
				Coarse Textured Soils	Salinity Tolerance				
<i>Achnatherum hymenoides</i>	Paloma	indian ricegrass	cool	Yes	Low	5	1.54	\$ 7.50	
<i>Atriplex canescens</i>	Rincon	4-wing saltbush	perennial	Yes	High	1	0.84	\$ 8.00	polyploid species, be sure to get the right ploid for soil texture
<i>Bouteloua curtipendulum</i>	Vaughn, Niner	side oats grama	warm	Yes	Medium	2	0.46	\$ 6.50	
<i>Bouteloua gracilis</i>	Lovington, Hachita, Alma	blue grama	warm	Yes	Medium	2	0.11	\$ 16.50	
<i>Elymus canadensis</i>		canada wildrye	cool	Yes	Medium	2	0.76	\$ 9.00	
<i>Pleuraphis jamesii</i>	Viva	galleta	warm	Yes	Medium	2	0.51	\$ 32.00	
<i>Puccinellia parishii</i>		Parish's alkali grass	cool	Yes	High	2	0.07		
<i>Schizachyrium scoparium</i>	Pastura	little bluestem	warm	Yes	None	2	0.34	\$ 7.75	
<i>Sorghastrum nutans</i>	Llano	indiangrass	warm	Yes	Medium	2	0.73		
<i>Sporobolus airoides</i>	Salado	alkalai sacaton	warm	Yes	High	2	0.06	\$ 8.00	
<i>Sporobolus cryptandrus</i>		sand dropseed	warm	Yes	Medium	5	0.04	\$ 9.00	
<i>Sporobolus flexulosa</i>		mesa dropseed	warm	Yes	None	2	0.03		
<i>Triticum elongatus</i> (sterile cover crop)		Regreen		Yes	Yes	5	217,800	15.56	
TOTAL						29	5.48		
ACRES TO SEED									