

(Reference FSH 2509.13)

4,507 acres 76%

Shrub Dominated (American Plum)	550 acres	9%
Shrub Dominated (Snow berry)	344 acres	6%
Tree Dominated (Juniper)	177 acres	3%
Tree Dominated (Ponderosa Pine)	327 acres	5%
Roads	50 acres	1%

O. Dominant Soils:Valentine Fine Sand - rolling to hilly

P. Geologic Types:Ogalalla Formation

Q. Miles of Stream Channels by Order or Class: Undifferentiated landscape, N/A

R. Transportation System

Trails: 0 miles Roads: 7 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 5,954 (low) ___ (moderate) ___ (high)

B. Water-Repellent Soil (acres): 0

C. Soil Erosion Hazard Rating (acres)¹:
 ___ (low) ___ (moderate) 5,954 (Wind erosion) (high)

D. Erosion Potential¹: 15-25 tons/acre

E. Sediment Potential¹: 7-18 cubic yards / square mile

¹ Kevin Hood - NRCS District Conservationist - Thedford Nebraska

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 3 – 5²

B. Design Chance of Success, (percent): 95

C. Equivalent Design Recurrence Interval, (years): N/A³

D. Design Storm Duration, (hours): N/A³

E. Design Storm Magnitude, (inches): N/A³

F. Design Flow, (cubic feet / second/ square mile): N/A³

G. Estimated Reduction in Infiltration, (percent): N/A³

H. Adjusted Design Flow, (cfs per square mile): N/A³

² See Thedford fire history (Appendix A Range Report)

³ The principal concern with this fire is wind erosion, which can not be defined as a single event. This January burn will allow 2-3 months for wind to erode exposed soil before surface vegetation can grow sufficiently to reduce the potential.

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency:

The Four Corners Fire burned southwest of Halsey Nebraska. The fire started in the SE ¼ NW ¼ of Section 20 T. 22 N. R. 27 W. on the morning of Jan 15, 2006. The fire moved quickly through the Sand Hills, driven by sustained winds of 10 - 17 mph with gusts from 21 - 26 mph. The fire was declared contained on Jan 17, 2006. The fire burn and area about 1.5 miles wide and 8 miles long, totaling 5,954 acres. It did not increase appreciably in size after the first day.

Using recommended BAER guidelines, the entire fire was determined to be low severity. In the timbered areas (504 acres), the fire produced a patchwork of unburned and low severity areas. A few trees torched, but char heights on trees in the interior rarely exceeded 2 m. With the exception of trees on the edge of the forested areas that were hit with a headfire, this was a surface fire.

The principal concern with this fire is wind erosion. In the grasslands, the Four Corners fire consumed almost all surface vegetation and litter, leaving the substrate exposed to the wind. The substrate in the area is composed of loose sand and sandy soil, with steep slopes. As the sand is displaced from the ridge tops to the south facing slopes, it covers the existing root crowns, although grasses grow through this sand layer in many places. This process is constantly occurring naturally, though to a much lesser extent than is currently occurring in the burned area.

Green-up of cool season grasses, dominant in low areas, is generally in late March. Green-up of warm season grasses, dominant on ridge tops, is approximately the first week of May. In the Sand Hills, the windiest months of the year are March, April, and May. Within two to three days following the burn, observations and photopoints indicated that drifting sand was already accumulating to a depth of up to three inches. Attached photos, taken six weeks after the fire was declared out, indicate more drifting since the original observations. Dominant northwest winds are also undercutting the roots of grasses on the ridge tops. Because the fire occurred in January, and the ridge top grass green up begins, it is expected that greater damage from wind erosion will occur than would be typical for a fire in the Sand Hills, and will continue until forage begins to grow. The degree of wind erosion will be highly dependent upon the amount and timing of precipitation, either snow or rain.

The fire damage to roads will come from damaged vegetation on the cut/fill slopes (average slope of 2:1) and lead-off ditches along 6 miles of the South Natick Road and 1 mile of the Circle Road. The loss of the vegetation will increase the likelihood of severe soil erosion caused by wind and also by heavy rain during major damage-producing storms with (these storms typically occur in late spring and summer). Severe erosion will occur where the roads cross over steep hills, and the roads run straight uphill/downhill. Damage to the two-tracks will come from the loss of vegetation on both edges and down the middle of these roads. "Two track" roads are critical for normal operations and management, such as access to water sources for permittees, recreational use, and other management functions.

Although accelerated erosion and deposition will occur across much of the burned area, not all affected areas will be treatable. Once surface vegetation has greened up sufficiently, it will be possible to identify areas of concern for which treatments will be effective. These areas are expected to include:

1) Two tracks:

- a. Providing primary access to water sources for permittees

- b. Providing primary access for recreational uses
- c. Providing primary access for management operations

Many 'two track' roads are critical for normal operations and management within the burned area. Two tracks that are at risk of erosion and/or areas that are sources for sand that is being deposited may be stabilized by spreading weed-free, native hay. Native, weed-free hay can also serve as a source of native seed, further stabilizing the area.

2) Signage:

- a. "Closed to motor vehicles from Sept 1. – Nov. 30 for roadless hunting. Non-motorized entry welcome"
- b. "Close gate"

Numerous signs were destroyed in the fire and will have to be replaced before the area can be reopened to normal use. This affects both safety and operations in the area. Closure signs limit access and prevent both fires and mechanical damage to soils, and species that are vulnerable during certain times of year. Gates that are left open can cause problems when livestock can reach roads and other public areas.

B. Emergency Treatment Objectives:

Vegetation: Stabilize soil

Roads: Stabilize cut/fill slopes, lead-off ditches, and possibly two tracks on the Forest Service roads occurring in the burn area.

Other: Replace damaged fences and signage.

C. Probability of Completing Treatment Prior to First Major Damage-Producing Storm:

Land * % Channel % Roads 90 % Other %

*The principal concern with this fire is wind erosion, which can not be defined as a single event. This January burn will allow 2-3 months for wind to erode exposed soil before surface vegetation can grow sufficiently to reduce the potential.

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	50	75	90
Channel			
Roads	75	100	100
Other			

E. Cost of No-Action (Including Loss): \$100,000 It's difficult to put a monetary value on decreased permit value and increasing bare sand/blowouts.

F. Cost of Selected Alternative (Including Loss): \$18,214

G. Skills Represented on Burned-Area Survey Team:

<input type="checkbox"/> Hydrology	<input type="checkbox"/> Soils	<input type="checkbox"/> Geology	<input checked="" type="checkbox"/> Range	<input type="checkbox"/>
<input checked="" type="checkbox"/> Forestry	<input checked="" type="checkbox"/> Wildlife	<input type="checkbox"/> Fire Mgmt.	<input checked="" type="checkbox"/> Engineering	<input type="checkbox"/>
<input type="checkbox"/> Contracting	<input checked="" type="checkbox"/> Ecology	<input type="checkbox"/> Botany	<input type="checkbox"/> Archaeology	<input type="checkbox"/>
<input type="checkbox"/> Fisheries	<input type="checkbox"/> Research	<input type="checkbox"/> Landscape Arch	<input checked="" type="checkbox"/> GIS	

Team Leader: Mary Lata

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H. **Treatment Narrative:**

Land Treatments: No immediate treatment was proposed for the vegetation of the Four Corners burn. It is believed that the area will eventually regenerate naturally, however, just a six weeks after the burn, accelerated erosion and deposition in the burned area raised concerns about the most impacted areas. Some of these areas may become blowouts and/or sources of drifting sand that impede roads.

Monitoring done within the fire area identified areas needing retreatment for noxious weed infestations. Treatment of these infestations will need to take place in spring/early summer of 2007, along with continued monitoring in the fire area for new noxious weed infestations.

See: Appendix A. Range Report

Channel Treatments: N/A

Roads and Trail Treatments: Two track sand roads within the fire boundary will be treated by installing erosion control straw matting and laying weed-free, native hay in areas adjacent to the road that are sources of sand drifting over roads. Weed-free, native hay may also serve as a source of native seed, further stabilizing the area. Cross-country vehicle travel will continue to be restricted until the burned areas heal.

See: Appendix C. Road Report

Structures: Permittees on the affected land will provide the labor for refencing if the Forest Service provides the materials and oversight.

I. **Monitoring Narrative:**

Vegetation: The burned area will continue to be visited regularly searching for noxious weeds. Disturbed areas with exposed soils are vulnerable to noxious weed infestations and these areas need to be watched carefully, particularly for this first growing season. Areas where suppression activities occurred, such as engines driving.

Canada thistle was found in the burned area and treated in 2006. Additional monitoring and control will need to continue in 2007 and 2008.

Erosion: Erosion has been observed in various locations in the burned area and tends to occur in open areas, ridgetops, saddles in ridges, and areas where wind is funneled. These areas will continue to be monitored for erosion.

Roads: Monitoring needs include visual inspections by driving, riding or walking down roads after each storm/wind/rain event and visually inspecting the road treatments to see if soil erosion is occurring, and checking for seed germination at the appropriate times. This will have to be done seed which will be in August and the degree of damage to native vegetative cover is apparent.

Part VI – Emergency Stabilization Treatments and Source of Funds

Interim # 2

		NFS Lands					Other Lands				All
		Unit	# of		Other		# of	Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	BAER \$	\$		units	\$	Units	\$	\$
A. Land Treatments											
Chemical	gal	125	2	\$250	\$0			\$0		\$0	\$250
Admin/data mgmt	days	318	3	\$954	\$0						\$954
Weed detection	days	280	2	\$560	\$0			\$0		\$0	\$560
Weed treatment	days	280	4	\$1,120	\$0			\$0		\$0	\$1,120
Vehicle	miles	0.31	200	\$62	\$0			\$0		\$0	\$62
Insert new items above this line!				\$0	\$0			\$0		\$0	\$0
Subtotal Land Treatments				\$2,946	\$0			\$0		\$0	\$2,946
B. Channel Treatments											
				\$0	\$0			\$0		\$0	\$0
Insert new items above this line!				\$0	\$0			\$0		\$0	\$0
Subtotal Channel Treat.				\$0	\$0			\$0		\$0	\$0
C. Road and Trails											
				\$0	\$0			\$0		\$0	\$0
				\$0	\$0			\$0		\$0	\$0
				\$0						\$0	\$0
Insert new items above this line!				\$0	\$0			\$0		\$0	\$0
Subtotal Road & Trails				\$0	\$0			\$0		\$0	\$0
D. Protection/Safety											
				\$0	\$0			\$0		\$0	\$0
Insert new items above this line!				\$0	\$0			\$0		\$0	\$0
Subtotal Structures				\$0	\$0			\$0		\$0	\$0
E. BAER Evaluation											
					\$0			\$0		\$0	\$0
					\$0			\$0		\$0	\$0
				---	\$0			\$0		\$0	\$0
Insert new items above this line!				---	\$0			\$0		\$0	\$0
Subtotal Evaluation				---	\$0			\$0		\$0	\$0
F. Monitoring											
Effectiveness mon.	days	280	4	\$1,120	\$0			\$0		\$0	\$1,120
Insert new items above this line!				\$0	\$0			\$0		\$0	\$0
Subtotal Monitoring				\$1,120	\$0			\$0		\$0	\$1,120
G. Totals				\$4,066	\$0			\$0		\$0	\$4,066
Previously approved				\$36,895							
Total for this request					\$4,066						

PART VII - APPROVALS

1. /s/ Donald J. Bright
Forest Supervisor (signature)

6/12/07
Date

2. /s/ Richard Stem for
Regional Forester (signature)

07/09/07
Date