Central Niobrara Watershed
Final Fire Management Plan

September 2009

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NOTE:

There is currently no Timber Industry Representative for the Niobrara Council at this time. 3/21/2011 /s/ *Stuart W. Schneider*

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1. EXECUTIVE SUMMARY

The over-arching purpose of this Fire Management Plan is to improve collaboration among and enhance communications between the various agencies and organizations who manage fire in the Central Niobrara Valley watershed. Another equally important objective is to educate private landowners about the benefits of utilizing prescribed fire and hazardous fuel reduction as tools to help restore native grasslands affected by invasive woody species and to protect valued woodlands from the effects of catastrophic wildland fire. Sections of interest to private landowners within this document include the introduction (history of the plan's development), plan boundaries, the natural communities, fire history, implementing prescribed fire on private lands and protecting homes and property from wildland fires (wildland urban interface). This plan will serve as the primary fire management document for the Niobrara National Scenic River and does not replace any other agency or organization's plan, but rather supplements them to coordinate fire management activities across a varied primarily privately owned landscape.

2. INTRODUCTION

Through the collaborative efforts of private landowners, various organizations, rural fire departments, and state and federal agencies the Central Niobrara Watershed (CNW) Fire Management Plan (FMP) was developed. As early as 2002, the National Park Service (NPS) explored the possibility of creating a FMP for the Niobrara National Scenic River (NSR). This was somewhat of a novel idea, as the NPS does not own any land within the Niobrara NSR. The NPS however, is directed by Congress to manage the river and its immediate environs to protect the outstandingly remarkable values that include its scenic attributes (six ecosystems with distinct vegetative characteristics) consisting of extensive pine, boreal, and hardwood forests and grasslands.

The NPS felt that one of the major threats to the scenic qualities of the NSR was the possibility of uncontrolled wildland fires. Pine densities in forests throughout the Niobrara River valley and its side canyons have increased substantially since the early 1900's and invasion by eastern red cedar (*Juniperus virginiana*) has created a thick, volatile understory of ladder fuels. This is due in part to the continual suppression of wildland fires for over a century. Resulting fires would be difficult to control, and would be capable of destroying homes, buildings, and other improvements along the river valley.

Rather than drafting a fire plan that would encompass only the NPS boundary along the river between Valentine and Newport (23,074 acres) the NPS suggested a more expansive boundary from rim to rim, or perhaps even including vast grasslands to the north and south of the river valley. Recognizing that a community fire planning effort utilizing multiple partnerships was the best way to protect the river's resources, the NPS met in July 2003 with various agencies, organizations, and private landowners to seek direction and gather input as to what kind of plan would best protect the outstandingly remarkable values of the designated river segment. From this meeting the concept of a need for a collaborative process to address

fire and fuels management over a much broader area was strengthened. Community involvement and education are essential components of this planning process. The overriding management goal of this plan is to provide an acceptable means for each of the partners to accomplish their own goals and objectives efficiently and effectively through the coordinated and cooperative use of limited resources. This document will serve as an overarching community wildland fire plan for the watershed in a four-county area, as well as satisfy NPS fire planning requirements outlined in the Service's primary reference manual, RM-18.

The CNW encompasses about 793,762 acres. Lands in private ownership comprise approximately 97% of the project area. The U.S. Fish and Wildlife Service, Nebraska Game and Parks Commission, National Park Service, and local governments manage the remaining lands. Wildland Fire Associates (a private contractor) through collaboration with the Central Niobrara Watershed Fire Advisory Council (FAC) facilitated the formulation of this FMP. Agencies and organizations within the CNW include the:

- National Park Service, Department of Interior (NPS)
- Natural Resources Conservation Service, Department of Agriculture (NRCS)
- Nebraska Forest Service (NFS)
- Nebraska Game and Parks Commission (NGPC)
- Niobrara Council (NC)*
- Rural Fire Departments**
- The Nature Conservancy (TNC)
- U.S. Fish and Wildlife Service, Department of the Interior (FWS)

** Not a member of the FAC*
*** FAC members include the Valentine Volunteer Fire Department (VFD), Springview VFD, Ainsworth VFD, the Bassett VFD and a timber industry representative. Within the planning area are the communities of Valentine, Long Pine, Wood Lake, Johnstown, Ainsworth, Bassett, Newport, Springview, Meadville, Norden, and Sparks.*

Broad management objectives that relate to resource management are compiled from the Niobrara NSR Final General Management Plan (NPS September 2006); the Fort Niobrara National Wildlife Refuge Comprehensive Conservation Plan (FWS 1999); the Niobrara Valley Site Conservation Plan (Steuter and Behrens 1999); and Nebraska Game and Parks Commission Focusing on the Future Plan (NGPC 2004). These management objectives are:

- Preserve, restore, and enhance the unique diversity of upland and riparian plant communities and associated water resources of the CNW.
- Preserve, restore, and enhance the ecological diversity and abundance of migratory and resident wildlife in the CNW.
- Contribute to the preservation and restoration of threatened and endangered flora and fauna that occur or have historically occurred in the CNW.
- Provide the public with quality opportunities to learn about and enjoy the ecological diversity, wildlands, wildlife, and history of the CNW in a largely natural setting and in a manner compatible with the purposes for which the Niobrara National Scenic River, Fort Niobrara National Wildlife Refuge, Niobrara Valley Preserve, Nebraska State Parks, State Wildlife Management Areas, and other land designations were established.

- Promote partnerships to preserve, restore, and enhance a diverse, healthy, and productive ecosystem in the CNW.

Partner goals (agencies/organizations and private landowners) vary widely and range from increasing farm or ranch production, restoration or maintenance of historic scenes, supporting native plant communities, providing for firefighter and public safety, to the protection of natural and cultural resources and human developments from unwanted wildland fire.

The specific goals of the CNW Fire Management Plan are to:

- Ensure firefighter and public safety by implementing LCES[1], reviewing the 10 Standard Firefighting Orders and 18 Situations that Shout Watch Out, implementing temporary closures, and providing public information and education.
- Suppress all unplanned ignitions to protect private property, natural, cultural, and paleontological resources from unacceptable impacts attributable to fire.
- Identify and assess hazardous fuels that have the potential to affect targeted natural and cultural resources.
- Utilize prescribed fire and/or other methods (e.g. mechanical) to reduce threats posed by hazardous fuels. Reduce fire hazards through construction of defensible fuel spaces that protect communities and resources. Protect the outstandingly remarkable values of the National Scenic River.
- Utilize prescribed fire and/or other methods, as appropriate, to maintain long-term stability, diversity of fire-dependent vegetation communities, and improve the integrity of the ecosystem.
- Cooperate with partners and other interested parties to incorporate their concerns and compatible resource objectives in fire management programs.
- Enhance communications among agencies and organizations involved with fire management.
- Develop the support and understanding of prescribed fire as a valuable management tool among communities, agencies and visitors through various educational efforts.
- Ensure that fire management activities do not adversely affect adjacent communities.
- Ensure smoke production from prescribed fires does not violate state and/or federal standards; minimize smoke impacts to neighbors and visitors to the watershed.
- Ensure fire management actions are consistent with other planning documents.
- Educate the public in *Firewise* landscaping and construction techniques.

3. GENERAL CONSIDERATIONS

[1] (Lookout, Communications, Escape Routes, Safety Zones)

The Central Niobrara Watershed is the area between Highway 12 to the north, Highway 137 to the east and Highway 20 to the south with three additional inclusions. These inclusions are the town of Long Pine and the canyons to the south (also known as Hidden Paradise), Plum Creek Valley State Wildlife Management Area, and the town of Valentine and canyons to the north and west of Valentine. The CNW resides entirely within the State of Nebraska and in portions of Cherry, Rock, Brown and Keya Paha counties. Appendix A contains a map of the CNW and the surrounding region.

Niobrara National Scenic River, comprising approximately 23,074 acres, is located in north-central Nebraska. The 76-mile National Scenic River was established in 1991 by Public Law 102-50 (105 Stat. 254), which amended the Wild and Scenic Rivers Act. The Law also specified that the U.S. Fish and Wildlife Service would continue to manage that portion of the Scenic River within the Fort Niobrara National Wildlife Refuge (NWR). The Law established an advisory commission (now the Niobrara Council) and constrained the amount of land the National Park Service could own in fee-title.

3.1 Natural Communities

In north-central Nebraska, the 100th Meridian runs north/south through the Niobrara River valley. Here an unusual blend of climate, geology, and topography provides for an incredible diversity of plants and animals. Varying exposure to sun, wind and moisture determines vegetative communities and their dependent wildlife. Six different ecosystems meet and mix within the watershed and include ponderosa pine forests; relict boreal forests of paper birch and aspen; eastern deciduous forests of ash, oak, elm, box elder, and cottonwood; mixed Sandhills prairie; patches of eastern tallgrass prairie along the river; and Dakota (Northern) mixed grass prairie.


Diverse hardwood forest with aspen & birch – note cedar understory

South of the Niobrara are the rolling Sandhills, a vast dunefield stabilized by vegetation with interspersed wetlands. At the Sandhills northern edge the Niobrara River has cut up to 400' deep through several rock layers, including the Ash Hollow, Valentine, Rosebud, and Pierre formations. These unique geological formations include fossils of many extinct mammalian species including beavers, camels, horses, rhinoceros, and mastodons, as well as fossils of fish, alligators, and land tortoises. Dense forests of pine and various hardwoods cover the slopes and canyons. Eastern red cedar has invaded the forest understory, creating ladder fuels and spreading into forest openings and across grasslands. In many places, entire pastures have been lost to cedar invasion. Hardwoods grow within the river valley and adjoining springbranch canyons (canyons created by the flow of water from springs and seeps that in turn, feed into the Niobrara River). Remnant patches of tallgrass prairie grow on river benches (elevated flatlands created by the natural down cutting of the river). On the northern slopes and rim


Dense eastern red cedar understory beneath ponderosa pine

are expansive forests of ponderosa pine that give way to mixed grasses further west and north.

Within the project area, major vegetation types include prairie (533,528 acres), a coniferous forest of mostly ponderosa pine and eastern red cedar (41,725 acres); eastern deciduous forest (42,082 acres); mixed conifer and deciduous woodlands (1,753 acres); and woody and herbaceous wetlands (27,090 acres). Fire is a natural component of most of these communities and one of the primary influences under which these communities developed. Residents have suppressed natural fire ignitions in the project area for over 120 years.

3.2 Land Use

Within the CNW planning area, the approximate distribution of land ownership is:

Table 1: Land Ownership

Ownership	Acres
U.S. Fish and Wildlife Service	19,131 acres
Bureau of Land Management	240 acres
Bureau of Reclamation	125 acres
Middle Niobrara Natural Resources District	2 acres
Nebraska Game and Parks Commission	7,106 acres
The Nature Conservancy (other private)	51,184 acres
Board of Educational Lands and Funds	29,900 acres
Private Ownership	686,074 acres

Croplands and pastures occupy about 136,055 acres. About 8,055 acres are open water. The remaining 3,445 acres include communities, commercial developments, roads, bare ground, quarries/gravel pits and urban grasslands.[2]

3.3 Economic Development & Tourism

Most rural areas in north-central and western Nebraska have declined in population over the last several decades. Cherry County has declined in population from 6,846 to 6,148 people in the last 30 years while the town of Valentine has only decreased by 55 since the 1960 census, which was an all-time high for the city. Agriculture (specifically cattle ranching) is the strongest component of the local economy. Tourism is the third largest economic input. The scenic river supports the local area economy with an estimated 4.7 million dollars income and 114 local jobs. Efforts are underway in local communities to recruit small businesses and light manufacturing and to promote tourism and the variety of recreational opportunities the area has to offer. New home construction is growing as retirees and those seeking vacation properties buy land and build cabins in the Niobrara River valley. Many of these newcomers and residents are likely unaware of the ecological changes in the forests and prairie and uninformed about the dangers from wildland fire. Fire management concerns include smoke from prescribed fires and its effect on tourism, potential impacts to cattle ranching, vehicular

[2] National Land Cover Data Set 1992

safety (visibility); resident and visitor safety during large wildland fires; area closures due to fire activities; and fire bans and their effect on visitors to the National Scenic River, state park, and other recreation areas.

3.4 Special Considerations

The CNW is home to thirteen plant communities and a host of federal and/or state listed species, Nebraska Natural Legacy Project Tier 1 At-Risk Species, and other Nebraska rare species. The list includes fifteen birds, four mammals, ten fish, four insects, and seventy plants to consider when making management decisions associated with wildland fire, prescribed fire, or other habitat management actions. Many of the region's funding sources are designed to address the specific needs of rare and declining species. All fire management projects should consider critical life requirement periods (i.e. nesting) and enhance habitat quality for these species accordingly.

As much as possible managers should apply fire management activities outside the primary nesting season to minimize effects on production of most bird species. In addition, as the primary habitat for most fish species is near the headwaters of streams, land managers should take special care to insure that fire management activities do not contribute to increased erosion that can affect fish survival and production.

A portion (4,635 acres) of the Fort Niobrara National Wildlife Refuge is federally designated wilderness (PL 94-557 October 19, 1976). Special regulations governing the use of mechanized equipment and various impacts to the environment exist for the management of federally designated wilderness.

Congress designated seventy-six miles of the Niobrara River (PL 102-50, 5-24-1991) as a component of the Wild and Scenic Rivers System. Within its boundary of 23,074 acres, Congress has charged the NPS to protect five well-defined ORVs. These include its scenic, recreational, geologic, fish and wildlife, and paleontological values. Most of the land within the National Scenic River boundary remains in private ownership. The NPS is responsible to prevent actions within the boundary that might negatively affect these ORVs. The Niobrara Council reviews all burn permits for consistency with the purposes of the scenic river designation.

Smith Falls State Park, Borman Bridge Wildlife Management Area (WMA), Bobcat WMA, Thomas Creek WMA, Fred Thomas WMA, Plum Creek WMA and the Valentine State Fish Hatchery are all Nebraska Game and Parks Commission lands (6,467 acres) within the boundaries of the CNW. Various regulations and policies govern these lands as well.
The Nature Conservancy's 51,184 acre Niobrara Valley Preserve (Preserve) is located along a 25-mile stretch of the Niobrara River extending from Smith Falls State Park to just west of Meadville, NE. The majority of the Preserve is located on the south side of the river. However, the Preserve also extends north of the river near Norden Bridge. Additionally, the Conservancy leases approximately 4,000 acres of state and federal lands that they also manage to meet specific conservation goals. The Nature Conservancy has an active fire program and manages their lands to preserve and enhance plant and animal diversity.

Burn bosses should discuss cultural and paleontological resources with individual landowners when creating prescribed fire burn plans, or undertaking hazardous fuel reduction activities. Particular agencies and organizations address these items in their own fire management plans. Landowners should inform VFD of these special resources when attacking wildland fires where fire personnel use heavy machinery for control and containment.

4. FIRE HISTORY OF THE SANDHILLS & NIOBRARA RIVER VALLEY

4.1 Present Conditions

In recent years, the intensity and extent of fires in the CNW have seemed to increase significantly. A tree limb shorted out a power line and ignited the Big Rock Fire, which started near Valentine on July 16, 2006. The resulting fire burned over 3,000 acres and resulted in severe property and ecological damage. Low humidity (approximately 9%), extreme temperatures (113 °F), and high winds resulted in rapid spread into the north edge of town and along canyon rims, where ten homes were destroyed and numerous other buildings were damaged or destroyed. Severe fire conditions resulted in areas of complete stand replacement, occurring particularly on steep forested slopes. Few local firefighters had previously witnessed the levels of extreme fire behavior and rapid rates of spread as those occurring during the Big Rock Fire.

The largest local fire event in recent history occurred on September 17, 2000. On that day, a lightning storm produced over 50 fires in Cherry County that burned over 100,000 acres in 36 hours (most outside the project area). Five fires ranged in size from 1,276 acres to 22,587 acres. Nearby, much larger fires have occurred on private property with one fire burning 87,000 acres in less than 24 hours. The Thedford Fire occurred in 1999, south of the Valentine NWR (outside of this plan's area), and burned 74,000 acres (much of it grasslands) in two and a half days. Most of the fire's spread occurred during the first burning period. Table 2 shows fire department reports from 2000 through 2006 (Note: some of these fires have occurred outside the plan's boundary). In addition, NWR staff suppressed an average of thirteen wildland fires that burned 935 acres in each of the last ten years (however, most of these fires occurred on the Valentine NWR or otherwise outside the management planning area).

Table 2: Wildland Fires Reported by Volunteer Fire Departments

Year	Lightning-Caused Reported	Acres Burned	Human-Caused Reported	Acres Burned
2000	15	6,156	13	662
2001	11	36	16	530
2002	41	610	45	13,374
2003	14	20	7	13
2004	9	15	12	1,590
2005	6	47	10	136
2006	20	169	14	3160
2007	5	20	3	11
2008	4	12	2	2
Total	125	7,085	122	19,465
Average	**14**	**787**	**14**	**2,164**

This short fire history period fails to capture information from recent years of high severity during which tens of thousands of acres burned.

4.2 Past Conditions

Local Fire Departments, the U.S. Fish and Wildlife Service (Fort Niobrara and Valentine NWR), and The Nature Conservancy maintain separate records for their respective lands. Thus, comprehensive and compatible fire records are not available for the CNW because of differences in reporting procedures and requirements.

Refuge staff has responded to wildland fires in every month of the year (FMIS 2001). The FWS quickly suppresses most wildland fires while they are still small but some fires have spread beyond FWS lands onto private ranches. Inhibitions of suppression efforts by firefighters are due in part to the lack of natural or fabricated fuel breaks. Fuel loads are generally light, but exhibit fast drying times and burn with high rates of spread. Wind driven fires in these fuels can burn for 20 miles or more in a single burning period.

Lightning, usually accompanied by wind most commonly occurs during April through September. Storms often may not be accompanied by rain. In general, dry lightning fires appear to be more common in drought years. Multiple starts on a single day are common during warmer months. Appendix C contains more information on fire occurrence.

4.3 Fire History

Fire is a natural component of the Sandhills and Niobrara River valley environments and one of the conditions under which vegetation on the CNW evolved (Harrison 1980, Bogan 1993, Bragg 1994). Historic records describe huge prairie fires ignited by lightning or humans. Fires burned millions of acres because there were few natural fuel breaks and no suppression. The River Valley/Sandhills ecotone indicates that fires occurred every 4 to 5 years between 1850 and 1900 (Bragg 1986 and 1994). A great reduction in bison numbers on the Great Plains also occurred during this period, which may have influenced fire return intervals and/or fire intensity. Steinauer and Bragg (1987) reported that the mean fire interval increased from 3.5 years between 1851 and 1900 to 8.5 years between 1901 and 1951. Presumably, the fire frequency now is near zero, as fire suppression became more effective post World War II than it was before World War II. There is no comprehensive fire history database for the CNW to evaluate the pre-settlement fire intervals on the grasslands, Niobrara River Valley, and ponderosa pine/prairie ecotone.

Research throughout the Great Plains indicates historic fire frequencies of 1 to 10 years for tallgrass prairies (Kucera 1981), 5 to 10 years for rolling mixed-grass prairies (Wright and Bailey 1980), 2 to 25 years for ponderosa pine forests (Wright and Bailey 1980), and 10 to 30 years for other forested Great Plains areas (Wright and Bailey, 1980). Research at Wind Cave National Park indicated mean fire intervals of 10-12 years in ponderosa pine savannah (twice as frequent as at interior forest sites), probably due to the influence of fire in adjacent prairies (Brown and Sieg 1999).

TNC (1999), citing Moore (1972) indicates that 32% of fires in the Northern Great Plains could be attributed to Native American ignition, 14% to early European settlers, and the balance to lightning Westover (1984). Higgins (1986) notes that regardless of ignition source, wildland fires occurred primarily during two periods: March through May and July through November, with peak periods of ignition in April and October.

Grasslands historically evolved in areas with a disturbance frequency too high to permit the establishment of tree species, or in areas too dry or too wet for most regionally indigenous tree species. Over 120 years of wildland fire suppression on the CNW has resulted in various changes in vegetation composition and structure - the most visible of which are the pioneering of eastern red cedar, ponderosa pine, and other shrubs into prairies and into the understory of savannas and forests, or the filling of wetlands with slowly decomposing decadent vegetation and invading woody growth. Steinauer and Bragg (1987) note encroachment of ponderosa pine, particularly on north slopes beginning mainly after 1900. Reducing this encroachment could increase the scenic aesthetic and create a more natural ecosystem eventually reducing the potential for large stand replacing fires.

Changes in grass and forb composition caused by fire exclusion are not well documented due to a lack of baseline data, except in cases of exotic species invasion. Bragg (1997, 1998) studied the effects of single fires during various seasons on Sandhills mixed-grass prairie. He noted that a single fire did not result in any substantive changes in species or community diversity. There were, however, differences in abundances of various species and litter – usually for less than four years – following fire. No dramatic changes in species richness were observed in response to fire. Bragg (1998) concluded, “Data suggest that more frequent fires occurring in different seasons have the potential to maintain a highly diverse landscape through differentially affecting species occupying different topographic locations.”
Pfeiffer and Steuter (1994) found that spring burning increased production of both rhizomatous grasses and bunchgrasses, but that summer burning reduced production of bunchgrasses. They further noted that bison reduced the standing crop of bunchgrasses much more than rhizomatous grasses following burning.


Bison on Fort Niobrara NWR

Biondini, et al. (1999) noted that bison actively selected burned areas on the Niobrara Valley Preserve during the growing season for one to three years following fire. They mostly avoided old burns and unburned areas (there was no significant effect of fire on bison range use during the non-growing season). Biondini noted other management implications to this pattern of bison use, particularly (1) providing undisturbed nesting cover for waterfowl and other species in unburned areas, (2) providing habitat for species preferring short stature grasslands, (3) providing areas of increased forb abundance and diversity, and (4) enhancing control of woody species.

4.4 Desired Future Conditions

Desired future conditions will vary widely among private landowners. Agencies and organizations may also manage for different conditions depending upon their mission, goals

and objectives. In a broad sense land managers could accomplish ecological objectives throughout the watershed (i.e. non-crop and undeveloped lands) with seasonally prescribed fires occurring every three to thirty years, depending upon vegetative type (forest or grasslands) and specific objectives.

Generally, maintenance for grasslands would require burning every three to ten years and ponderosa pine forests every two to twenty-five years following initial fuel treatment and burning. Fire frequency would need to be adjusted to meet the needs of landowners and managers and in consideration for grazing needs, drought, and other disturbance factors. Surface fires of low to extreme intensity would be needed on 55-85% of the landscape (over 16% is either not burnable or difficult to burn, such as wetlands).


Restored Bottomland Oak Forest

In order to initially restore the health of the natural communities within a decade, an estimated 50,000+ acres of grasslands, 8,000+ acres of mixed woodlands, and 3,600+ acres of ponderosa pine would need to be burned annually throughout the planning area. These figures are determined from an average return interval of 10 years for grasslands, 20 years for mixed forests, and 11.5 years for ponderosa pine forests and their relative area covered.

A fire regime of infrequent fires has replaced a historic fire regime of frequent low intensity fuel-reducing surface fires within ponderosa pine and mixed pine forests. This has lead to increased fuel levels, and a greater probability of high intensity/stand replacement fires, which pose a greater threat to life, property, and resources, because such fires are difficult to suppress.

The desired condition is a landscape with an appearance of what would exist with natural processes uninterrupted and what probably had existed historically. It should display a mosaic of complex vegetation patterns that would have evolved naturally from ecological and geological processes. Vegetation types should vary greatly with openings, seral stages, and a variety of plant communities occurring in a random patchwork.

Fire-management activities should maintain or improve production and native-species diversity in all six of the area's ecosystems. Conifer encroachment and the resulting increased stand densities are threatening these ecosystems. The invasion of exotic grasses and weedy forbs also threaten many area grasslands. This is partly a result of fire exclusion, and in some cases, improper grazing practices. Land managers should apply prescribed fire and other management tools, where appropriate, at a time and in a manner that will counter these threats and realize goals.

Fire-management activities should improve the quality and quantity of habitat for wildlife species by reducing woody-species encroachment and timber stand densities, and promoting more desirable native-plant species. Restoring and improving plant-species diversity improves ecosystem health and promotes a greater diversity and abundance of wildlife.

5. CURRENT FIRE MANAGEMENT ACTIVITIES & STRATEGIES

5.1 Landowner Prescribed Fire & Hazard Fuel Reduction

The state of Nebraska prohibits open burning (81-520.01). The Fire Chief or their designee of a Rural Fire Department may issue a waiver by issuing a burn permit to private landowners to conduct prescribed fires (including pile burns). Statistics are not currently compiled concerning private landowner conducted burns or hazardous fuel reduction activities. The Fire Advisory Council (FAC) has distributed a new fire report card to Volunteer Fire Departments to record fire data in order to compile annual statistics on wildland fires and prescribed fires (Appendix G). Within the National Scenic River corridor, the Niobrara Council must approve all prescribed fire permits by private landowners or organizations to ensure that they are consistent with the scenic river's desired future conditions.

The Nebraska Game and Parks Commission (NGPC) has been actively funding prescribed fire projects on private lands in the Niobrara River watershed with funding received through the Landowner Incentive Program (LIP), Nebraska Environmental Trust Fund, and State Wildlife Grants. Rare and declining plant and animal species occur in the watershed and eastern red cedar encroachment and invasive species such as cool season grasses are threatening their habitats. The NGPC intends for LIP funds to be used to restore habitat for these rare and declining species.


Skid-steers removing cedar trees for HFR work

The NGPC has funded numerous prescribed burns in the last several years. In 2004 three prescribed burn projects totaled 417 acres. In 2005 327 acres were burned, and three projects involving 804 acres were burned in 2007. In 2008, 4 spring burns and 1 fall burn were conducted comprising 1719 acres. Prescribed burn plans and agreements are currently being developed that will involve 8 burns encompassing 1384 acres in 2009, 12 burns encompassing 2081 acres in 2010, and some follow-up smaller burns occurring in succeeding years.

The first prescribed fire with technical assistance provided by the Natural Resources Conservation Service (NRCS) occurred within the planning area on April 15, 2004. A contractor from Kansas on a local ranch conducted the 132-acre prescribed fire. Staff from the Broken Bow NRCS field office wrote the burn plan. Its purpose was to stimulate warm season grasses, control invasive woody plants, reduce cool season grasses and improve wildlife habitat. The landowners received cost-share funds through the EQIP program.

Personnel carried out three additional prescribed fires in April of 2005. The District Conservationist in the Valentine NRCS office developed each plan. The FWS and TNC fire program personnel also reviewed these burn plans. The goals of each of these burns (178, 158 and 75 acre burns)


NRCS Prescribed Burn

were to reduce competition from cool season grasses (smooth brome and/or cheat grass), stimulate warm season grasses, improve wildlife habitat (increase diversity), control eastern red cedar invasion, and reduce hazardous fuel loads. In 2006, the Valentine NRCS office had four requests for prescribed fire plans; none were implemented due to poor weather and the lack of available burn contractors. In the spring of 2007, the Valentine NRCS office conducted three prescribed fires. Two prescribed fires (76.6 acres) were cost shared under EQIP (both of which were carried over from 2006) and one burn (217.7 acres) was not cost shared. Of the two remaining prescribed fires planned in 2006, a landowner withdrew one and NRCS scheduled the other for the spring of 2009. In 2008 the Valentine NRCS office had four requests for prescribed fire plans.

Nebraska Forest Service personnel recognize the need for reducing wildland fire fuel loads in many types of woodlands within the state. Overstocked woodland populations will require some type of initial entry to reduce hazardous fuels prior to follow up prescriptions, such as prescribed burning to manage future stocking levels. Initial treatments will reduce ladder fuels and provide space between dominant and co-dominant crowns. Resulting trails and roads will facilitate future fire control. In the summer of 2006, the National Forest Service called for private landowner applications to access cost share grants from the National Fire Plan (50% of $350/acre) to eliminate hazardous fuels like eastern red cedars and reduce pine densities in forests to protect structures and property. A Forester/Wildland Fuel Specialist is now stationed in Valentine. Their duties include assisting landowners in managing forest health and establishing fuel breaks. There is $200,000 in grant money (75% cost-share) currently designated for this program along the Central Niobrara.

5.2 Agency/Organization Prescribed Fire & Hazard Fuel Reduction

5.2-1 Nebraska School Trust Lands (Board of Educational Lands and Funds)

The Board of Educational Lands and Funds (BELF) is the constitutionally established Trustee of Nebraska's K-12 School Trust Lands. The Board's Field Representative initially reviews each request by a lessee to conduct a prescribed fire and the associated prescribed fire burn plan. Further review by BELF State Office staff may be required and the approval by the Board is a necessary final step. There is no policy for "automatic approval."

5.2-2 The Nature Conservancy

Dr. Allen Steuter, former graduate student of Professor Henry Wright, Texas Technological University, and pioneer fire practitioner and researcher, introduced prescribed fire to the Niobrara Valley Preserve (NVP) in 1984. After the introduction of bison to the preserve in 1985, many fires were set in different seasons in the original 7,500-acre "east" bison pasture. Researchers used these plots to test and refine the concept of fire-grazing interactions to increase both structural and species diversity and distribution in Sandhills Prairie, and to improve forage quality for bison, which winter without supplemental feeding.

In succeeding years, other fires were set primarily for eastern red cedar control and to thin overstocked ponderosa pine stands, both with some success. Fire activity varied annually due to weather and other variables, and in some years, personnel were unable to conduct any burns. Burning reached a peak in the late 1990s and then declined beginning in 2000, due

both to chronic drought and loss of key personnel at a time when The Nature Conservancy was converting to National Wildland Fire Coordinating Group (NWCG) standards. Recently the fire program has become revitalized with personnel holding improved qualifications and more burns conducted through cooperative measures. Nearly 4,000 acres were burned in 2007-08, with the majority of the burning completed in the spring of 2008.

Table 3: Prescribed fires on Niobrara Valley Preserve

Year	Burns	Total Acres	Year	Burns	Total Acres
1984	2	300	1999	8	2,393
1987	1	60	2000	4	373
1988	2	160	2001	3	135
1989	3	949	2002	2	125
1992	1	70	2004	1	200
1994	1	80	2005	0	0
1996	7	1,880	2006	0	0
1997	5	950	2007	3	500
1998	4	2,237	2008	10	3,600

The NVP also has a long history of cutting eastern red cedar, both for fence posts and saw timber as well as for conservation purposes. An emphasis on harvest dictated that most clearing occurred in small stands of straight, clear-trunked trees, usually in or near the valley bottom. Partial harvesting of thick stands also helped to open up areas otherwise largely impenetrable by prescribed fire. In early 2007, TNC received a grant and staff subsequently expanded mechanical clearing activities to include Sandhills pastures with the goal of complete elimination of eastern red cedars on targeted areas. These areas included low-density stands, Preserve boundary areas, and other areas where fire would be less economical or relatively risky. Cedars were removed from about 5,600 acres of land during the fall and winter of 2007-08 and efforts are still on-going.

Cost of burning for The Nature Conservancy under National Wildfire Coordinating Group (NWCG) standards, both for equipment and personnel, is higher when compared to pre-NWCG burning, and funding is sometimes difficult to obtain. However, NVP has received grant funds to conduct mechanical clearing, as described earlier, and for the actual implementation of prescribed fire. TNC has used these resources for hazardous fuel reduction, burn unit preparation, and the application of fire.

5.2-3 Fort Niobrara National Wildlife Refuge

After the introduction of prescribed fire at the Fort Niobrara National Wildlife Refuge in 1995, the program continued to grow throughout the following decade (Table 4, list of acres burned by year is included below). Presently, FWS is targeting approximately 1000 acres per year using prescribed fire, of which 700–800 acres include eastern red cedars. There will be a

mechanical fuel reduction target primarily of large cedars, for approximately 100 acres each year.

Table 4: Fort Niobrara NWR - Year & Acres Burned

Year	Acres burned	Year	Acres burned
1995	30	2004	22
1997	65	2005	43
1988	358.1	2006	956
1999	222	2007	1315
2001	642	2008	0[3]
2002	20		

From 2006-07 at the Borman Bridge State Wildlife Management Area a contractor cut and piled eastern red cedars to reduce cedar invasion on grasslands and in easily-accessible wooded portions. This project was part of a fuel reduction project in conjunction with the FWS and NGPC. A major hazardous fuel reduction project is now underway at the Fort Niobrara Refuge to reduce eastern red cedar and ponderosa pines along the western boundary and southwest corner where wildland urban interface is a concern. Agency personnel are now removing fuels and hope to conduct prescribed fires in treated areas. The FWS may utilize a contractor in the future.

5.2-4 Nebraska Forest Service

The Nebraska Forest Service has a brochure with information on forest fuels management (fuels reduction) at: http://www.nfs.unl.edu/documents/fireprotection/nfsfuelstreatment.pdf

5.3 Initial Attack & Suppression

Most wildfires are suppressed by VFDs in their respective districts. Currently the FWS performs initial attack through mutual aid agreements with local VFDs. The FWS receives support from the local VFDs for fires occurring on Refuge System lands and FWS supports the local VFDs by responding to fires occurring in their respective response areas. The NPS may accompany the USFWS on initial attack when within/adjacent to the scenic river boundary. TNC performs initial attack with direct assistance from VFDs.

5.4 Training

FWS refuge staff has offered some suppression training to local VFDs but there are incomplete records. The FWS will continue to offer S-130 Basic Firefighter, S-190 Introduction to Fire Weather, S-211 Portable Pumps and Water Use, S-234 Ignition Operations, and other courses based on interest, funding, instructor availability, and need.

[3] 72 acres of cedars were mechanically removed on the refuge's western boundary in 2008. All prescribed fires in 2008 were conducted on the Valentine NWR.

The Natural Resources Conservation Service National Range and Pasture Handbook provides policy for NRCS participation in the Planning and Application of Prescribed Burns: "NRCS supports and encourages the use of prescribed burning on rangeland, pastureland, forest land, hay land, Conservation Reserve Program (CRP) land, and wildlife land to meet specific resource management objectives." NRPH, rev. 1, December, 2003, Appendix A-1.

Employees actively involved in the planning and writing of prescribed burn management plans receive training, certification and job approval authority for those activities from the NRCS State Range Management Specialist. This training includes; Fire ecology, fire behavior, fire safety and smoke management.

NRCS encourages employee participation in approved prescribed burn training activities and workshops, including those conducted by other agencies or organizations. The Valentine Field Office staff currently maintains at least one employee with the training and certification to discuss the use of prescribed fire as a conservation tool with clients and to apply this practice in a contract. At this time, the Valentine Field Office does not have a staff member with the job approval authority to write prescribed burn management plans. Any subsequent training and certification of staff for this elevated job approval authority lies at the discretion of the District Conservationist.

The Nebraska Forest Service contracts with the training division of the State Fire Marshal's Office. A part of each Firefighter I course is devoted to wildland fire suppression under the terms of this contract.

Each year, NPS personnel take refresher training offered by the Fort Niobrara NWR staff. They may also attend refresher training or gain other certification levels in other geographical areas. In 2006, the NPS readied a Type 6 engine and has plans to bring at least one employee up to qualification as an Engine Boss and two to Engine Operator within the next few years. The NPS will be called out by the FWS and suppress fires under their supervision as a member of the Keya Paha Brown Rock and Cherry (KBRC) Mutual Aid Association.

The NPS has no specific fire staff and, therefore, is not able to offer training directly to other agencies or the public. In the past, however, the NPS did offer training to rural fire departments through the Rural Fire Assistance grant program. In 2002 and 2003 the NPS and FWS teamed up to facilitate S-130, S-190 and water handling training for several VFDs throughout the watershed. Annually two to four NPS rangers are red-carded.

Three TNC personnel are currently qualified t the Firefighter 2 level. The Conservancy also draws upon non-local staff and partners to supplement fire team needs.

5.5 Education

Currently, the Central Platte Natural Resources District (NRD) Fire Program aids in providing prescribed fire training to local landowners at several locations each spring. This one-day training is followed by participation in a prescribed fire, and is held in conjunction with the Prescribed Burn Taskforce. The NRD also offers NWCG training such as S-130 Basic Firefighter, S-190 Introduction to Fire Weather, and S-131 Advanced Firefighter training to

local firefighters and cooperating agency personnel.

In 2005, the Central Platte NRD gave presentations at the Society for Range Management meeting in Ainsworth, Nebraska and the NARD conference in Kearney, Nebraska. They also hosted educational booths at the Nebraska Grazing Conference, Husker Harvest Days, and the NARD conference where they distributed a booklet, *Landowners Guide to Prescribed Fire*, and a brochure discussing the NRD cost-share to numerous landowners. In the future, they hope to give presentations to local schools, and to conduct training for other interested NRDs. They are also aiding in the formation of a statewide council to address prescribed fire education, cooperation, and policy.


FAC Public Meeting

In 2006, after the Big Rock Fire, the NRCS, UNL Extension office, NFS and the local NRD presented three public meetings for affected landowners and interested parties about hazardous fuel reduction needs around structures, erosion control methods, cost-share programs, and information for managing pine forests in the watershed through thinning and other methods. In addition the FAC (NPS, NGPC, NRCS and NFS) held a public meeting in Valentine, Nebraska on October 5, 2006 to inform the public about the FMP process, cost-share programs for hazardous fuel reduction, wildlife benefits and conducting prescribed fires, and efforts to start a private landowner prescribed fire association. On January 23, 2007, the NPS gave a presentation in Ainsworth, Nebraska explaining the status of the CNW Fire Management Plan. This occurred during a NGPC informational meeting about the Nebraska Natural Legacy Project that also included the application of prescribed fire to improve habitat for Tier I and II wildlife species and discussion of the availability of NFS cost-share money for hazardous fuel reduction in forests. Private landowner representatives from the Taylor/Sargent area also described their efforts to start a local prescribed fire association of ranchers. The NFS in cooperation with the North Central RC&D also conducted a *Firewise* Workshop for the public in Ainsworth that fall. A second public meeting, centered on forest fuels management was conducted in July 2008 at the Norden fairgrounds. The workshop included presentations, a tour of recent fuels management projects, demonstrations related to wood utilization and wood products exhibits.

The FWS will continue to support private land prescribed fire projects through the NRCS. Support will include the development, editing and review of fire prescription plans. NRCS will also serve as a member of a core team for training and education. The Niobrara Council will continue to look for opportunities to be involved in public education concerning fire management.

Two excellent articles have appeared in Nebraska Game and Parks Commission's Nebraskaland magazine. An article in the December 2006 issue, *Saving an Ecosystem*, explains the importance of prescribed fire in restoring the mosaic of grasslands and forests at the Rock Glen Wildlife Management Area. A lengthy article in the January 2007 issue, *Fire on the Ridge*, describes the effects of recent wildland fires on Nebraska's Pine Ridge, the ecological implications of the absence of fire over the last several decades, and the need for

improved forest and grassland resource management. Before and after photos in these articles are visual goldmines that illustrate the changes in tree densities after a fire, especially pine and cedar densities.

The Nebraska Prescribed Fire Council held its formative meeting on December 8, 2005. Their mission is to increase the understanding of safe, professional fire use and to assist landowners in utilizing prescribed fire as an important tool in grassland management. The Council is examining state laws and procedures to ease barriers to conducting prescribed fires and continue to provide quality training to landowners.

The Nature Conservancy participates in educational and outreach activities, including the Fire Learning Network, which holds local, regional, and national meetings The FMP area lies within the Great Plains-FLN "Middle Niobrara-Sandhills" anchor site. Much of the original FLN momentum has spun off into the FMP itself, which has a high degree of overlap with the original FLN-identified issues and objectives, and other fire-related efforts. In October 2008, the Middle Niobrara-Sandhills anchor site hosted a Great Plains FLN meeting in Ainsworth, Nebraska. More than fifty participants attended the conference, shared successes and challenges, and toured local fire management sites. Some attendees also participated in NVP-hosted burns conducted immediately following the meeting.

The NPS offers an outreach program in the local schools and is available to speak to classes on an "as requested" basis about a variety of resource topics. The Fifth Grade Curriculum book Science Horizons has a short (two-page) section on fire titled, *2000: How Should We Manage Forest Fires?* The NPS should examine the Valentine Rural High School curriculum to determine if any courses address fire management and should offer their educational services to the school.

Local reporters and NPS staff have also written several newspaper articles in which the NPS and other partners (FWS, TNC) have teamed up to educate the public about wildland fire, fire ecology and the need for hazardous fuel reduction/ prescribed fire. The following articles have appeared in the Valentine Midland News:

August 9, 2006 - After the Fire Land Care Workshop Held
August 23, 2006 - Plans underway since 2004 for Central Niobrara Watershed Fire Management Plan
September 27, 2006 - Good fire – bad fire – what you can do
October 4, 2006 - Fire…friend and foe – find out more
January 21, 2009 – Central Niobrara Watershed Fire Management plan open houses

The NPS plan, "A Strategy for the National Park Service Wildland Fire Communications and Education Program" aims to enhance recognition, acceptance and support for the role of fire in ecosystems and management of fire and fuels in the NPS. The document should be adaptable to address and meet local needs and is directed towards protecting lives, property and resources while restoring and maintaining healthy ecosystems. There are six mission goals; goals 4 and 6 apply poignantly to the CNW:

Mission Goal 4: Internal and external audiences understand and support the role of fire in ecosystems and the management of fuels and fire.
Mission Goal 6: A well-established wildland fire communications and education program enhances the service's collective efforts towards its number one priority, firefighter and public safety.

Educating visitors and local residents about the importance of fire in maintaining healthy forests and grasslands and resident/visitor safety are two of the highest educational goals for the CNW project area. Efforts to implement these mission goals should include public meetings, newspaper, radio and magazine articles, brochures, school classroom speakers, attending organization meetings, media relations, wayside exhibits, public demonstration burns, tours and hikes, self-guided trails, training and other educational opportunities.

5.6 Recent Investigations & Research

Researchers are addressing fire issues in the Niobrara Valley and adjacent Sandhills through ongoing research. One topic investigated is the decline of blowout penstemon (*Penstemon haydenii*) in the Nebraska Sandhills and its relationship to fire suppression and the absence of grazing bison.

A study conducted by the University of Nebraska-Lincoln (UNL) in the Bessey District of the Nebraska National Forest (Wedin 2003) is investigating the environmental effects of a planted forest on grasslands. In Nebraska, the spread of woody species into grasslands is due in part to the suppression of wildland fire. Prolonged periods of fire suppression cause a vegetation change from grassland to open canopied forest, and eventually closed canopied forest (pine and/or cedar). Carbon storage is also affected. Under dense pine stands, soils are losing up to 50% of their organic matter and becoming more acidic. Compared to 75% of the carbon stored in Sandhills prairie, only 10% is stored beneath dense pine stands. In addition, pine forests tend to use much more water in the winter (when temperatures exceed freezing) than grasslands. Winter is perceived as a critical period for groundwater recharge of aquifers. Comparable studies (Steuter 1990) have shown that the woodlands are expanding out of the Niobrara River valley and its springbranch canyons into adjoining Sandhills Prairie.

A similar study (Eggemeyer, et. al. 2006) also examined the expansion of ponderosa pine and eastern red cedar into Sandhills prairie and concluded that these deeply rooted trees used more water than grasses in summer which, because grasses senesced when rainfall is scarce. In winter, when grasses are not utilizing water, the trees will grow and tap deep soil moisture to compensate for a lack of growth during droughts.


Aspen Researcher

By examining sedimentary and fossil records, other research from UNL has shown that drought and fire increased dune formation in the recent geologic past, and that as recently as 1,000 years ago there were droughts more severe than in the 20th century (Nicholson, Swinehart 2005). A similar project at UNL (IANR News Service 2003) is an interdisciplinary study of the interaction of sand, grass, and water in stabilizing the dunes in the Sandhills region. They are exploring how grazing and

fire, along with climatic factors affect the dunefields. The dunes have gone from grass-covered to barren several times over the last few thousand years. Yet another study (Mangan, et. al. 2004) examined the impacts of drought, functional plant type, fire grazing, and erosion relative to dune stability in the Sandhills. It concluded that fire and grazing alone did little to adversely impact vegetation, but when combined with drought, biomass decreased.

The Nature Conservancy (Steuter 1996) has studied the effects of fire on grasslands and the interactions of bison grazing with other mammals, like pocket gophers, after fire. Generally, bison are attracted to burned areas to feed on new bunch grasses. Their preference for a particular burned area declines over time. During summer burns, bison favor burned areas in open, rolling country when breeding, even though better forage may be available on recently burned lands in hilly or wooded areas. Biomass after bison grazing tends toward rhizomatous grasses and forbs. The Fire Learning Network reports that for the Sandhills particular, specific, and improved prescriptions and methods need to be developed.

Forest Type Mapping Project: Nebraska Forest Service staff classified areas of homogeneous forest/woodland vegetation to provide a base-mapping layer for forest management applications in the Niobrara Valley. Definiens Image processing software was used to classify 2006 color-infrared (CIR) imagery into grassland, ponderosa pine forest, eastern red cedar forest, deciduous forest, developed land, bare earth, and water as land cover categories. Agricultural land was removed prior to classification using the Farm Service Agency common land unit layer. Noticeable errors and inconsistencies were removed from the final classifications using Erdas Imagine image cleaning tools.

Using the forest type information, hazardous fuel potential may be more readily identified and mapped. Areas of high priority for fuel reduction efforts may be established based on fuel characterization, proximity to high value property, topographical features, etc. Acreage determinations based on planned management activities will help guide funding and labor needs.

Using forest types to stratify inventory sampling may provide estimates of available small diameter round wood and woody biomass resulting from forest/woodland management activities. The potential to spur economic growth exists within areas where there are sufficient quantities of raw materials for lumber, posts and the bio-fuels industry.

Two recent studies (Buenger 2003 and Sturdevant, et. al. 2006) relate to the effects of fire on archaeological resources. They describe how buried archaeological resources are generally not threatened by either wildland or prescribed fires unless trenching or machinery is used to construct fire lines. Surface objects can be damaged, depending on fire and fuel characteristics. This would be more of an issue in the forests rather than prairies where black lines are used. Pile burns located directly over resources can also adversely affect these resources. Fossil resources would be most likely threatened by heavy machinery use if fire lines were to be constructed for major forest fires.

6. STRATEGIES TO RESTORE A FIRE ADAPTED SYSTEM

6.1 Landowner Prescribed Fire Workshops

NRCS and partners held two prescribed fire schools in St. Paul and Osceola during January of 2007. As previously mentioned, the FAC held a public information meeting in October of 2006 in Valentine. Presentations from the NGPC regarding the Landowner Incentive Program and the NRCS explaining EQIP were supplemented by information provided by the NFS about current and proposed funding for hazardous fuel reduction projects in the central Niobrara River valley. In addition, the FAC described problems associated with eastern red cedar encroachment and high densities of ponderosa pine, and provided a brief overview about the FAC. Availability of Private Landowner Prescribed Burn Associations was also a topic of great interest among landowner participants.

6.2 Prescribed Fire Brochure

The FAC has created a prescribed fire brochure entitled, *Prescribed Fire Use in the Nebraska Sandhills and Niobrara River Valley* (Appendix E). The NGPC provided funding for printing this brochure.

6.3 Hazard Fuel Reduction Brochure

The FAC recommends that the brochures, *Country Living at its Best* and *It's the Little Things That Count* (both published by the Nebraska Forest Service University of Nebraska-Lincoln), be made available to each new zoning request applicant in the four-county area. These brochures and various other hazardous fuel reduction handouts will be made available to the public through various agencies and at local libraries.

6.4 Prescribed Fire Groups and Crews

At two recent meetings, ranchers from the North Platte and Taylor/Sargent areas discussed local fire associations in which ranchers and farmers have collaborated to implement prescribed fires. In one instance, the group sought non-profit status, received grants to purchase fire equipment, and conducted burns to improve grasslands and reduce or eliminate eastern red cedars. Another group of ranchers did not formally organize, but burned numerous acres each spring to reduce or eliminate eastern red cedars and improve grazing.

These presentations generated significant interest from local ranchers, especially when they learned that up to 80% of some lands were lost to cedar invasion and that prescribed fire restored the land to pasture. The NGPC held a well-attended meeting in Sparks, Nebraska in October of 2008 to introduce the concept of formulating a private landowner prescribed fire group. Subsequently, in December of 2008 a number of local residents formed a Prescribed Fire Group that encompasses six counties. They appointed a president, vice-president and a secretary/treasurer. There is an eastern and western representative for this large landscape as well. Collaboration will occur with the local Fire Learning Network (FLN). This group investigates strategies to encourage and empower local ranchers to form prescribed fire groups, get needed training, and make equipment available for prescribed fires.

A number of models exist for conducting prescribed fire on private lands, including the use of contracted crews, dedicated agency and NGO (non-government organization) crews, and groups of cooperating landowners. No one model is best for all situations, nor are they mutually exclusive. Rather, fulfillment of the FMP goals will require use of all models, alone or in combination.

However, application of prescribed fire ideally will undergo an evolution within the area as people accept use of fire and become experienced in its use. It is reasonable that in the short term, some expert assistance might be required to conduct fires on private property. This can take the form of contractors, agency and NGO crews, and planners working with individuals, who gain experience and confidence with prescribed fire. In the long term it is envisioned that groups of cooperating landowners having some degree of organization will apply most prescribed fire.

The benefits of enabling landowners to burn their own property are significant. Once a critical mass of cooperators is reached, the group can supply adequate labor. Ranchers can share equipment and its cost spread among members. At a more organized level, such a group may be able to accept grants to pay for training and equipment. The NPS has the authority to cooperate with local fire organizations and to assist them when doing so helps enhance or protect the outstandingly remarkable values of the river. Newer cooperators can gain valuable experience by assisting more seasoned members on fires. Also, when trained and experienced, landowners or managers have a distinct advantage when conducting fires on their own property, in that they know the land and fuels and can best gauge whether management objectives have been met. Liability is also reduced. Finally, others can replicate this model across a larger landscape, with the formation of local groups to service optimally sized rural neighborhoods.

Despite this vision of substantial self-reliance, it is reasonable that broader cooperation among all partners should continue, especially when burning larger units, complex and potentially dangerous fuels, or under more extreme conditions.

6.5 NWCG Training

The FWS and other cooperators will offer NWCG training courses in the local area. FWS will serve as a contact for training outside the local area. The State Fire Marshal's office offers training for VFDs.

6.6 Prescribed Fire Equipment Caches

The Nebraska Game and Parks Commission secured fire equipment with State Wildlife Grant funds. They will use or lend this equipment to implement prescribed fire on private lands. Equipment available for loan includes; one 200 gallon slide-in pumper; an ATV sprayer; three two-way radios; miscellaneous *Nomex* shirts, pants and jumpsuits; three collapsible backpack pumps; two flappers; five fire rakes; three drip torches; and one weather kit. The Commission has secured funding for creating two fire cache trailers to be loaned to private landowners that meet guidelines and training established by the newly developed prescribed fire association. The trailers (one located at the NGPC in Bassett and one at the NRD office in Valentine) would be equipped to enable 10-person crews to conduct prescribed fire.

The TNC does not have a fire cache with equipment available for use by other entities. TNC may consider a loaner program after expansion and upgrade of their equipment cache.

6.7 Funding

In 2005, the Nebraska Game and Parks Commission received a Landowner Incentive Program (LIP) grant from the FWS to focus on management of unique ecosystems along the Niobrara National Scenic River corridor and within the Sandhills. Unique at-risk plant and animal species and wetland ecosystems occur in these areas and need protection against invasive species and management practices that threaten survival. One portion of the grant enabled NGPC to fill a three-year term employee to focus on restoring these ecosystems. The position was filled in the fall of 2006 and works with the Northern Prairies Land Trust. Another portion of the grant provides approximately $245,000 for landowner agreements, which benefit at-risk species by improving habitat in these focus areas. Landowner agreements are required to obtain a 75% federal to 25% non-federal matching funds. Many landowner agreements will encourage eastern red cedar removal through prescribed fire or mechanical treatment, and meadow management strategies that benefit at-risk species. Several projects were planned or implemented in 2007 to conduct prescribed fires and reduce fuel loads.

The Nebraska Game and Parks Commission also administer the WILD Nebraska program that utilizes habitat stamp dollars to improve wildlife habitat on private lands. These funds are limited and can be used in cooperation with Natural Resource District funds. The Commission has cooperative agreements with all NRDs in the focused region. Funds are available for wetland, grassland, and woodland related projects.

The Nebraska Game and Parks Commission is continually applying, or assisting landowners in applying for other grants to benefit private lands habitat. Some of these granting sources include the Nebraska Environmental Trust Fund, Partners for Wildlife Program, Private Stewardship Grants, and State Wildlife Grants.

In 2007, the Nebraska Forest Service received a grant of $200,000 to reduce hazardous fuel loads in the forests of the Middle Niobrara River valley. A previous seed grant of $39,899 was made available to private landowners in the fall of 2006 following the Big Rock Fire and was distributed to local landowners. This grant was also for the purpose of reducing understory ladder fuels (primarily eastern red cedar) and thinning ponderosa pine forests. Another similar grant may become available in 2009.

6.8 Economic/Business Concerns

The Nebraska Forest Service has conducted numerous workshops across the State to demonstrate the utilization of merchantable and small diameter timber for wood products. Demonstrations include a portable band mill for lumber production and a post peeler to produce posts suitable for fencing material or post furniture and rail applications.
A Wood Energy Action Team was formed to investigate, demonstrate, and promote new technology using woody biomass for energy. This team will work to:

- Accelerate timber stand improvement on private woodlands based on increased market demand for firewood.
- Promote fire safety in the home when heating with wood; work with larger institutions statewide (schools, clinics, private businesses, etc.) that could utilize wood heating and cooling.
- Utilize urban tree waste for wood fuels.
- Facilitate the development and expansion of companies engaged in harvesting and conversion of trees to other products.

Recent discussions have occurred in Nebraska concerning the possibility of utilizing various fast-growing tree species (such as poplars) to produce ethanol. It is unknown if cedars would be considered feasible for this process. Other possible uses of forest resources include production of cedar oil and chips for roads and landscaping, and building a power plant fueled by wood products.

7. FIRE TRAINING & EQUIPMENT

7.1 Goal

An important goal is to encourage that all government, for-profit, and nonprofit entities* that support the CNW Fire Management Plan, and who apply prescribed fire within the watershed, meet National Wildfire Coordinating Group (NWCG) PMS 310-1 standards within five years of this plan's endorsement.

Rationale: There are numerous county, state, and federal agencies within the CNW that use prescribed fire as a management tool. Some nonprofit organizations also manage land with prescribed fire. However, uniform training and equipment standards currently do not exist among agencies and organizations conducting prescribed fires.

Adopting uniform standards will enhance the safety and effectiveness of prescribed fire efforts and help to control public liability in the CNW. By using the same training and equipment standards, wildland firefighters and their staff will improve communication lines and realize safety standards intended to create a positive climate for prescribed fire throughout the landscape.

** This would not include local prescribed fire associations composed of ranchers, VFDs, etc.*

7.1-1 Action Step

The FAC will develop fire standards for the CNW using NWCG 310-1 as a framework. (PMS 310-1 is available at http://www.nwcg.gov/pms/docs/310-1new.pdf). These standards include:

- Personal Protective Equipment Standards
- Nomex trousers and shirt or other NWCG approved wildland fire resistant clothing
- Hard hat (designed for high-heat environment)

- Eight (8) inch high leather boots with lug-type soles
- Eye protection (goggles, face shield, or safety glasses)
- Leather gloves
- Fire ignition devices (matches, lighters, fusees)
- Fire shelter

7.1-1a Physical Fitness Standards

Each agency would be responsible for issuing fitness tests to satisfy their agency standards, health screenings, and certification forms. Fitness levels include:

- Moderate level fitness test -- all firefighters required to carry a 25-pound pack for 2 miles in 30 minutes or less (Field test).
- Arduous level fitness test -- all firefighters required to carry a 45-pound pack for 3 miles in 45 minutes or less (Pack Test).

7.1-1b Training Standards

Most agencies/organizations utilize seasonal workers on the fire line. Seasonal workers can participate as firefighters as long as they meet their respective agency's physical fitness standards.

Within five years of plan endorsement, all agencies and organizations should either have a burn boss or be able to share qualified personnel to carry out burns.

7.1-2 Action Step

Facilitate the adoption of NWCG standards among cooperating agencies and organizations.

- Seek funding to assist with the acquisition of equipment, training, and Personal Protective Equipment.
- Set up centralized locations to qualify individuals for physical fitness testing (field and pack tests).
- Offer NWCG training opportunities in cooperation with DNR Fire Coordinator Specialist.

7.2 Goal

One hundred percent of burn bosses will utilize a fire complexity-rating system for prescribed fires.

Rationale: A fire complexity-rating system is used to identify prescribed fire plan elements or characteristics that may pose special problems or concerns and where prescribed fire plan changes may be prudent to mitigate or eliminate these problems or concerns. Fire complexity-rating system considers three factors:

- Risk, the probability or likelihood that an adverse event or situation will occur
- Potential consequence, some measure of the cost or result of an adverse event or situation occurring.
- Technical difficulty, which indicates the skill needed to implement the burn and deal with unexpected or adverse events.

7.2-1 Action Step

Develop a prescribed fire rating system for the CNW, or utilize the prescribed fire complexity guide (PNS-424, NFES 2472).

(See http://www.nwcg.gov/pms/RxFire/complexity_analysis.pdf)

7.2-2 Action Step

Establish guidelines for the use of a fire complexity-rating system.
Example: For low complexity burns, agencies may be able to determine their own qualifications, whereas on burns of moderate or higher complexity, and on which resources of more than one agency are utilized, the NWCG 310-1 standards should be applied.

8. INITIAL ATTACK

8.1 Incident Command System

Federal agencies such as the NPS and FWS use the Incident Command System (ICS) a component of the National Incident Management System (NIMS) when responding to and fighting wildland fires and other emergency incidents. Some VFDs have had specific training in ICS, but few if any of their firefighters have qualified for ICS positions. The FAC encourages VFDs, Sheriff Departments and the local Office of Emergency Management to work together to get a basic ICS course offered in the area, so that emergency personnel can attend and receive training in managing incidents, such as fire. There is a high probability of large-scale wildland fires in the immediate future. Management complications can ensue from one VFD trying to manage the numerous responding departments and agencies. The complexity of a large-scale incident could overwhelm a fire chief.

When over fifty VFDs responded to the Big Rock Fire in 2006, it placed a heavy burden on a few individuals to coordinate operations. A Unified Command structure is an alternative for incident management when many personnel respond and an incident becomes very complex. A typical fire department has a Chief with an Assistant Chief in command positions. Utilizing the Incident Command System would enhance the incident's organizational effectiveness by utilizing various personnel from within the primary agency, as well as personnel from other entities and organizations to fill IC positions such as Incident Commander, Information Officer, Operations Chief, Planning Chief, Logistics Chief, and Finance Chief.

Basic Function/Position responsibilities are as follows:

Incident Command: Leads the entire operation from start to finish and obtains targeted results. Other members of the fire organization accomplish the work, rather than solely the IC. The command is responsible for all on scene activities, staff consensus and decisions, establishment of a command post, policy implementation, and establishing communications with local dispatch or the responsible agency.

Operations: Carries out tactical activities (ground, air, water); commits resources; assigns operational work based on contents of a daily management plan (Incident Action Plan).

Planning: Acquires all information pertinent to the operation (who, what, where, how, why, when); tracks resources and their status; prepares maps, record, photos, weather forecasts and records, etc.; conducts briefings and debriefings; establishes strategy; mobilizes and demobilizes resources and entire operations; provides documentation; completes investigations.

Logistics: Acquires what is necessary to support operations; provides resources, supplies, equipment to carry out the mission; responsible for transportation, medical care, food, sleep facilities, personal hygiene, etc.; provides all incident communications infrastructure (network, interface, messages, etc.).

Finance: Establishes costs for lost and damaged property, resource costs (all items used to suppress the fire), injury/claims compensation, personnel costs tracking (hours worked, days, OT, hazard pay, etc.), fiscal documentation and logs, etc.

Information Officer: Relates incident news to media in a timely matter.

Safety Officer: Provides risk analysis, and daily safety briefings; collects injury and near miss reports.

Liaison(s): Helps to coordinate business between departments and agencies.

Technical Specialists: Specifically addresses special problems.

Appendix L contains an organizational chart of the Incident Command System.

8.2 Fire Reporting

Members of the public generally report wildland fires by calling 911 or dialing the local county sheriff department. County dispatchers will complete a form CNW FAC – F1 (Appendix G) and immediately notify the VFD or agency that is accountable for response. The Dispatcher Card (see section 8.7) will be kept in the dispatch office and will be available to the FAC or responding agency.

8.3 Response


Bucket Drop – Big Rock Fire

After a county dispatch center receives a report of a wildland fire they notify VFD members by pager and/or phones. Each respective VFD reports to the firehouse and then responds to the scene of the fire. County Dispatch notifies the FWS to respond to a particular fire when requested by the primary responders. The FWS will notify the NPS by phone to assist them with a response to a fire. Presently the NPS will act under the direction and authority of the FWS when responding to fires on a National Wildlife Refuge or on mutual aid fires

within or adjacent to the National Scenic River boundary. TNC responds directly to wildland fires and requests assistance from VFDs when needed. See Appendix O for a flowchart illustrating fire reporting and response.

8.4 Equipment Lists

A list of VFD equipment is included in Appendix I. Each VFD was sent a letter (approved by the FAC on 8-18-06) in October 2006 and January 2007 requesting updated equipment lists of trucks and major equipment capabilities. Most VFDs have responded.

8.4-1 The Nature Conservancy (TNC)

1 Type 6 engine (300 gallon)
2 Type 7 engines (200 gallon)
1 Draft Pump
6 Panama drip torches; 5 silver-type drip torches
1 Cat motor grader w/ radio
1 Ford 4WD tractor/Brush Hog mower w/ radio
10 old style shelters
6 new Nomex@ 2-piece PPE; 10 old Nomex@ 1-piece PPE
6 FSA complete backpacks
10 FSA spare bags
5 metal Indian pumps, with upgrades suspension systems
Assorted helmets, goggles, headlamps
12 flappers, 4 council rakes, 6 Pulaskis, 4 chainsaws

8.4-2 NPS

Currently the NPS has the following general equipment:
Hand tools (flappers, Pulaskis, Council rakes, axes, McLeods, shovels, etc.)
Portable hand pumps (backpack)
Drip Torches
Belt Weather Kits
Firefighter Packs and PPE (yellow packs, sleeping bags/pads, water bottles, headlamps, files, flagging, fusees, personal first aid kits, headlamps, leather gloves, Nomex@ shirts and pants.)
Educational materials (training manuals, forms, Fireline Handbooks, etc.)
1988 Chevrolet 1 ton fire truck (6.2 liter - 30 Custom deluxe Diesel) I-147065, with a 1997 "Wildfire Pacific" 250-gallon tank w/18 hp engine Wajax Pacific BB4 pump (110 gpm @ 100 psi) mounted on the truck bed.[4] A complete inventory record is kept of all equipment.

8.4-3 FWS

The FWS has a fully stocked fire cache with the following engines:
E6315 300 gallon model 52
E6316 300 gallon model 52
E6317 300 gallon grass rig
E125 300 gallon grass rig
E126 300 gallon grass rig

[4] This truck will be surplused in 2009

E127 300 gallon grass rig
WT13 1250 gallon tender

8.5 Fire Chiefs and Department Addresses (See Appendix J)

8.6 Emergency Contact Information (See Appendix K)

8.7 Coordination with County Dispatches

The NPS gave county dispatch centers a Dispatcher Card in February 2007 to assist them with recording information from reporting parties for wildland fire. Though its use is voluntary, the card improves information collection and assists VFDs in gathering accurate information on the type of fire, location, rate of spread, etc.

8.8 Annual Operating Plan (AOP)

With an approved FMP and a formal written agreement among the members of the Fire Advisory Council, an Annual Operating Plan will be prepared (2010) outlining the specific tasks that the various partners will seek to accomplish on an annual basis. Job positions, names, phone numbers call lists, radio frequencies, and equipment lists will be included in the AOP. The AOP will remain in effect for the duration of the FMP.

8.9 MOU/General Agreements

The state of Nebraska and federal land management agencies (including U.S. Fish and Wildlife service, National Park Service, and U.S. Forest Service) entered into a general wildland fire agreement in 2007. This agreement states in part that all parties may assist each other for fire suppression operations within the state of Nebraska. The NPS and FWS will develop an Annual Operating Plan (AOP) to provide direction to all involved partners. Mutual Aid Agreements exist among the U.S. Fish and Wildlife Service and local rural fire departments that allow each party to assist in wildland fire suppression when needed.

8.10 Plan When Fire Exceeds Local Capabilities

When a fire exceeds the capabilities of the local fire district, the fire district will call for mutual aid. If mutual aid resources are not sufficient to control the fire, then the Region 24 Emergency Management Director can declare an emergency and contact the Nebraska Emergency Management Agency (NEMA). If the resources of the State are insufficient to control the fire, then NEMA can begin to call for other state and federal resources through the Great Plains Interagency Dispatch Center in Rapid City, South Dakota. This Dispatch Center, in turn, is linked to the National Interagency Coordination Center in Boise, Idaho. The FWS will operate under their own policies within their own fire management plan. The NPS owns no lands at this time, but in the future, if lands are owned and managed by the NPS, it would request assistance from local resources first, and then contact the Interagency Dispatch Center for additional suppression resources.

8.11 Emergency Preparedness & Evacuation

The Region 24 Emergency Management director has the responsibility to determine emergency preparedness and evacuation procedures for their respective counties and communities. Cherry County has a detailed Local Emergency Operations Plan that addresses evacuation procedures. The FAC suggested that the river valley be divided into various districts with contact persons, organizations and calling trees. Each agency/organization is responsible for evacuation plans for their lands.

8.12 Training

Training will be agency-specific for initial attack. The FWS/NPS will offer S-130 Basic Firefighter and S-190 Introduction to Fire Weather on an as-needed basis as well as make higher level courses available when feasible (Burn Boss, Engine Boss, etc.)

*__NOTE:__ Congress mandates that the National Park Service protect the outstandingly remarkable values of the Niobrara National Scenic River. Although the NPS cooperatively manages these resources, only four percent of landowners along the river felt the NPS should have primary responsibility for management of natural resources. Protecting local ownership of the land and maintaining its rural character were the highest objectives to these landowners (2001 Niobrara Council Landowner Survey). One of these values includes its scenic attributes, which are composed of an astonishing array of forest types and grasslands. A second value includes the great diversity of wildlife species. Managing these diverse resources is an especially challenging task because the **NPS does not own or directly control any land** at this time. Presently the NPS is unable to conduct or assist with prescribed fires on private lands (the NPS may assist TNC on prescribed fires). Efforts are underway to allow federal agencies (especially a non-land owning agency) to help manage land within and/or adjacent to its boundaries in more creative ways, thus the necessity for the NPS to help manage a broader landscape by collaborating with various agencies and organizations in an attempt to affect positive ecological changes over a much greater area.*

9. FIRE MANAGEMENT COORDINATION

9.1 NPS Role

The NPS's role in current fire management activities is largely a supportive one. The NPS assists in the suppression of wildland fires within and immediately adjacent to its boundaries as a member of the KBR&C Mutual Aid Association and through other agreements. The NPS will respond to wildfires under the direct guidance and supervision of the U.S .Fish and Wildlife Service until/if the NPS has its own fire management organization. When feasible the NPS will also assist with prescribed fires at Fort Niobrara NWR, The Nature Conservancy and PLO fires conducted through the Niobrara Prescribed Fire Association. For the purposes of this plan there is only one **Fire Management Unit** and only one response – **suppression**. Other agencies, entities and private landowners have the primary responsibility of direct fire management during wildland fires and prescribed fires. In extended attack situations, the NPS could fill an overhead role that is appropriate to incident management and provide firefighters and/or equipment to the extent training and qualifications allow.

At higher staffing classes, the NPS will work closely with the FWS and assist them when feasible in providing personnel.

9.2 Education/Interpretation

Rural fire departments, the NPS and other federal agencies such as the U.S. Forest Service have had a long tradition of fire suppression. Historically the general goal of fire management was to control and extinguish wildland fires as quickly as possible, usually within the first twenty-four hours. The images of Smokey Bear and Bambi conjure up thoughts of the destructive power of wildland fire upon our nation's forests and the death of countless wildlife. Our culture has largely accepted these engrained impressions. The point is that we may not want to change the local public's image of "wildland fires". Wildland fires destroy millions of acres of forest annually, burn homes and vehicles, and adversely affect water quality. Worst of all is the annual loss of firefighter and civilian lives. However, we want to educate people about the potential benefits of utilizing prescribed fire and managing our forest resources through reducing hazardous fuels and establishing firebreaks.

Part of this process is educating the public about the role that fire plays in the maintenance of various ecosystems. Excluding all fires will result in unwanted wildland fires becoming more frequent and dangerous than if fire management is used. Fire suppression has been successful, and resulted in detrimental changes to the ecosystem and hazardous fuels buildup.

Native Americans used fire as a tool to manage landscapes for hunting, personal protection, and survival. Farmers and ranchers have traditionally used fire to burn ditches, debris piles, and pastures though many landowners have little understanding of the role that fire plays in an ecosystems, maintaining healthy grasslands and forests. With the frequent barrage of media images during busy summer fire seasons, the public has developed a fear of fire as a destructive force, yet ironically, this same public seems to take little action in locating homes in areas away from fire prone areas or providing a defensible space around their homes.

There are various publications available to the public that inform landowners of risks and teach methods to protect private property. Though we have had some success in educating the public about fire across the country, much work remains. Education alone may not be enough.

Fire Learning Network workshop - Hazel Creek post burn inspection

Because of a longstanding tradition of good stewardship, area ranchers take great pride in the care and preservation of the landscape and the sustainability of the Sandhills ecosystem. Productive grasslands, sufficient water and healthy forests are all common goals that landowners want to preserve, protect, and improve. The CNW Fire Advisory Council's role on the Niobrara is to cooperate and assist other local agencies and organizations, and to inform the public of the advantages and inherent dangers of fire. This opens the door to discussions on how the public can use prescribed fire as one of several tools to improve livestock production, ensure better grasslands, and begin the prolonged task of managing forests to reduce the possible effects of catastrophic wildland fire.

Educating younger generations about fire's natural role and effects is an important first step. With a myriad of new educational standards and requirements to meet, local schools have little

time to learn about fire. The FAC, NPS, Niobrara Council, and other partners can provide additional information and insight to ecosystem management lessons. Many of the associated issues fit into science curriculum, including the water cycle, energy relationships in biotic communities, pollution, and animals and their habitats. Fire plays a crucial role in all of these basic concepts and many more.

As an example the third grade curriculum includes science topics such as, *Living in a Forest*, *Living in a Desert*, and *Forces that Change the Land*. Fourth graders read the chapter *Using Our National Parks* and fifth graders learn about nature in *How do Ecosystems Change Naturally*? The creative interpreter will weave fire into these required curricula. This will begin to educate the next generation of landowners so that fire becomes a familiar topic -- a natural process and a manageable tool that they can use to benefit economies, as well as ecosystems. Teachers could integrate upper class science students into pre- and post-burn field studies to see the differences in grasslands and forests with and without fire management.

A second undertaking is to work with the current generation of landowners. The vast majority are ranchers. Unlike Kansas where the skies are said to turn black each spring, using fire as a tool in north-central Nebraska is in its infancy. The combined efforts of organizations, such as the Natural Resources Conservation Service, Nebraska Game and Parks Commission, Nebraska Forest Service, and The Nature Conservancy's Fire Learning Network, results in slow but steady progress to educate landowners about the role and benefits of fire in dependent ecosystems. Cost-share programs provide resources and expertise to help landowners reduce forest density, protect property from fire, improve grasslands, and eliminate or reduce the invasion of woody vegetation into pastures. Hazardous fuel reduction efforts, best management practices (which might include deferred grazing) and prescribed fire are methods being used to attain management goals.

Local residents have long looked at fire as a thing to be feared and immediately extinguished. VFDs aggressively attack prairie fires, and rightly so. People most often focus on the dangers and destructive nature of fire because it burns valuable grazing lands and can destroy property and livestock, rather than examine the beneficial aspects of fire. In the early stages of local burning efforts, mistakes made in the application of fire to the landscape can cause great damage and set a program back months or perhaps years. It is critical that agencies and contractors as well as private landowners take the highest of precautions when conducting prescribed fires. Certainly private landowners need to be told up front that fire is dangerous and sometimes unpredictable. Usually human error or unanticipated changes in weather cause fire escapes. Although topography and fuel conditions are predictable, weather is not and sometimes the best-laid plans may go awry without adequate site preparation and contingency plans.

Getting local residents to accept prescribed fire as a practical tool and gaining the trust of fire management authorities are two critical aims of this FMP. Illustrating that direct fire management can protect valuable resources and property and may increase profits is an important aspect as well.

A third issue is to convince local authorities of the importance of protecting personal property and lives. In theory, this should not be a hard sell, but if it involves implementing new regulatory measures, it can become difficult to sell. Current and new landowners need to become aware of how best to situate homes, but also of how to protect structures before disaster strikes. The Big Rock Fire in Valentine in July of 2006 and the Chadron Area Fires in August were wake-up calls for Nebraskans, illustrating that if we do not start acting soon, destructive fires will continue to occur. What is surprising is how many landowners have not made efforts to protect their property, have only made cursory efforts, or have even rebuilt on the same locations that have the same topographical risks. The Fire Advisory Council is working with county zoning authorities and county commissions to notify new landowners of fire risks when choosing a building site. It is a first step in a lengthy process of awareness, education, and perhaps future regulatory oversight.

Fourth, insurance providers are beginning to see the results of poor building site choices made by property owners. Through the destructive forces of hurricanes, floods, landslides, and fire, insurance agencies are beginning to increase rates for high-risk policies or are even refusing to insure properties. Until insurance companies tighten standards regarding the placement of homes and modification of traditional building/construction standards, homeowners will continue to place themselves and their property at unnecessary risk.

The FAC will work with its partners in advising the public about planned burns and fuel reduction projects. Good public relations and notifying the local populace about the fire-related activities is an important step in helping local communities and landowners to understand fire. The FAC will seek to notify visitors of fire danger levels through signage and through public media (newspapers, television and radio stations). VFDs have the authority to implement burning restrictions and fire bans and they work closely with county commissioners and law enforcement agencies when making these decisions. The vast majority of wildland fires and prescribed fires within the CNW boundary take place with inadequate communication among agencies and organizations. Efforts to meet with fire agencies and VFDs to improve communication and to record fires for statistical purposes are underway. Neighbors need to be notified, the media contacted, and signs placed to inform the public about planned prescribed fires or hazardous fuel reduction projects. These efforts will help enhance public education and safety, and decrease the likelihood that visitors might report or attempt to put out a prescribed fire.

During extended attack operations within the scenic river boundary, the Chief of Interpretation or their designee will function as a liaison between a local media contact person and/or a Public Information Officer in order to provide for effective communication between park personnel, the public and the media. During the case of a large-scale wildland fire, the Park may request a Public (Fire) Information Officer (PIO) from outside the Park. In the NPS Long Range Interpretive Plan “Fire History” is listed as a research need (pg. 76) and fire should certainly be considered as a subject matter in the development of wayside exhibits, site bulletins, educational outreach and interpretive programs. The NPS should incorporate elements of the fire management program into the overall Interpretive Program and explained where possible and appropriate.

Barriers to effective education and interpretation include mobility of visitors and the numerous entry/exit points to the CNW; a lack of public facilities, such as ranger stations, picnic areas, public campgrounds, etc., the absence of a central visitor center for the river/Sandhills environs; seasonal visitation fluctuations; and a lack of wayside exhibits.
The FAC will meet post-season and will gather statistical data from area dispatchers, agencies, and organizations. The FAC will also complete an informal assessment of public perception of the FACs fire management efforts. The FAC will accomplish this through coordination with neighbors, local groups, and other agencies/entities. This coordination should include consultation on any pertinent issues with the State fire office and VFDs. In some instances, NPS park staff may take the lead on issues with adjacent landowners, State air quality and VFDs. The purpose of soliciting feedback is to revise plans, procedures, and educational efforts regarding fire management within the planning area. The FAC will issue a joint press release summarizing the year's accomplishments of its partners.

The Fire Program Coordinator will cooperate with the Regional Fire Education, Prevention and Information Specialist on the following programs:

- Development of site bulletins or brochures on the basic objectives for using prescribed fire for hazardous fuel reduction and ecological benefits.
- The FAC will maintain a file of public comments received concerning prescribed fires and use them to improve procedures, public relations, and communication efforts targeted at increasing support for the fire management program.

The FAC is committed to keeping the public informed of its fire management program and activities. Staff will develop informational and educational media to reach as many segments of the public as possible. This may include park neighbors, local and state government representatives, special interest groups, schools, public organizations, and other groups. Within agencies (NPS, FWS, NFS) materials and programs exist currently that will help deliver information concerning the role that fire plays in preserving and protecting the cultural and natural resources of the fire management area. Regionally appropriate and specific information will be developed and disseminated.

The Volunteer Fire Departments will take the lead in an active fire prevention program and should coordinate with other agencies to protect human life and property, and prevent damage to cultural resources or physical facilities. Fire prevention activities will be based upon fire history, including ignition sources, and current conditions.

An integral part of the fire prevention program is that all employees, cooperators, contractors and permit holders be mindful of their own activities that could lead to unwanted ignitions. Setting a good example will aid the FACs credibility with its neighbors. Public contact staff will look for opportunities to integrate fire prevention and safety messages into informal and formal visitor contacts.

If NPS staffing levels increase, the Interpretive Division may implement a program of public education regarding potential fire danger. They would do this through visitor contacts, bulletin

board materials, handouts, and interpretive programs in order to increase visitor and neighbor awareness of fire hazards.

It is essential that the FAC inform agency employees, partners and cooperators about fire prevention and the objectives of the fire management program as well as changes in existing conditions throughout the fire season.

Prior to, during, and after a prescribed fire, cooperators need to communicate to the public the beneficial effects of prescribed fires and the dangers of unplanned wildland fires. Information must be included that emphasizes the potential severity and prevention of human-caused wildland fires.

During periods of extreme or prolonged fire danger, FAC agencies should provide fire prevention messages to the visiting public and park neighbors. These messages may be informal contacts by various agency/organization staff, press releases to area media outlets and on agency/organization websites, or by such means as the staff determines necessary and appropriate, including future interpretive programs. Emergency restrictions regarding fires or area closures may become necessary. Such restrictions, when imposed, would be consistent with those implemented by fire chiefs and cooperators.

When a cooperator is conducting a prescribed burn within the river corridor, a notice at the Valentine Ranger Station, Fort Niobrara NWR Visitor Center, NRCS office, NGPC office in Bassett, the Smith Falls State Park office, and the Niobrara Council should be posted to supplement visitor contacts. Agencies would use these notices to direct, inform, guide, and caution visitors about existing fire conditions and prescribed fire activities. When feasible, partners will also post information on websites and share information with interested parties by email or effective means.

Note: *Step-up plan for Public Information Activities (Specific to the Niobrara NSR Only)*

Prior to the beginning of each spring fire season the Park Superintendent, Chief Ranger, Chief of Interpretation, Regional Fire Education and Prevention Specialist, and Regional Prescribed Fire Specialist should discuss any known prescribed fires planned by partners or plans to burn on NPS administered areas for the upcoming year. The Chief Ranger will evaluate the potential of the upcoming fire season and a public notification plan will be prepared based upon that analysis. It is essential that agencies carefully articulate information pertaining to fire danger, public advisories, closures, prescribed fire activity, and suppression operations to the public. They should consider a variety of methods in this planning process, including the use of local television, radio and newspaper resources, as well other informational contacts such as the use of posters, flyers, Internet sites and letters to neighbors.

The managing agency or entity needs to apprise the public of the basic facts regarding wildland fire activity, including the location and status of a fire and any special restrictions that may be enacted. When someone discovers a wildland fire in the area, the generally report it to an area Dispatch Center via 911. The local VFD Chief (who may work closely with county commissioners and sheriff departments) handles public information activities for at least the first 24 hrs. If officials expect the fire to exceed the initial attack period (24 hrs), it is likely that other entities and agencies (such as the Nebraska Emergency Management Agency or other federal agencies) could assist, and the Incident Command System implemented. Managers should consider a request to order a qualified Fire Information Officer (PIO) if the fire is located within the NPS boundary. Park staff should fill these positions if possible, to help ensure familiarity with the resources involved in the incident. Should the incident transition to a Type I incident, a PIO will generally accompany the Incident Management Team to the fire; this can also apply to some Type II incidents. Notifications will always be supportive of public concerns. PIOs should emphasize that trained professionals are leading the incident and that action taken will manage the situation according to established guidelines.

As is the case with most incidents, news media often arrive on the scene unannounced. Fire managers need to manage the media, not prohibit it. The Fire Chief or Incident Commander would be responsible for ensuring that media activities do not jeopardize the safety of the media crew, public, or fire management personnel, and that they do not hamper effectiveness of wildland fire operations. Managers should not allow media personnel on fire lines without required personal protective equipment, including fire shelters and a current "red-card" certifying their qualifications for being on the line. When possible, a CNW representative shall accompany media personnel on larger, longer duration fires within the park's boundary.

All partners are responsible to communicate their organizations' policies about the use of fire in the various ecosystems to the public. The primary goal of information management is to provide fire information to the public. Another essential goal is to provide accurate and updated information to elected officials, cooperating agencies, media, and local communities.

Activities planned to meet these goals include the following:

1) Undertake an information and education program to ensure that citizens, key contacts, and employees understand the status of the fires within the planning area and the purpose of the specific action(s). This will include providing updated information to visitor contact personnel along the river at cooperating agencies.
2) Prepare and send a fire information update to all employees, cooperating agencies, media, legislative outlets, local communities, adjacent landowners, and other interested parties on a regular basis. Such updates should include the past 24-hour status, anticipated planned actions, and other pertinent information regarding such things as smoke management, structure protection, or closures.
3) Prepare news releases as needed on specific events related to the management of the fire(s).
4) Arrange and coordinate special visits or tours with Congressional offices, feature writers or photographers, local community officials, outfitters and guides, or other appropriate officials.
5) Meet the interests and needs of private citizens, contractors, and outfitters in conjunction with resource advisors.
6) Coordinate with partner agency Public Affairs Officers or suppression team information officers via conference calls or meetings.
7) Include information pertaining to closures or fires when visitors inquire regarding boating, hunting or other affected activities.
8) Assist when possible in the staffing of an information office during large extended-attack fires to provide current information.
9) Provide updated information to office personnel across the fire management boundary and at adjoining and cooperating agencies. Educational specialist or PIOs should incorporate ecological concepts into information handouts, selected books written about the area, web pages, and wayside and visitor center exhibits. Information handouts explaining the fire management program will be prepared and periodically updated. During periods when prescribed fires are burning, various field personnel will distribute these handouts to visitors at information boxes or visitor centers, during informal contacts along the river valley.
10) Interpreters should feature the fire management program into future interpretative talks, walks, automated programs, and other written materials, web pages, and wayside and visitor center exhibits, giving particular attention to these activities when fires are conspicuous from visitor centers and/or local communities.
11) NPS staff and involved partners will prepare and release joint news articles during ongoing fires within the scenic river boundary to local newspapers, radio, and television stations, and post information on web sites.

12) The NPS will write articles about the CNW FAC fire management program for publication in statewide or regional periodicals.
13) The FAC will provide public information outlets of neighboring land management agencies with fire management information, particularly when ongoing fires are burning within the area.
14) Fire organizations should inform employees of the fire management program and the status of ongoing fires. This will enable employees to communicate effectively with the public.
15) Fire personnel should discuss the fire management program during informal contacts with other agencies, organizations, contractors, commercial users, Special Use Permit holders, neighbors, and area-wide visitors.
16) When possible, the NPS will place signs notifying the public about ongoing prescribed fires, wildland fires, area closures, dense smoke, or other special situations along roadways, visitor centers, launch ramps, trailheads, campsites, and day use sites.

Neighbors are those private parties having property within or immediately adjacent to the boundaries of the fire management area. Fire management activities can directly affect these parties in both beneficial and adverse ways. Keeping neighbors informed of fire management activities is a key component of mitigating adverse impacts of those activities. In order to accomplish this:

- Each agency, entity or landowner conducting a prescribed fire should notify landowners having property adjacent to prescribed fire units of the planning process and contact them directly, by telephone or e-mail, not more than 48 hours before ignition.

- Each spring before prescribed burning begins the FAC with assistance from its partners will prepare and send out a press release describing the locations, objectives, and planned treatment windows of prescribed fire projects planned for initiation in the following spring, summer, and fall. The fire manager will notify at least one local newspaper covering each of the counties affected by smoke from any of the prescribed fires. The notice will include contact names and numbers.

- Using the NPS web site to provide information or links to information about fire ecology and about prescribed fire activities in the river valley is an excellent tool. Staff will direct inquiries about fire operations within the National Scenic River to this web site.

- Public outreach will be used to inform people of ways to protect themselves from the impacts of smoke from prescribed and wildland fires. Examples of possible methods of public outreach are disseminating brochures about fire and smoke, posting notices at local businesses and boat ramps, and placing signs in and around burned areas.

9.3 Sandhills Cattle Association

The FAC met with the Sandhills Cattle Association and will address the issues of prescribed burning and the loss of grasslands to woody shrubs in future meetings. They currently distribute the Fire Advisory Council brochure on prescribed fires to area ranchers and produce a newsletter.

9.4 UNL Extension

The University of Nebraska-Lincoln (UNL) Extension in Cherry County supports the creation and implementation of the CNW Fire Management Plan. People understand the importance of wildland fire suppression, but as a landscape management tool the public is less accepting of prescribed fire. This plan will facilitate a balanced approach to fire in the Niobrara River ecosystem. UNL Extension will assist in disseminating information about the FMP. UNL Extension will also be involved in educational workshops on fuel reduction to reduce wildland fire severity and the use of prescribed fire as a land management tool.

9.5 Sandhills Task Force

The Sandhills Task Force is a coalition of ranchers and conservationists formed in 1991 to address issues and problems facing a 20 county region. Its vision is to promote economic diversity and prosperity for individuals and communities in the Nebraska Sandhills. The careful management of native grasslands and wetlands will help enhance and support diverse wildlife communities.

The Sandhills Task Force works with landowners to design projects suited for their range operations by building partnerships with private and public organizations. It can assist in financial assistance, technical assistance, matching researchers or funding to projects, and by providing support to educational programs. Restoring and maintaining grasslands and forests in their natural state benefits wildlife as well as cattle and bison.

The Sandhills Task Force works exclusively to promote conservation on private lands within the Nebraska Sandhills. The majority of their sixteen-member board are ranchers, who support the voluntary application of fire as a management tool for landowners. Use of fire to maintain and improve production while supporting diversity of native species has long been one of the board's goals. Reflected in this FMP are the Sandhills Task Force's diverse landowner goals, objectives, and management styles. Prescribed fire planning and implementation can make a significant contribution to preservation of existing native plant and animal species while controlling encroachment of various non-natives. Prescribed fire also helps to ensure the safety of residents, visitors, and firefighters in the watershed by minimizing the chances of uncontrollable wildland fire. The Sandhills Task Force supports the concepts of community supported fire policies that respect stakeholders' views. Empowering local VFDs, harnessing their commitment to community, coupling their energy with the agencies that operate with external funding, and molding these factions into a cohesive FMP coalition will leave our resource base stronger as well as help individual agencies meet their resource goals.

9.6 Fire Advisory Council Partners

The NPS, FWS, NFS, NGPC, NRCS, TNC and four VFDs are all core members of the Fire Advisory Council. Agencies and entities of the FAC have signed a General Agreement (Appendix N) to assist in the administration of CNW fire management. Additionally, a representative of the timber industry and private landowners are involved in the FAC. The Fire Advisory Council will meet on at least an annual basis to coordinate fire management activities within the project area. Each agency/entity will manage their own fire-related goals and objectives through individual management plans. Items of business for FAC will include:

- Enhancing training opportunities (NWCG training, monitoring, evaluation, etc.)
- Promoting prescribed fire schools
- Gathering data (acres burned by prescription and unwanted wildland fire and number of acres of hazardous fuel mitigation)
- Creating maps with fire locations (GIS layers, etc.)
- Setting annual goals for acres burned/treated
- Reviewing FMP annually
- Providing input into burn plans
- Offering public education and information on the wise use of fire
- Working with other agencies and entities to find funding sources for hazardous fuel reduction, prescribed fire, acquisition of fire equipment, and other matters relating to fire management

9.7 Funding

There is no specific funding other than agency base funds and project funds from grants to specific agencies and entities for the FAC. The FAC will work through interagency or agency programs to accomplish the goals/tasks of the FMP.

9.8 Shared Equipment

The Nebraska Forest Service (NFS) in cooperation with the U.S. Forest Service has access to Federal Excess Personal Property (FEPP). The NFS can assign FEPP, predominantly all wheel drive vehicles, to local fire districts for use in fire suppression. The Springview VFD houses a hose trailer (funded through the NPS and the RFA program) that is available for use by any local department to suppress fires when forests are involved. Fort Niobrara NWR maintains an inventory of Class A foam to battle large blazes for multiple days before they need to resupply.

9.9 Upcoming Prescribed Fires/Burn Evaluations/Lessons Learned

The FAC will review any data cards (CNW FAC – F2) received on a bi-annual basis (late spring/early summer, late fall/winter) and calculate statistics and note problems. The FAC will provide a copy of these statistics to all partners and VFDs.

9.10 Liability

Each landowner conducting prescribed fires or hazardous fuel reduction projects on their own property is responsible for their own insurance and liability coverage. Agencies will conduct

prescribed fires under their own agency guidelines and policies. Private contractors should be required to carry liability insurance by the employing private landowner wishing to conduct a burn. Prescribed Fire Associations will need to work out individual details in regard to insurance and liability before conducting prescribed fires.

9.11 Maintenance

Each agency, entity, organization or individual will be responsible to maintain group equipment according to agreed upon standards.

9.12 Fire Monitoring

Except for agency specific monitoring and requirements, the NRCS, NFS or NGPC will design monitoring plans for private landowner prescribed fires in accordance with project goals and objectives.

10. PRESCRIBED FIRE ON PRIVATE LAND

10.1 Goals

The CNW project area encompasses all of the Niobrara National Scenic River corridor (23,074 acres) and adjacent lands in public and private ownership, totaling 793,762 acres. Lands in private ownership make up approximately 97% of the project area with cattle ranching functioning as the principle industry. Grazing management is the primary land management tool to steward rangelands and riparian areas.

Historically, fire was prevalent on the landscape and responsible for shaping and developing Nebraska's unique grassland and riparian woodland resources. Due to the lack of fire as a management tool, species such as eastern red cedar have invaded rangelands and the Niobrara corridor causing a loss in grassland production and ecological diversity across the landscape.

As previously mentioned, a primary goal of this FMP is to promote and utilize prescribed fire through a collaborative partnership effort to preserve, restore, and enhance the unique biological and ecological diversity of upland and riparian habitat to sustain long-term, viable populations of unique flora and fauna in the region. Other objectives include firefighter and public safety; suppress all unwanted wildland fires to protect human life, private property, and natural, historical, and cultural resources; identify, assess, and reduce/mitigate hazardous fuels; improve communications with the public; and provide training and education concerning prescribed fire.

Fire and fuels management goals for the ensuing five years may be very ambitious given that prescribed fire is not currently a common land use practice. Some goals are to:

- Utilize an appropriate management response to suppress about 200 wildland fires totaling approximately 25,000 acres.
- Conduct 150-200 prescribed fires in ponderosa pine, prairie, eastern deciduous forest, and wetland communities with total burned acreage of about 150,000-300,000 acres.
- Carryout mechanical hazardous fuel reduction projects totaling about 6,000-8,000 acres during a typical five-year period.
- Burn debris piles to dispose of biomass from hazardous fuel reduction projects.

10.2 Training Opportunities for Private Landowners

The Niobrara Prescribed Fire Association carried out "training" burns in the spring of 2009 near Hwy 7 and north of Johnstown.

10.3 Local Prescribed Fire Caches

See section 6.6

11. AGREEMENTS, RULES & REGULATIONS

11.1 Annual Review

The FMP will be reviewed on an annual basis and if needed updated at a minimum every three years. The FAC will collect fire report cards (Form CNW FAC – F2) on an annual basis in the early winter (November/December) and prepare a report that tracks the number and kinds of wild fires, acreages, prescribed fires, etc. (Appendix G). The report findings will be sent to VFDs, partner agencies, and the local press (as a news release), and will be used to set goals for the coming year, strengthen funding requests, and aid in future planning.

11.2 Legislation Allowing NPS and FWS to Burn on Private Lands

The Wild and Scenic Rivers Act gives broad authority to the managing agency (i.e., NPS) to work cooperatively with private landowners, as well as states and private organizations to protect and manage river resources in section 11 (b) (1). One of the greatest threats to the National Scenic River corridor is the invasion of grasslands by woody shrubs and eastern red cedar trees and the increase in tree and understory (mostly cedar) densities in forests because of fire suppression. Annual appropriations language may give the NPS some authority to address hazardous fuel reduction (HFR) needs.[5]

SECTION 11.(b)(1) *The Secretary of the Interior, the Secretary of Agriculture, or the head of any other Federal agency, shall assist, advise, and cooperate with States or their political subdivisions, landowners, private organizations, or individuals to plan, protect, and manage river resources. Such assistance, advice and*

[5] On 4-27-2009 the NPS signed a letter establishing a formal relationship with the **Niobrara Prescribed Fire Association** to assist them with prescribed burns.

cooperation may be through written agreements or otherwise. This authority applies within or outside a federally administered area and applies to rivers, which are components of the national wild and scenic rivers system, and to other rivers. Any agreement under this subsection may include provisions for limited financial or other assistance to encourage participation in the acquisition, protection, and management of river resources.

11.3 Other Important laws and Policies

Nebraska law prohibits open burning without a permit.

Chapter 81, Article 5 –Open Burning

81-520.01 State Fire Marshal; open burning ban; waive; permit. *(1) There shall be a statewide open burning ban on all bonfires, outdoor rubbish fires and fire for the purpose of clearing land. (2) The fire chief of a local fire department or his or her designee may waive an open burning ban under subsection (1) of this section for an area under his or her jurisdiction by issuing an open burning permit to a person requesting permission to conduct open burning. The permit issued by the fire chief or his or her designee to the person desiring to conduct an open burning shall be in writing, signed by the fire chief or his or her designee, and on a form prescribed by the State Fire Marshall. The State Fire Marshall shall provide local fire departments with such forms. (3) The fire chief of a local fire department or his or her designee may waive the open burning ban in his or her jurisdiction when conditions are acceptable to the chief or his or her designee. Anyone burning in such jurisdiction when the open burning ban has been waived shall notify the fire department of his or her intention to burn.*

81-520.03: Range-management burning, defined.
For purposes of sections 81-520.04 and 81-520.05, range-management burning shall mean the controlled application of fire to existing vegetative matter on land utilized for grazing.

81-520.04: Range-management burning; permit; issuance; when.
The fire chief of a local fire department or his or her designee may waive an open burning ban under subsection (1) of section 81-520.01 by issuing a permit for range-management burning only if the range-management burning is to be conducted in accordance with 81-520.05.

81-520.05 Range-management burning; application for permit; plan; contents; fire chief; duties.
(1) A landowner, tenant, or other landowner's agent of the land where range-management burning is proposed shall file an application for a permit and a plan for conducting such burning. The plan shall include:
(a) The name of the landowner of the land on which the range-management burning is to occur;
(b) The name of the person who will supervise the range-management burning if such person is different from the landowner;
(c) The land-management objective to be accomplished;
(d) A map showing the areas to be burned including natural and manmade firebreaks;
(e) Procedures to be used to confine the fire in boundary areas without preexisting firebreaks;
(f) A list of equipment that will be on and;
(g) The types and conditions of the vegetative matter to be burned on the land and in adjacent areas;
(h) Identification of roads and habitations that may be affected by smoke;
(i) A description of weather conditions believed to be required to safely and successfully conduct the range-management burning, including wind speed, temperature, and relative humidity; and
(j) Such other information as may be prescribed by the fire chief of a local fire department.
(2) The fire chief of a local fire department or his or her designee shall evaluate each plan to determine its compliance with subsection (1) of this section. If a plan fails to comply with all provisions of such subsection, a permit for range-management burning shall not be issued.
(3) the fire chief of a local fire department or his or her designee shall issue a permit for range-management burning if (a) the plan complies with subsection 91) of this section and (b) the fire chief or his or her designee deter mines that range-management burning conducted in accordance with the plan would be conducted with due regard for the safety of people and property outside the burning area. No permit shall be valid for more than thirty days.

11.4 Niobrara Council

The Niobrara Council must approve requests for open burning permits within the National Scenic River corridor to ensure that they are,

*". . .consistent with and as described by the laws of the State of Nebraska, and in consideration of the purposes of the Niobrara National Scenic River designation, including the scenic river's free-flowing condition and scenic, geological, biological, agricultural, historic and prehistoric resources." **

Although not a member of the Fire Advisory Council, a Niobrara Council representative attends meetings and provides input acting as a liaison with the FAC.

** Source: state law language for Niobrara Council's authority*

11.5 Wyden Amendment

If managers are applying prescribed fire to federal land the Wyden Amendment allows an agency to burn on private lands within or adjacent its boundaries. This amendment allows prescribed fire practices that only recently began widespread use in our country. The FWS has the ability to conduct prescribed fires on private lands bordering the Fort Niobrara NWR. Summary excerpted from RM 18 Chapter 10

Fuels Treatment on private Lands: is authorized under the authority of the Wyden amendment which is codified in Title 16, Chapter 18, Section 1011(a) of the Code of Federal Regulations (CFR); or the authority within the Interior Appropriations Act. The Wyden Amendment allows the Service to enter into agreements with the, "heads of other federal agencies, tribes, State and local governments, private and nonprofit entities and landowners for the protection, restoration and enhancement of fish and wildlife habitat and other resources on public or private land and the reduction of risk from natural disaster where public safety is threatened that benefit these resources on public lands within the watershed."

All fuel treatments must also comply with NPS Fire Management policies. To comply with the CFR there must be a signed agreement with the landowner that:

- Includes such terms and conditions mutually agreed to by the Service and the landowner;
- Stipulates improved viability of and otherwise benefit the fish, wildlife, and other biotic resources on public land within the watershed;
- Authorizes the provision of technical assistance by the Service in the planning of the management activities that will further the purposes of the agreement;
- Provides for the sharing of costs of implementing the agreement among the Service, the landowner, and other entities, as mutually agreed on by the affected interests;
- Ensures that any expenditure by the Service pursuant to the agreement is determined by the Service to be in the public interest; and
- Includes such other terms and conditions as are necessary to protect the public investment on private lands, provided the Secretary and the landowner mutually agree to such terms and conditions.

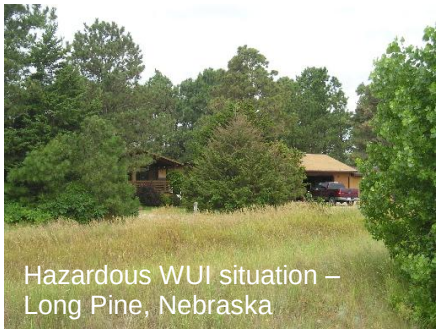
At this time, the only prescribed burning occurring on private lands (Wyden Amendment) is through the private lands group of the FWS.

The Nebraska Game and Parks Commission developed a white paper in the spring of 2005 outlining a concept for using federal fire resources, specifically trained fire personnel, to assist with prescribed fire on private lands in Nebraska. Prescribed fire is an effective and ecologically beneficial tool for managing native grassland and woodlands. Benefits may include increased floral and faunal diversity, control of invasive plant species, and increased vigor of native plants to mention a few.

The white paper pointed out that even though there is interest among landowners, and public and private land managers to conduct prescribed fires, there are several roadblocks to achieving a desired level of use of fire as a tool. Among the principal barriers to prescribed fire on private lands are the lack of technical expertise or equipment to effectively conduct prescribed fires, and the availability and cost of risk management instruments. Local VFDs have assisted with conducting prescribed fires, but their abilities are limited because firefighters are volunteers and have other full time employment and may be unavailable during opportune burning conditions.

The intent of the white paper was to seek means of using federal fire crews (i.e. FWS, USFS, USBOR, NPS) to assist and train private landowners in Nebraska in conducting prescribed fires. Federal fire crews generally have the knowledge, training, equipment, personnel, and technical expertise to conduct prescribed fires. The USFS, through the Wyden Amendment, has the authority to perform management practices like prescribed fire on private lands adjacent to federal lands. The objective of the white paper was to broaden the intent of the Wyden Amendment to enable other federal agencies to work on private lands. Further exploration is still needed to enable assistance by federal fire crews on private lands.

12. WILDLAND URBAN INTERFACE


Hazardous WUI situation – Long Pine, Nebraska

The Wildland Urban Interface (also known as WUI) is the area where structures and other human development meet or intermingle with undeveloped wildland. In most areas throughout the country, this interface is evident where suburbs or rural housing developments have encroached upon wildlands. People are building houses on the edges of forests, or even within forests, often bordering federal lands such as National Forests and National Parks. On a smaller scale, however, any place a person builds a house within or adjacent to forests, brushy areas, or even grasslands can constitute a WUI situation. Within the Niobrara valley watershed, this is most evident as new landowners build cabins and houses atop ridges overlooking the river valley or adjacent creeks and canyons. Even ranch houses may constitute WUI situations if a prairie fire can sweep into the vicinity and threaten to destroy the house, outbuildings, and other development where there are ungrazed or unmowed grasses, brush, or windbreaks (often-eastern red cedar). Wildland fire can easily spread to manmade structures from the surrounding land.


Destroyed Residence – Big Rock Fire

WUI areas are evident within the FMP boundaries and include the canyons (Minnechaduza Creek and its tributaries) north and west of the Valentine city limits where developers have constructed several housing developments, as well as individual homes. The Big Rock Fire of July 2006 destroyed ten homes on the north side of town. Some homeowners have rebuilt in the exact same places. Ponderosa pine covers these steep canyon walls with an understory of cedar and shrubs, while hardwoods dominate the wetter canyon bottoms. The cities of Valentine and Long Pine have houses scattered within or adjacent to pine forests and ungrazed grasslands and brushy areas. These homes are subject to great danger from wildland fire.

The area surrounding the Highway 20/83 Bridge south of Valentine and over 70 miles eastwards along the river to the east boundary of the CNW include rugged pine canyons and tributaries north and south of the river with high densities of ponderosa pine and thick under stories of cedar and shrubs. Eastern red cedar and ponderosa pine are also encroaching on grazing land. Traveling east, the pine gives way to hardwoods and cedar. Due to a slight increase in moisture, the cedar understory is most dense in the eastern half of the project area. Residents often build summer cabins and new homes deep within the pines or atop ridges, affording pleasant views of the valley, yet they are at high risk for being destroyed by wildland fire. The Plum, Pine, Fairfield, and Bone Creek drainages all contain dense forests of pine, cedar, and/or hardwoods. Many homes within these canyons are at great risk. Along Hwy 20 near the town of Long Pine, the forested canyons are so dense that it is difficult to walk through them. Many homes are nestled among the trees. In the Hidden Paradise area south of the town of Long Pine, dozens of vacation cabins are at extreme risk. These homes are crowded together in a narrow canyon with limited access in dense forests of cedar, hardwoods, and mixed pine. Fire would quickly spread from one home to another.

12.1 Hazardous Fuel Reduction Plans

Perhaps the first step in addressing the issue of WUI is education. Since private citizens own most of the land within the project area, fire managers must inform them of the risk. Many landowners are as of yet, unaware of the problem, or if aware, unwilling to take action. Often homeowners think that fire will not destroy their home. Most homeowners cannot identify hazardous fuels. Some property owners may be unable to do the necessary work or cannot afford to hire a contractor to reduce hazardous fuels. Within weeks of the Big Rock Fire, only a few landowners were making efforts to reduce hazardous fuels around their homes.
Property owners need to address the most serious threats found around homes and buildings. These are:

- Reducing ladder fuels (dead branches, shrubs, etc.)
- Eliminating the cedar understory in pine and mixed pine/hardwood forests
- Thinning the density of the pine forests
- Improving access for fire department vehicles, and
- Establishing a sufficient fire control buffer space between the forest or natural grassland edge and the structures

Many other secondary problems exist as well. A lack of water sources, construction materials used in buildings, firewood piles adjacent to homes, and inadequate vehicular access pose a serious risk. Agencies held several workshops in the Valentine area during the summer/fall of 2006 to educate homeowners about the dangers of hazardous fuels and living in the WUI. The Nebraska Forest Service has offered cost-share funding to private landowners who reduce hazardous conditions in adjacent forests and around their structures. A list of current contractors who thin forests and cut cedar is found in Appendix M.

Fire managers need to get more information out to other communities. This will better inform the public of their role in protecting private property from unwanted fire. Since participation is voluntary, and it is in the early stages of implementation, it is too soon to evaluate the success of the efforts currently underway. The FAC will hold meetings in other towns in the future to better educate the public and get the word out about the need for mitigation of fire hazards.

Landowners need to establish fuel breaks (Fig. 1) within the river corridor along county roads and state/federal highways to help slow or stop the spread of severe wildland fires. Some agencies within the FAC such as the NFS will encourage landowners to apply for cost-share grants to conduct hazardous fuel reduction operations on their property bordering roads and to utilize mowing or grazing strategies to reduce flashy fuels. Agencies such as the NPS may also enter into cooperative agreements with landowners to construct firebreaks.

12.2 Zoning Issues

(See Appendix F)

12.3 Emergency Management

In the event of a catastrophic fire event along the Niobrara River, the PSAPs (Public Service Answering Points) will attempt to contact residents of their particular counties by phone. If unable to contact, personnel from law enforcement and other responding agencies will be dispatched to contact residents of the corridor to evacuate. Evacuation decisions will be incident or event driven and will also follow the Primary Evacuation Plan of the county(s) involved. If the PSAP has Reverse 911, this program can be used to contact residents of a particular area. In the event of seasonal homes where no phone service is available, direct contact will need to be made. The Emergency Operations Center and/or Incident Command will be in charge of the evacuation incident. Emergency notification for fires within the Fort Niobrara NWR or Smith Falls State Park will be the responsibility of the respective agency. The NFS has a Fire Danger Map posted on their website that is updated twice daily. The NPS & its partners will seek to place fire danger signs in strategic locations along the valley and will help coordinate fire bans with Rural VFDs and Sheriff Offices.

12.4 Brochures

The FAC hopes to persuade county zoning authorities to send a one-page handout and hazardous fuel reduction brochures to all new zoning applicants (new residents or construction permits). Fire managers can distribute this information to the public through various media (newspaper, radio) and made available in certain locales (libraries, extension offices, etc.).

The NPS mailed "*Country Living At Its Best*" (fire protection information) and, "*Prescribed Fire Use in the Nebraska Sandhills and Niobrara River valley*" to over 200 Niobrara River Valley residents in December of 2007. The NFS also has a brochure about managing forest fuels (see Section 5.2-3)

12.5 Media

County Emergency Managers will coordinate the release of fire information with the cooperation of the local governments (city, county officials) and the involved Volunteer Fire Departments. Agency-specific personnel such as Public Information Officers, Superintendents, etc. will handle fire information on state or federal land.

13. MONITORING AND EVALUATION

Federal agencies will implement long and short term monitoring to access accomplishments, and determine the effects of management activities on cultural and natural resources. Private landowners and non-Federal agencies may or may not opt to participate in this monitoring. The NPS could confer with fire ecologists at the NPS Midwest Regional Office or the FWS Mountain Prairie Regional Office on the monitoring of prescribed fires and fire effects. The NPS should consult them about future prescribed fire plans with regard to potential fire effects and attaining desired conditions. The fire effects monitors may assist in establishing vegetation-monitoring plots and assessing fire effects and hazardous fuel mitigation activities on the vegetative community.

The National Park Service Fire Monitoring Handbook may serve as a reference for other agencies to use in the monitoring of prescribed fires. Other resources are available that will also serve as excellent references.

13.1 Voluntary Monitoring

The purpose of monitoring is to evaluate the effects of past management practices, confirm new effective management practices, identify trends that can be used to predict future changes, and learn about environmental factors that affect the land. Site managers should develop monitoring plans that evaluate short term and long-term lumber or grass (AUM) production goals and management objectives for the burn unit(s).

Pre-burn Monitoring: As part of the planning process for a prescribed fire, Rx Burn Specialists should select permanent monitoring site(s) that are representative for the burn unit using a Global Positioning System device.

The monitoring specialist could collect the site's baseline information by taking five photographs at each monitoring point. The first photograph should be looking down on a 3 ft. x 3 ft. frame (made out of ½" PVC pipe) lying on the ground adjacent to the point. It should include an identification label (land steward name, date, location, field number, monitoring point number, etc.). The photograph will document current ground cover, plant composition, total annual production, etc. Next landscape photographs should be taken facing out from the site in all four directions (identify each photo as N, S, E, or W). Private landowners may prefer

a simple photo point site for monitoring as their primary concern is economic loss or gain. They may have goals that differ substantially from land management agencies and organizations.

The “Grazing Lands Monitoring Plan and Key Area Documentation” (NE-ECS-8) sheet or similar form (Appendix H) can be used by managers to record baseline information and other observations related to land steward goals and management objectives for the prescribed fire.

Post-burn Monitoring: Regular monitoring intervals (semi-annual, annual, etc.) can be set up on a schedule, as needed, to document the results of the prescribed fire and progress made towards meeting land steward goals and/or management objectives. At a minimum, researches should collect monitoring information on the site(s) annually (at least for the first few years) and at the same time each year.

Summary: Fire managers can apply the monitoring technique discussed above to any landscape (grazing lands, forestlands, etc.). Monitoring techniques need to be as simple as possible with the underlying goal of data collection being: “keep the records you need, use the records you keep.” Detailed monitoring methods and techniques are available to land stewards, depending on the short and long-term management and monitoring objectives for the burn unit(s). Individual agencies will utilize their own monitoring methods per policy. Technical assistance for monitoring is available to land stewards by contacting local conservation agencies (County Extension Services, NPS, NRCS, and FWS).

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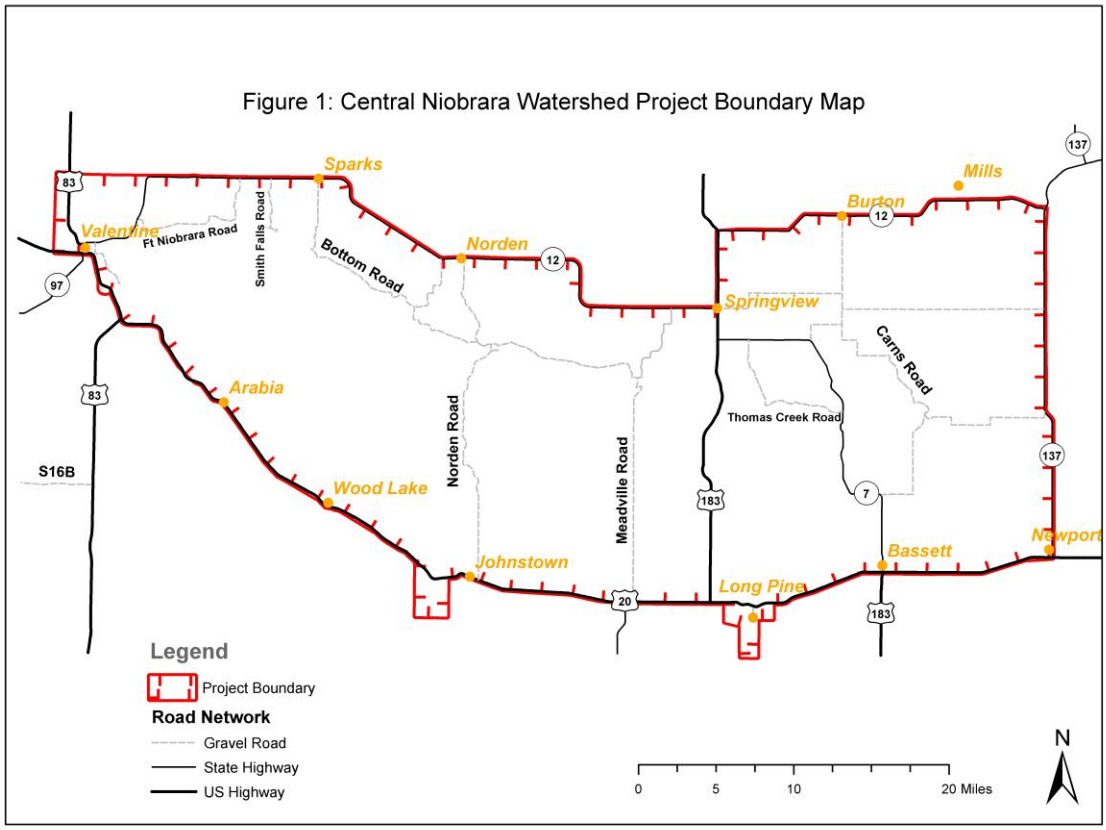
Note: Primary FMP author was unable to relocate some sources (Bogan 1993; Bragg 1994).

APPENDIX A: CNW Fire Management Area Map



APPENDIX B: Compliance Documents NEPA and NHPA

The Environmental Assessment is a separate document.

APPENDIX C: Wildland Fire Occurrence Data

Figure C1: Fort Niobrara NWR Fire Occurrence Data

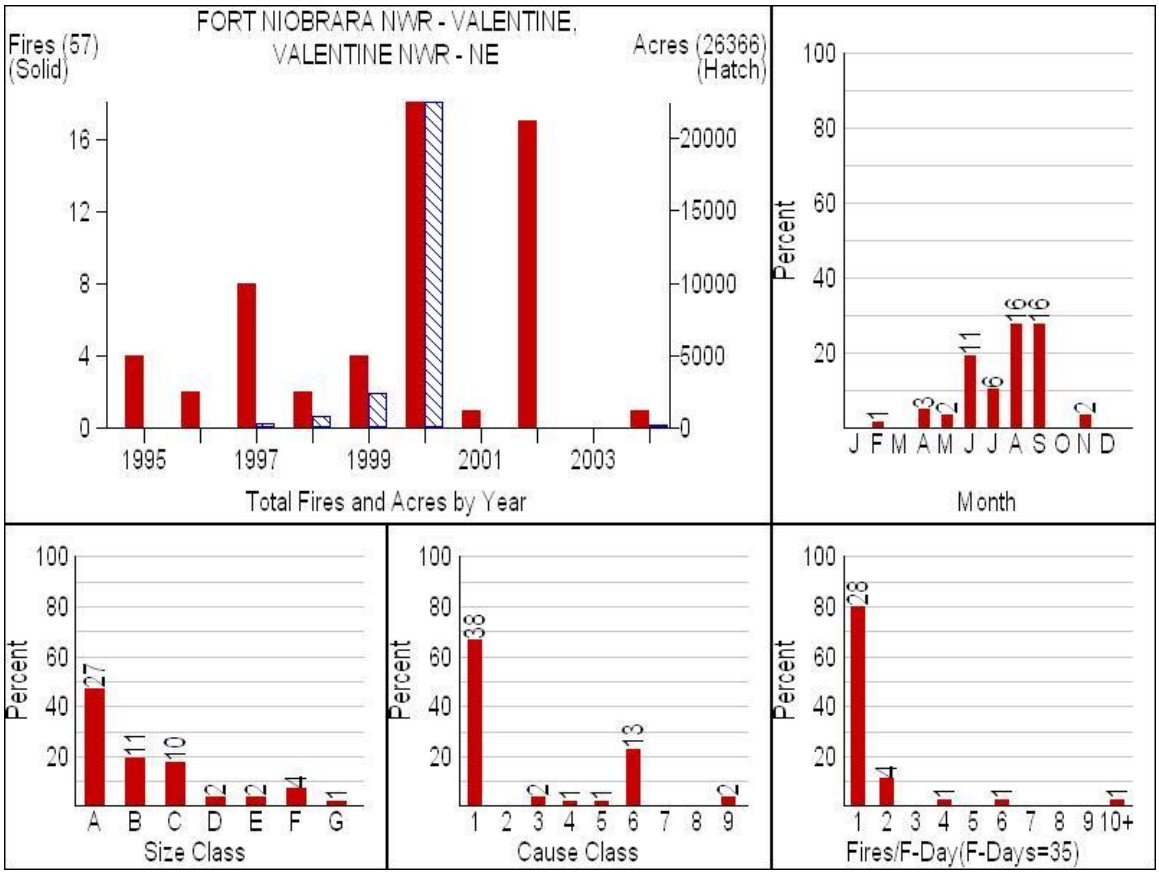


Table C1: VFD Fire Occurrence 2004

FIRE DISTRICT	LOCATION	COUNTY	DATE	TOTAL ACRES	CAUSE	SPECIFIC CAUSE
Valentine	Valentine FD	Cherry	9/18/04	10	Misc.	Hunters
			9/2/04	10	Misc.	Unknown
			8/31/04	0.5	Lightning	
			8/2/04	5	Lightning	
			7/29/04	0.1	Lightning	
			7/4/04	0.01	Lightning	
			7/3/04	0.01	Lightning	
			5/9/04	1	Misc.	Unknown
			3/19/04	1500.5	Equipment	Baler
Wood Lake	Valentine FD	Cherry	3/12/04	10	Equipment	Car/ Truck
Newport	Newport FD	Rock	9/1/04	2	Misc.	Other

FIRE DISTRICT	LOCATION	COUNTY	DATE	TOTAL ACRES	CAUSE	SPECIFIC CAUSE
			8/15/04	0.25	Lightning	
			4/17/04	160	Debris Burning	Pile Burning
			3/11/04	0.01	Debris Burning	Pile Burning
			3/6/04	2.1	Equipment	Welding
			2/22/04	0.1	Debris Burning	Pile Burning
			2/8/04	0.1	Debris Burning	Pile Burning
			1/31/04	0.01	Debris Burning	Pile Burning
			1/31/04	0.01	Debris Burning	Pile Burning
			1/31/04	0.01	Debris Burning	Pile Burning
Brown	Johnstown FD	Brown	11/15/04	1	Equipment	Combine
			9/8/04	4	Misc.	Unknown
			8/15/04	5	Lightning	
			7/28/04	0.01	Lightning	
			4/14/04	40	Misc.	Unknown
			5/16/04	3	Lightning	
			3/19/04	0.1	Equipment	Baler
			3/12/04	0.1	Equipment	Baler

Table C2: VFD Fire Occurrence 2003

FIRE DISTRICT	LOCATION	COUNTY	DATE	TOTAL ACRES	CAUSE	SPECIFICC AUSE
Valentine	Valentine FD	Cherry	1/1/03	1	Misc.	Power Lines
			8/9/03	8	Lightning	Unknown
			7/13/03	1	Lightning	
			7/14/03	1	Lightning	
			7/15/03	1	Misc.	Fireworks
			7/28/03	0.1	Misc.	Other
			9/10/03	2	Lightning	
			8/5/03	1	Equipment	Hay Grinder
Wood Lake	Wood Lake FD	Cherry	7/21/03	1500.5	Lightning	
			7/21/03	10	Lightning	
			7/25/03	2	Equipment	Tractor
			8/21/03	0.25	Misc.	Power Lines
			8/15/03	160	Equipment	Baler
			7/25/03	0.01	Equipment	Combine
			7/31/03	2.1	Debris	Pile Burning

FIRE DISTRICT	LOCATION	COUNTY	DATE	TOTAL ACRES	CAUSE	SPECIFICC AUSE
					Burning	
Keya Paha	Springview FD	Keya Paha	9/25/03	1	Misc.	Unknown
			9/24/03	2	Equipment	Car/Truck
			9/14/03	5	Misc.	Power Lines
			7/3/03	1	Equipment	Baler
Newport	Newport FD	Rock	3/23/03	1	Debris Burning	Pile Burning
Brown County	Johnstown FD	Brown	7/25/03	4	Equipment	Combine

Table C3: VFD Fire Occurrence 2002

FIRE DISTRICT	LOCATION	COUNTY	DATE	TOTAL ACRES	CAUSE	SPECIFIC CAUSE
Valentine	Valentine	Cherry	8/8/02	1	Lightning	
			8/0/02	223	Lightning	
			8/8/02	4	Lightning	
			6/27/02	1	Misc.	Fireworks
			8/15/02	0.01	Misc.	Spontaneous Combustion
			6/24/02	1	Lightning	
			6/9/02	1	Misc.	Unknown
			6/6/02	2	Lightning	
			8/21/02	0.01	Lightning	
			8/14/02	4	Equipment	Baler
			6/30/02	1	Misc.	Unknown
			8/16/02	0.01	Misc.	Spontaneous Combustion
			9/5/02	20	Lightning	
			9/4/02	5	Lightning	
			3/30/02	1	Misc.	Unknown
			7/11/02	1	Misc.	Spontaneous Combustion
			7/16/02	1	Equipment	Baler
Valentine	Valentine	Cherry	2/2/02	5	Equipment	Feed/Hay Grinder
			8/10/02	1.01	Misc.	Power Lines
			11/20/02	1	Misc.	Unknown
Wood Lake	Wood Lake	Cherry	6/25/02	15	Lightning	
			6/25/02	0.25	Lightning	
			6/25/02	32	Lightning	
			1/31/02	3	Debris Burning	Pile Burning
			5/2/02	0.13	Equipment	Car/Truck
			2/15/02	1	Debris Burning	Pile Burning
			7/17/02	1	Equipment	Baler
			7/18/02	1	Misc.	Discarded Material

FIRE DISTRICT	LOCATION	COUNTY	DATE	TOTAL ACRES	CAUSE	SPECIFIC CAUSE
			8/7/02	0.5	Smoking	
			8/14/02	0.5	Equipment	Misc.
			8/14/02	0.5	Equipment	Baler
			8/17/02	0.13	Railroad	North Central RR
			8/17/02	1	Railroad	North Central RR
Wood Lake	Wood Lake	Cherry	7/16/02	0.5	Equipment	Baler
			9/18/02	0.25	Misc.	Power Lines
			11/17/02	5	Equipment	Car/Truck
			10/14/02	2	Equipment	Car/Truck
			9/4/02	2	Lightning	
			9/5/02	5	Lightning	
Keya Paha	Springview	Keya Paha	9/5/02	10	Lightning	
			9/5/02	2	Lightning	
			9/4/02	5	Lightning	
			9/4/02	5	Lightning	
			8/29/02	2	Lightning	
			8/28/02	1	Misc.	Unknown
			8/13/02	1	Misc.	Unknown
			8/11/02	1	Lightning	
			8/11/02	3	Lightning	
			8/3/02	10	Lightning	
			8/3/02	20	Lightning	
Brown County	Calamus	Brown	8/6/02	300.01	Misc.	Power Lines
			7/29/02	1,011	Misc.	Power Lines
			7/17/02	3	Misc.	Unknown
			2/14/02	3,600	Equipment	Car/Truck
			9/4/02	20	Equipment	Welding
			6/21/02	25	Lightning	
Brown County	Johnstown	Brown	6/6/02	100	Lightning	
			7/17/02	4	Misc.	Unknown
			4/7/02	4	Equipment	Car/Truck
Brown County	Long Pine	Brown	4/4/02	110	Debris Burning	Pile Burning
			1/19/02		Debris Burning	Pile Burning
Newport	Newport	Rock	5/26/02	3	Lightning	
			6/22/02	1	Misc.	Unknown
			7/14/02	2	Lightning	
Rock County	Bassett	Rock	5/26/02	3	Lightning	
			6/22/02	1	Misc.	Unknown
			7/14/02	2	Lightning	
			7/31/02	7,000	Equipment	Baler
			10/13/02	10	Debris Burning	Pile Burning
			7/10/02	1	Lightning	
			6/6/02	100	Lightning	
			6/7/02	3	Lightning	
			6/16/02	2	Lightning	

FIRE DISTRICT	LOCATION	COUNTY	DATE	TOTAL ACRES	CAUSE	SPECIFIC CAUSE
			6/17/02	2	Lightning	
			6/23/02	1	Lightning	
			6/24/02	2	Equipment	Car/Truck
			6/27/02	1	Misc.	Power Lines
			3/25/02	200	Misc.	Unknown
			7/9/02	10	Lightning	
			7/22/02	30	Equipment	Baler
			7/30/02	2	Lightning	
			7/30/02	150	Lightning	
			7/31/02	900	Equipment	Baler
			8/1/02	3	Incendiary	Suspicious
			8/3/02	1	Lightning	
			8/3/02	1	Lightning	
			8/3/02	30	Lightning	
			8/8/02	1	Lightning	
			8/10/02	1	Lightning	
			9/4/02	160	Equipment	Misc.
			7/9/02	1	Lightning	

Table C4: Fire Occurrence 2001

FIRE DISTRICT	LOCATION	COUNTY	DATE	TOTAL ACRES	CAUSE	SPECIFIC CAUSE
Valentine	Valentine FD	Cherry	7/30/01	3	Lightning	
			4/24/01	500	Misc.	Power Lines
			4/5/01	1	Misc.	Power Lines
			3/19/01	5	Equipment	Welding
			8/11/01	1	Equipment	Misc.
			9/5/01	10	Lightning	
			8/12/01	10	Lightning	
			7/28/01	1	Misc.	Unknown
			7/25/01	2	Misc.	Unknown
			6/30/01	1	Misc.	Fireworks
			6/25/01	1	Misc.	Unknown
			5/10/01	10	Misc.	Power Lines
Wood Lake	Wood Lake FD	Cherry	3/12/01	0.5	Equipment	Tractor
			4/12/01	1	Misc.	Power Lines
Keya Paha	Springview FD	Keya Paha	9/13/01	5	Lightning	
			7/31/01	1	Lightning	
			7/30/01	5	Lightning	
			7/30/01	1	Lightning	
			7/30/01	1	Lightning	
Brown County	Long Pine	Brown	4/9/01	0.1	Debris Burning	Agricultural Burning
Brown	Raven	Brown	6/24/01	1	Misc.	Unknown

FIRE DISTRICT	LOCATION	COUNTY	DATE	TOTAL ACRES	CAUSE	SPECIFIC CAUSE
County						
Newport	Newport	Rock	8/24/01	0.01	Lightning	
			7/30/01	0.01	Lightning	
Rock County	Bassett	Rock	10/1/01	2	Equipment	Baler
			8/21/01	1.01	Equipment	Combine
			8/2/01	0.11	Lightning	
			6/15/01	2	Debris Burning	Agricultural Burning

Table C5: VFD Fire Occurrence 2000

FIRE DISTRICT	LOCATION	COUNTY	DATE	TOTAL ACRES	CAUSE	SPECIFIC CAUSE
Mid-Cherry	Mid-Cherry	Cherry	8/25/00	60	Lightning	
			9/16/00	3,500	Lightning	
Wood Lake	Wood Lake FD	Cherry	9/18/00	2001	Lightning	
			9/18/00	118	Lightning	
			9/27/00	350	Equipment	Cr/Truck
			9/6/00	0.01	Lightning	
			4/5/00	0.1	Debris Burning	Agricultural Burning
			4/4/00	10	Debris Burning	Trash Burning
			6/9/00	0.5	Lightning	
Keya Paha	Springview FD	Keya Paha	7/24/00	5	Lightning	
			7/24/00	1	Lightning	
			7/17/00	30	Equipment	Welding
Brown County	Ainsworth	Brown	2/28/00	1	Misc.	Unknown
			8/2/00	1	Equipment	Misc.
			7/28/00	5	Lightning	
			7/24/00	400	Lightning	
			3/6/00	2	Debris Burning	Agricultural Burning
			9/18/00	40	Lightning	
			9/18/00	5	Lightning	
			9/18/00	5	Lightning	
			9/18/00	6	Lightning	
Newport	Newport	Rock	10/19/00	160	Equipment	Car/Truck
Rock County	Bassett	Rock	8/10/00	2	Equipment	Baler
			8/3/00	1	Equipment	Baler
			7/24/00	10	Lightning	
			7/17/00	40	Welding	
			3/28/00	30	Smoking	
			11/4/00	35	Equipment	Car/Truck

APPENDIX D: Weather Averages and Indices

Figure D1: Burning Index over a Three Day Period

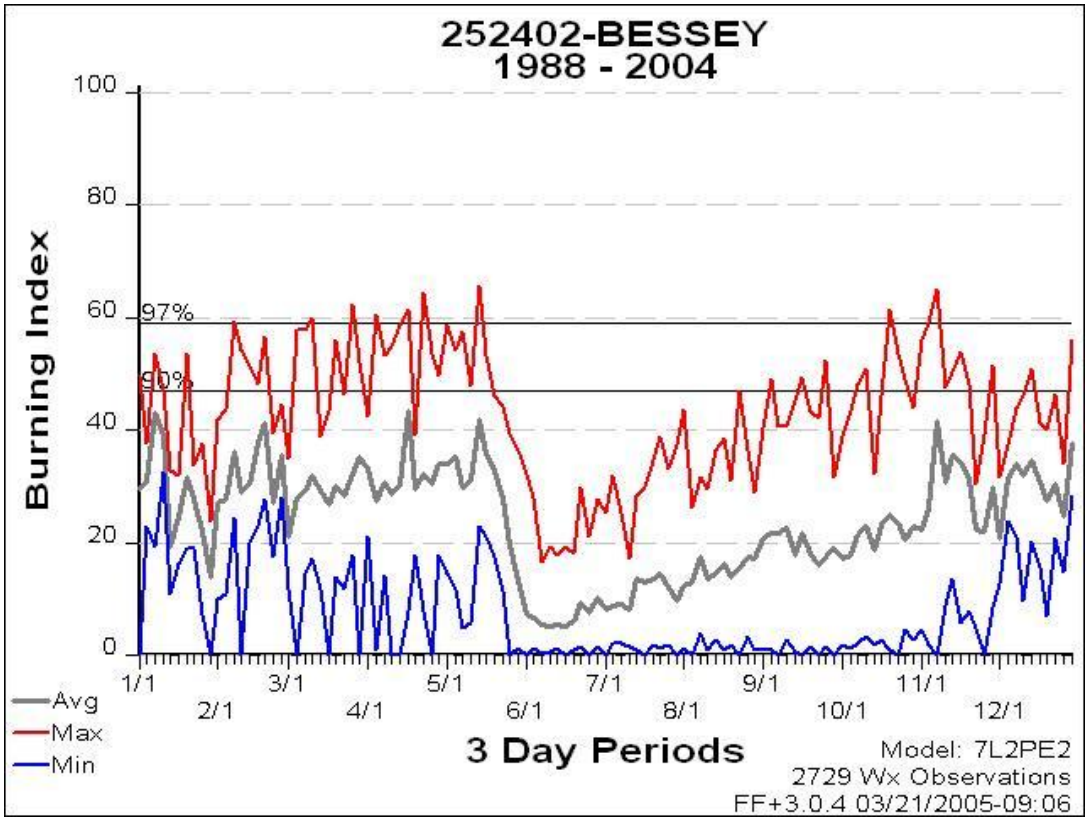


Figure D2: Average High and Low Temperatures over the Annum

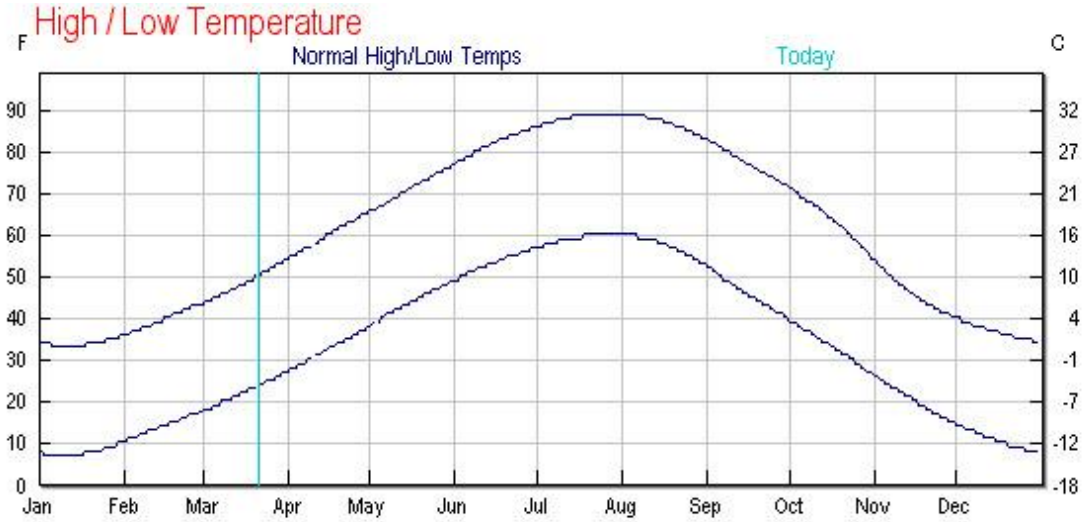


Figure D4: Distribution of Annual Rainfall

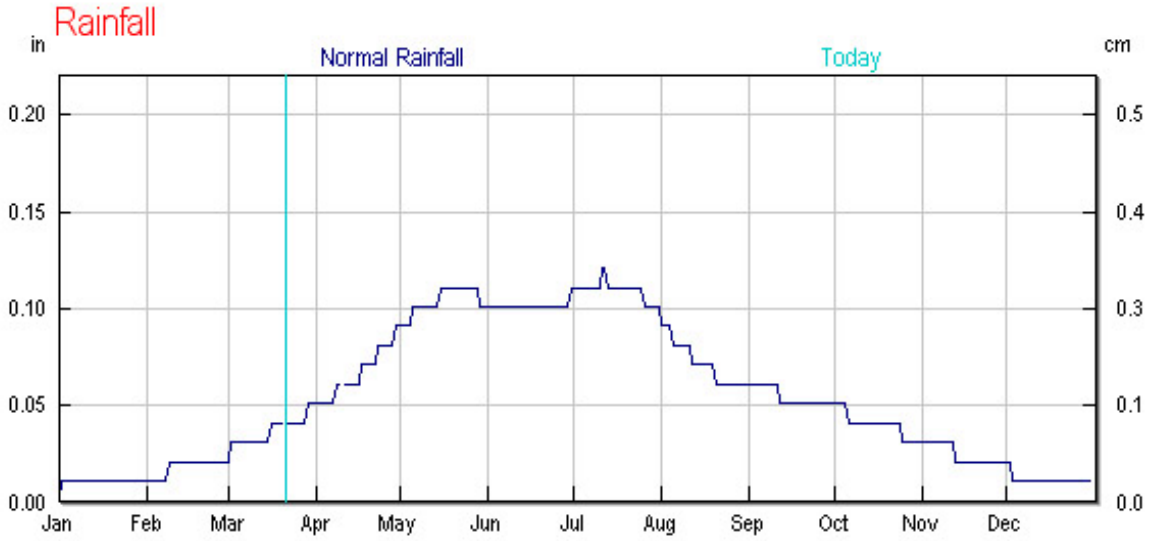


Figure D5: Distribution of Annual Snowfall

Table D1: Valentine Weather Averages

Valentine Nebraska Weather Averages												
	Jan	**Feb**	**Mar**	**Apr**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**
High Temp (F)	33	38	47	60	71	82	89	87	76	64	47	35
Low Temp (F)	7	12	21	33	44	54	60	58	46	34	21	9
Snow (in)	5	4	6	2	0	0	0	0	0	1	3	4
Wind Speed (mph)	9	9	10	11	11	10	9	9	9	9	9	9
Wind Direction	WNW	NNW	NNW	NNW	S	SSE	S	S	S	WNW	WNW	WNW

http://www.wunderground.com/NORMS/DisplayNORMS.asp?AirportCode=KVTN&StateCode=NE&SafeCityName=Valentine&Units=none&IATA=VTN&lastyear=on&normals=on&records=on

Fire Weather Forecast by County in Central Nebraska:

www.weather.gov/northplatte
Once on this website, look in the left column for "**Forecasts**" and click on "**Fire Weather**". Look under **RAWS Weather Observations**. The closest RAWS station is located at the Valentine NWR. You can also obtain spot weather forecasts on this website (resume April 1 of each year).

APPENDIX E: Prescribed Fire Brochure

Insert Hard Copy here

APPENDIX F: Zoning Handout

Welcome to _____ County. We hope you will enjoy living in our county and the many natural amenities that this area has to offer. In order to assist you in choosing a safe building site for your home, weekend cabin, or outbuildings, the county has drawn up a list of recommendations to help improve the safety of your property in the event of wildland fire. Although these suggestions are not mandatory, we strongly advise that you seek to implement as many of them as possible. By following these guidelines, you will be making wise decisions to protect your family, home, and property. The beauty of the Niobrara River valley's pine canyons is one of several reasons people choose to live here. All landowners have a responsibility to take measures to reduce wildland fire risks. If you need further advice or assistance, please contact one of the resources listed below.

- Locate your home and outbuildings off ridge-tops, well back from steep slopes and away from gullies. Wildfires can easily travel up slopes and burn into structures. Preferably, locate your home at least 100 feet from the forest edge. Do not build a structure located within pinewoods where embers can travel from burning trees to your house or where a crown fire could spread to your roof.
- Use fire resistant materials in the construction of your home. Consider using cement shingles or building a metal roof. There are many attractive cement siding products. Adobe is also an alternative siding to use.
- Screen in the underside of balconies and above ground decks. Use composite materials for decks, which are less susceptible to fire.
- Install only double or triple paned windows. Limit the size and number of windows facing nearby forests.
- Cover your chimney and stovepipe with a nonflammable screen.
- Consider installing an emergency sprinkler system within your house and on your roof/deck.
- Plant no trees within 30' of your home. Keep this space "lean, clean, and green."
- Consider thinning the forest within a set distance from your home or outbuildings. Depending upon slope, this distance may vary from 30' to 200' Cut branches from tree trunks 6-10' high. Eliminate ladder fuels in the understory (cedars, shrubs, etc.)
- Ensure that the road into your property is wide enough to allow emergency vehicles enough room to pass each other. Build a loop drive or have a large turn-around area at road's end to ease congestion and traffic flow. If possible, have at least two exit points.
- Eliminate understory flammable vegetation and ladder fuels along access roads.
- Post your name and home address at the end of your private road so that fire personnel can easily locate your property.
- Have a reliable source of water nearby to refill fire engines (2500 gallons is a minimum recommended supply).
- Obtain, read, and follow suggestions from brochures that address wildland fire dangers.

For additional information go to www.firewise.org or contact one of the following agencies for assistance:

- Nebraska Forest Service (308) 728-3221
- U.S. Fish & Wildlife Service (402) 376-3789
- National Park Service (402) 376-1901
- UNL Cherry County Extension (402) 376-1850
- UNL KBR County Extension (800) 634-8951
- Region 24 Emergency Management Agency (Cherry, Keya Paha, Brown & Rock) (402) 684-2424

APPENDIX G: Fire Reporting (Dispatch Card)

Central Niobrara Watershed Fire Report Form

1. Reporting Party (RP): _____
2. Address/Location of RP:

_____
_____
_____

3. RP Phone Number:

_____

4. Day/Time of Report: _____
5. Actual Fire Location:
    a. Landmarks (*Local names*)_____
    b. Description _____
    _____
6. Wind: Calm ___ Light ___ Moderate ___ Strong ___ Gusty ___
7. Wind Direction: _____
8. Fuel Burning: Grass ___ Shrubs ___ Single Tree ___ Pine Forest ___ Deciduous Forest ___ Mixed Forest ___
9. Estimated Fire Size at Report _____ Acres
10. Dispatcher Receiving Report_____
11. Fire Name: _____
12. Actual Fire Location (*complete a, and either b, c or d*):
    c. Local name/landowner: _____
    d. Map Location: Quadrangle _____
    e. T. _____ R. _____ Sec. _____ Sec. ¼ _____
    f. UTM Coordinates:_____(E)_____(N)_____
    g. _____ (Lat.) _____ (Long.)
13. Date/Time Reported/Conducted _____
14. Fuel Burning: (*Check any that apply*) Grass ___ Shrubs ___ Single Tree ___ Pine Forest ___ Deciduous Forest ___ Mixed Forest ___
15. Probable Cause of Fire: Lightning:_____ Arson: _____Prescribed _____ Accidental (*list cause*): _____
16. Actual Fire Size: _____(*acres*) Perimeter: _____
17. Comments/Narrative:_____
    _____
    _____
    _____

CNW FAC – F1 _____ *FAC Fire #*

APPENDIX H: NE ECS-8 Grazing Lands Monitoring Plan & Key Area Documentation Form

NRCS NEBRASKA Natural Resources Conservation Service	Grazing Lands Monitoring Plan and Key Area Documentation	NE-ECS-8

Client Name:		Conservationist:		Date:	
Long Term Management Objective		Short Term Management Objective			
Long Term Monitoring Objective		Short Term Monitoring Objective			

Key Area Number	Date Established	Established By:	Soil/Aspect/Slope	Ecological Site	Plant Community	UTM Coordinates and Elevation		Location		Monitoring Method		Key Plant Species
						Zone		T				
						E		R		Plot frame/Size		Monitoring Schedule
						W		S		# Transects		
						El.		1/4		Transect length		

Key Area Photograph

Insert KEY AREA PHOTOGRAPH here.

Select **Insert-Picture-From file** *and browse to the file where photo is stored. Select the photo, click on* **Insert**. *Resize the photo by selecting the corner editing circles and re-shape to fit the cell.*

Photo Information	
Date of Photo	
Time	
Photographer	
Pasture Name	
Pasture #	
Transect #	
Transect/Photo Bearing (°)	
Transect/Photo Direction	

Descriptions and Comments

APPENDIX I: VFD Equipment Lists

Long Pine VFD:

LP-1 1972 IHC 4x4 Grass Rig (250 gal)
LP-2 1967 Ford Pumper (500 gal)
LP-3 1986 Chevy 1 ¼ ton 4x4 Grass Rig (250 gal)
LP-4 1991 IHC Tanker/Pumper (1600 gallons)
Lp-5 6x6 2 ½ ton M44A2 series Truck (2600gals)
LP-19 Crash/Supply Unit

Springview VFD:

S1 - 1974 International Pumper Truck (1000 gallon?)
S2 - 1960 Ford Grass Rig (250 gallon)
S7 - 1989 GMC Pumper Truck (750 gallon?)
S9 - 1980 Chevy 1-ton (250 gallon)
1962 2 ½ ton 6x6 Tanker (1250 gallon)
Two 1968 Kaiser Jeeps (Forestry Service)

Valentine VFD:

- Grass Rigs: R-1, R-2, R-6, R-7, R-8, R-9*
- Tankers: R-3, R-5, G-5
- Personal equipment carrier: R-4

R-1: 300 gallons, 300' 1" booster, 150' 1 ½"
R-2: 300 gallons, 300' 1" booster, 150' 1 ½"
R-3: 1,800 gallons (300 gpm @ 150 psi) 500' 1 ½"
R-5: 3000 gallons (+ 300 gallon portable tank) 150' 1 ½", 100' 2 ½" hose
R-6: 200 gallons, 150' ½"
R-7: 300 gallons, 300' 1", 150' 1 ½"
R-8: 300 gallons, 300' 1" (booster), 150' 1 ½", + 300' 1" (small reel)
R-9: 300 gallons, beam sprayer
G-5: 2000 gallons, 300' 1 ½", 250' 1 ½", 50' 3" fill hose
stationed at Merritt Reservoir

Wood Lake:

W1: 1995 Ford 350 Diesel (150' 1" hose) 400 gallons
W2: 1963 Ford 4x2 tanker (50' 1.5" hose) 1200 gallons
W3: 1969 Ford 4x2 Grass Truck 100' 1" hose, 800 gallons

W4: 1991 Ford 4x4 Grass Truck 100’ 1” hose, 300 gallons
W5 1974 Ford 4x4 Grass Truck 100’ 1” hose, 300 gallons
W6 1999 Chevy Grass Truck 100’ 1” hose, 450 gallons + 800’ 3” hose
Ainsworth:

A1: 1994 Ford City Pumper 900 gallons (1000 gpm)
A2: 2000 Sterling Tanker/Grass-rig 800 gallons
A3: 1986 Ford Rural Pumper (?) 750 gallons (500 gpm)
A4: 1998 Ford Tanker/Grass-rig 800 gallons
A5: 1967 Ford Truck Pumper 500 gallons (750 gpm)
A6: 1977 Army 6x6 Tanker/Grass-rig 1000gallons
A20: 1976 Chevrolet Rescue Truck
A21: 1992 Chevrolet Command Unit
2005 John Deere Gator (60 gallon spray tank & rescue basket)
2006 Trailer 8.5’ x 24’ enclosed mobile support unit (radios, beds, drinks, gator aide, AC, small command center, etc.)
Springview:

S1: 1974 International Pumper Truck 1100 gallons
S2: 1960 Ford Grass Rig 500 gallons
S3: 1972 Chevrolet Grass Rig 250 gallons
S4: 1970 Chevrolet Grass Rig 250 gallons
S5: 1968 Kaiser Jeep/Forestry Service 250 gallons
S6: 1968 Kaiser Jeep/Forestry Service 250 gallons
S7: 1989 GMC Pumper Truck 1250 gallons
S8: 1976 Chevy Suburban Personal carrier
S9: 1980 Chevy 1-ton/mini Pumper Command vehicle 250 gallons
S10: 1962 Studebaker 6x6 Tanker 1250 gallons
S12: 2007 Ford 1 tone Grass Rig gallons?
S11: 1986 Chevy 1 ¼ ton Grass Rig (Forestry Service) 250 gallons
KBR&C Hose Trailer
Newport:

Five - 4x4 Grass Rigs with 200 gallon tanks
One - 4x4 Grass Rig with 800 gallons
One - 1200 gallon Tanker
Bassett:

B1: 1986 Chevy Grass-rig 250 gallons (250 gpm)
B2: 2000 Ford Grass-rig 250 gallons (250 gpm)
B3: 1966 Chevy Pumper 750 gallons (500 gpm)
B4: 1980 INC Pumper 750 gallons (750 gpm)
B5: 1987 Ford Pumper 750 gallons (500 gpm)
B7: 1952 IHC Tanker 1500 gallons (300 gpm)
B8: 1950 Diamond Red Tanker 2000 gallons (250 gpm)
B14: 1950 GMC Pumper 200 gallons (500 gpm)

APPENDIX J: Fire Chiefs and Department Addresses

Ainsworth VFD

c/o Chief Brad Fiala
PO Box 425
Ainsworth, NE 69201

Bassett VFD

c/o Chief Jim Stout
PO Box 603
21 N. State Street
Bassett, NE 68714

Johnstown VFD

c/o Chief Ben Burdick
PO Box 317
Johnstown, NE 69214

Long Pine VFD

c/o Chief Eric Denny
PO Box 150
497 N. Main Street
Long Pine, NE 69217

Newport VFD

c/o Chief Kurt Micheel
555 N. Ash
PO Box 244
Newport, NE 68759

Springview VFD

c/o Chief Rusty Nilson
PO Box 204
Springview, NE 68778

Valentine VFD

c/o Chief Terry Engles
224 S. Hall St.
Valentine, NE 69201

Wood Lake VFD

c/o Chief Craig O'Kief
PO Box 663
Wood Lake, NE 69221

APPENDIX K: Emergency Contact Information

Radio Frequencies & Phone Numbers (402 Area Code)

Dept. Name	Chief/FMO/Supt.	Home #	Work# (cell)	VFD #
Ainsworth	Brad Fiala	387-0433	387-10102/ 760-1512 cell	
Bassett	Jim L. Stout	684-3906		
FWS	Troy Davis	376-1397	376-3789 x 228	
Johnstown	Ben Burdick	722-4287		
Long Pine	Eric Denny	273-4578		
Newport	Kurt Micheel	244-5208	760-0261	
NPS	Stuart Schneider	376-5962	376-1901 x101	
Smith Falls	John Lemmon	376-2858	376-1306	
Springview	Rusty Nilson	497-3427		497-3331
Valentine	Terry Engles	376-3507	376-3100	376-1700
Wood Lake	Craig O'Kief	967-3442	376-4133	967-3400

Emergency Numbers

To report a wildland fire call these numbers:
Brown County SO (Ainsworth, Johnstown, Long Pine): 911 or (402) 387-1440
Cherry County SO (Valentine & Wood Lake): 911 or (402) 376-1890
Keya Paha County SO (Springview): 911 or (402) 497-3201
Rock County SO (Bassett, Newport): 911 or (402) 684-3811
Great Plains Interagency Dispatch Center (605) 393-8017

Radio Frequencies

Guidelines:

- Try to use primary high-band channels for communications within an agency
- Use 39.98 MHz for communications between departments and agencies/organizations; **State Mutual Aid** (155.475) or **Govt. Common Use Digital** (168.6125/F7E (Rx), 168.6125/293 (Tx)
- Keep radio traffic to a minimum – communications between agencies should be restrained to command level(s)
- Avoid 10-codes; use plain language
- Ensure all vehicles and on-foot firefighters have a working radio with spare batteries
- On mutual assist fires the IC should develop a simple communications plan immediately

Ainsworth VFD

High band Direct: 158.775 MHz
High band Repeater: 153.785 MHz

Bassett VFD

High band Direct: 155.925 MHz
High band Repeater: 153.920 MHz
Low band 39.98 MHz

Brown County (Roads)

Direct (used by Long Pine, Johnstown, South Pine, Raven & Calamus): 155.025 MHz
Repeater (used by same departments as listed above): Rx 153.775 MHz, Tx 153.815/114.8

Fort Niobrara National Wildlife Refuge
United States Fish & Wildlife Service (FWS):
Rx 169.775/078 MHz; Tx 169.775/078/127.3 MHz
Repeater: Rx 169.775/078; Tx 169.725/078/127.3 MHz

Keya Paha County (Roads)

Direct (Springview VFD): 158.880 MHz
Repeater (Springview VFD): 154.085 MHz

Nebraska State Mutual Aid

High Band Law Enforcement (LE): 155.475 MHz
Low Band LE: 39.90 MHz
Low Band Fire: 39.98 MHz

Niobrara National Scenic River

National Park Service (NPS): Direct 171.1625/100 MHz
West Repeater: Rx 171.1625/100; Tx 166.3375/200 MHz
East Repeater: Rx 171.1625/100; Tx 166.3375/300 MHz

Niobrara Valley Preserve

The Nature Conservancy (TNC): 151.520 MHz

NOAA (weather): 162.450 MHz

Smith Falls State Park

Nebraska Game & Parks Commission (NGPC)
(Parks): 151.475 MHz

Valentine VFD

Radio (used also by Wood Lake): 39.98 MHz
Pagers: 158.820 MHz

APPENDIX L: Incident Command System

INCIDENT COMMANDER

Information
(Safety, PIO)

Operations Section

Logistics Section

Planning Section

Finance Section

Division Group

Strike Team Leader

Crew Boss

Squad Bosses

Crew (Firefighters)

APPENDIX M: Contractors/Operators: Cedar Removal & Rx Fire

SKIDDER OPERATIONS

Neil Coleman

Arnold, NE 69120
(308) 848-3394
Equipment:

5 machines
4 Bobcats shears w/ sweeps
1 Hot saw w/ 321 hydro axe
Can cut up to 20-26" diameter trees
14-14 trees/minute

$100/hour

Brent Eigenberg

1304 W. Koenig
Grand Island, NE 68801
(308) 383-4198
Bre1@charter.net
Minimum job is $250
$250 first 4 hours
Over 4 hours $55/hour
Dennis Jones

387-2698
Ainsworth, NE 69210
Cedar removal

Gross Seed Company, Inc.
402-722-4215
HC 66 Box 13
Johnstown, NE 69214
Skidder with non-moving blade system;
Trees to 6" diameter

Big Toys Hire & Rentals LLC
Jordan & Ryan Ross
(402) 760-1145 or 1146
PO Box 171
Springview, NE 68778
Cedar Tree Removal
(Skidders w/ hydraulic blades)
Lawrence Turner

HC13 Box 40
Sparks, NE 69220
(402) 376-1547
Equipment:

Bobcat w/ saw blade
Dale Waterman

O'Neill, NE
(402) 336-4325
Equipment:

Wrangler articulated loader w/
cutters on front

SAWMILL OPERATIONS

Mike & Dwight Sawle

Meadville, NE 68778
(402) 497-3727
722-4440 (Mike work)
Pete & Lynn Sawle

(402) 497-3571
Meadville, NE 68778
Equipment:

Chainsaws, Bobcat skid steer, thin forests, cut for stumpage and salvageable lumber

PRESCRIBED FIRE

Neil Classen
PO Box 333
Lynch, NE 68746
(402) 569-3116

Bob Lowe*
49233 807th Rd.
O'Neill, NE 68763
(420) 336-3213

Eric G. Rumple*
90275 497th Ave.
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APPENDIX N: FAC General Agreement

General Agreement
Between the
United States Department of the Interior
National Park Service
Niobrara National Scenic River
and the
Central Niobrara Watershed Fire Advisory Council

This agreement is entered into by and between the National Park Service (NPS), United States Department of the Interior, acting through the Superintendent of Niobrara National Scenic River (NIOB); the U.S. Fish and Wildlife Service (FWS), United States Department of the Interior, acting through their Project Leader at Fort Niobrara National Wildlife Refuge; Nebraska Game and Parks Commission (NGPC), acting through their Administrative Assistant; the Natural Resources Conservation Service (NRCS), United States Department of Agriculture, acting through their State Conservationist; The Nature Conservancy (TNC), a non-profit corporation of the District of Columbia, acting through its State Director; Nebraska Forest Service (NFS), University of Nebraska/Lincoln, acting through their State Forester & Director; and four fire districts (Valentine, Bassett, Springview and Ainsworth), acting through their respective Fire Chiefs or designees.

ARTICLE I – BACKGROUND AND OBJECTIVES

The Niobrara National Scenic River was designated by an act of Congress on May 24 1991[6] and set aside 76 miles of the Niobrara River in north-central Nebraska to be managed by the National Park Service through partnerships with various federal, state and local agencies and organizations as well as individual private landowners. Designated Scenic Rivers are defined as, "Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads."[7]

In order to better protect those resources entrusted to the management of the National Park Service within and adjacent to the Niobrara National Scenic River, the NPS has embraced the concept of a watershed-based fire management plan that encompasses approximately 794,000 acres, various ecosystems and habitats and involving multiple partnerships and several communities. In 2004 various agencies, organizations and private landowners came together to form a core team, known herein as the "Central Niobrara Watershed Fire Advisory Council" in a cooperative effort to plan and promote the concept of a fire management plan that is not solely dependent on individual agency boundaries and that would work across agency lines, private lands and fire district borders to help manage wildland fire on a larger, ecosystem scale.

The goals are to:

[6] **§ 1274 (a) United States Code Title 16-Conservation § 791-End and Title 17 Copyrights 1994 Edition**
[7] **§1273 (b) (2) United States Code Title 16-Conservation § 791-End and Title 17 Copyrights 1994 Edition**

- Ensure firefighter and public safety by implementing LCES, reviewing the 10 Standard Firefighting Orders and 18 Situations that Shout Watch Out, implementing temporary closures, providing public information and education.
- Suppress all unscheduled ignitions to protect private property, natural, cultural and paleontological resources from unacceptable impacts attributable to fire.
- Identify and assess hazardous fuels that have the potential to adversely affect targeted natural and cultural resources.
- Utilize prescribed fire and/or other methods (e.g. mechanical) to reduce threats posed by hazard fuels conditions.
- Utilize prescribed fire and/or other methods, as appropriate, to maintain long-term stability, diversity of fire-dependent vegetation communities and improve the integrity of the ecosystem.
- Cooperate with partners and other interested parties to incorporate their concerns and compatible resource objectives in fire management programs.

Enhance communications among agencies and organizations involved with fire management.

Develop the support and understanding of prescribed fire as a valuable management tool among communities, agencies and visitors through various educational efforts.

- Ensure that fire management activities do not adversely affect adjacent communities.
- Ensure smoke production from prescribed fires does not violate state and/or federal standards; minimize smoke impacts to neighbors and visitors to the watershed.
- Ensure fire management actions are consistent with other planning documents.

This group will formally exist for 5 years following the last date of signatures unless the partners decide to terminate this agreement at an earlier time. It may be in the best interest of said signatory partners to extend this agreement, if so desired, for purposes of continuing to administer or provide input and guidance to carrying out the fire management plan.

The authority for this agreement is found in PL 90-542 as amended; and 16 U.S.C. §§1271-1287, especially § 1281 (e) and §1282 (b) (1).

ARTICLE II – STATEMENT OF WORK

a. The NPS will:
   1) provide technical assistance in the planning of a watershed-based wildland fire management plan through formal/informal input and review, compilation of needed materials, research, providing facilities or materials, and other administrative work necessary to complete and carry out the fire management plan;
   2) meet at least biannually to review past hazard fuel reduction (HFR) and prescribed fire projects; seek funding, education and training sources and opportunities; discuss successes and problems, lessons learned and compile statistical data for acres treated/burned; compile data for fire occurrences and examine the success of communications and cooperation among partners; set goals for coming year;
   3) assist with fire research-related activities;
   4) participate in the public review process (NEPA).
b. The other signatory partners will:

1) provide technical assistance in the planning of a watershed-based wildland fire management plan through formal/informal input and review, compilation of needed materials, research, providing facilities or materials, and other administrative work necessary to complete and carry out the fire management plan;
2) meet at least biannually to review past HFR and prescribed fire projects, seek funding, education and training sources and opportunities; discuss successes and problems, lessons learned and compile statistical data for acres treated/burned; compile data for fire occurrences and examine the success of communications and cooperation among partners; set goals for coming year;
3) participate in the public review process (NEPA**).**

ARTICLE III – TERM OF AGREEMENT

This agreement will be effective for a period of five years from the date of final signature, unless terminated earlier by one or other parties pursuant to Article VIII.

ARTICLE IV – KEY OFFICIALS

All communications and notices regarding this Agreement will be directed to the following official(s) for each party:

A. For the NPS

Dan Foster
Superintendent
Niobrara National Scenic River
P.O. Box 319
Valentine, Nebraska 69201
(402) 376-1901
FAX (402) 376-1949

B. For The Nature Conservancy

Mace Hack
State Director - TNC
Nebraska Field Office
1025 Leavenworth Street
Omaha, NE 68102
(402) 342-0282
FAX (402) 342-0474

C. For NGPC

Jim Douglas
Wildlife Division Administrator
2200 N. 33rd Street
PO Box 30370
Lincoln, NE 68503-0370
(402) 471-5539
FAX 471-5528

D. For the NRCS

Steve Chick
State Conservationist
Federal Bldg. Room 152
100 Centennial Mall N.
Lincoln, NE 68508-3866
(402) 437-5300
FAX 437-5327

E. For the FWS

Steve Hicks
Deputy Project Leader
Fort Niobrara/Valentine Complex
HC 14, Box 67
Valentine, NE 69201
(402) 376-3789
FAX 376-3217

F For the NE Forest Service

Scott J. Josiah
State Forester & Director
Nebraska Forest Service
P.O. Box 830815
Lincoln, NE 68583-0815
(402) 472-1476
FAX 472-2964

G. For the Springview Fire District

Rusty Nilson
Fire Chief
HC 80 Box 125
Springview, NE 68778
(402) 497-3427 (h)

H. For the Bassett Fire District

Jim Stout
Fire Chief
PO Box 603
Bassett, NE 68714
(402) 684-3906 (h)

I. For the Valentine Fire District

Terry Engles
Fire Chief

J. For Ainsworth Fire District

Brad Fiala
Fire Chief

224 S. Hall Street
Valentine, NE 69201
(402) 376-3507 (h)

P.O. Box 425
Ainsworth, NE 69210
(402) 387-0102 (b)

ARTICLE V – PROPERTY UTILIZATION

Not Applicable

ARTICLE VI – PRIOR APPROVAL

Not Applicable

ARTICLE VII – REPORTS AND/OR OTHER DELIVERABLES

Each spring, the Fire Advisory Council will prepare a document outlining the number of known, planned prescribed fires and hazard fuel reduction projects that are supported through partners, examine their objectives and planned acres burned/treated; revise/update applicable information within the AOP; discuss training needs and opportunities; examine equipment needs and purchases among partners; and discuss educational outreach plans. In the fall, the core team will compile statistical data of the actual number of burns conducted, acres of HFR projects and prescribed fires, number of wildland fires and acres, and evaluate various aspects of the fire program.

ARTICLE VIII – TERMINATION

Any party may terminate this Agreement by providing the other with sixty (60) days advance written notice. In the event that one party provides the other party with notice of its intention to terminate, the parties will meet promptly to discuss the reasons for the notice and attempt to resolve any differences.

ARTICLE IX – STANDARD CLAUSES

1. **Civil Rights**
   During the performance of this agreement, the participants agree to abide by the terms of USDI-Civil Rights Assurance Certification, nondiscrimination and will not discriminate against any person because of race, color, religion, sex or national origin. The participants will take affirmative action to ensure that applicants are employed without regard to their race, color, religion, sex or national origin.
2. **Officials Not to Benefit**
   No member or delegate to Congress, or resident Commissioner, shall be admitted to any share or part of this agreement, or to any benefit that may arise there from, but this provision shall not be construed to extend to this agreement if made with a corporation for its general benefit.

3. Public Information Release

Partners will obtain prior approval from the Fire Advisory Council for any public information releases regarding this agreement that refer to the agreement, any activities hereunder, or any participating organizations, bureau, agency, park unit, or employee (by name or title). The specific text, layout, photographs, etc. of the proposed release must be submitted with the request for approval.

ARTICLE XI – AUTHORIZING SIGNATURES

IN WITNESS HEREOF, the parties hereto have signed their names and executed this General Agreement.

National Park Service:

Signature: _____ Title: _____
Name: _____ Date: _____

Fish and Wildlife Service:

Signature: _____ Title: _____
Name: _____ Date: _____

The Nature Conservancy:

Signature: _____ Title: _____
Name: _____ Date: _____

Nebraska Game and Parks Commission:

Signature: _____ Title: _____
Name: _____ Date: _____

Natural Resources Conservation Service:

Signature: _____ Title: _____
Name: _____ Date: _____

Nebraska Forest Service:

Signature: _____ Title: _____
Name: _____ Date: _____

Ainsworth Fire District:

Signature: _____ Title: _____
Name: _____ Date: _____

Bassett Fire District:

Signature: _____ Title: _____

Name: _____ Date: _____

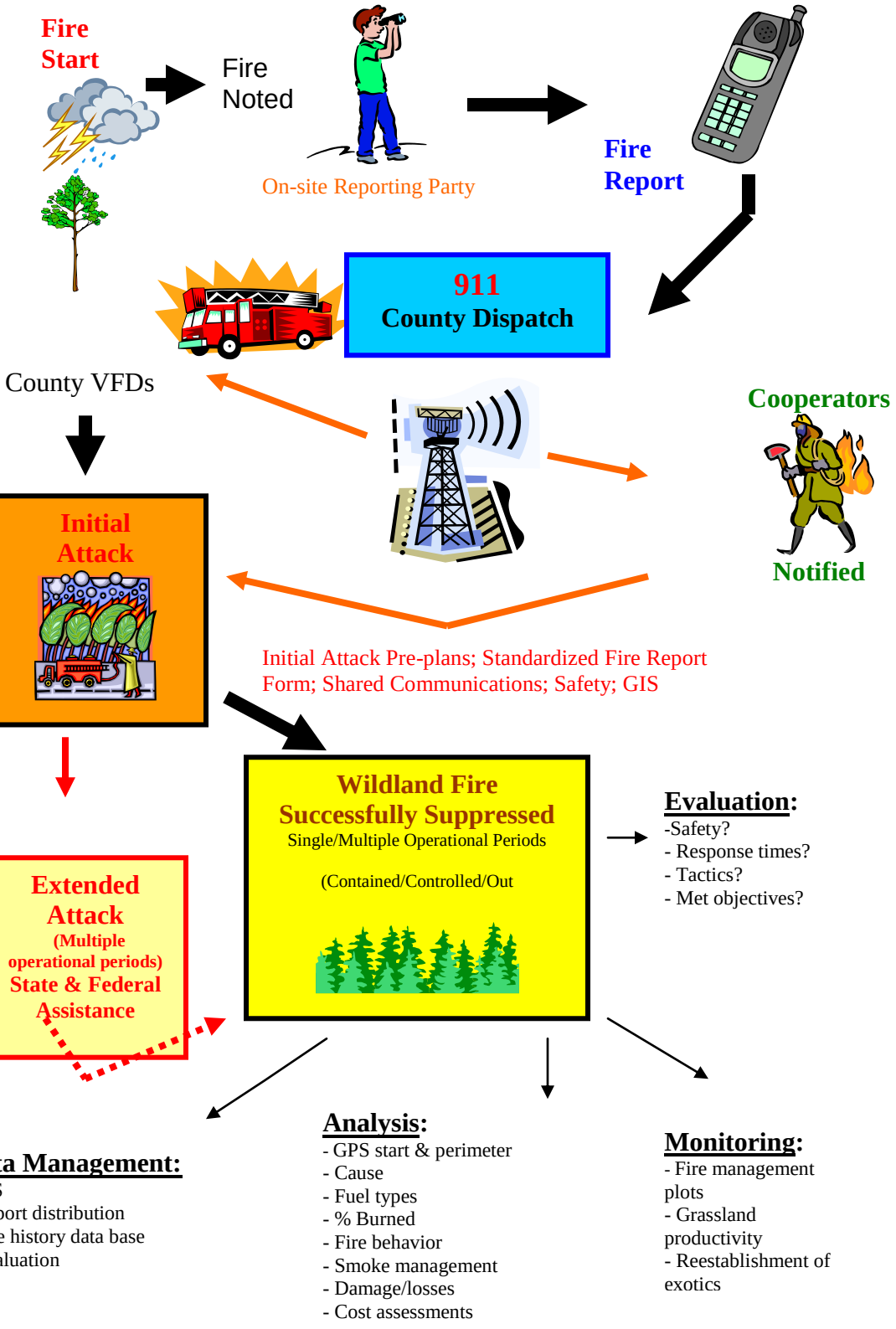
Springview Fire District:

Signature: _____ Title: _____
Name: _____ Date: _____

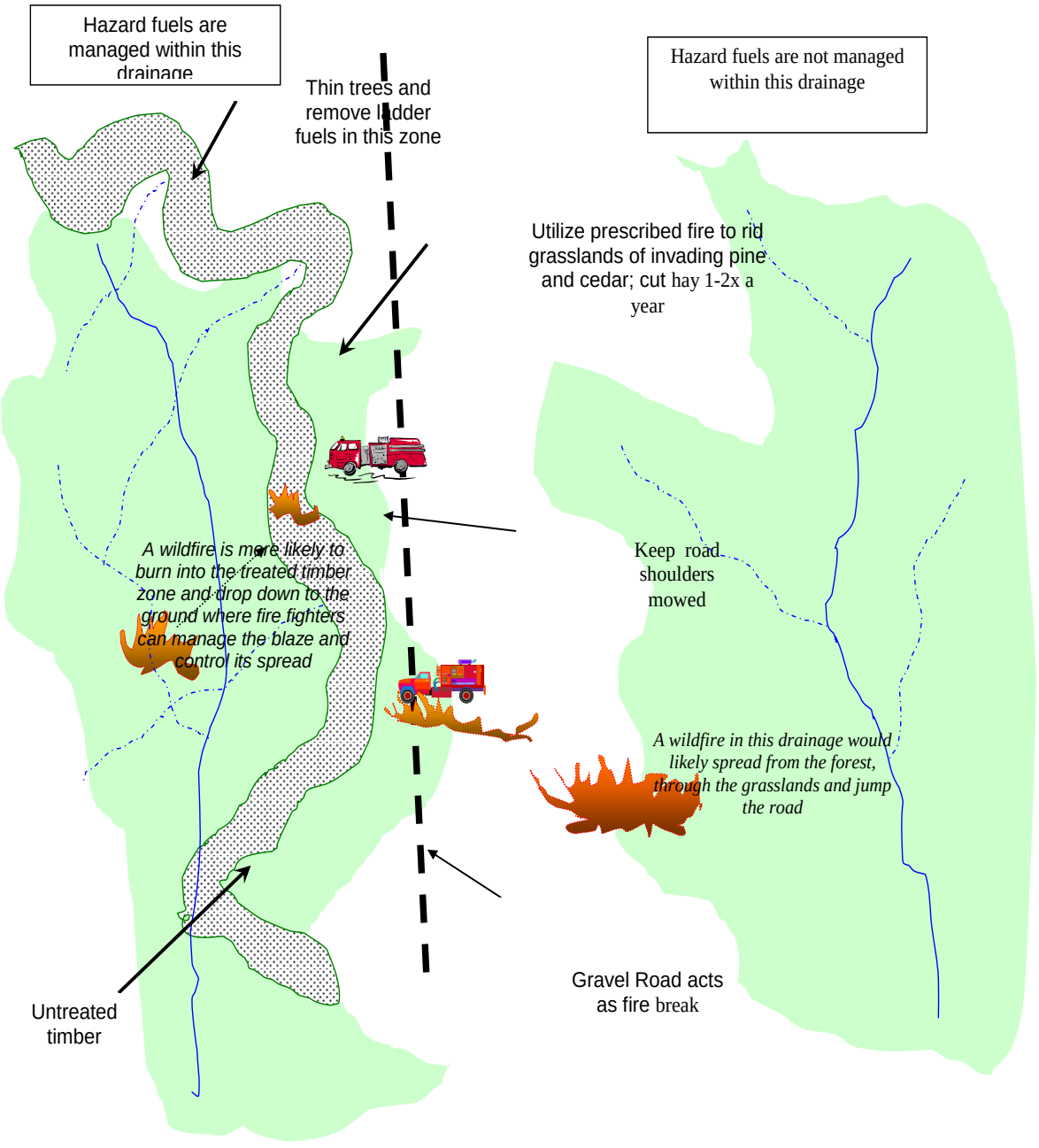
Valentine Fire District:

Signature: _____ Title: _____
Name: _____ Date: _____

APPENDIX O: Wildland Fire Suppression Flow Chart



APPENDIX P: Effectiveness of Fuel Treatments



National Fire Plan Glossary of Wildland Fire Terms

A

Agency: Any Federal, state, or county government organization participating with jurisdictional responsibilities.

Aspect: Direction toward which a slope faces.

B

Backfire: A fire set along the inner edge of a fireline to consume the fuel in the path of a wildland fire and/or change the direction of force of the fire's convection column.

Backpack Pump: A portable sprayer with hand-pump, fed from a liquid-filled container fitted with straps, used mainly in fire and pest control. (See also Bladder Bag.)

Behave: A system of interactive computer programs for modeling fuel and fire behavior that consists of two systems: BURN and FUEL.

Brush: A collective term that refers to stands of vegetation dominated by shrubby, woody plants, or low growing trees, usually of a type undesirable for livestock or timber management.

Brush Fire: A fire burning in vegetation that is predominantly shrubs, brush, and scrub growth.

Buffer Zones: An area of reduced vegetation that separates wildlands from vulnerable residential or business developments. This barrier is similar to a greenbelt in that it is usually used for another purpose such as agriculture, recreation areas, parks, or golf courses.

Burn Out: Setting fire inside a control line to widen it or consume fuel between the edge of the fire and the control line.

Burning Ban: A declared ban on open air burning within a specified area, usually due to sustained high fire danger.

Burning Conditions: The state of the combined factors of the environment that affect fire behavior in a specified fuel type.

Burning Index: An estimate of the potential difficulty of fire containment as it relates to the flame length at the most rapidly spreading portion of a fire's perimeter.

Burning Period: That part of each 24-hour period when fires spread most rapidly, typically from 10:00 a.m. to sundown.

C

Closure: Legal restriction, but not necessarily elimination of specified activities such as smoking, camping, or entry that might cause fires in a given area.

Command Staff: The command staff consists of the information officer, safety officer, and liaison officer. They report directly to the incident commander and may have assistants.

Complex: Two or more individual incidents located in the same general area, which are assigned to a single incident commander or unified command.

Contain a fire: A fuel break around the fire has been completed. This break may include natural barriers or manually and/or mechanically constructed line.

Control a fire: The complete extinguishment of a fire, including spot fires. Fireline has been strengthened so that flare-ups from within the perimeter of the fire will not break through this line.

Control Line: All built or natural fire barriers and treated fire edge used to control a fire.

Cooperating Agency: An agency supplying assistance other than direct suppression, rescue, support, or service functions to the incident control effort; e.g., Red Cross, law enforcement agency, telephone company, etc.

Crew Boss: A person in supervisory charge of usually 16 to 21 firefighters and responsible for their performance, safety, and welfare.

Crown Fire (Crowning): The movement of fire through the crowns of trees or shrubs more or less independently of the surface fire.

Curing: Drying and browning of herbaceous vegetation or slash.

D

Dead Fuels: Fuels with no living tissue in which moisture content is governed almost entirely by atmospheric moisture (relative humidity and precipitation), dry-bulb temperature, and solar radiation.

Debris Burning: A fire spreading from any fire originally set for the purpose of clearing land or for rubbish, garbage, range, stubble, or meadow burning.

Defensible Space: An area either natural or manmade where material capable of causing a fire to spread has been treated, cleared, reduced, or changed to act as a barrier between an advancing wildland fire and the loss to life, property, or resources. In practice, "defensible space" is defined as an area a minimum of 30 feet around a structure that is cleared of flammable brush or vegetation.

Detection: The act or system of discovering and locating fires.

Direct Attack: Any treatment of burning fuel, such as by wetting, smothering, or chemically quenching the fire or by physically separating burning from unburned fuel.

Dispatch: The implementation of a command decision to move a resource or resources from one place to another.

Dispatcher: A person employed who receives reports of discovery and status of fires, confirms their locations, takes action promptly to provide people and equipment likely to be needed for control in first attack, and sends them to the proper place.

Dispatch Center: A facility from which resources are directly assigned to an incident.

Division: Divisions are used to divide an incident into geographical areas of operation. Divisions are established when the number of resources exceeds the span-of-control of the operations chief. A division is located with the incident command system between the branch and the task force/strike team.

Dozer: Any tracked vehicle with a front-mounted blade used for exposing mineral soil.

Dozer Line: Fire line constructed by the front blade of a dozer.

Drip Torch: Hand-held device for igniting fires by dripping flaming liquid fuel on the materials to be burned; consists of a fuel fount, burner arm, and igniter. Fuel used is generally a mixture of diesel and gasoline.

Drought Index: A number representing net effect of evaporation, transpiration, and precipitation in producing cumulative moisture depletion in deep duff or upper soil layers.

Dry Lightning Storm: Thunderstorm in which negligible precipitation reaches the ground. Also called a dry storm.

Duff: The layer of decomposing organic materials lying below the litter layer of freshly fallen twigs, needles, leaves, and immediately above the mineral soil.

E

Engine: Any ground vehicle providing specified levels of pumping, water, and hose capacity.

Engine Crew: Firefighters assigned to an engine. The Fireline Handbook defines the minimum crew makeup by engine type.

Entrapment: A situation where personnel are unexpectedly caught in a fire behavior-related, life-threatening position where planned escape routes or safety zones are absent, inadequate, or compromised. An entrapment may or may not include deployment of a fire shelter for its intended purpose. These situations may or may not result in injury. They include "near misses."

Environmental Assessment (EA): EAs were authorized by the National Environmental Policy Act (NEPA) of 1969. They are concise, analytical documents prepared with public participation that determine if an environmental impact statement (EIS) is needed for a particular project or action. If an EA determines an EIS is not needed, the EA becomes the document allowing agency compliance with NEPA requirements.

Environmental Impact Statement (EIS): EIS's were authorized by the National Environmental Policy Act (NEPA) of 1969. Prepared with public participation, they assist decision makers by providing information, analysis, and an array of action alternatives allowing managers to see the probable effects of decisions on the environment. Generally, EIS's are written for large-scale actions or geographical areas.

Escape Route: A preplanned and understood route firefighters take to move to a safety zone or other low-risk area, such as an already burned area, previously constructed safety area, a meadow that will not burn, or natural rocky area that is large enough to take refuge without being burned. When escape routes deviate from a defined physical path, they should be clearly marked (flagged).

Escaped Fire: A fire that has exceeded or is expected to exceed initial attack capabilities or prescription.

Extended Attack Incident: A wildland fire that has not been contained or controlled by initial attack forces, and for which more firefighting resources are arriving, en route, or being ordered by the initial attack incident commander.

Extreme Fire Behavior: "Extreme" implies a level of fire behavior characteristics that ordinarily precludes methods of direct control action. One of more of the following is usually involved: high rate of spread, prolific crowning and/or spotting, presence of fire whirls, and strong convection column. Predictability is difficult because such fires often exercise some degree of influence on their environment and behave erratically, sometimes dangerously.

F

Fine (Light) Fuels: Fast-drying fuels, generally with comparatively high surface area-to-volume ratios, which are less than 1/4-inch in diameter and have a time lag of one hour or less. These fuels readily ignite and are rapidly consumed by fire when dry.

Fire Behavior: The manner in which a fire reacts to the influences of fuel, weather, and topography.

Fire Behavior Forecast: Prediction of probable fire behavior, usually prepared by a fire behavior officer, in support of fire suppression or prescribed burning operations.

Fire Behavior Specialist: A person responsible to the planning section chief for collecting weather data and for developing fire behavior predictions based on fire history, fuel, weather, and topography.

Fire Break: A natural or constructed barrier used to stop or check fires that may occur, or to provide a control line from which to work.

Fire Cache: A supply of fire tools and equipment assembled in planned quantities or standard units at a strategic point for exclusive use in fire suppression.

Fire Crew: An organized group of firefighters under the leadership of a crew leader or other designated official.

Fire Front: The part of a fire within which continuous flaming combustion is taking place. Unless otherwise specified the fire front is assumed to be the leading edge of the fire perimeter. In ground fires, the fire front may be mainly smoldering combustion.

Fire Intensity: A general term relating to the heat energy released by a fire.

Fire Line: A linear fire barrier that is scraped or dug to mineral soil.

Fire Management Plan (FMP): A strategic plan that defines a program to manage wildland and prescribed fires, and documents the fire management program in the approved land use plan. The plan is supplemented by operational plans such as preparedness plans, preplanned dispatch plans, prescribed fire plans, and prevention plans.

Fire Perimeter: The entire outer edge or boundary of a fire.

Fire Season: 1) Period(s) of the year during which wildland fires are likely to occur, spread, and affect resource values sufficient to warrant organized fire management activities. 2) A legally enacted time during which burning activities is regulated by state or local authority.

Fire Shelter: An aluminized tent offering protection by means of reflecting radiant heat and providing a volume of breathable air in a fire entrapment situation. Fire shelters should only be used in life-threatening situations, as a last resort.

Fire Shelter Deployment: The removing of a fire shelter from its case and using it as protection against fire.

Fire Use Module (Prescribed Fire Module): A team of skilled and mobile personnel dedicated primarily to prescribed fire management. These are national and interagency resources, available throughout the prescribed fire season, that can ignite, hold, and monitor prescribed fires.

Fire Weather: Weather conditions that influence fire ignition, behavior, and suppression.

Firefighting Resources: All people and major items of equipment that can or potentially could be assigned to fires.

Flame Height: The average maximum vertical extension of flames at the leading edge of the fire front. Occasional flashes that rise above the general level of flames are not considered. This distance is less than the flame length if flames are tilted due to wind or slope.

Flame Length: The distance between the flame tip and the midpoint of the flame depth at the base of the flame (generally the ground surface); an indicator of fire intensity.

Flare-up: Any sudden acceleration of fire spread or intensification of a fire. Unlike a blow-up, a flare-up lasts a relatively short time and does not radically change control plans.

Flash Fuels: Fuels such as grass, leaves, draped pine needles, fern, tree moss and some kinds of slash that ignite readily and are consumed rapidly when dry. Also called fine fuels.

Forb: A plant with a soft, rather than permanent woody stem, that is not a grass or grass-like plant.

Fuel: Combustible material. Includes vegetation, such as grass, leaves, ground litter, plants, shrubs and trees that feed a fire. (See Surface Fuels.)

Fuel Bed: An array of fuels usually constructed with specific loading, depth and particle size to meet experimental requirements; also, commonly used to describe the fuel composition in natural settings.

Fuel Loading: The amount of fuel present expressed quantitatively in terms of weight of fuel per unit area.

Fuel Model: Simulated fuel complex (or combination of vegetation types) for which all fuel descriptors required for the solution of a mathematical rate of spread model have been specified.

Fuel Moisture (Fuel Moisture Content): The quantity of moisture in fuel expressed as a percentage of the weight when thoroughly dried at 212 degrees Fahrenheit.

Fuel Reduction: Manipulation, including combustion, or removal of fuels to reduce the likelihood of ignition and/or to lessen potential damage and resistance to control.

Fuel Type: An identifiable association of fuel elements of a distinctive plant species, form, size, arrangement, or other characteristics that will cause a predictable rate of fire spread or difficulty of control under specified weather conditions.

G

General Staff: The group of incident management personnel reporting to the incident commander. They may each have a deputy, as needed. Staff consists of operations section chief, planning section chief, logistics section chief, and finance/administration section chief.

Geographic Area: A political boundary designated by the wildland fire protection agencies, where these agencies work together in coordination and effective utilization.

Ground Fuel: All combustible materials below the surface litter, including duff, tree or shrub roots, punchy wood, peat, and sawdust that normally support a glowing combustion without flame.

H

Hand Line: A fireline built with hand tools.

Hazard Reduction: Any treatment of a hazard that reduces the threat of ignition and fire intensity or rate of spread.

Head of a Fire: The side of the fire having the fastest rate of spread.

Heavy Fuels: Fuels of large diameter such as snags, logs, and large limb wood that ignite and are consumed more slowly than flash fuels.

Helibase: The main location within the general incident area for parking, fueling, maintaining, and loading helicopters. The helibase is usually located at or near the incident base.

Holding Actions: Planned actions required to achieve wildland prescribed fire management objectives. These actions have specific implementation timeframes for fire use actions but can have less sensitive implementation demands for suppression actions.

Holding Resources: Firefighting personnel and equipment assigned to do all required fire suppression work following fireline construction but generally not including extensive mop-up.

I

Incident: A human-caused or natural occurrence, such as wildland fire, that requires emergency service action to prevent or reduce the loss of life or damage to property or natural resources.

Incident Action Plan (IAP): Contains objectives reflecting the overall incident strategy and specific tactical actions and supporting information for the next operational period. The plan may be oral or written. When written, the plan may have a number of attachments, including: incident objectives, organization assignment list, division assignment, incident radio communication plan, medical plan, traffic plan, safety plan, and incident map.

Incident Command Post (ICP): Location at which primary command functions are executed. The ICP may be co-located with the incident base or other incident facilities.

Incident Command System (ICS): The combination of facilities, equipment, personnel, procedure and communications operating within a common organizational structure, with responsibility for the management of assigned resources to effectively accomplish stated objectives pertaining to an incident.

Incident Commander: Individual responsible for the management of all incident operations at the incident site.

Incident Management Team: The incident commander and appropriate general or command staff personnel assigned to manage an incident.

Incident Objectives: Statements of guidance and direction necessary for selection of appropriate strategy, and the tactical direction of resources. Incident objectives are based on realistic expectations of what can be accomplished when all allocated resources have been effectively deployed.

Initial Attack: The actions taken by the first resources to arrive at a wildland fire to protect lives and property, and prevent further extension of the fire.

J

K

Keech Byram Drought Index (KBDI): Commonly used drought index adapted for fire management applications, with a numerical range from 0 (no moisture deficiency) to 800 (maximum drought).

L

Ladder Fuels: Fuels that provide vertical continuity between strata, thereby allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease. They help initiate and assure the continuation of crowning.

Large Fire: 1) For statistical purposes, a fire burning more than a specified area of land e.g., 300 acres. 2) A fire burning with a size and intensity such that its behavior is determined by interaction between its own convection column and weather conditions above the surface.

Light (Fine) Fuels: Fast-drying fuels, generally with comparatively high surface area-to-volume ratios, which are less than 1/4-inch in diameter and have a time lag of one hour or less. These fuels readily ignite and are rapidly consumed by fire when dry.

Lightning Activity Level (LAL): A number, on a scale of 1 to 6, which reflects frequency and character of cloud-to-ground lightning. The scale is exponential, based on powers of 2 (i.e., LAL 3 indicates twice the lightning of LAL 2).

Litter: Top layer of the forest, scrubland, or grassland floor, directly above the fermentation layer, composed of loose debris of dead sticks, branches, twigs, and recently fallen leaves or needles, little altered in structure by decomposition.

Live Fuels: Living plants, such as trees, grasses, and shrubs, in which the seasonal moisture content cycle is controlled largely by internal physiological mechanisms, rather than by external weather influences.

M

Mineral Soil: Soil layers below the predominantly organic horizons; soil with little combustible material.

Mobilization: The process and procedures used by all organizations, Federal, state and local for activating, assembling, and transporting all resources that have been requested to respond to or support an incident.

Mop-up: To make a fire safe or reduce residual smoke after the fire has been controlled by extinguishing or removing burning material along or near the control line, felling snags, or moving logs so they will not roll downhill.

Multi-Agency Coordination (MAC): A generalized term which describes the functions and activities of representatives of involved agencies and/or jurisdictions who come together to make decisions regarding the prioritizing of incidents, and the sharing and use of critical resources. The MAC organization is not a part of the on-scene ICS and is not involved in developing incident strategy or tactics.

Mutual Aid Agreement: Written agreement between agencies and/or jurisdictions in which they agree to assist one another upon request, by furnishing personnel and equipment.

N

National Environmental Policy Act (NEPA): NEPA is the basic national law for protection of the environment, passed by Congress in 1969. It sets policy and procedures for environmental protection, and authorizes environmental impact statements and environmental assessments to be used as analytical tools to help Federal managers make decisions.

National Fire Danger Rating System (NFDRS): A uniform fire danger rating system that focuses on the environmental factors that control the moisture content of fuels.

National Wildfire Coordinating Group: A group formed under the direction of the Secretaries of Agriculture and the Interior and comprised of representatives of the U.S. Forest Service, Bureau of Land Management, Bureau of Indian Affairs, National Park Service, U.S. Fish and Wildlife Service, and Association of State Foresters. The group's purpose is to facilitate coordination and effectiveness of wildland fire activities and provide a forum to discuss, recommend action, or resolve issues and problems of substantive nature. NWCG is the certifying body for all courses in the National Fire Curriculum.

Normal Fire Season: 1) A season when weather, fire danger, and number and distribution of fires are about average. 2) Period of the year that normally comprises the fire season.

O

Operational Period: The period of time scheduled for execution of a given set of tactical actions as specified in the incident action plan. Operational periods can be of various lengths, although usually not more than 24 hours.

P

Pack Test: Used to determine the aerobic capacity of fire suppression and support personnel, and assign physical fitness scores. The test consists of walking a specified distance, with or without a weighted pack, in a predetermined period of time, with altitude corrections.

Peak Fire Season: That period of the fire season during which fires are expected to ignite most readily, to burn with greater than average intensity, and to create damages at an unacceptable level.

Personnel Protective Equipment (PPE): All firefighting personnel must be equipped with proper equipment and clothing in order to mitigate the risk of injury from, or exposure to, hazardous conditions encountered while working. PPE includes, but is not limited to: 8-inch high-laced leather boots with lug soles, fire shelter, hard hat with chin strap, goggles, ear plugs, aramid shirts and trousers, leather gloves, and individual first aid kits.

Preparedness: Condition or degree of being ready to cope with a potential fire situation.

Prescribed Fire: Any fire ignited by management actions under certain, predetermined conditions to meet specific objectives related to hazardous fuels or habitat improvement. A written, approved prescribed fire plan must exist, and NEPA requirements must be met, prior to ignition.

Prescribed Fire Plan (Burn Plan): This document provides the prescribed fire boss information needed to implement an individual prescribed fire project.

Prescription: Measurable criteria that define conditions under which a prescribed fire may be ignited, guide selection of appropriate management responses, and indicate other required actions. Prescription criteria may include safety, economic, public health, and environmental, geographic, administrative, social, or legal considerations.

Prevention: Activities directed at reducing the incidence of fires, including public education, law enforcement, personal contact, and reduction of fuel hazards.

Project Fire: A fire of such size or complexity that a large organization and prolonged activity is required to suppress it.

Pulaski: A combination chopping and trenching tool, which combines a single-bitted axe-blade with a narrow adze-like trenching blade fitted to a straight handle. Useful for grubbing or trenching in duff and matted roots. Well-balanced for chopping.

R

Rate of Spread: The relative activity of a fire in extending its horizontal dimensions. It is expressed as a rate of increase of the total perimeter of the fire, as rate of forward spread of the fire front, or as rate of increase in area, depending on the intended use of the information. Usually it is expressed in chains or acres per hour for a specific period in the fire's history.

Reburn: The burning of an area that has been previously burned but that contains flammable fuel that ignites when burning conditions are more favorable; an area that has re-burned.

Red Card: Fire qualification card issued to fire rated persons showing their training needs and their qualifications to fill specified fire suppression and support positions in a large fire suppression or incident organization.

Rehabilitation: The activities necessary to repair damage or disturbance caused by wildland fires or the fire suppression activity.

Relative Humidity (RH): The ratio of the amount of moisture in the air, to the maximum amount of moisture that air would contain if it were saturated. The ratio of the actual vapor pressure to the saturated vapor pressure.

Remote Automatic Weather Station (RAWS): An apparatus that automatically acquires, processes, and stores local weather data for later transmission to the GOES Satellite, from which the data is re-transmitted to an earth-receiving station for use in the National Fire Danger Rating System.

Resources: 1) Personnel, equipment, services, and supplies available, or potentially available, for assignment to incidents. 2) The natural resources of an area, such as timber, crass, watershed values, recreation values, and wildlife habitat.

Resource Management Plan (RMP): A document prepared by field office staff with public participation, and approved by field office managers that provides general guidance and direction for land management activities at a field office. The RMP identifies the need for fire in a particular area and for a specific benefit.

Retardant: A substance or chemical agent that reduces the flammability of combustibles.

Run (of a fire): The rapid advance of the head of a fire with a marked change in fire line intensity and rate of spread from that noted before and after the advance.

Running: A rapidly spreading surface fire with a well-defined head.

S

Safety Zone: An area cleared of flammable materials used for escape in the event the line is outflanked, or in case a spot fire causes fuels outside the control line to render the line unsafe. In firing operations, crews progress so as to maintain a safety zone nearby allowing the fuels inside the control line to be consumed before going ahead. Safety zones may also be constructed as integral parts of fuel breaks; they are greatly enlarged areas, which can be used with relative safety by firefighters and their equipment in the event of a blowup in the vicinity.

Size-up: To evaluate a fire to determine a course of action for fire suppression.

Slash: Debris left after logging, pruning, thinning or brush cutting; includes logs, chips, bark, branches, stumps, and broken understory trees or brush.

Smoke Management: Application of fire intensities and meteorological processes to minimize degradation of air quality during prescribed fires.

Smoldering Fire: A fire burning without flame and barely spreading.

Snag: A standing dead tree or part of a dead tree from which at least the smaller branches have fallen.

Spot Fire: A fire ignited outside the perimeter of the main fire by flying sparks or embers.

Spot Weather Forecast: A special forecast issued to fit the time, topography, and weather of each specific fire. These forecasts are issued upon request of the user agency and are more detailed, timely, and specific than zone forecasts.

Spotting: Behavior of a fire producing sparks or embers that are carried by the wind and start new fires beyond the zone of direct ignition by the main fire.

Springbranch Canyon: A canyon or gully fed by a creek or rivulet whose water source is a spring and/or seep. Temperatures are often moderated and canyon bottoms moister, allowing for unusual vegetation such as paper birch, ferns, mosses, etc.

Staging Area: Locations set up at an incident where resources can be placed while awaiting a tactical assignment on a three-minute available basis. Staging areas are managed by the operations section.

Strategy: The science and art of command as applied to the overall planning and conduct of an incident.

Structure Fire: Fire originating in and burning any part or all of any building, shelter, or other structure.

Suppressant: An agent, such as water or foam, used to extinguish the flaming and glowing phases of combustion when direction applied to burning fuels.

Suppression: All the work of extinguishing or containing a fire, beginning with its discovery.

Surface Fuels: Loose surface litter on the soil surface, normally consisting of fallen leaves or needles, twigs, bark, cones, and small branches that have not yet decayed enough to lose their identity; also grasses, forbs, low and medium shrubs, tree seedlings, heavier branch wood, downed logs, and stumps interspersed with or partially replacing the litter.

T

Tactics: Deploying and directing resources on an incident to accomplish the objectives designated by strategy.

Test Fire: A small fire ignited within the planned burn unit to determine the characteristic of the prescribed fire, such as fire behavior, detection performance, and control measures.

Time lag: Time needed under specified conditions for a fuel particle to lose about 63 percent of the difference between its initial moisture content and its equilibrium moisture content. If conditions remain unchanged, a fuel will reach 95 percent of its equilibrium moisture content after four time lag periods.

Torching: The ignition and flare-up of a tree or small group of trees, usually from bottom to top.

Two-way Radio: Radio equipment with transmitters in mobile units on the same frequency as the base station, permitting conversation in two directions using the same frequency in turn.

Type: The capability of a firefighting resource in comparison to another type. Type 1 usually means a greater capability due to power, size, or

capacity.

U

Uncontrolled Fire: Any fire that threatens to destroy life, property, or natural resources,

Underburn: A fire that consumes surface fuels but not trees or shrubs. (See Surface Fuels.)

V

Volunteer Fire Department (VFD): A fire department of which some or all members are unpaid.

W

Weather Information and Management System (WIMS): An interactive computer system designed to accommodate the weather information needs of all Federal and state natural resource management agencies. Provides timely access to weather forecasts, current and historical weather data, the National Fire Danger Rating System (NFDRS), and the National Interagency Fire Management Integrated Database (NIFMID).

Wet Line: A line of water or water and chemical retardant, sprayed along the ground, that serves as a temporary control line from which to ignite or stop a low-intensity fire.

Wildland Fire: Any nonstructural fire, other than prescribed fire, that occurs in the wildland.

Wildland Fire Implementation Plan (WFIP): A progressively developed assessment and operational management plan that documents the analysis and selection of strategies and describes the appropriate management response for a wildland fire being managed for resource benefits.

Wildland Fire Situation Analysis (WFSA): A decision-making process that evaluates alternative suppression strategies against selected environmental, social, political, and economic criteria. Provides a record of decisions.

Wildland Fire Use: The management of naturally ignited wildland fires to accomplish specific pre-stated resource management objectives in predefined geographic areas outlined in fire management plans.

Wildland Urban Interface: The line, area or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.

General Glossary of acronyms and terms

AMR—Appropriate Management Response

BI – Burning Index

COE – Army Corps of Engineers, Department of Defense

DI-1202 – Individual Fire Report form

DO-18 – Director's Order 18

DOD—Department of Defense\

DOI—Department of the Interior

EMS—Emergency Medical Services

EPMP-- Northern Great Plains Exotic Plant Management Plan

FIREPRO – National Park Service Fire Program

FMH -- Fire Monitoring Handbook

FMO -- Fire Management Office

FMP -- Fire Management Plan

FMU – Fire Management Unit

FPA—Fire Program Analysis
FWS – U.S. Fish and Wildlife Service, Department of Interior
GMP – General Management Plan
HFR – Hazardous Fuel Reduction
IQCS—Incident Qualifications Certification System
KBDI—Keetch Byram Drought Index
LAL – Lightning Activity Level
LCES – Lookouts, Communication, Escape Routes, and Safety Zones (the 4 Fire Orders)
MIST – Minimum Impact Suppression Tactics
MWRO – Midwest Regional Office
NEPA – National Environmental Policy Act
NHPA—National Historic Preservation Act
NIFC -- National Interagency Fire Center
NFDRS – National Fire Danger Rating System
NPS – National Park Service
NWCG – National Wildland fire Coordinating Group
PIO -- Public Information Officer
RAWS -- Remote Automated Weather Station
RFD – Rural Fire Districts
RM-18 – Reference Manual 18
SHPO – State Historic Preservation Office
USDA-United States Department of Agriculture
USDI-United States Department of the Interior
WFIP - Wildland Fire Implementation Plan
WFMI-- Wildland Fire Management Information (System)
WFSA - Wildland Fire Situation Analysis
WUI – Wildland Urban Interface

ADDITIONAL DEFINITIONS AND TERMS

Appropriate Management Response (AMR)	**The objective of putting the fire dead out by a certain time has been replaced by the need to make unique decisions with each fire start to consider the land, resource, and incident objectives, and to decide the appropriate management response and tactics that result in minimum cost and minimum resource damage.** **Fire management requires the fire manager and firefighter to select management tactics commensurate with the fire's existing or potential behavior while causing the least possible impact on the resource being protected.**
Comprehensive Strategy	**A logically organized and tracked sequence of activities designed to achieve and/or maintain the desired conditions.**
Consultation	**A discussion, conference, or forum in which advice or information is sought or given, or information or ideas are exchanged. Consultation can take place on an informal basis in some cases, but formal consultation requirements for compliance with some regulations, such as section 106 of NHPA as published in 36 CFR Part 800, demand written documentation of the process.** **Consultation with recognized tribes is done on a government-to-government basis, according to NPS Management Policies, 2006, p. 256. Consultation is also a part of NEPA with consultation commonly involving Section 7 of the Endangered Species Act and the Clean Water Act (Federal Water Pollution Control Act of 1972, as amended).**

Desired Conditions	**The optimal state of a resource or visitor experience. A description of the "ideal" resource conditions or visitor experience opportunities to be achieved in a specific portion of a park (desired conditions are found in NIOB's GMP).**
Ecosystem	**An interacting system of interdependent organisms**
Ecosystem management	**The careful and skillful use of ecological, economic, social, and managerial principles in managing ecosystems to produce, restore, or sustain ecosystem integrity and desired conditions over the long term.**
Endangered Species Act (ESA)	**Endangered Species Act of 1973, as amended**
Ethnographic Resources	**Objects and places, including sites, structures, landscapes, and natural resources with traditional cultural meaning and value to associated peoples. Research and consultation with associated people identifies and explains the places and things they find culturally meaningful.**
Fire Management Plan (FMP)	**A strategic plan that defines a program to manage wildland and prescribed fires, and documents the fire management program in the approved land use plan.**

Fire Management Unit (FMU)	**Any land management area definable by objectives, topographic features, values-to-be-protected, fuel types, or major fire regimes, that sets it apart from management characteristics of another unit.**
Fire regime	**The pattern of fire across a landscape, characterized by frequency, intensity, and type and size of typical fire events, resulting from a unique combination of climate and vegetation.**
Fundamental Resources and Values	**Those resources identified in the foundation of planning and management that are critical to achieving NIOBs purpose and maintaining its significance. They may include systems, processes, features, visitor experiences, stories, scenes, sounds, smells or other resources and values.**
Fuel	**The materials burned in a fire: duff, litter, grass, dead branch wood, snags, logs, stumps, weeds, brush, foliage, and, to a limited degree, live vegetation.**
Foundation for Planning and Decision-making (or Management)	**A statement clearly defining the legal and policy requirements that mandate NIOBs basic management responsibilities, including the identification and comprehensive analysis of those resources and values determined to be critical to achieving NIOBs purpose and maintaining it significance, or to be otherwise important to park planning and management.**

GMP, General Management Plan	**General management planning results in a shared understanding among NPS managers and the public about the kinds of resource conditions and visitor experiences that will best fulfill the purpose of NIOB.**
Guild	**A group of species that exploits the same class of environmental resources in a similar way.**
Hazard fuels	**Fuels which, when ignited, threaten: public safety, structures and facilities, cultural resources, natural resources, natural processes, or any other social, political, or economic value. In addition, fuels that permit the spread of wildland fires across administrative boundaries except as authorized by agreement.**
Implementation Plan	**Implementation plans tier off NIOBs general management plan, program plans, and strategic plan and describe in detail the high-priority actions that will be taken over the next several years to help achieve the desired conditions for NIOB.**
Initial Attack	**Wildland fires that are identified for suppression must receive appropriate initial attack action (IA) as defined in the fire management plan. The goal in all IA actions is to limit damage to values to be protected and to prevent the escape of the fire.**

Minimum Impact Suppression Tactics (MIST)	**The use of the minimum amount of forces necessary to effectively achieve the fire management protection objectives consistent with land and resource management objectives. It implies a greater sensitivity to the impacts of suppression tactics and their long-term effects when determining how to implement an appropriate suppression response.**
Mitigation actions	**Mitigation actions are considered to be those on-the-ground activities that serve to check, direct, or delay the spread of unwanted wildland fire and minimize threats to life, property, and resources. Mitigation actions may also refer to actions taken to protect values during suppression or in prescribed fire planning and implementation.**
National Fire Danger Rating System (NFDRS)	**A system to predict several measures of fire probability and resistance to control.**
National Historic Preservation Act of 1966, As amended through 2000 (NHPA)	**This Act became law on October 15, 1966 (Public Law 89-665, October 15, 1966; 16 U.S.C. 470 et seq.). Since enactment, there have been 22 amendments. The NHPA and its implementing regulations are the primary Federal historic preservation laws and regulations outlining the historic preservation responsibilities of the agencies.**

Natural Resource Inventory and Monitoring Program (Vital Signs)	**Natural resource inventory and monitoring provides site-specific information needed to understand and identify change in complex, variable, and imperfectly understood natural systems and to determine whether observed changes are within natural levels of variability or may be indicators of unwanted human influences. The monitoring is often referred to as "Vital Signs" monitoring, because it focuses on quantifying changes in indicators of ecosystem health.**
Other Important Resources and Values	**Significant resources and values that are not directly linked to NIOB purpose, but that support the Fundamental Resources and Values of NIOB or are part of resource stewardship because of policy, statute, or regulation, and are determined to be important to park planning and management.**
Park Purpose and Significance	**Statements of why, within a national, regional, and system wide context, NIOBs resources and values are important enough to warrant national park designation.**
Partner	**An agency, organization, or individual with whom the NPS has a documented agreement.**
Prescribed Fire	**Purposefully ignited fire intended to meet management objectives.**

Prescribed Fire [Burn] Plan	**Sets the objectives for and parameters by which a prescribed fire may be used to meet management objectives. Parameters include weather conditions, air quality objectives, holding actions, techniques and other specifics associated with a project implementation plan.**
Program Plan or Program Management Plan	**Park managers and staffs conduct various kinds of program planning to identify and recommend the best strategies for achieving the desired conditions and/or visitor experiences related to each particular program area (resource management, visitor use, facility management, etc.). Park-level program plans are not decision-making documents.**
Resources	**See Fundamental Resources and Values and Other Important Resources**
Resource Stewardship Strategy (RSS)	**This 15-20 year program management document provides a clear linkage between the qualitative desired conditions prescribed in the General Management Plan and the measurable performance outcomes and implementing actions identified in park strategic planning. These linkages include specific science- and scholarship-based Comprehensive Strategies that provide park managers with a logical sequence of activities necessary to achieve or maintain NIOBs desired conditions.**

State Historic Preservation Officer (SHPO)	**State Historic Preservation Officers (SHPO) administer the national historic preservation program at the State level, review National Register of Historic Places nominations, maintain data on historic properties that have been identified but not yet nominated, and consult with Federal agencies during Section 106 review. SHPO's are designated by the governor of their respective State or territory.**
Special Mandates	**Legal, regulatory, and policy requirements specific to NIOB or to the National Park Service generally. Protection of habitat for an endangered species in a park not set aside for that purpose exemplifies a special mandate.**
Stakeholders	**An individual, group, or other organization that can place a claim on our attention, resources, or output, or is affected by that output. In other words, a stakeholder has a stake in what we do and can exert significant influence on park or program mission and strategies. Examples include, citizens, higher level managers, special interest groups, and governing bodies (e.g., Congress).**
Structure (as a cultural resource)	**A constructed work, usually immovable by nature or design, consciously created to serve a human activity**

Suppression	**An appropriate management response to wildland fire that results in curtailment of fire spread and eliminates all identified threats from the particular fire. All wildland fire suppression activities provide for firefighter and public safety as the highest consideration while minimizing loss of resource values, economic expenditures, and the use of critical firefighting resources.**
Tribal Historic Preservation Officer (THPO)	**In the Context of RSS efforts, the office that engages in the consultation for those tribes that have assumed SHPO responsibilities on their tribal lands and have been certified pursuant to Section 101(d)(2) of the NHPA. THPO's would be consulted in lieu of the SHPO, while non-certified tribes would be consulted in addition to the SHPO.**
Vital Signs (Vital Signs Monitoring)	**A set of indicators that, as with medical vital signs, give a general measure of ecosystem health.**
Wildland Fire	**Any non-structure fire, other than prescribed fire, that occurs in the wildland. This term encompasses fires previously called both wildland fires and prescribed natural fires.**
Wildland fire management program	**The full range of activities and functions necessary for planning, preparedness, emergency suppression operations, and emergency rehabilitation of wildland fires; prescribed fire operations; and non-fire fuels management to reduce risks to public safety and achieve resource management goals.**

Wildland Fire Situation Analysis (WFSA)	**The decision-making process that evaluates alternative management strategies against selected safety, environmental, social, economic, political, and resource management objectives. Also, the paperwork documenting this process.**
Wildland fire use (WFU)	**The management of naturally-ignited wildland fires to accomplish specific, pre-stated, resource management objectives in pre-defined geographic areas outlined in Fire Management Plans. It is not authorized in this FMP.**
Wildland-urban interface	**An area or zone where structures and other human development occur next to or within undeveloped wildland fuel complexes.**