FIRE MANAGEMENT PLAN

FOR

CRESCENT LAKE\NORTH PLATTE

NATIONAL WILDLIFE REFUGE COMPLEX

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I. INTRODUCTION

U.S. Fish and Wildlife Service policy requires that an approved Fire Management Plan must be in place for all of Service lands with burnable vegetation. Service Fire Management Plans must be consistent with firefighter and public safety, protection values, and land, natural, and cultural resource management plans, and must address public health issues. Fire Management Plans must also address all potential wildland fire occurrences and may include the full range of appropriate management responses. The responsible agency administrator must coordinate, review, and approve Fire Management Plans to ensure consistency with approved land management plans.

Service policy allows for a wildland fire management program that offers a full range of activities and functions necessary for planning, preparedness, emergency suppression operations, emergency rehabilitation, and prescribed fire operations, including non-activity fuels management to reduce risks to public safety and to restore and sustain ecosystem health. This plan fulfills that requirement and provides the guidance necessary for managing fire to achieve the resource management objectives of Crescent Lake\North Platte National Wildlife Refuge Complex.

Throughout this plan the Crescent Lake/North Platte National Wildlife Refuge Complex will be referred to as the "Complex", the Crescent Lake National Wildlife Refuge as "Crescent Lake", and the North Platte National Wildlife Refuge as "North Platte".

Authority and guidance for implementing this plan are found in:

K. Protection Act of September 20, 1922 (42 Stat. 857; 16 U.S.C. 594).

L. Reciprocal Fire Protection Act of May 27, 1955 (69 Stat. 66, 67; 42 U.S.C. 1856, 1845a and b).

M. National Wildlife Refuge System Administrative Act of 1966 as amended (80 Stat. 927; 16 U.S.C. 1601).

N. Federal Fire Prevention and Control Act of October 29, 1974 (88 Stat. 1535; 15 U.S.C. 2201).

O. Department of the Interior Manual, Part 620 DM-1, Wildland Fire Management (April 10, 2000).

P. United States Fish and Wildlife Service Wildland Fire Management Handbook (December 2, 2000).

Q. United States Fish and Wildlife Service Refuge Manual, 621 FW1-3, Fire Management (February 7, 2000).

II. COMPLIANCE WITH FWS POLICY

L. Purpose

Crescent Lake was created by Executive Order 5579 on March 16, 1931, as a preserve and breeding ground for native birds. Crescent Lake now managed primarily for Migratory Birds and resident species, as well as for public enjoyment and research in a natural setting. The refuge includes a proposed wilderness and two research natural areas. Public use of the refuge is also an important refuge purpose. The refuge receives approximately 12-20 thousand visits annually. The purpose and legislative history for Crescent Lake can be found in Appendix A.

North Platte was established by Executive Order 2446 on August 21, 1916. This Order set aside the reservation "as a preserve and breeding ground for native birds". The refuge is overlain on a Bureau of Reclamation (Bureau) irrigation reservoir project, Inland Lakes. The Executive Order was subject to Bureau's use, including management of water for irrigation. From 1916 to 1986 the U. S. Fish and Wildlife Service (Service) managed only the wildlife aspects of the refuge and the Bureau managed all other aspects of the Inland Lakes including recreation. In 1976 Public Law 94-223 gave the Service authority for all programs except irrigation within the refuge boundary. In 1986 the Bureau turned over all programs including recreation for Service management. The purpose and legislative history for North Platte can be found in Appendix A.

B. Objectives

Goals and objectives for Crescent Lake and North Platte can be found in Appendix A.

C. Effect of Fire Upon Complex/Refuge Objectives

Fire was an essential part of the western Nebraska's ecosystem, and is a primary tool available to resource managers for vegetation and habitat management. Proper management of the Complex's habitats is essential to meeting refuge objectives and Service bio-diversity mandates.

Fire can also have negative effects upon Complex programs when uncontrolled. Wildfires can burn vegetation that was projected as use for game forage or habitat for certain species. Wildfires may also cause damage to improvements and sensitive areas.

While the short term damage from a wildfire to the Complex could be serious, the long term effect upon Complex resources would most likely be negligible or positive. That is not true for adjacent ranches and farms, where fires can cause disastrous economic consequences. Since the areas economy is dominated by ranching and farming, fire protection is a very high priority. Fires escaping from the Complex would have considerable negative economic and political implications.

While wildfires can produce positive effects for Complex resources, there is also a possibility of negative effects upon resources and public safety. Therefore, all wildfires will be suppressed to minimize damage, and prescribed fire will be used to maximize benefits.

D. Impacts of Fire Management Activities

Fire management activities on the Complex can greatly impact neighboring lands. While both prescribed fire and wildfire can have positive affects on refuge management objectives, both activities can have negative impacts on neighbors. A prescribed burn that escapes or wildfire which spreads to adjacent ranches and farms can have disastrous economic and political consequences. Since the area's economy is driven by ranching and farming, fire protection is a very high priority.

Realizing the consequences Complex fire management activities can have on the neighbors, extreme caution is used when planning and conducting prescribed burns on the Complex. In addition, all wildfires are aggressively suppressed to minimize damage to adjoining lands.

When a wildfire occurs on neighboring lands, refuge firefighters provide assistance when a request is made by any participating member of the Mutual Aid Association in which the refuge belongs. Crescent Lake is a member of the Central Panhandle Mutual Aid Association and North Platte is a member of the Scotts Bluff County Mutual Aid Association. Mutual aid agreements are in place for both refuges and are effective for 5 years from the date signed.

It is understood by the agreement that when mutual aid is provided, each member of the Association will supervise its own personnel and equipment. However, the Fire Chief of the District requesting mutual aid assistance shall be the incident commander (IC) in over-all charge of the incident. Should the fire enter on refuge land, the incident will be turned over to refuge personnel and an incident commander will be appointed.

III. DESCRIPTION OF AREA AND FIRE EFFECTS

A. Crescent Lake/North Platte National Wildlife Refuge Complex

1. General Description

Crescent Lake consists of 45,818 acres located approximately 28 miles North Oshgosh, NE. The refuge is located in the south western edge of the Nebraska Sandhills; a unique region which contains some of the largest remaining stands of mid and tall native prairie in North America. The relative location is depicted in Exhibit 1 Vicinity Map.

North Platte consist of 5,177 acres located in the Nebraska Panhandle about eight miles north of the city of Scottsbluff. The refuge is superimposed over Three Bureau reservoirs and one island. It consist of four Units: Lake Minatare, Winters Creek, Lake Alice, and Stateline Island. The relative location is depicted in Exhibit 2 Vicinity Map.

2. Topography and Soils

Crescent Lake consists of approximately 37,484 acres of native prairie grasslands and undulating sand dunes, 4,755 acres of type II fresh meadows, 1,154 of type III shallow Fresh Marshes, 309 acres of type IV deep fresh marshes, 2,033 acres of type V open fresh water, 70 acres of noncommercial tree groves, 10 acres of brush and 34 acres of administrative lands including 12 miles of roads. The predominate types of topsoils are sand and sandy loams. These soils are extremely well drained. Soils on upland sites are highly erodible and erosion is a major concern following wildfires and during the planning of prescribed fires.

North Platte is located in the central part of the High Plains, the refuge is situated on a terrace or bench area north of the North Platte River between two bedrock outcrops. The area has numerous gravel veins indicating it is a remnant of an old alluvial terrace. Soils on the refuge consist of the Bayard-Bridgeport association with some Valentine- Dwyer association especially around the Winters Creek Unit. The refuge consist of approximately 2,688 acres of open water, 1,591 acres of grassland, 390 acres of flooded timber, 332 acres of trees and brush,

6 acres of marsh, 36 acres of administrative site, 28 acres of road, 26 acres of cabin sites, and 24 acres of canals.

3. Climate

A variable climate dominates the area. Winters are cold with prevailing northwesterly winds and periodic severe winter storms. Summers are hot with prevailing southerly winds. Low humidity, high temperatures, and moderate to strong winds dominate the summer season. The average frost-free period for the area is approximately 110 days, with a mean annual temperature of 46.8 to 48 degrees fahrenheit. The fall, winter, and spring months are generally dry and windy.

Annual precipitation averages 14 to 17.59 inches across the Complex. Precipitation is generally in the form of rain, and occurs primarily during the summer. Precipitation generally occurs in association with small but intense storm cells with heavy lightning activity and strong winds. These conditions commonly produce very spotty rainfalls in localized areas. Dry lightning is not uncommon, especially in drought years. Hail and/or tornados may also be associated with storms. The rain that does fall percolates quickly into the sandy soil, and any remaining moisture is quickly evaporated by sun and wind.

National Weather Service records show fire danger ratings of high to extreme during all months of the year. All months except January demonstrate regularly repeated patterns with high fire dangers for five or more consecutive days.

4. Wildlife

The Complex is managed primarily for migratory waterfowl, other migratory birds, endangered species, and upland game birds, although numerous other native species can be found on the refuge. There are also a number of rare, threatened, and endangered species native to the Complex. A complete listing of such species can be found in Appendix C.

a. Reptiles and Amphibians

The Complex is within the range of 26 to 27 species of amphibians and reptiles (Freeman 1990). Twenty-three species can be found on the Complex, including 8 amphibians, 4 turtles, 4 lizards, and 7 snake species. The turtle fauna on Crescent Lake is rich in species with abundant populations especially the Yellow Mud turtle which is on the Federal Category II Candidate Species List. Of the seven snake species only the milk snake does not occur in any significant numbers.

b. Birds

The avifauna of the Complex is extremely diverse with 279 species making up the Crescent Lake/North Platte Bird Lists. There are five endangered species that are migrants or winter residents only; and three species on the Federal

Category I and II Candidate Species List. Of the latter three, the ferruginous hawk is a migrant and the black tern and loggerhead shrike are common and are breeding species on the Complex.

The riparian shorelines on Crescent Lake National Wildlife Refuge are primarily native willow which provide habitat for many neotropical migrants (Sedgewick 1993). This is true for North Platte also. The high water levels of the past 10-15 years at Crescent Lake have not encouraged significant use by migrating shorebirds.

c. Mammals

The Complex provides several land types that support an abundant diversity of native mammals. The original native mammalian fauna probably comprised 55 species. Six carnivores and ungulates were probably extirpated by the turn of the century and the remaining 49 mammal species include 10 species that have been introduced or their ranges have been extended (Jones 1964, and McDaniel 1967). One native species, the swift fox, is on the Federal Category I and II Candidate Species List as well as the State Endangered Species List. The present range of occurrence of this species is within the region of the Complex, but, recent documentation of occurrence has not been verified.

d. Insects

Two insect species are on the Federal Category I and II Candidate Species List -- the regal fritillary butterfly, and the Belfragi's chlorochroan bug. However, systematic monitoring of the diverse insect life on and adjacent to the Complex has not been accomplished.

5. Vegetation

A. Grasslands

The Panhandle and Sandhills prairie is within the wide transitional zone of the Mixed Grass Prairie between Tall Grass Prairie and the Short Grass Plains. Annual precipitation is typical of the semi-arid Mixed Grass Prairie; however, the Nebraska Sandhills is characterized by a predominance of postclimax tall grass species typical of a greater moisture regime (Oosting 1948, Keeler et al. 1980). This mixture and general dominance by Tall Grass Prairie species is locally influenced by topography, i.e., the soil moisture holding capacities and soil moisture penetration in different textures of the sand soil range sites; and the root structures and the photosynthetic strategies of cool and warm season plants (Barnes 1984). There are four basic range sites within the Sandhills.

Wetland range sites (533 acres) are the low meadow sites dominated by grass species that thrive with a moisture saturated soil profile, i.e., prairie cordgrass, bluejoint reedgrass, sedge species, and non-grass species such as golden rods, American licorice, and smartweed.

Sub-irrigated range sites (3696 acres) are meadows that are very close to the ground water level. Sub-irrigated range sites are dominated by Tall Grass Prairie species such as big bluestem, prairie cordgrass, and switchgrasss. Soil moisture in the sub-irrigated range site is adequate to support the deep rooted warm season native grasses even during periods of drought. Sub-irrigated range sites are commonly invaded by exotic species such as Kentucky bluegrass, smooth brome and redtop.

Sand range sites (33,088 acres) comprise the dry meadows (low sand sites) and the gently undulating sandhills. Native vegetative species common to the sand range sites are cool season grasses: needle-and-thread and western wheatgrass; and warm season grasses typical of the Tall Grass Prairie: prairie sandreed, sand bluestem, sand lovegrass, little bluestem, and switchgrass. Typical non-grass species of the sand range site include annual and perennial sunflower, yucca, western ragweed and tenpetal mentzelia. Exotic smooth brome and Kentucky bluegrass will also invade the lower elevations of the sand range sites.

Choppy sand range sites (4597 acres) are the characteristic sand dunes for which the Nebraska Sandhills is named. Many vegetational characteristics are common to the sand range sites, but, there is a greater proportion of unvegetated sand soil surface that is subject to wind and water erosion. Typical perennial grasses include: blue gramma, sand bluestem, prairie sandreed, blowout grass, sand lovegrass, little bluestem, and sandhill muhly; non-grass species include yucca, western ragweed and sunflowers. The federally endangered species, blowout penstemon, is endemic to the Nebraska Sandhills and its characteristic habitat includes the blowouts and open sand areas of the choppy sand range sites.

Native perennial and annual flowering forbs adorn the various range sites on the Complex - some of which are only found on native grasslands that have not been degraded by the impact of modern man, i.e. conversion of grassland to farm land, use of herbicides, and chronic overgrazing of livestock (Weaver 1961, Farrar 1990).

b. Trees

There are approximately 45 species of native and introduced trees and shrubs on or around the Complex. Native willows are found around wetlands as are cottonwoods; and hackberry, green ash, and chokecherry. Many shrub and tree species, including non-natives, were planted by the Civil Conservation Corps (CCCs) during the 1930s at both Refuges. At Crescent Lake trees and shrubs have been gradually disappearing through natural mortality with little to no recruitment since their planting. Russian olive trees have been able to reproduce to a limited degree at Crescent Lake, but they are a real problem tree at North Platte. The 1994 revision of the Complex grazing plan called for maintenance of tree and shrub abundance at about the current level.

6. Cultural Resources

There are no known or recorded cultural or archaeological resources that will be affected by fire management on the Complex. There are several deserted homestead and CCC sites that are known, but, these were cleaned up in years past and few traces remain. In the event that Native American camps or burial sites are found, USFWS and Nebraska Historical and Preservation Offices will be contacted.

7. Improvements

A listing of all capital improvements and value can be found in Appendix D. Wildfire damage to improvements on and off the Complex is a primary concern. The Crescent Lake refuge headquarters is particularly vulnerable because of difficult terrain just west of the headquarters site. Dispersed improvements, particularly fences, are likely to be damaged by severe or large fires.

B. Complex Fire Environment and History

1. Fuel and Vegetation Types

Fuel and vegetation types characteristic of the Complex and the surrounding area are:

A. Fuel Model 1: Sparse or short grasses which have generally been recently grazed heavily or mowed, or which grow on very poor sites. This is not the natural state of grasslands on the Complex, but is very common on ranches adjacent to the refuges, and on some units within the Complex after a grazing treatment. In the absence of extreme conditions, fire suppression is relatively simple in this fuel type. Resistance to control is low.

B. Fuel Model 3: Heavy or tall continuous grasses, this is the natural state of grasslands throughout the Complex. Fuel loadings are generally directly proportioned to moisture availability. The heaviest loadings are found in marshes and subirrigated meadows. These fuels can exhibit extreme rates of spread and flame lengths with average winds and minimal drying. Resistance to control is very high to extreme.

C. Fuel Model 8/9: Hardwoods growing in riparian areas with an understory which may be any combination of brush, grass, or litter. Fire intensity is generally low to moderate, increasing to high during periods of drought.

2. Fire Occurrence/History

Wildfire is one of the primary natural forces which created the native prairie. Historic records describe huge prairie fires started by lightning or man. Fires burned millions of acres because there were few natural fuel breaks and no suppression. Research has determined a presettlement fire frequency (return interval) of 3 to 10 years.

Historic records of the Sandhills also describe the Sandhills as wet and grassy meadows between sparsely vegetated sand dunes when explored in the mid-1800s. The sand dunes became stabilized by vegetation with the advent of managed grazing and fire exclusion in the mid-1800s.

Today, grazing and farming continues to be the primary use and economic industry around the Complex. Society places a high value on suppressing any fires which might threaten vegetation used both for soil stabilization and economic production.

Fires have occurred during every month within the last ten years. A summary of fire occurrence over the last ten years is contained in exhibit 6.

Highest fire occurrence is exhibited during the lightning season which generally starts in April and runs through September, although lightning has been known to occur in most months of the year. Multiple starts during a single day are possible during this period. Almost all fires are lightning starts and are accompanied by winds. Suppression may or may not be assisted by rain. In general, dry lightning fire responses appear to be more common in drought years.

Fires occurring outside the lightning season do not occur with the same frequency, but tend to be more severe with high potential for escape and threat to life, property, and resources. This is primarily due to the seasonal curing of fuels and high average wind speeds. Spring fires occurring after dry, open winters tend to be the most severe fires, and these conditions have produced several disastrous fires in the area. The situation is compounded by a lack of preparedness of fire suppression organizations. Rural Fire Protection Districts (RFPD) generally do not have heated equipment storage, so their equipment is drained. The refuges are on minimum staffing and can only field one engine under the best of circumstances. Equipment use is the primary historic cause of these fires, and the increase in recreation and use of catalytic converter equipped vehicles within the tall grass of the Complex poses a severe threat.

RFPD records indicate a corresponding pattern of fires, with the majority of wildfires occurring late spring, summer, and fall. The largest and most severe fires, however, occur during late winter, late summer, or fall.

The Normal Fire Year fire occurrence predictions for the Complex are:

FIRE CLASS	FIRES/YEAR (10 yr.avg.)	
	FWS Land	All Responses
Class A (0 - .2 acres)	0.5	0.7
Class B (.3 - 9.9 acres)	1.9	0.5
Class C (10 - 99.9 acres)	1.6	0.6
Class D (100 - 299.9 acres)	0.2	0.0
Class E (300 - 999.9 acres)	0.3	0.4
Class F (1000 - 4999.9 acres)	0.0	0.5
TOTAL FIRES	4.5	2.7
AVERAGE ACRES/YEAR	13.5	7,528.0
AVERAGE FIRE SIZE	69.7	1,792.4

3. Fire Behavior

There is little documentation or research on fire behavior for the Complex, but some generalizations can be made.

Fine fuels, mostly grasses, are the primary fuel in most cases. Larger diameter fuels typically only become a factor during periods of drought. The fineness of most fuels combined with well drained sandy soils, high average winds, and low humidities can produce high fire danger situations despite recent precipitation or season. Under normal daytime conditions, fires can exhibit high rates of spreads and flame lengths in excess of 4 feet. Conversely, diurnal temperature and humidity changes, particularly during the winter, spring, and fall, produce low fire activity at night, and may completely extinguish a fire. Most fuels exhibit rapid burnout with very little smoldering.

The Great Plains are known for large, fast moving grass fires which defy suppression. Large fires are becoming less common due to manmade fuel breaks and suppression, but do occur several times yearly. Although large fires may occur at anytime, disastrous fires generally occur when 1 or more excellent growing seasons is followed by a dry, open winter and/or drought. The varied terrain and intense, fast fires help create circumstances with great potential for injury. Two relatively recent area fires demonstrate the potential danger of wildfires in the Sandhills.

The Halsey fire, in May 1965, burned 32,000 acres of planted forest and rangeland on and adjacent to the Halsey Unit of the Nebraska National Forest. The fire burned 11,000 acres in the first burning period. It was declared out in the second burning period.

The Mullen fire, on March 6, 1972, burned over 87,000 acres of range and timber lands, with significant losses of livestock, buildings, and other structures. One firefighter died as a result of burns caused when a wind shift caused a fire front to overrun him. The fire, caused by hay moving equipment, raced over 45 miles within four hours, then nearly 20 miles in another direction. Three backfires of up to one quarter of a mile in width failed to stop the fire front. Private, State, and Federal lands were effected. The fire was controlled in the first burning period, and declared out in the second.

EXHIBIT 1 - VICINITY MAP OF CRESCENT LAKE NATIONAL WILDLIFE REFUGE

EXHIBIT 2 - Crescent Lake NWR MAP

EXHIBIT 3 - VICINITY MAP OF NORTH PLATTE NATIONAL WILDLIFE REFUGE

EXHIBIT 4 NORTH PLATTE NWR MAP

EXHIBIT 5 - STATELINE ISLAND MAP

EXHIBIT 6 - SUMMARY OF FIRE OCCURRANCE

IV. CRESCENT LAKE\NORTH PLATE NATIONAL WILDLIFE REFUGE COMPLEX FIRE MANAGEMENT POLICY AND OBJECTIVES

A. Fire Management Considerations

The following considerations influenced the development of the Complex's fire management goals and objective. These observations are established in various sections of this plan.

1. Fire is an essential part of the Complex's native biotic communities.

4. Uncontrolled wildfire has potential for negative impacts on and off the refuge.

5. Rapid rates of spread, fire suppression resource response times, and the lack of fuel breaks pose significant suppression problems and increase the likelihood of escape onto adjacent lands.

6. Use of the "minimum tool" concept to minimize environmental damage is important throughout the refuge, and especially in the primitive area, Research and Natural Areas.

B. Complex Fire Management Goals:

The goal of wildland fire management is to plan and make decisions that help accomplish the mission of the National Wildlife Refuge System. That mission is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans. Fire management objectives (standards) are used in the planning process to guide management to determine what fire management responses and activities are necessary to achieve land management goals and objectives.

The primary goal is to provide for firefighter and public safety, property, and natural resource values. Service policy and the Wildland Fire Policy and Program Review direct an agency administrator to use the appropriate management response concept when selecting specific actions to implement protection and fire use objectives. The resulting Appropriate Management Response are specific actions taken in response to a wildland fire to implement protection and fire use objectives. With an approved Fire Management Plan, the Refuge staff may use wildland fire in accordance with local and State ordinances and laws to achieve resource management objectives (habitat improvement).

1. Protect life, public and private property, and cultural and natural resources from wildfire.

2. Use prescribed fire as a tool to restore the natural fire regime and vegetative communities and to accomplish other refuge objectives.

B. Complex Fire Management Objectives:

1. Safely suppress all wildfires using strategies and tactics appropriate to safety considerations and the values at risk, and in accordance with Service policy.

2. Prevent human-caused wildfires.

3. Minimize the impact and cost of fire suppression.

4. Manage the risks associated with hazard fuels.

5. Use prescribed fire to the fullest practical extent to restore the natural fire regime and vegetative communities.

6. Use prescribed fire when it is the most effective and efficient means for achieving management objectives.

7. Educate the public regarding the natural role of fire within the Complex's ecosystems.

V. FIRE MANAGEMENT STRATEGIES

The following strategies will be employed to meet fire management objectives.

A. Using the Appropriate Management Response concept, suppress all wildfires consistent with values at risk. Strategies employing a range of suppression options depending on the situation will be used. Minimum impact suppression tactics (MIST) will be used, where appropriate.

Table 2: Appropriate Management Response

SITUATION	STRATEGY	TACTIC
1. Wildland fire on Refuge lands which does not threaten life, natural or cultural resources or property values.	Restrict the fire within defined boundaries established either prior to the fire or during the fire.	1. Holding at natural and man-made barriers. 2. Burning out. 3. Observe and patrol.
1. Wildland fire on Service property with low values to be protected. 2. Wildfire burning on to Service lands. 3. Escaped prescribed fire entering another unit to be burned.	Take suppression action, as needed, which can reasonably be expected to check the spread of the fire under prevailing conditions.	1. Direct and indirect line construction. 2. Use of natural and man-made barriers. 3. Burning out 4. Patrol and mop-up of fire perimeter.
1. Wildland fire that threaten life, property or sensitive resources. 2. Wildland fire on Service property with high values to be protected. 3. Observed and/or forecasted extreme fire behavior.	Aggressively suppress the fire using direct or indirect attack methods, holding the fire to the fewest acres burned as possible.	1. Direct and indirect line construction 2. Engine and water use. 3. Aerial retardant 4. Burn out and back fire. 5. Mop-up all or part of the fire area.

B. Maintain an Initial Attack organization capable of suppressing multiple Class A, B, and C wi

C. Maintain Cooperative Agreements with local fire agencies to promote cooperative prevention, suppression, and prescribed fire activities. Provide assistance to local or federal cooperators under the "total mobility" and "closest resources" principles in accordance with Service policy.

D. Manage hazardous fuels on the entire Complex which will compliment other resource objectives. Consider treatment alternatives, prescriptions and rotations based on existing and future research.

E. Utilize prescribed fire as a management tool for achieving hazardous fuel reduction and to accomplish resource management objectives. Prescribed fire will be used to maintain habitat productivity as described in the 1994 upland management plan.

F. Conduct all fire management programs in a manner consistent with applicable laws, policies, and regulations.

VI. FIRE MANAGEMENT UNITS

The Complex can be broken into general fire management units (plus an additional unit for satellite land units) based on predominant fuel types, management restrictions, values at risk, and typical suppression strategies.

A. Crescent Lake\North Platte National Wildlife Refuge Complex (see map, Exhibit 5)

A. Crescent Lake Grassland/Wetland Unit

1. Predominant Fire Environment

Flat to rolling topography. Mid-grass prairie species dominate upland sites, tall grass species dominate subirrigated meadow sites, and tall emergents dominate wetland sites. Vegetation is continuous with few natural or man-made fuel breaks. Fires can be moderately intense with extreme rates of spread.

2. Access and Response Time

Access is available to 4 wheel drive vehicles via refuge trails. Vehicle travel off trails is generally possible, but may not be possible on many of the steep and soft sand dunes or in wetlands. The east end of the refuge is 15 straight line miles from Refuge headquarters, with access only by very poor trails. Response time should be not more than 3 hours, with the possible exception of wetlands not accessible by vehicle.

3. Values at Risk

The primary concern would be escape of fire from this unit onto private property or into the refuge wildland/structural interface area. Escape into these areas could pose a serious threat to life and property.

This unit serves as habitat for a wide variety of native wildlife species. Small fires pose no significant impact. Large fires during nesting season or during the dormant season may impact breeding success. The endangered Blowout Penstemon occurs in this unit. The effects of fire on this plant could be quite variable, from wiping out a years production of seed, to creating new blowouts, a critical habitat for the plant.

A final concern would be the loss of improvements including fences and windmills within the unit.

4. Management Restrictions

There are no restrictions other than Service policy. Extra caution should be used to minimize runoff of fire suppressant foam into standing water. Vehicles and equipment should utilize existing roads or trails whenever possible, and minimize travel off trails or rutting of trails. Aerial Retardants and foams will not be used within 300 feet of any waterway as described in the Guidelines for Aerial Delivery of Retardant or Foam near Waterways.

5. Suppression Strategies

Suppression strategy will be determined by circumstance. Low to moderate intensity fires may be directly attacked by handcrews and engines (provided access is possible). Indirect attack and containment strategies may be used for more intense fires or where lack of access and/or escape routes does not allow for a safe direct attack. Whenever possible, light ground pressure engines (JD Gator) will be utilized in boggy areas to avoid getting standard engines stuck.

B. Crescent Lake Primitive Area Unit

1. Predominant Fire Environment

Terrain ranges from flat to steep slopes. Aspect is variable. The vegetation is the same as described in the grassland/wetland unit. Soils are in general more solid in this unit and access is less restricted by loose sand.

2. Access and Response Time

This unit was proposed as a wilderness in 1972, but has not been acted on by Congress. In the absence of action, a Grazing Management Plan originally prepared in 1985 was updated into an Upland Management Plan in 1993 which defined rules for management of the area. The plan takes a practical approach to maximizing the aesthetic appeal of the area without requiring unpractical, high cost management techniques. Unrestricted access was deemed appropriate for fire management activities. It is anticipated that some action will be initiated by the Complex to remove the proposed wilderness designation of this area and manage it under the guidelines of the Upland Management Plan.

Vehicle access off trails may be limited by moist soil or soft and steep sand dunes. Response time by refuge equipment may be as much as three hours, because of long distances over very poor roads. The refuge maintains a cooperative agreement with the Rackett RFD which should be able to respond in one hour in this unit.

3. Values at Risk

The primary concern would be escape of fire from this unit onto private property or into the refuge wildland/structural interface area. Escape into these areas could pose a serious threat to life and property.

This unit serves as habitat for a wide variety of wildlife species. Small fires pose no significant impact. Large fires during nesting season or during the dormant season may impact breeding success. The Blowout penstemon also occurs in this unit and the impacts of fire would be as described above.

A final concern would be the loss of improvements including fences and windmills within the unit.

4. Management Restrictions

Management of this area is subject to Wilderness Act and Service Wilderness Area restrictions. Minimal impact strategies and tactics will be used, keeping in mind the serious consequences of fire escaping this unit to private lands. Aerial Retardants and foams will not be used within 300 feet of any waterway as described in the Guidelines for Aerial Delivery of Retardant or Foam near Waterways.

5. Suppression Strategies

Since any point within this unit is within two miles of neighboring private land, fire suppression within this unit will be as aggressive as anywhere else in the refuge. Two miles is almost no buffer space when considering type 1 and 3 fuels and the inclination to wind in our climate.

C. North Platte Grassland/Wetland Units

1. Predominant Fire Environment

Flat to rolling topography. Mid-grass prairie species dominate upland sites and subirrigated areas while the wetlands sites little or no emergent vegetation. Vegetation is continuous in small parcels with numerous

man-made fuel breaks such as roads and canals. Fires can be moderately intense with extreme rates of spread.

2. Access and Response Time

Access is available to 2 a 4 wheel drive vehicle via county roads, canal roads, and refuge trails. Vehicle travel off roads and trails is generally possible. Response time should be not more than 45 minutes to all parts of the refuge.

3. Values at Risk

The primary concern would be escape of fire from this unit onto private property or into the refuge wildland/structural interface area. Escape into these areas could pose a serious threat to life and property.

This unit serves as habitat for a wide variety of native wildlife species. Small fires pose no significant impact. Large fires during nesting season or during the dormant season my impact breeding success.

A final concern would be the loss of improvements including fences, kiosks, and signs.

4. Management Restrictions

Vehicles and equipment should utilize existing roads or trails whenever possible. Aerial Retardants and foams will not be used within 300 feet of any waterway as described in the Guidelines for Aerial Delivery of Retardant or Foam near Waterways.

5. Suppression Strategies

Suppression strategy will be determined by circumstance. Low to moderate intensity fires may be directly attacked by handcrews and engines. Indirect attack and containment strategies may be used for more intense fires or where lack of access and or escape routes does not allow for a safe direct attack.

D. North Platte Stateline Island

1. Predominant Fire Environment

Flat riverine topography. Cottonwood, willow, Russian olive, and mid-grass prairies species dominate the Island. Vegetation is continuous with few man-made fuel breaks. Since it is a island the Platte River on the north provides a large natural fuel break, but the channel to the south is not continuous, is narrow in some parts but does provide an natural fuel break. Fires can be moderately intense with fast rates of spread.

2. Access and Response Time

Access is available to 2 and 4 wheel drive vehicles vis refuge trails and one county road. Vehicle travel off trails is generally possible, but is some area of heavy tree growth is may not be possible. Response time should be not more that 45 minutes

3. Values at risk

The primary concern would be escape of fire from this unit onto private property. Escape into these areas could pose a serious threat to life and property.

4. Management Restrictions

Vehicles and equipment should utilize existing roads or trails whenever possible, and minimize travel off trails. Aerial Retardants and foams will not be used within 300 feet of any waterway as described in the Guidelines for Aerial Delivery of Retardant or Foam near Waterways.

5. Suppression Strategies

Suppression strategy will be determined by circumstance. Low to moderate intensity fires may be directly attacked by handcrews and engines (provided access is possible). Indirect attack and containment strategies may be used for more intense fires or where lack of access and/or escape routes does not allow for a safe direct attack.

E. Structural/Interface Unit

1. Predominant Fire Environment

Topography is generally flat to gently rolling at North Platte Refuge to very steep soft sands at Crescent Lake. Vegetation ranges from tall and mid grasses to shrubs and trees. Fire behavior is generally similar to that of the Upland Grassland Unit (see above), but may experience more intensity and spotting due to brush, trees, and cedar windrows. Structural improvements such as buildings, flammable

liquids, and electrical lines may also greatly increase fire intensity and spotting.

Crescent Lake headquarters is especially vulnerable because of the rough terrain to the west and a continuous red cedar shelter belt between the hills and headquarters. Slopes and soils west of headquarters preclude the use of even ATV fire equipment.

2. Values at Risk

The primary concern would be threat of damage to life or property in refuge headquarters at Crescent Lake and private residences in an urban interface situation at North Platte.

3. Management Restrictions

Service policy restricts firefighters from engaging in structural firefighting activities, but not in structural (exposure) protection. Aerial Retardants and foams will not be used within 300 feet of any waterway as described in the Guidelines for Aerial Delivery of Retardant or Foam near Waterways.

4. Suppression Strategies

Primary suppression strategy within the unit will be aggressive direct attack. In the urban interface at North Platte, roads lawns and cultivation break up the fuel continuity to such an extent that it is difficult to envision a grass fire building enough intensity to threaten more than a building or two at a time. Indirect attack may be used to prevent a wildfire from spreading into this unit, or to protect structures. Protection of life and safety will be the overriding priority.

The present state of affairs at Crescent Lake Headquarters would require letting a fire burn down the steep slopes west of the headquarters into terrain which would allow access by light engines. The problem with this strategy is that the toe of this slope is occupied by a red cedar windbreak, and is only yards away from buildings, and equipment. Depending on burning conditions this could be a formula for disaster. The refuge will endeavor to install a permanent sprinkler system to fire proof this area as funds permit.

UNIT MAP KEY	
COLOR	UNITS
	GRASSLAND/WETLAND
	WILDERNESS/NATURAL AREA
	STRUCTURAL INTERFACE

EXHIBIT 7 - CRESCENT LAKE\NORTH PLATTE NWR COMPLEX FIRE MANAGEMENT UNIT MAPS

VII. FIRE MANAGEMENT ORGANIZATION AND RESPONSIBILITIES

The fire job responsibilities in the Fireline Handbook (PMS 410-1) and the ones described for the positions below are to be fulfilled.

A. Complex Fire Management Officer (CFMO)

1. Responsible for the overall management of the refuges in the complex including fire management.
2. Insures effective cooperative relations within the Complex, cooperating fire organizations, and adjoining land owners.
3. Insures sufficient collateral duty firefighters meeting Service standards are available for initial attack.
4. Responsible for planning, coordinating, and directing all presuppression activities including:
    a. Fire training
    b. Physical fitness testing and Interagency Fire Qualification System (IFQS) and data entry.
    c. Fire weather station operation and data entry.
    d. Fire cache and equipment inventory accountability, maintenance and operation.
    e. Coordinating with cooperative agencies. Revises cooperative agreements as necessary.
    f. Insure the step-up presuppression plan is followed.
    g. Informing Refuge staff of fire situation and potential.
5. Responsible for coordinating and directing all suppression activities including:
    a. Dispatching
    b. Fire Command
    c. Insures fire management policies observed.
6. Responsible for managing prescribed fire activities including:
    a. Propose annual prescribed fire program to meet management objectives.
    b. Prepare or approve individual prescribed fire plans.
    c. Serve as or designate Prescribed Burn Boss.
    d. Provides daily validation that prescribed fires are under prescription and meet all other Service policy requirements.
7. Prepares and updates the Fire Management Plan, maintains fire records, and reviews completed DF-1202's for accuracy.

B. Dedicated and Collateral Duty Firefighters

The safety of firefighters and the public is the first priority. Persons engaged in fire suppression activities are exposed to a high element of risk. The Refuge Manager and fireline supervisors must make every effort to reduce the exposure to risk and

enhance performance. One way is through formal and on-the-job training and improved physical fitness. The Service has adopted the training and fitness standards established in 310-1, and all firefighters must meet these and other standards established by the Service to participate in fire management activities.

Table 3: Dedicated and Collateral Duty Firefighters

Complex Position	Current Fire Position	Target Position	Physical Fitness Requirement
Project Leader	ENOP	ENOP	Light
NPL Manager	FFT1	ICT5, RXB3	Arduous
Advanced Firefighter	FFT1	FFT1	FFT1 Arduous
Clerk	Dispatcher	Dispatcher	None
CRL Manager/CFMO	ICT5, RXB3	ICT5, RXB3	Moderate

Equipment Repairer	ENOP	ENOP	Light
Laborer (temp)	ENOP	ENOP	Light
Advanced Firefighter	FFT1	FFT1	Arduous
Firefighter	FFT2	FFT2	Arduous
Firefighter	FFT2	FFT2	Arduous

6. Responsible for their own fire records, equipment, and physical conditioning.
7. Qualifying annually on the step-test or 1 1/2 mile run between January 15-30, or within 2 weeks of EOD date.
8. Maintaining assigned fire equipment in ready state and using all safety gear assigned.
9. Maintain engines in a state of readiness.

C. Fire Cooperators (see listing of cooperators in Appendix H)

Along with other land management agencies, the Service has adopted the National Interagency Incident Management System (NIIMS) Wildland and Prescribed Fire Qualification Subsystem Guide, PMS 310-1 to identify minimum qualification standards for interagency wildland and prescribed fire operations. PMS 310-1 recognizes the ability of cooperating agencies at the local level to jointly define certification and qualification standards for wildland fire suppression. Under that authority, local wildland fire suppression forces will meet the standards established for their agency or department. All personnel participating in prescribed fire management activities must meet Service fitness and training standards.

Cooperators will:

1 Provide assistance in detection and suppression of wildfires.

2 Assist, as needed, in the investigation of suspicious fires.

3 Assist in training.

VIII. WILDLAND FIRE PROGRAM

A. Fire Prevention

1. General

Twenty-seven percent of the Complex's fires are human caused and thus could have been prevented. Seventy-three percent of the fires are lightning caused and are not preventable. Fifty percent of the human caused fires started accidently as a result of equipment use. The others were caused by smoking, debris burning and miscellaneous causes. Human caused fires are generally the most damaging because they can occur outside of the fire season when there are fewer initial attack resources available and at a time which the environment has not adapted to fire.

In general, the local public and many visitors to the refuge are very aware of fire prevention and are extremely cautious about starting range fires. As a reminder, the Complex will endeavor to place fire prevention information and hints on Complex bulletin boards. The Complex will also post special warnings/notices, area closing, and increase patrols during periods of very high or extreme fire danger especially during periods of high public use as part of it's step-up preparations. Equipment and/or public use restrictions may also be made when needed.

2. Fuel Management

Due to the extreme nature of range fires in Sandhills Prairie, some fuel management is considered prudent for the Complex. Unfortunately, extensive fuel reduction is not compatible with other Refuge objectives because of it's effect on habitat and wildlife populations.

Therefore, the Complex will take the following measures regarding fuel management:

1. Use mechanical means and/or prescribed fire to maintain recommended safe fuel levels in areas adjacent to property and/or sensitive resources especially at North Platte Refuge. The Refuge Manager, with the assistance of the seasonal fire staff, will identify problem areas and corrective actions for the Project Leader's approval. Work will be carried out primarily by seasonal fire staff.

2. Endeavor as funding and/or manpower permits to replace the existing drip irrigation of the shelter belts west of Crescent Lake headquarters with a sprinkler system. The system should have sufficient capacity to render the trees fire proof in one hour.

3. Annually each fall unpaved refuge roads and parking areas and the edges of paved roads will be mowed to prevent vehicle use from starting fires. This is a labor intensive project requires approximately 8 man days of staff and equipment time.

B. Fire Behavior Potential

See section III C.

C. Fire Presuppression

1. General

The CFMO is responsible for coordinating Complex presuppression actions. Specific duties are assigned in the step-up plan (Appendix F). The fire season will start **April 1 and run through November 20.**

2. Personnel

Only employees meeting current Complex fitness, training, and experience requirements will be dispatched to fires. Employees not meeting these requirements may assist in support capacities, but will not be permitted on the fireline. All attempts will be made to maintain the following **minimum** fire qualification levels for collateral duty firefighters within the Complex:

Table 3: Minimum Fire Staffing

Position	Fire (Temporary)	Collateral
Initial attack IC (ICT5)	1 NPL	1CRL 1NPL
Engine Operator (ENOP)		1CRL 1NPL
Firefighter	3 CRL	

Total Fire Qualified Employees	4	4

A listing of Service qualification standards can be found in Appendix D. Training will be needed each year to qualify new firefighters, and to keep collateral duty firefighters up with ever changing requirements.

Additional firefighters (emergency hire/casual firefighters) may be hired temporarily to supplement engine crew, or existing crew term of employment may be extended, using severity or emergency presuppression funding when very high or extreme fire conditions warrant.

Crescent Lake personnel will be scheduled so that at least one crew member is normally on teaming up with a cooperator or ferrying water to the fire.

The ability to maintain an adequate response time to fires occurring on Crescent Lake National Wildlife Refuge has been eroding over the years and is of critical importance. Staffing constraints prevent maintaining more than 2 permanent collateral duty firefighters and four seasonals (during the fire season) on Crescent Lake National Wildlife Refuge. This situation, and the increasing involvement of the fire crew on other refuges or agencies fires and wildfires, will necessitate a unusually heavy reliance upon utilizing emergency presuppression funding to preposition employees from other refuges or agencies.

In keeping with Service Policy, a physical examination is required for all new permanent employees and all seasonal employees assigned to arduous duty as fire fighters prior to reporting for duty. A physical examination may be requested for a permanent employee by the supervisor if there is a question about the ability of an employee to safely complete one of the work capacity tests. All permanent employees over 40 years of age who take the Pack or Field Work Capacity Test to qualify for a wildland or prescribed fire position are required to have an annual physical examination before taking the test.

3. Equipment

An inventory of primary and secondary fire equipment is contained in Appendix E. Primary equipment is that equipment which is essential to firefighting operations and maintained and used for that purpose exclusively. Secondary equipment is that equipment purchased with fire suppression funds, but which primary uses are to support non-fire refuge operations. All maintenance of primary equipment will be funded out of fire funds. The maintenance of secondary equipment will be charged to the benefitting account.

Engines are the primary initial attack resource on the Complex because of the predominance of areas with fine fuels and good vehicle access. Handcrews and portable pumps are not as efficient in range fires. Earth moving equipment and Air attack resources are not readily available, but can be resource ordered when needed.

Currently, the Complex maintains a fire fleet consisting of three 200 gallon and one 300 gallon (type 6) slip-on units and a 55 gallon slip on for a John Deere Gator ATV. This fleet has excellent response time, but the small tanks limit their utility on large range fires. These slip-ons and vehicles were purchased on the assumption that any employee could serve as drivers, regardless of fitness, and that the Complex would continue to hire approximately 4 seasonal firefighters.

Firefighters will be issued the required personal protective equipment. All primary engines will be equipped with tools, firing devices, and water handling accessories. The Complex also maintains a small fire cache at the Crescent Lake headquarters.

D. Impacts of Drought and Other Factors on Fire Management Activities

As indicated previously, periods of drought can greatly impact fire behavior and resistance to suppression. For that reason the Palmer Drought Index and the Keech-Byram Drought Index will be monitored at a minimum on a weekly bases throughout the year. All are available on the Internet at http://ndc.fws.gov. The Refuge fire staff can also contact the Custer Interagency Dispatch Center (605-673-4434) during periods of high fire danger to track indices and anticipate possible fire activity. Preparedness actions have been identified in the Step-Up Plan to respond to unusual conditions associated with drought and other factors.

Large scale fire suppression activities occurring in various parts of the country can have an impact on local fire management activities. For example, resources may be limited to implement prescribed fire activities because the closest available resources may be assigned to fire suppression duties or Refuge personnel may be involved as well. Regional drought conditions may also tie-up local resources that would normally be able to assist with Refuge fire management activities. It may be necessary to go out of Region to get the resources needed to staff Refuge engines during periods of extreme drought or high fire danger.

The Refuge is in the Rocky Mountain Area. During National and Regional Planning Levels IV and V, it is necessary to receive approval from the Rocky Mountain Area Coordination Group to conduct prescribed burns.

E. Emergency Preparedness

The Complex will rely on other fire management entities to identify high fire danger situations. The US Forest Service at Chadron, Ne the State Fire Marshals Office, and Ft. Niobrara N.W.R. all calculate fire danger.

As indicated in the previous section, the CFMO will monitor current and predicted fire weather reports, and take appropriate actions as listed in the step-up plan.

The CFMO may authorize emergency presuppression overtime for SC-IV and SC-V step-up actions that can not be met with regularly scheduled employees once an emergency presuppression account is available. Collateral duty firefighters may be assigned emergency presuppression duties if needed. It may be impossible for the CFMO to meet some staffing actions once Complex resources have been dispatched to a fire. In those cases, it will be up to the CFMO, with Project Leader concurrence, to determine if outside assistance should be ordered.

F. Emergency Presuppression and Severity Funding

Severity funding is different from Emergency Presuppression funding. Emergency Presuppression funds are used to fund activities during short-term weather events and increased human activity that increase the fire danger beyond what is normal. Severity funding is requested to prepare for abnormally extreme fire potential caused by unusual climate or weather events such as extended drought. Severity funds and emergency presuppression funds may be used to rent or preposition additional initial attack equipment, augment existing fire suppression personnel, and meet other requirement of the Step-up Plan.

Emergency Presuppression and Severity funds will be requested in accordance with the guidance provided in the Service's Fire Management Planning Handbook. As a general guide, Severity funding will be requested if a severe drought is indicated by a Palmer Drought Index reading of -4.0 or less or a Keech-Byram Drought Index of 600 or greater and a long-range forecasts calling for below average precipitation and/or above average temperatures. Drought Indices can be located at: http://www.boi.noaa.gov/fwxweb/fwoutlook.htm.

G. Detection

The Complex relies on neighbors, visitors, staff, and cooperators to detect and report fires. In addition, the step-up plan provides increased patrols if deemed necessary by the CFMO.

There may be occasions when unqualified personnel discover a wildland fire. When this occurs the employee should report the fire and request assistance before taking action to suppress or slow the spread of the fire. If the fire poses an imminent threat to human life, the employee may take appropriate action to protect that life before requesting assistance. The unqualified personnel will be relieved from direct on-line suppression duty or reassigned to non-fireline duty when qualified initial attack forces arrive.

H. Preattack Plan

Preattack planning data continues to be compiled by the CFMO and seasonal fire staff. Once finished, preattack plans will be included in Appendix G and copies copies placed in each engine. Final preattack plans will include:

1. Response map

   roads, fences, and gates

   fire stations/caches

   water sources (type and flow)

1. Global positioning system equipment, preprogrammed with locations such as road junctions to aid in night time navigation.

I. Fire Suppression

1. General

Service policy requires the Complex to utilize the ICS system and firefighters meeting Service qualification requirements for fires occurring on Service property and mutual aid fires. Personnel responding to interagency fires off the refuge must meet NWCG qualification requirements in addition to Service requirements. Mutual Aid resources responding from fire departments to Service fires must meet the standards of their department.

1. Initial Reporting and Dispatch

All fires occurring within or adjacent to the Complex will be immediately reported to Headquarters or the CFMO. Normally all available personnel respond to all fires. The complex office, permanent employees wives, and the Garden County Sheriffs Office serve as dispatchers.

Requests for assistance from cooperators on fires not threatening the Complex must be made to and approved by the CFMO or his acting. The CFMO will not obligate firefighters for over one burning period without the preapproval of the Complex Manager. Only qualified and properly equipped resources will be dispatched.

2. Initial Attack

The CFMO will serve as or appoint a qualified Incident Commander (IC) for each fire occurring on the complex. An ICT5 will be utilized for grassland fires confined to the refuge. Command of very large fires will be assumed by the local fire districts.

The IC will select the appropriate fire suppression strategies and tactics necessary to effectively suppress the fire. Minimum impact tactics will be utilized whenever possible. Dozers, graders, plows, or discs will not be used inside Complex boundaries without approval by the Refuge Managers.

The IC is also responsible for the safety, deployment, and supervision of assigned engines and crews. Each engine will have a qualified Engine Boss (ENGB) or Engine Operator (ENOP) who will serve as the single resource boss of the engine and crew. The ENGB or ENOP will be responsible for receiving assignments from the IC, selecting the appropriate tactics, and supervising the crew in the completion of the assignment(s). Most importantly, the single resource boss is responsible for insuring the safety of assigned crew members.

3. Escaped Fires/Extended Attack

A Wildland Fire Situation Analysis (WFSA) will be completed for all Refuge fires which escape initial attack or go into a second burning period (Appendix N).

Large fires and fires that last more than one burning period will most certainly have crossed refuge boundaries, perhaps even fire district boundaries and county lines. Some rural fire district chiefs will take command of large fires, others will rely on the tactics used on small fires where each resource is responsible for itself. In the former situation, refuge resources will work under any established leadership. In the absence of any command system, refuge resources will remain together as a team under command of an ICT5.

J. Mop up Standards and Emergency Stabilization and Rehabilitation

The IC will be responsible for mop-up and mitigation of suppression actions taken on Refuge fires. The mop-up standards established in the Fireline Handbook will be followed. Refuge fires will be patrolled or monitored until declared out.

Prior to releasing all firefighters from a wildland fire the following actions will be taken:

- All trash will be removed.
- Firelines will be refilled and waterbars added if needed.
- Hazardous trees and snags cut and the stumps cut flush.
- Disked firelines should be compacted as soon as possible to preserve the living root stock of natives grasses.
- Overturned sod resulting from plowing must be rolled back with a grader or by hand and compacted to preserve native grass root stock.

Other emergency stabilization and emergency rehabilitation measures may be taken in accordance with Chapter 5 of the Fire Management Handbook. Briefly:

- **Emergency stabilization** is the use of appropriate emergency stabilization techniques in order to protect public safety and stabilize and prevent further degradation of cultural and natural resources in the perimeter of the burned area and downstream impact areas from erosion and invasion of undesirable species.

The Incident Commander may initiate Emergency Stabilization actions before the fire is demobilized, as delegated by the Agency Administrator, but emergency stabilization activities may be completed after the fire is declared out.

G **Rehabilitation** is the use of appropriate rehabilitation techniques to improve natural resources as stipulated in approved refuge management plans and the repair or replacement of minor facilities damaged by the fire. Total "rehabilitation" of a burned area is not within the scope of the Emergency Rehabilitation funding. Emergency Rehabilitation funding can be used to begin the rehabilitation process if other funding is committed to continue the rehabilitation throughout the life of the project (beyond the initial 3 years of Emergency Rehabilitation funding). Major facilities are repaired or replaced through supplemental appropriations of other funding.

G Because of the emergency nature of the fire event, the emergency stabilization section of the Emergency Stabilization and Rehabilitation Plan (ESR Plan) must be developed expeditiously and is frequently developed by a local unit or designated burned area ESR team. The rehabilitation section of the ESR Plan is not considered an emergency, and is developed as other refuge land use plans. The refuge manager is responsible for preparing all ESR Plans. In order to be funded, ESR Plans must meet resource management objectives and be approved by the Project Leader and the Regional Director.

K. Records and Reports

The CFMO will complete all situation reports as soon as practical. The IC will complete the DF 1202 Fire Report and Crew Time Reports for all personnel assigned to the fire, and return these documents to the CFMO. The IC should include a list of all expenses and/or items lost on the fire on the Fire Report. The CFMO will ensure that the fire report is entered into the Fire Management Information System, that the timekeeper is informed of all time and premium pay to be charged to the fire, and that expended supplies are replaced.

IX. PRESCRIBED FIRE MANAGEMENT

Fire, started either by lightning or aborigines, was a major natural process in the Complex's ecosystems prior to European settlement and fire suppression. Management igniting prescribed fires, now offer a powerful tool for managing refuge resources. The Complex uses prescribed fire as a tool in two management areas: resource management and hazard fuels reduction.

A. Resource Management Prescribed Fire

Resource management prescribed fire is used to restore, create, and/or maintain a diversity of plant communities for the purpose of restoring and perpetuating native species. Goals of resource management prescribed fires are:

G Preservation of native prairie vegetation

- Reduction/control of exotic vegetation (kentucky bluegrass, smooth brome
- Reduction of woody vegetation invading native prairie and marsh (cedar, willow, sumac, snowberry, Russian olive
- Reduction of dense cattail growth in shallow wetlands
- Maintenance/rejuvenation of quality nesting cover for waterfowl and native birds
- Maintenance/rejuvenation of quality forage for native herbivores
- Removal of accumulated vegetation to facilitate other operations such as weed control

In order to achieve the above goals, most grassland prescribed fires will occur on wetland, sub-irrigated meadow, uplands, or sands range sites. No prescribed fires are anticipated for choppy range sites due to concerns over wind erosion. Burning frequency will vary from 3 to 15 years dependent upon management objectives, historic fire frequency, and funding.

B. Hazard Fuels Reduction Prescribed Fire

The Complex may use hazard fuel reduction techniques (mechanical removal or prescribed fire) within or near Complex development zones, sensitive natural resources, and boundary areas to reduce the risk from wildfire damage. To the greatest extent possible, hazard fuel burns will only be used when they compliment resource management objectives.

The goal of hazard fuel reduction prescribed burning is to maintain fuel loadings of 3 tons/acre or less in uplands, meadow, and wetland areas.

Most hazard fuel reduction treatments are needed in uplands, wetland, and meadow habitats. No hazard fuel reduction prescribed burning is anticipated in choppy range sites. Burning frequency will be determined by fuel loading and resource management considerations.

C. Planning

This plan meets the requirements of the National Environmental Protection Act (NEPA). An environmental assessment was completed for the 1995 document "Management of Upland Habitats on Cresent Lake/North Platte National Wildlife Refuge Complex", and a Finding of No Significant Impact (FONSI) was signed by the Regional Director in April of that year (Appendix M). An EA will not be completed for prescribed fire due to regulations published January 16, 1997 in the Federal Register (62 FR 2375). The new regulation categorically excludes prescribed fire when used for habitat improvement purposes when conducted in accordance with local and State ordinances and laws. Wildfire suppression and prescribed fire are both categorically excluded as outlined in 516 DM 2, Appendix 1.

The Refuge Manager is responsible for identifying units or areas in need of treatment, and for developing resource and treatment objectives for those units/areas based on Complex resource management goals and objectives. The FMO is

responsible for determining if prescribed fire can be utilized to meet the treatment objectives. Prescribed fire is just one of a combination of tools (fire, grazing, haying, rest, water level manipulation) which will be considered.

CRESCENT LAKE /NORTH PLATTE NWR					
HABITAT TYPE / RANGE SITE	**APPROX. ACREAGE**	**FIRE RETURN INTERVAL**		**ANNUAL AVERAGE BURN TARGET**	
		MIN	MAX	MIN	MAX
Marsh & Wetland	1859	3	7	20	200
Subirrigated Meadow	4755	3	7	100	300
Sand	34251	5	10	20	1500
Choppy Sand	6692	0	0	0	0
Unclassified or Non-Burnable	3444	0	0	0	0
Total	51001			140	2000

Should prescribed fire be selected as the preferred treatment alone or in some combination with other treatments? The Refuge Manager will develop a burn prescription and plan which will accomplish the desired objectives. Burn plans will meet all training, personnel, equipment, and other requirements as specified in the FWS Fire Management Handbook. Prescribed fires will be planned to minimize the risk of escape and/or to mitigate necessary risks and provide an adequate contingency plan for suppressing the fire should an escape occur. All burn plans will be reviewed and approved by the Regional Office prior to implementation.

A contingency plan will be found within every prescribed burn plan and discussed at the briefing. Specific to the Complex, the Burn Boss will declare an escaped fire if it can not be contained within ½ hour with on-site resources or if structures or public safety is threatened regardless of containment time. Escape of burn will be attacked directly by the crew if possible. If not, the crew will hold at contingency lines identified in the plan. The Burn Boss will become the incident commander and refuge dispatcher will be directed to alert adjoining fire districts as necessary.

The CFMO and fire management crew will be responsible for prescribed fire preparations including equipment maintenance, fuel break mowing, and blacklinning. Prescribed burns can be conducted at any time of the year, depending upon the objectives and prescription. However, most burning will take place from December through June. Burning permits are required from adjacent fire protection districts for North Platte but not for Crescent Lake and no permit is required from the state air quality office. Prescribed burning may be limited during the summer due to waterfowl nesting and other biological considerations. Prescribed burning will also be curtailed when suppression forces are in high demand and/or unavailable, i.e. the Rocky Mountains Interagency Fire Coordination Area or the National fire danger Preparedness Level is V.

The Complex may also assist private land owners with prescribed burning to improve the value of their land as wildlife habitat. A Wildlife Extension Agreement with a written provision for the use of prescribed fire must be approved prior to implementing burns on

private lands. Such assistance is subject to guidance provided within the Fire Management Handbook, private lands program policies, and funding and staffing constraints.

D. Training

The Complex (employees and volunteers) will at minimum meet policy requirements of the FWS prescribed fire qualification system. The CFMO will be responsible for ensuring Refuge personnel maintain the qualifications necessary to implement the growing prescribed fire program. The Complex will develop and maintain a minimum of one employee qualified at the burn boss III (RXB3) level.

E. Complexity

Prescribed fires on the Complex may vary from low to high complexity as determined by the Region 6 Complexity Analysis Guide (Appendix O). Complexity is dependent upon fuels/vegetation, objectives, burn boundaries, and size. Most prescribed fires will be of low to average complexity. Higher complexity burns will only be undertaken once appropriate experience is gained and adequate resources are available.

F. Monitoring and Evaluation

Past monitoring and evaluation of prescribed fires has been limited. Pre burn evaluation has been limited to photo points, vegetative height measurements (VOR transects), and/or qualitative evaluation of fuel conditions and greenup conditions. Burn day evaluations document weather and fire behavior and objective related measurements such as dead fuel reduction or woody growth scorch. Post burn evaluation is limited to photo point, VOR vegetative height measurements, and/or qualitative estimates of native species response and effectiveness in achieving objectives.

Fire monitoring protocols will follow Regional and National guidance. If the fire management program proposed by this Fire Management Plan is fully funded, a more quantitative monitoring program will be implemented. The FTE increase proposed in this plan will be used to establish vegetative monitoring in each of the habitat types being burned. Species composition and % cover will be the primary information used to determine if burn objectives are being met and to monitor long term vegetation responses.

G. Prescribed Fire Impacts

The environmental and social impacts of the prescribed fire program have been examined in detail in the Fire Management Environmental Assessment (Appendix N) and Section I - D.

H. Reporting and Documentation

Individual prescribed burn plans will be the primary document used to record prescribed fire information. Burn plans document personnel, costs, fire behavior, weather, and burn

critique information. Prescribed burns will also be documented on DI-1202 forms and entered into FMIS within 10 days.

X. WILDLAND FIRE USE FOR RESOURCE BENEFIT

All wildfires will be suppressed using the appropriate management response concept. Benefits to be derived from wildland fire will not be a consideration when determining the appropriate response.

XI. AIR QUALITY / SMOKE MANAGEMENT GUIDELINES

Visibility and clean air are primary natural resource values. The protection of these resources must be given full consideration in fire management planning and operations. In addition, smoke management can have serious health and safety effects which must be considered during the planning and approval process.

In general, the air quality of the area is excellent. There are no major sources of emissions, and the weather (windy, dry, with few inversions) is conducive to rapid smoke dispersal. The state of Nebraska does not have any smoke management guidelines, regulations, or permits for prescribed fire.

The management of smoke will be incorporated into the planning of prescribed fires, and, to the extent possible, in the suppression of wildfires. Sensitive areas will be identified and precautions will be taken to safeguard visitors and local neighbors.

XII. FIRE RESEARCH AND MONITORING

The effects of fire upon the Complex's plants and animal populations need to be better understood. Through applied research and careful application of fire, data collected can provide managers with a better understanding of the natural ecological effects of fire, and the information needed to refine prescriptions to meet resource objectives.

The following Fire Research is needed at Crescent Lake\North Platte NWR Complex:

* Comprehensive inventory and assessment of the Complex's hazard fuels, and the identification and prioritization of hazard fuel units.

* Assessment of hazard fuel management options, and their effects upon Complex resource objectives.

* Assessment of long and short term fire effects in the Sandhills with recommendations for using prescribed fire in conjunction with other management tools to meet resource objectives.

* Assessment of fire effect monitoring needs and preparation of fire effect monitoring plan.

XIII. PUBLIC SAFETY

Firefighter and public safety will always take precedence over property and resource protection during any fire management activity. Firefighter safety is covered in Section . This section will deal with public safety.

The greatest threat to public safety from Complex wildfires are entrapment by extremely fast moving fire fronts or fingers. Of particular concern are hunters or visitors who may be present in the area of the fire, and neighbors who initiate their own suppression actions without proper training, equipment, or communication. Complex staff will attempt to keep the fire scene clear of people except for Service firefighters and any resources requested from cooperators.

Another concern is smoke from a Complex wildfire, particularly smoke that drifts into a roadway causing dangerously reduced visibility. The fire dispatcher will notify the Garden\Scott's Bluff County Sheriffs office whenever the IC believes that smoke may be causing a safety hazard. The Sheriff's Office can assess the situation and take action as needed.

The final concern is for fires which might escape from the Complex and spread to private property which may be populated. The following steps will be taken to minimize this threat:

* The development of a professional and skilled fire management organization capable of safely suppressing wildfires and conducting prescribed fires.

* The development of fire prevention programs.

* The development of a hazard fuel management program.

* Improving interagency coordination and cooperation including keeping local officials briefed on the potential for escape.

These programs are in their infancy, and will improve as the Complex becomes more proficient, and is able to fine tune strategies and tactics.

XIV. PUBLIC INFORMATION AND EDUCATION

Informing and educating the public is an important part of firefighting fire prevention and the Fish and Wildlife Service mission. Information and education is critical to gaining public support of firefighting, fire prevention, and prescribed fire programs. There are several different aspects of this task.

A. Wildfire Suppression

The Incident Commander is in charge of the dispersal of fire information to the press and/or public on wildland fires. The IC may request assistance with these tasks if needed, but there has been little need to do this in the past.

B. Prescribed Fire

Areas that have been burned will present an opportunity for the public to actually see the effects of fires, and offer staff members an excellent opportunity to explain the purpose of the burns to the public. These programs should demonstrate the Complex's capability to safely conduct prescribed fire operations, and increase the public's tolerance of the aesthetic effects. To improve interpretive and education efforts, the Complex will provide opportunities for the press to be present at prescribed fire events.

C. Fire Prevention

The Complex's fire prevention plan is contained in section VIII - A.

XV. CULTURAL RESOURCES

Fire Management activities at the Refuge will be implemented in accordance with the regulations and directions governing the protection of cultural resources as outline in Departmental Manual Part 519, Code of Federal Regulations (36 CFR 800), the Archeological Resources Protection Act of 1979, as amended, and the Archeological and Historic Preservation Act of 1974. All fire management activities will be in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended.

Currently wildfires are suppressed. However, historical evidence demonstrates that natural and artificial fires were regular events in the mixed grass prairie. In recent years, fire suppression has resulted in a steady buildup of grassland and riparian fuel loads, colonization of disturbed soils by invading plant species, and natural vegetative growth, increasing the chances of an uncontrolled wildfire that could potentially endanger the Refuge’s cultural resources as well as surrounding private property. Although over 20 years of fire ecology research allows ecologists to predict impacts on biotic communities, the possible impacts of prescribed burning (and wildfires) on archeological resources are not well known. Research conducted in North Dakota indicated that fire-related impacts to buried artifacts are negligible, but effects on surface-exposed artifacts will be significant, depending on artifact type and size (Seabloom et al 1991).

Impacts to archeological resources by fire resources vary. The four basic sources of damage are (1) fire intensity, (2) duration of heat, (3) heat penetration into soil, and (4) suppression actions. Of the four, the most significant threat is from equipment during line construction for prescribed fires or wildfire holding actions (Anderson 1983).

The following actions will be taken to protect archeological and cultural resources:

- Files and records of cultural resources, when available, should be consulted by the staff when planning prescribed burns, developing pre-attack plans, and performing other preparedness actions. The potential for adverse impacts to cultural resources will be evaluated prior to prescribed burning and in the selection of fire suppression strategies during wildfires.

- The Regional Archeologist will be contacted during the development phase of the burn plan writing process.

- The Nebraska State Historic Preservation Officer (SHPO) will be contacted by the Regional Archeologist when it is known a planned management action may impact archeological or cultural resources. The SHPO must respond in 30 days.
- The location of sites discovered as the result of fire management activities will be reported to the Regional Archeologist.

XVI. FIRE CRITIQUES AND PLAN REVIEW

The Complex recognizes that Fire Management is an evolving mission within the Service and the Complex. It is the Complex's intention to evolve with advances in fire management so that staff and resources are afforded the best available protection. Accomplishment of this goal will require periodic review of the CFMO and fire management operations as described below.

A. Fire Critiques

ICs will conduct critiques for all fires, although the critiques of most fires will be short and informal. The results of fire critiques will be reported to the FMO. The CFMO may pass the results of critiques along to the Regional Fire Management Coordinator when appropriate.

The CFMO will conduct formal fire critiques if:

1. There was a significant fire related injury/accident.
2. There was significant property or resource damage.
3. Fire shelters were deployed (entrapment investigation also initiated).
4. There were significant safety concerns voiced.
5. There was an extended attack.

The CFMO will prepare a formal report documenting each review.

B. Prescribed Fire Critique

Burn Bosses will conduct critiques for all prescribed fires, and report the critique findings to the FMO.

The CFMO will conduct formal prescribed fire critiques if:

1. There was a significant fire related injury/accident.
2. There was significant property or resource damage.
3. The prescribed fire was declared a wildfire for any reason.
4. There were significant safety concerns voiced.

C. Fire Season and Annual Plan Review

The Project Leader, CFMO, and Refuge Managers will meet in November to review prevention, presuppression, suppression, and prescribed fire operations during the prior fire season, and develop strategies for improving these operations in the future. A listing of recommended actions, staff members responsible for implementation, and implementation time frames will be developed.

XVII. CONSULTATION AND COORDINATION

The Fire Management Environmental Assessment will be distributed to the following interested parties for comment:

Volunteer Rural Fire Protection Districts

Blue Creek RFD #1
- Lisco Fire Department #2
- Heart of the Hills RFD #5
- Rackett RFD #4
- Garden County (Oshkosh) RFD #2

Garden County
- Garden County Sheriff (Civil Defense Director)

United States Forest Service
- Nebraska National Forests
- Custer Interagency Coordination Center

State of Nebraska
- Nebraska Department of Forestry
- Nebraska Parks and Wildlife
- Nebraska Dept of Air Quality

United States Fish and Wildlife Service

Regional Office - Region 6

Regional Fire Management Coordinator

Associate Manager - Zone III

Ecological Services - Grand Island

The final revision of the FMP was prepared after informal consultations with Complex staff, Regional staff, and cooperators. The main changes in this revision are due to changes in Service policy as reflected in the Fire Management Handbook. The Handbook also required the revision of FMP format. Review and approval will only be required of the Project Leader and the Regional Fire Management Coordinator.

Copies of the approved FMP will be provided to the Regional Fire Management Coordinator, the Branch of Fire Management, and interested cooperators.

APPENDIX A - LEGISLATIVE HISTORY, PURPOSE, GOALS AND OBJECTIVES

CRESCENT LAKE NATIONAL WILDLIFE REFUGE

Legislative History - The original purchase of 36,920 acres for the Crescent Lake National Wildlife Refuge was approved by the Migratory Bird Conservation Commission on December 18, 1930. This original acquisition was authorized by the by the Migratory Bird Conservation Act of February 18, 1928 (45 Stat. 1222). Executive Orders numbers 5579, dated March 16, 1931, and 7183 dated September 12,1935, established additional legal basis for the area. Some additional lands were acquired under provisions of Sections 302 and 304 of the Act of June 15, 1935 (49 stat. 381 16 USC: 715d-I). Funds for the purchases were provided by the various acts and by money made available by he Resettlement Administration. Various subsequent acquisitions and exchanges have increased the present day refuge area to 45,818 acres.

In 1972, 24,502 acres of the refuge received nomination for wilderness consideration and was submitted to Congress. No further consideration has materialized. Two special areas have been designated on the refuge, Goose Lake (940 acres) and Hackberry (172 acres) Research Natural Areas.

Purpose _ "as a refuge and breeding ground for birds and wild animals and "for use as an inviolate sanctuary, or for any other management purpose, for migratory birds."

Goals and Objectives

Goal 1 - Migratory Birds - To the extent possible provide the life requirements of waterfowl and other migratory birds occurring on Crescent Lake NWR.

Objectives:

1. Develop and maintain waterfowl habitat, emphasizing nesting, brood, and maintenance habitat.
2. Strive for a 25 percent Mayfield for mallards and pintails.
3. Aggressively control predators in priority waterfowl production areas.
4. Develop and maintain shorebird nesting maintenance habitat, with emphasis on long-billed curlew, american avocet and upland sandpiper.

Goal II - Endangered Species - Preserve, restore and enhance federally listed endangered and threatened species and habitat upon which they depend.

Objectives:

1. Provide protection and migratory maintenance habitat for the bald eagle and peregrine falcon and nesting habitat for the bald eagle.
2. Manage selected habitat units for Penstemon haydonii.

Goal III - Other Wildlife - To the extent possible provide the life requirements for resident wildlife species.

Objectives:

1. Provide optimum sustainable habitat for upland game birds, namely sharp- tailed grouse, prairie chicken and pheasant.

2. Provide optimum sustainable habitat for mule deer, white-tailed deer,a nd pronghorn antelope.

Goal IV - Interpretation and Recreation - Provide the public with wildlife/wildlands related opportunities when compatible with management objectives.

Objectives:

1. Provide visitors with the opportunity to enjoy appropriate activities on refuge lands and to learn about relationships of plants and animals within the ecosystem.

2. Enhance the public's understanding of natural resource management and ecological concepts.

3. Ensure that refuge information is communicated to the public through various media.

North Platte National Wildlife Refuge

Legislative History - The North Platte Bird Reservation was established by Executive Order # 2446, signed by President Wilson on August 21, 1916 as " a preserve and breeding ground for native birds" subject to Reclamation Service uses. A second Executive order (No. 2446, dated 1916) and Public Land Order 2291, dated 1961 modified the refuge boundaries. The name of the reservation wa chanced to North Platte national Wildlife Refuge on July 25, 1940 via Proclamation #2416. A Memorandum of Understanding, entered into effect August 8, 1991, transferred land management responsibilities of Stateline Island to the Service. This area is managed under and as a unit of the North Platte NWR.

Purpose - "...reserved, subject to Reclamation Service uses...as a preserve and breeding ground for native birds." Executive Order 2446, dated August 21, 1916.

Goals and Objectives

Goal I - Preserve, restore, and enhance federally listed endangered and threatened species and habitat upon which they depend.

Objective:

1. Provide protection and migratory maintenance habitat for the bald eagle and peregrine falcon and nesting habitat for the bald eagle.

Goal II - Provide the life requirements of waterfowl and other migratory birds.

Objectives

1. Develop and maintain waterfowl nesting, brood and maintenance habitat.

2. Develop and maintain other migratory bird habitat.

Goal III - Manage for natural diversity and abundance of fauna and flora.

Objectives

1. Provide habitat for Nebraska State listed threatened and endangered species and other naturally occurring wildlife and plant species.

Goal IV - Provide opportunities for compatible education and recreation.

Objectives

1. Provide opportunities for the public to view, understand and appreciate wildlife and wildands.

2. Foster public understanding and advocacy of Refuge and Service programs.

3. Provide opportunities for recreation compatible with the purpose, goals and objectives of the refuge.

4. Protect and interpret cultural resources in harmony with refuge programs.

APPENDIX B - CRESCENT LAKE/NORTH PLATTE NWR COOPERATIVE AGREEMENTS

The Complex has mutual aid agreements with the six Rural Fire Districts which boarder on the Complex. All of the Crescent Lake agreements are the same as the Garden Co. agreement shown below. Those at North Platte are both different, the Minatare/Melbeta F.D. includes a $100 administrative fee each year and this one and the Lyman agreement are Cooperative Agreements with no assistance on lands surrounding the North Platte. The Complex also maintains a mutual assistance agreement with the US Forest Service, Pine Ridge District.

MEMORANDUM OF UNDERSTANDING
between the
U.S. Fish and Wildlife Service
and
Garden County Rural Fire District #2

I. PURPOSE

This Memorandum of Understanding is entered into between the U.S. Fish and Wildlife Service, Crescent Lake National Wildlife Refuge (REFUGE) and the Garden County Rural Fire District #2 (DISTRICT) located in Garden County, Nebraska, for the purpose of providing adequate fire protection and fire suppression for the lands located within the REFUGE and DISTRICT.

II. AUTHORITY

The Fire Protection Act of 1992 (42 Stat. 857; 16 USC 594) and the Reciprocal Fire Protection Act of 1955 (69 Stat. 66, 67; 42 USC 1856, 1856a and b) and the Department of Interior Appropriation Act.

III. SCOPE OF WORK

A. Garden County Rural Fire District #2 agrees to:

1. Provide, at its own expense, first response and initial attack with such equipment and labor as are available, on wildland fires occurring within the boundaries of the REFUGE and on adjacent private lands.

B. Crescent Lake National Wildlife Refuge agrees to:

1. At its own expense with available equipment and manpower provide first response and initial attack for wildland fires occurring within the boundaries of the Crescent Lake National Wildlife Refuge, and assist on wildland fires determined to be a threat to Refuge lands occurring on adjacent private lands within the boundaries of the DISTRICT.

2. Assist in wildland fire suppression on lands surrounding the REFUGE, not covered by this agreement, when requested by the DISTRICT and deemed practical by the Project Leader. This assistance will be provided to the DISTRICT at the REFUGE's expense.

IV. PERIOD OF PERFORMANCE

A. The period of performance of this agreement is from the effective date of October 1, 1993 to September 30, 1998.

APPENDIX C -RARE, THREATENED, AND ENDANGERED SPECIES LISTS

Federally listed threatened and endangered species which may occur in Western Nebraska:

Common Name	Scientific Name	Comments
Peregrine falcon	Falco peregrinus	Migrant
Bald eagle	Haliaeetus leucocephalus	Migrant & winter resident
Eskimo curlew	Numenius borealis	Spring migrant
Interior least tern	Sterna antillarum	Migrant, nesting
Piping plover	Charadrius melodus	Migrant, nesting
Whooping crane	Grus americanus	Migrant
Blowout penstemon	Penstemon haydenii	Sandhills blowouts
W. prairie fringed orchid	Plantanthera praeclara	Tall grass meadows
American burying beetle	Nicrophorus americanus	Riparian & grassland areas
Black-footed ferret	Mustela nigripes	Not documented on Refuge

Federally listed category I and II candidate species found in Western Nebraska:

Common Name	Scientific Name	Comments
Regal fritillary butterfly	Speyeria idalia	Unknown
Belfragi's chlorochroan bug	Chlorochroa belfragi	Unknown
Plains topminnow	Fundulus sciadicus	Unknown
Ferruginous hawk	Buteo regalis	Migrant
Loggerhead shrike	Lanius ludovicianus	Possible nester
Black tern	Childonias niger	Nesting
Long billed curlew	Numenius americanus	Nesting
Swift fox	Vulpes velox	State Endangered
Plains spotted skunk	Spilogale putorius interrupta	Unknown
Northern Goshawk	Accipter gentilis	Past Migrant
Mountain Plover	Charadrius montanus	Past migrant
Baird's sparrow	Ammodramus bairdii	Past migrant
Harlequin duck	Histrionias histrionicus	Accidental

White-faced ibis	Pelgadis chihi	Past nester
Fringed-tailed myotis	Myotis thysanodes pahaspensis	Unknown
Blanding's turtle	Emydoidea blandingii	Unknown
Yellow mud turtle	Kinosternon flavescens flavescens	Breeding
Wolf's spike rush	Eleocharis wolfii	Unknown

State listed endangered and candidate species native to Crescent Lake/North Platte National Wildlife Refuge Complex:

Common Name	Scientific Name	Comments
Swift fox	Vulpes velox	Former resident
Northern redbelly dace	Phoxinus eos	Unknown
Finescale dace	Phoxinus neogaeus	Unknown
Pearl dace	Semotilus margarita	Unknown

Summary of Nebraska Natural Heritage Database Occurrence Information on sensitive species and plant communities for the Crescent Lake/North Platte National Wildlife Refuge Complex:

Rank	Common Name	Scientific Name	Comments
S1	Basin saltbush	Atriplex nuttallii	Unknown
S1	Rich Scrub Fen Com.	Sandhills Fen Community	Unknown
S1	Slender cotton-grass	Eriophorum gracile	Unknown
S1	Am. burying beetle	Nicrophorus americanus	Unknown
S1	Cottongrass	Eriophorum polystachion	Unknown
S1	Adder's tongue	Ophioglossum vulgatum	Unknown
S1	Blowout penstemon	Penstemon haydenii	Blowouts
S1	Am. pillwort	Pilularia americana	Unknown
S1	W. pr. fringed orchid	Plantanthera praeclara	Unknown
S1	White faced ibis	Plegadis chihi	Nesting
S2	Indian wild rice	Zizania aquatica	Unknown
S2	White stem pondweed	Potamogeton praelongus	Unknown

S2	Marsh St. John's-wort	Triadenum fraseri	Unknown
S2	Northern bog violet	Viola nephrophylla	Unknown
S2	Blk-crwnd night heron	Nycticorax nycticorax	Smith
S2	Menzies pink	Silene menziesii	Unknown
S2	Short-eared owl	Asio flammeus	Perrin
S2	Rush aster	Aster junciformis	Unknown
S2	Ferruginous hawk	Buteo regalis	Migrant
S2	Trumpeter swan	Cygnus buccinator	Nesting
S2	Purple mission-bells	Fritillaria atropurpurea	Unknown
S2	Least bittern	Ixobrychus exilis	Nesting
S2	Scirpus-like rush	Juncus scirpoides	Unknown
S2	Am. lotus	Nuphar luteum	Unknown
S3	Frie's pondweed	Potamogeton friesii	Unknown
S3	Str. leaf pondweed	Potamogeton strictifolius	Unknown
S3	Semi-perm. marsh	Sandhills Marsh	Unknown
S3	Long-leaf stitchwort	Stellaria longifolia	Unknown
S3	Forster's tern	Sterna forsteri	Nesting
S3	Swainson's hawk	Buteo swainsoni	Nesting
S3	Rocky mtn. sedge	Carex saximontana	Unknown
S3	Long-billed curlew	Numenius americanus	Nesting
S3	Peregrine falcon	Falco peregrinus	Migrant
S3	Wild sarsaparilla	Aralia nudicaulis	Unknown
S3	N. redbelly dace	Phoxinus eos	Unknown
S3	American bittern	Botaurus lentiginosus	Nesting
S3	Swainson's hawk	Buteo swainsoni	Nesting
S3	Black tern	Chlidonias niger	Nesting
S3	Northern harrier	Circus cyaneus	Nesting
S3	Yellow mud turtle	Kinosternon flavescens	Gimlet
S3	Lance-leaf loosesrif	Lysimachia hybrida	Unknown
S4	Eared grebe	Podiceps nigricollis	Nesting
S4	Bell's vireo	Vireo bellii	
S4	Western grebe	Aechmophorus occidentallis	Nesting
S4	Great blue herron	Ardea herodias	Rookery Crane
S?	Flat-top white aster	Aster pubentior	Unknown
S?	Canada rush	Juncus canadensis	Unknown

EXPLANATION OF THE NATURAL HERITAGE RANKING SYSTEM

State Rank

S1 Critically imperiled in Nebraska because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extinction from the state.

S2 Imperiled in Nebraska because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it vulnerable to extirpation from the state.

S3 Rare in Nebraska (on the order of 21 to 100 occurrences).

S4 Apparently secure in Kansas, with many occurrences.

APPENDIX D - LISTING OF IMPROVEMENTS

APPENDIX E - QUALIFICATION REQUIREMENTS

Request physical fitness requirements exception for Incident Commander Type 5 position. Moderate fitness co-lateral duty employees only. The terrain of the refuges is flat to moderate, fuels are almost exclusively grass, and attack is always by engine. Restrictions:

* Not permitted to utilize hand tools or hose
* Initial attack only, not permitted during second burning period

APPENDIX F - EQUIPMENT LIST

PRIMARY FIRE EQUIPMENT INVENTORY

EQUIPMENT DESCRIPTION	PROPERTY #	FUNDING	PURCH DATE	PURCH $	REPLACE $	MAINT COST	REPLACEMENT DATE
CRL SLIP-ON 300 gal	620311	FIRE	1979	4898	7300	50	1996
CRL SLIP-ON W/ FOAM 200 gal	620463	FIRE	1991	7843	8500	50	2005
CRL SLIP-ON 200 gal	620360	FIRE	1983	6343	7300	50	2000
NPL SLIP ON 200 gal	620404	FIRE	1988	5145	7300	50	1999
Truck Chev 1T Red	620317	FIRE	1979	10539	20000	200	1996
Truck Chev 1T Red	651916	FIRE	1992	15518	20000	200	2008
Truck Chev 1T Tan	620380	FIRE	1986	14433	20000	200	2000
Truck NPL Dodge 3/4T	620389	FIRE	1987	10331	20000	250	1998
Radio for 620317	620489	FIRE	1991	1710	2000	10	2005
Radio for 651916	651913	FIRE	1992	1230	2000	10	2005
Radio for 651916 Highband	654204	FIRE	1993	900	1000	5	2005
Radio for 620380	620494	FIRE	1992	1710	2000	10	2005
Radio for 620389	620488	FIRE	1992	1710	2000	10	2005
Slip On 55 gal	600698	O&M	1974	492	1200	25	1999
Gator AT Hauler	651922	O&M	1993	7000	8000	75	2002
Portable Radios 4 for temps.		FIRE	1988	416ea	1000	5	2000
Portable Radio Highband	654203	FIRE	1993	900	1000	5	2005
GPS Hardware		FIRE	1995	800ea	900		2000
Tractor Mower & Rake	620413	O&M	1988	10946	14000	75	2000
Auto Weather Station		FIRE	1994				2030

SECONDARY FIRE EQUIPMENT INVENTORY

EQUIPMENT DESCRIPTION	PROPERTY #	FUNDING	PURCH DATE	PURCH $	REPLACE $	REPLACEMENT DATE	FAIR SHARE
BASE RADIOS REPEATERS AND PATCHES		FIRE	1986	17500	20000	2005	50/50
Mobile Radios		FIRE	1990	10000	12000	2005	50/50
Portable Radios		FIRE	1991	5600	7000	2005	50/50
ATV 14 gal Sprayer	620384	O&M	1986	2810	5200	1998	50/50
ATV 20 gal Sprayer	620397	O&M	1987	3077	5200	1999	50/50
Pumps 4ea		Fire		6000	7000	1999	50/50
Bulldozer D-6	341887	O&M	1968	14063	80000	2000	30/70
Semi-truck	616070	O&M	1985	22925	100000	1997	30/70
Trailer-semi lowboy	258176	O&M	1979	3758	25000	1998	30/70

APPENDIX G - STEP-UP PLAN

Fire Presuppression Step-up Plan for Crescent Lake/ North Platte NWR Complex

The following step-up plan will guide fire presuppression operations on the complex and the use of emergency presuppression funding. The plan uses the National Weather service (NWS) Rangeland Fire Index as a fire Danger rating/ but will be revised to use the National Fire Danger Rating System (NFDRS) Burning Index (BI) per FWS Fire Management Handbook requirements when the Weather Information Management (WIMS) can calculate BIs for the Complex.

STAFFING CLASS MATRIX

Staffing Class I and II - Rangeland Fire Index = LOW

*** 2 primary engines staged (unstaffed) at Crescent Lake NWR**

*** 1 primary engine staged (unstaffed) at North Platte NWR**

*** Fire staff maintain radio contact**

Staffing Class III - Rangeland Fire Index = HIGH

*** All Staffing Class II actions Plus:**

*** Step-up to Staffing Class IV if lightning activity is predicted or during periods of high public use**

Staffing Class IV - Rangeland Fire Index = VERY HIGH

*** All Staffing Class III Actions plus:**

*** CFMO opens emergency presuppression account and notifies RFMC**

*** Slip on unit loaded**

*** Staff firefighters may be assigned to engine or detection patrol**

*** Fire staff work weeks and/or tours of duty may be revised or extended at discretion of CFMO**

*** Atomatic detection patrols after dry lightning occurrence**

*** Step-up to staffing Class V if lighting activity, or high public use is predicted**

Staffing Class V - Rangeland Fire Index = Extreme

*** All Staffing Class IV actions plus:**

*** Non-fire personnel may be placed on standby (charged to emergency presuppression account)**

*** Fire Staff and assigned engines at duty station or on detection patrol**

CRESCENT LAKE - NORTH PLATTE COMPLEX FIRE STEP-UP PLAN

LIGHTNING ACTIVITY	PUBLIC USE	RANGELAND FIRE INDEX						
		LOW	HIGH	VERY HIGH	EXTREME	**NONE**	**LOW**	**Class I**	**Class II**	**Class III**	**Class IV**
PROBABLE	**HIGH**	**Class III**	**Class IV**	**Class V**	**Class V**						

	STAFFING CLASS				
PRESUPPRESSION ACTIONS	I	II	III	IV	V
FIRE STAFF					
*** Maintain radio contact**	**X**	**X**	**X**	**X**	**X**
*** Remain with assigned engine**			**X**		
*** Work weeks and/or tours of duty may be revised or extended at discretion of CFMO**				**X**	**X**
REFUGE STAFF FIREFIGHTERS					
*** Carry PPE while on duty**			**X**	**X**	
*** May be assigned to an engine at a**				**X**	**X**

station or on detection patrol by CFMO

*** Work weeks and/or tours of duty may be revised or extended at discretion of CFMO** X

FIRE EQUIPMENT

*** Permanent engines loaded** X X X X X

*** Slip on loaded** X X

MISCELLANEOUS EMERGENCY PRESUPPRESSION ACTIONS

*** Automatic Detection patrol following thunderstorm activity** X X

*** RFMC notified, emergency presuppression account opened** X X

Step-up plan does not apply when resources are assigned to fires

APPENDIX H - PREATTACK PLANS

Plans to be completed for the Complex and to include:

1. Response map
   - roads, fences, and gates
   - fire stations/caches
   - airports
   - helispots
   - water sources (type and flow)
   - mutual aid zones/fire cooperator districts

2. Hazard/Risk map
   - high potential fire occurrence zones
   - potential values at risk zones (high, medium,low)
   - hazard potential zones (high, medium, low)

3. Natural and Cultural Resources map
   - sensitive zones
   - non-sensitive zones
   - restricted vehicle access areas

4. Structure assessments

6. Closure/Evacuation procedures

APPENDIX I - FIRE DISPATCH PLAN

Crescent Lake National Wildlife Refuge
Fire Dispatch Plan

When report of smoke or fire is received get as much information from the caller as possible:

Location of smoke or fire
Who is calling and from where
Size of fire
Rate of spread
Anyone dispatched to the fire?
Should our dispatcher call other units? Who?

1. Notify Refuge Manager or other permanent Refuge Personnel

2. Radio and telephone dispatcher put on duty

Refuge Staff:

Bill Behrends	762-4339
Monte L. Shaul	762-3961
In town	772-3058
Bunkhouse	762-____

3. Dispatch two fire units: 1-300 gal, 1-200 gal and 4 people to fire. 1-200 gal slip on unit also available.

4. Put North Platte Refuge on standby

Complex Office	1-635-7851
Larry Malone	1-635-1113
Brad Mckinney	1-635-5153

5. Grass fires very seldom burn through the night. If the fire is still live at midnight, and it is likely that it will continue the next day, contact the highest ranking refuge fireman to take a fire order. Then contact the FMO at Ft. Niobrara NWR, or the Fire Management Coordinator at the regional office to see about getting the order filled.

Ft. Niobrara NWR - business hours 1-402-376-3789
John Segar -home 1-402-376-3165
Denver Regional Office 1-303-236-8145 ext 676
Philip Street-home 1-303-933-6851

1. Heart of the Hills RFD #5 (west and north side)

*Ev Dietlien (or) 762-3185 P
Tim Dietlien 762-3352
Bob Daggett (or) 762-2256 P
Butch Black 762-4349
Matt Brennan 762-6344 P
Howard McCarty 458-2948 P
Leroy Londen 762-5036 P
Jack Zicklefence P

* Primary Contact
P Local Fire Truck Location

Personnal Fire Equipment Available
Victor Elderd 762-2888 P
Gerald Dewitt 762-5248

2. Blue Creek RFD # 1 (south side)

*Garden County Sheriff 772-3540
Steve McCormick (Chief) 778-5395
Greg Koester (Asst. Chief) 778-5622
Pat Thelander 778-5578 P

3. Lisco Fire Department RFD #2

*Garden County Sheriff 772-3540
Robert Cooper (Chief) 772-3947
Justin Sullivan (Asst Chief) 772-3215
Scott Fetters 772-3562

Mike McGinley 772-4507 P

Jim McConkey 772-3431

Personnal Fire Equipment Available

Eldred Ranch

Merle Jeffery (or) 772-4400 P

Ray Heath 772-3734

4. Rackett RFD #4 (east side)

*Bernard Groves (Chief) 577-6332 P

*Cancy Groves 557-6333

Merlyn Grace 772-3134 P

Sid Cotton 772-3484 P

Herschell Rice 577-6360 P

Art (Jerry) Mues 772-3458 P

5. Garden County (Oshkosh) RFD #2

*Garden County Sheriff 772-3540

Joe Quinn (Chief) 772-3891

6. Pioneer RFPD #4 (northwest side)

*Mule Shoe Bar Ranch Office 762-3964 P

* Primary Contact

P Local Fire Truck Location

7. Lyman Fire District 911

8. Minatare/Melbeta Fire District 911

9. Nebraska National Forest - Chadron (USFS)

*Forest Service (Main Office) 432-0300
*Pine Ridge District Office 432-4475
Bob Sprentall 432-0315
Marvin Liewer 432-4475
Roger Keepers 432-4475
Mike Watts 432-4475
Mary Peterson 432-0311
Marsha Yates 432-4146

10. Alliance Fire Department 762-2151

11. Bingham Fire Department 588-6264

12. Broadwater Fire Department 489-5555

13. Bridgeport Fire Department 262-0931

14. Hyannis Fire Department 458-2300

15. Arthur Fire Department 764-2911

16. Ogallala Fire Department 284-2011

17. Gering Fire Deparatment 911

18. Scottsbluff fire Department 911

* Primary Contact

P Local Fire Truck Location

Directory

Regional Office	303/236-8151
Associate Manager	
Fire management Officer Ft. Niobrara NWR	402/376-3789
John Segar	402/376-3165 (home)
Regional Fire Mngmt Coordinator	
Phil Street	303/236-8152 (Office)
NIFC FWS Fire Mngmt. Coordinator	208/389-2595 (Office)
Roger Erb	208/853-0529 (Home)
Logistics Support	208/334-9400
Nebraska State Fire Marshal	402/471-2027
Nebraska Civil Defense	762-5859

Other Services

Weather Information

National Weather Service (Scottsbluff)	632-6822
Fire Forecast (Cheyenne, WY)	307/638-6437

Gasoline

Doug's Texaco (Oshkosh)	772-3951
After hrs contact Sheriff's Office	772-3540
Hempel's Gas and Appliance (Alliance)	762-4072
Bruce Johnson	762-3806 (Home)

Ambulance

Alliance	911
Oshkosh	772-3540
Lewellen	772-3540

Hospital

Garden County Hospital (Oshkosh)	772-3283
Box Butte County Hospital (Alliance)	762-6660

Law Enforcement

Alliance Police Department	762-4955
Box Butte County Sheriff	762-6464
Garden County Sheriff	772-3540
Nebraska State Patrol	632-1211

APPENDIX J - INCIDENT COMMANDER PROCEDURES

APPENDIX K - ESCAPE FIRE SITUATION ANALYSIS

APPENDIX L - DELEGATION OF AUTHORITY

APPENDIX M - BIBLIOGRAPHY

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APPENDIX N - ENVIRONMENTAL ASSESSMENT