WILDLAND FIRE MANAGEMENT PLAN

LITTLE PEND OREILLE NATIONAL WILDLIFE REFUGE

2001

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EXECUTIVE SUMMARY

When approved, this document will become the Fire Management Plan for Little Pend Oreille National Wildlife Refuge's (LPO) . Major components include:

– updates policy for prescribed fires at LPO.

– meets objectives described in Comprehensive Conservation Plan (CCP).

– updates format and content changes under the direction of Fire Management Handbook (Release Date 6/1/00).

– outlines a Prescribed Fire Program to manage critical habitat and reduce hazardous fuels.

– institutes a program of full suppression of all wildland fires using appropriate management strategies.

This plan is written to provide guidelines for appropriate suppression and prescribed fire programs at LPO. Prescribed fires may be used to reduce hazard fuels, restore natural processes and vitality of ecosystems, improve wildlife habitat, remove or reduce non-native species, and/or conduct research.

INTRODUCTION

The Little Pend Oreille National Wildlife Refuge (LPO) was established through Executive Order 8104 "... as a refuge and breeding ground for migratory birds and other wildlife..." and "...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds." (Migratory Bird Conservation Act). Rehabilitation of degraded natural resources and protection of white-tailed deer winter range were two primary underlying goals leading to the establishment and management of the refuge.

The development of this Fire Management Plan (FMP) was undertaken both to manage fire in a manner compatible with the purpose of the Refuge, incorporate the latest fire management policy directives (DOI 1995), as delineated in the Federal Wildland Fire Management Policy and Program Review , Final Report- 12/18/95, and satisfy requirements of 910 DM 1-3 and 621 FW 1.1. It will also serve to update the existing FMP to meet present US Fish and Wildlife Service policy requirements and refuge management objectives. Service policy requires that all refuges with vegetation capable of sustaining a fire will develop a FMP. In addition, all Service lands using prescribed fire must have an FMP in place.

This FMP is an appendix contained within the Little Pend Oreille NWR Comprehensive Conservation Plan (CCP) and is essential as a guide in achieving the resource management objectives delineated in the CCP. The CCP, and through extension, all the sub-sections within the CCP meet NEPA/NHPA compliance. As such no further NEPA documentation will be necessary to implement this plan.

Fire management at LPO will include the use of prescribed fire and suppression of all wildland fires using appropriate management strategies.

Efforts will be made to protect resources including the remnant stands of old growth ponderosa pine, sites containing Adder's Tongue (a rare plant species), structures of cultural significance, campgrounds, and whitetail deer habitat. Historic sites include the refuge office, Winslow Cabin and the Christiansen Homestead. Adjacent property under other ownership will be protected from fires which occur on the refuge in accordance with Service policy.

This plan will include cooperative efforts in wildland fire and prescribed fire with the Colville National Forest, Washington Department of Natural Resources, and other federal, state, and private wildland fire organizations.

COMPLIANCE WITH USFWS POLICY

AUTHORITIES

Authorities for implementing this plan are as follows;

1. 42 Stat.857; 16 USC 594, Protection Act of September 20, 1922.

2. 47 Stat. 417; 31 USC 315, Economy Act of June 30, 1932.

3. 69 Stat. 66, 67; 42 USC 1856, 1856a and b, Reciprocal Fire Protection Act of May 27, 1955.

4. 80 Stat. 927; 16 USC 668dd-668ee, National Wildlife Refuge System Act of 1966 as amende

5. 88 Stat. 688; 43 USC 1601, Alaska Native Claims Settlement Claims Act of December 18, 1971.

6. 88 Stat. 143; 42 USC 5121, Disaster Relief Act of May 22, 1974.

7. 88 Stat. 1535; 15 USC 2201, Federal Fire Prevention and Control Act of October 29, 1974.

8. Pub. L. 95-244, as amended by Pub. L. 97-258, September 13, 1982. 96 Stat. 1003; 31 USC 6301-6308, Federal Grants and Cooperative Act of 1977.

9. 94 Stat. 2371, Alaska National Interest Lands Conservation Act of December 2, 1980.

10. 96 Stat. 837, Supplemental Appropriation Act of September 10, 1982

11. Pub. L. 100-428, as amended by Pub. L. 101-11, April 7, 1989, Wildfire Suppression Assista

12. Departmental Manual, 910 DM 1-3, Wildland Fire Suppression and Management, Fire Protection and Assistance, and Wildfire Control and Management-Alaska.

13. Departmental Manual, Series: Public Lands; Part 620: Wildland Fire Management.

14. National Wildlife Refuge Improvement Act of 1997, (PL 105-57)

REFUGE MANAGEMENT PLANS

The CCP, as it relates to fire, will strive for native diversity of existing forest habitats and to enhance those elements which have been degraded due to previous activities such as removal of old-growth forests and fire exclusion.

The Habitat Management Plan, under development, will also include a large measure of prescribed fire in keeping with the philosophy of enhancing native diversity and utilizing fire in a simulated natural role to maintain overall forest health and reduce the incidence and extent of severe wildland fire.

The Wildlife Management Plan, under development, is expected to utilize fire to achieve objectives related to deer winter range and other species of interest.

The Fire Management Plan will help meet the objectives detailed in other planning documents through the use of fire as a tool to maintain the desired mix and proportion of habitats for a variety of wildlife species as described in the CCP. For example, prescribed fire will be used to help restore and maintain much of the refuge's 8,000 acres of dry forest (including ponderosa pine and Douglas-fir habitats) which is of great importance to a wide array of plant and animal species.

FIRE MANAGEMENT OBJECTIVES

The overall objectives for fire management are to promote a program to ensure firefighter and public safety, aimed at reducing human-caused fires, to ensure appropriate suppression response capability to meet expected wildland fire complexity, and to increase use of prescribed fire. Specific fire management objectives are:

- Promote a fire management program and control all wildland fires.
- Protect life, property, and resources from wildland fires at costs commensurate with resource values at risk.
- Use prescribed fire to reduce hazard fuel accumulation, restore fire to fire-dependent ecological communities, and to maintain cultural/historic scenes where appropriate.
- Use appropriate suppression tactics and strategies that minimize long-term impacts of suppression actions.

DESCRIPTION OF REFUGE

The Little Pend Oreille NWR is located in the mountainous northeastern portion of Washington State with an elevation range of 1800 feet on the west side to 5600 feet on the east boundary (Figure 1). The refuge is predominantly located in Stevens County with a small portion of its eastern boundary in Pend Oreille County. The Refuge comprises 40,198 acres most of which is forested and typical of the surrounding areas.

Much of the adjacent land surrounding the refuge on the northern and western boundaries is in state and private ownership while the lands to the south and east are dominated by lands managed by the USDA Colville National Forest and private timber companies.

Social, political and economic resources center around the town of Colville which serves as the Stevens County seat of government. Most livelihoods in this area are supported by service and light industry, state and federal jobs, cattle ranching, wheat farms and the timber industry.

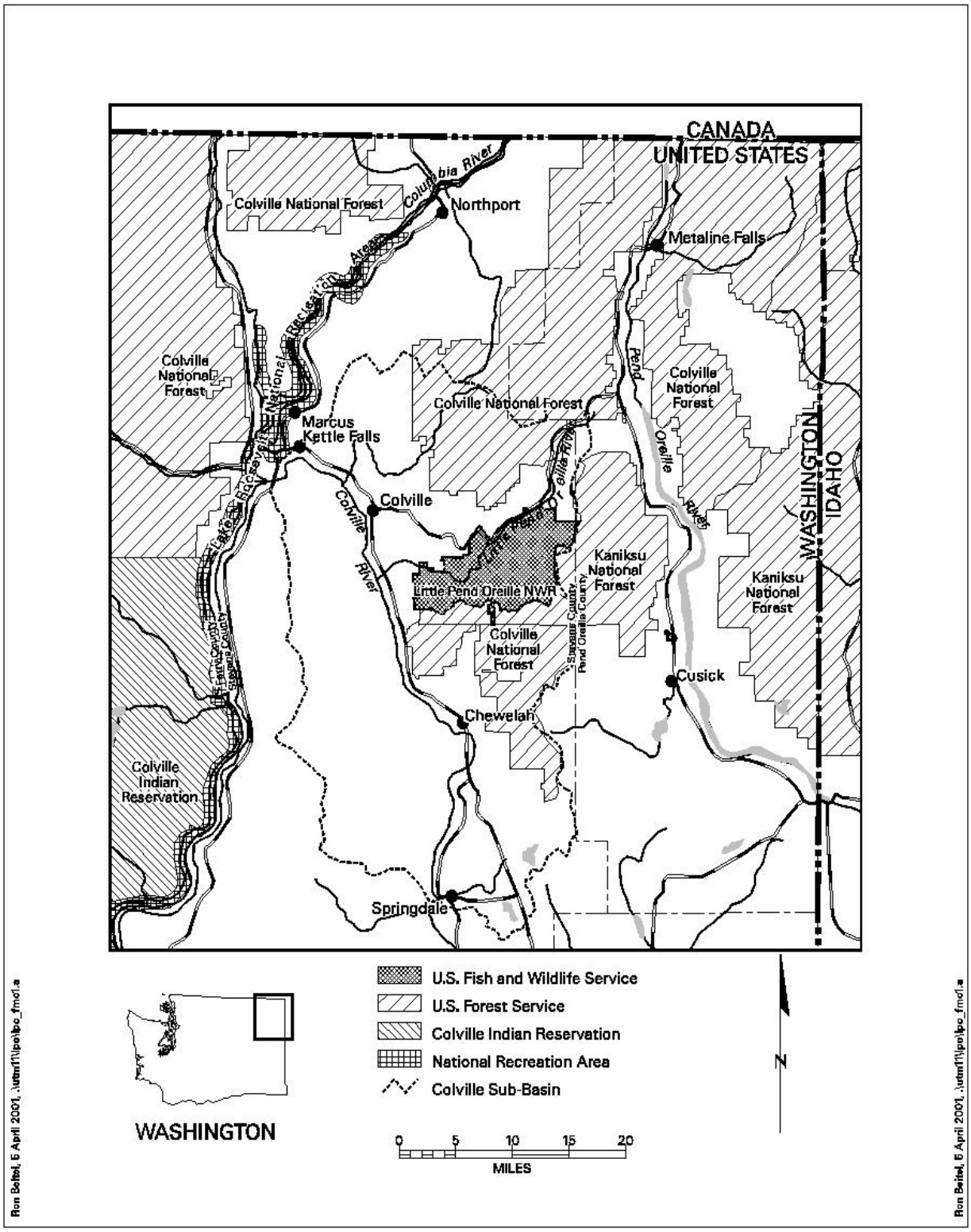
In the early part of this century, the immediate area of the Refuge surrounding the lower and middle portions of the Little Pend Oreille River was occupied by homesteaders and lumber camps. Decades of farming, grazing, mining and logging reduced the quality of the habitat to such a degree that the Little Pend Oreille white-tail deer herd was believed to be in jeopardy. As farms and ranches went "bust" and the best accessible timber was decimated private ownership of the land was abandoned. Land reverted to Federal ownership through a variety of Acts and Statutes with the end result being the issuance of Executive Order #8104 signed by President Franklin D. Roosevelt on May 1, 1939 which established the Little Pend Oreille Wildlife Refuge. On July 27, 1940, this became the Little Pend Oreille National Wildlife Refuge by Proclamation #2416.

In 1965, management of the Refuge, through cooperative agreement, was assumed by the Washington State Department of Fish and Wildlife. Primary management focused on the white-tailed deer herd and their winter range but some activities have also centered on forest grouse habitat and the fishing opportunities afforded by the areas lakes and streams.

CLIMATE

In addition to elevation, other principle climatic influences occur from weather systems which originate over the North Pacific and continental air masses from the Inland Basin to the south and the Canadian heartland to the north. Due to the prevailing westerly winds, the systems from the North Pacific dominate our weather during most of the year which helps to moderate temperatures year around. However, occasional blasts from the Canadian Arctic do spill over the Northern Rockies from the northeast and can govern our weather for extended durations. When these arctic air masses occur it results in an increase in cloudiness, precipitation, and during the warmer months, an increase in lightning activity greater then that of most areas east of the Cascades. During the winter months temperatures can be sub-freezing for prolonged periods.

Figure 1: Vicinity Map



The area generally receives between 38 to 64 cm (15 to 25 inches) of precipitation per year in the valleys with up to 40 inches and greater at higher altitudes. Most of this moisture is received from mid September through mid January. The driest period is late June through early September.

Low elevation summer temperatures range from the upper 40's to the middle 80's with an expected decrease of about 3 degrees F for each 1000 feet of increase in elevation. Maximum temperatures exceed 95 degrees 5 to 20 days each summer and 100 degrees on 1 to 5 days. Average winter temperatures range from 10 degrees to slightly above freezing with extremes going down to -30 and -40 degrees F. The daily temperature range in the summer is about 30 degrees and about half that in the winter.

The average daily variation in relative humidity during the winter is from 88% at night to 78% in the afternoon; 80% to 45% in the spring and fall; and 65% to 25% in the summer.

AQUATIC RESOURCES

LPO maintains a highly valued wetland component made up of rivers streams and lakes. The centerpiece is the Little Pend Oreille River itself which flows diagonally across the refuge from the northeast to the southwest for some 13 miles. Except for some private in-holdings, the refuge encompasses the entire Bear Creek watershed which is a major tributary of the Little Pend Oreille River. With today's emphasis on ecosystem management the significance of this is obvious both from a management standpoint as well as an environmental one. Six other smaller, but no less significant watersheds, ultimately end up in the LPO river and have either their origins on the refuge, or a large portion of their courses flow through the Refuge. From the southwest to northeast they are Norman, Narcisse, Squaw, Cedar, Scrabblers and Olsen Creeks. Two streams, which have their headwaters located on the Refuge, but drain into the Colville River are Slide Creek and Moran Creek on the extreme southwest corner of the Refuge. Many other seasonal streams and high quality springs can be found on the Refuge.

Several small lakes are dispersed through the Refuge with the most important being McDowell and Bayley Lakes. Each of these lakes spill out into a chain of beaver ponds which provide notable habitat for waterfowl and the occasional moose which pass through the area. Indications point to a rapidly expanding moose population and continued dispersion in this part of Washington. Potter's Pond, Bayley and McDowell Lakes provide recreational fishing opportunities as well. Bayley Lake in particular, is very productive and is connected to Potter's Pond by an outfall channel which has become a spawning stream for the lake's trout.

GEOLOGY AND SOILS

Little Pend Oreille National Wildlife Refuge is located in the eastern portion of the geographic region known as the Okanogan Highlands Province which stretches from the Methow River Valley in the west to the western Slope of the Northern Rocky Mountains in the east, and the Columbia River Breaks in the south to the upper reaches of the Kettle River in British Columbia, Canada.

The land is characterized by wide, flat north/south river valleys surrounded by mountainous terrain distinguished by moderate slopes and broad rounded summits. The current configuration of this region was formed during the Pleistocene Epoch when the entire province

was repeated covered and uncovered by glacial ice. Deposits of glacial drift are common and this is especially true of the land forms north of Spokane where the refuge is located. Underlying these glacial masses in the eastern parts of the province are primarily quartzite, graywacke, slate, argillite, phyllite, greenstone and some limestone as deposited during the Paleozoic Era.

In this province the general classes of soils are closely related to the elevations at which they occur. Granitic soils are common away from the river valleys in the mountains and generally fall into Xerocherpts (Regosols) and Cryorthods (Podzols). Xerocherpts have very little profile development and are most often cold, acid, stony or gravelly loams of about 3.5 feet in depth. Cryorthods contain higher contents of silt and loam and greater profile development containing both A2 and B2 horizons with high iron contents.

The lower river valleys reflect drier conditions and transition from forest to grassland communities. Glacial till and Haploxerolls (Chernozem soils) dominate. Soil texture is typically sandy loam and loam with more definition in the structure containing both A and B horizons. (From Natural Vegetation of Oregon and Washington 1973)

VEGETATION

The major vegetation types at LPO consist of riparian woodlands, upland forest, old fields, and meadows. Other areas, such as cliffs and talus slopes, represent a small portion of the refuge. A map of vegetation types within the refuge boundaries can be found in Figure 2.

Ute ladies'-tresses (Spiranthes diluvialis), an orchid that is federally listed as threatened, is known to be present in northern Washington. There hasn't been adequate surveys conducted on the refuge so it is considered to be potentially present in any suitable habitat that occurs on the refuge.

Riparian Woodlands

Interspersed throughout the refuge are well developed stands of hardwoods with affinities for moist sites. These woodlands include quaking aspen (*Populus tremuloides*), mountain alder (*Alnus tenuifolia*), sitka alder (*Alnus sinuata*), willow (*Salix* spp.), black cottonwood (*Populus trichocarpa*), Douglas maple (*Acer glabrum douglasii*), white birch (*Betula papyrifera*) and water birch (*Betula* spp.).

Hardwood stands are attractive to a variety wildlife for their nutritious forage, thick cover, source of water and general diversity of plant species. This attraction was similarly felt by the early settlers and as a result most of these hardwood forests have been altered to various degrees through clearing for homesites, farming and pastureland.

In addition to their importance to wildlife, hardwoods play a major role in streambank stabilization and soil retention in floodplains. While dependant upon a wide array of environmental factors the sequence of re-colonization of streambanks often begins with alders pioneering sand and gravel bars followed by cottonwood and aspen.

These wet woodlands are only susceptible to fire in the very driest of years. When these areas burn it tends to produce conditions favorable to the reproduction of these pioneering species. In fact, with aspen in particular, fire creates conditions necessary for reproductive growth from rootstock (see section on Fire Ecology/Fire Effects on Forest Communities).

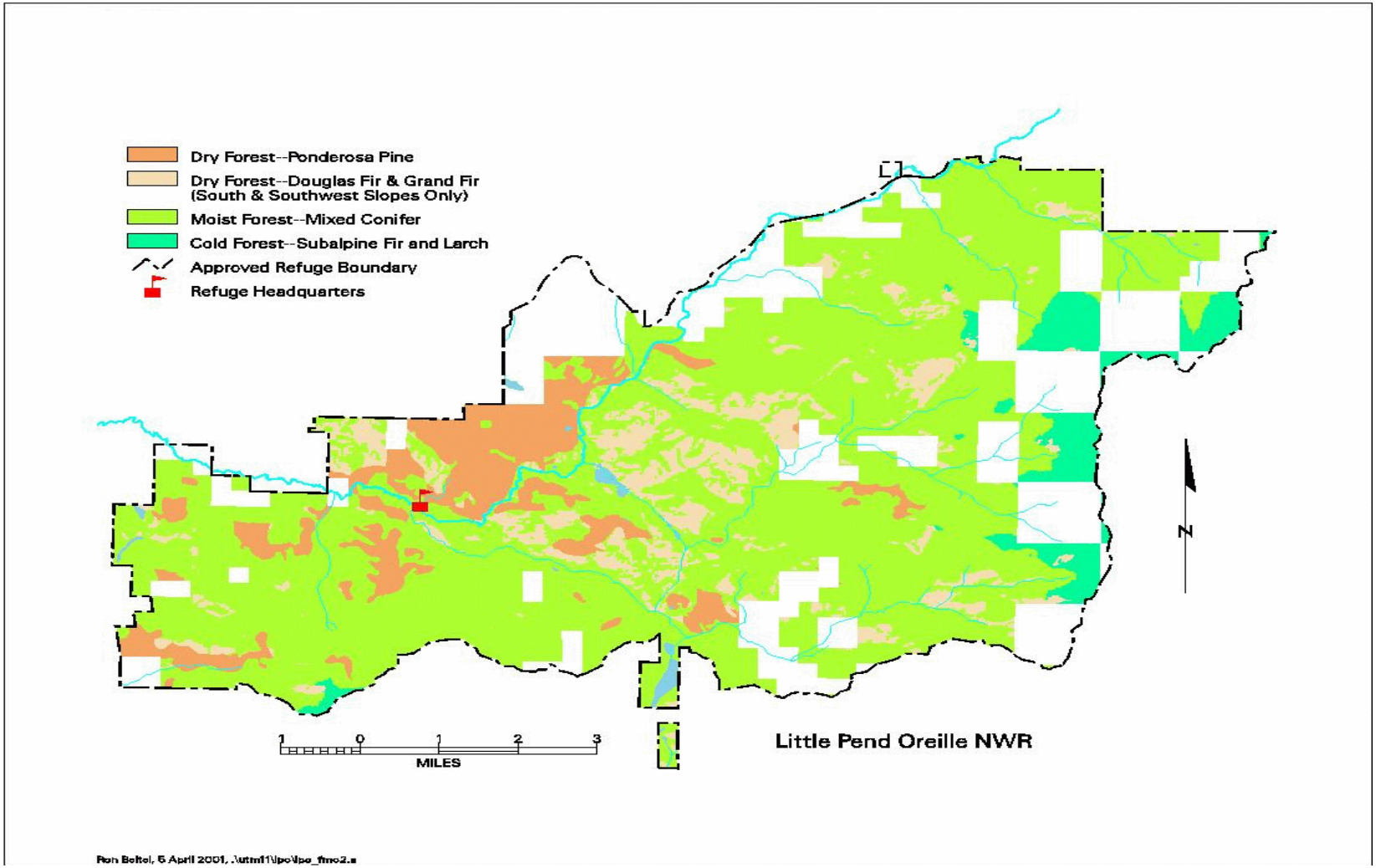


Figure 2: Vegetation Map

Upland Forests
Old photographs, survey notes and existing remnant stands indicate that much of the Refuge was characterized by extensive stands of large, old growth Ponderosa pine (*Pinus ponderosa*), Douglas-fir (*Psuedosuga menziesii*) and Western larch (*Larix laricina*) prior to settlement and exploitation. Impressive stands of Western redcedar (*Thuja plicata*), Western hemlock (*Tsuga heterophylla*) and other mixed conifer stands were also present. Records indicate that logging has occurred on the Refuge since its inception with a primary objective of improving wildlife habitat, but also for sanitation and salvage. Letters in the refuge files indicate that the cedar poles cut on the refuge were so desirable that they were specifically requested by buyers from the mid-West. Taken as a whole, the mixed-conifer forests which dominate the refuge are the most complex in the Pacific Northwest (Agee 1993).

Currently, most of the forest land is second- and third-growth mixed stands with higher numbers of stems per acre and a greater percentage of shade tolerant species than naturally occurred here. This can be directly attributed to past timber harvest practices and aggressive fire suppression. The southeastern corner of the Refuge contains an extensive roadless area with an old growth timber component. This area comprises about 3200 acres and was once proposed as a designated Wilderness Area. Two Research Natural Areas (RNA) are located on the Refuge; the Varline Grove-Flodelle RNA and the Baird Basin RNA. These areas exemplify a collection of relatively undisturbed Society of American Foresters (SAF) Forest Cover Types typical of Northeastern Washington (see details under Wilderness and Special Areas section).

The Refuge is well represented by a variety of forest types from low elevation ponderosa pine on its western edge which gradually becomes higher elevation mixed stands of Douglas-fir, grand fir, lodgepole, western white pine, western larch, western redcedar, western hemlock, Englemann spruce (*Picea engelmannii*) and sub-alpine fir (*Abies lasiocarpa*). Also present are hardwood species as described above in the Riparian Woodlands section. For management purposes, these various forest types have been grouped into three broad classifications; A. Dry Forest; B. Moist Forest; and C. Cold Forest groups. For further explanation see the CCP. Each of these broad forest categories, in turn, represent fire regimes which may be based on a variety of factors, but for our purposes will be founded upon return intervals and vegetation communities.

The fire regimes have tremendous ecological importance to the refuge, especially in light of the fact that key local species, ponderosa pine, Western larch and Douglas-fir, and their associated vegetative complexes, are highly adapted to wildland fire. The continuity of fire disturbance, and by extension the fire regimes, has been interrupted in refuge forests through nearly a century of fire suppression.

Fire suppression has been so successful and logging/clearing operations so pervasive throughout our forests that major transformations are taking place which are being recognized as less then desirable. The two most serious problems encumbering forest habitat management are excessively high fuel loadings and conversion of our forests from highly fire resistant and fire dependant species to shade tolerant, fire sensitive species. Dealing with these two problems predicates the essential elements of forest habitat management on the refuge.

Prior to pioneer settlement the low elevation ponderosa pine habitat was burned by wildland fire

every 5 to 25 years. This relatively high frequency, low intensity fire is essential to maintaining healthy stands of interior ponderosa pine.

Perhaps more then any other single event, wildland fire, has shaped and profiled the character of our forests. Anthropomorphic and lightning caused fires burned through virtually the entire area of the refuge with varying degrees of frequency. This repeated disturbance led to the ecological adaptation of various forest communities to degrees of tolerance to fire frequencies and intensities. Low elevation dry sites with greater fire frequencies favored those species which developed deep tap roots, thick exfoliating and insulating bark and good self pruning traits especially as the trees matured. This ensured that the larger, older specimens could survive progressively greater fire intensities due to their high fire resistance and wide spacing and thus, continue to provide seed for many years.

Mixed stands of Douglas-fir and other species burned at somewhat greater intervals depending upon topography, aspect, elevation and fuel type. Most of the refuge forest is dominated by Douglas-fir/mixed forest in both dry and moist settings. The natural periodicity of fire in the dry Douglas-fir is between 10 and 24 years (Agee 1993) while the moist forest is somewhat longer at 13 to 26 years.

Western red-cedar/Western hemlock draws and high elevation sub-alpine fir types have the longest fire intervals. Fire may only visit these stands every 50-100 years for low to moderate intensity fires and 150 -500 years for stand replacement fires (Forested Plant Associations of the Colville National Forest 1995).

Old Fields; Homestead Pastures and Agricultural Fields

There are approximately 58 man-made openings within the refuge totaling 631 acres. The largest contiguous openings are a legacy from the homesteading days when areas were cleared for farming and grazing operations. Since grazing has remained a part of the Refuge operation, these openings still exist, although in some areas they are being reclaimed by the forests which once occupied them.

In terms of fire management, these old fields are dominated by grass fuels which are quite flashy during the height of fire season and can be readily burned during the Fall or late winter/early Spring prescribed fire season. Although these fields are not naturally occurring, they do add to habitat diversity and the CCP calls for maintaining some of them through the use of fire.

Natural Openings and Meadows

Somewhat rare in terms of total acres, 96.5, natural openings can be found throughout the Refuge on the dryer ridge tops in particular, but also in a few moist bottomland meadows. The majority of natural open meadows are found on the lower elevation slopes and ridges on the west side of the Refuge. Grasses that dominate the meadows are Kentucky Bluegrass (Poa pratensis), Redtop (Agrostis alba), Orchardgrass (Dactylis glomerata), and Timothy (Phleum pratense).

Other Habitats; Cliffs, Talus Slopes

Cliff Ridge and portions of the west slope of McDonald Mountain represent the refuge's most dramatic forms of this habitat. Other remote cliff and talus sites occur on Scrabbler's Peak and Blacktail Mountain. Detailed information concerning wildlife utilizing these very specific habitats

is lacking, however they are very important to note as natural fire breaks, safety zones and potential hazard areas.

FISH AND WILDLIFE

Federally listed ***endangered species*** that may occupy the LPO;

Peregrine falcon (*Falco peregrinus*); incidental sightings only, not likely to be affected by prescribed fire as planned on the LPO.

Gray wolf (*Canus lupus*); unconfirmed sightings only. Increase in the wintering deer herd through manipulation of habitat with prescribed fire may be beneficial due to increasing food supply.

Grizzly bear (*Ursus arctos*); No reported sightings on the refuge, but is well documented nearby. Same effects as with gray wolf.

Federally listed threatened species that may occupy the LPO;

Bald eagle (*Haliaeetus leucocephalus*); Year around resident, and one known nesting site at Bayley Lake. Little effect to this species is likely. Areas slated for prescribed fire will be surveyed for eagle nests or other significant habitat features such as roosts or perches.

Of principal concern on this Refuge is the Canada Lynx (*Felis canadensis*). This species has specific forest habitat requirements that will dictate the nature and application of prescribed fire in areas where these animals may be impacted. Historic records show the lynx was found on the refuge and recent reports of lynx sign indicate they still occupy the general area. A 1998 survey failed to detect lynx on the refuge although seasonal habitat does exist at some of the higher places within the LPO. Since natural fire is infrequent in these areas, and little prescribed fire is planned for them, the impact of management fire will be minimal. However, in any given year, natural fire may have a significant impact on the available lynx habitat depending upon location, intensity and size.

Species of Concern, as designated by the USFWS include Columbia spotted frog, northern goshawk, black tern, olive sided flycatcher, Yuma myotis, long-eared myotis, fringed myotis, long-legged myotis, pale Townsend's big-eared bat, California wolverine, redband trout and westslope cutthroat trout.

The Northern Goshawk (*Accipiter gentilis*) is of concern since there is evidence that the ever increasing density of the forests in which it lives may be limiting its ability to hunt successfully (Reynolds,1982). Foraging areas with diverse prey species form the largest habitat requirement for these raptors and conversion to shade tolerants is evident on the refuge. The CCP goal of creating and maintaining a greater percentage of mature forest using prescribed fire, among other techniques, will have positive benefits for goshawks.

Details regarding habitat requirements and fire use in the management of these species will be outlined in the Wildlife Management Plan and the Habitat Management Plan.

CULTURAL RESOURCES

Use of the area within the boundaries of the Little Pend Oreille NWR by Native American Indians is not well documented. In fact, no prehistoric sites have been located within the Refuge itself. This may seem unusual because of the dense population centers located on the Columbia and Pend Oreille Rivers. Evidence from ethnographic and archaeological sources suggest that native groups congregated along the major rivers to harvest salmon and trade.

Beginning in 1982, culture resources surveys have been conducted on the Refuge in order to fulfill the requirements of the National Historic Preservation Act (NHPA). Approximately 5,000 acres of the entire 40,198 acres on the Refuge have been surveyed. The surveys have been conducted for timber sales, a land exchange, Potter's Pond, and a stratified sample to gather information for the Comprehensive Conservation Plan. Several special studies have also been conducted including a historic bridge survey and a mine contamination study.

Additional surveys are required when new projects are sponsored by the refuge such as road construction, prescribed fire, timber harvest or thinning, facilities remodeling, new construction, and any other activity that has the potential to affect historic properties.

WILDERNESS AND SPECIAL MANAGEMENT AREAS

Refuge records indicate that as early as March of 1948, expanses of the LPO were being examined for inclusion into a national inventory of protected lands, termed "Natural Areas", representing typical climax forests of the major types as defined by the Society of American Foresters and proposed in February of 1947. Today, these are known as Research Natural Areas or RNA's.

The original RNA for the LPO was what we now call Baird Basin, a 160 acre tract in the North Fork of the Bear Creek watershed. This parcel typifies SAF Forest Type 212, Larch-Douglas-fir. In 1959, this was refined to indicate that two additional SAF Forest Cover Types were also present. They are;

SAF Type 214, Ponderosa pine-Larch-Douglas-fir
SAF Type 218, Lodgepole pine

During this period, two other RNA's were proposed. The Varline Grove-Flodelle Creek area and the Edmonson Grove. The Edmonson Grove was rejected as being too small (8 acres), but remains a very impressive Type 214 dominated by old growth ponderosa pine in a largely pure stand.

Varline Grove-Flodelle Creek is also 160 acres, was accepted, and represents;

SAF Type 206, Englemann spruce-subalpine fir
SAF Type 212, Larch-Douglas-fir
SAF Type 218, Lodgepole pine

The Wilderness Act of 1964, stimulated a great deal of interest in the possibility of designating a portion of the LPO under this initiative. In the early 1970's a study was undertaken to determine the suitability for the LPO NWR as a wilderness. After lengthy research, public hearings, letter campaigns and much discussion the it was determined that the Refuge did not fit the designation and so was rejected in 1974.

Despite this lack of technical classification, there remains a 3200 acre block of unroaded and

largely undisturbed forest in the southeastern corner of the Refuge which does have many elements of wilderness. This area will require some special consideration as we develop our Habitat Management Plan.

STRUCTURES AND FACILITIES

Structures on the refuge that need to be considered in a fire situation include: Refuge Headquarters, Bunkhouse, Warehouse, Gas house, Log Barn, and Winslow Cabin. None of these are considered historic.

WILDLAND FIRE MANAGEMENT SITUATION

FIRE HISTORY

Pre-settlement Fires

Fire history of the refuge is spotty in the historical record but there is some information and accounts from old newspapers and Forest Service maps. In large part, natural fire was suspended from running its normal course in the 1920's when the lower elevation dry forest areas of the refuge were being cleared and settled. Prior to homesteading, there is little specific information concerning the refuge environment. Information can be gleaned from original survey notes and journals from early explorers such as the Thompson Expedition.

It is evident that the area was covered with an extensive wilderness of forest rich in wildlife. Fire scars on old trees in Research Natural Areas (RNAs) such as Baird Basin and remnant old growth stands indicate that the LPO is no stranger to fire. Old photographs show much of this part of the State was open forest land dominated by large ponderosa pine trees and maintained in that condition by periodic low intensity fires. Prior to 1965, fires were responded to by the refuge staff and whatever help they could muster from other agencies and adjacent landowners. From 1965 until 1994, the fire suppression duties at this station fell to the Washington State DNR. In 1994, the Service resumed all responsibilities.

Post-settlement Fire History

Recorded fire history for this area of Washington begins in the latter half of the 1800's as more and more homesteader's began establishing farms and clearing forest land for pasture and crops. Subsequent to logging and clearing, burning was employed as a common and effective method for eliminating logging slash. Indeed for many homesteaders it was their only viable option. And since wildland fire suppression was not a common practice until well into the 1900's , many of these man caused fires burned off the intended land and into the surrounding forests where they were left to run their course. This probably occurred without much damage since natural fire was still a common phenomenon during this period and the adverse effects of decades of fire suppression had not yet been recognized.

The following chronology presents some of the larger fires occurring in this area dating back to the 1910s. Appendix P lists more extensive known wildland and prescribed fire history for the LPO and surrounding area.

Table 1: Fire History

Year	Fire Name	Fire Location	Acres
1994	Olsen Peak	Eastern boundary	185
1994	Copper Butte	NW of refuge	7000
1985	Narcisse Fire	north boundary	700
1988	White Mountain	west of refuge	20,000+
1988	Grass Mountain	north of refuge	2000

1930s	series of fires	no precise data	NA
1927	Lakes Fire	Coffin Lake	NA
1926	Squaw Creek	no precise data	NA
1924	Black Lake	data from GLO report	NA
1920s	series of fires	no precise data	NA
1910s	series of fires	no precise data	NA
1908	Unnamed	Lenhart Meadows to Blacktail Mtn	12,000+
1907	Black Lake	data from GLO report	“Large”
1898-1907	Homesteader	numerous fires from homsteaders	NA
1897	Baird Basin	Baird Basin Area	~6000 (all or part of 10 sections)

Table 2 Prescribed Fire History:

Year	**Acres**
2000	60
1981	150
1980	30
1977	18
1976	30
1974	81
1973	109
1972	50
1971	50
1970	531
1969	45
1968	10

1967	457
1966	42
1964	18
1962	112
1961	3
1960	16
1959	106
1958	35
1957	20
1954	22
1952	15
1950	350
1940	100

FIRE ECOLOGY AND FIRE EFFECTS

The ecological role of fire is as complex as the local habitat is diverse. Throughout their ranges, ponderosa pine (*Pinus ponderosa*), Western larch (*Larix laricina*) and, to a somewhat lesser degree, Douglas-fir (*Psuedosuga menziesii*) are well adapted to wildland fire. These three species dominate our forest habitat and exhibit evidence of regular disturbance by wildland fire.

Prior to pioneer settlement the low elevation ponderosa pine habitat was burned by wildland fire every 5 to 25 years. This relatively high frequency, low intensity fire is essential to maintaining healthy stands of interior ponderosa pine. For this reason, most of the initial prescribed fire management activity referred to in the CCP and this plan will be carried out in the ponderosa pine forests.

Ponderosa pine produces an abundance of highly resinous needles which provide excellent fuel for carrying fires that the species depends upon to help sanitize the stand, prepare sites for seed germination and reduce competition. Other adaptations include self pruning of lower branches, long needles in an open type crown, high foliar moisture content, large buds with insulating scales, thick, exfoliating bark and deep taproots. All of which help individual trees survive fire and make the ponderosa pine forest dependant upon fire for overall stand health and vitality.

In addition, the refuge's dry forest community has a large area of dry site Douglas-fir/grand fir. This forest type has many of the same characteristics as the ponderosa pine community albeit to a lesser degree. These forests also require periodic fire to maintain vigor.

Use of fire, and other management strategies, will result in reduced stocking, increases in average stand diameters and greater overall vigor in the tree, shrub, grass and forb components all of which are important to wildlife. Restoring the periodic occurrence of fire will also promote deciduous tree species such as aspen (*Populus tremuloides*), black cottonwood (*Populus trichocarpa*), Western white birch (*Betula papyrifera*) and water birch (*Betula occidentalis*). These species occurred in far greater abundance under a natural fire regime where fires burned at regular intervals.

Of particular note is the gradual loss of aspen clones throughout the dry forest. Aspen is an important species for a wide variety of migratory and resident birds and also for big game such as deer. This species occurred on wetter microsites within the larger forest and greatly added to native habitat diversity. Fire suppression, and grazing, have led to the demise of these desirable stands. Under a normal fire regime, fire would curtail encroachment by ponderosa pine and other species because during most instances when the surrounding forest would burn, aspen groves would be too wet to carry a fire. In those seasons when aspen stands would burn, the fire tended to be light and aided in aspen regeneration by exposing more soil to sunlight and warmth. With the exclusion of fire, invasion of other tree species occurred into, and around, the aspen groves resulting in excess competition for resources, in particular, water and light. Aspen is relatively short lived compared to ponderosa pine, Western larch and Douglas-fir and propagates best through cloning by means of root suckers produced on lateral root buds. This suckering is viable, and sustainable, when an abundance of light, and heat, reach the forest floor. As the larger aspen trees in a grove die out, they would be replaced by developing clones from below. Excessive competition from invaders slowly negated this process. As a result, aspen stands lost vitality and began to fade. Many remnants of these groves can still be detected, but they are very much in decline and require attention if they are to be revived and allowed to flourish.

Although detailed, chronologically specific site data is lacking, some generalizations regarding fire in other forest communities of the refuge, and similar habitats of the surrounding landscape, can be made. As mentioned above, prior to pioneer settlement the low elevation ponderosa pine habitat was burned by wildland fire about every 5 to 25 years. Mixed stands of Douglas-fir and other species burned at somewhat greater intervals depending upon topography, aspect, elevation and fuel type. Most of the refuge forest is dominated by Douglas-fir/mixed forest in both dry and moist settings. The natural periodicity of fire in the dry Douglas-fir is between 10 and 24 years (Agee 1993). while the moist forest is somewhat longer at 13 to 26 years

High elevation sub-alpine fir forests have the longest fire intervals of the forest types on the refuge at 109-275 years (Agee 1993). depending upon the actual location. Due to the low resistance to fire of the tree species associated with the “cold forest” zone and the marginal environment in which these trees exist, regeneration and growth after disturbance can be a long and difficult process which may last for decades or centuries. The relative permanence of sub-alpine meadows is largely due to this phenomenon (Agee 1993). On the LPO, western hemlock and western red-cedar trees are more often associated then not. For this reason, and the intent of this FMP, these species will be considered in unison.

Western hemlock/western red-cedar stands are common on the refuge and exact fire interval data is not available, however, despite the fact that these species are rated as low to moderate in their resistance to fire, these stands typically persist for long periods of time, on the order of several centuries. Data from North Idaho indicates that fire return intervals of 50-100 years for

low to moderate intensity fires and 150 -500 years for stand replacement fires (Forested Plant Associations of the Colville National Forest 1995). This is likely due to their propensity to grow on cooler, wetter sites then their competitors and the fact that they so dominate a site that very little can exist beneath their closed canopy except for their own offspring and ground covering plants such as queencup beadlilly (*Clintonia uniflora*) and twinflower (*Linnaea borealis*). This combination of wet, cool site and paucity of understory fuel does not lend itself to frequent or intense fires. The fact that Western hemlock/Western redcedar stands tend to achieve their full climax potential in stream bottoms often allows them to serve as effective natural fire breaks during normal fire seasons when the surrounding uplands have favorable conditions for supporting fire. Furthermore, large, old cedar trees with thick insulating bark are more resistant to damage from fire than younger, thin barked trees. Old cedar stands with clear understories tend to have very light, low intensity fires which helps contribute to stand longevity.

The moist and cold forest zones will also benefit from occasional prescribed fire. Because the natural fire regime indicates that the fire return interval was greater in these types, the effects of fire exclusion have been far less dramatic. Fire will not be used to the same extent as in the dry forest zone. Its application will be guided by the concept of restoring overall forest health and vigor in those areas where its use is determined to be beneficial and necessary.

SENSITIVE RESOURCES

Use of fire will be constrained by impacts to endangered species and their habitats; notably Canada lynx and by weather, fuel types, soil moisture, soil type, smoke dispersion patterns, available suppression resources both locally and nationally, and federal, state and local laws pertaining to wetlands protection and smoke management. Constraints will be specifically addressed in individual unit prescriptions.

INTERAGENCY OPERATIONS

The refuge works closely with the Colville NF and the Washington DNR in all fire management activities. All refuge dispatch activities are handled through the Colville NF Fire Dispatch Office. Training activities are conducted through the Eastern Washington Area Coordination Group, comprised of USFWS, USFS, NPS, BIA, state, and local fire departments. Copies of Local operating plans and agreements are in Appendix D. All fire personnel will meet national interagency firefighter qualifications (PMS 310-1) for any Interagency operation.

Any fire on the refuge will be reported to the Colville NF Dispatch Office at 509-684-7194. Additional resources will also be ordered through the Colville Dispatch. The Dispatch office will assist with ordering spot weather forecasts, smoke management approval, and coordination of contingency forces during prescribed burns.

The Colville Dispatch will contact the refuge for assistance with wildland fires within the lands surrounding the refuge, including the Colville NF and lands managed by Washington DNR. The refuge FMO has the discretion to deny requests based on staffing needs.

Refuge fire management operations utilize the Colville NF frequencies (Appendix S).

RESPONSIBILITIES

An Organization chart for the Fire Management Organization is located in Appendix N.

Project Leader

The Project Leader (PL) is responsible for:

- planning and implementing an effective wildland fire management program on the Monument. In conjunction with the Fire Management Officer,
- determining the level of fire management effort required to meet wildland fire management objectives for the Monument.
- making available for dispatch to off-refuge/interagency wildland and prescribed fire management operations all personnel hired in dedicated, fire-funded positions.

Fire Management Officer
Oversees entire Fire Management Program including planning, budget, personnel, training, policy implementation, qualifications, preparedness, equipment purchase and maintenance, suppression, prescribed fire, prevention, safety and coordination with other agencies.

Prescribed Fire Specialist:
Primary responsibility is to plan and carry out all aspects of prescribed burning operations with oversight and consultation provided by the FMO. Incumbent will also be closely involved with various aspects of fire suppression operations.

Engine Boss (Supervisory)
Duties include overseeing the daily operations of both engine crews including preparation of burn units, maintenance of equipment, ordering of equipment, physical fitness routines, crew training and currency, preparedness of crew, engines and other fire apparatus, fire prevention, prescribed burning operations and suppression.

Engine Boss (Lead)
Duties include overseeing daily operations of fire crew personnel including preparation of burning units, maintenance of equipment, physical fitness routines, crew training and currency, preparedness of crew, engines and other fire apparatus, fire prevention, prescribed burning operations and suppression.

Assistant Engine Boss
Oversees engine and crew assigned to him/her. Participates in all prescribed fire and suppression operations.

Firefighter
Serves as a member of an engine crew. Participates in all prescribed fire and suppression operations.

Fire Analysis Committee
The Fire Analysis Committee consisting of the deputy project leader, fire management officer, prescribed fire specialist and refuge biologist will meet as needed to review wildland and prescribed fires, coordinate actions, develop alternatives, and present them to the project for approval. Guidelines for their work are those established for the Wildland Fire Situation Analysis (WFSA). A sample WFSA is located in Appendix M.

Incident Commander
Incident Commanders (of any level) use strategies and tactics as directed by the Project Leader and WFSA where applicable to implement selected objectives on a particular incident. A specific Limited Delegation of Authority (Appendix K) will be provided to each Incident

Commander prior to assuming responsibility for an incident. Major duties of the Incident Commander are given in NWCG Fireline Handbook, including:

- Brief subordinates, direct their actions and provide work tools.
- Ensure that safety standards identified in the Fire Orders, the Watch Out Situations, and agency policies are followed at all times.
- Personally scout and communicate with others to be knowledgeable of fire conditions, fire weather, tactical progress, safety concerns and hazards, condition of personnel, and needs for additional resources.
- Order resources to implement the management objectives for the fire.
- Inform appropriate dispatch of current situation and expected needs.
- Coordinate mobilization and demobilization with dispatch and the Collateral FMO.
- Perform administrative duties; i.e., approving work hours, completing fire reports for command period, maintaining property accountability, providing or obtaining medical treatment, and evaluating performance of subordinates.
- Assure aviation safety is maintained to the highest standards.

Initial attack teams

Initial attack teams will consist of experienced, fully- qualified firefighters, those on their first fire, and well-qualified leadership. Teams will be prepared and equipped with hand and power tools as needed and will be dispatched with a day's supply of food and water, so they can continue work for 24 hours without additional support.

Employees participating in any wildland fire activities on Fish and Wildlife Service or cooperator's lands will meet fitness requirements established in PMS 310-1, except where Service-specific fitness requirements apply.

Exceptions to fitness requirements on Initial attack activity are available from the Regional Fire Management Coordinator per guidelines in Chapter 1.5 of the Fire Management Handbook (USFWS 2000).

WILDLAND FIRE ACTIVITIES

Fire program management describes the operational procedures necessary to implement fire management at LPO. Program management includes: fire prevention, preparedness, emergency preparedness, fire behavior predictions, step-up staffing plan, fire detection, fire suppression, minimum impact suppression, minimum impact rehabilitation, and documentation.

All fires not classified as prescribed fires are wildland fires and will be appropriately suppressed.

The Refuge wildland fire season typically begins about the middle of June and goes through September with a peak period from late July until the second week of September when accumulated fuels and weather conditions combine to create the most volatile fire situations and extremes of fire behavior (Appendix C). Depending on the specific weather of any particular year the seasons may be shorter or longer and, therefore, may start earlier or last longer.

FIRE MANAGEMENT STRATEGIES

All unplanned wildland fires will be suppressed in a prompt, safe, aggressive, and cost-effective manner to produce fast, efficient action with minimum damage to resources using appropriate management strategies. Other strategies include:

- All Wildland fires will be suppressed using the appropriate management strategy.
- Wildland fires will be managed within prescriptive criteria established otherwise the fire will be treated as an unwanted wildland fire.
- Fire adapted communities that have not had a significant fire for more than twice the normal fire frequency for that community type may be undergoing change in community structure and function. Depending upon other consideration, prescribed fire should be reintroduced into these communities if the reintroduction is consistent with land use objectives established for the communities.
- No use of retardant in areas under consideration for wilderness, except in life-threatening situations, without the express approval of the refuge manager.
- No use of mechanical equipment in known cultural areas without the area first being examined by an archeologist.

Although resource impacts of suppression alternatives must always be considered in selecting a fire management strategy, resource benefits will not be the primary consideration. Appropriate suppression action will be taken to ensure firefighter safety, public safety, and protection of the resources.

Critical protection areas, such as refuge headquarter and Winslow cabin, will receive priority consideration in fire control planning efforts. In all cases, the primary concerns of fire suppression personnel shall be the safety, and if needed, all individuals not involved in the suppression effort may be evacuated.

Suppression strategies should be applied so that the equipment and tools used to meet the desired objectives are those that inflict the least impacts upon the natural and cultural

resources. Minimum impact suppression strategies will be employed to protect all resources. Natural and artificial barriers will be used as much as possible for containment. When necessary, fire line construction will be conducted in such a way as to minimize long-term impacts to resources.

Vehicle access to normally closed areas of the refuge will be made using existing fire roads when possible. When off-road travel is determined to be necessary, vehicle access will be allowed with approval of the Refuge Project Leader, FMO, or Delegate.

Heavy equipment such as crawlers, tractors, dozers, or graders will not be used within the refuge boundaries unless their use is necessary to prevent a fire from destroying privately-owned and/or government buildings and historic resources. The use of any heavy equipment requires approval from the Project Leader or Delegate in any riparian area.

PREVENTION PROGRAM

An active fire prevention program will be conducted in conjunction with other agencies to protect human life and property, and prevent damage to cultural resources or physical facilities.

A program of internal and external education regarding potential fire danger will be implemented. Visitor contacts, bulletin board materials, handouts and interpretive programs may be utilized to increase visitor and neighbor awareness of fire hazards. Trained employees need to relate to the public the beneficial effects of prescribed fires as opposed to unwanted human-caused fires, with emphasis on information, essential to understanding the potential severity of human-caused wildland fires and how to prevent them.

It is essential that employees be well informed about fire prevention and the objectives of the refuge's fire management program. Further, employees must be kept informed about changes in existing conditions throughout the fire season.

During periods of extreme or prolonged fire danger emergency restrictions regarding refuge operations, or area closures may become necessary. Such restrictions, when imposed, will usually be consistent with those implemented by cooperators. The Fire Analysis Committee will recommend when such restrictions are necessary. Closures will be authorized by the Project Leader.

The fire prevention program on the refuge is geared toward increasing public awareness of wildland fire prevention by providing information, instruction and reminders of its importance. The best way to reach the visitors to the refuge is through the use of a sign plan. The complete sign plan is located in Appendix G.

The intent of the sign plan is to give an overview of the fire prevention signs used on the refuge and direction of when they need to be in place. Signing is one of the most valuable means of informing the public of fire danger of reminding them of regulations of restrictions.

The Little Pend Oreille signs fall into three general categories: 1) Industrial Fire Precaution Level signs, 2) Fire Prevention (refuge entry road) signs and 3) Campground signs.

Industrial Fire Precaution Level signs are to notify industrial users of the refuge changes in the industrial fire precaution level (IFPL) and fire

danger. This has ramifications on refuge use, especially to woodcutters, loggers and other industrial users. IFPL's and fire danger adjectives are generated by fire danger conditions. The refuge will be notified by the Colville National Forest Dispatch office when there is a change in the IFPL. The IFPL sign must be changed the same date as the notification.

Fire Prevention (refuge entry) signs are located on the main roads entering the refuge. These signs are designed to be visible to the casual observer without detracting from the beauty of the refuge. Poster signs are stapled to the front and back with messages on them as appropriate to the season or fire danger. These messages rotate as the fire danger and weather conditions dictate.

Campgrounds are also signed with messages appropriate to the season or fire danger.

The responsibility for maintaining and rotating messages on the prevention signs will be the engine captain's. The engine captain will utilize the engine crews to post, repair and maintain signs. The prevention signs will be stored in the fire cache. Each engine will carry a couple of signs in order to replace ones they find damaged or missing .

PREPAREDNESS AND SUPPRESSION

The National Interagency Mobilization Guide, which is revised annually, clearly describes interagency mobilization and dispatch procedures at all preparedness levels. Its directives will be followed on the refuge without deviation, whether pertaining to wildland fire or prescribed fire.

Regional dispatch occurs through the Northwest Coordination Center located in Portland, Oregon. It reviews simultaneously occurring incidents and dispatches interagency resources on a priority basis. The refuge may be called upon to provide resources or to receive requested resources based upon priorities established by the coordination center. All resource requests will be processed by the Colville NF Dispatch Office.

The Little Pend Oreille NWR will maintain a satisfactory state of preparedness at all times for wildland fire control and prescribed fire management.

Historical weather analysis

The weather station used for historical weather was the Colville Airport, station number 452903. The Washington Department of Natural Resources maintains this weather station. A data set from 1970 to the present exists for this station. KCFAST was used to download the data onto a PC and then FIREFAMILY Plus was used to analyze the data.

A cumulative frequency distribution on the burning index yields staffing classes. The 97th percentile establishes staffing class 5, the 90th percentile establishes staffing class 4. Staffing classes 2 and 3 are based upon 1/4 and ½ of the 90th percentile value, respectively.
The break points of the burning index for Fuel Model C were used in the step-up plan and were:

Staffing class 1 = 0-5
Staffing class 2 = 6-11
Staffing class 3 = 12-24
Staffing class 4 = 25-33
Staffing class 5 = 34 and greater

Staffing Priority Levels

The step-up plan (Appendix Q) determines daily staffing needs at the refuge. The step-up plan is based on the burning Index (BI) calculated from the refuge weather station. The FMO is responsible for making sure this is done on a daily basis to project staffing needs for the next burn period.

Training

Each year prior to fire season (mid-June) fire personnel will be hired three to four weeks early in order to accomplish training and preparation for the coming season. This will entail such tasks as detailing engines and equipment, inventorying fire cache, joint exercises with cooperating agency crews, completing medical exams and pack testing personnel. Throughout the year, as individual training needs and course offerings coincide, the staff will make efforts to fulfill training goals.

When preparations are complete for the fire season, fire personnel will shift their emphasis to prescribed burn activities including burning pre-approved units and new unit preparation in accordance with the annual prescribed burn plan. This will require a variety of activities including thinning, construction of fire lines, mapping, monitoring and identifying and defining future burn units.

Departmental policy requires that all personnel engaged in suppression and prescribed fire duties meet the standards set by the National Wildfire Coordinating Group (NWCG). The LPO will conform strictly to the requirements of the wildland fire management qualification and certification system and USFWS guidelines.

Basic wildland fire training refreshers are offered annually for red-carded firefighters and records kept in a centralized database. Additional training is available from surrounding agencies in pump and engine operation, power saws, firefighter safety, fire weather and fire behavior, helicopter safety and

prescribed fire objectives and activities. On-the job training is encouraged and will be conducted at the field level. Whenever appropriate, the use of fire qualification task books will be used to document fire experience of trainees. The FMO will coordinate fire training needs with those of other nearby refuges, cooperating agencies, and the RO.

The refuge supports the development of individual Incident Command System (ICS) overhead personnel from among qualified and experienced refuge staff for assignment to overhead teams at the local, regional, and national level.

Fire suppression is an arduous duty. On prescribed fires, personnel may be required to shift from implementation/monitoring activities to suppression. Poor physical condition of crew members can endanger safety and lives during critical situations.

Personnel performing fire management duties will maintain a high level of physical fitness. This requires successful completion of a fitness pack test. Personnel must complete a three mile hike with a 45 pound pack in less than 45 minutes.

Current fire qualifications can be found in Appendix R.

Supplies and Equipment

A fire cache is located the refuge headquarters and is maintained by the Engine Captain. Appendix O lists a fire cache inventory. This cache is supplied to support all red-carded personnel following the NUS (Normal Unit Strength) guidelines. The cache will be maintained and inventoried annually by the Engine Captain.

Additional equipment and supplies are available through cooperators and the interagency cache system. Requests for additional personnel and equipment are made through the servicing Dispatch for the area (see dispatch plan in appendix E). The contact list can be found in Appendix F.

DETECTION

All fires are reported to Colville Dispatch (509-684-7195) as described in the Dispatch Plan (Appendix E). The Colville NF conducts detection flights during periods of high lightning activity.

The Fire Management Plan does not discriminate between human-caused and lightning caused fire. All wildland fires will be suppressed. However, detection shall include a determination of fire cause. Moreover, human-caused fires will require an investigation and report by law enforcement personnel. For serious human-caused fires, including those involving loss of

life, a qualified arson investigator will be requested.

COMMUNICATIONS

The LPO utilizes the Colville NF communications system, including repeaters and radio frequencies. Appendix S lists repeaters, frequencies, and standard channel numbers. All communications equipment continue to be analog.

PRE-ATTACK PLAN

The complete Pre-attack plan is located in Appendix K.

Upon discovery of a fire, all subsequent actions will be based on the following:

1. The Incident Commander (IC) will locate, size-up, and coordinate suppression actions. The IC will complete the pre-attack planning checklist (Appendix K).
2. Provide for public safety.
3. Considering the current and predicted fire conditions, the Incident Commander will assess the need for additional suppression resources and estimate the final size of the fire. The potential for spread outside of the refuge should be predicted, as well as the total suppression force required to initiate effective containment action at the beginning of each burning period.
4. The Incident Commander will assess the need for law enforcement personnel for traffic control, investigations, evacuations, etc. and make the request to the FMO.
5. Document decisions and complete the fire report (DI-1202).
6. Should a wildland fire move into an extended attack a Delegation of Authority will be invoked. Once a Delegation of Authority has been authorized the Incident Commander will make the final decisions pertaining to the fire. A copy of Delegation of Authority is in Appendix K. Colville National Forest will also handle expanded dispatch.

FIRE MANAGEMENT UNITS

Because of the overriding importance of watersheds to natural resource management, the refuge has been divided into five primary management units to serve both habitat and fire management needs. Each primary unit is further sub-divided by secondary watersheds. To be consistent with our overall habitat management goals (see CCP for more details), the concept of the dry, moist and cold forest fire regimes found in each of these FMU's will be considered when detailed prescriptions are written to further compartmentalize the units and ensure continuity with refuge resource management goals. Based on these natural features the units are defined as follows:

Upper Little Pend Oreille River Watershed

The Watershed begins at the confluence of Bear Creek and the LPO River and extends to the northeast corner of the refuge. Sub-watersheds include Spring Creek, McDowell Lake, Starvation Lake Outflow, Blacktail Creek, Squaw Creek, Prospect Creek, Cedar Creek, Amazon Creek, Scrabblers Creek, and Olsen Creek.

Lower Little Pend Oreille River Watershed

Lower Little Pend Oreille River Watershed begins in the northwest corner of the refuge and ends at the confluence of the LPO River and Bear Creek. Sub-watersheds include Norman Creek, Narcisse Creek, and Daily Lake.

Bear Creek Watershed

Bear Creek Watershed begins at the mouth of Bear Creek and ends at the headwaters of Bear Creek along the southeastern refuge boundary. Sub-watersheds include North Fork of Bear Creek and Numerous unnamed tributaries.

Bayley Lake Watershed

Bayley Lake Watershed begins in the Bayley Lake gorge and extends south via an underground outlet and a series of beaver ponds.

Colville River Watershed

Colville River Watershed begins at the hydrographic divide which separates the Lower Little Pend Oreille River Watershed from the extreme western portion of the refuge which drains into the Colville River. Sub-watersheds include Long Lake, Moran Creek, and Slide Creek.

Fuel Models

For the purpose of estimating fire behavior, natural wildland fuels are described as "Fuel Models" (FM). Fuel Models are further broken down into four broad categories progressing from lightest to heaviest as follows; Grass, Brush, Timber and Slash. Each FM is characterized by fuel size classes expressed in inches in diameter, tons per acre, live verses dead and fuel bed depth. These are all measurable descriptors which enter into the fire behavior prediction equations.

Fire Behavior ranges for Fuel Models 3, 9 and 11 are shown in Appendix I. These are presented in order of complexity and difficulty of control using input data collected on site for an average high severity day (staffing class 4) in August 1998.

There are 8 major fuel models (FM) which are found within the refuge. A detailed description of each may be found in Anderson's guide Aids to Determining Fuel Models For Estimating Fire Behavior, GTR INT-122. They are listed in order of their relative abundance.

Each FMU has some of the fuel models in it. At this time we don't have the amount broken out as far as number of acres in each. This will be added as we develop our GIS data.

FM 11; Mixed conifer partial cut slash residue; NFDRS FM "K"
FM 10; Mixed conifer heavy dead and down fuels; NFDRS FM "G"
FM 8; Mixed Closed Canopy with light surface fuels and little brush; NFDRS FM "H"
FM 9; Closed canopy of long needle pine (ponderosa pine); NFDRS FM "U"
FM 5; Light brush fuels under a closed canopy; NFDRS FM "F"
FM 2: Light forest grass fuels under a partial canopy; NFDRS FM "C"
FM 3; Heavy tall grass fuels in sub-irrigated old pastures; NFDRS FM "N"
FM 1; Western grasses in upland meadows and pastureland; NFDRS FM "L" and "A"

Under extreme conditions FM 10 and 11 provide a great deal of risk of extreme fire behavior and difficulty of control. At this time, there are no restrictions on actions which may be taken to extinguish wildland fires because of the high fuel loads and potential risk in these fuel types.

Heavy equipment such as crawlers, tractors, dozers, or graders will not be used within the refuge boundaries unless their use is necessary to prevent a fire from destroying privately-owned and/or government buildings and historic resources. The use of any heavy equipment requires approval from the Project Leader or Delegate in any riparian area. I added this from below. Even though we would fight fire aggressively we would still try to use tactics that would have minimum impact. Could now delete it from below.

Appendix I, shows a range of values for Fuel Model 11 in the middle of August which is representative of one of our more difficult potential fire situations.

Fire Behavior

In discussing fire behavior a high degree of variability exists for any given set of weather conditions
because of the wide deviation in fuel types and elevations. The Little Pend Oreille NWR has been identified by the Washington GAP Analysis (Cassidy et al, 1997) as having one of the most diverse mixes of forest habitat types in the State and one of the most important reserves in the region for extensive ponderosa pine forests. This dry forest type epitomizes fire tempered forest habitat in the Western United States with its variety of vegetative adaptations and high fire frequency.

In any forest community where heavy surface fuels, ladder fuels and overstocked stands (exceeding 18,000 stems per acre in some

areas) are encountered one can expect to have catastrophic fires with extreme fire behavior at some point in time. This is the case at LPO. Because of this, a large part of our preparedness efforts will be directed toward "pre-conditioning" forest stands by mechanical means such as pre-commercial and commercial thinning prior to the re-introduction of fire. The mechanical manipulations will reduce the risk of stand-replacing fire events.

SUPPRESSION TACTICS

The habitat management objectives for each FMU as related to fire involve the utilization of natural and pre-existing barriers in suppression efforts to manage refuge resources. Wildland fire response would be the same for all five of the FMU's. This corresponds with what the Forest Service does on adjacent lands.

Wildland fires will be suppressed in a prompt, safe, aggressive, and cost-effective manner to produce fast, efficient action with minimum damage to resources. Suppression involves a range of possible actions from initial attack to final suppression. All wildland fires will be suppressed.

Personnel and equipment must be efficiently organized to suppress fire effectively and safely. To this end, the FMO assumes the command function on major or multiple fire situations, setting priorities for the use of available resources and establishing a suppression organization.

Each fire will have only one Incident Commander responsible through the FMO to the Project Leader or Delegate. The Incident Commander will designate all overhead positions on fires requiring extended attack. Reference should be made to a Delegation of Authority (Appendix K).

Since the objectives of fire management at LPO are related to protection of life and property through suppression while protecting resources, an Appropriate Management strategy will be utilized for each incident.

Suppression actions may take any of the following forms:

1. **Direct attack:** Action taken close to the flaming front of a fire either at the rear, flank or head of a fire. Requires separation of fuels or use of agent (water, mineral soil, chemicals) to make the fuels unavailable to the combustion process. Often referred to as "working in the black".

2. **Indirect Attack:** Action taken away from the flaming front. Used when circumstances such as terrain, available resources or fire intensity prohibit direct attack or fire

assessment indicates that the safest and most efficient strategy is to fight the fire from some man-made or natural fuel-break. Fuels between the fire line and the black area are usually burned out either actively or by letting the fire burn to the break.

Primary initial attack resources will be via engines and/or hand crews. These resources will be local, either LPO fire personnel, Washington State Department of Natural Resources (DNR), or United States Forest Service Personnel from the Colville National Forest (CNF) (see local operating plan, Appendix D).

CNF Dispatch will function as our primary communications locale for fire and other related incidents. We are currently sharing frequencies with CNF, DNR, U.S. Bureau of Indian Affairs, Spokane Agency (BIA) and the National Park Service (NPS).

Suppression Conditions

Suppression strategies should be applied so that the equipment and tools used to meet the desired objectives are those that inflict the least impacts upon the natural and cultural resources. Minimum impact suppression tactics will be employed to protect all resources. Natural and artificial barriers will be used as much as possible for containment. When necessary, fire line construction will be conducted in such a way as to minimize long-term impacts to resources.

Vehicle access to normally closed areas of the refuge will be made using existing fire roads when possible. When off-road travel is determined to be necessary, vehicle access will be allowed with approval of the Refuge Project Leader, FMO, or Delegate.

Heavy equipment such as crawlers, tractors, dozers, or graders will not be used within the refuge boundaries unless their use is necessary to prevent a fire from destroying privately-owned and/or government buildings and historic resources. The use of any heavy equipment requires approval from the Project Leader or Delegate in any riparian area.

Wildland Fire Situation Analysis

For fires that cannot be contained in one burning period, a WFSA must be prepared. In the case of a wildland fire, the Incident Commander, in conjunction with the FMO, will prepare the WFSA. Approval of the WFSA resides with the Project Leader.

The purpose of the WFSA is to allow for a consideration of alternatives by which a fire may be controlled. Damages from the fire, suppression costs, safety, and the type of suppression actions taken are all important considerations.

Public safety will require coordination between all refuge staff

and the IC. Notices may be posted to warn visitors, trails may be closed, and traffic limited. Where wildland fires cross roads, the burned area adjacent to the road should be mopped up and dangerous snags felled. Every attempt will be made to utilize natural and constructed barriers, including changing fuel complexes, in the control of wildland fire. Rehabilitation efforts will concentrate on the damages done by suppression activities rather than on the burned area itself.

Aircraft Operations

Aircraft may be used in all phases of wildland fire management operations including prescribed fire. All aircraft must be Office of Aircraft Services (OAS) or Forest Service approved. An OAS Aviation Policy Department Manual will be provided by OAS.

Helicopters may be used for reconnaissance, bucket drops and transportation of personnel and equipment. Natural helispots and parking lots are readily available in most cases. Clearing for new helispots should be avoided where possible. Improved helispots will be rehabilitated following the fire.

As in all wildland fire management activities, safety is a primary consideration. Qualified aviation personnel will be assigned to all flight operations.

REHABILITATION AND RESTORATION

When suppression action is taken, rehabilitation is appropriate. The most effective rehabilitation measure is prevention of impacts through careful planning and the use of minimum impact suppression techniques.

Rehabilitation will be initiated and monitored by the Incident Commander, FMO, or Project Leader. Rehabilitation will be directed toward minimizing or eliminating the effects of the suppression effort and reducing the potential hazards caused by the fire. These actions may include:

1. Backfill control lines, scarify, and seed.
2. Install water bars and construct drain dips on control lines to prevent erosion.
3. Install check dams to reduce erosion potential in drainages.
4. Restore natural ground contours.
5. Remove all flagging, equipment and litter.
6. Completely restore camping areas and improved helispots.
7. Consider and plan more extensive rehabilitation or revegetation to restore sensitive impacted areas.

If revegetation or seeding is necessary, only native plant species will be used.

Sites impacted by fire suppression activities or by the fire will be rehabilitated as necessary, based on an approved course of action for each incident. If emergency rehabilitation measures are needed or if rehabilitation is needed to reduce the effects of a wildland fire then the refuge can request appropriate funding through the Burned Area Emergency Rehabilitation (BAER) fund.

Rehabilitation plans for each fire will be reviewed by the Fire Analysis Committee. A final plan will be submitted to Region (or NIFC if more than $250,000) for establishing an account. Rehabilitation should be initiated following guidelines outlined in the Fire Management Handbook..

All wildland fires will be rehabilitated following the control of the fire. Items that will be considered as to how extensive the rehabilitation will be are: 1) Location and size, 2) Soils, 3) Topography, 4) Climate, 5) Vegetation prior to the fire, 6) Intensity of the fire, 7) Hydrology, and 8) Landownerships involved.

REQUIRED REPORTING

The IC will be responsible for documenting decisions and completing the fire report (e.g., Ics-214, DI-1202). The FMO will be responsible for any additional required reports.

FIRE INVESTIGATION

Fire management personnel will attempt to locate and protect the probable point of origin and record pertinent information required to determine fire cause. They will be alert for possible evidence, protect the scene and report findings to the fireline supervisor.

Prompt and efficient investigation of all suspicious fires will be carried out. However, fire management personnel should not question suspects or pursue the fire investigation unless they are currently law enforcement commission qualified.

Personnel and services of other agencies may be utilized to investigate wildland fire arson or fire incidents involving structures. Colville NF Dispatch office will be the contact for ordering needed resources.

PRESCRIBED FIRE ACTIVITIES

Perhaps more than any other single event, wildland fire has shaped and profiled the character of our forest. Anthropogenic and lightning-caused fire burned through virtually the entire area of the Refuge prior to the influence of early-Pioneers. The adaptation of forest ecosystems to natural fire on the LPO NWR provides the key to the use of prescribed fire to accomplish many habitat related management goals. Fire will be used to restore and maintain the natural balance to the ecosystem which has been absent due to fire exclusion. Specifically fire will be important in restoring the mature and old growth components of the ponderosa pine and dry Douglas-fir stands and in maintaining the vital deer winter range in a high quality condition. For details refer to the Comprehensive Conservation Management Plan and the Forest Habitat Management Plan.

This CCP covers the dry, moist and cold forest regions of the LPO and it is expected that management activities will include prescribed burns throughout the refuge over the years this plan will be in effect. The thrust of management on the LPO, as it relates to fire, will be to strive for native diversity of existing forest habitats and enhance those elements which have been degraded or lost through past activities such as removal of the mature and old growth forests through land clearing and timber harvest.

Natural fire has played an important role in the Columbia Basin Ecosystem and in particular the dry forests as described in our Comprehensive Conservation Plan (CCP). The role of fire will be continued with prescribed fire being used to simulate the effect of natural fire in habitat management.

As greater numbers of acres are conditioned for a return of fire, increasing acres of the Refuge will fall under a planned burning schedule. Burning will be guided by two primary tenets; A. Hazard Reduction and B. Resource Management.

The Little Pend Oreille has two burning seasons. One is in the spring, usually April and May, and the other is in the fall, September and October. For both of these seasons there is a short period of time when the burn will be in prescription, so the actual burning window is usually only a week for each season.

Initially, most burning will be done to reduce fuel hazards, enhance deer winter range and establish a baseline of information (post-burn evaluations) which will facilitate future prescribed burn planning. Part of the strategy in selecting burn units will be to break fuel continuity at strategic points to expedite suppression of wildland fires. As the dynamics of burning the refuge's variety of forest habitats becomes better understood, in

relation to the objectives and goals described in the CCP, it is anticipated that regular maintenance burning will become routine. At that time, while hazard reduction burning will always play a significant role in the fire program, resource burning will become of increasing concern as a method to achieve goals and maintain forest health. This is especially true in the ponderosa pine (dry forest type) of which only 3.9 % is in protected status managed primarily for biodiversity. Of this remaining habitat only a fraction remains in the old growth successional stage. It is a primary goal of this refuge to restore a significant amount of ponderosa pine to its mature state.

Details of specific prescribed burns can be found in the Annual Prescribed Fire Plan (APFP). This Plan will have the individual prescriptions for each burn unit planned for any given year including backlog acres. A sample prescription format is attached to this FMP in Appendix J. Due to the constraints and often complicated logistics involved in executing prescriptions, every effort will be made to achieve the goals set forth in the Annual Prescribed Burn Plans. Backlog burn acres, that is those prescriptions which are not accomplished in the scheduled year, will become part of the succeeding year's Plan if appropriate.

Burn complexity will run the gamut from relatively simple in grass fuels, to high complexity under forest canopies where it is desirable to limit scorch heights, tree mortality and duff reduction. Ignitions will take advantage of hand firing, in most cases, because of tree canopies and to maintain better control of fire intensities. Hand firing, as opposed to aerial ignitions, will lower complexities but enhance our ability to control intensities and achieve desired results. It would be rare for the staff to attempt to burn more then one unit at a time, however some of the forested units may be as large as 600 to 700 acres.

PRESCRIBED BURN PROGRAM OBJECTIVES

Prescribed fire can be a useful tool for restoring and maintaining natural conditions and processes at LPO. The goals of prescribed fire are for hazard fuel reduction and to meet resource management objectives. Specific management needs for the refuge as a whole and for specific areas will be determined annually. Specific burn objectives, fire frequency rotation, firing methodology, and prescriptions will vary from year to year. Burn plans will be updated to reflect any variations. The Project Leader will approve prescribed fire plans after review of the plan by the Zone Fire Management Officer.

The desired future of the program includes treating approximately 1000 acres per year in a variety of vegetation types. Prescribed fire activities include mechanical treatments (e.g., thinning),

burning, and monitoring.

Prescribed fires involve the use of fire as a tool to achieve management objectives. Research burning may also be conducted when determined to be necessary for accomplishment of research project objectives. The prescribed burn program actions include: the selection and prioritization of prescribed burns to be carried out during the year, prescribed burn plans, burn prescriptions, burn operations, documentation and reporting, and burn critiques. Measures to ensure the successful implementation of the prescribed fire program are to:

1. Conduct a vigorous prescribed fire program with the highest professional and technological standards;
2. Identify the prescribed burn prescriptions most appropriate to specific situations and areas;
3. Efficiently accomplish resource management objectives through the application of prescribed fire;
4. Continually evaluate the prescribed fire program to better meet program goals by refining prescriptions treatments and monitoring methods, and by integrating applicable technical and scientific advancements;
5. Prepare prescribed burn plans with a review by a qualified Prescribed Fire Manager/Prescribed Burn Boss, and approval by the Project Leader.
6. Conduct prescribed burns with an adequate number of qualified personnel to conduct the burn as well as to mop-up.

A complexity analysis, generated using FIREBASE, will be used to determine the complexity of each prescribed fire project. This will determine the qualification level of burn boss necessary to conduct the burn.

The refuge reserves the option to utilize an interagency team approach for complex burns carried out on the boundaries and close to developed areas or burns of large acreage. The most highly qualified and experienced personnel in the regional interagency community would be requested to serve on this team.

FIRE MANAGEMENT STRATEGIES

Prescribed fire will be used to reduce hazard fuel accumulation, restore fire to fire-dependent ecological communities, improve wildlife habitat, and to maintain cultural/ historic scenes where appropriate. All prescribed fire activity will comply with applicable Federal, state, and local air quality laws and regulations.

All prescribed fire projects will have a burn plan approved by the Project Leader and reviewed by the Fire Management Officer. Each burn plan will be prepared using a systematic decision-making process, and contain measurable objectives, predetermined

prescriptions, and using an approved environmental compliance document. The CCP for LPO includes appropriate NEPA documentation for the Fire Management Plan. Therefore, additional NEPA documentation will be necessary only for prescribed fire projects not meeting the criteria outlined in this Plan.

Prescribed Fire Burn Plans must include components such as a GO/ No-Go Checklist, contingency actions to be taken in the event the prescription is exceeded, and the need for alerting neighbors and appropriate public officials to the timing and the planing of the burn. A burn plan format meeting all policy requirements is located in Appendix J.

Fire monitoring will be used to evaluate the degree to which burn objectives are accomplished. Monitoring can assist managers in documenting success in achieving overall programmatic objectives and limiting occurrence of undesired effects.

PRESCRIBED FIRE PLANNING

Annual Activities

Prescribed Fire activities will be reviewed annually by the FMO, Project Leader, and Resource Specialist. Necessary updates or changes to the Fire Management Plan will be accomplished prior to the next fire season. Any additions, deletions, or changes will be reviewed by the Project Leader to determine if such alterations warrant a re-approval of the plan.

Management Unit Objectives

The objectives of prescribed burning at LPO are to reduce hazardous fuels and meet resource objectives. The purpose of fuels management is to complement the fire management program by reducing fire hazards, decreasing the potential damage to refuge resources, adjacent lands, and minimizing risks to employees, residents and visitors.

Fire will be used to restore and maintain the natural balance to the ecosystem which has been absent due to fire exclusion. Specifically fire will be important in restoring the mature and old growth components of the ponderosa pine and dry Douglas-fir stands and in maintaining the vital deer winter range in a high quality condition. For details refer to the Comprehensive Conservation Management Plan and the Forest Habitat Management Plan.

General prescribed fire objectives will be to:

1. Reduce fuel accumulations;
2. Manage vegetation to promote the growth of native species and control encroachment of exotic species; and
3. Assist with the establishment and maintenance of the historic scene.

This plan calls for full suppression of all wildland fires, both natural and human-caused, for each of the units of the refuge. Any prescribed fire outside prescription will be designated a wildland fire and will be appropriately suppressed.

Prescribed Burn Plan

The Prescribed Burn Boss will conduct a field reconnaissance of the proposed burn location with the refuge biologist, FMO, and/or Project Leader to discuss objectives, special concerns, and gather all necessary information to write the burn plan. After completing the reconnaissance, the Prescribed Burn Boss will write the prescribed burn plan.

All prescribed fires will have prescribed burn plans. The prescribed burn plan is a site specific action plan describing the purpose, objectives, prescription, and operational procedures needed to prepare and safely conduct the burn. The treatment area, objectives, constraints, and alternatives will be clearly outlined. No burn will be ignited unless all prescriptions of the plan are met. Fires not within those parameters will be suppressed. Prescribed Burn Plans will follow the format contained in Appendix J. The term "burn unit" refers to a specific tract of land to which a prescribed burn plan applies.

Strategies and Personnel

Execution of prescribed burns will only be executed by qualified personnel. The Prescribed Burn Boss will fill all required positions to conduct the burn with qualified personnel. All personnel listed in the burn plan must be available for ignition of the burn or the burn will not be initiated.

Weather and fuel moisture conditions must be monitored closely in planned burn units to determine when the prescription criteria are met. A belt weather kit may also be utilized to augment monitoring. Fuel moisture samples of 10-, 100-, and 1000-hour down and dead logs (where applicable) and of live plants may be monitored each week and percent moisture contents figured to help determine when the prescription criteria are met.

When all prescription criteria are within the acceptable range, the Prescribed Burn Boss will select an ignition date based on current and predicted weather forecasts. A thorough briefing will be given by the Prescribed Burn Boss and specific assignments and placement of personnel will be discussed. An updated spot weather forecast will be obtained on the day of ignition and all prescription elements will be rechecked to determine if all elements are still within the approved ranges. If all prescription elements are met, a test fire will be ignited to determine on-site fire behavior conditions as affected by current weather. If conditions are not satisfactory, the test fire will be suppressed and the burn will be rescheduled. If

conditions are satisfactory the burn will continue as planned if all elements of the Go/ No-go checklist have been met.

The contingency section of the prescribed fire plan should cover the following items:

1. Initial actions should be based on complexity and risk and consequences of escape analysis.

   If the planned initial actions call for additional resources to those currently available in the fire management zone, those resources should be made available as contingency resources prior to ignition.

2. Notifications (who, when, how, by whom, etc.) In the event of an escape.
3. Containment opportunities.
4. Conditions under which a wildland fire will be declared.

A qualified Incident Commander Type III will be available within a four hour response in the event of an escaped prescribed burn. If the prescribed burn escapes the predetermined burn area, all further ignition will be halted except as needed for suppression efforts. Suppression efforts will be initiated, as discussed in the pre-burn briefing. The FMO will be notified immediately of any spot fires on a prescribed burn. If the burn exceeds the initial suppression efforts, the burn will be declared a wildland fire and suppressed using guidelines established in this plan. A WFSA will be completed and additional personnel and resources ordered as determined by the Incident Commander. If the fire continues to burn out of control, additional resources will be called from the local cooperating agencies via the servicing dispatch. A management overhead team may be requested to assume command of the fire.

Monitoring and Evaluation

Monitoring of prescribed fires is intended to provide information for quantifying and predicting fire behavior and its ecological effects on refuge resources while building a historical record. Monitoring measures the parameters common to all fires: fuels, topography, weather and fire behavior. In addition, ecological changes such as species composition and structural changes will be monitored after a fire. This information will be very useful in fine-tuning the prescribed burn program.

All wildland fires will be appropriately suppressed. However, monitoring wildland fires may be appropriate and potentially valuable in mapping and documenting the growth of the fire, measuring on-site weather and fuel loading to provide the fire staff with present and expected fire behavior and effects. During prescribed burns, monitoring can serve as a precursor to invoking suppression action by determining if the fire is in prescription, assessing its overall potential, and determining

the effects of the prescribed burn.

During prescribed burning, monitoring should include mapping, weather, site and fuel measurements and direct observation of fire characteristics such as flame length, rate of spread and fire intensity. Operational monitoring provides a check to insure that the fire remains in prescription and serves as a basis for evaluation and comparison of management actions in response to measured, changing fire conditions, and changes such as fuel conditions and species composition.

Prescribed fire monitoring is the systematic process for collecting and recording fuels, topography, weather, fire behavior, smoke and immediate post - fire effects information to provide a basis for evaluating and adjusting prescribed fire programs. Three primary goals of monitoring on the refuge are: 1) Verify that fire weather, fuel moisture, and fire behavior are within prescription, 2) Quantitatively document immediate post - fire effects and compare with stated burn plan objectives, and 3) Ensure that fire and resource management objectives are being met.

Monitoring begins in the first stages of project planning. The existing condition of the vegetation, water quality, fuel loadings, soils, fish and wildlife habitat is determined using existing resource data, ground observations, and aerial photos.

Many different resource areas are monitored during the implementation of a prescribed fire to ensure the project is implemented as designed and that the implementation strategies are effective in meeting the objectives. Monitoring methods include weather readings, fuel - moisture samples, rainfall measurements, and meteorological observations and predictions to determine when and if the project area is within the prescription parameters. Meteorological observations and predictions are also used to ensure that the project will meet Smoke Management Plan guidelines. Walk through observations and photographs of project activities and fire behavior throughout project implementation are used to verify compliance with fish and wildlife standards, water quality standards, and fuel and vegetation goals and objectives. Weather readings, fuel moisture samples, and meteorological observations are also continued throughout implementation. A constant watch is kept on the direction and effectiveness of smoke dispersal.

Monitoring plots enable us to determine if the prescribed fire project accomplished what it was supposed to. Were the plans, prescriptions, and activities effective in meeting the project objectives and goals, and management direction? One permanent monitoring plot will be established in each project area. The plot center is marked with an eighteen inch piece of angle iron

and trees can be tagged to reference the direction and distance to plot center. The plot locations are also recorded using a Global Position System (GPS) device. Each plot is a 100 foot photo transect typical of the area being burned. A series of panoramic photos will be taken from each plot center. For specified photopoints throughout the refuge, photos will be taken prior to burning, immediately post-burn, one year after the burn, 3, 5 and 10 years after the burn.

Required Reports

All prescribed burn forms will be completed as outlined by the Prescribed Burn Boss. A monitor will be assigned to collect all predetermined information and complete all necessary forms prior to, during, and after the burn. All records will be archived in the refuge's fire records for future use and reference.

The Prescribed Burn Boss will prepare a final report on the prescribed burn for the Fire Analysis Committee. Information will include a narrative of the burn operation, a determination of whether objectives were met, weather and fire behavior data, map of the burn area, photographs of the burn, number of work hours, and final cost of the burn.

Prescribed Burn Critique

Each prescribed burn will have a critique. A report detailing the actual burn may accompany any recommendations or changes deemed necessary in the program. A post-season critique of the fire management program, including the prescribed burn program, will be held each year at the conclusion of the fall fire season.

AIR QUALITY/SMOKE MANAGEMENT

The Little Pend Oreille is required to obtain burn clearance from the Department of Natural Resources prior to the implementation of the burn. The clearance procedure is used to ensure that weather conditions on the day of the planned burn are conducive to good smoke dispersal conditions (no inversions and wind directions which will carry the smoke away from populated areas). It also allows coordination of burns between agencies and private interests to prevent too many burns from being conducted simultaneously within the same airshed.

Smoke Management: Under the direction of the federal Clean Air Act, The Washington State guidelines as described in the State of Washington Smoke Management Plan (Plan) will be adhered to. A copy of this Plan is on file at the refuge office and may be reviewed in conjunction with this document. Copies are also available from the Washington Department of Natural Resources (DNR).

Advance notice to be provided to the Washington DNR Regional Office of the intent to burn, proposed date, expected duration, smoke impact areas and estimated tonnages of fuel expected to be consumed.

All prescriptions will contain a section detailing smoke management concerns and mitigation efforts.

On the day of the burn a call will be made to the DNR at 1-800-323-2876 (BURN) to get final burn day conditions and go/no-go directions.

The Little Pend Oreille NWR lies to the east of Colville, Washington. Air quality in this area is generally considered excellent. Occasional impacts occur due to smoke from wildland fires and debris/waste burning from local landowners. Air quality monitoring stations have not been established in this area. Consequently, existing air quality data for the area does not exist. Generally a short term degradation in air quality is associated with prescribed fire activities. No known record of adverse impact of air quality has ever been filed due to prescribed fire activities in the area.

The general meteorology of wind patterns in this area fluctuate on a diurnal and seasonal pattern. Daytime ridge top winds are usually southwest during the burning season. This prevailing wind pushes smoke particulates to the northeast. Nighttime winds are generally light and downslope/down valley, causing particulates to move down the Little Pend Oreille drainage.

Part of the federal Clean Air Act, as revised in 1991, is a legal mandate designed to protect human health and welfare from air pollution. The act defines Natural Ambient Air Quality Standards (NAAQS) as levels of pollutant above which detrimental effects on human health and welfare could occur.

The nearest federally designated Class I area (all national wilderness areas larger than 5,000 acres) is the Pasaytan Wilderness. The Pasayton Wilderness is located approximately 90 air miles to the west.

The city of Spokane is located approximately 80 miles to the south of the refuge. Spokane is a federally designated non - attainment area. A non - attainment area is defined in the Washington State Smoke Management Plan, as a clearly delineated geographic area that has been designated by the Environmental Protection Agency as exceeding a national ambient air quality standard or standards for one or more of the criteria pollutants. These pollutants include carbon monoxide, fine particulate matter (PM10), sulfur dioxide, ozone, and nitrogen dioxide.

Currently any prescribed fire could occur on the refuge if it doesn't exceed more than 180,000 pounds of PM-10 in a 24 hour period. The proposed prescribed fire program for the Little Pend Oreille NWR of burning 1000 acres annually will not impact regional air quality from the aspect of total particulate load input. If the recommendations for smoke mitigation outlined in this plan are followed the impacts from the proposed prescribed fire program will be of short duration (less than 8 hours) and will affect only areas directly adjacent to the burn area.

Burning when smoke dispersion conditions are favorable and in compliance with daily Washington State smoke management direction would minimize any adverse effects. All burning would be scheduled in conjunction with the State of Washington to comply with the State Implementation Plan to minimize adverse effects on air quality.

A good working relationship between the Fish and Wildlife Service, other Federal and State land management agencies, and interstate, state, and local air quality officials will help assure that both air quality control and fire management objectives are met with the least amount of conflict.

Shortly before prescribed burns are anticipated and during natural fires for resource benefits, information will be made available to state contacts, refuge visitors, local citizenry, and the press about what is happening on the refuge. On - site information will also be used to alleviate visitor concern about the apparent destruction of refuge resources by fire or impairment of views due to temporary smoke.

Prescribed fire plans or Wildland Fire Situation Analyses will describe the holding actions which may be used to keep the fire within prescription for air quality objectives, particularly when smoke dispersion is deteriorating to the point that it is possible that smoke and air quality objectives will no longer be achieved. Examples may include:

A. Using firing crews to ignite fuels so that the fuels burn with the flaming rather than with smoldering combustion.
B. Constructing firelines to halt fire spread.
C. Mopping up smoldering heavy fuels until conditions improve for smoke dispersion, at which time the fire may be reignited.
D. Or, using hoselays and pumps to wet fuels to extinguish all or a portion of the fire front, with possible subsequent reignition under prescribed dispersal conditions.

Some principles that may be used to guide smoke management planning are:

A. Obtain and use weather forecasts.
B. Burn when conditions are good for rapid dispersion.
C. Determine the direction and volume of smoke.
D. Notify local fire dispatch office, nearby residents, and adjacent landowners.
E. Use test fires to confirm smoke behavior.
F. Mop - up along roads.
G. Burn when duff and soil moistures are high to prevent smoldering ground fires.
H. Anticipate down - drainage flow, particularly at night.

FIRE RESEARCH

There are currently no fire research projects in progress at LPO. Any future projects would be approved by the Project Leader and funded through independent sources (e.g., grants, Joint fire Science Committee, universities, research station). Periodically opportunities will arise to develop and apply fire research grants and the staff will strive to compete for these funds as time and need permit.

PUBLIC INFORMATION AND EDUCATION

People who live in this area are used to prescribed burning by the surrounding land owners. These owners include small private forest land holders, large timber corporations, State lands, tribal lands and large federal landowners all of which practice prescribed burning. Nevertheless, public concerns may arise as a result of smoke from wildland burning, or from a general fear of forest fires. These concerns have routinely been addressed in the many public meetings that have been held in conjunction with the development of the refuge CCP of which this FMP is attached as an Appendix. To date, no one has expressed unusual concern about the use of fire for management purposes on the refuge.

The public will be notified of planned prescribed burning in advance of any actions and posting of information and educational materials at various refuge locations such as campgrounds and kiosks throughout the refuge is the current routine. The refuge and the Colville NF also act in concert regarding fire danger ratings and the use of fire by visitors during periods of high fire danger.

PUBLIC SAFETY

Safety is the number one priority, whether for the public or for refuge workers. Signing will be done when there is high fire danger and if there is a wlidland fire precautions will be taken to inform the public. For prescribed fires, roads potentially affected by surface smoke will be signed with visibility hazard notifications and patrolled during and after the burn until visibility is safe for traffic. In addition, potentially affected individuals will be notified prior to the implementation of the prescribed fire.

FIRE CRITIQUES AND ANNUAL PLAN REVIEW

FIRE CRITIQUES

Fire reviews will be documented and filed with the final fire report. The FMO will retain a copy for the refuge files.

ANNUAL FIRE SUMMARY REPORT

The FMO will be responsible for completing an annual fire summary report. The report will contain the number of fires by type, acres burned by fuel type, cost summary (prescribed burns and wildland fires), personnel utilized, and fire effects.

ANNUAL FIRE MANAGEMENT PLAN REVIEW

The Fire Management Plan will be reviewed annually. Necessary updates or changes will be accomplished prior to the next fire season. Any additions, deletions, or changes will be reviewed by the Refuge Manager to determine if such alterations warrant a re-approval of the plan.

CONSULTATION AND COORDINATION

For this Fire Management Plan the following people were consulted on a variety of issues:

Bill Leenhouts - Fire Ecologist with U.S. Fish and Wildlife Service, Boise, Idaho

Jerry Cline - Refuge Biologist

Roddy Baunmann - Regional Prescribed Fire Specialist

Amanda McAdams - Regional Fire Planner

This plan was an attachment to the Comprehensive Conservation Plan and Environmental Impact Statement for the Little Pend Oreille National Wildlife Refuge and as such any and all reviewer for that document could have reviewed and made comments on this plan.

APPENDICES

APPENDIX A: REFERENCES CITED

Agee, J.K. 1993. Fire ecology of Pacific Northwest forests. Island Press, Washington, D.C.

Williams, C.K., B.F. Kelly, B.G. Smith, and T.R. Lillybridge. 1995. Forested plant associations of the Colville National Forest. General Technical Report PNW-GTR-360

Reynolds, R.T., E.C. Meslow, and H.M. Wight. 1982. Nesting habitat of coexisting Accipiter in Oregon. J. Wildlife Management 46:124-138.

APPENDIX B: DEFINITIONS

Agency Administrator. The appropriate level manager having organizational responsibility for management of an administrative unit. May include Director, State Director, District Manager or Field Manager (BLM); Director, Regional Director, Complex Manager or Project Leader (FWS); Director, Regional Director, Park Superintendent, or Unit Manager (NPS), or Director, Office of Trust Responsibility, Area Director, or Superintendent (BIA).

Appropriate Management Action. Specific actions taken to implement a management strategy.

Appropriate Management Response. Specific actions taken in response to a wildland fire to implement protection and fire use objectives.

Appropriate Management Strategy. A plan or direction selected by an agency administrator which guide wildland fire management actions intended to meet protection and fire use objectives.

Appropriate Suppression. Selecting and implementing a prudent suppression option to avoid unacceptable impacts and provide for cost-effective action.

Bureau. Bureaus, offices or services of the Department.

Class of Fire (as to size of wildland fires):
Class A - ¼ acre or less.
Class B - more than ¼ but less than 10 acres.
Class C - 10 acres to 100 acres.
Class D - 100 to 300 acres.
Class E - 300 to 1,000 acres.
Class F - 1,000 to 5,000 acres.
Class G - 5,000 acres or more.

Emergency Fire Rehabilitation/Burned Area Emergency Rehabilitation (EFR/BAER). Emergency actions taken during or after wildland fire to stabilize and prevent unacceptable resource degradation or to minimize threats to life or property resulting from the fire. The scope of EFR/BAER projects are unplanned and unpredictable requiring funding on short notice.

Energy Release Component (ERC) A number related to the available energy (BTU) per unit area (square foot) within the flaming front at the head of a fire. It is generated by the National Fire Danger Rating System, a computer model of fire weather and its effect on fuels. The ERC incorporates thousand hour dead fuel moistures and live fuel moistures; day to day variations are caused by changes in the moisture content of the various fuel classes. The ERC is derived from predictions of (1) the rate of

heat release per unit area during flaming combustion and (2) the duration of flaming.

Extended attack. A fire on which initial attack forces are reinforced by additional forces.

Fire Suppression Activity Damage. The damage to lands, resources and facilities directly attributable to the fire suppression effort or activities, including: dozer lines, camps and staging areas, facilities (fences, buildings, bridges, etc.), handlines, and roads.

Fire effects. Any consequences to the vegetation or the environment resulting from fire, whether neutral, detrimental, or beneficial.

Fire intensity. The amount of heat produced by a fire. Usually compared by reference to the length of the flames.

Fire management. All activities related to the prudent management of people and equipment to prevent or suppress wildland fire and to use fire under prescribed conditions to achieve land and resource management objectives.

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

Fire prescription. A written direction for the use of fire to treat a specific piece of land, including limits and conditions of temperature, humidity, wind direction and speed, fuel moisture, soil moisture, etc., under which a fire will be allowed to burn, generally expressed as acceptable range of the various fire-related indices, and the limit of the area to be burned.

Fuels. Materials that are burned in a fire; primarily grass, surface litter, duff, logs, stumps, brush, foliage, and live trees.

Fuel loadings. Amount of burnable fuel on a site, usually given as tons/acre.

Hazard fuels. Those vegetative fuels which, when ignited, threaten public safety, structures and facilities, cultural resources, natural resources, natural processes, or to permit the spread of wildland fires across administrative boundaries except as authorized by agreement.

Initial Attack. An aggressive suppression action consistent with firefighter and public safety and values to be protected.

Maintenance burn. A fire set by agency personnel to remove debris; i.e., leaves from drainage ditches or cuttings from tree pruning. Such a fire does not have a resource management objective.

Natural fire. A fire of natural origin, caused by lightning or volcanic activity.

NFDRS Fuel Model. One of 20 mathematical models used by the National Fire Danger Rating System to predict fire danger. The models were developed by the US Forest Service and are general in nature rather than site specific.

NFFL Fuel Model. One of 13 mathematical models used to predict fire behavior within the conditions of their validity. The models were developed by US Forest Service personnel at the Northern Forest Fire Laboratory, Missoula, Montana.

Prescription. Measurable criteria which guide selection of appropriate management response and actions. Prescription criteria may include safety, public health, environmental, geographic, administrative, social, or legal considerations.

Prescribed Fire. A fire ignited by agency personnel in accord with an approved plan and under prescribed conditions, designed to achieve measurable resource management objectives. Such a fire is designed to produce the intensities and rates of spread needed to achieve one or more planned benefits to natural resources as defined in objectives. Its purpose is to employ fire scientifically to realize maximize net benefits at minimum impact and acceptable cost. A written, approved prescribed fire plan must exist and NEPA requirements must be met prior to ignition. NEPA requirements can be met at the land use or fire management planning level.

Preparedness. Actions taken seasonally in preparation to suppress wildland fires, consisting of hiring and training personnel, making ready vehicles, equipment, and facilities, acquiring supplies, and updating agreements and contracts.

Prevention Activities directed at reducing the number or the intensity of fires that occur, primarily by reducing the risk of human-caused fires.

Rehabilitation (1) Actions to limit the adverse effects of suppression on soils, watershed, or other values, or (2) actions to mitigate adverse effects of a wildland fire on the vegetation-soil complex, watershed, and other damages.

Suppression. A management action intended to protect identified values from a fire, extinguish a fire, or alter a fire's direction of spread.

Unplanned ignition. A natural fire that is permitted to burn under specific conditions, in certain locations, to achieve defined resource objectives.

Wildfire. An unwanted wildland fire.

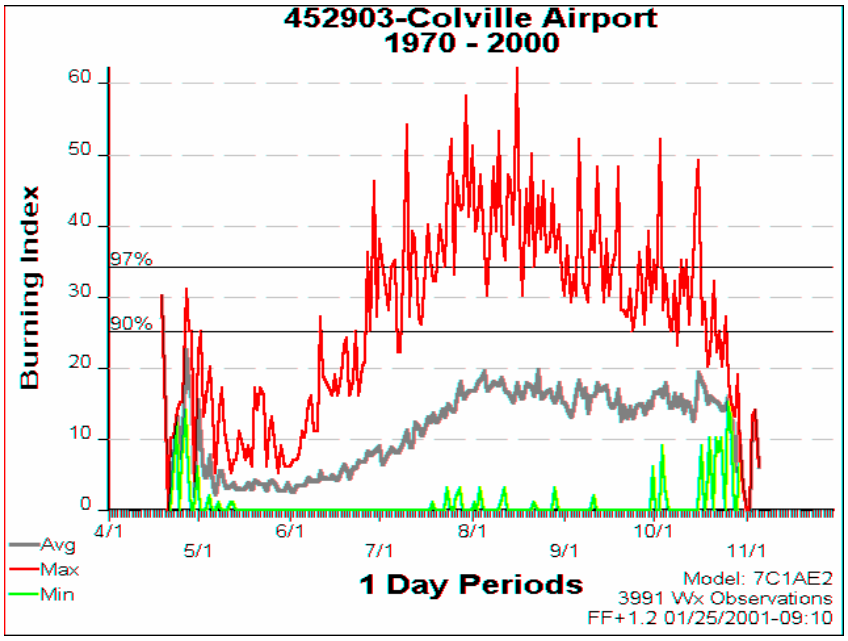
Wildland Fire. Any non-structure fire, other than prescribed fire, that occurs in the wildland.

Wildland Fire Situation Analysis (WFSA). A decision-making process that evaluates alternative management strategies against selected safety, environmental, social, economical, political, and resource management objectives as selection criteria.

Wildland/urban interface fire A wildland fire that threatens or involves structures.

APPENDIX C: WEATHER DATA

Weather Station used for weather analysis was Colville Airport #452903 for years 1970-2000
The graphs below show the Burning Index for this data set.



APPENDIX D: COOPERATIVE AGREEMENTS

LOCAL ANNUAL OPERATING PLAN
Between
U.S. DEPARTMENT OF THE INTERIOR, LITTLE PEND OREILLE NATIONAL WILDLIFE REFUGE
and
U.S. DEPARTMENT OF AGRICULTURE, COLVILLE NATIONAL FOREST

1.0 BACKGROUND

This agreement is entered into under the Authority of the Master Interagency Agreement P3-51E-001 between the Bureau of Land Management, Bureau of Indian Affairs, National Park Service, U.S. Fish and Wildlife Service, all of the Department of the Interior, and the Forest Service of the U. S. Department of Agriculture, dated October 1, 1982.

Authority for this agreement is further provided by the Master Cooperative Fire Protection Agreement between the Bureau of Land Management, Bureau of Indian Affairs, National Park Service, U.S. Fish and Wildlife Service of the U.S. Department of the Interior, the Forest Service of the U.S. Department of Agriculture, the State of Oregon Department of Forestry and the State of Washington Department of Natural Resources dated October 14, 1998.

2.0 OBJECTIVE

The U.S. Fish and Wildlife Service has the fire management responsibilities on the Little Pend Oreille National Wildlife Refuge, herein referred to as the National Wildlife Refuge. The U.S. Forest Service has the fire management responsibilities on the Colville National Forest, herein referred to as the Forest Service. It would be effective and economical for the Forest Service and the National Wildlife Refuge to provide reciprocal presuppression and initial attack services, on these lands in light of the cooperative agreement referenced above and recent policy changes regarding fire management on federal lands.

3.0 STATEMENT OF WORK

Fire presuppression and initial attack services:

A. The parties to this plan shall provide fire presuppression and initial attack services in mutual support on the lands they are each responsible for to the extent that available resources not otherwise committed shall allow.

B. Annually, prior to the fire season, the Forest Service

and the National Wildlife Refuge will meet to discuss agreed upon objectives, including costs for fire services provided, access, preplanned dispatch and other details that enhance the pre-suppression and initial attack job.

C. All initial attack fire suppression and presuppression cost will be non reimbursable. Each agency will maintain their own costs.

D. Since there are intermingled private lands within the National Wildlife Refuge and the Forest Service, and since the State of Washington Department of Natural Resources, herein referred to as the DNR, is a party to the Master Cooperative Agreement, the parties to this plan, may elect to form a reciprocal Local Operating Plan with the Washington State Department of Natural Resources.

E. When fire suppression actions on the National Wildlife Refuge, or the Forest Service, require additional forces beyond initial attack resources, the parties will agree to , and document in writing, the line authority, resource objectives and fiscal accountability requirements as requested by either party to meet management goals and objectives in suppressing the fire. All incidents which go beyond initial attack actions will be organized under the Incident Command System with the Incident Commander working directly for the appropriate line officer depending upon the agency.

F. If initial attack, and other fire suppression resources are in short supply, the parties to this Plan , will set priorities for protection of all lands under this, and other direct protection agreements, based upon the values at risk, and each agencies policies and responsibilities until additional resources can be obtained.

4.0 DEFINITIONS

A. Reciprocal fire protection services shall mean that each party will, with it’s fire protection resources, provide aid to one another by furnishing fire protection services to such lands of the other party as each may be in a position to furnish.

B. Non-reimbursable fire management services include all direct firefighting costs and supporting costs, of either a direct or indirect nature, including, but not limited to, initial attack, reinforcements, overhead, logistics, office services and indirect expenses of any kind that are devoted to, or chargeable against, a firefighting effort.

C. Direct costs include all expenditures that can be identified as expended in support of a specific project. These costs typically include that portion of the agency's overhead and general support services needed to support the fire program. Each agency's indirect cost rate will be adjusted annually in accordance with mandated accounting procedures.

5.0 PAYMENTS

Payment will be made by an inter-agency transfer of funds between the U.S. Fish and Wildlife Service and the Forest Service according to each agencies procedures, documentation and policies. Collection of funds will be by the use of the ON-LINE payment and Collection System (OPAC).

It is understood that if Congress does not make funds available to either party, each party would be released from any liability and potential future commitment under this agreement.

Funds in the amount of $2,000 will be made available by the National Wildlife Refuge to the Forest Service for the 1998 fire season to provide for dispatch and other services. This figure will be negotiated annually. The Forest Service will bill U.S. Fish and Wildlife Service for this amount.

6.0 COST RECOVERY

If a fire on either parties lands is determined to have been started through negligence, or a willful or illegal act, it is agreed that each party, upon their own discretion, will attempt within 60 days, to obtain an estimate of all costs, including initial attack, incurred in suppressing such fires and assume responsibility for pursuing claims for recovery of all firefighting costs and resource damage to its lands.

7.0 TERMINATION AND AMENDMENTS

This plan shall be effective from the latest date signed, and shall remain in effect until terminated by either party. Cancellation of this plan may occur with 90 days written notice by either party between November 1 and April 1. Upon both parties agreement, amendments to this plan may be made in writing by either party at any time.

Forest Supervisor, Date

Refuge Man

Colville National Forest

Little Pend Oreille
National Refuge

Memorandum of Understanding
Between
USDA Forest Service, Colville National Forest
And The
USDI Fish and Wildlife Service

I. Purpose

The purpose of this Agreement is to allow the cooperating agencies to share assigned radio frequencies, avoid duplication of equipment and to improve radio communication.

II. Statement Of Mutual Benefits And Interests

The USDA has mandated that all USDA agencies share telecommunications services where economically feasible. The Fish and Wildlife Service has requested to share the Colville National Forest radio system, and that the Forest Service provide portable and mobile radio maintenance. The Forest Service has requested the use of Fish and Wildlife Service radio frequencies. Each participating agency will benefit by reducing the cost for telecommunications services and by increasing available services. Re-engineering through Information Technology (1993), encouraged the sharing of IRM resources to "identify additional opportunities and oversee follow-up on those opportunities for sharing information resources across agencies to improve program performance". Agencies have been directed to identify areas of duplication and work together to best utilize personnel, technology, and administrative re-invention opportunities to reduce expenditures and redundant functions.

III. It Is Mutually Agreed And Understood By And Between The Said Parties That:

The Forest Service agrees to allow the Fish and Wildlife Service to share the Forest Service radio
system within the scope of the licensed authority of the Colville National Forest.

The Fish and Wildlife Service agrees to allow the Forest Service to share the radio frequency 164.6250 MHZ as a repeater access frequency throughout the Colville National Forest.

This instrument in no way restricts the Agencies from participating in similar activities with other public or private agencies, organizations, and individuals.

Pursuant to Title 41, United States Code, section 22, no member of, or Delegate to, Congress shall be admitted to any share or part of this instrument, or any benefits that may arise there from.

Nothing herein shall be considered as obligating the Agencies to expend or as involving the United States in any contract or other obligations for future payment of money in excess of funding approved and made available for payment under this instrument and modifications thereto.
Modifications within the scope of this instrument shall be made by the issuance of a mutually executed modification prior to any changes being performed.

Each party may terminate this agreement with 180 days written notice to allow the other parties to make alternative arrangements before the date of expiration.

This instrument is effective as of the last date shown below and expires on January 1, 2005, at which time it will be subject to review, renewal, or expiration.

The principle contacts for this instrument are:

Douglas Wollan
USDA Forest Service

Colville National Forest

765 South Main Street
Colville, WA 99114
509-684-7125

Keith Satterfield
USDI Fish and Wildlife Service
Little Pend Oreille National Wildlife Refuge
1310 Bear Creek Road
Colville, WA 99114
509-684-8384

IN WITNESS WHEREOF, the parties hereto have executed this Cooperative Agreement as of the last written date below.

_____
_____
Nora Rasure
Forest Supervisor

Date

_____

_____

Lisa Langelier Date
Refuge Manager

INTERAGENCY AGREEMENT
between the
U.S. FISH AND WILDLIFE SERVICE
and
U.S. FOREST SERVICE

FWS AGREEMENT # 135610H231A

Charge Code: 10131-9251-0000

Amount Obligated: $2,000.00

I. TYPE OF AGREEMENT:
X Inter-Agency
_____ Intra-Agency

II. TYPE OF ORGANIZATION:
X Federal Agency
_____ DOI Bureau or Service

III. PARTICIPANTS:

Funding Organization:

Dept. of Interior
U.S. Fish and Wildlife Service
Little Pend Oreille Natl Wildlife Refuge
1310 Bear Creek Road
Colville, WA 99114

Recipient Organization:

Dept. of Agriculture
U.S. Forest Service
Colville National Forest
765 S. Main
Colville, WA 99114

IV. PROJECT OFFICERS:

FWS Officer:

Name: Lisa Langelier
Title: Project Leader
Phone: (509) 684-8384

Recipient Representative:

Name: Nora Rasure
Title: Forest Supervisor
Phone: (509) 684-3711

V. PURPOSE / OBJECTIVE:

The U.S. Fish and Wildlife Service has fire management responsibility for the Little Pend Oreille National Wildlife Refuge, the boundary of which is largely adjacent to the U.S. Forest Service, Colville National Forest. It is effective and

economical to procure dispatch and other related fire program services from the U.S. Forest Service. The objective of this Interagency Agreement is to reimburse the U.S. Forest Service for fire dispatch services, and to stipulate responsibilities of the participating agencies relative to suppression and presuppression activities.

VI. AUTHORITY

This agreement is entered into under the Authority of the Master Interagency Agreement P3-51E-001 between the Bureau of Land Management, Bureau of Indian Affairs, National Park Service, U.S. Fish and Wildlife Service, all of the Department of the Interior, and the Forest Service of the U.S. Department of Agriculture, dated October 1, 1982. The Economy Act (31 USC 1535) and Federal Acquisition Regulation (FAR 17.5) provide further authorization for this agreement.

VII. FUNDING INFORMATION:

Funds in the amount of $2,000.00 will be made available by the U.S. Fish and Wildlife Service to the U.S. Forest Service for the year 2000 fire season to provide for dispatch and other fire related services. This figure subject to annual negotiation.

VIII. TERM OF AGREEMENT

This agreement will remain in effect until terminated. Funds will be provided by the Service, subject to availability, through a modification to this agreement.

IX. SPECIFIC OBLIGATIONS OF EACH PARTY:

A. The U.S. Forest Service agrees to:

Provide dispatch and other fire related services. Reciprocal presuppression and initial attack services will be provided to the U.S. Fish and Wildlife Service, subject to availability of resources. All initial attack fire suppression and presuppression costs will be non-reimbursable.

B. The U.S. Fish and Wildlife Service agrees to:

Reimburse the U.S. Forest Service, Colville National Forest, for dispatch and fire related services. Reciprocal presuppression and initial attack services will be provided to the U.S. Forest Service, subject to availability of resources. All initial attack fire suppression and presuppression costs will be non-

reimbursable.

X. REPORTING REQUIREMENTS:

Not applicable to the terms of this Agreement.

XI. INVOICING / ACCEPTANCE PROCEDURES:

Transfer of funds between FWS and FS will be done by use of the Department of Treasury's Online Payment and Collection (OPAC) system. When transfer requests are made, a copy of the request document shall be sent to the following address:

U.S. Fish and Wildlife Service
Little Pend Oreille National Wildlife Refuge
1310 Bear Creek Road
Colville, WA 99114

XII. TERMINATION

Cancellation of this plan may occur with 90 days written notice by either party.

XIII. MODIFICATION PROCEDURES:

Modifications to this Agreement may be proposed by either party and shall become effective upon written concurrence of the parties. Modification for annual certification of funds availability will be incorporated as shown in Attachment I.

XIV. SPECIAL PROVISIONS:

Not applicable to this Agreement.

XV. RELATED ATTACHMENTS:

Attachment I - Annual Funds Availability Modification
Attachment II - Economy Act Determination

FOR THE U.S. FISH AND WILDLIFE SERVICE:

By:

Signature:_____ Date:

Title:_____

FOR THE U.S. FOREST SERVICE:

By:

Signature:_____ Date:

Title:_____

FWS CONTRACT SUFFICIENCY REVIEW:

By:

Signature:_____ Date:

Contracting Officer FWS#

APPENDIX E: DISPATCH PLAN

EMERGENCY FIRE DISPATCH PLAN

for the

LITTLE PEND OREILLE NATIONAL WILDLIFE REFUGE

1310 Bear Creek Road
Colville, WA 99114
Office: 509-684-8384

Primary support for all LPO wildland fires is provided via Memorandum of Understanding (MOU) and an Annual Operating Plan with the Colville National Forest.

The following steps provide guidelines which are designed to best accomplish the task of rapid response to a wildland fire situation. If you follow this outline you will succeed in getting resources to the fire in a timely and efficient manner.

When receiving information on, or reporting a wildland fire emergency, the following information should be noted and relayed to the appropriate official. If the list is incomplete, report as much information as is available.

LOCATION OF SMOKE OR FIRE:

LOCATION OF CALLER:

NAME AND TELEPHONE NUMBER OF CALLER:

IS THE FIRE ON, OR THREATENING THE REFUGE:

COLOR OF SMOKE:

SIZE OF FIRE:

TYPE OF FUEL:

CHARACTER OF FIRE (SMOLDERING, CREEPING, RUNNING, TORCHING, CROWNING):

ANYONE ON THE FIRE:

WAS ANYONE SEEN LEAVING THE AREA (describe vehicle, license plate, etc...) :

IF THE FIRE IS ON, OR THREATENING, THE REFUGE, OR YOU ARE UNCERTAIN; relay as much of the above information as possible to the following agencies or personnel in order by radio or

telephone:

CALL LIST FOR FIRES ON, OR THREATENING, THE REFUGE			
AGENCY OR OFFICE	PERSON/TITLE	RADIO CALL SIGN	PHONE NUMBER
USFS DISPATCH	DON DEESE, ED Wall, OR DUTY PERSON	DISPATCH RADIO CHANNEL 3	684-7218
LPO NWR	DAN BRAUNER LEAD ENGINE FOREMAN	BY NAME	684-8384 509-838-2997
LPO NWR	KEITH SATTERFIELD; PRESCRIBED FIRE SPECIALIST	BY NAME	684-8384 509-838-2997
LPO NWR	STEVE FOWLER, REFUGE OPERATIONS SPECIALIST	LPO 2 or NAME	684-8384 OFFICE 684-1039 HOME
LPO NWR	LISA LANGELIER, REFUGE MANAGER	LPO 1	684-8384 OFFICE 684-3201 HOME
LPO NWR	KARL MALLORY, MAINTENANCE WORKER/LEO	LPO 4	684-8384 OFFICE 685-0118 HOME
LPO NWR	JERRY CLINE, WILDLIFE BIOLOGIST	LPO5	684-8384 OFFICE 732-6178 HOME
LPO NWR	JIM LILLIE, OFFICE ADMIN.	LPO 3	684-8384 OFFICE 684-3505 HOME

- For fires known to be on USFS land call the USFS dispatch listed above.
- If the fire is known to be on State or private land report the fire to the Washington State Department of Natural Resources (DNR) at 684-7474.

If you are in radio or telephone contact with fire fighters or dispatch personnel, remain in contact until you are certain that the fire is being initial attacked. This is especially important if you have a visual of the fire and/or thorough knowledge of the

fire location.

If you are at the fire and can remain safe, stay at the fire until help arrives. ***REMEMBER: STAY AT THE FIRE ONLY SO LONG AS YOU ARE CERTAIN OF YOUR SAFETY. THAT IS YOU HAVE PLANNED ESCAPE ROUTES AND SECURE SAFETY ZONES IDENTIFIED. IF YOU HAVE THE SLIGHTEST DOUBT; GET OUT!***

DIRECTORY

OTHER SERVICE FIRE PERSONNEL		
REGION 1 FIRE MGT COORDINATOR	PAM ENSLEY	503-231-6174
R1 ASSISTANT FIRE MGT COORDINATOR	ANDY ANDERSON	503-231-6175
AFMO; TURNBULL NWR		509-235-4723
NATIONAL INTERAGENCY FIRE CENTER	FWS OFFICE	1-208-387-5595

LOCAL LAW ENFORCEMENT		
STEVENS CO SHERIFF	N/A	684-5296
WA. STATE PATROL	N/A	684-7431
		1-800-283-7804
PEND OREILLE CO SHERIFF	N/A	911
WA. DEPARTMENT OF WILDLIFE	N/A	1-800-777-3847

EMERGENCY SERVICES		
MT. CARMEL HOSPITAL	N/A	684-2561
HOLY FAMILY HOSPITAL	N/A	509-482-0111
SACRED HEART MEDICAL CENTER	N/A	509-455-3131

APPENDIX F: CONTACT LIST

Name Address (if required)	Phone Number	Date of Contact	Time of Contact
Statesman Examiner	684-4567		
Colville Dispatch	684-7195		
Washington DNR	684-7474		
Stevens County Sheriff	684-5296		
Wayne Vaagen	684-2443		
Tom and Earline Daly	684-6909		
Danny and Evelyn Bell	684-6618		
Wesly Thomas	684-6428		
Frank and Martha Weeks	685-1901		
Ken and Joan Chellis	684-1925		
Dick Hoover Maggie Lynt	680-0868		
Edward & Maxine Johnson	685-9837		
Dale Kitt	684-4825		
Jim and Michelle Stewart	684-4355		
Dan Martin	684-1791		
Duane and Janet Johnson	685-2366		
Kay Jones	206-329-2885		
Demorest	Notify at house.		

APPENDIX G: SIGN PLAN

Industrial Fire Precaution Level Sign Plan
The industrial fire precaution level signs are changed when a change in precaution level is announced by the Colville National Forest Dispatch office. This will be announced during the daily fire weather forecast. The IFPL will change at midnight the day the change is announced. Signs must be changed the day a change is announced. The IFPL directly affects industrial activities on the refuge. Leaving the signs overnight or posting IFPL signs incorrectly is unacceptable. When a change of the IFPL is announced, the engine crews are to be notified to be sure they heard the change. They must change the signs as soon as possible after notification. The refuge manager, fire management officer and timber sale administrator should be notified immediately or as soon as possible. Extra emphasis should be placed on the refuge manager and fire management officer. They should be called at home and notified if they are not in the office or they are unreachable by radio. Use the IFPL Notification Checklist (Appendix B) to make sure necessary notifications have been made. These check lists are in the fire management office.

Fourth of July/Independence Day Sign Plan
Fireworks on the Little Pend Oreille NWR are specifically cited in 36CFR 261.52(f) prohibiting; "Possessing, discharging or using any kind of fireworks or other pyrotechnic device." "No Fireworks" signs must be posted which specifically prohibit the use of fireworks on the refuge. Fireworks go on sale June 23 through July 6. The signs must be posted at least by June 23.

Along with the refuge entry signs, campground signing is especially important as this is where most of the fireworks would be used by the public. Keep a sign on the campground billboard, it's important to keep this information visible to anyone who may be asked. Check the signs occasionally to ensure that they haven't been taken down by vandals.

Extreme Fire Danger Sign Plan
When the refuge goes to an IFPL of III or higher, Extreme Fire Danger Signs should be put up to warn refuge visitors to be extra careful. This will not necessarily predicate a campfire closure.

Campfire Closure Sign Plan
When the danger of forest fire dictates, a campfire closure may be issued from the refuge manager. As a rule, this closure will mean no campfires except in designated areas. Any designated areas will be identified by the refuge manager. Campfire closures may require signing to be done at the dispersed sites as people often use these sites in lieu of the designed campgrounds and will not have heard of the closure except from the signs.

Refuge Closure Sign Plan
Refuge Closure would be announced by the refuge manager. The responsibility of fire management includes signing, patrolling and enforcement. Roads closures will be planned and listed by the refuge manager. The signs to use are "Closed Due To Fire Hazard". These will be placed at all the entrances to the refuge.

APPENDIX H: IFPL NOTIFICATION CHECKLIST

Little Pend Oreille NWR
Industrial Fire Precaution Level Notification Checklist

The Industrial Fire Precaution Level will change
from_____to_____ at 2400 tonight.
Today's date is_____.

Time of Contact	Title	Phone Numbers
_____	Refuge Manager Lisa Langelier	684-3201
_____	Zone Fire Management Officer Keith Satterfield	738-2934
_____	Engine LPO1	675-3846
_____	Engine LPO2	n/a
_____	Forester/Timber Sale Administrator	vacant
_____	Front Desk Receptionist	684-8384

APPENDIX I: BEHAVE RUNS; FM-3, 9, & 11

DIRECT
1--FUEL MODEL ---------- 3 -- TALL GRASS, 2.5 FT (75 CM)
2--1-HR FUEL MOISTURE, % -- 2.0
7--MIDFLAME WINDSPEED, MI/H 2.0 4.0 6.0 8.0 10.0
8--TERRAIN SLOPE, % ------- 15.0
9--DIRECTION OF WIND VECTOR .0
DEGREES CLOCKWISE
FROM UPHILL
10--DIRECTION OF SPREAD ---- .0 (DIRECTION OF MAX SPREAD)
CALCULATIONS
DEGREES CLOCKWISE
FROM UPHILL

MIDFLAME WIND (MI/H)	RATE OF SPREAD (CH/H)	HEAT PER UNIT AREA (BTU/SQFT)	FIRELINE INTENSITY (BTU/FT/S)	FLAME LENGTH (FT)	REACTION INTENSITY (BTU/SQFT/M)	EFFECT. WIND (MI/H)
2.0	65.	980.	1165.	11.6	3828.	2.2
4. 0	142.	980.	2557.	16.6	3828.	4.1
6.0	233.	980.	4194.	20.9	3828.	6.1
8.0	335.	980.	6013.	24.6	3828.	8.1
10.0	444.	980.	7980.	28.1	3828.	10.1

MIDFLAME WIND (MI/H)	AREA (AC)	PERIMETER (CH)	LENGTH-TO-WIDTH RATIO (CH)	FORWARD SPREAD DISTANCE (CH)	BACKING SPREAD DISTANCE (CH)	MAXIMUM WIDTH OF FIRE
2.0	1107.	386.	1.5	129.7	17.6	95.7
4.0	3581.	734.	2.0	284.7	19.7	149.8
6.0	7360.	1118.	2.5	466.9	19.8	192.5
8.0	12311.	1532.	3.0	669.4	19.3	227.6
10.0	18332.	1974.	3.5	888.3	18.6	257.3

DIRECT
1--FUEL MODEL ---------- 9 -- HARDWOOD LITTER
2--1-HR FUEL MOISTURE, % -- 2.0
3--10-HR FUEL MOISTURE, % - 3.0
4--100-HR FUEL MOISTURE, % 4.0
7--MIDFLAME WINDSPEED, MI/H 2.0 4.0 6.0 8.0 10.0
8--TERRAIN SLOPE, % ------- 15.0
9--DIRECTION OF WIND VECTOR .0
DEGREES CLOCKWISE
FROM UPHILL
10--DIRECTION OF SPREAD ---- .0 (DIRECTION OF MAX SPREAD)

CALCULATIONS
DEGREES CLOCKWISE
FROM UPHILL

MIDFLAME WIND (MI/H)	RATE OF SPREAD (CH/H)	HEAT PER UNIT AREA (BTU/SQFT)	FIRELINE INTENSITY (BTU/FT/S)	FLAME LENGTH (FT)	REACTION INTENSITY (BTU/SQFT/M)	EFFECT. WIND (MI/H)
2.0	4.	488.	38.	2.4	3157.	2.2
4.0	10.	488.	90.	3.6	3157.	4.1
6.0	18.	488.	164.	4.7	3157.	6.1
8.0	29.	488.	260.	5.8	3157.	8.1
10.0	42.	488.	374.	6.9	3157.	10.1

MIDFLAME WIND (MI/H)	AREA (AC)	PERIMETER (CH)	LENGTH-TO-WIDTH RATIO (CH)	FORWARD SPREAD DISTANCE (CH)	BACKING SPREAD DISTANCE (CH)	MAXIMUM WIDTH OF FIRE (CH)
2.0	4.7	25.	1.6	8.5	1.1	6.2
4.0	17.8	52.	2.0	20.0	1.4	10.5
6.0	45.7	88.	2.5	36.8	1.6	15.2
8.0	92.9	133.	3.0	58.1	1.7	19.8
10.0	162.8	186.	3.5	83.6	1.8	24.3

DIRECT
1--FUEL MODEL ---------- 11 -- LIGHT LOGGING SLASH
2--1-HR FUEL MOISTURE, % -- 2.0
3--10-HR FUEL MOISTURE, % - 3.0
4--100-HR FUEL MOISTURE, % 4.0
7--MIDFLAME WINDSPEED, MI/H 2.0 4.0 6.0 8.0 10.0
8--TERRAIN SLOPE, % ------- 70.0
9--DIRECTION OF WIND VECTOR .0
DEGREES CLOCKWISE
FROM UPHILL
10--DIRECTION OF SPREAD ---- .0 (DIRECTION OF MAX SPREAD)
CALCULATIONS
DEGREES CLOCKWISE
FROM UPHILL

MIDFLAME WIND (MI/H)	RATE OF SPREAD (CH/H)	HEAT PER UNIT AREA (BTU/SQFT)	FIRELINE INTENSITY (BTU/FT/S)	FLAME LENGTH (FT)	REACTION INTENSITY (BTU/SQFT/M)	EFFECT. WIND (MI/H)

2.0	11.	978.	201.	5.2	3011.	6.1
4.0	15.	978.	265.	5.9	3011.	7.8
6.0	19.	978.	334.	6.5	3011.	9.6
8.0	23.	978.	406.	7.1	3011.	11.5
10.0	27.	978.	481.	7.7	3011.	13.4

MIDFLAME WIND (MI/H)	AREA (AC)	PERIMETER (CH)	LENGTH-TO-WIDTH RATIO (CH)	FORWARD SPREAD DISTANCE (CH)	BACKING SPREAD DISTANCE (CH)	MAXIMUM WIDTH OF FIRE (CH)
2.0	17.	54.	2.5	22.4	1.0	9.3
4.0	25.	68.	3.0	29.5	.9	10.3
6.0	33.	83.	3.4	37.2	.8	11.1
8.0	43.	99.	3.9	45.3	.8	11.9
10.0	53.	116.	4.4	53.6	.7	12.5

APPENDIX J: PRESCRIBED FIRE PLAN

Refuge or Station _____
Unit _____

Prepared By: _____ Date: _____

Reviewed By: _____ Date: _____
Refuge Manager
Reviewed By: _____ Date: _____
Prescribed Fire Burn Boss
Reviewed By: _____ Date: _____
Regional Fire Management Coordinator
Reviewed By: _____ Date: _____
(Others)

The approved Prescribed Fire Plan constitutes the authority to burn, pending approval of Section 7 Consultations, Environmental Assessments or other required documents. No one has the authority to burn without an approved plan or in a manner not in compliance with the approved plan. Prescribed burning conditions established in the plan are firm limits. Actions taken in compliance with the approved Prescribed Fire Plan will be fully supported, but personnel will be held accountable for actions taken which are not in compliance with the approved plan.

Approved By: _____ Date: _____

PRESCRIBED FIRE PLAN

Refuge: _____ Refuge Burn Number: _____

Sub Station: _____ Fire Number: _____

Name of Area: _____ Unit No. _____

Acres To Be Burned/Maximum Manageable Area (MMA): _____ Perimeter Of Burn: _____

Legal Description: Lat. ___ Long. ___ T __ R __ S __

County: _____

Is a Section 7 Consultation being forwarded to Fish and Wildlife Enhancement for review ? Yes No (circle).

(Page 2 of this PFP should be a refuge base map showing the location of the burn on Fish and Wildlife Service land)

The Prescribed Fire Burn Boss/Specialist must participate in the development of this plan.

I. GENERAL DESCRIPTION OF BURN UNIT

Physical Features and Vegetation Cover Types (Species, height, density, etc.):

Primary Resource Objectives of Unit (Be specific. These are management goals):

1)
2)
3)
4)

Objectives of Fire (Be specific. These are different than management goals):

1)
2)
3)
4)

Acceptable Range of Results (Area burned vs. unburned, scorch height, percent kill of a species, range of litter removed, etc.):

1)
2)
3)
4)

II. PRE-BURN MONITORING

Vegetation Type Acres % FBPS Fuel Model

_____	__	__	_____
_____	__	__	_____
_____	__	__	_____
_____	__	__	_____
Total	__	__	_____

Habitat Conditions (Identify with transect numbers if more than one in burn unit.):

Type of Transects:

Photo Documentation (Add enough spaces here to put a pre-burn photo showing the habitat condition or problem you are using fire to change/correct. A photo along your transect may reflect your transect data.):

Other:

III. PLANNING AND ACTIONS

Complexity Analysis Results:

Site preparation (What, when, who & how. Should be done with Burn Boss):

Weather information required (who, what, when, where, how, and how much):

Safety considerations and protection of sensitive features (Adjacent lands, visitors, facilities, terrain, etc., and needed actions. Include buffer and safety zones. Be specific, indicate on a burn unit map. Map should be a USGS quadrangle if possible, so ridges, washes, water, trails, etc. can be identified.)

Special Safety Precautions Needing Attention (Aerial ignition, aircraft, ignition from boat, etc.):

Media Contacts (Radio stations, newspaper, etc., list with telephone numbers):

Special Constraints and Considerations (Should be discussed with Burn Boss):

Communication and Coordination on the Burn (Who will have radios, frequencies to be used, who will coordinate various activities.):

IV. IGNITION, BURNING AND CONTROL

	Planned or Proposed	Actual
Scheduling: Approx. Date(s)	_____	_____
Time of Day	_____	_____

	Acceptable Range		
FBPS Fuel Model ___	Low	High	Actual
Temperature			
Relative Humidity			
Wind Speed (20' forecast)			
Wind Speed (mid-flame)			
Wind Direction			
Cloud Cover (%)			
ENVIRONMENTAL CONDITIONS			
Soil Moisture/KBDI			
1 hr. Fuel Moisture			
10 hr. FM			
100 hr. FM			
Woody Live Fuel Moisture			
Herb. Live Fuel Moisture			
Litter/Duff Moisture			
FIRE BEHAVIOR			
Type of Fire (H,B,F)			
Rate of Spread			
Fireline Intensity			

Flame Length			
Energy Release Component NFDRS Fuel Model _____			

Cumulative effects of weather and drought on fire behavior:

Ignition Technique (Explain and include on map of burn unit. Use of aerial ignition must be identified in this plan. Last minute changes to use aircraft will not be allowed and will be considered a major change to the plan. This will require a resubmission):

Prescribed Fire Organization (See Section VII, Crew and Equipment Assignments. All personnel and their assignments must be listed. All personnel must be qualified for the positions they will fill.)

Other (If portions of the burn unit must be burnt under conditions slightly different than stated above, i.e., a different wind direction to keep smoke off of a highway or off of the neighbors wash, detail here.)

Prescription monitoring (Discuss monitoring procedure and frequency to determine if conditions for the burn are within prescription):

V. SMOKE MANAGEMENT

Make any Smoke Management Plan an attachment.

Permits required (who, when):

Distance and Direction from Smoke Sensitive Area(s):

Necessary Transport Wind Direction, Speed and Mixing Height (Explain how this information will be obtained and used):

Visibility Hazard(s) (Roads, airports, etc.):

Actions to Reduce Visibility Hazard(s):

Residual Smoke Problems (Measures to reduce problem, i.e., rapid and complete mop-up, mop-up of certain fuels, specific fuel moistures, time of day, etc.):

Particulate emissions in Tons/Acre and how calculated (This should be filled in after the burn so more precise acreage figures can be used):

VI. FUNDING AND PERSONNEL (INCIDENT ACTION PLAN)

Activity Code: _____

	Equipment & Supplies	Labor	Overtime	Staff Days	Total Cost
Administration (planning, permits, etc.)					
Site Preparation					
Ignition & Control					
Travel/Per Diem					
Total					

Costs

VII. BURN-DAY ACTIVITIES

Public/Media Contacts on Burn Day (List with telephone numbers):

Crew & Equipment Assignments (List all personnel, equipment needed, and assignments. The following is not an all inclusive list for what you may need.)

Burn Boss/Manager -
Ignition Specialist -
Ignition Crew -
Holding Specialist -
Holding Crew -
Aircraft Manager -
FWBS -
Dispatcher-
Other -

Crew Briefing Points (Communications, hazards, equipment, water sources, escape fire actions, etc. To be done by Burn Boss. Refer to Safety Considerations in Planning Actions and points listed below):
Ignition Technique (Methods, how, where, who, and sequence. Go over what was submitted in Section IV and any changes needed for the present conditions.) Attach ignition sequencing map if necessary:

Personnel Escape Plan:

Special Safety Requirements:

Go-No-Go Checklist:

Holding and Control:

Critical Control Problems:

Water Refill Points:

Other:

Contingency Plan for Escaped Fire (Are there crews standing by to initial attack or will people doing other jobs be called upon to do initial attack, who must be called in case of an escape, what radio frequencies will be used, etc.)

Mop Up and Patrol:

Rehabilitation Needs:

DI 1202 Submission Date:

Special Problems:

VIII. CRITIQUE OF BURN

Were burn objectives within acceptable range of results? (Refer to Section I):

What would be done differently to obtain results or get better results?

Was there any deviation from plan? If so, why?

Problems and general comments:

IX. POST-BURN MONITORING

Date:_____ Refuge Burn Number: _____

Length of Time after Burn: _____
Vegetative Transects:

Comments on Habitat Conditions, etc.:

Photo Documentation:

Other:

X. FOLLOW-UP EVALUATION

Date: _____ Refuge Burn Number: _____

Length of Time after Burn: _____

Vegetative Transects:

Comments on Habitat Conditions, etc.:

Photo Documentation:

Other:

APPENDIX K: PRE-ATTACK PLAN

The Pre-Attack Plan is divided into four sections (command, planning, operations and logistics). Each of those sections will be discussed as to the location of the pertinent data.

Pre-attack WFSA

Draft Delegation of Authority

As of 1800, July 27th, 19xx, I have delegated authority to manage the _____ fire, number _____, Little Pend Oreille NWR, to Incident Commander _____ and their Incident Management Team.

The fire which originated as _____ occurring on July 26th, 19xx, is burning in the Bear Creek drainage. My considerations for management of this fire are:

Provide for fire fighter safety.
I would like the fire managed under a control strategy with suppression actions done with as little environmental damage as possible.
Key cultural features are:
Key resource considerations are:
Restrictions for suppression actions are
My agency resource advisor will be _____
Managing the fire cost-effectively for the values at risk is a significant concern.
Providing training opportunities for the refuge personnel is requested to strengthen our organizational capabilities.
Minimum disruption of visitor access of the main road consistent with public safety.

_____

Refuge Manager Date

Interagency Agreements

Appendix C.

Evacuation Procedures

Structural Protection Needs

At this time the refuge is looking to remodel one of the warehouses so that one of the fire engines will be maintained all year round. This would only supply a small amount of water, but since the refuge is outside the fire protection zone it would give some

measure of protection.

Refuge Closure Procedures

Look at Prevention Plan where this is discussed.

PLANNING

Refuge Base Map

On file at refuge.

Topographic Map

On file at refuge.

Vegetation/Fuel Maps

Being worked on. Will be stored in GIS.

Hazard Locations (ground and aerial)

Power lines to the refuge and Winslow cabin. Iron Mountain Lode (mine shaft) and Bear Mountain shaft and Adit.

Archeological/Cultural Base Map

A cultural survey has been done for the refuge that identifies sites. It is on file at the refuge.

Endangered Species Critical Habitats

This database is maintained by the Washington Department of Fish and Wildlife and there are maps at the refuge listing these areas.

Sensitive Plant Populations

This database is maintained by the Washington Department of Natural Resources and there are maps at the refuge listing these areas.

Special Visitor Use Areas

Currently this would include Bayley Lake, Potter's Pond, McDowell Lake, Bear Creek Campground, Cottonwood Campground, River Camp, and Horse Camp.

Land Status

OPERATIONS

See attached map with locations on it for helispots, water sources, safety zones, and staging area locations.

LOGISTICS

All of the logistical needs will be covered by the Colville National Forest Dispatch office. In the event of an extended attack project fire an expanded dispatch will be set up at the dispatch office.

APPENDIX L: PRESCRIPTIVE SUPPRESSION CRITERIA

Refuge: _____ Fire Number: _____

Sub Station: _____ Fire Number: _____

Name of Area: _____ Unit No. _____

Maximum Manageable Area (MMA in acres): _____ Perimeter Of Burn: _____

Legal Description: Lat. _____ Long. _____ T ____ R ____ S ____

County: _____

The Prescribed Fire Burn Boss/Specialist must participate in the development of this plan.

I. GENERAL DESCRIPTION OF BURN UNIT

Physical Features and Vegetation Cover Types (Species, height, density, etc.):

Primary Resource Objectives of Unit (Be specific. These are management goals):

1)
2)
3)
4)

Objectives of Fire (Be specific. These are different than management goals):

1)
2)
3)

4)

Acceptable Range of Results (Area burned vs. unburned, scorch height, percent kill of a species, range of litter removed, etc.):

1)
2)
3)
4)

III. PLANNING AND ACTIONS

Complexity Analysis Results:

Site preparation (What, when, who & how. Should be done with Burn Boss):

Weather information required (who, what, when, where, how, and how much):

Safety considerations and protection of sensitive features (Adjacent lands, visitors, facilities, terrain, etc., and needed actions. Include buffer and safety zones. Be specific, indicate on a burn unit map. Map should be a USGS quadrangle if possible, so ridges, washes, water, trails, etc. can be identified.)

Special Safety Precautions Needing Attention (Aerial ignition, aircraft, ignition from boat, etc.):

Media Contacts (Radio stations, newspaper, etc., list with telephone numbers):

Special Constraints and Considerations (Should be discussed with Burn Boss):

Communication and Coordination on the Burn (Who will have radios, frequencies to be used, who will coordinate various activities.):

IV. RX FIRE PARAMETERS CHART

If any item below exceeds to listed acceptable limit the fire will be suppressed

FBPS Fuel Model __	Acceptable Upper Limit	Actual
Temperature		
Relative Humidity		
Wind Speed (20' forecast)		
Wind Speed (mid-flame)		
Wind Direction		
Cloud Cover (%)		
ENVIRONMENTAL CONDITIONS		
Soil Moisture/KBDI		
1 hr. Fuel Moisture		
10 hr. FM		
100 hr. FM		
Woody Live Fuel Moisture		
Herb. Live Fuel Moisture		
Litter/Duff Moisture		
FIRE BEHAVIOR		
Type of Fire (H,B,F)		
Rate of Spread		
Fireline Intensity		
Flame Length		
Energy Release Component		

NFDRS Fuel Model _____		

Cumulative effects of weather and drought on fire behavior:
Suppression Action: Explain and delineate plans on map of incident.

Fire Organization: See Section VII. Crew and Equipment Assignments. All personnel and their assignments must be listed. All personnel must be qualified for the positions they will fill.

Other: If portions of the incident require backfiring or burning out as a part of the suppression strategy, especially under conditions which exceed those listed in the Parameters Chart above, detail here.

Incident Monitoring: Discuss monitoring procedure and frequency to determine if conditions for the fire are within prescription to meet management objectives and goals.

V. SMOKE MANAGEMENT

Make any Smoke Management Plan an attachment.

Permits required (who, when): It is Service policy to adhere to State smoke management regulatory guidelines

Distance and Direction from Smoke Sensitive Area(s):

Necessary Transport Wind Direction, Speed and Mixing Height (Explain how this information will be obtained and used):

Visibility Hazard(s) (Roads, airports, etc.):

Actions to Reduce Visibility Hazard(s):

Residual Smoke Problems (Measures to reduce problem, i.e., rapid and complete mop-up, mop-up of certain fuels, specific fuel moistures, time of day, etc.):

Particulate emissions in Tons/Acre and how calculated (This should be filled in after the burn so more precise acreage figures can be used):

VI. FUNDING AND PERSONNEL (INCIDENT ACTION PLAN)

Activity Code: _____

Costs

	Equipment & Supplies	Labor	Overtime	Staff Days	Total Cost
Administration (planning, permits, etc.)					
Site Preparation					
Ignition & Control					
Travel/Per Diem					
Total					

VII. BURN-DAY ACTIVITIES

Public/Media Contacts on Burn Day (List with telephone numbers):

Crew & Equipment Assignments (List all personnel, equipment needed, and assignments. The following is not an all inclusive list for what you may need.)

Burn Boss/Manager -
Ignition Specialist -
Ignition Crew -
Holding Specialist -
Holding Crew -
Aircraft Manager -
FWBS -
Dispatcher-
Other -

Crew Briefing Points (Communications, hazards, equipment, water sources, escape fire actions, etc. To be done by Burn Boss. Refer to Safety Considerations in Planning Actions and points listed below):

Ignition Technique (Methods, how, where, who, and sequence. Go over what was submitted in Section IV and any changes needed for the present conditions.) Attach ignition sequencing map if necessary:

Personnel Escape Plan:

Special Safety Requirements:

Go-No-Go Checklist: (sample attached at end of prescription)

Holding and Control:

Critical Control Problems:

Water Refill Points:

Other:

Contingency Plan for Escaped Fire (Are there crews standing by to initial attack or will people doing other jobs be called upon to do initial attack, who must be called in case of an escape, what radio frequencies will be used, etc.)

Mop Up and Patrol:

Rehabilitation Needs:

DI 1202 Submission Date:

Special Problems:

Go-No-Go Checklist

YES ___ NO ___ Do you have an APPROVED prescribed fire plan?

YES ___ NO ___ Are ALL fire prescription elements met?

YES ___ NO ___ Are ALL smoke management specifications met?

YES ___ NO ___ Are ALL permits and clearances obtained?

YES ___ NO ___ Has a spot weather forecast been obtained and is it favorable?

YES ___ NO ___ Are ALL required personnel in the prescribed fire plan on-site?

YES ___ NO ___ Has the contingency planning process adequately considered fuels adjacent to and within a reasonable proximity to the burn area?

YES ___ NO _____ Have ALL personnel been briefed on the project objectives and their assignment?

YES ___ NO ___ Have ALL personnel been briefed on safety hazards, escape routes, and safety zones?

YES ___ NO ___ Have ALL the required notifications been made?

YES ___ NO ___ Are the on-site holding forces adequate for containment under the expected conditions?

YES ___ NO ___ In YOUR OPINION, can the prescribed fire meet the planned objectives, and can it be carried out according to the approved plan?

I certify that I have reviewed the burn objectives and have reviewed and in agreement that the Prescribed Fire Complexity Analysis is correct, and that all of the above questions were answered "YES."

_____ _____

Prescribed Fire Burn Boss Date

_____ _____

Refuge Manager Date

Proceed with test fire, and document the current conditions, location, and results.

APPENDIX M: WILDLAND FIRE SITUATION ANALYSIS (WFSA)

APPENDIX N: CURRENT FIRE MANAGEMENT ORGANIZATION

All service manual requirements of 6 RM 7.13 and the Fish and Wildlife Service Policy Manual Part 621 Fire Management, will be adhered to for the training and qualifications of Refuge personnel.

The Service has adopted the National Wildfire Coordinating Group (NWCG) Interagency WildlandFire Qualifications Guide 310-1 to identify minimum national standards for training, experience and physical fitness for positions under the Incident Command System (ICS).

Basic requirements for all employees involved in fire activities will be S-130, S-190, and Standards for Survival.

Additional Training will be scheduled on a case by case basis for all personnel involved in fire activities. Individual training plans will be developed according to position, current qualifications, and anticipated future needs.

Position Responsibilities:

***Fire Management Officer*:** Oversees entire Fire Management Program including planning, budget, personnel, training, policy implementation, qualifications, preparedness, equipment purchase and maintenance, suppression, prescribed fire, prevention, safety and

coordination with other agencies.

Prescribed Fire Specialist: Primary responsibility is to plan and carry out all aspects of prescribed burning operations with oversight and consultation provided by the FMO. Incumbent will also be closely involved with various aspects of fire suppression operations.

Engine Boss (Supervisory): Duties include overseeing the daily operations of both engine crews including preparation of burn units, maintenance of equipment, ordering of equipment, physical fitness routines, crew training and currency, preparedness of crew, engines and other fire apparatus, fire prevention, prescribed burning operations and suppression.

Engine Boss (Lead): Duties include overseeing daily operations of fire crew personnel including preparation of burning units, maintenance of equipment, physical fitness routines, crew training and currency, preparedness of crew, engines and other fire apparatus, fire prevention, prescribed burning operations and suppression.

Assistant Engine Boss: Oversees engine and crew assigned to him/her. Participates in all prescribed fire and suppression operations.

Firefighter: Serves as a member of an engine crew. Participates in all prescribed fire and suppression operations.

For other key contacts and related fire personnel see Appendix A, Little Pend Oreille NWR Fire Dispatch Plan.

APPENDIX O: NORMAL UNIT STRENGTH (NUS)/ EQUIPMENT INVENTORY

Little Pend Oreille Fire Cache Inventory

LOCATION	ITEM	QUANTITY	S/N	COST
FIRE CACHE	EXTRA LARGE FIRE SHIRTS	4		
FIRE CACHE	LARGE FIRE SHIRTS	5		
FIRE CACHE	MEDIUM FIRE SHIRTS	7		
FIRE CACHE	SMALL FIRE SHIRTS	3		
FIRE CACHE	36 X 34 FIRE PANTS PAIRS	10		
FIRE CACHE	34 X 34 FIRE PANTS PAIRS	11		
FIRE CACHE	32 X 34 FIRE PANTS PAIRS	7		
FIRE CACHE	RED DUFFLE BAGS	2		
FIRE CACHE	CHEST HARNESSES (RADIO HOLDERS)	3		
FIRE CACHE	CHAIN SAW BAR COVERS	4		
FIRE CACHE	TENTS	2		
FIRE CACHE	BLOW-UP MATTRESSES	3		
FIRE CACHE	GAS CAN	2		
FIRE CACHE	HOMELITE 9,000	1	S/NHS1330068	
FIRE CACHE	HOSEWASHER	1		
FIRE CACHE	MARK III PUMP	1	S/N 95-210591	
FIRE CACHE	STIHL P840	1	SN-328097035	
FIRE CACHE	PULASKI	3		
FIRE CACHE	COMBI TOOLS	2		
FIRE CACHE	BRUSH RAKE	1		
FIRE CACHE	ROUND POINT SHOVELS	3		
FIRE CACHE	ROLLS OF 50 FT 1 ½	16		

Little Pend Oreille Fire Cache Inventory

FIRE CACHE	ROLLS OF 100FT 1 ½	13
FIRE CACHE	ROLLS OF 50FT 1"	2
FIRE CACHE	LENGTHS OF 1 ½ HARD SUCTION	2
FIRE CACHE	LENGTHS OF 2 ½" HARD SUCTION	3
FIRE CACHE	BOXES OF EAR PLUGS	2
FIRE CACHE	PAIRS OF SAFETY GOGGLES	10
FIRE CACHE	BELT WEATHER KIT	1
FIRE CACHE	PAIR OF FIRE GOGGLES	2
FIRE CACHE	FIRE SHELTERS	3
FIRE CACHE	EXTRA FIRE SHELTER HOLDERS	7
FIRE CACHE	HELMET SHROUDS	4
FIRE CACHE	WATER BOTTLES	11
FIRE CACHE	WATER BOTTLE	31
FIRE CACHE	LANTERN BATTERIES	9
FIRE CACHE	BOX D CELL BATTERIES	1
FIRE CACHE	BOX AA BATTERIES	2
FIRE CACHE	CASES OF MRES	2
FIRE CACHE	FIELD FIRST AID KITS	3
FIRE CACHE	PAIR OF SMALL GLOVES	2
FIRE CACHE	PAIR OF MEDIUM GLOVES	9
FIRE CACHE	PAIRS OF LARGE	20 Gloves
FIRE CACHE	PAIR OF LARGE GLOVES	3
FIRE CACHE	COLEMAN LANTERN	1

Little Pend Oreille Fire Cache Inventory

FIRE CACHE	COLEMAN STOVE	1	
FIRE CACHE	EAGLE FIRE PACK	1	
FIRE CACHE	BACKPACK	1	
FIRE CACHE	FIELD PACKS	5	
FIRE CACHE	BACKPACK PUMP	1	
ENGINE 1	EXTRA LARGE FIRE SHIRT	1	
ENGINE 1	GOGGLES	1	
ENGINE 1	PAIR OF EXTRA LARGE GLOVES	1	
ENGINE 1	FIRE SHELTER	1	
ENGINE 1	FIRST AID KIT	1	
ENGINE 1	HEAD LAMP OLD STYLE	1	
ENGINE 1	FIELD PACK	1	
ENGINE 1	STIHL 026 CHAIN SAW	1	237724179
ENGINE 1	SAW KIT	1	
ENGINE 1	PAIR CHAPS	2	
ENGINE 1	STIHL 036 SAW BAR GUARD	1	238738837
ENGINE 1	ONE GALLON CANTEENS	21	
ENGINE 1	LENGTHS OF 50FT 1" HOSE	5	
ENGINE 1	LENGTHS OF 100FT 1" HOSE	1	
ENGINE 1	LENGTHS OF 50FT 1 ½” HOSE	4	
ENGINE 1	LENGTHS OF 100FT 1 ½” HOSE	3	
ENGINE 1	ROUND POINT SHOVELS	2	
ENGINE 1	McLOUDS RAKE	2	

Little Pend Oreille Fire Cache Inventory

ENGINE 1	BRUSH RAKE	1
ENGINE 1	PULASKI	1
ENGINE 1	FALLING AXE	1
ENGINE 1	PRY BAR	
ENGINE 1	CLAW BARS	2
ENGINE 1	ONE GAL. GAS CAN	1
ENGINE 1	DOLMAR	1
ENGINE 1	DRIP TORCH	1
FIRE CACHE	1 ½” GATED WYE’S	2
FIRE CACHE	1" GATED WYE’S	1
FIRE CACHE	2 ½“ DOUBLE FEMALE	1
FIRE CACHE	2 ½” DOUBLE MALE	1
FIRE CACHE	1 ½” DOUBLE FEMALE	1
FIRE CACHE	1 ½” DOUBLE MALE	1
FIRE CACHE	1" TO 3/4" REDUCERS	1
FIRE CACHE	1 ½ “ TO 1" REDUCER	5
FIRE CACHE	GRAVITY SOCK	1
FIRE CACHE	COLLAPSIBLE BUCKET	1
FIRE CACHE	3/4" LINE NOZZLES	2
FIRE CACHE	FORESTER NOZZLE	1
FIRE CACHE	1" FOG NOZZLE	1
FIRE CACHE	1 ½" FOG NOZZLE	2
FIRE CACHE	PISTOL GRIP UBBLE CUP	1
FIRE CACHE	HYDRANT WRENCH	1

Little Pend Oreille Fire Cache Inventory

FIRE CACHE	TOOL BOX	1	
FIRE CACHE	1 ½" IN LINE T'S	3	
FIRE CACHE	HOSE CLAMP	1	
FIRE CACHE	SPANNER WRENCHES	2	
FIRE CACHE	1 ½" SHUT OFF'S	2	
FIRE CACHE	1 SHUT OFF	1	
	CHAINSAWS		
Fire Cache	Stihl	023	227772718
Fire Cache	Stihl	046	135026227
Fire Cache	Stihl	038	334634665
Fire Cache	Stihl	038	334634659
Fire Cache	Stihl	026	
Fire Cache	Stihl	036	

APPENDIX P: WILD AND PRESCRIBED FIRE HISTORY

1939	No Data	
1940	100 acres burned in the vicinity of Winslow Camp.	
1941		
1942	TS 1910 acres.	
1943	TS 1200 acres.	5 fires within boundary. 4 by lightning, 1 by smoking
1944	TS 1548 acres.	1 lightning fire 1/16 acre T34NR41ES13SWSW
1945	TS 400 acres.	6 fires, 5 lightning, 1 smoking storm Aug. 8th started the 5. The largest 1 ½ acre.
1946	TS 960 acres.	2 fires. 1 July 14th .07 acre caused by smoker. Other fire caused by hunters warming fire was 10 acres.
1947	TS 400 acres.	2 fires caused by lightning. 1 fire at post treating tank.
1948		6 fires. Location of one was T36NR41ES27NENE
1949	Started a prescribed burn program. Goal was to burn 100 acres a year to improve browse.	
1950	350 acre Deer Park slash burn. TS 240 acres.	
1951	TS 350 acres.	
1952	25 acres thinned, 15 acres burned. TS 280 acres.	1 fire, lightning. T36NR41ES36
1953	TS 780 acres..	1 fire Oct. 23rd south slope Winslow Ridge 1/4 mile northwest of McDowell Lk.
1954	22 acres burned.	
1955		1 fire July 24th. T34NR41ES15NWNW

1956		3 fires. 2 lightning July 14th and Aug. 15. T34NR40ES21SW T34NR40ES15NW. Other fire by smoker Sept 23. T34NR41ES12NWSE
1957	20 acres burned.	
1958	75 acres thinned, 35 acres burned.	2 fires. July 9th lightning. T34NR40ES17 1 acre. Other was a campfire July 25th.
1959	106 acres burned.	1 fire by lightning Aug. 14th. T34NR40ES22NWNE
1960	16 acres burned.	
1961	3 acres burned.	3 fires by lightning. July 17th T34NR40ES3SENE .02 acre July 17 3.5 acres no location T34NR41ES24SWNE .1 acre on July 16th.
1962	112 acres burned.	I fire July 26th by lightning. T34NR41ES35/36NE
1963		
1964	18 acres burned for browse and other additional acres of slash piles.	
1965	Starvation Flat Project. Logged 966 acres on Starvation Flats and 420 acres at Durlan Springs. TS 536 acres.	
1966	42 acres for timber sales. TS 746 acres.	
1967	420 acres burned at Durlan Springs and 37 acres for other sales. TS 1032 acres.	
1968	10 acres. TS 146 acres.	
1969	45 acres. TS 1589 acres.	
	531 acres burned at Starvation	

1970	Flats.	
1971	50 acres. TS 660 acres.	
1972	50 acres. TS 319 acres.	
1973	109 acres. TS 540 acres.	
1974	30 acres. TS 258 acres.	
1975		
1976	30 acres. TS 334 acres.	
1977	18 acres burned. Chapman burn.	
1978		
1979		
1980	30 acres. TS 427 acres.	
1981	150 acres. TS 356 acres.	
1982		
1983		
1984		
1985		
1986	TS 175 acres.	
1987		
1988		
1990		
1991		
1992		

APPENDIX Q: STEP UP PLAN

The purpose of this Plan is to provide Refuge staff, particularly fire personnel, the guidance necessary to maintain an appropriate level of readiness for initial attack suppression operations. Furthermore, it may be used to provide a basis on which to justify Emergency Pre-suppression funding as a bridge to Severity Funding.

It is not intended that the indices shown below be the sole justification for requesting emergency support money since many other factors related to available resources, seasons, local conditions and weather may have to be considered.

This step-up plan uses weather data collected from the Colville Airport. The Washington Department of Natural Resources maintains this weather station. A data set from 1970 to the present exists for this station. KCFAST was used to download the data onto a PC and then FIREFAMILY Plus was used to analyze the data. An analysis of fuel model C resulted in the following step-up plan. A cumulative frequency distribution on the burning index yields staffing classes. The 97th percentile establishes staffing class 5, the 90th percentile establishes staffing class 4. Staffing classes 2 and 3 are based upon 1/4 and ½ of the 90th percentile value, respectively. Staffing class 1 is the remaining days.

Staffing Class	Burning Index	Actions
1-Low	0-5	Working hours for all fire personnel; 0730-1600. Service uniforms may be worn for routine work activities. Initial attack packs kept with fire personnel. Weekly equipment checks on engines and pumps. Cache to be cleaned and maintained weekly. Maintain Prevention Signs.
2-Moderate	6-11	Working hours for all fire personnel; 0730-1600. Service uniforms may be worn for routine work activities. Initial attack packs kept with all fire personnel. Weekly equipment checks on engines and pumps. Cache to be cleaned and maintained weekly. Inspect refuge vehicles for inclusion of serviceable fire tools. Maintain Prevention Signs.
3-High	12-24	Working hours for all fire personnel; 0730-1600 (or as required on a daily basis). PPE worn when on duty. Initial attack packs kept with all fire personnel. Daily equipment checks on engines and pumps. Cache to be cleaned and maintained weekly. Raise to level 4 for national holidays (Memorial Day, Independence Day, Labor Day).

		Maintain Prevention Signs.
4-Very High	25-33	Working hours for all fire personnel; 0930-1800 (or as required on a daily basis). PPE worn when on duty. Initial attack packs kept with all fire personnel. Daily equipment checks on engines and pumps. Cache to be cleaned and maintained weekly. Raise to level 5 for national holidays (Memorial Day, Independence Day, Labor Day). Maintain Prevention Signs. Aerial Detection Flights for lightning.
5-Extreme	34 and greater	Working hours for all fire personnel; 0900-2000 (or as required on a daily basis). PPE worn when on duty. Intial attack packs kept with all fire personnel. Daily equipment checks on engines and pumps. Cache to be cleaned and maintained weekly. Project leader will consider closure of refuge roads. FMO to prepare fire complexity analysis and WFSA by 1600 each day. Request emergency preparedness support from Regional office. Maintain Prevention Signs. Aerail Detection Flights for lightning.

APPENDIX R: EMPLOYEE QUALIFICATIONS

Steve Fowler:

Keith Satterfield: DIVS, FBAN, FALC, ICT3, RXB1

Dan Brauner: STLC, ENGB

Jerry Cline:FFT2

APPENDIX S: COMMUNICATIONS PLAN

Bendix-King EPH Radio Frequencies Group 1

Channel	Rx Frequency	C Guard	Tx Frequency	C Guard	Owner
1	164.625		164.625		FWS 1
2	163.150		163.150		FWS 2
3	170.550	146.2	170.550	146.2	CNF REP 1
4	170.550		169.575	146.2	CNF REP 2
5	170.125		170.125		CNF Project
6	164.9625		164.9625		Fire Tactical
7	151.415		151.415		DNR Common
8	164.775	156.7	166.275	156.7	TBL Repeater
9	164.775		164.775		TBL NWR
10	166.375		166.975		NPS Repeater
11	122.925		122.925		AIR to GRD
12	122.900		122.900		AIRNET
13	153.965	179.9	153.965	179.9	Sheriff
14	162.400				NOAA WX