WILDLAND FIRE MANAGEMENT PLAN

SONNY BONO SALTON SEA NATIONAL WILDLIFE REFUGE

2001

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TABLE OF CONTENTS

TABLES

FIGURES

EXECUTIVE SUMMARY

When approved, this document will become the Sonny Bono Salton Sea National Wildlife Refuge's (NWR) Fire Management Plan. Major components include:

- Updated policy for prescribed fires at Sonny Bono Salton Sea NWR.
- Manages wildland fire in accordance with the Habitat Management Plan..
- Format changes under the direction of Fire Management Handbook.
- Establishes a Prescribed Fire Program to manage critical habitat and reduce hazardous fuels.
- Continues a program of full suppression on all wildland fires. All fires will be appropriately suppressed.

This plan is written to provide guidelines for appropriate suppression and prescribed fire programs at Sonny Bono Salton Sea NWR. Prescribed fires may be used to reduce hazard fuels, restore the natural processes and vitality of ecosystems, improve wildlife habitat, remove or reduce non-native species, and/or conduct research. Wildland Fire Use will not be used on this refuge.

INTRODUCTION

There is currently no Comprehensive Management Plan for the Sonny Bono Salton Sea NWR. Management objectives have been based on the Habitat Management Plan for the Refuge.

The Refuge was established "as a Refuge and breeding ground for birds and wild animals" in 1930. Originally, it included approximately 35,000 acres. Nearly 60 percent of the original acreage was open saline lake with the balance comprised of shoreline alkali flats, freshwater wetlands, native desert scrub and upland (farm fields). Due to the inflow of agricultural effluent and a subsequent rise in the level of the Salton Sea, all of the original Refuge area has been inundated. In 1947, 24,000 acres were leased from the Imperial Irrigation District (IID) and divided between three agencies: California Department of Fish and Game (CDFG), U.S. Navy, and U.S. Fish and Wildlife Service (USFWS). Of this original acreage, the Refuge received 640 acres located near Refuge Headquarters. Most of the current Refuge acreage of 47,827 acres has been flooded by a continued rise in the level of the Sea. At present, 2,500 acres of the Refuge is dry ground, with about 2,200 acres suitable for farming and wetland development. Most of the Refuge, about 2,300 acres is leased from IID, California Energy Corporation, or California Department of Fish and Game. The lease status has no effect on prescribed burning or fire suppression activities as the Refuge has sole management responsibilities of leased lands.

This plan will meet the requirements of the National Environmental Protection Act (NEPA) and the National Historic Preservation Act (NHPA). A Categorical Exclusion was completed for this plan; a copy of the Environmental Action Statement is in Appendix C as well as an informal Intra Service Section 7 Consultation form. The FMP is written as an operational guide for

managing the Refuge's wildland fire and prescribed fire programs. It defines levels of protection needed to help ensure safety, protect facilities and resources, and restore and perpetuate natural processes, given current understanding of the Refuge relationships in natural ecosystems. It is written to comply with a Service-wide requirement that Refuges with burnable vegetation develop a fire management plan (620 DM 1).

The major objectives of this plan are:

- All wildland fires will be suppressed using an appropriate suppression strategy which considers safety, property, natural resources and economics.
- Utilize prescribed fire to accomplish habitat management goals.
- Monitor the use of prescribed fire in it's ability to meet habitat management goals. This applies particularly to the use of fire to manage habitat of the endangered Yuma clapper rail.

COMPLIANCE WITH USFWS POLICY

This fire management plan will adhere to the U.S. Fish and Wildlife Service policy and regulations pertaining to fire management activities and will support the enabling legislation of the Sonny Bono Salton Sea National Wildlife Refuge which is:

> "..as a Refuge and breeding ground for birds and wild animals." Executive Order 5498 dated November 25, 1930. For lands acquired under the Migratory Bird Treaty Act (16USC Section 695) the purpose of acquisition is "..for use as an inviolate sanctuary, or for any other management purpose, for migratory birds." For lands acquired under the Lea Act (16USC Section 695) the purpose of acquisition is "..for the management and control of migratory waterfowl and other wildlife." For lands leased from the State of California, Department of Fish and Game the purpose of acquisition is "..primarily for the production of crops to provide wintering feed for waterfowl and to aid and assist in the control of depredation by waterfowl to commercial crops in the area."

The Department Manual, DM 910 (USDI 1997) states the following regarding wildland fires:

> Wildfires may result in loss of life, have detrimental impacts upon natural resources, and damage to or destruction of man-made developments. However, the use of fire under carefully defined conditions is to be a valuable tool in wildland management. Therefore, all wildfires within the Department will be classified either as wildfire or as prescribed fires.
>
> Wildfires, whether on lands administered by the Department or adjacent thereto, which threaten life, man-made structures, or are determined to be a threat to the natural resources or the facilities under the Department's jurisdiction, will be considered emergencies and their suppression given priority over normal Departmental programs.
>
> Bureaus will give the highest priority to preventing the disaster fire - the situation in which a wildfire causes damage of such magnitude as to impact management objectives and/or socio-economic conditions of an area. However, no wildfire situation, with the possible exception of threat to human survival, requires the exposure of firefighters to life threatening situations.
>
> Within the framework of management objective and plans, overall wildfire damage will be held to the minimum possible giving full consideration to (1) an aggressive fire prevention program; (2) the least expenditure of public funds for effective suppression; (3) the methods of suppression least damaging to resources and the environment; and (4) the integration of cooperative suppression actions by agencies of the Department among themselves or with other qualified suppression organizations.
>
> Prescribed fires...may be used to achieve agency land or resource management objectives as defined in the fire management plans....

Prescribed fires will be conducted only when the following conditions are met:

a. Conducted by qualified personnel under written prescriptions.
b. Monitored to assure they remain within prescription.

Prescribed fires that exceed the limits of an approved prescribed fire plan will be reclassified as a wildfire. Once classified a wildfire, the fire will be suppressed and will not be returned to prescribed fire status.

The authority for funding (normal fire year programming) and all emergency fire accounts is found in the following authorities:

Section 102 of the General Provisions of the Department of Interior's annual Appropriations Bill provides the authority under which appropriated monies can be expended or transferred to fund expenditures arising from the emergency prevention and suppression of wildland fire.

P.L. 101-121, Department of the Interior and Related Agencies Appropriation Act of 1990, established the funding mechanism for normal year expenditures of funds for fire management purposes.

31 US Code 665(E)(1)(B) provides the authority to exceed appropriations due to wildland fire management activities involving the safety of human life and protection of property.

Authorities for procurement and administrative activities necessary to support wildland fire suppression missions are contained in the Interagency Fire Business Management Handbook.

The Reciprocal Fire Protection Act of May 27, 1955 (42 U.S.C. 815a; 69Stat 66) provides Authorities to enter into agreements with other Federal bureaus and agencies; with state, county, and municipal governments; and with private companies, groups, corporations, and individuals regarding fire activities.
Authority for interagency agreements is found in “Interagency Agreement between the Bureau of Land Management, Bureau of Indian Affairs, National Park Service, US Fish and Wildlife Service of the United States Department of the Interior and the Forest Service of the United States Department of Agriculture” (1996).

FIRE MANAGEMENT OBJECTIVES

Sonny Bono Salton Sea NWR provides habitat for over 384 bird species, 41 mammal species, and many reptiles and amphibians. The Refuge winters up to 30,000 snow, Ross' and Canada geese, and 60,000 ducks daily from November through February. Marsh birds and shorebirds account for more than six million use-days each year. Endangered species observed on the Refuge include the southern bald eagle, peregrine falcon, California brown pelican, Yuma clapper rail, and desert pupfish. A significant Yuma clapper rail population nests on the Refuge. Nearly 50 artificial nest burrows are currently established on Refuge lands and utilized by burrowing owls, a species whose status is of increasing concern in western North America. Additionally, a significant nesting colony of gull-billed terns and black skimmers was established on the Refuge headquarters ponds in 1995. Sensitive species using the Refuge include the fulvous whistling-duck, wood stork, long-billed curlew, mountain plover, western snowy plover, black rail and white-faced ibis.

Habitat management emphasis is placed on the maintenance and improvement of wintering goose and duck habitat, and the reduction of waterfowl depredations to adjacent crop lands. Protection and enhancement of nesting habitat for the endangered Yuma clapper rail, maintenance of habitat for nesting and migratory populations of sensitive species and other marsh and shorebirds are also major objectives.

The fire management plan objectives are:

- To protect life, property and natural resources from unwanted fire.
- Use prescribed fire to accomplish resource management objectives within the context of a natural ecological process.
- Develop and implement a process of collection, analysis and application of fire management information needed for sound management decisions.
- Use prescribed fire to manage and enhance the habitat as research and experience demonstrates the need.

DESCRIPTION OF REFUGE

The Sonny Bono Salton Sea NWR is located 40 miles north of the Mexican border at the southern end of the Salton Sea in California's Imperial Valley. Situated in the Pacific Flyway (Figure 1). Sonny Bono Salton Sea is the only Refuge located below sea level. Because of its southern latitude, minus 226-foot elevation, and location in the Colorado Zone of the Sonoran Desert, the Refuge experiences some of the highest temperatures in the nation. Daily temperatures from May to October generally exceed 100^{o}F with temperatures of 120^{o}F recorded yearly.

CULTURAL RESOURCES

Humans have been utilizing the area for some 10,000 years. Agricultural practices of Colorado River cultures spread throughout the area during late prehistoric times, after A.D. 1000; and, in just recent historic times, large areas have been converted to irrigated agriculture. The recently formed Salton Sea has become a mecca for retirement, recreation, and development. Contemporary attitudes and beliefs are varied; lifestyle is rural. The international border and large Hispanic populations contribute to cultural diversity; Hispanic populations comprise much of the agricultural, often migrant, workforce. The economy emphasizes agriculture, government employment, and recreation.

Presently the acres managed by the Refuge either leased or held in fee title, have been intensively farmed for over 60 years. The probability of previously uncovered cultural resources remaining on the Refuge are minimal to nonexistent.

FISH AND WILDLIFE

The Sonny Bono Salton Sea NWR is geographically located within the southwestern edge of the Colorado zone of the Sonoran Desert biome. This location, coupled with an elevation of -226 feet below sea level results in extremely low annual precipitation and extremely high day time temperatures. Despite the harsh environmental conditions, the Salton Sea supports one of the most diverse avian compositions in the United States as well as a host of other wildlife species.

Habitat diversity on Refuge lands provides for the needs of resident wildlife species as well as numerous seasonal residents and migrants of the Pacific Flyway. A total of 384 bird species have been recorded at the Sonny Bono Salton Sea NWR and at least 93 species have nested on the Refuge. In addition, 41 species of mammals, 18 species of reptiles, four species of amphibians and 15 fish species have been identified on the area. Appendix M provides a complete list of resources of concern for the Refuge.

State and federally listed endangered species which are known to have occurred on the Refuge include the California brown pelican (*Pelecanus occidentalis californicus*), southern bald eagle (*Haliaeetus leucocephalus*), peregrine falcon (*Falco peregrinus*), Yuma clapper rail (*Rallus longirostris yumanensis*), wood stork (*Mycteria americana*), and desert pupfish (*Cyprinodon macularius*). The Aleutian Canada goose (*Branta canadensis leucopareia*) and the California least tern (*Sterna antillarum*) are known to occur on the Refuge at times.

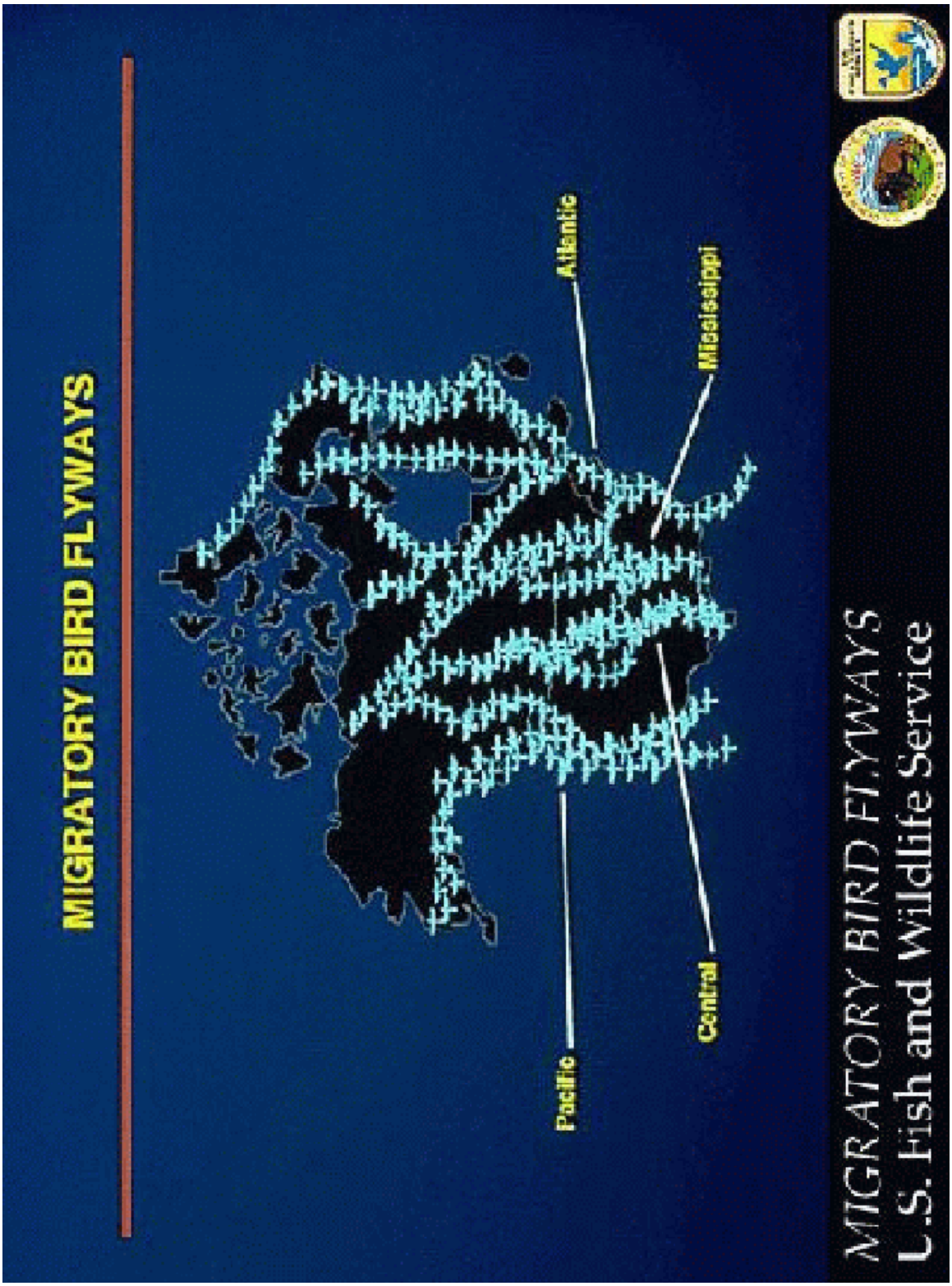
Much of the Sonny Bono Salton Sea NWR is devoted to providing habitat and forage for wintering waterfowl. At least 25 species of waterfowl used the Sea, adjacent freshwater ponds and agricultural fields during 1997-98. Most common species included snow and Ross' geese, green-winged teal, northern shoveler, American wigeon and northern pintail. However, ruddy ducks are the most common waterfowl species on the Sea during the winter months which have been sighted as representing up to 49% of the total number of this species in the Pacific Flyway.

Large numbers of marsh and water birds migrate to and reside at the Salton Sea. Nesting species include: pied-billed grebe, Clark's and Western grebe, great blue heron, green-backed heron, black-crowned night heron, great egret, snowy egret, cattle egret, black rail, Yuma clapper rail, sora and Virginia rail, least and American bittern.

The Sonny Bono Salton Sea NWR is of regional significance to shorebirds, providing important staging and breeding habitat for numerous species. Shorebird migrations through the Salton Sea can number over 105,000 birds providing one of the most important habitats for shorebirds on the Pacific Flyway and perhaps the most important staging area in the southwest United States. Refuge ponds are managed to create water depths suitable for the large diversity of shorebirds visiting the area by staged water draw downs in the spring and early flooding in the fall.

A portion of two river deltas, the New and Alamo Rivers, lies within the boundary of the Sonny Bono Salton Sea NWR. These river deltas consist of dense vegetation comprised of salt cedar (*Tamarix pentandra)* and Phragmites (*Phragmites phragmites*). This mix of dense vegetation provides extensive roosting and nesting habitat for several species of egrets including cattle egret (*Bubulcus ibis*), snowy egret (*Egretta thula*), and great egret (*Ardea alba*) as well as herons including green heron (*Butorides virescens*), black-crowned night heron (*Nycticorax nycticorax*), and great blue herons (*Ardea herodias*).

Figure 1: Pacific Flyway



VEGETATION

Vegetation on the Refuge consists of managed wetlands, Colorado Desert alkali sink scrub and agricultural units. Wetland management often entails growing wetland plant species through periodic "flash" flooding in the spring and summer months. This moist soil management is geared towards the propagation of plants favorable for food and cover such as alkali bulrush (*Scirpus robustus*), watergrass *(Echinochloa crusgalli*), sprangle-top grass (*Leptochloa spp*.), swamp timothy (*Heleochloa schoenoides*), wigeongrass *(Ruppia maritima*) and cattail *(Typha latifolia*). Salt cedar (*Tamarix pentandra), Phragmites (Phragmites phragmites)* and Sesbania (*Sesbania exalata*) are problem weed species which often accompany moist soil management on the Refuge. Appendix M provides a complete list of resources of concern for the Refuge.

Native desert species such as *Atriplex spp. , Allenrolfea occidentalis* and *Pluchea sericea* are typical of the alkali sink scrub areas on and around the Refuge. Scattered Honey Mesquite (*Prosopis juliflora glandulosa*) and screw bean (*Prosopis pubescens*) trees are present both naturally and in planted tree rows.

Agricultural units on the Refuge are managed utilizing cooperative farmers for a large portion of the Refuge acreage. Crops from October to March are managed to provide browse for wintering white geese, typically winter wheat, barley or rye grass. Crops from April to September are grown by and for the cooperator consist of sudan grass and alfalfa.

WATER RESOURCES

The Sonny Bono Salton Sea NWR lies in the southern portion of the Salton Sea, California's largest lake. The Salton Sea encompasses some 380 square miles and stretches 35 miles in length. Approximately 43,000 acres of the Refuge lie beneath the Salton Sea where lands were flooded by rising water levels in the 1940's. The Salton Sea is a closed basin saline lake. The only outlet for water is through evaporative processes. The Salton Sea basin was a prehistoric extension of the Gulf of California. It forms a natural sump for the 4,500 square mile Imperial Valley and northern Baja California with its primary sources being agricultural drainage. The salinity of the Sea has steadily increased since its formation at the turn of the century. In 1950, it was 35 parts per thousand (ppt), equaling the Pacific Ocean. By the end of 1992 it had risen to 46 ppt, almost thirty two percent saltier than the Pacific Ocean. Currently the salinity is recorded at 43 ppt. The salinity will probably rise again as normal precipitation levels return along with annual evaporation of ten feet per year. The New and Alamo Rivers traverse the Refuge. Both provide freshwater inflow to the Sea. The New River's source is urban effluent and agricultural drainage from Baja California and its capitol city of Mexicali as well as agricultural drainage from the Imperial Valley. The Alamo River's source is agricultural drainage from the Imperial Valley and Baja California.

The water in the Salton Sea is too salty for use in crop production or moist soil management purposes. Freshwater environments are needed to support the large species diversity using the Salton Sea area and to fulfill Refuge mandates. Freshwater sources are limited to the Colorado River and obtained through a series of canals emanating from Imperial Dam. The Refuge has no direct water rights, rather it must purchase water directly from the Imperial Irrigation District for all freshwater water management activities as well as for it's domestic uses.

Water has always been available to the Refuge as needed, although recent water transfer negotiations between the Imperial Irrigation District and the City of San Diego have raised questions on availability of water in the future.

Water is applied to wetland units using gravity flow from a series of delivery ditches. It is removed from these areas mostly through a series of agricultural drains which ultimately empty into the Salton Sea. In some cases ponds and agricultural fields managed by the Refuge require pumping to remove water as they are below the level of the Salton Sea. The Refuge has approximately 826 acres which are managed as permanent or seasonal wetlands.

SOILS

The soils of the Sonny Bono Salton Sea NWR consist of deposits from prehistoric lake beds and periodic inflows from the Colorado River. As described by Zimmerman (1981) the soils of the Imperial Valley consist of well to poorly drained soils "formed in alluvial deposits throughout the lake basin. Natural drainage of soils has been altered by the seepage of water from irrigation canals and by extensive irrigation. Slopes are less than 2 percent....." Erosion of surrounding mountains also contribute to the material deposited on the desert floor.

CLIMATE

The climate of the Imperial Valley is typical of a desert ecosystem and can be characterized by hot, dry summers, occasional wet thunderstorms and strong gusty dry winds. It is the one of the most arid areas in the United States having an annual average rainfall of just 3 inches. Most of the rainfall occurs during the winter months from Pacific storms moving from west to east. The Refuge is in the rain shadow of the Laguna Mountains to the west which accounts for the low rainfall totals. Additional rainfall arrives during mid summer from monsoonal moisture moving north out of the gulf of Mexico in the form of thunderstorms. This rainfall is not uniform but localized. High temperatures are the most significant weather feature of this climate zone. Summer temperatures often exceed 110^0F and there are typically more than 110 days over 100^0F each year. The frost-free period is stated to be greater than 300 days per year.

TOPOGRAPHY

The valley floor is a flat, dry, lake bed. The Imperial Valley is aligned toward the northwest. The elevation range is from about -230 feet on the shore of the Salton Sea up to about sea-level on the old shore-line of Lake Cahuilla. Rock Hill, located next to the Refuge headquarters, is the exception, and rises 125 feet. The Refuge is bordered by the Salton Sea on the north and by intensively farmed agricultural lands on the east, south and west. The Refuge is composed of two disjunct units, separated by 18 miles of private lands. Drainage is to the north along the Alamo and New Rivers, emptying into the Salton Sea.

AIR QUALITY

The Refuge lies within the Salton Sea Air Basin of the Imperial County Air Quality Management District. This air shed does not met National Ambient Air Quality standards for various criteria pollutants such as Carbon Monoxide, Nitrogen Oxide and particulate matter (PM 10). A State Implementation Plan has been developed to bring these pollutants below allowable limits. The

state is currently monitoring and developing a SIP for PM 2.5. Several factors unique to this air basin contribute to the non-attainment levels relative to the PM 10 & 2.5 pollutants. The large non-vegetative expanses of land in this desert Ecoregion combined with strong diurnal winds are significant causes. Significant agricultural burning within this air basin is also a major contributor.

All burning is administered by the Imperial County Agricultural Commission for the AQMD. A state- wide Smoke Management Plan is currently being developed which will guide all parties who use fire in vegetation management. A Smoke Management Plan is required for all prescribed burns.

STRUCTURES AND FACILITIES

All structures and facilities for the Sonny Bono Salton Sea NWR are located at one administrative site except for a observation tower. There are a total of 23 structures located at the administration site. Figure 1 shows the general locations of all structures and facilities on the Refuge. Figure 2 shows the layout of structures and facilities at the Refuge headquarters. The structures and facilities at the Refuge headquarters include;

1	Research Support Facility (Boat Barn)	1	Refuge Office & Visitor Center
2	Incinerators	1	Refuge Shop Building with Offices
1	Boat Barn	2	Fuel Tanks
1	Equipment Shade Structure	1	Oil Storage Shed
1	Bunkhouse	1	Used Oil and Containment Structure
1	Mobile Home trailer	1	Covered Parking
1	RV hookup with slab	1	Lab Trailer
1	Garage	1	Field Hospital
1	Refuge Residence	1	Equipment Yard Storage Shed
1	2-Story Storage Building		

All structures on this site are of metal construction except for the headquarters and residences which are wood construction. Hazard reduction around the structures and facilities requires vary little maintenance due to the low rainfall and growth rate of vegetation in the area. Over the years flammable ground vegetation has been removed and trees have been pruned to provide protection to this site. The observation tower is of wood construction.

Figure 2: Vicinity map

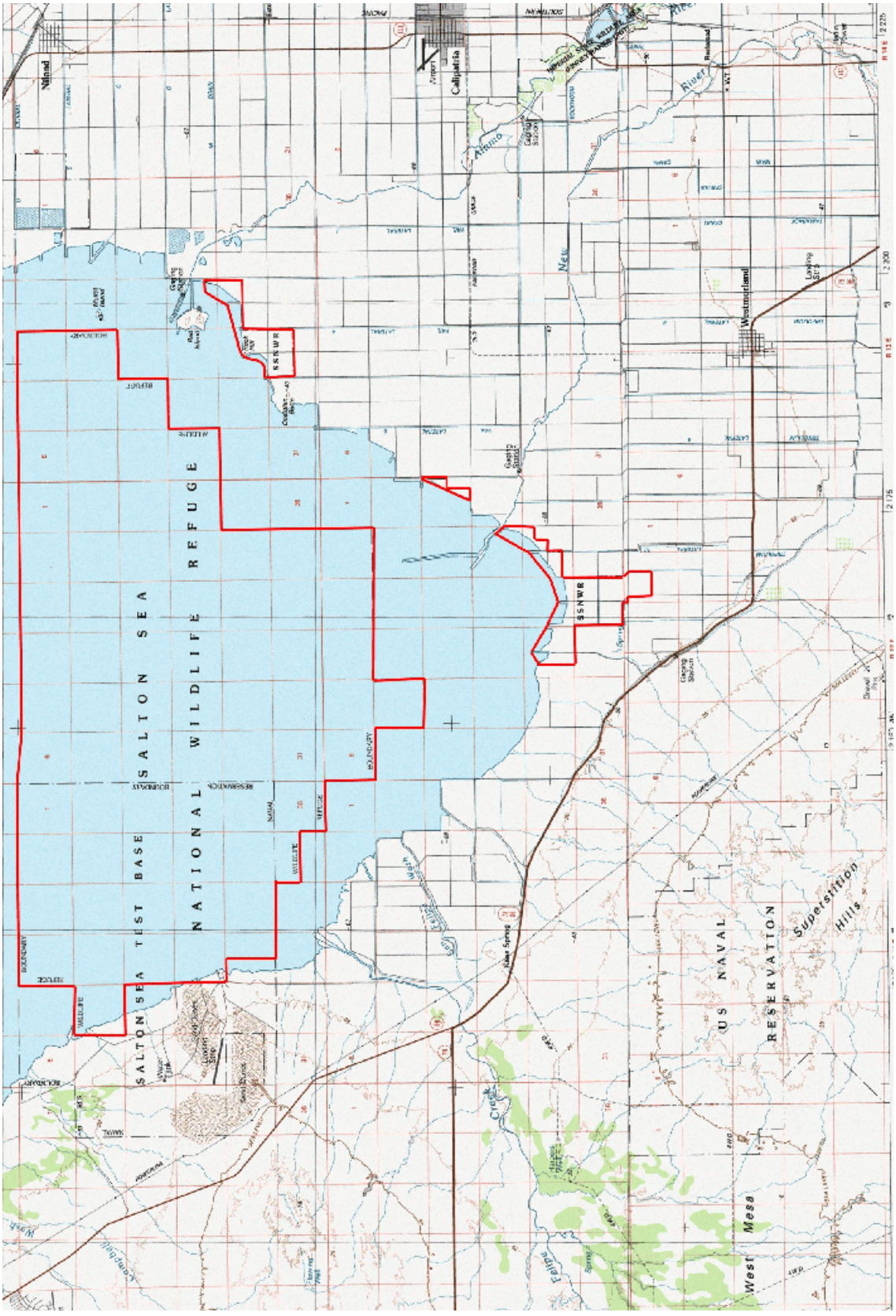
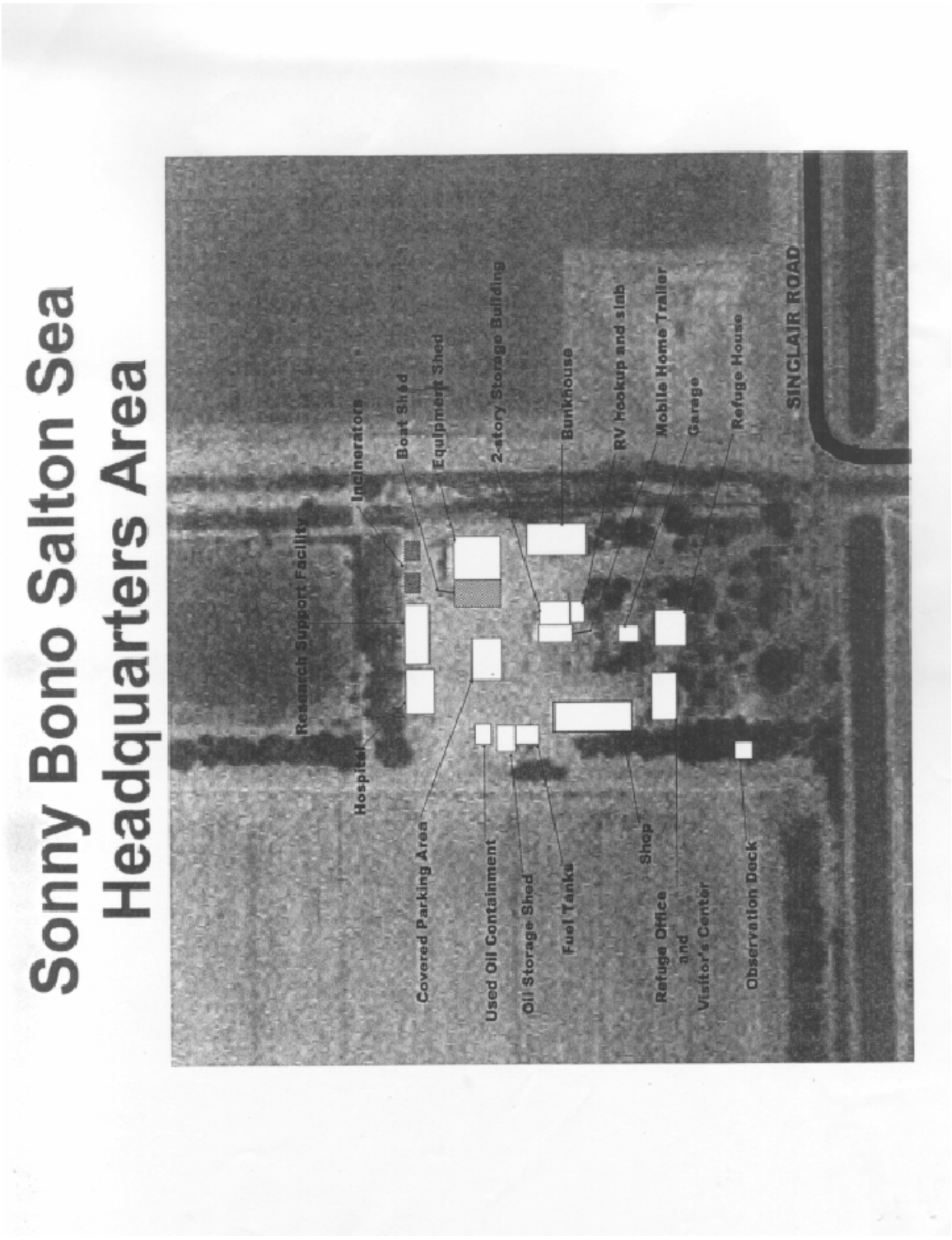


Figure 3: General Structure and Facility Map



WILDLAND FIRE MANAGEMENT SITUATION

HISTORIC ROLE OF FIRE

There is a low occurrence of wildland fire on and around the Sonny Bono Salton Sea NWR. This is a result of land use practices consisting almost entirely of intensive agriculture where burnable vegetation is kept to an absolute minimum throughout the year. The Current fire regime of the Colorado Desert ecosystem is well within the desired 35-100 year fire return interval as identified by research conducted by the Fire Sciences Laboratory, Rocky Mountain Research Station, Missoula, Montana. This research noted that fires in this ecosystem are usually stand replacing (removes or chars all above ground vegetation). These vegetation types return to maturity in 35-100 years. Since a native landscape is almost non-existent at the Refuge, this point is almost irrelevant. The important role of fire is the recent use of prescribed fire in maintaining and enhancing the habitat.

Pre-settlement fires

The fire ecology of the Imperial Valley is severely altered due to development, agricultural activity, and establishment of the Salton Sea. It can be assumed that the fire ecology is very similar to that of the remaining undeveloped portions of the Colorado Desert. Lightning activity occurs during the late summer, often with moderate precipitation. Ignitions will result in small fires due to the sparse vegetation and natural barriers of sand dunes and dry river beds. A fire return interval of 35 to 100+ years has been identified for this desert ecosystem.

Post-settlement Fire History

The Imperial Valley was first settled by Europeans in the 1850's when some of the first farms were established. Farms were typically greater than 50 acres and centered around seasonal and year round creeks. Not much is known of the early fire suppression/exclusion history but is assumed to have begun at the time of early European settlement. Wildland fire was considered a threat to a farmers lively hood so suppression was conducted when there was a threat to crops both pre and post cut (bail hay & alfalfa).

Refuge records show there have been 8 fires over the last 15 years on or threatening the Refuge. Total acreage of these fires was 255 acres. No structures of facilities were damaged in these fires.

Prescribed fire history

Early historical records from the local natural history museum indicate burning by farmers of harvested fields of alfalfa, corn, wheat, and barley did occur. This was done to remove debris and prepare fields for planting. Historical records indicate the number of prescribed burns has risen proportionally with the number of new farms fields. Imperial County Agricultural Department reports that the official (permitted) burns in the area average 300 per year for fields of 40 acres or more. The unofficial average is 500 or more for field less than 40 acres and slash piles of less than one acre.

The Refuge has been conducting prescribed burns for at least 12 years. Records are not available prior to 1986 to document the extent and type of burning done on the Refuge. The main purpose for prescribed burning has been on cooperative farmed agricultural fields and impoundment ponds. Agricultural fields are burned annually by Refuge staff in preparation for planting. These fields provide food for wintering white geese. Impoundment ponds have stands of cattails which become decadent over time and reduce their habitat value. These units are drained and burned periodically to meet habitat management objectives. On average, there have been 2 prescribed fires totaling 100 acres annually on the Refuge..

RESPONSIBILITIES

The Sonny Bono Salton Sea Refuge does not have a dedicated fire management staff. The Project Leader is responsible for planning and implementing the fire management program on the Refuge. The Zone Fire Management Officer located in San Diego is responsible for fire management program over- site and coordination. The Project Leader will assign fire management responsibilities to appropriate staff as collateral duties, who possess appropriate training, experience, and incident qualifications. Pre-suppression planning and work is accomplished by Refuge staff in accordance with national and regional fire management direction under guidance from the Zone FMO. Emergency fire management actions will be handled by Refuge staff according to training and incident qualifications. The Zone FMO will be immediately notified of all actions. Additional information and direction is included in the Refuge Emergency Fire Plan (Appendix D).

Project Leader (PL)

- Is responsible for implementation of all Fire Management activities within the Refuge and will ensure compliance with Department, Service and Refuge policies.
- Selects the appropriate management responses to wildland fire.

Deputy Project Leader (DPL)

- Coordinates Refuge programs to ensure personnel and equipment are made available and utilized for fire management activities including fire suppression, prescribed burning and fire effects monitoring.
- Ensures that the fire management program has access to Refuge resources when needed.
- Ensures that Refuge Managers consider the fire management program during Refuge related planning and implementation.

Refuge Manager (RM)

- Identifies prescribed burn units and biological objectives to Fire Management Officer (FMO), notifies FMO of prescribed fire project constraints, and ensures that Refuge resources are available to accomplish prescribed fire and fire suppression objectives.
- Acts as the primary Refuge Resource Management Specialist during fire management planning and operations.
- Ensures fire effects monitoring is being implemented, drafts wildland fire Rehabilitation Plans for Deputy Project Leader, and is responsible for posting and enforcing fire restriction regulations.

Biologist

- Coordinates through Refuge Managers and Deputy Project Leader to provide biological input fort the fire program with the FMO and PFS.
- Assists in design and implementation of fire effects monitoring, with FMO.
- Participates, as requested, in prescribed burning and fire suppression.

Fire Management Officer (Zone)

- Responsible for all fire related planning and implementation for the Refuge.
- Supervises all fire positions.
- Integrates biological Refuge objectives into all fire management planning and implementation.
- Solicits program input from the RM and Biologist.
- Supervises prescribed fire planning.
- Coordinates fire related training.
- Coordinates with cooperators to ensure adequate resources are available for fire operational

needs.

- Is responsible for implementation of this Plan. This responsibility includes coordination and supervision of all prevention, pre-suppression, detection, wildland fire, prescribed fire, suppression, monitoring, and post-fire activities involving Refuge lands.
- Is responsible for preparation of fire reports following the suppression of wildland fires and for operations undertaken while conducting prescribed fires.
- Prepares an annual report detailing fire occurrences and prescribed fire activities undertaken in each calendar year. This report will serve as a post-year's fire management activities review, as well as provide documentation for development of a comprehensive fire history record for the Refuge.
- Submits budget requests and monitors FIREBASE funds.
- Maintains records for all personnel involved in suppression and prescribed fire activities, detailing the individual's qualifications and certifications for such activities.
- Updates all fire qualifications for entry into the Fire Management Information System.
- Nominates personnel to receive fire-related training, as appropriate.

Assistant Fire Management Officer (Zone)

- Responsible for the planning and implementation of a program, which collects information for the documentation, analysis, and prediction of fire behavior and effects.
- Implements and directs burns.
- Organizes and performs studies to develop fire management prescriptions for prescribed burns.
- Plans and conducts fuel management surveys to document presence or absence of hazardous amounts of fuel.
- Is responsible for record keeping associated with burn planning, fire occurrence reporting and fire weather.
- Is responsible for planning, coordinating, and directing preparedness activities including fire training, physical fitness testing and Interagency Fire Qualification System (IFQS) data entry, fire cache and equipment inventory accountability, maintenance, and operation, cooperation with cooperative agencies.

Fire Management/Suppression Personnel

- Consist of all Refuge personnel, whether permanent or seasonal, who meet the minimum standard set by the National Wildfire Coordinating Group (NWCG) for firefighters.
- Are fully equipped with proper personal protective equipment, have taken and passed the minimum classroom training, and meet physical fitness standards required.
- Undertake fire management duties as assigned by the qualified IC on each suppression action or by the Prescribed Fire Burn Boss on each prescribed fire project.
- Are responsible for their personal protective equipment and physical conditioning, qualifying annually with the work capacity test before April 15.

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 E) will be provided to each Incident Commander prior to assuming responsibility for an incident. Major duties of the Incident Commander are given in the National Wildfire Coordinating Group (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 modules
Initial attack modules will consist of red-carded firefighters with appropriate red-carded supervision. A Type 5 (ICT5) or Engin Boss (ENGB) is the basic requirement of leadership when responding to a fire with an organized suppression module, i.e. engine. Modules 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 cooperators' lands will meet fitness requirements established in PMS 310-1, except where Service-specific fitness requirements apply.

INTERAGENCY OPERATIONS
Cooperative agreements with various federal, state and local agencies generally provide that resources of each agency are available to assist in initial attack efforts. These agreements have detail payment among cooperators, list of response areas, communications frequencies, and have been reviewed by a contract specialist and/or solicitor.

The primary emergency wildland fire management contact for Sonny Bono Salton Sea NWR is the Cleveland National Forest Emergency Command Center (ECC) located in El Cajon, California. The ECC handles wildland fire emergency dispatching for the Refuge under a cooperative agreement (Appendix F). Westmoreland Volunteer Fire Department is the fire department responsible for structural fire protection on the Refuge. The Bureau of Land Management, California Desert District is also considered a cooperator due to their location and ability to provide resources. All of these contacts as well as other cooperating agencies are listed in the Refuge Emergency Fire Plan (Appendix D).

Sonny Bono – Salton Sea NWR will use the Incident Command System (ICS) as a guide for fireline organization. Qualifications for individuals is per DOI Wildland Fire Qualifications and Certification System, part of NIIMS and the National Wildland Fire Coordination Group (NWCG) Prescribed Fire Qualification Guide. Depending on fire Complexity, some positions may be filled by the same person.

PROTECTION OF SENSITIVE RESOURCES
All mechanized equipment and off-road travel is allowed in agricultural fields to suppress wildland fires and conduct prescribed burns. In all other areas, the use of heavy equipment (e.g., dozers) must be authorized by the project leader or Designee. Retardant and Foam use is restricted in impoundments and

other bodies of water, except in cases where life and/or property are threatened (Appendix P). Appendix M provides a complete list of resources of concern for the Refuge which should be referenced during prescribed fire planning and suppression activities.

The Regional Archaeologist and/or his/her staff will work with fire staff, project leaders, and incident commanders to ensure that cultural resources are protected from fire and fire management activities. The "Request For Cultural Resource Compliance" form (RCRC, attached) will be used to inform the Regional Archaeologist of impending activities, thereby meeting the regulations and directions governing the protection of cultural resources as outlined in Departmental Manual Part 519, National Historic Preservation Act (NHPA) of 1966, Code of Federal Regulations (36CFR800), the Archaeological Resources Protection Act of 1979, as amended, and the Archaeological and Historic Preservation Act of 1974. The NHPA Section 106 clearance will be followed for any fire management activity that may affect historic properties (cultural resources eligible to the National Register of Historic Places).

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

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

Wildland Fires

- Minimum impact fire suppression tactics will be used to the fullest extent possible.
- Resource Advisors will inform Fire Suppression personnel of any areas with cultural resources. The Resource advisor should contact the Regional Archaeologist and/or his/her staff for more detailed information.
- Foam use will be minimized in areas known to harbor surface artifacts.
- Mechanized equipment should not be used in areas of known cultural significance.
- The location of any sites discovered as the result of fire management activities will be reported to the Regional Archaeologist.
- Rehabilitation plans will address cultural resources impacts and will be submitted to the Regional Archaeologist using the RCRC.

Prescribed Fires

- The Refuge Fire staff will submit a completed RCRC to the Regional Archaeologist and/or his/her staff as soon as the burn area is identified (i.e., as soon as feasible).
- Upon receipt of the RCRC, the Regional Archaeologist and/or his/her staff will be responsible for consulting with the FMO and evaluating the potential for adverse impacts to cultural resources.
- When necessary, the Regional Archaeologist and/or his/her staff will coordinate with the State Historic Preservation Officer (SHPO). The SHPO has 30 days to respond. The Refuge will consider all SHPO recommendations.
- Mechanized equipment should not be used in areas of know cultural significance.
- The location of any sites discovered as the result of fire management activities will be reported to the Regional Archaeologist.

WILDLAND FIRE ACTIVITIES

Fire program management describes the operational procedures necessary to implement fire management at Sonny Bono Salton Sea NWR. 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. Records show that fires can occur any time of the year.

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. Specific fire management strategies for the Sonny Bono Salton Sea Refuge are:

- All wildland fires will be controlled using the appropriate suppression strategy which considers safety, property, natural resources and economics.
    - Protect Yuma clapper rail habitat from adverse effects of fire.
    - Protect agricultural crops grown for migratory birds or for cooperative farmers.
    - Protect agricultural irrigation ditches, pumps and gates.
- Utilize prescribed fire to accomplish habitat management goals.
    - Use prescribed fire to set back cattail succession and increase biological diversity in wetland units.
    - Use prescribed fire to prepare agricultural units for new crop rotations.
    - Use prescribed fire to control exotic vegetation, primarily salt cedar.
- Monitor the use of prescribed fire to meet habitat management goals. This applies particularly to the use of fire to manage habitat of the endangered Yuma clapper rail.

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 riparian areas and impoundment ponds in use by Clapper rails, 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.

Heavy equipment such as crawlers, tractors, dozers, or graders will only be used in agricultural area unless their use is necessary to prevent a fire from destroying life, privately-owned and/or government buildings, critical habitat, and historic resources. The use of any heavy equipment requires approval from the Project Leader or Delegate.

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.

PREPAREDNESS

Preparedness is the work accomplished prior to fire occurrence to ensure that the appropriate response, as directed by the Fire Management Plan, can be carried out. Preparedness activities include: budget planning, equipment acquisition, equipment maintenance, dispatch (Initial attack, extended, and expanded), equipment inventory, personnel qualifications, and training. The preparedness objective is to have a well trained and equipped fire management organization to manage all fire situations within the monument. Preparedness efforts are to be accomplished in the time frames outside the normal fire season dates.

The Project Leader is responsible for reviewing personnel, equipment, and preparedness documents annually. Areas of concern such as roads, cultural, biological and structural improvements, and any operational and emergency contacts which may affect fire operations should be reviewed. The zone Fire Management Officer will conduct a site visit and inspection of equipment and personnel fire annually.

Historical weather analysis

Sonny Bono Salton Sea NWR uses the weather measurements from the Squaw Lake (045081) Remote Automated Weather Station (RAWS) for historic weather trends and NFDR calculations. This station is maintained by the Bureau of Land Management, Yuma District and has a weather data base of 14 years. It is located at Squaw Lake on the Colorado River, approximately 80 miles due east of the Refuge. Although this station is located off site, it is representative of the lower desert region due to fuels, terrain, weather patens, large body of water and similar climate zone. The Refuge is within NFDR area 666 which includes the entire southwest Mojave and Colorado Desert region. The National Weather Service forecast trend zone is area 519 which includes the same region. The representative NFDRS fuel type used for this RAWS is B, southern California Brush.

Fire is not a significant factor of the Refuge ecosystem nor the highly altered Imperial Valley due to agricultural activities. Given climatic conditions however, wildland fire could and has occurred virtually ever month of the year where burnable vegetation is present. Appendix Q displays the average mean temperature and humidity as well as the KDBI for the Last 14 years. Significant is the KDBI which on average over the last 14 years has remained above 600 through out the year. Fires season is dictated by live fuel moisture in the herbaceous fuels and cured state of the annual grasses. Other factors include days since the last measurable rainfall, seasonal fire danger rating calculations and probabilities using Fire Family Plus. An analysis of the historic Burning Index (BI) trend (Appendix G) shows very little variation in this index through out the year. This is due to the factors that have been mentioned. Declaration of fire season in California is made by the California Department of Forestry and Fire Protection for each county. The Imperial County fire agencies acknowledge this declaration but realize it has very little bearing on their year round conditions. Wildland fires have occurred year round in the lower desert area. Weather features dictating fire season length in the zone are the persistence of the "Pacific High", season ending rainfall and Santa Ana wind events.

The most accurate way of displaying the relationship of weather and fuels to the fire danger is through the Burning Index or BI. Burning index values represent a fire danger rating value. The BI is an estimate of the potential difficulty of containment of a wildland fire as it relates to the flame length at the head of the fire. The BI value is a function of the spread component (how fast the fire could spread) and the energy release component (how hot the fire could burn). The BI is scaled such that a BI value of 40 would indicate a predicted average mid-flame length of 4 feet. Wildland fires where the mid-flame length

exceeds 4 feet are judged to be too hazardous for hand crews and engines to attack along the direct edge of the fire. The BI may also communicate the relative fire danger in a rating area. 90th percentile BI is 185 and for the 97th percentile BI is 220 (Appendix G). The 90th percentile is defined as 90 percent of all BI's are at or below this index for the time period calculated, and the same is true for the 97th percentile. When overlaid with historic fire occurrence, a relationship with fire weather can assist with more accurate preparedness planning.

The Santa Ana wind events occur from late September to February. These foehn winds are characterized by low humidity and wind speeds in excess of 50 mph. Both factors are criteria for Red Flag watches, warnings, and alerts. The criteria for these announcements are found in the California Fire Weather Operating Plan. The Riverside Fire Weather Office has the responsibility for issuing these and other severe fire weather events for the zone. The significance of Santa Ana wind events is for prescribed burn planning and fire suppression. Severe weather events as well as the daily fire weather forecast for Imperial County is available from the Riverside Fire Weather Office at 909-782-4852, or the Federal Interagency Command Center in San Bernardino. The Riverside Fire Weather Office also maintain a website "http://www.fs.fed.us/r5/fire/south/fwx/index.shtml." where other local and regional weather information can be accessed.

Fire Prevention

While the frequency of human caused fires has been low over the years, potential still exists for both accidental and arson fire. Precautions and education of Refuge staff, contractors and visitors is key to a successful fire prevention program on this Refuge. With that, an active fire prevention program will be conducted in conjunction with other local fire agencies to protect human life and property, and prevent damage to cultural resources or physical facilities. Visitor contacts, bulletin board materials, handouts and interpretive programs may be utilized to increase visitor and adjacent land owner 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.

Refuge staff, volunteers and contractors shall be made aware of general fire precautions and restrictions. Restrictions include ensuring all small engines have approved spark arresters, having a separate building and area for the storage of combustibles, and using appropriate precautions when welding and cutting in the field. It is essential that employees be well informed about fire prevention and the objectives of the Refuge's fire management program. Further, employees should be aware of the existing fire danger around them. .

During periods of extreme or prolonged fire danger, emergency restrictions regarding Refuge operations, or area closures may become necessary. Such restrictions, when imposed, should be consistent with those implemented by cooperators. There are no pre-determined area closures either on the Refuge or adjoining private lands. The Project Leader has the authority to implement an area closure for the Refuge when fire danger is extreme and public safety is threatened. Levels which should initiate consideration of area closures are: BI's in excess of the 97th percentile, large fires in the immediate area or threatening the Refuge, initial attack resources committed to other fires, increase in arson activity, etc. A decision matrix for area closures can be found in the Fire Management Handbook, Section 3.1. Consultation and coordination with cooperating fire agencies and landowners is critical to implement a successful closure.

Staffing Priority Levels
The Sonny Bono Salton Sea NWR does not have full time fire personnel, so staffing levels per say is not relevant. Fire Danger calculations and adjectives are necessary on this Refuge for communicating the fire danger & growth potential on a given day, and determining the precautions necessary when performing prescribed fire and field work. Staffing levels may also be used to augment the areas staffing levels with Fish & Wildlife resources.

The Federal Interagency Command Center (FICC) in San Bernardino calculates the BI and fire danger for NFDR area 666. The Refuge is within this fire danger rating area. The daily BI is obtained by either calling the FICC at (909) 782-4852 or listening to the daily weather forecast on BLM frequency 166.375 at 1600 daily. Staffing levels are breakpoints in the historic weather (Appendix S). These breakpoints are ranges in the BI with increasing fire danger. Staffing levels have been developed for the southern Mojave Desert region by the BLM and applicable for this Refuge. Appendix S displays the 5 staffing levels with associated fire probability.

During high visitor use, special events, or fire activity, there is a need to access the local fire weather. The Riverside Fire Weather Office is the agency responsible for collecting and publishing the forecasted fire weather for Imperial County. This forecast can be obtained by accessing the Riverside Fire Weather Office web site at "http://www.fs.fed.us/r5/fire/south/fwx/index.shtml." or by calling FICC.

Since there are no fire staff located on the Sonny Bono Salton Sea NWR, all severity augmentation on the Refuge will be in the form of repositioning personnel and equipment to the Refuge, or in the local vicinity. It would be a rare event requiring severity augmentation. In any event, coordination with cooperators will be necessary so as to not duplicate or otherwise commit resources unnecessarily. All severity actions will follow FWS Fire Management Handbook direction in Section 3.1. which gives guidance on when this type of action is warranted and the process for implementation.

Training
Departmental policy requires that all personnel engaged in suppression and prescribed fire duties meet the standards set by the National Wildfire Coordinating Group (NWCG). Sonny Bono Salton Sea NWR will conform strictly to the requirements of the wildland fire management qualification and certification system and Service guidelines.

The FMO is the Refuge coordinator for all wildland fire training and certification. The FMO will provide classroom and on the job training opportunities to facilitate career development and augment the Refuge, regional, and national firefighting and prescribed fire staffing needs. The Project Leader, Refuge Manager, and FMO will annually identify training needs for Refuge staff. The FMO will obtain classroom training slots and coordinate attendance. The FMO will coordinate fire training needs with those of other nearby Refuges, cooperating agencies, California/Nevada Operations, and the Regional Office. The FMO is responsible for verifying pre-requisites and overseeing compliance in both the classroom and taskbook process. The FMO will initiate taskbooks for Refuge employees as required to document training assignments and aid in employee development. The Project Leader is responsible for signing incident qualification cards.

Only red-carded firefighters will participate in fire suppression and prescribed burning programs. All others should have a basic under standing of wildland fire safety, notification procedures and roles in the event of a wildland fire. An Annual Wildland Fire Safety refresher is a requirement for all red-carded Refuge staff and should be attended by all employees with field duties. The refresher will follow guidelines as stated in the FWS Fire Management Handbook, Section 1.5.1. All Refuge staff fire related

training and qualification records will be kept in the FMO's master files with a copy at the Refuge office. A list of redcarded Refuge employees will be maintained in the Appendix of this plan and updated annually (Appendix O). All physical fitness testing, annual fire safety refresher training, and equipment & supply inspections will be completed prior to fire season. The Refuge Manager will ensure these items are accomplished annually (Appendix H).

The Refuge supports the development of individual fire qualifications where there is an interest. Refuge staff will be trained and qualified according to national standards and made available to overhead teams at the local, Regional, and National level when available.

The moderate fitness level measured by the Field Test (2 miles / 25 lbs. / 30 minutes) is the standard level of fitness on this Refuge for prescribed burning per FWS FMH section 1.5.1. While performing prescribed fire duties, personnel may be required to shift from implementation/monitoring activities to suppression. If a prescribed fire is converted to a wildland fire, all personnel must be carded at the arduous level. ALL wildland fire suppression activities require the arduous fitness level as measured by the Pack Test (3 miles / 45 lbs. / 45 minutes).

Supplies and Equipment
Other preparedness measures for the potential threat of fire involved the creation and maintenance of the Refuge fire cache (Appendix I) and establishing of structure protection hose boxes around the Refuge buildings, mounting fire extinguishers in buildings and vehicles. Fire tools will be inspected and maintained by the Refuge manager annually or after a fire by sanding the handle, filing any blades, and repainting the metal components.

The fire cache is located at the Refuge headquarters. Maintenance of equipment and supplies is the responsibility of the Refuge Manager. The cache is equipped for 10 persons and includes a 250-gallon slip-on unit stored in the cache.

Additional equipment and supplies are available through the interagency cache system or GSA. Requests for additional personnel and equipment are made through the Cleveland National Forest Emergency Command Center during incident mobilization. Fire replacement of normal unit strength inventories should be ordered though normal procurement channels with Project Leader approval.

Detection
Fires are typically reported by Refuge staff, adjacent landowners, or the local sheriff department. All fires will be reported to the Cleveland ECC. Specifics are included in the Emergency Fire Plan (Appendix D).

Dispatching
Sonny Bono Salton Sea NWR does not have a dispatcher position. Dispatching for wildland fires is provided for under a cooperative agreement between the San Diego NWR and the Cleveland N.F. The procedure for activating a wildland dispatch in outlined in the Emergency Fire Plan, Appendix D. A discussion of dispatch levels and resources is covered under the Staffing Levels Section.

Communications
The Refuge radio system will be utilized for communications between Refuge staff and Refuge headquarters during initial reporting and size-up activities. Dispatching of resources, ordering and size-ups will be on the Cleveland National Forest frequency. The command frequency will be on the FWS fire frequency. A tactical frequency will be requested through the Cleveland ECC.

Pre-Attack Plan
The San Diego NWR provides wildland fire protection for the Sonny Bono Salton Sea NWR. When a wildland fire incident occurs on or threatens the Refuge, the Zone FMO is notified through the Cleveland ECC and a dispatch is initiated. Three dispatching levels have been identified , low, moderate and high (Table A). Each dispatch level corresponds to the BI as calculated by Squaw Lake RAWS and historic fire occurrence for the Refuge as displayed in Appendix S. A 28 day monthly trend of the BI (Appendix Q) was calculated to assist with the determination of the level during a given month a average dispatch should be. By establishing these 3 levels the project leader or other management staff has a reference point to initiate an initial attack response for a wildland fire on or threatening the Refuge. These dispatching levels and assigned resources are to be used only as a guide for determining immediate needs. Increases or decreases in this order is appropriate based upon fuel type, size, behavior and potential after a size up by a initial attack incident commander. The increases or decreases in the resource order should be discussed with a fire management specialist if available.

Table A: Dispatching Levels

Adjective	BI	Engine	Air Tanker	Helicopter	Crew	Chief Officer
Low	0-90	1	*	*	*	0
Moderate	91-175	2	*	*	*	1
High	176 +	3	*	*	*	1

* special resource orders requiring fire management staff assessment

The pre-attack plan has been identified in the Emergency Fire Plan (Appendix D). The Emergency Fire Plan identifies steps and contacts in the event of a wildland fire emergency on or adjacent to the Refuge (Appendix L). In the event of a wildland fire, the project leader, Refuge manger or designate will contact the Cleveland ECC to request the Zone FMO notification and initiate a dispatch based on the activity level. All initial attack forces will have the following: contact phone numbers, maps, information on sensitive areas (including critical habitat), and restrictions on mechanized equipment. A Refuge representative will meet and brief all incoming resources on local suppression and safety concerns. Due to the lay out of the Refuge and multiple roads and water delivery channels, no pre-attack plan maps have been prepared.

Structure Protection
There are no structures located on or adjacent to the Sonny Bono Salton Sea NWR that require protection. Those structures located at the refuge headquarters are at such a distance from any wildland fuels and are of such a construction as to not pose a risk from a wildland fire. Be that as it may, the Westmoreland Volunteer Fire Department is the local fire department with structural fire protection responsibility on the Refuge.

FIRE MANAGEMENT UNITS
Due to staff limitations, relatively small land management parcels, long response times, valuable resources, and values at risk on neighboring lands, this plan does not recommend wildland fire managed for resource benefit as an option for any of the units. Wildland fires will be suppressed using the appropriate suppression response. Prescribed fires will be used to reduce hazardous fuels and to meet resource management objectives.

Fire Management Units (FMUs) are areas on a Refuge which have common wildland fire management objectives and strategies, are manageable units from a wildland fire standpoint, and can be based on natural or manmade fuel breaks. An FMU may coincide with a prescribed fire burn block or treatment area or unit, but this is not always the case. On smaller Refuges the whole Refuge may be treated as a single FMU.

The Sonny Bono Salton Sea NWR has three habitat management units: Hazard Unit, Unit 1, and Headquarters Unit (Figures 4,5,& 6). Located within these habitat management units are three distinctive types of vegetation which will be identified as FMU's. The three FMU's are; Wetlands, Agricultural Fields, and Riparian Zones (Figures 7 & 8.). These FMUs will be managed for both wildland and prescribed fire

Wetland Units

Since a considerable portion of the Refuge is under water, the FMU identified as wetlands will only include those areas which have vegetation that may be termed burnable. These sites are flooded basins ranging in sizes of 10 to 20 acres, surrounded by earthen levees and cement ditches. There are approximately 380 acres of wetlands on the Refuge. These sites provide habitat for migratory birds as well as various resident species. Wetland units containing dense cattail vegetation are the only units where wildland fire could occur with any significance. Of greatest concern within these units is the endangered Yuma clapper rail. It is considered very unlikely that the wetland units would burn during use by Yuma clapper rails as the ponds are always flooded and vegetation is green (live). The potential for the fire to escape the wetland units is low as the units are all contained by earthen levees and dirt roads. Wetland units are managed by prescribed fire to reduce the fuel loading and restore the habitat.

Fuel Types and Fire Behavior

Fuel types for Refuge wetland units typically consist of cattail and are considered to be Fuel Model 1 if laid down or chopped and FM 3 if left standing. When cut or laid over and cured, fuel moisture can be at 1% or less. This explains the high intensities observed while burning these units. Flame lengths will range from 1 to 3 feet and rates of spread will range from 20 to 80 chains per hour. Burn out time is relatively short, lasting often less than 1 hour. Standing cattails offer spectacular flame lengths and a large production of smoke due to the higher fuel moisture and incomplete burning. Standing cattails are difficult to impossible to walk through so all actions should be conducted from the perimeter or interior trails. Burn out time is from 4 to 6 hours. In both situations, ponds are drained and left to dry for at least 2 months. Situations are possible for wet ponds with heavy accumulations of dead cattails to burn under a high wind, but such events would be rare. Under all situations fire would have good effects on these ponds, except when Yuma Clapper rails are present as was previously mentioned.

Suppression Conditions

If wildland fire does occur in these units, the Refuge will attempt to extinguish the fire before it causes excessive damage to the resource; mainly habitat for the endangered Yuma clapper rail. Project leader (or Designee) approval is required to use heavy equipment in the Clapper rail habitat. Foam should not be used in these areas.

If the fire is beyond the Refuge means for extinguishing, the unit will be allowed to burn out, while refuge personnel stand by for suppression purposes in the event of a spot fire outside the wetland unit. If in habitat presently occupied by Yuma clapper rails, all attempts will be made to extinguish the fire using Refuge resources first, then local fire companies as needed. If in a dry pond where no rail use is documented, fires will be contained within the unit. Fire qualified Refuge personnel will stand by to

prevent spread into other units as well as notification of the Zone Fire Management Officer.

Agricultural Fields
Fields are rectangular units varying in size from 40 to 120 acres. There is approximately 860 acres of agricultural fields on the Refuge. They are farmed by a cooperative farmer or Refuge staff to provide food for migratory birds. Vegetation consists primarily of wheat, rye barley, alfalfa or sudan grass. Cooperative farmers harvest crops twice annually which leaves a stubble field that requires either discing or burning. Burning is preferable since it accelerates the return of nutrients into the soil for the next crop. Agricultural fields are typically surrounded by either roads or water delivery canals on all sides. Accidental fires can occur in these units. Potential for a prescribed or wildland fire to escape an agricultural field is relatively small due to the low fuel loadings and containment by roads/ditches. Several fields are bordered by tree rows which provide habitat and are at risk to damage by fire. These tree rows are excluded from prescribed burning by placing a disk line fire break in the field parallel to the row.

Fuel Types and Fire Behavior
This fuel will consist entirely of Fuel Model 1 vegetation. Fuels will either be pre-harvest with a 2 to 3 foot height or are stubble fields with vegetation of less than 1 foot in heigh. In either case there will be little ground fuel. Rates of spread will be similar to annual grasses but with lower intensities due to the lower fuel loading. Burn out times are usually less than 1 hour. Fuel moisture will vary with each unit depending on pre or post harvest and cure time which will affect both rate of spread and consumption.

Suppression Conditions
Wildland fire occurrence is considered to be unlikely. However, in the event of unwanted fire in an agricultural unit, the fire will be allowed to burn out. The potential for the fire to escape into other areas is very low. If needed and when possible, fire breaks will be disced to prevent spread into tree rows or to minimize crop losses. Water supply draft points are typically less than a half mile away and consist of water delivery ditches. If the field burning is a crop to be harvested by the cooperative farmer, fire qualified Refuge personnel will attempt to extinguish or prevent further damage by discing fire breaks within the field. Upland habitat (tree rows) will be protected by discing fire breaks or creating a wet line with the Refuge water truck. If the field burning is under Refuge control for migratory bird use, Refuge personnel will make reasonable attempts to extinguish the fire. If resource allocation for this activity is considered to be excessive, the fire will be allowed to burn out. Fire breaks will be created to protect tree rows and may be used to salvage un-burned vegetation for migratory birds. The local fire department will be notified.

Riparian Zones
The Refuge borders the Alamo River and includes some of the New River channel. There is approximately 343 acres identified as riparian. Vegetation within these channels consists primarily of salt cedar, grasses and Phragmites which can be very dense. These areas provide habitat for passerine species such as Wilson's warbler (*Wilsonia pusilla*) and Yellow-rumped warbler (*Dendroica magnolia*). A vigorous campaign of exotic and non-native species control is being conducted to remove both the Phragmites and salt cedar. Hand and mechanical removal of salt cedar and tamarisk is completed prior to pile burning to dispose of the debris. Otherwise, no other management activities have been implemented.

Fuel Types and Fire Behavior
Fuel models for the river channels consist primarily of FM 6 and contain mostly live fuels. Depending on the age class of these fuels considerable dead and down may be present which will add to spread, intensity and control problems. Fuel moisture levels for river channels will be lowest during the hot

summer months and therefore present the greatest risk for “extreme” fire behavior. Small, creeping ground fires are typical unless exposed to the wind, in which case a crown fire can be expected with outputs similar to the high ends of the standard FM 6. Fire effects in these riparian areas will have a significant effect on the habitat of what ever species are using the area. Short term loss of the habitat should be expected with regrowth of the shrubs within 5 to 6 years. Re-sprouting from root crowns as well as rhizomes after burning is typical.

Suppression Conditions
If fire occurs in either the New or Alamo River channels, Refuge resources will be used to protect Refuge habitat first. Heavy equipment can be utilized to suppress all fires in this area, if fire spread to other areas is deemed inevitable and a fuel break is needed. River channels provide extensive roosting and nesting habitat for a variety of avian species. All heavy equipment use in these areas will need to be authorized by Project Leader or Designee. Fire-qualified Refuge personnel will be used to the extent possible to extinguish the fire and prevent further spread along the river channel or into surrounding wetland and/or agricultural units. In all cases where fire occurs in one of the river channels, local fire companies will be notified and Refuge personnel may assist in fire fighting efforts. In all other cases, fire should be fought to prevent it’s spread along the river channel.

The zone Fire Management Officer should be notified with an evaluation of the need for additional firefighting resources. In the event of a fire in the river channels bordering the Refuge, fire-qualified personnel from the Refuge will assist other agencies in suppression efforts. Where possible, fire breaks can be created with heavy equipment along the river channels to limit the spread of the fire.

Figure 4: Hazard Unit

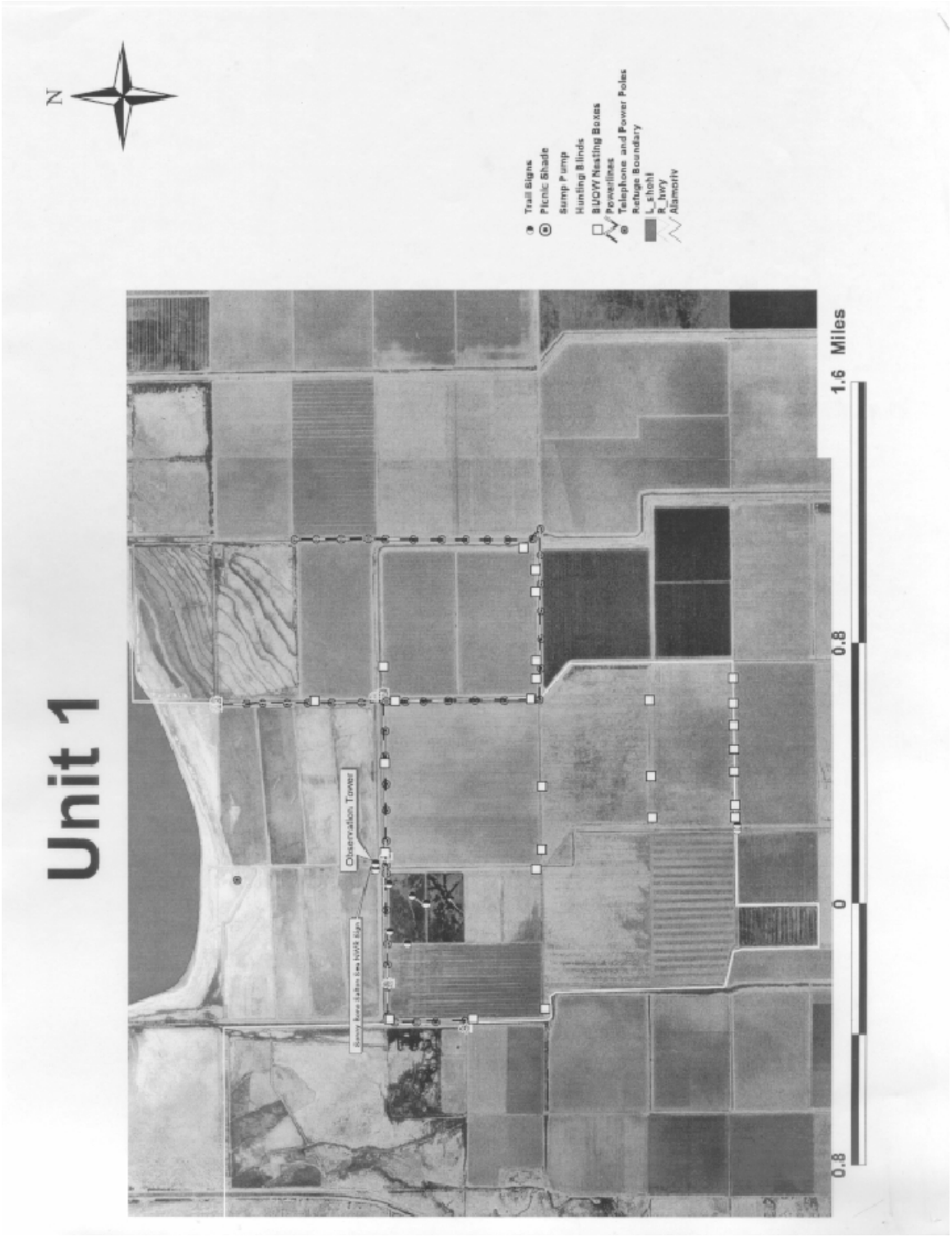


Figure 5: Unit 1

Figure 6: Headquarters Unit

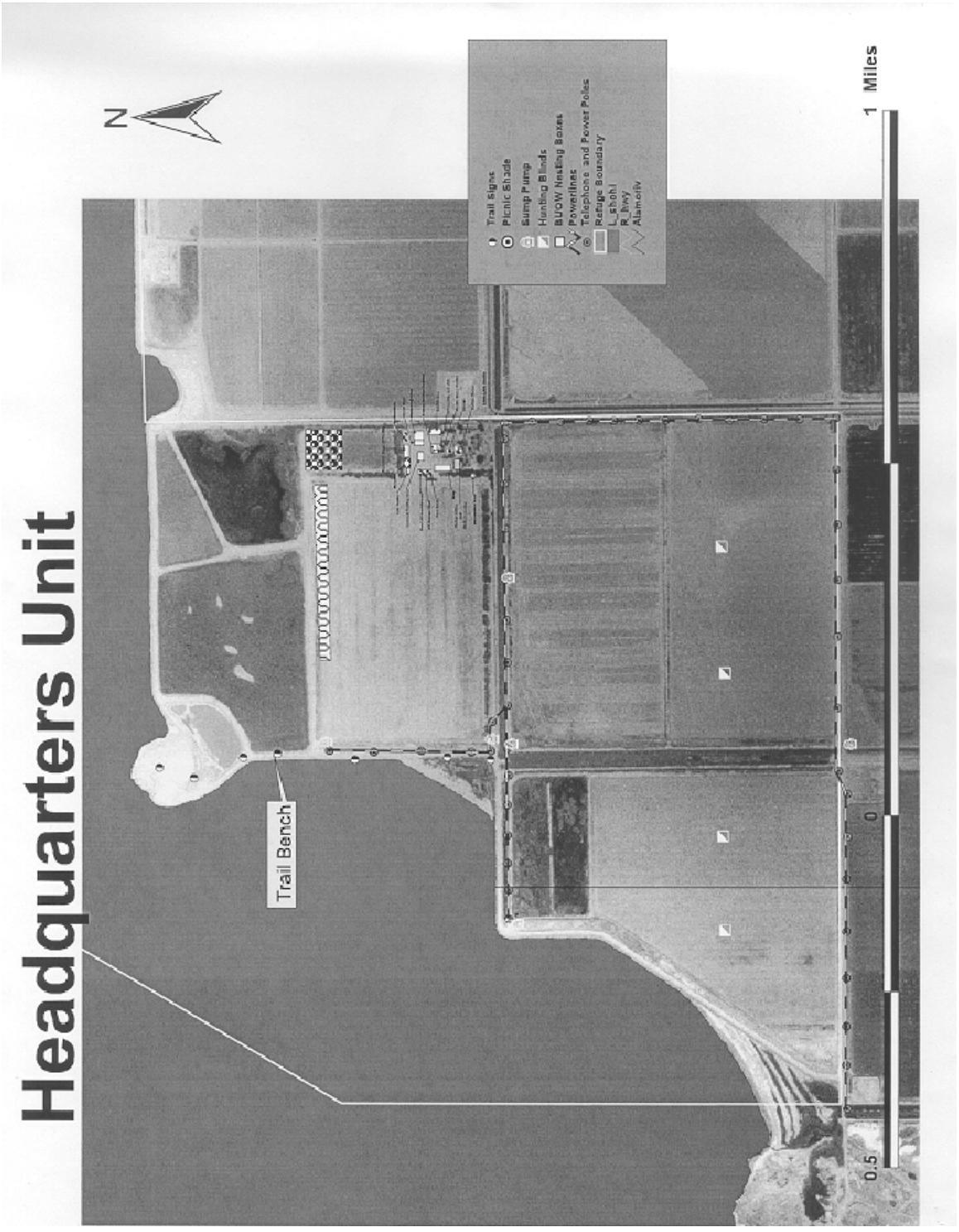


Figure 7: Fire Management Unit (Unit 1)

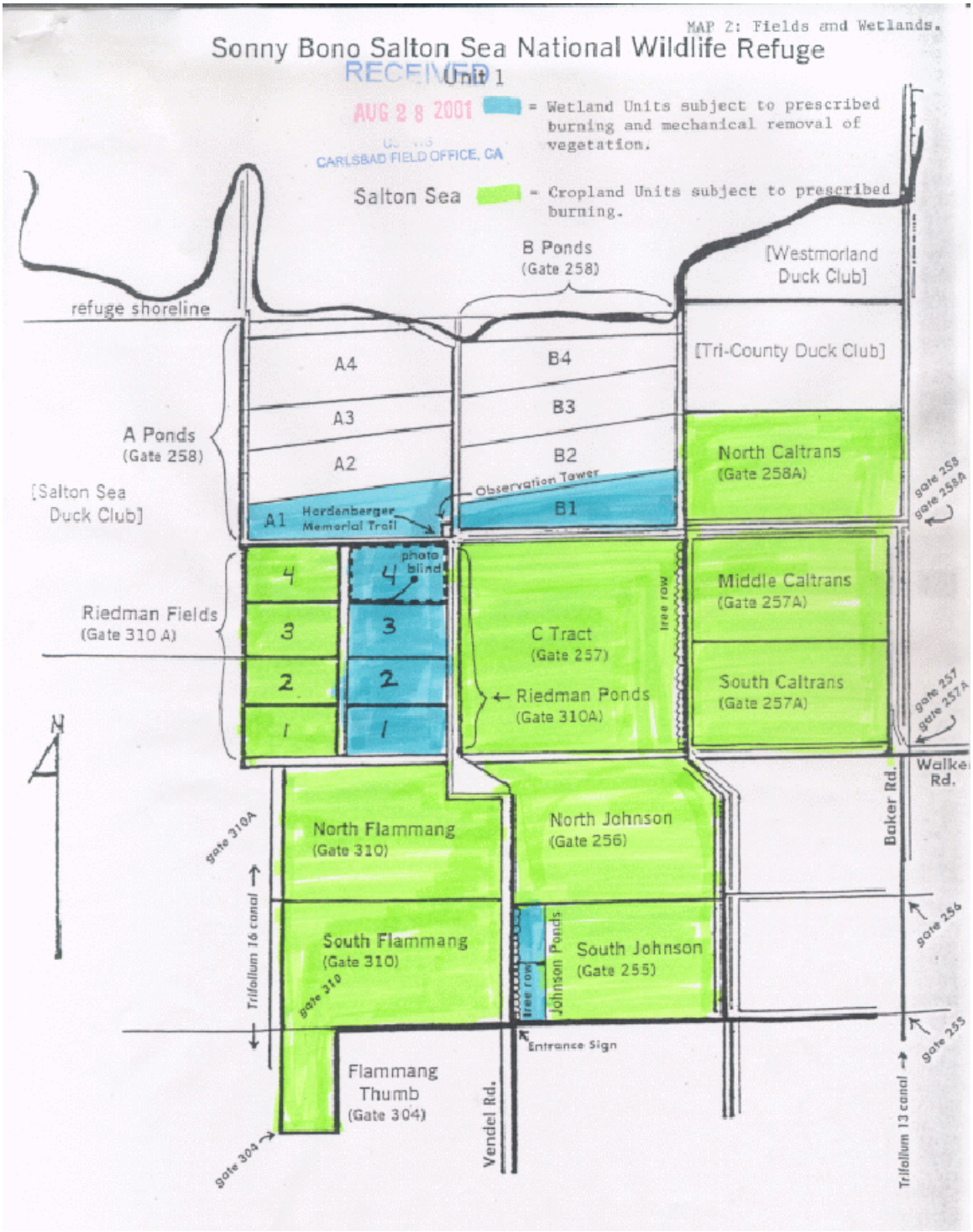
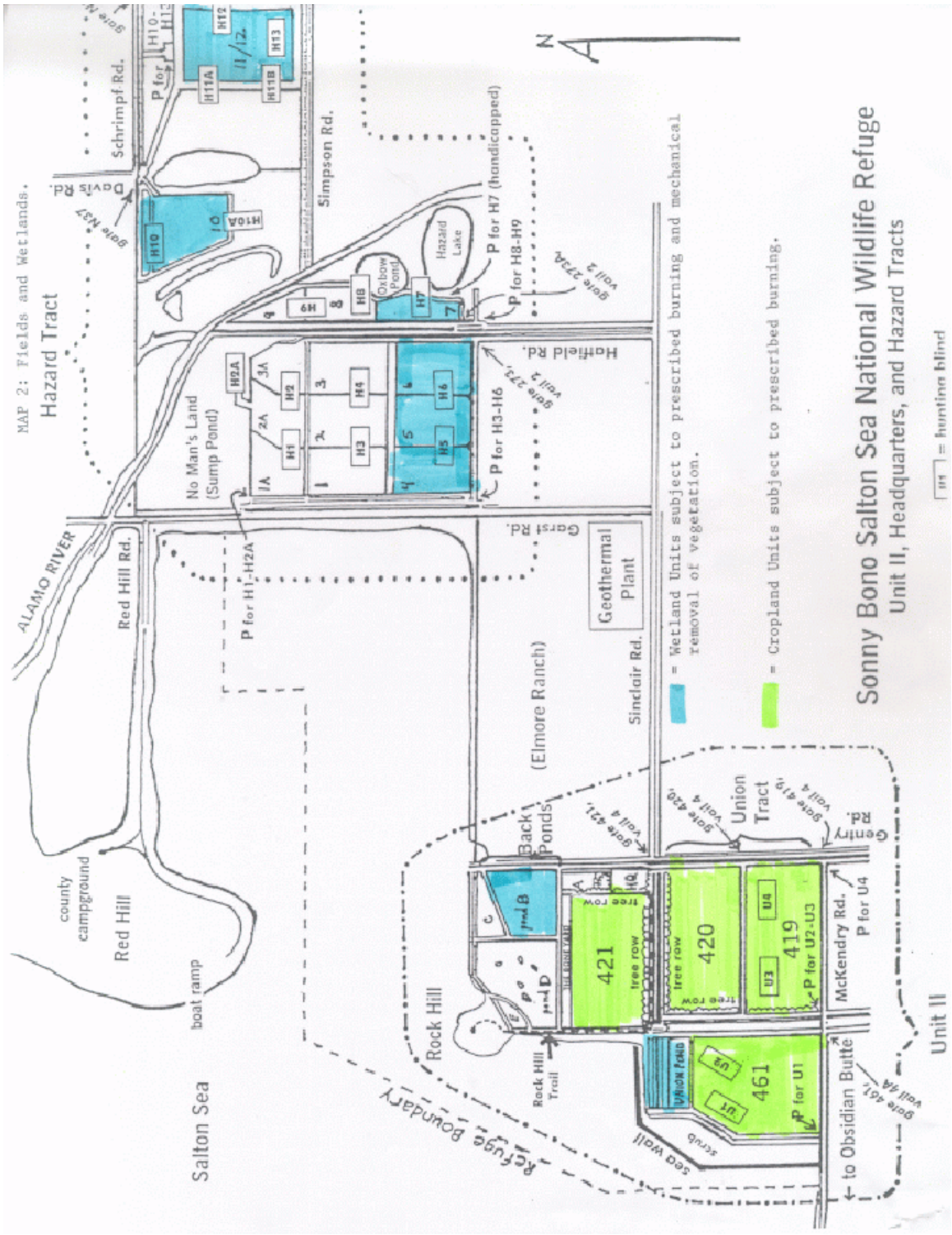


Figure 8: Fire Management Units (Headquarters & Hazard Tract)



SUPPRESSION TACTICS

Suppression involves a wide range of possible tactics from the initial attack to final control. To this end, all wildland fires will be suppressed in a safe, aggressive, and cost-effective manner to produce efficient action with minimal resource damage and limit smoke impacts to local communities.

As displayed in Table A, typical initial attack includes only engine resources. Adjustments to these dispatch levels may be made as described in the Staffing Plan Section All fires will be assessed by the first on-scene incident commander and attacked using appropriate equipment and personnel, following guidelines identified in the Protection of Sensitive Resources Section. Roads, water delivery ditches, and natural barriers will be used as much as possible to reduce fireline construction. Fireline and mop-up through riparian areas should consider long-term damage to vegetation. Unnecessary cutting and bucking should be replaced with alternative actions whenever possible. Back-fires and burnout operations should be evaluated in relation to the value of the farm field and riparian areas. A resource advisor should be assigned to all wildland fire incidents from the beginning to document rehab needs and to also assist with on-the-ground resource protection concerns.

All Fish & Wildlife Service red carded incident commanders are delegated authority to direct the initial attack of wildland fire on the Refuge. The fire suppression agreement with the Cleveland NF will serve as the delegation of authority to the initial attack incident commander from the Cleveland NF to employ tactics they deem appropriate as well. Specific direction or concerns should be relayed to the incident commander immediately. If a fire enters extended attack, a new delegation of authority may be necessary. The Project Leader and Fire Management Officer should evaluate this need based on prognosis, strategies & tactics, and Complexity.

Wildland Fire Situation Analysis

For fires that cannot be contained in one burning period, a Wild Fire Situation Analysis (WFSA) must be prepared. In the case of a wildland fire, the Project Leader 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 probable character of suppression actions are all important considerations. A sample WFSA is provide in Appendix N.

It is unlikely that a WFSA would ever be needed at Sonny Bono Salton Sea NWR. All wildland fire situations occur in areas where escape is unlikely (within agricultural fields or wetland impoundments) or in areas relatively easy to control (New and Alamo river channels). Damages to natural resources would be limited to loss of wildlife habitat, particularly for the endangered Yuma clapper rail. Damages to areas adjacent to Refuge land would include destruction of agricultural crops including stacked hay bales near Refuge boundaries. Suppression activities would center on protecting these resources and ensuring public safety in areas where visitor use occurs. All fires on Refuge lands and within river channels should be able to be controlled in under 12 hours with resources currently available. For planning purposes, the following guidelines will direct the preparation of a WFSA:

- a wildland fire is anticipated to enter a second burning period.
- tactics or strategies are planned that are controversial or potentially damaging to habitat.
- a extensive rehab plan is anticipated.

AIRCRAFT OPERATIONS

Both fixed and rotor wing aircraft may be used in all phases of fire management operations. 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. Fixed wing may be used for retardant drops and reconnaissance. Guidelines for retardant and foam use are attached in Appendix P. Air space restrictions should be considered due to the proximate to the El Centro Naval Air Station to the south and farming operations which employ aircraft. Phone numbers for both the NAS and El Centro Airport are found in Appendix D.

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

REHABILITATION AND RESTORATION

There are 2 types of fire rehabilitation: Suppression Rehabilitation and Burned Area Emergency Rehabilitation & Stabilization. Suppression Rehabilitation is to restore and repair property and resources from direct suppression activity damage, i.e., cut fences, dozer lines, and campsites. Burned Area Emergency Rehabilitation & Stabilization is to re-store resources and property damaged or otherwise impacted from the fire, i.e. burned waterlines, denuded hill sides, etc.

In the event of a wildland fire, rehabilitation of fire suppression damage should be accomplished immediately. An appropriate time is within 7 days after the fire is controlled unless the regional fire coordinator grants an extension. Funding for suppression rehabilitation is from the specific fire cost account as established by the FMO. The Incident Commander as agreed to by the Project Leader or Refuge Manager will initiate suppression rehabilitation. 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:

- Backfill control lines, scarify, and seed.
- Install water bars and construct drain dips on control lines to prevent erosion.
- Restore natural ground contours, which were altered.
- Remove all flagging, equipment and litter.
- Completely restore camping areas and improved helispots.
- Re-vegetation to restore sensitive impacted areas due to suppression actions.

*If re-vegetation or seeding is necessary, only native plant species will be used.

A written suppression rehabilitation plan may be appropriate on larger incidents. Contractors or equipment may be hired to accomplish specialized work.

If Burned Area Emergency Rehabilitation or Stabilization is required to reduce the effects of a wildland fire, then the Refuge should request appropriate funding through the Burned Area Emergency Rehabilitation (BAER) fund. The NPS representative at the National Interagency Fire Center administers the BAER fund.

A survey, plan and request must be prepared and submitted according to agency guidelines. Smaller incidents may only need simple plans prepared by Refuge staff. Larger incidents with extensive rehabilitation efforts should employ a BAER Team. A BAER Team is composed of personnel who specialize in key disciplines of resource management and are experts in BAER Plan preparation. A formal request for a BAER Team should be made in consultation with the Incident Management Team as

soon as it appears damage may be significant. Delays in making a request may hinder funding approval and magnify the damage. Once a BAER Team is employed, the Project Leader or their representative should provide guidance to the BAER team leader with expectations. The Project Leader, Refuge Manager, biologist, and FMO will review all BAER Plans. The final plan will be submitted to the Region for review prior to submission to the WO. Direction on BAER guidelines can be found in the FWS Fire Management Handbook section 5.1.

REQUIRED REPORTING

The Incident Commander 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 fireside 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.

All fire investigations should follow the guidelines outlined in 4.1-2 of the Fire Management Handbook (2000). The Fish & Wildlife Service will take the lead in all fire investigations on the Refuge. Fires which start off the Refuge and burn on to it will be investigated by the agency responsible for fire management at the point of origin. A Fish and Wildlife Service Fire Investigator may be requested to assist with the investigation. If a FWS investigator is not available, a wildland fire investigator may be requested from the Cleveland N.F. When a fire originates on the Refuge, the fire investigator will report directly to the Project Leader or their designate. All case reports, citations, and other pertinent documentation must meet with FWS guidelines. The FWS reserves the right to issue bills for collection for suppression costs and damage.

PRESCRIBED FIRE ACTIVITIES

PRESCRIBED BURN PROGRAM OBJECTIVES

The current conditions and fuels on the Refuge will benefit from prescribed burning. It is well documented that the cattails which are found in the impoundment ponds respond well to periodic burning which in turn benefits the migratory bird populations. As well, the field burning is a proven agricultural practice which benefits crop production and the migratory bird populations.

The Sonny Bono Salton Sea NWR performs prescribed burns on wetland and agricultural units. In wetland units, fire is used to open dense cattail stands to improve biological diversity and hunting opportunities. This activity is done in support of the Yuma clapper rail recovery efforts on the Refuge. Prescribed fire is also used on agricultural fields to remove stubble vegetation prior to new crop rotations, return nutrients to the soil, and remove decadent grassland cover. This activity supports the migratory bird program by improving the quality of crops used by migratory waterfowl, and also the vigor of grasslands used by upland nesting birds.

Burns that are performed in habitat which has been occupied by Yuma clapper rails will be burned only when suitable habitat exists nearby to mitigate the temporary loss through these operations. Burns will only occur when numbers of clapper rails using the unit show a marked decline or weed species (primarily salt cedar) become dominate within the unit.

Prescribed fire may also be utilized to treat and remove exotic vegetation (salt cedar and phragmites). These burns are typically carried out as a “pile” burn and located in either dry, open ponds or disced agricultural fields where there is very little risk of unwanted fire spread.

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. Actions included in the prescribed burn program 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:

- Conduct a vigorous prescribed fire program with the highest professional and technological standards;
- Identify the prescribed burn type most appropriate to specific situations and areas;
- Efficiently accomplish resource management objectives through the application of prescribed fire;
- 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;
- Prepare prescribed burn plans with a review by a qualified Prescribed Fire Manager/Prescribed Burn Boss, and approval by the Project Leader.
- Conduct prescribed burns with an adequate number of qualified personnel to conduct the burn as well as to mop-up.

The Refuge reserves the option to utilize an interagency team approach for Refuge 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. 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. Appropriate NEPA documentation (Appendix C) exists for this 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 required needs 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

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, personnel utilized, and fire effects.

Prescribed burning require a 2 year planning cycle which would consist of unit identification, out year budget submission, burn plan development, project/budget approval and site preparation. Prescribed burns are planned in advance with project leader, station biologist and cooperative farmers involvement. Projects are entered into the FIREBASE project budget request database by the Zone FMO once annually if 9263 funding is requested. The Refuge staff responsible for burn plan development will write and submit burn plans to the Zone FMO for review, then forward to the Project Leader for final approval. Project budget approval and cost code development will be forwarded by the Zone FMO to the project leader after projects are approved for funding at the regional level. Site prep will commence as early as necessary to provide for curing of fuels. Equipment to be used will be maintained, purchased or otherwise accounted for prior to the burning activity. Table B provides a planning schedule:

Table B: Planning Schedule

Steps of Planning	**Responsibility**	**Lead Time**
Burn Unit Identification	Project Leader & Biologist	12 - 24 months
Project Budget Request	Fire Management Officer	12 - 18 months
Burn Plan Development	Refuge Staff	6 - 12 months
Project Approval	Regional	12 months
Site Preparation	Burn Boss	1 to 6 months
Equipment & Personnel	Burn Boss	1 month
Implementation	Burn Boss	

Prescribed Burn Plan
The Prescribed Burn Boss will conduct a field reconnaissance of the proposed burn location with the FMO/ AFMO, biologist, and/or Refuge Manager 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. Each burn plan will be reviewed by the Refuge Manager, Biologist, FMO/AFMO, and Burn Boss. The Project Leader has the authority to approve the burn plan.

Burn Unit Vegetation Types
The term Burn Unit refers to a specific tract of land to which a prescribed burn plan applies. There are two burn unit vegetation types; wetland and farm fields. A description of these fuel types is covered in the Fire Management Units Section of this plan. Prescribed fire in wetland units typically occurs in the winter or fall at the Sonny Bono Salton Sea NWR. Wetlands should only be burned in fall or winter so that important habitat for the Yuma clapper rail is not destroyed. Wetland units that have been dried through the spring, precluding use by clapper rails, may be burned. Agricultural burns occur after crop rotations and are bimodal occurring in the fall (October) and/or spring (March or April). Coordination with the cooperative farmer is critical. See Fire Management Units Section for discussion of these Units.

Wetland Units
Wetland units will be burned approximately every 5 to 6 years. Burning will be conducted only when not in use by the Yuma clapper rail. In this instance, the ponds with dense cattail will be drained after clapper rails have molted (late August to September) and allowed to dry so that the vegetation will carry a fire. If vegetation is very tall, or too close to vegetation along levees where fire could escape, it will be mowed and an appropriate fire line will be disced along the edges of the pond. In all cases, the units will be allowed to burn out and while Refuge personnel stand by for suppression purposes. Water drafting locations are typically less than a half mile away from any unit in the form of water delivery ditches.

Agricultural Fields
Fields may be burned twice annually; Spring and Fall. Coordination with the cooperative farmer is necessary, but all burning will be conducted by currently red-carded FWS personnel. These fields will be in the preparation cycle so timing will be critical when the last cut is made and the stubble has cured. Prior to any prescribed fire, appropriate fire breaks will be disced along borders of the field. Larger fire breaks will be disced on fields bordered by mesquite and palo verde tree rows. In all cases agricultural fields are surrounded by either concrete water delivery ditches, graded dirt roads or both which serve as effective fire breaks. Refuge personnel will stand by for suppression activities in the event the fire escapes or creates a spot fire in another unit.

Strategies
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 required positions listed in the burn plan must be available for the duration 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 and live fuel moisture 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. Notification of the Imperial County Sheriffs Office and Westmorland Volunteer Fire Department on the day of the burn is necessary to prevent false alarm responses.

A qualified Incident Commander Type 4 will be available within a one 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 control actions 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.

Both wetlands and agricultural fields have similar prescriptions but different fire effects. This is due to size class, live fuel moisture and arrangement. While 90% to 95% of fuel is consumed in the agricultural fields using the below prescription, 75% to 85% is consumed when burning wetlands. Piles may be burned under the same prescription with adequate curing. A prescription is necessary for fire behavior in fuels adjacent to the piles incase of an escape. Table C gives general prescription guidelines:

Table C: Prescriptions

	Fields	**Ponds**	**Piles**
Temperature	80-110 f	80-110 f	80-110 f
Relative Humidity	3-15%	3-15%	3-15%
Wind Speed	5-20 mph	5-20 mph	5-20 mph
Wind Direction	N, S, E, W	N, S, E, W	N, S, E, W
Fuel Moisture	1 - 5%	1 - 5%	1 - 5%
Flame Length	1-3 ft.	10-20 ft.	N/A
Rate of Spread	20-80 ch/hr	20-80 ch/hr	N/A

Prescribed fires on this Refuge are generally low Complexity. Fuel types burned are typically FM 1 which presents a low spotting potential and ease of control. All units burned are surrounded by either existing graded dirt roads, concrete water delivery ditches and/or the Salton Sea which limits potential for escape. Escaped fire is only a risk to adjoining fields which typically are not ready receptors to spot fires. No aerial ignition is involved and most burns are conducted with less than 5 persons.

Monitoring and Evaluation

Monitoring of wildland and 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 efforts during suppression operations 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. All wildland fires may be monitored regardless of size. The FMO will establish specific fire information guidelines for each fire to update intelligence about the fire. Highest priority for monitoring will be assigned to large fires or fires which threaten to leave the Refuge.

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. Prescribed burn 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.

Monitoring is important in units burned to accomplish improvement of biological diversity or the removal of exotic vegetation. Response of clapper rails to burned wetland units is of utmost importance. Burning should only be performed in clapper rail habitat if monitoring shows dramatic declines in habitat use, or if other areas are created to allow rails alternate habitat prior to the burn. If burning is performed to improve rail habitat, monitoring should include response of rails in years following the burn to justify the action. Monitoring protocol will be identified in individual burn plans and recovery plans. First order fire effects will be identified, measured, and recorded by the burn boss. Second order fire effects will be the responsibility of Refuge staff as designated in the burn plan. Criteria will be developed by the Refuge biologist as identified in recovery plans, habitat conservation plan, or other pertinent documents.

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 Refuge Records. 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.

The Prescribed Fire Implementation Reporting System (PIFRS) report should be filed with the Cleveland National Forest ECC prior to the burn to assist with Federal prescribed burning database information collection (Appendix R).

Prescribed Burn Critique
A report detailing the actual burn will accompany any recommendations or changes deemed necessary in the program. This report will be submitted to the Project Leader. A post-season critique of the fire management program, including the prescribed burn program, should be held each year at the conclusion of the fall fire season.

Critiques of prescribed burn activities will conform to the established protocol in the USFWS standard Prescribed Burn Plan (Appendix J)..

AIR QUALITY / SMOKE MANAGEMENT GUIDELINES

The California Air Resources Board is the regulatory agency responsible for air quality in the state. California Air Basins are divided into air districts. The Sonny Bono Salton Sea NWR is within the Imperial County Air Pollution Control District (APCD). All air quality issues and regulatory information is administered through this office. The Imperial Valley Agricultural Commission regulates the prescribe burn program for the APCD.

Prescribed burns must be approved by the Imperial Valley Agricultural Commission on the day of the burn. Verbal approval by the Commission is given over the phone and an ignition time is set. Specific instructions for smoke management will be included in each burn plan. A burn permit must be submitted on a yearly basis (Appendix K). Smoke management concerns are addressed in individual burn plans and mitigation to minimize impacts to Refuge visitors and vehicular traffic near the Refuge. Smoke sensitive areas will be identified in each burn plan with a smoke trajectory map attached. In the event that smoke impacts an area, appropriate preplanned measurers will be taken to reduce those impacts such as road and trail closures and/or halting of burning. Interpretive trails may need to be temporarily closed to the public and signs explaining the burning operation posted in the parking areas. Refuge personnel will flag traffic along affected roads to slow or stop vehicles when smoke problems occur along county roads.

Performing the burn when wind direction keeps smoke away from trails and roads will minimize impacts to visitors. Refuge personnel may be stationed on roads (primarily at Unit 2) to slow or stop vehicles when smoke problems occur. Fires are of a small enough size so that impacts to vehicle travel or visitors are of a short duration. The combination of small fire size and distance to the nearest residential communities (8-10 miles) reduces smoke impacts to smoke sensitive areas.

The Agricultural Burning Guidelines for the State of California are being amended. Changes may occur in the coming years which may affect the quantity, method, and cost of prescribed burning. Initial guidelines require a 72 hour notice of intent to burn. Draft provisions of the plan will identify 3 tiers of burning:

- Tier 1 - burn projects greater that 10 acres or estimated to produce 1 ton of particulate matter.
- Tier 2 - burn projects greater than 100 acres or estimated to produce 10 tons of particulate matter.
- Tier 3 - burn projects greater than 250 acres or near smoke sensitive areas.

Each tier will require varying degrees of reporting, notification, and monitoring. Administrative cost based on tonnage or acreage is also planned. The new amendments are scheduled to be implemented by April 1, 2003. As these changes become effective, amendments to this plan and individual burn plans may be necessary.

FIRE RESEARCH

There are currently no on-going nor proposed fire research projects on the Refuge. Possibilities do exist for future research on the effects of fire on Clapper rail habitat. Funding for fire research projects may be available through other research grants proposals.

PUBLIC SAFETY

Sonny Bono Salton Sea NWR is dedicated to ensuring the safety of each visitor and to all residents and property adjacent to the Refuge's boundary. Annual public safety planning activities will include updating of the Fire Dispatch Plan with phone numbers and changes that could affect public and employee safety in the event of a wildland fire (Appendix E). Visitor activities may be limited due to wildland and prescribed fire activities. Visitors to the Refuge should be briefed on fire safety. Briefings will include use of any open flame or other ignition sources, fire safety, and smoking precautions.

There are no pre-determined area closures either on the Refuge or adjoining private lands. The Project Leader has the authority to implement an area closure for the Refuge when fire danger is extreme and public safety is threatened. Levels which should initiate consideration of area closures are large fires in the immediate area or threatening the Refuge, local initial attack resources committed to other fires, an increase in arson activity, etc. The Fire Management Handbook, Section 3.1 provides a decision matrix for determining Refuge closures. Consultation and coordination with cooperating fire agencies and landowners is critical to implement a successful closure.

In the event of wildland fire or prescribed burn activity on the Refuge, fire information and maps will be displayed at visitor information sites and at the Refuge headquarters. Attempts to notify local landowners and residents adjacent to the Refuge may be made during wildland fires and when any prescribed burns are planned. If a fire information officer is available during an incident, the Refuge will coordinate all press releases which could affect public safety. The fire information officer will also be used to assist with other public safety issues which the Refuge staff identifies.

PUBLIC INFORMATION AND EDUCATION

Educating the public on the value of fire as a natural process is important to increasing public understanding and support for the fire management program. The Refuge will use the most appropriate and effective means to explain the overall fire and smoke management program. This way include supplemental handouts, signing, personal contacts, auto tour routes, or media releases. When deemed necessary, interpretive presentations will address the fire management program and explain the role of fire in the environment.

Human caused wildland fires are a very low probability. Issues of fire prevention and safety will be addressed with cooperative farmers and Refuge visitors as the situation dictates. As outlined in the prevention section, emergency closures or restrictions may become necessary during periods of extreme or extended fire danger.

When Refuge prescribed burns are performed, information on the burn may be posted at visitor facilities, explaining the reasons and goals for prescribed fire on the Sonny Bono Salton Sea NWR. Prescribed burns at the Refuge are typically very short in duration (2-3 hours) therefore impacts to public use are minimal. Outreach personnel can be used to describe benefits of prescribed fire to the environment in some cases. Agricultural burns are very common in the Imperial Valley, and local residents are used to observing and living with these situations.

FIRE CRITIQUES AND ANNUAL PLAN REVIEW

FIRE CRITIQUES

Fire critiques are an informal process to improve performance and prevent injury. Informal critiques should be conducted after all incidents where a FWS fire crew responds. Informal critiques should include the crew supervisor, fire crew members, and management as the situation dictates. Cooperators can participate. The informal critique will discuss strategy & tactics, safety, interagency cooperation, and other issues that are identified in the discussion. There is no official form for these critiques, so plain paper with a heading of the incident name, date, Complexity, names, and assignments will suffice. These critiques should be routed to the Refuge Supervisor and Zone FMO. If there is a minor injury on the incident, formal documentation is required and the Zone FMO and Refuge Manager will determine if a more extensive review of the incident is necessary based on FWS policy.

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. This report will be provided to the Project Leader, Refuge Manager, and Regional Fire Coordinator.

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.

FIRE REVIEWS

Fire reviews are a formal process for improving safety and efficiency. The Fire Management Handbook, section 3.6.1 describes the objectives, types, and responsibilities of formal reviews. Formal reviews may be requested by the Refuge Manager, Zone FMO, Project Leader, regional or national offices.

CONSULTATION AND COORDINATION

The following agencies, organizations and/or individuals were consulted in preparing this plan.

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APPENDICES

APPENDIX A: REFERENCES CITED

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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, Refuge 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 - 3 acre or less.
Class B - more than 3 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 moisture and live fuel moisture; 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 Refuge, 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: NEPA COMPLIANCE

UNITED STATES FISH AND WILDLIFE SERVICE
Sonny Bono Salton Sea National Wildlife Refuge

ENVIRONMENTAL ACTION STATEMENT FOR THE FIRE MANAGEMENT PLAN

Within the spirit and intent of the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act (NEPA), and other statutes, orders, and policies that protect fish and wildlife resources, I have established the following administrative record and determined that the action of wildland and prescribed fire activities:

Check One:

__**XX**_ is a categorical exclusion as provided by 516 DM 2, Appendix 1and 516 DM 6, Appendix 1. No further NEPA documentation will therefore be made.

_____ is found not to have significant environmental effects as determined by the attached environmental assessment and finding of no significant impact.

_____ is found to have significant effects and, therefore, further consideration of this action will require a notice of intent to be published in the Federal Register announcing the decision to prepare an EIS.

_____ is not approved because of unacceptable environmental damage, or violation of Fish and Wildlife Service mandates, policy, regulations, or procedures.

_____ is an emergency action within the context of 40 CFR 1506.11. Only those actions necessary to control the immediate impacts of the emergency will be taken. Other related actions remain subject to NEPA review.
Other supporting documents (list):

Signature Approval:

_____ 9/17/01___
Sylvia Pelizza, Project Leader Date
Sonny Bono Salton NWR

INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION FORM

Originating Person(s): Sylvia Pelizza, Project Leader; Jihadda Govan, Refuge Operations Specialist, Sonny Bono Salton Sea National Wildlife Refuge, Calipatria, CA.

Date: 24 August 2001

I. Region: Pacific Region, Region 1, Southern California Ecoregion.

II. Service Activity: Refuge Prescribed Burning

III. Pertinent Species and Habitat:

A. Listed species and/or their critical habitat within the action area:

Species	Status
California brown pelican	Endangered*
Southern bald eagle	Threatened*
Peregrine falcon	Threatened*
Yuma clapper rail	Endangered*
Aleutian Canada goose	Threatened*
California least tern	Threatened*
Desert pupfish	Endangered*
Wood stork	Endangered*

* No critical habitat is designated for the above listed species.

B. Proposed species and/or proposed critical habitat within the action area: Sonny Bono Salton Sea NWR:

At this time, mountain plovers are the only proposed species found on the Refuge and surrounding farmland.

No designated critical habitat lies within or adjacent to the refuge boundary for all listed species found on the Refuge.

C. Candidate species within the action area:

No candidate species are found within the action area.

D. Include species/habitat occurrence on a map.

Maps indicate wetland habitats where Yuma clapper rails are found; areas containing desert pupfish and roosting areas for wood storks. The remaining listed

species on the above mentioned list are incidental and do not occur on a regular basis on the Refuge.

IV. Geographic area or station name and action:

The proposed action is to annually burn agricultural crop stubble and brush piles and to periodically, when feasible, burn wetland units. The proposed action is to take place in Imperial County, California near the communities of Calipatria and Westmorland.

V. Location (see attached map):

A. Ecoregion Number and Name:

California Nevada Office/Southern California Ecosystem-5

B. County and State:

Imperial County, California

C. Section, township, and range (or latitude and longitude):

Lat. 33°11'; Long. 115°36'

D. Distance (miles) and direction to nearest town:

10 miles to the nearest town, north-east to Niland, CA and 12 miles south-west to the town of Westmorland, CA.

E. Species/habitat occurrence:

See attached maps.

VI. Description of proposed action (attach additional pages as needed):

The proposed action is the annual prescribed burning of crop stubble in various agricultural fields; the burning of brush piles on an as needed basis and to periodically, when feasible, burn wetland units.

Agricultural Fields

Annual prescribed burning of agricultural fields will typically take place during the months of May through September. The timing of the burning will correspond to the departure of wintering waterfowl and mountain plover. The material burned would consist of crop stubble remaining from mowing operations and/or left over winter browse for waterfowl. Burning operations will be accomplished with the assistance of the engine crew from San Diego NWRC until Burn Boss Certification is acquired by Refuge Senior Wildlife Biologist and/or Deputy Project Leader at which time prescribed burning

operations will be conducted by Refuge personnel having undergone fire training. Agricultural fields for proposed prescribed burning lie in the Refuge's Headquarters Unit (or Union Tract) and in Unit 1 (see Map 2). The purpose of burning will benefit the Refuge by reducing weeds; eliminating the need to mow and/or disc the fields and to increase the nutrient load in the soil, thereby, providing the next wintering population of waterfowl with a more nutritious green browse. By decreasing the amount of weeds, waterfowl are provided with more green browse on which to feed. Weed reduction also slows its spread to other agricultural units. Agricultural fields require discing prior to the planting of new crops.

The proposed prescribed burning activity will eliminate the need to disc vegetation under prior to planting a new crop, thereby, reducing labor and the costs associated with field preparation. Prescribed burning increase the nutrient load in the soil benefitting wildlife by an increased nutrient availability in their green browse and additionally eliminating the cost to fertilize new plant growth.

Wetland Units

Wetland Units on the Refuge which are periodically subject to prescribed burning are those which are managed for the breeding and foraging of endangered Yuma clapper rails. Wetland Units managed for Yuma clapper rails are located at Headquarters, Hazard, and Unit 1 (see Map 2). Yuma clapper rails prefer a freshwater wetland unit that is easy to move through while providing adequate coverage for breeding and avoiding potential predators. When wetland units become thick with dead standing cattails and bullrush, these units become less favorable by Yuma clapper rails. To maintain these freshwater wetland units, they periodically require burning. To prepare wetland units for prescribed burning, units are drawn down (removed of water) ideally during late September or early October prior to burning in order to dry out the vegetation. Burning would then take place during the months of December or January. Burning operations would correspond with annual migratory movements of Yuma clapper rails at the end of the breeding season. During non-breeding months, Yuma clapper rails utilize wetland units for foraging activities and tend to be non-territorial as opposed to being territorial during the breeding season. Once wetland vegetation is dry, the unit will be ignited and allowed burn down to ash which usually requires 3-4 hours of burning.

Wetland units on the Refuge are also subject to vegetation removal by mechanical means rather than by burning. To prepare wetland units for mechanical removal of vegetation, units are drawn down (removed of water) ideally during late September or early October in order to dry out the wetland substrate. Mechanical removal would then take place during the months of December or January to reduce harm to Yuma clapper rails as stated above under wetland burning procedures, and would be accomplished with the aid of an excavator, low impact dozer, or D-6 dozer. To further minimize harm to Yuma clapper rails when using mechanical removal methods, Refuge staff would be on hand to observe the proposed action area for rails which may be in harms way and alert the heavy equipment operator of the presence of rails, or other wildlife in harms way.

VII. Determination of effects:

A. Explanation of effects of the action on species and critical habitats in items III. A, B, and C (attach additional pages as needed):

California brown pelicans: No effect. Pelicans utilize the open water of the Salton Sea; none of the proposed actions are to occur on or directly near the Salton Sea. California brown pelicans summer on the Salton Sea, but do not breed.

Southern bald eagle: No effect. Occurrence of this species has been only occasional, therefore, the proposed action is not likely to effect this species. Species does not breed on the Refuge or in the immediate area.

Peregrine falcon: No effect. Occurrence of this species has been only occasional, therefore, the proposed action is not likely to effect the species.

Aleutian Canada goose: No effect. Occurrence of this species was common in the past. Current sightings of this species in Imperial County are considered rare. P The proposed action would not effect this species because the action would occur at the time of year when the species was not present

California least tern: No effect. Occurrence of this species has been only occasional, therefore, the proposed action is not likely to effect.

Desert pupfish: No effect. Proposed action would occur on land, not in the drains desert pupfish occur.

Wood stork: No effect. Wood storks use the Refuge for roosting only, not breeding. Roosting areas for wood storks are not in the proposed action areas.

Mountain plover: Proposed action is not likely to effect this proposed species. An unpublished study conducted by U.S.G.S, winter 2001, indicates mountain plover use of agricultural fields in the Imperial Valley occurs during the winter months, November-early March, and that by April, all mountain plovers have left the Imperial Valley. The study also indicated that mountain plovers use agricultural fields to forage for food, expressly for insects, many of these fields being recently burned Bermuda grass, indicating possible benefits of the proposed action to this species. While mountain plovers have been observed in agricultural fields on the Refuge, ample agricultural areas are found in the Imperial Valley.

Because mountain plovers do not breed in the Imperial Valley, the proposed action would have no effect on the young of this species.

Yuma clapper rail: Proposed action is likely to effect, but not adversely effect this species. Yuma clapper rails are a year round resident and regularly breed on Refuge and surrounding wetland areas during late April through early June.

Surveys conducted for Yuma clapper rails this year during mid March to mid May

yielded 49 on Refuge and 4 off Refuge (see Attachment 1). This number represents a decline in Yuma clapper rails from 73 identified in 2000, and 85 in 1999. The 2001 survey indicated an increase in Yuma clapper rail numbers off Refuge. Wetland units on Refuge with the highest number of rails was the B-1 Pond in Unit 1.

2001 surveys found Yuma clapper rails utilizing agricultural fields as foraging areas during the early morning and late evening hours. Rails utilized fields with green vegetation as well as those recently burned, the latter on private lands. The possible decline in Yuma clapper rail numbers may be attributed to the unsuitability of wetland units to rails (see Attachment 1). Proposed action, wether it be burning or mechanical removal of vegetation, would likely effect the species by impelling them to move to adjacent wetland habitats.

Refuge wetland units managed for Yuma clapper rail production are typically burned once every 5-7 years. This management activity opens up wetland units which have become overgrown and chocked with vegetation hampering movement of rails. This management activity will open up areas of wetland units increasing foraging opportunities, creating new breeding areas, and encouraging adequate cover. Possible negative effects of this activity would be the taking too much rail wetland acreage out of productivity resulting in a population decline. There are currently 350 acres of freshwater wetland units specifically managed for the production of Yuma clapper rails on the Refuge.

B. Describe, if known, project modifications that would promote the conservation of the affected species.

In order to promote the conservation and population growth of mountain plovers and Yuma clapper rails and to reduce negative impacts to the existing population on Refuge, the following provisions will be applied to the proposed prescribed burning and mechanical removal of vegetation activity:

A. Wetland units having Yuma clapper rails present will not be considered for prescribed burning or mechanical removal operations until mid to late winter when Yuma clapper rail offspring have fledged and the breeding season is completed.

B. Before water of selected wetland unit is drawn down to allow vegetation to dry out, weekly surveys will be conducted to determine the presence/absence of Yuma clapper rails. If rails are found to be utilizing the particular wetland unit during 2 separate survey attempts, wetland unit will not be burned or mechanically treated and water will be returned.

C. Typically, an individual wetland unit will be burned or mechanically treated every 5-7 years. A maximum of 20% of overall rail habitat will be treated in any one year. Yuma clapper rail management units are primarily managed in pairs. In any given year, only one of the pair of wetlands would receive prescribed fire treatment thereby providing

alternative habitat nearby.

D. Where feasible, Refuge staff will use mechanical vegetation removal in place of prescribed burning. Mechanical removal methods will be used in selected areas within the wetland unit with the aid of excavator, low impact dozer, or D-6 dozer, to provide increased foraging opportunities while maintaining cover for breeding and predator evasion. Mechanical removal of vegetation would allow for selective cutting and be conducted at a slow pace, allowing any remaining rails ample time to move from harms way. Mechanical vegetation removal will be accomplished in a slow pace to allow Yuma clapper rails ample time to move from harms way. In addition to a slow pace, Refuge staff will be on hand to observe the equipment operation and to insure no Yuma clapper rails are harmed.

F. Encourage, through Partners for Fish and Wildlife, private land owners to create permanent wetland units for Yuma clapper rail production off Refuge.

G. Scheduling a management burn will depend on the breeding bird survey results. A decline in two consecutive years during a 5-7 year management period will trigger the need for manipulation.

VIII. Effect determination and response requested:

A. Listed species/designated critical habitat:

Determination	Response requested

no effect/no adverse modification
(species:_____) ____Concurrence

may affect, but is not likely to adversely
affect species/adversely modify critical habitat
(species: Yuma clapper rail) X Concurrence

may affect, and is likely to adversely
affect species/adversely modify critical habitat
(species: _____) ____Formal Consultation

B. Proposed species/proposed critical habitat: N/A

Determination — Response requested

no effect on proposed species/no adverse
modification of proposed critical habitat
(species: _____) ____Concurrence

is likely to jeopardize proposed species/
adversely modify proposed critical habitat
(species: _____) ____Conference

C. Candidate species: N/A

Determination — Response requested

no effect
(species: _____) ____Concurrence

is likely to jeopardize candidate species
(species: _____) ____Conference

Sylvia R. Pelizza, Project Leader
Sonny Bono Salton Sea NWRC

9-20-01
Date

Ken Corey, Branch Chief, Desert/Coachella
Carlsbad Fish and Wildlife Office

9.20.01
Date

APPENDIX D: EMERGENCY FIRE PLAN

SONNY BONO SALTON SEA NATIONAL WILDLIFE Refuge
Emergency Fire Plan
Updated June 29, 2001

When a report of smoke or fire on or near the Refuge is received, the person taking the report will proceed with the following steps.

1. Get as much information as possible from the person making the report.
    - Name and telephone number of the individual
    - Location of the individual
    - Location of the fire or smoke
    - Color of the smoke (grey, white, or black)
    - Size of the fire (acres)
    - Type of fuel (grass or brush)
    - Character of the fire (running, smoldering, flame height)
    - Persons already fighting the fire
    - Any persons or vehicles seen in the vicinity of the fire

2. Notify the Calipatria Fire Department immediately.
3. Notify the Refuge Manager and accomplish their instructions as necessary (phone number listed below).
4. Remain on duty, as necessary, to maintain a log of all radio and telephone communications relative to the fire.
5. Notify Fire Management Officer
6. Refuge Manager or Representative will proceed to fire location for size up and resource needs.
7. Qualified Refuge staff will respond with appropriate equipment to begin suppression actions.

AGENCY DIRECTORY

All Emergencies	**911**
Bureau of Land Management, Yuma	(520) 317-8656
Cleveland NF Emergency Command Center	(619) 557-5262
Calipatria Fire Department	(760) 348-4144
Federal Interagency Communications Center	(909) 383-5651
Imperial County Sheriffs Office	(760) 339-6301
Westmoreland Volunteer Fire Department	(760) 344-3411
Regional Fire Management	
Pam Ensley	(503) 231-6174
Andy Anderson	(530) 231-6175
Roddy Baumann	(530) 231-2075
Zone Fire Management Officers	
Bill Molumby - San Diego	(619) 669-6651
Roger Wong - San Luis	(209) 826-3508

FWS Fire Management Coordinator NIFC

Roger Erb	(208) 387-5596
Roger Spaulding	(208) 387-5712

SB-SS NWRC Staff Directory

Sylvia Pelizza - Project Leader	(760) 348-5278
Larry McGowan - Deputy Project Leader	
Charlie Pelizza - Senior Wildlife Biologist	
Steve Johnson - Wildlife Biologist	
Jihadda Govan - Refuge Operations Specialist	
Greg Birkenfeld - Coachella NWR, Refuge Manager	(760)251-4860

Frequency:

	Tx:	Rx:	Tone:
Sonny Bono Salton Sea NWR			
Cleveland National Forest	170.500	168.750	146.2 or 156.7
CNF Tactical (2)	168.200	168.200	
Calipatria Fire Department			
BLM California Desert District	166.375	168.975	146.2 or 156.7
BLM Tactical	168.300	168.300	
Westmorland VFD			
Fish & Wildlife Service Fire	166.325	166.325	

APPENDIX E: DELEGATION OF AUTHORITY

DELEGATION OF AUTHORITY
Region 1, U.S. Fish and Wildlife Service
Sonny Bono Salton Sea National Wildlife Refuge

_____, you are assigned as Incident Commander of the
_____ Incident, on the Sonny Bono Salton Sea National Wildlife Refuge..

You have full authority and responsibility for managing the Fire Suppression operation on this incident within the framework of legal statute, current policy, broad direction, and the Wildland fire Situation Analysis (WFSA). Your primary responsibility is to achieve complete control of the fire by organizing and directing the fire suppression organization in an effective, efficient, and economical manner.

You should be guided in your duties by the fire job descriptions relating to Incident Commander, as found in the Fireline Handbook. Strongly consider long-term ecosystem health, and the effects of suppression actions in the development of appropriate suppression responses. These issues are to be addressed and documented in the WFSA.

You are accountable to the Refuge Manager _____ of the Sonny Bono Salton Sea National Wildlife Refuge, who is the Line Officer. _____, is the Line Officer Representative for this incident.

You will immediately notify me in person in the event of:
(1) a serious injury or fatality,
(2) threat to private property,
(3) if the incident exceeds the limits of the selected alternative of the WFSA.

The Sonny Bono Salton Sea National Wildlife Refuge is home to several endangered, threatened, or candidate species. Your job as Incident Commander is critical, as you must minimize damage to these habitats, as well as provide for fire fighter safety. Minimum environmental suppression tactics shall be used, commensurate with forecasted and threatened resource values. You are to be guided by the Wildland fire Situation Analysis approved by _____, Refuge Manager. All ordering is to be done through the Cleveland National Forest Emergency Command Center in El Cajon. The Resource Advisor assigned to your incident will be _____.

Thank you for your help.

_____ _____
, Refuge Manager Date

APPENDIX F: COOPERATIVE AGREEMENTS

DRAFT – 3/30/01

COOPERATIVE AGREEMENT FOR FIRE MANAGEMENT
Between the
CLEVELAND NATIONAL FOREST
of the
UNITED STATES DEPARTMENT OF AGRICULTURE
and the
SAN DIEGO NATIONAL WILDLIFE REFUGE
of the
UNITED STATES DEPARTMENT OF THE INTERIOR

I. Introduction

Fire management in the nations wildlands continues to be a matter of concern to the American public and to the land management Agencies of the Department of the Interior and the Department of Agriculture. Considerable progress has been made in fire management planning, fire use, and suppression by all agencies. More progress can be made by closer cooperation and coordination among agencies. Because fire recognizes no boundaries, programs must lead to more productive cooperation and efficient operations between agencies.

The Cleveland National Forest (here after called Forest Service) and San Diego National Wildlife Refuge (hereafter called Fish & Wildlife Service) share similar land management values and resources requiring protection. Acquisition and congressional boundaries are shared which further impresses the need for an agreement. It is in the best interest of both parties to cooperate in pre-suppression, prescribed fire, and wildland fire suppression planning and operations. The American public will benefit from this cooperation by better management of the natural resources and ecosystems, protection of private property, and more efficient use of personnel and budgets.

II. Authority.

A. Interagency Agreement between the BLM, BIA, NPS, FWS, and Forest Service, May 5, 1987, as amended.

B. Protection Act of 1922 (16 U.S.C. 594)

C. Reciprocal Fire Protection Act of May 27, 1955, (69 Stat. 6; 42 U.S.C. 1856a).

D. Economy Act of June 30, 1932 (47 Stat. 417; 31 U.S.C. 1535), as amended.

E. Federal Land Policy and Management Act of 1976 (43 U.S.C. 1702)

F. National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd- 668ee; 80 Stat.927), as amended.

G. Disaster Relief Act of 1974 (42 U.S.C. 1521)

H. Cooperative Forestry Assistance Act of 1978 [PL 95-313,92 Stat. 365 as amended; 16 U.S.C. 2101 (note), 2101-2103, 2103a, 2103b, 2104-2105]

III. Objective.

A. To provide an agreement for cooperative wildland fire protection, dispatching, pre-suppression activities and prescribed fire implementation between the Fish & Wildlife Service and Forest Service.

B. To facilitate the exchange of personnel, equipment, supplies, services, and funds between the Fish & Wildlife Service and Forest Service as it relates to this agreement.

C. To protect the ecosystem from unwanted wildland fire and subsequent suppression damage.

D. To reduce costs and apply wise economic management to existing local resources.

IV. Statement of Work and Shared Services.

A. The Forest Service will:

1. Provide daily status of equipment and personnel, dispatching, and law enforcement services for Fish & Wildlife Service equipment and personnel though the Monte Vista Emergency Command Center (hereafter referred to as ECC) under recently signed cooperative agreement (See Appendix F).

2. Provide emergency fire equipment and radio repairs to FWS equipment when assigned to Forest Service incidents, which will be charged to back to the incident as appropriate.

3. Provide emergency fire equipment replacement through the Monte Vista Warehouse chargeable to appropriate incidents.

B. The Fish & Wildlife Service will:

1. Provide the Forest Service a payment of $10,000 per year for services rendered under this agreement. Payment will be submitted by December 30th annually.

C. Both agencies agree:

1. To develop planned response areas with resources, for dispatching to each agencies direct protection area, incorporating the closes forces concept.

2. Provide duty officer coverage as requested.

3. That the ECC will be the ordering point of resources for wildland fires occurring on either Forest Service or Fish & Wildlife Service land unless superseded by a Direct Protection Agreement.

4. The Forest Service and Fish & Wildlife Service will promptly notify each other of any and all fire burning or threatening of each other's lands.

5. Use appropriate suppression strategies and tactics as they apply for both the San Diego Refuges and the Cleveland National Forest.

6. To provide personnel and equipment as available for pre-suppression & fuels projects on a full reimbursement basis or as otherwise agreed upon.

7. Nothing in this agreement commits either agencies resources beyond the extent practical to provide for it's own protection responsibilities.

8. Annually, by April 1 of each year, the operating plan will be reviewed and updated as necessary by both agencies. (Appendix A)

9. Share training opportunities for each other's employees for resource and fire courses.

10. Assist each other in fire prevention activities as mutually beneficial and available.

V. Billing and Payments

A. Emergency Fire Suppression - Agencies shall not bill for services rendered by the si

B. Fire Management Projects - Agencies may chose to bill by mutual agreement as outlined in the master Interagency Agreement between the Forest Service and Department of Interior Bureaus/Services.

C. Fire Pre-suppression (including severity) - Agencies may choose to bill by mutual a

Mobilization of State, Local and Private Fire Suppression Resources – Each Agency Will use appropriate cooperative agreements and contracts to mobilize and pay for suppression resources dispatched through the ECC.

E. Provide upon request, fire and cost information for billings and investigations.

F. Review annually, and amend as needed, the appropriate share each agency pays for dispatching services.

V. General Provisions.

A. Each agency shall make direct settlement from its own funds for all liabilities it incurs under this agreement, except for workers compensation claims determined to have occurred on each others projects or as noted.

B. Parties to this agreement are not obligated to make expenditures of funds under the terms of this agreement unless such funds are appropriated for the purpose by the Congress of

the United States, or are otherwise legitimately available under section 101 and 102 of the annual Appropriations Acts. If some extraordinary emergency or unusual circumstance arises which could not be anticipated involving an expenditure in excess of available funds for the protections of life or property, all agencies shall seek supplemental appropriations to meet their respective shares of such emergency obligations.

C. This agreement will take effect on the date of the last signature. The Agreement shall remain in effect until terminated. Any signatory agency may terminate their participation in this agreement by written notice to the other signatory provided that such notice shall be given between the dates of October 31 and the following April 1. Termination will take effect 30 days after receipt of termination notice.

D. Amendments and modification to this agreement may be initiated by either signatory agency. The amendments shall not take effect until documented and signed by both agencies.

E. The responsible officers at the appropriate level operating within their authority must approve financial obligations under this agreement, to accomplish activities under Section IV.

F. Procedures for assigning charge codes and incident numbers will be identified in the annual operating plan.

G. Billing and collection procedures will follow the current payment and accounting system process.

H. Economy Act Determinations to support reimbursement are not required because the Reciprocal Fire Protection Act specifically authorizes the execution of agreements between agencies of the United States and other agencies and instrumentalities for mutual aid in fire protection and other fire management purposes. It is stated in the Federal Acquisition Regulations (FAR) 17.500(b) that the Economy Act only applies when more specific authority does not exist.

VI. Approval and Signatures

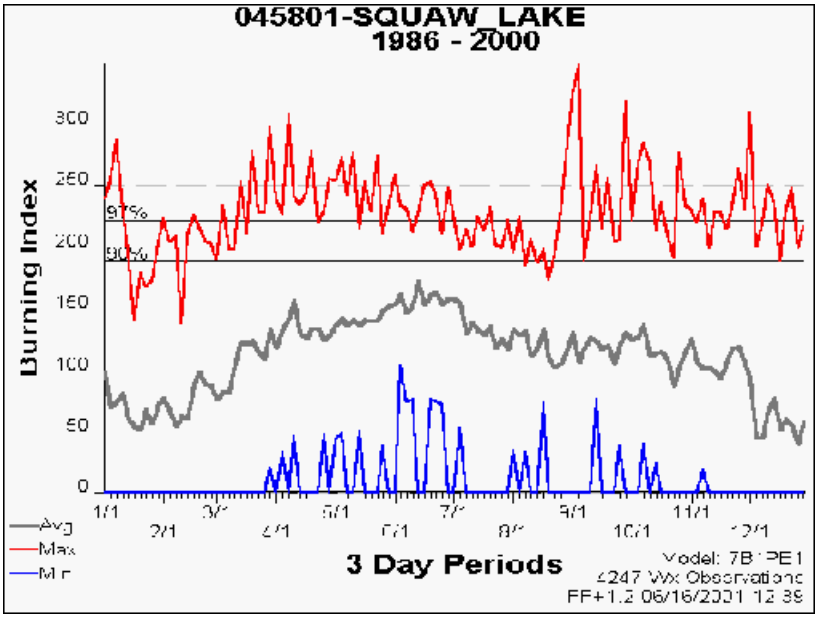
_____ _____

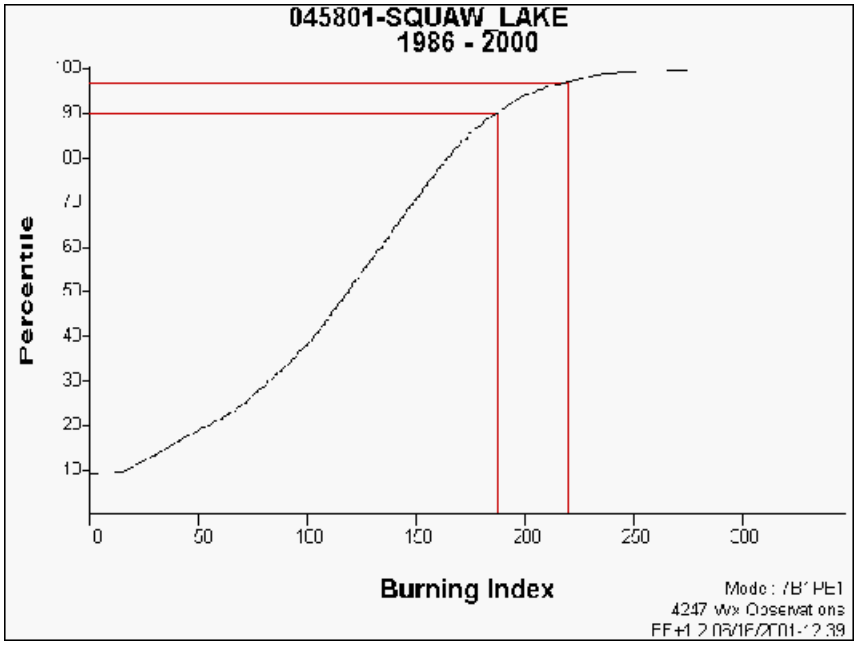
Michael J. Spear Date
Manager
California/Nevada Operations
US Fish & Wildlife Service

_____ _____

Anne S. Fege, PhD. Date
Forest Supervisor
Cleveland National Forest

APPENDIX G: WEATHER ANALYSIS





APPENDIX H: ANNUAL ACTIVITIES

Sonny Bono- Salton Sea National Wildlife Refuge
Annual Refuge Fire Management Activities

Month

ACTIVITY	1	2	3	4	5	6	7	8	9	10	11	12
Update Interagency Fire Agreements/TOP's	x											
Review and Update Fire Management Plan	x											
Vehicle Annual Maintenance	x											
Update Dispatch Plan		x										
Inventory Fire Engine and Cache		x										
Annual Refresher Training			x									
Annual Fitness Testing			x									
Agreement(s) Review with Cooperators				x								
Identify Training Needs for Next FY									x			
Prescribed Fire Plan Preparation										x		

Activities should be completed prior to the end of the month that is indicated.

APPENDIX I: FIRE CACHE INVENTORY

SONNY BONO - SALTON SEA FIRE CACHE

Item	Required	Inventory
Web Gear (Complete)	5 ea.	
Red Bags	3 ea.	
Hard Hats w/ Neck Protector	5 ea.	
Headlamps	7 ea.	
Safety Glasses	10 ea.	
Gloves Assorted Sizes	10 pr.	
Nomex Pants Assorted Sizes	6 pr.	
Nomex Shirts Assorted Sizes	6 ea.	
Fire Shelters w/ Cases	3 ea.	
1 Quart Canteens	1 Case	
Shovels	5 ea.	
Pulaskis	5 ea.	
McCleods	3 ea.	
1” Hose	300 ft.	
1” (NK2)	2 ea.	

APPENDIX J: BURN PLAN

PRESCRIBED FIRE PLAN
Approval Sheet

PROJECT NAME FIELD OFFICE

Prepared By:__Date:__

Technical Review By:_____Date:__

List other reviewers as appropriate:

Date:

Date:

The approved Prescribed Fire Plan delegates the authority to burn. No one has the authority to burn without an approved plan or in a manner not in compliance with the approved plan. Actions taken in compliance with the approved Prescribed Fire Plan will be fully supported. Personnel will be held accountable for actions taken which are not in compliance with elements of the approved plan regarding execution in a safe and cost-effective manner. This plan meets Fish & Wildlife Service policy and contains the required elements for prescribed fire planning outlined in FWS Fire Management Handbook (1/01). The Complexity of this project is:

HIGH _____ MODERATE _____ LOW

Estimated Cost_Cost Per Acre__Acres__

Benefitting Activity(s)

Approved By:__Date:

Technical Review evaluation checklist
(continued)

Format	Item	Comments	Initials
o	Safety briefing checklist attached		
o	Interagency/escape plan adequate		
o	Public communication plan complete		
o	Organization adequate		
o	Cost, funding source identified		
o	Test fire planned		
o	Smoke management adequate		
o	Ignition plan/sequence appropriate		
o	Benefitting activities identified		
o	Fire objective defined		
o	Prescription narrative complete		
o	Site preparation complete		
o	Air operations/organization plan complete		
o	Contingency plan adequate		
o	Job hazard analysis attached		
o	Go/no go checklist attached		
o	Medical Plan		
o	Communication plan		
o	Mop-up and patrol plan		
o	Post burn evaluation form attached		
o	Is an ignition sequence map needed?		

PRESCRIBED FIRE
Complexity RATING WORKSHEET

Complexity element	***Weighting factor***	***Complexity value***	***Total points***
Safety	**5**		
Threats to boundaries	**5**		
Fuels and fire behavior	**5**		
Objectives	**4**		
Management organization	**4**		
Improvements	**4**		
Natural, cultural, social values	**3**		
Air quality values	**3**		
Logistics	**3**		
Political concerns	**2**		
Tactical operations	**2**		
Interagency coordination	**2**		
Total Complexity points			
Complexity Rating (circle)	**L**	**M**	**H**

Complexity Value Breakpoints: ***Low 42 - 60***
Moderate 61 - 140
High 141 - 200

The Prescribed Fire Complexity Analysis provides a method to assess the Complexity of both wildland and prescribed fires. The analysis incorporates an assigned numeric rating Complexity value for specific Complexity elements that are weighted in their contribution to overall Complexity. The weighted value is multiplied times the numeric ***Complexity*** **value to provide *a total point rating for that item*. All values are *then* added to generate the total *point rating*. Breakpoint *ratings* are provided for low, moderate, and high Complexity *prescribed fire projects*.**

Prepared By:

Signature:_____Date___

Technical Review By:

Signature:_____Date___

Line Officer Approval By:

Signature:_____Date

WILDLAND AND PRESCRIBED FIRE COMPLEXITY RATING WORKSHEET NUMERIC RATING GUIDE

	GUIDE TO NUMERIC RATING		
Complexity ELEMENT	**1**	**3**	**5**

Safety	Safety issues are easily identifiable and mitigated	I. Number of significant issues have been identified J. All safety hazards have been identified on the LCES worksheet and mitigated	K. SOF1 or SOF2 required L. Refuge safety issues exist
Threats to Boundaries	M. Low threat to boundaries N. POI<50% O. Boundaries naturally defensible	P. Moderate threat to boundaries Q. 50<POI<80% R. Moderate risk of slopover or spot fires S. Boundaries need mitigation actions for support to strengthen fuel breaks, lines, etc.	T. High threat to boundaries U. POI>80% V. High risk of slopover or spot fires W. Mitigation actions necessary to compensate for continuous fuels
Fuels/Fire Behavior	X. Low variability in slope & aspect Y. Weather uniform and predictable Z. Surface fuels (grass, needles) only AA. Grass/shrub, or early seral forest communities BB. Short duration fire CC. No drought indicated	DD. Moderate variability in slope & aspect EE. Weather variable but predictable FF. Ladder fuels and torching GG. Fuel types/loads variable HH. Dense, tall shrub or mid-seral forest communities II. Moderate duration fire JJ. Drought index indicates normal conditions to moderate drought; expected to worsen	KK. High variability in slope & aspect LL. Weather variable and difficult to predict MM. Extreme fire behavior NN. Fuel types/loads highly variable OO. Late seral forest communities or long-return interval fire regimes PP. Altered fire regime, hazardous fuel /stand density conditions QQ. Potentially long duration fire RR. Drought index indicates severe drought; expected to continue

WILDLAND AND PRESCRIBED FIRE COMPLEXITY RATING WORKSHEET NUMERIC RATING GUIDE
(continued)

Complexity ELEMENT	GUIDE TO NUMERIC RATING		
	1	**3**	**5**
Objectives	SS. Maintenance objectives TT. Prescriptions broad UU. Easily achieved objectives	VV. Restoration objectives WW. Reduction of both live and dead fuels XX. Moderate to substantial changes in two or more strata of vegetation YY. Objectives judged to be moderately hard to achieve ZZ. Objectives may require moderately intense fire behavior	AAA. Restoration objectives in altered fuel situations BBB. Precise treatment of fuels and multiple ecological objectives CCC. Major change in the structure of 2 or more vegetative strata DDD. Conflicts between objectives and constraints EEE. Requires a high intensity fire or a combination of fire intensities that is difficult to achieve
Management Organization	FFF. Span of control held to 3 GGG. Single resource incident or project	HHH. Span of control held to 5 III. Multiple resource incident or project JJJ. Short-term commitment of specialized resources	KKK. Span of control greater than 5 LLL. Multiple branch, divisions or groups MMM. Specialized resources needed to accomplish objectives NNN. Organized management team (FUMT, IMT)
Improvements to be Protected	OOO. No risk to people or property within or adjacent to fire	PPP. Several values to be protected QQQ. Mitigation through planning and/or preparations is adequate RRR. May require some commitment of specialized resources	SSS. Numerous values and/or high values to be protected TTT. Severe damage likely without significant commitment of specialized resources with appropriate skill levels
Natural, Cultural, and Social Values to be Protected	UUU. No risk to natural, cultural, and/or social resources within or adjacent to fire	VVV. Several values to be protected WWW. Mitigation through planning and/or preparations is adequate XXX. May require some commitment of specialized resources	YYY. Numerous values and/or high values to be protected ZZZ. Severe damage likely without significant commitment of specialized resources with appropriate skill levels

Wildland and Prescribed Fire Complexity Rating Worksheet Numeric Rating Guide
(continued)

Complexity ELEMENT	GUIDE TO NUMERIC RATING		
	1	**3**	**5**
Air Quality Values to be Protected	A. Few smoke sensitive areas near fire B. Smoke produced for less than 1 burning period C. Air quality agencies generally require only initial notification and/or permitting D. No potential for scheduling conflicts with cooperators	E. Multiple smoke sensitive areas, but smoke impact mitigated in plan F. Smoke produced for 2-4 burning periods G. Daily burning bans are sometimes enacted during the burn season H. Infrequent consultation with air quality agencies is needed I. Low potential for scheduling conflicts with cooperators	J. Multiple smoke sensitive areas with Refuge mitigation actions required K. Health or visibility complaints likely L. Smoke produced for greater than 4 burning periods M. Multi-day burning bans are often enacted during the burn season N. Smoke sensitive class 1 airsheds O. Violation of state and federal health standards possible P. Frequent consultation with air quality agencies is needed Q. High potential for scheduling conflicts with cooperators
Logistics	R. Easy access S. Duration of fire support is less than 2 days	T. Difficult access U. Duration of fire support between 3 and 10 days V. Logistical position assigned W. Anticipated difficulty in obtaining resources	X. No vehicle access Y. Duration of support is greater than 10 days Z. Multiple logistical positions assigned AA. Remote camps and support necessary
Political Concerns	BB. No impact on neighbors or visitors CC. No controversy DD. No media interest	EE. Some impact on neighbors or visitors FF. Some controversy, but mitigated GG. Press release issued, but no media activity during operations	HH. High impact on neighbors or visitors II. High internal or external interest and concern JJ. Media present during operations

WILDLAND AND PRESCRIBED FIRE COMPLEXITY RATING WORKSHEET NUMERIC RATING GUIDE
(continued)

Complexity ELEMENT	GUIDE TO NUMERIC RATING		
	1	**3**	**5**
Tactical Operations	KK. No ignition or simple ignition patterns LL. Single ignition method used MM. Holding requirements minimal	NN. Multiple firing methods and/or sequences OO. Use of specialized ignition methods (i.e. terra-torch, Premo Mark heli-torch III) PP. Resources required for up to one week QQ. Holding actions to check, direct, or delay fire spread RR. Aerial support for mitigation actions desirable SS. Simultaneous ground and aerial ignition	TT. Refuge firing patterns highly dependent upon local conditions UU. Simultaneous use of multiple firing methods and/or sequences VV. Simultaneous ground and aerial ignition WW. Use of multiple heli-torches XX. Resources required for over 1 week YY. Multiple mitigation actions at variable temporal and spatial points identified. Success of actions critical to accomplishment of objectives ZZ. Simultaneous and highly Refuge ground and aerial ignition AAA. Aerial supervision and/or support for mitigation actions mandatory
Interagency Coordination	BBB. Cooperators not involved in operations CCC. No concerns	DDD. Simple joint-jurisdiction prescribed fires EEE. Some competition for resources FFF. Some concerns	GGG. Refuge multi-jurisdictional fires HHH. High competition for resources III. High concerns

Prescribed Fire Management &
Risk Assessment Statement

National Standards (Minimum)

Brief summary of project:

Threats to life or property:

Smoke management concerns:

Potential impacts on key resources:

Public land users, cooperators, community:

Other (identify):

Potential for escape:

Consequences of escape:

Narrative:

PROJECT MANAGEMENT OBJECTIVES

RESOURCE OBJECTIVES	PRESCRIBED FIRE OBJECTIVES (Specific)

TOLERABLE DEVIATION OF OBJECTIVES:

OBJECTIVE MONITORING PLAN:

BURN AREA PHYSICAL DESCRIPTION

Legal Description:___Lat./Long.____

Total Burn Area Size:

Size of Subdivisions (list):___

_____

_____

County:_____

Elevation:____Top:__Bottom:_____

Aspect:_____Drainage:____

Slope (Range):_____Slope (Average):____

Physical Description:

Environmental Assessment No.:____RIPS No. (If Applicable):___

Fire Prescription Range

	ACCEPTABLE PRESCRIPTION RANGE			
	Acceptable Range		(Desired)	
Temperature (dry bulb, degree F)				**OUTSIDE AREA AT CRITICAL HOLDING POINT MINIMUM ACCEPTABLE MOISTURE**
Relative Humidity (%)				
Nighttime Recovery (%)				
Wild Speed Range (MPH)				
Average Slope (%)				
Wind Direction - Preferred				
Wind Direction - Acceptable				
Med. Flame Wind Speed mph				
1 hr. Fuel Moisture Range				
10 hr. Fuel Moisture Range				
100 hr. Fuel Moisture Range				
1000 hr. Fuel Moisture Range				
Live Fuel Moisture Content Range				
Woody Fuel Moisture Content Range				
Duff Moisture Content Range				
Soil Moisture Content Range				
Burning Index				

FIRE BEHAVIOR RANGE

	ACCEPTABLE FIRE BEHAVIOR RANGE			
	Acceptable Range		(Desired)	
Standard Evaluation System = BEHAVE			**OUTSIDE AREA AT CRITICAL HOLDING POINT**	
Fuel Model(s)				**Model**
Rate of Spread (Ch/hr)				**Ch./hr.**
Heat Per Unit Area				**BTU/ft.**
Fire line Intensity (BTU/ft/sec)				**BTU/ft/sec.**
Flame Length Range (Feet)				**Feet**
Flame Height (Feet)				**Feet**
Probability of Ignition (%)				**%**
Reaction Intensity Range (BTU/ft/min)				**BTU/ft./min.**
Scorch Height, Maximum (Feet)				**Feet**
Spotting Distance, Maximum (Miles)				**Miles**
Burn Out Time (hrs. & min.)				**Hours & Minutes**
Other (Specify)				

Narrative:

WEATHER + FIRE BEHAVIOR OBSERVATION WORKSHEET

Observer's Name
Date
Fire Identification
Section of line identification

Weather + Fuels							
	Time						
	Slope (%)						
	Aspect						
	Elevation (Ft.)						
	Fuel Model (1-13)						
	Shade Percent (Est.)						
	Dry Bulb Temp.						
	Wet Bulb Temp.						
	Relative Humidity (%)						
	Eye Level Windspeed						
	Wind Direction						
	1 Hr. Fuel Moist. Open (%)						
	1 Hr. Fuel Moist. Shade (%)						
	10 Hr. Fuel Moisture						
FIRE OBSERVATIONS							
	Average Flame Length (Ft.)						
	Maximum Flame Length (Ft.)						
	Overstory Torching/Crowning (Y/N)						
	Fire whirls (Y/N)						
	Spotting Occurrence (Y/N)						
	Spotting Distance (Ft.)						
	Rate Of Spread (Ch/Hr. or Ft./Min.)						

Other Information: 1,000 Hr. Fuel Moisture:___Duff Moisture:_Soil Moisture:_
Live Fuel Moisture:

SMOKE MANAGEMENT PLAN

In accordance with the air district program, this application/plan will be completed by the applicant and submitted to air district officials. This plan is to be used while the California Prescribed Fire Incident Reporting system becomes operational.

General Information

1. Entered into P.F.I.R.S.? Yes___No____

B. Burn Projects: (use only when all elements of plan are the same)
Project #:_____Legal Location: T_____R_____S_____Acres__

C. Objective of Burn: (check those that apply)
a._____fire hazard reduction (natural and harvest debris reduction in all fuel types)
b._____wildlife and/or plant habitat improvement
c._____reintroduction of fire processes
d._____create planting sites
e._____other__

4. Type of Project: Pile Burn:____Understory:____
Broadcast:_____Live veg/brush:_Other:_

5. Vegetation/Fuel Group: Brush:_Grass:_
Timber:Litter:_Timber Slash:

6. Desired Season:Acceptable____
Will a Controlled Burn Notice 48/72 be requested? Yes_No____

7. Project/Unit elevation (feet): Top:_____Bottom:_____

8. Planned duration estimates: Ignition:___days Burnout:_____days

B. Wind prescription and additional planned actions

1. Wind direction surface – Acceptable:___
   Wind direction aloft (transport) – Acceptable:___

2. Identify potential meteorological conditions that would prohibit acceptable smoke dispersal._____
   _____

C. Emission Estimates

1. Required by APCD:____Not required by APCD:

2. Project in attainment or non attainment area?____

3. Method used to calculate emissions (use EPA approved) PM 10 total tons:_____
   Other as specified by APCD:___

4. List emissions/fuel reduction techniques utilized for this burn, if any:____
   _____

D. Smoke Management Action for Smoke Sensitive Areas (S.S.A.) Population Centers, Airports, Hospitals, Schools

1. Will any smoke sensitive areas be affected by project:
   No:____(go to section I) Yes:___(If yes, fill in items below)

2. Identify S.S.A. or receptors that could be adversely affected by this project:_____
   _____

3. Sensitive Feature:_____
   Direction/distance from project:
   Unacceptable condition:

4. Does the prescribed fire smoke as planned have the potential to impact a Class I area? Likely:___Unlikely:_____
List:___

5. Does the prescribed fire smoke as planned, have the potential to impact another Air District?
Likely:_Unlikely:_____

6. If so, what Air District(s):_____
_____

7. Is the planned prescribed fire in more than one Air District? Yes:_____No:____
List:___

Historically, has prescribed fire smoke impacted the listed SSA?_
List areas and dates:____

E. Smoke Dispersal Monitoring

1. Smoke dispersal monitoring will be accomplished by one or more of the following techniques. All records will be available upon request.

test fire:_____balloon:_____weather forecast:_____on site:_
weather obs:___RAWS:_Scout or lookout:_____visual monitoring: aircraft:

(Equipment breakdown/availability must be considered uncontrollable and will not affect validity of this plan.)

2. Method/location of smoke dispersal monitor(s) (include type of equipment if applicable, i.e., Data Ram, TEOM):_
_____

SMOKE MANAGEMENT PLAN
(continued)

3. Interval of smoke dispersal monitoring:_

4. Mitigation—One or more of the following mitigation shall be used if it is likely that prescribed fire smoke will impact a smoke sensitive area. Check items as appropriate.

Limit burning to_____piles or acres per day
No more than__piles shall be ignited at one time
Allow__hours between ignition of_____(piles/units)
Mop up within:_18 hrs__24 hrs__48 hrs__72hrs
Special weather condition forecasters:__
Begin ignition (time):__Terminate ignition (time):_____
Accelerate firing:_____Other, explain:_

5. Contingency—Actions to be taken if smoke impacts a S.S.A. and can be safely implemented while providing for firefighter and public safety. Check items as appropriate.

Stop ignition, except as needed to maintain control of fire and to allow fire to burn to contingency control lines
_____Begin mop up within:__18 hrs__24 hrs__48 hrs
_____Stop mop up if favorable conditions return
_____Accelerate ignition
Other

F. Public Notification

1. The following actions will be done to advise the local community that burning is planned. Also, when the burning is imminent, individual sensitive receptors may need to be contacted. Check items as appropriate.

Type of Notification	Describe Activity & Timing
_____	Radio station notification
_____	Newspaper notification
_____	Posters/flyers/letters
_____	Television station notification
_____	Door-to-door
_____	Signing
_____	Personal phone calls
_____	Other

G. Complaint Procedures

The following shall be obtained from complaints: Name, location, phone number of person, and nature of complaint:

a. Health complaint, smoke related
b. Visibility, residential or road related
c. Nuisance, just doesn't like smoke
d. Other

E.g., is the complainant suffering from effects of smoke? Are there problems with visibility in the area?

2. A log of all complaints shall be kept in the project file folder for a period of one year. Smoke related complaints shall be forwarded to the Prescribed Fire Manager or Incident Commander/Burn Boss and the Air District.

3. The Prescribed Fire Manager or Incident Commander/Burn Boss in coordination with the Air District will seek resolution for all complaints as needed.

Note: Do not display personal phone number information in smoke management plans.

H. Contacting Responsible Officials

1. Make available to the Air District who and how the Prescribed Fire Manager/Incident Commander/Burn Boss can be reached.

I. Maps and Approval

1. Check applicable maps

_____Estimated range of day/time plume path during ignition
_____Probable night time smoke path
_____Smoke sensitive areas
_____Interior cut off lines
_____Interior unit size (acres)
_____Other

2. Approval

_____Approved as submitted:
Signature of approving official

Approved with the following changes and/or conditions (specific APCD requirements—define):

_____Disapproved for the following reasons:

Signature of Approving Official Date

Public Communication Notification plan
(If necessary & applicable)

Project:

A. Purpose of the Plan (What is the focus of the communication?)

B. Objective/Outcome (What do you want to be different as a result of the communication?)

C. Key Messages (What do you want your audience to know? No more than three simple statements.)

D. Target Audience(s) (Who are you going to focus on?)

E. Methods

F. Products Needed (door knob hangers, posters, flyers, etc.)

G. Applicable Media Outreach (Radio/Television/Print)

H. Measurable Accomplishments (How will you measure the effectiveness of your communications?)

PUBLIC COMMUNICATION NOTIFICATION PLAN

(continued)

1. Post Project Notification Schedule
2. Post Project Notification Method
3. Other Considerations

4. Pre-burn and burn contacts:

Person/Agency	When	By

5. Post-burn contacts

Person/Agency	When	By

IGNITION & HOLDING

Firing Plan:

Potential Holding Problems:

Location of Holding Forces and Instructions:

Water Sources/Access:

Counter Measures for Slopovers:

Public Safety Provisions:

Other:

WORKFORCE & EQUIPMENT NEEDS FOR IGNITION & HOLDING

Prescribed Fire Burn Boss: ***Resource Advisor:***

Ignition Specialist: ***Holding Specialist:***

		AMOUNT SUPPLIED BY	
PERSONNEL	***TOTAL AMOUNT***	***BLM***	***OTHER***
EQUIPMENT ***Ignition Equipment***			
Engines			
Water Tenders/Other			

WORKFORCE & EQUIPMENT NEEDS FOR IGNITION & HOLDING
(continued)

		AMOUNT SUPPLIED BY	
PERSONNEL	***TOTAL AMOUNT***	***BLM***	***OTHER***
Crews			
Aircraft			
Mechanical Equipment			
Fittings/Hose/Etc.			
Pumps and Accessories			
Other (Radios, Belt Wx Kits, etc.)			

DAILY MOP UP/PATROL SHIFT PLAN

Burn Date: ***Shift Plan Date:***

PREDICTED WEATHER NEXT 24 HOURS		
	MINIMUM	***MAXIMUM***
Temperature		
Relative Humidity		
Wind Speed (20 ft.)		
Wind Direction		

Weather Trend Narrative:
Shift Plan Objective:
Special Considerations and Hazards:

Mop Up IC: ***Patrol Coordinator:***

		AMOUNT SUPPLIED BY:		
PERSONNEL	***TOTAL AMOUNT***	***BLM***	***PURCHASER***	***OTHER***
EQUIPMENT				
ENGINES				
HOSE				
PUMPS				
OTHER				

Add extra pages as needed

NOTE: THIS IS ONLY AN EXAMPLE. A SITE SPECIFIC CONTINGENCY PLAN NEEDS TO BE DEVELOPED FOR EACH PRESCRIBED FIRE PROJECT.

CONTINGENCY PLAN FOR ESCAPED PRESCRIBED FIRE

1. Should an escape occur, the Prescribed Fire Boss (or other designated person) will act as IC until relieved. The IC will organize all on site resources for an aggressive response.

2. The IC will notify_____ of the situation and the needed resources. Resource Area personnel will notify adjacent landowners as needed. The Field Office manager will assign an environmental specialist, if needed.

3. The Area FMO and/or IC and the environmental specialist will develop a WFSA. This document will determine what the suppression effort will be.

4. Upon an escape, all key personnel will initiate a unit log to document all actions taken. After the incident is contained, the Prescribed Fire Burn Boss will submit a report documenting weather, resources on site, ignition sequence, suppression actions, and other pertinent data.

5. The strategy for an escaped fire will include flanking the fire until the forward rate of spread is stopped, and/or burning out from roads and/or natural barriers.

Contingency Resources:

6. Available resources for dispatch through the local initial attack dispatch center:

Light Engine – 200 Gallon #_____ *Heavy Engine – 800 Gallon + #_____*
Ch/hr. Ch/hr.
Time to Fire_____ *Time to Fire_____*

Hand Crew – (number) #_____ *Other – (list) #_____*
Ch/hr. Ch/hr.
Time to Fire_____ *Time to Fire_____*

On site resources:_____heavy engines and _____ light engines. Total on site line building capabilities:_____ Ch/hr.

The line building rate of the contingency resources <u>WILL/WILL</u> <u>NOT</u> exceed <u>expected</u> fire spread rate or perimeter increase during initial escape. If the escape occurs at wind speed over _____ MPH, additional resources will be required. In some cases, fire intensity or flame length could limit the effectiveness of engines in suppressing an escape. Topography and /or the lack of a water source could also limit containment efforts. Topography is/is not a significant factor limiting access. A contingency area has been/has not been identified. Any escape into the contingency area will <u>NOT</u> be treated as an escaped fire unless it exceeds the "escape burn area target". The escape burn area target is _____ acres. If this target is exceeded, an escape will be declared. At this point efforts to burn the unit will cease and all resources committed to containment efforts.

The closest forces are:

BLM resources at:_____. Other Agency resources at:_____.

PRESCRIBED FIRE BRIEFING CHECKLIST

PROJECT NAME:_____DATE:_

TOTAL SIZE:___SUBDIVISIONS & SIZES:

CHAIN OF COMMAND:

- ☐ *Organization Chart*
- ☐ *Roles and Responsibilities*

OBJECTIVES:

- ☐ *% Burn Area*
- ☐ *Target Species*
- ☐ *Leave Areas*
- ☐ *Expected Daily Accomplishment*
- ☐ *Why We Are Here*
- ☐ *Resource Management Direction*
- ☐ *Fire Hazard Abatement*

COMMUNICATIONS:

- ☐ *Command*
- ☐ *Tactical*
- ☐ *Lighting*
- ☐ *Holding*
- ☐ *Air to Ground*
- ☐
- ☐
- ☐

FIRING/HOLDING ASSIGNMENTS:

Complete unless organization chart attached

WATER SOURCES:

CONTINGENCY:

- ☐ *IC Designation*
- ☐ *How Organization Changes*
- ☐ *Communication Change*
- ☐ *Ordering Point*
- ☐ *At what point will wildland fire be declared*
- ☐ *Go No Go Threshold*
- ☐ *The Whole Story – Ranges L-H*
- ☐ *Flame Length Behavior*
- ☐ *Adverse Behavior Consideration*

PRESCRIPTION & WEATHER FORECAST:

- ☐ *Weather Parameters (Humidity, wind speed, direction, fuel present)*
- ☐ *Wind Gusts/Sustained*
- ☐ *Stability*

PRESCRIBED FIRE BRIEFING CHECKLIST
(continued)

SAFETY: ***PUBLIC SAFETY:***

- ☐ *LCES* ☐ *Evacuation*
- ☐ *Personal Protective Equipment* ☐ *Notification*
- ☐ *JHA* ☐ *Pre-Event Media Contacts*
- ☐ *Known Hazards* ☐ *Special Area Conditions*
- ☐ *Public Safety* ☐ *Wildland Urban Interface*
- ☐ *10 Standard Orders*
- ☐ *18 Watch Outs*
- ☐ *Other*

SMOKE MANAGEMENT

- ☐ *Constraints*
- ☐ *Smoke Behavior*
- ☐ *Burnout Time*
- ☐ *Smoke Extension*
- ☐ *Firefighter Exposure*
- ☐ *Effects on Roads, Camp, etc.*

OTHER CONSIDERATIONS AND NOTES ON THE BRIEFING:

REQUIRED ATTACHMENTS:

- ☐ *Organization Chart*
- ☐ *ICS 204*
- ☐ *Maps*
- ☐ *Medical Plan*
- ☐ *IHA*
- ☐ *Communication Plan (if necessary)*
- ☐ *Transportation Plan*

Signed:____Date:

JOB HAZARD ANALYSIS FOR PRESCRIBED FIRE OPERATIONS

ACTIVITY	*HAZARDS*	*ACTION TO ELIMINATE HAZARD*
1. Driving to work site	*A. General operations and public traffic.*	*A. Defensive driving techniques.*
	B. Steep, narrow roads.	*B. Drive cautiously so that you can stop in less than ½ of your usual distance. Lights on.*
	C. Unsecured loads.	*C. Check loads for secureness before departing – use downs.*
	D. Hauling flammable substances.	*D. Use appropriate containers for hauling slash fuel or gasoline.*
	E. Transporting sharp tools.	*E. Use guards, cages, boxes, or tool mounts.*
	F. Loading vehicles.	*F. Use proper lifting techniques.*
	G.	*G.*
	H.	*H.*
2. Driving at or near work site	*A. Backing or turning around in small areas.*	*A. Use spotters. Face the hazard while turning around. Avoid tight turn around if possible.*
	B. Heavy truck traffic between units and water source.	*B. Maintain radio communications and alert other drivers in the area. Lights on.*
	C. Smoke, poor visibility.	*C. Place a guide on foot ahead of the vehicle. Wait until smoke is less dense. Lights on. Use light bars and/or warning lights.*
	D. Parking near a prescribed burn.	*D. Use parking brake. Leave keys in ignition, avoid leaving exposed flammable in bed of vehicle. All windows closed.*
	E. ATV's.	*E. Operated by trained and licensed drivers only. Lights on. Avoid steep slopes.*
	F. Public Safety.	*F. Post signs an/or use road blocks if needed.*
	A. Exposure to sparks.	*A. Use proper containers, move away from hot areas, no smoking.*
	B. Eye or skin contamination from fuel.	*B. Gloves, goggles, leather lace-up boots.*
	C. Leaking containers or torches.	*C. Empty and tag in field, have repairs made before next use.*

ACTIVITY	*HAZARDS*	*ACTION TO ELIMINATE HAZARD*
	D. Improper gas/diesel ratios for slash fuel.	***D. Use labels on containers, field test small amounts before use.***
	E. Slippery surfaces from spilled fuel.	***E. Make every effort to avoid spilling fuel, where feasible. Install non-slip material on fuel truck beds. Clean up spills as soon as possible.***
4. Equipment set-up	***A. Muscle or back strain lifting heavy objects.***	***A. Use of proper lifting techniques. Get help if too heavy.***
	B. Operating pumps and mechanized equipment exhaust burns, loose clothing.	***B. Tuck in shirt tails, remove scarves and jewelry. Proper clothing, gloves and boots.***
	C. Application of slippery retardant, poor footing.	***C. Eight-inch lug sole, lace-up boots. Avoid slick areas if possible.***
	D. Crew people working uphill from each other (rolling debris).	***D. Post lookout. Shout warnings.***
	E. Operating high pressure nozzles.	***E. Maintain visual contact with pump operator and other crew members. Use backup person behind nozzle man. Use goggles.***
	F. Traversing rocky terrain.	***F. Eight-inch lug boots, slow cautious movement.***
	G. Noise from pumps and saws.	***G. Use hearing protection (ear plugs or muffs).***
5. Firing (hand ignition)	***A. Rolling debris.***	***A. Use hand held radios, close supervision, lookouts. Consider aerial ignition.***
	B. Close proximity to intense heat and erratic fire behavior.	***B. Same action as in A. Use PPE.***
	C. Smoke, sparks, and cinders.	***C. Avoid very dense smoke. Wear PPE, Alter firing patterns. Rotate personnel out of worst areas.***
	D. Poor footing, steep slopes, heavy fuels.	***D. Constant awareness, learn to identify hazard area. Slow down.***
	E. Noise of fire, obscures verbal warnings.	***E. Hand held radios for all lighting personnel.***
	F. Burning fuel dripping from torches. Burns from drip torches.	***F. Lighters stay alert to where torch head is. Close air vent when not actually lighting. Proper PPE.***

ACTIVITY	*HAZARDS*	*ACTION TO ELIMINATE HAZARD*
	G. Misguided lighter lighting wrong area.	***G. Know location of others. Radios for all lighting personnel. Close supervision.***
	H.	***H.***
	I.	***I.***
5.1 IGNITION DEVICES		
5.1.1 Flares	***A. Risks associated with firing projectiles or flares.***	***A. Basic firearm safety rules followed, separation of ammo by type and size, access to launchers limited to trained personnel or those undergoing training.***
	B. Inadvertent firing over/under shot resulting in activity outside project boundaries.	***B. Post lookouts. Notify ignition spec. and holding spec. Holding crews extinguish spot, subsequent to further ignition.***
5.1.2 Mechanical (ATV)	***A. Vehicle Maintenance***	***A. Thorough inspection of vehicles and ignition equipment.***
	B. Close proximity to fire, intense heat, erratic behavior.	***B. Same as in 5. B, Know escape routes.***
	C. Rough terrain, heavy ground fuels, side hills and slopes.	***C. Scout and locate accessible routes, make dry run, experienced operator or supervised trainee. Fire by hand if needed.***
	D. Noise of ATV and fire obscures verbal warnings.	***D. Hand held radios required of all ignition personnel. Hard hats instead of helmets to facilitate communications.***
	E. Inadvertent ignitions.	***E. Preplan ignition on/off points, check wand apparatus on regular basis. Notify holding crew.***
	F.	***F.***
5.1.3 Mounted (Terra Torch)	***A. Intrinsic danger of using terra torch (vehicle mounted).***	***A. Terra torch is to be operated under supervision of the ignition spec. Use only with trained operator's i.e., driver, operator, and engine support.***
	B. Vehicle maintenance.	***B. Thorough inspection of vehicle and ignition equipment. Electrical connections and grounds all in working order.***

ACTIVITY	*HAZARDS*	*ACTION TO ELIMINATE HAZARD*
	C. Close proximity to fire, intense heat, erratic behavior.	***C. Same as 5. B, known escape routes.***
	D. Rough terrain/roads, ground fuels, side hills and slopes.	***D. Terra torch use restricted to roads or two tracks, pre-scouted paths or routes only.***
	E. Chemical exposure, mixing/transferring.	***E. Trained personnel only. Well ventilated area. Use PPE. All containers grounded.***
	F. Flammable vapors, liquids, and solids.	***F. Terra torch mixing group will wear 100% cotton clothing. All containers grounded. Clean up all spills.***
	G. Slippery surfaces from spilled fuel.	***G. Make every effort to avoid spilling fuel, install non-slip material on decking, absorbent material for spills will be in torch kit.***
5.1.4 Helitorch/PSD	***A. Hazards of aircraft use combined with ignition systems.***	***A. Aviation operations to be coordinated by certified personnel. HEMG on project site. Trained and experienced personnel operating ignition equipment. Separate operating plan and JHA developed.***
	B. Flight routes, project area and flight following coordinations (MOA's, TFR's etc.).	***B. Follow guidelines and restrictions as stated in IHOG, file special use safety plan, coordinate w/Aviation Management Specialist and Dispatch Centers.***
	C. Apparatus viability.	***C. Aerial ignition apparatus thoroughly maintained, inspected, tested before installing into aircraft, pilot has ultimate GO/NO GO authority.***
6. Holding (includes all of item 4)	***A. Carrying sharp tools.***	***A. Keep tool guards on while traveling, remove only while in use.***
	B. Tool use.	***B. Proper crew training, with close supervision by crew boss.***
	C. Snag falling.	***C. Falling and bucking to be done only by trained personnel.***
	D. Burned off snags or widow-makers.	***D. Avoid entering burned over areas. Post lookout, flag. Obtain professional faller if needed.***
	E. Burns from radiant heat and hot embers.	***E. Nomex clothing, hard hats and gloves required.***

ACTIVITY	*HAZARDS*	*ACTION TO ELIMINATE HAZARD*
	F. Rolling debris.	*F. Post lookouts, brief crew as to potential hazard areas.*
	G. Erratic fire behavior	*G. To be covered by burn boss in pre-burn briefing, escape route shall be known by everyone.*
7. Mop-up: Included all hazards in items 4, 5, 6, and the following	*A. Slippery, wet surfaces.*	*A. All PPE required.*
	B. Smoke inhalation.	*B. Crews will be rotated in and out of dense smoke.*
	C. Fatigue, long hours of work.	*C. Shifts of duty shall not exceed 12 hours, except in emergencies. Crews will work no longer than 7 days on with 1 day off or 14 on with 2 off. Work in pairs, have rested drivers available.*
	D.	*D.*

PUBLIC SAFETY CHECKLIST

(To Be Developed)

Address : recon procedure for no one in project area, signs needed at all points of egress to maintain closure during burn, contact of property owners adjacent to burn, possible smoke visibility issues and how they will be dealt with, ie across highways, near airports, etc.; Evacuation procedures if needed or applicable;

MEDICAL PLAN

INCIDENT MEDICAL AID STATIONS

MEDICAL LOCATION PARAMEDICS		***YES***	***NO***
Trauma kit and burn kit on site			

** Identify any on site EMT's, and First Responders.*

TRANSPORTATION

A. Ambulance services

NAME	***TELEPHONE***	***ADDRESS***	***PARAMEDICS***	
			YES	***NO***

B. Incident Ambulance

NAME	***LOCATION***	***PARAMEDICS***	
		NO	***YES***
Helispot			

HOSPITALS

NAME	***ADDRESS***	***TRAVEL TIME***		***PHONE***	***HELIPAD***		***BURN CENTER***	
		AIR	***GRND***		***YES***	***NO***	***YES***	***NO***

** Identify the Latitude and Longitude for hospitals with helipads. Also list hospital radio frequencies.*

MEDICAL EMERGENCY PROCEDURES

Notify Prescribed Fire Burn Boss of serious accidents or injuries. The Prescribed Fire Burn Boss will initiate on site response and coordinate additional needs through _____. The first option is to transport to _____ if using an ambulance for transport, send someone to meet the ambulance at a known location. IE. Highway Junction or known landmark.

INCIDENT RADIO COMMUNICATIONS PLAN

SYSTEM/CACHE	*CHANNEL*	*FUNCTION*	*FREQUENCY*	*ASSIGNMENT*	*REMARKS*
					H = Hand held *M = Mobile*

** If aerial ignition is used consider assigning a specific radio frequency for use between the aircraft and Prescribed Fire Burn Boss and/or Ignition Specialist.*

GO/NO-GO CHECKLIST

(A "NO" RESPONSE TO ANY ITEM MEANS STOP!)

1. ARE ALL FIRE PRESCRIPTION SPECIFICATIONS MET?

2. ARE ALL SMOKE MANAGEMENT PRESCRIPTION SPECIFICATIONS MET, AND/OR HAS SMOKE MANAGEMENT CLEARANCE BEEN GIVEN FOR THE PROJECT?

3. IS THE AREA FIRE WEATHER FORECAST FAVORABLE?

4. ARE ALL REQUIRED PERSONNEL IN THE PRESCRIBED FIRE PLAN ON SITE?

5. IS ALL REQUIRED EQUIPMENT IN THE PRESCRIBED FIRE PLAN IN PLACE AND FUNCTIONAL?

6. HAVE ALL PERSONNEL BEEN BRIEFED ON THE PROJECT OBJECTIVES AND THEIR ASSIGNMENTS?

7. HAVE ALL PERSONNEL BEEN BRIEFED ON THE SAFETY HAZARDS, ESCAPE ROUTES AND SAFETY ZONES.

8. HAVE ALL THE REQUIRED NOTIFICATIONS BEEN MADE?

9. ARE THE "CONTINGENCY RESOURCES" ADEQUATE FOR CONTAINMENT OF ESCAPES UNDER THE EXPECTED CONDITIONS?

10. IN YOUR OPINION, CAN THE BURN BE CARRIED OUT ACCORDING TO PLAN AND WILL IT MEET THE PLANNED OBJECTIVES?

11. TEST BURN MEETS OBJECTIVES.

IF ALL QUESTIONS WERE ANSWERED "YES" PROCEED WITH A TEST FIRE. DOCUMENT THE CONDITIONS, LOCATION AND RESULTS.

Signed: _____ Date:__

Prescribed Fire Burn Boss

Counter Signed: _____ Date:

Highest Ranking/Qualified Person

PROPOSED COST

<u>PROPOSED TOTAL COST:</u>

These costs could all be in the 9263 or 9264 sub-activity; or could be spread across several sub-activities; estimate the cost for each area.

Site Preparation: ***Ignition + Holding:***

Mop & Patrol: ***Supplies:***

These costs could be in one or more sub-activities; estimate the cost and show the sub-activity for each area.

Planning: ***Other:***

E.A.

Clearances

Plan Preparation

site preparation requirements

Line Construction Requirements:

Line Specifications:

Fuel Pretreatment and Distribution:

Assignment Responsibilities:

Project proposed scheduling

A. Season: Approx. Date:

Any limitations on days of week of burning:

Time of day:

Type of burn:

Length of ignition phase:

Length of burnout phase:

FIRE WEATHER DATA/FORECASTS

Data collection methods (describe):

Instrument locations (include elevation):

Weather information to be collected:

How many days before ignition:

Fire weather forecasting unit:

Fuel moisture (live & dead) sampling methods to be used:

Fire Out Certificate

The_____prescribed burn is completed and no further action or patrol is required.

Prescribed Fire Boss Signature

Administrative Site Burn Plan

Name:

Location: *Township* *Range Section* *Lat/Lon*

1. *EA optional*
2. *Resource objectives*
3. *Dooryard trash, small piles weeds, ditch banks, etc., trespass shacks*
4. *Has minimum resources required*
5. *Has weather parameters been established*
6. *Low potential for escape*
7. *No fire behavior prediction required*
8. *Can be written to be good up to 3 years*
9. *Burn day required*
10. *Less than (<) one acre in size*
11. *Intended for admin sites, campgrounds, occupancy trespass, etc.*

DEBRIS & PILE BURN PLAN

NOTE: THIS PLAN IS INTENDED FOR BURNING DEBRIS AND PILES (ACTIVITY FUELS) FROM THINGS LIKE TIMBER SALE AND FUEL BREAK CONSTRUCTION. THIS PLAN FORMAT SHOULD ONLY BE USED OUTSIDE OF DECLARED FIRE SEASON FOR THE AREA CONSIDERED.

Field Office:___

Project Name:_

Prepared By:__Date Prepared:_

Reviewed By:__Date Reviewed:_

Area Manager Approval:_____Date:__

Environmental Assessment Met (where documented):___

_____

Estimated Cost: $_____Funding Code:_

PROJECT AREA DESCRIPTION (ATTACH MAP OF BURN AREA)

General Location:_____

_____

Legal Description: T.__ R.____ S.____

Burn Objectives:_____

_____

Number, Species, and Size of Piles:

Adjacent Fuel Description:

Weather Forecasts: *The Burn Boss is responsible for weather being taken every hour while burning to ensure prescription compliance. Contact the Emergency Communications Center (ECC) for weather forecasts and burn day designation. Contact ECC by radio when ignition is starting, giving legal description of area burning; and when burning is over, giving number of acres or piles burned.*

PRESCRIPTION:

Season of Burn (Fall, Spring, Summer, Winter):

	Acceptable Range		*Desired*
Air Temperature	_____		_____
Relative Humidity	_____	_____	_____
Wind Speed	_____	_____	_____
Fuel Moisture 1 Hour T.L.	_____	_____	_____
10 Hour T.L.	_____	_____	_____
100 Hour T.L.	_____	_____	_____
Adjacent Live Fuel Moisture Low/High	_____	_____	_____

Wind Direction Preferred:_____Acceptable:___Unacceptable:_

(continued)

Smoke Management

Permitting Agency:

Total Tons Per Acre Emissions:

Distance and Direction from Smoke Sensitive Area(s):

Necessary Transport Wind Direction(s):

Visibility Hazard(s) (i.e., roads, airports, etc.):

Actions to Reduce Visibility Hazard(s):

Can Residual Smoke Be a Problem?

Other Considerations:

Special Constraint(s)/Consideration(s):

Holding Force Instructions:

Mop Up Instructions

debris & pile burn plan

(continued)

***CONTACT PLAN** (Who will notify the following and when):_____*

_____

_____

Key People:___

Local Landowners:____

_____

Private Land Within Proposed Burn (Identify on Map):_

Fire Protection Agencies:_____

Dispatcher:___

Public Affairs Officer:__

News Releases to Local Papers and News Media:_____

(continued)

SAFETY PLAN

All line employees involved in the actual burning of standing and/or piled fuels will have on their person and use as necessary the following protective clothing:

1. *Hard hat*
2. *Goggles*
3. *Gloves*
4. *Fire resistant pants*
5. *Fire resistant shirt*
6. *Fire shelter*
7. *Laced boots as used in fire suppression*

Employees involved in a project with an assignment not related to actual burning should have with them all of the above safety equipment and be so equipped if their unplanned duties expose them to line work and/or the actual burning.

Each burning plan will designate fire safety responsibility. This designation should include the following considerations:

1. *Escape routes*
2. *Safety areas*
3. *Closest recognized burn treatment facility and specific methods of travel to burn center or hospital*

HOSPITALS

		Travel Time		Helipad	Burn
Center Name	***Address***	***Air/Ground***	***Phone***	***Yes/No***	***Yes/No***

debris & pile burn plan

(continued)

MEDICAL EMERGENCY PROCEDURES

1. Give First Aid at scene.

2. Contact Bakersfield Dispatch or local California Department of Forestry Emergency Communications Center (ECC).

3. Make transportation arrangements.

Comments:____

_____

_____

DEBRIS & PILE BURNING CHECKLIST

(A "NO" response to any item means STOP!)

1. Are all fire prescriptions met?
2. Has dispatch been notified?
3. Is it a permissive burn day?
4. Is fire weather forecast favorable?
5. Are all personnel required in the burn plan on site?
6. Have all personnel been briefed on the burn plan requirements?
7. Have all personnel been briefed on safety hazards, escape routes and safety orders?
8. Is all the required equipment in place an in working order?
9. Are all personnel aware of mop up requirements before abandonment?
10. Are all answers to all the above questions "Yes"?

If all ten questions have been answered "Yes", you may proceed with lighting.

PRELIMINARY BURN SITE REVIEW

Review Group

_____ *Field Office*___
_____ *Location (w/map)*_____
_____ *Project Name* __
_____ *Project Number*

A. Management Consideration

Land/Resource Planning Documents: __
Present Management Constraints: _____
BLM Relationship W/Operator:
*Potential Conflicts with Other Uses:*___
*Smoke Management Issues:*____
(Consider location of communities, prevalent winds, smoke sensitive air sheds, etc.)

Project Goals/Objectives: *1.*_____
*2.*_____
*3.*_____
*4.*_____

B. Site Analysis

General Site Description: _____
Plant Species and Densities: Bare Ground % _____ *Litter Depth:*___
Overstory: _____,_____,_____
Understory: _____,_____,_____
Topographic Features: % Slope _____ *Elevation:*
*Aspect:*_____ *Fuel Description: Height:*___
Continuity: _____ *Loading in tons/AC:*__
*By Size Class:*_____ _____ _____ ____
Fuel Profile Adjacent to the Planning Unit:

C. Site Considerations

9 Water Quality 9 Water Shed 9 Water Source 9 Recreation

9 Wildlife/T&E 9 Wildlife/Other 9 Wilderness 9 Mining

9 Archaeology 9 Other _____
Land Status/Use Conflicts:____
Type of Ignition:_____
Season to Burn:
Barriers to Fire: _____
Special Equipment Needed:____
Preburn Actions Needed to Meet Fire Behavior Objectives: ____
_____
Fire Organization (Specify number of people needed): Burn Manager___,
Burn Boss _____ ___ Firing Crew _____ ___ , Holding Crew ____,
Other _
Type and Amount of Equipment Needed:_____
_____

Duration of Activity: Site Preparation __
Implementation
Post-Burn Activities ___

E. Logistics of Project

*Travel Time to the Site_*
Preparation___
Camp/Motel Arrangements____

F. Recommendations

JOB PLANNING CHECKLIST

Field Office____ Project Name__

Project Number_____ Subactivity____

SECTION I - ACTION REQUIRED TWO YEARS PRIOR TO AWP.	*DATE*	*INITIAL*
1. Prescribed Fire Project Proposed to local Agency Administrator.		
2. Local Manager approves or denies further action and assigns the project to appropriate area staff person.		
3. Site inspection. Map and initial flag project. Preliminary objective determined and discussed. Environmental concern identified and agreement that objectives can be met.		
4. Check and document the following: *a. Planning Documents* *b. Land Claims* *c. Mining Claims* *d. Wilderness Status* *e. Water Rights Status* *f. Possible threatened and endangered species conflict* *g. Possible conflicts with wildlife concerns* *h. Possible problems with soil, water quality, or air quality* *i. Possible problems with livestock, wild horses or burros* *j. Possible conflicts with other authorized uses* *k. Possible conflict with other Federal, state, or local government agencies and public.* **Note: Indicate either Conflict (C), Possible Conflict (PC), No Conflict (NC), or Not Applicable (NA). If a conflict or possible problem does exist, explain on a separate sheet or memo and attach.*		
5. Local Manager reviews and resolves or initiates resolution of conflicts or terminates the proposal.		
6. Prepare a prescribed fire project file. Include this checklist, full documentation of all items , and best available map of the project area.		
7. Initiate possible Co-op agreement and contributions. Prepare rough draft of co-op agreement(s).		

JOB PLANNING CHECKLIST		
SECTION II - ACTION REQUIRED ONE YEAR PRIOR TO AWP		
8. Visual contrast Rating completed (form #8400-4) and mitigated if required.		
9. Cultural Resources/Antiquities inventory completed and mitigated if required.		
10. Environmental Analysis report prepared, reviewed and signed		
11. Local Manager reviews the mitigation identified in Environmental Assessment, Cultural Resource Report, Visual Resource Management, draft co-op agreements, and resolves or mitigates conflicts.		
13. Prescribed Fire Plan prepared and approved.		
14. Resource Advisory Council review.		
15. Permission by private land owners for access, if needed.		
16. Co-op agreements finalized and signed.		
17. Office staff review and approval.		
18. Public review and/or involvement of interest groups, tribal entities, user groups, or individuals.		
19. Final project lay out.		
20. Project submitted to Agency Administrator.		
21. Final approval.		
SECTION III - AWP & JOB COMPLETION		
22. Contracting Draft prepared if this option selection: *a. Contract Draft reviewed.* *b. Contract advertised.* *c. Bids reviewed.* *d. Contract awarded.* *e. Contract administration COAR and PI assigned. (These are the only people authorized to perform administration of the contract.)*		
23. Implementation of Prescribed Fire Plan.		
24. Conduct long term monitoring of resource objectives		

PRESCRIBED FIRE PLAN CHECKLIST

The items in the checklist can be found in the Prescribed Fire Plan on the page indicated.

A= Attached AN= As Needed

Attach the following to the Prescribed Fire Plan after the project is completed:
Fuel Moisture Data
General and Spot Weather Forecasts
Weather and Fire Behavior Observations
Photographs

PRESCRIBED FIRE REPORT

Burning Unit: ***Date(s):***

Date of Burn(s) ***Time of Burn(s):***

On site moisture conditions obtained by (sticks, oven, NFDRS, etc.):

Temp. R.H. Wind Speed Direction:

Fuels Present after Burning: Estimated: Measured:

APPENDIX K: BURN PERMIT

IMPERIAL COUNTY AIR POLLUTION CONTROL DISTRICT

APPLICATION FOR PRESCRIBED BURNING PERMIT

SECTION A: GENERAL INFORMATION AND CONDITIONS FOR ALL PRESCRIBED BURN PROJECTS

A.1. Project Name

Permittee: *Burn Permit No.:*

Project Name:

Project location:

A.2. Natural Ignition on a No-burn Day (CCR 80160(h))

When a natural ignition occurs on a no-burn day, the initial "go/no-go" decision to manage the fire for resource benefit will be a "no-go" unless:

[redacted]

A "no-go" decision does not necessarily mean that the fire must be extinguished, but that the fire cannot be considered as a prescribed fire.

A.3. Smoke Management Plan (SMP) Conditions Must Be Met on Day of Burn
(CCR 80160(j))

Ignition of this burn project will not occur unless all conditions and requirements stated in this SMP are met prior to ignition on the day of the burn event, the District has both declared the day to be a burn day, and the District has authorized the burn on the day of the burn.

A.4. Condition of Vegetation and Burn Limitations to Minimize Smoke
(CCR 80160(m)(n) and (o))

1. To minimize smoke, vegetation will be in the following condition during combustion, considering fire safety and other factors:

2. To minimize smoke, vegetation will be piled and prepared as follows:

3. To minimize smoke, burning will be limited as follows:

No more than piles per day and no more than piles at one time.

No more than acres per day and no more than acres at one time.

No less than hours between ignitions

A.5. California Department of Fish and Game (CDFG) Statement (CCR 80160(p))

G *Check if applicable*

This burn project is to be done primarily for improvement of land for wildlife or game habitat. A statement from CDFG is attached to this SMP which certifies that this burn is desirable and proper.

G *Check if applicable*

The CDFG statement specifies the amount of brush treatment that is appropriate and this treatment is specified in this SMP.

A.6. Public Notification Procedures (CCR 80160(l))

The permittee shall begin public notification before the day of burning. The notification shall be continuous until end of burning.

The permittee will use the following procedures to notify and educate the public about this burn project:

G *Television* G *Radio* G *Newspaper* G *Posters/flyers* G *Telephone calls*

G *Other (Explained below)*

The specifics of the notification procedure(s) checked above are as follows:

In addition, the permittee will place signage to identify the burn project to the public as noted on the attached map.

Public notification shall direct the public to report complaints on smoke impacts to the Air District(s) with jurisdiction over the burn site, and/or to adjacent Air Districts into which smoke may travel. Air District contact information shall include District name, address, contact person, telephone number, and fax number.

Air District(s) with Jurisdiction Over the Burn:

Air District Name: *Contact:*

Address:

Telephone: ( ) *Fax: ( )*

Air District Name: *Contact:*

Address:

Telephone: ( ) *Fax: ( )*

The permittee will notify the adjacent Air Districts listed below about the burn project when smoke may travel into and/or the permittee knows that smoke has traveled into those jurisdictions.

Adjacent Air District(s) Potentially Impacted by Smoke from the burn:

Air District Name: *Contact:*

Address:

Telephone: ( ) *Fax: ( )*

Air District Name: *Contact:*

Address:

Telephone: ( ) *Fax: ( )*

A.7. Procedures for permittees to Report Public Smoke Complaints to Air Districts (CCR 80160(l))

[redacted]

The location of the smoke impact, a short description of the smoke behavior including wind direction and speed, visibility, and public safety impacts if available from the complainant.

3. The permittee shall inform the complainant that he or she may also contact the District directly and shall provide the District name, telephone number and address.

[redacted]

Section B: This section applies to burn projects greater than 10 acres or producing more than 1-ton of particulate matter.

G Check if applicable

B.1. SMP Requirement for Natural Ignition Over 10 Acres (CCR 80160(i))

The permittee shall submit a SMP to the District within 72 hours of the start of any naturally ignited wildland fire managed for resource benefits that is expected to exceed 10 acres in size.

This SMP is submitted for a naturally ignited wildland fire subject to the above criteria.

Yes: G *No:* G

B.2. Responsible Personnel (CCR 80160(b))

Project Supervisor: *Tel ( )*

Project Field Contact: *Tel ( )*

B.3. Project Location (CCR 80160(b))

Legal Coordinates: *S.* *T.* *R.*

UTM Coordinates: *N* *m* *E* *m*

Latitude/Longitude: *Lat*

APPENDIX L: CONTACT LIST/ ADJACENT LANDOWNERS

Name	***Address***	***Phone Number***	***Location of Property***
H. Elmore	*550 W. Main* *Brawley, CA 92227*	*760/344-1080*	*Sinclair/Gentry Roads* *Calipatria, CA*
A. Kalin	*5300 Kalin Road* *Brawley, CA 92227*	*760/3442550*	*Bannister Road* *Westmorland, CA*
M. Morgan	*Brawley, CA 92227*	*760/996-2713* *760/344-6288*	*Vendel Road* *Westmorland, CA*
R. Owens	*Brawley, CA 92227*	*760/996-5658* *760/535-9499*	*Vendel Road* *Westmorland, CA*
W. Slovak	*El Centro, CA 92243*	*760/996-9735* *760/352-9735*	*Baker, Vendel Roads* *Westmorland, CA*
B. Smith	*681 S. Marilyn Ave.* *Brawley, CA 92227*	*760/344-6655*	*Sinclair Road* *Calipatria, CA*

APPENDIX M: SENSITIVE RESOURCES

Common Name	***Scientific Name***	***Breeds on Refuge?***	***Listed?***
California brown pelican	*Pelecanus occidentalis californicus*	*No*	*Yes. Endangered*
Southern bald eagle	*Haliaeetus leucocephalus*	*No*	*Yes. Threatened*
Peregrine falcon	*Falco peregrinus*	*No*	*Yes. Threatened*
Yuma clapper rail	*Rallus longirostris yumanensis*	*Yes*	*Yes. Endangered*
Aleutian Canada goose	*Branta canadensis leucopareia*	*No*	*Yes. Threatened*
California least tern	*Sterna antillarum*	*Occasionally*	*Yes. Endangered.*
Desert pupfish	*Cyprinodon macularius*	*Unknown*	*Yes. Endangered.*
Wood stork	*Mycteria americana*	*No*	*Yes. Endangered.*
Gull-billed tern	*Sterna nilotica*	*Yes*	*No*
Black skimmer	*Rynchops niger*	*Yes*	*No*
Black tern	*Chlidonias niger*	*Yes (small numbers)*	*No*

APPENDIX N: SAMPLE WFSA

WILDLAND FIRE SITUATION ANALYSIS

[redacted] ***US Fish and Wildlife Service***	[redacted]
[redacted] *National Wildlife Refuge*	[redacted]
[redacted]	[redacted]
[redacted]	
[redacted]	
[redacted]	
-Complexity Analysis *X* *-Risk Assessment/Analysis* *X* *Probability of success* *Consequences of Failure* *-Maps* *-Decision Tree* *-Fire Behavior Projections* *X* *-Calculations of Resource Requirements* *-Other*	

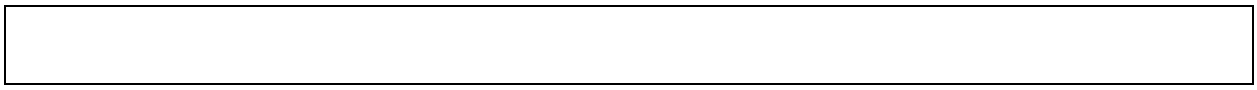
OBJECTIVES AND CONSTRAINTS

[redacted]

-Public

-Firefighter

[redacted]



ALTERNATIVES

	A.	*B.*	*C.*
Wildland Fire Strategy	*e.g. Allow fire to play a natural role*	*e.g. Aggressive attack*	
Narrative			
Resources Needed *Hand Crews* *Engines* *Dozers* *Air Tankers* *Helicopters*			
Final Size			
Est. Contain/ Control Date			
Costs			
Risk Assessment *-Probability of success* *-Consequence of failure*			
Complexity			
Attach maps for each alternative			

EVALUATION OF ALTERNATIVES

	A.	*B.*	*C.*
Evaluation Process			
Safety *Firefighter* *Aviation* *Public*			
Sum of safety values			
Economic *Forage* *Improvements* *Recreation* *Water* *Wildlife* *Other*			
Sum of economic values			
Environmental *Air* *Visual* *Fuels* *T&E Species* *Other*			
Sum of environmental values			
Social *Employment* *Public Concern* *Cultural* *Other*			
Sum of social values			
Other			
Sum of other values			
TOTAL			

ANALYSIS SUMMARY

	A.	*B.*	*C.*
Compliance with Objectives *Safety* *Economic* *Environmental* *Social* *Other*			
Pertinent Data *Final fire size* *Complexity* *Suppression cost* *Resource values* *Probability of success*			
External/Internal Influences			

VI. DECISION

The Selected Alternative is: .

Rationale:

Agency Administrator's Signature *Date/Time*

VII. DAILY REVIEW

			PREPARED NESS LEVEL	*INCIDENT PRIORITY*	*RESOURCE AVAILABILITY*	*WEATHER FORECAST*	*FIRE BEHAVIOR PREDICTIONS*	*WFSA VALID*
Date	*Time*	*By*						

VIII. FINAL REVIEW

The elements of the selective alternative were met on:

Date *Time:*

By:

Agency Administrator

APPENDIX O: REFUGE FIRE QUALIFIED PERSONNEL

	Pack/Field Test	*Physical*	*Qualified*	*Training Needs*	*Target Position*
Sylvia Pelizza					
Larry Mcgowan		*4/00*	*FFT1*	*S390, PFPI*	*RXB3, ICT5*
Charles Pelizza	*5/01 PT*	*4/01*	*FFT1*	*S390, PFPI*	*RXB3, CRWB*
Jihadda Govan	*4/00 PT*	*4/00*	*FFT2*	*S290*	*RXB3, ENOP*
Steve Johnson	*6/01 PT*	*4/00*	*FFT2*	*S290*	*RXB3, ENOP*
Marcos Orozco				*RXFF2*	
Raul Molina	*4/00 FT*	*4/00*	*RXFF2*		
Lee Quarcelino	*4/00 FT*	*4/00*	*RXFF2*	*S290*	*DOZ1*

APPENDIX P: RETARDENT AND FOAM USE RESTRICTIONS

Guidelines for Aerial Delivery of Retardant or Foam near Waterways

Definition:

WATERWAY – Any body of water including lakes, rivers, streams and ponds whether or not they contain aquatic life. NOTE: Ecological Services includes springs, seeps, or intermittent streams within the definition of waterway.

Guidelines:

Avoid aerial application of retardant or foam within 300 feet of waterways.

These guidelines do not require the helicopter or airtanker pilot-in-command to fly in such a way as to endanger his or her aircraft, other aircraft, or structures or compromise ground personnel safety.

Guidance for pilots: To meet the 300-foot buffer zone guideline, implement the following:

A. *Medium/Heavy Airtankers: When approaching a waterway visible to the pilot, the pilot shall terminate the application of retardant approximately 300 feet before reaching the waterway. When flying over a waterway, pilots shall wait one second after crossing the far bank or shore of a waterway before applying retardant. Pilots shall make adjustments for airspeed and ambient conditions such as wind to avoid the application of retardant within the 300-foot buffer zone.*

B. *Single Engine Airtankers: When approaching a waterway visible to the pilot, the pilot shall terminate application of retardant or foam approximately 300 feet before reaching the waterway. When flying over a waterway, the pilot shall not begin application of foam or retardant until 300 feet after crossing the far bank or shore. The pilot shall make adjustments for airspeed and ambient conditions such as wind to avoid the application of retardant within the 300-foot buffer zone.*

C. *Helicopters: When approaching a waterway visible to the pilot, the pilot shall terminate the application of retardant or foams 300 feet before reaching the waterway. When flying over a waterway, pilots shall wait five seconds after crossing the far bank or shore before applying the retardant or foam. Pilots shall make adjustments for airspeed and ambient conditions such as wind to avoid the application of retardant or foam within the 300-foot buffer zone.*

Exceptions:

- *When alternative line construction tactics are not available due to terrain constraints, congested area, life and property concerns or lack of ground personnel, it is acceptable to anchor the foam or retardant application to the waterway. When anchoring a retardant or foam line to a waterway, use the most accurate method of delivery in order to minimize placement of retardant or foam in the waterway (e.g., a helicopter rather than a heavy airtanker).*

- *Deviations from these guidelines are acceptable when life or property is threatened and the use of retardant or foam can be reasonably expected to alleviate the threat.*

- *When potential damage to natural resources outweighs possible loss of aquatic life, the unit administrator*

may approve a deviation from these guidelines.

Threatened and Endangered (T&E) Species:

The following provisions are guidance for complying with the emergency section 7 consultation procedures of the ESA with respect to aquatic species. These provisions do not alter or diminish an action agency's responsibilities under the ESA.

Where aquatic T&E species or their habitats are potentially affected by aerial application of retardant or foam, the following additional procedures apply:

1. *As soon as practicable after the aerial application of retardant or foam near waterways, determine whether the aerial application has caused any adverse effects to a T&E species or their habitat. This can be accomplished by the following:*

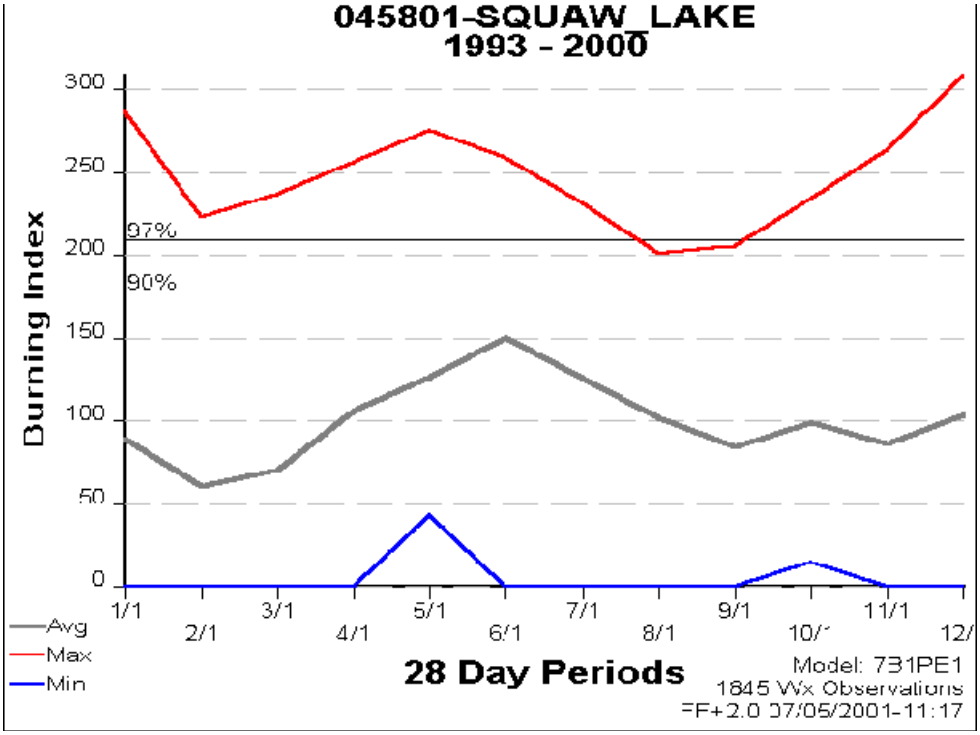
    a. *Aerial application of retardant or foam outside 300 ft of a waterway is presumed to avoid adverse effects to aquatic species and no further consultation for aquatic species is necessary.*
    b. *Aerial application of retardant or foam within 300 ft of a waterway requires that the unit administrator determine whether there have been any adverse effects to T&E species within the waterway.*

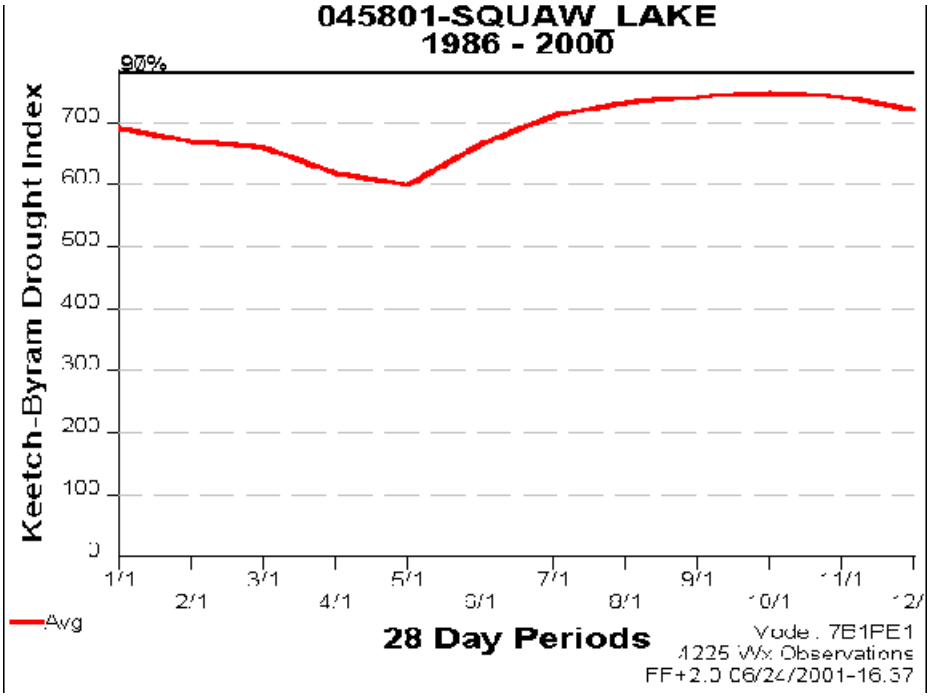
These procedures shall be documented in the initial or subsequent fire reports.

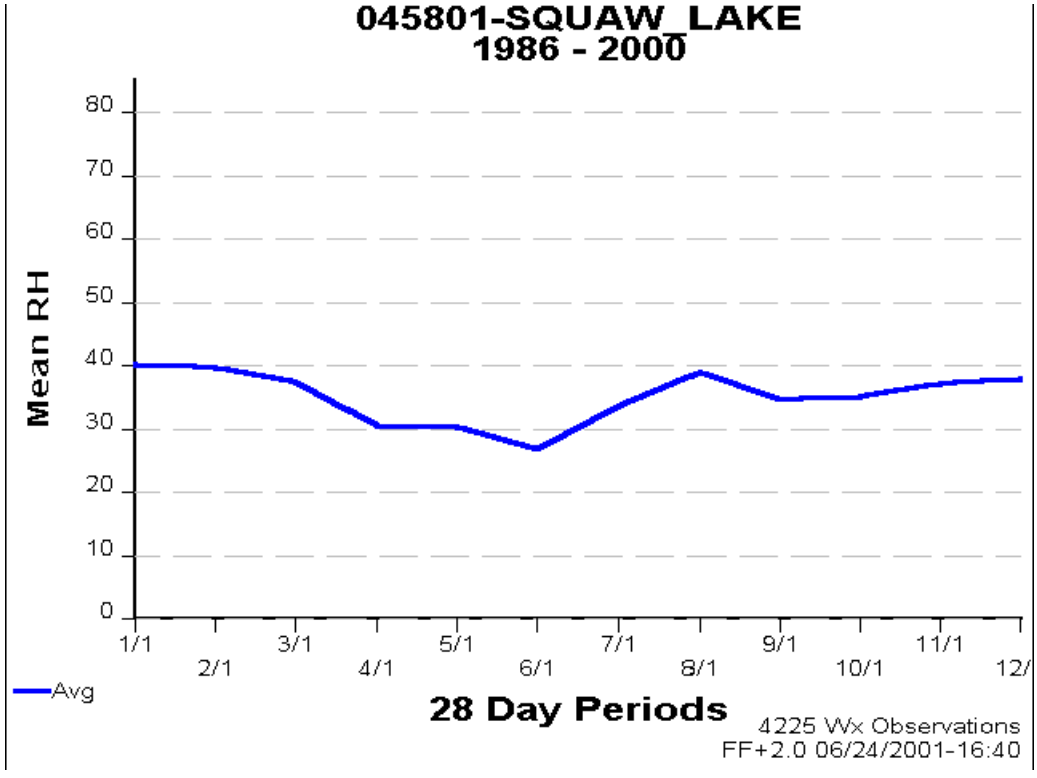
2. *If there were no adverse effects to aquatic T&E species or their habitats, there is no additional requirement to consult on aquatic species with Fish and Wildlife Service (FWS) or National Marine Fisheries Service (NMFS).*

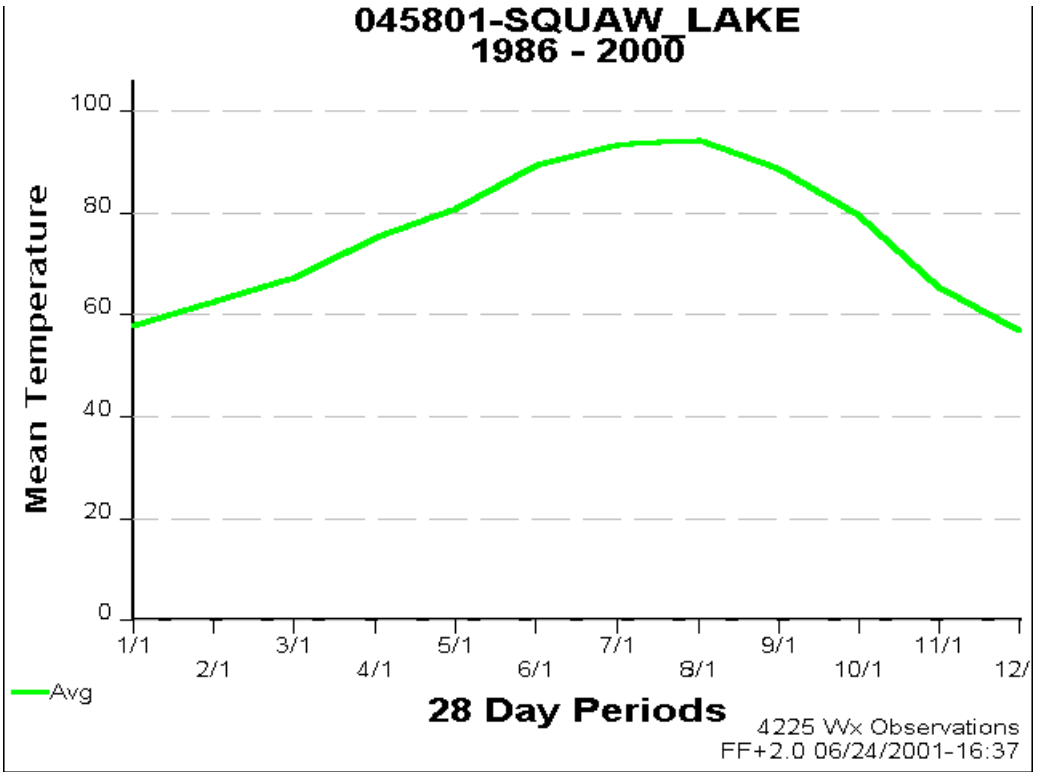
3. *If the action agency determines that there were adverse effects on T&E species or their habitats then the action agency must consult with FWS and NMFS, as required by 50 CFR 402.05 (Emergencies). Procedures for emergency consultation are described in the Interagency Consultation Handbook, Chapter 8 (March, 1998). In the case of a long duration incident, emergency consultation should be initiated as soon as practical during the event. Otherwise, post-event consultation is appropriate. The initiation of the consultation is the responsibility of the unit administrator.*

Each agency will be responsible for insuring that the appropriate guides and training manuals reflect these guidelines.


045801-SQUAW_LAKE
1993 - 2000
Burning Index
300
250
200
150
100
50
0
97%
90%
1/1
2/1
3/1
4/1
5/1
6/1
7/1
8/1
9/1
10/1
11/1
12/
Avg
Max
Min
28 Day Periods
Model: 7B1PE1
1845 Wx Observations
FF+2.0 07/05/2001-11:17


045801-SQUAW_LAKE
1986 - 2000
Keetch-Byram Drought Index
90%
700
600
500
400
300
200
100
0
1/1
2/1
3/1
4/1
5/1
6/1
7/1
8/1
9/1
10/1
11/1
12/
Avg
28 Day Periods
Mode: 7B1PE1
1225 Wx Observations
FF+2.0 06/24/2001-16:37


045801-SQUAW_LAKE
1986 - 2000
Mean RH
80
70
60
50
40
30
20
10
0
1/1
2/1
3/1
4/1
5/1
6/1
7/1
8/1
9/1
10/1
11/1
12/
Avg
28 Day Periods
4225 Wx Observations
FF+2.0 06/24/2001-16:40


045801-SQUAW_LAKE
1986 - 2000
Mean Temperature
100
80
60
40
20
0
1/1
2/1
3/1
4/1
5/1
6/1
7/1
8/1
9/1
10/1
11/1
12/
Avg
28 Day Periods
4225 Wx Observations
FF+2.0 06/24/2001-16:37

APPENDIX R: PIFRS

PRESCRIBED BURN 209 WORKSHEET (PFIRS)

2. REPORT STATUS (INITIAL, UPDATE, FINAL) INITIAL

3. PROJECT NAME (12)

4. INCIDENT # (8)_____ 5. INCIDENT COMMANDER (12)

*6. JURISDICTION **USFWS** 7. UNIT ___ 8. BURN TYPE*

*9. LOCATION DESCRIPTION **Lat. Long***

COUNTY CODE VENTURA (XVN) RIVERSIDE (XRI) SAN DIEGO (XSD)

NEAREST TOWN (14)

10. DATE OF BURN (6) _____ TIME (4)

11. IGNITION DEVICE (HF,HT,TT,AD,VP,LR,) (16)

FIRE BEHAVIOR (HD,BK,BL,PI) (10)

*12. AREA INVOLVED (CURRENT ACRES TO BURN TODAY) (20) ___ **ACRES***

*13. PERCENT OF TOTAL PROJECT TO BE BURNED (4) ____ **%***

15. ESTIMATE OF CONTROL DATE (6) _____ ESTIMATE CONTROL TIME (4)

17. PURPOSE OF BURN (66)
(HR HAZARD RED,WL WILDLIFE,SP SITE PREP, AQ AIR QUAL)

18. PROBLEMS (64)

*25. PRESCRIPTION WIND (4) ____ TEMP:(4) ___ RH: (4) __ **%***

29. RESOURCES (FWS, LPF,VNC)

QUICK ENTRY 2. STANDARD ENTRY 3. END
FWS, EI___, DI___, CI___, HE___, OP

CNF, EI ___, DI ___, CI ___, HE ___, OP

CDF, EI ___, DI ___, CI ___, HE ___, OP

30. COOPERATORS (52)
31. A.AIR BASIN IS IN (06 SAN DIEGO) (05 SOUTH COAST)

AIR BASIN SMOKE WILL DRIFT TO (11 DESERT)

31. B.TOTAL PROJECT SIZE ***ACRES***

31. C.VEGETATION TYPE (CHM,MC,CS,GS,CON,COT,)

31. D.FUEL INFORMATION %DEAD %LIVE FUEL MOISTURE

31. D.TODAY TONS PER ACRE (8)

31. E.TODAYS BURN LOWEST ELEVATION HIGHEST ELEVATION

31 F.AGENCY PROJECT NUMBER (VMP CONTRACT NUMBER)

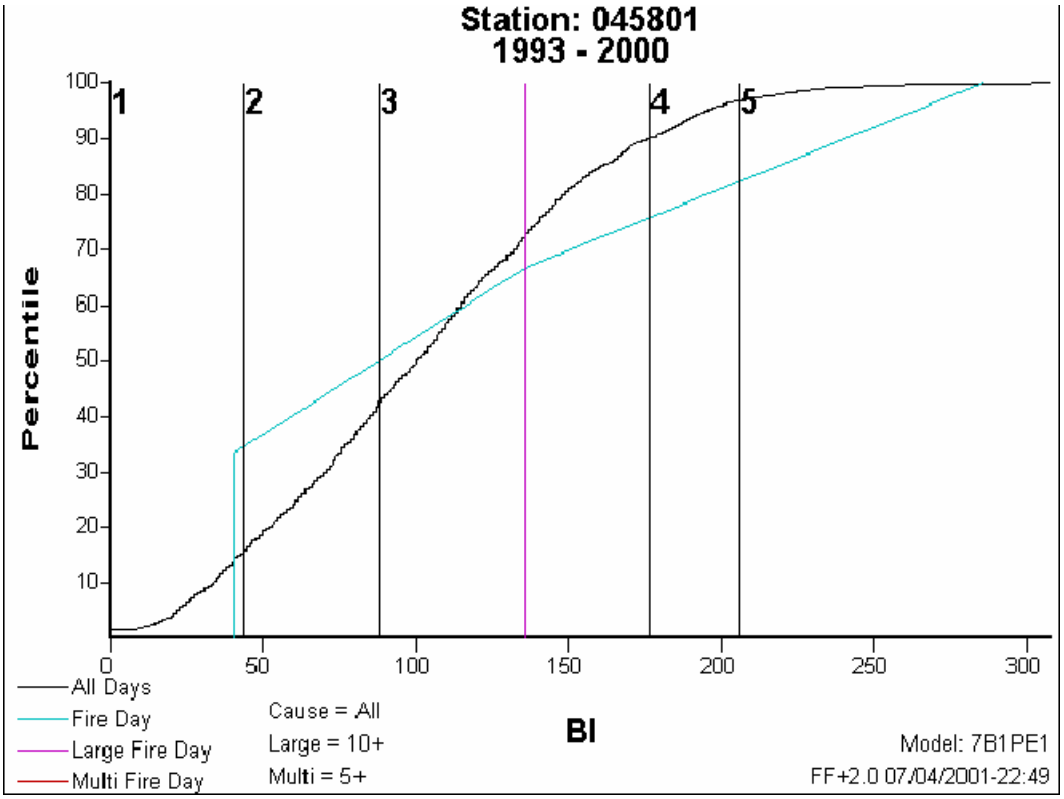
31 G.CONTACT NAME PHONE NUMBER

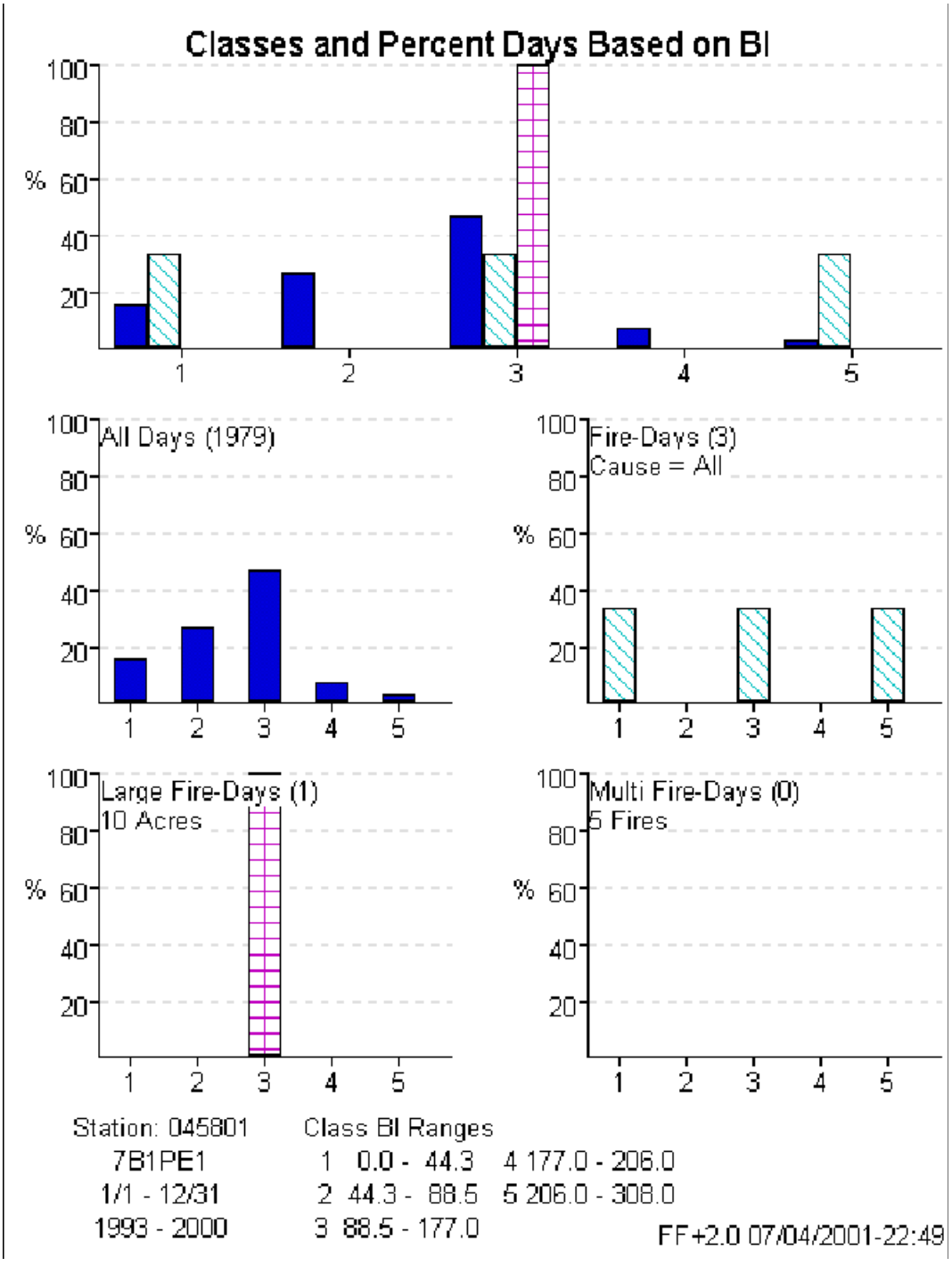
31 H.CURRENT BURN UNIT STATUS,(CA)Cancelled,(CO)Complete,(AC)Active,

31. I BURNED ACRES TO DATE

32. PREPARED NAME

APPENDIX S: STAFFING BREAKPOINTS




Classes and Percent Days Based on BI
All Days (1979)
Fire-Days (3)
Cause = All
Large Fire-Days (1)
10 Acres
Multi Fire-Days (0)
5 Fires
%
Station: 045801
7B1PE1
1/1 - 12/31
1993 - 2000
Class BI Ranges
1 0.0 - 44.3
2 44.3 - 88.5
3 88.5 - 177.0
4 177.0 - 206.0
5 206.0 - 308.0
FF+2.0 07/04/2001-22:49

REQUEST FOR CULTURAL RESOURCE COMPLIANCE

U.S. Fish and Wildlife Service, Region 1

Project Name:					***Program:*** *(Partners, Refuges, JITW, WSECP, etc.)*	
State: *CA, ID, HI, NV, OR, WA*		***EcoRegion:*** *CBE, IPE,KCE, NCE*			***FWS Unit:*** ***Org Code:***	
Project Location:	***County***	***Township***	***Range***	***Section***	***FWS Contact:*** *Name,* *Tel#,* *Address*	
USGS Quad:					***Date of Request:***	
Total project acres/linear ft/m:		***APE Acres / linear ft/m (if different)***			***Proposed Project Start Date:***	

MAPS Attached	***Check below***		
Copy of portion of USGS Quad with project area marked clearly ***(required)***			*Project (sketch) map showing Area of Potential Effect with locations of specific ground altering activities* ***(required)***
Photocopy of aerial photo showing location ***(if available)***			*Any other project plans, photographs, or drawings that may help CRT in making determination* ***(if available)***

Directions to Project: *(if not obvious)*	
Description of Undertaking:	*Describe proposed project and means to facilitate (e.g., provide funds to revegetate 1 mile of riparian habitat, restore 250 acres of seasonal wetlands, and construct a 5-acre permanent pond). How is the project designed (e.g., install 2 miles of fence and create approximately 25' of 3' high check dam)?*

Area of Potential Effects (APE):	*Describe where disturbance of the ground will occur. What are the dimensions of the area to be disturbed? How deep will you excavate? How far apart are fenceposts? What method are you using to plant vegetation? Where will fill be obtained? Where will soil be dumped? What tools or equipment will be used? Are you replacing or repairing a structure? Will you be moving dirt in a relatively undisturbed area? Will the project reach below or beyond the limits of prior land disturbance? Differentiate between areas slated for earth movement vs. areas to be inundated only. Is the area to be inundated different from the area inundated today, in the recent past, or under natural conditions? Provide acres and/or linear ft/m for all elements of the project.*
Environmental and Cultural Setting:	*Briefly describe the environmental setting of the APE.* ***A)*** *What was the natural habitat prior to modifications, reclamation, agriculture, settlement?* ***B)*** *What is land-use history? When was it first settled, modified? How deep has it been cultivated, grazed, etc.?* ***C)*** *What is land use and habitat today? What natural agents (e.g., sedimentation, vegetation, inundation) or cultural agents (e.g., cultivation) might affect the ability to discover cultural resources?* ***D)*** *Do you (or does anybody else) know of cultural resources in or near the project area?*