Lyndon B. Johnson National Historical Park
Fire Management Plan

Prepared By:

/s/ Fulton Jeansonne (acting FMO) 2/28/05

David F. McHugh *Date*
Fire Management Officer, Big Thicket National Preserve

Recommended By:

/s/ Brian Carey 3/4/05

Brian Carey *Date*
Chief, Resources Management and Visitor Protection, Lyndon B. Johnson NHP

Approved:

/s/ David Vela 3/8/05

David Vela *Date*
Texas State Coordinator/Superintendent, Lyndon B. Johnson NHP

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

I. *INTRODUCTION*

This Fire Management Plan meets the requirement of Director's Order -18 (DO-18) that all National Park Service (NPS) park units with vegetation capable of sustaining fire develop a wildland fire management plan approved by the Superintendent. This plan will help achieve resource management objectives as defined in the Resources Management Plan/Resources Stewardship Plan, and it will guide all fire management activities including the prevention and suppression of wildfire, the application of prescribed fire and the reduction of hazardous fuels.

Lyndon B. Johnson National Park (LYJO) was originally established in order "...to preserve in public ownership historically significant properties associated with the life of Lyndon B. Johnson."

The initial Fire Management Plan for LYJO was written in 1994, in collaboration with Big Thicket National Preserve (BITH), with the last review and amendment signed June 13, 2002. BITH serves as the lead park for fire management activities at four NPS areas in Southeast Texas which jointly are referred to as the SE Texas Fire Cluster (SET Fire) (See Appendix K). In 1997 an Interpark Agreement was signed that continues to govern management oversight, project, training, dispatch, and funding support from the fire management staff at BITH (See Appendix E). The Texas Nature Conservancy and Balcones Canyonlands National Wildlife Refuge fire staff have provided expertise to specific projects and guided program development.

The Fire Management Plan will implement fire management policies and help achieve resource management and fire management goals as defined in: (1) Federal Wildland Fire Management Policy and Program Review; (2) Managing Impacts of Wildfires on Communities and the Environment, and Protecting People and Sustaining Resources in Fire Adapted Ecosystems – A Cohesive Strategy (USDOI/USDA); and (3) A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Comprehensive Strategy Implementation Plan.

Mangi Environmental Group [Mangi] was awarded a contract to complete an Environment Assessment for the Fire Management Plan. Mangi was provided the objectives and alternatives of an internal scoping meeting on January 22, 2003 and public input from public scoping conducted from December 8-26, 2003. A site visit and coordination meeting was conducted November 12-14 2003 with Mangi, park staff, the Fire Management Officer and Fire Ecologist from BITH, and other local experts. The Environmental Assessment has been approved by the IMR environment compliance division, and meets National Environmental Policy Act (NEPA) requirements (See Appendix D for Record of Decision). Completing the Assessment of Effort form and notifying the Texas State Historical Preservation Officer on specific projects accomplished compliance with the National Historical Preservation Act (NHPA).

The authority for fire management is found in the National Park Service's Organic Act of 1916, 16 USC 1 through 4. This authority is further clarified in the National Parks and Recreation Act of 1978. Primary policy guidance for implementing this plan is contained in Departmental Manuals (section 910), NPS Management Policies of 2001, NPS-77 Natural Resources Management Guidelines, Lyndon B. Johnson NHP General Management Plan (1999, pg. 84-85),

and Directors Order and Reference Manual (RM) 18 of 1999 (Wildland Fire Management Guidelines).

II. *RELATIONSHIP TO LAND MANAGEMENT PLANNING AND FIRE POLICY*

NPS fire management activities will be performed in accordance with the principles, policies, and recommendations of the Final Report of the Federal Wildland Fire Management Policy and Program Review, and with Part 620 of the Departmental Manual. Air operations during Wildland fire incidents will comply with the provision so Director's Order #60 (Aviation Management) and Parts 350-354 of the Departmental Manual.

The Associate Director for Park Operations and Education will represent, and act on behalf of, the NPS on the Interagency Management Oversight Team; and will prepare and issue a reference manual to help NPS managers and field staff understand and implement Departmental and NPS policies applicable to fire management. The reference manual will contain detailed procedures emphasizing personnel safety, the use of wildland fire for beneficial purposes, monitoring of smoke behavior and the concept of risk management.

The Associate Director for Natural Resource Stewardship and Science will develop, in concert with the Associate Director for Park Operations and Education: (1) a research program to address scientific information needs, technological needs and advances, risk assessment, social and economic concerns, and public health concerns; (2) procedures to ensure that park resource management plans adequately take into account the positive values of Wildland and prescribed fire as a tool for ecosystem management; and (3) a primer to assist all NPS personnel in accomplishing the objective of paragraph 4.8.

The Superintendent of each park having burnable vegetation will ensure that RM 18 is available in sufficient quantities to serve the needs of fire management staff within the park, and will ensure that fire management staff is adequately versed in the Department and NPS policies and procedures contained therein.

NPS employees will take advantage of appropriate opportunities to educate the public about the positive values of wildland fire and the manner in which the NPS manages fire to meet ecosystem management objectives.

A. NPS Management Policies

To implement NPS Management Policies governing fire management, the NPS will administer is wildland fire program in a manner that will:

- Educate employees and the public about the scope and effect of wildland fire management, including fuels management, resource protection, prevention, hazard/risk assessment, mitigation and rehabilitation, and fire's role in ecosystem management.

- Stabilize and prevent further degradation of natural and cultural resources lost in and/or damaged by impacts of wildland fires and/or fire management program.
- Maintain the highest standards of professional and technical expertise in planning and safety implementing an effective wildland fire management program.
- Integrate fire management with all other aspects of park management.
- Manage wildland fire incidents in accordance with accepted interagency standards, using appropriate management strategies and tactics and maximize efficiencies realized through interagency coordination and cooperation.
- Scientifically manage wildland fire using best available technology as an essential ecological process to restore, preserve, or maintain ecosystems and use resource information gained through inventory and monitoring to evaluate and improve the program.
- Protect life and property and accomplish resource management objectives, including restoration of the natural role of the fire in fire-dependent ecosystems.
- Effectively integrate the preservation of wilderness including the application of "minimum requirement" management techniques into all activities impacting this resource.

B. Enabling Legislation

LYJO was established to preserve and interpret historical significant properties associated with the life of Lyndon B. Johnson, and his heritage. The Secretary of the Department of the Interior authorized Public Law 91-134, on December 2, 1969, which established the Lyndon B. Johnson National Historical Site. Park's Omnibus Bill (S2363-1980) Title VI amended PL91-134 by enlarging the park and changing the name to Lyndon B. Johnson National Historical Park.

The 2005-2008 Strategic Plan outlines the following mission statement for the park:

Lyndon B. National Historical Park is the premier location to experience the environment that shaped the character, public policy, and continuing legacy of the 36th President of the United States. The NPS is dedicated to preserving and interpreting a rich, singular collection of resources, which illuminate the man, and to enhancing regional and national awareness and understanding of a complex and compelling figure in the history of the Presidency.

One of the key mission goals is to preserve the resources within the park:

The natural environment and cultural heritage of the Texas Hill Country is protected and maintained through a regional network of private and public stewardship. LYJO is a full partner in the research, resource preservation, and technical assistance integral to sustaining public awareness of the connection between influence of place and the programs of the Johnson administration.

C. General Management Plan

LYJO manages the formal landscapes, pastures, crop fields, and orchards for in order to preserve the identified cultural landscapes. At the LBJ Ranch, maintaining the rural agricultural setting is "key to an understanding of the isolation of the Hill Country during the president's youth, the work ethic of its residents, and understanding of a Texas cattle operation, and the origin of many of the president's ideas, programs, and legislative concerns." President Johnson spoke of his desire that the ranch operations not become a "sterile relic of the past." The ranch pastures, hay fields, and cultivated fields are managed in part for cattle production. The desired flora and fauna in pastures at the LBJ Ranch are typically non-native species. The invasion of undesirable species compromises not only crop production, but also the historic scene.

In Johnson City, the park structures represent several decades. An important part of the interpretive story at the Johnson Settlement is the period of the cattle drive in the mid to late-19th century. It is difficult today to visualize what the landscape looked like at that time. Thus, the park has begun a program to restore a section to the vegetation similar to pre-European settlement times utilizing native grasses representative of the late 19th century.

D. Resources Management Plan

The Resources Management Plan recommends annual or bi-annual prescribed burns to restore the historic scene at the Johnson Settlement and to improve forage at the LBJ Ranch. The impacts of continued use of fire for these purposes are analyzed in the 1999 General Management Plan and Environmental Impact Statement.

Three component cultural landscapes have been identified and inventoried in the LBJ Ranch District. The Agricultural Complex component landscape is made up of agricultural fields, a Show Barn Complex, the Pedernales River bottom and a pecan orchard. The landscape reserved within the Agricultural Complex, based on the rich floodplain soils and water of the Pedernales, is the reason that the Johnsons and their predecessors chose the site for settlement. Agricultural burning has been and continues to remain an important tool for landscape maintenance.

The park is listed on the National Register of Historic Places as a historic district at the national level of significance. Within the boundaries, 120 historic structures are listed on the List of Classified Structures.

No threatened or endangered (T&E) species have been identified within the boundaries of the Park. The only known occurrences of a T&E species within the park are the occasional overflights of Bald Eagles, which have been sighted over the Johnson Settlement and the Pedernales River. There are currently no nests within park boundaries, nor any historical record of nesting within the park.

E. Fire Management Plan

Fire is a powerful phenomenon with the potential to drastically alter the vegetative cover of any park. Fire may contribute to a hinder the achievements of park objectives. Park fire management programs will be designed around resource management objectives, and the various resource management zones of the park. All prescribed fires are carried out under written approval prescriptions within carefully defined fire management units. Prescribed burns may be used to attain resource objectives such as restoring or maintaining historic settings. They may also be used to maintain open spaces, and reduce hazardous fuel accumulations. All prescribed fires will comply with smoke ordinances and air quality regulations of state and local authorities. All fires in the Park are classified as prescribed fires or wildland fires, wildland fires are immediately suppressed. Wildland Fire Use fires are not a part of the fire management program.

III. *WILDLAND FIRE MANAGEMENT STRATEGIES*

A. General Management

Fire management plans, programs, and activities will be based upon the best available science, and incorporate the role of Wildland fire as an essential ecological process; utilize fire as a natural process and as a tool to maintain and restore cultural landscapes or dispose of vegetation and debris; ensure that cost effective programs and activities are based on values, risk management, and resource management objectives; standardize procedures among federal agencies, and encourage interagency coordination, cooperation, and involvement of all parties.

Fire management planning, preparedness, prevention, suppression, fire use, restoration and rehabilitation, monitoring, research, and education will be conducted on an interagency basis with the involvement of cooperators and partners. LYJO will provide certified employees and equipment to participate in regional and national assignments per national fire level determinations. The Fire Management Officer at BITH will provide fire management assistance, oversight, maintenance of qualification records, fuels treatment project reporting, fire monitoring and training coordination. The park will pursue agreements with local agencies, coordinate wildland urban interface activities with local cooperators, administer rural fire assistance grants, and coordinate national dispatch with the Texas Interagency Coordination Center.

General Agreements with the volunteer fire departments of Johnson City and Fredericksburg, and a Memorandum of Understanding with the Stonewall Volunteer Fire Department, established cooperative efforts in fire suppression activities. A state-wide All-Risk Memorandum of Understanding is in place between the Texas Forest Service, US Fish & Wildlife-Region 2, National Park Service-IMR, the Nature Conservancy-Texas Chapter, and the National Forests of Texas.

B. Wildland Fire Management Goals

1. General Goals

To implement NPS Management Policies governing fire management, the NPS will administer its wildland fire program in a manner that will:

- Achieve maximum overall benefits and minimize damages of wildland fire use within the framework of land use objectives and resource management plans, while giving primary consideration to firefighter and public safety.
- Educate employees and the public about the scope and effect of wildland fire management, including fuels management, resource protection, prevention, hazard/risk assessment, mitigation and rehabilitation, and fire's role in ecosystem management.
- Stabilize and prevent further degradation of natural and cultural resources lost in and/or damaged by impacts of wildland fires and/or fire management activities.
- Maintain the highest standards of professional and technical expertise in planning and safely implementing an effective wildland fire management program.
- Integrate fire management with all other aspects of park management.
- Manage the wildland fire program in accordance with Congressional intent as expressed in the annual appropriations act and enabling legislation, and comply with applicable departmental manual and agency policies and procedures.
- Manage wildland fire incidents in accordance with accepted interagency standards, using appropriate management strategies and tactics and maximize efficiencies realized through interagency coordination and cooperation. Provide interagency assistance on a national scale through the Incident Command System.
- Scientifically manage wildland fire using best available technology as an essential ecological process to restore, preserve, or maintain ecosystems and use resource information gained through inventory and monitoring to evaluate and improve the program.
- Protect life and property and accomplish resource management objectives, including restoration of the natural role of fire in fire-dependent ecosystems.

2. Specific Goals

The NPS is committed to protecting park resources and natural ecological processes; but firefighter and public safety must be the first priority in all fire management activities.

- Protection of human life and property, both within and adjacent to the park boundaries. Ensure that firefighter safety is the highest priority of every fire management activity.
- Employ strategies to manage wildland fires that provide for firefighter and public safety, minimize cost and resource damage, and are consistent with values to be protected, while maximizing overall benefits of wildland fire within the framework of land use objectives and resources management plans. Restore and rehabilitate resources and improvements lost in or damaged by fire or suppression activities.
- Organize a fire staff that can apply the highest standards of professional and technical expertise, and provide interagency assistance on a national scale through the Incident Command System.
- Suppress all wildland fires to protect the public, private property, natural, cultural and historic resources of the unit, and investigate/prevent all unplanned human-caused fires.
- Promote public understanding of fire management programs and ecosystem management by taking advantage of appropriate opportunities. Encourage research to advance understanding of fire behavior, effects, ecology, and management.
- Use prescribed burning to restore and maintain historical landscapes (such as the LBJ Ranch pastures or the Johnson Settlement prairie restoration area), control undesirable plants, and reduce hazardous fuel levels.

3. Fire Management Objectives

The objectives of the wildland fire management program are to:

- Protect human life and property and natural/cultural resources both within and adjacent to agency administered lands, while employing strategies to manage wildland fires that minimize cost and resource damage, and are consistent with values to be protected and management objectives.
- Minimize damages and maximize overall benefits of wildland fire within the framework of land use objectives and resources management plans.
- Comply with applicable departmental manual, agency policies and procedures.
- Restore and rehabilitate resources and improvements lost in or damaged by fire or suppression activities. Minimize, and where necessary, mitigate human-induced impacts to resources, natural processes, or improvements attributable to wildland fire activities.

- Promote public understanding of fire management objectives and encourage research to advance understanding of fire behavior, effects, ecology, and management.
- Organize a fire staff that can apply the highest standards of professional and technical expertise.
- Integrate fire management through all levels of the planning process.
- Prevent and investigate all unplanned human-caused fires.

C. Wildland Fire Management Options

1. Wildland Fire Suppression

   The Johnson City Fire Management Unit (FMU) and LBJ Ranch FMU are wildland urban interface areas with numerous high value/high-risk structures adjacent to the boundary. The Johnson City FMU has grassy fuels that can carry a fast moving fire from a major highway onto the park, and threaten visitors and historic structures within minutes. Conversely, an accidental ignition by a visitor or park employee can threaten adjacent homes before a phone call can be made. The LBJ Ranch FMU is on a hilltop with wind exposure and grassy fuels, particularly along the Pedernales River. Visitation to the LBJ is confined to NPS-led bus tours that include walking in restricted areas, and a limited auto tour route after the bus tour ceases operation in the afternoon. Grazing cattle generally reduces the risk of hazardous fuel build up. All wildfires will be suppressed in both units.

2. Prescribed Fire

   Prescribed burning is an accepted technique to control undesirable plants and recycle nutrients for the maintenance of cattle pasturelands, and can be used to promote natural grasslands.

3. Wildland Fire Use

   Due to the size and urban characteristics of the park, fire use is not applicable.

4. Non-Fire Applications

   Mowing and grazing will control hazardous fuels and undesirable plants within the pastures and prairie restoration areas at the Johnson City and LBJ Ranch FMUs. Hand cutting and piling will also be used for hazardous fuel reduction, treatment of invasive non-native vegetation, removal of hazard trees, flood debris clean-up and other park operations.

D. Description of Fire Management Units

The park consists of two districts: the Johnson City FMU (78 acres) inside the city limits of Johnson City, and the LBJ Ranch FMU (594 acres) which is approximately 15 miles west of Johnson City. 120 historical structures and 38 non-historical buildings exist within the park. The vegetation of both park units is principally rangeland and pasture

rangeland with some areas of numerous live oak trees. There is a pecan orchard on approximately 55 acres of the ranch. The surrounding area can be characterized as 88% rangeland (with a 10-20% brush canopy), about 6% cultivated crops, 5% developed, and 1% in pastures. The Blanco/Gillespie County area is in a Juniper-Oak-Mesquite-Savanna region. Short grass, live oaks, and post oaks formally characterize this area. Common rangeland vegetation is cedar elm, agarita, persimmon, mesquite, and whitebrush.

The topography of the park and surrounding area consist of rolling hills with occasional rock outcroppings. About 70% of the soils are very shallow and there are numerous stock tanks and creeks throughout the unit. The soils within the Edward's Plateau are well drained with moderately slow permeability. Some soils are stony and cobbly. The soils in the Johnson City District consist of the Brackett-Purves-Doss association. Limestone and marl underlie these soils, with the corresponding limitations of rapid runoff and low available water capacity. The soils of the LBJ Ranch District are sandy to loamy soils of the Luckenbach-Pedernales-Heatly Association; cropland is a well-suited use of these soils.

1. Johnson City Fire Management Unit

   The Johnson City FMU consists of pastureland, demonstration areas with native grass species, and city lots located within the boundaries of the city of Johnson City.

   a) Natural and Cultural Resources

      Native and invasive non-native grasses dominate the vegetation of the Johnson Settlement. Depending upon rainfall amounts full growth can be achieved each year. There are approximately twenty pecan trees remaining from a former orchard, and thick vegetation grows along Town Creek. Soils have been disturbed by historic grazing, farming and orchard management.

      Town Creek, a tributary of the Pedernales River, is an intermittent stream that flows generally south to north through the middle of Johnson City. The NPS has no impoundment or water rights on this stream. A man made pond is located 200 feet east of the Exhibit Center. This spring-fed pond impounds approximately 1 acre-foot of water. A small spring is located along the trail, approximately halfway between the Johnson Settlement entrance and the Exhibit Center. There are no recorded major erosion problems, except road and trail washouts during periods of heavy rainfall.

      There are numerous structures, both historic and non-historic, in this FMU. Many of the structures are located in the maintained landscape around the Boyhood Home and Visitor Center and are not at any risk from wildland fire. Structures around the Sam Ealy Johnson, Sr. Cabin in the Johnson Settlement and in the administrative area in the Back 40 are of wooden construction and will need to be protected by mowed buffer areas or active protection during prescribed burns.

The Taylor archeological site is located near the Education Center adjacent to Town Creek. This site and others located during a recent archeological survey will be protected from damage from fire management activities. Archeological resources will not be adversely affected by low intensity prescribed burns. There are no known Native American Grave Repatriation Act (NAGPRA) or other Native-American issues.

The only known occurrences of a threatended and endangered (T&E) species within the park are the occasional overflights of Bald Eagles, which have been sighted over the Johnson Settlement. There are currently no nests within park boundaries, nor any historical record of nesting within the park.

b) Objectives

- Utilize mechanical treatments to reduce hazard fuels along the park boundary and around park structures.
- Utilize prescribed fire to reduce hazard fuels along the park boundary and control unwanted plants within pasture areas.
- Utilize mowing and prescribed fire to restore natural occurrence and abundance of native species in the prairie restoration area.

c) Management Constraints

- Ensure that air quality requirements are considered in developing implementation plans. Residential areas, including a retirement center, are adjacent to the north and west boundary.
- Prevent unacceptable impacts to cultural resources or T&E species.
- Use riparian areas as fire breaks when wet, particularly when conducting prescribed burns (i.e. natural barriers). Burning along Town Creek will be scheduled to avoid periods of heavy rainfall and flood events to avoid the possibility of soil erosion and silting.
- Prevent wildland fires in this area. Wildland fire has the potential to do a great deal of damage to the historic structures in the Johnson Settlement due to the type of construction materials and proximity to undeveloped land.
- Ensure socio-political economic impacts, including wildland urban interface issues, are considered in developing implementation plans.

d) Fire History

Historically, fire has been used and continues to be used by local landowners to remove undesirable species and promote the growth of desirable species. The Cox ancestors burned the Cox property (adjacent to Johnson City) as an agricultural practice prior to the NPS ownership. Since its inception the park has

attempted to conduct a prescribed fire at intervals of every two to three years, with mixed success.

In 1997, as part of a vegetation restoration project at the Johnson Settlement of the Johnson City FMU, a literature search was conducted to determine the vegetation of the area prior to European settlement and a vegetation survey was conducted to identify current vegetation species. One of the products of the project was the recommendation that fire continue to be used to maintain and restore the native prairie grasses at this site. It was recommended to continue the burning regime with the possibility of introducing burning in the summer months when it is believed burns would naturally have occurred. However, smoke management mitigations in previous prescribed burn plans have required north to northeast winds that typically follow winter cold fronts.

In 2004 a research project was begun in cooperation with the Lady Bird Johnson National Wildflower Center and the U.S. Fish and Wildlife Service to evaluate the effects of various treatments including prescribed fire on the control of an invasive exotic grass, King Ranch Bluestem. The results of this research study will be helpful in developing management recommendations for prairie restoration at this site.

There have been two wildland fires in the Johnson City FMU, both contained at one acre or less (See Table 1).

Table 1. Wildland Fires and Prescribed Burns at LYJO 1989-1998.

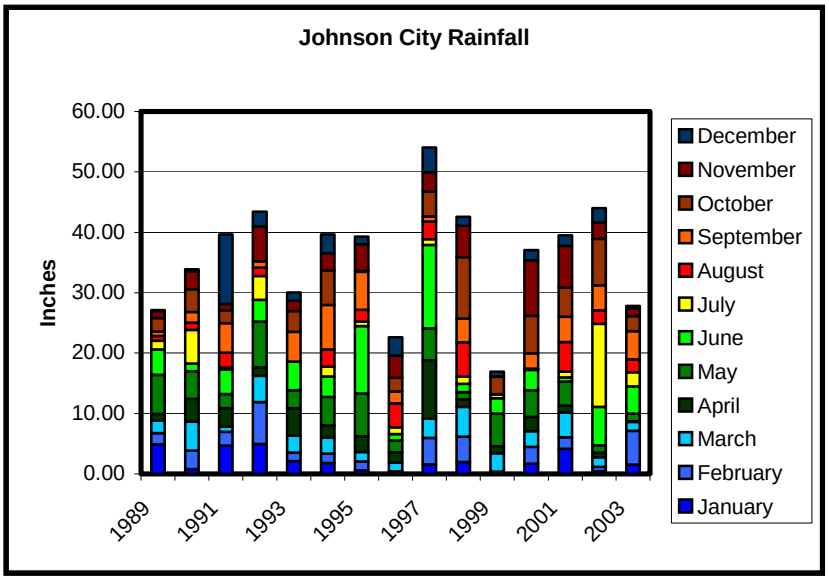
Date	Fire Name	Ignition Source	Acres
3/24/89	North Pasture	Prescribed Fire	50
1989	Leaky Tank/Little Tank	Prescribed Fire	64
1989	Johnson Settlement/Pecan Orchard/Front Pasture	Prescribed Fire	34
1989	River Bottom	Prescribed Fire	52
2/22/90	Johnson Settlement	Prescribed Fire	14
2/22/90	Back 40	Prescribed Fire	25.6
2/12/90	River Bottom	Prescribed Fire	52
10/07/92	Wire (in Fish Tank Pasture)	Downed Power Line	.2
3/17/94	Settlement	Prescribed Fire	28
9/1/94	Chicken	Vehicle Exhaust?	1
3/4/96	Settlement	Prescribed Fire	30
4/27/97	Post	Lightning	.1
2/17/98	Settlement	Prescribed Fire	26.1
5/27/00	North Tank Tree	Lightning	.1

e) Fire Management Situation

1) Historical Weather Analysis

The area has a humid, subtropical climate with hot summers and mild winters. The average rainfall is approximately 34 inches per year at the Johnson City FMU, and 28 inches per year at the LBJ Ranch FMU. Rainfall is rather evenly distributed throughout the year. The rainfall pattern, typical for the Edward's Plateau, has a double maximum in May and September. September is generally the wettest month and July is generally the driest. About two thirds of the annual rainfall occurs between April and October. A large part of this rainfall is a direct result of thunderstorm activity, which makes the amount of rain vary from year to year. The total annual rainfall for Blanco County ranges from 12.98 to 55.06 inches.

Figure 1. Rainfall Total for Johnson City 1989-2003.



Temperatures in the winter months are generally mild. Freezing temperatures occur two out of five nights during an average winter. The average daily maximum in January, the coldest month, is 60.3 degrees Fahrenheit. High daytime temperatures prevail throughout the summer with mid to upper ninety temperatures; however, cooler periods sometimes follow after thunderstorms. In spring, the mean date for the last occurrence of 32 degrees or below is March 26. In fall, the mean date of the first occurrence of 32 degrees or below is November 15. The average percentage of total sunshine is 53% in winter, 75% in the summer, and 55% in fall and spring.

The mean relative humidity in Blanco County at noon is 58% in January, 56% in April, 45% in July, and 53% in October. The average annual free water evaporation is 58 inches in Johnson City and 62 inches at the LBJ Ranch near Stonewall. Evaporation exceeds rainfall by about 28 inches annually. The prevailing wind is from the south in April through September and from the north in October through March. The average length of the growing season is 234 days in Johnson City and 219 days in Stonewall.

A WIMS remote automated weather station was installed in the LBJ Ranch FMU by the TFS in October 2002. It is maintained by the TFS and replaced a manual weather station that had been maintained by LYJO at this location prior to 2002. The station ID# is 41709.

A weather station was installed at Park Headquarters in the Johnson City FMU by the National Weather Service New Braunfels Office in 1996. It is

not connected to WIMS. Readings of actual temperature, minimum and maximum temperature and accumulated rainfall are taken daily and relayed to the National Weather Service.

2) Fire Season

This area of Texas can exhibit extreme fire behavior during July and August, which typically are the two driest and hottest months. Wildfire potential is also high during late winter when grasses are cured, and can be exceptional during droughts.

3) Fuel Characteristics

Fuels around the Boyhood Home and associated neighborhood are mowed lawns with scattered ornamentals. The grass cures after the first fall frost, and remains dead through the winter. The Johnson Settlement, including the prairie restoration area, has dense, knee-high grass with some scattered oaks and pecan trees. Such fuels ignite readily and spread rapidly under the right conditions. The pastures have non-native grasses that can vary from stubble to knee-high, depending upon grazing pressure.

4) Fire Regime Alteration

Natural fuels have been intentionally altered by over two centuries of farming and development. This FMU is currently in Condition Class 3 (high departure from historical or natural range of variability), with a Fire Regime Class of II (shrub lands: frequent, stand replacing fire regime). The Boyhood Home and surrounding neighborhood are being maintained as a part of the cityscape characterized by mowed lawns. The twelve acre prairie restoration area will be managed for natural conditions and may ultimately return to Condition Class 1.

5) Control Problems

Wildland urban-interface occurs along the boundary with Johnson City. Significant fuel loads in the form of Ashe Juniper stands and grassy fuels occur on adjacent lands that threaten surrounding homes, industry and park resources from accidental ignitions. The land is generally flat with a stream, Town Creek, separating the Boyhood Home neighborhood and headquarters building from the pastures and prairie restoration area.

6) Values at Risk; Wildland Urban Interface

Impacts to visitation to the prairie restoration area, Exhibit Center and Johnson Settlement should be mitigated. Fuel loads will be properly minimized during periods of increased fire risk, and prescribed fire will be utilized during periods of anticipated low visitation. Closures of the Johnson Settlement are typically short (one day or less) in duration. Fire management activities in these areas will be coordinated with the Resources

Manager, Supervisory Range Technician and Park Fire Management Officer so that there is a balance between the interpretive and pasture management objectives.

2. LBJ Ranch FMU

The LBJ Ranch FMU is fifteen miles west of Johnson City, and includes the Texas White House, airstrip, Ranch Foreman's House (occupied), Show Barn, Bus Barn, and pastures of coastal Bermuda grass. There is a pecan orchard on approximately 55 acres of the ranch. The ranch is managed as an active cattle ranch, and has guided tours that originate at the adjacent LBJ State Park.

a) Natural and Cultural Resources

This FMU is predominately maintained as pasture. Hazardous fuel loads are not a factor. Sufficient fuels for conducting prescribed fires at the ranch are dependent not only upon weather factors but also grazing impacts as well. Grazing exacerbates the lack of growth of sufficient fuels to carry fire after a dry fall and winter.

The Pedernales River runs along the southern boundary of this FMU. The Pedernales River originates in southeast Kimball County and flows southeasterly about 123 miles into the Colorado River. The total drainage area is 1,302 sq. miles. The area drained by the river before it reaches the park is approximately 608 sq. miles. The watershed topography consists of plateaus and hills broken by spring-fed streams and lies over the northeast sector of the Edwards Plateau.

All water rights owned by the park at the LBJ Ranch are shared with the LBJ Company. When water rights were adjudicated in 1979, all LBJ Company and NPS claims were considered conjointly. They were then adjudicated on the basis of shared water rights. The LBJ Company reserves the first of use on all withdrawals. Other surface water in the LBJ Ranch FMU consists of stock ponds or 'tanks' formed by the construction of earthen dams to capture surface water runoff. These tanks were built in conjunction with the terracing of various fields to provide erosion control, stock water, and in some cases as holding ponds for irrigation. There are eleven tanks within the legislative boundary of the park. Two concrete dams on the Pedernales River provide water for irrigation, fire protection, and filling stock tanks. The Johnson Dam impounds 48 acre-feet of water, and the Jordan Dam impounds 35 acre-feet of water.

There are numerous historic structures located in the Texas White House Complex and throughout the agricultural areas. Wildfire is unlikely to cause damage to sites within the LBJ Ranch FMU because most structures in the FMU are surrounded by mowed grass buffers that are kept sprinkled. Suppression activities will have no impact on the structures themselves.

Several archeological sites have been located in this FMU during a recent archeological survey, and prehistoric artifacts have been discovering during monitoring activities associated with previous construction and reconstruction efforts. All sites will be protected from damage from fire management activities. There are no known NAGPRA or other Native American issues in the park. The cultural resources will not be adversely affected by the low impact burning which occurs in this unit.

There will be some involvement of riparian areas and wetlands in the prescribed fire program. The LBJ Ranch has river bottom pastures that reside in the 100 to 500 year flood plains. Burning in these areas is typically scheduled to avoid periods of heavy rainfall as low fuel moistures are critical to achieving resource benefits; this automatically mitigates soil erosion and silting.

The LBJ Ranch Airstrip is situated in the middle of this FMU and will be temporarily affected by smoke during fire management activities. This is maintained as a cultural feature of the LBJ Ranch and not as an airstrip. The seven grandchildren of President and Mrs. Johnson have life estate use of the airstrip under certain conditions, but only one grandchild makes active use of the airstrip at this time.

The only known occurrences of a T&E species within the park are the occasional overflights of Bald Eagles, which have been sighted over the Pedernales River. There are currently no nests within park boundaries, nor any historical record of nesting within the park.

b) Fire Management Objectives

- Prescribed fire will be used to reduce undesirable grass species, promote new growth for grazing, and to maintain the historic scene. All prescribed burns are conducted consistent with all Federal, State, Tribal, and local smoke management requirements.
- All unplanned and unwanted wildland fires are controlled during initial attack (12 hours or 10 acres).
- No structures will be lost due to a wildland fire.

c) Management Constraints

- Ensure that air quality requirements are followed in developing implementation plans.
- Prevent unacceptable impacts to cultural resources or T&E species.
- Ensure socio-political economic impacts, including wildland urban interface, are considered in developing implementation plans.

- Utilize prescribed fire to reduce hazard fuels and control unwanted plants within pasture areas.
- Coordinate prescribed burning on life estate pastures that are leased by the park for grazing with the Johnson family.
- Ensure that the schedule of prescribed burns is communicated to holders of life estate use of the LBJ Ranch Airstrip.

d) Fire History

President Johnson burned areas of the LBJ Ranch prior to NPS acquisition. While it is known that many of the burns were conducted at night, the frequency of burning is not known. Historically fire has been used and continues to be used by local landowners to remove undesirable species and promote the growth of desirable species. The NPS has conducted burning with mixed success. Drought is a significant factor. Recent years have seen periods when the surrounding area has been under a burn ban during the period when the park typically conducts its prescribed burns.

There have been two wildland fires on the ranch, both contained at less than one acre. (See Table 1 under "Fire History" for the Johnson City FMU.)

e) Fire Management Situation

1) Historical Weather Analysis

Because this FMU is only 15 miles from the Johnson City FMU, the historical weather analysis is the same for the LBJ Ranch FMU.

2) Fire Season

There is no peak to wildfire occurrence in that dry periods can occur year round. However, July and August tend to be the two driest and hottest months.

3) Fuel Characteristics

Pasture areas are grazed and hayed which keeps the fuels relatively short. Such fuels ignite readily and fire may spread rapidly under the right conditions. Scattered tree stands provide shade for the cattle and reduce fire intensity. A dense oak and juniper stand along the western boundary can produce extreme fire behavior with even modest weather conditions.

4) Fire Regime Alteration

Natural fuels have been intentionally altered by over two centuries of farming and development. It is currently in Condition Class 3 (high departure from historical or natural range of variability), with a Fire Regime Class of II (shrub lands; frequent, stand replacing fire regime). The Texas White House and surrounding structures are maintained to reflect the historic period and

are characterized by mowed lawns. There is no intent to manage toward Condition Class 1.

5) Control Problems

The topography is flat to slightly sloping. The airstrip and roads divide the area into burn blocks.

6) Values at Risk; Wildland Urban Interface

Impact to visitation of the LBJ Ranch on NPS bus tours should be minimized. Closures of all or part of the tour route due to fire management activities are typically short (4 hours or less) in duration. Fire management activities in this FMU will be coordinated with the Resources Manager, Supervisory Range Technician and Park Fire Management Officer so that there is a balance between the interpretive and pasture management objectives. Fuel management and fire suppression activities in the pecan grove should reduce the risk of tree mortality. Smoke from fire management activities may temporarily impact the safe use the LBJ Ranch Airstrip by the holders of life estate use. Advance notice will be provided to the Johnson family for all prescribed burns.

IV. *WILDLAND FIRE MANAGEMENT PROGRAM COMPONENTS*

A. General Implemention Procedures

Implementation of wildland fire management components must be consistent with fire management capabilities and should consider the current and predicted conditions affecting fire behavior. Preplanned decisions based on historical fire behavior indices should be considered to most efficiently aid in Stage 1 decisions requiring appropriate management response.

1. Defining Implementation Procedures

A Wildland Fire Implementation Plan (WFIP) will be initiated for all wildland fires. The Stage I: Initial Fire Assessment will be completed by the Initial Attack Incident Commander to provide the decision framework for selecting the appropriate management response. Guidelines are located in chapter 4 of the Wildland and Prescribed Fire Management Policy Implementation Procedures Reference Guide, hereafter referred to as the Implementation Guide.

The Stage I: Initial Fire Assessment includes the **Fire Situation** and the **Decision Criteria Checklist**. The Stage I analysis documents the current and predicted situation, and documents administrative information. As suppression is the only appropriate response in both FMUs, the requirement for a decision checklist as part of the Stage I analysis is met. The Stage I analysis is satisfied at the programmatic

level as numerous high-value structures within and adjacent to the boundary and the prevalence of flashy fuels (grass and juniper brush) require immediate and aggressive fire control actions.

Stage II is the Short-term Assessment and Implementation Actions that guide a fire for resource benefits. This category will not be used as actions are restricted to suppression only.

A Wildland Fire Situation Analysis is used to guide fires that have not been controlled by initial attack. Due to the size and shape of LYJO, and the potential rate-of-spread in flashy fuels, wildland fires will either be controlled on initial attack, or will spread outside the boundary with command transferring to the fire department having jurisdiction. As the fire moves into extended attack (2nd burning period) command will transfer to the TFS. The Wildland Fire Situation Analysis and Incident Action Plan will be developed utilizing the procedures developed by that organization. The park will provide a resource advisor as a liaison between park management staff and the fire departments and/or TFS.

B. Wildland Fire Suppression

Due to the small size of the park and proximity of any wildfires to structures, all wildland fires will be immediately suppressed using aggressive attack, usually a combination of direct attack with engines and indirect attack. They will be suppressed in such a manner as to leave no lasting impact on the natural and cultural resources. The fuels, terrain and accessibility make suppression efforts comparatively easy.

1. Fire Behavior

   Fire management personnel will make fire behavior predictions by using the NFDRS fuels models (Burgan 1988, Rothermal 1983). Fuels at LYJO are rangeland or pasture (Fuel Model A) with scattered live oaks and pecan orchards, and small areas of dense juniper (Fuel Model 4). The quantity and continuity of the ground fuels vary greatly with grazing activity and rainfall from year to year. Fire behavior of this fuel model is highly dependent upon local weather conditions. Wildland fires in flashy fuels (grass) may display high rates of spread with low heat per unit area and low fireline intensity, while the juniper develops high fire intensities. These fuels can be very flashy and are potentially dangerous with even modest winds.

   Fire behavior normally would be flame lengths ranging from 1 to 6 feet (grass) or up to 50 feet in dense juniper. Rate of spread of the fire in these fuels is very dependent upon wind speed. Under extreme conditions of high winds and low relative humidity fire would move rapidly. Depending on the ignition point the fire could exit the park before park resources could respond.

2. Preparedness Actions

   a) Prevention

The main objective of the fire prevention program is to reduce the threat of human caused fires through visitor, neighbor and employee education. This can be accomplished by integrating the prevention message into visitor information. As the fire danger increases, park personnel will be advised of the danger and incorporate fire observation in the daily routine. Fire detection will generally be through routine patrols and activities of the park staff. Increased patrols and awareness will be implemented during very high to extreme fire danger periods. Staff may work with cooperators and contact park neighbors with defensible space and FIREWISE information. Information on the FIREWISE program is available at http://www.firewise.org.

b) Training

All employees working on any fire assignment will be qualified for the position assigned according to the Incident Command Qualification System. All fire personnel will meet physical fitness standards required by RM-18. Supervisors will encourage employee participation in fire management activities and develop training plans. Fire personnel will receive physical clearance and then perform the physical fitness test (conducted by the Physical Fitness Coordinator). Fire personnel will attend an 8-hour safety refresher training prior to assuming any fire suppression duties on a calendar year basis. The BITH Fire Program Assistant will update fire training and fire experience records annually.

c) Preparedness

The Chief, Resources Management and Visitor Protection (RM&VP) and the Collateral Duty Fire Management Officer (FMO) will complete a pre-season preparedness review prior to the beginning of the summer fire season (i.e. by June). Servicing of the wildland engine and slip-on pump unit will be completed in January and June. Supplies and equipment will be inspected, serviced and inventoried in September. Replacement of stock items will be coordinated with the SE Texas Fire Cluster (SET Fire) fire management staff. Personal Protective Equipment (PPE) will be issued on an as-needed basis through the SET Fire staff.

d) Fire Weather

Fuel type for both units is predominantly grass with some scattered tree stands. Such fuels ignite readily and spread rapidly under the right conditions. July and August are typically the two driest and hottest months, when extreme fire behavior is possible. The late winter - after grasses have cured and before greenup can occur - has the potential for wildfires, but not the extreme behavior associated with summer months. Prescribed fires are typically conducted during this period. The TFS maintains a Remote Automated Weather Station (RAWS) at the LBJ Ranch, and the US Fish and Wildlife Service has a RAWS station (FWS-12S) located 60 miles east of the park in Balcones Canyonlands National Wildlife Refuge.

e) Step-up Staffing Plan

Fuel Model A is typically used for graded pasturelands, and Fuel Model D is used for brushlands with significant Juniper presence. The burning index (BI) for NFDRS fuel Model A will be used to indicate fire danger in the park. As fire danger increases, the park's level of preparedness will increase. Preparedness actions, defined by staffing classes, are discussed in Table 2. As fire danger escalates to Very High or Extreme, the Chief, RM&VP, will notify park staff by email or local direct communications and verify step-up activities. The Chief, RM&VP, will also contact the SET Fire FMO at BITH and coordinate development of the funding justification for increased costs.

Table 2. LYJO Staffing Class Definitions

Staffing Class	Burning Index	Fire Danger
I	0-10	Low
II	11-18	Moderate
III	19-36	High
IV	37-40	Very High
V	41 +	Extreme

Minimum levels of actions by park staff:

I Initial attack by park staff on normal tour of duty.

II Slip-on unit is fire ready and available for out of park assignments. Do preventive maintenance at high-risk structures.

III Fire danger is relayed to park staff. Fire safety messages are incorporated in interpretive programs. No fires are allowed in Johnson Settlement interpretive programs. All fire qualified staff are to have issued PPE with them while on duty. Review readiness with Johnson City and Stonewall Volunteer Fire Departments. If high visitation is determined to pose an increased risk of human caused fires, or if high winds are expected, staffing class is moved to next higher level.

IV Increase boundary and Johnson Settlement patrols and extend workday (through sunset) for patrol personnel at the discretion of management. Local resources are not available for out of park dispatch below national level IV.

V Temporary closure of the Settlement and other areas may occur at the discretion of the Superintendent.

3. Pre-attack Plan

   - Use emergency preparedness plans to deal with periods of extreme fire seasons or periods of extreme of extreme fire danger within normal seasons. The Step-up Staffing Plan incorporates specific measures to be taken to provide adequate resources, and emergency preparedness funds are available during staffing class 4 and 5 based upon a risk analysis (see RM 18, chapter 7, exhibit 2 for an example).
   - Maintain a 12-foot wide fire-break (mowed) in the grassy fuels along the boundary adjacent to US Highway 290.
   - Develop cooperative agreements, acquire funding, and participate in fuel reduction treatments on adjacent lands, e.g. Gibson Estate, Cox property and Johnson family property.
   - Apply other FIREWISE standards where appropriate to provide for better defensible space around NPS structures.

4. Minimum Impact Suppression Tactics (MIST)

   MIST is the policy for all fire management activities on NPS lands. Most wildland fires can be suppressed with water from a hose lay or rolling attack. The use of a foaming or surfactant agent is permitted away from any watercourse. Hydraulic digging with the water stream should be avoided. Construction of dozer lines will require consultation with an archeologist and approval by the Superintendent. Cold trailing the fire edge is preferred, with hand tools and water used on for mop up of heavy fuels, such as stumps.

5. Initial Attack

   Fire suppression actions will be taken to minimize resource damage and suppression costs. Actions will also be commensurate with values at risk and firefighter safety. All NPS fire personnel will comply with personal qualification and protective equipment standards identified by the National Wildfire Coordinating Group. If initial attack begun by NPS firefighters, is unsuccessful (i.e. crosses onto adjacent lands) the appropriate fire department (Johnson City or Stonewall VFD) and TFS will be notified, and command transitioned after a situational briefing. They will respond at a level identified in their own operational guidelines; personnel will utilize their fire protective gear and function in positions identified in their qualifications system. The Chief, RM&VP, should designate a resource advisor to function as a liaison with the fire departments and/or TFS. Local fire departments and the TFS have a strong history of suppressing wildland fires on initial attack in this area. The construction of dozer lines within the park will require case-by-case approval by the Superintendent and on-site guidance by a trained archaeologist.

As most fires are controlled on initial attack, and extended attack fires will have minimal park involvement, the ordering, camping or resting of additional resources is not a park issue.

a) Johnson City FMU

A confinement strategy is not practical due to the urban setting. Low-level use of aircraft is not permitted due to the urban setting. A primary appropriate tactic is to utilize direct attack with engines from the 'black' (areas that the fire has passed through) or hose-lays from supporting engines. A foaming agent or surfactant can be used at a low percentage rate (<1%) to reduce water usage, aid penetration and prevent rekindling.

Since the park's inception, there have been few uncontrolled fires in this area of the park. Most of the boundary is considered wildland urban interface due to adjoining private residences and some commercial structures. Mechanical fuel treatments have been limited to the boundary near US Highway 290. Numerous man-made control lines (road and trails) are readily available and there are municipal water supply hydrants to support engine operations. An indirect strategy may sometimes be used near Town Creek or around other fuel breaks that exist in this FMU.

b) LBJ Ranch FMU

Structures are typically surrounded by mowed lawns and have defensible space. A confinement strategy is not practical as there is only one natural barrier, the Pedernales River, with the potential for a high-speed fire to cross the remaining boundary in grassy fuels. A 'rolling attack' with wildland style engines (i.e. brush trucks) from within the black is an appropriate tactic. Direct attack using hose-lays from supporting engines should also be attempted as more equipment arrives. A foaming agent or surfactant can be used at a low percentage rate (<1%) to reduce water usage, aid penetration and prevent rekindling. Heavy equipment (dozers/plows) use should be limited as restoration will be required. Construction of a barrier ahead of the fire could place the firefighters at significant risk. Utilizing a 'burning out' tactic from established control features and containing the fire is also a good option.

The park has limited initial attack resources and depends upon local volunteer fire departments for assistance. Since all fires will be considered wildland urban interface and the rate-of-spread is high in grassy fuels, all available NPS fire resources should respond. Local VFDs will utilize their own policies to set initial response, and adjacent departments should be notified of a possible resource request.

Table 3. Typical Fire Response Times by Resource Type

Johnson City VFD to Johnson FMU	**Type IV**	**<10 minutes**
Johnson City VFD to LBJ Ranch FMU	**Type IV**	**<20 minutes**
Stonewall VFD to Johnson City FMU	**Type IV**	**<20 minutes**
Stonewall VFD to LBJ Ranch FMU	**Type IV**	**<15 minutes**
Stonewall VFD to Johnson City	**Tanker**	**<30 minutes**
Stonewall VFD to LBJ Ranch FMU	**Tanker**	**<20 minutes**
Fredericksburg to Johnson City FMU	**Type IV**	**<30 minutes**
Fredericksburg to LBJ Ranch FMU	**Type IV**	**<20 minutes**

Aerial delivery of water by either Single-Engine Air Tanker (SEAT) or helicopter is permitted. Foaming or surfactant agents are not allowed on the south side of Park Road 49 along the Pedernales River or within 50 ft of the tanks in the pastures. It is unlikely that aerial resources would be available within the time frames of initial attack, and extended attack on fires that begin with the park will put the head of the fire outside the FMU. Aerial delivery can be considered for extended attack on fires that burn into the park from outside the park boundary. Coordination with park management staff is essential before the LBJ Ranch Airstrip can be used as a SEAT base if requested by the TFS for use with extended attack on fires outside of the park.

6. Extended Attack

Unless they occur during extreme weather occurs in a drought period, most wildland fire ignitions will be contained during initial attack, particularly if nighttime recovery of relative humidity occurs. Fires occurring during Very High or Extreme conditions could quickly move outside the park, becoming the responsibility of local fire departments and/or the TFS. Additional resources (dozers and aerial support) will be needed to maintain suppression actions. If the fire is expected to burn throughout the night, the NPS should recommend that a Type II management team (organized overhead personnel) be considered by the TFS. An NPS firefighter will function as resource advisor for the portion of the fire on NPS lands. The fire departments and TFS have their own planning processes, including a Wildland Fire Situation Analysis (WFSA). NPS staff should assist in preparation of the WFSA if active burning continues on NPS land.

7. Wildland Fire Situation Analysis (WFSA)

   The resource management staff, Fire Management Officer, and Incident Commander, will complete a WFSA when initial attack is not successful. The Superintendent will retain initial approval; however, the Daily Review will be delegated to the Chief, RM&VP, with regular briefings to the Superintendent. If fire conditions or complexity levels escalate, signature authority will automatically and immediately revert to the Superintendent. If the review process dictates selection of a new management alternative, certification authority will also revert to the Superintendent.

   An electronic version of a WFSA can be found at the US Forest Service website at http://www.fs.fed.us/fire/wfsa/.

8. Exceeding Existing WFSA

   A WFSA has been exceeded when a fire cannot be suppressed using current suppression actions or when a prescribed fire becomes an escaped fire. Transition to an incident management team requires a briefing by the Superintendent and a limited delegation of authority for the suppression of the fire(s). The briefing should address agency specific concerns, priorities, firefighter and public safety, economic and resource concerns, and other topics or issues of importance and relevance to the suppression effort.

Figure 2. Example of "Delegation of Authority"

Y14

To: _____, Incident Commander

Subject: Delegation of Authority, _____ Wildland Fire Incident

I hereby delegate authority for the management of the _____ Wildland Fire Incident to you as Incident Commander of the _____ Type ____ IMT. This fire is currently burning on _____ lands under the jurisdiction of _____. The local fire protection agencies for private property are _____.

You will report to the _____ Incident Base following the Agency Administrator's briefing on _____ at _____ am/pm at the _____ Office. Your team will assume full command of the incident following shift change at _____am/pm on _____.

I expect all suppression efforts will be executed in accordance with the selected strategy identified in the WFSA prepare for the _____ incident. I, or my representative(s), will be available for daily review of the WFSA throughout this incident.

I have designated _____ my representative and assigned _____ as the Resource Advisor to the incident.

Suppression objective priorities, as outlined in the WFSA, are:

1. _____

2. _____

Any _____ suppression tactics within the _____ area must be approved by me or my representative. Within the _____ is approved. The following areas are designated _____ habitat. Suppression activities within these areas should consider _____.

Effective management of costs commensurate with resource values to be protected and strategic direction of the WFSA selected alternative is critical. A comptroller will be appointed and available to our staff. Property accountability should demonstrate adherence to National direction on acceptable fire loss/use rates.

Incident Resources will be responsible for Initial Attack within the Fire Management Unit and any spot fires on adjacent lands from the _____ Incident. The Texas Forest Service will assume Initial Attack responsibilities outside this specified area. Resources committed to the fire are _____.

Fire information and media relations will be coordinated with the park information officer.

I request that personnel assigned to the incident be sensitive to the local community and request that as much purchasing as possible be done through local vendors.

I have included excerpts from the Fire Management Plan into the briefing documentation. Other documents that are pertinent to fire suppression efforts within the area include:

Superintendent

9. Rehabilitation Guidelines

   Management actions allowed under this plan should not result in resource damages requiring significant rehabilitation. Mitigation actions include removal of suppression equipment, e.g. hoses, and site cleanup of trash. Vegetative slash will be chipped or left on-site and tree stumps flush cut. Removal of charred trees and brush may be considered to maintain the scene, but this activity can not be paid for with fire suppression funds. Short-term irrigation may be used to restore a grass ground cover. Surface disturbances (scratch lines, vehicle ruts) will be raked in after inspection by an archaeologist. Extensive rehabilitation actions (seeding or repair to cultural resources) will require a written plan and approval of the Regional Bare Area Emergency Rehabiliation Coordinator prior to implementation.

10. Records and Reports

    The status of all wildland fires will be reported daily to the Texas Interagency Coordination Center (TICC) by a faxed ICS-209 form. It details the statistics (size, equipment, staffing, progress, etc.) and the current and potential activities in a short narrative. The SET Fire staff can assist in the submittal.

    The park establishes an account code using the park Identifier (73##), followed by a unique national accounting code received from TICC (AA##), followed by an activity class (E11 for wildfires, H12 for prescribed burns, E13 emergency stabilization). The IMR Fire Budget Analyst should be notified of the location, anticipated resource orders and an account number for cost tracking. All resources or expenses assigned to this incident will use this account number.

    A fire report (DI-1202) should be initiated in the Shared Application Computer System (SACS) system and then updated daily. This can be accomplished by calling the SET Fire program assistant, who will enter the data online. A paper copy of the fire report (including a narrative and map [GPS data is preferred]) should be completed and the information entered into the computer system within ten days of calling the fire out. Fire reports for prescribed burns and any escaped fire must be reported in the DI-1202 format in the SACS.

    The park will maintain a file that includes the burn plan, fire report, fire narrative, cost, spread maps, observed weather and fire behavior data, fire monitoring data, any operational or injury review, and any other information that is pertinent. The park will also maintain a fire atlas (GIS maps) as a historical record.

    Prescribed burn and fuels treatment projects will be generated in the National Fire Plan Operations and Reporting System (NFPORS), and account numbers received as part of the annual budget process. Progress will be reported in NFPPORS with the assistance of the SET Fire FMO.

Any significant injury/accident or escaped fire that has significant impact to adjacent land, is large in size, or is controversial should be reported by phone to the IMR FMO.

All entrapments or burn-overs will be reported immediately to the Superintendent and a review process initiated. A preliminary report should be prepared and faxed to the IMR fire office.

Table 4. Required Records and Reports:

Record/Report	Frequency	Responsibility	Distribution
Cache Inventory	Annually	FMO	LYJO
FIREPRO Submissions	Annually	FMO	LYJO/BITH
Pre-season Risk Analysis	Annually/ Periodically	FMO	LYJO
Red Cards	Annually	FMO	Firefighters-BITH
Prepardness Review	Annually	FMO	LYJO/BITH
Fitness Training and Experience Records	Annually	FMO	LYJO
Training Needs Assessment	Annually	FMO	LYJO/BITH
Fire Prevention Analysis	Every 3 Years	FMO	LYJO
Annual FMP Update	Annually	Superintendent/FMO	LYJO/BITH
Prescribed Burn Accomplishment Report (NFPORS)	When changes, or by 23rd of the month	FMO	LYJO/BITH
Fire Danger	As needed	FMO	LYJO
Fire Weather	As needed	FMO	LYJO/WIMS
Fiscal Records	As needed	FMO	LYJO
DI-1202 Fire Report	Each Fire	FMO	LYJO

C. Wildland Fire Use

Lyndon B. Johnson NHP does not have a wildland fire use program. All fires not ignited by management will be immediately suppressed using the appropriate management response (AMR).

D. Prescribed Fire

Prescribed burns of selected areas of the park may be conducted every two to five years. They are necessary to restore and maintain the historic scene, reduce undesirable plant species, release plant nutrients and reduce hazardous fuel loads.

1. Planning and Documentation

   a) Annual activities

      The park management team, resource staff and collaborators will determine if prescribed fire treatments are necessary to restore or maintain the cultural landscapes and manage hazardous fuels. Projects will be defined and requested annually by March 15th in the National Fire Plan and Reporting System (NFPORS). They will be funded, tracked, and closed out in NFPORS. Prescribed burn plans will meet RM-18 guidelines, go through an external review process, and be approved by the Superintendent.

   b) Long-Term Strategy

      Encroachment of undesirable species into pastures may be treated with prescribed burns during years when adequate rainfall is received. This will be dependent upon grazing and harvesting needs. The prairie restoration area will be burned on a two to five year cycle, when weather permits, or mechanical treatments will be utilized. Resource management staff will establish long-term goals for specific areas and each treatment, and monitor to ensure that burns discourage exotics and undesifable species.

      Timing of the prescribed burns will typically occur during the late winter but this may be varied depending on the results of ongoing research into the effects of fire on the control of invasive non-native species of plants. The University of Texas completed a research project that recommended conducting prescribed fires in the summer to enhance the reestablishment of native grasses in a planned prairie restoration area. Naturally occurring fires would more often occur during the summer as ignition would be provided by lightning in summer thunderstorms. Currently research is underway with the Lady Bird Johnson Wildflower Center and the US Fish and Wildlife Service to measure the effects of various treatments, including prescribed fire, on the control of King Ranch Bluestem, an invasive non-native species of grass that is prevalent in the Johnson Settlement.

c) Personnel

The park does not have sufficient wildland fire risk or fire history to justify full-time fire positions. The park will at a minimum maintain a collateral duty Fire Management Officer (FMO) qualified as an advanced firefighter [FFT1] and Incident Commander [ICT5], and two firefighters [FFT2]. The SET Fire FMO will provide oversight and assistance for the LYJO fire program, and will guide the development of prescribed burn plans, including arranging for the necessary peer review. All prescribed burns will be conducted under the direct supervision of a certified Burn Boss, who has previously examined the prescribed burn plan. The crews for these burns will consist of no less than six members. Additional staffing for wildland fire management actions can be requested from San Antonio Missions National Historical Park, Padre Island National Seashore, and interagency partners. Debris burns, which will be located in an area in each district that has been designated for debris piles and suitably prepared for this funciton, will be conducted by the Collateral Duty FMO with an engine and at least least one crewmember.

d) Weather, Fire Behavior, Monitoring

Burning is generally attempted in February or March after the grasses have cured and before green-up. Further limiting the window of opportunity is the need to prevent smoke from adversely impacting Johnson City. For this reason winds must be in a range from north to east. Winds are typically southerly, coming from the north or east only when a cold front moves through the area. These fronts must also be dry in order to keep fuel moistures low enough to carry a prescribed burn. Pending the results of research in to the effects of summer fires on the control of invasive exotic grasses, prescribed burning may be conducted in the summer. The prescribed burn plan would specify the weather conditions necessary to limit smoke impacts on Johnson City.

Prescribed fires will be conducted when Staffing Levels are 1-3, and when no frontal passage or unusual weather event is expected within 24 hours. Generally, head fire ignition patterns will only be utilized during light winds (<5 mph). Specific weather and fire behavior parameters are defined in each prescribed burn plan to determine equipment and staffing needs while achieving resource goals.

SET Fire fire monitoring staff will collect first order fire effects and pre/post burn data.

e) Critiques

The burn boss will conduct an “After Action Review” on-site at the end of each active fire period. While a group meeting is preferred, specific resources that are leaving the fire early may be debriefed individually. All participants will be given the opportunity to discuss equipment status, holding and ignition

operations, observed fire behavior, safety issues, any remaining control needs, tomorrow's operations, personnel issues, and other pertinent items.

f) Reporting and documentation requirements

The initiation, accomplishment, size and cost of a fire management action are tracked on the NFPORS web page. A short description of the treatment and result, as a 'success story', is submitted to the Public Information Officer at the National Interagency Fire Center and the Regional FMO. Fire reports for prescribed burns follow the same procedures as wildfires. An escape is noted on the prescribed burn report and a separate fire report generated to document the escaped fire. The park file should include additional monitoring data and accomplishments. Fire reports, burn narrative, maps and other required informaiton will be submitted within the time frames required by RM-18 (see IV-B-9). Prescribed Burn Plans will be approved and ready for implementation by January 1st of each year. Each plan will meet RM-18 requirements. Pre and post burn data will be entered into the NIFC computer system within the time frames required by RM-18.

g) Historic fuel treatments

The Johnson Settlement of the Johnson City FMU was burned in 1990, 1994, 1996 and 1998. Records are not available prior 1987. In 1999 the grass was cut, due to drought, with the thatch left in place. In 2001 the grass was cut, due to a burn moratorium, and the thatch removed. This treatment was repeated in 2004.

A significant area of the LBJ Ranch FMU was last burned in 1993. At that time 135 acres were burned. The last attempted prescribed fire in 1998 was rained out at only 10 acres.

h) Prescribed burn plan

The SET Fire staff will prepare prescribed burn plans in consultation with the park.

2. Exceeding Prescribed Fire Burn Plan

A prescribed fire should be suppressed or converted to a wildfire if weather conditions or fire behavior exceed prescription parameters, goals are not being met, or an escape occurs. A Wildland Fire Situation Analysis should be prepared (see RM-18, chapter 9) to guide suppression efforts if initial attack fails. If the escaped fire has the potential to cross the boundary, or is on adjacent lands, the local VFD will be notified. Trigger points are identified in the transition section of the prescribed burn plan.

3. Air Quality and Smoke Management

National Ambient Air Quality Standards (NAAQS) for what are known as criteria pollutants are intended to protect human health and welfare. The criteria pollutants

are sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (as PM-10 and PM-2.5), lead, and carbon monoxide (CO).

Ambient monitoring has not routinely been undertaken at LYJO, and the nearest criteria pollutant monitoring is in the Austin and San Antonio metropolitan areas. Based on that monitoring, the Austin and San Antonio areas are considered to be in attainment for all NAAQS as of 2002, except for ozone. In order to expedite compliance with the new 8-hour standard, both San Antonio and Austin have committed to implementing additional emissions controls prior to what is prescribed in statute through a mechanism called an early action compact.

The Austin and San Antonio areas each have at least one monitoring site for CO, O_3, PM-10, and PM-2.5. CO levels are well below the NAAQS. Ozone values from sites in the Austin and San Antonio areas that are located nearest LYJO are included in Table 5, and demonstrate the two areas' ongoing issues with that pollutant. Ozone levels in the park itself are unknown at this time, but could well be in compliance with the new 8-hour standard given its distance from Austin and San Antonio. It should be noted though that at levels well below the NAAQS that ozone can be phytotoxic, having damaging effects on sensitive vegetation.

EPA is also in the process of implementing a new particulate matter standard, PM-2.5 and, the entire area is most likely to be attainment for this new NAAQS. Data from sites in the San Antonio and Austin monitoring networks that are located nearest the park are shown in Table 6.

Although apparently in attainment for PM-2.5, LYJO is certain to experience some of the same widespread visible haze that affects much of the eastern half of Texas on some days. This haze may be attributed to a variety of sources, including more regional ones some distance away.

To illustrate the significance of emissions in the six-county area surrounding the park, consisting of Blanco, Burnet, Comal, Gillespie, Llano, and Travis counties, these estimates are displayed in Table 7. Most of these emissions are from Travis County, which is where Austin is located. This data is derived from EPA's National Emission Inventory for 1999.

Table 5. Ozone Monitoring Data from Closest Monitoring Stations

EPA Air Quality Standard
120 ppb = 1-hour
80 ppb = 8-hour

Camp Bullis site, San Antonio, TX (approx. 50 miles from park)

One hour averages					# of Exceedences		
# Obs.	1st Max	2nd Max	3rd Max	4th Max	Actual	Est.	Year
235	108	95	92	91	0	0	2000
239	101	92	91	90	0	0	2001
227	119	112	108	108	0	0	2002

Eight-hour averages					# of Exceedences		
# Obs.	1st Max	2nd Max	3rd Max	4th Max	Actual	Est.	Year
235	93	83	80	80	1	1	2000
239	90	81	81	81	1	1	2001
227	100	97	96	95	10	10	2002

Lime Creek site, Austin, TX (approx. 30 miles from park)

One-hour averages					# of Exceedences		
# Obs.	1st Max	2nd Max	3rd Max	4th Max	Actual	Est.	Year
243	112	104	103	9102	0	0	2000
227	97	97	88	86	0	0	2001
240	95	94	93	91	0	0	2002

Eight-hour averages					# of Exceedences		
# Obs.	1st Max	2nd Max	3rd Max	4th Max	Actual	Est.	Year
243	100	97	88	87	9	9	2000
239	85	82	81	80	1	1	2001
240	92	81	81	81	1	1	2002

Table 6. Particulate Matter(PM) Monitoring Data from Closest Monitoring Stations

EPA Air Quality Standard
150 ppb (24-hour standard for PM-10)
50 ppb (Annual standard for PM-10)
65 ppb (24-hour standard for PM-2.5)
15 ppb (Annual standard for PM-2.5)

Camp Bullis site, San Antonio, TX (approx. 50 miles from park)

PM-2.5					# Exceedences			
# Obs.	1st Max	2nd Max	3rd Max	4th Max	Actual	Est.	Annual	Year
217	23	22	22	20	0	0	9	2000
233	26	21	21	21	0	0	8	2001
328	43	40	35	29	0	0	8	2002

Lime Creek site, Austin, TX (approx. 30 miles from park)

PM-2.5					# Exceedences			
# Obs.	1st Max	2nd Max	3rd Max	4th Max	Actual	Est.	Annual	Year
338	32	28	25	25	0	0	9	2000
226	40	39	35	32	0	0	8	2001
181	43	42	40	26	0	0	7	2002

Table 7. Emissions Totals for Blanco, Burnet, Comal, Gillespie, Llano, and Travis Counties

Pollutant	Point/Indust. (tpy)	Area/Mobile (tpy)	Total Emissions (tpy)
NO_X	8,918	34,065	42,983
SO_2	343	2,396	2,739
PM-2.5	506	8,041	8,547
PM-10	845	26,665	27,510

a) Prevention of Significant Deterioration

LYJO is designated as a Class II area under the Prevention of Significant Deterioration (PSD) provisions of the Clean Air Act. As such, the area's air quality is protected by allowing only limited increases, i.e. allowable increments, over baseline concentrations of pollution for sulfur dioxide (SO_2), nitrogen oxides (NO_X), and particulate matter (PM). The PSD permitting program is administered by the Texas Commission on Environmental Quality (TCEQ), and applies to defined categories of new or modified sources of air pollution with emissions greater than 100 tons per year and all other sources greater than 250 tons per year.

No current determination of the status of PSD increments in the parks is available. The most significant type of PSD source in the area is power plants. It would appear though that the status of increment consumption could well be driven by non-industrial sources like motor vehicles, since growth in those emissions are to be considered when a new source or a modified source tries to get permitted. TCEQ is responsible for periodically reviewing the adequacy of its air quality management program to assure, among other things, compliance with allowable increments in all PSD areas of the State. A current determination of the compliance status of air pollution sources affecting the region should be available from the agency.

b) Class 1 Airsheds

Big Bend National Park is a Class I airshed located along the Texas / Mexico border. As it is approximately 300 miles west-southwest of LYJO, activities at the ranch will not affect this Class I area. Guadalupe Mountains National Park is the second Class 1 air shed, located on the Texas/New Mexico state line. As it is approximately 400 miles west-northwest of LYJO, activities at the ranch will not affect this Class I area. There are no Class I air sheds within close proximity to the park.

Johnson City has several public schools, and a retirement community is located several blocks north of the pastures and prairie restoration area. A state highway is located adjacent to the western boundary. The LBJ State Park and Historic Site is south of the LBJ Ranch FMU along a state highway.

Air quality and smoke management objectives will comply with RM-18 and with the Texas Commission on Environmental Quality (TCEQ) regulations. TCEQ regulations provide for the type of burning conducted at LYJO. Burn plan prescriptions provide for compliance with these regulations. All burns will be conducted in such a manner as to have a minimal smoke impact on the environment and the public. Due to the small acreage of the prescribed fires, and fine fuel type, smoke management is a short-term concern.

E. Non-Fire Fuel Treatment Applications

1. Annual Activities

   Mechanical treatments may be used for structure protection, for wildland urban interface fuels treatment, to harvest hay and when prescribed burns are not possible due to weather factors. These activities are planned in consultation with the Supervisory Range Technician and may be funded with park or fuels treatment project accounts.

2. Equipment and Seasonal Use Restrictions

   Below normal rain amounts reduce the volume of grass. Pastures that are heavily grazed will not build up hazardous fuel levels. Tractor use typically occurs in the late summer or early fall due to the need to provide winter forage; periods after heavy rain are avoided to reduce soil rutting.

3. Monitoring

   Short term monitoring of brush re-growth and grass recovery will consist of photo-points and line-transect surveys to determine the effectiveness in meeting management objectives. Long-term monitoring will be planned in conjunction with the IMR Fire Effects Monitoring staff (See Appendix F for Monitoring Plan). Scientifically valid research may require contracted or university level assistance to accomplish.

4. Critique

   The park staff will determine if the initial treatment results meet the resource management goals and will conduct an on-site review with involved park staff and contractors. The review will include determining if the scope of work was completed; discussion of any problems or issues; recommendations for expansion of the project to other areas; discussion of the knowledge gained that can be incorporated into future projects; listing of future treatment needs; and noting of any cost saving factors.

5. Cost

   The budget and accounting process of the park will approve and track expenditures. If NFPORS funds are used, SET Fire staff will enter the appropriate data in NFPORS. Excess project funds will be returned to the IMR Fuels Account for funding other projects.

6. Reporting and documentation

   Fuels projects will be coordinated with the SET Fire FMO and tracked in NFPORS.

7. Annual Project List

   The park staff will prepare project proposals and coordinate funding input (NFPORS) with the SET Fire staff by March 15th annually for funding during the next fiscal year.

8. Emergency Rehabilitation and Restoration

   Soil disturbance (rutting) due to equipment use is usually minor and does not require rehabilitation. If water runoff has the potential to cause additional damage, the displaced soil will be raked back into the rut.

V. *ORGANIZATIONAL AND BUDGETARY PARAMETERS*

A. Organizational Structure

The purpose of this section is to outline operational procedures and responsibilities necessary for the implementation of a wildfire suppression program. The park has agreements with local volunteer fire departments for mutual aid response on adjacent lands (See Appendix E).

1. Superintendent

   Responsible for the overall program direction and periodic assessment. Has final decision making authority for fire management operations. Approves Wildland Fire Escape Situation Analyses and Delegations of Authority, and signs interagency agreements for the park.

2. Chief, Resources Management and Visitor Protection

   Responsible for management oversight on a daily basis. Advises the Superintendent on significant activities and recommends policy/procedural changes. Also provides supervision of the resource and protection functions. Normally performs as the Agency Representative for the Superintendent to incident management teams or organizations.

3. Collateral Duty Fire Management Officer

   Serves as the park's FMO and is responsible for the daily fire activities. Other responsibilities include preparation of draft prescribed burn plans, preparation of fire reports and budget reports, and maintenance of personnel records, weather station and fire equipment.

4. Park Staff

   All fire responsibilities are collateral duties for park staff. A list of current red-carded personnel is in Appendix E.

B. Fuels Tratment Funding

Park staff will develop projects in consultation with the SET Fire FMO and fire ecologist. The projects will be entered into NFPORS for funding, with the SET Fire FMO functioning as the project's advocate during the budget process.

C. Periodic Assessments

The Superintendent is responsible to periodically assess and certify, by signature, that continued management of wildland fire suppression actions is acceptable. This responsibility may be delegated to the Chief, RM&VP, if the action is not controversial, resource losses are minimal, or no damage to private property has (or is likely to) occurred.

D. Interagency Coordination

The park cooperatively interfaces with several local, state and federal entities such as the Texas Commission on Environmental Quality (TCEQ), TFS, Texas Interagency Coordination Center (TICC), Texas Parks & Wildlife, US Fish and Wildlife Service, Texas Historic Commission and the cities of Johnson City and Stonewall.

1. Interagency contacts

Dispatch availability	TICC
Fire status, wildland fire project numbers	TICC
Initial Attack at Johnson City FMU	Johnson City VFD
Initial Attack at LBJ Ranch FMU	Stonewall VFD
Extended Attack	TFS – Bastrop
Emergency Section 106 Compliance	Texas Historic Commission

E. Agreements

The park has cooperative agreements with the volunteer fire departments of: Stonewall, Johnson City, and Fredericksburg.

An interagency all-risk agreement includes the US Forest Service, National Park Service, US Fish and Wildlife Service, and Texas Nature Conservancy.

VI. *MONITORING AND EVALUATION*

The park will use the monitoring plan in Appendix F for monitoring short and long-term changes in the prairie restoration area of the Johnson City FMU. The SET Fire staff will conduct the fire monitoring. The LBJ Ranch FMU is primarily a monoculture of Coastal-Bermuda grass and is managed as a crop for harvest or grazing. Burn areas are monitored by ranching and park cultural/natural resources staff to determine the effects of prescribed fires.

VII. *FIRE RESEARCH*

In 1997 funding was obtained for a literature search, vegetation inventory and recommendations for strategies to reestablish historically accurate vegetation on a twelve-acre site in the Johnson Settlement. The park contracted with two University of Texas students to produce this study. Upon completion of this phase of the project the park contracted with Texas A&M Department of Rangeland Ecology and Management for assistance in implementing the various strategies formulated for the project. The prairie restoration project is ongoing.

In 2004 the park began a cooperative research project with the Lady Bird Johnson Wildflower Center and the US Fish and Wildlife Service to measure the effects of prescribed fire, mowing and herbicidal treatment on the control of King Ranch Bluestem, an invasive non-native species of grass that is prevalent in the Johnson Settlement. 35 plots in the Johnson Settlement are being exposed to seven treatments and the results are being monitored.

VIII. *PUBLIC SAFETY*

The park will work closely with adjacent landowners to develop defensible boundaries and limit the spread of wildland fires that threaten homes and businesses. Local law enforcement officials and fire departments will be notified when a prescribed burn is to be conducted. Safety is the top priority on all fires. During any wildland fire activity access by the public may be restricted and tours of the LBJ Ranch may either be cancelled or rerouted. Protection Rangers will be present during fire activities to direct traffic and control access to the site. Adjacent neighbors will be notified prior to ignition of a prescribed burn. During prescribed fires at the Johnson Settlement, the area will be closed to the public until after the burn has been completely extinguished.

Prescribed burns will be conducted when predicted winds will carry smoke away from roads and inhabited areas.

A. Evacuation/Closure procedures

1. Johnson City FMU

   Closure and evacuation of the Johnson Settlement will be implemented immediately upon notification of a wildfire. Protection Rangers will evacuate visitors through the north and east entrances with assistance from other divisions as required. The area will remain closed until the fire is extinguished. Due to the nature of the fuels and size of the park, closures and evacuations will normally be of short duration. Routine operations should resume within hours. Maps of the roads and trails are included in Appendix E.

2. LBJ Ranch FMU

Fire within the visitor use area will not necessarily cause a closure of the entire ranch. Closure of the area in the immediate vicinity of the fire will be determined by the Incident Commander or Burn Boss based upon wind speed and direction, smoke density, flame length, rate of spread, etc. During extreme conditions, the evacuation of portions of the LBJ Ranch may be necessary. Protection Rangers will ensure that visitors and non-essential personnel are evacuated from the area.

B. Mitigating Safety Issues

In the Johnson Settlement, most structures are made either entirely of wood, or of stone with wood roofs, and are threatened from embers blowing into the attics or onto the roofs, or landing in gutters choked with debris. Monitoring of winds during a fire is extremely important to assess this threat. The municipal water system feeds two hose reels and a pre-connected one-inch line on a hydrant that are strategically located. This water supply can be used to perform direct attack, feed roof sprinklers, or wet down structures. The fuel modification plan will reduce risk to structures.

C. Medical Facilities

Emergency access to local medical services is initially activated through the local 911 system. Stonewall First Responders and the Gillespie County EMS service the LBJ Ranch FMU. North Blanco County EMS services the Johnson City FMU. The nearest hospital is Hill Country Memorial Hospital in Fredericksburg.

D. Water Sources

Water hydrants and/or hose reels are scattered throughout the structure area of both FMUs. Drafting water from Town Creek in the Johnson City FMU or the Pedernales River and stock tanks in the LBJ Ranch FMU is possible.

E. Control Lines/Safety Zones

The park is dissected by numerous roads and trails that can serve as access routes and control features. Heavily grazed pastures can be considered as safety zones.

IX. *PUBLIC INFORMATION AND EDUCATION*

Prescribed fire is a commonly used tool of the landowners in this area, and therefore not an uncommon sight. The use of agricultural burning is well understood locally, which provides a good base of support for using fire to manage cultural landscapes. The visiting public will be informed and educated by Interpretive Rangers whenever prescribed burns take place. Any unusual event regarding the fire program will be disseminated to the public via the Public Information Officer. The majority of ignitions in and around the park result from the careless

use of fire during recreational activities. The park will incorporate fire prevention material into the school outreach program, interpretive media and programs as appropriate.

The TFS is the principal wildland fire suppression agency and has fire weather and predictive services staff that provide fire danger warnings to local city and county officials. When Very High or Extreme fire danger levels are declared, the County Judge restricts outdoor burning and a red 'Burning Ban' flag is flown from all post offices and city halls. The TFS also has public information officers that interact with local media.

X. *PROTECTION OF SENSITIVE RESOURCES*

Natural and cultural resources will be protected from the adverse effects of unwanted fire and fire management activities. Flame passage poses little risk to buried archeological sites, but they are vulnerable to disturbance by scraping fire lines or heavy equipment. During all suppression activities, minimum impact suppression tactics (MIST) will be incorporated to the greatest extent feasible and appropriate, employing methods least damaging to park resources for the situation. While there is potential to see Bald Eagles in the park, there have been no sightings or nesting locations that would require special treatment.

Some features of the ultural landscapes and the numerous historical/non-historical buildings must be protected from wildfires. Structures located in the Johnson City FMU are at a greater risk due to higher fuel loading. The risk to structures in the LBJ Ranch FMU is relatively lower due to the majority of the grass being grazed and mowed.

Adjacent land use includes ranches, where fire is occasionally used as a means to clear land of undesirable plant species, or urban dwellings, where generally well maintained lawns provide adequate defensible space.

XI. *FIRE CRITIQUES AND ANNUAL PLAN REVIEW*

Each wildland fire will have an "After Action Review" conducted by the Incident Commander or Burn Boss, with recommendations added to the fire record. Each class C wildfire (>l0 acres) will have a formal critique hosted by the Fire Management Committee and documented in writing. All entrapments, deployments, other serious incidents, or potentially serious incidents will be reported, investigated and reviewed.

The Fire Management Committee will review the Fire Management Plan annually. Changes that are within the range of the approved Environmental Assessment may be made annually with the Superintendent's concurrence and signature. A copy of this annual update will be sent to the Regional FMO. The SET Fire FMO will assist the park in making substantive changes and help determine if a major plan rewrite is required every five years.

IMR fire staff may conduct a fire program review on a three to five year cycle, or audit specific projects as needed. The Superintendent may also request or conduct a review. All entrapments, deployments and other serious or potentially serious incidents will be investigated and reviewed in coordination with the IMR FMO. Reviews will be conducted so as to provide constructive critiques and not as a faultfinding process.

A. Fire Reviews

Fire Reviews will be conducted in accordance with RM18:

1. Purpose of Reviews:
   - Examine progress of ongoing or completed fires.
   - Identify new or improved techniques or tactics.
   - Compile consistent and complete information to improve or refine park fire management programs and to ensure cost effectiveness of the program.
   - Examine unusual fire related incidents.
2. Daily Staff After Action Reviews

   These examine the progress of ongoing fire incident and are conducted by the FMO or Superintendent's designee with the Incident Commander. They confirm decisions made in the Wildland Fire Situation Analysis or provide corrective recommendations.
3. Park-level Reviews

   These are conducted by the Superintendent or designated representative with the FMO and other board members appointed by the Superintendent. They provide the Superintendent with information to recognize commendable actions and to take corrective actions. A report generated from this review is forwarded to the IMR FMO.
4. Entrapment and Fire Shelter Deployment Reviews

   These will occur soon as possible after the incident and a report will be made to the IMR FMO.
5. Program Reviews

   a) Fire Program Review

   Reviews the fire management program to assure compliance with established Service standards.

   b) Preparedness Review

   Conducted annually by Collateral Duty FMO in coordination with the SET Fire FMO utilizing the Interagency Fire Preparedness Review Guide adapted for park specific needs.

XII. *CONSULTATION AND COORDINATION*

Brian Carey, Chief, Resources Management and Visitor Protection, Lyndon B. Johnson NHP

Cliff Chetwin, Regional Aviation Manager, Intermountain Region

L. Dean Clark, Regional Fuels Specialist, Intermountain Region

Michael George, Environmental Protection Specialist, Intermountain Region

Drew Gilmour, Park Ranger, Lyndon B. Johnson NHP

Fulton Jeansonne, Fire Ecologist, Big Thicket National Preserve

Bob Lineback, Wildland Fire Specialist, Intermountain Region

Jason Lott, Integrated Resources Program Manager, Lyndon B. Johnson NHP

Dave McHugh, FMO, Big Thicket National Preserve

XIII. *APPENDICES*

Appendix A REFERENCES

10-Year Comprehensive Strategy Implementation Plan

A Collaborative Approach for Reducing Wildland Fire Risk to Communities

DO 12, National Environmental Policy Act 1969, 42 USC 4321

DO 18, The Wildland Fire Management Policy: Implementation and Reference Guide, (1999), and attendant Reference Manual (RM-18).

Federal Wildland Fire Management Policy and Guidelines, 2001

Lyndon B. Johnson General Management Plan 1999, pages 84-85

National Park Service, Organic Act, August 25, 1916, 16 USC 1 through 4

Public Law 91-134, December 2, 1969, establishing Lyndon B. Johnson National Historical Site.

Interagency Standard for Fire and Fire Aviation Operations, 2004

Appendix B. DEFINITION OF TERMS

Chain: A unit of measure equal to 66 feet.

Control Line: A comprehensive term for all the constructed and natural fire barriers and treated fire edges used to control a fire.

Direct Method: A method of suppression that treats the fire as a whole, or all its burning edges, by wetting, cooling, smothering, or chemically quenching the fire, or by mechanically separating the fire from unburned fuel.

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

Fire Management Plan: A strategic plan that defines a program to manage wildland fires. This plan is supplemented by operational procedures such as preparedness, preplanned dispatch burn plans and prevention.

Flame Length (FL): The length of a flame measured from the base of the flame to its tip and parallel to the length of the flame. Flame length is measured on a slant when the flame is tilted due to the effects of wind and slope.

Fuel Model: A simulated fuel complex for which all fuel descriptions required by the mathematical fire spread model have been specified.

Fuel Type: An identifiable vegetative association of fuel elements of distinctive species, form, size, arrangement, or other characteristics.

Hazard Fuels: Fuels that, if ignited, have significant potential to threaten human life and safety, real property, park resources, or carry fire across park boundaries.

Indirect Attack: A method of suppression in which the control line is located along natural firebreaks, favorable breaks in topography, or at considerable distance from the fire.

Initial Action: Action taken by the first resources to arrive at a wildland fire to meet protection and fire use objectives.

Minimum Impact Suppression Tactics (MIST): The application of techniques that effectively accomplish wildland fire management objectives while minimizing the impacts to cultural and natural resources commensurate with ensuring public and firefighter safety and effective wildland fire control.

National Fire Danger Rating System (NFDRS): A multiple index scheme designed to provide fire control and land management personnel with a systematic means of assessing various aspects of fire danger on a day-to-day basis.

Planned Ignition: A fire ignited by management actions to meet specific objectives.

Preparedness: Activities that help to provide a safe, efficient and cost effective fire management program in support of land and resource management objectives through appropriate planning and coordination.

Prescribed Fire: A fire ignited by park managers under known conditions of fuel, weather, and topography to achieve specific objectives. An approved prescribed fire plan must be completed and NEPA requirements must be met prior to ignition.

Prescription: Measurable criteria that guide selection of appropriate management strategies and actions. Prescription criteria may include economic, public health, environmental, geographic, administrative, social or legal considerations.

Rate of Spread (ROS): The time it takes the leading edge of a flaming fire front to travel a known distance. Rate of spread is commonly measured in chains/hour and meters/second.

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

Unplanned Ignition: A wildland fire not ignited by management actions.

Wildland: Any area under fire management jurisdiction of a land management agency.

Wildland Fire: Any 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 environmental, social, political, and economic criteria.

Wildand Urban Interface: The area where developed areas (usually containing structures) abut parklands that are more natural in character, e.g. grasslands, forests.

Weather Information Management System (WIMS): An interactive computer system designed to accommodate the weather information needs of all federal and state natural resource agencies.

Appendix C SPECIES LIST

Fishes

Scientific Name	Common Name
Campostoma anomalum	Central Stoneroller
Cyprinella lutrensis	Red Shiner
Cyprinella venusta	Black-tailed Shiner
Cyprinus carpio	European Carp
Dorosoma cepedianum	American Gizzard Shad
Gambusia affinis	Western Mosquitofish
Ictalurus punctatus	Channel Catfish
*Labidesthes sicculus***	Brook Silverside
Lepomis cyanellus	Green Sunfish
Lepomis gulosus	Warmouth
Lepomis macrochirus	Bluegill
Micropterus salmoides	Largemouth Bass
Micropterus treculii	Guadalupe Bass
Notropis volucellus	Mimic Shiner
Percina carbonaria	Texas Logperch
Pimephales vigilax	Bullhead Minnow
Pomoxis annularis	White Crappie
Scartomyzon congestus	Grey Redhorse

Amphibians

Scientific Name	Common Name
Acris crepitans blanchardi	Blanchard's Cricket Frog
Hyla versicolor	Gray Tree Frog
Rana berlandieri	Rio Grande Leopard Frog
Rana catesbeiana	Bullfrog

Reptiles

Scientific Name	Common Name
Apalone spinifera guadalupensis	Guadalupe Spiny Softshell
Chelydra serpentina serpentina	Common Snapping Turtle
Elaphe obsoleta lindheimerii	Texas Rat Snake
Graptemys versa	Texas Map Turtle
Hemidactylus turcicus	Mediterranean Gecko
Nerodia rhombifer rhombifer	Diamondback Water Snake
Pseudemys texana	Texas River Cooter

Scientific Name	Common Name
Storeria dekayi texana	Texas Brown Snake
Trachemys scripta elegans	Red-eared Slider

Birds

Scientific Name	Common Name
Actitis macularia	Spotted Sandpiper
Aphelocoma californica	Western Scrub Jay
Ardea herodias	Great Blue Heron
Bubo virginianus	Great Horned Owl
Bubulcus ibis	Cattle Egret
Butorides striatus	Green Heron
Cardinalis cardinalis	Northern Cardinal
Cathartes aura	Turkey Vulture
Ceryle halcyon	Belted Kingfisher
Chaetura pelagica	Chimney Swift
Charadrius vociferous	Killdeer
Chondestes grammacus	Lark Sparrow
Columbina inca	Inca Dove
Coragyps atratus	Black Vulture
Corvus brachyrhynchos	American Crow
Cyanocitta cristata	Blue Jay
Falco sparverius	American Kestrel
Hirundo pyrrhonota	Cliff Swallow
Hirundo rustica	Barn Swallow
Lanius ludovicianus	Loggerhead Shrike
Meleagris gallopavo	Wild Turkey
Melospiza melodia	Song Sparrow
Mimus polyglottos	Northern Mockingbird
Molothrus ater	Brown-headed Cowbird
Otus asio	Eastern Screech-Owl
Pandion haliaetus	Osprey
Parus bicolor	Tufted Titmouse
Parus carolinensis	Carolina Chickadee
Passer domesticus (exotic)	House Sparrow
Passerina ciris	Painted Bunting
Phalacrocorax auritus	Double-crested Cormorant
Picoides scalaris	Ladder-backed Woodpecker
Polyborus plancus (*Caracara*	Crested Caracara

Scientific Name	Common Name
Sayornis phoebe	Eastern Phoebe
Sturnella sp.	Meadowlark
Sturnus vulgaris (exotic)	European Starling
Thryomanes bewickii	Bewick's Wren
Thryomanes ludovicianus	Carolina Wren
Troglodytes aedon	House Wren
Turdus migratorius	American Robin
Tyrannus forficatus	Scissor-tailed Flycatcher
Zenaida asiatica	White-winged Dove
Zenaida macroura	Mourning Dove

Mammals

Scientific Name	Common Name
Antilope cervicapra	Blackbuck
*Baiomys taylori***	Pygmy Mouse
Bassariscus astutus	Ringtail
Dasypus novemcinctus	Nine-banded Armadillo
Didelphis virginiana	Opossum
Felis domesticus	Domestic Cat
Lasiurus borealis	Eastern Red Bat
Lepus californicus	Black-tailed Jackrabbit
Mephitis sp. or *Spilogale* sp.	Skunk sp.
Mus musculus	House Mouse
Myocastor coypus	Nutria
Myotis velifer	Cave Myotis
Odocoileus virginianus	White-tailed Deer
Procyon lotor	Raccoon
Sciurus niger	Fox Squirrel
Sylvilagus floridanus	Eastern Cottontail
Urocyon cinereoargenteus	Gray Fox

Plants

Scientific Name of Species (Synonyms)	Common Name	Native or Exotic	Abundance	Park Unit
Acanthaceae	**Acanth Family**			
Anisacanthus wrightii (Torr.) A. Gray (=A. quadrifidus var. wrightii)	hummingbird-bush	N	Cultivated	Both units
Dicliptera brachiata (Pursh) Spreng.	false mint	N	Uncommon	Ranch
Justicia americana (L.)Vahl	water-willow, American	N	Uncommon	Ranch
Ruellia brittoniana E. Leonard. cv. Katie's	wild-petunia, Katie's dwarf	E	Cultivated	Johnson C.
Ruellia brittoniana E. Leonard. pink-flowered cultivar	wild-petunia, pink willow-leaf	E	Cultivated	Johnson C.
Ruellia drummondiana (Nees) A.Gray	wild-petunia, Drummond's	N	Uncommon	Ranch
Ruellia malacosperma Greenman	wild-petunia, soft-seed	E	Cultivated	Ranch
Ruellia metziae Tharp.	wild-petunia, white	N	Uncommon	Ranch
Ruellia nudiflora (Engelm. & A. Gray) Urban	wild-petunia, showy	N	Uncommon	Both units
Ruellia occidentalis (A. Gray) Tharp & Barkley	wild-petunia, Western	E	Cultivated	Johnson C.
Siphonoglossa pilosella (Nees) Torr. (=Justicia pilosella)	tubetongue, hairy	N	Uncommon	Ranch
Aceraceae	**Maple Family**			
Acer grandidentatum Nutt.	maple, large-tooth	N	Cultivated	Ranch
Agavaceae	**Agave Family**			
Hesperaloe parviflora (Torr.) J.M. Coult.	yucca, red	E	Cultivated	Both units
Yucca arkansana Trel.	yucca, Arkansas	N	Cultivated	Ranch
Yucca constricta Buckley	yucca, Buckley's	N	Cultivated	Ranch
Yucca flaccida Haw.	yucca, soft-leaf	E	Cultivated	Johnson C.
Yucca rupicola Scheele	yucca, twist-leaf	N	Uncommon, Cultivated	Ranch
Yucca torreyi Shafer	yucca, Torrey's	N	Cultivated	Both units
Amaranthaceae	**Amaranth Family**			
Alternanthera caracasana Kunth	chaff-flower, mat	N	Uncommon	Ranch
Amaranthus albus L.	amaranth, tumbleweed	N	Uncommon	Both units
Amaranthus palmeri S. Wats.	amaranth, Palmer's	N	Uncommon	Both units
Amaranthus polygonoides L.	amaranth, tropical	N	Uncommon	Johnson C.
Amaranthus rudis J.D. Sauer	water-hemp	N	Uncommon	Johnson C.
Froelichia gracilis (Hook.) Moq.	snake-cotton, slender	N	Uncommon	Johnson C.
Amaryllidaceae	**Amaryllis Family**			
Cooperia drummondii Herb. (=Zephyranthes brazosensis)	rain-lily, common	N	Uncommon	Johnson C.
Cooperia pedunculata Herb. (=Zephyranthes drummondii)	rain-lily, giant	N	Uncommon	Ranch
Crinum scabrum Herb.	milk-and-wine-lily	E	Cultivated	Johnson C.
Hippeastrum advena (Ker.-Gawl.) Herb. (=Rhodophiala advena)	oxblood lily	E	Cultivated	Johnson C.

Scientific Name of Species (Synonyms)	Common Name	Native or Exotic	Abundance	Park Unit
Anacardiaceae	**Sumac Family**			
Pistacia texana Swingle	pistachio, Mexican	E	Cultivated	Ranch
Rhus lanceolata (A. Gray) Britt.	sumac, lanceleaf	N	Uncommon	Johnson C.
Rhus virens A. Gray	sumac, evergreen; lentisco	N	Cultivated	Johnson C.
Apiaceae	**Celery or Umbel Family**			
Chaerophyllum tainturieri Hook.	chervil	N	Common	Both units
Conium maculatum L.	poison-hemlock	E	Uncommon	Ranch
Daucus pusillus Michx.	seedticks; rattlesnake-weed	N	Uncommon	Johnson C.
Hydrocotyle verticillata Thunb var. verticillata	pennywort, whorled	N	Uncommon	Both units
Polytaenia nuttallii DC. (incl. P. texana)	parsley, prairie	N	Uncommon	Both units
Spermolepis inermis (Nutt.) Math. & Const.	scaleseed, spreading	N	Uncommon	Johnson C.
Torilis arvensis (Huds.) Link.	hedge-parsley, beggerlice	E	Common	Both units
Torilis nodosa (L.) Gaertn.	hedge-parsley, knotted	E	Uncommon	Johnson C.
Apocynaceae	**Dogbane Family**			
Nerium oleander L.	oleander	E	Cultivated	Johnson C.
Vinca minor L.	periwinkle, common	E	Cultivated	Both units
Aquifoliaceae	**Holly Family**			
Ilex cornuta Lindl. var. burfordii DeFrance	holly, spineless Chinese	E	Cultivated	Ranch
Ilex decidua Walt.	holly, deciduous	N	Common	Johnson C.
Ilex vomitoria Sol. in Ait.	holly, yaupon	N	Cultivated	Both units
Araliaceae	**Gingsing Family**			
Hedera helix L.	ivy, English	E	Cultivated	Johnson C.
Asclepiadaceae	**Milkweed Family**			
Asclepias asperula (Dcne.) Woods. (incl. A. capricornu Woodson)	antelope-horns, trailing	N	Common	Both units
Asclepias oenotheroides Cham. & Schltdl.	milkweed, side-cluster	N	Uncommon	Johnson C.
Cynanchum laeve (Michx). Pers.	bluevine	N	Uncommon	Ranch
Cynanchum unifarium (Scheele) Woodson (=C. racemosum var. unifarium)	talayote	N	Uncommon	Johnson C.
Matelea biflora (Raf.) Woods.	milkweed, two-flowered	N	Uncommon	Both units
Matelea reticulata (A. Gray) Woodson	milkvine, green	N	Uncommon	Johnson C.
Aspleniaceae	**Spleenwort Family**			
Cyrtomium falcatum Presl.	holly-fern, house	E	Cultivated	Ranch
Asteraceae	**Sunflower or Composite Family**			
Achillea millefolium L.	yarrow	N?	Cultivated	Johnson C.
Amblyolepis setigera DC.	daisy, huisache	N	Uncommon	Ranch
Ambrosia artemisiifolia L.	ragweed, common	N	Uncommon	Johnson C.
Ambrosia psilostachya DC.	ragweed, Western	N	Abundant	Both units

Scientific Name of Species (Synonyms)	Common Name	Native or Exotic	Abundance	Park Unit
Ambrosia trifida L. var. texana Scheele	ragweed, giant	N	Uncommon	Ranch
Aphanostephus riddellii Torr. & A. Gray	daisy, Riddell's lazy	N	Uncommon	Ranch
Aster ericoides L.	aster, heath	N	Uncommon	Johnson C.
Aster oblongifolius Nutt.	aster, oblong-leaf	N	Cultivated	Both units
Aster praealtus Poir.	aster, tall	N	Rare	Johnson C.
Aster subulatus Michx. var. ligulatus Shinners	aster, broom	N	Uncommon	Both units
Baccharis neglecta Britt.	Roosevelt-weed	N	Uncommon	Ranch
Berlandiera betonicifolia (Hook.) Small (=B. texana)	greeneyes, Texas	N	Uncommon	Ranch
Calyptocarpus vialis Less.	lawnflower	N	Common	Both units
Carduus nutans L.	musk-thistle	E	Uncommon	Both units
Carduus tenuiflorus Curtis	bristle-thistle, slender	E	Uncommon	Johnson C.
Centaurea melitensis L.	star-thistle, short-spine	E	Uncommon	Johnson C.
Chaetopappa asteroides DC.	daisy, least	N	Uncommon	Johnson C.
Chlorocantha spinosa (Benth.) G.L. Nesom (=Aster spinosa)	aster, spiny	N	Rare	Ranch
Chrysanthemum leucanthemum L.	daisy, ox-eye	E	Cultivated	Ranch
Chrysanthemum X morifolium Ramat.	chrysanthemum, garden	E	Cultivated	Ranch
Cirsium texanum Buckl.	thistle, Texas	N	Common	Both units
Cirsium undulatum (Nutt.) Spreng.	thistle, wavyleaf	N	Uncommon	Johnson C.
Conoclinium coelestinum (L.) DC. (=Eupatorium coelestinum)	mistflower	N	Rare	Ranch
Conoclinium dissectum A. Gray (=Eupatorium greggii, Conoclinium gregii)	mistflower, cutleaf	E	Cultivated	Ranch
Conyza candensis (L.) Cronq.	horseweed	N	Uncommon	Johnson C.
Coreopsis lanceolata L.	coreopsis, lance	E	Cultivated	Ranch
Coreopsis wrightii (A. Gray) H. M. Parker	coreopsis, rock	N	Uncommon	Ranch
Dracopis amplexicaulis (Vahl) Cass.	coneflower, clasping	N	Uncommon	Ranch
Echinacea purpurea (L.) Moench.	coneflower, purple	E	Cultivated	Ranch
Eclipta prostrata (L.) L. (= E. alba)	yerba de tago	N	Uncommon	Ranch
Engelmannia pinnatifida A. Gray (=E. peristenia)	daisy, Engelmann	N	Uncommon	Johnson C.
Erigeron modestus A. Gray	fleabane, gray	N	Uncommon	Johnson C.
Erigeron philadelphicus L.	fleabane, clasping-leaf	N	Uncommon	Ranch
Erigeron strigosus Willd.	fleabane, prairie	N	Uncommon	Johnson C.
Eupatorium havanense Kunth.	boneset, shrubby	N	Cultivated	Ranch
Eupatorium serotinum Michx.	boneset, late	N	Uncommon	Ranch
Evax prolifera Nutt.	rabbit-tobacco, bighead; cotton-rose	N	Common	Both units
Facelis retusa (Lam.) Sch. Bip.	facelis	E	Common	Both units
Gaillardia pulchella Foug.	Indian-blanket, prairie	N	Common	Both units
Grindelia nuda A.W. Wood	gumweed, rayless	N	Uncommon	Johnson C.
Gutierrezia texana (DC.) T. & G.	broomweed, Texas	N	Common	Both units
Helenium amarum (Raf.) H. Rock var. amarum	sneezeweed or bitterweed, yellow	N	Uncommon	Johnson C.
Helenium amarum (Raf.) H. Rock var. badium (S. Watson) Waterfall	sneezeweed, basin	N	Uncommon	Both units
Helenium elegans DC.	sneezeweed, tall	N	Uncommon	Ranch

Scientific Name of Species (Synonyms)	Common Name	Native or Exotic	Abundance	Park Unit
Helianthus annuus L.	sunflower, common	N	Uncommon	Johnson C.
Helianthus maximiliani Schrad.	sunflower, Maximilian	N	Uncommon	Johnson C.
Heterotheca canescens (DC.) Shiners	goldenaster, gray	N	Uncommon	Both units
Heterotheca subaxillaris (Lam.) Britt. & Rusby	camphorweed	N	Uncommon	Both units
Hymenopappus scabiosaeus L'Her. var. corymbosus (T.& G.) Turner	old-plainsman	N	Uncommon	Ranch
Iva angustifolia DC.	sumpweed, rag	N	Abundant	Both units
Krigia wrightii (A. Gray) Chambers & Kim	dandelion, Wright's dwarf	N	Uncommon	Johnson C.
Lactuca serriola L.	lettuce, prickly wild	E	Uncommon	Both units
Lindheimera texana Engelm. & Gray	Texas-star	N	Uncommon	Ranch
Lygodesmia texana (T. & G.) Greene	skeleton-plant, Texas	N	Uncommon	Both units
Melampodium leucanthum T. & G.	daisy, rock or black-foot	N	Uncommon	Ranch
Pluchea odorata (L.) Cass.	stinkweed, purple	N	Uncommon	Ranch
Pseudognaphalium luteoalbum (L.) Hilliard & Burtt	cudweed	N	Rare	Ranch
Pyrrhopappus pauciflorus (D. Don) DC.	dandelion, wild	N	Common	Both units
Ratibida columnifera (Nutt.) Woot. & Standl.	coneflower, prairie	N	Common	Both units
Rudbeckia hirta L. var. pulcherrima Faras	black-eyed Susan	N	Uncommon	Johnson C.
Silphium radula Nutt. (=S. asperrimum)	rosinweed, roughstem	N	Rare	Johnson C.
Solidago canadensis L.	goldenrod, tall	N	Common	Both units
Solidago gigantea Ait.	goldenrod, giant	N	Uncommon	Ranch
Sonchus asper (L.) Hill	sowthistle, prickly	E	Common	Both units
Sonchus oleraceus L.	sowthistle, common	E	Common	Both units
Tagetes lemmoni A. Gray	marigold, shrub	E	Cultivated	Ranch
Taraxacum officinale F. H. Wigg.	dandelion, common	E	Common	Both units
Tetraneuris linearifolia (Hook.) Greene (=Hymenoxys linearifolia)	bitterweed	N	Uncommon	Ranch
Thelesperma filifolium (Hook.) A. Gray	greenthread, common	N	Common	Both units
Thelesperma simplicifolium A. Gray	greenthread, slender	N	Uncommon	Ranch
Verbesina encelioides A. Gray	crownbeard; gravelweed	N	Common	Both units
Verbesina virginica L.	frostweed, Virginia	N	Common	Both units
Vernonia baldwinii Torr.	ironweed, Western	N	Uncommon	Both units
Wedelia texana (A. Gray) B.L. Turner (=W. hispida Zexmenia hispida)	wedelia, hairy	N	Uncommon, Cultivated	Johnson C.
Xanthium strumarium L.	cocklebur	N	Common	Both units
Berberidaceae	**Barberry Family**			
Berberis trifoliolata Moric. (=Mahonia trifoliolata)	agarito	N	Uncommon	Both units
Nandina domestica Thunb.	heavenly-bamboo	E	Cultivated	Both units
Bignoniaceae	**Trumpet Creeper Family**			
Bignonia capreolata L.	crossvine	E	Cultivated	Ranch
Campsis radicans (L.) Seem.	trumpet-creeper	N	Uncommon	Johnson C.
Catalpa speciosa Warder.	catalpa, Northern; cigartree	E	Cultivated	Johnson C.
Tecoma stans HBK. (=Stenolobium stans)	yellow bells	E	Cultivated	Ranch
Boraginaceae	**Borage Family**			
Buglossoides arvense (L.) I. M. Johnst.	bugloss, false	E	Uncommon	Ranch

Scientific Name of Species (Synonyms)	Common Name	Native or Exotic	Abundance	Park Unit
Brassicaceae	**Mustard Family**			
Brassica nigra (L.) Koch	mustard, black	E	Uncommon	Ranch
Capsella bursa-pastoris (L.) Medik.	shepherd's purse	E	Common	Both units
Draba platycarpa Torr. & A. Gray	draba, broad-pod	N	Common	Both units
Lepidium austrinum Small	pepperweed, southern	N	Common	Both units
Lepidium virginicum L.	pepper-grass, common	N	Uncommon	Johnson C.
Lesquerella densiflora (A. Gray) Wats.	bladderpod, dense-flower	N	Uncommon	Ranch
Lesquerella recurvata (Engelm.) Wats.	bladderpod, drooping	N	Uncommon	Both units
Rorippa nasturtium-aquaticum (L.) Hayek (=Nasturtium officinale)	watercress	E	Uncommon	Ranch
Sisymbrium irio L.	mustard, rocket	E	Uncommon	Ranch
Bromeliaceae	**Pineapple Family**			
Tillandsia recurvata (L.) L.	ball-moss	N	Common	Both units
Buxaceae	**Boxwood Family**			
Buxus sempervirens L.	boxwood, common	E	Cultivated	Ranch
Cactaceae	**Cactus Family**			
Opuntia engelmannii Salm-Dyck var. lindheimeri (Engelm.) B. D. Parfitt & Pinkava	prickly-pear, Texas	N	Common	Both units
Opuntia leptocaulis DC. (=Cylindroopuntia leptocaulis)	tasajillo; cactus, rat-tail	N	Rare	Ranch
Opuntia macrorhiza Engelm	prickly-pear, plains	N	Common	Both units
Campanulaceae	**Bellflower Family**			
Triodanus perfoliata (L.) Nieuwl. var. biflora (R. & P.) T. R. Bradley (=T. biflora)	Venus' looking-glass, small	N	Uncommon	Johnson C.
Cappar(id)aceae	**Caper Family**			
Polanisia dodecandra (L.) DC. subsp. trachysperma (T. & G.) Iltis (=P. trachysperma)	clammyweed	N	Uncommon	Both units
Caprifoliaceae	**Honeysuckle Family**			
Lonicera japonica Thunb.	honeysuckle, Japanese	E	Common	Johnson C.
Sambucus nigra L. var. canadensis (L.) Bolli (=S. canadensis)	elderberry	N	Uncommon	Ranch
Viburnum odoratissimum Ker.-Gawl.	viburnum, sweet	E	Cultivated	Ranch
Viburnum rufidulum Raf.	blackhaw, rusty	N	Cultivated	Ranch
Viburnum suspensum Lindl.	viburnum, Liukiu	E	Cultivated	Ranch
Caryophyllaceae	**Carnation Family**			
Arenaria benthamii T & G.	sandwort, hilly	N	Uncommon	Johnson C.
Arenaria serpyllifolia L.	sandwort, thyme-leaf	E	Uncommon	Both units
Cerastium glomeratum Thuill.	chickweed, bunch-flower	E	Common	Johnson C.
Dianthus chinensis L.	pink, rainbow	E	Cultivated	Ranch

Scientific Name of Species (Synonyms)	Common Name	Native or Exotic	Abundance	Park Unit
Silene antirrhina L.	catchfly, sleepy	N	Uncommon	Johnson C.
Stellaria media (L.) Cyr.	chickweed, common	E	Uncommon	Johnson C.
Celastraceae	**Bittersweet Family**			
Euonymus japonicus L.	spindle-bush, evergreen	E	Rare	Johnson C.
Ceratophyllaceae	**Coon-tail Family**			
Ceratophyllum demersum L.	hornwort; coontail	N	Uncommon	Ranch
Chenopodiaceae	**Spinach Family**			
Chenopodium ambrosioides L.	wormseed	E	Uncommon	Ranch
Chenopodium cf. missouriense Aellan (=C. album var. missouriense)	goosefoot, Missouri	E?	Uncommon	Ranch
Chenopodium pratericola Rydb.	goosefoot, thick-leaf	N	Uncommon	Ranch
Commelinaceae	**Spiderwort Family**			
Commelina erecta L. var. angustifolia Benth.	dayflower, narrow-leaf	N	Common	Both units
Commelina erecta L. var. erecta	dayflower, erect	N	Uncommon	Johnson C.
Tinantia anomala (Torr.) C.B.Clark	widow's-tears	N	Uncommon	Ranch
Tradescantia gigantea Rose	spiderwort, giant	N	Uncommon	Ranch
Convolvulaceae	**Morning Glory Family**			
Convolvulus equitans Benth.	bindweed, prairie	N	Uncommon	Johnson C.
Dichondra carolinensis Michx. (=D. repens)	pony-foot	N	Abundant	Both units
Evolvulus sericeus Sw.	morning-glory, silky dwarf	N	Common	Both units
Ipomoea cordatotriloba Dennst. var. torreyana (A. Gray) D.F. Austin	morning-glory, cotton	N	Uncommon	Johnson C.
		N		
Cornaceae	**Dogwood Family**			
Cornus drummondii Mey.	dogwood, roughleaf	N	Common	Johnson C.
Crassulaceae	**Stonecrop Family**			
Sedum cf. tenellum Bieb.	stonecrop	E	Cultivated	Johnson C.
Cucurbitaceae	**Cucumber Family**			
Cucurbita foetidissima Kunth	gourd, buffalo	N	Uncommon	Both units
Melothria pendula L.	melonette, drooping	N	Uncommon	Ranch
Cupressaceae	**Cypress Family**			
Juniperus ashei J. Buchholz	cedar, mountain; juniper,	N	Common	Both units
Juniperus chinensis L.	cedar, Chinese	E	Cultivated	Ranch
Juniperus chinensis L. cv. Pfizer	cedar, spreading Chinese	E	Cultivated	Johnson C.
Juniperus virginiana L. cultivar	cedar, Eastern red	E	Cultivated	Ranch
Cyperaceae	**Sedge Family**			
Carex emoryi Dewey	sedge, Emory's	N	Uncommon	Ranch

Scientific Name of Species (Synonyms)	Common Name	Native or Exotic	Abundance	Park Unit
Carex leavenworthii Dewey	sedge, Leavenworth's	N	Rare	Ranch
Carex microdonta T. & H.	sedge, littletooth	N	Uncommon	Johnson C.
Carex perdentata S. D. Jones	sedge, saw-tooth	N	Rare	Johnson C.
Carex planostachys Kunze	sedge, cedar	N	Common	Both units
Carex tetrastachya Scheele	sedge, four-angle	N	Uncommon	Ranch
Cyperus croceus Vahl (=C. globulosus)	umbrella-sedge, Baldwin	N	Uncommon	Both units
Cyperus esculentus L.	nut-grass, yellow	N	Uncommon	Both units
Cyperus odoratus L.	umbrella-sedge, fragrant	N	Uncommon	Ranch
Cyperus retroflexus Buckley var. pumila (=C. uniflorus var. pumila)	umbrella-sedge, dwarf one-flower	N	Uncommon	Johnson C.
Cyperus retroflexus Buckley var. retroflexus (=C. uniflorus var. retroflexus)	umbrella-sedge, one-flower	N	Uncommon	Both units
Cyperus rotundus L.	nutgrass, purple	E	Common	Both units
Cyperus strigosus L.	nutgrass, false	N	Common	Both units
Cyperus strigosus X retroflexus	umbrella-sedge, hybrid	N	Uncommon	Ranch
Eleocharis montevidensis Kunth.	spikerush, sand	N	Common	Both units
Fuirena simplex Vahl. var. aristulata (Torrey) Kral	umbrella-grass, Western	N	Uncommon	Ranch
Rhynchospora colorata (L.) H. Pfeiff.	sedge, white-top	N	Uncommon	Ranch
Schoenoplectus pungens (Vahl) Palla (=Scirpus pungens, S. americanus)	bulrush, American	N	Common	Ranch
Ebenaceae	**Persimmon Family**			
Diospyros texana Scheele	persimmon, Texas	N	Uncommon, Cultivated	Both units
Elaeagnaceae	**Oleaster Family**			
Elaeagnus pungens Thunb.	oleaster	E	Cultivated	Ranch
Equisetaceae	**Horsetail Family**			
Equisetum hyemale L. ssp. affine (Engelm.) Calder & R.L. Taylor	scouring-rush, common	N	Uncommon	Ranch
Euphorbiaceae	**Spurge Family**			
Acalypha lindheimeri Muell. Arg.	copperleaf, Lindheimer's	N	Common	Both units
Acalypha monococca (A. Gray) Lill. W. Mill. & Gandhi (=A. gracilis var. monococca)	copperleaf, one-seed	N	Uncommon	Ranch
Acalypha ostryifolia Riddell	copperleaf, hop-hornbeam	N	Common	Both units
Argythamnia humilis (Engelm. & A. Gray) Pax (=Ditaxis humilis)	mercury, low wild	N	Uncommon	Ranch
Chamaesyce angusta (Engelm.) Small (=Euphorbia angusta)	spurge, black-foot	N	Rare	Ranch
Chamaesyce maculata (L.) Small (=E. maculata)	spurge, spotted	N	Uncommon	Johnson C.
Chamaesyce nutans (Lag.) Small (=E. nutans)	spurge, eyebane	N	Uncommon	Ranch
Chamaesyce prostrata (Ait.) Small (E. prostrata)	spurge, prostrate	N	Uncommon	Ranch
Chamaesyce serpens (H.B.K.) Small. (E. serpens)	spurge, mat	N	Common	Johnson C.
Cnidoscolus texanus (Mull.-Arg.) Small	bull-nettle, Texas	N	Common	Both units
Croton capitatus Michx. var. lindheimeri (Engelm.	croton, wooly; hogwort	N	Uncommon	Both units

Scientific Name of Species (Synonyms)	Common Name	Native or Exotic	Abundance	Park Unit
& A. Gray) Muell. Arg.				
Croton glandulosus L.. var. lindheimeri Muell. Arg.	croton, Lindheimer's	N	Uncommon	Johnson C.
Croton monanthogynus Michx.	prairie-tea, one-seed	N	Common	Both units
Croton texensis (Klotzsch) Muell. Arg.	croton, Texas	N	Uncommon	Johnson C.
Euphorbia dentata Michx.	spurge, toothed	N	Common	Both units
Euphorbia marginata Pursh	snow-on-the-mountain	N	Common	Both units
Phyllanthus polygonoides Nutt.	leaf-flower, rock	N	Uncommon	Both units
Ricinus communis L.	castor-bean	E	Uncommon	Ranch
Sapium sebiferum (L.) Roxb.	tallow-tree, Chinese	E	Uncommon	Johnson C.
Stillingia texana I. M. Johnston	Queen's-delight, Texas	N	Uncommon	Both units
Tragia brevispica Engelm. & A. Gray	noseburn, short-spike	N	Common	Both units
Tragia ramosa Torr.	noseburn, catnip	N	Uncommon	Ranch
Fabaceae	**Legume or Bean Family**			
Albizia julibrissin Durazz.	mimosa-tree	E	Cultivated	Johnson C.
Amorpha fruticosa L.	leadplant	N	Uncommon	Ranch
Cercis canadensis L. var. canadensis	redbud, Eastern	E	Cultivated	Ranch
Cercis canadensis L. var. texensis (S. Watson) M. Hopkin	redbud, Texas	N	Cultivated	Johnson C.
Dalea greggii A. Gray	dalea, trailing	E	Cultivated	Johnson C.
Dalea nana A. Gray var. nana	dalea, dwarf	N	Uncommon	Johnson C.
Desmanthus acuminatus Benth. (=D. virgatus var. acuminatus)	bundleflower ,sharp-pod	N	Uncommon	Both units
Desmanthus illinoensis B. L. Robins. & Fern.	bundleflower, Illinois	N	Uncommon	Johnson C.
Desmanthus reticulatus Benth.	bundleflower, net-leaf	N	Uncommon	Both units
Desmodium paniculatum (L.) DC.	tick-clover, panicled	N	Uncommon	Johnson C.
Gleditsia triacanthos L.	locust, honey	N	Uncommon	Johnson C.
Indigofera miniata Ort. var. leptosepala (Nutt.)	pea, scarlet	N	Uncommon	Johnson C.
Lathyrus hirsutus L.	pea-vine, rough	E	Uncommon	Ranch
Lupinus texensis Hook.	bluebonnet, Texas	N	Common, Cultivated	Both units
Medicago lupulina L.	medic, black	E	Common	Both units
Medicago minima (L.) Bartal.	burclover	E	Common	Both units
Medicago polymorpha L.	bur-clover, California	E	Common	Both units
Melilotus albus Medik.	sweetclover, white	E	Uncommon	Johnson C.
Mimosa aculeaticarpa Ortega var. biuncifera (Benth.) Barneby (=M. biuncifera)	catclaw, white	N	Uncommon	Johnson C.
Mimosa borealis Gray	catclaw, pink	N	Rare	Johnson C.
Mimosa roemeriana Scheele (=Mimosa quadrivalvis, Schrankia roemeriana)	sensitive-briar	N	Uncommon	Both units
Parkinsonia aculeata L.	paloverde; retama	E?	Cultivated	Ranch
Prosopis glandulosa Torr.	mesquite, honey	N	Common	Both units
Rhynchosia senna Hook var. texana (Torr. & A. Gray) M.C. Johnst. (R. texana)	snoutbean, Texas	N	Uncommon	Johnson C.
Sesbania drummondii (Rydb.) Cory	rattlebush, Drummond's	N	Uncommon	Johnson C.
Sesbania herbacea (Mill.) McVaugh (=S. exaltata)	river-hemp, Colorado	N	Uncommon	Ranch
Sesbania vesicaria (Jacq.) Elliott (Glottidium	bladderpod	N	Uncommon	Ranch

Scientific Name of Species (Synonyms)	Common Name	Native or Exotic	Abundance	Park Unit
vesicarium)				
Sophora japonica L.	pagoda tree, Japanese	E	Cultivated	Ranch
Sophora secundiflora (Ortega) DC.	mountain-laurel, Texas	N	Cultivated	Both units
Vicia ludoviciana Nutt. ssp. leavenworthii (T. & G.) Lass. & Gunn	vetch, deer	N	Common	Both units
Vicia sativa L. ssp. nigra (L.) Ehrh. (=V. angustifolia)	vetch, narrowleaf	E	Uncommon	Ranch
Vicia villosa Roth	vetch, winter	E	Uncommon	Ranch
Wisteria sinensis (Sims) Sweet	wisteria, Chinese	E	Cultivated	Both units
Fagaceae	**Oak Family**			
Quercus buckleyi Nixon & Dorr (=Q. shumardii var. microcarpa, Q. texana)	oak, Texas red	N	Uncommon	Both units
Quercus fusiformis Small (=Q. virginiana var. fusiformis)	oak, plateau live	N	Common, Cultivated	Both units
Quercus marilandica Muenchh.	oak, blackjack	N	Rare	Johnson C.
Quercus rubra L.	oak, Northern red	E	Cultivated	Johnson C.
Quercus stellata Wang.	oak, post	N	Uncommon	Both units
Fumariaceae	**Fumitory Family**			
Corydalis curvisiliqua Engelm.	scrambled-eggs	N	Uncommon	Ranch
Gentianaceae	**Gentian Family**			
Centaurium texense (Griseb.) Fernald	star-pink, Texas	N	Rare	Johnson C.
Eustoma russellianum (Hook.) G. Don (=E. grandiflorum)	bluebells, Texas	N	Uncommon	Johnson C.
Geraniaceae	**Geranium Family**			
Erodium cicutarium (L.) L'Her.	filaree	E	Abundant	Both units
Erodium texanum A. Gray	stork's-bill, Texas	N	Uncommon	Both units
Geranium carolinianum L.	crane's-bill, Eastern	N	Common	Both units
Pelargonium X hortorum L. H. Bailey	geranium, garden	E	Cultivated	Ranch
Hippocastanaceae	**Horse-Chestnut Family**			
Aesculus pavia L.	buckeye, red	N	Cultivated	Ranch
Iridaceae	**Iris Family**			
Iris chamaeiris Bertol (=I. lutescens Lam.)	low iris	E	Cultivated	Johnson C.
Sisyrinchium langloisii Greene	blue-eyed-grass, pale	N	Uncommon	Johnson C.
Juglandaceae	**Walnut Family**			
Carya illinoinensis (Wang.) K. Koch.	pecan	N	Common, Cultivated	Both units
Juglans nigra L.	walnut, black	N	Uncommon	Johnson C.
Juncaceae	**Rush Family**			
Juncus texanus (Engelm.) Coville	rush, Texas	N	Uncommon	Both units

Scientific Name of Species (Synonyms)	Common Name	Native or Exotic	Abundance	Park Unit
Lamiaceae	**Mint Family**			
Hedeoma acinoides Scheele	pennyroyal, annual	N	Uncommon	Both units
Hedeoma reverchonii (A. Gray). A. Gray	pennyroyal, Texas	N	Rare	Ranch
Lamium amplexicaule L.	henbit	E	Abundant	Both units
Marrubium vulgare L.	horehound	E	Common	Both units
Mentha spicata L.	spearmint	E	Cultivated	Ranch
Monarda citriodora Lag.	beebalm, lemon	N	Common, Cultivated	Both units
Perilla frutescens (L.) Britt.	beefsteak-plant	E	Cultivated	Johnson C.
Perovskia abrotanoides Karel	Russian-sage, cutleaf	E	Cultivated	Ranch
Physostegia correllii (Lundell) Shinners	obedient plant, Correll's	N	Cultivated	Johnson C.
Physostegia virginiana (L.) Benth.	obedient plant, Eastern	E	Cultivated	Johnson C.
Salvia coccinea Juss.	sage, scarlet	N	Uncommon, Cultivated	Ranch
Salvia cv. Indigo Spires (S. longispica M.& G. X farinacea Benth.)	sage, indigo spires	E	Cultivated	Johnson C.
Salvia farinacea Benth.	sage, mealycup	N	Uncommon, Cultivated	Ranch
Salvia greggii A. Gray	sage, autumn	E?	Cultivated	Both units
Salvia leucantha Cav.. purple-flowered cultivar	sage, wooly	E	Cultivated	Ranch
Salvia microphylla HBK.	sage, small-leaf	E	Cultivated	Ranch
Salvia roemeriana Scheele	sage, cedar	N	Cultivated	Johnson C.
Salvia texana (Scheele) Torr.	sage, Texas	N	Uncommon	Ranch
Salvia uliginosa Benth.	sage, Brazilian blue	E	Cultivated	Ranch
Scutellaria drummondii Benth.	skullcap, Texas	N	Common	Both units
Scutellaria suffrutescens S. Wats.	skullcap, rose	E	Cultivated	Johnson C.
Stachys coccinea Ortega	betony, Texas	E	Cultivated	Johnson C.
Teucrium canadense L.	germander, American	N	Uncommon	Both units
Liliaceae	**Lily Family**			
Allium ampeloprasum L.	garlic, elephant	E	Rare	Johnson C.
Allium canadense L. var. canadense	garlic, wild	N	Uncommon	Johnson C.
Allium drummondii Regel	onion, prairie	N	Uncommon	Both units
Asparagus officinalis L.	asparagus, garden	E	Cultivated	Ranch
Chlorophytum capense Kuntze (=C. comosum (Thunb.) Jacques)	spider-plant	E	Cultivated	Ranch
Hemorocallis fulva L. hybrid cultivar	daylily, orange	E	Cultivated	Johnson C.
Liriope muscari Bailey	lily-turf; monkey-grass	E	Cultivated	Ranch
Muscari neglecta Ten.	grape-hyacinth	E	Cultivated	Johnson C.
Nothoscordum bivalve (L.) Britt.	garlic, false	N	Common	Both units
Schoenocaulon texanum Scheele	sabadilla, Texas	N	Rare	Ranch
Linaceae	**Flax Family**			
Linum imbricatum (Raf.) Shinners	flax, tufted	N	Uncommon	Johnson C.
Linum rigidum Pursh var. berlandieri (Hook.) T. & G. (=L. berlandieri)	flax, Berlandier's	N	Common	Both units

Scientific Name of Species (Synonyms)	Common Name	Native or Exotic	Abundance	Park Unit
Linum rupestre (Gray) Gray	flax, rock	N	Uncommon	Ranch
Loganiaceae	**Strichnine Family**			
Gelsemium sempervirens Ait. f.	jessamine, Carolina	E	Cultivated	Ranch
Loranthaceae	**Mistletoe Family**			
Phorodendron tomentosum (DC.) A. Gray	mistletoe	N	Common	Both units
Lythraceae	**Loosestrife Family**			
Ammannia robusta Heer & Regel (=A. coccinea ssp. robusta)	ammannia, pale	N	Rare	Ranch
Lagerstroemia indica L.	crepe-myrtle	E	Cultivated	Ranch
Magnoliaceae	**Magnolia Family**			
Magnolia grandiflora L.	magnolia, flowering	E	Cultivated	Both units
Malvaceae	**Mallow Family**			
Callirhoe involucrata (Nutt.) A. Gray	winecup	N	Uncommon	Both units
Hibiscus rosa-sinensis L.	hibiscus, Chinese	E	Cultivated	Ranch
Hibiscus syriacus L.	rose-of-Sharon	E	Cultivated	Ranch
Malva parviflora L.	mallow, little	E	Uncommon	Johnson C.
Malvaviscus arboreus Cav. var. drummondii Schery	Turk's-cap, Drummond's	N	Cultivated	Both units
Modiola caroliniana (L.) G. Don	modiola, Carolina	N	Uncommon	Johnson C.
Rhynchosida physocalyx (A. Gray) Fryxell (=Sida physocalyx)	sida, beaked	N	Uncommon	Both units
Sida abutifolia Mill. (=S. filicaulis T. & G.)	sida, spreading	N	Common	Both units
Meliaceae	**Mahogany Family**			
Melia azedarach L.	Chinaberry	E	Common	Both units
Menispermaceae	**Moonseed Family**			
Cocculus carolinus (L.) DC.	snailseed, Carolina	N	Common	Both units
Molluginaceae	**Carpetweed Family**			
Mollugo verticillata L.	carpetweed, green	E	Uncommon	Both units
Moraceae	**Mulberry or Fig Family**			
Fatua villosa (Thunb.) Nakei	crabweed, hairy	E	Uncommon	Both units
Ficus carica L.	fig, edible	E	Cultivated	Both units
Ficus pumila L.	fig, creeping	E	Cultivated	Ranch
Morus alba L.	mulberry, white	E	Uncommon	Ranch
Morus rubra L.	mulberry, red	N	Uncommon	Johnson C.
Myricaceae	**Wax-Myrtle Family**			
Myrica cerifera L.	wax-myrtle, Southern	E	Cultivated	Johnson C.

Scientific Name of Species (Synonyms)	Common Name	Native or Exotic	Abundance	Park Unit
Najadaceae	**Water Naiad Family**			
Najas guadalupensis (Spreng.) Magnus	naiad, Southern	N	Rare	Johnson C.
Nyctaginaceae	**Four-O'clock Family**			
Boerhavia diffusa L. (incl. B. coccinea)	spiderling, scarlet	N	Common	Johnson C.
Mirabilis jalapa L. (incl. M. lindheimeri)	four-o'clock, common	E?	Uncommon, Cultivated	Both units
Oleaceae	**Olive Family**			
Forestiera pubescens Nutt.	elbow-bush	N	Uncommon	Johnson C.
Fraxinus cf. pennsylvanica Marsh	ash, green or red	N	Uncommon	Ranch
Jasminum mesnyi Hance	jasmine, primrose	E	Cultivated	Johnson C.
Ligustrum japonicum Thunb.	privet, wax-leaf	E	Cultivated	Ranch
Ligustrum lucidum Ait.	privet, glossy	E	Cultivated	Ranch
Ligustrum sinense Lour.	privet, Chinese	E	Uncommon, Cultivated	Johnson C.
Menodora heterophylla DC.	twinpod, low	N	Rare	Ranch
Onagraceae	**Evening Primrose Family**			
Calylophus berlandieri Spach ssp. pinifolius (A. Gray) Towner (=C. drummondianus, C. serrulata subsp. d.)	dewdrops, square-bud	N	Uncommon	Ranch
Gaura brachycarpa Small	gaura, plains	N	Uncommon	Both units
Gaura drummondii (Spach) Torr. & A. Gray	gaura, sweet	N	Rare	Johnson C.
Gaura parviflora Dougl.	gaura, lizard-tail	N	Uncommon	Ranch
Gaura suffulta Engelm.	gaura, roadside	N	Uncommon	Johnson C.
Ludwigia repens Forst.	water-primrose, creeping	N	Uncommon	Both units
Oenothera laciniata Hill	evening-primrose, cutleaf	N	Uncommon	Johnson C.
Oenothera speciosa Nutt.	primrose, showy	N	Uncommon	Both units
Oenothera triloba Nutt.	primrose, stemless	N	Uncommon	Both units
Oxalidaceae	**Sorrel Family**			
Oxalis dillenii Jacq.	sourclover, yellow	N	Common	Both units
Oxalis drummondii A. Gray	sourclover, Drummond's	N	Uncommon	Johnson C.
Oxalis rubra St. Hil.	sourclover, tuberous	E	Cultivated	Ranch
Papaveraceae	**Poppy Family**			
Argemone albiflora Hornem. ssp. texana G.B. Ownbey	prickly-poppy, Texas white	N	Uncommon	Johnson C.
Argemone aurantiaca G.B. Ownbey	prickly-poppy, red-sap	N	Uncommon	Ranch
Eschscholzia californica Cham.	poppy, California	E	Cultivated	Ranch
Papaver rhoeas L.	poppy, corn	E	Cultivated	Ranch
Passifloraceae	**Passionflower Family**			
Passiflora tenuiloba Engelm	passion-flower, bird-wing	N	Rare	Ranch
Pedaliaceae	**Sesame Family**			

Scientific Name of Species (Synonyms)	Common Name	Native or Exotic	Abundance	Park Unit
Proboscidea louisianica (Mill.) Thell. (=Martynia louisianica)	devil's-claw, common	N	Uncommon	Ranch
Phytolaccaceae	**Pokeweed Family**			
Rivina humilis L.	rougeplant; bloodberry	N	Uncommon	Ranch
Pinaceae	**Pine Family**			
Pinus brutia Ten.	pine, Turkish	E	Cultivated	Ranch
Plantaginaceae	**Plantain Family**			
Plantago rhodosperma Dcne.	plantain, redseed	N	Common	Both units
Plantago virginica L.	plantain, common	N	Common	Both units
Plantago wrightiana Dcne.	plantain, Wright's	N	Uncommon	Ranch
Platanaceae	**Sycamore Family**			
Platanus occidentalis L.	sycamore	N	Cultivated	Johnson C.
Poaceae	**Grass Family**			
Andropogon glomeratus (Walter) Britton, Sterns, & Poggenb.	bluestem, bushy; beardgrass, bushy	N	Common	Both units
Aristida oligantha Michx.	three-awn, oldfield	N	Uncommon	Johnson C.
Aristida purpurea Nutt. var. longiseta (Steud.) Vasey (=A. longiseta)	three-awn, long awned or red	N	Common	Johnson C.
Aristida purpurea Nutt. var. purpurea	three-awn, purple	N	Common	Johnson C.
Aristida purpurea Nutt. var. wrightii (Nash) Allred (=A. wrightii)	three-awn, Wright's purple	N	Common	Ranch
Arundo donax L.	reed, giant	E	Uncommon	Ranch
Avena sativa L.	oats, common	E	Uncommon	Ranch
Bothriochloa ischaemum (L.) Keng var. songarica (Rupr.)C. & H.	bluestem, King Ranch	E	Abundant	Both units
Bothriochloa laguroides (DC.) Hertr. ssp. torreyana (Steud.) Allred & Gould (=B. saccharoides)	bluestem, silver	N	Abundant	Both units
Bouteloua curtipendula (Michx.) Torr.	grama, sideoats	N	Abundant	Both units
Bouteloua hirsuta Lag.	grama, hairy	N	Uncommon	Ranch
Bouteloua pectinata Featherly	grama, tall	N	Uncommon	Ranch
Bouteloua rigidiseta (Steud.) Hitchc.	grama, Texas	N	Common	Both units
Bouteloua trifida Thurb.	grama, red	N	Uncommon	Ranch
Bromus catharticus Vahl (=B. unioloides)	rescue-grass	E	Common	Both units
Bromus japonicus Murr.	brome, Japanese	E	Common	Both units
Bromus macrostachys Desf.	brome, big-spike	E	Uncommon	Ranch
Buchloe dactyloides (Nutt.) Engelm.	buffalo-grass	N	Common	Both units
Cenchrus spinifex Cav. (=C. incertus)	sandbur, common	N	Uncommon	Both units
Chloris cucullata Bisch.	windmill-grass, hooded	N	Common	Both units
Chloris verticillata Nutt.	windmill-grass, tumble	N	Common	Both units
Cortaderia selloana (Schult. & Schult. f.) Asch. & Graebn.	pampas grass	E	Cultivated	Johnson C.
Cynodon dactylon (L.) Pers.	Bermuda-grass	E	Abundant,	Both units

Scientific Name of Species (Synonyms)	Common Name	Native or Exotic	Abundance	Park Unit
			Cultivated	
Dichanthelium acuminatum (Sw.) Gould & C. A. Clark. var. lindheimeri (Nash) Lelong (=Pancium a. l.)	rosettegrass, Lindheimer's	N	Uncommon	Johnson C.
Dichanthelium oligosanthes (Schult.) Gould var. scribnerianum (Nash) Gould (=Panicum o. s.)	rosettegrass, Scribner's	N	Common	Both units
Dichanthium annulatum (Forssk.) Stapf.	bluestem, Kleburg	E	Uncommon	Johnson C.
Digitaria ciliaris (Retz.) Koel.	crabgrass	E	Common	Both units
Digitaria cognata (J. A. Schultes) Pilger (=Leptoloma cognata)	witchgrass, fall	N	Uncommon	Ranch
Echinochloa colona (L.) Link	jungle-rice	E	Uncommon	Both units
Echinochloa crus-galli (L.) P. Beauv.	barnyard-grass	E	Uncommon	Ranch
Elymus canadensis L.	wild-rye, Canada	N	Common	Both units
Elymus virginicus L.	wild-rye, Virginia	N	Uncommon	Johnson C.
Eragrostis barrelieri Daveau	lovegrass, Mediterranean	E	Uncommon	Ranch
Eragrostis cilianensis (All.) Janch.	lovegrass, stinky	E	Uncommon	Ranch
Eragrostis intermedia Hitchc	lovegrass, plains	N	Common	Both units
Eragrostis secundiflora J. Presl. subsp. oxylepis (Torr.) S.D. Koch (=E. oxylepis)	lovegrass, red	N	Uncommon	Ranch
Eragrostis sessilispica Buckley	lovegrass, tumble	N	Uncommon	Both units
Eragrostis superba Peyr.	lovegrass, Wilmann's	E	Uncommon, Cultivated	Ranch
Erioneuron pilosum (Buckley) Nash	fluffgrass	N	Uncommon	Both units
Festuca arundinacea Schreb. (=F. elatior, Lolium a.)	fescue, tall	E	Common, Cultivated	Both units
Hilaria belangeri (Stued.) Nash	curly-mesquite	N	Uncommon	Ranch
Hordeum murinum L.	barley, mouse	E	Common	Both units
Hordeum vulgare L.	barley, common	E	Uncommon	Ranch
Leptochloa mucronata (Michx.) Kunth	sprangletop, red	N	Uncommon	Both units
Limnodea arkansana (Nutt.) L. H. Dewey	Ozark-grass	N	Uncommon	Johnson C.
Lolium perenne L. ssp. multiflorum (Lam.) Husnot	ryegrass, common	E	Common	Both units
Muhlenbergia lindheirmeri Hitchc	muhly, Lindheimer's	N	Cultivated	Ranch
Muhlenbergia reverchonii Vasey & Scribn.	muhly, seep	N	Uncommon	Johnson C.
Muhlenbergia utilis (Torr.) Hitchc.	aparejo; muhly, aparejo	N	Uncommon	Ranch
Nassella leucotricha (Trin. & Rupr.) Barkworth (=Stipa leucotricha)	wintergrass, Texas;	N	Common	Both units
Panicum coloratum L.	Klein grass	E	Uncommon	Both units
Panicum diffusum Sw.	panicgrass, spreading	E?	Common	Both units
Panicum obtusum Kunth	vine-mesquite	N	Uncommon	Johnson C.
Panicum virgatum L.	switchgrass, lowland	N	Common	Both units
Paspalum dilatatum Poir.	Dallis-grass	E	Uncommon	Ranch
Paspalum pubiflorum Rupr. var. pubiflorum	paspalum, hairy-seed	N	Common	Both units
Paspalum setaceum Michx.	paspalum, thin	N	Uncommon	Johnson C.
Paspalum urvillei Steud	paspalum, Urville's	E	Uncommon	Ranch
Poa annua L.	bluegrass, annual	E	Uncommon	Ranch
Polypogon monspeliensis (L.) Desf.	grass, rabbit's-foot	E	Uncommon	Ranch
Schedonnardus paniculatus (Nutt.) Trel.	grass, tumble	N	Uncommon	Both units

Scientific Name of Species (Synonyms)	Common Name	Native or Exotic	Abundance	Park Unit
Schizachyrium scoparium (Michx.) Nash (=Andropogon scoparium)	bluestem, little	N	Common	Both units
Setaria parviflora (Poir.) Kerguelen	bristlegrass, knotroot	N	Uncommon	Both units
Setaria scheelei (Steud.) Hitchc.	foxtail, Southwestern	N	Common	Both units
Sorghastrum nutans (L.) Nash	Indiangrass	N	Common	Both units
Sorghum bicolor (L.) Moench ssp. bicolor	sorghum	E	Cultivated	Ranch
Sorghum halapense (L.) Pers.	Johnson-grass	E	Common	Both units
Sphenopholis obtusata (Michx.) Scribn.	wedgescale, prairie	N	Uncommon	Ranch
Sporobolus compositus (Poir.) Merr. var. drummondii (Tr.) K. & G. (=S. asper var. drummondii)	dropseed, meadow	N	Abundant	Both units
Sporobolus cryptanthus (Torr.) A. Gray	dropseed, sand	N	Uncommon	Ranch
Stenotaphrum secundatum (Walter) Kuntze	St. Augustine grass	E	Cultivated	Both units
Tridens albescens (Vasey) Woot. & Stand.	whitetop	N	Common	Both units
Tridens flavus (L.) Hitchc.	purpletop	N	Common	Johnson C.
Tridens muticus (Torr.) Nash	tridens, slim	N	Uncommon	Ranch
Tripsacum dactyloides L.	gamagrass, Eastern	N	Common	Ranch
Urochloa ciliatissima (Buckley) R.D. Webster (=Brachiaria ciliatissima)	signal grass, fringed	N	Uncommon	Johnson C.
Urochloa texana (Buckley) R.D. Webster (=Brachiaria texana)	signal grass, Texas	N	Uncommon	Johnson C.
Podocarpaceae	**Podocarp Family**			
Podocarpus macrophyllus (Thunb.) D. Don	podocarp	E	Cultivated	Ranch
Polemoniaceae	**Phlox Family**			
Phlox drummondii Hook.	phlox, Drummond's; pride-of-Texas	N	Cultivated	Ranch
Phlox paniculata L.	phlox, summer	E	Cultivated	Ranch
Polygalaceae	**Milkwort Family**			
Polygala alba Nutt.	milkwort, white	N	Rare	Ranch
Polygonaceae	**Buckwheat Family**			
Rumex altissimus Wood	dock, peach-leaf	N	Common	Both units
Rumex hastatulus Baldwin	dock, Engelmann's; sorrel, heart-wing	N	Uncommon	Ranch
Portulacaceae	**Purslane Family**			
Portulaca oleracea L.	purslane, common	E	Uncommon	Johnson C.
Portulaca pilosa L.	purslane, shaggy	N	Common	Johnson C.
Portulaca umbraticola L.	purslane, wing-pod	N	Uncommon	Johnson C.
Talinum aurantiacum Engelm.	flameflower, orange	N	Rare	Johnson C.
Primulaceae	**Primrose Family**			
Samolus valerandi L. (incl. S. parviflorus)	brookweed, smallflower	N	Uncommon	Both units

Scientific Name of Species (Synonyms)	Common Name	Native or Exotic	Abundance	Park Unit
Punicaceae	**Pomegranate Family**			
Punica granatum L.	pomegranate	E	Cultivated	Johnson C.
Punica granatum L. cv. Nana	pomegranate, dwarf	E	Cultivated	Ranch
Ranunculaceae	**Buttercup Family**			
Anemone berlandieri Pritzel .(=A. decapetala)	anemone, tenpetal	N	Common	Both units
Aquilegia canadensis L.	columbine, American	N	Cultivated	Ranch
Aquilegia chrysantha A. Gray	columbine, yellow	E	Cultivated	Johnson C.
Clematis drummondii Torr. & A.Gray	virgin's-bower, Texas	N	Uncommon	Ranch
Clematis pitcheri T. & G.	leatherflower, Pitcher's	N	Uncommon	Ranch
Delphinium ajacis L..	larkspur, rocket	E	Cultivated	Ranch
Delphinium carolinianum Walt. ssp. virescens (Nutt.) Brooks (=D. virescens)	larkspur, Carolina	N	Uncommon	Ranch
Ranunculus sceleratus L.	buttercup, blister	N	Uncommon	Ranch
Rhamnaceae	**Buckthorn Family**			
Colubrina texensis (T. & G.) A. Gray	snakewood, Texas	N	Uncommon	Johnson C.
Rosaceae	**Rose Family**			
Chaenomeles lagenaria (Loisel.) Koidz	quince, flowering	E	Cultivated	Ranch
Eriobotrya japonica Lindl.	loquat	E	Cultivated	Ranch
Geum canadense Jacq.	avens, white	N	Uncommon	Johnson C.
Photinia serrulata Lindl	photinia, red-tip	E	Uncommon, Cultivated	Johnson C.
Photinia serrulata Lindl cv. Aculeata	photinia, spiny red-tip	E	Uncommon, Cultivated	Johnson C.
Prunus cf. cerasifera J.F. Ehrh.	plum, cherry	E	Cultivated	Ranch
Prunus cf. cerasus L.	plum, sour	E	Cultivated	Ranch
Prunus persica Batsch double-flowered cultivar	peach, flowering	N	Cultivated	Ranch
Prunus rivularis Scheele	plum, creek	E	Uncommon	Johnson C.
Pyracantha crenatoserrata (Hance) Rehd.	firethorn	E	Cultivated	Johnson C.
Pyrus communis L.	pear	E	Cultivated	Ranch
Rosa banksiae Ait.	rose, Banks	E	Cultivated	Johnson C.
Rosa chinensis Jacq. hybrid cultivar (Floribunda group)	rose, floribunda	E	Cultivated	Both units
Rosa chinensis Jacq. hybrid cultivar (Polyantha group)	rose, polyantha	E	Cultivated	Ranch
Rubus aboriginum Rydb.	dewberry, Indian	N	Common	Johnson C.
Rubus trivialis Michx.	dewberry, bristly	N	Uncommon	Johnson C.
Spiraea cantoniensis Lour.	bridal wreath, Cantonese	E	Cultivated	Ranch
Spiraea trilobata L.	bridal wreath, three-lobe	E	Cultivated	Ranch
Rubiaceae	**Coffee Family**			
Cephalanthus occidentalis L.	buttonbush	N	Uncommon	Both units
Diodia virginiana L.	buttonweed, large	N	Uncommon	Ranch
Galium aparine L.	bedstraw, catchweed	N	Common	Both units
Galium proliferum A. Gray	bedstraw, rock	N	Rare	Ranch

Scientific Name of Species (Synonyms)	Common Name	Native or Exotic	Abundance	Park Unit
Galium virgatum Nutt.	bedstraw, wand	N	Common	Both units
Hedyotis nigricans (Lam.) Fosb.	bluets, prairie	N	Uncommon	Both units
Houstonia micrantha (Shinners) Terrell (=Hedyotis australis)	bluets, Southern	N	Uncommon	Ranch
Houstonia pusilla Schoepf (=Hedyotis crassifolia)	bluets, dwarf	N	Uncommon	Johnson C.
Richardia tricocca (Torr. & A. Gray) Standl. (=Diodia tricocca)	buttonweed, prairie	N	Uncommon	Johnson C.
Sherardia arvensis L.	spurwort	E	Common	Both units
Rutaceae	**Citrus Family**			
Ptelea trifoliata L. (incl. P. mollis, P. tomentosa)	wafer-ash	N	Uncommon	Johnson C.
Zanthoxylum hirsutum Buckley	toothache-tree, Western; prickly-ash	N	Rare	Ranch
Salicaceae	**Willow Family**			
Salix nigra Marsh	willow, black	N	Uncommon	Johnson C.
Sapindaceae	**Soapberry Family**			
Cardiospermum halicacabum L.	balloonvine	N	Rare	Ranch
Sapindus saponaria L. var. drummondii (H. & A.) L. Benson	soapberry, Western	N	Uncommon	Both units
Ungnadia speciosa Endl.	buckeye, Mexican	N	Cultivated	Ranch
Sapotaceae	**Chicle or Sapote Family**			
Sideroxylon lanuginosum Michx. (=Bumelia lanuginosa)	buckthorn, wooly; gum-elastic	N	Uncommon	Ranch
Scrophulariaceae	**Snapdragon Family**			
Agalinus heterophylla (Nutt.) Britt.	foxglove, prairie false	N	Uncommon	Johnson C.
Bacopa monnieri (L.) Pennell	water-hyssop, coastal	N	Uncommon	Both units
Castilleja indivisa Engelm.	paintbrush, Indian	N	Uncommon	Ranch
Leucophyllum fructescens Berl.) I.M. Johnston	cenizo; Texas-sage	N	Cultivated	Both units
Leucospora multifida (Michx.) Nutt.	water-hyssop, cutleaf	N	Uncommon	Ranch
Lindernia dubia (L.) Pennell var. anagallidea (Michx.) Cooperr.	false pimpernel, clasping	N	Rare	Ranch
Mecardonia procumbens	water-hyssop, prostrate	N	Uncommon	Ranch
Nuttallanthus texanus (Sheele) D.A. Sutton (=Linaria texana)	toadflax, Texas	N	Uncommon	Ranch
Penstemon cobaea Nutt.	foxglove, wild	N	Uncommon	Ranch
Verbascum thapsus L.	mullein, common	E	Uncommon	Johnson C.
Veronica anagallis-aquatica L.	speedwell, water	E	Uncommon	Both units
Veronica arvensis L.	speedwell, common	E	Common	Both units
Smilacaceae	**Greenbriar Family**			
Smilax bona-nox L.	greenbriar, saw	N	Common	Both units
Solanaceae	**Nightshade Family**			

Scientific Name of Species (Synonyms)	Common Name	Native or Exotic	Abundance	Park Unit
Calibrachoa parviflora (Juss.) D'Arcy (=Petunia parviflora)	petunia, wild	N	Rare	Ranch
Capsicum annuum L. var. glabriusculum (Dunal) Heiser & Pickersgill (=C. a. var. aviculare)	pepper, bird	N	Cultivated	Ranch
Chamaesaracha edwardsiana Averett	nightshade, plateau false	N	Rare	Ranch
Datura inoxia Mill.	Indian-apple	N?	Rare	Ranch
Physalis cinerascens (Dunal) Hitch.	groundcherry, wooly	N	Uncommon	Both units
Solanum dimidiatum Raf.	horse-nettle	N	Uncommon	Both units
Solanum elaeagnifolium Cav.	nightshade, silverleaf	N	Common	Both units
Solanum ptychanthum Dunal (=S. americanum, S. nigrum)	nightshade, American	N	Uncommon	Both units
Solanum rostratum Dun.	buffalo-bur	N	Uncommon	Johnson C.
Solanum triquetrum Cav.	nightshade, Texas	N	Uncommon	Ranch
Taxodiaceae	**Bald Cypress Family**			
Taxodium distichum (L.) Rich.	cypress, bald	N	Uncommon	Both units
Ulmaceae	**Elm Family**			
Celtis laevigata Willd. var. laevigata	sugarberry or hackberry, smooth-leaf	N	Common, Cultivated	Both units
Celtis laevigata Willd. var. reticulata Torr. (=C. reticulata)	sugarberry or hackberry, rough-leaf	N	Common	Both units
Ulmus americana L.	elm, American	N	Cultivated	Ranch
Ulmus crassifolia Nutt.	elm, cedar	N	Common	Both units
Urticaceae	**Nettle Family**			
Parietaria pensylvanica Willd.	pellitory	N	Uncommon	Ranch
Valerianaceae	**Valerian Family**			
Valerianella radiata (L.) Dufr.	cornsalad, beaked	N	Uncommon	Ranch
Verbenaceae	**Verbena Family**			
Callicarpa americana L.	beautyberry	N	Cultivated	Johnson C.
Glandularia bipinnatifida (Nutt.) Nutt. (=Verbena bipinnatifida)	verbena, Dakota	N	Common	Both units
Glandularia pumila (Rydb.) Umber (=Verbena pumila)	vervain, pink	N	Uncommon	Johnson C.
Lantana 'Callowiana Hybrids' cultivar (L. depressa X camara)	lantana, hybrid cultivar	E	Cultivated	Johnson C.
Lantana camara L.	lantana, West Indies	E	Uncommon, Cultivated	Johnson C.
Lantana camara X urticoides	lantana, hybrid	E	Uncommon, Cultivated	Johnson C.
Lantana depressa Small hybrid cultivar	lantana, rockland	E	Cultivated	Johnson C.
Lantana montevidensis Briq	lantana, trailing	E	Cultivated	Ranch
Lantana urticoides Hayek (=L. horrida)	lantana, Texas	N	Uncommon, Cultivated	Both units

Scientific Name of Species (Synonyms)	Common Name	Native or Exotic	Abundance	Park Unit
Lippia lanceolata Michx. hybrid with L. nodiflora? (=Phyla lanceolata)	frogfruit, Northern	N	Common	Both units
Lippia nodiflora (L.) Michx. "incisa" morph (=Phyla nodiflora, P. incisa)	frogfruit, common	N?	Uncommon	Johnson C.
Lippia nodiflora (L.) Michx. (=Phyla nodiflora)	frogfruit, common	N?	Common	Both units
Lippia nodiflora (L.) Michx. may have L. lanceolata genes (=Phyla nodiflora)	frogfruit, common	N?	Common	Both units
Verbena brasiliensis Vell.	vervain, Brazilian	E	Uncommon	Ranch
Verbena canescens Kunth	vervain, gray	N	Uncommon	Both units
Verbena halei Small	vervain, slender	N	Common	Both units
Vitex agnus-castus L.	chaste tree	E	Cultivated	Both units
Violaceae	**Violet Family**			
Viola missouriensis Greene	violet, Missouri	N	Cultivated	Johnson C.
Vitaceae	**Grape Family**			
Ampelopsis arborea (L.) Koehne	peppervine	N	Common	Johnson C.
Ampelopsis cordata Michx.	grape, possum	N	Common	Johnson C.
Cissus incisa Des Moul	ivy-treebine	N	Uncommon	Both units
Parthenocissus heptaphylla (Buckley) Small	creeper, sevenleaf	N	Rare	Johnson C.
Parthenocissus quinquefolia (L.) Planch.	creeper, Virginia	N	Uncommon	Johnson C.
Vitis aestivalis Michx.	grape, summer or pigeon	N	Uncommon	Johnson C.
Vitis mustangensis Buckley	grape, mustang	N	Common	Johnson C.
Zygophyllaceae	**Lignum Vitae Family**	N		
Kallstroemia parviflora Norton	caltrop, warty	N	Uncommon	Johnson C.

Appendix D NEPA and NHPA Compliance

FINDING OF NO SIGNIFICANT IMPACT

Fire Management Plan
Lyndon B. Johnson National Historical Park

Lyndon B. Johnson National Historical Park is located in the "Hill Country" of south-central Texas, a landscape of forested hills, deep canyons, and secluded valleys. The park is made up of two districts. The Johnson City District, in Johnson City, is 47 miles west of Austin and 63 miles north of San Antonio. It includes the Park Headquarters and Visitor Center, Boyhood Home, Johnson Settlement, and Education Center. The LBJ Ranch District, near Stonewall, lies 14 miles west of Johnson City. It includes the Junction School, Reconstructed Birthplace, Texas White House, Show Barn, ranch lands and cattle, and other structures related to President Johnson's life in the Texas Hill Country.

Since Lyndon B. Johnson National Historical Park entered National Park Service administration in 1969, all wildland fires have been suppressed. On average, the occurrence of wildland fires at the park has been low; since 1980 there has been only four known wildland fires, two caused by lightning and two human related.

An environmental assessment (EA) was prepared to better understand the environmental effects associated with fire management activities at the park, including wildland fire suppression, mechanical thinning of hazard fuels, and use of prescribed fire, while concurrently protecting employees, visitors, and adjoining lands from negative consequences of fire management activities. Environmental issues identified during scoping and evaluated in the EA included soils, water resources, floodplains and wetlands, vegetation, wildlife, air quality, park operations, human health and safety, and cultural resources.

PREFERRED ALTERNATIVE

The park intends to implement Alternative 2 (Preferred Alternative): Fire Management Plan to Include Wildland Fire Suppression, Expanded Hazard Fuels Reductions Around Park Structures and Along Park Boundaries, and Prescribed Fire Use.

Under this alternative, the park will be managed using two separate fire management units (FMUs): the LBJ Ranch FMU (594 acres) and the Johnson City FMU (81 acres). The two FMUs will be reorganized into several different management compartments: Pasturelands, Developed Areas, Cedar/Oak Thicket and Prairie Restoration Area.

The preferred alternative includes wildland fire suppression, mechanical reduction of hazard fuels, and use of prescribed fire. Under the program, all wildland fires in the park will be suppressed in a manner that minimizes the negative environmental impacts of suppression activities. Hazard fuels reduction will include mowing of vegetation in areas adjacent to park structures, grazing of pastures, and the occasional selective thinning of woody vegetation as well as any hazard trees. Hazard fuels reduction will be expanded in the Developed Areas, Prairie Restoration Area and Cedar/Oak Thicket in order to protect all park structures and certain areas along the park's boundary. Along critical portions of the park's boundary a 12-ft wide mowed buffer will be maintained, especially during the driest times of the year and during prescribed burns, in order to help prevent the spread of wildland fire to and from adjacent non-agency land. The park will work with neighboring landowners to reduce fuels on adjacent non-federal land.

Prescribed fire will be conducted on a two to five year rotation in the prairie restoration area. Prescribed fire will be utilized on the 12-acre native prairie restoration project in the Johnson City FMU in order to mimic a more natural fire regime, and also to benefit this fire adapted ecosystem and help combat invasive exotic plants species. On the pastureland of both FMUs, prescribed fire will be used to help remove invasive weedy plant species, promote the growth of coastal Bermuda grass and other pasture grasses, and to recycle nutrients into the soil.

Fire effects monitoring in the Prairie Restoration Area Compartment will help evaluate the effects of fire on the progress of prairie restoration. Minimum Impact Suppression Techniques (MIST) will be used to prevent and/or mitigate adverse environmental impacts that may occur from fire management activities.

OTHER ALTERNATIVES CONSIDERED BUT NOT SELECTED

The No Action Alternative

Under this alternative, the Fire Management Plan would include the suppression of all wildland fires, allow for hazard fuels reduction, and prescribed fire use. All wildland fires in the park, including human-caused fires and naturally ignited fires, e.g. lightning fires, would be declared wildland fires and suppressed in a manner that minimizes the negative environmental impacts of suppression activities.

Prescribed fire would be utilized on the 12-acre native prairie restoration project in the Johnson City FMU in order to mimic a more natural fire regime, and to also benefit this fire adapted ecosystem and to help combat invasive exotic plants species. On the pastureland of both FMUs, prescribed fire would be used to help remove invasive weedy plant species, promote the growth of coastal Bermuda grass and other pasture grasses, and to recycle nutrients into the soil.

Alternative 3

Under this alternative wildland fire suppression and hazard fuels reduction would be conducted in the same manner as in the "Preferred" Alternative, however prescribed fire would not be utilized anywhere in the park to reduce hazard fuel loads or to combat invasive plant species. Within the Prairie Restoration Area Compartment, the area would be mowed and baled to meet management objectives, while in the Pasturelands Compartment, grazing would continue.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

The environmentally preferred alternative is the alternative that will promote the national environmental policy as expressed by §101 of the National Environmental Policy Act (NEPA). This includes alternatives that:

1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;

2) ensure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;

3) attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;

4) preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;

5) achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities; and

6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

In essence, the environmentally preferred alternative would be the one(s) that "causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources".

In this case, Alternative 2 is the environmentally preferred alternative for Lyndon B. Johnson National Historical Park since it best meets goals 1, 2, 3, and 4 described above. Under this alternative, fire management activities would help restore and maintain native plant communities in the park's native vegetation (prairie) restoration project, mimic natural ecological processes, and help protect park resources and adjacent lands from the threat of wildland fires. Finally, the

preferred alternative best protects and helps preserve the historic, cultural, and natural resources in the park for current and future generations.

THE PREFERRED ALTERNATIVE AND SIGNIFICANCE CRITERIA

As defined at 40 CFR §1508.27, from the regulations of the Council on Environmental Quality that implement the provisions of NEPA, significance is determined by examining the following criteria:

Impacts that may be both beneficial and adverse: A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.

There are potentially both beneficial and adverse impacts from the preferred alternative. None of the adverse impacts is significant. The preferred alternative would have positive effects on the human health and safety of the park's visitors, staff, and neighboring residents due to suppression of wildland fires. Prescribed fire would produce minor benefits to soils, moderate benefits to vegetation, minor benefits to wildlife, and minor to moderate benefits to the cultural landscape of the park.

Minor, localized, and short-term impacts to soils, water resources, vegetation, wildlife, air quality, visitor use and experience, park operations, human health and safety, and cultural resources are possible as the result of fire suppression activities and the use of prescribed fire. None of the impacts rise to the level of significance.

The degree to which the proposed action affects public health or safety

When conducting fire management activities, human health and safety is the primary concern. Under the preferred alternative, every precaution would be taken to protect human health and safety during fire management activities.

Most of the impacts to human health and safety would be minor, beneficial and long-term. There is the potential for short-term minor adverse impacts as well. Wildland fire suppression and management of hazard fuels provides protection to the public, but entails a small risk of injury to firefighters from smoke inhalation, contact with firefighting foams or retardants, or from burns. Proper training and strict adherence to guidelines minimizes these risks. Similarly, notification of the public prior to prescribed burns, and strict adherence to procedures and guidelines for managing fire and smoke, will minimize dangers to the public and to firefighters.

***Unique characteristics of the geographic area such as proximity to historic or cultural resources, parklands, prime farmlands, and wetlands*.**

Almost the entire park is listed on the National Register of Historic Places as an historic district of national significance. The cultural landscapes preserved at the park are vital components of the park's significance.

As described in the EA, the preferred alternative protects and enhances the important cultural resources of the park. After consultation with the SHPO, it was determined that the implementation of the preferred alternative, including mitigations aimed at protecting cultural resources, would have no effect on cultural resources at the park.

The degree to which the effects on the quality of the human environment are likely to be highly controversial.

There were no controversial impacts identified during the analysis done for the EA, and no controversial issues were raised during the public review of the EA.

Degree to which the possible effects on the quality of the human environment are highly uncertain or involve unique or unknown risks.

There are no identified risks associated with the preferred alternative that are unique or unknown, and there are no effects associated with the preferred alternative that are highly uncertain identified during the analysis for the EA or during the public review of the EA.

The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

The preferred alternative does not establish a precedent for any future actions that may have significant effects, nor does it represent a decision in principle about a future consideration. The purpose of this action is to develop a fire management plan and program that protects the natural and cultural resources of the park from wildland fire, in accordance with NPS requirements.

Under this program, mechanical thinning activities will be conducted over several years to reduce hazard fuels, and prescribed fire will be used on several small areas of the park for resource benefits. While it is anticipated that these actions will continue to produce overall positive impacts on park resources, if it is determined at some future date that this is not the case, these activities can be reassessed and if necessary modified or discontinued.

Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.

The EA determined that there would be no significant cumulative impacts associated with the preferred alternative.

The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed on National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.

The park is listed in the National Register of Historic Places as an historic district with national significance. There are 120 historic structures maintained within the park. The Johnson Boyhood Home was designated a National Historic Landmark in 1966. The cultural landscape includes both landscape features and structures. Protection and preservation of the park's cultural resources is central to the mission Lyndon B. Johnson National Historical Park. Fire management activities described in the FMP and EA would help to protect these important cultural resources.

The EA was written in compliance of Section 106 of the National Historic Preservation Act. It was determined by consultation with the State's SHPO on March 16, 2004, that the proposed action will have no adverse effect to the cultural resources of the park.

The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

Informal consultation with the U.S. Fish and Wildlife Service indicated that habitat for two listed species, Golden-cheeked Warbler (*Dendroica chrysoparia*) and Black-capped Vireo (*Vireo atricapillus*), may occur around the park. The park therefore conducted a survey for habitat for these two species. No suitable habitat for either species was found within the park. Because there is no suitable habitat within the park, it has been determined that the fire management activities described in the FMP and EA will have no effect on these species.

In the event that either of these species was to occur incidentally within the park, there would likely be no impacts from fire management activities. As stated in the National Park System's 2001 Management Policies, if a Federally or state listed species were to be documented within the park boundaries, active management programs would be undertaken to inventory, monitor, restore, and maintain the listed species' habitats, control detrimental non-native species, control detrimental visitor access, and re-establish extirpated populations as necessary to maintain the species and habitats upon which they depend. The Park would also manage designated critical habitat, essential habitat, and recovery areas to maintain and enhance their value for the recovery of threatened and endangered species. Measures taken to protect those species, or their required habitat, would supersede any management activities outlined in the FMP in the event any of those management activities would negatively impact the listed species.

Whether the action threatens a violation of Federal, state, or local law or requirements imposed for the protection of the environment.

This action violates no federal, state, or local environmental protection laws.

Impairment

In addition to reviewing the list of significance criteria, the National Park Service has determined that implementation of the proposal will not constitute an impairment to the critical resources and values of the Park. This conclusion is based on a thorough analysis of the environmental impacts described in the Fire Management Plan and its EA, public comment, relevant scientific studies, and the professional judgment of the decision-maker guided by the direction in NPS *Management Policies 2001*. The plan under the preferred alternative will not impair natural or cultural resources or values that are (1) necessary to fulfill specific purposes identified in the enabling legislation of the park, (2) key to the natural or cultural integrity of the park or opportunities for enjoyment of the park, and (3) identified as a goal in the park's general management plan or other National Park Service planning documents.

PUBLIC INVOLVEMENT

The environmental assessment was made available for public review and comment during a 30-day period ending January 8, 2005. A legal notice announcing its availability was published in the local paper on November 24, 2004**.** Copies of the EA were mailed to 82 individuals/agencies. Copies were also placed at the Johnson City Visitor Center, LBJ Ranch Visitor Center, and at the Johnson City Public Library. No comments were received on the document.

The preferred alternative does not constitute an action that normally requires preparation of an environmental impact statement (EIS). The preferred alternative will not have a significant effect on the human environment. Negative environmental impacts that could occur are negligible or minor in intensity. There are no significant impacts on public health, public safety, threatened or endangered species, sites or districts listed in or eligible for listing in the National Register of Historic Places, or other unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects, or elements of precedence were identified. Implementation of the action will not violate any federal, state, or local environmental protection law.

Based on the foregoing, it has been determined that an EIS is not required for this project and thus will not be prepared.

Approved: /s/ Steve Martin 1/31/05
Intermountain Regional Director Date

Appendix E. Unit-Specific Supplemental Information

1. Emergency Contact Information

All Emergency Services	**911**	**Blanco Co. Dispatch**	**830 868-7104**
Ambulance – Johnson City	**830 868-7104**	**Gillespie Co. Dispatch**	**830 990-8793**
Ambulance – Fredericksburg	**830 990-8793**	**Gillespie Co. LE Center**	**830 997-7585**
Hospital Fredericksburg	**830 997-4353**	**Johnson City Police**	**830 868-7111**
Fire-Johnson City	**830 868-7104**		
Fire-Stonewall	**830 644-5571**		
Fire-Fredericksburg	**830 997-8080**		
TX DOT-Fredericksburg	**830 997-4362**		
TX DOT-Johnson City	**830 868-7166**		
Pedernales Electric	**830 868-4055**		
Central TX Electric	**830 997-2126**		

2. LYJO Staff Fire Qualifications

Lyndon B. Johnson National Historical Park Incident Qualifications 12/31/2004

Name	Division	Fire			EMS	LE	other	Training Needs	TASK BOOKS
Eakman, Hollis	**FM&R**	**FFT2**							**RADO & ENOP**
Felps, Jed	**FM&R**	**FFT2**					**Heavy Equip OP**		**RADO & ENOP**
Geistweidt, Carol	**ADMIN**								**EQTR & PTRC**
Gibson, Deborah	**ADMIN**	**ADPT**	**PTRC**	**EQTR**					
Gilmour, Drew	**RMVP**	**HCWN**	**HELB**	**HEB2**	**SFA**	**L1**	**HAZ**		**STLD-T & HEB1**
		ICT4	**CRWB**	**FFT1**					**HEB1 & ENGB**
Jenschke, Bonnie	**SO**	**THSP**							**EDRC**
Justus, Sherry	**I&E**								**IOF3**
Lara, Rosa	**RMVP**								**PTRC**
Larrabee, Randy	**FM&R**	**RCDM**	**FFT1**		**SFA**		**Heavy Equip Op**	**ICT5**	**FMNT & ENOP**
									RADO & EQPM
									ORDM & COMT
									PTRC & EQTR
									EDRC
Lindig Elizabeth	**I&E**	**EDRC**	**EDSD**					**D-310**	
Lott, Jason	**RM&VP**	**FFT2**							
Peckne, John	**FM&R**	**FFT2**	**RADO**						
Schafer, Dave	**I&E**	**FFT2**							
Suttle, Hollis J.	**RM&VP**	**FFT2**			**SFA**				
Weisenbaugh, Darryl	**FM&R**						**HAZ**		**EQMP & GSUL**
									RADO

3. Radio Contacts

Channel		Receive	Tone		Transmit	Tone
1 NPS Ranch Repeater	**170075**	**173.8**		**168375**	**173.8**	
2 NPS JC Repeater	**170075**	**173.8**		**168375**	**192.8**	
3 NPS Local	**170075**	**173.8**		**170075**	**173.8**	
6 North Blanco Co. EMS	**158955**	**162.2**		**153875**	**162.2**	
8 Gillespie Co. EMS	**154445**	**203.5**		**153890**	**203.5**	
9 Statewide Fire Mutual Aid	**154280**			**154280**		
10 National Weather Service	**162400**	**-**			**-**	**-**
11 Blanco Co. Sheriffs Office	**154755**	**151.4**		**155685**	**151.4**	
12 Gillespie Co. Sheriffs Office	**155730**	**203.5**		**155010**	**203.5**	

4. LYJO Fire Equipment Inventory

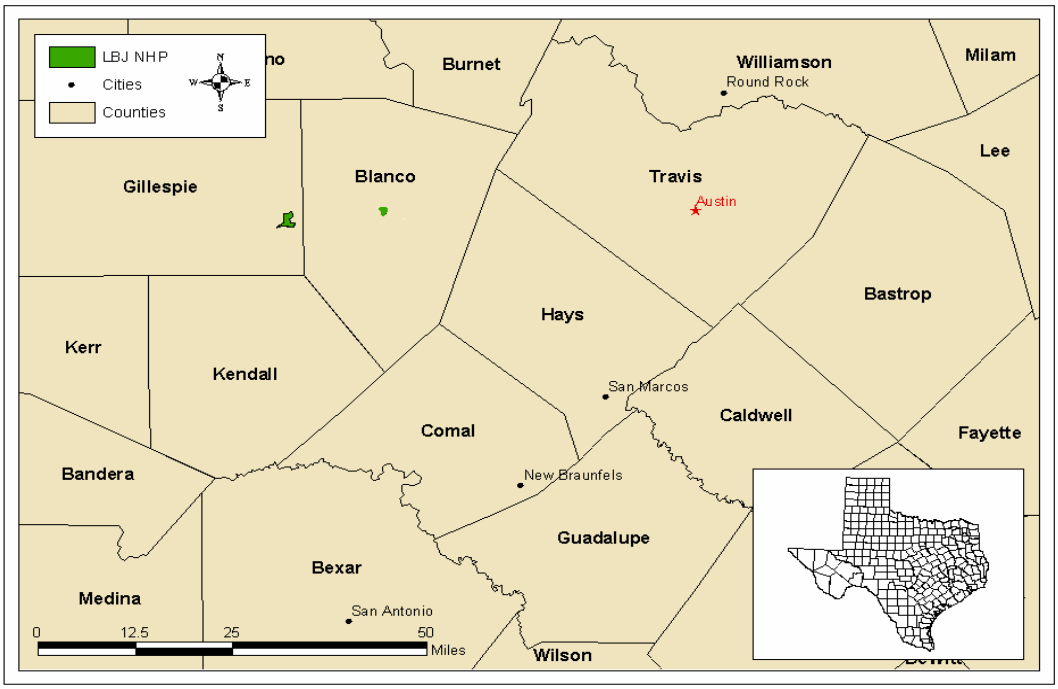
Item Description	Size	Number
Fire Tool, McLeod		5
Fire Tool, Fire Rake		2
Fire Tool, Shovel		14
Fire Tool Flapper		3
Fire Tool Leaf Rake		1
Fire Tool Pulaski		4
Chainsaw - Stihl	044	1 + kit
Back Pack Pump		3
Fire Hose	2 ½”	
Fire Hose	1 ½”	
Fire Hose	1”	7
Fire Hose	.75	3
Gated Y	1 ½ “	2
Gated Y	1”	1
Hydrant wrench		2
Hose Clamp		3
Spanner wrench		7
Nozzles - Forester		10
Nozzles - Foam		7
Nozzle – Garden Hose	.75	1
Nozzles-Plastic	1 ½	4
Fittings D-female	1 ½”	1
Fittings D- male	1 ½”	1
Fittings D- female	1”	1
Fittings D- male	1”	1

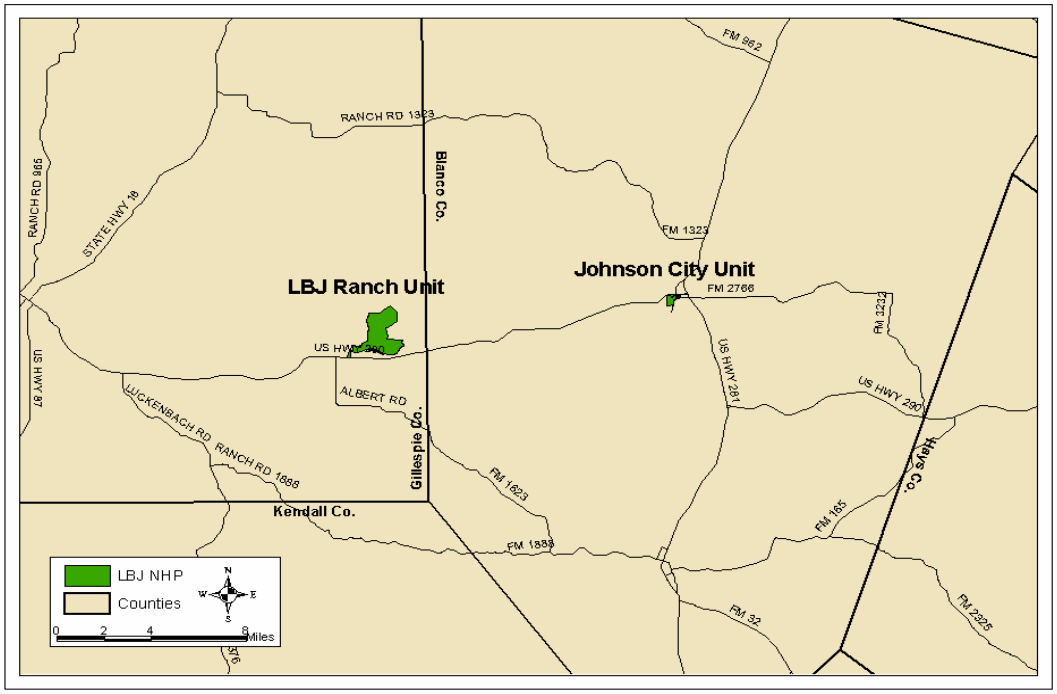
Item Description	Size	Number
Fittings NPSH-NH	1 ½ -1 ½ “	2
Fittings NPSH-NPSH	1 ½ t-1	1
Fittings NPSH-NPSH	½ -1”	1
Fittings NPSH-NPSH	1-.75	1
Jerry Can	5 Gal	3
Dulmar	3.5 Gal	2
Drip Torch		2
Foam	5 Gal	11
Shirt - Nomex	small	14
Shirt - Nomex	med	12
Shirt – Nomex	large	0
Shirt - Nomex	x-large	0
Brush jacket	small	1
Brush jacket	large	1
Hard Hat		9
Goggles Tanker		9
Goggles Industrial		4
Foam Ear plugs	1 case	1
Gloves Forestry worker	small	12
Gloves	Med	0
Gloves	Large	0
Gloves	X-Large	2
Fire Shelter with case		9
Fire Shelter case		2
Head lamp		11
Space blanket		4
Crew First Aid Kit		1
Belt weather Kit		1
Pack belt yellow FSS		1
Pack yellow FSS		2
Pack personal gear		2
Pack Red FSS		1
MEI hotshot packs		3
Sleeping bag disposable	5 per box	2 boxes
Sleeping bag FSS Yellow/blue		4
Sleeping bag military		2

Item Description	Size	Number
MRE		4 boxes
Canteen Cover Yellow		1
Canteen Cover White		20
Belt Pack Yellow FSS		1
Air Mattress		1
Tarp in bag		1

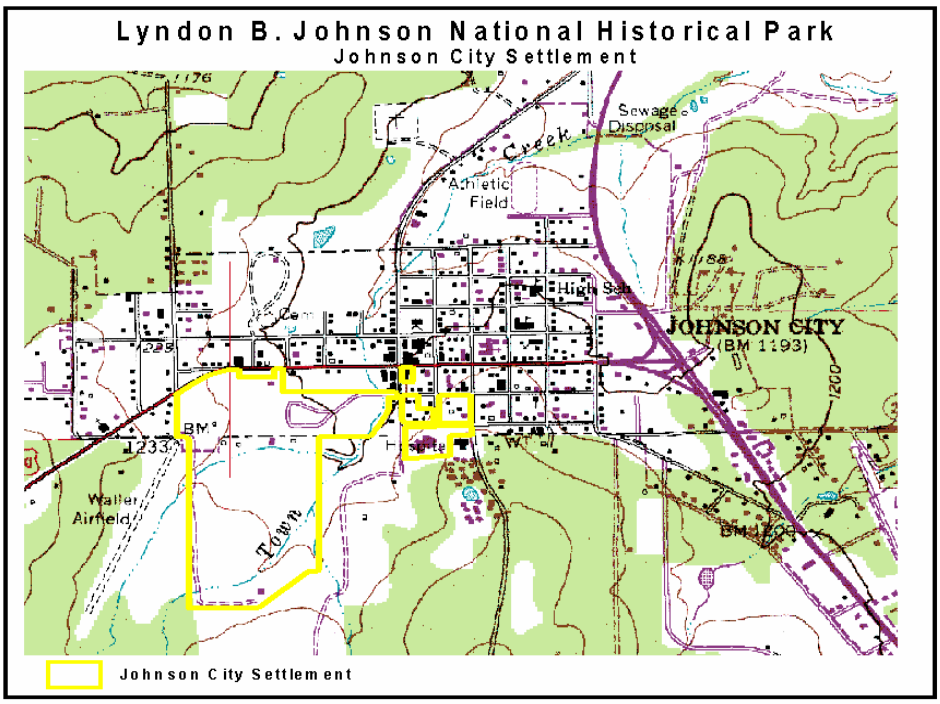
5. Maps

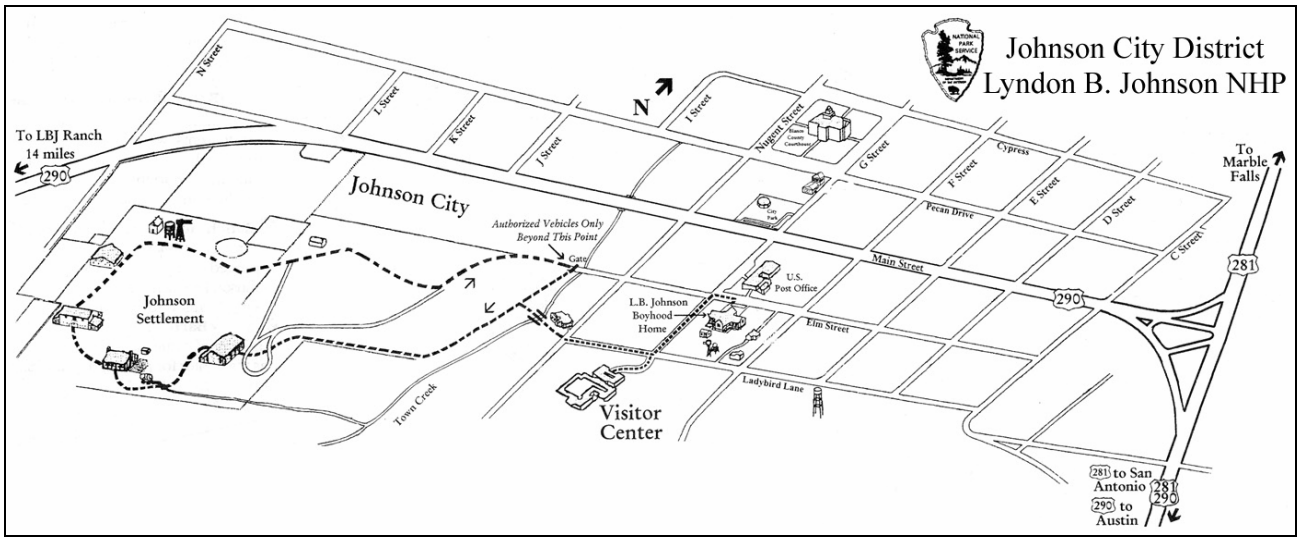
A. Vicinity Maps of Lyndon B. Johnson National Historical Park

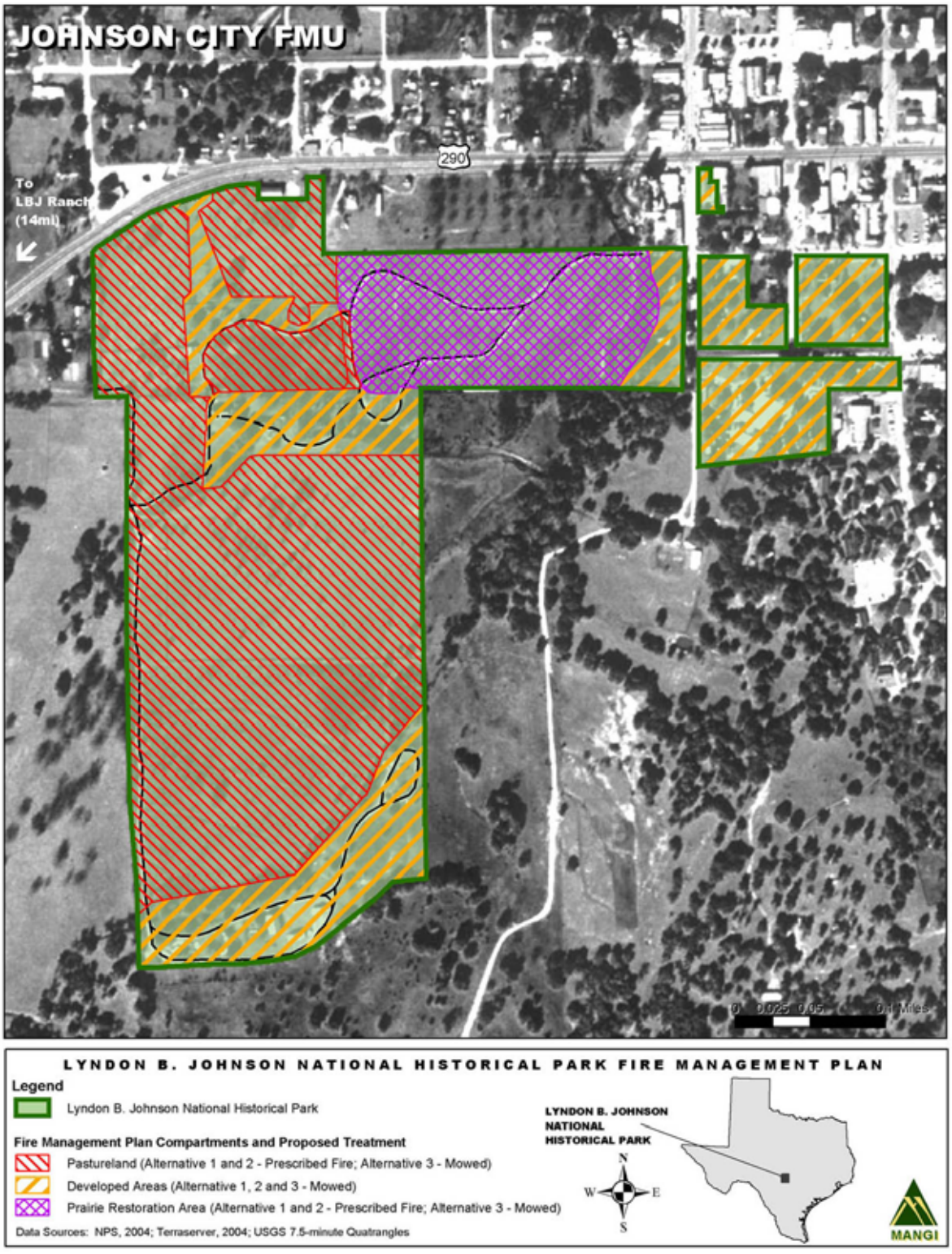




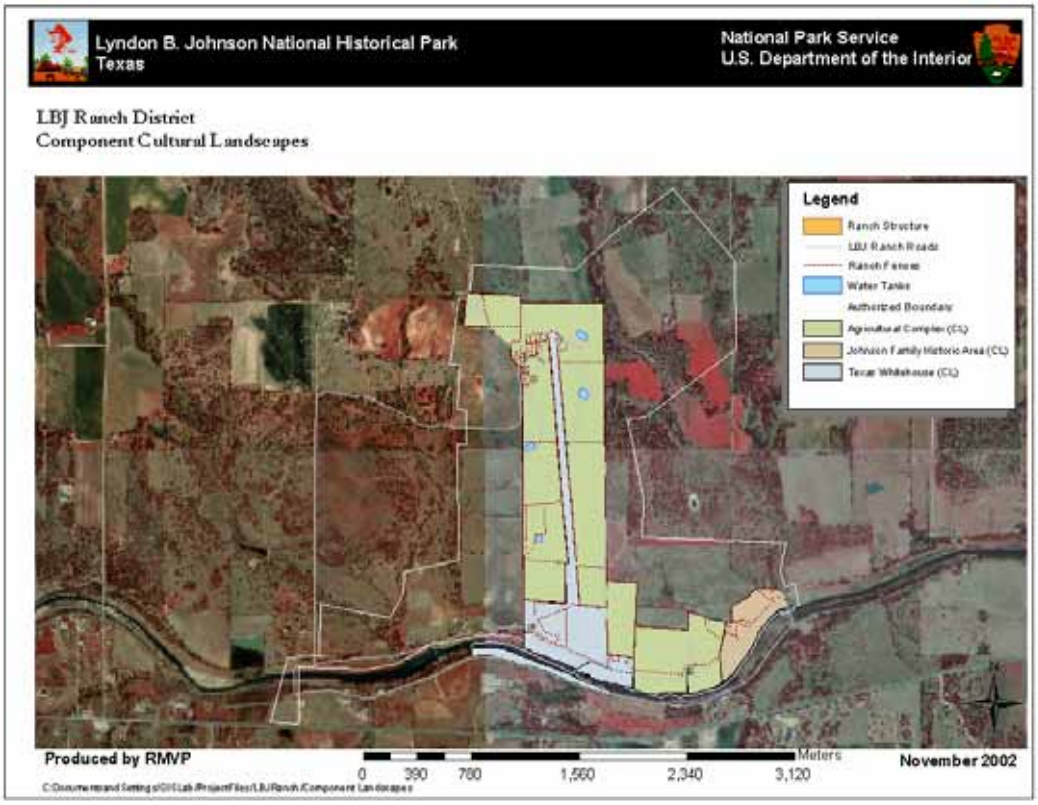
B. Johnson City FMU

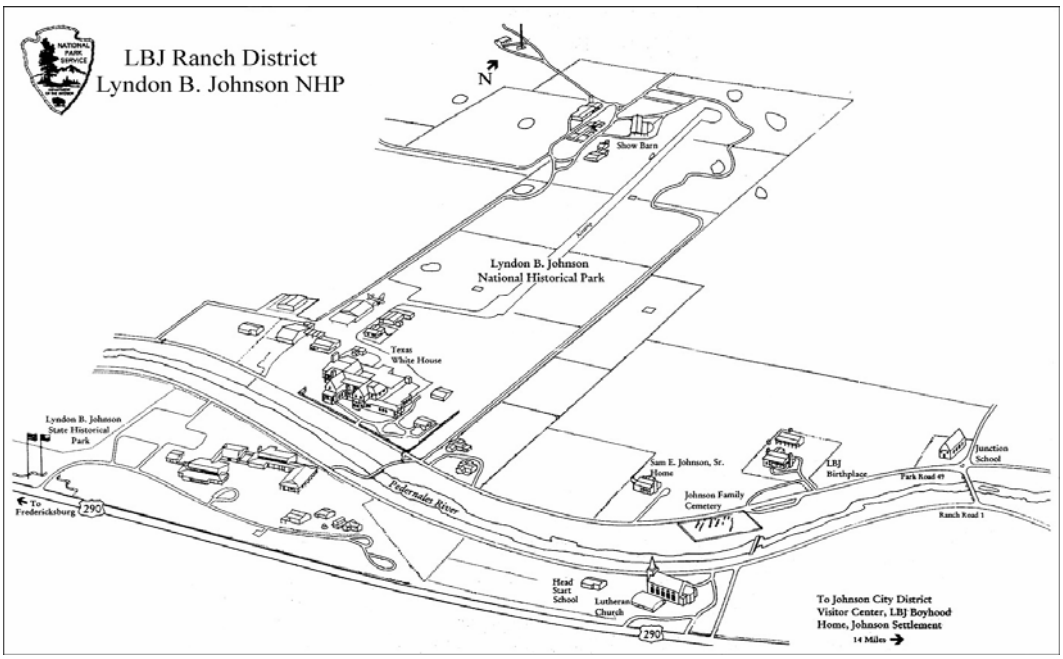


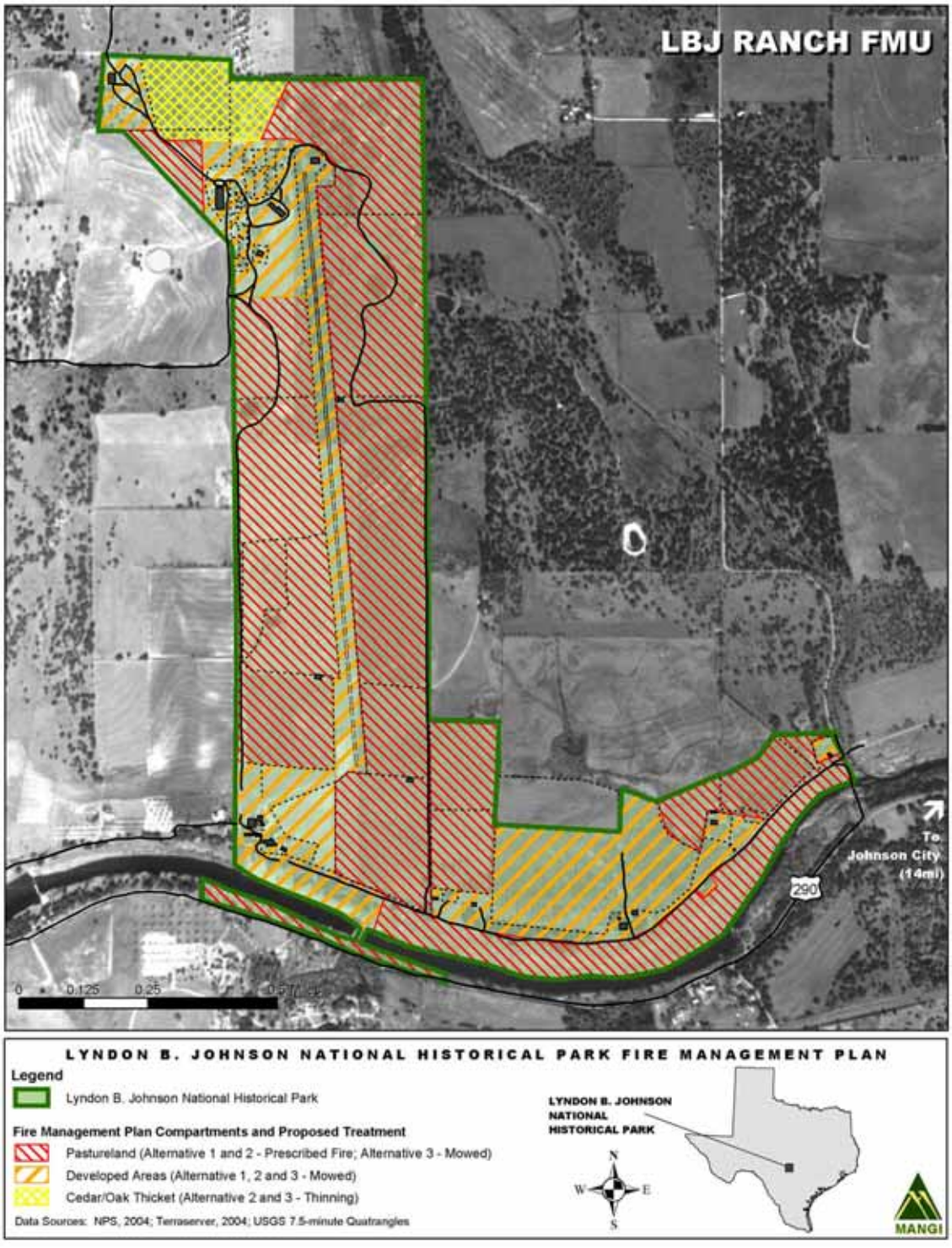



JOHNSON CITY FMU
290
To
LBJ Ranch
(14mi)
0 0.025 0.05 0.1 Miles
LYNDON B. JOHNSON NATIONAL HISTORICAL PARK FIRE MANAGEMENT PLAN
Legend
Lyndon B. Johnson National Historical Park
Fire Management Plan Compartments and Proposed Treatment
Pastureland (Alternative 1 and 2 - Prescribed Fire; Alternative 3 - Mowed)
Developed Areas (Alternative 1, 2 and 3 - Mowed)
Prairie Restoration Area (Alternative 1 and 2 - Prescribed Fire; Alternative 3 - Mowed)
Data Sources: NPS, 2004; Terraserver, 2004; USGS 7.5-minute Quatrangles
LYNDON B. JOHNSON NATIONAL HISTORICAL PARK
N
W
E
S
MANGI

C. LBJ Ranch FMU






LBJ RANCH FMU
To Johnson City (14mi)
290
0
0.125
0.25
LYNDON B. JOHNSON NATIONAL HISTORICAL PARK FIRE MANAGEMENT PLAN
Legend
Lyndon B. Johnson National Historical Park
Fire Management Plan Compartments and Proposed Treatment
Pastureland (Alternative 1 and 2 - Prescribed Fire; Alternative 3 - Mowed)
Developed Areas (Alternative 1, 2 and 3 - Mowed)
Cedar/Oak Thicket (Alternative 2 and 3 - Thinning)
Data Sources: NPS, 2004; Terraserver, 2004; USGS 7.5-minute Quatrangles
LYNDON B. JOHNSON NATIONAL HISTORICAL PARK
N
W
E
S
MANGI

6. Cooperative Agreements

A. Stonewall Volunteeer Fire Department

A44

MU-7350-6-0002

October 20, 2002

MEMORANDUM OF UNDERSTANDING

Between

LYNDON B. JOHNSON NATIONAL HISTORICAL PARK

and

STONEWALL VOLUNTEER FIRE DEPARTMENT

I. Background

A. Purpose

1. The purpose of this Memorandum of Understanding (hereinafter MOU) is to provide personal services and equipment required for structural and wildland fire prevention/suppression and the protection of life and property from fire on lands administered by Lyndon B. Johnson National Historical Park (hereinafter Park) and to nearby prevention agencies.

B. Authority:

1. The statutes found at 42 U.S.C. 1856-1856d and 16 U.S.C. 1b(1) provide authority for the National Park Service (hereinafter NPS) to enter into reciprocal agreements and to render emergency fire fighting and cooperative assistance to nearby fire prevention agencies to extinguish fires and preserve life and property.

2. The Chief of the Stonewall Volunteer Fire Department (hereinafter Department) has signature authority to enter into agreements with the Park regarding fire prevention and suppression services on Park administered lands.

3. The Park Superintendent has signature authority to enter into agreements with the Stonewall Volunteer Fire Department regarding fire prevention and suppression services on Park administered lands and to provide reciprocal assistance.

II. Statements of Work

A. Fire on Park Lands:

1. In the event of a structural or wildland fire, the Department agrees to:

a. Respond to the fire with a minimum of one Engine unit and crew with safety and fire fighting equipment, unless the absence of this equipment from the community would put the community of Stonewall at risk.

b. Cooperate with the park staff in the immediate suppression of the fire.

c. Recognize the first fire unit on the scene as Incident Command. Incident Command will be passed to a qualified representative of the jurisdiction in which the fire occurs. All responding fire and emergency units will obtain briefings and assignments from Incident Command prior to taking suppression action.

d. Recognize that Park/NPS policies and requirements may necessitate special or unique fire fighting procedures that may differ from Department procedures. The Department will adhere to Park/NPS requirements when requested to do so by the Park Superintendent or designated representative. For purposes of this MOU, the following persons will be considered, in descending order as the Superintendent's designated representatives:

1) Chief Park Ranger, Brian Carey

2) Fire Management Officer Drew Gilmour

2. The Park agrees to:

a. Provide qualified wildland fire fighting personnel with safety and fire fighting equipment. The Park has no structural qualified firefighters at this time.

b. Cooperate and coordinate with the Department personnel in suppression and rescue activities.

c. Recognize the first fire unit on the scene as Incident Command. Incident Command will be passed to a qualified representative of the jurisdiction in which the fire occurs. All responding fire and emergency units will obtain briefings and assignments from Incident Command prior to taking suppression action.

B. Fire off Park Lands:

1. In the event of a wildland fire, the Park agrees to:

a. Respond to the fire, when called by the requesting Department, with available qualified fire personnel and equipment, unless the absence of this equipment from the Park would put the Park at risk.

b. Cooperate with Department personnel in suppression of the fire.

c. Recognize the first fire unit on the scene as Incident Command. The Incident Command will be passed to a qualified representative of the jurisdiction in which the fire occurs. All responding fire and emergency units will obtain briefings and assignments from Incident Command prior to taking suppression action.

2. The Department agrees to:

a. Establish a clear command structure and provide orders and instructions to Park personnel.

b. Consult with Park Superintendent or designated representative if the fire threatens Park administrated property.

c. Recognize the first fire unit of the scene as Incident Command. Incident Command will be passed to a qualified representative of the jurisdiction in which the fire occurs. All responding fire and emergency

units will obtain briefings and assignments from Incident Command prior to taking suppression action.

C. Operations: Suppression personnel/equipment will be activated as follows:

1. Park will request assistance by contacting the Department dispatcher at: 210/644-5571 OR 911 (Fredericksburg).

2. Department will request assistance by contacting personnel in the following order:

a. Park Dispatch - Liz Lindig
(830) 868-7128 ext. 231 or ext. 244
(830) 868-7207 (Home)
(Radio – 401)

b. Park Fire Management Officer- Drew Gilmour
(830) - 868-7792 (Work)
(512) - 658-7837 (Work Cell)
(830) - 868-7035 (Home)
(830) - 385-6766 (Cell Home)
(Radio - 511)

c. Chief Ranger– Brian Carey
(830) - 868-7128 ext. 232 (Work)
(512) –658-7669 (Work Cell)
(830) –868-7884 (Home)
(Radio 500)

III. Terms of MOU

The term of this MOU is five (5) years, commencing upon the date of signature of the final signatory party to the MOU.

IV. General Provisions:

A. The Park and Department mutually agree to the following:

1. In the execution of this MOU, employees or agents of the Department are not considered employees of the Park or NPS.

2. The Park shall not be obliged to make any expenditures under this MOU in excess of funds appropriated by the Congress of the United States and administratively allocated by the NPS for the performance of this MOU.

3. The Park and Department waive all claims against each other for compensation for any loss, damage, personal injury, or death occurring in consequence of the performance of this MOU.

4. All suppression qualified personnel will be physically fit.

5. Personal protection equipment will be provided by the respective parties to this MOU.

B. Key Officials

1. The Chief Ranger is designated by the Superintendent to have the authority and responsibility for managing this MOU on behalf of the Park.

2. The Chief of Stonewall Volunteer Fire Department has the authority and responsibility for managing this MOU on behalf of the Department.

C. Agreement Evaluation:

The parties will jointly review the results of this MOU at the end of each calendar year. The MOU may be amended at any time by the written mutual consent of the parties. The approved amendment will immediately become part of this MOU.

1. The Park will solicit and accept recommendations from the Department command personnel in suppression and rescue procedures, insofar as they do not conflict with Park/NPS policies. For purposes of this MOU, the Department command personnel are:

   a. Bradley Neilson, Chief

   b. Rodney Eckert, Assistant Chief

2. The Department will solicit and accept recommendations from the Park command personnel in suppression and rescue procedures, insofar as

they do not conflict with Department policies. For purposes of this MOU, the Park command personnel are:

a. Brian Carey, Chief Ranger

b. Drew Gilmour, Fire Management Officer

V. Reports

Each party is responsible for its respective timekeeping and other required records and reports.

VI. Termination

This MOU may be terminated by either party by providing sixty (60) days notice to the other party.

VII. Required Clauses

A. No member or delegate to Congress, or resident Commissioner, shall be admitted to any share or part of this agreement, or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this agreement if made with a corporation for its general benefit.

B. During the performance of this agreement, the participants agree to abide by the terms of Executive Order 11256 on nondiscrimination and will not discriminate against any person because of race, color, religion, sex or national origin. The participants will take affirmative action to ensure that applicants are employed without regard to their race, color, religion, sex or national origin.

10/29/02 Date — Chief, Stonewall Volunteer Fire Department

11/25/02 Date — for Superintendent, Lyndon B. Johnson National Historical Park

B. Johnson City Volunteer Fire Department

A44

GA- 7350-3-0002

December 4, 2002

General Agreement

Between

LYNDON B. JOHNSON NATIONAL HISTORICAL PARK

and

JOHNSON CITY VOLUNTEER FIRE DEPARTMENT

Article I - BACKGROUND AND OBJECTIVES

A. Purpose

1. The purpose of this **General Agreement** (hereinafter **GA**) is to provide personal services and equipment required for structural and wildland fire prevention/suppression and the protection of life and property from fire on lands administered by Lyndon B. Johnson National Historical Park (hereinafter Park) and to nearby prevention agencies.

B. Authority:

1. The statutes found at 42 U.S.C. 1856-1856d and 16 U.S.C. Ib(I) provide authority for the National Park Service (hereinafter NPS) to enter into reciprocal agreements and to render emergency fire fighting and cooperative assistance to nearby fire prevention agencies to extinguish fires and preserve life and property.

2. The Chief of the Johnson City Volunteer Fire Department (hereinafter Department) has signature authority to enter into agreements with the Park regarding fire prevention and suppression services on Park administered lands.

3. The Park Superintendent has signature authority to enter into agreements with the Department regarding fire prevention and suppression services on Park administered lands and to provide reciprocal assistance.

ARTICLE II STATEMENT OF WORK

A. Fire on Park Lands:

1. In the event of a structural or wildland fire, the Department agrees to:

a. Respond to the fire with a minimum of one Engine unit (if available) and crew with safety and fire fighting equipment, unless the absence of this equipment from the city would put the city of Johnson City at risk.

b. Cooperate with the park staff in the immediate suppression of the fire.

c. Recognize the first fire unit on the scene as Incident Command. Incident Command will be passed to a qualified representative of the jurisdiction in which the fire occurs. All responding fire and emergency units will obtain briefings and assignments from Incident Command prior to taking suppression action.

d. Recognize that Park/NPS policies and requirements may necessitate special or unique fire fighting procedures that may differ from Department procedures. The Department will adhere to Park/NPS requirements when requested to do so by the Park Superintendent or designated representative. For purposes of this GA, the following persons will be considered, in descending order as the Superintendent's designated representatives:
1) Brian Carey, Chief Ranger
2) Drew Gilmour, Park Fire Management Officer

2. The Park agrees to:

a. Provide qualified wildland fire fighting personnel with safety and fire fighting equipment.

b. Cooperate and coordinate with the Department personnel in suppression and rescue activities.

c. Recognize the first fire unit on the scene as Incident Command. Incident Command will be passed to a qualified representative of the jurisdiction in which the fire occurs. All responding fire and emergency units will obtain briefings and assignments from Incident Command prior to taking suppression action.

3. Operations: Suppression personnel/equipment will be activated as follows:

a. Park will request assistance by contacting the Department dispatcher at 911.

b. Department will request assistance by contacting personnel in the following order:

1) Park Dispatch

830-868- 7128 ext. 231
830-868- 7207 (Home)
Radio -401 (Park Head Quarters)

2) Chief Ranger
830-868- 7128 ext. 232
830-868-7884(Home)
830-385-1363(Cell)
Radio 500

3) Park Fire Management Officer
830-868- 7792 (Work)
830-868-2644 (Home)
830-385-1361 (Cell)
Radio 511

B. Fire off Park Lands:

1. In the event of a wildland fire, the Park agrees to:

a. Respond to the fire, when called by the requesting Department, with available qualified fire personnel and equipment, unless the absence of this equipment from the Park would put the Park at risk.

b. Cooperate with Department personnel in suppression of the fire.

c. Recognize the first fire unit on the scene as Incident Command.
The Incident Commander will be passed to a qualified representative of the jurisdiction in which the fire occurs. 911 responding fire and emergency units will obtain briefings and assignments from Incident Command prior to taking suppression action.

2. The Department agrees to:

a. Establish a clear command structure and provide orders and instructions to Park personnel.

b. Consult with Park Superintendent or designated representative if the fire threatens Park administrated property.

c. Recognize the first fire unit of the scene as Incident Commander, Incident Command will be passed to a qualified representative of the jurisdiction in which the fire occurs. All responding fire and emergency units will obtain briefings and assignments from Incident Command prior to taking suppression actions:
Suppression personnel/equipment will be activated as follows:
1. Park will request assistance by contacting the Department dispatcher at 868 - 7104 OR 911 (Johnson City).

3. Department will request assistance by contacting personnel in the following order:

a. Park Dispatch
830-868-7128 ext. 231
830-868- 7207 (Home)
Radio- 401 (Park Head Quarters)

b. Chief Ranger
830-868- 7128 ext. 232
830-868- 7884 (Home)
830-385-1363 (Cell)
Radio- 500

c. Park Fire Management Officer
830-868-7792
830-868-2644(Home)
830-385-1361 (Cell)
Radio- 511

ARTICLE III - STATEMENT OF WORK:

The term of this **GA** is five (5) years, commencing upon the date of signature of the final signatory party to the **GA**.

IV. General Provisions:

A. The Park and Department mutually agree to the following:

1. In the execution of this GA, employees or agents of the Department are not considered employees of the Park or NPS.

2. The Park shall not be obliged to make any expenditure under this GA in excess of funds appropriated by the Congress of the United States and administratively allocated by the NPS for the performance of this GA.

3. The Park and Department waive all claims against each other for compensation for any loss, damage, personal injury or death occurring in consequence of the performance of this GA.

4. All suppression-qualified personnel will be physically fit.

5. The respective parties will provide personal protection equipment to this GA.

ARTICLE IV - KEY OFFICIALS (NPS AND OTHER PARTY)

1. The Chief Ranger is designated by the Superintendent to have the authority and responsibility for managing this **GA** on behalf of the Park.

2. The Chief of Johnson City Volunteer Fire Department has the authority and responsibility for managing this **GA** on behalf of the Department.

C. Agreement Evaluation:

The parties will jointly review the results of this MOU at the end of each calendar year. The GA may be amended at any time by the written mutual consent of the parties. The approved amendment will immediately become part of this GA.

1. The Park will solicit and accept recommendations from the Department command personnel in suppression and rescue procedures, insofar as they do not conflict with Park/NPS policies. For purposes of this GA, the Department command personnel are:

   a. James Dildine, President
   b. Todd Kneese, Chief

2. The Department will solicit and accept recommendations from the Park command personnel in suppression and rescue procedures, insofar as they do not conflict with Department policies. For purposes of this GA, the Park command personnel are:

   a. Brian Carey, Chief Ranger
   b. Drew Gilmour, Fire Management Officer

ARTICLE V - PROPERTY UTILIZATION

Property furnished by the Government or acquired by the other party to the agreement shall be used and disposed of as set forth in the NPS Property Management " Regulations. (State not applicable, if no provisions for property are required).

ARTICLE VI - PRIOR APPROVAL, IF APPLICABLE

ARTICLE VII - REPORTS AND/OR DELIVERABLES, IF APPLICABLE

A. Each Party is responsible for its respective time- keeping and other required records and reports as required by respective agency policy

ARTICLE VIII - TERMINATION

A. This GA may be terminated by either party by providing sixty (60) days advanced written notice to the other party.

ARTICLE IX STANDARD CLAUSES

1. Civil Rights
During the performance of this agreement, the participants agree to abide by the terms of Executive Order 11256 on nondiscrimination and will not discriminate against any person because of race, color, religion, sex or national origin. The participants will take affirmative action to ensure that applicants are employed without regard to their race, color, religion, sex or national origin

2. Officials Not to Benefit
No member or delegate to Congress, or resident Commissioner, shall be admitted to any share or part of this agreement, or to any benefit that may arise there from, but this provision shall not be construed to extend to this agreement if made with a corporation for its general benefit.

3. Promotions
The Johnson City Volunteer Fire Department shall not publicize, or otherwise circulate, promotional material such as advertisements, sales brochures, press releases, speeches, still and motion pictures, articles, manuscripts or other publications) which states or implies Governmental, Departmental, bureau or Government employee endorsement of a product, service, or position which the (party represents. No release of information relating to this agreement may state or imply that the Government approves of the (party's) work product, or considers the party's) work product to be superior to the other products or services.

4. Public Information Release
(Party) must obtain prior government approval from the Johnson City Volunteer Fire Department for any public information releases which refer to the Department of the Interior, any bureau, park unit, or employee (by name or title), or this agreement. The specific text, layout, photographs, etc., of the proposed release must be submitted with the request for approval.

ARTICLE X – AUTHORIZING SIGNATURES

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

NATIONAL PARK SERVICE	JOHNSON CITY VOLUNTEER FIRE DEPARTMENT
Signature: Leslie Starr Hart	Signature: James R. Dillane
Name: LESLIE STARR HART	Name: James R. Dillane
Title: SUPERINTENDENT	Title President
Date: 03/31/03	Date: 03-12-2003
Signature: Mark L Wagner	Signature: Todd Knecse
Name: Mark L Wagner	Name: TODD KNEESE
Title: Contract Specialist	Title: CHIEF
Date: 4/2/03	Date: 03/12/03

C. Fredericksburg Volunteer Fire Department

A44

I. GA-7350-3-000-3

December 17, 2002

General Agreement

Between

LYNDON B. JOHNSON NATIONAL HISTORICAL PARK

and

FREDERICKSBURG VOLUNTEER FIRE DEPARTMENT

Article I - BACKGROUND AND OBJECTIVES

A. Purpose

1. The purpose of this General Agreement (hereinafter GA) is to provide personal services and equipment required for structural and wildland fire prevention/suppression and the protection of life and property from fire on lands administered by Lyndon B. Johnson National Historical Park (hereinafter Park) and to nearby prevention agencies.

B. Authority:

1. The statutes found at 42 U.S.C. 1856-1856d and 16 U.S.C. 1b(l) provide authority for the National Park Service (hereinafter NPS) to enter into reciprocal agreements and to render emergency fire fighting and cooperative assistance to nearby fire prevention agencies to extinguish fires and preserve life and property .

2. The Chief of the Fredericksburg Volunteer Fire Department (hereinafter Department) has signature authority to enter into agreements with the Park regarding fire prevention and suppression services on Park administered lands.

3. The Park Superintendent has signature authority to enter into agreements

with the Department regarding fire prevention and suppression services on Park administered lands and to provide reciprocal assistance.

ARTICLE II STATEMENT OF WORK

A. Fire on Park Lands:

1. In the event of a structural or wildland fire, the Department agrees to:

a. Respond to the fire with a minimum of one Engine unit (if available) and crew with safety and fire fighting equipment, unless the absence of this equipment from the city would put the city of Fredericksburg at risk.

b. Cooperate with the park staff in the immediate suppression of the fire.

c. Recognize the first fire unit on the scene as Incident Command. Incident Command will be passed to a qualified representative of the jurisdiction in which the fire occurs. All responding fire and emergency units will obtain briefings and assignments from Incident Command prior to taking suppression action.

d. Recognize that Park/NPS policies and requirements may necessitate special or unique fire fighting procedures that may differ from Department procedures. The Department will adhere to Park/NPS requirements when requested to do so by the Park Superintendent or designated representative. For purposes of this GA, the following persons will be considered, in descending order as the Superintendent's designated representatives:

1) Brian Carey, Chief Ranger

2) Drew Gilmour, Park Fire Management Officer

2. The Park agrees to:

a. Provide qualified wildland fire fighting personnel with safety and fire fighting equipment.

b. Cooperate and coordinate with the Department personnel in suppression and rescue activities.

c. Recognize the first fire unit on the scene as Incident Command. Incident Command will be passed to a qualified representative of the jurisdiction in which the fire occurs. All responding fire and emergency units will obtain briefiI1gs and assignments from Incident Command prior to taking suppression action.

3. Operations: Suppression personnel/equipment will be activated as follows:

   a. Park will request assistance by contacting the Department Dispatcher at 911.

   b. Department will request assistance by contacting personnel in the following order:

      1) Park Dispatch
      830-868- 7128 ext. 231
      830-868- 7207 (Home)
      Radio -401 (Park Head Quarters)

      2) Chief Ranger
      830-868- 7128 ext. 232
      830-868-7884(Home)
      512-658-7669(Cell)
      Radio 500

      3) Park Fire Management Officer
      830-868- 7792 (Work)
      830-868-2644 (Home)
      512-658-7837 (Cell)
      Radio 511

B. Fire off Park Lands:

1. In the event of a wildland fire, the Park agrees to:

   a. Respond to the fire, when called by the requesting Department, with available qualified fire personnel and equipment, unless the absence of this equipment from the Park would put the Park at risk.

   b. Cooperate with Department personnel in suppression of the fire.

   c. Recognize the first fire unit on the scene as Incident Command. The Incident Command will be passed to a qualified representative of the jurisdiction in which the fire occurs. All responding fire and emergency units will obtain briefings and assignments from Incident Command prior to taking suppression action.

2. The Department agrees to:

   a. Establish a clear command structure and provide orders and instructions to Park personnel.

b. Consult with Park Superintendent or designated representative if the fire threatens Park administrated property.

c. Recognize the first fire unit on the scene as Incident Commander. Incident Command will be passed to a qualified representative of the jurisdiction in which the fire occurs. All responding fire and emergency units will obtain briefings and assignments from Incident Command prior to taking suppression actions: Suppression personnel/equipment will be activated as follows:

1. Park will request assistance by contacting the Department dispatcher at (830) 997-8080 or 911

2. Department will request assistance by contacting personnel in the following order:

a. Park Dispatch
830-868-7128 ext. 231
830-868- 7207(Home)
Radio- 401 (Park Head Quarters)

b. Chief Ranger
830-868-7128 ext. 232
830-868-7884 (Home)
512-658-7669 (Cell) Radio- 500

c. Park Fire Management Officer
830-868-7792
830-868-2644(Home)
512-658-7837(Cell)
Radio- 511

ARTICLE III - STATEMENT OF WORK:

The term of this GA .is five (5) years, commencing upon the date of signature of the final signatory party to the GA.

IV. General Provisions:

A. The Park and Department mutually agree to the following:

1. In the execution of this GA, employees or agents of the Department are not considered employees of the Park or NPS.

2. The Park shall not be obliged to make any expenditures under this GA in excess of funds appropriated by the Congress of the United States and administratively allocated by the NPS for the performance of this GA.

3. The Park and Department waive all claims against each other for compensation for any loss, damage, personal injury or death occurring in consequence of the performance of this GA.
4. All suppression qualified personnel will be physically fit.

5. Personal protection equipment will be provided by the respective parties to this GA.

ARTICLE IV - KEY OFFICIALS (NPS AND OTHER PARTY)

1. The Chief Ranger is designated by the Superintendent to have the authority and responsibility for managing this GA on behalf of the Park.

2. The Chief of Fredericksburg Volunteer Fire Department has the authority and responsibility for managing this GA on behalf of the Department.

C. Agreement Evaluation:

The parties will jointly review the results of this MOU at the end of each calendar year. The GA may be amended at any time by the written mutual consent of the parties. The approved amendment will immediately become part of this GA.

1. The Park will solicit and accept recommendations from the Department command personnel in suppression and rescue procedures, insofar as they do not conflict with Park/NFS policies. For purposes of this GA, the Department command personnel are:

   a. Steve Evens, Chief

   b. Steve Olfers, Assistant Chief

2. The Department will solicit and accept recommendations from the Park command personnel in suppression and rescue procedures, insofar as they do not conflict with Department policies. For purposes of this GA, the Park command personnel are:

   a. Brian Carey, Chief Ranger

   b. Drew Gilmour, Fire Management Officer

ARTICLE V - PROPERTY UTILIZATION

Property furnished by the Government or acquired by the other party to the agreement shall be used and disposed of as set forth in the NPS Property Management Regulations. (State not applicable, if no provisions for property are required).

ARTICLE VI - PRIOR APPROVAL, IF APPLICABLE

ARTICLE VII - REPORTS AND/OR DELIVERABLES, IF APPLICABLE

A. Each Party is responsible for its respective time- keeping and other required records and reports as required by respective agency policy

ARTICLE VIII - TERMINATION

A. This GA may be terminated by either party by providing sixty(60) days advanced written notice to the other party.

ARTICLE IX - STANDARD CLAUSES

1. **Civil Rights**
During the performance of this agreement, the participants agree to abide by the terms of Executive Order 11256 on nondiscrimination and will not discriminate against any person because of race, color, religion, sex or national origin. The participants will take affirmative action to ensure that applicants are employed without regard to their race, color, religion, sex or national origin

2. **Officials Not to Benefit**
No member or delegate to Congress, or resident Commissioner, shall be admitted to any share or part of this agreement, or to any benefit that may arise there from, but this provision shall not be construed to extend to this agreement if made with a corporation for its general benefit. .

3. **Promotions**
The Fredericksburg Volunteer Fire Department shall not publicize, or otherwise circulate, promotional material such as advertisements, sales brochures, press releases, speeches, still and motion pictures, articles, manuscripts or other publications) which states or implies Governmental, Departmental, bureau or Government employee endorsement of a product, service, or position which the (party represents. No release of information relating to this agreement may state or imply that the Government approves of the (party's) work product, or considers the party's) work product to be superior to the other products or services.

4. **Public Information Release**
(Party) must obtain prior government approval from the Fredericksburg Volunteer Fire Department for any public information releases which refer to the Department of the Interior, any bureau, park unit, or employee (by name or title), or this agreement. The

specific text, layout, photographs, etc., of the proposed release must be submitted with the request for approval.

ARTICLE X – AUTHORIZING SIGNATURES

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

NATIONAL PARK SERVICE

Signature: [signature]
Name: LESLIE STRAN HART
Title: SUPERINTENDENT
Date: 5/8/03

Signature: [signature]
Name: Marsha L. Unger
Title: Contract Specialist
Date: 7/8/03

FREDERICKSBURG VOLUNTEER FIRE DEPARTMENT

Signature: [signature]
Name: JON DERRICK
Date: APRIL 11, 2003

Signature: [signature]
Name: STEVE EVANS
Title: CHIEF
Date: 4-16-03

D. Big Thicket National Preserve (SE Texas Fire Cluster)

January, 2001

INTERPARK AGREEMENT
between
Big Thicket National Preserve
and
Lyndon B. Johnson National Historical Park

ARTICLE I. PURPOSE

The purpose of this agreement is to define the mutual fire responsibilities of Big Thicket National Preserve's fire staff (**Preserve**) and staff at Lyndon B. Johnson National Historical Park (**LYJO**).

ARTICLE II. RESPONSIBILITIES

The duties of the **Preserve** will include providing, as requested and required, professional and technical support to the fire management program of **LYJO**. The performance of these responsibilities will be based on communications between the area superintendents, the **Preserve**'s Fire Management Officer (FMO), and other staff as appropriate.

A. Specific responsibilities of the **Preserve** include:

1. Assists in development and implementation of prevention, suppression, rehabilitation, and aviation programs with appropriate staff through site visits, program reviews, inspections, budget formulation, and training.

2. Assists in coordination of reports, correspondence, and preparation/review of fire management plans and aviation plans, and participates in fire management planning as requested.

3. Assists in coordination and implementation of planned ignitions, fire effects monitoring, smoke management, fire ecology**,** and research programs in accordance with park fire management plans.

4. Coordinates mobilization of **LYJO** personnel to interagency fire assignments through appropriate zone coordination centers.

5. Develops, coordinates, conducts and issues performance task books for fire-related training as necessary to meet the wildland fire needs of **LYJO** and interagency commitments according to approved fire management plans and zone, cluster, regional and national guidelines. Assists IMR Fire Management Staff in the identification and certification of individuals for development in overhead positions.

6. Manages fire qualification/training records in the National Park Service Wildland Fire Computer System, including: initial record input; updating fitness scores, training, record transfer, experience, and instructor records, and issues incident qualification cards.

7. Communicates with **LYJO** on issues and concerns prior to representing **LYJO** at meetings, conferences, seminars, and other functions as requested and required.

8. Coordinates **LYJO's** role in the 'zone' interagency fire community; developing interagency agreements, cooperative agreements, and other agreements necessary for wildland fire management activities.

9. Provides **LYJO** with daily situation and fire weather reports as requested during the identified fire season or in support of management ignited bum projects. Participates in the overall fire management of **LYJO** and of the NPS by sharing trained and available personnel upon request.

B: Specific responsibilities of **LYJO** include:

1. Designates a collateral duty Fire Management Officer who will request program assistance, budget, supplies, and training needs through the **Preserve** FMO with sufficient lead-time to meet due dates, set-up meetings, etc.

2. Submits personnel updates, physical fitness scores, individual fire reports (DI-1202), situation reports, physical exam records, and information following established times and due dates. **LYJO** FMO will be responsible for advising **LYJO** management of the fire readiness levels identified in the park's fire management plan and coordinating the necessary staffing levels and equipment preparedness.

3. Notifies the **Preserve** FMO as soon as practical of any fire restrictions, closures, fire occurrences, or support actions.

4. Participates in the overall fire management of the **Preserve** and of the NPS by sharing trained and available personnel upon request.

ARTICLE IV. FUNDING

1. Program costs (travel/per diem, communications, supplies & materials, etc.) incurred by the **Preserve** will be charged to appropriate FIREPRO accounts. If personnel are working on a project that has been individually funded, the personnel may be paid from appropriate project funds.

2. The **Preserve's** annual budget request will identify supplemental support for **LYJO** - i.e.: physical exams, PPE, training, cache items, travel, hazard fuel reduction projects, etc.

ARTICLE V. REPORTS

The **Preserve** will supply trip reports, situation and weather reports, personnel file information, or other pertinent reports to **LYJO** as requested.

ARTICLE VI. TERM OF AGREEMENT

The term of this Agreement will be five (5) years, beginning in CY 2001. It is renewable at the end of each five-year period by a letter of agreement signed by each superintendent.

Amendments to or cancellation of this Agreement can be made at any time subject to the written concurrence and approval of each superintendent.

_____ _____

Superintendent, Lyndon B. Johnson National Historical Park Date

_____ _____

Superintendent, Big Thicket National Preserve Date

E. Texas Interagency Agreement

MEMORANDUM OF UNDERSTANDING

BETWEEN

U.S. FISH AND WILDLIFE SERVICE
REGION 2

AND
NATIONAL PARK SERVICE
INTERMOUNTAIN REGION

AND
TEXAS FOREST SERVICE

AND
THE NATURE CONSERVANCY,
TEXAS CHAPTER

AND
NATIONAL FORESTS AND GRASSLANDS
IN TEXAS

I. INTRODUCTION:

Federal and State Land management agencies have an obligation to provide for public protection from wildfire, and other "all risk" type incidents such as hurricanes, floods, and acts of terrorism. In turn, private conservation agencies, such as the Nature Conservancy that maintain fire management organizations and equipment, are in a unique position to provide certain assistance in the event of wildfires, floods, and hurricanes. These organizations also have responsibilities to sustain diverse and productive ecosystems. These ecosystems provide cultural, scientific and recreational needs for a diverse cross-section of Americans. In order to meet these responsibilities, agencies must work together, and when possible, provide support to other agencies in their conservation efforts.

II. PURPOSE:

The purpose of this MOU is to provide mutual support, cooperation and assistance between the U. S. Fish and Wildlife Service Region 2, Texas Forest Service, National Park Service Intermountain Region, National Forests and Grasslands in Texas, and The Nature Conservancy, Texas Chapter for prescribed fire management; fire prevention; fire preparedness; and for emergency management and assistance on incidents such as

wildfire, floods, and hurricanes, at no cost to the benefiting agency. Support and assistance in the event of acts of terrorism will apply only to the Federal and State agencies and will not apply to the Nature Conservancy, Texas Chapter. This MOU will also provide for technical support, and will allow each party to obtain equipment and appropriate personal safety items as necessary to ensure the safety of employees participating in interagency incident management efforts.

III. AUTHORITY:

This MOU is entered into under the authority provided in:

Reciprocal Fire Protection Act of May 27, 1955 (69 Stat. 66; 42 U.S.C. 1856a) (F&WS, NPS, USFS)

Disaster Relief Act of May 22, 1974 (NPS)

Organic Act of August 1916 (16USC1) (NPS)

Cooperative Forestry Assistance Act (16USC 2101) (USFS)

Federal Grant and Cooperative Agreement Act of 1977 [P.L. 960224, as amended by P.L. 97-258, September 13, 1982 (96 Stat. 1003;31 U.S.C. 6301 thru 6308)] (NPS)

Vernon's Texas Civil Statutes (Sub Chapter B. Section 88.106) (TFS)

IV. STATEMENT OF MUTUAL BENEFIT:

State and private lands, for which the State of Texas is responsible for protection, Nature Conservancy lands in Texas, for which the Conservancy is responsible, and Federal lands for which the Federal government is responsible, are intermingled and adjacent to each other throughout the State of Texas. Emergency incidents and their management, on these lands for which one agency is responsible for may present a threat to, or affect, lands for which the other agency is responsible.

Management of prescribed fire, wildland fire, or other emergency incidents, on one or another of the parties' land, could require greater resources and expertise than that party can handle. It is in the best interest of each party to have available service from the other party to aid and assist them in management of, preparation for, and response to, these incidents.

It is to the mutual advantage of the U.S. Fish and Wildlife Service, State of Texas, National Park Service, The Nature Conservancy Texas Chapter, and U.S. Forest Service

to coordinate efforts for prevention, training for, detection, and suppression of wildfires; and management and training for other incidents and similar projects, to limit duplication and to improve efficiency and effectiveness.

It is the intent of the parties hereto that State, Federal, and Nature Conservancy's Texas Chapter, resources be available to assist in the above activities on each others' lands, and on other lands upon which the Federal government provides fire suppression support including other States, Canada, and Mexico; and with non-fire state and national emergencies and logistical support activities in this state and other states.

Each party will have the benefit of utilizing personnel and equipment of the other party as available at no cost for the first operational period, other than optional reimbursement for use of aircraft. (After the first operational period, costs would be reimbursable if covered in a separate Agreement.) Also, each can obtain training, equipment and services from the other that may not be otherwise available.

V. RESPONSIBILITIES:

1. Each party will designate a contact person for the implementation of this Memorandum of Understanding.
2. Each party may request prescribed fire management; fire prevention; fire preparedness or other emergency incident management resources from the other as necessary to meet management goals.
3. Each party may, at their discretion and upon mutual consent, participate in prescribed fife management; fire prevention; fire preparedness; and emergency incident management operations of another party, to foster knowledge and experience; and to further cooperation between organizations.
4. Personnel and equipment may be provided from one party to another as requested. Request and dispatch of personnel and equipment shall be at the discretion of the affected agency receiving the request.
5. Each party will provide for salary or wage costs of its own employees and operate and maintain its own equipment.
6. All personnel shall meet the qualification standards of the National Wildfire Coordinating Group for the positions that they will occupy.
7. Each agency may install the others radio frequency in its radios for use in cooperative activities. All federal licensing requirements will be followed.

VI. AGREEMENT TERM:

This MOU will remain in force for a period of five years from the date of execution.

VII. SPECIAL PROVISIONS

A. This MOU is for the purpose of creating a cooperative effort among the parties, and shall not be construed as obligating funds, staff or other resource: of one party to another party. This MOU is neither a fiscal nor a funds obligation document. Any endeavor involving reimbursement or contribution of funds between parties of this MOU will be handled by separate agreement (except as otherwise provided in this MOU) in accordance with applicable laws, regulations and procedures.

B. This MOU may be modified or amended as necessary upon written consent of all parties or may be terminated by any party after providing 60 day written notice to the other parties.

C. Property or equipment provided by one party to another party, pursuant to this agreement, remains the property of the providing party, unless a written agreement to the contrary is prepared.

D. Each party will be responsible for its actions, and the actions of its employees. The activities performed under this MOU shall be performed entirely at each parties own risk. Each party releases the other parties from the actions of its own employees. Each party waives all claims against every other party to this agreement for compensation from any loss, damage, personal injury, or death occurring as a consequence of the performance of this agreement.

E. Other fire management organizations, with state level responsibilities, may be added to this MOU upon agreement by the original signing parties, and signature of the responsible official for the new organization.

F. Modifications to this MOU may be processed by the Texas Forest Service as requested by any of the partner agencies. The Texas Forest Service will promptly communicate any proposed modifications to all parties to this agreement. Changes will not take effect until signed by all parties.

G. The designated contacts for this MOU are:

1. U.S. Fish and Wildlife Service
   Jeff Whitney
   Regional Fire Management Coordinator
   P.O. Box 1306
   Albuquerque, NM 87103
   505-248-6865

2. National Park Service
   Bob Lineback

Wildland Fire Specialist
P.O. Box 728
Santa Fe, NM 87504
505-988-6018

3. Texas Forest Service
   Mark Stanford
   Chief, Fire Operations
   P.O. Box 310
   Lufkin, TX 75902
   936-639-8130

4. The Nature Conservancy of Texas
   Wendy Ledbetter
   Big Thicket Project Director
   3888 Hwy. 327
   West Silsbee, Texas 77656
   409-385-0445

5. U.S. Forest Service
   Ron Haugen
   Fire Management Officer
   701N. First Street
   Lufkin, TX 75901
   936-639-8547

In Witness Whereof, the parties have caused this Memorandum of Understanding to be executed as of the date of last signature below:

APPROVED:

U.S. FISH AND WILDLIFE SERVICE
REGION 2

BY: _____
Regional Director

Geoffrey Haskett
Signature

March 5, 2004
Date

NATIONAL PARK SERVICE
INTERMOUNTAIN REGION

BY: Steve Martin
IMR Regional Director

Signature

3/23/04
Date

TEXAS FOREST SERVICE

BY: James B. Hull
Director

Signature

5-17-2004
Date

THE NATURE CONSERVANCY,
TEXAS CHAPTER

BY: Carter Smith
State Director

Signature

July 5, 2004
Date

U.S. FOREST SERVICE

BY: Fred S. Salinas
Forest Supervisor

Fred S. Salinas
Signature

May 27, 2004
Date

Appendix F

LYJO Fire Effects Monitoring Plan

Fire monitoring at LYJO will include fire behavior/weather observations, immediate post-fire effects, and long-term fire effects.

Fire Weather and Behavior Observations

A fire effects monitor (FEMO) will be assigned to each prescribed fire on the park. The monitor will collect and record fire behavior during and weather immediately prior, during, and immediately after each prescribed burn conducted on the park. A photographic record will also be taken during the burn to document fire behavior. These records will be compiled into a "Fire Behavior and Weather Report" and turned into the burn boss. Copies of this report and the burn narrative will be provided to the park resource management staff to determine burn effectiveness and refine burn prescription parameters in the future.

Long Term Fire Effects Monitoring Plots

All monitoring plots will be located in the prairie restoration area of the Johnson City Fire Management Unit. Pastures burned for grazing improvement will not be monitored by fire staff.

Management Objectives

"Lyndon B. Johnson National Historical Park will use prescribed fire to accomplish some of the goals described in the Fire Management Plan. A fire monitoring program is essential in the Johnson City FMU in order to measure the effectiveness of prescribed fire in accomplishing these goals. Specifically, fire monitoring in the Prairie Restoration Area compartment will be helpful in evaluating the effects of fire on the progress of prairie restoration. Vegetative measurements such as species occurrence, species abundance, and species distribution are needed to evaluate efforts to restore native species of grasses and forbs and to eliminate non-native species of grasses and forbs. Monitoring of changes in the thickness of thatch and/or leaf litter will aid in measuring the effectiveness of prescribed fire in reducing biomass accumulation, which is essential for successful prairie restoration." (B. Carey, personal communication, January 26, 2004).

As more quantifiable prairie restoration objectives are defined by LYJO resource management staff they will be incorporated into this monitoring plan.

Monitoring Objectives

The long-term fire monitoring plots will be located in the prairie restoration area of the Johnson City FMU. The monitoring design listed below will provide relative and percent cover by species over time. A more specific monitoring objective section will be incorporated into this monitoring plan when more quantifiable prairie restoration objectives are defined by LYJO resource management staff.

Monitoring Design

This plot design will follow the protocol from the NPS Fire Monitoring Handbook (FMH). This can be found online at www.nps.gov/fire/ . Any questions or clarifications on protocol can be found in this document.

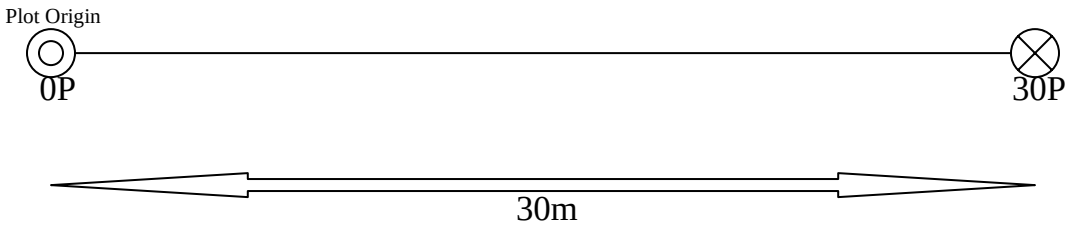
Site Selection **- Selection of plot locations will be random utilizing the grid method for origin point selection. Due to the small size of the monitoring area this method will be used as an initial guide and then adjusted until a suitable site is found. Plot rejection criteria will be developed to exclude external impacts from park roads, trails, and improvements.**

Plot Setup **- Plots will be a 30m point intercept transect at a random azimuth from the plot origin. A rebar stake will be used to mark the plot origin (0P) and end point (30P) and labeled with brass tags to identify them.**

Plot Measurement **- Measurement on the transects will follow the FMH protocol. A rigid plumb bob graduated into decimeters is held perpendicular to the ground every 30cm along the transect. Each species that touches the pole is recorded (only once per species) from the tallest to shortest. On a 30m plot there will be 100 points recorded.**

Photographs **– There will be two photos taken at each plot. One will be taken from 0P to 30P and another will be taken from 30P to 0P. Due to the small acreage of the monitoring unit no photos from a reference point will be taken.**

Plot Measurement Schedule **– Due to the quick burn return interval the monitoring schedule will be dictated by the burn schedule. Plots are planned to be read on a pre-burn, immediate post-burn and first year rotation.**



Data Storage and Analysis

Vegetation data will be collected on FMH-16 forms and all pictures will be taken using digital cameras. Data sheets and photographs will be stored both by BITH and LYJO with copies being stored by the regional fire ecologist in Denver. Analysis and electronic storage will be accomplished utilizing the NPS Fire Ecology Assessment Tool (FEAT) software when it is completed. Analysis and reports will be completed by the BITH fire ecologist and LYJO resource management staff.

Monitoring Responsibilities

Monitoring plots will be established and measured by BITH fire effects monitoring crew with the help of LYJO resource management staff. When available, LYJO will provide a person familiar with local vegetation to assist the BITH fire effects monitoring crew in plant identification.

Appendix G. Pre-Attack Plan

No specific pre-attack plans exist for Lyndon B. Johnson NHP. Volunteer fire departments have their own assessment protocols and procedures for initial attack. Historic structures will receive the highest priority during any suppression action. The Wildland Fire Prevention Analysis (Appendix L) lists specific prevention measures, such as mowing around structures, reducing hazardous fuel loads, and creating a fire breaks along SH 290.

1. Structural Protection Needs

   a) Johnson City District

      The area of threat to structures in the Johnson City District is within the Settlement. The greatest threat is from embers blowing into the buildings or onto the wooden roofs of the buildings. Structures in the Settlement are made either entirely of wood or of stone with wood roofs. Monitoring of winds during a fire is extremely important to assess this threat. Two hose reels, a pre-connected one-inch line and a hydrant, connected to the municipal water supply, are strategically located in the Settlement. When a structure is threatened these hose reels will be used to perform direct attack or wet down the structure. Fuels in the Johnson City District particularly the Johnson Settlement consists of mid to tall native grasses which at times can create high flame lengths. Grass around the structures is routinely mown to less than four inches for ease of visitor access and hazard reduction.

   b) Ranch District

      Most structures at the ranch, due to their construction materials and distance from fuels, will require only limited protection. Fuels in the Ranch District are predominately short to mid length grasses. Fuels in close proximity to structures are cut to a much shorter length and irrigated. Structures or fuels in the Ranch District should require no pretreatment in the event of a wildfire. Most structures can readily be protected by lawn sprinkler systems available at each location.

2. Medical Facilities

   Emergency access to local medical services is initially activated through the local 911 system. Stonewall First Responders and the Gillespie COUNTY EMS service the Ranch District. North Blanco COUNTY EMS services the Johnson City District. The nearest hospital is Hill Country Memorial Hospital, fifteen miles west of the Ranch District, in Fredericksburg TX.

3. Water Sources

   Both Districts have water hydrants and/or hose reels located throughout the districts. Locations are depicted on the base maps located at the end of this plan. In addition water is available for drafting from the Pedernales River and stock tanks in the Ranch District. Drafting would be secondary to hydrants as a source of water.

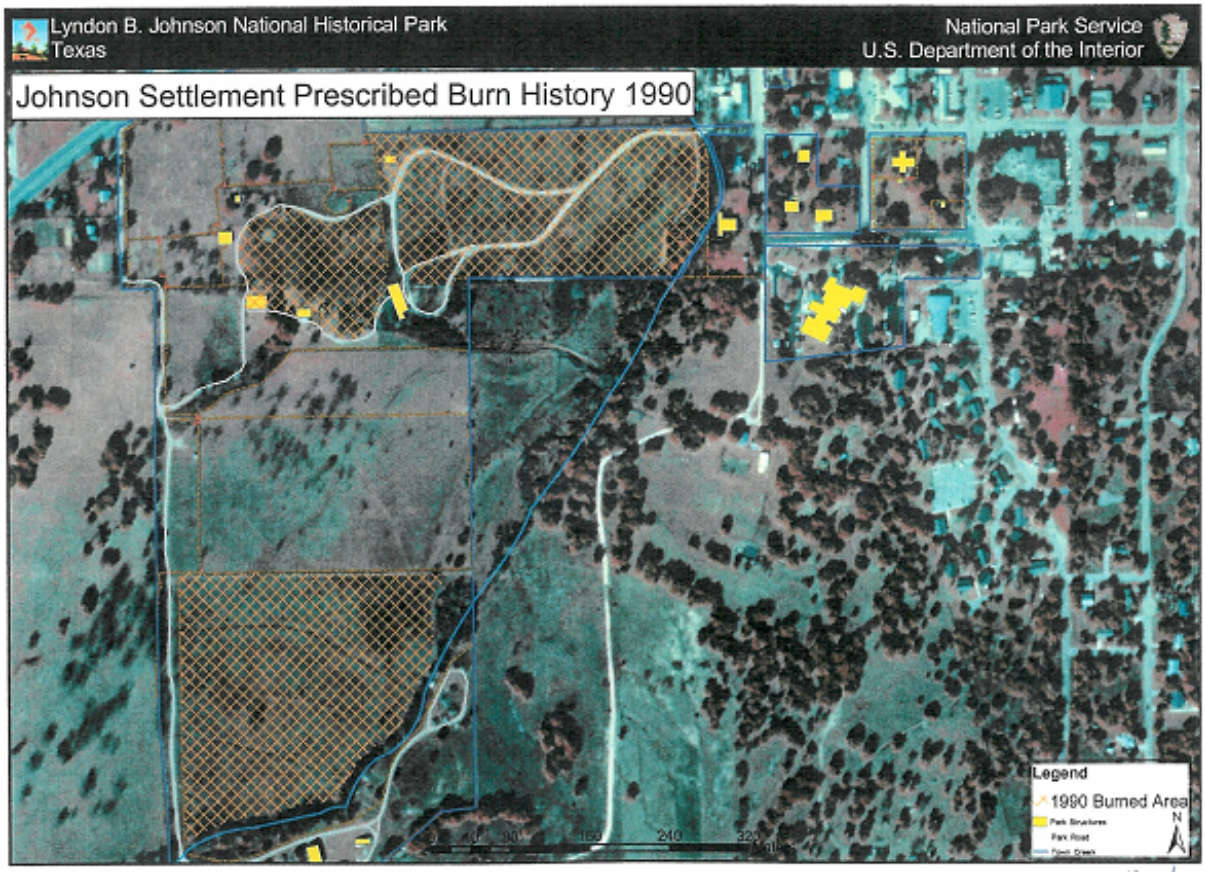
4. Control Lines/Safety Zones

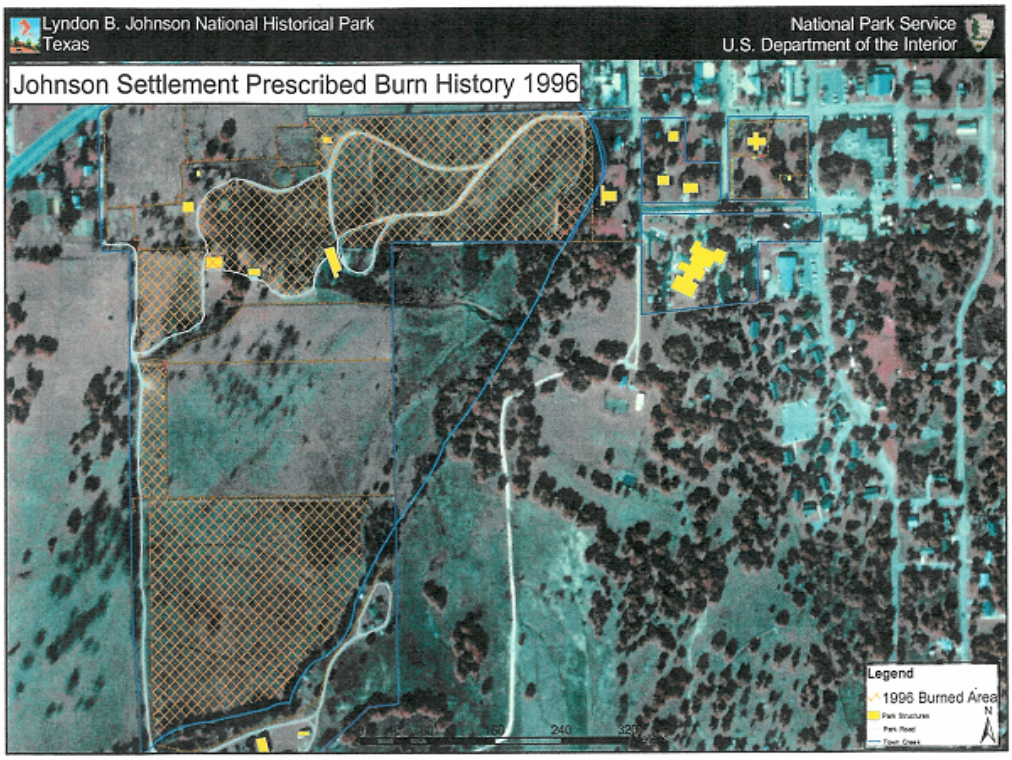
   The park is dissected by numerous roads and trails, which will be used not only for control of fires but as access to and from a fire. Maps are located in Appendix E.

Appendix H. History of LYJO Prescribed Burning Activity

Lyndon B. Johnson National Historical Park Prescribed Fire History

Prescribed Burns	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Johnson City FMU																
Back 40 (North)								Partial								
Back 40 (south)		X						X								
Buckner Barn (North)		X						X								
Buckner Barn (West)								X								
Praire Restoration	?	X				?		X		X						
LBJ Ranch FMU																
North Pasture	X															
Leaky Tank	X															
Little Tank	X															
Pecan Orchard	X															
Front Pasture	X															
River Bottom		X														
Wildfires (size)				0.2		1			0.1							




Lyndon B. Johnson National Historical Park
Texas
National Park Service
U.S. Department of the Interior
Johnson Settlement Prescribed Burn History 1996
Legend
1996 Burned Area
N

Appendix I. LYJO Five Year Fuels Treatment Plan

Lyndon B. Johnson National Historical Park Five Year Fuels Treatment Plan

Fuels Treatments Key
PB = Prescribed Burn M= Mechanical Shredding G=Grazing

Burn Units	2005				2006				2007				2008				2009			
	W	SP	SU	F	W	SP	SU	F	W	SP	SU	F	W	SP	SU	F	W	SP	SU	F
LBJ Ranch FMU																				
E. Barley Field	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
N. Bailey Field	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
S. Bailey Field	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
Pecan Orchard			M	G			M	G			M	G			M	G			M	G
Jordan River Bottom	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
S. River Bottom	G	G	M,G	G	G	G	M	G	G	G	M,G	G	G	G	M,G	G	G	G	M,G	G
E. Oat/Air Field	G	G,M	G	G	G	G,M	G	G	G	G,M	G	G	G	G,M	G	G	G	G,M	G	G
Fish Tank	G	G	M,G	G	PB	G	M,G	G	G	G	M,G	G	GP B	G	M,G	G	G	G	M,G	G
Hay Shed	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
Dales Trap	G	G	G	G	PB	G	G	G	G	G	G	G	GP B	G	G	G	G	G	G	G
Leaky Tank	G	G	G	G	PB	G	G	G	G	G	G	G	GP B	G	G	G	G	G	G	G
Little Tank	G	G	G	G	PB	G	G	G	G	G	G	G	B	G	G	G	G	G	G	G
West Barley Field			M				M				M				M				M	
HQ Coastal			M				M				M				M				M	

Lyndon B. Johnson National Historical Park Five Year Fuels Treatment Plan

Fuels Treatments Key
PB = Prescribed Burn M= Mechanical Shredding G=Grazing

Burn Units	2005				2006				2007				2008				2009			
Johnson City FMU																				
Praire Resoration		M				PB				PB				M				PB		
Horse/Steer Past.	G	G	G	G,M	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
Cabin area		M		M		M		M		M		M		M		M		M		M
Long Horn Past.	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
M. Long Horn Past.	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
S. Back 40		M				PB				PB				M				PB		
Bruckner Barn		M,G		G		PB		G		PB		G		M		G		PB		G
Back 40 Admin				M				M				M				M				M

Appendix J. Fire Prevention Plan

1. Objectives

   - To reduce the threat of human-caused fires through visitor and employee education.
   - To integrate the prevention message into interpretive programs.

2. Background

   A Wildland Fire Prevention Analysis (attached) was completed to determine the need and scope of the Wildland Fire Prevention Plan. The park was divided into three protection zones. Each zone was evaluated for the potential risk of wildfire ignition, hazards as related to fuels and topography, and values at risk. In the past ten years there have been four wildland fires within Lyndon B. Johnson NHP. Occurrence was evenly split between the two FMUs; one human and one lightning caused in each FMU. The two lightning caused fires were both contained at less than .1 of an acre. The two human caused fires were both contained at less than one acre. Power lines contacting tree limbs and shorting out caused the one human caused fire at the LBJ Ranch FMU. The one human caused fire at the Johnson City FMU was of unknown origin, but a faulty vehicle exhaust system is suspected.

3. Overview of Analysis Results

   Risk-of-Ignition was low to moderate based on types and amount of use and fire history. Hazard was moderate due to the fine flashy fuels found in all zones and topography. Values-at-Risk were low to high depending on the particular zone and the structures located within each zone.

3. General Actions

   During periods of high fire danger:

   - Fire prevention messages will be given to staff during tailgate safety meetings and squad meetings.
   - Fire prevention messages will be given to visitors during bus tours and posted at contact points throughout the park.
   - Mowed buffers will be maintained around wooden and other historic structures in the Johnson Settlement to reduce fuels.
   - Patrols will be more frequent.

4. Campfires and Smoking

   There will be no demonstration ‘campfires’ at the Johnson Settlement Chuckwagon or Cabin during high or extreme fire danger. Visitors will receive ‘no smoking’ messages from interpretive staff during periods of high fire danger at the Johnson Settlement and the LBJ Ranch. No other open fires, such as brush piles will be allowed during high or

extreme fire danger periods. Smoking at the Johnson Settlement is currently limited to the immediate vicinity of the Exhibit Center.

5. Responsible Persons:

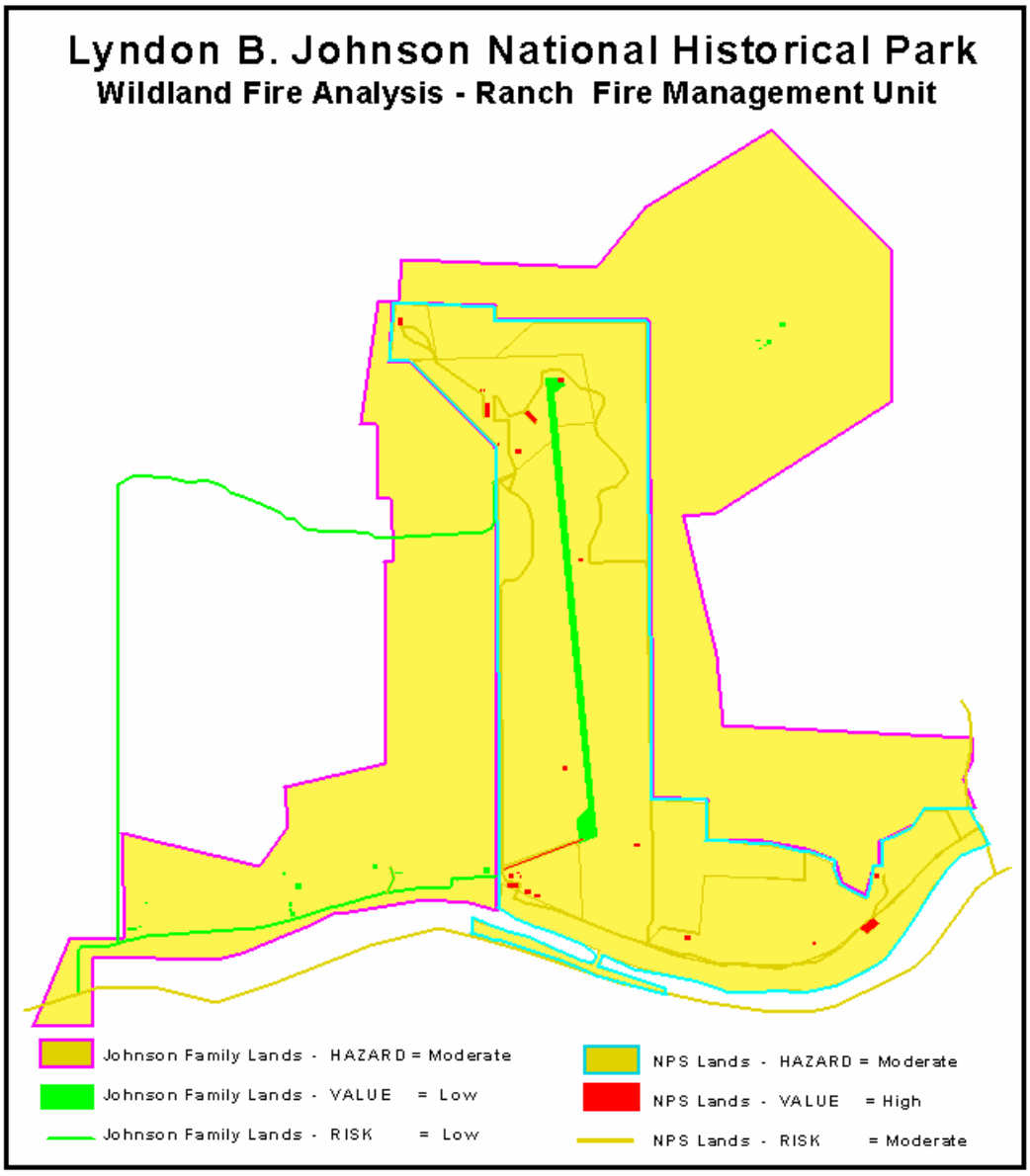
- Chief, RM&VP Division
- Chief, Interpretation and Education Division
- Collateral Duty Fire Management Officer

Wildland Fire Prevention Analysis

Risks, Hazards and Values are rated for three fire protection areas. Each category is rated as either low, medium, or high using the guidelines found in the NPS Wildland Fire Prevention Analysis Handbook.

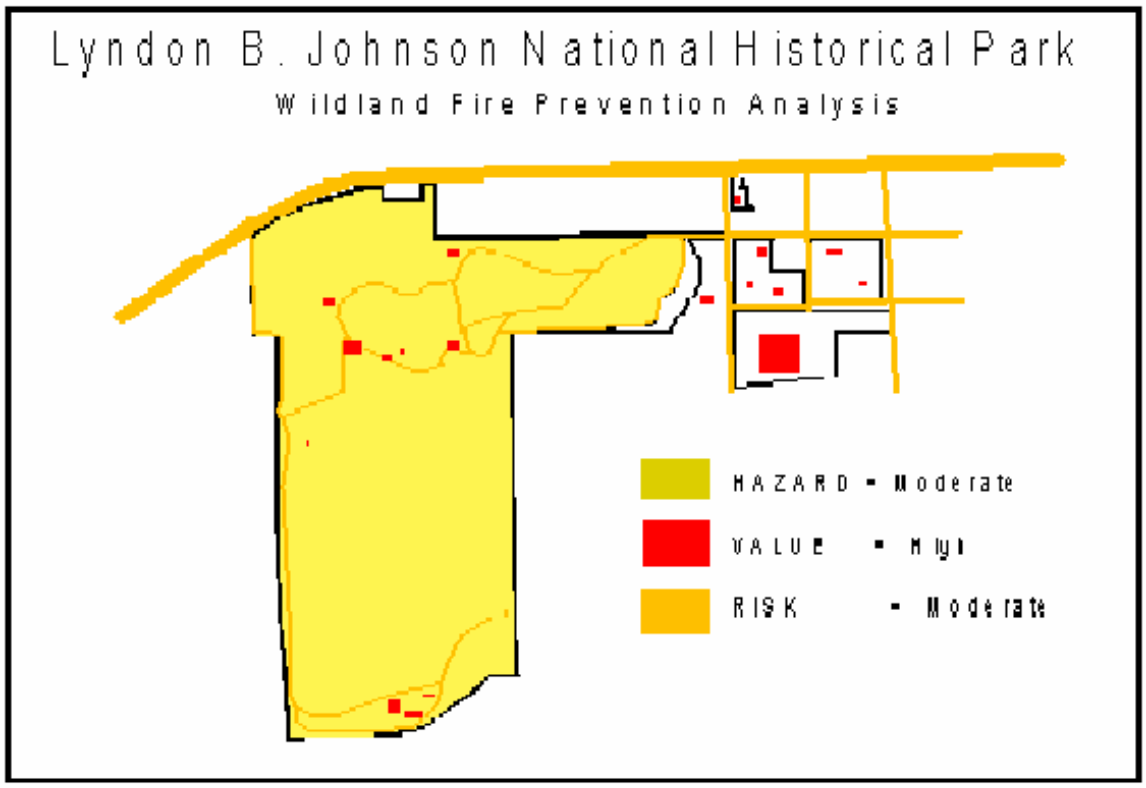
Fire Protection Zone #1 -		**LBJ Ranch FMU: Johnson Farm Historic Area and Texas White House Complex**
Risk:	**Moderate**	Area has concentrated employee use and park tour bus operations.
Hazard:	**Moderate**	Fine flashy fuels on gentle slopes. There are buffer zones of roads, airstrip and taxiway between fields and historic structures.
Value:	**High**	Close proximity to historic structures.

Fire Protection Zone #2 -		**LBJ Ranch FMU: Pastures**
Risk:	**Low**	Light employee use and very little visitor use. Most of the area is used for agricultural purposes (cattle, hay, and grain production).
Hazard:	**Moderate**	Scattered Live Oak and Cedar trees with fine flashy fuels on gentle slopes.
Value:	**Low**	Little development and few structures. Area surrounded by roads and the Pedernales River

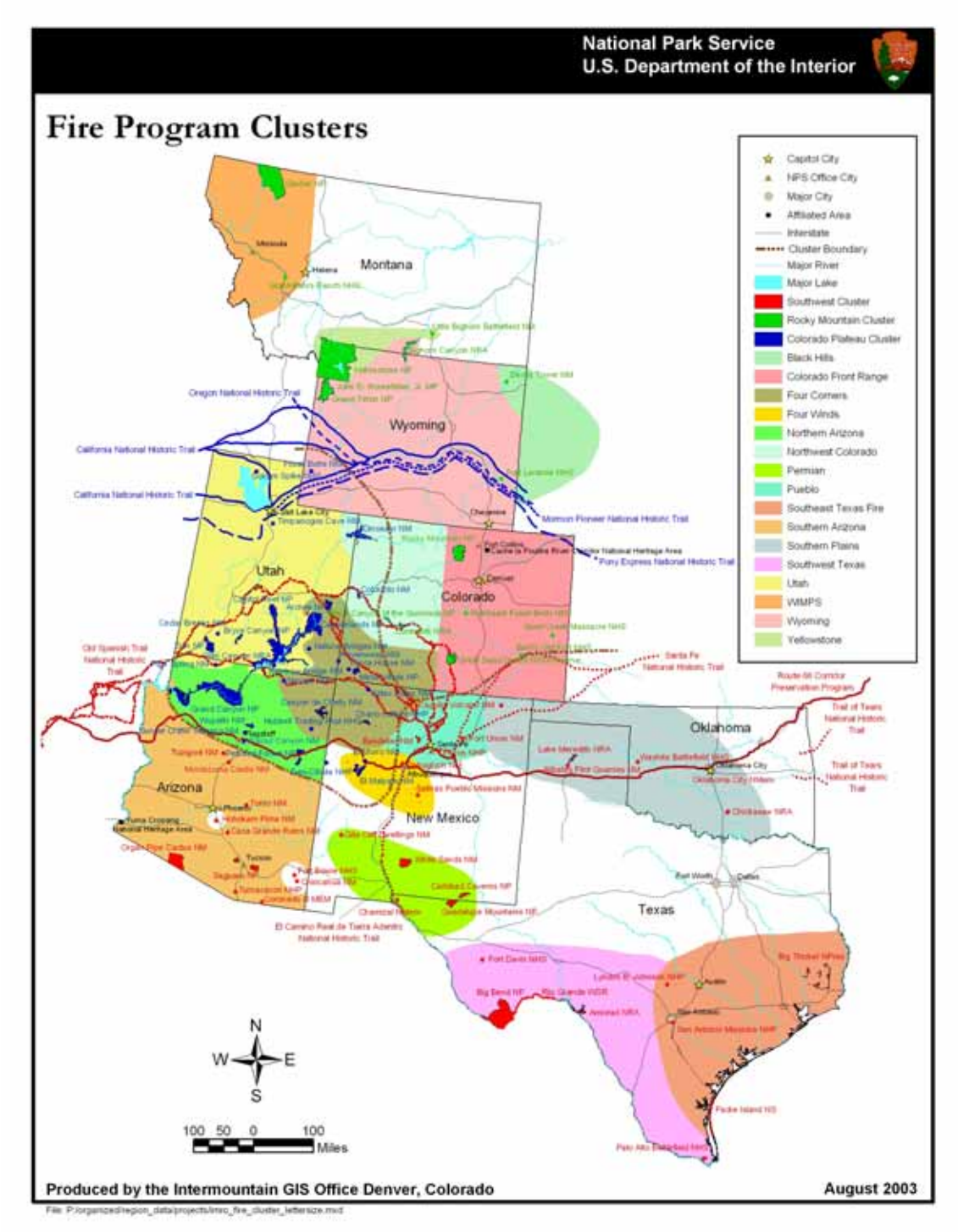

Lyndon B. Johnson National Historical Park
Wildland Fire Analysis - Ranch Fire Management Unit
Johnson Family Lands - HAZARD = Moderate
Johnson Family Lands - VALUE = Low
Johnson Family Lands - RISK = Low
NPS Lands - HAZARD = Moderate
NPS Lands - VALUE = High
NPS Lands - RISK = Moderate

Fire Protection Zone #3 - Johnson City FMU: Johnson Settlement

Risk:	**Moderate**	Day-use visitation only. Most visitors to the Johnson Settlement use a hiking trial for access. Access by vehicle is allowed for mobility impaired.
Hazard:	**Moderate**	Fine flashy fuels, heavy in areas, with widely scattered Live Oak and Pecan trees.
Value:	**High**	Significant historic structures; Johnson Log Cabin, Johnson Barn, Bruckner Barn, etc. Private housing borders park boundary.



Appendix K. NPS Intermountain Region Fire Program Clusters



Appendix L. 2001 Federal Wildland Fire Management Policy Compliance

1. SAFETY

Firefighter and public safety is the first priority. This Fire Management Plan and all activities described within reflect this commitment.

2. FIRE MANAGEMENT AND ECOSYSTEM SUSTAINABILITY

The fire management activities will be used to help achieve ecosystem sustainability, including its interrelated ecological, economic, and social components.

3. RESPONSE TO WILDLAND FIRE

The 2001 Federal Wildland Fire Management Policy considers fire a critical natural process to be integrated into land and resource management plans and activities on a landscape scale, and across agency boundaries. This Fire Management Plan authorizes prescribed fire treatments and wildfire suppression activities.

4. USE OF WILDLAND FIRE

The 2001 Federal Wildland Fire Management Policy states that wildland fire will be used to protect, maintain, and enhance resources and, as nearly as possible, be allowed to function in its natural ecological role. This Fire Management Plan does not allow the use of wildland fire for resource benefit.

5. REHABILITATION AND RESTORATION

Rehabilitation and restoration efforts will be undertaken to protect and sustain ecosystems, public health, and safety, and to help communities protect infrastructure.

6. PROTECTION PRIORITIES

The protection of human life is the single, overriding priority. Setting priorities among protecting human communities and community infrastructure, other property and improvements, and natural and cultural resources will be based on the values to be protected, human health and safety, and the costs of protection. Once people have been committed to an incident, these human resources become the highest value to be protected.

7. WILDLAND URBAN INTERFACE

The operational roles of federal agencies as partners in the Wildland Urban Interface are wildland firefighting, hazardous fuels reduction, cooperative prevention and education, and technical assistance. Structural fire suppression is the responsibility of tribal, State, or local governments. Federal agencies may assist with exterior structural protection activities under formal Fire Protection Agreements that specify the mutual responsibilities of the partners, including funding. Mutual Aid Agreements are in effect with Johnson City and the community of Stonewall.

8. PLANNING

Every area with burnable vegetation must have an approved Fire Management Plan. Fire Management Plans are strategic plans that define a program to manage wildland and prescribed fires based on the area's approved land management plan. Fire Management Plans must provide for firefighter and public safety; include fire management strategies, tactics, and alternatives; address values to be protected and public health issues; and be consistent with resource management objectives, activities of the area, and environmental laws and regulations.

This Fire Management Plan is a strategic plan that provides for firefighter and public safety, addresses values to be protected, public health issues, and is consistent with resource management activities, activities of the area, and is consistent with environmental laws and regulations.

9. SCIENCE

Fire Management Plans and programs will be based on a foundation of sound science. Research will support ongoing efforts to increase our scientific knowledge of biological, physical, and sociological factors. Information needed to support fire management will be developed through an integrated interagency fire science program. Scientific results must be made available to managers in a timely manner and must be used in the development of land management plans, Fire Management Plans, and implementation plans.

This Fire Management Plan is based upon, and utilizes, the best available science and relevant research available.

10. PREPAREDNESS

Agencies will ensure their capability to provide safe, cost-effective fire management programs in support of land and resource management plans through appropriate planning, staffing, training, equipment, and management oversight.

This Fire Management Plan provides guidance for safe, cost-effective fire management, supporting land and resource management plans through appropriate preparedness activities.

11. SUPPRESSION

Fires are suppressed at minimum cost, considering firefighter and public safety, benefits, and values to be protected, consistent with resource objectives.

12. PREVENTION

Lyndon B. Johnson NHP will work with partners and other affected groups and individuals to prevent unauthorized ignition of wildland fires.

13. STANDARDIZATION

Agencies will use compatible planning processes, funding mechanisms, training and qualification requirements, operational procedures, values-to-be-protected methodologies, and public education programs for all fire management activities.

Lyndon B. Johnson NHP is an active participant in, and contributor to, interagency planning processes, funding mechanisms, training and qualification requirements, operational procedures, and values-to-be-protected methodologies.

14. INTERAGENCY COOPERATION AND COORDINATION

Fire management planning, preparedness, prevention, suppression, fire use, restoration and rehabilitation, monitoring, research, and education will be conducted on an interagency basis with the involvement of cooperators and partners.

Lyndon B. Johnson NHP participates in interagency planning processes, including the Fire Program Analysis (FPA).

15. COMMUNICATION AND EDUCATION

Agencies will enhance knowledge and understanding of wildland fire management policies and practices through internal and external communication and education programs. These programs will be continuously improved through the timely and effective exchange of information among all affected agencies and organizations.

Lyndon B. Johnson NHP has an active public education program.

16. AGENCY ADMINISTRATOR AND EMPLOYEE ROLES

Agency administrators will ensure that their employees are trained, certified, and made available to participate in the wildland fire program locally, regionally, and nationally as the situation demands. Employees with operational, administrative, or other skills will support the wildland fire program as necessary. Agency administrators are responsible and will be held accountable for making employees available.

17. EVALUATION

Agencies will develop and implement a systematic method of evaluation to determine effectiveness of projects through implementation of the 2001 Federal Fire Policy. The evaluation will assure accountability, facilitate resolution of areas of conflict, and identify resource shortages and agency priorities.

Lyndon B. Johnson NHP develops and performs mechanical and prescribed fire treatments in coordination with the fire management staff at Big Thicket National Preserve. Regional and preserve staff provide program oversight.

Appendix M. Prescribed Burn Plan (to be developed)

Appendix N. Burned Area Emergency Stabilization and Rehabilitation Plan (to be developed)

Appendix O. Rental Equipment Agreements (add if developed)

Appendix P. Contracts for Suppressions and Prescribed Fire Resources (add if developed)