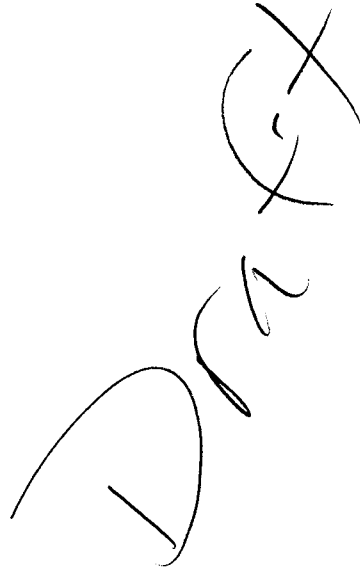


Finding of No Significant Impact

February 2002

A handwritten signature in black ink, appearing to be 'D. N. Smith', is written diagonally across the page.

***Wildland-Urban Interface
Fuels Management***

BIG THICKET

National Preserve - Texas

FINDING OF NO SIGNIFICANT IMPACT

WILDLAND-URBAN INTERFACE FUELS MANAGEMENT PROJECT

BIG THICKET NATIONAL PRESERVE

The Big Thicket National Preserve was established October 11, 1974 as the first preserve in the National Park System. The preserve consists of nine land units and six water corridors, encompassing more than 99,290 acres of land and water. The area is considered the biological crossroads of North America. A convergence of ecosystems occurred here during the last ice age, bringing together, in one geographical location, the eastern hardwood forests, the Gulf coastal plains, and the Midwest prairies. Its uniqueness lies in the juxtaposition of landforms and wildlife. For example, bogs occur near arid sand hills and eastern bluebirds nest near roadrunners. Historically the density of vegetation limited the use and settlement of the area by Native Americans and Europeans until the mid-1800s. The preserve receives approximately 60,000 visitors per year.

During much of the 20th century, total fire suppression on public lands was viewed as the most appropriate method to prevent widespread wildland fires. However, after decades of fire suppression, it became obvious that complete exclusion of fire did not promote ecosystem health. In fire-evolved systems, fuels accumulated that increased fire risk and had detrimental impacts on native flora and fauna. Following damaging fire seasons in 1988 and 1994, fire management policies for public lands were reviewed and updated. In 1995, the role of fire was reconsidered, and prescribed burns were reintroduced as a management tool on National Park Service lands. Reductions of fuel loads were planned to facilitate the control of wildfire. Current federal policy reinforces the protection of human life and property as an overriding principle in wildland fire management. Other guiding principles include protecting natural ecological systems and safeguarding cultural and natural resources.

A contributing factor to the amount of damage resulting from wildland fires has been the growth of communities in areas adjacent to public lands. Such development puts human life, homes, and other property at risk. Wildland-urban interface projects are intended to reduce the fire hazard in areas where developed areas adjoin wildlands.

The purpose of wildland-urban interface fuels management at Big Thicket National Preserve is to protect and preserve the resource values of the preserve for the enjoyment of present and future generations. This would include protection of human life and property within and adjacent to National Park Service lands.

To achieve these long-term goals, Big Thicket National Preserve has implemented a comprehensive fire management program. Actions within this program include, but are not limited to, fuels reduction, prescribed fire for resource benefit, and wildland fire suppression. The preserve's fire management plan recommends the use of prescribed fire on a 3-year rotational basis. However, high fuel levels presently exist in the 290-acre treatment area that is located within the 703 acre Hickory Creek Unit located in Tyler County, Texas.

PREFERRED ALTERNATIVE

The preferred alternative for the 290-acre treatment area addresses the high hazard associated with heavy fuel loads adjacent to the Wildwood Community (600 homes adjacent to the treatment area).

The preferred action would conduct a one-time chemical thinning followed by a one-time mechanical treatment to cut and chip the vegetation. This action would meet the objective of reducing fuels to a level that would allow the resumption of the preserve's approved prescribed fire program.

Under the preferred alternative, approximately 171 acres of the 290-acre treatment area would be chemically and mechanically treated to reduce the wildfire hazard.

- Fuels within 200 feet of the fenced boundary adjacent to the Wildwood Community, representing an area of approximately 21 acres, would be reduced using herbicide application followed by a mechanical treatment.
- Using the same treatment application, an additional 150 acres of brush reduction would be performed within the 290-acre treatment area. These additional fuel reduction areas would be targeted to break up fuel continuity throughout the fire management unit.
- Some heavy brush would be left in savannah areas where fuel levels are low to maintain a vegetation mosaic.

Crews using backpack units would apply the herbicide Garlon4® (trade name - triclopyr). It is EPA-approved (USEPA 1998). This herbicide is mixed with a vegetable oil carrier at a dilution rate of approximately 8:1 to produce the application solution. Based on a targeted rate of one gallon of application solution per acre, approximately 20 to 30 gallons of Garlon4® would be applied over a 4-week period. Additional targeted herbicide treatments (at a rate of one quarter to one third of the initial application rate) could occur after vegetation re-growth (re-sprouting) for additional control.

Mechanical treatments would then be conducted using wheeled heavy equipment (equivalent to a Case 855) fitted with a front-end rotary shredder ("bull-hog"). The vehicle would be fitted with oversized tires to minimize soil compaction and rutting. Mechanical clearing would be conducted over a period of 2 to 4 weeks between August and October. Approximately 10 to 15 acres per day could be treated under normal operating conditions. Slash would be left in the project area. Limited manual clearing by chain saws could be conducted in concurrence with chemical and/or mechanical treatment. The combination of chemical followed by mechanical treatment would be considered the best means of reducing high fuel loads.

The preferred alternative would incorporate best management practices and mitigation measures to prevent or minimize potential adverse impacts associated with treatment actions. Examples of best management practices would include parking vehicles in specified areas and having crews walk to the project sites to avoid resource damage, and using central refueling stations with ground protection for refueling chains saws and brush cutters to minimize chances of gasoline or oil spills.

Mitigation measures that would be used to avoid additional resource damage would include, but not be limited to, the following.

- Endangered or threatened species
 - Wherever possible, treatments would not be used in known habitats of listed or sensitive species.
 - Where treatments would be necessary in proximity to known listed or sensitive species' habitats, treatment actions would be selected to minimize any adverse effect.
- Soils
 - The heavy equipment used for brush reduction would be wheeled and not tracked.
 - Oversized wheels would be used to minimize soil compaction and rutting.
 - Mechanical treatment would be conducted when soils are dry, minimizing soil displacement and compaction.
 - Saturated and ponded areas would be avoided during mechanical and chemical treatments.
- Vegetation and wildlife
 - Garlon4[®] herbicide would be sprayed by hand application to targeted species.
 - To mitigate impacts to nesting birds, chemical and mechanical treatments would be performed in late summer through the fall to avoid the spring breeding season.
 - The bull-hog attachment would be set to 18 inches above the ground to minimize wildlife mortality.
- Water quality
 - Herbicide would be applied directly to targeted plants in a manner to minimize runoff to surface water.
- Health and safety
 - Handlers would wear approved protective equipment to minimize exposure.

Cultural resources were dismissed as an impact topic because there are no known cultural resources in the treatment area and the potential for intact archeological deposits is low. In the unlikely event that cultural resources are identified at the site, such resources would be marked for avoidance. Heavy equipment would not be driven over identified resources. Personnel would be instructed regarding the illegality of collecting artifacts on federal lands.

ALTERNATIVES CONSIDERED

The environmental assessment analyzed four alternatives – a no action alternative and three action alternatives, including the preferred alternative, Alternative B.

Alternative A, continue current management/no action, is the baseline condition against which proposed activities were compared. It is defined as continuing existing management practices into the future. Current fire management practices would remain in effect. The treatment area would continue to be managed in conformance with the Big Thicket Fire Management Plan, 1998; however, fuels management actions to create an appropriate condition for the use of prescribed burns would not be implemented due to existing heavy fuel loads.

Alternative B, the preferred alternative, is described above.

Alternative C, one time mechanical treatment, is similar to Alternative B, except that it would NOT allow for chemical treatment. The fast re-growth potential of plant species (re-sprouting) would limit the effectiveness of this one time mechanical treatment, providing only short-term beneficial impacts. In the long-term, the objective would not be achieved and the consequences would be similar to Alternative A (No Action).

Alternative D, one time chemical treatment, is similar to Alternative B, except that it would NOT allow for mechanical treatment. This alternative would be more costly, labor intensive and would leave dead vegetation that would be subject to fire, making this alternative less effective than Alternative B.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

The environmentally preferred alternative is determined by applying the criteria suggested in the National Environmental Policy Act of 1969 (NEPA), which is guided by the Council on Environmental Quality (CEQ). The CEQ provides direction that "the environmentally preferable alternative is the alternative that will promote the national environmental policy as expressed in NEPA's Section 101:

- 1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- 2) assure for all generations 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 resources."

The preferred alternative, a one time chemical application followed by one time mechanical treatment to cut and chip vegetation, was identified as the environmentally preferred alternative. The combined treatments, represented by the preferred alternative, would provide the most effective, efficient, and cost effective way to meet the stated objective. The preferred alternative would be environmentally preferred because, compared to the other alternatives, it would enhance the quality of renewable resources and approach the maximum attainable recycling of resources. The environmentally preferred alternative would promote national environmental policy as expressed by §101 of the National Environmental Policy Act.

WHY THE PREFERRED ALTERNATIVE WILL NOT HAVE A SIGNIFICANT EFFECT ON THE HUMAN ENVIRONMENT

As defined in 40 CFR §1508.27, significance is determined by examining the following criteria:

Impacts that may be both beneficial and adverse: Minor adverse impacts of the preferred alternative would include: effects to air quality from equipment usage; localized soil compaction from treatment activities; short term effects to air quality and wildlife from chemical and mechanical treatments, and reduced vitality of desired trees and shrubs that are inadvertently treated.

Beneficial effects of the preferred alternative would occur as a result of the reduction of wildfire risk. These effects would include: minor to moderate benefits to air quality by reducing the potential for smoke and particulate pollution; minor to moderate benefits to vegetation by reducing potential for destructive fire; minor to moderate benefits to local wildlife in avoiding displacement from wildfire; and by providing protection against wildfire. Beneficial effects of the preferred alternative also include the re-instatement of prescribed burns, allowing for the restoration of the historic vegetation regimes.

Degree of effect on public health or safety: Public health and safety is an important issue for the wildland-urban interface fuels reduction project. By reducing the potential for migrating wildfire, protection of life and property would be enhanced. The treatment activities would pose no threat to visitors, adjacent residents, or staff. The proposed action would have a beneficial, negligible to minor, long-term effect by reducing the potential for smoke and particulate emission and limiting the spread of wildfire across preserve boundaries.

Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas: There are no known surface cultural sites, no prime farmlands, no jurisdictional wetlands, no wild and scenic rivers, and no ecologically critical areas within the treatment area; and, therefore, these resources would not be affected.

Degree to which effects on the quality of the human environment are likely to be highly controversial: Risk to neighbors, visitors, and preserve staff during implementation of the preferred alternative would be minimal. Use of machinery along the preserve boundary with the Wildwood community would generate noise levels that may disrupt daily routines to a small extent. Emissions from equipment would be minimal. The prescribed use of herbicide would pose no threat to public health. Due to the small area over which actions would be taken, park visitors and employees could avoid exposure and still remain in the preserve. The proposed

treatment would not affect key resources or values of Big Thicket National Preserve. Overall effects to the human environment as a result of the preferred alternative would be negligible.

As part of the initial scoping process, the National Park Service sent letters regarding the wildland-urban interface project to the public and to the U.S. Fish and Wildlife Service. Copies of the letters are included in the environmental assessment. No cultural resources are known to be present in the project area. As provided for in 36 CFR 800.4 (d)(1), the Big Thicket National Preserve used the environmental assessment to notify the Texas Historic Commission that no historic properties would be affected by project implementation. That office provided their concurrence with that determination on February 7, 2002. The issues and concerns identified as a result of the scoping effort were addressed in the environmental assessment. Implementation of the preferred alternative would be unlikely to generate any highly controversial effects.

Degree to which the possible effects on the quality of the human environment are highly uncertain or involve unique or unknown risks: As previously described, the risks to the quality of the human environment associated with the preferred alternative would be negligible. There were no highly uncertain, unique, or unknown risks identified.

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 neither establishes a National Park Service precedent for future actions with significant effects nor would it represent a decision in principle about a future consideration.

Whether the action is related to other actions with individually insignificant but cumulatively significant impacts: Implementation of fuels reduction at the wildland-urban interface would not significantly impact the resources or values of Big Thicket National Preserve. There would be no significant cumulative impacts to unique or important preserve features. The negligible to minor adverse effects related to the preferred alternative, in conjunction with the adverse impacts of any other past, present, or reasonably foreseeable future actions would result in negligible to minor impacts to soils and vegetation, depending on the scope and location of these other actions. The adverse impacts of the preferred alternative would be a relatively minor component of these cumulative effects, given the limited scope and small size of the treatment area.

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: There are no known surface cultural sites/resources within the treatment area, thus these resources would not be affected.

Degree to which the action may adversely affect an endangered or threatened species or its critical habitat: No federally listed threatened or endangered species occur in the treatment area, and no impacts to such species or any critical habitats would be expected as a result of the preferred alternative. The U.S. Fish and Wildlife Service did not respond formally to the NPS scoping inquiry. Although no written response was received, a verbal confirmation was given that no federally listed species have been documented in the treatment area.

Whether the action threatens a violation of Federal, state, or local environmental protection law: The preferred alternative would not violate any 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 preferred alternative would not constitute an impairment to Big Thicket National Preserve's resources and values. This conclusion is based on a thorough analysis of the environmental impacts described in the Wildland-Urban Interface Fuels Management Environmental Assessment, the public comments received, relevant scientific studies, and the professional judgment of the decision-maker guided by the direction in NPS Management Policies. Although the plan/project would have some adverse impacts, in all cases these adverse impacts are the result of actions taken to preserve and restore other preserve resources and values. Overall, implementation of the preferred alternative would result in benefits to preserve resources and values, opportunities for their enjoyment, and it would not result in their impairment.

PUBLIC INVOLVEMENT

Prior to preparation of the environmental assessment, the National Park Service sent letters regarding the wildland-urban interface project to the public.

The following issues and concerns were identified as a result of scoping for this fuels reduction action. A notification, "Public Comment Request: Fire and the Urban Interface, the Wildwood Community," was placed in the local newsletter for distribution to community residents. Ten responses were received. There was general support for use of prescribed fire as a management tool within the Big Thicket National Preserve. Three individuals expressed opposition to use of chemical treatment, three individuals had opposition to use of heavy machinery, and one individual wanted a 300-foot-wide, rather than a 200-foot-wide, buffer strip between the preserve boundary and the Wildwood Community. The environmental assessment addressed these issues and concerns.

The environmental assessment was made available for public review and comment during a 30-day period ending August 21, 2001. Five comments were received from two conservation organizations, one private citizen, one academic institution, and one state agency. The comments raised concerns pertaining to the following categories related to the preferred alternative: methods and timing of burns, ecological considerations (threatened species, wetlands, vegetation succession), human health and safety and economic impact. Since the responses to public comment represented clarifications to the text and did not necessitate content changes to the environmental assessment, the comments and responses are attached as errata sheets to this decision document.

The environmental assessment was provided to the Texas Historical Commission as notification that no historic properties would be affected by project implementation. Concurrence was provided by that office on February 7, 2002.

No changes to the Big Thicket National Preserve Wildland-Urban Interface Fuels Management Environmental Assessment were required as a result of public comment.

CONCLUSION

The preferred alternative would not constitute an action that normally requires preparation of an environmental impact statement (EIS). The preferred alternative would not have a significant

effect on the human environment. Adverse environmental effects that could occur are negligible to minor in intensity. There would be no significant impacts on public health, public safety, threatened or endangered species, or other unique characteristics of the region. No highly uncertain or controversial impacts, unique risks, significant cumulative effects, or elements of precedence were identified. Implementation of the action would 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.

Recommended:

Superintendent

Date

Approved:

Intermountain Regional Director

Date

Errata

Environmental Assessment/Assessment of Effect

Wildland-Urban Interface Fuels Management

Big Thicket National Preserve

The responses to public comments, as follows, provide additional clarification to information presented in the environmental assessment. These clarifications did not result in changes to the text of the environmental assessment.

PUBLIC COMMENTS:

Response to Comments

Comment: "On page 5, Description of the Treatment Area, we do not favor winter or early spring only prescribed fires. We believe that natural fire history for HCSU indicates that many fires occur in summer. These summer fires would have burned hotter and had a greater impact on hardwood and shrub vegetation in the HCSU. We recommend that the NPS burn in the summer as soon as the LPS ecosystem has been restored closer to the vegetation composition and fuel load that naturally existed. Any prescribed fire program for HCSU must mimic, as closely as possible, natural fires in duration, frequency, intensity, rate, seasonality, evenness, start location(s), regime and the original forest vegetation mosaic. Only when we mimic all of the natural fire characteristics will we have an ecosystem that functions similar to the historical ecosystem that once existed in HCSU."

Response: The Fire Management Plan for Big Thicket National Preserve outlines the procedures by which planned ignitions are managed in high risk areas. In accordance with the operational procedures in that plan, the HCSU unit has only been burned in the winter to reduce the risk of severe fire from existing high fuel loads. An objective of this project is to reduce this risk through chemical and mechanical treatments and allow us to implement a more natural burn cycle. This has already taken place in the remainder of the Hickory Creek Unit.

Comment: On Page 18, we are concerned about the three-year rotation for prescribed burning. In the natural HCU ecosystem, there would not have been a fire every three years. Nature does not work that way. We need to not homogenize the burning that we do. We strongly encourage a burning schedule based on a random numbers table that allows burns once every five years or more frequent. This would more closely mimic natural fires that followed droughts or years with frequent thunderstorms than a prescribed fire every three years.

Response: The three-year burning interval is a target interval based on knowledge of median fire return frequency and the need to restore savannas. However, the vagaries of weather and logistical constraints of prescribed fire management (personnel availability, burn bans, etc.) prevent such a scientifically precise approach to prescribed fire management. Consequently, as described in the EA, we view three-years as a target interval for implementing prescribed burns, as opposed to a rigid schedule. In practice, prescribed fire frequency ranges from 2-5+ years, at varying times of year, and follows no particular pattern. This basically mimics the "random" fire frequency that most likely occurred historically.

Comment: "On page 17, Alternatives Considered, we suggest several additional alternatives. One alternative is to mechanically cut and chip the unwanted trees and shrubs and paint, squirt, or hypohatchet a small amount of herbicide on the wound left by the cutting. This would ensure that less herbicide is used and there is less danger of contamination due to drift. We suggest a mechanical cutting, chipping, and burning alternative. This can be done carefully because the NPS can place the cut material in the safest places so the likelihood of a burn getting out of control is lessened. These are reasonable alternative that must be considered with the same level of detail as the other alternatives that are in this EA."

Response: The National Park Service carefully considered all of the treatment alternatives discussed in your recommendation in selecting the combinations presented in this document. Alternative B, Preferred Action: Chemical Followed by Mechanical Treatment (One-Time) was considered the best combination of treatments to mitigate undesirable impacts to resources, as well as providing the greatest possibilities for achieving park management goals. Within in this document, we have covered a

sufficient array of reasonable alternatives to achieve park goals and minimize risks to park and public resources.

Comment: On Page 49, NPS states that the fire hazard will become greater over time in the "No Action" alternative because fuels will build up. This is only partly true. As the hardwood populations in HCSU increase, after a certain point, fire hazard will decrease because hardwoods provide less fuel than pines.

And, Comment: On page 64, Alternative A, Cumulative Effects, we disagree that the long-term impacts would be greater fire hazard. Over the long-term the fire hazard would be less from the mature hardwood vegetation that develops.

And, Comment: On page 56, the NPS asserts that the "No action" Alternative will favor edge-associated species. This is not correct. As the vegetation matures a more dense will be created which will favor species that depend on forest cover due to a denser canopy.

Response: These comments assume that over hundreds of years a hardwood canopy would develop, shading out more flammable brush. It is more likely that a stand replacing fire will remove the canopy of pines, and occasional fires will maintain a brush field. Historically the vegetative structure and distribution within the treatment area was shaped by the natural fire regime, which characteristically recurred in 3-5 year intervals. Recent management actions have resulted in a modification of vegetative conditions, and resultant fuel accumulations have created an increased risk of high-severity, stand-replacing fire.

Comment: On page 50, the NPS must describe the negative environmental effects on killing most hardwoods and shrubs due to their proposal.

Response: The National Park Service goal is to reduce hardwoods and shrubs to their natural frequency and restore stand structure in the treatment area. The preferred alternative is designed to retain native, desirable plant species in the forest stand. The expected response to the treatment will be long-term, beneficial reestablishment of historic vegetation communities.

Comment: On page 64, the NPS ignores the education and technical assistance part of the Wildland-Urban Interface program. Why doesn't the NPS propose working with Wildwood to fire proof the yards and vacant lots so that fire is less likely to burn houses if it does escape? This would allow the community to buy into a program of prescribed burning because they would receive a tangible benefit from the program."

And, Comment: What will increase long-term fire hazard will be more people living in close proximity to a forest that naturally burned periodically. Most people do not know how to live with such an ecosystem. In addition, as more people move into an area the risk of fire increases because people are the greatest source of fire starts."

Response: Big Thicket National Preserve willingly works with the public and cooperators to reduce hazards to values at risk. The primary responsibilities envisioned with the treatments proposed in this document are to reduce the risk of fire leaving park lands and affecting private property. We believe the most effective protection to private property is through creation of defensible space around those values at risk. We are

expending funds to reduce wildland fire hazard potential on federal lands adjacent to this community.

Comment: On page 12, we are concerned that the only public scoping that occurred for this project was via a local newsletter for community residences. There are others, who do not necessarily live in Big Thicket, who are interested and concerned about the health of BTNP. In the future I request that that I be sent any scoping or other documents the NPS develops about burning and restoration in BTNP.

Response: Internal, agency, and public scoping were conducted prior to initiating a formal analysis of the alternatives. In light of this project's scale, public scoping was targeted to community residents within the vicinity of the Preserve, and a notification was placed in the local community newsletter. We feel that the comments received during scoping were meaningful to the analysis, and we addressed the public concerns in the environmental assessment. We believe the extent of public scoping to be adequate and commensurate with the scale of the project.

A wider audience including environmental organizations, industry groups, federal and state agencies, and individuals was provided a copy of the environmental assessment for review and comment. Concerning your request to be informed of future fire and restoration projects at BTNP, we have added your name to our list of recipients of scoping notifications and NEPA documents.

Comment: On page 10, Wetlands and Floodplains, we do not necessarily agree that wetlands covered by Executive Orders 11990 or 11988 do not exist on HCSU. Only by conducting a wetlands jurisdictional survey can this be determined. We urge the NPS to do so if this has not been done already and if it has been done then the results of the survey should be provided in this EA.

Response: Wetland Pine Savannas (WPS) do exist in the Hickory Creek Unit; however, treatment actions will be limited to non-WPS areas within the unit. FMU 2101 consists of Upper Slope Pine Oak (USPO) forest vegetation with minor inclusions of WPS vegetation (Marks and Harcombe, 1981). The wetland status of WPS in the West Gulf Coastal Plain is equivocal: The U.S. Army Corps of Engineers does not recognize these areas as jurisdictional wetlands; however, some researchers believe they are clearly wetlands (MacRoberts and MacRoberts, 1998). These differences of opinion; however, are a moot point for this EA. Aerial photographs of the area show that the WPS inclusions represent a mosaic of perhaps 5% of the treatment area. Prescribed fire activity has maintained the WPS areas and prevented brush encroachment, and thus WPS will not be targeted for this treatment. Since WPS areas are obvious even to the untrained observer, precise surveys were not needed to identify their location. Fuel reduction will only be performed on the drier upland portions of FMU 2101 where dense shrubs have clearly invaded. Since the WPS inclusions would be avoided for treatment, and completely avoided by equipment, wetlands were dismissed as an impact topic.

Comment: On page 11, Visitor Use and Experience, we disagree that visitors do not use the treatment area. The NPS has no documentation that visitors do not use that area since it is open for cross-country use. There will be visitor use and experience impacts. The NPS must cover these in this EA.

Response: There may be instances when visitors hike cross-country within the Hickory Creek Unit, either from the Sundew trail on the east-side or from Wildwood. In either case, we estimate that only a few persons visit the area annually, and alternative sites are readily available for recreational activity.

Signs will be posted before chemical treatment begins and will remain through mechanical treatment alerting persons to avoid the area. Additionally, an advisory would be posted at the visitors' center.

In light of these notification measures, the limited use of the area, and the availability of alternative hiking areas, we determined that impacts to visitors would be negligible.

Comment: On page 20, the NPS does not assess the impacts of the proposal on the full complement of sensitive species in the Big Thicket. The NPS should assess the effects on state-listed species, and sensitive species on the list of species that the U.S. Forest Service has developed for the four National Forests in Texas.

Response: Big Thicket spans 7 counties and a wide variety of habitats. We limited our analysis to only those species that would be likely to inhabit the treatment area.

Comment: On page 24, the NPS does not assess what additional air pollutants are created when vegetation laced with herbicides are burned. This information must be in this EA.

Response: In the preferred alternative, chemical treatment will be accomplished through the direct application of Garlon4 to vegetation targeted for reduction. Garlon4 is the trade name for the butoxyethyl ester formulation of the herbicide triclopyr. This ester converts to triclopyr acid which is absorbed by leaves and roots and causes phytotoxicity.

According to a study conducted by researchers at the University of Georgia and the USDA Forest Service (Bush, et. al., 1987), the burning of triclopyr-treated wood under rapid combustion (e.g. within a woodstove) can result in virtually complete thermal decomposition of herbicide residue. Slower combustion of treated wood, such as smoldering conditions, can result in very low-levels of herbicides in air; however, measured amounts were orders of magnitudes lower than acceptable indoor-exposure limits. Field studies (McMahon and Bush, 1992) involving outdoor workers in proximity to burning timber indicated that the risk of herbicide exposure is small, even if the fire occurred immediately after herbicide application.

Given the nature of the thermal degradation of triclopyr, we consider the potential exposure impacts of the eventual burning of chemically-treated vegetation to be negligible.

Comment: On pages 26-27 and 32-35, the Comparison of Impacts Alternatives on Table 4 and Wildland Urban Interface Projects Impact Threshold Definitions in Table 5, are not quantitative in any way. The thresholds and definitions used in these tables are qualitative. Words are used that can mean different things to different people. We urge the NPS to quantify impacts whenever possible so the public can carefully review and compare the impacts in a meaningful and scientific manner. After all, what does negligible, detectable readily apparent, considerable, minor, moderate and adverse really mean?

Response: Based on input received during scoping, we determined that relevant existing information and expertise could be used to adequately predict impacts resulting from each alternative. Therefore, we did not consider it necessary nor additionally meaningful to conduct new studies for the purpose of absolutely quantifying impact levels. Our qualitative impact analyses are supported with scientific literature, site-specific resource surveys, and expert testimony. The references and technical experts consulted in the development of this EA are listed on pages 67-71.

The criteria used to define impact thresholds and indicators are presented in Table 5 on pages 32-35. This table categorizes levels of potential effects per impact topic in relative terms of "negligible," "minor," "moderate," and "major." The criteria and indicators in the table are qualitative so as to be relevant to the qualitative impact descriptions in the document. The "Environmental Consequences" section (pages 36-66) presents our analysis of the impacts of each alternative, using the standards in Table 5. There one can find the specific rationale by which direct and cumulative impact levels were determined to be "negligible," "minor," etc., as well as find descriptions of "measurable" and "adverse" effects.

Comment: On page 36, Air Quality, we are concerned that the NPS is minimizing the impacts that smoke, gases and other pollutants have on humans, especially those that live in Wildwood. There can be significant air quality impacts in Wildwood and the NPS must truthfully state this. In addition, Tyler county is adjacent to Hardin County where exceedances of the health based ozone standard have been detected. The volatile organic compounds and nitrogen oxides that emitted during burning can create ozone and increase smog concentrations.

Response: Airborne particulate matter is typically the primary pollutant of concern from wildland fire. The smaller smoke particles (i.e., less than 2.5 microns in diameter) tend to scatter light and reduce visibility, and these particles also have the potential to deposit in and irritate the human respiratory tract. The size and emission levels of particulate matter emitted during forest fires can vary greatly and depend on the amount and type of fuel consumed, the fuel moisture content, the rate of fire spread as well as the heat intensity of the fire. According to our fire management plan, prescribed fires are conducted under the following conditions to reduce emissions and smoke impacts: use of low-intensity backfires or flank fires, burning when fuel moisture levels are low, and burning under favorable dispersal conditions. Service-wide fire management policy also includes the identification and avoidance of smoke impacts on sensitive receptors that could be affected during fire use in park units. Nearby communities, such as Wildwood, and other populated areas like schools, hospitals, airports, and roadways are included in the sensitive receptor category of areas to be protected from smoke impacts in the implementation of the national preserve's prescribed fire program.

As for volatile organic compounds and nitrogen oxide emissions, these two pollutants are released in such small quantities (i.e., the emission rates are very low per ton of fuel consumed by fire) that their ambient air impacts and potential contribution to ozone formation is likely to be negligible. A key consideration in this regard is the timing of planned burns that are typically outside of the hot summer months when regional ozone levels are elevated, so ambient levels during the "burning season" are historically much lower than the ozone health standards. In some cases, the presence of nitrogen oxides can even act to lower ambient ozone concentrations through a scavenging mechanism.

Burning also results in emissions of other gases including varying amounts of carbon monoxide and carbon dioxide. Carbon monoxide readily oxidizes to carbon dioxide and otherwise dilutes rapidly in the immediate vicinity of the fire and does not pose a threat to the general population.

Comment: On page 57, add turtle as species that are vulnerable to being crushed or disturbed by equipment.

Response: A few box turtles would probably occur in the treatment area and could potentially be vulnerable to equipment as described in the comment. Thus acknowledged, we contend that their overall population is controlled by the health of their ecosystem, and less by the mortality of individuals. This project will benefit turtle populations by improving stand structure.

Comment: On page 61, the EA has no estimates of economic benefits. This is required so that the public has opportunity to assess the information and comment on it.

Response: Director's Order and Handbook #12 ("DO#12") sets forth the policy and procedures by which the NPS will comply with NEPA. According to DO#12, cost-benefit analyses or other economic reports need only be included in an EA if such information is used in making decisions among alternatives. In the case of this proposal, cost comparisons were not considered in selecting the preferred alternative.

Short-term, direct economic benefits resulting from implementation of the preferred alternative would be negligible: fuels management actions would be performed by NPS personnel; and, therefore, no outside hiring or contracting would occur in conjunction with the proposal. As a result, there is no anticipated effect to the local tax base or employment levels, either temporarily or permanently, by implementation of the preferred alternative.

As stated in the EA, we expect the action alternatives will, to varying degrees, have direct, beneficial, long-term economic effects. This assertion is based on the rationale that, when fuel loads are reduced within the treatment area, the potential for high-intensity wildland fire will thereby be reduced; and, resultantly, increased protection from wildland fire will be afforded to local, fire-vulnerable resources. We consider the preferred alternative a proactive step to protect such resources, including area economic values associated with property, natural and cultural resources, timber, commercial activities, and tourism.

Comment : There was no impact analysis on state listed species.

Response: The Rafinesque's big-eared bat (*Corynorhinus rafinesquii*), Bachmans' sparrow (*Aimophila aestivalis*), northern scarlet snake (*Cemophora coccinea copei*), and timber rattlesnake (*Crotalus horridus*) are state-listed species that exist or have the potential to exist in the preserve. Although the Hickory Creek Unit of the preserve provides potential habitat for these species, none have been documented in the treatment area portion of the unit. Negligible to minor impacts would be expected because these species are mobile and can avoid human disturbance. Mitigation actions in the assessment addressing wildlife would also pertain to these state-listed species.

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