

National Park Service  
U.S. Department of the Interior



Big Bend National Park  
Texas

## **CONSTRUCT A FOSSIL DISCOVERY TRAIL EXHIBIT FINDING OF NO SIGNIFICANT IMPACT**

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to evaluate two alternatives and environmental impacts associated with the proposed project to construct a new fossil exhibit at Big Bend National Park (Park).

The proposed project will construct a structure up to 4000 square feet in size to house a new interpretive exhibit on the topic of the Park's fossil record. The exhibit will be located adjacent to the existing and obsolete Fossil Bone Exhibit to take advantage of existing infrastructure and to provide an interpretive link between the exhibit and an actual fossil site. Existing infrastructure at the site includes a paved access road, large paved parking area, large picnic shelter, vault toilet, interpretive exhibit structure, paved and unpaved trails, signs, and interpretive media.

The exhibit will be unstaffed, open air, and day use only. Four ancient environments will be interpreted in the exhibit, using interpretive media and museum-quality casts of fossil species known from the park. Most fossil casts will be protected within display cases, but several touchable specimens made of bronze or concrete will be used as well.

The proposed project to construct a new fossil exhibit is needed in part to address the visitor experience associated with the existing fossil exhibit. In particular, it does not interpret the four major ancient environments that once existed here over a 130 million year period or provide adequate information to reflect the advancement of paleontology in recent years. The park is not currently fulfilling its responsibility to promote scientific investigation of its resources and to share information about park resources with the public. Additionally, access to the current site is difficult and does not meet Architectural Barriers Act Accessibility Standards (ABAAS). A new fossil exhibit will expand visitor experience opportunities and provide improved access.

### **PREFERRED ALTERNATIVE**

Alternative B, Construct a Fossil Discovery Trail Exhibit, is the preferred alternative and the NPS's selected action because it best meets the objectives, purpose, and need for the project. The

objectives state: 1) Protect fossil replicas and exhibit materials from weather (provide shaded outdoor space for weather-proof replicas and interpretive waysides) ; 2) Enhance interpretation of paleontological and geological resources to improve visitor understanding; and 3) Engage a wide range of visitors and provide for visitor enjoyment at the site.

Under Alternative B, a new fossil exhibit will be constructed to the east of the existing exhibit, removing the existing structure, and constructing a new introductory structure closer to the parking lot. Additional actions may include: creating a children's exploration area near the picnic area, rehabilitating the existing trail leading to the steps to the overlook (steps will be rehabilitated as well, but not to ABAAS standards), installing interpretive signs and relocating the existing signs, installing quick response codes on interpretive signs and exhibits, installing a wireless internet booster, replacing the existing picnic shelter (in the same location) with a shelter to match the style and materials of the new exhibit (reusing existing shelter at another location), and installing a large-vehicle turn-around and two to three large vehicle parking spaces near the picnic area. Wireless booster installation (and related equipment) and the large-vehicle turn-around and two to three parking spaces may be completed in future phases of the project, as appropriate.

If feasible, the new fossil exhibit will be built off the desert floor, on piers. Colors, materials, and design will be used to reduce its visibility and help it blend with the surrounding landscape. The estimated size of the structure totals about 3000-4000 square feet (30-40 feet running in an east/west orientation and 90-100 feet running in a north/south orientation) and will offer outdoor shaded exhibit space, well-ventilated indoor exhibit space, and boardwalks or paths to connect the existing trail to the exhibit. The exhibit will not depend on any utilities. Solar-powered lights may be installed in exhibit cases for proper illumination of fossil replicas. Solar panels will be strategically placed on roofs to reduce reflectivity.

A future phase may include installation of a wireless internet booster, which may require a 20 ft antenna, a dish, and a large telephone box onsite (dimensions of 4 ft x 4 ft x 4 ft) or solar panels to supply power for the booster. A rain-water catchment system may be installed, as appropriate. The existing vault toilet will not be altered.

The existing parking lot will be the staging area for all construction related to the project.

## **MITIGATING MEASURES**

- To minimize the amount of ground disturbance, staging and stockpiling of materials will be in the existing parking lot on site. This will occur in a visitor-use area but the fossil bone pullout site will be closed to the public during construction for the health and safety of visitors. All staging and stockpiling areas will be returned to pre-construction conditions following construction.

- Best management practices for prevention of soil erosion will be implemented during construction, such as use of erosion control matting in sensitive areas, and staging of equipment on hardened surfaces, where possible. Other measures such as retaining walls could be used, as needed.
- Design features will be used to prevent soil erosion such as constructing stone walls, or another material, parallel to the existing drainages, and raising the building off the desert floor with piers (the aforementioned walls will be placed directly on the desert floor), or installing culverts or swales.
- Construction zone will be marked with some type of material (e.g., temporary construction tape or fencing) to prevent the construction footprint from expanding onto the fragile desert floor and to confine the activities to the minimum area required. Disturbance of the soils and vegetation shall be limited to the footprint of the exhibits and immediate surrounding areas.
- Soil conditions must be dry, not muddy when vehicles are driven in. If soil conditions become muddy to a degree that park resources or the access route shall be impacted during the project, then work that requires vehicles must shut down. Work may resume when conditions dry out.
- Building design will take advantage of naturally occurring site conditions where possible such as sunlight, shade, ventilation, views, drainage, and existing vegetation. Where possible, recycled products will be used. Non-toxic products will be used and design will strive for a high level of energy efficiency (e.g., natural sunlight, solar lighting). Building designs will be reviewed for applicable codes.
- Use environmentally-friendly construction materials, tools, and techniques whenever feasible to reduce construction-related noise and time spent on-site (e.g., pre-painted siding and battery operated hand tools, pre-cutting materials off-site).
- Equipment must be free of any fluid leaks (fuel, oil, etc.) upon arrival to the work site and will be inspected at the beginning of each shift for leaks. Leaking equipment will be removed off-site for necessary repairs before the commencement of work.
- To reduce noise and emissions, construction equipment will not idle any longer than is necessary for safety and/or mechanical reasons.
- During all phases of project implementation and construction, mitigations (e.g. dust abatement) should be implemented to minimize adverse impacts to air, water, and sound quality even if impacts are short-term/temporary in intensity and duration.
- Construction workers and supervisors will be informed about plant species of park concern.
- Sensitive plant species will be flagged prior to construction.
- Vegetation: All the succulents that are likely to be disturbed by construction will be harvested, left exposed for several days to allow root tissue injuries to harden, toed-in under sand at the park's plant propagation and cultivation facility, and re-planted as xeriscaping after construction is complete. In other projects, survivorship for

succulents treated in this manner is greater than 90%. The four *S. parvifolius* plants in the footprint area will be harvested with as much root mass as possible, and transplanted into 10-gallon pots at the plant propagation facility. After construction, the surviving plants will be used in xeriscaping. Transplanting shrubs is not often done in this environment because of the difficulty in harvesting sufficient root mass and the stress caused by transplanting, but the park botanist believes that 50% survivorship of these individuals is possible. This work will be done by the park botanist.

- Construction equipment must be weed free. All equipment used during construction must arrive at the work site clean of soil and vegetation. NPS staff will conduct inspection of equipment upon arrival at the construction site to confirm compliance with this requirement.
- Only clean fill will be used (sources to be verified by park botanist).
- Monitor the site after construction to ensure that exotic plants have not invaded or spread, and treat such infestation if necessary.
- The National Park Service will ensure that all contractors and subcontractors are informed of the penalties for illegally collecting artifacts or intentionally damaging paleontological materials, archeological sites, or historic properties. Contractors and subcontractors will also be instructed on procedure to follow in case previously unknown paleontological or archeological resources are uncovered during construction.
- An archeological monitor will be present during all ground-disturbing activities.
- If previously unknown archeological resources were discovered during construction, all work in the immediate vicinity of the discovery will be halted until the resources could be identified and documented by NPS archeologist. If in-situ preservation is not possible, a mitigation strategy will be developed in consultation with the Texas Historical Commission and affiliated tribes. If any inadvertent discoveries such as human remains, funerary objects, sacred sites, or objects of cultural patrimony are encountered during project activities, all necessary steps outlined in the Native American Graves Protection and Repatriation Act (25 USC 3001) of 1990 will be followed.
- Color, texture, angle, reflectivity of materials will all be considered and designed to blend in with nearby landscape features to reduce impacts to viewsheds.
- Best management practices to prevent creating new drainage patterns or widening existing drainages will be followed, and existing drainages that are disturbed by construction activities will be rehabilitated to prevent erosion. In order to minimize runoff and erosion, using gravel instead of the impervious asphalt for large vehicle parking spaces and/or parking turn-around will be considered.
- Best management practices to prevent wildlife from nesting in the fossil exhibit or below the stilted exhibit will be followed. Measures such as installing a screen skirt

or barrier around the base of the structure or other appropriate mitigations could be implemented. Periodic inspection will be needed for above ground portions of the exhibit. If wildlife is found to be nesting or utilizing exhibit areas, integrated pest management techniques will be followed, adhering to NPS policy.

- Paleontological survey will be conducted before and during any work at the site. If fossils are discovered during survey that are of great scientific value, they may be collected. Some fossils may be left in place for visitor appreciation, while recognizing that all naturally exposed fossils are eventually lost to erosion.
- The park will ensure that this project is communicated to affected staff and visitors. Visitor centers, signs at pullout, or park website may be used to inform visitors of closures and construction. The Public Information Officer will determine the best methods of informing the public.

## **ALTERNATIVES CONSIDERED**

Two alternatives were examined in this EA including the no action alternative and one action alternative. Under Alternative A, No Action, the new fossil exhibit would not be constructed. Alternative B, Construct a Fossil Discovery Trail Exhibit, is the preferred alternative, as described in the previous section.

### **Alternatives Considered but Dismissed**

***Sequence interpretive pavilions along trail loop.*** Each ancient environment would be interpreted at a pavilion placed along a loop trail. The first pavilion would be located at the trail head and the next four would each focus on a single ancient environment. This alternative was dismissed for the following reasons: cost related to the proposed stone walls within exhibits; the desert floor was subject to erosion and damage; difficulty of confining foot traffic; difficulty of construction access; and concern for cultural resources.

***Develop exhibit in or near Panther Junction Visitor Center.*** The General Management Plan identified a need for outdoor, large paleontological exhibits. The visitor center is an historic building from the Mission 66 period. Adding outdoor exhibits could potentially alter some of the building's character defining features. Additionally, public comments from the Environmental Assessment completed for removal of dinosaur fossils identified the need for an in-situ type display. The proposed fossil exhibit would be located near the geological source of many of the replica specimens, thus linking interpretation of the park's fossils to an actual fossil site. This alternative was dismissed because the visitor center location was unsuitable for this type of exhibit and did not fully meet the project objectives.

## **ENVIRONMENTALLY PREFERABLE ALTERNATIVE**

According to the Council on Environmental Quality (CEQ) regulations implementing NEPA (43 CFR 46.30), the environmentally preferable alternative is the alternative “that causes the least damage to the biological and physical environment and best protect, preserves, and enhances historical, cultural, and natural resources. The environmentally preferable alternative is identified upon consideration and weighing by the Responsible Official of long-term environmental impacts against short-term impacts in evaluation what is the best protection of these resources. In some situations, such as when different alternatives impact different resources to different degrees, there may be more than one environmentally preferable alternative.”

The NPS has determined that the environmentally preferable alternative for this project is Alternative B, the Preferred Alternative (Construct Fossil Discovery Trail Exhibit) for several reasons: 1) the new fossil exhibit will be designed to use natural energy efficiently (e.g., natural light); 2) while there will be some new ground disturbance that will damage the previously undisturbed elements of the biological and physical environment, the design of the new exhibit and parking areas is close in proximity to the footprints of existing disturbed areas and will be set on piers in order to stay above the fragile soil, thereby reducing impacts to highly undisturbed desert areas; 3) this alternative will rehabilitate the lower portion of the existing trail to meet ABAAS standards (the non-step section) and implement ABAAS standards throughout the entire new exhibit, thus improving public health and safety of the area; 4) this alternative enhances geological and paleontological resource protection; 5) this alternative provides enhanced opportunities for visitor education; and 6) this alternative will draw visitors to the improved fossil exhibit and reduces the temptation for off-trail exploration on nearby resources. This will reduce the potential for damage to sensitive natural and cultural resources. For these reasons, Alternative B causes the least damage to the biological and physical environment and best protects, preserves, and enhances historical, cultural, and natural resources, thereby making it the environmentally preferable alternative.

Alternative A (the no action alternative) was not selected as the environmentally preferable alternative for the following reasons: 1) the natural resources would continue to be under-interpreted by an exhibit limited in size and scope; 2) the visitor experience is not improving and limited information is available about resource preservation and paleontological resources; and 3) the trail to the existing exhibit does not meet current accessibility standards.

## **WHY THE SELECTED ACTION WILL NOT HAVE A SIGNIFICANT EFFECT ON THE HUMAN ENVIRONMENT**

As defined in 40 CFR Section 1508.27, 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.***

Implementation of the preferred (selected) alternative will result in some adverse impacts; however, the overall benefit of the project, particularly to the visitor use and experience, outweighs these negative effects. The adverse effects are summarized as follows. Construction activities will disturb water resources by increasing the amount of impervious surface area and contributing to increased soil and water runoff, potentially impacting existing drainages to a negligible to minor degree. Long-term, local, minor adverse impacts will result in interruption of the viewshed from construction of a new fossil exhibit, particularly when viewing the area from Highway 385, Old Ore Road, and/or nearby proposed wilderness areas.

The overall benefit of implementing the preferred (selected) alternative is that the visitor use and experience will be improved through expanded opportunities for resource appreciation and understanding and result in direct, site-specific to regional, long-term effects. Access will be improved by meeting ABAAS standards.

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

The preferred alternative will have an overall beneficial effect on public health and safety, particularly for the park's visiting public. The new fossil exhibit will meet ABAAS standards and include rehabilitation of the lower portion of the existing trail (before the steps) to meet ABAAS standards, a benefit to visitor safety and accessibility. The parking turn-around and parking spaces for larger vehicles will also minimize unsafe conditions for larger vehicles (e.g., backing up, three point turns, double parking, etc.). However, this action will be phased depending on visitor use levels at the site.

***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.***

The preferred alternative will not impact unique characteristics of the area including park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical area because these resources do not exist in the project area. Although Big Bend is home to the Rio Grande Wild and Scenic River, the river is over 20 miles from the project area.

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

Throughout the environmental process, the proposal to construct a new fossil exhibit was not highly controversial, or are the effects expected to generate future controversy. Most comments showed favor towards the proposed project.

***The degree to which the possible effects on the quality on the human environment are highly uncertain or involve unique or unknown risks***

The effects of constructing a new fossil exhibit do not pose unexpected uncertainties. The environmental process has not identified any effects that may involve highly unique or unknown risks.

***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 is not expected to set a precedent for future actions with significant effects, nor does 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. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small components.***

This EA analyzed cumulative effect and no significant cumulative impacts were identified.

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

No historic properties will be affected in the preferred alternative. A letter dated October 15, 2013 from the Texas Historical Commission concurs with the NPS determination of “no historic properties affected” on cultural resources per section 106 of the National Historic Preservation Act. Additionally, there are no cultural resources on site that are considered eligible for listing in the National Register of Historic Places, as determined by the park’s archeologist.

***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***

The NPS concluded that there will be “no adverse effect” on federally listed or candidate species, or their designated critical habitat per section 7 of the Endangered Species Act. A response letter dated on May 1, 2013 from the U.S. Fish and Wildlife Service with a “no action” stamp (in reply to the NPS letter) and no additional information regarding listed or proposed threatened or endangered species or critical habitats that might occur in the project vicinity, and any special management considerations for such species, indicated that the U.S. Fish and Wildlife Service was in concurrence with the NPS determination.

A letter from the Texas Park and Wildlife Department (TPWD) on May 16, 2013 recommended the NPS review the TPWD list of rare and protected species that could occur in Brewster County and incorporate potential impacts to these species in the EA. The parks wildlife biologist

reviewed these lists and determined that none of the species listed for Brewster County occur in the project area and thus were dismissed as an impact topic in the EA. A second letter from TPWD, in response to the EA on November 7, 2013 recommended that the park include a detailed description of the analysis performed or the basis for determination that the project does not have potential to affect rare and protected species. The requested material is included in the Errata Sheets in this FONSI and provides a detailed description of the analysis performed by the Park's Botanist.

Based on surveys, analysis, and mitigations, the park determined that the project is not likely to affect vegetation resources, including Federal-, State- or park-listed rare plants.

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

The action will not violate any federal, state, or local laws or environmental protection laws.

**PUBLIC INVOLVEMENT AND NATIVE AMERICAN CONSULTATION**

The EA was made available for public review and comment during a 30-day period from October 24- November 22, 2013. To notify the public of this review period and the scoping meetings, a letter was mailed to stakeholders, Native American tribes, interested parties, and newspapers. Hard copies of the EA were available upon request, made available in local repositories, and posted on the NPS Planning, Environment, and Public Comment (PEPC) website. Six public comments were received on PEPC during this period from October 24- November 22, 2013.

One commenter requested that a graphic of the proposed facility be provided to the public and also asked for more time to review and comment on the EA. In response, a preliminary schematic design sketch was provided to the public with the caveat that it was not a final design and that changes were almost certain to occur, and the public comment period was extended to December 23, 2013. Seven public comments were received during the extended comment period, two of which were from people who also commented in the earlier comment period. Substantive comments are addressed in the Errata Sheets attached to this FONSI.

Three agency comment letters and one tribal comment letter were received. The substantive comment from the TPWD, dated November 7, 2013 is addressed in the Errata Sheet attached to this FONSI.

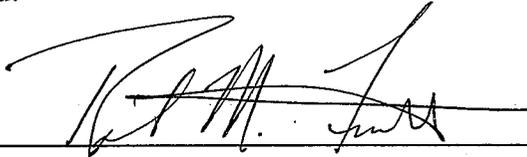
**CONCLUSION**

As described above, the preferred alternative does not constitute an action meeting the requirements for preparation of an environmental impact statement (EIS). The preferred

alternative will not have a significant effect on the human environment. Environmental impacts that could occur are limited in context and intensity, with beneficial and adverse impacts that range from site-specific, short-to long-term, and negligible to moderate. There are no unmitigated adverse effects 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 preceding information, NPS has determined that an EIS is not required for this project and thus will not be prepared.

Approved:



5/23/14

Sue E. Masica

Date

Regional Director, Intermountain Region, National Park Service

**Errata Sheets**  
**Fossil Discovery Trail Exhibit Construction**  
**Big Bend National Park**

According to NPS policy, substantive comments are those that 1) question the accuracy of the information in the EA, 2) question the adequacy of the environmental analysis, 3) present reasonable alternatives that were not presented in the EA, or 4) cause changes or revisions in the proposal.

Some substantive comments may result in changes to the text of the EA, in which case, they are addressed in the *Text Changes* section of the Errata Sheets. Other substantive comments may require a more thorough explanatory response and are addressed in the *Response to Comments* section. NPS responds to all substantive comments in either or both of these sections.

Seventeen comments were received during the public review of the EA, and commenters raised 5 issues that are considered substantive. Substantive comments for the EA centered on topics related to two plant species, design/illustrations, obstructed views, development of the area, and alternative methods of interpretation. Some of these concerns resulted in minor changes to the text of the EA, and responses for all of them are included in the *Response to Comments* section.

## **TEXT CHANGES**

**Page 9, *Special Status Species*** - Delete second paragraph and add the following paragraphs:

“In two surveys of the area conducted by the park botanist, no Federally-listed plants were found, and the park database indicates that the nearest known location of a Federally-listed plant (*Echinomastus mariposensis*) is at least five miles from the site. Only one State-listed plant was found (*E. torreyana* var. *powelliorum*) near the project site. These individuals are not in the proposed project footprint, but are in adjacent sandstone habitat that is outside the footprint, but could be affected by project overflow or changes in construction plans. The park botanist will monitor planning and construction and re-evaluate threats to these plants as necessary.

The two State-listed plants addressed in the 07 November Texas Parks and Wildlife letter (*Andrachne arida* and *Streptanthus cutleri*) were not found at the project area. Although conditions were poor for identifying plant species in April, 2013 survey, these species would have been identifiable during the November survey. In addition, the project location is unlikely to be suitable habitat for *A. arida* which is considered a limestone specialist. The site is suitable habitat for *S. cutleri*, however the park database does not indicate any known locations within several hundred meters of the project area.

Several individuals of the park-listed *Selinocarpus parvifolius* are likely to be negatively affected by the project. Mitigation measures may allow for these individuals to be re-planted on site as part of local xeriscaping. The species is common on the adjacent sandstone hills, which are unlikely to be affected by the proposed project, and there are at least 15 other locations in the park where the species is common. The proposed project is unlikely to affect the parkwide population of the species. The other park-listed species found near the project area (*Cathestecum erectum*, *Psathyrotes scaposa*) are common to abundant in similar habitat adjacent to and near the project area. Both species are widespread in the park. Disturbance to these species will constitute only a small fraction of the local population, and an even smaller fraction of the parkwide population.

Additional impacts to species within 1.5-mile radius of the project area:

The proposed project is not likely to affect listed plant species within a 1.5-mile radius. The project is less than one acre in size and adjacent to an already-developed site which includes a paved road, paved trail, parking lot, and restroom. The footprint of the new proposed construction increases the total developed area only marginally; therefore the only potential effects to species in a 1.5-mile radius would be indirect effects such as increased erosion, invasion or spread of exotic species, effects of increased human traffic (foot and vehicle). The proposed mitigations will address the indirect effects except potential increases in human traffic in the area. Project developers do not expect the project to dramatically increase the rate of off-trail human traffic, but it is possible if the exhibit proves to be popular. The park will monitor the site and make appropriate mitigations, such as signage explaining the presence of rare plants, or physical barriers to off-trail foot traffic, if necessary.

The April, 2013 survey, park-listed rare plant species were targeted that were known to occur in the general area, and charismatic flora (e.g. large yuccas) that could be salvaged and used for landscaping:

*Selinocarpus parvifolius* (little-leaf moonpod): *Selinocarpus parvifolius* is abundant in the project area, mostly on the sandstone, less common in the deep Tornillo-Pajarito soils. Plants were dry, in poor condition, with few leaves.

*Ephedra torreyana* var. *powelliorum* (no accepted common name): *Ephedra torreyana* var. *powelliorum* is common on the sandstone bedrock, not found on flats. Plants were dry and in poor condition.

*Cathestecum erectum* (false grama): *C. erectum* was uncommon in the project area, with only senescent leaf material visible. False grama grass is common on the highway right-of-way adjacent to the site, and is abundant on several sites nearby.

*Yucca* spp. (all yucca species): Approx. 10 *Yucca rostrata* were found at the site, dispersed widely enough such that the largest building and trail development proposed would only affect 1-

2 individuals. These can be salvaged, stockpiled until construction is complete, and re-planted on site.

*Opuntia* spp. (all prickly pears, dog chollas, cane chollas): *Opuntia camanichica* (Comanche prickly pear) is common on the site. *Opuntia [Grusonia] schottii* var. *grahamii* (Graham's dog cholla) is uncommon, with a few individuals found on Tornillo-Pajarito soil flats. *Opuntia leptocaulis* (pencil cholla) is uncommon. Individuals of all these species that would be disturbed by construction can be salvaged and re-planted on site with little mortality.

*Foquieria splendens* (ocotillo): Ocotillo is uncommon on site. Individuals that would be disturbed by construction can be salvaged and re-planted with little chance of mortality.

Although the survey was focused on target species, all unusual or rare species encountered were noted. No Federal-, State-, or Park-listed species were found in the project area.

From these observations, and mitigations that could be done to minimize damage to vegetation during construction, Big Bend National Park made an assessment that the proposed project was not likely to adversely affect vegetation resources, including rare plants.

The following list represents the vascular plant list for 20 Nov., 2013 survey of the Fossil Bone project area:

<u>Species</u>	<u>Listing</u>
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Found in Construction Perimeter:

<i>Acacia neovernicosa</i>	
<i>Aristida purpurea</i>	
<i>Bahia absinthifolia</i>	
<i>Boerhavia</i> sp.	
<i>Bothriochloa ischaemum</i>	
<i>Bouteloua barbata</i>	
<i>Bouteloua curtipendula</i>	
<i>Cathestecum erectum</i>	BIBE
<i>Digitaria californica</i>	
<i>Eragrostis lehmanniana</i>	
<i>Krameria grayi</i>	
<i>Larrea tridentata</i>	
<i>Nama hispidum</i>	
<i>Nerisyrenia camporum</i>	
<i>Opuntia camanichica</i>	
<i>Opuntia leptocaulis</i>	
<i>Opuntia schottii</i> var. <i>grahamii</i>	
<i>Pappophorum vaginatum</i>	
<i>Pectis angustifolia</i>	
<i>Pennisetum ciliare</i>	
<i>Pleuraphis mutica</i>	

<i>Psathyrotes scaposa</i>	BIBE
<i>Quincula lobata</i>	
<i>Selinocarpus parvifolius</i>	BIBE
<i>Senna bauhinoides</i>	
<i>Thelesperma megapotamicum</i>	
<i>Thymophylla acerosa</i>	
<i>Viguiera stenoloba</i>	
<i>Yucca rostrata [thompsoniana]</i>	
<i>Zephyranthes longifolia</i>	

Found w/in 20 meters of project perimeter:

<i>Ephedra torreyana</i> var.	BIBE, State
<i>powelliorum</i>	S1

Plants on target list not found near project area:

<i>Andrachne arida</i>	BIBE, State S1
<i>Streptanthus cutleri</i>	BIBE, State S2

Based on the surveys, analysis, and mitigations, the park determines that the project is not likely to affect vegetation resources, including Federal-, State- or park-listed rare plants, therefore this impact topic was dismissed.”

**Page 24-25, Table 4 Mitigation Measures** - Add an additional row to the end of the table for “*Vegetation Resources*.” In the second column, add the following text for mitigations for vegetation resources: “All the succulents that are likely to be disturbed by construction will be harvested, left exposed for several days to allow injuries to root tissue to harden, toed-in under sand at the park’s plant propagation and cultivation facility, and re-planted as part of a xeriscape after construction is complete. In other projects, survivorship for succulents treated in this manner is greater than 90%. The four *S. parvifolius* plants in the footprint area will be harvested with as much root mass as possible, and transplanted into 10-gallon pots at the plant propagation facility. After construction, and installation of a water catchment and drip-irrigation system at the site, the surviving plants will be used in xeriscaping. Transplanting shrubs is not often done in this environment because of the difficulty in harvesting sufficient root mass and the stress caused by transplanting, but I think that 50% survivorship of these individuals is possible. This work will be done by the park botanist. Monitor after construction to ensure that exotic plants have not invaded or spread, and treating such infestation if necessary. Use only clean fill during construction (sources to be verified by park botanist).”

## RESPONSES TO COMMENTS

**Comment 1** - Texas Park and Wildlife Department recommends that NPS include a discussion in the EA regarding what federally-listed, state-listed, and rare species were considered during habitat surveys in the project areas as well as an explanation of why they would not be impacted by the proposed project. TPWD also recommends the NPS include additional detail regarding potential impacts to species with TXNDD occurrences found within a 1.5 mile radius of the project area.

**Response 1** - The park botanist conducted two surveys of the project area and no Federally-listed plants were found, and the park database indicates that the nearest known location of a Federally-listed plant (*Echinomastus mariposensis*) is at least five miles from the site. One State-listed plant was found (*E. torreyana* var. *powelliorum*) near the project site. These individuals are not in the proposed project footprint, but are in adjacent sandstone habitat that is outside the footprint, but could be affected by project overflow or changes in construction plans. The two state listed species addressed in the TPWD letter (*Andrachne arida* and *Streptanthus cutleri*) were not found in the project area. The park botanist will monitor planning and construction and re-evaluate threats to these plants as necessary.

Please see the text that was added to the EA on the subjects of what plant species were found during the Nov. 20<sup>th</sup> survey, mitigations, and impacts to species with TXNDD occurrences found within a 1.5 mile radius of the project area.

**Comment 2** - One commenter requested that the park provide “some kind of sketch to illustrate what you would like to do.”

**Response 2** - At the time that the EA was written, the design was not finalized. Chapter 3 of the EA, *Affected Environment and Environmental Consequences*, thoroughly analyzes the potential impacts that may result from construction of a new fossil exhibit. The estimated size and potential design of the exhibit were considered in the impact analysis. Because size and exhibit structures and features were discussed and used for analysis, it was not necessary to include illustrations in the EA. However, in response to this request, a preliminary schematic design sketch was provided to the public with the caveat that it was not a final design and that changes were almost certain to occur, and the public comment period was extended to December 23, 2013.

**Comment 3** - Several comments stated that the proposed facility would obstruct the view to the east of persons arriving at the parking area or would detract from the natural view.

**Response 3** – Viewshed and scenic values were analyzed in Chapter 3 of the EA, and this analysis found that minor to moderate adverse impacts to the viewshed may be expected to occur. The facility design calls for an open view to the east from the central pavilion area so that the strata visible may be interpreted with respect to the park’s fossil resources. Additionally, unobstructed views to the east may be obtained from the trail to the nearby knoll that is located just south of the proposed facility, and from almost any location to the east of the parking area. Visibility of the facility from other parts of the park will be mitigated by careful architectural design, choice of building materials, choice of colors, and use of hilly terrain to shield the facility from view.

**Comment 4** – One commenter questioned whether installing displays “in a largely undeveloped area of the park would not detract from the overall visitor experience.”

**Response 4** – The proposed exhibit site contains many existing developmental features, including a paved access road, a large paved parking lot, a large picnic shelter, a vault toilet, an interpretive exhibit structure, paved and unpaved trails, and various signs and interpretive media. The Preferred Alternative will make better use of the existing development by placing a larger and greatly improved interpretive structure immediately adjacent to the existing development. The Preferred Alternative will enhance overall visitor experience by providing improved interpretation of the park’s geological and paleontological resources to a wide range of visitors.

**Comment 5** – Two commenters suggested using other methods than the proposed facility to interpret the park’s fossil resources, such as smartphone trails, improved graphics, self-guided tour booklets, or improving the current exhibit.

**Response 5** – As stated in the Purpose and Need section of the EA, the project objectives include engaging a wide range of visitors and enhancing interpretation of paleontological and geological resources to improve visitor understanding. The current Fossil Bone Exhibit interprets only one small facet of the park’s rich paleontological history, so improving it would not meet the goal of helping park visitors understand the paleontological history of the park. The small size of the existing exhibit makes it impractical for interpreting the extensive paleontological resources and history of the park. Likewise, alternative methods of interpretation such as smartphone trails and self-guided tour booklets are not practical for interpreting the park’s fossil resources for several reasons. Directing visitors to sites where fossils are visible would place those fossils at risk of damage or theft. The park’s fossil history is complex, spanning at least 130 million years of geologic time and at least 4 major ancient ecosystems, which creates a challenging topic that would be very difficult to effectively interpret to a wide audience using simplified interpretive techniques such as self-guided walks. Additionally, a smartphone trail would fail to engage the widest range of visitors, because not every visitor possesses a smartphone. Therefore, the

suggested alternative methods of interpretation would not fulfill the purpose and objectives of the project.

## Appendix – Non-Impairment Finding

National Park Service's *Management Policies, 2006* require analysis of potential effects to determine whether or not actions will impair park resources. The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. National Park Service managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adversely impacting park resources and values.

However, the laws do not give the National Park Service the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the National Park Service the management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources and values, including the opportunities that otherwise would be present for the enjoyment of those resources and values. An impact to any park resource or value may, but does not necessarily, constitute an impairment. An impact would be more likely to constitute an impairment to the extent that it affects a resource or value that is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- Key to the natural or cultural integrity of the park; or
- Identified as a goal in the park's general management plan or other relevant NPS planning documents

An impact would be less likely to constitute an impairment if it is an unavoidable result of an action necessary to pursue or restore the integrity of park resources or values and it cannot be further mitigated.

The park resources and values that are subject to the no-impairment standard include:

- The park's scenery, natural and historic objects, and wildlife, and the processes and conditions that sustain them, including, to the extent present in the park: the ecological, biological, and physical processes that created the park and continue to act upon it; scenic features; natural visibility; both in daytime and at night; natural landscapes; natural soundscapes and smells; water and air resources; soils; geological

resources; paleontological resources; archeological resources; cultural landscapes; ethnographic resources; historic and prehistoric sites, structures, and objects; museum collections; and native plants and animals;

- Appropriate opportunities to experience enjoyment of the above resources, to the extent that can be done without impairing them;
- The park's role in contributing to the national dignity, the high public value and integrity, and the superlative environmental quality of the national park system, and the benefit and inspiration provided to the American people by the national park system; and
- Any additional attributes encompassed by the specific values and purposes for which the park was established.

Impairment may result from National Park Service activities in managing the park, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the park. The NPS's threshold for considering whether there could be an impairment is based on whether an action will have significant effects.

Impairment findings are not necessary for visitor use and experience, socioeconomic, public health and safety, environmental justice, land use, and park operations, because impairment findings relate back to the park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act, and cannot be impaired in the same way that an action can impair park resources and values. After dismissing the above topics, topics remaining to be evaluated include viewsheds and water resources.

The Act that established Big Bend National Park, dated June 20, 1935, dedicated the lands to be "set apart as a public park for the benefit and enjoyment of the people. . ." The Act authorizing the land be conveyed to the United States for Big Bend National Park, May 12, 1939, stated that Big Bend would be "for use of the public for recreational park purposes. . ." Viewsheds and water resources are not directly addressed in these acts. While the General Management Plan does not specify fundamental resources and values, it states the following natural resource issues that the plan prescribes to address: water quantity at some developed areas, park facilities in floodplains, endangered species, degradation of natural systems, conflicts among various user groups, and the lack of adequate space for interpretive activities, park housing, storage, and staff offices. The park significance statements highlight the Chihuahuan Desert ecosystem, Rio Grande river, geology, and other natural and cultural resources. The below topics were analyzed in detail in the EA and describe why the selected action would not cause impairment to these resources.

The preferred alternative will result in short-term to long-term negligible to minor adverse impacts to some of the park's resources, which include viewsheds and water resources. However, the NPS has determined that the implementation of the NPS preferred alternative

will not constitute an impairment to the resources or values in Big Bend National Park. This conclusion is based on consideration of the thorough analysis of the environmental impacts described in the EA, relevant studies, comments provided by the public and others, and the professional judgment of the decision-maker guided by direction in Management Policies 2006. Implementation of the NPS selected alternative will not result in impairment of park resources or values whose conservation is bulleted above.

- **Viewsheds** – Big Bend National Park contains numerous long views and uninterrupted vistas of the desert and surrounding mountains. The preferred alternative will construct a new fossil exhibit, near existing disturbed areas, but in a location that will interrupt views and be visible from portions of the highway, Old Ore road, and proposed wilderness areas. Because the selected alternative will result in minor to moderate adverse impacts under NEPA, there will be no impairment to viewsheds.
- **Water Resources** – Ground disturbance from the proposed project is unlikely to contribute any sediment erosion into nearby Tornillo Creek, although small, local, on-site drainages may change as a result of the exhibit placement. Impacts to soils will be primarily associated with surface disturbance during construction activities. However, some permanent alterations to soil will occur in areas that are graded or paved. These long-term adverse impacts will be minor. Many of the adverse impacts associated with construction activities will only be minor and short-term, the selected alternative will not result in impairment to water resources.

In conclusion, as guided by this analysis, good science and scholarship, advice from subject matter experts and others who have relevant knowledge and experience, and the results of public involvement activities, it is the Superintendent's professional judgment that there will be no impairment of park resources and values from implementation of the selected alternative.