Recreational Use Alternatives Analysis

Prepared by State of Alabama, Natural Resource Trustees

5 September 2012
(revised 21 April 2014 for public release)[1]

[1] The original study (5 September 2012) has been edited for public release to remove confidential and/or project-specific information that could adversely affect the Trustees' ongoing negotiations and litigation with BP.

Table of Contents

Summary 3
I. Introduction 4
Background 4
Overall Alabama Restoration Approach 4
Reason for Action 5
Pre- and Post-Oil Spill Conditions 6
Objectives 6
Scope of Analysis 7
II. Alternatives 8
Initial Screening to Identify a Short-List of Projects 8
Gulf State Park Enhancement Project 9
Land Acquisitions 10
Boat Launches 10
Boardwalks and Campgrounds 10
Beach Access and Dune Walkovers 10
Artificial Reefs 10
III. Recreational Use Discussion 11
Recreational Benefits and Impacts of Alternatives 11
Gulf State Park Enhancement Project 11
Land Acquisitions 12
Boat Launches 12
Boardwalks and Campgrounds 12
Beach Access and Dune Walkovers 13
Artificial Reefs 13
IV. General Natural Resource Impacts Analysis 14
Impacts of Alternatives 14
Gulf State Park Enhancement Project 14
Land Acquisitions 15
Boat Launches 15
Boardwalks and Campgrounds 15
Beach Access and Dune Walkovers 15

Artificial Reefs 16
Evaluation of Projects against Primary Objectives 16
Evaluation of Projects against Secondary Objectives 18

Summary

To determine which project or projects to advance for negotiations with BP as compensation for Alabama's lost human use under the Early Restoration Framework, the Alabama Trustees reviewed potential projects using a process that considered a range of both primary and secondary objectives. The types of initiatives analyzed by the Trustees included both land acquisitions and infrastructure projects. Of those projects, the proposed Gulf State Park Enhancement Project best captured all of Alabama's objectives in a cost-effective manner.

Projects that improve access to a resource have traditionally been accepted as appropriate for restoring the loss of use of a natural resource. Furthermore, the vast majority of these access projects have involved building some type of infrastructure to support access to the injured resource. For example, past NRDA infrastructure projects have included sea life centers[2], campsites[3], trails[4], interpretive signs/centers[5], boat ramps[6], and parking lots[7].

The Alabama Trustees considered various projects that incorporated infrastructure improvements as part of the overall project. Of these, the Gulf State Park Enhancement Project incorporates the greatest variety of access-based infrastructure, synergistically providing substantial "bang for the buck." This project proposal includes an expanded trail system at Gulf State Park, interpretive centers and exhibits showcasing the park's resources, K-12 education facilities, and a lodge for overnight visits.

The lodge component in particular provides a unique opportunity for the restoration of lost human services along the Alabama Gulf Coast. There are few accommodations in the immediate vicinity of Gulf State Park and those that are available are generally condominiums requiring a weekly rental. The Gulf State Park lodge would increase access to natural resources by allowing visitors another lodging option. In addition, one of the project's goals for the lodge is a LEED and/or Living Building Challenge certification that would serve to demonstrate and educate the public on environmentally-friendly coastal construction.

The Gulf State Park Enhancement Project enjoys broad support in the region. BP proposed improvements to the park as a potential Early Restoration project and there is widespread public support for the various components of the Gulf State Park Enhancement initiative. Furthermore, the park has a direct nexus to the injuries caused by the DWH spill—the park's beaches were oiled and its lands used as a staging area for the response effort. These factors give the Alabama Trustees additional confidence that the Gulf State Park Enhancement Project is the most appropriate and best project to compensate for the loss of use of Alabama's natural resources under the Early Restoration program.

---

[2] Avila II; *Exxon Valdez*
[3] Chalk Point; *Kuroshima*; *New Carissa*
[4] Avila II; *Cape Mohican*; *Command*; Lower Fox River/Green Bay; *Stuyvesant*
[5] Avila II; Chalk Point; Lower Fox River/Green Bay; *Stuyvesant*
[6] Chalk Point; Lavaca Bay; Lower Fox River/Green Bay
[7] Chalk Point; Lavaca Bay; Olympic Pipeline

I. Introduction

The State of Alabama Natural Resource Trustees (Commissioner, Alabama Department of Conservation and Natural Resources, and State Geologist, Geological Survey of Alabama) are evaluating restoration options for the damages incurred by the State as a result of the 2010 BP Deepwater Horizon Oil Spill and quantified through the Natural Resource Damage Assessment process pursuant to the Oil Pollution Act. This document provides an analysis of restoration actions for mitigating the significant loss to the State of human use natural resource services that resulted from the spill. This document gives a brief overview of the nature of Alabama's loss of human use services, provides the rationale for taking early restoration action, and describes the early restoration goals that the state hopes to achieve in taking action. The project selection process compares a representative set of restoration alternatives that could be implemented to address the State's specific losses and achieve the Trustees' overall restoration goals. To inform this decision-making process, the State evaluated the potential contributions of each project in terms of improvements to the recreational use experience, increased visitors and visitor access to natural resources, as well as more general impacts to natural resources in areas where restoration actions would occur. This document outlines the Trustees' initial screening and prioritization process and the resulting recommendations for implementing proposed early restoration actions.

Background

On April 20, 2010, a blowout and explosion on the BP Deepwater Horizon drilling platform in the Gulf of Mexico resulted in a major oil spill. Before the well was finally capped, experts estimated that almost 5 million barrels of oil were released into the Gulf. The spill caused significant damage to coastal areas of Louisiana, Mississippi, Texas, Alabama, and Florida. In addition to injury of sensitive ecosystems and disruption of commercial fishing activities, lost human use of natural resources, particularly along the Gulf beaches of Alabama, was significant owing to repeated episodes of oiling, as well as the widespread public perception that the beaches were fouled. This led to large numbers of cancelled beach trips over the course of many months. Alabama, along with the other states bordering the Gulf, is beginning a restoration process that includes projects designed to compensate for both ecological and human use losses.

Overall Alabama Restoration Approach

The Deepwater Horizon (DWH) spill had significant impact on Alabama's natural resources and resulted in a concomitant significant loss of human use services provided by these natural resources. Although the detailed assessment of human use losses is ongoing, and will continue for some time to come, Alabama's Trustees have developed an early restoration strategy to address immediate restoration needs. This approach is unique relative to the standard NRDA process employed in past oil spills and resulted from the Early Restoration Framework Agreement reached between the Trustees and BP. This agreement provided one billion dollars of funding to be used to implement early restoration projects. The early restoration goal of the State of Alabama's NRDA trustees is to begin the process of making the

State whole for the natural resource injuries suffered as a result of the DWH oil spill. The Trustees seek to initiate compensatory mitigation of those impacts through the selection of Early Restoration projects that put Alabama on a path to achieving that overarching goal.

Using exposure to oil from the spill as a proxy for resource injury, it is evident that several major categories of potential injury exist in Alabama, including loss of human use of resource services, injuries to shorelines and shoreline biota (i.e., marshes and beaches), and injuries to the water column, including the biota that depend on the water column. All three of these categories were exposed to oil and dispersant in Alabama during the DWH incident. Consequently, the Trustees' focus for the Early Restoration program has been on the implementation of projects compensating for injuries in these areas. The Phase 1 Early Restoration Plan will implement a marsh protection and creation project that should serve to partially offset injuries to coastal wetland resources in Alabama. As proposed, the Phase 2[8] Early Restoration Plan for Alabama focuses on addressing the other categories mentioned above, with a primary focus on projects that offset the well-documented human use losses along the State's coastline. It is important to emphasize that the Early Restoration Plan represents only a starting point for restoration of injuries sustained as a result of this spill. When Alabama's injuries resulting from the DWH spill are fully quantified, additional projects to offset injuries will likely need to be identified and implemented.

As noted previously, the detailed assessment of human use losses is ongoing. Nonetheless it is evident that human use impacts in the State of Alabama were very significant, and almost certainly will represent one of the larger DWH injuries experienced by the State. Preliminary information from a variety of sources indicates that lost visits for human uses of shoreline natural resources caused by the spill number in the millions.

Offsetting the injuries from a loss of this magnitude requires a human use restoration program of unprecedented magnitude. Given Alabama's limited Gulf Coast (approximately 53 miles) and the fact that only a small portion of this is public land controlled by the State, identification of restoration projects that can be implemented by the Trustees and that are large enough to compensate for the human use losses is challenging. This document outlines the Trustee's process for identifying potential projects and describes the Trustees' process for evaluating the extent to which individual projects or suites of projects can be implemented to successfully provide compensation for Alabama's human use injury.

Reason for Action

The purpose of restoration resulting from the DWH NRDA process is to make the State of Alabama and its citizens whole with respect to the environmental injuries that have resulted from the DWH spill. For this to occur, Alabama must begin creating new recreational opportunities to compensate for the human use losses suffered during and after the oil spill. Recognizing that the State can directly affect

[8] Now Phase III.

change on only a small portion of its coastline, the Trustees were tasked with identifying projects that enhance visitor use in an efficient and cost-effective manner. An overview of pre- and post- DWH spill conditions reinforces the need for human use restoration projects in Alabama.

Pre- and Post-Oil Spill Conditions

While not extensive, Alabama's Gulf coast draws millions of visitors every year. For example, according to data collected by the tourism industry for 2009--the last full year before the spill--4.6 million people visited Alabama's coast and spent approximately $2.3 billion dollars. In 2008, 1.67 million sport-fishing trips were documented along the Alabama coast. Concentrated along a 50-mile coastline, this represents exceptionally heavy average state recreational use per mile of shoreline compared to the other Gulf Coast states.

Actual and anticipated oiling from the DWH spill, and the staging and implementation of related response actions, dramatically depressed visitor numbers during the last eight months of 2010 (and potentially for much longer). Although the assessment of these losses is ongoing, preliminary analysis indicates reductions in visitation exceeded 50 percent during the peak summer months of 2010. Moreover, in June of that year, Alabama was forced to implement a complete closure of its coastal recreational fishing waters, resulting in the loss of 98 days of fishing by the time State officials were able to reopen the coastal waters.[9]

Objectives

The Trustees developed a set of primary and secondary criteria for purposes of selecting projects for Early Restoration. A particular project's ability to meet the primary objectives is a direct indicator of how effectively it addresses the State's restoration goals. In addition, secondary objectives provide additional insight on how a project or set of projects would affect other criteria that are of concern to the Trustees.

Primary Objectives

1. Provide sizable contribution towards compensating human use losses;
2. Represent a cost-effective approach; and

---

[9] Chris Denson, Alabama Marine Resources, personal communication, June 4, 2012. Alabama began closing waters on June 1, 2010; the last reopening was on September 6, 2010 (all areas and all species). The total number of days June 1 – September 6 is 98 days. At the height of the closure, Alabama had closed around 351 square miles (45% of state marine waters). The openings were conducted based on the time lapse of observed oiling events and were fisheries specific. Alabama had to submit a reopening proposal for each closed area and were subject to NOAA/FDA reopening protocols. The timeline for closures be found at http://www.outdooralabama.com/fishing/saltwater/dh/Timeline.cfm

3. Maximize the certainty of successful project implementation.

Secondary Objectives

1. Strength of local support;
2. Job creation and benefits to local economies;
3. Level of other co-benefits—e.g., ecological or educational; and
4. Administrative efficiency.

In the remainder of this document, project alternatives are evaluated in terms of their human use benefits, impacts to natural resources, and effectiveness in meeting the primary and secondary objectives listed above.

Scope of Analysis

The analysis was intended to provide decision-makers with an initial screening assessment designed to assist the Trustees in prioritizing the planning and implementation of actions to compensate for natural resource damages and associated human uses losses resulting from the oil spill. For projects negotiated successfully with BP, a more robust analysis will likely be necessary in the future to better understand site-specific impacts and comply with any applicable federal laws such as the National Environmental Policy Act.

II. Alternatives

The following section describes project alternatives the State of Alabama considered for implementation to meet its overarching restoration approach and those specific human use-based objectives described above. Although recognizing the possibility, the Trustees did not explicitly include a No Action alternative under which Alabama would receive no compensation for human use losses as part of the Early Restoration program. The No Action alternative would not achieve Alabama's overall restoration goals or its objectives for near-term compensation for human use losses.

Initial Screening to Identify a Short-List of Projects

The Alabama Trustees received several hundred suggestions for Early Restoration projects as part of public comment processes implemented following the spill. Recognizing the critical need to address the loss of human use, the Trustees initially screened the full list to identify those projects that had the potential to provide meaningful compensation for lost human use. From this list, the Trustees, in consultation with experts at the Alabama Department of Conservation and Natural Resources, excluded projects that did not fit within the financial resources of the Early Restoration program and then created a short-list of alternatives designed to be representative of the categories of projects available to address human use losses. This resulted in six major types of projects that the Trustees believe encompass the range of options available for Early Restoration initiatives directed at compensating for lost human use:

- Large-Scale Multi-Use Initiatives
- Land Acquisitions
- Boat Ramps
- Boardwalks and Campgrounds
- Beach Access and Dune Walkovers
- Artificial Reefs

The Trustees' analysis is based on specific projects selected as representative of each of these categories.[10]

[10] To avoid disclosing project specific information that could have an adverse impact on the Trustees' ongoing negotiations and/or litigation with BP, the discussion of specific projects in the original report has been edited to provide a more general analysis of the five alternatives to the Gulf State Park Enhancement Project.

Gulf State Park Enhancement Project

This alternative would implement ecologically-sensitive improvements to Gulf State Park (GSP) to (1) enhance access and improve the visitor experience, (2) restore degraded ecosystems, and (3) provide a major expansion of the park's environmental education programs. BP's share of the proposed cost for this project is estimated at approximately $85 million.[11]

Key elements of the project include the following:

Rebuilding the GSP Lodge. The original GSP lodge, destroyed in 2004 by Hurricane Ivan, would be rebuilt as a 'green' overnight stay and meeting facility. Building design and construction would be undertaken with the goal of certification under the LEED and/or Living Building Challenge certification programs, so as to minimize the facility's impact on the environment and establish it as a model for regionally-appropriate coastal zone design. The new building would provide state-of-the-art meeting facilities, overnight accommodations (350 double occupancy rooms), and ecologically-based amenities in a natural environment.

Expansion of GSP Environmental Education and Research Programs. The park's environmental education and research programs for youth groups and adult visitors would be expanded to promote improved understanding of the ecological services provided by Alabama's limited coastal natural resources. The expansion of environmental programs for visitors would be accomplished through several key improvements. An interpretive center would be constructed at Lake Shelby with exhibit space, laboratories, meeting spaces, and an auditorium devoted to ecosystems and the ecological services they provide.[12] Visitor orientation and interpretive exhibits would be incorporated into all public spaces, using the interpretive center as well as the rebuilt Gulf State Park Lodge to highlight the natural history of Alabama's coastal areas—especially marine and dune systems located within the park. The park's existing environmental education facilities would be expanded, including construction of three classrooms, three laboratories, and overnight lodging and eating facilities for approximately 50 students.

Visitor Enhancements. Various visitor enhancement elements would be implemented, including construction of recreational trails throughout the park for walkers, runners, cyclists, and other users. The proposed trail enhancements are extensions of existing trails that would create loops and provide increased recreational opportunities.

Ecological Restoration and Enhancement of Degraded Dune Habitat. Ecological restoration would target degraded dunes adjacent to the proposed lodge and to the west of the existing Beach Pavilion. Restoration would include breaching of the existing berm at strategic locations to allow for the buildup of dunes immediately behind the berm. The dunes would then be restored and enhanced by planting

[11] This reflects the estimated cost at the time the original analysis was prepared and before negotiations with BP were completed. The negotiated cost of the project is $87.5 million.

[12] Since preparation of the initial alternatives analysis in 2012, the location of the Interpretive Center has been moved from Lake Shelby to a site adjacent to the existing Beach Pavilion at Gulf State Park in order to minimize environmental impacts.

native vegetation such as sea oats *(Uniola paniculata)* and sand oaks *(Quercus geminata*). The sea oats and sand oaks would stabilize existing dunes and allow for sand accretion, thus increasing the areal coverage of dunes.

Land Acquisitions

Under this alternative, the State of Alabama would acquire and preserve undeveloped land along the Alabama coast. Preservation would protect ecologically sensitive coastal environments, including Alabama beach mouse habitat. Other than required access infrastructure, the Trustees envision no other development or alteration of the acquired land under this project type. Acquisition would allow for public access along beachfront areas and on trails in adjacent uplands.

Boat Launches

This alternative envisions the construction of public use boat launch facilities in coastal Alabama. These facilities will be designed and constructed using best management practices (BMPs) that meet local, state, and federal standards. Projects would be consistent with the Alabama Coastal Area Management Plan.

Boardwalks and Campgrounds

This alternative proposes the development of recreational boardwalks and campground facilities in coastal Alabama. The project would include 6,000 feet of boardwalk facilitating opportunities for bird and wildlife viewing. This alternative also includes provision of ten RV sites designed to attract more visitors to the area, thereby helping to recoup lost recreation user-days.

Beach Access and Dune Walkovers

This alternative would restore and enhance areas damaged by response activities and provide the public with better access and use of the beach that they were denied during the oil spill and cleanup. Beach walkovers would be constructed across areas damaged by response activities.

Artificial Reefs

This alternative proposes the construction of artificial reefs to provide recreational opportunities for anglers, snorkelers, and SCUBA divers. An artificial reef is a structure placed in the ocean environment that alters the natural habitat, and for the purposes of restoration and recreation, provides human use of ecological benefits. Although specific designs for the artificial reefs have not been selected, similar structures proposed for the Gulf coast have consisted of concrete discs or slabs embedded with rock and mounted on pilings. The exact locations of the proposed reefs in Mississippi Sound have not yet been determined. The total area of the proposed reefs is approximately 10 acres.

III. Recreational Use Discussion

Recreational Benefits and Impacts of Alternatives

The Trustees anticipate that each alternative will improve the visitor experience in coastal Alabama by providing recreational opportunities associated with the Gulf of Mexico and the surrounding environment; increase ecotourism; enhance the public's appreciation of the unique nature of Alabama's coastline and its natural resources; increase the public's awareness and understanding of the value of ecological services provided by healthy coastal ecosystems; and connect citizens to the natural resources of the Gulf of Mexico. The following discussion describes qualitatively recreational benefits of each of the six project alternatives. This qualitative analysis was performed to better inform the evaluation of the how well alternatives meet primary and secondary objectives.

Gulf State Park Enhancement Project

This initiative calls for the development of a state park lodging facility, which will serve as a gateway to the environment, ecology, and natural history of Alabama's Gulf Coast ecosystems. The lodge would provide overnight accommodations in its 350 rooms. The facility would offer the option of short-term visits to Alabama's Gulf Coast---a one-week minimum stay requirement is typical of private beach rentals in the area—creating lower vacation cost options for visiting the area, and thereby providing recreational opportunities to citizens from a broader range of income groups. In addition, overnight accommodations would allow visitors to maximize their time enjoying different recreational and education opportunities at the park or other beach and coastal areas nearby. For those recreational pastimes that require early mornings or evenings, such as bird watching and fishing, lodging at the park would allow for additional flexibility in scheduling and maximizing recreational experiences.

In addition to the lodge, the State would also expand environmental education and research programs designed to educate visitors about the variety of habitats in the park, including the extensive freshwater habitats that are unique in their proximity to the saltwater Gulf and the associated dune ecosystem. The goal is to support a year-round program of K-12 education focused on improved scientific understanding Alabama's Gulf Coast ecosystems.

As part of this project, recreational trails and interpretive nature trails would also be designed and developed. The recreational trails would provide opportunities and access for walkers, runners, cyclists, and other users in a natural environment. The interpretive nature trails would encourage exploration of the park's natural environments especially the dune and wetland habitats.

Construction of the full set of amenities, including the proposed ecological restoration component and the lodge, will synergistically work to enhance the visits of the park's existing 2.5 million annual visitors, increase overall park visitation, while also promoting visitation to other local nature preserves such as the Bon Secour National Wildlife Refuge and Weeks Bay National Estuarine Research Reserve.

Finally, the project will restore degraded dune habitat in the park resulting in enhanced habitat for beach mice and sea turtles. Sea turtles lay their eggs in nests built along the beach and lower dune systems, and their nests provide an additional source of nutrients for the dune vegetation.

Land Acquisitions

This alternative provides for land acquisition along the Alabama coast. Acquisitions of land and its conversion to State property will allow for increased public beachfront access to the Gulf of Mexico and to uplands and other parts of the acquired parcels. Acquisitions may also provide additional recreational opportunities associated with the Gulf of Mexico and the surrounding environment (e.g., birdwatching, snorkeling, etc.). The Trustees estimate that this alternative would likely increase day-use recreational opportunities for beachgoers, runners, walkers, and bird watchers.

This alternative focuses primarily on land-based recreation and is not expected to increase recreational use or experiences associated with activities such as boating or non-beach fishing.

Boat Launches

This alternative will result in the development of boat ramps and other boat launch facilities. Boat launches will provide boaters with access to public waterways for many recreational pursuits including fishing, SCUBA diving, water-skiing, and cruising local waterways. However, boat launches will only provide day-trip opportunities for most visitors, unless visitor vessels provide overnight accommodations.

Although boat ramps provide for a diversity of water-based recreational opportunities and experiences, they only serve those visitors who have access to watercraft, which typically requires a substantial investment. In addition, boat ramp development can also create conflict with land-based recreational needs in terms of beach access and parking. For recreational boaters, the creation of boat ramps and associated facilities would likely result in improvements to the boating experience through provision of additional access to marine resources. However, the benefits are likely more limited than for some other project alternatives as this initiative focuses only on owners of watercraft. For those visitors that do not own boats or have the resources to acquire them, this alternative will not provide substantial benefits.

Boardwalks and Campgrounds

Under this alternative, additional boardwalk and campground infrastructure would be created. This alternative calls for new boardwalks to improve access for disabled and other recreational users who enjoy bird watching or the opportunity to view existing natural habitat and wildlife. In addition, this alternative would include new overnight opportunities in the form of 10 RV campsites.

Similar to other alternatives, this alternative focuses on a single type of user. Although the alternative does provide additional overnight opportunities, it does so for a limited group of users—those that own or are willing to rent RVs. Based in this analysis, it is likely that those recreational users who focus on birding, wildlife viewing or RV camping are the primary ones who would derive benefits from this alternative. Recreational users who do not engage in those activities are unlikely to benefit.

Beach Access and Dune Walkovers

This alternative would primarily serve to facilitate access to the beaches of coastal Alabama but generally would not provide other recreational amenities beyond those needed to facilitate access (e.g., parking). Implementation of the alternative would result in increased day-use, enhancing the recreational opportunities of beachgoers, runners, walkers, bird watchers, and other land-based recreational users. As with other alternatives, this would be primarily a day-use option limited to single-day visits unless visitors are willing to pay for overnight accommodations.

Artificial Reefs

This alternative is similar in nature to the boat launches alternative described above in that it serves only one type of visitor; however, unlike boat ramps, reef development would result in additional natural resource benefits described below, which would enhance reef visitor experience. Artificial reef development would provide recreational uses and experiences for snorkelers, and anglers, as the reefs would become populated with a diversity of marine life. However, depending on the location of the reef, boats may be necessary for access, which would limit the pool of recreational users that may benefit from them. The reef would likely be close enough to shore for swimmers to reach; therefore, a broader group of visitors could benefit.

Marine Recreational Fishing Statistical Survey (MRFSS) data have documented high utilization of artificial reef structures along the Alabama coast, including a significant majority of charter fishing trips departing from the area. Survey data also suggest an increasing trend of use of artificial structures for fishing from 1992 to 2003, possibly due to the increase in opportunities for fishing over artificial reefs. This alternative assumes the addition of 10 new acres of artificial reef to an existing total of 205 acres of inshore artificial reefs in Alabama.

IV. General Natural Resource Impacts Analysis

In order to achieve the state's overarching restoration goals, impacts to the natural resources of the coastal and marine areas were considered in the evaluation of the alternative recreational use projects. This qualitative analysis was performed to better inform the evaluation of the how well alternatives meet primary and secondary objectives.

Impacts of Alternatives

The following analysis qualitatively discusses the impacts that each of the six project alternatives may have on the project area's natural resources. In terms of assessing the impacts related to the implementation of various alternatives, effects are generalized as either negative or positive. Negative effects are reductions in current condition or status of natural resources of the area. Positive effects are characterized as improvements in natural resource condition. More detailed analyses could be performed in the future when site-specific resource conditions are better understood (i.e., detailed quantification of natural resource impacts to date has been limited due to the short time for implementing Early Restoration). The natural resources considered in this assessment are the coastal and marine habitats, the plants and animals that inhabit them, and related coastal processes and their associated functions.

Gulf State Park Enhancement Project

The development-related effects of this alternative in its proposed location are mitigated by the fact that the new lodge would be built entirely within the disturbed area footprint of the previous lodge, thereby reducing negative impacts to natural resources. In addition, the design and construction of the lodge will further reduce any associated negative impacts as it would be undertaken with the goal of certification under the LEED and/or Living Building Challenge certification programs, in order to minimize the facility's impact on the environment and establish it as a model for regionally appropriate coastal zone design.

The restoration and enhancement of degraded dune habitat in the park would result in positive impacts as these actions would improve the structure and function of a sensitive coastal ecosystem. The dune restoration would also enhance sea turtle nesting habitat. Sea turtles lay their eggs in nests built along the beach and lower dune systems; as a result, the turtle nests provide additional nutrients for the dune vegetation. Alabama beach mouse habitat would also be improved.

Trail enhancements proposed under this project are designed only for pedestrian traffic and are generally extensions of already existing trails. Trails would be sited to avoid sensitive habitats such as wetlands or important habitat for wildlife. Although there would be minor adverse effects related to creating a trail extension, trail planning would limit the level of impacts and balance it with the ability for visitors to experience and appreciate the resources.

Land Acquisitions

Implementation of this alternative would result in positive impacts to the acquired area's natural resources because property subject to development threats would be permanently protected. This would conserve essential habitat for a number of beach/dune and coastal upland forest species of plants and animals. For more isolated parcels, the low level of use likely to occur would also provide additional positive effects for the endangered Alabama beach mouse. There are no foreseeable negative effects of this alternative on the areas natural resources other than minor impacts associated with creation of infrastructure needed to facilitate public access (e.g., parking).

Boat Launches

Boat launch development and associated facilities could result in some negative effects if not designed with the intent to minimize natural resource impacts. For example, depending on the type of materials used and their location in the water, boat ramps could affect sand transport laterally along the intertidal areas resulting in erosion or accretion. In addition, reduced water quality in the area of the boat ramp might also be experienced. Although there is little likely impact on aquatic species, increased human use and associated waste could attract scavengers, creating a nuisance and potential impacts to adjacent shorebirds or other species. However, the careful consideration and construction using best management practices could limit the negative effects described. Positive effects cannot be determined without additional site-specific information.

Boardwalks and Campgrounds

This alternative would likely result in both positive and negative effects to natural resources. The clearing of an area for campsites would result in the loss of native vegetation. However, habitat enhancement resulting from channeling visitors to boardwalks would likely offset any negative effects. Depending on the location of the proposed boardwalks, different effects are possible. For example, wetlands could be negatively affected if the boardwalk is sited through wetland areas, although the impacts would be short-lived. Crossing the dune system could also result in negative impacts as sand transport could be affected as well as dune stability. However with proper planning most negative impacts would be avoidable.

Beach Access and Dune Walkovers

This alternative would be expected to generate mostly positive impacts to natural resources as a result of the cleanup and restoration of areas used for equipment staging of response activities and oil removal dumpsters. Depending on the location of proposed walkovers and design of parking and restroom facilities, different impacts are possible. As with the Boardwalks and Campgrounds alternative above, proper planning efforts would be necessary to avoid negative impacts to sand transport and dune stability. With proper design of the walkover and the parking and restroom facilities, most negative impacts would be avoidable.

Artificial Reefs

This alternative would yield positive environmental impacts by increasing habitat structure and species diversity as newly created reefs are colonized by a variety of organisms. However, one potential negative effect experienced on artificial reefs in other areas is the unintentional colonization by invasive species, which could limit the potential for the reef to provide habitat for the desired native species. However, through proper planning and management this concern/effect could largely be avoided.

Final Project Evaluation

For final selection of Alabama's Phase II[13] Early Restoration projects, the Trustees conducted a screening analysis that considered primary and secondary objectives. As noted previously, the project alternative types were selected from the full list of projects submitted to the State based on their ability to address human use losses resulting from the oil spill and their consistency with the OPA and Early Restoration Framework Agreement. The Trustees recognize there are other project types in coastal Alabama that could provide compensation for lost human use. However, these six project types provide a representative sample and basis for evaluating the type and scale of human use projects available for implementation under the Early Restoration agreement.

Since the projects have yet to be fully developed at this stage of early restoration, this screening analysis relied on readily available data and expert judgment. The following sections describe how each alternative meets the stated primary and secondary objectives. The primary objectives are generally quantitative and considered the extent to which a project:

1. Provides sizable contribution towards compensating human use losses;
2. Represents a cost-effective approach; and
3. Maximizes the certainty of successful project implementation.

In addition, qualitative secondary objectives included:

1. Strength of local support;
2. Job creation and benefits to local economies;
3. Level of other co-benefits—e.g., ecological or educational; and
4. Administrative efficiency.

Evaluation of Projects against Primary Objectives

For each of the six project types the Trustees conducted a benefits transfer exercise to provide a rough approximation of the improvements in public welfare available through implementation of each project type. A two-step process was used to assess improvements. First, the increased participation in recreational activities resulting from the project type and/or the number of existing participants that were expected to experience an enhancement in the value of the experience were estimated. Second, a

[13] Now Phase III.

consumer surplus estimate, derived from the available economics literature, was applied to the estimate of participation in order to project the increase in human use value attributable to the project.

The results of the benefits transfer exercise are shown in Figure 2.[14] This document summarizes the results of the analysis in terms of project rankings, from highest (1) to lowest (6) against each criterion. Figure 2 also includes a qualitative measure of the degree of certainty associated with the Trustees' ability to implement the project.

Project Human Use Benefit Summary	Project Benefits Ranking	Project Cost Ranking	Net Project Benefits Ranking	Benefit-Cost Ratio	Certainty of Implementation
Artificial Reefs	3	3	2	1.0-2.0	High
Land Acquisitions	2	2	6	<1.0	Low
Boat Launches	4	4	3	1.0-2.0	Low
Boardwalks and Campgrounds	5	5	5	1.0-2.0	Medium
Beach Access and Dune Walkovers	6	6	4	1.0-2.0	Medium
Gulf State Park Improvement Project	1	1	1	1.0-2.0	High

Figure 2: Human Use Project Type Rankings

Net benefits: This represents the difference between project costs and the screening level estimates of recreational benefits. It is a ranking from high (1) to low (6) of the absolute dollar magnitude of improvement in human welfare expected to result from an individual project type. For this screening evaluation, net benefit is used as a measure of the extent to which the project type meets the Trustees' first primary evaluation criterion— providing a sizable absolute contribution towards compensating human use losses.

Full implementation of the Gulf State Park Enhancement project is expected to produce the highest level of absolute benefits. Land Acquisitions—the second largest project type in terms of budgeted cost—yields the lowest total net recreational benefits. Although land acquisition initiatives are projected to have significant total benefits, the human uses represent only a portion of the overall project benefits and therefore make a significantly smaller contribution to compensating Alabama for human use losses relative to the Gulf State Park Enhancement Project. The remainder of the land acquisition project benefits would be ecological.

The four other project types all yield positive net benefits (i.e., benefits exceed costs) but the net benefits are smaller than those for the Gulf State Park project.

Benefit-Cost Ratio: Alabama's second primary objective is that each project type must be reasonably cost-effective, which was assessed using benefit-cost ratios. All of the project types are projected to

[14] In the original version of the report, the table includes detailed estimates for actual projects. For this document, the actual estimates have been replaced by project rankings so as not to disclose information that might be adverse to ongoing negotiations with BP.

have positive human use benefit-cost ratios, with the exception of the Land Acquisitions, where a substantial portion of the benefits can be characterized as ecological. The Gulf State Park Enhancement Project and four of the other project types all exhibit reasonable benefit-cost ratios, and therefore meet the Trustees' criterion for cost-effectiveness.

Conceptually, it is also worth considering whether a suite of smaller projects with greater benefit-cost ratios might be preferable to a single large project with a lower benefit-cost. Looking across the six project types, the Boat Launches were estimated to have the highest benefit-cost ratio from a human use perspective and Land Acquisitions the lowest.

In this scenario, if we assume that the five alternative project types are representative of a broader suite of projects that might be developed by the Trustees, the weighted average benefit-cost ratio for human use would still be less than the ratio for the Gulf State Park Enhancement Project.[15] Since any scale up strategy would inevitably involve a significant land acquisition component, where recreational benefits do not tell the whole story, implementation of a suite of these projects is likely less beneficial from a human use perspective than implementation of the Gulf State Park Enhancement initiative.

Implementation Certainty: The third primary objective is a qualitative assessment of the level of certainty associated with implementation of the six project types. Risks associated with reduced project life or performance due to tropical storms were incorporated separately into the discounting process for the benefit-cost analyses.

Effectively, this criterion is a measure of the Trustee's degree of control over implementation of the project. At the low end are Land Acquisitions where it is unclear whether there will be a willing seller at the property's appraised value. Also ranked low are the Boat Launches, a project category where the Trustees are aware of some site-specific concerns. The Boardwalk and Campground and the Beach Access and Walkover projects were assigned a medium certainty ranking based on the likelihood of community support for the projects. The only initiatives given a high certainty value are the Artificial Reefs and the Gulf State Park Enhancement Project, both of which are under the direct control of the state Trustees.

Evaluation of Projects against Secondary Objectives

The following section provides a more qualitative analysis of how each alternative meets the Trustees' four secondary objectives. These objectives were:

1. Strength of local support;
2. Job creation and benefits to local economies;
3. Level of other co-benefits (e.g., ecological or educational); and

[15] The Trustees also considered the possibility of scaling up only the subset of project types that ranked higher than Gulf State Park. While such an approach would yield a higher benefit-cost ratio than the Gulf State Park Enhancement Project, it is not a realistic approach to restoration because it would create far more of certain types of infrastructure projects than the Trustees believe is needed in coastal Alabama.

4. Administrative efficiency.

For this analysis, administrative efficiency relates to the ability to oversee the design and implementation of a project, but does not include on-going project operation.

Gulf State Park Enhancements—Alabama Trustee consultations with affected communities, local environmental NGOs, and other local leaders indicate support for the Gulf State Park Enhancement Project. The project is anticipated to create substantial benefits to the local economy through the creation of construction jobs as well as permanent employment opportunities at the lodge and education center. Restoration of dunes at the park will provide both ecological and broader coastal protection benefits. The proposed K-12 educational program is also an important co-benefit of the project. From an administrative perspective, implementation of a single, large Early Restoration effort is much less burdensome to the Trustees than implementation of multiple small projects with an equivalent value.

Land Acquisitions—In southern Alabama there is strong NGO and community support for land acquisition projects. While these do not have significant job creation benefits, they do create new recreational opportunities and have the potential to provide very significant ecological benefits. From an administrative efficiency perspective, this initiative is a relatively efficient means of achieving Alabama's Early Restoration objectives due to its large size when compared with most of the other alternatives under consideration.

Boat Launches—Boat launch facilities generally have a wide range of public supporters. However, experience from other projects does suggest that construction of boat ramps has the potential in some cases to be more controversial than other types of projects. There would be no ecological co-benefits associated with this project type and the job creation impacts will be relatively small. Like other small projects, this is also not an especially efficient Early Restoration approach for the Trustees from an administrative perspective.

Boardwalks and Campgrounds—Projects of this type often have strong support in neighboring communities. Economic and job creation benefits, however, are quite limited. Anticipated ecological co-benefits are also minimal, and like other small project types, this one is not especially efficient from the administrative perspective.

Beach Access and Dune Walkovers—Projects of this type generally garner strong support from both residents and non-residents as they provide important beach access opportunities. This project type will yield some small-scale economic benefits when constructed and can provide needed protection for ecologically sensitive dune habitats. Administrative efficiency is low given the project scale.

Artificial Reefs—Constructed reefs for fishing and snorkeling are generally very popular with the public. From a job creation perspective, they will have a short-term positive impact but these are not likely to be large overall given the relatively limited scale of proposed reef development. Such reefs will add

secondary productivity benefits for coastal ecosystems. Again, administrative efficiency is low due to the fact that the proposed reefs are generally small (ranging from 0.25 to 4 acres).

Conclusions

The screening evaluation indicates that the Gulf State Park Enhancement Project best meets the primary and secondary objectives of the Alabama Trustees. It makes a large contribution towards compensating the State for lost human use, has a reasonable benefit-cost ratio and provides the Trustees with a relatively more certain implementation outcome. In addition, it will provide important educational and ecological benefits, temporary and permanent job creation, and a high degree of administrative efficiency from the implementation perspective. More generally, it provides a high quality recreational use experience and results in overall beneficial impacts to natural resources.

The remaining five projects all provide important benefits and remain viable candidates for implementation under a longer-term restoration initiative. But these projects, either individually or in combination, do not provide as desirable an opportunity for meeting the Trustees' objectives for Early Restoration as does the Gulf State Park Project.