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Chapter 2: Management Alternatives

Introduction

There are many different ways to protect natural areas at Gateway, preserve its historic buildings, and provide fun and educational activities. In a GMP/EIS, these different options to fulfill the park's purpose and achieve a new vision are called management alternatives. Alternatives provide a different focus for the park and emphasize different priorities. All the alternatives meet the park's purpose, laws, and policies—they just do it in different ways.

These alternatives represent the combined planning efforts of NPS staff and the contributions of academic institutions, other government agencies, stakeholder groups, local residents, park users, and interested individuals. Not all ideas and suggestions will be reflected in the alternatives; many are specific actions that could happen as part of implementation of the final GMP/EIS.

This chapter of the GMP/EIS presents three alternatives, compares their impacts and costs, and identifies the preferred alternative.

This chapter of the GMP/EIS presents three alternatives, compares their impacts and costs, and identifies the preferred alternative. Data used to compare their impacts—or what would happen if each alternative was adopted—are summarized from the detailed environmental impact analysis presented in Chapter 4: Environmental Consequences.

The alternatives include a "no-action alternative" in the National Environmental Policy Act (NEPA) that assumes that no new actions would occur (i.e., the continuation of current management direction). This no-action alternative is alternative A. The GMP/EIS also describes and evaluates two action alternatives: alternatives B and C. Alternative A provides the baseline for comparing the impacts of implementing the action alternatives.

Gateway would continue to follow the applicable laws, policies, and special mandates regardless of the alternatives considered in this GMP/EIS. These laws, policies, and mandates are not repeated in this chapter. However, other aspects of management would differ among the alternatives, and those aspects are the focus of this chapter. The alternatives do not include many details on resource management or visitor use management. More details on how to achieve the desired future would be determined in follow-up implementation plans once it has been decided what those conditions should be.

Developing the Alternatives

As part of the evolutionary process associated with creating alternatives for the GMP/EIS, many concepts have been given serious consideration. Like fitting pieces of a large puzzle together, many ideas have been considered, modified, rejected, or accepted. The reasons for ultimately accepting or rejecting a concept are varied and sometimes very complex.

Following identification of GMP/EIS issues during scoping in summer 2009, the planning team began to consider different and creative ways to address the issues Gateway faces. This exercise resulted in a set of preliminary management concepts that would eventually be shaped into alternatives. These preliminary concepts were presented in fall of 2010 by newsletter and at a series of open houses. With input from interested individuals and

The park will continue working with agencies and landowners to resolve the boundary issues on a case-by-case basis. This plan does not preclude future consideration of boundary adjustments should needs or conditions change.

stakeholders, and through an iterative process of planning and reviews, the planning team worked to strengthen the preliminary concepts and developed four alternatives. Each alternative expressed a different management scenario and future for Gateway.

In summer 2012, the planning team presented the four alternatives in a GMP/EIS newsletter, hosted a series of open houses, briefed elected officials and convened a number of stakeholder meetings in order to share the alternatives with local residents, the public, and partners. The planning team used public comments and partner feedback to refine the alternatives. At this stage in the process, the team dismissed alternative D and narrowed the planning effort to the no-action alternative (alternative A) and the two action alternatives (alternatives B and C).

In October 2012, Hurricane Sandy struck Gateway and caused damage to many areas of the park. Following months of recovery efforts and initial damage assessment, the planning team, in conjunction with NPS senior leadership, evaluated the alternatives to determine whether changes were necessary. The group concluded that the vision for each alternative remained intact and Hurricane Sandy recovery efforts would be guided by the new GMP framework.

Potential for Boundary Adjustments

The National Parks and Recreation Act of 1978 requires GMPs to address whether boundary modifications should be made to park units. Boundary adjustments may be recommended if modifying the boundaries would fulfill any of the following goals:

- To include significant resources or opportunities for public enjoyment related to the purposes of the park
- To address operational and management issues such as access and boundary identification by topographic or other natural features or roads
- To protect park resources critical to fulfilling park purposes

Issues related to the current boundary and related park operations were explored and evaluated for each area of Gateway. Specific minor boundary adjustments were identified as being needed to correct operational inconsistencies resulting from the park's legislation; however, none of the alternatives in this GMP/EIS propose major changes to the park boundary. The park will continue working with agencies and landowners to resolve the boundary issues on a case-by-case basis. This plan does not preclude future consideration of boundary adjustments should needs or conditions change.

Management Concepts for Each Alternative

Each alternative is framed by a management concept, a general theme that directs how management would be focused across the park. Gateway's enabling legislation, the park's resources and recreation opportunities, and the issues and needs that were identified early in the planning process all helped to shape the following management concepts.

Alternative A: No Action

A no-action alternative is required by the implementing regulation of NEPA and serves as the baseline for evaluating and comparing the other proposed alternatives. Under alternative A, park resources and visitor use would be managed as they are today, with no major change in direction. Decisions would be based on existing conditions and available information, but would continue to lack a comprehensive planning framework that addresses the full range of contemporary and potential future issues. The park's enabling legislation, the management direction established in the 1979 GMP, the Foundation Document and other implementation plans would continue to guide management decision making.

Under alternative A, the visitor experience would remain segmented, with each of the three units independently serving local residents and visitors at specific locations.

Alternative B: Discovering Gateway – NPS Preferred Alternative

This alternative provides the widest range of activities and most recreational opportunities in dispersed locations throughout the park. New connections would be forged with park lands and communities adjacent to Gateway and nearby. This alternative offers the most instructional programming and skills development and draws people into the park to increase awareness and enjoyment of Gateway's historic resources and the natural environment. Under alternative B, more convenient and affordable park access would be developed through trail connections, bicycle infrastructure, public transit, and waterborne transportation. This alternative prioritizes joint management and operations for visitor services, orientation, programs, and facilities with New York City and other partners.

Alternative C: Experiencing Preserved Places

This alternative provides the most opportunities for independent exploration and "wild" experiences that immerse visitors into natural areas and historic sites and landscapes. This alternative increases the visibility, enjoyment, and protection of coastal resources and focuses resource management on beach and dune ecosystems and coastal defense landscapes. New recreational programming emphasizes low-impact activities that highlight preservation efforts as part of interpretation and education activities and promotes hands-on learning and outdoor skills. This alternative maximizes sustainable operations and concentrates activities, access, and facilities in distinct locations.

Alternative A: No Action

Under alternative A, continuation of current management direction (no-action alternative), the NPS would continue to manage Gateway's resources and visitor use as it does today, with no major change in management direction. Decisions would be based on existing conditions and available information; there would be no comprehensive planning framework to address the full range of contemporary and potential future issues. The park's enabling legislation, the management direction established in the 1979, federal laws, NPS policies, the Foundation Document and other approved plans and projects would continue to guide management of resources, visitor use, facilities, and operations.

Recreation and Visitor Experience

Under alternative A, the visitor experience would remain segmented, with each of the three units independently serving local residents and visitors at specific locations. Efforts to reopen areas of the park that were damaged by Hurricane Sandy and to provide services and visitor facilities would continue. The ongoing structural assessments and recovery efforts may result in temporary shifts of current management and visitor access. Existing interpretive, educational, and management programs providing a range of services to visitors would continue, adjusting for Hurricane Sandy limitations. Visitors would continue to

enjoy a variety of traditional beach-oriented and other recreational activities at open areas. Gateway would continue to provide comfort stations, lifeguards, food and beverage service, camping, and ferry operations where those services currently exist. Funded planning projects to improve and expand trail systems and camping areas would continue. Existing campsites would remain in their current locations.

The visitor centers at Sandy Hook, Jamaica Bay Wildlife Refuge, and Floyd Bennett Field would continue to provide orientation, information, interpretive programs, and exhibits and serve as both destinations and points of departure for day visitors, tours, and school groups. Traditional ranger-led activities and curriculum-based educational programs would continue to be available. Current efforts to make more people aware of the presence of the park would continue. Gateway's informational website, exhibits, brochures, and other publications would also be available.

Featuring a diversity of districts that range in character from popular beaches to small community parks to an urban wildlife refuge, the Jamaica Bay Unit would continue to offer a wide range of visitor experiences.

Jamaica Bay Unit

Featuring a diversity of sites that range in character from popular beaches to small community parks to an urban wildlife refuge, the Jamaica Bay Unit would continue to offer a wide range of visitor experiences. Learning opportunities would continue to be characterized by guided and self-guided tours, publications, wayside exhibits, a Junior Ranger program, nature trails, and special programs.

Floyd Bennett Field would continue to provide a large variety of recreational activities, including shoreline fishing, community gardening, archery, hand-propelled watercraft launch/landing, overnight tent and recreational vehicle (RV) camping, biking, cross-country skiing, and birding. At Ecology Village, the NPS would continue to offer curriculum-based overnight camping programs for school groups, teacher training, and guided trail programs. Concession operations include the marina, a golf driving range, and an athletic center.

The trails at Dead Horse Bay, the North Forty, and Ecology Village would remain open for hiking and nature observation. A portion of the Jamaica Bay Greenway, a 19-mile greenway circumnavigating Jamaica Bay, runs along the east side of Flatbush Avenue and adjacent to the park boundary and provides connections to the rest of the Jamaica Bay Greenway and other New York City greenway systems. Biking would continue along the greenway and historic runways.

The newly renovated William Fitts Ryan Visitor Center (Ryan Visitor Center) in the former control tower /administration building would continue to be open year-round and provide exhibits and a bookstore. The Historic Aircraft Restoration Project (HARP) would continue to be accessible to visitors at Hangar B. The exteriors of Hangars 3 and 4 continue to be featured in interpretive programs. Plumb Beach would continue to be a site for sailboarding, kite sailing, and hand-propelled watercraft (e.g., canoes, kayaks). Other beach uses include sunbathing, beachcombing and wading would continue. No trails would be maintained at the site and visitors would continue to travel along social trails through the dunes.

Canarsie Pier would continue to be used as a fishing pier and promenade. The pier would remain a popular break area for cyclists using the adjacent Jamaica Bay Greenway.

The existing structure would be shared with New York City and serves as maintenance storage. Kayak and bike rental concessions slated to be implemented in the summer of 2013 would be maintained.

Bergen Beach would continue to have horse-related activities provided by a concession-run equestrian center. A number of trails would continue to offer horseback-riding opportunities. Limited equestrian programming would be offered and the facilities would continue to accommodate horse boarding.

Canarsie Pier would continue to be used as a fishing pier and promenade. The pier would remain a popular break area for cyclists using the adjacent Jamaica Bay Greenway. Picnicking and grilling on a first-come basis would continue in the designated area. Hand-propelled watercraft launch/landing sites would continue to be maintained. Demonstration programs for canoes/kayaks would continue at designated launch/landing sites. Special events would continue to be considered on an as-requested basis.

Frank Charles Memorial Park would continue to be managed as an active recreation area for tennis, baseball/softball, and children's play. Access to shoreline areas would continue to be limited to below the high-tide line for the purposes of fishing only to protect remaining marsh areas.

Hamilton Beach Park would continue to be managed as an active recreation area for children's play and baseball. Shoreline access would continue to be limited to below the high-tide line for the purposes of fishing only to protect remaining marsh areas.

Jacob Riis Park would continue to be managed as a popular beach destination and recreation area. Visitor uses and recreation facilities would be maintained, including a surf-guarded beach in season (Memorial Day to Labor Day) for sunbathing, swimming, and wading. Seasonal NPS evening campfire programs would continue, as would occasional NPS-guided tours and interpretive programming. Other recreational uses would continue, including pitch 'n' putt golf, surf fishing, beachcombing, strolling, cycling on the boardwalk, picnicking, basketball, and hard court sports.

Fort Tilden would continue to provide visitors access to the historic "back fort" area to view the exterior of Battery Harris, the maritime forest, and access to the freshwater pond trail. Biking would continue to be allowed along paved trails. Outdoor recreation opportunities would include fishing, birding, beachcombing, sunbathing, and strolling. The Rockaway Little League would continue to manage and maintain the playing fields, field house, and associated facilities leased to them by the NPS. The Rockaway Artists Alliance would also maintain its gallery and studio operations. The Rockaway Theater Company would operate out of the former post theater, which includes ticketed performances of live productions. The picnic area would continue to provide group picnicking through permits. Outdoor concerts, picnics/cookouts, and sports tournaments would continue to be managed on a per-event basis.

Recreational activities maintained at Breezy Point Tip would include surf fishing, beach walks, and wildlife viewing. Off-road permits would continue to be offered for beach access for the purpose of fishing during the shorebird nesting off-season. The beach club concessions would continue to provide beach access, pools, and associated amenities to members and day-fee visitors, including fast-food / casual food services, cabanas of various sizes and expenses, and opportunities for catered events.

Sandy Hook Unit

The Atlantic Coast of Sandy Hook would continue to be a draw for millions of visitors for swimming, sunbathing, strolling, beachcombing, and fishing. The popular multi-use path would provide opportunities for walking and biking. Visitors would also continue to take advantage of the open space and natural surroundings for hiking and wildlife observation. Visitor services would be retained to provide food, beverages, and other items. Recreation would be maintained along the bayside, including hand-propelled boating, sailboarding, and windsurfing as well as fishing and birding.

The NPS and its partners would continue to offer free, guided programs that feature Sandy Hook's natural resources and historic maritime and coastal defense structures. Educational and living history programs, wayside exhibits, publications, and a Junior Ranger program would round out learning opportunities at the park unit.

The historic setting around Fort Hancock would continue to be preserved and visitors would continue to have access to the lighthouse and a few coastal defense structures. Guardian Park would remain an area for picnicking. Concerts would continue to be considered on an as-requested basis, as would other special events by permit. Public camping by reservation would continue at the established campground.

Recreational uses at Great Kills would continue to be complemented by educational programming offered at the Great Kills Education Field Station.

Staten Island Unit

Natural and coastal defense resources within the Staten Island Unit would continue to be interpreted and experienced by visitors through guided and self-guided tours, living history programs, Fort Wadsworth's Mont Sec House tours, classes/workshops, wayside exhibits and publications, and educational programming at Great Kills Education Field Station and the Education Center at Fort Wadsworth. Additionally, visitors would continue to experience the Staten Island parks through recreation, including walking and biking on trails and greenways, fishing, kayaking, and field sports.

At Fort Wadsworth, coastal defense touring would continue via scheduled guided programs, living history programs, and self-guided walking tours. The park would remain a stopping point, destination, and starting point for bicycling and cycling groups. The overlook remains open and inviting for vista viewing and interpretation. Local residents would continue to use the park for walking, exercise, and fishing. Public camping by reservation would also be available in its existing location at Camp Hudson.

Miller Field would continue to be managed to accommodate field sports and sports leagues. The NPS would retain and manage the sports fields. Sports leagues would continue to use the sports fields by permit or as otherwise legally authorized. The trail through the swamp white oak forest would remain open to visitors. The bike path would continue to provide connections to Fort Wadsworth and New York City parks along the eastern shore. The picnic area would continue to be available for use on a permit basis. Fishing, community gardening, basketball, and the playground area would continue to provide additional recreational opportunities.

Many recreational activities, such as walking/jogging, cycling, swimming, hiking nature trails, kayaking, and motorboating, would continue at Great Kills Park. Local residents and formal and informal groups would continue to use the park for walking, exercise routines, wildlife observation, fishing, and astronomy programming. The Great Kills Park swimming beach areas would be available during the summer months. Boating use at the marina would continue with temporary facilities. Recreational uses at Great Kills Park would continue to be complemented by educational programming offered at the Great Kills Education Field Station. Some areas of the park would remain closed until remediation efforts are completed.

Natural Resource Management

Natural resource management programs would continue, many in partnership with federal, state, and local agencies, academic institutions, and non-governmental organizations (NGOs). Existing programs would focus on protecting special-status species, monitoring conditions, mitigating external threats, controlling nonnative species, and restoring habitats impacted by manmade structures or human activities.

Jamaica Bay Unit

The Plumb Beach western shoreline would continue to be monitored for severe erosion resulting from increased storm surges. Gateway would continue to actively work with the New York City Department of Parks and Recreation (NYCDPR) and the U.S. Army Corps of Engineers (USACE) to mitigate erosion and its impact on the infrastructure. Sediment management of the shoreline would also continue. The Plumb Beach dune system would continue to be minimally managed. Horseshoe crab populations would continue to be monitored.

The habitat restoration project at Bergen Beach that was established as part of a New York City Department of Transportation (NYCDOT) mitigation agreement would continue.

The Floyd Bennett Field North Forty would continue to be managed as a natural area with pedestrian access only along established trails. Invasive species would be controlled and native species reestablished when staff and funding become available. Gateway would also continue to work with New York City to reestablish native species as part of the MillionTreesNYC program. Similarly, the grassland area of Floyd Bennett Field would continue to be maintained and mowed in order to provide habitat for migratory and residential birds and small mammals. Natural succession of woody vegetation would continue in other areas of Floyd Bennett Field.

The Jamaica Bay Wildlife Refuge would continue to be managed as an important stopover for migrating birds and an "Important Bird Area of Global Significance." The freshwater East Pond at the refuge would continue to be managed by natural resource management staff as an artificial landscape with the water levels controlled through locks. Gateway would continue to work cooperatively with federal, state, and local agencies to limit the impact to its natural resources within Jamaica Bay. The freshwater West Pond would remain breached, and future repair options would be studied.

Saltmarsh restoration projects would continue, and the park would continue to provide scientific data and monitoring of water quality and sediment contamination.

The Fort Tilden beach and dune system and upland forest would be managed to allow natural processes to occur. This habitat would be preserved and protected by allowing access only in designated areas and along established trails. Restoration of coastal vegetation would continue where practical and when funding is available. Invasive species would be removed and native species reestablished when staff and funding are available.

The habitat restoration project at Bergen Beach that was established as part of a New York City Department of Transportation (NYCDOT) mitigation agreement would continue.

Sandy Hook Unit

The northern beach and dune system of Sandy Hook would continue to be managed as a natural area with visitor access only along established trails. The piping plover protection would be maintained. The holly forest would be managed as a protected and preserved area, with visitor access limited to ranger-guided trail walks. The maritime forest within Sandy Hook's interior would continue to follow natural succession and be managed as a

natural area, with access allowed along established trails only. The recreational swimming beaches would continue to be actively managed for beach recreation while protecting and maintaining the beach and dune habitat would remain a priority.

Staten Island Unit

The Fort Wadsworth beach and shoreline continues to be managed to allow natural processes to occur. Offshore, Hoffman and Swinburne Islands would remain off limits to visitor access and would continue to be managed as bird and wildlife habitat.

The dune system at Miller Field would continue to be managed with native coastal vegetation planting when funding is available. Crooke's Point would continue to be managed as a natural area with access allowed along established trails. Invasive species would continue to be removed and native species reestablished when staff and funding are available. The NPS would continue to work with New York City to reestablish native species as part of the MillionTreesNYC program. Monitoring and beach erosion control on the northern Great Kills Park shoreline would continue.

Museum collections and archives would continue to be moved from Sandy Hook and consolidated with collections currently maintained in their current location at Fort Wadsworth.

Cultural Resource Management

Historic structures and cultural landscapes would continue to be managed through maintenance and repair where feasible and when funding becomes available. Existing programs providing basic protection to the park's cultural resources would continue to operate in a manner consistent with applicable federal and state laws and NPS policies. Vegetation would continue to be removed from some coastal defense fortifications on a limited basis, while others would continue to decay by natural processes. Many vacant buildings throughout Gateway would continue to deteriorate. The Sandy Hook Lighthouse, Battery Weed, and select fundamental coastal defense and maritime structures would be preserved. Museum collections and archives would continue to be moved from Sandy Hook and consolidated with collections currently maintained in their current location at Fort Wadsworth.

Jamaica Bay Unit

Select historic structures and landscapes at Jacob Riis Park, Floyd Bennett Field, Riis Landing and Fort Tilden would continue to be maintained for visitor services and park operations. Battery Kessler, Battery Harris, and Construction Battery 220 would continue to become overgrown with vegetation. The Nike Missile Launch Site would remain a maintenance yard. These and other coastal defense resources would not be interpreted on site.

Sandy Hook Unit

The NPS would continue to explore the most appropriate methods for the maintenance, stabilization, and restoration of the buildings at Officers' Row. The Fort Hancock 21st Century Advisory Commission would continue to provide advice on the development of a reuse plan and on matters relating to future uses of the Fort Hancock Historic District.

The History House, part of Officers' Row, would remain open to the public. Similarly, the unit's fundamental maritime resource, the Sandy Hook Lighthouse, would continue to be maintained in good condition. Battery Potter, Battery Gunnison, and Mortar Battery would continue to be maintained, stabilized, and interpreted as funding is available. However, Batteries Morris, Urmston, and Peck, Nine-Gun Battery, and Batteries Arrowsmith, Kingman, and Mills would continue to decay in place. Maintenance of the Nike Missile Launch and Radar Sites would occur as funding is available. The Sandy Hook Proving Ground would continue to be maintained through mowing and shrub removal.

Staten Island Unit

Batteries Duane and Weed and Fort Tompkins would continue to be stabilized and preserved as funding becomes available. Batteries Catlin, Bacon, Turnbull, Barbour, Hudson, Mills, Dix, Upton, Barry, Richmond, and Ayres would be left unmanaged. Vegetation removal by goats would continue on select batteries and landscapes.

Transportation and Operations

Existing operation and transportation infrastructure would be maintained at current locations. Maintenance functions, equipment, and facilities damaged as a result of Hurricane Sandy would continue to be evaluated and possible replacement and relocation explored. Gateway visitors would continue to be automobile dependent and people without cars would continue to be reliant on limited direct bus and ferry service.

Jamaica Bay Unit

Floyd Bennett Field would remain accessible by automobile from Flatbush Avenue, by New York City Metropolitan Transportation Authority (MTA) bus, by boat at the marina, at the landing by hand-propelled craft by permit, and by non-motorized means via the adjacent Jamaica Bay Greenway. The refuge trails and visitor center would remain accessible by car, the Jamaica Bay Greenway, the MTA buses, and the nearby elevated train station at Broad Channel. Fort Tilden would remain accessible by automobile and bicycle via New York City right-of-way (Rockaway Point Boulevard) and one MTA bus route. The NPS would also maintain ferry access to Riis Landing.

Maintenance facilities would remain at current locations: the Nike Missile site (Fort Tilden), Building 258 (adjacent to Ecology Village), the Building 97 warehouse (adjacent to Hangar B), and the Fort Tilden Wharf warehouses. Primary trail maintenance responsibilities would remain with the Jamaica Bay Unit maintenance operations.

The former landfills at Pennsylvania Avenue and Fountain Avenue would continue to be managed by New York City with no public access. Efforts to revegetate the areas would continue. The park would continue working with New York City on the transfer of the former landfill areas to the NPS. Following the transfer, the NPS would evaluate the potential of opening the former landfills to limited public use.

The New York City Sanitation Department would continue to occupy facilities at Floyd Bennett Field and, in return, provide sanitation services for the New York units of the park. The New York Police Department would continue to occupy facilities and a portion of one runway at Floyd Bennett Field. Development of a gas transfer station in the Floyd Bennett Field hangars would continue to be explored, with no public access permitted.

Sandy Hook Unit

Most visitors would access the unit by car, although seasonal ferry service would continue to be provided to Fort Hancock from Manhattan. Boaters would continue to access Sandy Hook at Horseshoe Cove and cyclists would enter via the entrance road and multi-use path. The South Maintenance Area would continue to be located on portions of the Nike Missile site.

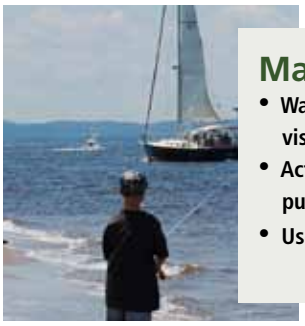
Staten Island Unit

Fort Wadsworth would remain accessible by automobile, MTA bus, bicycle, and on foot. Miller Field would continue to be accessible by automobile, MTA bus, Staten Island Rapid Transit (New Dorp Station), bicycle, and on foot via New York City right-of-way (New Dorp Lane). Miller Field would continue to serve as a regular starting point and rest area for tour cycling by groups. Great Kills Park would remain accessible by car. MTA bus service continues along Hylan Boulevard, and Staten Island Rapid Transit is available at Bay Terrace Station. Pedestrian and bicycle access would continue along the multi-use trail parallel to Buffalo Street. Access by boat would continue via the marina and boat launch. Maintenance facilities would remain at current locations at Fort Wadsworth and Great Kills Park.

Management Zones

Each day, Gateway staff members make hundreds of decisions that influence how facilities and resources like buildings and beaches are cared for. Should a grassy area be mowed or allowed to grow wild for wildlife habitat? Should a new segment of trail be paved for bikes or left as a natural surface for walking? In order to help guide the appropriate locations and types of use for these activities in a big park, Gateway staff relies on GMP management zones. These zones give people an understanding of where certain activities are and are not allowed. They also tell park managers where development can and cannot be added and the intensity of management that is appropriate in different parts of the park.

Management zones are descriptions of desired conditions for park resources and visitor experience in different areas of the park. The type, size, and location of the different zones correspond to that specific alternative. While some zones in the action alternatives are the same in terms of their location, what may actually happen in each zone would vary among the alternatives. Not all activities and facilities appropriate in a management zone may be allowed or constructed everywhere a management zone occurs. Because the management zones describe new alternatives, they have not been applied to alternative A. The management zones developed for the action alternatives are described below and further defined in table 2-1. Following the definitions, a set of management zone maps, charts, and narrative descriptions are used to describe each of the action alternatives in detail.



Marine

- Waters managed to protect and enhance the ocean and bay environments and provide opportunities for water-based visitor use and recreation.
- Activities are regulated to protect elements of the natural environment, prevent visitor conflicts and enhance public safety.
- Use levels would be expected to range from low to high and would be influenced by adjacent zones and time of year.

Recreation

- Park areas that accommodate a variety of recreation activities for fun, learning and physical activity.
- These areas offer a broad range of outdoor, educational, and interpretive experiences.
- High use levels would be expected especially during the summer months. Encounters with other people would be common.
  - Community Activity Subzone - This subzone supports large group gatherings such as sports leagues, community activities and special events. These places require more intensively managed facilities and landscapes.
  - Active Beach Subzone - This subzone offers traditional summer beach activities including swimming and sunbathing.

Natural

- Open, undeveloped areas managed to preserve natural resources while allowing for the enjoyment of the outdoors and nature.
- Visitors would enjoy the quiet, solitude, and sense of connection inspired by the natural world.
- Programs and facilities would facilitate nature study, interpretation and other passive activities. Moderate use would be expected at centralized activity areas and points of entry.
  - Sensitive Resource Subzone - These natural areas receive the highest level of protection, scientific investigation and monitoring and are sites for current and future restoration efforts. Public access is restricted to minimize impacts.

Historic

- These areas include fundamental and historic sites, structures and cultural landscapes linked to Gateway's history.
- Resources in these areas are the focus of interpretation and preservation projects and are managed to ensure the long-term protection of their historic integrity.
- Visitor use would be managed to minimize impacts on the resources while providing opportunities to learn about their associated events and history through tours and interpretive media.
  - Ruins Subzone - This subzone contains historic structures and landscapes in very poor condition. These structures and landscapes are allowed to decay naturally. Some areas may be improved for interpretation. The majority of these areas would be fenced to limit public access or stabilized for safety.

Developed

- These areas support visitor and administrative functions of the park and its partners.
- Infrastructure and facilities support maintenance, orientation, education, interpretation, lodging and transportation.
- Visitor access would vary throughout this zone with some areas receiving intensive visitor use and others having limited or no public access.

Table 2-1. Management Zones for the Action Alternatives.

	Marine	Recreation
Zone Concept	Waters would be managed to protect and enhance the ocean and bay environments and provide opportunities for water-based visitor use and recreation. Adjacent zones may influence the levels of public access and restrictions for boating and other uses (e.g., motor boating near Jamaica Bay Wildlife Refuge islands)	These are active park areas that accommodate a variety of activities for fun, learning, and physical activity. These areas offer a wide range of educational, interpretive, and recreational opportunities to enjoy and appreciate the park's resources. Two special zones that can accommodate more intensive use and larger groups of people are identified as the following subzones: Active Beach Subzone: Sites along the ocean and bay shorelines for traditional summer beach activities, including swimming and sunbathing, are located in this subzone. Lifeguards are present during the summer months. Community Activity Subzone: This subzone supports community-related activities and events such as sports leagues, gardening, festivals, and other larger group gatherings. Locations identified in this subzone would require more intensively managed facilities and landscapes.
Recreation and Visitor Experience	The marine environment offers natural sounds, tranquility, closeness to nature, and a sense of remoteness and self-reliance. Visitor use would be controlled to ensure that activities and their intensities are compatible with protecting resource integrity. Use levels would be expected to range from low to high and would be influenced by adjacent zones and time of year (e.g., from fishing in solitude to thousands of people swimming in Sandy Hook waters). Outstanding views of natural, cultural, and scenic resources would be a highlight of this zone. Natural sounds would be audible and would enhance the visitor experience in this zone. The natural soundscape would often be mixed with sounds from human activity, visitor use, and boat traffic. Dark night skies and natural lightscapes would enhance the visitor experience in this zone. Outdoor lighting would provide appropriate illumination for safety and visitor expectation while minimizing light pollution.	These areas would be conveniently accessed and a broad range of visitor services, facilities, and programs would support varied recreation uses and appeal to a diversity of visitors. Outstanding views of natural, cultural, and scenic resources would be an integral part of the visitor experience of this zone. High levels of use in centralized activity nodes would be expected, leading to the likelihood of high rates of encounters among visitors. In particular, the Active Beach Subzone would be very busy in the summer. Encounters with other people would be common. These zones would accommodate a spectrum of group sizes, with the Community Activity Subzone specifically developed to accommodate large groups of visitors. Natural sounds would be audible and would enhance the visitor experience in this zone. The natural soundscape would often be mixed with sounds from human activity and visitor use. In some areas, the soundscape would be affected by development. During times of low visitation, including nighttime and off-peak times, the natural soundscape could predominate, with occasional noise-free intervals. Dark night skies and natural lightscapes would also enhance the visitor experience in this zone. Outdoor lighting would provide appropriate illumination for safety. Only essential lights would be installed, and they would be operational only when needed. Visitor access would include a system of multiple transportation modes that are highly interconnected to allow for convenient access to and within the zone. Motorized access would be available on local and park roads. Greenways, bike paths, and sidewalks would link the zone to adjacent neighborhoods and connect Recreation Zones among the park areas. Additionally motorized and water-based shuttles may provide access to central nodes within the Recreation Zone.

Natural	Historic	Developed
These are open, undeveloped areas managed to preserve natural resources while allowing for the enjoyment of the outdoors and nature. These areas allow for a wide range of experiences, including resource-based recreation opportunities and immersion in a backcountry type of setting where one feels a sense of remote retreat from the urban environment. Areas containing fundamental natural resources that are sensitive to impacts from visitors and other external threats are designated as a Sensitive Resources Subzone. Sensitive Resources Subzone: This type of area would receive the highest level of natural resource protection, restoration projects, scientific investigation, and monitoring. Public access is controlled to minimize impacts on sensitive habitats and wildlife.	These areas include historic and fundamental sites, structures, and cultural landscapes linked to Gateway's history. Resources in these areas are the focus of interpretation and preservation projects and are managed to ensure the long-term protection of their historic integrity. Historic areas containing cultural resources in very poor condition where preservation projects are not feasible are designated as a Ruins Subzone. Ruins Subzone: Areas where historic structures and landscapes decay naturally, returning to their component elements by the forces of nature (e.g., wind, rain, ice). These historic structures and landscapes would be stabilized for safety or fenced to limit public access.	These areas support visitor, administrative, and maintenance functions of the park and its partners. Infrastructure and facilities support maintenance, orientation, education, interpretation, lodging, and transportation.
Visitors would enjoy the quiet, solitude, and sense of connection inspired by the natural world. Visitors would have opportunities to directly experience the natural resources and solitude primarily from trails and beaches. Visitor use would be controlled to ensure that activities and their intensities are compatible with protecting resource integrity. Programs and facilities would facilitate nature study, interpretation, and other nature-dependent activities. Through opportunities to experience a wild setting and explore natural areas, visitors would gain an understanding and appreciation of the significance of the park's natural resources (including marine) and the potential threats to those resources. Moderate use would be expected at centralized activity areas and points of entry (e.g., trailheads) with use levels dropping in the interior of these zones. Particularly in the interior of this zone, the natural quiet would remain substantially free of human intrusions relative to the park's urban surroundings. Natural sounds would occasionally be mixed with sounds from human activity and visitor use. Dark night skies and natural lightscapes would be integral to the visitor experience in this zone and management would preserve and, where possible, restore natural nocturnal lightscapes. Only essential lights would be installed, and they would be operational only when needed. Outdoor lighting would provide minimal visibility and would be concentrated at the perimeter of the Natural Zone (e.g., trailheads), thereby minimizing light pollution. Trails and access routes would be developed and maintained through the Natural Zone and would be highly managed (i.e., restrictions on access) to protect resources. Non-vehicular access would be the primary mode of transportation throughout the zone and several of the Natural Zone areas would only be accessible via trail. Limited motorized access would be allowed along the zone perimeter and restricted to established administrative roads and park roads. Very limited interior motorized access would be available, primarily for administrative use on established park roads. Within the Sensitive Resource Subzone, visitor access would be highly restricted and controlled to ensure that activities and levels of use are compatible with and do not detract from resource protection measures. Visitor experiences would be primarily guided, by permit only, and/or associated with a stewardship, interpretive, and/or educational program.	This zone would provide distinct visitor opportunities and experiences through a range of historic settings. Visitor use would be managed to minimize impacts on the historic resources while providing opportunities to learn about their associated events, significance, and history through tours and interpretive media. There would be opportunities for learning about the history and significance of the park through self-guided discovery and interpreted tours. A high level of visitor orientation and interpretive services would be available in this zone. Communication of interpretive themes would occur through a broad array of interpretive methods. In more restricted areas, interpretive media and interpreted views would still allow the visitor to experience the historic integrity and character-defining features of the cultural resources. Use levels would be dependent on chosen adaptive uses and location of outside spaces. Some interior spaces will be closed to the public and others will only be open via guided tours or on a limited basis. Group sizes could be limited based on facility capacities and/or experiential objectives. Visitors would have varying degrees of access to the park's cultural resources. In open areas of the Historic Zone, visitors would immerse themselves in historic settings. Vehicular access and non-vehicular access such as trails would be provided to and throughout the zone. Shuttle access may occur in congested areas. Within the Ruins Subzone, visitors would have limited or no direct access to these places. Visitors may experience these resources through waysides, multimedia, and off-site programs. Limited guided tours may be given of certain areas.	Visitor access would vary throughout this zone with orientation, educational, interpretive, lodging, and transportation park development areas receiving intensive visitor use, while public access to most maintenance and operations areas would be highly restricted or prohibited. Visitor experience would primarily be related to interpretation and education and may include interpreted trails, kiosks, and media; outdoor and indoor educational activities; and/or guided programming. The zone will also serve to orient visitors to the recreation opportunities found throughout the park. This would include trip planning and transportation system orientation, interpretation of the park's features and resources, and food, lodging, and other visitor comforts. When historic or natural resources of interest are present in the Developed Zone, limited tours and/or interpretive and educational programming may be offered. Communication of interpretive themes, especially related to sustainable operations, would complement associated activities. This zone would accommodate a spectrum of group sizes. Use levels would range from low in park maintenance areas to high in centralized activity nodes. Encounters with other people and park staff would range from infrequent to common. Motorized access would be available on park roads. Greenways and bike paths would be part of trail systems and link to other zones. The greatest numbers of truck, equipment, and vehicles may be present. Additionally, motorized and water-based shuttles may provide access to central transportation nodes.

Table 2-1. Management Zones for the Action Alternatives (continued).

	Marine	Recreation
Appropriate Types of Activities	Water-based recreation opportunities are widely available. These could include swimming, wading, recreational fishing, boating, canoeing, surfing, kiteboarding, snorkeling, and windsurfing. Gateway's waters also offer a range of educational and interpretive programming. This could include low-impact activities such as kayak and boat excursions with opportunities for marine-based nature observation (e.g., bird and mammal watching). Activities are regulated to protect elements of the natural environment, prevent visitor conflicts, and enhance public safety.	A wide range of visitor activities could occur in this zone, including the following: • Beach activities such as walking along shore, swimming, sunbathing, splashing in waves, relaxing, and viewing the ocean horizon • Land-related and trail-based activities such as camping, picnicking, biking, hiking, walking, running, horseback riding, sightseeing, and bird and wildlife viewing • Other kinds of activities, such as exploring historic sites; participating in interpretive and stewardship programs, classes, and workshops; nature study; photography; and artistic endeavors
Appropriate Types of Facilities	Facilities would be limited to support water-based recreation and interpretation, research, and restoration activities and could include floating docks, piers, mooring field, designated water trails, and interpretive features such as buoys and signs. Most facility development to support water-based activities, such as a boathouse or launch sites, would occur on the land adjacent to the Marine Zone. Boat launches and park marinas provide access for boat users, including motorized watercraft. Additionally, water-based transportation such as water taxis and ferries provide visitor access to the Marine Zone. Personal watercraft would be prohibited. Commercial services in the marine zone may include water-based tours, boatels, and fishing guides as well as water taxis, ferries, or other water-based transportation services.	Recreation and other facilities necessary to welcome, orient, and support visitors would be concentrated in this zone. A broad range of visitor services, facilities, amenities, and programs would support varied recreation experiences and appeal to a diversity of visitors. Within the Community Activity Subzone, facilities would be sited and scaled to accommodate large groups of visitors. Facilities could include the following: • Interpretive and/or educational facilities, including visitor center/contact stations and interpretive kiosks • Recreational facilities, such as designated trails and trailheads, including designated hiking and biking trails; boardwalks, picnic facilities, boat docks, designated non-motorized boat launch sites, fishing platforms, and temporary boat tie-ups; horse stables; a range of designated camping areas; indoor and outdoor recreation facilities (e.g., courts, ball fields); and entertainment venues • Support facilities such as overnight lodging facilities, food and beverage services, large event gathering areas, picnic facilities, restroom facilities, parking areas, equipment rentals, transportation facilities (multimodal hubs, bike paths, roads), and overlooks A variety of commercial services may also be available, including equipment rentals, guides, food and beverage services, recreation instruction, tours, competition/events, overnight accommodations, and retail.

Natural	Historic	Developed
Activities would be low impact and primarily natural resource-based, such as the following: • Beach activities such as walking, surf fishing, picnicking, and kite flying • Land-related and trail-based activities such as camping, picnicking, biking, hiking, walking, running, horseback riding, sightseeing, bird and wildlife viewing, astronomy, and stewardship activities • Other kinds of activities, such as participating in interpretive and stewardship programs, tours, and photography; artistic endeavors; nature observation and study; and scientific research of the park's habitats, wildlife, and waters. Communication of interpretive themes would most often occur outside or at the entry to this zone through printed and digital media and information kiosks. A low to moderate level of guided/unguided interpretive services, such as tours, would be available in this zone.	Recreational activities would be primarily resource-based and could include the following: • Interpretive and educational activities such as interpretive tours, programs, and special events; viewing historic structures, artifacts, and cultural landscapes; architecture study; photography; artistic endeavors; scientific research of collections, structures, and landscapes; educational experiences focused on topics at cultural resources sites within historic settings; and stewardship "hands on" historic preservation programming • Land-related and trail-based activities such as walking, sightseeing, biking, programmatic camping, and picnicking In addition, special and organized events such as presentations, performances, and historic celebrations would be allowed. Measures would be taken to mitigate impacts on resources and other visitors during these events.	This zone would accommodate a variety of activities and more intensive use depending on the location; activities could include the following: • Land-related and trail-based activities such as walking, sightseeing, biking, camping, and other compatible uses • Interpretive and educational activities, such as interpretive tours, programs and special events, and stewardship programming
Development would be limited to those facilities needed to facilitate natural immersion, such as access routes (e.g., trails), natural resource protection measures (e.g., fences), and observation or visitor safety features (e.g., signs). Most development is concentrated at the edge of the zone at entry points. Roads, parking, and limited comfort facilities would be located on the periphery of the zone. Additional facilities and services could include trails (hiking and biking); blinds and overlook platforms; benches; tents, platforms, and other camping support; equipment rentals (e.g., canoes, binoculars); picnic tables; trailheads with kiosks and comfort areas; and non-motorized boat launch sites. Within the Sensitive Resources Subzone, some visitor facilities such as trails and signs could be necessary to control visitor access and protect sensitive habitat or species. Any new development would be temporary to support resource protection and restoration.	Development would primarily entail rehabilitation or adaptive reuse of historic structures to protect and/or interpret cultural resources or to provide essential visitor services. Any new development needed to accommodate visitors (e.g., trails, signs, parking) would be sensitive to the cultural resources' character and blend with the historic setting. Buildings may be leased for compatible uses. The following types of facilities could be provided: visitor contact stations; historic house and aviation museums; interpretive kiosks; trails or paths; gathering places for interpretive programs; transportation support, such as shelters, restrooms, and parking; and picnic tables. Commercial services may be available and could include food and beverage services, retail, equipment rentals, and guided tours.	Development patterns would include a blend of rehabilitated historic structures and modern facilities to support park administration, maintenance, and operations as well as partners. Additionally, partner-run facilities and permitted development would fall within this zone. Facilities could include educational and interpretive facilities; transportation centers, stops, shuttles, and greenways; restrooms; food and beverage services; overnight accommodations; trails and trailheads; picnic facilities; and equipment rentals. Facilities needed to accommodate operations and maintenance functions and support could include administrative offices, maintenance buildings/yards, storage, garages, roads and parking, utility management, renewable energy facilities, and treatment facilities.

Table 2-1. Management Zones for the Action Alternatives (continued).

	Marine	Recreation
Natural Resources	The protection and restoration of marine resources and their systems, processes and values would be a management priority. Aquatic and benthic resources are maintained in a near-natural condition, supporting healthy interaction among, human, plant and wildlife communities. Natural conditions predominate and there is a low tolerance for resource modifications or degradation. Impacts on water and sediment quality from park activities would be minimal. The NPS will work collaboratively with regulatory agencies to improve degraded water quality.	Natural resources provide distinct visitor opportunities and experiences through a range of park settings. The natural elements of these park settings would help define and locate visitor opportunities, services, and facilities. The natural physical processes of marine and coastal areas would be left unimpeded to the extent possible and these habitats would be protected from visitor use impacts. Native vegetation and vegetative communities would be preserved to the greatest extent possible. Species that can withstand and support intense visitor use may be desired in developed areas or areas that receive high levels of trampling. Native wildlife and wildlife habitat would be protected from visitor use impacts to the greatest extent possible and wildlife watching opportunities would be available. Species of special concern and their habitats would be managed to support species requirements. Active Beach Subzone: Beaches would be groomed and mechanically raked to support more intensive visitor use.
Cultural Resources	Submerged (e.g., shipwreck remains) and archeological resources would be managed to protect integrity while ensuring public safety. Limited management of vegetation along the coastline would maintain views from the water to historic settings within the park. Vegetation may need to be cleared around select coastal defense or maritime resources in order to maintain views from the Marine Zone of the fundamental cultural resources.	Cultural resources would help define recreation opportunities and provide a venue for educational and interpretive activities and programs. Historic structures would be stabilized or rehabilitated based on condition and suitability for recreational, educational, and visitor use. Cultural landscape elements may be adapted to accommodate visitor use, education or park and partner operations, while preserving those features that convey historical, cultural, or architectural values.

Natural	Historic	Developed
The protection and restoration of natural resources and their systems, processes, and values would be a management priority in the Natural Zone. This zone would retain its natural, wild, and dynamic characteristics and ecological functions. The natural resources would be managed to preserve resource integrity while providing low-impact visitor uses. The natural shoreline processes occurring in this zone would be left unimpeded except when action is required for park safety. Throughout the park, the habitat mosaic of these Natural Zones would support a diversity and abundance of rare and native plant communities. Native vegetation and vegetative communities would be preserved to the greatest extent possible, with the goal of conserving native biodiversity. Rare and unique habitats would receive additional protection and would be enhanced where possible. Additionally, species of special concern and their habitats would be proactively managed to support species requirements, including recovery actions. In disturbed and degraded areas exhibiting quality habitat potential, efforts would be made to restore natural functions and processes. In the Sensitive Resources Subzone, resources would be managed to preserve their fundamental values while being monitored and often studied for scientific purposes. External threats to resources would be aggressively addressed.	The natural elements of cultural landscapes and historic settings would be managed to maintain the historic scene and to protect and preserve cultural resources and their associated values and characteristics. The preservation of cultural resources would be predominant over natural resource values. Natural resource objectives may be pursued in collaboration with, and where they complement, cultural resource objectives. Vegetative communities and patterns that contribute to cultural resource values and/or tolerate high levels of visitor use would be maintained. Vegetation may appear more "groomed" in this zone to meet cultural resource goals. Views are a character-defining feature of many cultural landscapes and historic settings. In the Historic Zone, a range of views would be protected to ensure that visitors find opportunities to experience the expansive New York Harbor views from Gateway's defensive and maritime structures. Selective management of vegetation would be necessary to maintain views that contribute to cultural landscapes. Within the Ruins Subzone, natural processes are allowed to occur unimpeded by management.	Natural resources would be managed to accommodate operational uses/ activities and to facilitate sustainable maintenance operations. Development footprints would be limited to protect habitat and reduce impacts on historic settings. The intrusion of maintenance and operational activities on the surrounding park setting would be minimized through planning, design, screening, native plantings, and noise reduction efforts. Impacted areas within the zone would be restored to the greatest extent possible. There would be minimal protection and management of viewsheds. Views of maintenance yards and operational facilities would be screened from visitors' view. Sounds from human activity, visitor use, and park operations would predominate. During those times when activity associated with park operations is low, the natural soundscape could predominate, with occasional noise-free intervals. Dark night skies would be preserved to the greatest extent possible while operational needs and uses are accommodated. Outdoor lighting would provide adequate illumination for visibility while minimizing light pollution.
Cultural resource management would complement natural resource management objectives and not conflict with the biological integrity of natural resources. Cultural landscapes would be allowed to gradually revert to a more natural state, except where important landscape resources can be preserved without compromising natural resource values. Select views from coastal defense structures may be maintained in order to allow visitors to experience coastal views and to understand the structures' historic context.	Select historic structures and fortifications would be managed for preservation. Changes to the historic setting would be allowed for basic visitor services or conveniences, such as walkways to provide safe visitor access and historic resource protection. Management actions would preserve these resources while making them readily visible and accessible to visitors. Cultural landscapes would be managed to preserve their physical attributes and their use when that use contributes to their historical significance. Elements may be adapted to accommodate visitor use or education or park and partner operations, while preserving those features that convey historical, cultural, or architectural values. Within the Ruins Subzone, cultural resources would be documented.	Most historic structures found in this zone would be rehabilitated for adaptive reuse for the purposes of park operations, maintenance, and administration or partner use. Historic structures not suited for adaptive reuse would be stabilized or, depending on their condition, removed. Cultural landscapes would be rehabilitated for appropriate contemporary use of the landscape while preserving those features that convey historical, cultural, or architectural values. Some of these historic structures and settings would be used for public enjoyment on a limited basis while others would be used by partners and/or park operations.

Desired Conditions Common to Both Action Alternatives

There are a number of overall desired future conditions and management approaches that would guide the park regardless of the action alternative selected. These desired conditions guide actions taken by NPS staff on such topics as natural and cultural resource management, park facilities, and visitor use management.

Climate change is expected to result in many changes to the Atlantic coast, including the northeastern coast of the United States. Both historical trends and future projections suggest increases in temperature, precipitation levels, accelerated rates of sea-level rise and intensity of weather events, such as storms, should be expected.

Desired conditions articulate the ideal conditions the National Park Service is striving to attain. The term "desired conditions" is used interchangeably with goals. Desired conditions provide guidance for fulfilling the park's purpose and for maintaining the park's significance on a parkwide basis. The actions could be used by the National Park Service (and/or its partners) to achieve the desired conditions. These common ideas and actions will be taken under both the two action alternatives.

Responding to Climate Change

Over the last decade, the NPS has consulted with the scientific community, federal agencies, non-profit organizations, and other informed parties to gather data and explore strategies to prepare the national park system for potential future impacts of a changing climate. Sea-level rise, extreme precipitation events, heat waves, and increases in severe winds or other phenomena related to climate change will alter how natural and cultural resources are managed, and the types of activities, facilities and infrastructure the NPS can support.

Climate change is expected to result in many changes to the Atlantic coast, including the northeastern coast of the United States. Both historical trends and future projections suggest increases in temperature, precipitation levels, accelerated rates of sea-level rise and intensity of weather events, such as storms, should be expected. In addition, climate change is expected to affect Gateway's weather, resources (e.g., shorelines, vegetation, wildlife, historic sites, and archeological resources), and visitor use patterns. These changes will have direct implications on resource management, recreational facilities, park operations, and visitor use and experience. Some of these impacts are already occurring or are expected at Gateway in the time frame of this management plan.

There are a number of executive orders, policies and plans that guide the national park system and Gateway's response to climate change.

- *Executive Order 13514* (2009) establishes an integrated strategy towards sustainability in the Federal Government and makes reduction of greenhouse gas emissions a priority for Federal agencies.

- *Secretarial Order 3289, Amendment 1* (2010) directs each bureau and office of the Department to consider and analyze the potential climate change impacts when undertaking long-range planning exercises.

- Department of the Interior *Climate Change Adaptation Policy* (523 DM1) outlines a set of principles and provides guidance for integrating climate change adaptation strategies into policies, planning, programs and operations.

- *NPS Management Policies 2006 §9.1.1* guides sustainable facility planning and development.

- *NPS Climate Change Response Strategy* (NPS, 2010) outlines a four-prong approach to addressing climate change: science, adaptation, mitigation, and communication.

- *NPS Climate Change Action Plan* 2012-2014 (NPS, 2012) details actions and recommendations to implement the climate change response strategy.

- *NPS Green Parks Plan* (NPS, 2012) defines a collective vision and a long-term strategic plan for sustainable management of NPS operations including reducing greenhouse gas emissions and adapting facilities at risk from climate change.

The general management plan describes the approach that the park would take to mitigate and adapt to the effects of climate change and during the next 20 years.

The park's Geographic Information System (GIS) program has been working with partners since 2008 to document and model the potential effects of climate change, specifically sea-level rise, storm surge and flooding, at Gateway and nearby national park sites. Park staff are engaged in discussions with academic institutions and NYC agencies as part of regional climate change initiatives. The GIS team has been documenting natural and cultural resource impacts and changes from key storm events such as the Nor' Easter of 2010, Hurricane Irene in 2011, and Hurricane Sandy in 2012. Since Hurricane Sandy, the GIS team has worked to develop elevation maps and apply Federal Emergency Management Agency (FEMA) guidance to assist in the recovery efforts, including the ABFE's (advisory base flood elevation) for the NYC area. A series of Surface Elevation Tables (SET's) are in place and being monitored throughout the park. Efforts are currently underway to collect and analyze first floor elevation data for all buildings at Gateway, the first initiative of this kind in the national park system. This data will assist future resource management initiatives and facility planning.

Management Strategies

The general management plan describes the approach that the park would take to mitigate and adapt to the effects of climate change and during the next 20 years. Many opportunities exist for Gateway to incorporate climate change adaptation into long-term planning across its three park units at Sandy Hook, Staten Island and Jamaica Bay. Specific options to protect Gateway's resources include integrating long-term planning into park operations, monitoring climate sensitive species, and implementing adaptive restoration.

Strategies for Visitor Facilities and Park Operations

Gateway's highest visitor use areas are in coastal environments and are vulnerable to future sea-level rise and storm surges. Coastal resiliency will be incorporated into any new developed areas and adaptively reused structures and facilities. While the action alternatives propose a range of facility additions and renovations to expand recreational

National parks can demonstrate how to minimize their contribution to global warming through practices such as energy efficiency and use of renewable energy.

opportunities, proposed facility investments will be evaluated using the following climate change strategies prior to project approvals to ensure the long-term sustainability of these investments. Future plans and studies (see table 2-11) would provide technical data and resource information to support the following strategies:

- Retain existing visitor and operations facilities and find creative design solutions to limit impacts from future flooding, storm surge and other impacts. When these facilities are no longer viable to retain and use, transition to moveable and portable facilities.

- Continue to provide a range of experiences by transitioning recreational use away from locations where changes in resource conditions no longer support such uses.

- Remove existing visitor facilities and discontinue recreational uses where continued use is unsafe, infeasible, or undesirable due to changing environmental conditions.

- Avoid or minimize additions of new infrastructure, construction of high value assets or major investments in facility renovations within coastal flood or storm surge zones.

- When considering facility investments within the FEMA 100-year floodplain (based on the Advisory Base Flood Elevation), evaluate risk (and cost/benefit), depending on their location and flood zone category. This could be a high level scan, examining the FEMA ABFE flood zones, and considering whether constructing or investing in the facility makes sense for the NPS or any other source/partner.

- Transition wastewater and sewage treatment systems to more sustainable systems and facilities.

- Keep utilities and critical systems and infrastructure out of flood zones.

- Use up-to-date policy guidance to respond to changing conditions.

National parks can demonstrate how to minimize their contribution to global warming through practices such as energy efficiency and use of renewable energy. Because emissions from visitor driving are estimated to contribute the highest percentage of the park's emissions, park staff and partners would assist in reducing visitor greenhouse gases by providing opportunities for alternative transportation options. The park will reduce the CO2 emissions of NPS and partner operations, increase the use of renewable energy and other sustainable practices, and reduce visitor emissions by lessening dependency on personal automobiles. Specific actions that the park would pursue:

- Test, use, and promote carbon-neutral energy, innovations, and infrastructure for NPS and partner operations.

- Consolidate park operations to reduce energy consumption.

- Construct and operate visitor facilities with the highest sustainability standards possible (e.g. more mobile/temporary structures).

- Use biodegradable/recycled resources and zero waste options.

- Upgrade/retrofit vehicle fleets and machinery for low emissions.

- Reduce vehicle miles traveled by Gateway staff and visitors who work in and use the park.

- Integrate climate change mitigation into all NPS business, operations, and management practices.

- Pursue Leadership in Energy and Environmental Design (LEED) certification for rehabilitated buildings as educational topic and as sustainable practice.

Strategies for Responding to Changing Conditions

Gateway would use and promote innovation, best practices, and partnerships to respond to the challenges of climate change and its effects on park resources. By using and developing tools and monitoring methods, including seeking outside assistance, the park staff can better respond to climate change. The park staff would interpret climate change science and develop management strategies, which may include predicting and projecting expected changes. The park staff would coordinate with other agencies in developing tools and strategies to help identify and manage climate change impacts. By adopting the best information on climate change as it becomes available, the park staff would be positioned to respond quickly and appropriately to the local effects of climate change.

Gateway may choose to use an adaptive management framework to respond to the effects of climate change. Temperature and precipitation changes may require that the park manages for native biodiversity and ecosystem function instead of managing for natural communities. In most cases park managers would allow natural processes to continue unimpeded, except when public health and safety or the park's fundamental resources and values are threatened. Scenario planning would likely play a pivotal role in developing the park's responses to climate change.

The park staff would coordinate with neighboring communities while implementing adaptation strategies that support the protection, preservation, and restoration of coastal wetlands and coastal processes, and can serve as vital tools in buffering coastal communities from the effects of climate change and sea level rise. Some of the strategies the park would pursue include:

- Inventory and monitor key attributes of the natural systems, cultural resources, and visitor experiences likely to be affected by climate change.

- Build resiliency of natural coastal resources to sea level rise and other effects of climate change.

- Restore key ecosystem features and processes, and protect key cultural resources to increase their resiliency to climate change. By reducing other types of impacts on resources, the overall condition of the resources could more easily recover from or resist the impacts of climate change.

- Reduce current and future stressors to the resource and the environment; this would improve the condition of the resource and build resiliency in the ecosystem that would help to minimize future adverse effects of climate change.

- Reduce habitat fragmentation and increase habitat connectivity and movement corridors.

- Give highest priority to preserving cultural resources and artifacts in situ, coupled with sustainable efforts (intervention techniques) to mitigate and reduce any stressors that might adversely affect the resource.

Engage the Scientific Community and Visitors in Climate Change

Gateway would continue to collaborate with a variety of academic and scientific institutions, non-profit organizations and agencies on research and projects to find creative solutions for the long-term preservation of natural and cultural resources. Climate change science would be one of the focus areas of the new Jamaica Bay Science and Climate Resilience Institute (JBSCRI). This new Institute would play a major role in promoting scientific investigations of urban marine ecosystems, using Jamaica Bay as a functioning "laboratory." The Institute would help coordinate the many existing research and restoration efforts already underway in the bay on the part of multiple agencies and organizations, and more widely sharing the results of their research. Applied research conducted at the Institute would inform future park planning, development and resource management. Gateway will explore with partners, the development of a facility or campus for the Institute at Floyd Bennett Field or Fort Tilden.

Education and interpretive programs help visitors understand climate change impacts at Gateway and beyond, and how they can respond to climate change. NPS and its partners would engage visitors on the topic of climate change, provide the latest park research and monitoring data and trends, inform the public about what response is being taken at the park, and inspire visitors to aid in that response.

Cooperative Stewardship and Marine Resources

Two-thirds of Gateway is covered by water—more than 17,500 acres of bay and oceanic waters that are part of larger systems influenced by land uses and activities taking place outside the park. The long-term management of natural resources and ecological processes within these waters will not be sustainable without the control of contaminant inputs and other human-caused disturbances.

Water Quality Enhancements

Elimination and control of pollution sources that cause degradation to the park's ecosystems is perhaps the most critical of desired conditions. These sources include effluents from wastewater treatment plants (WWTPs), combined sewage outfalls (CSOs), nonpoint runoff, atmospheric deposition and landfill leachates. Elimination or reduction of these contaminants would reduce nutrient pollution and long-term accumulation of contaminants in sediments and biota. These actions would have the widest influence on enhancing the recovery of Jamaica and Raritan Bays to a fully functioning ecosystem. Water quality levels should be attained that would eventually support and sustain fish and wildlife habitats and populations. This level of attainment would also support visitor contact recreational activities including bathing, fishing, and shellfishing. Nutrient removal with additional reduction of contaminants, including pharmaceutically active compounds, would benefit the entire ecosystem by providing increased DO, reduced algal blooms and turbidity, decreased organic loading, and reduced pathogen levels.

Desired conditions also include the control, inhibition and prevention of invasive exotic aquatic species, including harmful algal and sea lettuce (*Ulva* spp.) blooms. The estuary should be maintained as a refuge for proliferation and reproduction of aquatic biota at all trophic levels. To further aid overall water quality, borrow pits (dredge holes) should be filled to a depth that would improve levels of dissolved oxygen estuary-wide,, especially where anoxic or hypoxic conditions exist.

Sediment Contaminants

The desired future condition for Gateway waters and sediments is an estuary free of chemical contaminants, such that less than 1 percent of the aquatic animal species will experience adverse biological effects manifested by abnormal physical, behavioral, biological and population responses. Presently, about 10 to 50 percent of the aquatic species are affected, as approximated by Effects Range Low (ERL) and Effects Range Median (ERM) levels of contaminants and numerous contaminants research reports.

Gateway would take the lead in calling for reductions and elimination of these sources of contamination. Primary actions should include decreasing contaminants and nutrients from wastewater treatment plant effluents, decreasing input of contaminated surface runoff from the Jamaica Bay and Raritan Bay watersheds, cessation of sewage discharge from combined sewer outfalls, decrease air pollution to lessen contaminant deposition, and restoration of clean freshwater sources feeding into the bay.

The desired future condition for Gateway waters and sediments is an estuary free of chemical contaminants, such that less than 1 percent of the aquatic animal species will experience adverse biological effects manifested by abnormal physical, behavioral, biological and population responses.

A more natural shoreline that maximizes ecosystem functions such as habitat for wildlife, connectivity between the bay and upland habitats, and natural processes such as sediment transport and shoreline migration would be Gateway's goal

Estuarine Shorelines

A more natural shoreline that maximizes ecosystem functions such as habitat for wildlife, connectivity between the bay and upland habitats, and natural processes such as sediment transport and shoreline migration would be Gateway's goal. Achieving this goal will require the removal of hard structures wherever possible and restoration of natural shoreline features, including salt marsh, estuarine beach, and freshwater wetlands. In addition, alternative "soft" solutions would be identified and implemented in areas where shoreline protection is necessary. The primary focus for softening of the shoreline should occur on NPS and private property within park boundaries. Currently 30% of the shoreline along Jamaica Bay within park boundaries is human modified. Partnerships should also be advanced to soften shorelines along the primary creeks and bay shoreline that is not within park boundaries. Additional strategies would be:

- identify and prioritize other suitable sites, methodologies and partners for shoreline restoration/rehabilitation along other areas of shoreline,

- road and parking area could be redesigned and rehabilitated with permeable pavement to provide visitor access to the area,

- remove hard structures wherever possible and restore natural shoreline features, including salt marsh, estuarine beach, and freshwater wetlands,

- identify and implement alternative "soft" solutions in areas where shoreline protection is necessary.

Salt Marshes

Salt marshes will provide for sustainable and ecologically functioning salt marsh islands and fringing salt marshes. Some strategies to achieve this condition would be:

- Develop a system for prioritizing marshes for restoration,

- Adopt shared goals for marsh preservation, restoration and the elimination/management of anthropogenic causes of marsh loss, working with residents, organizations and partner agencies,

- Pursue research to understand and eliminate and/or manage human-related stressors and causes of marsh loss. Direct research at understanding future effects of sea level rise and global climate change on the sustainability of marshes,

- Pursue salt marsh restoration as a method of increasing our understanding of the causes of marsh loss as well as the processes and functions of marsh islands in an urban setting,

- Continue to develop and evaluate construction methods that are ecologically sound and cost effective. Continue beneficial use of dredge materials and explore mechanisms to couple restoration and dredge projects and cost-effectively obtain dredge materials.

Estuarine Benthic Habitats

The ultimate littoral-zone restoration objective is to re-establish self-sustaining benthic communities of Eastern Oysters, Eelgrass, and Bay Scallops, along with their numerous indigenous species. As these natural estuarine communities develop, they are likely to include more than 150 species of invertebrate animals, plants, and micro-organisms. Some strategies would be:

- Improve water quality, rebuilding shell beds at multiple locations throughout the bay, replanting key species (Eelgrass, Eastern Oysters, Bay Scallops) at sub-tidal depths in numerous locations, and restricting human disturbance at those sites,

- Develop a sustained, multi-partnership effort to achieve ecosystem restoration goals, including acquiring public and private funding, as well as innovative means of reducing current costs restoration.

Estuarine and Marine Finfish and Shellish Communities

Finfish and shellfish communities in Gateway waters should reflect and sustain a high level of species richness, appropriate diversity and sustainable populations of each species. Healthy and robust fish and shellfish communities are dependent on healthy estuarine ecosystems with a complete assemblage of habitats and species throughout the food web. A key goal would be to achieve a sustainable fishery, representative of and supported by a biologically productive mid-Atlantic region estuarine habitat complex.

Healthy and robust fish and shellfish communities are dependent on healthy estuarine ecosystems with a complete assemblage of habitats and species throughout the food web.

To attain the desirable level of estuarine ecosystem health and productivity requires comprehensive actions that include:

- eliminating the current levels of chemical and nutrient input,

- improving sediment chemistry to a point where contaminant bioaccumulation would be eliminated or at least substantially reduced,

- restore portions of the bay that are not supporting benthic / nekton communities due to chronically low levels of dissolved oxygen (hypoxia), and in some areas, anoxia,

- working with local, state and federal authorities, ensure the appropriate levels of fishing to maintain sustainable populations and outstanding recreational fishing opportunities.

Marine and Estuarine Resource Management Plan

A science-based plan would be developed to identify baseline and desired conditions to improve management of fish and shellfish resources, submerged aquatic vegetation and marine species, working closely with state, local and federal partners and the public. The plan would evaluate user capacity and identify types and levels of marine recreational uses necessary to improve the quality of park resources, reduce crowding and conflicts between uses, and provide a full range of visitor experiences. Visitor surveys and direct input from stakeholders will inform the plan.

Table 2-2. Summary of Natural Resource Conditions.

Desired Conditions	Examples of Future Actions
The park's fundamental natural resources obtain a higher degree of ecological integrity and resilience to changing climatic conditions, their associated natural processes continue unimpeded to the greatest extent possible. Natural resource management, conservation, restoration, and research focus on fundamental natural resources that are adapting to changing ecological and climatic conditions, sustainable levels of extraction by park visitors, and new scientific information. Gateway NRA is a leader in the study of urban ecology and collaboration with external partners to protect fragile ecosystems in the urban context. Internal and external human impacts on Gateway's resources are monitored and harmful effects minimized, mitigated, or eliminated in coordination with partners. Gateway expands and improves the inventory, monitoring, and understanding of its natural resources so as to have the best possible science based information available to guide management decisions. Threatened and endangered species and habitat are protected to the greatest extent possible and other particularly sensitive species and biotic communities are closely monitored and protected. Extractive uses of natural resources by hunting, fishing and trapping are regulated to maintain ecological integrity, recreational values and the sustainability of target populations.	Promote research to increase understanding of Gateway resources, natural processes, and human interactions with the environment with emphasis on fundamental resources. Continue to participate in and encourage ongoing partnerships with local, state, and federal agencies, and nongovernmental organizations in programs that have importance within and beyond park boundaries. Continue to monitor water quality and quantity within a local and regional context, and expand monitoring as needed to more fully understand the status and trends of ground and surface water. Participate in local, state, and national water quality remediation and watershed planning programs. Update strategies for water resources management as needed to reflect changing resources and management issues. Continue to inventory wetlands so that important wetland communities can be identified and protected. Provide education and outreach programs to highlight conservation and management issues facing the park and related lands and encourage partners who are able to assist with ecosystem stewardship. Continue to assess human-related threats to water quality and quantity. Continue to eradicate invasive nonnative plants in the park. Work with local, state, and other federal agencies, private landowners, and visitors to minimize introduction and the spread of invasive nonnative plant species into the park and the region. Continue cooperative management of threatened and endangered species within and outside the national park to stabilize or improve the status of these species. Strive to preserve populations and habitats of migratory species inhabiting the park, and cooperate with external partners . Continue to educate visitors and the public about wildlife issues and concerns. Manage extractive uses of natural resources by hunting, fishing and trapping to maintain sustainable populations of the target species and provide rewarding visitor experiences.

Table 2-2. Summary of Natural Resource Conditions (continued).

Desired Conditions	Examples of Future Actions
Conditions Specific to Marine Resources	
Coastal and maritime ecosystems including the Jamaica Bay waters are protected, studied and restored. Recreational uses are compatible with resource protection goals. Visitors to the marine zone avoid physical impacts and conserve the aesthetic and ecological values of shoreline areas and marine habitats. Visitors possess knowledge and awareness to safely pursue recreational opportunities and protect the resources they enjoy.	Work to protect the values of marine and estuarine resources, including preservation of fundamental physical and biological processes. Improve marking and signage of channels and boundaries for sensitive zones and other fragile areas. Expand boater outreach and education programs to protect submerged and shoreline vegetation and wildlife while allowing a wide range of recreation opportunities and reasonable recreational access. Require commercial services providing kayak and boat excursions, camping, and hiking to avoid damaging fragile shoreline and marine areas and avoid disturbance of wildlife. Work with partners to develop and disseminate a Jamaica Bay Map and Guide to provide boaters with information on the unique ecology and wildlife of the Bay as well as zones, regulations and stewardship of marine resources. Identify lands/waters outside the national park where ecological processes and human use affect park resources or are closely related to park resource management considerations; initiate joint research, monitoring, management actions, agreements, or partnerships to promote resource conservation.

Preserving Heritage: A Sustainable Future for Cultural Resources

To date, Gateway has not had a comprehensive approach for the management and repair of cultural resources. Cultural resources, which include the majority of the physical structures in the park, were repaired when funding became available; uses found when outside entities expressed interest in the building. With more than 550 historic structures and landscapes spread across three units, preventative maintenance was completed on some, but not all of the structures. This disjointed approach left the majority of the resources vacant, in poor condition and in need of major capital repair projects. The park determined that prioritization of these resources was necessary to guide cultural resource management and GMP decisions.

Prioritization Process

In order to guide GMP decisions, the planning team determined that a prioritized list of resources was necessary to inform future preservation efforts, funding, maintenance and business leasing efforts. Using a variety of information sources, a group of park and

NPS staff with expertise in history, historic architecture, conservation, cultural landscapes and business services, created a process to evaluate over 330 structures and associated landscapes that are contributing resources to the park's nine National Register Districts (see the "Cultural Resources – Historic Districts and Structures" section of Affected Environment for a complete description). Eight factors were used to evaluate and prioritize the park's resources. These include the following:

- Fundamental Resource
- National Register Status
- National Register Level of Significance
- Condition
- Uniqueness to Gateway
- Visibility
- Potential Use
- Vulnerability to Future Storm Events

Numerical points were assigned to each criterion and totaled for a score. Depending on that score, each resource was placed in one of three bands: preserve, stabilize, or ruin. The bands are defined as follows:

- **Preserve:** Actions will be taken to maintain and preserve these structures. Efforts will be made to maintain these structures in their current condition or move these structures into good condition through preservation or rehabilitation by NPS or partners. These structures will be utilized for operations, visitor services, and interpretation.

- **Stabilize:** Structures where actions will be taken to render an unsafe, damaged, or deteriorated property stable while retaining its present form. Minimal efforts will be made to maintain the structure in its current condition. Unless a use and/or funding is found, the structure may fall into disrepair.

- **Ruin:** Structures in poor condition where one or more of the basic structural elements has been lost and due to this condition are without viable reuse options. Resources may be removed or fenced off to keep from being a safety hazard; no work will be done to better the condition of the resource.

Under all the alternatives, the structures in very poor condition that the NPS has placed in the ruin band would remain as ruins and continue to decay naturally by the forces of nature. Some of these resources are zoned in the Ruin Subzone. Others may be part of another zone and removed from the landscape in keeping with the intention of that management zone. Gateway would prioritize documentation of these structures and, in some cases, use interpretive media to convey information about their significance and former use.

The contributing structures and landscapes priority band may change as data used to evaluate these resources is updated. As condition information and national register nominations are updated and/or new nominations are prepared, the list of resources and the priority band will be updated. The priority band may change.

The criteria definitions and a list of the evaluated resources and their bands are found in Appendix B. Additional information about the resources and National Register districts is detailed in the "Cultural Resources – Historic Districts and Structures" section of chapter 3.

Future cultural resource management at Gateway would be guided by the desired future conditions described in the management zone chart and in Table 2-3 as well as specific guidance at individual park areas. In each alternative, finding viable contemporary uses for historic structures and cultural landscapes would be a priority preservation strategy for Gateway. The park would pursue public-private partnerships that assist with the preservation and reuse of these places for a wide variety of uses including visitor services, administrative and partner needs, recreational business opportunities or compatible private use.

Table 2-3. Future Conditions for Cultural Resources at Gateway.

Desired Future Conditions	Examples of Future Actions
Cultural Resource Management	
Locations where cultural resource management is a priority are identified, and at these locations human and natural impacts on cultural resources are monitored, minimized, or eliminated. Visitors and park staff recognize and understand the value of the park's military and maritime history and resources within their local and national context. Cultural resource managers look beyond the park's borders and take into account resources found within the regional context (including other units of the National Parks of New York Harbor) and encourage scholarly research of Gateway's ties to the region. Sea level rise models as well as current climate change science inform cultural resource management. Research and documentation of the park's cultural resources are aligned with its purpose, significance and fundamental resources and values. Through ongoing investigation, study, and scholarly research, Gateway expands and improves the inventory, monitoring, and cataloging of its cultural resources so as to have the best possible information available to guide management decisions.	Conduct scholarly research and use the best available scientific information and technology for making decisions about management of park cultural resources. Continue to collect information to fill gaps in the knowledge and understanding of the national park's cultural resources, to assess status and trends, and to effectively protect and manage cultural resources Build partnerships focused on the preservation, maintenance, and interpretation of fundamental cultural resources.. Update and keep current the park's Cultural Landscape Inventory and List of Classified Structures

Table 2-3. Future Conditions for Cultural Resources at Gateway (continued).

Desired Future Conditions	Examples of Future Actions
Historic Structures	
Locations where cultural resource management is a priority are identified, and at these locations human and natural impacts on cultural resources are monitored, minimized, or eliminated. Visitors and park staff recognize and understand the value of the park's military and maritime history and resources within their local and national context. Cultural resource managers look beyond the park's borders and take into account resources found within the regional context (including other units of the National Parks of New York Harbor) and encourage scholarly research of Gateway's ties to the region. Sea level rise models as well as current climate change science inform cultural resource management. Research and documentation of the park's cultural resources are aligned with its purpose, significance and fundamental resources and values. Through ongoing investigation, study, and scholarly research, Gateway expands and improves the inventory, monitoring, and cataloging of its cultural resources so as to have the best possible information available to guide management decisions. Finding viable uses for historic structures is emphasized and the adaptive use of historic structures for park needs is encouraged before building new infrastructure. Historic buildings and cultural landscapes are managed to produce income that offsets the cost of their ongoing maintenance Whenever possible, adaptive use of historic structures for park needs is considered before building new infrastructure.	Reduce impacts of natural resources on cultural resources (i.e. remove vegetation) Pursue leasing options for fundamental historic structures to help preserve these through adaptive re-use in the face of limited funding. Prepare historic structure inventories and reports and implement actions as appropriate. Monitor, inspect, and manage identified and evaluated historic structures to enable long-term preservation of historic features, qualities, and materials. Create design guidelines and/or historic structure reports for specific areas in the national park to preserve architectural and character-defining features. Conduct preservation maintenance and other approved treatments of historic structures in a manner that maintains, to a high degree, the integrity of historic materials and fabric. Document and demolish non-fundamental cultural resources in a poor, degraded state that do not provide natural resource value.

Table 2-3. Future Conditions for Cultural Resources at Gateway (continued).

Desired Future Conditions	Examples of Future Actions
Cultural Landscapes	
Cultural landscapes are preserved to retain a high degree of integrity.	Prepare cultural landscape inventories and reports and amend existing reports as needed. Monitor, inspect, and manage identified and evaluated cultural landscapes to enable long-term preservation of historic features, qualities, and materials. Create design guidelines and/or cultural landscape reports for specific developed areas in the national park to preserve character-defining features. Implement actions identified in cultural landscape reports. Collaborate with park natural resource staff to develop cultural landscape preservation strategies that complement activities to manage vegetation and natural processes.
Museum Collections	
A scope of collections reflective of the park's purpose is maintained, protected, and made available to support scholarly research and interpretation. Gateway's museum collection is properly inventoried, curated, protected, and preserved. Provisions are made for appropriate access to the collection by NPS staff and the public for their use in exhibits, interpretation, resource management, and research.	Acquire, develop, and preserve museum collections that document the history, resources, and significance of the national park. Remove those items that do not belong. Maintain high standards for museum practices and ensure accountability for park collections. Continue to research, document, and catalog the museum collection, which serves as an interpretive and management resource for park staff and the public. Develop traditional and web-based exhibits to make collections more accessible. Use existing and emergent technologies for collections access and management. Upgrade facilities and staffing to better protect the park's collection of archeological and historic artifacts.

Table 2-3. Future Conditions for Cultural Resources at Gateway (continued).

Desired Future Conditions	Examples of Future Actions
Archeological Resources	
Archeological resources and submerged cultural resources would remain in situ and undisturbed, unless removal of artifacts or intervention into cultural material is justified by preservation treatment, protection, research, interpretation, or development requirements. Significant archeological and other scientific data threatened with loss from the effects of natural processes, human activities, preservation treatments, park operations, or development activities would be recovered, recorded, or otherwise preserved.	Conduct sufficient research to identify and evaluate park archeological resources and assess condition and potential threats. Continue long-term monitoring of archeological sites to measure deterioration from natural and human sources and to evaluate the effectiveness of management actions to protect resources and mitigate impacts. Preserve and protect archeological resources by eliminating and avoiding natural and human impacts, stabilizing sites and structures, monitoring conditions, and enforcing protective laws and regulations. Make decisions that promote preservation of archeological resources in place. Carry out required consultation and legal compliance and consider concerns raised. Include information about archeological resources, as appropriate, in interpretive and educational programs for the public.
Ethnographic Resources	
Ethnographic resources having cultural importance for tribes and other groups are identified and protected. Opportunities remain for tribal members and traditionally associated people to access culturally important places in the park.	Consult with the culturally associated Delaware Nation, Delaware Tribe and Stockbridge-Munsee Community on program and resource management planning Conduct park programs and activities in a way that respects the beliefs, traditions, and other cultural values of those who have ancestral or historic ties to park lands. Identify and document, through studies and consultations, traditional cultural properties and other ethnographic resources, traditionally associated people and other affected groups, and such groups' cultural affiliations to park resources. Recognize the sensitivity of ethnographic resources and associated data and provide confidentiality to the extent possible under the law. Collaborate with traditional cultural experts to develop a park strategy for ethnographic resources.

Improving Visitor Experience

Both alternatives focus on improving the visitor experience at Gateway in several ways. There would be an emphasis on improving communications, promotions, and wayfinding in order to raise the visibility of Gateway, to recruit new audiences and to improve visitors ability to navigate to and through the park. Additionally, both alternatives expand on the existing park experiences by providing more opportunities for multi-day excursions and overnight stays within the park.

Enhanced Communications, Outreach & Wayfinding

Under both alternatives, NPS and its partners would increase efforts to raise awareness of Gateway's recreational opportunities and natural and cultural resources and to recruit a broader array of users to visit the park. As listed in table 2-5, creative communications campaigns employing innovative technologies as well as traditional outreach channels would target visitors and potential visitors from a diversity of socio-economic and cultural backgrounds. Educational, interpretive, recreational and volunteer stewardship programs would be expanded in both alternatives and will be important tools for increasing visitor understanding and appreciation of the park's significance and its resources.

Orientation and wayfinding is another challenge both alternatives would address. Through more frequent and more visible signs, the visibility of Gateway's park lands would be increased for passerbys and neighboring residents. Additionally, orientation kiosks with maps and park information would be located at key locations and would reveal that Gateway's individual park lands are part of a much larger network of protected park lands within the NYC metropolitan area. Traditional signs at entrances and along roads would be complemented by technological-based information sources (e.g. gps-enabled apps, websites, social media) geared toward facilitating more convenient and clearer navigation of Gateway's resources.

Multiple-day Experience

Gateway is a large park with thousands of acres spread out among three units in two states with additional adjacent park lands managed by local and state agencies. All of these places provide a variety of things to see and do that cannot be experienced in a single day. The alternatives will propose different types of camping and lodging, varied use levels, and a range of supporting facilities that may be appropriate. In the future, Gateway will work with partners to develop and offer a variety of overnight accommodations such as camping, youth and elder hostels, eco-friendly lodges and small inns, where appropriate at each unit. These overnight lodging facilities will be similar to those found in other national parks throughout the country.

As part of this general management plan effort, NPS staff and partners developed options for camping to be tested as part of the GMP/EIS alternatives. The options represent initial recommendations for camping at Gateway, based on the best information available at the time of planning. This information was derived from multiple sources, including the

Under both alternatives, NPS and its partners would make a concerted effort to raise awareness of Gateway's recreational opportunities and natural and cultural resource and to recruit a broader array of users to visit the park.

Learn-to-Camp. This would be camping in an instructional setting where visitors would gain skills and confidence related to camping and other outdoor activities.

GMP/EIS alternative concepts and management zones, site visits and preliminary site analysis, and input received during two planning workshops and at summer 2012 public open house meetings.

The camping program at Gateway is intended to provide a variety of opportunities for visitors. Proposed camping options range from primitive tent camping in remote backcountry areas to facilities for recreational vehicles that may offer full utility hookups. Staying overnight in permanent or semi-permanent structures (e.g., cabins, tent-cabins, or yurts) may be pursued. This range of camping opportunities would enable new campers to gain confidence and skills as they camp in different parts of the park, and allow experienced campers to "get away from it all" in the "urban wildlands" of Gateway. The following section describes a range of camping types to be offered at Gateway. The camping options presented in this plan use these defined types, exploring different configurations for their placement within Gateway's three units. Where mentioned, "campsite living space" refers to the area in which a camper would sleep, cook, and eat. Amenities within this space would include a tent pad, fire pit/grill, and picnic table.

Programmatic Camping

Programmatic camping would consist of guided or ranger-led camping activities that emphasize interpretation and education on a variety of natural and cultural resources. Equipment and supplies may be provided to campers depending on the program.

- **Learn-to-Camp.** This would be camping in an instructional setting where visitors would gain skills and confidence related to camping and other outdoor activities. Educational experiences for beginner campers to those with advanced skill sets would be offered, enabling a large cross-section of participants to be included.

- **Historic.** This would entail camping in a historical setting where camping or other living quarters would have existed during a historical period of significance. Examples might include camping in historic forts or parade grounds. Storytelling, artifacts, architectural character, interpretive exhibits, and interactive programs would bring to life the history of the site for participants. Interpretive programs and events would be integral to the camping experience.

- **Natural.** This type of camping that would immerse participants in a natural setting and promote the learning of outdoor skills, natural history, and environmental stewardship. Organized activities might focus on natural resources. Interpretive programs would be integral to the camping experience. Examples might include overnight canoe/kayak programs, dune camping, etc.

- **Permanent or Temporary Campsites.** These programs would be offered on an occasional basis. The character of campsites would vary, depending on the program. In some instances permanent tent pads or platforms might be provided, while in others (for instance, a historically significant setting), campers might pitch a tent in a field and avoid leaving a lasting mark.

- **Moderate Services and Amenities.** Where appropriate, services provided might include vault or flush toilets, showers, and areas for interpretive programs.

Designated Backcountry/Beach Camping

Backcountry camping would appeal to self-reliant visitors seeking opportunities for solitude and a nature-based camping experience. Beach camping opportunities may vary. In some instances beach camping may offer the high probability of solitude, while in other places it may facilitate the enjoyment of recreational activities such as fishing, in the company of others.

Backcountry camping would appeal to self-reliant visitors seeking opportunities for solitude and a nature-based camping experience. Beach camping opportunities may vary.

- **Moderate to High Opportunities for Solitude.** Backcountry campers would expect minimal levels of interaction with other visitors and largely unmodified natural or natural-appearing environment. Opportunities for solitude may vary from one beach camping experience to another.

- **Highly Self-Reliant Campers.** Campers would carry everything they need (including tents, food, and water) and follow Leave No Trace principles.

- **Designated, Dispersed Campsites.** Campsites would be designated to prevent resource impacts and would be widely spaced to promote opportunities for solitude in the backcountry and in some beach camping. Spacing between designated campsites may vary from approximately one to four campsites per acre, but each campsite would occupy a small area.

- **Most Remote Access.** Backcountry campers would hike or paddle to the designated campsite from a parking lot / trailhead or boat launch. Distances would vary, but would be expected to be greater than one-quarter mile. The recreational activity of accessing the campsite would be an integral part of the backcountry experience. In some instances, beach camping could require just a short walk from the parking area.

- **Primitive, Designated Campsites.** Visitors would be required to camp at designated sites, which would be marked by a stake or similar method. Resource conditions would be monitored, and from time to time campsites could be relocated to prevent or limit impacts. Seasonal closures to protect bird nesting sites would probably be implemented.

- **Motorized Use Prohibited.** Motorized use would not be permitted.

- **Limited Services and Amenities.** Services and amenities would be minimal and might include a marker, vault toilets (at parking or perhaps at the campsite), and limited signage (e.g., directional signs or informational signs at the trailhead that focus on site resources).

Walk-in Tent Camping

Walk-in tent camping would require visitors to walk a short distance from their vehicles or parking lot to a designated tent campsite within a campground. Walk-in tent campers would typically see, hear, and possibly interact with other tent campers close by.

- **Moderate Opportunities for Solitude.** Campers would expect moderate to high levels of interaction with other visitors and, as feasible and appropriate, a natural-appearing environment. The fully pedestrian environment might encourage visitor interactions but also would limit the impact of modern development on solitude.

- **Self-reliant Campers.** Campers would carry everything they need (including tents, food, and water) to their campsites and follow Leave No Trace principles.

- **Concentrated Campsites.** Spacing between campsites might vary to promote differing levels of solitude and privacy; however, in general the walk-in campsites would be concentrated to limit the development footprint. The density of campsites might range from approximately 15–60 campsites per acre.

- **Moderately Remote Access.** Campers would walk a short distance from a parking lot/ trailhead (approximately 50–300 feet). Campers would therefore enjoy a moderate degree of separation from roads, parking, and other developments.

- **Improved Campsites.** Campgrounds would be modestly improved, with accessible walkways leading to campsites. Campsites would include designated tent pads and living spaces.

- **Motorized Use Prohibited.** Motorized use within walk-in camping areas would not be permitted. Parking would be consolidated at the edges of the campground.

- **Moderate Services and Amenities.** Where appropriate, services and amenities might include: vault or flush toilets, showers, or picnic facilities. Campsites would include designated tent pads and living spaces.

RV Park

The recreational vehicle (RV) park would allow for high-density RV camping. Utility hookups or dump stations might be provided.

- **Low Opportunities for Solitude.** Campers would expect moderate to high levels of interaction with other visitors and, as feasible and appropriate, a natural-appearing environment. The immediate setting may resemble a large parking lot, but it would be adjacent to more natural areas.

- **Consolidated Sites.** Parking stalls would be in close proximity to one another. Appropriately sized stalls would accommodate RVs. Visitors might stay within their vehicle or park it for several days while staying overnight in other areas of the park or outside the park.

- **Moderate Services and Amenities.** Where appropriate, available services and amenities might include: vault or flush toilets, showers, and a camp store. The RV park might be in a central location within the park, where some services might be available nearby. Electric or other hookups might be provided.

Drive-in (Vehicle Access) Campground

"Drive-in" campsites allow for a traditional designed campground experience for tent and RV campers. Visitors would park their vehicles at their campsites, which typically would be arranged around a campground loop drive.

- **Low Opportunities for Solitude.** Campers would expect moderate to high levels of interaction with other visitors, and a designed environment, but one that is still scenic and natural-appearing, as feasible and appropriate.

- **Developed Campsites.** Campsites would be arranged around designed loop roads, allowing campers to park their vehicles right at the campsite. Within the campground, loops might be designated for different types of camping (e.g., RV, tent, or a combination of both). An accessible, internal pedestrian circulation network would also be provided.

- **Moderate to High Services and Amenities.** Where appropriate, services and amenities might include: vault or flush toilets, showers, interpretive/educational areas, playgrounds, utility hookups, and/or a camp store. The campground might be in a centrally located position in the park so some of these amenities might be available nearby.

- **Tent.** Campsites would include a parking area that could accommodate up to two standard-size vehicles (probably a back-in spur) and a living space. Campers would pitch their tents on assigned tent pads.

- **RV.** Campsites would include a parking area that could accommodate a recreational vehicle and condensed living space. Pull-through parking would be preferred in order to safely accommodate large vehicles.

Structural Camping

The types of structures would vary but all would provide some degree of shelter, privacy, convenience, and comfort for campers. Depending on site factors, campers could drive up to the structure or take a short walk to the structure. Typically, this experience would require minimal camping equipment or supplies.

- **Low to Moderate Opportunities for Solitude.** Depending on location and other factors, campers would expect moderate to high levels of interactions with other visitors and, as feasible and appropriate, a natural-appearing environment.

- **Shorter Access to Limited Motorized Access.** Access may vary. Campers may walk a short or moderate distance to access some camping units or enjoy direct access by vehicle to camping units.

- **Moderate Services and Amenities.** Campers would stay overnight in shelters which may include lean-to shelters, yurts, moveable or permanent cabins, or tent-cabins. Where appropriate, other services and amenities may include: vault or flush toilets, showers, or educational/interpretive areas. Camping equipment (sleeping bags, stoves, etc.) may be provided by the operator.

Future visitor use and experiences at Gateway would be guided by the desired future conditions described in the management zone chart and in Table 2-4 as well as specific guidance at individual park areas. Table 2-4 provides desired conditions and examples of future actions to improve visitor use and experience at Gateway.

Table 2-4. Visitor Use and Experience.

Desired Conditions	Examples of Future Actions
Communications and Outreach	
Visitors from a diversity of socio-economic and cultural backgrounds learn about Gateway's resources, find convenient access to and through the park, and enjoy a wide variety of recreational, stewardship and educational opportunities. Park-related messaging and media respond to evolving social conditions, staying current and relevant to visitors and changing audiences. Outreach efforts build and sustain relationships with schools, organizations, partners, and neighboring communities. Awareness of the park's mission and fundamental resources increases among partners and a diversity of audiences.	Utilize print media, social media and digital media to more broadly disseminate information about Gateway's recreational opportunities, programming and resources. Work with partners to increase visibility and understanding of NPS and Gateway's resources through joint outreach, programming, communication and cross-promotions. Develop interpretive media supportive of park purpose, significance, and interpretive themes that is relevant to a more diverse audience and recruits more interest in Gateway. Actual and virtual interpretive programs are designed to appeal to a broad audience and increase visitor understanding of and appreciation for the park's resources. Continue to educate staff, visitors, and the public about park interpretation/education programs. Link programming and activities to school science and history curricula in NY/NJ Stay informed of changing visitor demographics and preferences to effectively tailor programs for visitors. Continue to promote improved pre-trip-planning information and orientation for park visitors through the park's website and other media. Work with local communities and partners to provide services outside park boundaries, where appropriate.

Table 2-4. Visitor Use and Experience (continued).

Desired Conditions	Examples of Future Actions
Visitor Experience	
Visitors enjoy an NPS experience that is consistent with the purpose, significance, fundamental resources, and values of Gateway. Park management prioritizes its focus and shapes the visitor experience to provide opportunities for the use and enjoyment of resource-based recreation, historic landscapes and sites, educational and interpretive activities, open spaces, and natural areas. The recreational needs of the diverse audiences of the surrounding communities are identified and used to inform management decisions regarding facility development and visitor services. Interpretive and educational programs increase visitor understanding and appreciation of the park's significance and its resources. Gateway is a regional and national learning laboratory offering abundant field learning experiences. Curriculum-appropriate, place-based educational programming inspires student understanding and is regularly updated to reflect current scholarship. Visitor services and facilities are appropriately scaled and sensitively located to meet the needs of visitors, minimize impacts on park resources, and facilitate enjoyable, safe, and educational visits to the park. Accessible facilities and programs enable visitors of all abilities to enjoy the park. Natural soundscape and dark night skies are preserved within Gateway and the sounds of modern society and light pollution are minimized in order to provide visitors a unique nature experience in such a highly developed urban context. Views of New York Outer Harbor and ocean horizon are protected. Sports-related activities are used as a foundation for a broader national park experience. Collaborative partnerships with non-profit and private partners expand the park's capacity to protect park resources and provide high quality recreation opportunities, interpretive and educational programming, and other visitor experiences.	Hands on environmental stewardship and cultural resource preservation programming provide opportunities to learn about the park's habitats and ecological systems as well as its history and significance. Cooperate with partners, other governmental agencies, educational institutions, and other organizations to enrich interpretive and educational opportunities locally, regionally, and nationally. Build on ongoing place-based learning experiences that link traditional science and history classrooms with resources found at Gateway (e.g., OPEX – operation explore) Develop and update a long-range interpretive plan, with emphasis on providing information, orientation, and interpretive services in the most effective and engaging manner possible. Create and implement an education strategy plan that outlines goals and actions for providing curriculum and place-based education programs. Explore management and maintenance of athletic fields and sports leagues by a third party.

Table 2-4. Visitor Use and Experience (continued).

Desired Conditions	Examples of Future Actions
Orientation, Access, and Wayfinding	
Visitors are informed and oriented before they arrive and throughout the visit. They enjoy a safe and comfortable experience at the park, and navigate clearly among the districts and units. Public access to Gateway is made more convenient through a combination of ferry services, busses, subway, and non-motorized modes such as walking, biking, and human powered boats. Gateway is accessible via non-motorized/human-powered modes including bicycle, foot-powered and watercraft. A multitude of opportunities to experience the units and districts of Gateway via non-motorized/human-powered modes are available. Many technologies are used to provide an effective orientation, wayfinding, and communication system that guides visitors easily between and within the park's districts.	Through improved signage, branding and a significantly increased ranger presence, make visitors more aware that Gateway is administered by the NPS Provide information kiosks, brochures, maps and digital media that showcases Gateway's parklands as part of a broad network of public lands within the New York City metropolitan area. Increase the visibility of Gateway and improve wayfinding through a unified and comprehensive sign system Expand on efforts to tie into regional water-based transportation systems (e.g., New York City water trail, NPNYHC ferry planning) Continue to support and plan enhanced regional trail linkages including filling gaps in current facilities and expanded connectivity to New York City greenways. Promote these regional trails (greenways) as recreation corridors (e.g., Belt Parkway) Improve wayfinding from local transit stops to parks Implement traveler information system (TIS) to include parking management system (PMS), highway advisory system (HAR), and variable message signs (VMS)
Facilities, Services and Operations	
Facilities and related development are the minimum necessary to serve visitor needs and protect park resources. Visitor and administrative facilities are as compatible as possible with natural processes and surrounding landscapes, aesthetically pleasing, and functional. Commercial services in the park are limited to those that are necessary and appropriate and that are compatible with the park purpose. Staff housing is sufficient to ensure an adequate level of protection for park resources, visitors, employees, and government property, and to provide necessary services. Gateway is a leader in sustainability. Decisions regarding NPS operations, facilities management, and development —from initial concept through design and construction—reflect principles of resource conservation and sustainability. Staffing and volunteer and partner support is adequate to meet the park's management objectives.	Work to make the park appear more cared for overall Improve facilities that welcome visitors to the park and improve the sense of arrival and visibility of the NPS and its park units Actively pursue the adaptive re-use of fundamental historic structures. Implement the PAMP and reduce the number of non-fundamental assets that the park must maintain Integrate NPS asset management practices into decision making and planning. Build, modify, and/or maintain facilities according to projected funding levels and defined park priorities. Consider removal of facilities that do not meet minimum NPS criteria and/or are not cost effective to maintain. Continue to strive to provide affordable housing in or near the park for emergency response staff and seasonal and entry-level employees.

Alternative B: Discovering Gateway – NPS Preferred Alternative

New activities, programs and enhanced facilities will attract users of all neighborhoods, backgrounds, and ages, drawing a diverse audience of local residents, national and international visitors to enjoy all of the park's offering.

Overview

This alternative provides the widest range of activities and most recreation opportunities in dispersed locations throughout the park. New connections would be forged with park lands and communities adjacent and nearby Gateway. This alternative offers the most instructional programming and skills development and draws people into the park to increase awareness and enjoyment of Gateway's historic resources and the natural environment. More convenient and affordable park access is developed through trail connections, bicycle infrastructure, public transit, and waterborne transportation. This alternative prioritizes joint management and operations for visitor services, orientation, programs, and facilities with New York City and other partners.

Jamaica Bay Unit

Under this alternative, Jamaica Bay will be Gateway's premier outdoor recreation destination. The park lands at Jamaica Bay would provide an unmatched variety of recreational, interpretive and educational opportunities for New York residents and park visitors. New activities, programs and enhanced facilities will attract users of all neighborhoods, backgrounds, and ages, drawing a diverse audience of local residents, national and international visitors to enjoy all of the park's offerings. Areas within the Jamaica Bay Unit including Floyd Bennett Field and the Rockaway peninsula parks (Jacob Riis Park, Fort Tilden, and Breezy Point Tip) would emerge as destinations for daily use and multiple day experiences.

Recreation and Visitor Experience

In partnership with New York City and other groups, the NPS would attract neighborhood, regional and distant visitors with new and improved amenities and recreation facilities (e.g., trails, camp sites); improved community-based recreation such as sports leagues and event spaces; and enhanced interpretive and environmental educational programming. With development of water trails, water skills programming, equipment rentals, and the expansion of beach access, the Jamaica Bay Unit would be established as a popular recreation destination for water-based activities. The combination of improved transportation infrastructure and widespread outreach and promotion, would ensure that these new opportunities for outdoor recreation, learning and skill building are accessible and popular among diverse audiences.

Under this alternative, the park lands would provide opportunities for youth and families to experience nature and to develop the skills and knowledge that would foster lifelong enjoyment of the outdoors. Improved and expanded facilities including trails, overlooks, viewing blinds, kayak launch sites, outdoor classrooms and campsites would provide more convenient access to natural areas and facilitate the exploration of Gateway's varied natural environments. These resource-based experiences would be complemented by opportunities to experience and learn about history and the park's significance through guided interpretive activities, interpretive media, and educational programming.

New multiple day experiences would be developed and promoted on NPS and New York City park lands throughout Jamaica Bay. A variety of camping options from special programs in unique locations to a variety of tent, structural and RV sites would enhance the national park experience. Lodging accommodations in historic buildings and associated support areas would be explored.

A multi-use trail network would be created throughout the area and would cater to different physical capabilities and recreation interests. The existing trail system would be greatly expanded and would provide paved as well as soft-surface trail experiences. The extensive network of trails would provide connections from adjacent parks and neighborhoods by tying into the Jamaica Bay Greenway.

Table 2-5. Jamaica Bay Unit - Alternative B - Summary of Visitor Experiences.

Desired Experience	Types of Change	Where Change May Occur
Physical and programmatic connections created to link Gateway sites, New York City parks and neighborhoods to Jamaica Bay	Explore new linkages by trails, sidewalks, paths and bridges Work with NYC and other partners to introduce new recreational skills and educational and interpretive programs in adjacent parks and communities	Plumb Beach Bergen Beach Canarsie Pier Pennsylvania Avenue and Fountain Avenue Parks Spring Creek Frank Charles Park Hamilton Beach
Orientation portals established to provide information on sites and activities throughout all Jamaica Bay park lands	Create distinctive access corridors to parks and Jamaica Bay through art, signs and other visual expression Improve signs and wayfinding Use virtual and modern technology for orientation and maps	Plumb Beach Canarsie Pier Spring Creek Floyd Bennett Field Fort Tilden
Recreation improvements	New picnic and open space area at Bergen Beach and Spring Creek Improved areas for horse-related activities at Bergen Beach Improved launching areas for human-powered boating and wind sports at Plumb Beach	Bergen Beach Plumb Beach Canarsie Pier Pennsylvania Avenue and Fountain Avenue Parks Spring Creek
Offer a wide variety of camping opportunities and support areas and services	Create new areas for all types of camping Offer special camping programs in places like historic buildings or natural areas.	Bergen Beach Floyd Bennett Field Fort Tilden Jacob Riis Park Jamaica Bay Wildlife Refuge
Connect park sites through trails and paths	Convert former roads into trails Improve biking and walking infrastructure and circulation Improve access and linkages to Jamaica Bay Greenway	Unit-wide

Table 2-5. Jamaica Bay Unit - Alternative B - Summary of Visitor Experiences (continued).

Desired Experience	Types of Change	Where Change May Occur
Community gathering spaces	Link athletic use/sports leagues with opportunities for NPS experience Accommodate small outdoor concerts and performances Create areas for gardens, markets, festivals and other community uses	Pennsylvania Avenue and Fountain Avenue Parks Floyd Bennett Field Canarsie Pier Frank Charles Park
Natural immersion	Create learning opportunities and services for activities such as kayaking and wildlife observation Formalize nature trails to bays and waterways for fishing, walking Establish overlooks for outstanding/distance views of Jamaica Bay	Unit-wide
Environmental education	Improve or develop places to learn about marine resources such as salt marsh, and wetlands	Floyd Bennett Field Bergen Beach Jamaica Bay Wildlife Refuge Fort Tilden
Formal water trails established	Establish new water trails connecting to NYC parks and other Gateway areas	Unit-wide
Expand access to Jamaica Bay and other waterways	Improve docking and marina area New boat sites, storage, shuttles, and equipment rental	Floyd Bennett Field Fort Tilden Canarsie Pier Pennsylvania Avenue and Fountain Avenue Parks

Resource Management

Partners sharing the NPS vision for a healthy and restored Jamaica Bay are numerous. In both action alternatives, NPS would continue cultivating and leveraging partnerships to accomplish natural resource objectives. Improving water quality within Jamaica Bay would be prioritized along with restoring marine resources and degraded stretches of coastal habitats. In conjunction with partners, NPS would produce a system-wide study of wetlands throughout Jamaica Bay that would determine the extent of freshwater wetland habitat projects. This study would identify the relationship of these wetlands habitats at park areas throughout Jamaica Bay and the appropriate habitat restoration that should occur.

Natural resource protection and restoration efforts in the Jamaica Bay Unit would focus on softening hardened coastal edges, restoring wetland and coastal habitats, and creating additional freshwater wetlands. Increased use would be balanced with additional monitoring and management of wildlife and habitats. NPS would work closely with New York City and other landowners to build the resiliency of coastal habitat and to improve conditions along the entire Rockaway coastline. Together the agencies would produce a holistic shoreline management plan that would help guide recovery efforts and future uses and development.

Historic structures and landscapes would be stabilized, and preserved for recreation, visitor services, education, and sustainable energy. Creative solutions would be found to continue use and adapt to future flooding, storms and other climate change related events. Mobile technology and other innovative media would enrich communication about the park land's history and significance.

NPS would continue cultivating and leveraging partnerships to accomplish natural resource objectives. Improving water quality within Jamaica Bay would be prioritized along with restoring marine resources and degraded stretches of coastal habitats.

Transportation

Through improved bike infrastructure, public transportation, and park shuttles, access to and within Jamaica Bay would be made affordable and convenient to more people. In partnership with its New York City partners, NPS would complete and expand the Jamaica Bay Greenway and trail network. The Jamaica Bay park lands and surrounding communities would also be connected via a system of land-based shuttles as well as water trails, water taxis and ferry service.

Plumb Beach

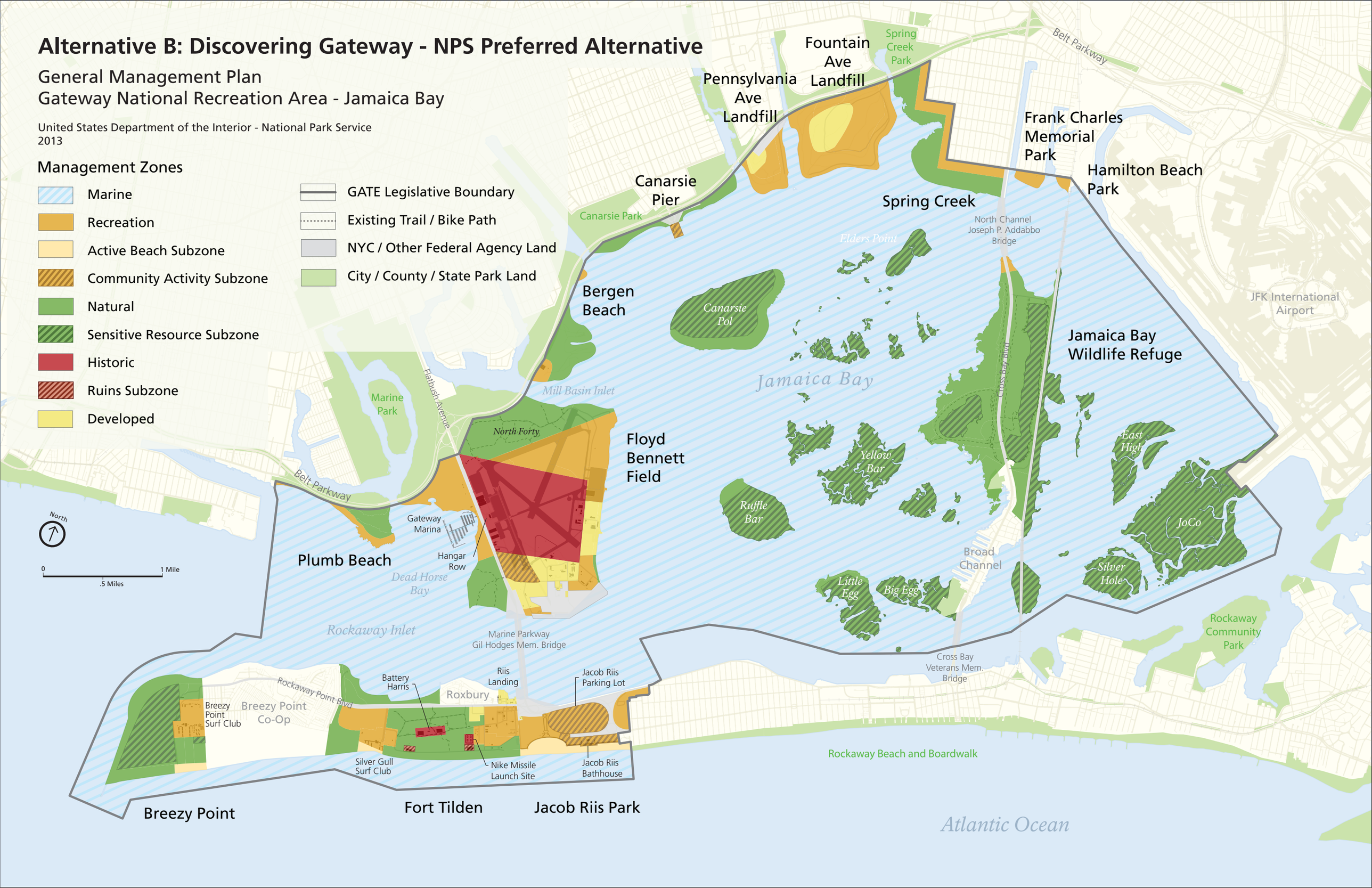
Recreation Zone

Plumb Beach would serve as a new orientation portal providing information on sites and activities for the Jamaica Bay park lands. The NPS would work with the NYCDPR to improve connections to outlying neighborhoods and other nearby park lands including Marine Park and Floyd Bennett Field. A water trail to Marine Park and Dead Horse Bay would be explored. Circulation and site improvements would enhance safety and enjoyment of the Jamaica Bay Greenway.

Alternative B: Discovering Gateway - NPS Preferred Alternative

General Management Plan
Gateway National Recreation Area - Jamaica Bay

United States Department of the Interior - National Park Service
2013



The greatest amount and widest spectrum of camping facilities would be developed to attract a variety of overnight users.

Beach uses would be maintained and improved as a launching site for human-powered boating and wind sports. New visitor amenities such as bathrooms, rentals (bikes and wind sports), food trucks, and launching areas would be developed. The existing building would be rehabilitated to accommodate administrative uses such as storage and a ranger office. Additionally, the building could be improved to offer limited visitor amenities such as food, restrooms, equipment rentals, and/or supplies for beach recreation (e.g. sunscreen, umbrella rental). The building could be jointly managed by the NPS and New York City.

Natural Zone

Beach/dune habitats would be protected and maintained. Formal trails would be established through the natural area to prevent trampling of vegetation, reduce impacts to wildlife, and ensure that restoration efforts are successful. Plantings of native coastal trees and shrubs and well as other techniques would help stabilize eroding natural areas.

Floyd Bennett Field

Recreation Zone and Community Activity Subzone

Floyd Bennett Field would become a bustling park and Jamaica Bay's premier destination for year-round outdoor recreation, community activities and environmental education. Much of the airfield's currently underused open spaces and structures would be energized and accommodate community events, outdoor recreation, skill development programming, entertainment, and learning. An extensive trail system would cater to hikers, bikers and nature lovers while water trails and launch sites would invite visitors to explore Jamaica Bay on kayaks, canoes, sailboards and other non-motorized boats.

In partnership with others, NPS would develop new recreation opportunities and host a wide range of activities and instructional programming. Recreational uses of the airfield would be offered year-round and cater to a diversity of visitors and skill levels. New opportunities for outdoor skill building (e.g., learn to camp, stargazing) and hands on environmental education would be explored.

The greatest amount and widest spectrum of camping facilities would be developed to attract a variety of overnight users. This diversity of camping opportunities would include instructional programs and equipment rentals to help people build new skills and confidence in sleeping overnight in the great outdoors. In addition to camping, overnight lodging would be developed in cooperation with park partners and to the greatest extent possible, utilize an existing historic building.

An area along Hangar Row would be designated as flexible open spaces intended to accommodate community activity such as picnics and group gatherings, and events. These areas could also be used for community uses such as gardens, markets, educational events and outdoor concerts and performances. Community activity spaces would be primarily located along Flatbush Avenue. Hangar B would be rehabilitated for an entertainment venue.

With more miles of hiking and biking trails and new signs, maps, multiple trailheads and a variety of trail features, Floyd Bennett Field would accommodate different skill levels and user groups. Connecting the airfield's main visitor facilities and internal trail network with the Jamaica Bay Greenway would ensure convenient trail access to the park.

The arrival sequence to the park would be improved with increased access to the airfield's main visitor facilities off Flatbush Avenue. Through improved circulation and way finding signs, a more welcoming sense of arrival would be established near the Ryan Visitor Center. Improved wayfinding, interpretive and orientation facilities and materials would orient visitors to the resources that can be found throughout Jamaica Bay and Gateway

Improved transportation infrastructure would likely be divided between the Recreation Zone and the Developed Zone. Floyd Bennett Field would be established as the most accessible park in the Jamaica Bay Unit, and the airfield would serve as a multi-modal transportation hub developed to provide transportation access and visitor distribution (via public transportation, shuttles, bikes, water taxis, etc.) to park lands throughout Jamaica Bay.

Habitats would be managed to improve resilience and healthy environments as part of the larger Jamaica Bay system. The restoration of freshwater and saltwater wetland habitat would be explored in portions of the North Forty natural area and along the shoreline.

Marine Zone

The marina would offer more public uses, including boat rentals, water-based recreation, and boating/sailing lessons. The enhanced marina area would serve as the Jamaica Bay unit's primary portal for experiencing the bay by water. The marina would serve as a water-based access point for ferries, water taxis, and other boats. Guided interpretive boat tours as well as a designated water trail would encourage people to explore the airfield and other Jamaica Bay resources from the water. Additionally, greater shoreline access and several launch sites for human-powered boats (e.g. kayak, canoe) would create more boating and fishing opportunities.

Natural Zone

Habitats would be managed to improve resilience and healthy environments as part of the larger Jamaica Bay system. The restoration of freshwater and saltwater wetland habitat would be explored in portions of the North Forty natural area and along the shoreline. The shoreline would return to natural (soft) conditions through the removal of bulkheads and other hardened structures and allow natural sediment transportation processes to occur. The park would explore the development of a wetlands interpretive center with partners. This center would highlight fresh and saltwater wetland environments and may include an interpretive and environmental education center, trails and boardwalks, outdoor classrooms, observation facilities, interpretive media and educational exhibits.

Upland forest management would continue within areas of the North Forty not designated for wetland habitat, and expanded visitor use in the North Forty would be compatible with the protection of the remaining species-rich forest. Grasslands habitat would be managed and maintained for grassland birds.

Nature-based recreation and environmental education programming would be expanded. Along soft-surface trails, people would encounter facilities such as blinds, scopes,

observation decks, and boardwalks. Along with interpretive materials, these facilities would be designed to facilitate nature study, wildlife observation, and immersion in a natural setting. Environmental education programming, as well as guided tours, would feature equipment rental facilities (e.g., bike, binocular, or tent rentals) developed to allow visitors to try new activities and to facilitate "gateway" experiences of the outdoors.

Historic Zone

The character-defining cultural landscape elements that reveal the airfield's historic municipal period (such as Ryan Center, Hangar Row, and runways) would be preserved and interpreted. The open pattern of the airfield landscape would be preserved through the maintenance of low vegetation and appropriately-scaled recreation facilities.

The historic aviation buildings along Flatbush Avenue known as Hangar Row would be rehabilitated for an aviation interpretive center and feature aviation exhibits, aircraft collections, and flexible interior and exterior space and would provide space for community activities, informal gatherings, interpretive programs, and special events. The historic plane collection would be relocated from Hangar B to Hangar Row. The expansive views of the bay and orientation to the airfield's cultural landscape would be enhanced by elevated areas such as the Ryan Center tower, a tethered balloon, or other related facilities.

Developed Zone

The eastern portion of the airfield would accommodate a variety of visitor services, transportation infrastructure, and operations and maintenance facilities. Uses in this zone would complement other uses on the field.

Visual shields would block views from maintenance and other functions, reducing impacts from these uses on visitors. Circulation throughout the airfield would be improved for operations, especially trucks and vehicles traffic. A separate access entrance would be designated for commercial, operational and maintenance vehicles that allows for direct access to the Developed Zone. Dilapidated and underutilized buildings in this zone may be demolished and the spaces would either be reused to accommodate operations and maintenance or restored as natural habitats.

The park would explore development of alternative energy and opportunities for more sustainable operations, including waste management. A new composting facility that processes food waste, vegetation, and other organic matter from concession stands, restaurants, groceries and other sources in and around the park and local vicinity would be considered.

Bergen Beach

Recreation Zone

New connections would be explored from Bergen Beach to McGuire Park, Paerdegat Basin Park, Eco Park and Flatlands, Bergen Beach and Mill Basin neighborhoods. A new water trail

would be developed to Paerdegat and Mill Basin inlet. Vehicular, bicycle and pedestrian access from the Jamaica Bay Greenway and Belt Parkway would be improved.

The NPS would maintain equestrian use and facilities. The NPS would work with the concession-run business to reduce impacts on the area's habitats through the designation of equestrian trails and improved signs and wayfinding. The park would be open to additional types of visitor uses in addition to equestrian uses and new facilities would be developed to accommodate expanded uses. Such facilities could include trails and picnic areas. A trail would be developed that provides access to the bay for fishing, walking and nature study. Additionally, the park could serve as another destination for water-based sports and provide launching sites, storage, shuttles, and equipment rental.

Visitor uses would be expanded to include nature-based recreation opportunities. The condition of coastal habitats would be improved through increased restoration efforts as well as more tightly controlled visitor use.

Natural Zone

Visitor uses would be expanded to include nature-based recreation opportunities. The condition of coastal habitats would be improved through increased restoration efforts as well as more tightly controlled visitor use. Bioengineering techniques would be used to stabilize eroding natural areas with plantings of native coastal trees and shrubs. Beach/dune habitats along with fringe wetlands would be protected and maintained. Visitor and equestrian use would be limited to designated trails to prevent trampling of vegetation, reduce impacts to wildlife and ensure restoration efforts are successful.

Canarsie Pier

Recreation Zone – Community Activity Subzone

Canarsie Pier would become a vibrant destination for community-oriented events as well as water-related recreational activities. This site would serve as a new orientation portal for the Jamaica Bay park lands and Gateway. Given the park's close proximity to New York City's Canarsie parks, NPS would work closely with NYC agencies on programming, transportation and other management issues.

The pier and its outlying spaces would be improved to better accommodate community events such as concerts, markets, and festivals. Additionally, spaces for picnics and group gatherings would be expanded and enhanced through shade trees and other plantings. The existing contact station could be adaptively reused to support community use and to provide expanded visitor amenities. Along the coast on either side of the pier, the NPS and its partners would develop improved spaces for fishing, kayaking, and other human-powered watercraft. Improvements would include lessons and a designated instructional and beginner paddling zone as well as equipment rentals.

Canarsie Pier would serve as another Jamaica Bay hub for waterborne transportation and water trail connections to other park lands. A launch site would provide access to a designated water trail for human-powered boat exploration. Additionally, ferry and/or water taxis access would be explored for both transportation and a launch site for guided Jamaica Bay boat tours. The NPS would work with NYC agencies to improve connections from Canarsie Pier to New York City's Canarsie Park and to improve trail linkages to the Jamaica Bay Greenway.

The former landfills at Pennsylvania Avenue and Fountain Avenue would be transformed into new park areas for recreation, community activities and outstanding views of Jamaica Bay.

Natural Zone

Restoration projects to the east and west of the pier would strive to create a healthy shoreline habitat and an intertidal area. Signs, trails, and clear beach and water access points would be developed in order to control visitor traffic and minimize disturbance to the coastal habitat.

Pennsylvania Avenue and Fountain Avenue Parks

Recreation Zone

The former landfills at Pennsylvania Avenue and Fountain Avenue would be transformed into new park areas for recreation, community activities and outstanding views of Jamaica Bay. Former service/haul roads at each park would be converted into a multi-use trail system. Facilities such as viewing platforms and/or overlooks would offer distance views of Jamaica Bay. New visitor amenities such as restrooms, orientation and gathering areas would be developed. At the Pennsylvania Avenue Park, the NPS and partners would explore the potential of establishing a ferry portal and/or water taxi stop and would develop a launch site for human-powered watercraft. Physical connections between each of the areas and their neighboring communities as well as nearby park sites would be improved.

Developed Zone

Renewable energy development, such as solar, would be explored at both Pennsylvania Avenue and Fountain Avenue Parks. Additionally, areas for recreational activities and community activities would be provided. At Fountain Avenue Landfill, the NPS would explore the potential of a community gathering space with associated facilities that could accommodate outdoor concerts and performances.

Frank Charles Park

Recreation Zone

Existing recreation uses at Frank Charles Park would be maintained and the park would remain an active community destination. The NPS and NYCDPR would work closely together on programming and other management issues at Frank Charles Park. As existing facilities are in need of replacement, NPS would develop shaded and flexible gathering areas as well as creative play structures for youth. Water access from the park to Jamaica Bay would be improved with trails, fishing access and boat launching/landing sites. Fringe wetlands would be protected and habitat along the shoreline improved.

Hamilton Beach Park

Recreation Zone

Hamilton Beach Park would continue to provide open space and outdoor recreation opportunities for the communities outlying the park. New shaded picnic areas would be created in order to improve community-gathering areas. Water access from the park would be improved with trails, fishing access and boat launching/landing sites. Fringe wetlands would be protected and habitat along the shoreline improved.

Jamaica Bay Wildlife Refuge

Natural Zone and Sensitive Resources Area Subzone

The refuge would remain a popular destination for nature study, environmental education and nature-based interpretation while offering considerably more opportunities for nature-based and water-based recreation. Habitats at Jamaica Bay Wildlife refuge would be protected and maintained. Habitats would be managed to support a diversity of migratory birds. Migratory bird identification, counting and research would be increased.

The refuge would remain a popular destination for nature study, environmental education and nature-based interpretation while offering considerably more opportunities for nature-based and water-based recreation.

Programming at the refuge would be expanded with an emphasis on engaging youth and families. In partnership with other, NPS would pilot a series of educational and stewardship experiences and programs that could be replicated in other areas. Efforts would also be made to tie the refuge programmatically into other park sites within the bay and their environmental education and nature activities so that complementary programs are offered across the bay. An expanded network of trails, boardwalks and nature study facilities (e.g. scopes, blinds, observation decks) would facilitate self-guided exploration as well as interpretive tours and educational programming throughout the Natural Zone.

Multi-modal transportation to and from the refuge would be improved. Greenway connections would link the refuge with Sunset Cove Park and other NYCDPR and NPS sites. Water-based shuttles could physically tie programming at Jamaica Bay Refuge with the proposed wetlands interpretive center at Floyd Bennett Field and other environmental and interpretive facilities ringing the Bay.

Marine Zone

Water quality would be improved throughout the Marine Zone. Aquatic and benthic habitat restoration projects would continue to be studied, explored and implemented with partners.

The refuge would also be established as a portal for accessing Jamaica Bay waters. Additional water- based interpretive and recreation facilities would be developed including water trails, kayak instructional programming, equipment rental, offshore docks and additional landing/launch sites. NPS would work closely with NYCDPR to improve Sunset Cove Park and other areas as access points for water-based exploration of the refuge and Jamaica Bay waters. A designated water trail that hugs the shoreline with several launching

points would allow visitors to venture into the bay and experience many of Jamaica Bay Unit's districts from the water. Primitive camping may be permitted on Canarsie Pol and would be limited to NPS (or partner)-guided camping trips.

Spring Creek

Recreation Zone

Spring Creek would serve as a new orientation portal for the Jamaica Bay park lands and provide access to the bay. New facilities would be developed to invite recreational use and to promote exploration of the Spring Creek area. Proposed new facilities would include trailheads and parking areas, orientation kiosk, trails, and picnic areas. Facilities to encourage water access would also be developed such as boat launch and landing sites, observation deck, and fishing access areas. A multi-use trail network would be established and would facilitate recreation within the park and improve neighborhood connections to outlying park sites and communities. Connections to the Jamaica Bay Greenway would be improved.

Natural Zone

Efforts to control and eradicate *Phragmites* and other invasives would be increased and complemented by native plantings. Monitoring and assessment of the saltmarsh and forested areas would be ongoing and these habitats would be protected and maintained. To prevent trampling of vegetation, reduce impacts to wildlife and ensure restoration efforts are successful, social trails would be eliminated and access would be limited to designated trails.

Jacob Riis Park

Recreation Zone and Community Activity Subzone

Jacob Riis would be transformed into a multi-season community activity area and a destination for both beach and water-based recreation. The park would attract and invite more community use and water-based and beach recreation with expanded facilities for community activities such as shaded picnic areas, sports fields, and more educational, arts, and entertainment programming.

A wide variety of water-based recreational experiences, from traditional beach uses at a guarded swim beach, to learn-to-swim programming, splash parks, and a water skills park appropriate to the coastal location would be offered. The parking lot would be redesigned to potentially accommodate sports fields, courts, camping, an entertainment venue, transportation, as well as flexible open spaces for group gatherings. Physical connection between Jacob Riis and the other park lands on the Rockaway Peninsula would be improved through a shuttle, linkages to public transportation, and bike infrastructure.

A wide variety of water-based recreational experiences, from traditional beach uses at a guarded swim beach, to learn-to-swim programming, splash parks, and a water skills park appropriate to the coastal location would be offered.

The Jacob Riis bathhouse would be rehabilitated to accommodate visitor and community uses such as performances and events as well as group gatherings while providing a shaded indoor space and basic amenities for beach goers. Interpretive programming at the site and digital media would be expanded to communicate the story of the bathhouse, recreation on the Rockaways as well as climate change. Any offices, restaurant, or more permanent uses would be relocated to the second floor of the building. The boardwalk and other cultural landscape features associated with the bathhouse would be maintained (with the exception of the parking lot as noted above). The NPS would use portable and mobile facilities to the extent possible to meet visitor needs (e.g. mobile equipment rentals, food trucks).

The trails network throughout Tilden would be expanded and some trailheads and segments of the trails would be located within the Recreation Zone.

Fort Tilden

Recreation Zone

Fort Tilden would become a destination for natural immersion activities. New overnight options, expanded programming and recreation opportunities would promote the Rockaway park lands as a premier multi-day excursion. The parade ground area would become the hub for lodging and activities that supports the recreation and interpretive uses of Fort Tilden. Select rehabilitated buildings would provide overnight accommodates and visitor amenities needed to support overnight stays such as food service and equipment rentals. A variety of camping opportunities and support facilities would be developed including instructional programs and equipment rentals.

The trails network throughout Tilden would be expanded and some trailheads and segments of the trails would be located within the Recreation Zone. Equestrian uses and facilities would be explored. Flexible open spaces would accommodate group gatherings as well as informal, recreation such as picnicking. Additionally, the parade ground area becomes the park's staging area for instructional programming, equipment rentals, and guided tours. The buildings would continue to accommodate community groups and could support additional interpretive exhibits and educational programming in the future.

More public uses, including boat rentals, water-based recreation, boating/sailing lessons, and fishing access, would be considered on the inlet. Riis Landing and other established access areas would serve as portals for experiencing the bay by water. Guided interpretive boat tours as well as a designated water trail would encourage people to explore the Rockaway Peninsula and Jamaica Bay.

The Silver Gull Beach Club use would be maintained. Public use of the beach club would be expanded to include water-based and beach recreation opportunities such as educational and interpretive programming and guided kayak tours and lessons.

Natural Zone

Coastal habitats and processes would be restored, protected and monitored. Habitat value of the Rockaway Inlet side of Fort Tilden would be studied and coastal habitat and wetland projects would be initiated, where appropriate. Opportunities for environmental education programming and nature study would be promoted.

The ocean and bay shorelines would offer a natural coastal experience more than other Gateway beaches. Appropriate access points and visitor amenities would be developed to support increased beach use. An improved trail system with trailheads and a robust backcountry trail experience along designated routes would invite exploration of Tilden's natural environments and cultural resources. Tent camping and appropriate support facilities would be introduced for overnight stays within the Natural Zone.

Historic Zone

Fort Tilden would be the primary location for interpreting Gateway's coastal defense story within the Jamaica Bay Unit. Through enhanced interpretation, the site would offer a greater appreciation for the role of the fort in protecting New York. Battery Harris would be stabilized and the existing overlook would be improved and interpretive media and programming would be expanded. The Nike Missile site would also be stabilized and interpreted. Access to, and interpretation of, these resources would be improved through an expanded trail network, enhanced interpretive media, and increased programming.

Developed Zone

Circulation between Riis Landing and Fort Tilden and other park lands on the Rockaway Peninsula would be improved through shuttles, safer road crossings, and bike infrastructure. Fort Tilden would act as the orientation portal for park lands on the Rockaway Peninsula and provide information on resources and opportunities offered throughout Gateway. Additionally, trailhead and parking areas would feature orientation media. Riis Landing would continue to serve as a ferry landing and kayak launch site. The buildings at Riis Landing would be adaptively reused and leased for community and other uses. Operations moved from the Nike Missile Site at Fort Tilden would be relocated to Riis Landing or other locations within the Jamaica Bay Unit.

Breezy Point Tip

Recreation Zone and Active Beach Subzone

The Breezy Point Surf Club use would be maintained. Public use of the beach club would be expanded to include water-based and beach recreation opportunities such as educational and interpretive programming and guided kayak tours and lessons.

Natural Zone and Sensitive Resources Area Subzone

Breezy Point Tip remains a natural area open to limited nature-based recreation. Habitats would be maintained, protected and enhanced through monitoring and restoration projects. Efforts to control and prevent invasive species in the freshwater wetland areas would be increased. Fishing access would be maintained. The area would continue to offer a quiet, natural immersion experience. NPS would with partners to offer limited environmental education and natural resource stewardship volunteer opportunities.

Sandy Hook Unit

Sandy Hook would remain a popular beach recreation destination where visitors find a variety of opportunities to have fun and enjoy the natural environment. New and expanded trails, boating launch sites, camping facilities and interpretive programs facilitate the coastal experience. Connections with neighboring communities including orientation, land and water trail systems, and linkages to related interpretive sites would provide for a richer experience at Sandy Hook.

Sandy Hook remains a popular beach recreation destination where visitors find a variety of opportunities to have fun and enjoy the natural environment. New and expanded trails, boating launch sites, camping facilities and interpretive programs facilitate the coastal experience.

A variety of transportation systems would be developed to make Fort Hancock and the entire Sandy Hook peninsula more convenient to access. Within Fort Hancock, ferry service would be expanded to include summer weekdays, shoulder seasons and special events. Additionally a seasonal water ferry/taxi connection would be explored from other communities and NPS sites. Opportunities to provide private/transient water access and dockage at Sandy Hook would also be evaluated.

A shuttle system would relieve parking issues and traffic congestion and provide convenient access to the park. The shuttle would collect visitors from surrounding towns, transportation stops and the ferry terminal and drop them off at Sandy Hook's beaches and activity nodes. Opportunities would be explored with partners to extend public transit service into Sandy Hook, and initiate a transit shuttle to connect the Highlands. Interpretive media would be incorporated into both the on ferry service and/or internal landside shuttle system.

An expanded multi-use path network would traverse more of the peninsula and accommodate cross-island travel so people could explore both the ocean side and the bay side. Designated on-street bike routes from the Highlands would connect with regional trails serving the park unit. Bike access would be encouraged to/from and within Sandy Hook, with bike rental stations at parking facilities near the park entrance and within the park.

Parking options would be evaluated for remote intercept parking lot(s) outside of the Sandy Hook boundary with transit shuttle and/or bicycle connections provided into the park. Advanced traveler information systems would be improved with partners.

Recreation Zone and Active Beach Subzone

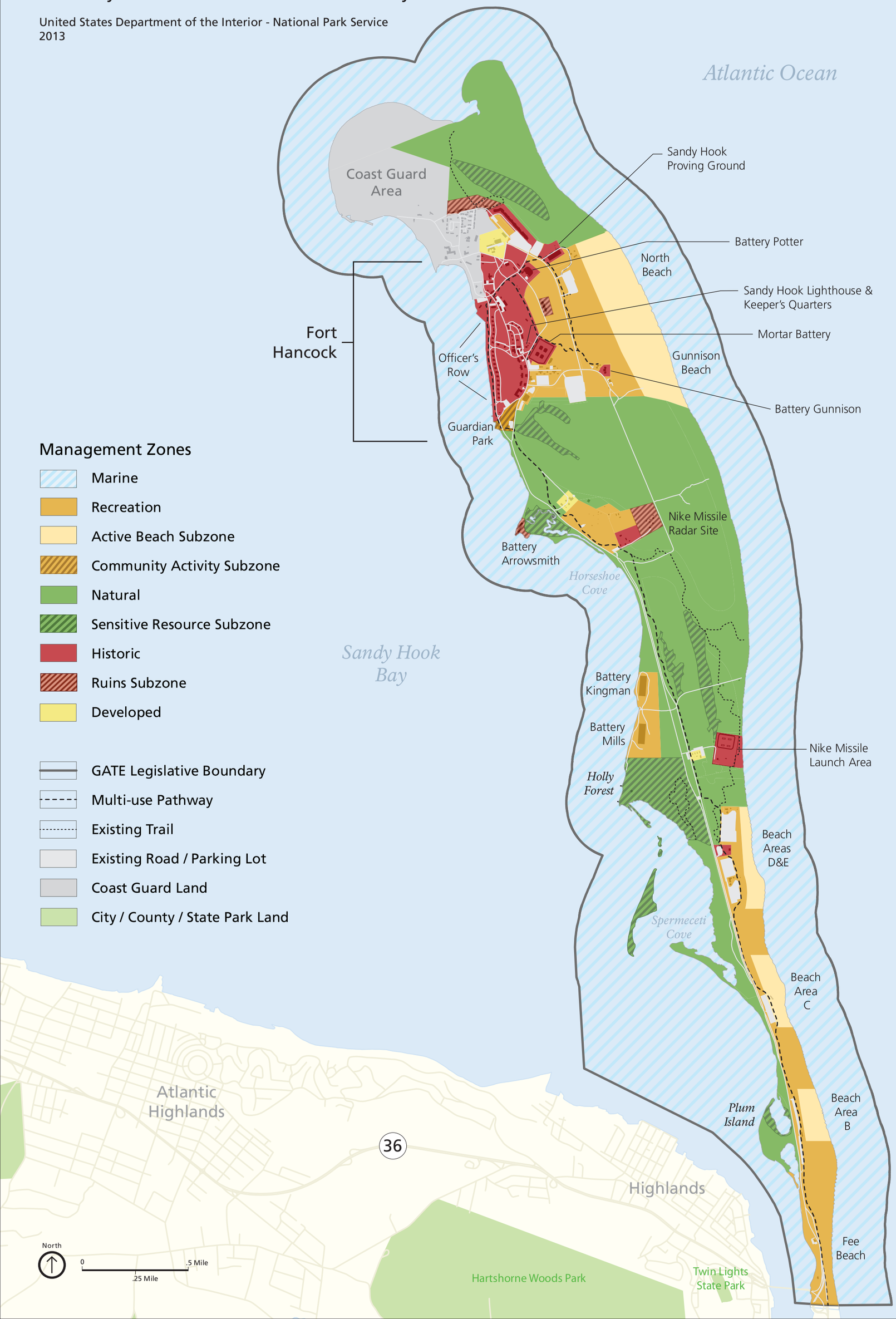
Active beach recreation, including swimming on lifeguarded beaches, would continue. The location and size of these areas could change in the future depending on changes along Sandy Hook's Atlantic coastline. Visitor services and facilities would be redesigned to be more resilient to storms and flooding. At North Beach, expanded and improved facilities would be able to accommodate more Fort Hancock use.

The Kingman and Mills batteries area would be developed as a recreation activity center. Trails would extend from the batteries allowing for exploration of the bayside shoreline and inland natural environments. The batteries would also serve as a launch site for water-based exploration with equipment rentals, instructional programming, piers, and launch sites.

Alternative B: Discovering Gateway - NPS Preferred Alternative

General Management Plan
Gateway National Recreation Area - Sandy Hook

United States Department of the Interior - National Park Service
2013



Also, guided programming, interpretive media, and exhibits would reveal the history of the batteries. Finally, the batteries and coastal landscape could also accommodate camping. Additional camping opportunities would be explored at several locations within the Recreation Zone.

Historic Zone

The Fort Hancock Area would become a premier New Jersey shore destination for outdoor recreation and historic interpretive experiences. The widest variety of potential adaptive reuses for the Fort Hancock buildings would be considered ranging from lodging to restaurants, conference space, and offices. The cultural landscape within the Fort Hancock area would be maintained. Areas within the cultural landscape would be rehabilitated to function as flexible open space areas for relaxation, gatherings, picnics, and community events.

Nike Missile Launch and Radar Site would be stabilized and interpreted. New opportunities for guided and self-guided exploration of the area would be created. Batteries Potter, Gunnison, McCook, and Reynolds (Mortar) would be preserved and interpreted through guided tours and/or interpretive media. Additional batteries within the Fort Hancock area would be stabilized, opened to visitor access and interpreted, including off site through digital media and/or exhibits.

Natural Zone and Sensitive Resource Subzone

Habitat conditions of the forest, shrub, and wetland habitats would be improved. Current natural resource management practices would be maintained and protection, research, and monitoring of sensitive habitat areas like the beaches on the northern tip and the maritime forest would be increased. The mosaic of coastal habitats would provide unique opportunities for experiencing and learning about natural systems and native plant communities.

A variety of natural immersion experiences would be created to increase visitor awareness and enjoyment of the natural environments including nature study, wildlife viewing, camping, and instructional programming.

Marine Zone

Water quality would be improved throughout the Marine Zone. Aquatic and benthic habitat restoration projects would continue to be studied, explored and implemented with partners.

Sandy Hook would be a popular recreation area for boating, wind sports as well as water-based interpretation and nature study. Water-based recreation would be encouraged through expanded guided tours via boat or kayak. Interpretive boat tours could link Sandy Hook physically and thematically with other NPS and local sites. Additionally, NPS would offer more instructional programming to introduce people to these sports and to build skills. This could include swimming, surf, kite boarding and kayaking lessons. Additionally, instructional and/or beginner zones would be designated offshore in order to create more comfortable learning environments.

A designated water trail focused on Sandy Hook Bay would provide a water-based connection between Fort Hancock, Highlands and the southern portion of the Sandy Hook peninsula. Several launch sites along the bay coastline as well as boat rentals and instructional programming at the Kingman and Mills recreation site would support travel along the water trail. An ocean water trail would be developed offshore and would link coastal features and attractions extending from Beach Area B to North Beach. Equipment rentals, boat storage facilities and shuttles at the beaches would facilitate the water-based exploration of Sandy Hook.

A mooring field would be developed within the Sandy Hook Bay. Moorings would encourage day and/or overnight trips to Sandy Hook and allow for greater physical and programmatic connections to other sites within the NY Harbor area as well as nearby New Jersey communities.

Staten Island Unit

Recreation and Visitor Experience

Improved trailheads and more miles of trail within and between the Staten Island sites as well as picnic areas, camping facilities, and interpreted historic sites would create more recreation opportunities. Opportunities to access and experience Gateway waters would also be increased. Water trails, interpretive boat tours, launch sites, and expanded beach and fishing access would encourage exploration of the coastline and New York Bay. These water trails and guided tours would facilitate paddling from Fort Wadsworth out to Hoffman and Swinburne islands and/or down the coast to Miller Field and Great Kills Park. The NPS would evaluate the possibility of developing overnight accommodations and expanded the locations and types of camping available throughout the Staten Island Unit.

Table 2-6. Staten Island Unit - Alternative B - Summary.

Desired Changes	Types of Change	Where Change May Occur
Physical and programmatic connections created to link Gateway sites, New York City parks and neighborhoods	Explore new linkages by trails, sidewalks, and paths Work with NYC and other partners to introduce new recreational skills and educational and interpretive programs in adjacent parks and communities	Fort Wadsworth Miller Field Great Kills
Orientation portals established to provide information on sites and activities throughout Staten Island	Improved contact stations, trailheads and parking Create distinctive access corridors to parks through art, signs and other visual expression Improve signs and wayfinding Use virtual and modern technology for orientation and maps	Fort Wadsworth Miller Field Great Kills
Recreation improvements	New picnic and open space areas Enhanced multi-use trail systems and connections Improved launching areas for human-powered boating	Great Kills Fort Wadsworth Miller Field
Offer a wide variety of camping opportunities and support areas and services	Create new areas for all types of camping Offer special camping programs in places like historic buildings or natural areas.	Great Kills Fort Wadsworth
Connect park sites through trails and paths	Convert former roads into trails Improve biking and walking infrastructure and circulation Improve access and linkages to NYC Greenway and paths	Great Kills Fort Wadsworth Miller Field
Community gathering spaces	Link athletic use/sports leagues with opportunities for NPS experience Accommodate small outdoor concerts and performances Create areas for gardens, markets, festivals and other community uses	Fort Wadsworth Miller Field
Natural immersion	Create learning opportunities and services for activities such as kayaking and wildlife observation Formalize nature trails to bays and waterways for fishing and walking Establish overlooks for outstanding/distance views of bays	Great Kills Fort Wadsworth Miller Field

Table 2-6. Staten Island Unit - Alternative B - Summary (continued).

Desired Changes	Types of Change	Where Change May Occur
Environmental education	Improve or develop places to learn about bay-related resources such as forests and wetlands	Great Kills Fort Wadsworth Miller Field
Formal water trails established	Establish new water trails connecting to NYC parks and other Gateway areas	Great Kills Fort Wadsworth Miller Field
Expand access to waterways	New boating sites, storage, shuttles, and equipment rental	Great Kills Fort Wadsworth

Resource Management

Habitats and current natural resource practices would be maintained including controlling invasive species, planting trees and monitoring beach erosion. Cultural resources would be preserved, stabilized and maintained, where appropriate.

Access and Transportation

Improved public transportation and an expanded greenway, as well as, shuttles between the sites would make access more convenient. Also, bike infrastructure would be developed throughout the unit including a bike-sharing system, maps, and convenient bike parking to encourage more bike use at the parks and provide convenient connections with other Staten Island trail systems. A shuttle system linking the Staten Island Unit park sites with Saint George Ferry Terminal would be considered as a means of promoting sustainable access and a first point of visitor orientation to the Staten Island Unit from those arriving via the Staten Island Ferry.

Fort Wadsworth would become a destination for both outdoor activities and community use and would offer a wide range of recreation facilities as well as interpretive experiences.

Fort Wadsworth

Recreation Zone

Fort Wadsworth would become a destination for both outdoor activities and community use and would offer a wide range of recreation facilities as well as interpretive experiences. Expanded trails and interpretation, access to the water, and improved facilities, would enhance opportunities to recreate in a scenic setting amidst the impressive coastal defense batteries. Camping facilities would be expanded and include a variety of different types of camping closer to the coastline and for various skill levels.

A multi-use trail system would be developed that connects to the New York City Greenway (NYC Greenway) and adjacent neighborhoods and cater to different physical capabilities and recreation interests. The NPS would work with NYCDPR to expand the greenway so that it links Fort Wadsworth, Miller Field, and Great Kills Park together. The NPS would work with partners to develop a multimodal transportation system including improved public transit, bike paths, and a shuttle, that would link Fort Wadsworth with the Staten Island Ferry and other areas.

Alternative B: Discovering Gateway - NPS Preferred Alternative

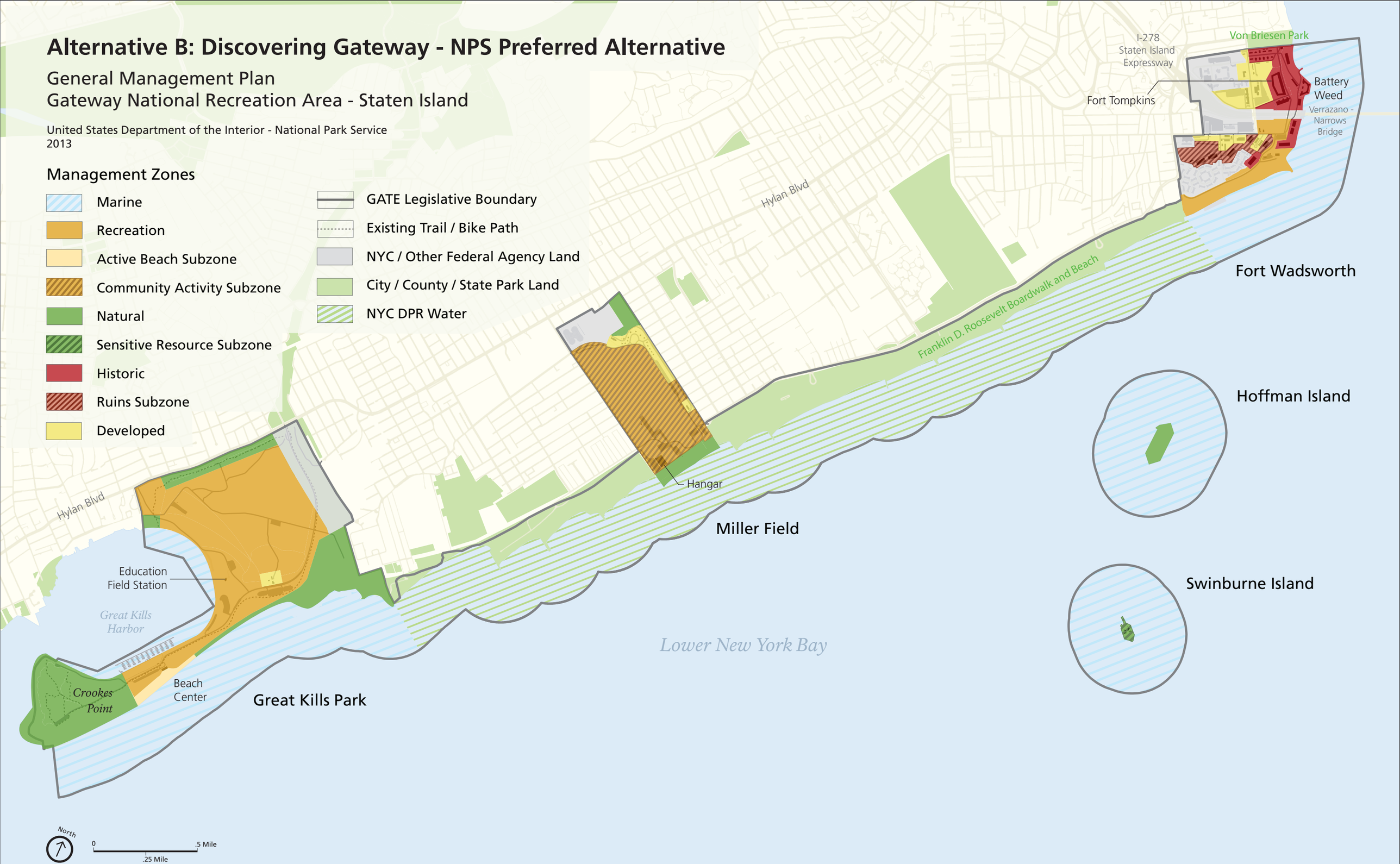
General Management Plan
Gateway National Recreation Area - Staten Island

United States Department of the Interior - National Park Service
2013

Management Zones

- Marine
- Recreation
- Active Beach Subzone
- Community Activity Subzone
- Natural
- Sensitive Resource Subzone
- Historic
- Ruins Subzone
- Developed

- GATE Legislative Boundary
- Existing Trail / Bike Path
- NYC / Other Federal Agency Land
- City / County / State Park Land
- NYC DPR Water



Biking and water-based recreational activities such as kayaking and fishing would be encouraged through instructional programming designed to introduce people to these sports and to build skills. Instructional and/or beginner zones would be designated offshore in order to create more comfortable learning environments. Equipment sharing and rentals would encourage visitors to try new activities and to facilitate "gateway" experiences of the outdoors. (e.g., bikes, binoculars or tent rentals).

Visitor orientation would be improved with new signs and wayfinding, Fort Wadsworth would be more visible and clearly identified as a park welcoming to visitors. A new contact station, possibly at the Gate House, would be developed in order to improve the sense of arrival and better orient visitors.

Historic Zone

At Fort Wadsworth, interpretive programming and media related to the fundamental resources would be increased, allowing for a more in-depth and richer experience of the site's cultural defense resources and cultural landscapes. Battery Weed and Fort Tompkins would be preserved and open to more regular visitor use. Public access to both forts would be increased and interpretive programming of these resources would be expanded. The Battery Weed seawall would be repaired and fortified to protect the resource from storm surges. Additional batteries would be stabilized and their unique features incorporated into the recreational and interpretive trail system.

Natural Zone and Marine Zone

Natural resource protection of offshore habitats would be maintained within the Marine Zone. In cooperation with partners, NPS would take recommended measures to improve water quality within the bay.

Opportunities for water-based recreation would be greatly expanded at Fort Wadsworth. These activities would include greater fishing access, a coastal water trail extending to Great Kills and the islands, human-powered boat launch sites, and equipment rental. From Fort Wadsworth, a water trail would lead out to an offshore dock positioned nearby Hoffman and Swinburne Islands for distant wildlife observation.

Hoffman and Swinburne islands would remain natural areas. The wildlife and habitat value would be monitored and studied. NPS would explore the possibility of creating guided tours for limited visitor use. Through guided tours or self-guided boat trips along a marked water trail, visitors could gain greater access to the islands. NPS would explore the feasibility of developing a dock on Hoffman in order to allow visitors on the island. Alternatively, an offshore, floating dock would be developed to accommodate distant wildlife observation. In particular, the impact of increased use of the islands would be monitored and the degree of access adjusted as needed.

Developed Zone

The park's administration and operation functions and facilities would continue at Fort Wadsworth. Park housing would be maintained. The character-defining features of Mont Sec and New York Avenue would be preserved and both avenues would be incorporated into the visitor experience of Fort Wadsworth through improved wayfinding signage and interpretation.

Miller Field

Recreation Zone and Community Activity Subzone

Miller Field would remain a vibrant center for community-based recreation tailored to youth and their families. Fields designed for a range of sports uses including soccer, softball and pee-wee leagues would be upgraded to better accommodate intensive use. In both alternatives, NPS would explore management of the ball fields and sports leagues with another entity. The NPS would explore opportunities to introduce more children and their families to the NPS, and other parks and experiences Gateway offers.

A multi-use Perimeter Trail would circumnavigate the entire park and connect the forest with the bay. Walkability throughout the park would be improved by expanding the width of multi-use paths and retrofitting park roads to slow traffic and include sidewalks or designated bike/walk ways. An active nature-based recreation experience that would appeal to youth and their families (e.g. bike trails/facilities, play features, nature adventure zone) would be offered and complement the sports league use.

The NPS would work with partners to host concerts, performances, tournaments and events. The community gardens would be expanded to accommodate more use. Additionally, the picnic and group gathering around the contact station would be expanded and improved. The hangar area would be redeveloped as a community activity area and could include a picnic pavilion, trailhead, and community event space. The hangar would be stabilized and new uses sought.

NPS would work with partners to develop more direct public transit routes that serve Miller Field. A bike-sharing terminal at Miller Field would encourage bike travel along the NYC Greenway up to Fort Wadsworth Park, and the NPS would work with partners to establish a designated bike route to Great Kills Park.

Natural Zone and Marine Zone

A kayak launch site, and kayak instructional zone would be developed on Miller Field's coastline. The Miller Field launch site would be an access point to the buoyed interpretive water trail that extends from Fort Wadsworth to Great Kills. The dune habitat along Miller Field's shoreline would be protected and maintained. Formal access points to the beach and shoreline would be established to protect the dune system.

Miller Field would remain a vibrant center for community-based recreation and offer new forms of recreation tailored to youth and their families. Fields designed for a range of sports uses including soccer, softball and pee-wee leagues would be upgraded to better accommodate intensive use.

A wide-variety of water-based recreational experiences from traditional beach uses at a guarded swim beach, to learn-to-swim programming, and kayaking lessons would be offered.

Developed Zone

The park housing on Miller Field and the Visitor Contact Station would be maintained. Location of maintenance and operations area will be identified upon further study. Maintenance area will be located to complement recreational opportunities.

Great Kills Park

Recreation Zone and Active Beach Subzone and Marine Zone

The Great Kills Harbor would become a destination for a variety of water-based recreational activities. Recreational opportunities such as a marina, kayak concessions, water trails, instructional boating zones, sailing lessons, equipment rental, and tours would be offered. The feasibility of "boatels" or other water-based accommodations would be studied. Supporting facilities such as boat storage and other amenities would be appropriately located. A wide-variety of water-based recreational experiences from traditional beach uses at a guarded swim beach, to learn-to-swim programming, and kayaking lessons would be offered. Expanded visitor amenities would be developed in conjunction with the harbor. Circulation and pedestrian access between the beach center and harbor would be improved.

A variety of new camping opportunities would be developed at multiple sites throughout Great Kills. RV, structural, walk-in tent, and drive-in tent camping options would be offered. Additionally, flexible open spaces to accommodate picnicking, discovery zones for youth, and other unstructured recreational activities would be created. The Education Field Station would be enhanced with a trailhead, outdoor classrooms, camping facilities, and a nature playground to create a fun and safe way for youth to connect with nature.

The popular multi-use pathway would be expanded to create a system of looped routes. Internal park trails would also tie into proposed community bike routes and the NYC Greenway. The NPS would coordinate with partners to complete missing pieces of on- and off-street trails and bike routes for connecting Great Kills to Miller Field. Improved bike infrastructure including bike rentals, maps and wayfinding, and bike parking facilities would also encourage park access by bike. Finally, the park would work with partners to determine the feasibility of introducing ferry service to Great Kills Marina that would provide links to other Gateway sites.

Natural Zone

Current natural resource practices would be maintained including controlling invasives, planting trees and monitoring beach erosion. NPS would work with neighbors and partners to implement solutions for improving resiliency of beach/dune habitat of Great Kills and further east along Staten Island coastline. Habitat restoration efforts would continue on Crooke's Point.

Alternative C: Experiencing Preserved Places

This alternative provides the most opportunities for independent exploration and "wild" experiences that immerse visitors into natural areas, historic sites and landscapes. Natural systems, historic sites and landscapes receive the highest levels of preservation and restoration in this alternative. This alternative increases the visibility, enjoyment and protection of coastal resources and focuses resource management on beach and dune ecosystems and coastal defense landscapes. New recreational programming emphasizes low impact activities that facilitate enjoyment of historic settings and natural areas and emphasize opportunities for education and interpretation through hands-on learning and stewardship opportunities. This alternative maximizes sustainable operations and concentrates activities, access and facilities in distinct locations in order to improve operational efficiency and energy conservation.

Jamaica Bay Unit

Visitor Use and Recreation

Throughout the Jamaica Bay Unit, such as Breezy Point, Fort Tilden, the Jamaica Bay Wildlife Refuge, and Floyd Bennett Field, visitors would find open, protected natural areas. In these area visitors can retreat into natural environments; experience the sounds, smells, and views; and learn about healthy habitat remnants that are unique within the New York City metropolitan area. Clusters of recreation facility development throughout the unit's park lands including trail networks, campgrounds, and observation platforms would encourage independent discovery and facilitate outdoor recreation. All new facilities would be designed to be "light on the land" and minimize impacts on natural and cultural resources.

This alternative would focus on engaging visitors, communities, and partners in participatory science, education, and natural resource stewardship while creating opportunities for self-guided exploration of the area's natural environmental and historic settings. The NPS and partner stewardship programming would harness volunteer energy and work toward improving water quality and habitat conditions throughout Jamaica Bay. In addition, increased monitoring, research, volunteer programs, and collaboration with regional partners would continue to address water quality issues, habitat restoration, and stewardship.

Table 2-7. Jamaica Bay Unit - Alternative C - Summary.

Desired Experience	Types of Change	Where Change May Occur
Programmatic and stewardship connections created to link Gateway sites, New York City parks, and neighborhoods to Jamaica Bay	New programs and stewardship opportunities	Unit-wide
Natural immersion opportunities are developed and promoted	Create learning opportunities and services for activities such as kayaking and wildlife observation Formalize nature trails to bays and waterways for fishing, walking Establish overlooks for outstanding/ distance views of bays and ocean More nature trail and nature observation facility development	Unit-wide
Environmental education	Improve or develop places to learn about bay-related resources such as salt marsh, wetlands	Floyd Bennett Field Bergen Beach Plumb Beach
Recreation improvements	New picnic and open space area at Spring Creek Equestrian use at Floyd Bennett Field or Fort Tilden Improved launching areas for human-powered boating and wind sports Trailheads and parking areas, orientation kiosk, trails and picnic areas	Bergen Beach Plumb Beach Canarsie Pier Landfills Spring Creek Floyd Bennett Field Fort Tilden Jamaica Bay Wildlife Refuge
Offer low impact camping opportunities	Create low-impact camping areas and support services Offer special camping programs in places like historic buildings or natural areas.	Bergen Beach Floyd Bennett Field Fort Tilden
Connect park sites through trails and paths	Convert former roads into trails Improve biking and walking infrastructure and circulation Improve access and linkages to NYC Greenway	Unit-wide
Formal water trails established	Establish new water trails connecting to NYC parks and other Gateway areas	Unit-wide
Expand access to Jamaica Bay and other waterways	Improve marina area at FBF New boat sites, storage, shuttles, and equipment rental	Unit-wide

Resource Management

Under alternative C, natural resource restoration projects would be widespread throughout the Jamaica Bay Unit. Ongoing restoration, research, and environmental protection projects would be broadened, expedited and strengthened by outside funding, and the involvement of additional partners and the broader scientific community. Management would focus on protecting and restoring natural conditions throughout the unit including hassocks and water quality within the bay, freshwater marshes at Breezy Point and Tilden's scrub/shrub-dominated covered dunes and grassy/forb-dominated fore and inner dunes. This more robust natural resource management would be complemented by expanded outreach, environmental education programming, citizen science, and volunteer stewardship projects. Along with this enhanced natural resource management would come expanded opportunities for nature-study, environmental educational and participatory natural resource stewardship programming.

In alternative C, the protection, preservation, and interpretation of the unit's coastal defense fortifications, aviation structures, and cultural landscapes would be substantially increased. The aviation history at Floyd Bennett Field would be preserved and showcased. On the Rockaway Peninsula, preservation and interpretation of Fort Tilden's cultural landscape, batteries, the Nike Missile site, and the Jacob Riis landscape would round out the predominantly natural resource-based recreational experiences found throughout the unit and result in richer communication about the area's history. Extensive preservation and interpretation projects at Fort Tilden's Battery Harris and the Nike Missile site would lead to improved access to the fundamental cultural resources and enriched communication about the site's coastal defense history.

NPS would work closely with the NYCDPR and other landowners to build the resiliency of coastal habitat and to improve conditions along the entire Rockaway coastline from Breezy Point Tip to NYC Rockaway parks. Together the agencies would produce a holistic shoreline management plan that would help guide recovery efforts and future uses and development. The effects of climate change and these park lands' vulnerability to future storms would continue to be studied.

Transportation

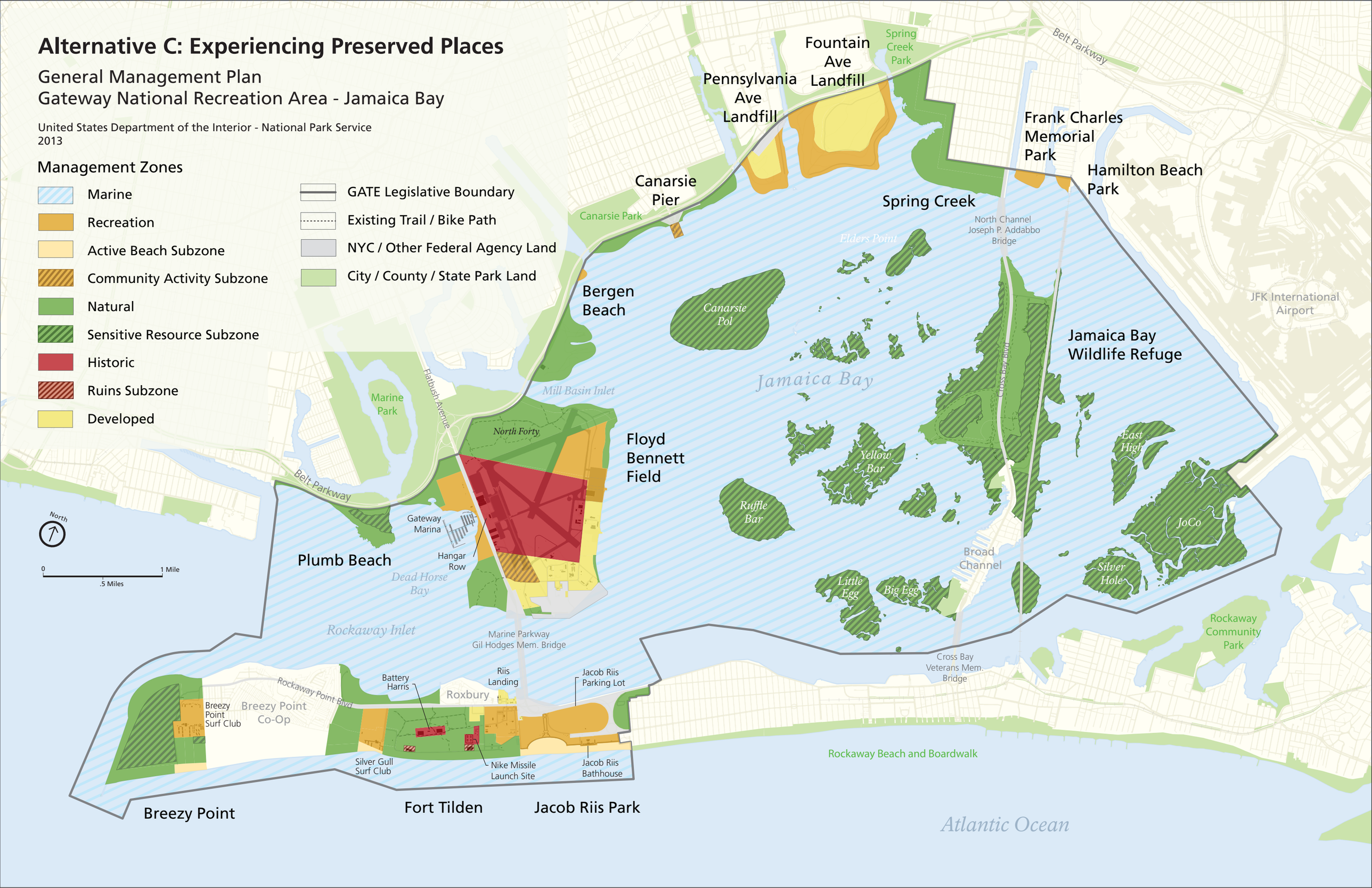
Similar to alternative B, but with less of an emphasis on waterborne transportation, management would make accessing the Jamaica Bay sites more convenient by establishing an interconnected system of trails and greenways, introducing bike-sharing stations, improving shuttle services between districts and linking to public transit stations. A transportation hub would be created at Floyd Bennett Field to improve access and circulation and to promote multi-modal options.

In alternative C, the protection, preservation, and interpretation of the unit's coastal defense fortifications, aviation structures, and cultural landscapes would be substantially increased. The aviation history at Floyd Bennett Field would be preserved and showcased.

Alternative C: Experiencing Preserved Places

General Management Plan
Gateway National Recreation Area - Jamaica Bay

United States Department of the Interior - National Park Service
2013



Plumb Beach

Natural Zone

The beach would be managed for nature-oriented, low-impact activities such as wildlife observation and environmental education. A designated natural area with interpreted nature trails and outdoor education facilities would provide more opportunities for volunteer projects, environmental education programming, and quiet nature study. The NPS would tie programming at Plumb Beach into New York City's environmental education programming at the Salt Marsh Nature Center in Marine Park. Similarly, the NPS and its partners would expand and offer volunteer and educational programs. The NPS will work with the NYCDPR, to improve programmatic and stewardship opportunities with adjacent neighborhoods and other nearby park lands including Marine Park, Floyd Bennett Field, and Dead Horse Bay. The NPS would work with New York City and NYCDOT to improve conditions of the parking lot. The existing building would be rehabilitated to accommodate administrative uses and to support restoration efforts (e.g., tool storage) and stewardship projects and programming. The building would likely be jointly managed by the NPS and New York City.

A designated natural area to the east with interpreted nature trails and outdoor education facilities would provide more opportunities for volunteer projects, environmental education programming, and quiet nature study.

Social trails would be eliminated and access to the Natural Zone would be controlled in order to prevent trampling of vegetation, reduce impacts to wildlife and ensure restoration efforts are successful. NPS would minimize disturbance to the saltmarsh and intertidal habitat by reducing foot traffic and limiting travel to a designated trail corridor. Additionally the saltmarsh and eastern end of beach would be evaluated to better understand its potential habitat value. Bioengineering techniques would be used to stabilize eroding beach and dune areas with plantings of native coastal trees and shrubs.

Sensitive Resources Subzone

Access to the Sensitive Resources Subzone would be limited to guided tours, volunteer stewardship projects, research and educational programs. Through signs and increased enforcement, the NPS would prevent illicit damage to horseshoe crabs and other wildlife.

Floyd Bennett Field

Recreation Zone

Floyd Bennett Field would become a destination for learning about and experiencing aviation history and participating in nature-oriented activities and experiences. NPS would focus on providing opportunities for self-guided exploration of the field's natural resources and expanding opportunities for natural immersion, and interpretive and educational programming.

New recreation development would be clustered in order to minimize impacts on the natural environment and to maximize the amount of space devoted to either habitat restoration and/or historic preservation. Overall, in this alternative, new recreation development is minimized and the NPS focuses more resources on expanding interpretive and educational programming.

Smaller-scale, concentrated camping areas would be established with the highest level of consideration to green design that serves as both an educational and recreational opportunity. NPS and its partners would offer skill building camping programs with a focus on encouraging independent exploration and healthy outdoor recreation. In this alternative, facilities would be designed and scaled to provide visitors quieter, more secluded nature and overnight experiences than offered in alternative B.

The arrival sequence to the park would be improved with increased access to the airfield's main visitor facilities off Flatbush Avenue. Through improved circulation and wayfinding signs, a more welcoming sense of arrival would be established. Improved transportation infrastructure would likely be divided between the Recreation Zone and the Developed Zone. Floyd Bennett Field would be established as the most accessible park in Jamaica Bay and the airfield would serves as a multi-modal transportation hub developed to provide transportation access and visitor distribution (via public transportation, shuttles, bikes, water taxis, etc.) to park lands throughout Jamaica Bay. Connecting the airfield's main visitor facilities and internal trail network with the Jamaica Bay Greenway would ensure convenient trail access to the park. Improved wayfinding, interpretive and orientation facilities and materials would orient visitors to the resources that can be found throughout Jamaica Bay and Gateway. The marina would serve as a water-based access point for ferries, water taxis, and other boats.

Improved wayfinding, interpretive and orientation facilities and materials would orient visitors to the resources that can be found throughout Jamaica Bay and Gateway. The marina would serve as a water-based access point for ferries, water taxis, and other boats.

Natural Zone

Habitat protection and wetlands restoration would be extensive. Within the North Forty and Mill Basin area, the shoreline would be softened through the removal of impervious surfacing and the restoration of former saltmarshes, sandspits, and intertidal mudflats. Additionally, more freshwater wetland habitat would be created than in alternative B. There would also be extensive restoration of former saltmarshes, sandspits, and intertidal mudflats. Areas south of Dead Horse Bay would be restored as tidal mudflats.

Existing grasslands habitat would be managed and maintained for ecological function and values. Grassland habitat would be actively managed to support butterfly, moths, bluebird and grassland-dependent birds including migrants (e.g. Bobolink) that use the Floyd Bennett Field grasslands as stop-over sites. Managed lawn in certain areas would be allowed to convert to natural meadows and when building or impervious surface removal allows, new areas of grassland would be established elsewhere on the site.

Portions of the North Forty would be converted to freshwater wetland habitat. Areas not converted or restored to wetland as part of the wetland interpretive center, would continue to be managed as upland forest. Expanded visitor use in the North Forty would be compatible with the protection of the remaining species-rich forest in the North Forty including successional maritime forest. Shrubland communities found in the back dune areas Floyd Bennett Field area including the Northern Bayberry Dune Shrubland and Northern Beach Heather Dune Shrubland would be protected and maintained.

Under alternative C, more extensive habitat restoration and habitat construction would occur than under alternative B. Aside from these trail corridors, new built visitor facilities will be minimal and limited to small-scale, low impact developments such as viewing blinds and observation platforms. The public would experience the new and restored habitat via trails and boardwalks. Under alternative C, the center would serve as an area where volunteers are trained for natural resource stewardship projects throughout Jamaica Bay.

The zone would be open to nature-based recreation along designated, soft-surface trails. The area would provide a venue for both environmental education programming and volunteer stewardship projects. Volunteers would be tasked with projects such as monitoring, native plantings and weed control. As in alternative B, visitors would encounter facilities such as blinds, scopes, observation decks and boardwalks along the trails. Along with interpretive materials, these facilities would be designed to facilitate nature study, wildlife observation and immersion in a natural setting. A limited number of low-impact camping facilities would be sited in the Natural Zone.

Along stretches of coastline that are not targeted for restoration, access to and recreational use of the shoreline for fishing, nature study and kayaking/boating would be increased.

Marine Zone

Along stretches of coastline that are not targeted for restoration, access to and recreational use of the shoreline for fishing, nature study and kayaking/boating would be increased. Like in alternative B, a water trail would be established offshore and NPS and its partners would offer boat tours that allow visitors to experience the airfield and Jamaica Bay by water.

The Gateway Marina would offer more public uses, including boat rentals, water-based recreation, and boating/sailing lessons. The enhanced marina area would serve as the Jamaica Bay unit's primary portal for experiencing the bay by waters. Guided interpretive boat tours as well as a designated water trail would encourage people to explore the airfield and other Jamaica Bay resources from the water. Additionally, greater shoreline access and several launch sites for human-powered boats (e.g. kayak, canoe) throughout this zone would create more boating and fishing opportunities.

Historic Zone

Compared to alternative B, more of Floyd Bennett Field would be dedicated to historic preservation and aviation interpretation with larger portions of the airfield's cultural landscape preserved and more character-defining landscape elements would be restored. Through cultural landscape restoration of select character-defining features and the adaptive reuse of historic aviation structures along Hangar Row, the experience of Floyd Bennett Field would be enriched through interpretation and immersion in a preserved historic setting.

The Aviation District would be energized and activated with abundant visitor use and interpretive experiences. The rehabilitated hangars and cultural landscape would feature aviation exhibits, aircraft collections, and flexible interior and exterior spaces and would provide space for community activities, informal gatherings, interpretive programs, and

special events. Prominent buildings and character-defining cultural landscape elements that reveal the aviation history of the airfield (such as Ryan Center, Hangar Row and runways) would be preserved and interpreted.

The period of significance for this cultural landscape would be the Municipal Airport Era. Current development located within this Aviation District that is not compatible with the airfield's historic character would be removed and the uses would be relocated to areas outside of the zone. Alternative C would include the preservation and, in some cases, restoration of many more character defining features of the cultural landscape such as vegetation, lighting, circulation patterns and entrance sequence to the Ryan Center, small-scale features and these features would be interpreted for visitors. Within the Aviation District, adaptively reused historic hangars, new structures, events, and exhibits, as well as preserved cultural landscape elements such as the runways, would create venues for interpreting a wide variety of topics from natural resources and habitat restoration to aviation history.

The historic aviation buildings along Flatbush Avenue known as Hangar Row would be rehabilitated to provide a range of visitor activities and uses that could include exhibits, informal gatherings, interpretive programs, and special events. The historic plane collection would be relocated from Hangar B to Hangar Row. Current uses of Hangar B would be relocated to Hangars 3 and 4. Future uses of Hangar B would continue to be explored and may include the rehabilitation of the hangar and site for an entertainment venue.

Like in alternative B, the southern portion of the airfield would be designated as a Developed Zone that would accommodate transportation infrastructure as well as operations and maintenance facilities.

Developed Zone

Like in alternative B, a portion of the airfield would be designated as a Developed Zone that would accommodate transportation infrastructure as well as operations and maintenance facilities. In areas not needed to support operational or visitor uses, impervious surfaces would be removed and grassland or other native vegetation would added.

Existing maintenance facilities would be reconfigured in the Developed Zone and new maintenance areas and storage and operation facilities would be developed in order to care for new recreation facilities, accommodate increased visitor numbers, and protect and preserve both natural and cultural resources. These new and expanded operations and maintenance facilities would be clustered in one area.

The NPS and New York City would continue evaluating the technical and environmental feasibility of siting a facility in the park that would process food waste, vegetation, and other organic matter from concession stands, restaurants, groceries, and other sources in and around the park and local vicinity.

A separate access for commercial, operational and maintenance vehicles that allows for direct access to the Developed Zone would be maintained. Uses by other agencies would be screened in order to minimize its visual impact on any visitor uses that would occur in the southern portion of the airfield. Some uses may be permanently removed from the airfield in the future.

Bergen Beach would be managed as a natural area with opportunities for quiet, nature study, research, volunteer stewardship, environmental education, and interpretive programming.

Bergen Beach

Natural Zone

Bergen Beach would be managed as a natural area with opportunities for quiet, nature study, research, volunteer stewardship, environmental education, and interpretive programming. Existing equestrian facilities would be removed, relocated, or repurposed, and the equestrian use areas would be restored to natural conditions. The park would be made more accessible and would cater to nature study. Facility development and programming would facilitate nature-based activities such as volunteer stewardship projects, guided nature tours, research, and self-guided nature study as well as permitted research. Bergen Beach will be designated as a research area for urban ecology and the study of other relevant research topics. Additionally, the area will be a center for volunteer stewardship projects and training as well as environmental education programs. A limited number of backcountry camping sites would be developed.

To prevent trampling of vegetation, reduce impacts to wildlife and ensure restoration efforts are successful, visitor use would be limited to designated trails within the Natural Zone. Trail development may include the addition of interpretive media as well as observation facilities such as viewing blinds.

Natural conditions would predominate at Bergen Beach and NPS and its partners would spearhead a number of restoration projects to protect and enhance the area's coastal habitats. More extensive beach/dune habitat restoration would be undertaken including bioengineering techniques would be used to stabilize eroding natural areas with plantings of native coastal trees and shrubs. Beach/dune habitats along with fringe wetlands would be protected, maintained, and restored. Efforts to control and eradicate *Phragmites* and other invasives would also be increased.

Canarsie Pier

The same as alternative B, Canarsie Pier would become a vibrant destination for community-oriented events as well as water-related recreational activities. Given its location on the Belt Parkway and proximity to dense housing developments, Canarsie Pier would serve as a new orientation portal for the Jamaica Bay park lands and Gateway. The pier would be improved to include orientation media such as a kiosk with a park map. Given the park's close proximity to New York City's Canarsie parks, the NPS would work closely with the NYCDPR on programming, transportation, and other management issues.

Canarsie Pier would serve as another Jamaica Bay hub for waterborne transportation and water trail connections to other park lands. A launch site would provide access to a designated water trail for human-powered boat exploration. Additionally, if it is demonstrated that the pier could support a ferry and or water taxis, it could also become a launch site for guided Jamaica Bay boat tours. The NPS will work with the NYCDPR to improve connections from Canarsie Pier to New York City's Canarsie parks and to improve trail linkages to the Jamaica Bay Greenway. Additionally, the NPS and its partners would actively target outreach to neighboring residents and encourage them to use the park's resources.

The pier and its outlying spaces would be improved to better accommodate community events such as concerts, markets, and festivals. Additionally, spaces for picnics and group gatherings would be expanded and enhanced though shade trees and other plantings. Along the coast on either side of the pier, the NPS and its partners would develop improved visitor facilities for fishing, kayaking, and other human-powered watercraft. Improvements would include lessons and a designated instructional and beginner paddling zone as well as equipment rentals. The existing contact station could be adaptively reused to support community use and to provide expanded visitor amenities.

Restoration projects to the east and west of the pier would strive to create a healthy shoreline habitat and an intertidal zone. Areas of saltmarsh and forested areas along the shoreline extending from Bergen Beach to Fresh Creek would be observed and assessed for habitat value. Signs, trails and clear beach and water access points would be developed in order to control visitor traffic and minimize disturbance to the coastal habitat.

At the Pennsylvania Avenue Park, the existing roads would be converted into a multi-use trail system. Facilities such as viewing platforms and/or overlooks would be developed to take advantage of the landfill's elevation and the views of Jamaica Bay.

Pennsylvania Avenue and Fountain Avenue Parks

Recreation Zone

Under alternative C, the Pennsylvania Avenue and Fountain Avenue Parks would be developed for recreation and community use and would offer a wide range of recreation facilities as well as community gathering spaces. At the Pennsylvania Avenue Park, the existing roads would be converted into a multi-use trail system. Facilities such as viewing platforms and/or overlooks would be developed to take advantage of the elevation and the views of Jamaica Bay. Other facility development would be basic visitor amenities such as restrooms and orientation and wayfinding signs. All new development on both sites would be designed to respect the sensitivity of the cap and other infrastructure. Vegetation and native habitats established at the parks sites would be protected, maintained, and interpreted.

Outreach to surrounding communities and creative programming led by the NPS and its partners would foster lasting engagement and would attract more local residents to Jamaica Bay park lands. Physical connections between the Pennsylvania Avenue Park and its neighboring communities as well as nearby park sites would be improved.

Developed Zone

Renewable energy development would be explored at both Pennsylvania Avenue and Fountain Avenue Parks. While visitor access will be limited to guided tours, the NPS would incorporate renewable-energy development into its interpretive media.

Spring Creek

Natural Zone

Spring Creek would act as a gateway to Jamaica Bay for adjacent communities and provide convenient access to the water and expanded recreation opportunities. Under alternative C, more extensive habitat enhancements would take place at Spring Creek, including more

native plantings and ongoing monitoring and assessment of saltmarsh and forested areas. Under this alternative, the NPS would work with the NYCDPR to improve habitat conditions along the natural corridor connecting Spring Creek with New York City park lands.

Jacob Riis Park

Recreation Zone and Active Beach Subzone

Jacob Riis Park would remain a destination for high-quality beach recreation activities. Riis would remain an active beach destination and would offer additional community recreation opportunities as well as nature and water- based recreation facilities. Facility development would be significantly less intensive than alternative B and larger areas of the park would be managed as flexible open spaces and/or natural areas.

Active beach use would be maintained and the visitor experience would be expanded with the development of a trail system, nature play features (e.g., dune playscapes), and boat launch. Additionally, shaded spaces for picnicking and gathering would be developed.

Even more impervious surfaces would be removed in this alternative and more of the park would be converted to flexible open spaces that can still accommodate recreation uses, but are more resilient to storm surges. Additionally, portions of the parking area would likely be converted to natural habitat and flexible open space.

The NPS would work with partners to adaptively reuse the bathhouse for a wide variety of uses, ranging from visitor amenities to interpretive exhibits to park operations. Interpretive programming at the site and digital media would be expanded to communicate the story of the bathhouse, recreation on the Rockaway Peninsula, and climate change.

Similar to alternative B, portions of the Jacob Riis parking lot would be adaptively reused for transportation facilities such as shuttle parking and a bike sharing station. The majority of the parking lot not needed for parking and transportation would be converted to flexible open spaces or natural habitats. In this alternative, NPS and partners would also investigate the possibility of using a portion of the parking lot for renewable energy development. Physical connection between Jacob Riis and the other park lands on the Rockaway Peninsula would be improved through a shuttle, linkages to public transportation and bike infrastructure.

Fort Tilden

Natural Zone

The park would be a destination for both nature-oriented recreation and historic interpretive experiences. Within the Natural Zone, Fort Tilden's largely undisturbed plant community with scrub/shrub-dominated covered dunes as well as grassy/forb-dominated foredunes and interdunes, would be protected, monitored, and enhanced. The beach intertidal zone, supratidal zone, and the grassy areas would continue to support marine

invertebrates and other native wildlife. Visitors find opportunities for a diversity of opportunities to explore the site's natural environments and enjoy a quiet immersive experience in a predominantly natural area.

Beach and dune habitats would be actively restored following damage from Hurricane Sandy. As the scrub/shrub-dominated covered dunes as well as grassy/forb-dominated fore and interdunes are reestablished, these habitats would be protected and monitored. In alternative C, research of these habitats would be increased and Fort Tilden would become another center for volunteer-based stewardship, monitoring, and restoration projects.

Beach and dune habitats would be actively restored following damage from Sandy. As the scrub/shrub-dominated covered dunes as well as grassy/forb-dominated fore and interdunes are reestablished, these habitats would be protected and monitored.

Overall, facility development would be significantly less than alternative B. Many visitor amenities would be provided on a seasonal basis using mobile facilities. Limited, low-impact camping opportunities would be developed in the Fort Tilden backcountry. Fort Tilden's existing equestrian facilities would be improved and used to accommodate trail rides throughout the park. The trails network throughout Fort Tilden would be expanded and some trailheads and segments of the trails would be located within the Recreation Zone. Improved trail system with trailheads and a robust backcountry trail experience along designated routes. Expanded interpretation along trails and interpretive programming would highlight both the natural and cultural resources. Fort Tilden remains an unguarded beach and offers more of a natural coastal experience than other Gateway beaches. Shore Road would be converted to a trail providing convenient access to the beach. Limited fishing access would also be provided. Fort Tilden would host a number of volunteer stewardship projects throughout the year.

Habitat value of the inlet side of Fort Tilden would be studied. If warranted, coastal habitat and wetland projects would be initiated. This area could also present opportunities for environmental education programming and limited public access for nature study.

Recreation Zone

Under alternative C, the Silver Gull Beach Club would be maintained. However, public use of the beach club would be expanded to include water-based and beach recreation opportunities such as educational and interpretive programming and guided kayak tours and lessons. NPS would work closely with concessionaire to ensure that future development of the beach club is more resilient to storms.

Historic Zone

At Fort Tilden, cultural resource preservation and stewardship projects as well as enhanced interpretation of the Fort's landscape, batteries and Nike missile site compliment the natural-resource based recreational experiences found elsewhere in the Jamaica Bay Unit.

Under alternative C, the Historic Zone is larger and preservation efforts are more extensive than in alternative B. Preservation projects under alternative C encompasses the batteries as well as the Nike Missile site and the Parade Grounds. Additionally, volunteers and partners would be engaged in the preservation of the cultural resources within the Historic Zone.

Battery Harris would be stabilized and made accessible. The battery's existing overlook would be improved and interpretive media and programming would be expanded. The Nike Missile site would also be stabilized and interpreted. Interpretation and programming at the missile site would be more extensive than in alternative B. Maintenance facilities would be moved out of the Nike Missile site to allow for interpretation and visitor access. Access to and interpretation of these resources would be improved through expanded trail network, enhanced interpretive media, and increased programming.

The cultural landscape of the parade ground would undergo significant preservation projects under alternative C, so that it would evoke the look and feel of the historic period. This would involve the removal of incompatible modern uses such as the athletic fields and ball fields. Depending on the results of the damage assessments of the parade ground, the buildings would continue to be adaptively reused be to support visitor facilities as well as community uses. Some rehabilitated buildings could provide overnight accommodates and visitor amenities needed to support overnight stays such as food service and equipment rentals. Additionally, the buildings would continue to accommodate community groups and could house additional interpretive exhibits and educational programming in the future. The parade ground would serve as a primary center for historic preservation volunteer and training projects. Additionally, the history of Fort Tilden would be interpreted through interpretive media and exhibits as well as guided programs.

Circulation between Riis Landing and Fort Tilden and other park lands on the Rockaway Peninsula would be improved through shuttles, safer road crossings, and bike infrastructure. Fort Tilden would act as the orientation portal for park lands on the Rockaway Peninsula and would provide information on resources and opportunities offered throughout Gateway. A visitor contact station would be established within an existing building. Additionally, trailhead and parking areas would be provided.

Development Zone

Riis Landing would continue to serve as a ferry landing. Additionally, buildings at the site would be preserved and adaptively reused. Operations moved from the Nike Missile site at Fort Tilden would be relocated to Riis Landing or other areas. The buildings at Riis Landing would be preserved and leased for community and other uses.

Breezy Point Tip

In both alternatives, Breezy Point Tip remains an undeveloped natural area open to limited nature-based recreation. The Breezy Point Surf Club would be maintained. However, public use of the beach club would be expanded to include water-based and beach recreation opportunities such as educational and interpretive programming and guided kayak tours and lessons. NPS would work closely with concessionaire to ensure that future development of the beach club is more resilient to storms.

In this alternative, Breezy Point Tip would be managed as a natural area with a greater emphasis on protecting the significant shorebird and marine bird/waterfowl habitat. The

area's unique combination of marine/exposed ocean beach/dune system with somewhat secluded back dunes and palustrine wetland swale features, as well as its salt panne pools would be monitored, protected and enhanced.

With its lighthouse, lifesaving station, and long coastline, Sandy Hook would emerge as Gateway's focal point for maritime heritage interpretation. The preservation of these iconic structures along with expanded programming, activities, and interpretive media would engage visitors in the parks maritime story.

Sandy Hook Unit

Visitor Use and Experience

Sandy Hook's beaches, forests, wetlands, and waters would serve as living laboratories where visitors and volunteers would be engaged in participatory science, education and stewardship. These programs would nurture personal connections with the coastal environment and inspire greater appreciation for the park's historic significance. Recreational uses would be maintained along the beach and bay.

Resource Management

Protection and restoration of the beach dune community as well as forest, shrub and wetland habitats at Sandy Hook would be increased in this alternative. To reduce impacts on these sensitive and rare habitats, access would be tightly controlled and restricted in some cases. Aggressive control of invasive species, strengthening healthy communities and repairing beach erosion would be management priorities. Additionally, research and monitoring of the unit's habitats would be increased.

Historic preservation efforts would be most widespread in this alternative with the largest number of projects to stabilize, preserve, and interpret both historic structures and cultural landscapes. At Sandy Hook, historic preservation training programs would be offered and people would find opportunities to engage in volunteer stewardship projects. Students, partners, and volunteers trained at Sandy Hook would be mobilized to participate in historic resource stewardship projects throughout Gateway.

With its lighthouse, lifesaving station, and long coastline, Sandy Hook would emerge as Gateway's focal point for maritime heritage interpretation. The preservation of these iconic structures along with expanded programming, activities, and interpretive media would engage visitors in the park's maritime story.

Transportation

A variety of transportation systems would be developed to make Fort Hancock and the entire Sandy Hook peninsula more convenient to access. Within Fort Hancock, ferry service would be expanded to include summer weekdays, shoulder seasons and special events. Additionally a seasonal water ferry/taxi connection would be explored from other communities and NPS sites. Opportunities to provide private/transient water access and dockage at Sandy Hook would also be evaluated.

A shuttle system would relieve parking issues and traffic congestion and provide convenient access to the park. The shuttle would collect visitors from surrounding towns, transportation

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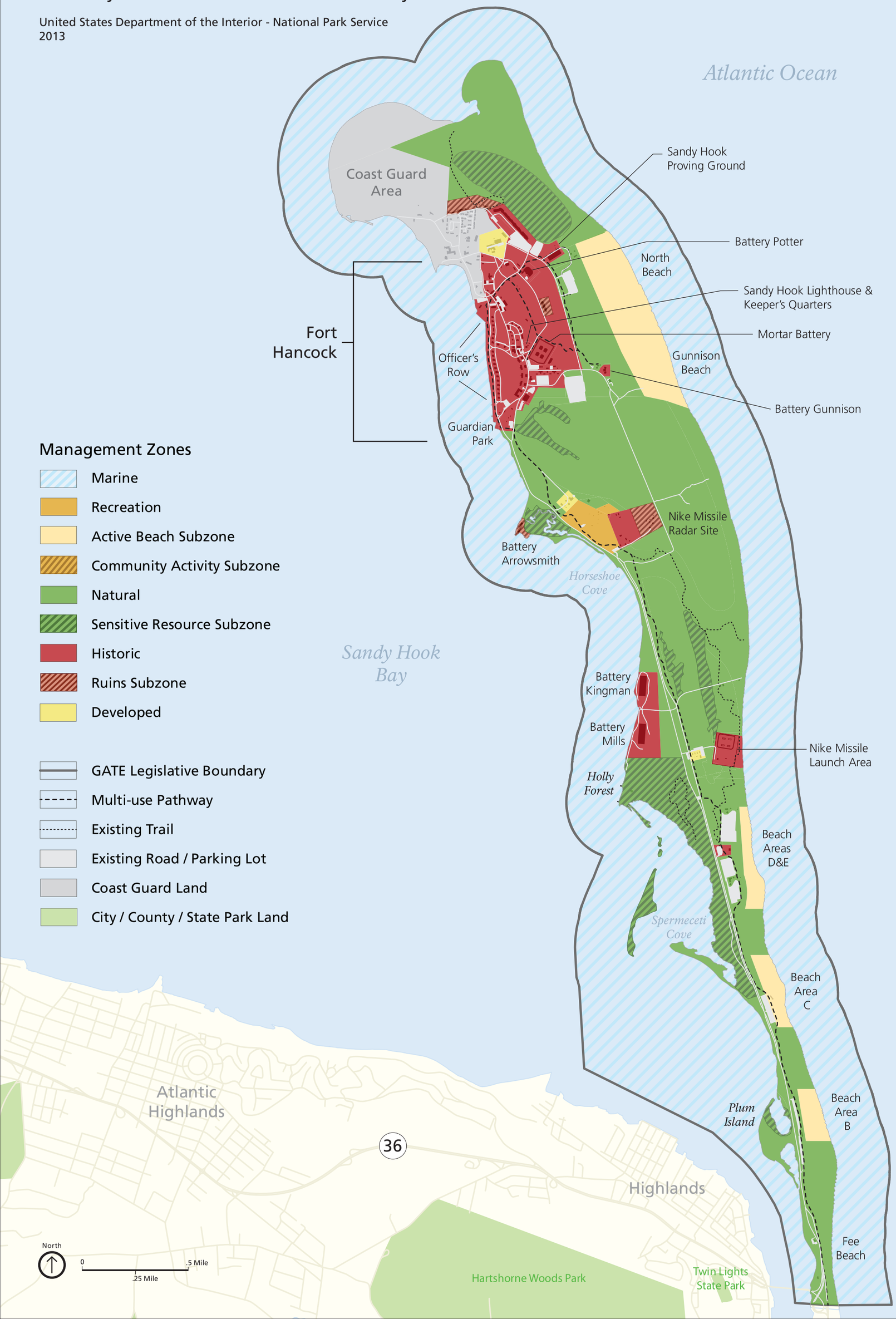

Additional batteries within the Fort Hancock area would be stabilized open to visitor access and interpreted. Batteries that would be preserved and interpreted through guided tours and/or interpretive media could include Batteries Potter, Gunnison, McCook, and Reynolds (Mortar).

stops and the ferry terminal and drop them off at Sandy Hook's beaches and activity nodes. Opportunities would be explored with partners to extend public transit service into Sandy Hook, and initiate a transit shuttle to connect the Highlands. Interpretive media would be incorporated into both the on ferry service and/or internal landside shuttle system.

An expanded multi-use path network would traverse more of the peninsula and accommodate cross-island travel so people could explore both the ocean side and the bay side. Designated on-street bike routes from the Highlands would connect with regional trails serving the park unit. Bike access would be encouraged to/from and within Sandy Hook, with bike rental stations at parking facilities near the park entrance and within the park.

Parking options would be evaluated for remote intercept parking lot(s) outside of the Sandy Hook boundary with transit shuttle and/or bicycle connections provided into the park. Advanced traveler information systems would be improved with partners.

Historic Zone

The preserved and interpreted historic setting of Fort Hancock would provide for a variety of historic interpreted experiences. Additionally, the area would draw people interested in learning more about historic preservation and participating in hands on preservation projects. In alternative C, there would be a greater emphasis in also preserving and interpreting the Fort's cultural landscape and in expanding historic interpretive and educational programming at Fort Hancock. Additionally, in alternative C, the interior of buildings within Fort Hancock would be more intensively restored to their period of significance.

The cultural landscape within the Fort Hancock area would be maintained and the preservation of additional character defining features would reinforce the military character and function of the fort. Along with preservation efforts, the features of the cultural landscape would be interpreted and revealed to people visiting Fort Hancock through new programming, interpretive media and educational programming.

Additional batteries within the Fort Hancock area would be stabilized open to visitor access and interpreted. Batteries that would be preserved and interpreted through guided tours and/or interpretive media could include Batteries Potter, Gunnison, McCook, and Reynolds (Mortar). Along with the structures themselves, the historic setting of some of these batteries would be preserved to more accurately represent the historic period. Additionally, volunteer stewardship projects would engage people in the hands on care and preservation of these structures.

An interpretive Battery Trail would extend from Fort Hancock and allow for self-guided exploration of the fortifications. The Battery Trail would provide greater access to the coastal defense structures within the Fort Hancock area and would provide a trail connection south to Batteries Kingman and Mills and north to the ruins of Batteries Morris and Urmston. The trail experience would be enriched by interpretive media of the structures and Sandy Hook's history (e.g. wayside signs, brochures).

Batteries Kingman and Mills would be stabilized, open to visitor access, and interpreted. Along with the structures themselves, the historic setting of some of these batteries would be preserved to more accurately represent the historic period. Additionally, volunteer stewardship projects would engage people in the hands-on care and preservation of these structures. Sandy Hook interpretive programming and media would also be expanded to incorporate these batteries.

The Nike Missile radar site would be converted into an interpreted, visitor-ready site. In alternative C, there would be more extensive preservation efforts, interpretation and programming related to the Nike Missile infrastructure on Sandy Hook than in alternative C. Alternative C would be more robust and the Nike Missile launch site would be converted into a primary interpretive destination. The interworkings of the launch site and the radar site would be interpreted. Preservation and restoration efforts at the launch and radar sites in combination with interpretive media would reveal what the site looked like during the Cold War era and allow visitors to visualize how Sandy Hook was employed to defend New York City over periods in U.S. history.

Recreation Zone and Active Beach Subzone

Recreational uses would be maintained. Redevelopment of the beach centers following damage from Hurricane Sandy would be dependent on an assessment of their vulnerability to future storms. Under alternative C, the redeveloped beach centers would all utilize portable architecture technologies and as a result would offer fewer amenities than those in alternative B and would be suited for seasonal use only.

Access to the beaches and between the beaches and other destination on Sandy Hook would be improved through the development of additional modes of transportation. A land-based shuttle would provide more convenient access to the beaches and would link the beaches with Fort Hancock and the bayside visitor amenities. The shuttle would also provide connections to nearby communities and carpool parking areas. The addition of east and west lateral trail connections would facilitate travel from the Oceanside to the Bayside. Additionally, implementation of a bike sharing system on Sandy Hook would encourage bike travel along the peninsula along with expanded ferry service and the shuttle would reduce car-dependency among park visitors.

Camping opportunities would be more widely distributed throughout the park than in alternative A, but less so than in alternative B. Sites would be concentrated in fewer locations than in alternative B in order to minimize impacts and would include designated backcountry / beach camping, walk-in tent, drive-in tent and RV.

Natural Zone and Sensitive Resources Subzone

Coastal bay habitats would be improved through restoration projects would be ongoing. Control of invasive species within the Natural Zone and Sensitive Resource Area subzone would be increased. Monitoring and study of the Holly and Eastern Red Cedar Forests would be increased.

Under alternative C, the visitor experience of the bayside would be expanded to include more opportunities for nature study, environmental education programming and volunteer, natural resource stewardship. Throughout the Natural Zone, access would be restricted to designated trails and recreation areas to reduce impacts to the natural resources. Within the Sensitive Resource Subzone, visitor access would be highly restricted and limited to guided tours.

The existing multi-use path network would be expanded to include direct connections to the bay. The paved multi-use path would link into a network of soft surface trails that allow for self-guided exploration of the bay and inland natural environments.

Opportunities for self-exploration, facilities, media and programming that facilitate nature study and wildlife observation and enrich the visitor experience of Sandy Hook's natural environments would be expanded. An interpreted nature trail would lead people through the various habitats. Alongside the trail, facilities for observing natural and wildlife would be developed such as observation blinds, scopes, and species lists. NPS would work with partners to offer expanded wildlife-observation and nature study programming (e.g. seasonal events, ID workshops). Additionally, NPS and their partners would engage volunteers in monitoring, species counts and habitat restoration projects. Shaded areas would be developed on the bayside to accommodate groups and allow for picnicking in a natural setting.

Current protection, monitoring and study of the beach/dune habitats would be increased. Access to the Holly Forest, dunes, and saltmarshes would be increasingly restricted in order to minimize habitat impacts. Management would encourage invertebrate and shore bird use of the intertidal zone.

Marine Zone

The Atlantic Ocean waters off Sandy Hook's beaches would remain a protected natural area while accommodating water-based recreation. Conditions within Sandy Hook Bay would continue to be monitored and ongoing efforts to protect offshore habitats would be maintained.

Interpretive media and programming related to Sandy Hook's coastal habitats and maritime and coastal defense heritage would be expanded. This would include tying interpretation of Sandy Hook's cultural resources into other regional sites such as Twin Lights. Interpretive boat tours would also physically link Sandy Hook with other maritime and coastal defense sites.

Water-based recreation would be encouraged through expanded guided tours via boat or kayak. New launch/landing sites would be developed, however, to a lesser degree than in alternative B.

Natural resource protection of offshore habitats would be maintained within the Marine Zone. Research and monitoring of these habitats and wildlife would be increased. The use of offshore artificial reefs to increase habitat and reduce wave action in eroding beach areas would be evaluated.

The Staten Island Unit would provide opportunities to experience nature, explore Fort Wadsworth's coastal defense heritage, and recreate in historic and natural settings.

Staten Island Unit

Visitor Use and Experience

The Staten Island Unit would provide opportunities to experience nature, explore Fort Wadsworth's coastal defense heritage, and recreate in historic and natural settings. Park managers would preserve historic structures and landscapes that tell the story of continuous military and civilian use of the fort and tie thematically with other parks and historic sites within New York Harbor. Recreational uses throughout the Staten Island unit would be maintained, and enriched by expanded interpretive and educational programming. Participatory cultural resource stewardship programming in which partners and volunteers would engage in the hands-on preservation of the coastal defense structures would be introduced at Fort Wadsworth. Likewise, Great Kills would offer new opportunities for nature study, environmental educational, and participatory natural stewardship programming.

Resource Management

Natural resource stewardship would be prioritized at the Staten Island districts. The NPS would focus resource protection efforts on improving beach/dune habitat at the unit and working with neighbors and partners to expand and care for the coastal stretch of protected wetlands and beach/dune habitat.

Historic preservation at Fort Wadsworth would be a management priority and preservation trainings and workshops would enable volunteers and partners to contribute to the preservation of Fort Tompkins and select Endicott/Taft-era batteries. In this alternative, more of Fort Tompkins would be opened, preserved, and interpreted. Also, interpretation of Fort Tompkins, Battery Weed, and the Endicott/Taft-era batteries would be enhanced through a Coastal Defense Trail. The trail would wind through and among the historic structures offering excellent views and interpretive media along the route.

Transportation

Similar to alternative B, improved public transportation and an expanded greenway, as well as, shuttles between the sites would make access more convenient. In addition, bike infrastructure would be developed throughout the unit, including a bike-sharing system, maps, and convenient bike parking, to encourage more bike use at the parks and provide convenient connections with other Staten Island trail systems.

Table 2-8. Staten Island Unit - Alternative C.

Desired Changes	Types of Change	Where Change May Occur
Programmatic and stewardship connections created to link Gateway sites, New York City parks, and neighborhoods	New programs and stewardship opportunities	Great Kills Fort Wadsworth Miller Field
Natural immersion opportunities are developed and promoted	Create learning opportunities and services for activities such as kayaking and wildlife observation Stewardship Formalize nature trails to bays and waterways for fishing, walking Establish overlooks for outstanding/distance views of bays and ocean More nature trail and nature observation facility development	Great Kills Fort Wadsworth Miller Field
Environmental education	Improve or develop places to learn about bay-related resources such as salt marsh, wetlands	Unit-wide
Recreation improvements	New picnic and open space area Improved launching areas for human-powered boating Trailheads and parking areas, orientation kiosk, trails and picnic areas	Great Kills Fort Wadsworth Miller Field
Offer low impact camping opportunities	Create low-impact camping areas and support services Offer special camping programs in places like historic buildings or natural areas.	Great Kills Fort Wadsworth
Connect park sites through trails and paths	Convert former roads into trails Improve biking and walking infrastructure and circulation Improve access and linkages to NYC Greenway	Great Kills Miller Field Fort Wadsworth
Formal water trails established	Establish new water trails connecting to NYC parks and other Gateway areas	Great Kills Fort Wadsworth Miller Field
Expand access to Jamaica Bay and other waterways	New boat sites, storage, shuttles, and equipment rental	Great Kills Fort Wadsworth

Fort Wadsworth

Historic Zone

Fort Wadsworth would become a destination for interpretive experiences in a preserved historic setting. The cultural landscape surrounding the batteries and ruins would be preserved to a greater degree than in alternative B and more accurately reflect the fort's periods of significance. The coastal defense structures at Fort Wadsworth would become a focal point for participatory stewardship and a learning laboratory for hands on historic preservation. Visitors would experience the history and discover the coastal defense structures through increased interpretive programming and expanded interpretive media. A new "Coastal Defense Trail" would be developed among the batteries and offer expanded interpretation and up close experiences of the coastal defense resources. Additional foot trails would also be re-established at Fort Tompkins.

Similar to alternative B, Battery Weed and Fort Tompkins would be preserved and open to more regular visitor use. However, in alternative C, NPS would increase the level of access to these structures and expand interpretive and education programming of the two fortifications. Fort Tompkins would be rehabilitated to serve as a visitor facility that orients visitors, includes interpretive exhibits and hosts educational programs. The Battery Weed seawall would be repaired and fortified to protect the resource from storm surges.

With the exception of the primary coastal defense structures (Weed and Tomkins) that are already interpreted, the following batteries would undergo minimal stabilization and would be featured interpretive stops along the Coastal Defense Trail: Duane, Caitlin, Torpedo, Bacon, Barbour. Some of these batteries would be made more visible by clearing vegetation from them. Those left covered in vegetation would be used to interpret the relationship between natural and cultural resources and to demonstrate how, overtime, some of the defense structures came to serve as habitat. In addition, overlooks would be developed on some of the batteries to facilitate, access, and frame cultural landscape vistas.

The cultural landscapes of Mont Sec and New York avenues would receive more extensive preservation treatments in alternative C and both avenues would be incorporated into the visitor experience of Fort Wadsworth through improved wayfinding signage and interpretation.

Recreation Zone

As in alternative B, visitor orientation within the entire park would be improved. NPS would establish multiple new contact stations in order to improve the sense of arrival and better orient visitors.

With improved signs and wayfinding, Fort Wadsworth would be more visible and clearly identified as a park welcoming to visitors. The NPS would work with the NYCDPR to expand the greenway so that it links Fort Wadsworth, Miller Field, and Great Kills together. Carolina Street would be closed to cars and converted into a bike/pedestrian route. Multi-modal

The coastal defense structures at Fort Wadsworth would become a focal point for participatory stewardship and a learning laboratory for hands on historic preservation. Visitors would experience the history and discover the coastal defense structures through increased interpretive programming and expanded interpretive media.

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transportation systems including public transit, bike paths, and a shuttle would link Fort Wadsworth with the Staten Island Ferry. At Fort Wadsworth and the other Staten Island park sites, the NPS would work in cooperation with NYCDPR to develop bike-sharing stations. These rental opportunities along with improved wayfinding and signs would encourage an promote bike travel through and between the park units.

Existing recreational facilities would be expanded to accommodate greater recreational use. Existing camping facilities would be expanded and include campsites closer to the coastline.

Natural Zone

The beach/dune habitat along Fort Wadsworth's coastline would be protected and enhanced through park and volunteer stewardship projects. The NPS would build resilience by working with partners and volunteer stewards to restore dune habitat along Fort Wadsworth coastline.

Access to the water would be maintained and new opportunities for water-based recreation would be introduce. This would include to greater fishing access, a human-powered boat launch site and boat-based interpretive tours. From Fort Wadsworth, a water trail would lead out to an offshore dock positioned nearby Hoffman and Swinburne Islands for distant wildlife observation. The interpretive water trail would also link to launch sites at Miller Field and Great Kills Harbor.

The NPS and its partners would work together to offer guided boat tours to interpret Fort Wadsworth, other NPNYHC coastal defense resources and natural resources from the water.

Hoffman and Swinburne Islands

Hoffman and Swinburne islands would be managed for their natural and cultural resources and no visitor access would be permitted on either island. The island's wildlife and cultural resources could be viewed from the water. The wildlife on the islands and the islands' habitat value would be monitored and study (e.g. heron rookery and seal haul out).

Miller Field

Recreation Zone - Community Activity Subzone

Miller Field would remain a vibrant center for community-based recreation tailored to youth and their families. Fields designed for a range of sports uses including soccer, softball and pee-wee leagues would be upgraded to better accommodate intensive use. In both alternatives, management of the ball fields and the sports leagues would be transferred from the NPS to another entity.

A multi-use Perimeter Trail would circumnavigate the entire park and connect the forest with the bay. Walkability throughout the park would be improved by expanding the width of multi-use paths and retrofitting park roads to slow traffic and include sidewalks or designated bike/walk ways. An active nature-based recreation experience that would appeal to youth and their families (e.g. bike trails/facilities, play features, nature adventure zone) would be offered and complement the sports league use.

The visibility of the NPS would be increased at Miller Field through improved signs and wayfinding. The NPS would take advantage of the busy park to introduce more children and their families to the NPS, and Gateway's NPS outreach would target sports leagues and families and inform them about the other parks and experiences Gateway offers.

The NPS would work with partners to host concerts, performances, tournaments, and events on the field. The community gardens would be expanded to accommodate more gardeners. Additionally, the picnic and group gathering around the contact station would be expanded and improved. The hangar area would be redeveloped as a community activity area and could include a picnic pavilion, trailhead, and community event space. The hangar would be stabilized and new use sought.

Ingress/egress circulation patterns, lot configurations, and wayfinding would be modified to address recurring congestion. Local transit access and bus connections to Staten Island Railway at New Dorp, Eltingville Transit Center, and Saint George/Staten Island Ferry Terminal would be promoted and the NPS would work with partners to develop more direct public transit routes that serve Miller Field. A bike-sharing terminal at Miller Field would encourage bike travel along the NYC Greenway up to Fort Wadsworth and the NPS would work with partners to establish a designated bike route to Great Kills.

Natural Resource Zone

A kayak launch site, kayak instructional zone, and boat rental concessionaire would be developed on Miller Field's coastline. The Miller Field launch site would be an access point to the buoyed interpretive water trail that extends from Fort Wadsworth to Great Kills Park. The dune habitat along Miller Field's shoreline would be protected and maintain. Control access with a well-defined trail from the greenway and parking area to the water.

Developed Zone

The park housing on Miller Field and the Visitor Contact Station would be maintained. Location of maintenance and operations area will be identified upon further study. Maintenance area will be located to complement recreational opportunities.

Great Kills Park

Natural Zone and Sensitive Resources Subzone

At Great Kills Park, the valuable natural resources including maritime forest and shrublands and over wash dunes and beaches would be protected and restored. More extensive habitat enhancement and restoration efforts would take place across the Great Kills park site than in alternative B. NPS would focus resource protection efforts on improving beach/dune habitat on the site and work with neighbors and partners to expand the stretch of protected wetlands and beach/dune habitat up Staten Island's coast. This wetland protection effort would include the reestablishment of saltmarsh. The former ball fields and model airplane would be removed and the area would be restored to restore maritime shrubs, forests, and wetlands as well as beach/dunes. Aggressive invasive species control would also be enacted throughout the Natural Zone and Sensitive Resource Subzones.

The park would also encourage more extensive study of geomorphology and beach erosion than in alternative B. NPS would work with neighbors and partners to implement solutions for improving resiliency of beach/dune habitat Great Kills and further east along Staten Island coastline.

The natural zone offers an abundance of opportunities for nature based recreation and environmental education programming. Within both the Natural Zone and the Sensitive Resources Subzone, volunteer stewards would be engaged in habitat restoration and monitoring projects.

The Great Kills Education Field Station would be enhanced to include more programming and exhibits, an outlying interpretive nature trail network and outdoor classrooms in order to better facilitate environmental education and field learning.

Miles of soft-surface trail and associated nature observation facilities such as blinds, towers, and boardwalks would encourage nature study and self-guided exploration of the park's existing and restored natural environments.

New camping opportunities and overnight accommodations would be developed within the Natural Zone. There would be an emphasis on introductory and intergenerational programs that teach camping skills.

Recreation Zone

New and improved facilities would expand recreation opportunities at Great Kills Park. Water-based recreation would be expanded at the Great Kills Harbor and marina to support boating and fishing including instructional programming, equipment rental and guided tours.

The popular multi-use pathway would be maintained. Additionally, the multi-use path would connect with the soft-surface trails that traverse the Natural Zone.

The guarded swim beach, beach access, and the beach center would be maintained. Expanded shade and picnic facilities would be developed to complement the beach experience.

Accessing the park would be made more convenient by an NPS shuttle that links surrounding communities and park lands. In addition, the NPS would coordinate with partners to complete missing pieces of on- and off-street trails and bike routes for connecting Great Kills to Miller Field. Finally, improved bike infrastructure, including bike rentals, maps, wayfinding, and bike parking facilities, would encourage park access by bike.

Alternative Considered but Dismissed

Following the presentation of the alternatives to the public and partners in the summer of 2012 and the collection of public comments and partner feedback, the GMP team decided to eliminate what had been alternative D. Titled "Connecting Coastlines," the management concept for alternative D was as follows:

The broad themes of coastal ecology, coastal defense, and coastal recreation link the three park units and their varied resources together. In this alternative, the NPS and its partners emphasize water-based recreation, education, and interpretation and create a seamless coastal experience centered on beaches, marine habitats, and coastal defense resources and stories.

The decision to dismiss alternative D stemmed from a lack of public interest/support and redundancy in key elements. Gateway staff and park partners felt that there were not enough unique components of alternative D to distinguish it substantially from alternatives B and C. Although the alternative was dismissed, it should be noted that certain ideas from alternative D were incorporated into alternative B, including the following management and recreation emphases:

- Expansion and promotion of water-based recreation opportunities and city park connections including water trails, kayak rental, and training opportunities, and boat tours.

- Development of new orientation, programming, and access from water and increased waterborne transportation.

Environmentally Preferable Alternative

The environmentally preferable alternative is identified upon consideration and weighing by the Responsible Official of long-term environmental impacts against short-term impacts in evaluating what is the best protection of these resources.

In accordance with the NPS NEPA Director's Order 12 Handbook, the NPS identifies the environmentally preferable alternative in its NEPA documents for public review and comment (NPS 2001, section 4.5 E[9]). The environmentally preferable alternative is the alternative that causes the least damage to the biological and physical environment and best protects, 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 evaluating 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 (43 CFR 46.30).

Alternative C has been identified as the environmentally preferable alternative based on the analysis of impacts, which identified it as least damaging to the biological and physical environment and best at protecting and enhancing natural and cultural resources. Specifics are outlined below.

Alternatives B and C both propose additional access and activities at many park sites, and this increase in use has the potential for damage to wildlife habitat—including that used by species of special concern—to vegetation, and to soils. However, each alternative also includes measures that would particularly enhance biological resources and that are absent from the no-action alternative. These measures include a commitment to using expanded partnerships with academics, agencies, private entities, and NGOs to jointly research the causes of loss of saltmarsh island habitat and how best to restore it and water quality in the Jamaica Bay; working with neighboring landowners to remove impediments to natural coastal sand transport processes; creating freshwater and saltwater wetlands and open water areas in conjunction with a new wetlands center; and holistically planning and implementing freshwater wetland restoration at multiple locations. Alternative B has substantially greater development of some park sites than alternative C for camping, trails, and visitor recreational facilities and amenities. Particularly at Sandy Hook, and to a lesser extent at Fort Tilden, current unique or undisturbed areas used by imperiled vegetation associations or plant or wildlife species of concern, or by many thousands of individual wildlife such as migrating birds, for example, could be affected by this development and by the presence of humans.

In addition to a smaller scope of development in alternative C, visitor use–related equipment or facilities would be sustainable and easy to remove following the summer season, restoring relatively undisturbed conditions for the remainder of the year. Alternative C also includes additional closures and protection of sensitive or unique habitat at Sandy Hook, Breezy Point, and Fort Tilden, including vegetative communities found only at these sites in the New York City or Monmouth County area, nesting by several species of shorebirds listed as federally or state endangered or threatened, vegetation associations considered globally

imperiled, and important migratory bird resting and feeding habitat. While alternative B opens Hoffman Island, Canarsie Pol, and Big Egg Island for day or overnight use, alternative C keeps these areas closed to visitor use. Each is used by birds for feeding, resting, or nesting; alternative C would therefore do a superior job of protecting, preserving, and enhancing this biological resource.

Both action alternatives are considerably more beneficial than no action (alternative A) for historic structures, historic districts and cultural landscapes, and museum collections. Reuse would not be nearly as extensive under the no-action alternative as for either action alternative, and because reuse requires restoration of historic sites which in turn may contribute to historic districts, it has an important beneficial impact on cultural resources. Of the two action alternatives, alternative B offers the widest variety of potential adaptive reuses, particularly in the Sandy Hook Unit. Use of Fort Tilden and Fort Wadsworth in either alternative B or C would also help in stabilizing these districts. Formalizing current policies of allowing some batteries and other damaged or deteriorating structures to continue to decay by applying a Ruins Subzone would have the potential for adverse impacts in alternatives B and C. Historic resources affected are primarily associated with military history and the coastal defense of New York Harbor. Conversely, application of a Historic Zone would help in protecting and preserving cultural resources. This zone is slightly larger in alternative C than alternative B (and is not part of alternative A). Both action alternatives are equally beneficial in finding a safe area to maintain the park's museum collections. The no-action alternative is environmentally preferable in protecting buried archeological resources, as development of trails, roads, visitor facilities, and other infrastructure is minimal. On balance, because activities in alternatives B and C are so similar, the application of a larger Historic Zone in alternative C makes it slightly environmentally preferable for cultural resources.

Consistency with NEPA

The NPS requirements for implementing NEPA include an analysis of how each alternative meets or achieves the purposes of NEPA, as stated in sections 101(b) and 102(1). Each alternative analyzed in a NEPA document must be assessed as to how it meets the following purposes:

1. Fulfills the responsibilities of each generation as trustee of the environment for succeeding generations

2. Ensures for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings

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

4. Preserves important historic, cultural, and natural aspects of our national heritage and maintains, wherever possible, an environment that supports diversity and variety of individual choice

5. Achieves a balance between population and resource use that would permit high standards of living and a wide sharing of life's amenities

6. Enhances the quality of renewable resources and approaches the maximum attainable recycling of depletable resources

Alternative A: No Action

Alternative A would minimally meet the six purposes of NEPA. There would be no new sources of park operating funds, such as from friends groups, donations, or volunteers beyond what currently exists, making it increasingly difficult for the declining numbers of park staff to meet the park's mission to manage the park leaving it unimpaired for the enjoyment of future generations (Purpose 1). The NPS would continue to have difficulty adequately protecting natural, scenic, and cultural resources due to limitations in the numbers of park staff, a major maintenance backlog, and an abundance of historic structures in poor condition (Purpose 4). The existing level of programming, activities, and enforcement would be maintained and used, with no construction of new facilities and the addition of only a few new programs, as funds allow (Purposes 2, 3, and 5). The park would not provide additional recreational facilities or recreational and educational programming requested by the public during GMP/EIS scoping (Purposes 2, 3, and 5). Existing resource management actions, particularly water quality monitoring, management planning to improve water quality in Jamaica Bay, and protection of coastal habitats, would continue as they are today, with long-term benefits continuing to be limited due to inadequate staffing and funding (Purpose 6).

Alternatives B and C

Both alternatives B and C would meet the six purposes of NEPA. New sources of funding would become available as the NPS works with its partners, substantially enhancing the park's ability to meet its mission and to support targeted resource protection goals (Purposes 1 through 6). With development of the Jamaica Bay Science and Resilience Institute and the resulting increase in partnerships, collaborations, and scientific study focused on Gateway's natural resources, habitat conditions in Jamaica Bay and elsewhere in the park would be better understood and stewardship would become more effective (Purposes 4 and 6). Historic structures at Fort Wadsworth (Fort Tompkins and Battery Weed), Fort Tilden (Battery Harris), and Sandy Hook Proving Ground (Fort Hancock and the Nike Missile site) would be rehabilitated and leased, enhancing their long-term protection and providing a moderate income stream to support their long-term maintenance (Purposes 4 and 5). Additionally, historic structures at Fort Wadsworth (Fort Tompkins and Battery Weed), Fort Tilden (Battery Harris) and Sandy Hook Proving Ground (the Nike Missile site) would undergo additional stabilization and rehabilitation and become visitor-ready and interpreted (Purpose 4). In both alternatives, the park would provide some additional recreational facilities and enhanced educational and interpretive programming as requested by the public during GMP/EIS scoping (Purposes 2, 3, and 5).

Partnerships with New York City in alternative B would greatly enhance the park's ability to meet its mission and to support targeted resource protection goals (Purposes 1 through 6). Also, in alternative B, Gateway would provide many more new recreational facilities, including a wetlands center at Floyd Bennett Field and a wide variety of recreational programming (e.g., camping, lessons, environmental education), which would exceed the improvements requested by the public during GMP/EIS scoping (Purposes 2, 3, and 5).

In alternative C, an emphasis on participatory stewardship, increased volunteer programming, and enhanced resource protection would enhance the park's ability to meet its mission and to support targeted resource protection goals (Purposes 1 through 6).

User Capacity Indicators and Standards

Introduction

User capacity is one statutory requirement for the GMP established in the 1978 National Parks and Recreation Act. The act called for the identification and implementation of commitments for visitor carrying capacities. The NPS GMP Sourcebook (2008b) explains that planners have found that "user capacity" is a more appropriate term than visitor carrying capacity because it conveys the concept that capacity is applicable to all park users, including local residents. The NPS defines user capacity as the type and level of use that can be accommodated while sustaining the desired resource conditions, social conditions, and visitor experiences consistent with the purposes of the park. The approach to user capacity is now focused on measuring the success at achieving and maintaining desired resource conditions and visitor experiences as affected by people's use of the parks. The NPS does not solely track and control user numbers, but instead manages the levels, types, behaviors, and patterns of visitor use and other public uses as needed to control the condition of the resources and the quality of visitor experiences.

The GMP planning process requires the development of a monitoring system to test the effectiveness of the management actions taken by identifying indicators and standards that gauge when or if the desired conditions have been achieved.

The GMP planning process requires the development of a monitoring system to test the effectiveness of the management actions taken by identifying indicators and standards that gauge when or if the desired conditions have been achieved.

The foundations for making user capacity decisions in this GMP are the purpose, significance, special mandates, and management zones associated with the park. The purpose, significance, and special mandates define why the park was established and identify the most important resources and values—including visitor opportunities—that are to be protected and provided. The management zones in each alternative describe the desired resource conditions and visitor experiences, including appropriate types of activities and general use levels, for different locations throughout Gateway. The zones, as applied in the alternatives, are consistent with, and help achieve, the specific purpose, significance, and special mandates for each park. As part of the NPS commitment to the implementation

of user capacity, park staff will use these directives to guide the types and levels of visitor use that will be accommodated while sustaining the quality of park resources and visitor experience consistent with the purposes of both parks.

In addition to these directives, in areas where use and past research and study have demonstrated a need, this GMP also includes specific user capacity indicators and standards. Indicators and standards are measurable variables that will be monitored to track changes in resource conditions and visitor experience. The indicators and standards help the NPS ensure that desired conditions are being attained, supporting the fulfillment of the legislative and policy mandates of the park.

User Capacity At Gateway

Gateway is a popular, heavily visited park located within a major metropolitan area with extensive and diverse visitor opportunities that are in high demand. Visitor use opportunities occur over a large land and water mass with many access points and use areas, which makes regulating use levels, activities, and patterns complex. While the park's natural resources have demonstrated an impressive degree of resiliency, the park contains habitats that are vulnerable to visitor use impacts.

Given these challenges and limited staff and budgets, user capacity management must be strategically implemented through the efficient use of staff time and funding, targeted focus on areas of most concern within the park, and creative approaches to monitoring and developing management strategies. For all areas of Gateway, the management zones provide the most important implementation commitment for user capacity, because they describe the desired resource conditions and visitor experiences—including appropriate types and levels of use, visitor services, and development—for all sites within the planning area. These management zones are consistent with and help achieve Gateway's purpose, significance, and special mandates.

In addition to the implementation commitments for the desired conditions (identified in the zone descriptions) and based on some of the most pressing existing or potential use concerns at sites within Gateway, a set of resource and visitor experience indicators have been identified for the park that may be monitored to assess visitor-related impacts on park resources and the quality of the visitor experience (see table 2-9). The priority resource indicators for Gateway are associated with the issues of habitat and wildlife disruption and wear on the park's cultural resources. The priority visitor experience indicators for Gateway are associated with the issues of crowding and congestion, condition of recreation sites, and satisfaction with visitor services and facilities. Please note that in order to measure some of the visitor experience standards, it will be necessary to institute a parkwide visitor survey or potentially modify an existing annual mail-in survey to include questions related to these visitor experience indicators and standards.

The final selection of any indicators and standards for monitoring purposes or the implementation of any management actions that affect use would comply with NEPA, the National Historic Preservation Act of 1966, and other laws, regulations, and policy, as needed.

Table 2-9. Park User Capacity Indicators and Standards.

Indicators	Assigned Zone/Specific Areas	Standards
Visitor-related Resource Indicators		
Evidence of persistent and/or prohibited use of closed and/or restricted areas.	Historic Zone Natural Zone Developed Zone Recreation Zone	Closure of existing informal, non-designated trails and unauthorized access points Or conversion of informal trails to designated and managed trail Proper signs and access enforcement Signs, fencing, and other measures to prevent unauthorized access to cultural resources
Deterioration in the condition of existing trails (e.g., widening, increased erosion, trampling) and/or development of new, non-designated informal or “social” trails	Natural Zone Sensitive Resources Subzone Recreation Zone Historic Zone	No substantial deterioration of existing, designated trail conditions in which severe erosion is obvious, bare soil is widespread in a widening tread and nearly complete loss of organic littler and/or vegetative cover Zero tolerance for new, undesignated “social trails”
Number of times per day birds are flushed from the roost or nesting colony—applies to tern colonies, heron rookeries, and piping plover nesting areas	Natural Zone Sensitive Resources Subzone	No more than two times in a 12-hour period
Degradation of the condition of marsh and shoreline habitat below baseline conditions	Natural Zone Sensitive Resources Subzone Recreation Zone	Proper signs and access enforcement Removal of social trails and unauthorized access points along shorelines No tolerance of boat landing on marsh islands or unauthorized access in closed areas Enforcement of motorized boating speed limits
Deterioration in the condition of habitat within and immediately surrounding backcountry, beach, walk-in tent, and programmatic camping areas	Natural Zone Recreation Zone Historic Zone	Maintain at least 80% of campsites with no more than moderate vegetation loss and minimal signs of soil erosion and shoreline disturbance
Number of incidents of graffiti and/or vandalism affecting park assets, including cultural resources	All zones (with a focus on cultural resources within the Historic Zone)	No more than one minor incident per month—minor is defined as repairable damage (e.g., new ink / paint graffiti over paintable surface) No major incidents—major is defined as irreparable damage resulting in major resource loss and significance recovery cost

Table 2-9. Park User Capacity Indicators and Standards (continued).

Indicators	Assigned Zone/Specific Areas	Standards
Documented changes in condition of Band 1 and 2 cultural resources (including historic structures and cultural landscapes) from visitors and park management activities	Historic Zone	Visitor impacts do not exceed threshold of changing overall site condition to a lesser condition (e.g., good to fair, fair to poor) No trampling of gardens and/or vegetation contributing to the significance of the cultural landscape Visitor uses, including self-guided access, guided tours, programming, and events, do not threaten character-defining features
Visitor Experience Indicators		
For arrival via car, shuttle, and ferry: Approximate arrival experience time (from park entrance to arrival at a parking lot / unloading zone)	All zones (with a focus on Recreation Zone because most parking lots and transportation infrastructure is within this zone)	Maximum arrival time is 15–20 minutes per individual or group
Recreation site condition assessment: rating of good, fair, poor based on site size, ground cover loss, tree/ vegetation damage, amount of litter / human waste, and evidence of wildlife harassment	Recreation Zone (including Community Activity and Active Beach Subzones) Natural Zone Historic Zone	The condition of recreation sites will be maintained in “good” condition Visitor impacts do not exceed threshold of changing overall recreation site condition to a lesser condition (e.g., good to fair, fair to poor)
Visitor satisfaction with the scale, location, and condition of visitor services and facilities as well as visitor comforts (using random survey instrument)	Recreation Zone (including Community Activity and Active Beach Subzones) Natural Zone	Greater than 75% of all visitors surveyed report “high” levels of visitor comfort and satisfaction with the scale, location, and condition of visitor services and facilities
Visitor satisfaction with opportunities to experience open space and nature (using random survey instrument)	Recreation Zone Natural Zone	Greater than 75% of all visitors surveyed report “high” levels of visitor satisfaction with access to natural areas and the shoreline, dark night skies, natural soundscapes, views, and/or direct sensory experiences with natural elements Less than 10% of visitors reported problems with user conflicts detracting from their experience of open space and nature
Visitor satisfaction with opportunities to experience historic settings (using random survey instrument)	Recreation Zone Historic Zone	Greater than 75% of all visitors surveyed report “high” levels of visitor satisfaction with access to historic settings and opportunities to learn about coastal defense and maritime history at Gateway Less than 10% of visitors reported problems with user conflicts detracting from their experience of historic settings

Monitoring

Park staff will continue general monitoring of use levels and patterns throughout Gateway. In addition, park staff will monitor these user capacity indicators. The development of specific monitoring protocols is left to a detailed monitoring plan, which is beyond the scope of the GMP/EIS. The rigor of monitoring the indicators (e.g., frequency of monitoring cycles, amount of geographic area monitored) may vary considerably depending on how close existing conditions are to the standards. If the existing conditions are far from exceeding the standard, the rigor of monitoring may be less than if the existing conditions are close to or trending toward the standard.

The initial application of the indicators and standards will determine whether the indicators are accurately measuring the conditions of concern and if the standards truly represent the minimally acceptable condition of the indicator. Park staff may decide to modify the indicators or standards and revise the monitoring program if better ways are found to measure changes caused by visitor use. If use levels and patterns change appreciably, the park may need to initiate additional monitoring of new indicators to ensure that desired conditions are protected. This iterative learning and refining process is the strength of the NPS user capacity management program, in that it can be adapted and improved as knowledge grows.

Mitigation Measures

As a part of the analysis of the GMP/EIS alternatives, mitigation measures that could further improve alternatives in protecting resources have been identified and would be considered by the NPS for implementation as part of the selected GMP/EIS alternative. Although each alternative in the GMP/EIS was designed in part to offer this protection, mitigation measures can further reduce impacts or offer greater protection of resources or values. As is true of all NPS actions, implementing the selected GMP/EIS alternative must be done in a way that protects unimpaired the park's natural and cultural resources and the quality of the visitor experience under the NPS Organic Act. Mitigation can be helpful or even instrumental in ensuring that this happens. In addition, actions described generally in the GMP/EIS often require a more site-specific environmental review under NEPA and other laws before they can be implemented. The mitigation measures described in table 2-16 are a starting point in developing design options for these actions. As an example, the implementation of a compliance monitoring program would be within the parameters of NEPA and National Historic Preservation Act compliance documents, USACE section 404 permits, etc. The compliance monitoring program would oversee these mitigation measures and would include reporting protocols.

While some of the measures in Table 2-10 are standardized actions or are required by law, others are options that the NPS would consider in its final decision making. These are distinguished by the use of "should" or "consider" or similar language indicating that they are discretionary.

As a part of the analysis of the GMP/EIS alternatives, mitigation measures that could further improve alternatives in protecting resources have been identified and would be considered by the NPS for implementation as part of the selected GMP/EIS alternative.

Table 2-10. Mitigation Measures to be Considered and/or Included as part of Action Alternatives.

Impact Topic	Mitigation Measure
Air Quality	If an anaerobic digester is built, consider housing it or otherwise filtering stack emissions to reduce methane.
Vegetation	Site-specific information on vegetation associations should be collected at Fort Tilden and used in siting camping and other recreation facilities. Rare or imperiled vegetation associations should be fenced or otherwise protected from visitor use at Fort Tilden.
Wildlife	Identify and consider imposing a buffer of approx. 300 feet around Hoffman Island and saltmarsh islands in Jamaica Bay to protect nesting wading birds, including herons, from visitors both on foot and in boats. Consider closing Hoffman Island, Canarsie Pol, and marsh islands where wading birds can or do nest in Jamaica Bay to visitors from March 15 to August 31. Consider limiting visitor access at Plumb Beach during new moon and full moon high tides during May and June to protect horseshoe crab spawning.
Species of Special Concern	Identify and consider imposing a buffer around osprey nests that would be in force during the April through August nesting season to ensure continued nesting success despite more intense or concentrated visitor use. Continue to close Breezy Point Tip, Sandy Hook north area, and portions of Sandy Hook beaches to visitor access to protect piping plover nesting mid-March through September. Consider working with USACE to realign the navigation channel into Great Kills Harbor to prevent the loss of horseshoe crab habitat from dredging to maintain the channel.

Table 2-10. Mitigation Measures to be Considered and/or Included as part of Action Alternatives (continued).

Impact Topic	Mitigation Measure
Cultural Resources	Continue to complete research and inventories for park historic resources including archeological resources, historic structures, cultural landscapes, ethnographic resources, and museum collections to better understand and manage the resources. Continue to complete necessary National Register evaluations and documentation. Incorporate the results of these efforts into the park's resource stewardship strategy and site-specific planning and compliance documents. Continue to manage cultural resources following federal regulations and NPS guidelines and policy, such as Director's Order 24: *NPS Museum Collections Management*, Director's Order 28: *Cultural Resource Management*, and NPS 28A: *Cultural Resource Management Guideline* (NPS 2008, 1998a, 1998c), and the Secretary of the Interior's *Standards for the Treatment of Historic Properties* (NPS 1992). Where demolition or neglect of a historic property is proposed, the adverse effects will be mitigated through a variety of possible measures including (but limited to) graphic and photographic documentation, Historic American Buildings Survey/Historic American Engineering Record/Historic American Landscape Survey (HABS/HAER/HALS) documentation, and/or the Secretary's Standards and Guidelines for Historical and Archaeological Documentation. The level of this documentation, which includes photography, archeological data recovery, and/or a narrative history, would depend on significance (national, state, or local) and individual attributes (an individually significant structure, individual elements of a cultural landscape, etc.) and be determined through the section 106 process. When demolition of a historic structure is proposed, and following thorough documentation, architectural elements and objects may be salvaged for reuse in rehabilitating similar structures or they may be added to the park's museum collection. Demolished resources may also be incorporated into interpretive displays. Through the park's interpretive programs, visitors will be encouraged to respect the park's coastal defense and maritime resources and to leave undisturbed any closed and/or inadvertently encountered historic and/or cultural resources. In the event of new cultural resource discoveries made during the implementation of the GMP, the park will initiate consultation with the appropriate SHPO in compliance with section 106 of the National Historic Preservation Act. Should human remains or funerary or sacred objects be encountered, work will immediately cease and the park staff will notify and consult with appropriate American Indian Tribes as required under the Native American Graves Protection and Repatriation Act of 1990 (NPS 2003c, 51–52). Unless otherwise stated, the Secretary of the Interior's Standards (NPS 1992) will guide work affecting any historic properties. Where they exist (also see the "Affected Environment" chapter), cultural landscape reports will be used to provide guidance for work in historic districts / cultural landscapes. These reports contain treatment guidelines for all aspects of the cultural landscape, including spatial organization, natural systems and features, land use, circulation, topography, buildings and structures, vegetation, and small-scale features. When historic districts and/or structures are left unmanaged and are expected to deteriorate and decay, the appropriate level of documentation will be prepared and consultation conducted as set forth in section 106 of the National Historic Preservation Act.

Table 2-10. Mitigation Measures to be Considered and/or Included as part of Action Alternatives (continued).

Impact Topic	Mitigation Measure
Visitor Safety and Visitor Experiences	Visitor safety concerns would be integrated into NPS interpretive and educational programs. Directional signs would continue to orient visitors, and education programs would continue to promote understanding among visitors. Measures to reduce adverse effects of construction and building rehabilitation on visitor safety and experience would be implemented, including project scheduling, a traffic control plan, and best management practices. An accessibility study will be conducted to understand barriers to park programs and facilities. Based on this study, a strategy will be implemented to provide the maximum level of accessibility. "Managed ruins" sites will be fenced off, signposted, and or/obscured from view to reduce the temptation for unsanctioned and unsafe access.
Soundscapes	Facilities would be located and designed to minimize objectionable noise. Standard noise abatement measures would be followed during construction, including a schedule that minimizes impacts on adjacent noise-sensitive resources, the use of the best available noise control techniques wherever feasible, the use of hydraulically or electrically powered tools when feasible, and the location of stationary noise sources as far from sensitive resources as possible. Options to reduce the sounds of maintenance equipment will be explored.
Visual Quality / Scenic Resources	Where appropriate, facilities such as trails and fences would be used to route people away from sensitive natural and cultural resources while still allowing access to important viewpoints. Facilities would be designed, sited, and constructed to avoid or minimize visual intrusion into the natural environment or cultural landscapes. Vegetation screening would be provided, where appropriate.
Socioeconomic Environment	During the future planning and implementation of the approved management plan for the park, NPS staff would work with local communities, New York City, and Monmouth County to further identify potential impacts and mitigation measures that would best serve the interests and concerns of both the NPS and the local communities. Partnerships would be pursued to improve the quality and diversity of community amenities and services.
Transportation	When the parking lots at Jamaica Bay Wildlife Refuge, Miller Field, or other park sites where space is often inadequate fill, redirecting traffic elsewhere would avoid exceeding the site's carrying capacity, as directed by NPS *Management Policies 2006* (NPS 2006a).

Cost Summary of the Alternatives

The future costs of implementing the alternatives were considered as part of the planning process. Future costs would encompass the design, construction, rehabilitation, or adaptive use of historic structures and landscapes, natural areas, visitor orientation, recreation and education facilities, parking areas, museum collection facility, maintenance areas, and other visitor services. In estimating the costs of the alternatives, different types of costs are taken into account, including one-time capital and annual operating costs.

Annual Operating Costs and Staff Levels

Annual operating costs (ONPS) are the total costs per year for maintenance and operations associated with each alternative, including utilities, supplies, staff salaries and benefits, leasing, and other materials. For alternative A, the park's current annual operating costs are $23,758,000. The operating costs for alternatives B and C would remain similar to alternative A and adjusted yearly as part of the federal budget process.

Staffing levels would be consistent for alternatives A, B and C. There are currently 295 FTEs authorized for the park. The staffing figure (total number of FTE employees) is the number of person-years of staff required to provide visitor services, protect resources, maintain the assets of the park, and generally support park operations. The FTE number indicates ONPS-funded NPS staff only, not volunteer positions or positions funded by partners. FTE salaries and benefits are included in the annual operating costs. While the FTE number would remain the same for each alternative, the types and numbers of positions for maintenance, resource management, visitor services and other park functions would likely change by alternative.

One-time Capital Costs

The presentation of capital costs in a general management plan is intended for alternatives comparison purposes only. This plan, however, does not present estimated capital costs for the alternatives beyond a broad conceptual range of $100M to $300M due to the degree of uncertainty in the details required for developing estimates. The costs are not appropriate for budgeting purposes, although they do indicate the level of NPS investment that would be needed to implement the alternatives, and to allow comparison of the costs for each alternative.

A number of alternative actions will require major partner contributions and/or cooperation by other entities in order to accomplish those actions. These actions are considered less certain, and not enough details are known at this time to estimate costs. In addition, implementation planning for many of the proposals in the action alternatives would not proceed until the completion of Hurricane Sandy Recovery projects. The work being undertaken in recovery projects will establish a new baseline for site planning for capital projects proposed in this plan, and cost estimates at this time would be highly conjectural. Actual costs would be determined at a later date and would take into consideration the design of facilities, identification of detailed resource protection needs, and contributions by non-NPS partners.

Future Planning Studies and Implementation Plans

The need for additional studies and implementation plans was identified during the planning process. The studies and plans identified in Table 2-11 are the highest priority for implementation of the preferred alternative. The NPS would develop these plans and studies in coordination with stakeholders, academic institutions, and local governments, and state and other federal agencies.

Table 2-11. Future Planning Studies and Implementation Plans.

Type of Plan or Study	Purpose of Plan or Study
Archeological Coastal Resources Management Plan	Inventory and document threatened archeological resources in coastal areas and develop a management strategy for responding to climate change impacts.
Climate Change Plan	Provide a framework for incorporating technical data related to climate change impacts into natural and cultural resources management and visitor experience and facility planning.
Green Parks Plan	Develop park strategy for water and energy conservation, alternative energy development, waste stream reduction and green products purchasing. Update information from 1993 Green House Gas Inventory. Implementation strategy for energy conservation measures identified in 2010 energy audit, including completing metering of individual buildings to tract energy usage of structures.
Buildings Sustainability Plan	Develop a park-specific sustainability plan that supports the park purpose, integrates with park strategic documents, ensures that appropriate documentation is completed, and contributes to the overall regional sustainable buildings targets and objectives.
Jamaica Bay Freshwater Wetlands Study	Conduct a system-wide study of freshwater wetlands in Jamaica Bay to understand the relationship of future restoration projects and potential future salt water intrusion.
Marine and Estuarine Resources Management Plan	Identify the conditions and actions necessary to improve the park's management of fisheries and shellfisheries, submerged aquatic vegetation, and marine species.
Floyd Bennett Field Camping Plan/Environmental Assessment	Develop a camping plan including site-specific design of multiple sites and supporting facilities.

Table 2-12. Summary of the Impacts by Alternative.

	Impacts under Alternative A	Impacts under Alternative B	Impacts under Alternative C
Soils and Geology			
Physical character of soils	Adverse from compaction	Additional adverse impact from increased visitor use, facilities	Slightly less adverse than B because of fewer facilities, visitors
Availability of soils/ erosion	Beneficial from beach nourishment	Adverse from excavation, grading for visitor facilities where natural soils exist	Slightly less adverse than B because of fewer facilities
Natural offshore sand transport	Adverse from interruptions of sand transport	Significant beneficial impacts from possible removal of impediments	Same as B
Natural soils	Adverse from unnatural fill, rubble at many sites	Possible significant benefit from created wetlands	Same as B
Air Quality			
Mobile emissions	Adverse from cars, buses at park and in region of air basin	Substantial beneficial impact from increase in alternative transportation, public transportation options	Same as B
Stationary emissions	Adverse from power generation and other sources upwind of park and park operations	Beneficial from increasingly sustainable practices; short term adverse from construction	Slightly less adverse because less construction than B
Greenhouse gases	Adverse from park operations, but beneficial from tree planting	Beneficial from additional sustainable park operation practices, tree planting	Same as B
Water Resources			
Jamaica Bay water quality and hydrology	Significant benefits from collaborative efforts to improve	Additional significant benefits from holistic planning and expanded partnership, scope of research and application of findings to restore water quality and hydrology	Same as B
Infiltration	Adverse from paved areas and facilities; beneficial from maintained open spaces	Localized adverse impacts at several park sites from increased development, hardening.	Slightly less adverse because less construction than B
Open water habitat	N/A	Possible significant benefits from creating open freshwater and marine habitat in the park	Slightly more beneficial as area of created open water habitats would be expanded
Wetlands and Floodplains			
Risk of damage from coastal flooding	Localized benefits from beach nourishment and dune stabilizing efforts	Potentially significant adverse impacts from rebuilding or rehabilitating coastal structures Potentially significant benefits from increased efforts to stabilize dunes, create a positive sediment budget	Same as B

Table 2-12. Summary of the Impacts by Alternative (continued).

	Impacts under Alternative A	Impacts under Alternative B	Impacts under Alternative C
Wetland resource conditions	Significant benefits from collaborative efforts to improve water quality in Jamaica Bay Substantial benefits from invasive species removal in wetlands	Additional significant benefits from holistic planning and expanded partnership, scope of research and application of findings to restore water quality Possible localized significant benefits from increased focus on invasive species removal in wetlands	Same as B
Saltmarsh wetland habitat	Significant benefits from collaborative efforts to increase saltmarsh Slight benefit from leaving West Pond breached	Additional significant benefits from holistic planning and expanded partnership, scope of research, and application of findings to increase saltmarsh Significant benefits from establishing a reconnection between Jamaica Bay and former saltmarsh at Floyd Bennett Field	Slightly more beneficial as area of saltmarsh at Floyd Bennett Field larger than in B
Freshwater wetland habitat		Significant benefits from holistic planning to create freshwater wetlands, including at West Pond Significant benefits from creating freshwater wetlands at Floyd Bennett Field	Slightly more beneficial as area of constructed freshwater wetlands at Floyd Bennett Field larger than in B
Marine Resources			
Marine borrow pits for sand used to nourish park sites	Adverse impacts to marine life at borrow sites	Same as A	Same as A
Marine and intertidal habitat at park	Benefits by adding habitat from beach nourishment Ongoing adverse impacts from impediments to natural sand transport processes	Adverse impacts from increases in visitor use and development Significant benefits by increasing extent of beach and dune habitat if sand transport processes restored Benefit from restored mudflat, intertidal habitat from increased collaboration to restore Jamaica Bay	Slightly less adverse impacts from less visitor related use and development Same as B for restoration of sand, dune, mudflat, and intertidal habitat
Marine, beach, and dune systems	Adverse impacts – Currently missing essential components and degraded at many park sites	Significant benefit from possibly restoring essential element of system if natural sand transport returned	Same as B

Table 2-12. Summary of the Impacts by Alternative (continued).

	Impacts under Alternative A	Impacts under Alternative B	Impacts under Alternative C
Vegetation			
Trampling of vegetation	Adverse impacts from off-trail use, horse use, visitor use at beaches and dunes Benefits from maintaining undisturbed and protected areas, including for rare vegetation associations	Localized adverse impacts from increased amenities and visitors Continued benefits by maintaining undisturbed areas where rare vegetation exists	Slightly less adverse impacts from lower levels of increased facilities and visitor use Greater benefits by restricting visitor access for unique vegetation at several park sites
Habitat restoration	Benefits from planting at many park sites, including Pennsylvania and Fountain Avenue park sites, Crooke's Point, Fort Tilden Benefits from invasive species removal Adverse impacts from impediments to natural sand transport causing habitat loss, erosion	Increased benefits from additional efforts to control erosion, remove invasives, and plant native species Possible significant benefits for mudflat, intertidal, and dune vegetation from restoring natural sand transport	Same as B
Restoration of saltmarsh vegetation	Benefits from leaving West Pond breached Significant benefits from partnership restoration of Jamaica Bay saltmarsh	Localized short-term adverse impact from restoring West Pond Significant benefits from increased collaborative efforts to restore saltmarsh at Jamaica Bay Significant benefits from restoring connection between Jamaica Bay and Floyd Bennett Field	Same as B
Restoration of freshwater wetland vegetation	Adverse impacts from losing freshwater wetlands at West Pond	Significant benefits from holistic planning and creation of freshwater wetlands across park sites Significant benefits from creating freshwater wetlands at Floyd Bennett Field	Same as B
Wildlife			
Human disturbance	Adverse impacts from visitor use disturbing wildlife Adverse impacts from presence of humans keeping wildlife from using otherwise suitable habitat Benefits from keeping some areas closed to visitors	Increasing adverse impacts from increased visitor use from disturbance and displacement Possible significant adverse impacts on nesting wading birds from allowing visitation at some Jamaica Bay Islands and Hoffman Island Adverse impacts from night use Adverse impacts from loss of habitat due to development	Similar impacts from disturbance No visitation on islands, same as alternative A Less adverse impacts than B from night use (less camping) Less adverse impacts than B from development Benefits from additional closures to visitors where wildlife is sensitive

Table 2-12. Summary of the Impacts by Alternative (continued).

	Impacts under Alternative A	Impacts under Alternative B	Impacts under Alternative C
Wildlife habitat	Benefits from maintaining grassland habitat by mowing Benefits by improving habitat conditions through invasive species removal Possible significant adverse impact from keeping West Pond breached as freshwater habitat is rare Possible significant benefits from collaborative efforts to restore Jamaica Bay saltmarsh habitat	Benefits by improving habitat with increased erosion control, wetland protection, and invasive species removal Possible significant benefits for freshwater wetland species from holistic planning to create wetlands at several park sites Significant benefits from increased collaborative research and stewardship of Jamaica Bay saltmarsh habitat Significant benefits from creation of freshwater and saltmarsh habitat at Floyd Bennett Field Localized benefits to intertidal wildlife from restored natural sand transport if it occurs	Same as B
Species of Special Concern			
Trampling listed plants	Adverse impacts from visitor use Benefits from fencing and signs	Adverse impacts increased from increased visitor use	Same as B
Human or other disturbance	Adverse impacts from visitor use Potential significant benefits for shorebirds, terrapins, colonial nesting wading birds from fencing and signs, buffers, education, predator management, and/or closures	Adverse impacts increased from increased visitor use, with harassment and significant impacts possible Continued restrictions would provide potential significant benefits Possible significant adverse impacts from disturbance of state-listed nesting wading birds if islands open to visitors	Similar to B, although alternative C anticipates additional closures and fewer visitor amenities with fewer areas of disturbance No visitors to islands, with beneficial impacts the same as in alternative A as a result

Table 2-12. Summary of the Impacts by Alternative (continued).

	Impacts under Alternative A	Impacts under Alternative B	Impacts under Alternative C
Habitat improvement, loss or gain	Benefit for horseshoe crabs, piping plovers, and other beach wildlife from sand nourishment Adverse impacts from loss of otherwise suitable habitat related to disturbance	Increased potential for adverse impacts from habitat lost to disturbance or development that is otherwise suitable, including at Sandy Hook Significant benefits from creating saltmarsh habitat through collaboration at Jamaica Bay or reestablishing a connection at Floyd Bennett Field Substantial benefits from possible restoration of natural sand transport processes	Similar to B, although less habitat lost to development and more saltmarsh at Floyd Bennett Field created
Cultural Resources – Historic Districts and Historic Structures			
Historic Districts containing Fundamental Resources	Benefits from maintenance, stabilization and preservation of some historic structures (coastal defense and marine resources) within Fort Hancock and Sandy Hook Proving Ground and Fort Wadsworth Significant adverse impacts from lack of maintenance for some historic structures (batteries and/or Nike Missile sites) at Fort Hancock and Sandy Hook Proving Ground, Fort Tilden, Fort Wadsworth)	Benefits to Fort Hancock and Sandy Hook Proving Ground, Fort Tilden and Fort Wadsworth from stabilization, rehabilitation/re-use, preservation, interpretation of some coastal defense and maritime resources; protection of individual resources designated as part of the Historic Zone; and protection of some historic structures from threats of future storm surges/flooding. Significant adverse impacts from loss of individual fundamental resources designated as part of the Ruins sub-zone (less severe than under alternative A).	Similar to alternative B
Other Historic Districts	Beneficial impacts from continued rehabilitation of historic structures and re-establishment of cultural landscape vegetation at Floyd Bennett Field.	Benefits from preservation and interpretation of the cultural landscape at Floyd Bennett Field Historic District; appropriate improvements to park facilities at Jacob Riis Park Historic District; and stabilization of historic structures at Miller Army Airfield Historic District, Breezy Point Surf Club Historic District, Silver Gull Beach Club Historic District and Far Rockaway Coast Guard Historic District Adverse impacts possible from outcome of converted structures in historic districts (Floyd Bennett Field) Significant adverse impacts to historic districts from application of Ruins Subzone (Floyd Bennett Field Historic District, Jacob Riis Park Historic District, Far Rockaway Coast Guard Historic District)	Benefits from preservation of the cultural landscape and adaptive re-use of structures at Floyd Bennett Field Historic District,(to a greater degree than alternative B); otherwise, same as alternative B. Significant adverse impacts to districts from application of Ruins Subzone similar to alternative B

Table 2-12. Summary of the Impacts by Alternative (continued).

	Impacts under Alternative A	Impacts under Alternative B	Impacts under Alternative C
Historic structures	Significant adverse impacts from lack of maintenance of many coastal defense resources (batteries) and other historic structures	Beneficial impacts from maintaining, stabilizing, restoring, and adaptive reuse of prioritized structures noted above in fundamental resources and other historic districts Adverse impacts from possible inappropriate conversion of historic structures and loss of historic structures in Ruins Subzone as noted above in Fundamental Resources and Other Historic Districts	Beneficial impacts similar to alternative B. Adverse impacts from loss of historic structures in Ruins Subzone as noted above in Fundamental Resources and Other Historic Districts
Cultural Resources – Archeological Resources			
Ground disturbance from walking or similar uses	Beneficial impacts from management of Hoffman and Swinburne Islands as natural areas (no park visitors)	Benefits related to visitor restrictions (established trails) on Swinburne and Hoffman Island (fewer benefits than under alternatives A or C)	Beneficial impacts from management of Hoffman and Swinburne Islands as natural areas--no park visitors (similar to alternative A)
Ground disturbance from excavation, grading and/or filling	N/A	Adverse impacts from grading, excavating, filling associated with construction of visitor amenities/facilities and O&M facilities; impervious surface removal; rebuilding of structures lost/damaged in Hurricane Sandy; landscape modifications to protect some historic structures from threats of future storm surges/flooding (increased adverse impacts than under alternative A)	Similar to alternative B
Ground disturbance from natural resources management actions	Adverse small-scale impacts from invasive species removal or tree planting, environmental restoration possible	Increased adverse impacts possible with greater efforts with invasive species removal, tree planting, wetland enhancement/creation, etc. (greater impacts than under alternative A) Adverse impact to submerged archeological resources from off-shore beach nourishment activities possible (greater impacts than under alternative A)	Similar to alternative B
Management strategies	Adverse impacts to archeological resources associated with deteriorating/decaying historic structures possible	Benefits related to preservation of archeological resources--primarily left intact and undisturbed (greater benefits than under alternative A) Adverse impacts to archeological resources associated with deteriorating/decaying historic structures within the Ruins Subzone possible (effects less intense than under alternative A)	Similar to alternative B

Table 2-12. Summary of the Impacts by Alternative (continued).

	Impacts under Alternative A	Impacts under Alternative B	Impacts under Alternative C
Cultural Resources – Museum Collections			
Collection security and safety	Adverse impacts from substandard conditions	Beneficial impact from locating and moving collection to a suitable and sufficient archival facility	Same as B
Social and Economic Environment			
Use of park for enjoyment and recreation	Social benefits for community and other visitors	Increased benefits from increased access to Gateway and between park sites	Same as B
Visitor spending in community	Beneficial impacts for community from purchase of goods and services	Increased visitor numbers would result in increased spending and community economic benefits	Benefits would be similar to but less than in B because of fewer expected visitors
Jobs created	Benefits from park and concessioner related jobs	Increased facilities and opportunities for recreation may increase jobs with benefits for employment	Benefits would be similar to but less than in B because of fewer visitor facilities
Transportation			
Parking and traffic	Adverse impacts from insufficient parking at Sandy Hook and other sites Adverse impacts from congestion when sites reach capacity	Benefits from building new or redesigning existing park lots and providing non-car options Benefit possible if park chooses to redirect traffic away from filled lots	Same as B
Public transportation	Adverse impacts from few public transportation options to access park	Possibly significant benefits from transportation hubs and multiple public transportation options, including new buses, shuttles and ferries	Same as B
Access between sites	Adverse impacts from few signs or other means of locating and traveling between park sites	Benefits from wayfinding and hubs with location information Benefits from creating paths between park sites, and between neighborhoods and park sites	Same as B
Alternative transportation	Adverse impacts from inadequate bike lanes, footpaths, or water access ways (blueways)	Possible significant benefits from increasing bike lanes, footpaths, and blueway options	Same as B

Table 2-12. Summary of the Impacts by Alternative (continued).

	Impacts under Alternative A	Impacts under Alternative B	Impacts under Alternative C
Park Management, Operations, and Facilities			
Facility maintenance and condition	Significant adverse impacts on park facilities because of inadequate budget to maintain all buildings and facilities; backlog and deterioration would continue to increase Short-term benefits from using repair money from Hurricane Sandy	Significant benefits from prioritizing key facilities for maintenance and allowing others to degrade; reduction in deferred maintenance Significant benefits possible if revenue-generating programming implemented	Same as B Significant benefits possible if preservation partners assist with rehabilitation of structures
Staff and budget	Significant adverse impact on park staff and budget from inadequate funds to maintain facilities	Adverse impacts from increased need for visitor programming and management, especially if funding inadequate to ensure staff levels Significant benefits possible from co-management with partner agencies on both staffing and budget, especially if revenue-generating programming implemented	Same as B Significant benefits possible from co-management with partner agencies to eliminate overlap and provide additional staff and budget
Energy efficiency/ resource conservation	Benefits from ongoing efforts to adopt LEED standards, reuse existing structures, increase fuel efficiency of fleet, and provide alternative transportation for visitors	Significant benefits on park objectives and budget from increased efforts to incorporate sustainability into operations	Same as B
Operational efficiency	NPS staff, budget are tasked with all aspects of management and operations	Significant benefits in improved operational efficiency from partnering with New York City to eliminate duplicative programming and management	Same as B