

Wright Brothers National Memorial

GENERAL MANAGEMENT PLAN

December 1996

North Carolina



A Plan For
Development,
Visitor Use and
Protection Of
The National
Memorial

Prepared by the
National Park Service



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Introduction...

The steps proposed by this plan will ensure that the resources contained within the memorial will be protected and treasured in perpetuity and that national and international visitors will enjoy and benefit from their experience at Wright Brothers National Memorial.

The year 2003 marks the 100th anniversary of the Wright brothers triumph at Kitty Hawk. The National Park Service (NPS) anticipates international attention focusing on December 17, 2003, and the months leading up to that significant date. This General Management Plan will form the foundation for management and development actions to take place in anticipation of the 100-year celebration. The steps proposed by this plan will ensure that the resources contained within the memorial will be protected and treasured in perpetuity and that national and international visitors will enjoy and benefit from their experience at Wright Brothers National Memorial.

Planning for the 50th anniversary began only two to three years before 1953; the results were disappointing. Beginning the planning process for the centennial celebration now and placing a high priority on it will assist the NPS in preparing the memorial for an event of international proportions. In 2003 the eyes of the world will focus on the 431-acre site in Kill Devil Hills, North Carolina.

The Kill Devil Hill Monument was established by the Act of March 2, 1927. The Executive Order of March 3, 1933, transferred administrative responsibility of the monument to the NPS. The site was established to commemorate the first successful human attempt at heavier-than-air, controlled, powered flight. The existing 431-acre land base stabilizes the remaining dunes existing during the


Wright brothers flight experiments at the turn of the century. The Secretarial Order of December 1, 1953, redesignated the area and monument as Wright Brothers National Memorial.



Orville and Wilbur Wright, Belmont Park, Long Island, October 1910.

Purpose And Need For The Plan

Public Law 95-625 (92 Stat. 3467) directs the Director of the NPS to prepare and revise a general management plan for the preservation and use of each unit of the National Park System. A general management plan sets forth the basic management philosophy for a park and provides strategies for addressing issues and achieving management objectives over a 5 to 10-year period. Two types of strategies are presented in the general management plan: 1) those required to manage and protect the park's resources and 2) those required to provide for visitor use and interpretation of the resources. Programs, actions, and support facilities necessary for efficient park operation and visitor use are identified based on these strategies. In addition, plans must be consistent with NPS Management Policies; be in compliance with legislative and executive requirements; reflect resource limitations, visitor safety considerations, and budgetary constraints; and recognize the concern expressed by the public and other agencies during planning efforts.



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Management Objectives...

Management objectives have been developed that provide direction for the overall administration of the park and guide the preparation of the general management plan.

Visitor Experience:

To provide a setting that helps the visitor to experience a sense of time and place which existed on December 17, 1903, and to realize the magnitude of the Wright brothers' achievements.

Resource Management:

To preserve, protect, and manage the cultural resources including artifacts and monuments associated with the achievements of the Wright brothers to inspire this and future generations.

Interpretation:

To interpret the events leading to the first, heavier-than-air, controlled, powered flight and its impact on the history of mankind.

To demonstrate the fundamental aerodynamic principles discovered in the Wright brothers' experiments which lead to man's conquest of the air.

To promote visitor appreciation and understanding of the two men responsible for this achievement.

Commemorative Events:

To foster and promote through partnership opportunities special activities at the site which commemorate the achievements of the Wright brothers in powered flight.

Issues:

Based upon the management objectives, the following issues are addressed in the General Management Plan:

- What steps can be taken to improve access into and out of the park? Should the visitor entrance and exit remain off U.S. 158 or is there a more suitable location?
- Should the facilities of the park accommodate the anticipated growth in visitation? What changes will be needed to accommodate major increases in visitation?
- What steps can be taken to ensure a quality visitor experience? Should a limit be placed on the number of visitors entering the park? What can be done to maximize the flight room talk?
- What steps can be taken to prepare the park for the 100th anniversary and to carry the story of the Wright brothers into the 21st Century?



II.

Management Objectives...continued

Issues:

- What can be done to take advantage of the latest and future advances in technology to bring the story alive at Wright Brothers National Memorial?
- What steps can be taken to address the shortcomings of the visitor center?
 - *Overcrowding in exhibit room*
 - *Inadequate air conditioning system*
 - *Crowded and uncoordinated visitor flow*
 - *Inadequate space for sales area*
 - *Crowded office space*
- How can visitor circulation be managed to enhance the visitor's experience while providing maximum protection of the memorial's resources?
- How can the visitor experience the sense of time and place that existed on December 17, 1903?
- How can parking be reconfigured to accommodate expected increases in visitation?
- Can less labor intensive design features can be incorporated into the park's overall plan that will compensate for increases in shoulder season visitation?
- What can be done to restore the memorial pylon to its original grandeur?
- How should the park's vegetation be managed to ameliorate the effects of surrounding development on the visitor's experience and the park's resources?
- As available public open space in the Kill Devil Hills area shrinks, can the park accommodate requests from local governments and others to use Wright Brothers National Memorial for purposes not usually associated with the park?
- How can the NPS use the 15.69 acres along U.S. 158 east of the entrance to the park?
- What should be the relationship between the NPS, the First Flight Society, and other potential partners?
- Is the First Flight Airstrip adequate to serve its current and future aviation load?
- What steps can be taken to ensure that facilities accommodating museum collections and book storage are designed to incorporate safeguards from weather emergencies?
- What will be the relationship between the memorial and the Dayton Aviation Heritage National Historical Park?
- Is there a use for the 1930s superintendent's residence on the south boundary of the park?
- What steps can be taken to improve the maintenance area?
- What measures can be taken to replace or upgrade park employee housing at the park?

The Plan...

Construct A New Visitor/Administrative Facility West Of U.S. 158 And Redesign The U.S. 158 Entrance To The Park

The NPS framed the General Management Plan to provide a satisfying experience for the memorial's visitors, to respond to the issues facing the memorial, and to address the direction set out in the Act of March 2, 1927, and the management objectives.

The plan recommends a new visitor/administrative facility west of U.S. 158 and redesigning the U.S. 158 entrance to the park.

Two elements of this plan predominate many of the issues facing the management of the memorial as the NPS prepares for the centennial of flight in 2003 and forges into the 21st Century. By addressing 1) the function and location of a new visitor/administrative facility and 2) the location and enhancement of the visitor's entrance, the NPS will lay the groundwork for solving many of the problems besetting the memorial today; problems that will surely exacerbate in the future. During the plan's preparation, the NPS coordinated its efforts with various State and local agencies and interest groups. Implementation of the plan will be dependent upon continued coordination and support. New funding sources and technological advances are available to the NPS that address issues identified in the plan. A summary comparison of how the plan addresses the issues is shown in Table 1. Table 2 shows the costs for implementing the plan.

Worldwide interest in the centennial of flight also stimulates reconsideration of the memorial for "World Heritage" status. In preparation for the 100th anniversary of flight, the NPS will resubmit its application for this international recognition.

Concept

- *Construct a new visitor/administrative facility*
- *Redesign U.S. 158 entrance*
- *Enhance interpretive messages*

The NPS will construct a new visitor/administrative facility designed to inspire park visitors about the achievements of the Wright brothers. Visitors will enter the park from U.S. 158, but a redesigned intersection will alleviate vehicle entrance and egress problems.

The NPS's interpretive efforts will be focused in the Visitor Center, allowing the visitor to contemplate the memorial landscape on its own terms. Through a series of interpretive media and devices in the Visitor Center, park visitors will learn about the Wright brothers contributions to aviation and the effects those accomplishments had on humankind. Then, armed with this information, visitors can venture onto the memorial's landscape and visit the areas where the Wrights conducted their glider experiments, where the first flights ascended, and where the Nation built a lofty monument and memorial landscape in their honor.

The NPS will prepare for the events culminating with the centennial of flight on December 17, 1903. In order to meet the demands associated with this international event and to accommodate the needs of resource protection and visitor services of the 21st Century, the NPS will embark on an ambitious program which will, to a large extent, depend upon the assistance of the First Flight Centennial Foundation created by the State of North Carolina. Legislation may also be introduced into the U.S. Congress for the creation of a national commission.



A summary comparison of how the plan addresses the issues is shown in Table 1. Table 2 shows the costs for implementing the plan. (see pages 19-23)

III

The Plan...continued

As the Wright brothers represented the forefront of technological progress at the turn of the 20th Century, so too will the NPS employ "state-of-the-art" advances to address, in part, fee collection, interpretation, and visitor circulation issues. Because the prospect of adding personnel to the memorial's staff will be slim, efforts will go forward to provide alternatives to labor-intensive services. The NPS will augment its Volunteer-in-the-Park program to supplement personal services to the public.

Entrance and Parking

- *Redesigned entrance*
- *Jug handle turn*
- *Deceleration lane*
- *Provide beach parking on 15.69-acre site*
- *Enlarge parking*
- *Designate drop off/pickup area*

Visitors travelling southbound will arrive at the memorial using an enhanced entrance off U.S. 158. To ease visitor entrance into the memorial the NPS will coordinate with the North Carolina Department of Transportation to construct a deceleration lane along southbound U.S. 158. Signs and warnings will caution visitors to slow down and use the 1,500 to 1,800-foot lane to prepare to enter the memorial. The length of the lane will allow adequate room for many vehicles to decelerate and wait (or stack) to enter the memorial. Construction of the deceleration lane will necessitate the relocation of utilities, the ditch line, and culverts.

Travelers, northbound on U.S. 158, will enter the park through a "jug handle" turn (see Figure 1). Vehicles will exit onto the 15.69-acre property on the east side of U.S. 158 and turn back toward the park's entrance. Construction of the jug handle will entail the

elimination of Prospect Avenue (the road which cuts through the 15.69-acre tract from North Carolina Route 12 to U.S. 158). The NPS will seek the cooperation of the town of Kill Devil Hills and the residents and businesses in the area to effect the closing of Prospect Avenue. An enhanced traffic signal device will control vehicle movement into the park from the east of the U.S. 158 location. To ensure that vehicles use the jug handle properly, directional signs and warnings will alert drivers approaching the intersection. Signs will indicate that direct left hand turns will be prohibited. In addition, a median will be placed in the turn (middle) lane of U.S. 158 or the turn lane will be eliminated in order to discourage direct left hand turns.

In cooperation with the town of Kill Devil Hills, the NPS will permit beach parking on the east side of the 15.69-acre tract. Access to this parking area will come from North Carolina Route 12 only. A memorandum of understanding between the town and the NPS will outline the responsibilities of each party.

After entering the park and passing through the fee collection plaza, vehicles will park in one of the 225 slots in the parking area at the new visitor/administrative facility. Approximately ten per cent of the spaces will be dedicated to oversized vehicles and busses. To improve traffic flow during extreme weather conditions and because of the increased numbers of senior visitors, the parking area will feature a designated drop off and pick up area. The parking area will be located between the Visitor Center and U.S. 158; a vegetative barrier will be maintained to screen the parking area and Visitor Center from U.S. 158. Vehicles will exit the park onto U.S. 158; a dedicated right turn lane will facilitate traffic flow and reduce congestion. A portion of the memorial's

The Plan...continued

road system linking the existing entrance with the road around Kill Devil Hill will be removed and the area grubbed and revegetated.

Fee Collection

- *Fee collection plaza*
- *Automated and cash transactions*

The NPS will work closely with the local community and organizations to publicize the fee system at the memorial. Visitors will be made aware of the collection system prior to entering the park. Nevertheless, strategically placed signs will remind visitors of the fee collection system.

The southbound deceleration (or stacking) lane will permit the NPS to collect fees as vehicles enter the memorial instead of collecting the fee while exiting. Northbound vehicles will use the jug handle turn and stack accordingly. Traffic signals will be calibrated and sufficient stacking space allotted to prevent congestion between northbound and southbound entering vehicles. A fee collection plaza (3 lanes) consisting of 3 booths will hasten visitor entrance into the memorial and will accommodate all sizes and types of vehicles. A vegetative barrier will screen the fee collection plaza from the Visitor Center and the rest of the park.

The NPS, by instituting an automated fee collection system that uses bank/credit cards, might eliminate the need to use currency to enter the park. Some booths may collect automated transactions, while other booths will accommodate memorial visitors requiring a cash transaction.

Visitor Use

- *New visitor /administrative facility*
- *5,000 square feet administrative space*
- *12,000 to 15,000 square feet for visitors*
- *Multiple interpretive venues*
- *Wright flyer*
- *Wright glider*
- *Quarters/hangar exhibit*
- *Feature film*
- *Ranger talk auditorium*
- *High tech exhibits*
- *Video link with Dayton Aviation Heritage NHP*

To accommodate the demands generated by the centennial of flight and of the 21st Century, the NPS in cooperation with the North Carolina First Flight Centennial Foundation will construct a new visitor/administrative facility. The facility will be



III

The Plan...continued

As Wilbur and Orville Wright successfully explored the limits of technology in the early 20th Century, the NPS, in one area of the Visitor Center, will seek to employ high tech methods to relate the Wright brothers story. Monitors, computers, and other types of interactive or audiovisual media will draw various age groups to this area.



designed to provide information and inspiration about the achievements of the Wright brothers. Various media will be employed to convey the story of Wilbur and Orville Wright. The Visitor Center will serve as the backdrop to encourage visitors to learn more about the achievements of the Wright brothers, to ascend the hill where Wilbur and Orville conducted many glider experiments, visit the memorial pylon, and to venture out to the area where man first successfully lifted into the sky.

The existing Visitor Center and parking area will be removed, the area grubbed and revegetated. The removal of the existing Visitor Center and the construction of a new facility will also necessitate an examination of the park's drainage system.

To take advantage of the resources, the NPS will locate this facility at a point approximately equidistant from the First Flight area and the memorial pylon. The NPS will concentrate its interpretive efforts within the Visitor Center, leaving visitors with only modest and subtle reminders of the Wright brothers' story on the landscape itself.

Visitors will be able to contemplate the site where man ascended skyward in the first successful heavier-than-air, controlled, powered flight. They may visit the hill where the brothers conducted many glider experiments and the granite memorial pylon erected in honor of the brothers.

The visitor area of the facility will consist of 12,000 to 15,000 square feet. Interpretive zones will include an audiovisual area featuring a 20 to 22-minute state-of-the-art production to inspire visitors and a series of 8 to 10-minute specialized features; a First Flight auditorium that will house the replica Wright Flyer and serve as the venue for the ranger talk; exhibit areas to house exhibits about the Wright brothers work and accomplishments; exhibit areas employing the latest in high technology interactive media catering to group activities; a glider room featuring

one or more Wright gliders; an information and orientation area; a sales area; and rest rooms.

The NPS will devote a segment of the exhibit area to a restored section of the quarters which the brothers occupied during 1902 and 1903. Here, in a comfortable environment, visitors will learn how the Wright brothers lived, toiled, and argued over the principles of flight. Visitors will gain an understanding of the living and working conditions on the Outer Banks in the fall and early winter of 1903. As a result of providing this information in the Visitor Center, the NPS will remove the replica exhibits located in the First Flight area.

Transition areas will define the visitors' introduction to and exit from the Visitor Center. From the parking area to the door of the Visitor Center, visitors will encounter symbols of flight, identified by historical milestones and images. Once in the Visitor Center, images of the Wright brothers will accompany visitors to the core of the building. Visitors emerging from the second transition area will encounter an orientation area. Here, NPS personnel and Volunteers-in-the-Park will provide information to visitors; monitors, touch screens, and printed material will inform visitors about the amenities and events at the park.

Following their journey through the facility, visitors could stop at the third transition area, a trailhead, located inside or outdoors. Here visitors will decide where to go next: to the First Flight site, to the memorial pylon, to the sales area, return to an exhibit, or perhaps depart the site. Information in this area will help visitors make an informed decision.

The concept of a reservation system to see interpretive programs should be explored in the future; such a system may be accomplished in partnership with the Dare County Tourist Bureau or the Chamber of Commerce. It should only be

The Plan...continued

considered when visitation levels reach excessively crowded conditions.

The audiovisual area will feature a film (perhaps a mini-IMAX) of approximately 20 to 22 minutes in length to complement the ranger talk in the First Flight auditorium. Specialized features (8 to 10 minutes in length) on various aspects of the Wright brothers story will also be available in this area. This space will accommodate approximately 200 visitors.

Continuing a long-established tradition, the First Flight auditorium talk will feature the inspirational story of triumph and achievement of the Wright brothers with the replica Wright flyer as the backdrop. To promote maximum contact and comprehension at this presentation, the audience will be limited to 200 visitors. Consideration will be given to shortening the talk to approximately 20 minutes.

As Wilbur and Orville Wright successfully explored the limits of technology in the early 20th Century, the NPS, in one area of the Visitor Center, will employ high tech methods to relate the Wright brothers story. Monitors, computers, and other types of interactive or audiovisual media will draw various age groups to this area. In order to avoid having an individual monopolize the various stations and exhibits, the NPS will design most stations to accommodate group activities. The NPS will solicit the expertise of software and hardware manufacturers to assist in the development and support of the technology for these exhibits.

The NPS will complement its high tech exhibits with areas devoted to artifacts, story boards, panels, dioramas, or photographs. These exhibits will explain the saga of the Wright brothers achievements and be designed to inform visitors representing many age and interest levels.

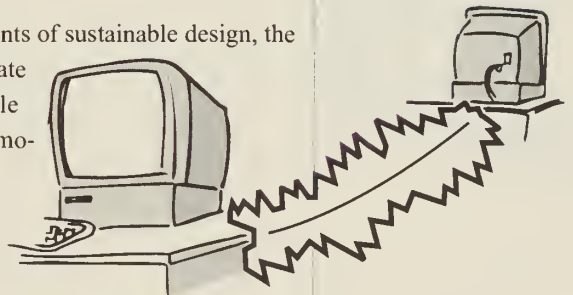
The messages conveyed at Wright Brothers National

Memorial culminate with the events of December 17, 1903, and the effects of the Wrights' achievements on humankind. The park can relate only a portion of this inspirational story. Another national park system unit in Ohio, the Dayton Aviation Heritage National Historical Park, complements and broadens the story of the Wright brothers. To enhance the interpretive programs at both sites, the NPS may establish a video link between the parks in Kill Devil Hills and Dayton. The parks will cooperate with the local school districts to develop programs and educational materials to supplement the on-site and video visits. Special programs, such as First Flight auditorium talks or commemorative celebrations, will be linked to Dayton. Similar types of special events or Wright-related educational programs will be broadcast to Kill Devil Hills. Educational programs could be linked directly to the two sites or to schools in North Carolina and Ohio.

The Eastern National Park and Monument Association sales outlet will be located in an area near the facility's exit. This layout will lessen crowding in the orientation area and promote a smooth flow of visitor movement through the facility.

By incorporating elements of sustainable design, the facility will accommodate changes in use. Movable interior walls to accommodate space for large numbers of visitors for commemorative events or special exhibitions, flexible mechanical systems (for example, the ability to easily move HVAC ducts and electrical conduits), alternative energy sources, and the flexibility to expand without compromising the integrity of the building will all be incorporated. Rest rooms will be located on the exterior of the

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III

The Plan...continued

Visitors will follow stabilized paths from the Visitor Center to the commemorative area where they will contemplate the Wright brothers experiences leading to the seminal flights in December 1903. ...The stabilized surface of the trails (with the exception of the hill trails which present special problems) will allow strollers, carriages, and wheelchairs to maneuver easily.

building and incorporate sensible design ratios for male and female visitors. Rest rooms will be designed to be cleaned, or a portion closed, without disrupting the entire operation.

Because the Visitor Center will serve the interpretive and informational needs of the visitor, interpretive planning documents must guide the design of the facility. Media planners must work hand in hand with the architects to ensure that visitors enjoy a safe and enriching experience. This experience will link the Visitor Center with the memorial's landscape.

This facility will also lodge the administrative functions of the NPS which comprise nearly one quarter of the total area (approximately 5,000 square feet). The space will be devoted to a number of functions including staff offices, a staff rest room, a staff break room, training and conference area, a storage area large enough to store chairs used for commemorative events, an Eastern National Park and Monument Association office and storage area, and space for the mechanical systems.

In addition, the administrative area will house a First Flight Plaza for use by the First Flight Society. The area will lodge an office, shared conference area, and a space to function as a library, reference room, and display area available to the public. Scholars and students may conduct research on the Wright brothers and may find this area particularly enriching. Portraits depicting recipients of the society's annual award will be displayed here.

Visitor Circulation

- *Stabilized trails*
- *Wayside exhibits*
- *Commemorative boulders define First Flight path*
- *Ascend Kill Devil Hill*

Although visitors will gain insight into the Wright brothers achievements at the Visitor Center, the NPS will encourage visitors to explore on foot the grounds which beheld the first flight. True, much of the area has been manipulated in order to stabilize the landscape, but it is key to the visitors' experience to walk the route of the first powered controlled flights or scale the hill, the site of numerous glider ascents. This message will be introduced through brochures, films, videos, and exhibits and reinforced through personal communication during the First Flight auditorium talk and by park personnel. Only subtle markers on the landscape will reveal the stories of the Wright brothers.

Visitors will follow stabilized paths from the Visitor Center to the commemorative area where they will contemplate the Wright brothers experiences leading to the seminal flights in December 1903. The commemorative area consists of the First Flight area, the path leading to Kill Devil Hill, the hill itself, the circular road, the paths winding about the hill, and the memorial pylon. The stabilized surface of the trails (with the exception of the hill trails which present special problems) will allow strollers, carriages, and wheelchairs to maneuver easily. Culverts will replace sections of the drainage ditch to the east side of the memorial pylon to allow the NPS to construct connector trails from the Visitor Center to the commemorative area.

Visitors will arrive at the First Flight area. Here, they will see the outline of the 1902/1903-quarters and the 1903-hangar where the Wright brothers lived, toiled, and argued over the principles of flight. Visitors will also visit the site where the remarkable scene of the first, heavier-than-air, controlled, powered flight was photographed. The NPS will prepare a Wayside Exhibit Plan to direct the installation of these exhibits and other key areas in the park.

The Plan...continued

Starting at the commemorative boulder visitors will venture along another stabilized trail that follows the path of the first four flights of December 17, 1903, the extent of each flight signified by a marker. The NPS will consider replacing the present markers with those that are less conspicuous on the landscape. The Wayside Exhibit Plan will address this issue more specifically. A 60-foot long steel monorail, a replica of the starting rail which stabilized the flyer during take off, parallels this path. Referred to as the "Junction Railroad" by the Wright brothers, the original rail consisted of four 15-foot two-by-fours.

Turning toward the southwest, visitors will begin their journey along a stabilized trail from the First Flight area to the base of Kill Devil Hill. This path follows a wide road which was part of the memorial's design in the late 1920s and early 1930s. From the base of the hill, visitors may ascend to the memorial pylon perched approximately 90 vertical feet above the hill's base. A series of historic paths wind up the hill, gradually reaching the base of the memorial pylon. To accommodate visitors who arrive at Kill Devil Hill without stopping at the First Flight Area, the NPS will construct two additional trails. One trail will follow the road to the northern base of the hill; the other trail will begin at the eastern parking area and connect with the hill's trail system. This linkage will mirror the trail connector on the opposite side of the hill and complete the symmetrical design.

From the top of Kill Devil Hill visitors will gain a perspective of the surrounding landscape while contemplating the achievements of Wilbur and Orville Wright. Following their descent from the hill, visitors will follow another path to the Visitor Center, to the first flight site, or perhaps to the west and take in an airplane ride at the First Flight Airstrip.

Returning to the Visitor Center visitors will be presented with a variety of choices including:

1) completing their visit and leaving; 2) reentering the facility and obtaining or purchasing additional information; or 3) driving their vehicles around Kill Devil Hill—and stopping at one of the parking areas along the road or taking a ride in the concessionaire-operated airplane—and exiting the park.

To preserve the sanctity of the commemorative design and the memorial landscape and to encourage visitors to become pedestrians on the landscape rather than drivers or passengers in a vehicle, the NPS will restrict access to the full circular drive. During the peak use season, the NPS will close to vehicular traffic the northern portion of the circular road between the parking areas. The NPS will install gates or removable bollards to close that portion of the road. At its discretion the NPS will open the road during such times as periods of nonpeak use, inclement weather, or during commemorative events. A screened cul-de-sac located near the First Flight concessionaire will permit buses and vehicles to turn around. Traffic will be two way at this time.

Returning to the Visitor Center visitors will be presented with a variety of choices including:

1) completing their visit and leaving; 2) reentering the facility and obtaining or purchasing additional information; or 3) driving their vehicles around Kill Devil Hill - and stopping at one of the parking areas along the road



III

The Plan...continued

Memorial Pylon

- *Restore to past grandeur*
- *Visitor access to bottom floor*
- *Reilluminate beacon*

Visitors will be encouraged to climb Kill Devil Hill to the base of the memorial pylon, however access to the structure will be limited to the ground floor when staff is available. The NPS will install gates across the stairways to prohibit visitor access up the stairs.

Material deterioration and mechanical problems have beset the memorial pylon since it was built in 1932. Water has seeped through the structure and the electrical system is outmoded. A Historic Structure Assessment Report prepared by the NPS had identified specific problems and preservation actions. To restore the memorial pylon to its stature of a bygone era, the beacon atop the structure will be reilluminated.

Vegetation Management

- *Enhance visitor views*
- *Screen modern intrusions*
- *Reduce maintenance*

In particular instances the visitor experience will be enhanced through the selective removal or addition of vegetation. By planting, thinning, or removing vegetation, the NPS will direct and enhance views within and outside the memorial.

Visitors looking toward and beyond the First Flight area notice single-engine aircraft taking-off and landing on a regular basis. Because the vegetative line separating the memorial's open area from the First Flight Airstrip is so thick, visitors seldom see the aircraft taxiing down the airstrip. Thinning or removing some of this vegetation adjacent to the airstrip (Figure 1) will enable visitors to observe the small aircraft, thus, perhaps, broadening their interest and understanding of the story of flight. After experiencing the First Flight auditorium talk and observing the exhibits, visitors will have a clear view of these aircraft soaring into or descending from the sky. Nonetheless, a balance between visual access in the historic scene and noise buffer must be achieved.

Another type of visitor experience will be enhanced by selective removal of vegetation. The illuminated memorial pylon serves as a striking monument to the Wright brothers, especially during nighttime hours. Vehicles travelling north and south along U.S. 158, in most instances, gain a clear view of the memorial pylon. However, some vegetation has grown so high on park property along the highway to obscure this view. The NPS will selectively thin or trim this vegetation and work with other property owners along U.S. 158 to ensure that this view will be maintained.



The Plan...continued

On the other hand, some selective planting of vegetative screens along park boundaries will help seal visitors within the confines of the memorial and reduce the impact of adjacent development on the visitor's experience. This situation is apparent at the park's entrance. Although adjacent land uses cannot entirely be screened from visitors, the addition of vegetation at this location will help soften distracting sights and sounds and focus visitors attention on the Wright brothers story. Maintaining the vegetation along U.S. 158 in the area of the Visitor Center will also shelter visitors from the noise and traffic generated by the busy thoroughfare.

Vegetation management guidelines will also be based on reducing staff hours required for mowing, trimming, and maintenance. Specific actions will include prescribed mowing times or seasons and altering perceptions of what the site should look like (for example taller grasses and less understory).

Additional Facility Development Or Removal

- *Expand car and plane parking at First Flight Airstrip*
- *New concession structure at airstrip*
- *Relocate maintenance facilities*
- *Remove 1930s superintendent's house*

Anticipating increases in small plane use of the First Flight Airstrip, the NPS will expand the capacity of the vehicle and plane parking areas serving the airstrip. The plane parking area will expand by a factor of 1.25, while the vehicle parking area will expand 2 to 2.5 times its present size. These actions will entail additional paving and the removal of a small amount of vegetation.

The NPS will replace and relocate the inadequate First Flight concession structure. The new structure will complement the new visitor center, be located

nearby, and provide sanitary facilities and some shelter from the sun and rain. Enhanced signing along the circular road will direct visitors to this location. The vacated site will be cleared, grubbed, and replanted with native vegetation.

Several structures serve or have served as employee housing over the years. The Cape Hatteras Group superintendent occupied a 1930s brick structure located on the south portion of the memorial, off Colington Road, near the maintenance area. In an effort to remove non-visitor related structures from the memorial's landscape and reduce the disruption to the park's natural and cultural resources, the NPS will remove the building, obliterate the surrounding impervious surfaces (roads and walkways), and restore the vacant land with native vegetation.

In similar fashion, the need to provide employee housing at the memorial has waned. The community offers sufficient numbers of adequate housing. Currently, several employees occupy trailers located in a housing compound on the west side of the memorial off Colington Road. The NPS will phase out employee housing, remove the trailers and associated development, and replant the area with native vegetation or consider this site for the location of a new maintenance area. However, what little seasonal and volunteer housing needs might exist will be considered as part of the Cape Hatteras Group's Bodie Island Housing Initiative.

In another effort to remove non-visitor related structures from the memorial's landscape and reduce the disruption to the park's natural and cultural resources, the NPS will relocate its maintenance facility from its current location (off Colington Road and south of Kill Devil Hill). The physical facilities are barely adequate to serve the park and have been constructed in a piecemeal manner. The NPS will also remove the asphalt



III

The Plan...continued

road linking the superintendent's house and the maintenance area with the circular drive and Colington Road. The disturbed area will be grubbed and stabilized with native vegetation. Maintenance vehicles may enter the park from Colington Road via the First Flight Airstrip road.

Three possible locations (Figure 1), all within the park's boundaries but away from primary historic resources and visitor activity, will qualify to accommodate the new maintenance area. Site A currently is the site for employee housing which will be removed. Site B, located across the road from the housing compound, served as the location for a Civilian Conservation Corps camp in the 1930s. Site C, located west of the "emergency clear zone," is another disturbed area. All three sites have been disturbed within the past 50 to 60 years. Selection of a preferred site will take the following criteria into consideration: 1) remote location, away from visitor experience areas; 2) minimal disturbance to prime cultural and natural resources; 3) sufficient area, approximately two acres; 4) safe road entrance; and 5) to minimize costs, take advantage of existing infrastructure.

Costs and Staffing

- \$26,565,400
- *Local and state government responsible for U.S. 158 improvements*
- *Slight increase in staff*

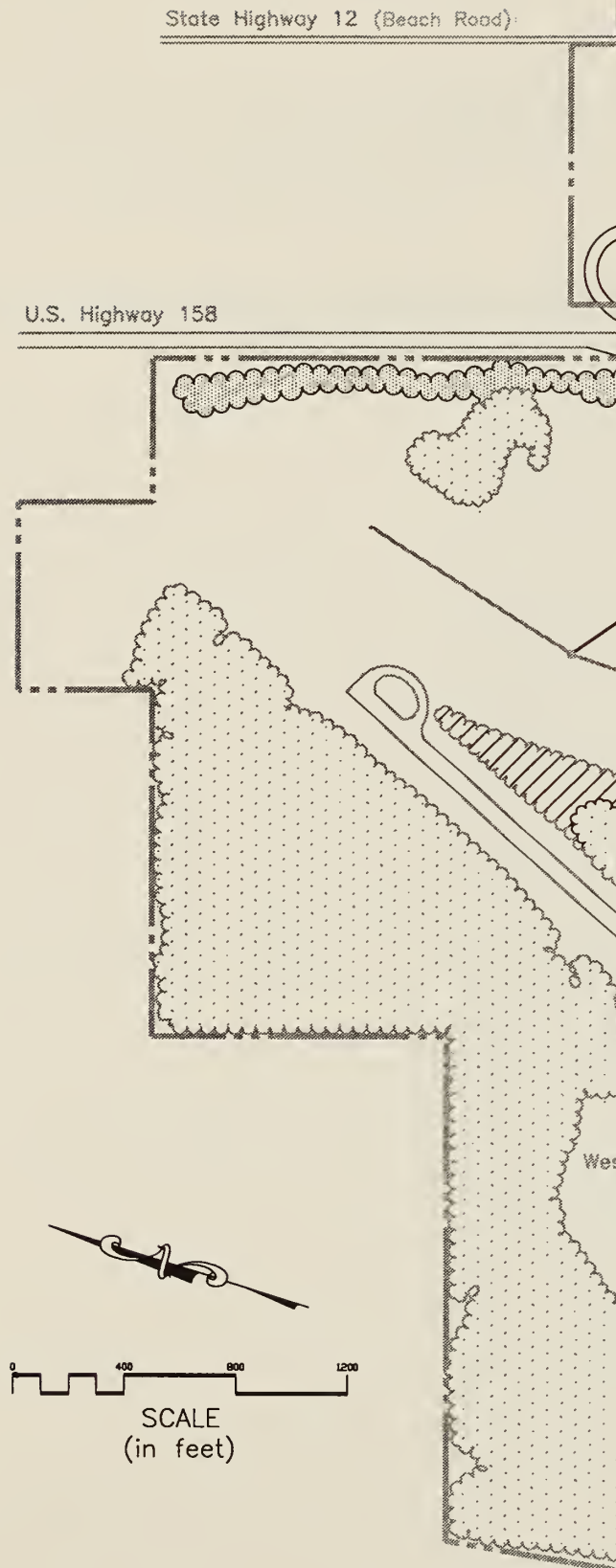
Completing the developments outlined under this plan will cost \$26,565,400. Improvements associated with U.S. 158 including deceleration and acceleration lanes, the jug handle turn, and the enhanced traffic signal system are not included. Local or State agencies will be responsible for these improvements. This plan will require the services of a projectionist and a person skilled to maintain the high tech interpretive equipment. The park will consider adding staff members or contracting for these services.



ational Memorial

Kill Devil Hills North Carolina

**Construct A New
Visitor/Administrative
Facility West Of
U.S. 158 And
Redesign The
U.S. 158 Entrance
To The Park**



Legend

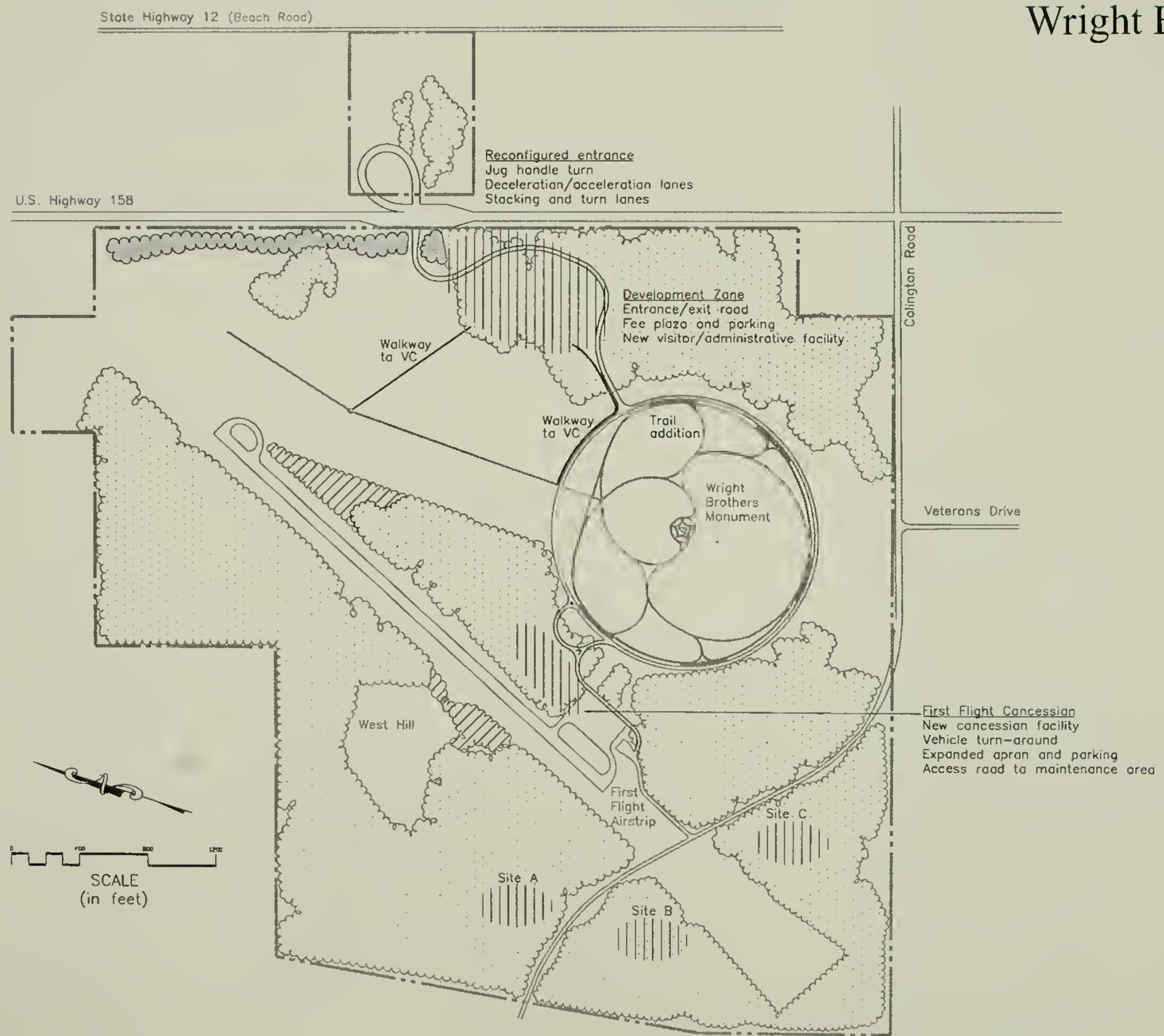
- Property line
- Existing trees/shrubs
- Tree/shrub plantings
- Tree/shrub thinning
- Development areas
- Proposed roads and trails
- Proposed maintenance area

Figure 1.

Wright Brothers National Memorial

Kill Devil Hills North Carolina

**Construct A New
Visitor/Administrative
Facility West Of
U.S. 158 And
Redesign The
U.S. 158 Entrance
To The Park**



Legend

- · · — Property line
- Existing trees/shrubs
- Tree/shrub plantings
- Tree/shrub thinning
- Development areas
- Proposed roads and trails
- Proposed maintenance area

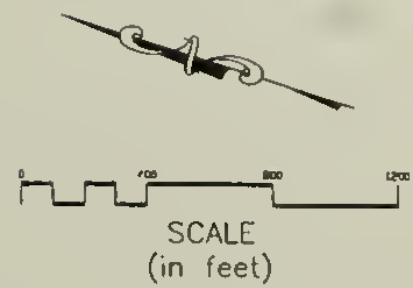


Figure 1.

Table 1

A Summary of how the Wright Brothers National Memorial General Management Plan addresses the issues.

Issues:	The Plan
<i>Prepare for 2003</i>	<ul style="list-style-type: none"> ✓ New visitor center, exhibits, and parking area.
<i>Memorial Pylon</i>	<ul style="list-style-type: none"> ✓ Historic Structure Assessment Report to recommend specific actions (e.g. electrical, masonry, and beacon repair).
<i>Visitor Center Improvements</i>	<ul style="list-style-type: none"> ✓ New visitor center, exhibits, and parking area; ✓ Ensure quality experience; ✓ Protect cultural and natural resources; ✓ Enhance scenic/historic views; ✓ Relocate/improve concession facilities; ✓ Enhance interpretation; ✓ Reservation system; ✓ Relocate maintenance; and ✓ Remove superintendent's house.
<i>Accommodate Park Visitor</i>	<ul style="list-style-type: none"> ✓ New visitor center; ✓ New parking area; ✓ Reservation system; and ✓ Relocate/improve concession facilities.
<i>Visitor Circulation</i>	<ul style="list-style-type: none"> ✓ Designated stabilized trails; ✓ Visitor center design; ✓ Transition areas; ✓ Enhanced information; and ✓ Portion of circular road closed.
<i>Limited Staff</i>	<ul style="list-style-type: none"> ✓ Supplement with automated fee collection; ✓ Sustainable design; ✓ Reservation system; and ✓ Use of Volunteers-in-the-Park.
<i>Fee Collection</i>	<ul style="list-style-type: none"> ✓ Automated bank/credit card of fee plaza as entering park.

please continue

Table 1 - continued

A Summary of how the Wright Brothers National Memorial General Management Plan addresses the issues.

Issues:	The Plan
<i>Visitor Entrance</i>	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Off US 158; <input checked="" type="checkbox"/> Southbound deceleration lane; <input checked="" type="checkbox"/> Northbound jug handle turn; <input checked="" type="checkbox"/> Enhance traffic signal.
<i>Additional Facility Development or Removal</i>	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Relocate maintenance facility; and <input checked="" type="checkbox"/> Remove superintendent's house.
<i>Adjacent Land Use & Vegetation Management</i>	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Soften effect of adjacent land use and reveal internal views.
<i>Accommodate Local Use</i>	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Beach parking
<i>Relationship with Dayton</i>	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Video link for programs; and <input checked="" type="checkbox"/> Educational materials in North Carolina and Ohio.



Table 2

The Plan: Construct a new visitor/administrative facility west of U.S. 158 and redesign the U.S. 158 entrance to the park.

Development Item:	Gross Construction Costs:
New visitor center Site prep and new construction Administrative and visitor center furnishing Flagpole, landscaping, planting, and site work	\$8,058,800
Stabilize memorial pylon**	\$115,300
Interpretive/commemorative circulation Interpretative display planning and production Artifact conservation Waysides, planning, and production Interactive video and projection system Surface stabilized trail (16,250 lf)	\$9,567,250
Fee collection plaza 3 tall booths	\$129,700
Construct new maintenance area on 2-acre site and use existing infrastructure Site prep and new construction Administration building furnishing 10 KW generator with shelter Flammable materials storage building Chain link fence and gate Paved parking and parking lot lighting Directional/informational sign	\$1,209,850
Entrance and parking Main entrance and roadway signs Clear vegetation Entrance road construction Parking area for 225 vehicles	\$897,900
Remove existing visitor center and parking area Building, parking lot and road removal Underground storage tank removal Land reclamation with native plants	\$367,900

please continue

Table 2 - continued

The Plan: Construct a new visitor/administrative facility west of U.S. 158 and redesign the U.S. 158 entrance to the park.

Development Item:	Gross Construction Costs:
Relocate maintenance area to undeveloped 2-acre site (additional costs) Entrance road construction	\$21,850
Relocate First Flight concession Medium cleor/grub Remove building Construct concession and sanitary facility Paved parking Directional/informational sign	\$80,750
Vegetation screens and management Along U.S. 158 Remove/thin vegetation at airstrip/First Flight area Remove/thin vegetation between airstrip and West Hill	\$157,100
Remove park housing Remove mobile homes, concrete pads, and road Land reclamation with native plants	\$21,750
Remove maintenance area Building, pad, and road removal Land reclamation with native plants	\$109,900
Remove superintendent's house Building and road removal Land reclamation with native plants	\$38,750
Rework park's drainage system Install 40"-corrugated pipe	\$475,500
Development Item	Gross Construction Costs
Subtotal Gross Construction Costs	\$21,252,300
Advance and Project Planning Costs	\$5,313,100
The Plan's Total Project Costs	\$26,565,400
* Price based on 1991 Means Facilities Cost Data **To be determined by findings of HSAR Septic design for 3,500 visitors and a peak of 5,000/day	

PS=Personal Services
P=Publications
A/ID-Architectural and Interior Design Elements
M=Museum Exhibits
W=Waysides
A=Audio-Visual
HF=Historic Furnishings

various themes

Resources/Themes:	1st Flight Dec. 17, 1903	ialization	Park Development	Changes in Environment	Orientation
Desk/ Info Area					PS, P, M
Theater AV Area (8-10 Minutes)	A	A			
Theater AV Area (20-22 Minutes)	A	A	A	A	A
Flyer Room	PS, M, A				
Glider Room					
Exhibit Area	M	M		M	
High Tech Exhibit Area	M, A				
Sales Area	P, A	P, A	P, A	P, A	P, A
First Flight Area	PS, W	PS			
Memorial Pylon	W	PS			
1903 Campsite		PS			
Transition Zone (VC Foyer)	M				
Transition Zone (VC To First Flight Area)	PS, W				PS, M, A/ID
Transition Zone (Parking Lot to VC)	A/ID				W, A/ID
Transition Zone (First Flight Area to Pylon Paths)					W
Big Kill Devil Hill					W
First Flight Airstrip					W
West Hill					
Off-Site	PS, A, P	, A, P	PS, A, P	PS, A, P	PS, A, P
Kill Devil Hills Lifesaving Station	W				
Kill Deveil Hills Post Office					
Kitty Hawk Lifesaving Station	W				
Dayton Aviation Heritage NHP	A, P	A, P	A, P	A, P	A, P
Aycock Brown Welcome Center	M, W				

- PS = Personal Services
- P = Publications
- A/ID = Architectural and Interior Design Elements
- M = Museum Exhibits
- W = Waysides
- A = Audio-Visual
- HF = Historic Furnishings

Table 3

Treatment of interpretation of the various themes at resource locations.

Resources/Themes:	1st Flight Dec. 17, 1903	1903 Flyer	Wright Brothers Profile	Significance of First Flight	Outer Banks Environment	Glider Experiments	Comp Life	Dayton Work	1902 Glider (wings control)	Attempts of Others	Wrights after 1903	Aviation/Aerospace Milestones	Memorialization	Park Development	Changes in Environment	Orientation
Desk/ Info Area																PS, P, M
Theater AV Area (8-10 Minutes)	A	A	A	A	A	A	A		A				A			
Theater AV Area (20-22 Minutes)	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Flyer Room	PS, M, A	PS, M, A		P, S												
Glider Room						M, PS, A	PS	PS	M, PS, A							
Exhibit Area	M	M, A	M	M	M	M, A	M, HF, PS	M	M	M	M	M	M		M	
High Tech Exhibit Area	M, A	M, A			M, A			M, A	M, A	M, A		M, A				
Soles Area	P, A	P, A	P, A	P, A	P, A	P, A	P, A	P, A	P, A	P, A	P, A	P, A	P, A	P, A	P, A	P, A
First Flight Area	PS, W												PS			
Memorial Pylon	W					PS, W							PS			
1903 Compsite		PS					PS, W						PS			
Transition Zone (VC Foyer)	M		M	M												
Transition Zone (VC To First Flight Area)	PS, W				PS						A/ID					PS, M, A/ID
Transition Zone (Porking Lot to VC)	A/ID			A/ID												W, A/ID
Transition Zone (First Flight Area to Pylon Paths)					W	W	W	W								W
Big Kill Devil Hill							W									W
First Flight Airstrip																W
West Hill						W		W								
Off-Site	PS, A, P	PS, A, P	PS, A, P	PS, A, P	PS, A, P	PS, A, P	PS, A, P	PS, A, P	PS, A, P	PS, A, P	PS, A, P	PS, A, P	PS, A, P	PS, A, P	PS, A, P	PS, A, P
Kill Devil Hills Lifesaving Station	W	W		W	W											
Kill Deveil Hills Post Office				W												
Kitty Hawk Lifesaving Station	W			W												
Dayton Aviation Heritoge HHP	A, P	A, P		A, P	A, P	A, P	A, P		A, P				A, P	A, P	A, P	A, P
Aycock Brown Welcome Center	M, W			M, W												

