

D-2106

development concept plan  
environmental assessment  
september 1983

**GATEWAY**  
FLOYD BENNETT FIELD



NATIONAL RECREATION AREA / NEW YORK, NEW JERSEY

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DEVELOPMENT CONCEPT PLAN AND ENVIRONMENTAL ASSESSMENT

FLOYD BENNETT FIELD  
GATEWAY NATIONAL RECREATION AREA

New York/New Jersey

U.S. DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE



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## PURPOSE OF AND NEED FOR ACTION

Floyd Bennett Field, on the southern edge of Brooklyn, forms part of the Jamaica Bay Unit of Gateway National Recreation Area. Once an airport and a military base, the field has been dedicated since 1972 to quite different purposes: providing open space, recreational opportunities, and a measure of environmental awareness to the nearby urban population.

A large portion of Floyd Bennett Field is intensively developed with miles of concrete runways, large hangar complexes, and numerous support facilities. Beyond the runway grid, however, there are acres of mixed grasslands and low shrub thickets which provide habitat for migratory and resident birds and small mammals. A fragile salt marsh is accreting along the northern periphery of the peninsula. While not fully open to the public, the field has been made available for special events, and permits have also been granted to groups such as model airplane flyers, gardeners, campers, and bird watchers. The park staff has created innovative interpretive and environmental education programs for organized groups, primarily school children. But development guidance is needed to achieve the field's recreational and educational potential.

The General Management Plan for Gateway, approved in 1979, established the management zones and resource management strategies for Floyd Bennett Field. The plan designated the Flatbush Avenue Hangar Row area as a Gateway Village, where the significant aspects of the airfield's historic character would be preserved while providing facilities, through the adaptive reuse of the structures and new construction, for a major environmental center and other educational, recreational, and cultural programs. The plan also proposed restoration of large portions of the existing landscape to a condition more in harmony with the surrounding natural area.

These ideas remain the guiding concepts for Floyd Bennett Field. The challenge is how to accomplish these concepts when the federal budget for construction, rehabilitation, preservation, and park operations has considerably shrunk over the past few years. Previous planning led to impressions of virtually limitless resources. This Development Concept Plan is not based on that assumption. Instead, this plan proposes to carry out the intent of the GMP through imaginative use of existing resources, programmatic innovations, and new institutional arrangements.

The full implementation of this DCP will require approximately \$22 million in capital funds and \$2.4 million a year in operational funds (1982 dollars). The plan proposes to seek partnerships with the private sector and with other governmental and nongovernmental institutions to provide a stronger financial base on which to develop and operate the park. A significant amount of capital funds and annual operational funds must be generated through this strategy. The goals for the involvement of the private sector and other institutions are threefold:

to identify appropriate sites for private sector involvement and to ensure that only appropriate uses are incorporated into the operations at Gateway

to maximize the involvement of the private sector at those appropriate sites and for those appropriate uses

to generate sufficient revenue through the private sector to offset certain NPS costs, thus allowing the NPS programs to more fully illustrate Gateway's natural, cultural, and historic resources

The success of this DCP will be contingent upon the willingness of both the profit and nonprofit sectors to share in the development and operations of Floyd Bennett Field. The last few years have shown an increased commitment to this endeavor. Improvements and use of the William Fitts Ryan Visitor Center, coupled with programmed uses of the field--which in one case attracted 20,000 visitors to a special event in the Blue Hangar and overall accommodated more than 300,000 visits in 1982--stand as examples of the field's potential use. Such joint ventures have proved that they can succeed here.

Finally, the cooperation and participation of New York City and State will be essential. Because of the sensitive quality of the Floyd Bennett Field historic district, all proposed modifications will be submitted to the NYC Department of City Planning for review prior to implementation. Cooperation will also be needed in the area of transportation. The DCP proposes highway improvements along Flatbush Avenue and the construction of a partial interchange off the Belt Parkway directly onto the field. It also proposes increased public land and water transportation to the field and shuttle service from the field to the Gateway beaches on Breezy Point. With these improvements the field can reach its ultimate use potential with minimal effects on surrounding neighborhoods. Traffic on Flatbush Avenue has been carefully scrutinized in this plan. The congestion that occurs on some summer weekends is a problem that has affected local residents for decades. The National Park Service cannot resolve this problem, but it will work cooperatively with the city and state to ensure that the projected visitor traffic is accommodated without making traffic congestion worse, and the proposed public transportation services will perhaps even improve the existing traffic flow in some instances.

The other areas addressed in the DCP include, in addition to the former air base on Floyd Bennett Field, the nearby shorelands at Dead Horse Bay and Plumb Beach. Bergen Beach is not addressed in this plan; it is assumed that resource management strategies and land use patterns at Bergen Beach will continue as at present without the need for further planning.

Through this plan, the National Park Service will provide local residents and other park visitors with a sorely needed recreational resource, which will add vitality to the community, while remaining a responsible neighbor. Floyd Bennett Field will be developed in a manner which meets the aspirations of the many people who have labored so long to create a truly national environmental center at Gateway.

The National Park Service remains committed to the public's involvement in park planning. As we proceed with the implementation of proposals from this plan, the Park Service will continue to provide all concerned groups and individuals with an opportunity to review the more significant decisions. If critical factors, such as fiscal conditions, significantly change, proposals will be reconsidered.

## PROPOSAL AND ALTERNATIVES

### DEVELOPMENT CONCEPT PLAN

The development concept for Floyd Bennett Field acknowledges that the site as it stands today has a great untapped potential for recreational and educational use. The existing buildings and surrounding natural areas need extensive improvements, but they can be readily adapted to create the multidimensional Gateway Village and environmental center proposed in the park's General Management Plan.

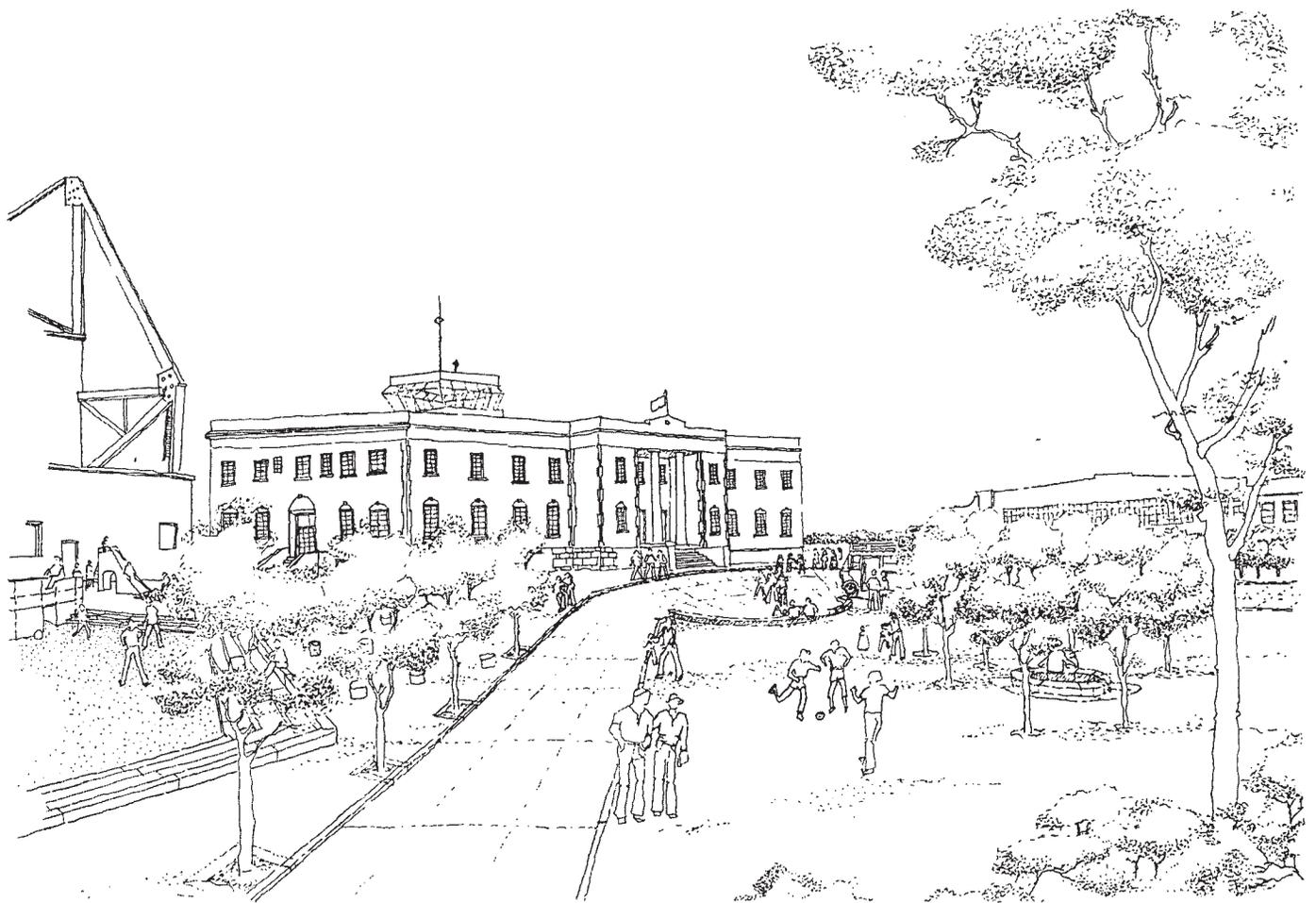
This Development Concept Plan consists of three plan elements, all of which are consistent with one another but could be implemented independently, depending upon Gateway's capital and operating budgets and the involvement of the private sector. The main element (element B) describes improvements needed to support full year-round use of the site's expansive building spaces and extensive shorelands. This element will eventually be achieved. In the meantime, if funding remains limited, the site can be partially developed without extensive rehabilitation of the buildings or other major investments, to successfully accommodate a variety of more seasonal programs and activities. This partial development is described in element A. Element C describes additional access improvements that could be accomplished to stimulate and serve greatly increased visitor use levels. These improvements would create easier, more parklike entrances to the field, but they would not be essential to accommodate the traffic generated by visitors.

The priorities for implementing the individual projects described as part of each element are intended to be flexible, and one element will not have to be completed if funds are forthcoming for projects included in another element. With this approach the development program can be continually directed toward the most effective use of the site's resources given the available funding.

#### Plan Element A

This is a strategy for maximizing the use of Floyd Bennett Field's existing resources for recreation and other visitor services in the short term, even without extensive rehabilitation of structures or other investments.

Natural Area. The heavy debris will be removed from the northern shore of the peninsula, which is now clogged with timbers, corroded steel parts, and other jetsam. A major initial cleanup effort will be followed by frequent maintenance to keep the beach and marsh areas clean, thus eliminating safety hazards and encouraging the restoration of natural environmental conditions. The GMP originally proposed that the bulkheading on the northern end of the field be removed and a new wetland area be established there. It has since been determined, however, that the bulkheading cannot be removed without the risk of creating a serious shoreline erosion problem, so this action is no longer proposed.



VIEW FROM FLATBUSH AVE.

The existing grasslands ecosystem will be retained over significant portions of the site. A nursery of trees, plants, and shrubs will be established near building 272, where the soil conditions are most appropriate. The National Park Service will nurture seedlings and seeds from throughout Gateway at this nursery to maintain a genetic stock of native vegetation for landscaping of specific areas of the field and other Gateway sites. Landscaping will be limited, and emphasis will be placed on using native vegetation to ensure the retention of the natural character of the field. Agencies and private companies with nursery expertise and resources will be encouraged to participate in this project.

Developed Area. The ongoing stabilization work on the structures in the historic district will be completed. Of the five main and six support buildings that date from the historic period, only hangar complex 5 and the administration building have already received stabilization treatment. Work on hangar complexes 3, 4, and 6 will include repairing steel framing systems where necessary, repointing brickwork, replacing corroded lintels, relaying displaced brickwork, reglazing or otherwise covering missing lights in sliding doors, reroofing, and repairing flashing. The support structures (garage, pump houses, and electrical vaults) require brick repointing, roof repairs, removal of corroded steel lintels and reglazing. With the exception of the garage (building 26), all these structures are small.

The park will be made appreciably more inviting for little cost by removing portions or all of the fence along Flatbush Avenue. The removal of this unsightly barrier will greatly improve visitors' views of the field from Flatbush and join the public space along the street to the public space inside the park. The removal will be phased and might initially involve only the removal of some sections of the fence or even moving sections of the fence a few yards back from the roadway. Care will be taken to ensure that random access and vandalism do not result from this action. Landforms, bollards, thick shrubbery, and other features will be installed to control access, and if vandalism still results, resources will be protected by installing lights, increasing night patrols, or other appropriate security measures.

Three of the large hangar complexes and the administration building will be made suitable for use during the summer. The administration building and hangar complex 5 have already been partially stabilized, and hangar complex 4 and the Blue Hangar are still in fair condition. Safety hazards will be removed and stabilization work will be completed. A new location will be found for the New York City Police Helicopter Unit to free up complex 4 for recreational uses. Several sites are being considered for the unit's relocation, including other facilities on Floyd Bennett Field away from Hangar Row and also Flushing Meadow Park.

The administration building has been dedicated as the William Fitts Ryan Visitor Center for Gateway National Recreation Area. A portion of the first floor of this building has been rehabilitated for summer use. In this center visitors will learn about the recreational opportunities available at all the units of Gateway, and also at other national parks, and gain an understanding of Gateway's overall mission and its role in the national



**SUPERVISED GROUP CAMPGROUND**

park system. At the same time, visitors will be oriented to the programs and services available at Hangar Row and elsewhere on Floyd Bennett Field. Exhibits and audiovisual programs here will convey several interpretive themes, including the history of the Native Americans who originally lived here, the Dutch and colonial settlers, the growth of New York City, and pioneer aviation at the field. Visitors will be encouraged to climb to the control tower to enjoy a panoramic view of the runway system and Jamaica Bay beyond. The second floor of the administration building might house the Jamaica Bay/Breezy Point staff and the park interpretive staff.

Extensive use will be made of the hangars during the warmer months. Schools, colleges, and recreational organizations, such as nonprofit summer day camps and folk-dancing groups, could use the hangars under short-term special use permits for activities of benefit or interest to the general public. The National Park Service will conduct a "sports sampler" program in one of the hangars in the summer. The Blue Hangar and the apron in front of it will be available for an expanded schedule of festivals and fairs.

Outdoor recreational programs will occupy portions of the airfield behind Hangar Row. Use of the runways for sports will be expanded, and sports fields will be developed. The community gardening program may be expanded and upgraded by providing such amenities as a clearly demarcated parking area near the gardens, a shade tree arboretum, and picnic tables. A crafts garden of plants for making dyes, herbs, and flowers for pressing, etc., will be planted near building 258, and that building may be rehabilitated for an arts and crafts center extension of Ecology Village. Camping activities will be expanded into the tamarack grove on the east side of the field and improved with a structured environmental program at the Ecology Village. In all, group camping for 400-500 campers daily will be accommodated at specific areas of the field. All field activity areas will be carefully located to minimize disturbing known wildlife habitats. Instruction in sailing will continue to be provided at the existing boat ramp.

Administrative Area. Organizations involved in education or environmental research will be invited to rehabilitate and operate spaces within the former bachelor officers' quarters (building 68) under the terms of cooperative agreements or long-term leases. This massive structure near the Jobs Corps Center can accommodate offices, laboratories, and dormitories. Neighboring universities, agencies such as NOAA or the Department of Energy, and other organizations will be sought to establish a base here for research in the environmental sciences.

Transportation. The main entrance for park visitors and resident staffs will remain at the southern end of the field. Advance signing will be installed along Flatbush Avenue to direct southbound motorists into the left-turn lane, and the signal will be improved to facilitate a safer, smoother flow of traffic into the field. Traffic signals and signs are under the jurisdiction of the New York City Department of Transportation, and the National Park Service will cooperate with that agency in effecting the necessary changes. The former entrance in front

of the administration building will also be opened to park visitors, and the entrances to the Barren Island marina and the golf driving range on the west side of Flatbush Avenue will be upgraded to improve traffic flow. These changes will allow 400-600 vehicles per hour to enter Floyd Bennett Field without adversely affecting traffic flow on Flatbush Avenue. Parking for about 1,500 cars total will be established on the aprons of the usable hangars.

Bus stops will be incorporated into the redesign of these entrances, and pedestrian crossing signals, pavement markings, and signs will be installed as necessary to provide safe at-grade pedestrian and bicycle access across Flatbush Avenue. The bicycle safety course near building 70 will be actively used. Other bicycle routes will be demarcated on the runway grid where appropriate.

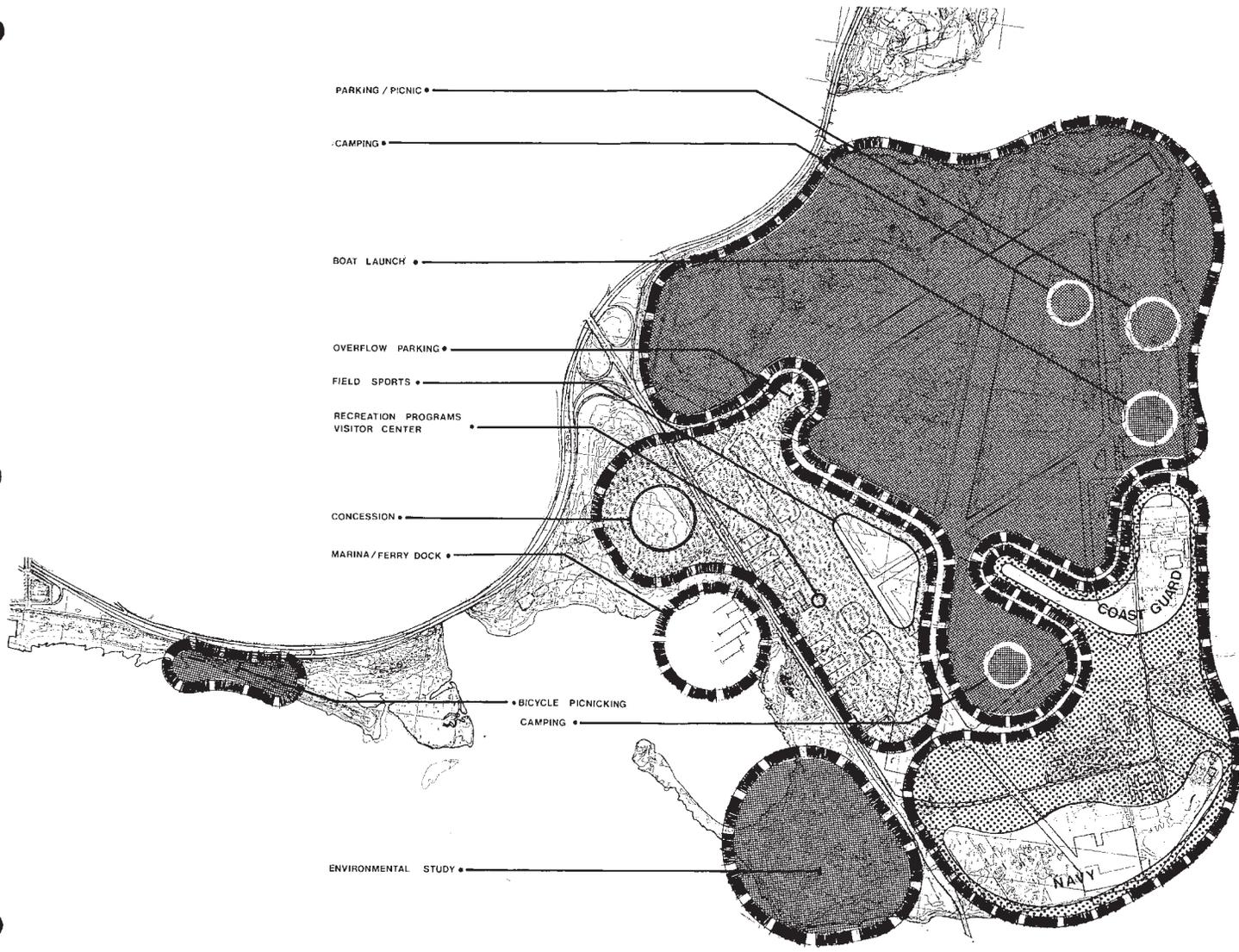
Cost. The actions proposed in this plan element are estimated to cost approximately \$4,180,000 (see appendix 2).

### Plan Element B

This planning strategy and program rationale will achieve optimum utilization of the field's existing resources to support large increases in annual use through the rehabilitation of structures, utilities, and other elements, and minor or inexpensive physical changes. No new major capital infrastructure is involved. Under this plan element, the Gateway Village will be a year-round recreational, educational, and cultural complex realized through a greatly expanded partnership between the National Park Service, private nonprofit organizations, and commercial enterprise. All the hangars will be rehabilitated and adapted to serve new uses; the administration building will be completely renovated; and the smaller support structures in the historic district will be preserved and used. Improved automobile access, ample parking space, and a shuttle bus system will encourage and facilitate the projected large increase in visitor use. Based on preliminary economic feasibility studies, the field will attract 4,000 to 6,000 visitors a day during the summer.

Natural Area. The great majority of the expansive area of Floyd Bennett Field will be left in a natural condition. Some landscaping will occur, but care will be taken to preserve and cultivate those pioneering species that are creating environmental settings on their own. Developing ecosystems will be allowed to blend gradually into the natural environments preserved in Jamaica Bay. This "urban wilderness" will illustrate Gateway's most dramatic theme--the power of nature to reclaim even the most heavily altered landscapes and to transform them into sanctuaries for people and wildlife.

Passive recreational activities will be encouraged in this natural setting: tent camping for supervised groups, evening astronomy lectures and stargazing at a planetarium to be set up in one of the structures along the shore, birdwatching along nature trails, and marine ecology walks on the beach. All trails will be judiciously planned so that bordering plantings will provide both food and habitat for wildlife. Berms, shrubbery, or where absolutely necessary, fencing will be used to control



**THE NATURAL AREA**

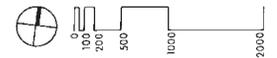
- ENVIRONMENTAL STUDY
- PICNICKING
- NATURE/BIKE TRAIL
- FORESTATION
- GRASSLANDS
- PROTECTED WETLANDS
- CAMPING
- AQUATICS SYSTEM

**THE DEVELOPED AREA**

- THE GATEWAY VILLAGE
- YEAR ROUND PROGRAMS
- VISITOR CENTER
- URBAN GARDENING
- FOOD SERVICE
- MAJOR EXHIBITS
- PARKING
- STRUCTURED RECREATION

**THE ADMINISTRATIVE AREA**

- JOB CORPS
- US NAVY
- US COAST GUARD
- PARK HQ
- US PARK POLICE
- COOPERATING ASSOCIATIONS



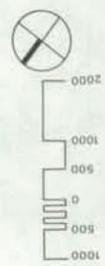
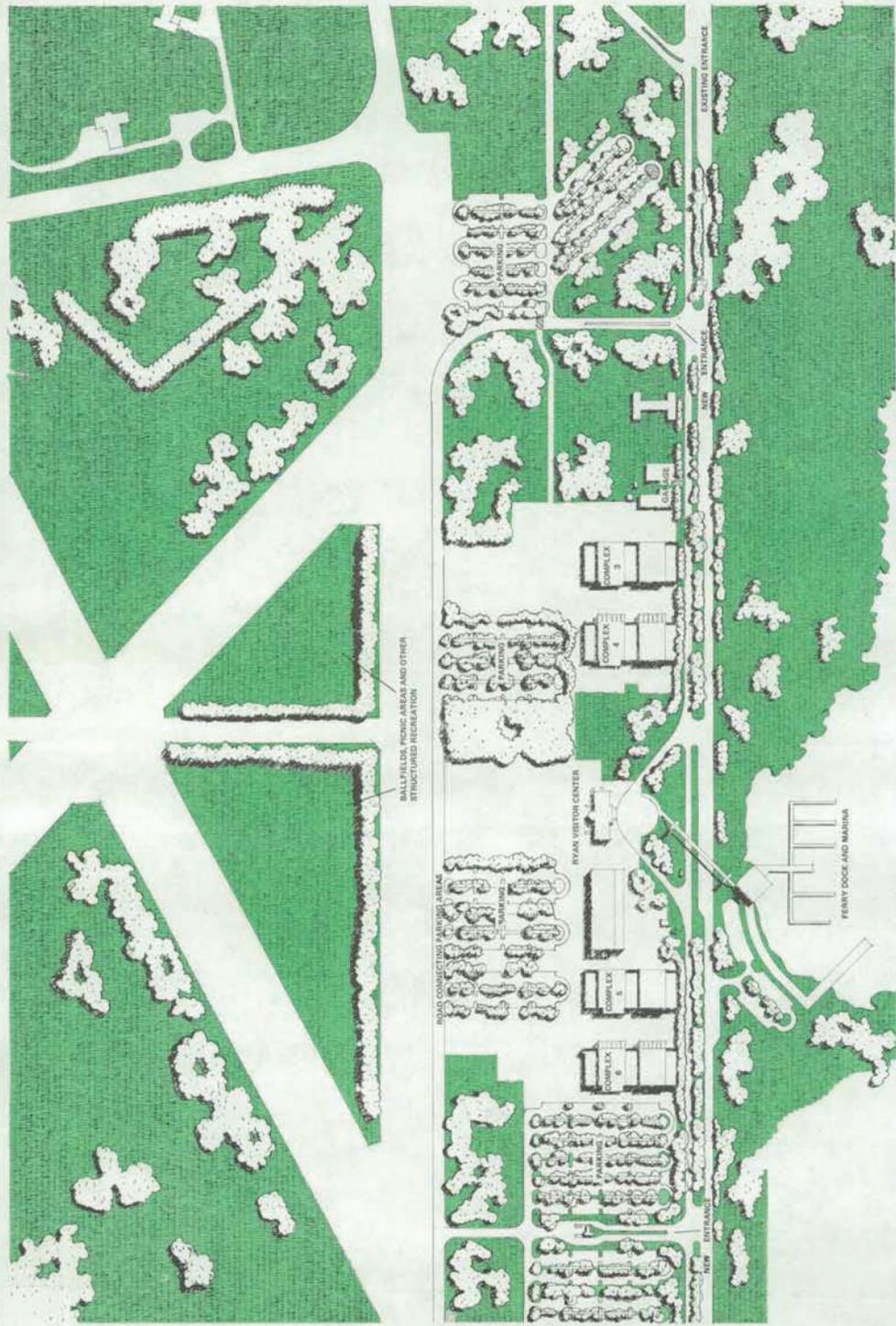
**CONCEPTUAL SCHEME  
FLOYD BENNETT FIELD**

GATEWAY NATIONAL RECREATION AREA  
UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE

646 | 40224  
DSC | MAY 83

**ON MICROFILM**





**HANGAR ROW CONCEPT  
FLOYD BENNETT FIELD**

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NATIONAL PARK SERVICE  
646 | 40221  
DEC | MAY 83

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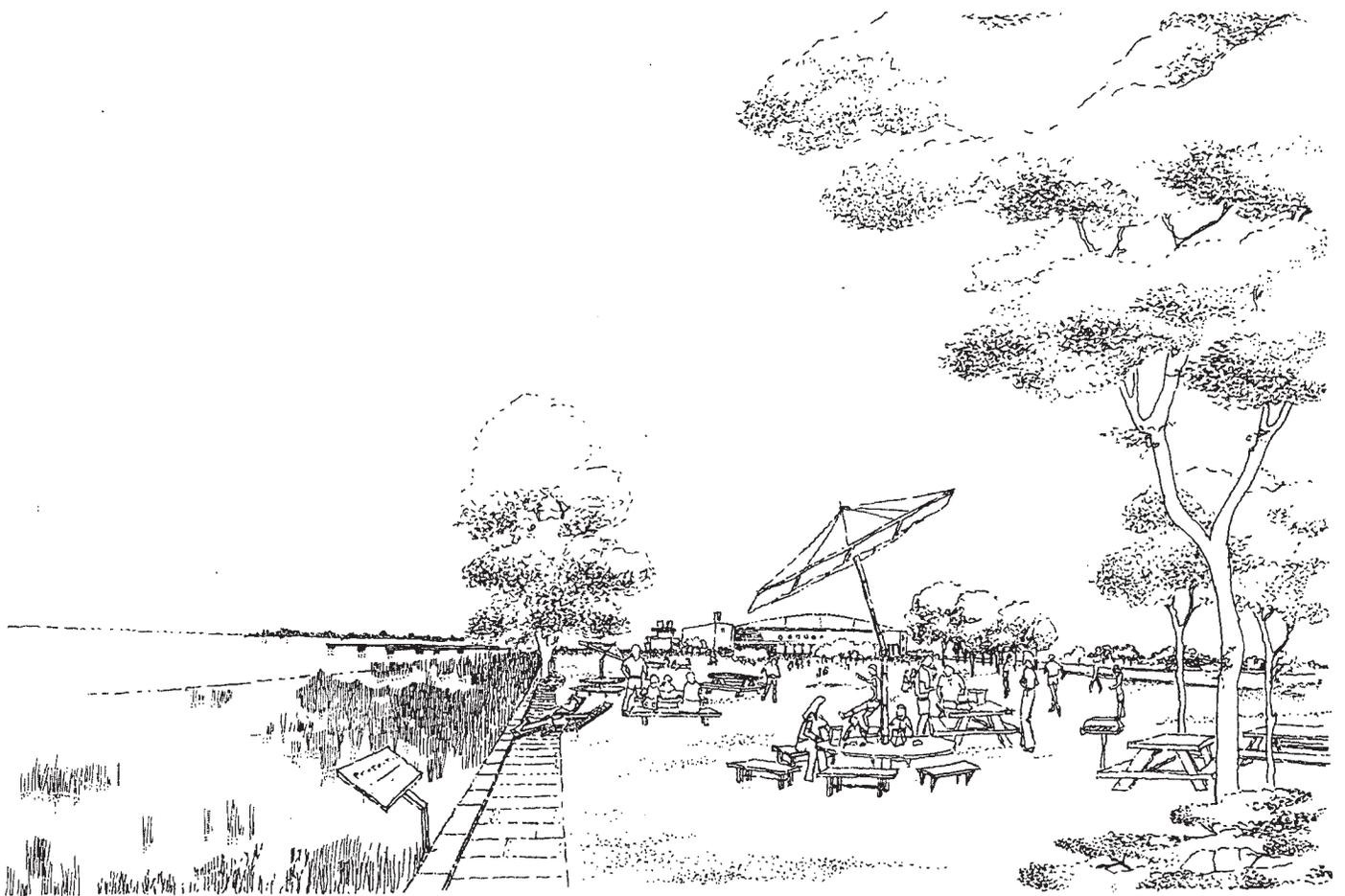


access to this natural area. Currently several species of small mammals and sensitive nonmigrating birds reside at Floyd Bennett Field, and the habitat for these species will be carefully monitored to ensure that it is not degraded. Nesting sites will be protected where possible, and new plantings will be carefully selected to preserve the character of the field. Additional studies will be conducted to determine the feasibility of introducing an aquatics system onto a modest portion of the site.

A boat-launching facility and picnic area will be established at the eastern end of the field. To reach these facilities, a specified number of cars will pass through control points at the parking areas, then travel the runway system to the eastern side of the field. Trees and plantings along the runways will make this a pleasant passageway. The existing seaplane ramp on the eastern edge of the field will be upgraded to serve private boatowners and a sailing program for school children. Only small craft will be launched here. Cars and trailers will be stored on the existing paved area near the ramp. Swimming in Jamaica Bay will not be authorized until health and safety concerns are satisfied. A modest lookout tower may be constructed to allow park visitors to view the field and Jamaica Bay; the tower would greatly enhance interpretive opportunities and provide an identifying marker for visitors on the field. The picnic area will be situated just north of the boat ramps. Shade trees will be planted, and the picnic tables will be placed close to the water's edge, yet clearly separated from a nearby wetland area. Signs and boardwalks will be installed to encourage visitors to keep off the wetland vegetation, and a ranger may be stationed here on peak days to educate visitors about the sensitivity of wetlands. A parking lot for up to 250 cars will be provided, and the number of users will be controlled by the capacity of this parking lot. Access to the runways will be limited by berms.

Numerous problems are associated with the current use of Plum Beach, including traffic congestion, haphazard overflow parking, hazardous swimming conditions, and severe beach erosion. Swimming will continue to be prohibited. In addition, the National Park Service proposes that the city and state consider closing the parking area so that Plum Beach can be managed as a quiet public beach and tidal wetland area accessible by foot or bicycle. The marsh and mudflats would provide an excellent outdoor laboratory for environmental education. A path for pedestrians and bicyclers could be established between the beach and Floyd Bennett Field. Before any action is taken, a joint study will be carried out with appropriate city and state agencies to further analyze the existing problems and establish cooperative management strategies.

The Dead Horse Bay shorelands west of Flatbush Avenue and south of the existing marina will remain in their natural condition. Some trails will be maintained and used for nature walks and interpretive programs devoted to the early industrial history of Barren Island. The old dock pilings, illustrative of that historical period, will remain in place. Swimming is dangerous here and will continue to be prohibited. The marina will be upgraded.



**EAST PICNIC AREA**

As part of the general cleanup and upgrading of the field, derelict structures will be demolished. A list of these structures is included in appendix 5.

The former airfield will assume an interesting and diversified appearance. The two triangular green spaces closest to Hangar Row will be devoted to field sports and passive recreation, such as picnicking. Here as elsewhere throughout the field, great care will be exercised in avoiding the disturbance of nesting sites. In the northern section of the field, the grasslands, low shrub thickets, and beach and marsh communities will be developing. The majority of the northern runway will be allowed to deteriorate gradually. Groves of trees will shade the camping area on the east side of the field and the picnic area on the water's edge.

Community-operated gardens, including a model organic garden and demonstration area, and a tree nursery will occupy some of the southern end of the field. The original T-shaped runway grid will be marked by numerous trees, as will other runway sections used as roadways. The whole spectacle of the field and its surrounding waters will be viewable from the control tower in the visitor center.

Developed Area. The administration building, some of the hangar complexes, and the more substantial outbuildings will be devoted to park-related programs and managed on a not-for-profit basis. The National Park Service will continue to operate the visitor center in the administration building, with the interior spaces and programming further improved. Some of the hangar complexes will be jointly operated by the National Park Service and cooperating nonprofit organizations who are participating in the development of the Gateway Village and the production of events and programs. The final selection and management of these groups will be determined in consultation with the Gateway Advisory Commission and others.

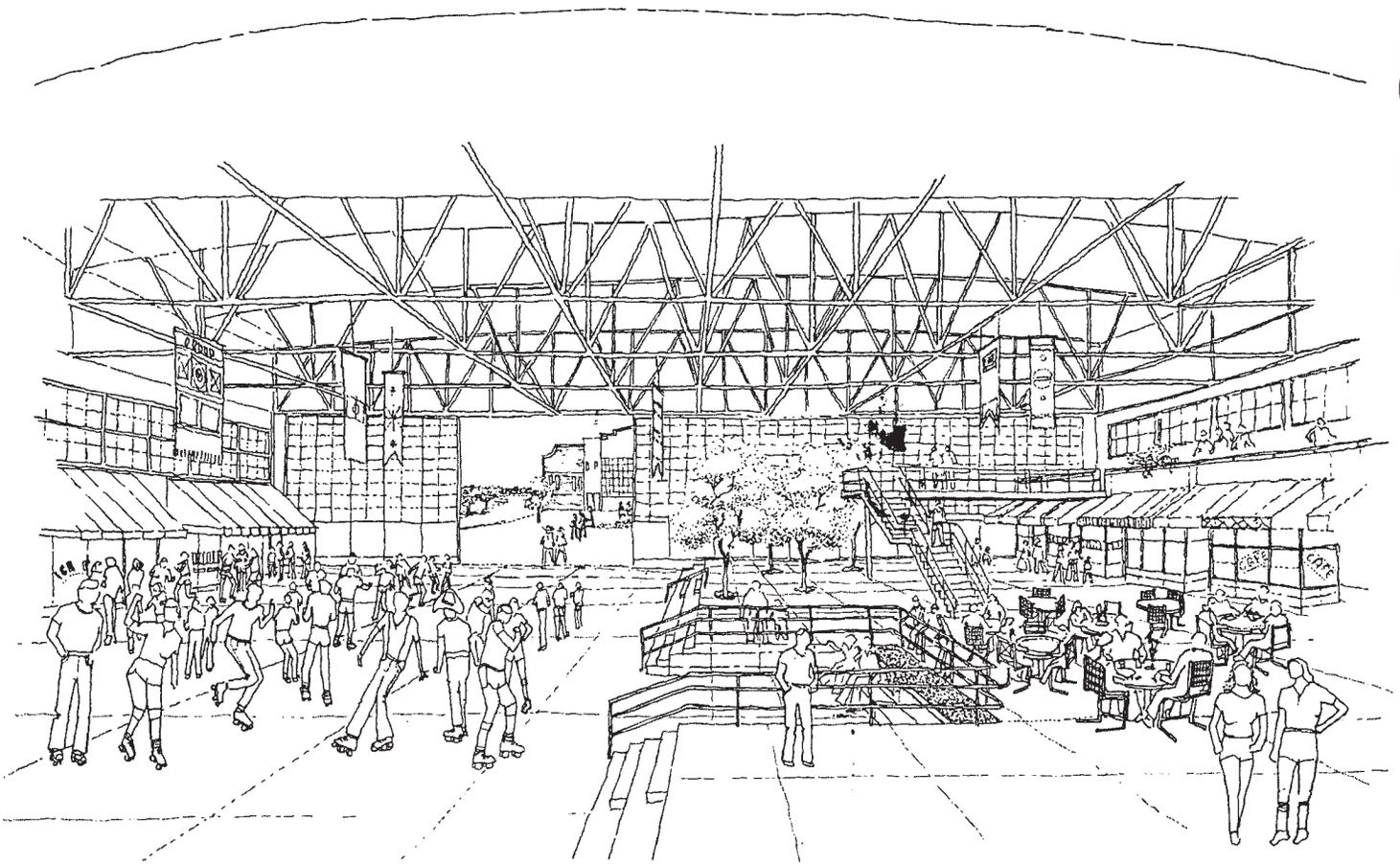
As nonprofit corporations, these organizations will be capable of receiving funds from other foundations and tax-exempt donations from individuals and groups, and it is possible that they will eventually assume the responsibility for the capital improvement of a hangar, subject to negotiations with NPS officials. The primary goals for the Gateway Village organizations are to

program events, displays, conferences, small-scale festivals, educational programs, courses, exhibits, community meetings, commercial recreational activities, and any other uses that are consistent with NPS policies

establish a permanent headquarters for various cooperating organizations

involve a broad base of community groups and special associations (artists, environmentalists, craftspersons, musicians, theatrical groups, etc.) in the realization of the Gateway Village

receive funds from public and private sources for the capital improvement of facilities designated for use by the cooperating organizations and also for other projects such as the Jamaica Bay drainage project to improve the water quality of the bay



RECREATIONAL USE OF HANGAR

Another way of ensuring the preservation, adaptive use, and operation of some of the hangar complexes would be to offer them to the private sector through lease or concession arrangements for commercial recreational enterprises. The major goal of leasing the hangars would be to provide for additional recreational programs while generating enough revenue not only to support the structures' rehabilitation, operation, and maintenance, but also to return some money to the National Park Service to help fund the other preservation work on Hangar Row. A market analysis by the National Park Service indicated that such lease arrangements might be feasible (see appendix 4). However, this could not be confirmed until a formal request for proposals was issued and the proposals themselves were analyzed. The specific allowable uses would be determined as part of the solicitation and selection process; the range might include court games (such as handball, racquetball, and tennis), ice or roller skating, restaurants, bowling, health clubs, craft and ethnic food markets, exhibits, and artists' workshops and galleries, among others. These same services could be provided by nonprofit organizations, in which case capital improvements would be accomplished directly by the nonprofit organization rather than returning funds to the National Park Service.

Specific proposals for the allocation of building and outdoor spaces will evolve out of negotiations with the various groups involved in the development of the village. Consequently only general proposals are made in this plan. One of the hangars reserved for park programs will become an environmental center, where the vision of Gateway as a demonstration of man's awakening to the necessity of living in harmony with the environment will be portrayed through exhibits and programs. The idea of an environmental center has a long association with Gateway. Part of Gateway's mission is to demonstrate the potential for ecological reclamation in an urban environment and to communicate to the urban public an appreciation of and concern for the natural world. These goals will be accomplished through this feature of the Gateway Village. An important theme at the center will be that whatever is extracted from the environment has a cost, not only in terms of environmental quality but also of economics. Programs relating to this theme could include instruction in resource conservation and recycling techniques, from furniture refinishing to home restoration. As an example of how public, private, and commercial efforts could be coordinated, nearby spaces could be allocated for educational exhibits, consultation in energy-saving measures, and the sale of supplies. Classrooms, conference rooms, and audiovisual facilities will be available for environmental programs. The work at the center will also encompass research in the natural sciences.

Another of the park program hangars might be adapted for use as a 300-500 seat theater that will accommodate films, concerts, lecture series, etc. Workshops in the theater arts could be held in conjunction with dramatic performances. The New York theater world is large and diverse, and badly in need of space. Organizations could develop an active theater program at Gateway. A third hangar bay might be devoted to general recreation. Specific uses will be determined in part by the programs proposed by the private sector. Duplication of facilities will be avoided.

Artists' studios and community meeting rooms will be established in the large garage and the smaller structure south of hangar complex 3. The two large undivided bays in the garage lend themselves to the production of sculpture and other large art forms, and artists' organizations have requested use of such space from Gateway in the past. Artists' workshops and activities could spill over into other buildings in the area with somewhat smaller working spaces. Artwork will be exhibited to the public regularly as part of the Gateway Village program.

With Hangar Row transformed into a bustling village of recreational, educational, and cultural activities, visitors will be able to spend a full day playing racquetball or roller-skating, exploring exhibits and demonstrations at the environmental center, enjoying a meal at an ethnic restaurant, learning about the aviation history of Floyd Bennett Field, taking in a dramatic performance, or any other combination of the great variety of things to do. New landscaping, attractive signing, and kiosks will guide visitors from place to place. The access and circulation system, which will include a shuttle bus service, will be designed to encourage visitors to explore the entire village complex.

The common factor in all of the village's activities will be a heightened awareness and appreciation of the importance of the environment. In the pleasant and stimulating surroundings created out of the old municipal airfield, visitors will be encouraged to rediscover their natural and cultural heritage, explore new interests, and take new knowledge and skills home with them to improve the quality of their life. The programs operated at the environmental center will play a major role in realizing this potential for the field. The most exciting programs associated with the center will take visitors directly into the natural area of Jamaica Bay, through such activities as excursions to marshes and islands and trips to an experimental aquafarm raising oysters and other shellfish.

Administrative Area. The administrative area will encompass the Coast Guard, Navy, and NARDET properties; the NPS-owned lands and facilities occupied by the Board of Education and the Job Corps; and the NPS administrative facilities, which will include the Gateway park headquarters, park police headquarters, maintenance, research institutions, and the tree nursery.

The National Park Service is negotiating with the Coast Guard to relocate their operating runway so that a larger section of the field can be opened for active recreational use and the administrative area can be more clearly defined. The National Park Service has offered the taxiway near the Gateway headquarters, but the Coast Guard has responded that this location is unacceptable for safety and security reasons. Cooperative discussions will continue to seek an alternative that is beneficial to both agencies and the public.

Research facilities will include a water quality laboratory with sampling capabilities to aid in gathering data for natural resource management activities. A research vessel might be docked at Floyd Bennett for year-round use in monitoring the marsh islands and water quality in Jamaica Bay and conducting geomorphological research and biological investigations. The vessel could also be used for special teacher



- NATIONAL PARK SERVICE
- NAIDET
- COAST GUARD
- US NAVY

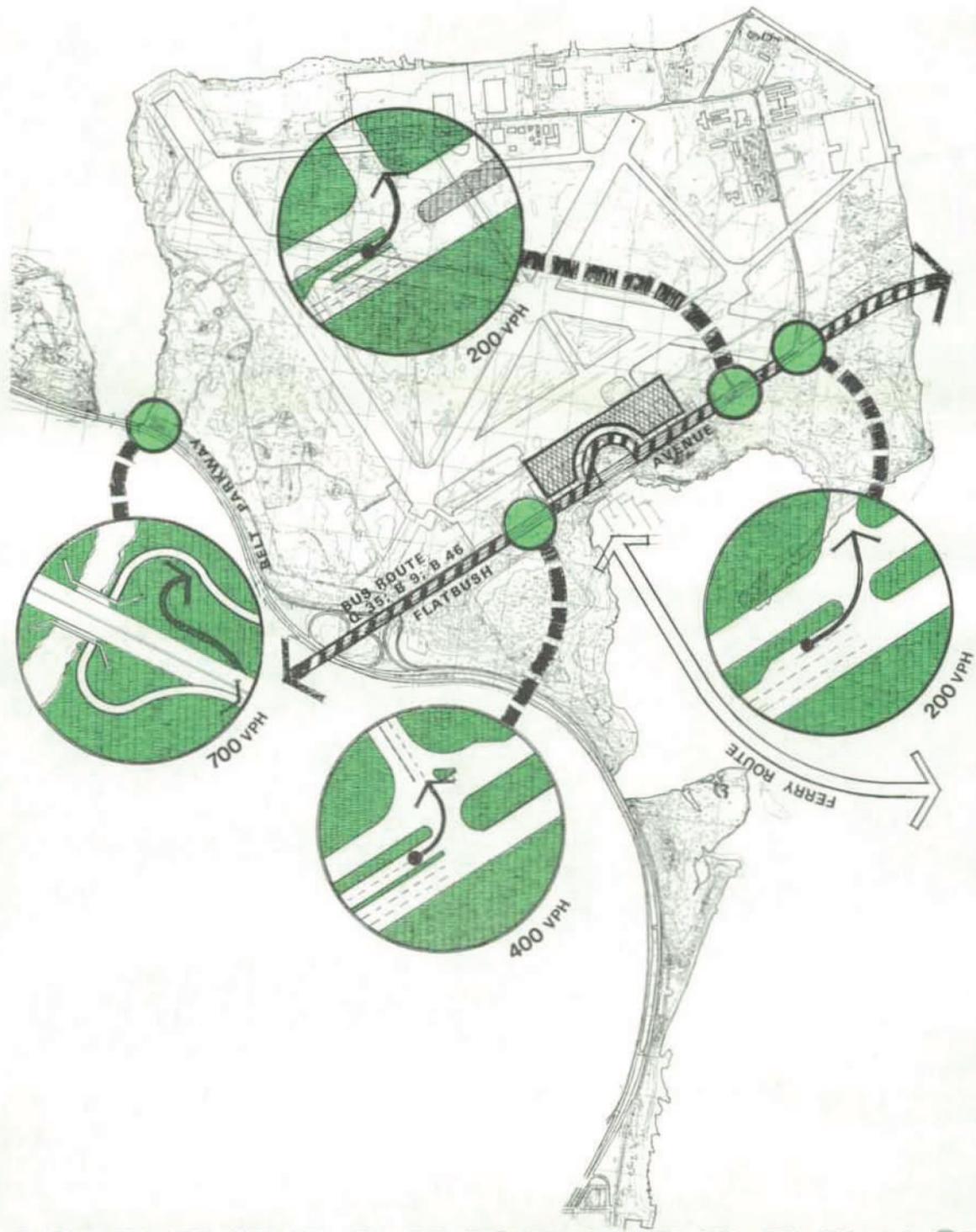


**LANDOWNERSHIP  
FLOYD BENNETT FIELD**

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 NATIONAL PARK SERVICE 646 / 40225  
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**ACCESS PROPOSALS  
FLOYD BENNETT FIELD**  
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workshops in environmental education. College interns will work in the lab and on the research vessel, if one is obtained, to aid in annual environmental monitoring efforts. Specimens unique to the Jamaica Bay or Gateway natural environments, both terrestrial and aquatic, will be displayed at the environmental center in the village.

Transportation. Two new entrances for park visitors will be established north and south of Hangar Row. The existing entrance near the Gil Hodges Memorial Bridge will serve the people working in the administrative area, only. At the new visitor entrances, left-turn lanes will be cut into the median strip of Flatbush Avenue; there will be double turn lanes at the north entrance and a single lane at the south. New traffic signals will be coordinated with the existing signals to provide for smooth traffic flow on Flatbush. Median cuts other than at the three entrances will be closed, and U-turns will be permitted only at the southernmost (service) entrance. The estimated capacity of the two new entrances will be 700-800 vehicles per hour with no significant impacts on traffic flow along Flatbush Avenue. Parking will be provided on the field for up to 2,000 automobiles. Parking in front of the Blue Hangar will be scaled to allow adequate space for programmed activities.

The former entrance in front of the visitor center will be used as a pedestrian crossing and drop-off point for cars and buses. Bicyclists who use the Belt Parkway bicycle path will be directed to cross at the new signal at the north entrance.

Shuttle service will be initiated to serve Jacob Riis Park. This convenience will let visitors park their cars at the Gateway Village, explore the exhibits and services available there, and then shuttle to the beach for recreation and relaxation. Other visitors may drive from the Gateway Village to activity areas elsewhere on Floyd Bennett Field. Automobile access for activities beyond Hangar Row will be regulated with a permit system.

Costs. The actions proposed for this element are estimated to cost \$15,705,000 (see appendix 2).

### Plan Element C

This element calls for new access improvements to stimulate and serve increased visitor use. In order to provide additional entrance capacity, it will be necessary to construct a direct link to the Belt Parkway. Only a partial traffic interchange is needed to serve park visitors--an exit for eastbound traffic and an entrance for westbound. This will adequately serve the majority of park traffic, since most visitors will be coming from and returning to areas north and west of the field in Brooklyn. A two-lane park access road will be constructed along the perimeter of Floyd Bennett Field adjacent to the parkway. One bay beneath the Belt Parkway Bridge over the Mill Basin channel will be used to create a grade-separated crossing for vehicles entering the parkway from this road. A preliminary design study will be conducted to determine the most cost-effective alignment. With this new entrance, as well as the two entrances on Flatbush Avenue, access can be provided for 1,200-1,500

vehicles per hour. Parking will be provided on the field for up to 3,000 automobiles.

The entrance capacity of the field can also be expanded by additional public transportation service. A private ferry service to the Deep Creek area of Dead Horse Bay will be encouraged to meet several objectives: (1) to offer access to residents of inner city areas who are currently unable to get to Gateway by public transit, (2) to decrease the traffic on Flatbush Avenue by offering an alternative means of access to the private car, and (3) to offer users a meaningful recreational experience on the way to the park. The ferry dock at Floyd Bennett will most likely be at Dead Horse Bay, although the U.S. Navy dock is also a possible site. If a new dock is constructed at Dead Horse Bay, no dredging will be needed because adequate water depth exists and shallow draft vessels will be used. The upland portion of the dock will be constructed on already impacted lands. This previously disturbed area could possibly also be the site of a new restaurant, if it appears that this is needed after the development of Hangar Row. A pedestrian overpass with ramps will be constructed to provide a grade-separated street-crossing between the marina and the village, which will serve both ferry users and local bus riders.

Expanded entrance capacity will improve opportunities for using the field as a staging area for public transportation to other park sites. Full daily operation of bus service to Jacob Riis Park will be initiated. A low-clearance vehicle will be considered for passage beneath Flatbush Avenue via the existing low underpass at the base of the Gil Hodges Memorial Bridge. Also, ferry service might eventually be operated between Floyd Bennett Field and Breezy Point as a shuttle for visitors who elect to avoid the traffic at the bridge by leaving their cars at the field.

The actions proposed in this element are estimated to cost \$2,100,000 (see appendix 2). The cost of this element added to element B is \$17,800,000.

#### SUMMARY OF ALTERNATIVES CONSIDERED

In October 1980 three alternatives for the development of Floyd Bennett Field (included here as alternatives 3, 4, and 5) were presented in public meetings and through a special edition of the Gateway Outlook. The publication, which also summarized basic data describing the resources of the site, was mailed to 15,000 people on the Gateway mailing list. The three alternatives, which had been developed by private consultants under contract with the National Park Service, explored innovative approaches to the development of the field around three possible themes: naturalistic, historic artifact, and urban. Many of the comments made in public meetings and received in writing by the National Park Service expressed enthusiasm for the planning concepts but concern about their associated costs and environmental impacts. Simultaneously, the fiscal environment within the federal government changed dramatically, with the result that a more cost-effective alternative was sought. A new preferred alternative (included here as alternative 2) was developed by the National Park Service. This alternative, which was subsequently expanded into

the proposal for the development concept plan, reflected a more modest, cost-effective, and environmentally less disruptive approach to the development of the field. These four alternatives, along with the alternative of no action (included here as alternative 1), are summarized in this section.

#### Alternative 1: No Action

This alternative, which reflects the ongoing management and use of the site, includes only the minimum stabilization and cleanup work needed to prevent the loss or further deterioration of structures and shorelands. Improvements to support increased visitor use are not included, but visitors would benefit indirectly from the safer, cleaner site conditions and better program opportunities.

Stabilization of the structures in the Floyd Bennett Field historic district would be completed. This would involve work on hangar complexes 3, 4, and 6 and outlying buildings 26, 29, 30, 57, 120, and 176. All work would be intended to make the structures weather-tight and to prevent further deterioration. No interior work would be done.

The stabilized structures would be used for special events and ranger-supervised programs emphasizing environmental education. The history of the site would be interpreted through wayside exhibits, markers, informative pamphlets, and tours.

The northern shore of the Floyd Bennett Field peninsula would be cleared of the heavy debris of timbers, corroded steel parts, and other jetsam. A major initial removal effort and frequent maintenance would be required to eliminate safety hazards and encourage the restoration of natural environmental conditions.

All motorists would continue to enter the site through the entrance at the southern end of the field. The signal at this intersection would be improved to facilitate a smoother flow of traffic along the avenue. The entrance capacity of the field would remain at about 300-400 vehicles per hour.

Implementation of this alternative is estimated to cost \$2,250,000.

#### Alternative 2 (Proposal): Resource Improvement and Adaptive Use

This alternative calls for improvement of the existing historic buildings, disturbed open spaces, and natural shorelands to create a variety of usable spaces for recreational, educational, and cultural programs. Private enterprise would join with the National Park Service in the adaptive use of the hangar bays for park programs, recreational activities, and other compatible uses. Some of the historic hangars and support buildings would be rehabilitated to accommodate the Gateway visitor center, an environmental center, artists' studios, game courts, and miscellaneous support facilities. Derelict structures that did not contribute to the historic scene would be removed. The expansive paved

areas would be retained for outdoor program space, parking, and roadways, with landscaping to delimit and screen activity sites and create pleasant passageways.

The surrounding shorelands would be cleaned up and encouraged to return to natural environmental conditions. Modest facilities would be provided to support camping, picnicking, walking, stargazing, and other activities aimed at enjoying the out-of-doors.

Two new entrances to the field would be established along Flatbush Avenue to increase the entrance capacity to about 700-800 vehicles per hour. This capacity could be doubled by constructing a park interchange on the Belt Parkway and expanding public transportation services.

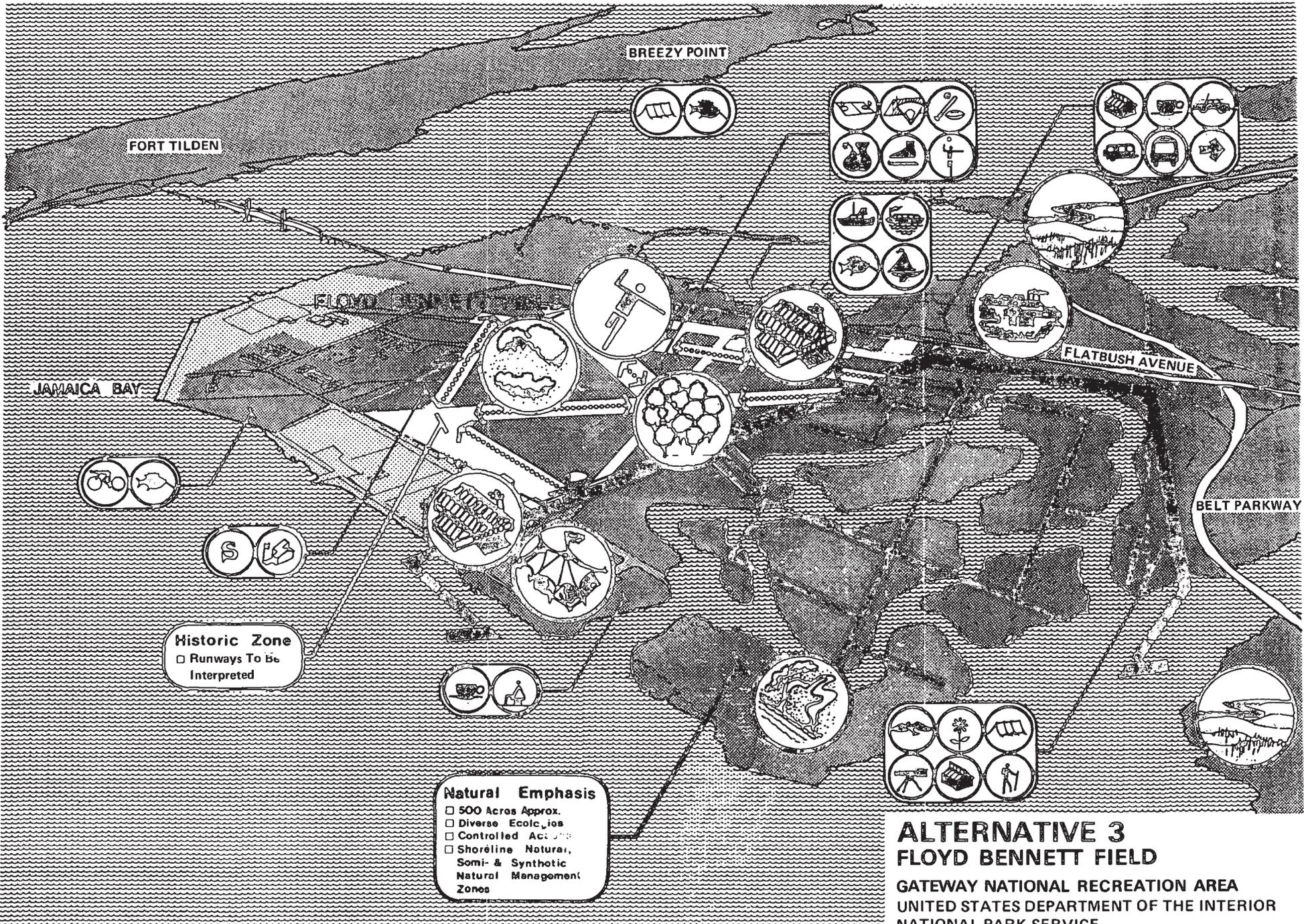
Implementation of this alternative is estimated to cost \$15,205,000-\$17,800,000.

### Alternative 3: Naturalistic Approach

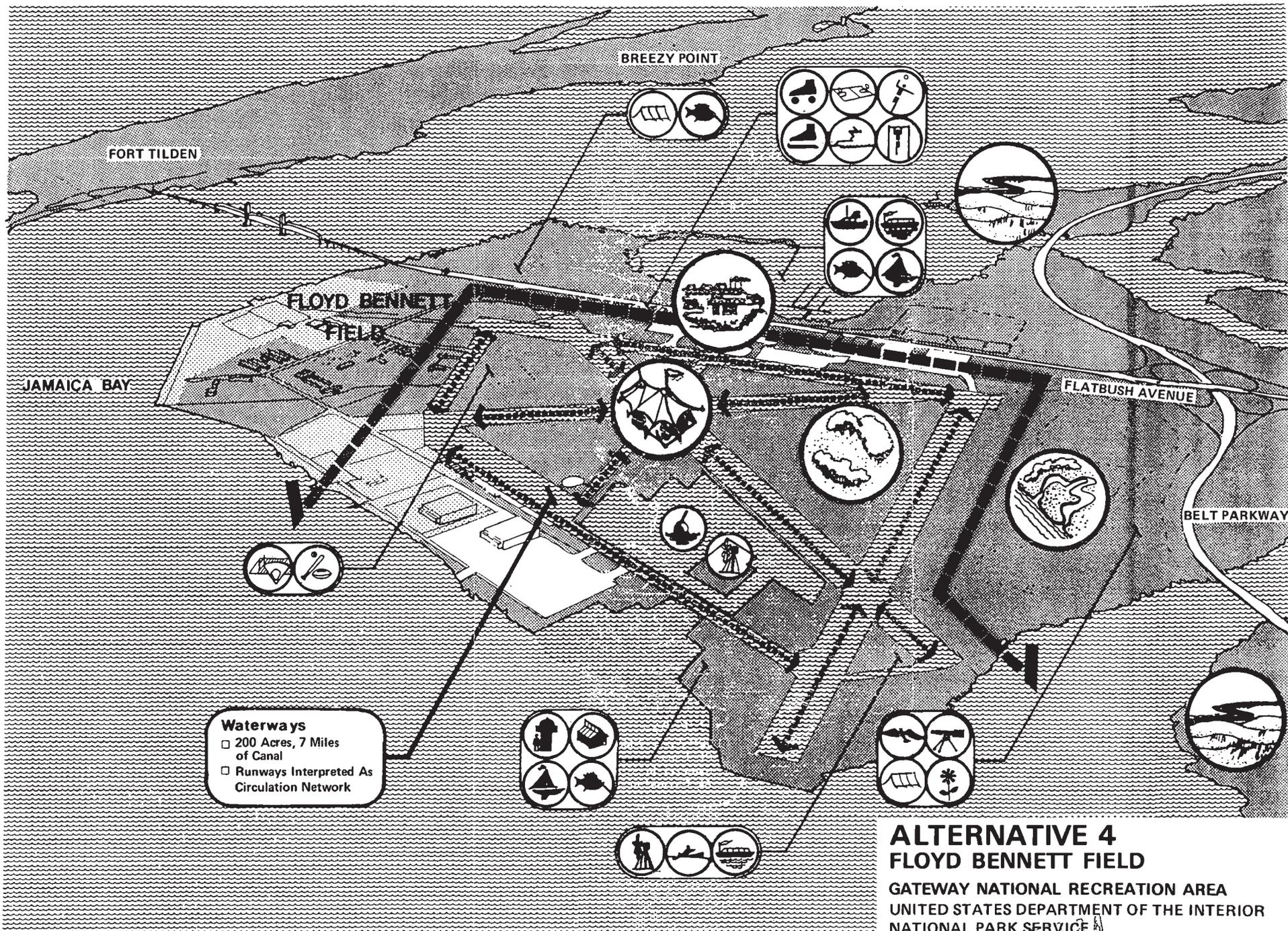
This alternative calls for massive alteration of a large part of the field to create a waterscape of tidal pools, canals, lagoons, and other features. This approach would support maximum use of the site for nature-related activities and pursuits. The northern portion of the field, an area of 500-700 acres, would be a man-made natural zone with carefully fashioned plant and wildlife environments designed to accommodate environmental education and passive outdoor recreation. This zone would be carefully protected, monitored, and accessible to visitors only via raised walkways or other similarly controlled routes. Canoeing and exploration on foot would be possible only by special permit. The remainder of the site would accommodate a major visitor center, in addition to parking, services, and active recreation. The hangars would be adapted for new uses. The existing historic runways could be interpreted through the use of landforms and special vegetation in a formal or less formal manner. Implementation of this alternative is estimated to cost \$75 million to \$125 million.

### Alternative 4: Historic Artifact Approach

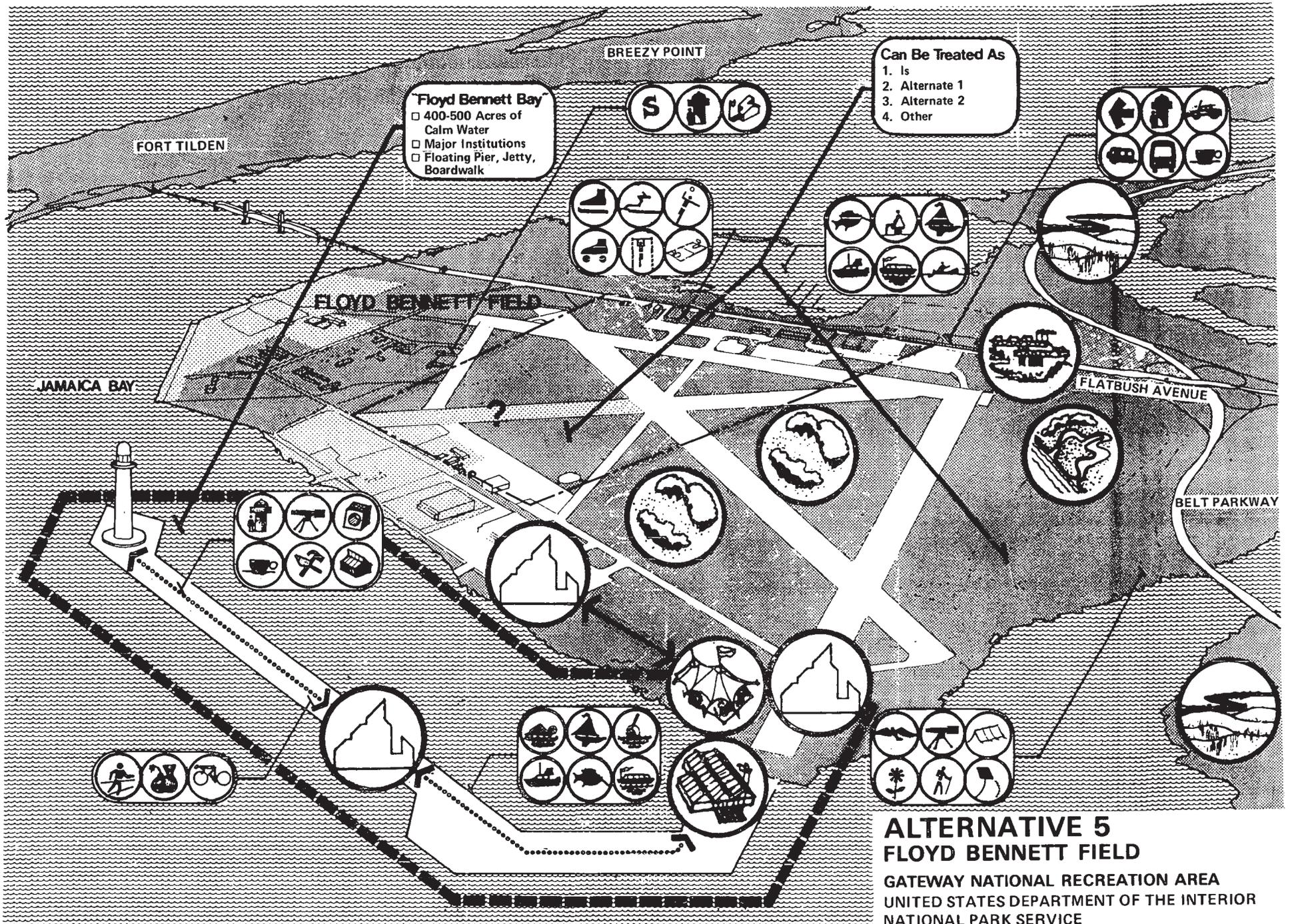
This alternative maintains the historic character of Floyd Bennett Field by preserving the pattern of runways, the hangars, the tower, and selected other buildings for adaptive reuse and interpretation. The primary feature would be an aeronautic museum, which would be operated to provide educational, cultural, and recreational programs. Certain hangars would be used for commercial entertainment. Waterways would be created on top of the existing runways and used for circulation and recreation. Water taxis and rented or private boats and canoes would carry visitors between recreation sites and program areas. The triangular areas between the waterways would be used for structured and unstructured recreation, and the area north of the runways would be maintained as a natural area. Implementation of this alternative is estimated to cost \$75 million to \$125 million.



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**ALTERNATIVE 5  
FLOYD BENNETT FIELD**

GATEWAY NATIONAL RECREATION AREA  
UNITED STATES DEPARTMENT OF THE INTERIOR  
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### Alternative 5: Urban Approach

This alternative relies on media presentations to create a national science and nature study facility. Creative programming would provide information and education to the general public regarding our national natural resources, their history, and their traditional uses. The hangars and additional new buildings, as required, would be used as awareness centers, greenhouses, theaters, simulation studios, participation chambers, etc. Water resource study would be made possible by capturing a large area of water to the east of the site. This would be accomplished through the construction of a jetty, a series of floating platforms, an underwater tunnel, or a kind of boardwalk or pier connected to or separated from the site. This area would provide for an intimate contact with the water otherwise unavailable at Floyd Bennett Field. Implementation of this alternative is estimated to cost \$75 million to \$125 million.

## DESCRIPTION OF THE ENVIRONMENT

The following is a summary of the relevant material from the complete description of the environment published in the 1979 Final Environmental Statement for the Gateway GMP and from the 1980 "Environmental Inventory and Preliminary Land Use Program" for Floyd Bennett Field, both available for review at park headquarters.

### REGION

Gateway National Recreation Area is situated at the ocean entrance to the largest urbanized region in the world. Approximately 22 million people, or 10 percent of the nation's population, reside within a day-trip radius of one or another of Gateway's units.

The New York City park system is comprised of about 570 park areas, 175 playgrounds, 350 sitting areas, 114 pools, 14 golf courses, 5 beaches, and 661 athletic fields. On the basis of acres per 1,000 persons, all of the greater New York/New Jersey metropolitan area is seriously lacking in park acreage. The recommended national standard, according to the "National Urban Recreation Study" (National Park Service 1977) is 12 acres per 1,000 persons. New York City has an average of 3.7 acres per 1,000 persons with Gateway. Brooklyn itself is worse, with only 2.7 acres per 1,000 persons. The need for more parkland in this region is clear.

Despite suburban migration, the great majority of the region's population remains concentrated in the older communities of the core metropolitan area. This population is racially and ethnically diverse, including numerous white ethnic groups, whose communities remain intact in various parts of the region (many adjacent to Gateway's lands), and growing percentages of minority members, especially black and Hispanic residents, who are generally situated in communities closer to the core commercial areas. Increasingly, this metropolitan population is also comprised of proportionately large numbers of poor and elderly residents. The departure of the more affluent central-city dwellers for the suburbs has had the effect of lowering the overall income levels of populations remaining in core areas. In 1970 as many as 14.5 percent of the total households in the Gateway counties (Kings, Queens, Richmond, and Monmouth) were below the poverty line, and the percent increased to 18.1 for the other New York City boroughs. In the entire Gateway service area, nearly 12 percent of the households were below the poverty line. As in many major cities, citizens 65 years and older are also concentrated more heavily in urban counties than in outlying ones. The heaviest concentrations occur in the New York counties of Manhattan (with 14.0 percent 65 and older), Queens (12.4 percent), Bronx (11.6 percent), and Brooklyn (11.1 percent). In the Gateway counties there are some 1.9 million elderly persons, or 11.3 percent of the total population. As the total population declines in the metropolitan area, the proportion of the 65-and-older group continues to increase.

The number of people who do not own automobiles is a significant factor in the metropolitan New York area. In 1970, nearly half the households within the Gateway boroughs or counties were without cars.

New York is and will continue to be a center for tourism. Tourism alone constitutes a \$3.5 billion industry in the Gateway service region. Some 37 percent of the nation's international visitors spend time in New York.

## SITE

The 1,450-acre site at Floyd Bennett Field, a historic civil aviation facility, is dominated by constructed and man-altered landscapes. The sheer size of the site, along with the large number of facilities remaining from its historic period, give Floyd Bennett Field tremendous recreational potential.

Few undisturbed natural features and communities remain. The open portions of the field contain extensive stands of reeds and woodland thickets. Mixed grasslands and low-shrub thickets are also present and provide habitat for a variety of small mammals and birds, including several species of birds that are endangered or of special concern within the state of New York. Mud flats and a thin strip of low salt marsh border the open waters of Jamaica Bay.

The portion of the field transferred to the National Park Service features a concrete runway grid, six large hangar complexes, and numerous administrative and air base support facilities. Among the buildings in this area are brick and wood-frame dormitory structures; recreation buildings; steam, sewage, and cold-storage plants; gasoline and jet fuel tanks; power generators; radio and beacon towers; and garages and maintenance shops. An internal road system traverses the southwestern part of the field and continues along its northern edge, across the runway of the U.S. Coast Guard, surrounding the entire runway complex.

Dead Horse Bay, fronting on Flatbush Avenue midway between the Belt Parkway and the Gil Hodges Memorial Bridge, includes several park concession facilities providing recreational services. Developed by private interests under New York City concession permits prior to the establishment of Gateway National Recreation Area, the facilities are a marina, tennis courts, and a golf driving range.

Plumb Beach is a natural shoreline area that has been developed for use with a visitor contact station, public toilets, and small maintenance and storage facilities, all adjacent to a parking lot. The maintenance portion lies on city property.

## Existing Park Operations

Since 1974 Floyd Bennett Field has been the site of the park headquarters for Gateway National Recreation Area. The United States Park Police and the Jamaica Bay district staff are also headquartered here.

In the interval between the beginning of Gateway operations and the approval of a development concept plan for Floyd Bennett Field, a pattern of use has developed at the field based upon limited resources. School

groups and other youth groups have been invited to participate in recreation and environmental education programs which utilize the field's open spaces and its structures. A community garden program has been started, allowing local citizens who have obtained permits to grow their own vegetables with instruction from the park staff and gardening specialists. In addition, organized groups have been permitted to use the field for their own activities, which have included softball, model aircraft flying, and an auto driving course. Annual visitor use has increased over the past several years, and 316,000 visits were reported at Floyd Bennett Field in fiscal year 82.

Interpretive and recreational activities in the summer of 1982 included a "sports sampler" program for children, a history tour of the hangars and runways of the old municipal airport, and a "hands-on" nature study program for the physically disabled. Nature discovery walks were conducted at Plumb Beach and Dead Horse Bay. At Ecology Village, school classes camped out for 24-hour periods and worked in a garden, providing an intensive experience in environmental education. Other groups camped on their own, without instruction from the park staff, in the tamarack grove on the east side of the field.

Floyd Bennett Field hosts several large special events each summer; these are often held in and around the Blue Hangar, with a grandstand erected on the apron east of the hangar. Events in the 1981 season included a celebration of the 50th anniversary of the opening of Floyd Bennett Field as a municipal airport, a citywide recreation and culture festival, the City Gardener's Harvest Fair, and a citywide Hispanic Festival.

The lands at Plumb Beach receive a good deal of unstructured use (picnicking, strolling, sunbathing) by nearby residents and others. The inadequate entrance and exit for the parking lot has led to numerous auto accidents at this site. Fishing and swimming are not permitted at either Plumb Beach or the Dead Horse Bay area because of the polluted waters and dangerous currents in Rockaway Inlet. An erosion abatement program is underway.

### Cultural Environment

The area now known as Floyd Bennett Field was originally made up of small islands and marshes interconnected by estuarine streams. Barren Island may have been the site of a village of the Canarsie Indians in the 17th century. Dutch and English settlers used the area primarily for grazing stock. Industrial development began in the 1860s with the construction on Barren Island of fish oil and fertilizer factories and, later, garbage disposal plants. These industries gave rise to a small community, which declined in the early decades of the 20th century as the factories closed. No significant above-ground evidence remains today of the industrial structures or their associated community.

In 1928 Barren Island was selected as the site for New York City's first municipal airport. Completed in 1931, the airfield consisted of a central administration building and control tower, eight aircraft hangars in four

pairs built along Flatbush Avenue, and a T-shaped runway pattern. The facility was named Floyd Bennett Field in honor of a pioneer aviator.

Floyd Bennett Field was the scene of many achievements in early aviation, but it was never a commercial success. Ten years after its opening, the airfield was acquired by the U.S. Navy, which continued to use it until 1971. Despite considerable expansion and new construction during the military period, Floyd Bennett Field retains most of its original structures, and with one exception is free of intrusions on the original configuration of the field. For these reasons the National Park Service nominated the municipal airfield area to the National Register of Historic Places, and the Floyd Bennett Field historic district, some 330 acres in extent, was listed on the register in 1980.

The property today looks unmistakably like an airfield. The two original runways form the core of an expanded runway system that has developed over the years. Between 1934 and 1938 two new runways were built by the WPA; these form an X and intersect the longer of the two original runways. The navy greatly expanded the field with landfill, lengthened and widened all the runways except the two original ones (which it used only as taxiways), and built a new runway at the extreme northern end of the field.

The boundaries of the historic district have been drawn to include only that area of the runway system in existence before 1941. Within this area, there is a 2,500-foot runway section under the jurisdiction of the U.S. Coast Guard that was excluded from the district.

The original hangars and the administration building still dominate Hangar Row along Flatbush Avenue. Infill structures built by the WPA in the 1930s connect the two hangars in each pair, resulting in four hangar complexes. These are referred to today as hangar complexes 3, 4, 5, and 6, numbered from south to north. After 1941, a new hangar was erected between the administration building and hangar complex 5. A large steel, external-frame building, built to accept the forward end of an aircraft, with blue corrugated siding, it is known locally as the Blue Nose Hangar. It is designated on the National Register form as an intrusion in the historic district.

Smaller structures in the Hangar Row area which date from the historic period (1931-1941) include a garage and dope shop (building 26), a fire pumphouse (29), sewage pumphouse (30), electrical vault (57), transformer building (120), and gasoline pump station (176). These buildings should be preserved. A few structures outside the historic district are also included on the NPS List of Classified Structures. These are an ammunition dock (106), small arms magazine (108), storage building (109), and communications building (118). All are located in the northern section of the property and date from the World War II period.

### Natural Environment

Extensive landfilling and other developments and uses have connected the historically separate Barren Island and the smaller tidelands in Jamaica

Bay with the main portion of Long Island and otherwise drastically altered the natural character of this area. Nevertheless, even with water pollution and heavy pressures from the urban environment, those portions of Floyd Bennett Field which have been left undisturbed for the past 20 to 25 years have reverted to natural conditions through ecological processes. Wedges of low salt marsh, reminiscent of Barren Island marsh, grow along several miles of the outer edge of the field and at the developing spit and cove in Dead Horse Bay. Though considerable areas of disturbed soils are covered with reeds (Phragmites), several expansive areas have revegetated with grasses, setting the stage for habitat similar to the now practically eliminated Hempstead Plains of Long Island.

Plumb Beach, west of Floyd Bennett Field, contains an extensive tidal mud flat, a low salt marsh area, a narrow sand beach, a dune complex stabilized by beach grass, a small tidal lagoon, and several scattered woodland thickets. Tidal mud flats serve as a source of food for algae and marshland vegetation. Invertebrates, including snails and fiddler crabs, utilize the organic matter found in these muds. Horseshoe crabs are often observed here.

The accreting low salt marshes that fringe Plumb Beach, Dead Horse Bay, and the northeastern edge of the field are the principal natural resource concerns. The freshwater inflow channels to Jamaica Bay are also significant because they aid in maintaining the salinity balance in the bay waters. Floyd Bennett Field's location adjacent to Jamaica Bay and in the path of the Atlantic Flyway for some 340 species of birds is another cause for careful consideration of its natural resources.

Soils and Water Table. Soils on Floyd Bennett Field are derived from two sources: the dredge fill soils contain coarse to fine sands with varying amounts of silt and shells, and the miscellaneous fill/urban rubble soils contain sands mixed with metals, coal, crushed rock, cinders, and rubble. Natural deposits that have been relatively undisturbed by past human activities are found in some mudflats, marshes, and sand dunes. The loose, unconsolidated sands characteristic of the area possess poor to fair load-bearing capacities but do not impose significant limitations to earth moving or drainage. Chemical analysis of a selected soil sample from the east-central portion of the field showed no contaminants (metals, pesticides) in excess of U.S. Environmental Protection Agency standards. About 25 percent of the total land area is in pavement, mainly concrete and macadam runways. Based on the somewhat homogenous soil characteristics of infield areas adjacent to the runways, it is expected that dredge fill soil extends below the runways as well.

Fresh groundwater lies from 2 to more than 20 feet below the surface, and in many locations it is perched above saltwater. Saline depths range from 8 to more than 20 feet below the ground surface, both above and below the mean sea level. Groundwater is at the highest elevation through the central areas of the field. The quality and quantity of the perched fresh groundwater is unknown at this time. It is known, however, that greater quantities of freshwater are generally at depths of 200 to 500 feet below the surface. Any alterations to the terrain could result in the lowering of the freshwater table (reduction in freshwater recharge) and increased intrusion of saline waters.

Vegetation. Fourteen major vegetation types have been identified at the field, including aquatic, salt marsh, dune, reed, shrubland, and upland field grassland. At one time extensive grasslands covered much of Long Island, but this vegetation type has become rare because of development.

While the successional trends and development history of the vegetation at the field have not been fully studied, the following trends have been recognized:

Sparse vegetation covering sand bald areas may eventually succeed to shrub thicket communities if protected.

Unvegetated or grassy foredune areas will, over time, be transformed to mixed dune grass areas and eventually to wooded backdunes.

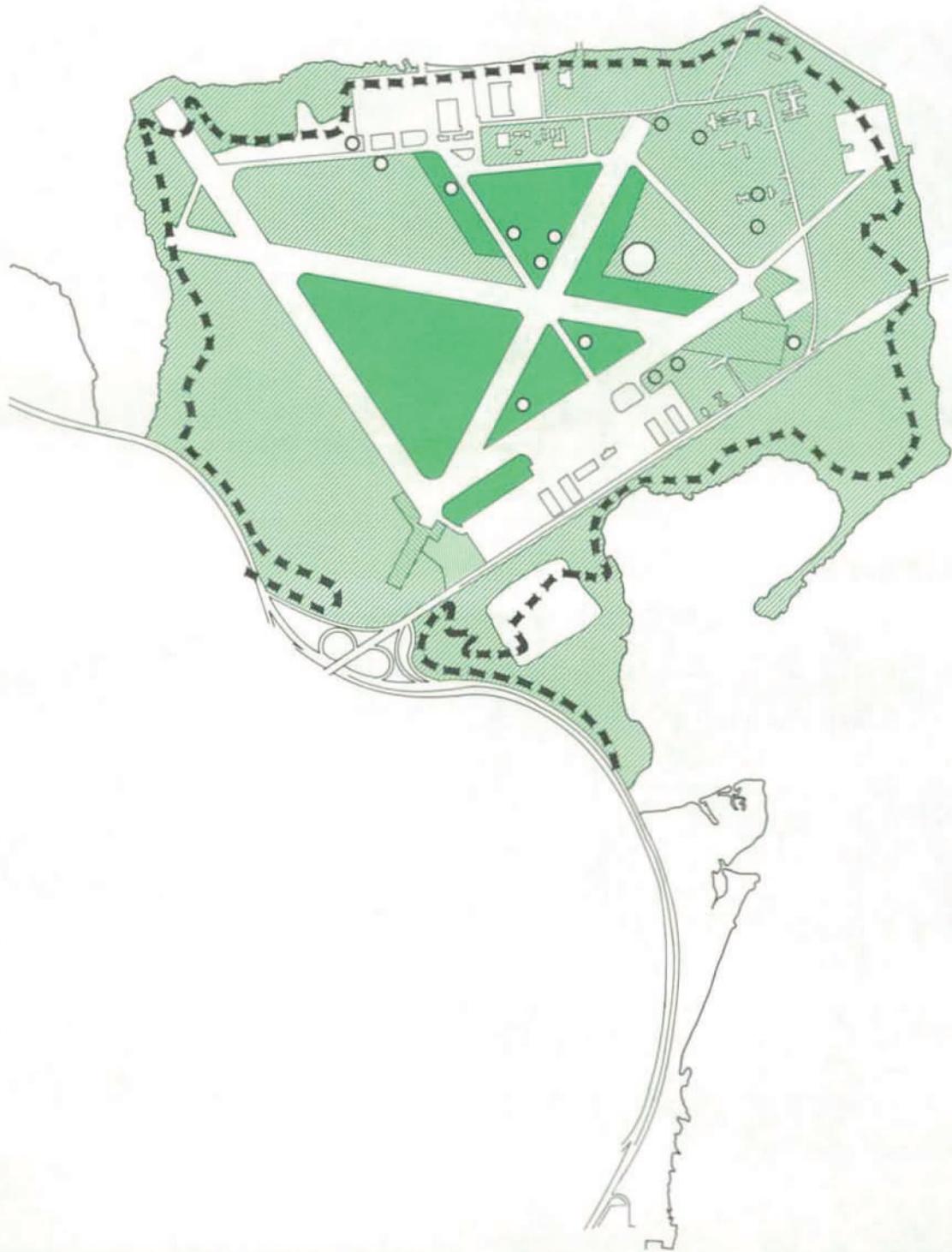
Reed (Phragmites) and shrub thicket communities dominate specific areas of the site.

Grasslands are being invaded by shrubs and trees.

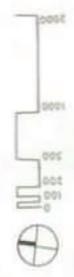
Based on fertility analyses of soil samples, the vegetative growing conditions are generally good where finer-textured fill and topsoil materials have been deposited. Growing conditions elsewhere, such as sand bald and urban rubble areas, are considered poor to marginal, based on these analyses.

Wildlife. Rabbits, rats, meadow voles, field mice, and a great variety of birds are present in large numbers at Floyd Bennett Field. Two species listed as threatened or endangered by the U.S. Fish and Wildlife Service--the bald eagle and peregrine falcon--are occasional visitors to the field, but no individuals nest there. One species listed by the state of New York as threatened or endangered--the northern harrier (marsh hawk)--and three species of special concern in the state--the barn owl, grasshopper sparrow, and upland sandpiper--are known residents that breed (or at least bred through 1978) at the field. The status of these four species was investigated and documented in the "Survey of Selected Avian Species Breeding at Gateway" (1979). Floyd Bennett Field is the only location within the confines of Gateway National Recreation Area where these species are known to breed. The northern harrier is also listed in appendix II of the "Convention on International Trade in Endangered Species of Wild Flora and Fauna." Two additional species listed as threatened or endangered by the state of New York--the least tern and osprey--may also be present, but their use of the field has not been documented. The short-eared owl, another species of special concern, has been reported. Other birds reported at the field include black-crowned night heron, great blue heron, ring-necked pheasant, and mourning dove.

Water Quality. Waters of Jamaica Bay peaked in pollutant levels in the early 1960s; since that time, water quality has stabilized and, for some parameters, has improved. Remaining problems include high fecal coliform levels, heavy-metal concentrations, and high nutrient levels. Primary discharge of pollutants results from wastewater effluents, sewer overflow, and stormwater runoff. Water quality in Jamaica Bay will improve with



- VARIED HABITATS
- SHORT GRASS
- SHORT GRASS/DISTURBED AREA
- TALL GRASS
- 100 YEAR FLOOD
- NESTING SITE
- TEN OR MORE NESTS



**SELECTED NATURAL FACTORS  
FLOYD BENNETT FIELD**

GATEWAY NATIONAL RECREATION AREA  
 UNITED STATES DEPARTMENT OF THE INTERIOR  
 NATIONAL PARK SERVICE  
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implementation of the New York City wastewater management program. Although other pollutant sources remain, such as leachates from landfills and hydrocarbon emissions from recreational boating, incremental improvements are expected to upgrade waters adjacent to Floyd Bennett Field to a swimmable quality within 10 to 20 years. This projected improvement of Jamaica Bay waters will have a direct positive effect on the aesthetics and ecology of the shoreline; however, no swimming is proposed at the field because of the sensitivity of the shoreline wetlands.

Wave Erosion and Other Environmental Hazards and Nuisances. Wind erosion is a problem where heavy public use (foot traffic, trailbikes, horses) have decimated the stabilizing vegetation. Numerous areas of recent shoreline erosion, along with broken bulkheads, pilings, and other debris, limit recreational uses. Other potential hazards include abandoned buildings and cars, and mosquitoes, ticks, and rats.

The projected flood elevations range from 7.9 feet for the 10-year flood to 11.4 feet for the 500-year flood. The 100-year flood line, at an elevation of 9.4 feet, covers the eastern portions of Bergen and Plumb beaches to the Belt Parkway, as shown on the Selected Natural Factors map. Only the fringes of Floyd Bennett Field proper, perhaps some 10 percent of the total land area, are within the 100-year floodplain. As could be expected, these areas are the most susceptible to erosion.

Only limited storm wave height data are available for the immediate area, so estimates of flooding were projected from storm surge data recorded by automatic gauges at Fort Hamilton, New York, and Sandy Hook, New Jersey. Wave height data recorded during a recent 100-year storm, Hurricane Donna (September 1960), provided a base figure for the flooding projections. A tidal height of 8.6 feet above sea level was the maximum recorded height for Hurricane Donna at both Fort Hamilton and Sandy Hook. To project a "worst-case" condition--the coincidence of storm surge with spring tides--the mean high water elevation of 2.4 feet was added to the 8.6-foot storm surge for a total flood elevation of 11.0 feet above mean sea level. Because of its more protected location, the flood elevation at Floyd Bennett Field is lower than at Fort Hamilton or Sandy Hook. Using a correlation curve derived from storm data by the Army Corps of Engineers, it was determined that a value of 9.4 feet for Jamaica Bay corresponds to a value of 11 feet for New York Harbor. Thus it was concluded that at Floyd Bennett Field, land below an elevation of 9.4 feet would be subject to inundation during a 100-year storm.

Air Quality and Meteorological Data. With sunshine on about 60 percent of the days of the year, the field may have strong potential for solar energy heating, small-scale power generation, or a pilot educational project. The air-conditioning season extends from June through September, and the heating season from October through May. Winter temperatures do not often remain below freezing for sufficient periods to form adequate ice for skating. Construction of a refrigerated rink would be required if a full skating season was desired.

Ozone levels exceeding national standards are a regional problem. Violations of carbon monoxide standards occur during peak recreational travel days at points of queuing and congestion. Auto emissions are

expected to decrease as a result of vehicle emission controls, and these decreases will more than offset emissions associated with increased visitor traffic volumes.

Severe storm events, including hurricanes and other tropical storms, have occurred in the project area at a frequency of about 80 times per 100 years. Average hourly winds of between 35 and 65 miles per hour and peak gusts of 90 to 95 miles per hour have been documented.

According to local climatological data visibility at the field exceeds 6 miles about 73 percent of the time. Fog, smoke, and haze occasionally affect long-distance views of the Manhattan skyline and the Verazzano Narrows Bridge and also shorter distance views around the field.

Noise. Noise from aircraft using JFK International Airport and from helicopters using the Coast Guard and New York City Police Department facilities is commonly heard at the field. In terms of proposed activities, outdoor concerts would be interrupted frequently by JFK Airport noise. Interior noise levels would depend on building structure and amenities. Such items as double-glazed windows and central air conditioning would minimize interruptions to indoor concerts or other noise-sensitive activities. Auto-traffic noise is not a factor anywhere on the field except the edges along Flatbush Avenue and the Belt Parkway.

## TRANSPORTATION

### Automobile Access

The existing access network for Floyd Bennett Field consists of two roadways: Flatbush Avenue and the Belt (Shore) Parkway. The capacities of these roadways are affected by speed, traffic composition, lane width, lateral clearance, roadside development, intersections, and roadway geometry. Flatbush Avenue is a six-lane arterial road with three lanes in each direction. It is posted at 45 miles per hour south of the Belt Parkway interchange, in the area opposite Floyd Bennett Field. A wide tree-lined median separates traffic, and one set of signals regulates turns and allows pedestrian movement. The existing capacity of Flatbush Avenue is estimated at 4,500 vehicles per hour in either direction. This estimate has been verified by counts of daily traffic. The present entrance to Floyd Bennett Field is off Flatbush Avenue at the south end of the field. A separate turning lane and signal can accommodate about 300-400 vehicles an hour at this entrance.

The Belt Parkway is a six-lane freeway with grade-separated interchanges. The Belt is posted at 50 miles per hour and has an estimated capacity of 4,500-4,800 vehicles per hour in each direction. The capacity of the Flatbush Avenue/Belt Parkway interchange is limited by the ramp capacity and traffic slowdowns caused by merging. Volumes on these types of ramps are usually fewer than 1,000 vehicles per hour, which is confirmed here by traffic counts. The interchange is a capacity constraint during times when turning volumes are high and the Belt Parkway and Flatbush Avenue are flowing freely; when the avenue and

the parkway are congested, the constraint shifts to the ability of these roadways to accept the interchange traffic.

On the busiest summer weekends both Flatbush Avenue and the Belt Parkway can reach their capacities. At most times, however, they operate at substantially less than their design capacities. The greatest traffic loads currently occur on hot summer Sundays. An analysis of the ten busiest days for the Gil Hodges Memorial Bridge validates other counts to support this assessment. On summer weekdays Flatbush Avenue operates at a volume to capacity (v/c) ratio of 0.5 to 0.7 during peak hours. On summer weekends, and in particular on hot Sundays in July, volumes sometimes exceed the roadway capacity for several hours. Weekday data for the Belt Parkway are not available. Weekend counts indicate that the v/c ratio is in the range of 0.8 to 0.9.

On summer weekends, when traffic volume approaches or exceeds roadway capacities, northbound, or home-bound, traffic from Jacob Riis Park is severely limited by the merging south of the Gil Hodges Bridge and by the limited ability of the Belt Parkway and Flatbush Avenue north of the Belt Parkway to accept traffic. The result is long delays on leaving Riis Park on very high volume days. Additional traffic turning into and out of Floyd Bennett Field could potentially cause new traffic conflicts if provisions were not made for new entrance and exit roadways into the field and increased public transportation to both the field and the beach areas, as proposed in the DCP.

Also, statistics on traffic volumes on the Gil Hodges Bridge indicate that both annual and peak traffic levels have moderated in the past 10 years. Annual volumes have steadily declined to a level 20 percent less than that in 1971, largely due to a significant decline in the residential population of the Rockaways. Average traffic levels for the 10 highest days of the year have declined 13 percent since 1973.

An emergency traffic plan which provides procedures for traffic diversion and emergency services has been prepared by the New York City Police Department in cooperation with the National Park Service, Triborough Bridge and Tunnel Authority, and the local community.

#### Bus Service

Bus service to Floyd Bennett Field is operated daily by the Green Bus Line on route Q-35 Rockaways. This line originates at the Brooklyn terminus of the number 3 and 4 subway lines at Flatbush and Nostrand. The route follows Flatbush Avenue to Jacob Riis Park and then turns onto B 116th Street in the Rockaways. Summer weekend service has been operated on Flatbush Avenue to Riis Park on New York City Transportation Authority Routes B-9 60th Street and B-46 Utica Avenue since 1980 and 1981. Bus service levels on the Q-35 line on summer weekdays are approximately 180 vehicle trips per day in both directions, while weekend service is 270 vehicle trips per day. A total of approximately 80 vehicle trips per day on summer weekends in both directions is operated on the NYCTA B-9 60th Street and B-46 Utica Avenue routes.

### Bicycle Access

Bicycle access is provided by bikeways along the south side of the Belt Parkway and along the west side of Flatbush Avenue. Both are within the jurisdiction of New York City. Bicycle use along Flatbush Avenue has been observed to be as high as 100 bicycles per hour on peak summer weekends. Data were taken prior to full 1982 expansion and upgrading of bicycle access along Flatbush Avenue.

## ENVIRONMENTAL CONSEQUENCES OF THE PROPOSAL AND ALTERNATIVES

### IMPACTS OF THE DEVELOPMENT CONCEPT PLAN

The general impacts on the park and region of development of Floyd Bennett Field were extensively described in the 1979 Final Environmental Statement for the Gateway GMP. This document is available for review at park headquarters. The proposals of this plan are generally consistent with the less detailed proposals previously published.

#### Impacts on Natural Resources

Floodplain. In conformance with Executive Order 11988, "Floodplain Management," no developments are proposed for areas that fall within the 100-year floodplain.

Plant and Animal Life. None of the proposed actions would result in significant adverse impacts on natural communities at Floyd Bennett Field. Opening up the field to additional numbers of visitors, including campers, bird watchers, and sports enthusiasts, would adversely affect some of the vegetated areas near the runways and other designated access corridors and activity sites. Care would be exercised to avoid disturbing the nesting sites of the northern harrier, grasshopper sparrow, and upland sandpiper; however, it is assumed that the increased visitor use might result in the abandonment of a few sites. As vacant buildings were rehabilitated or demolished, the barn owl population would be somewhat disturbed. A possible mitigation would be to identify an alternative structure for their use.

Some impacts on wetlands might result from increased visitor use, although the potential for disturbance would be reduced by directing visitors to avoid these areas. The construction of a new access trail at Plumb Beach might cause short-term minor changes to the natural system of the area. Construction of an open pile docking facility on disturbed land at Dead Horse Bay and the introduction of ferry operations would not adversely affect the local wetlands environment. Use of large conventional-displacement ferry vessels, with their resultant wake, could somewhat increase the rate of erosion in the surrounding wetlands; however, the installation of a tire barrier to absorb a significant proportion of the wake would mitigate this impact.

Overall, the general cleanup and other management activities included in the plan would have a highly beneficial effect on the environment by encouraging increasingly stable ecosystems that would support a greater diversity of plant and animal life. The retention of grasslands over a major portion of the site would provide a habitat type that is becoming increasingly rare in the region.

Air Quality. Air quality improvement plans for the New York area rely primarily upon vehicle fleet replacement for improvements to monitored pollutants. The regional ozone (hydrocarbon) conditions have slightly improved for 1981, and a downward trend in pollutant level is anticipated.

No significant addition of pollutants would be expected as a result of the proposals.

### Impacts on Cultural Resources

Historic Sites and Structures. Under element A, stabilization of the hangars, administration building, and certain support structures in the Floyd Bennett Field historic district would benefit these deteriorating structures. Work would be performed according to the NPS Cultural Resource Management Guideline (NPS-28) and the Secretary of the Interior's Historic Preservation Standards (36 CFR 68). All work would be supervised by a qualified preservation specialist.

The removal of the fence along Flatbush Avenue would increase the potential for vandalism to the hangars, administration building, and other structures. The area would be patrolled at night, and other security measures, such as maintaining an effective lighting system, would be taken to protect these resources.

Under element B, adaptive use of the administration building, the four hangar complexes, the garage/dope house, and other structures in the historic district would result in the long-term preservation of these significant buildings and would ensure their continued maintenance. Rehabilitation of the administration building for use as a visitor center and for park offices would require some modification of interior spaces, but the building is already basically well suited for such use since it has large public spaces and information windows on the first floor and offices on the second. No significant exterior changes would be required except those necessary to accommodate the handicapped. A wheelchair ramp placed at one of the side (north or south) entrances would be noticeable but less intrusive than one installed on the staircase on either the Flatbush Avenue or the airfield facade.

The hangar interiors would be extensively modified to accommodate year-round uses. Although the lean-tos and infill structures were originally steamheated, the hangars themselves were not so designed; their enormous interior spaces and loose sliding doors make efficient heating and cooling impossible without modifications. Independent structures might be built within the hangars to provide weather-tight envelopes. Sliding hangar doors could be permanently sealed, leaving only the "pilot doors" in use. Replacement of some hangar doors with compatible infill and new smaller doors might be desired, as might the installation of drop ceilings in some areas. New landscaping to create shade for visitors would be permitted, but only in areas that minimize intrusion into the historic runway pattern. In summary, while introducing new uses into Hangar Row, care would be exercised to minimize changes to historic structures and the landscape so that the overall historic scene would not be dramatically altered.

Hangar interiors might be subdivided, but if used for ice rinks or bowling alleys, large undivided spaces would remain, and these would be somewhat reminiscent of the original spaces. The interior of building 26 (the garage) might be slightly modified to accommodate use by artists.

The general appearance of Hangar Row would be altered to some degree as the area was developed as a recreational, cultural, and educational center. Features such as umbrella-covered outdoor eating areas, tents or pavilions for exhibits and demonstrations, signs directing users between buildings, and shuttle bus stops would result in a measure of visual relief where none exists currently in the large paved areas between the hangar complexes. The sense of a functioning airfield would be reduced; however, most of these facilities would be temporary in nature, and all would be of a scale inconsequential in relation to the huge hangar complexes. While the present landscaping would be respected, new landscaping would also be introduced. Some paved areas would be planted, particularly the aprons between the hangar complexes and the airfield, where parking lots would be established. New plantings on the site would be carefully selected to preserve the historic character of the field as much as possible.

The runway pattern in the historic district would remain in its present configuration. Rows of trees would outline those sections of the original east-west runway which would be used by automobiles. Other runways would be used for sports activities. Those in the designated natural area would be allowed to deteriorate gradually as grasses and shrubs developed; most of these runways lie outside the historic district. If the present Coast Guard landing area came under NPS jurisdiction, this section of the original airfield would be included in the National Register historic district, where it properly belongs.

Among the derelict structures to be demolished as part of the plan, three are located within the boundaries of the Floyd Bennett Field historic district. These are building 238, a concrete block storehouse at the north end of Hangar Row; Building 126, a concrete block shed at the south end of Hangar Row; and the water tank west of the Blue Hangar, if it is determined to be expendable. The water tank is not listed or described in the National Register form for the historic district. Buildings 126 and 238 are described as intrusions, and are so indicated on the map of the district included with the nomination form. The removal of these structures would not, therefore, affect the significant qualities that qualify Floyd Bennett Field for listing in the National Register. All these structures have been evaluated and found to not be eligible for National Register listing.

Buildings 118, 232, and 233, also proposed for demolition, are not within the historic district, but they are included on the NPS List of Classified Structures under management category C, "Buildings which may be preserved." This designation reflects a professional determination that these buildings need not necessarily be retained if their condition, potential for reuse, rehabilitation costs, and safety factors indicate otherwise. Under the existing circumstances, the demolition of these derelict structures would not constitute a loss of significant cultural resources.

Archeological Sites. No major construction is proposed in the DCP. The installation of new mechanical and electrical systems in the Hangar Row buildings would pose the only major opportunity for ground disturbance, and it is unlikely that levels below the 1930s landfill would be reached.

Nevertheless, an archeologist would be consulted as plans for the utility systems were developed, and archeological testing or monitoring might be necessary, especially since the exact locations of any Indian settlement areas on Barren Island are unknown. No NPS undertakings are proposed for the area where industrial development was concentrated on the southern shore; that area, which lies mainly to the east of Flatbush Avenue, is under the jurisdiction of the Navy Department. The Dead Horse Bay beach area would also be left undisturbed.

Compliance with Historic Preservation Laws, Regulations, and Procedures.  
In accordance with a programmatic memorandum of agreement executed in December 1979 between the National Park Service, the Advisory Council on Historic Preservation, and the National Council of State Historic Preservation Officers, a memorandum of agreement regarding implementation of the Gateway GMP was signed in February 1981 by the Advisory Council on Historic Preservation, the New York state historic preservation officer, and the National Park Service. This agreement required that the Floyd Bennett Field DCP be submitted at the draft stage to the state officer and the Advisory Council for their review. Representatives of the state officer and the council received copies of the task directive for the DCP and were contacted during the planning effort. Copies of the draft DCP were presented to them in October 1981, with a request for comments within 30 days. No comments were received within that period, but subsequent responses indicated that neither office objected to the plan. Thus, the compliance process has been completed.

Individual actions that affect National Register or LCS properties or that might affect archeological resources will be subject to in-house review by cultural resource management professionals in the North Atlantic Regional Office, through use of the "Assessment of Effect" format (XXX form).

#### Impacts on Transportation

The Flatbush Avenue corridor currently operates at traffic levels varying from undisrupted traffic flow to severe congestion, depending upon the season of the year, day of the week, and hour of the day. Traffic volumes on Flatbush Avenue are normally at less than one-half capacity. However, during times of severe congestion the Gil Hodges Memorial Bridge acts as a bottleneck, causing delays as traffic backs up from the toll booths at the bridge.

In general, visitor traffic to Floyd Bennett Field would occur at times of undisrupted traffic flow, when traffic increases can be accommodated without contributing to severe congestion. Undisrupted traffic flow occurs on the access corridors on most weekdays during nonrush hours and on spring, fall, and winter weekends. The emphasis on year-round use of the Hangar Row area would take advantage of the roadway system during these seasons of the year and days of the week when it normally operates well below capacity. Park programming would schedule events to coincide with available roadway capacity. Also, during rush hours on weekdays, the direction of heavy traffic flow is opposite the direction of park visitor traffic in the Flatbush corridor. This leaves only several summer weekend days when visitor traffic might contribute to severe

congestion. On these days, when traffic congestion might normally occur for one to three hours, the possibility would exist for up to 30 minutes of additional delay. A proposal is included to add shuttle service between Floyd Bennett Field and the beaches of Breezy Point to mitigate any increased delay and, in fact, reduce the present congestion at the bridge.

Based on the projected visitor use levels presented in appendix 1, and assuming that existing travel patterns continue, the following increases in traffic are expected:

On winter days, when traffic levels are low, the number of vehicles would increase at most by 400 cars (about 150 per hour) and about 5 buses. There would be no effect on undisrupted traffic flow.

On spring and fall weekdays, 800 additional cars and 15 additional buses (about 250 vehicles per hour) would be traveling to Floyd Bennett Field. The expected increase on these days of undisrupted traffic flow might cause only a few seconds of additional delay in the Flatbush corridor.

On spring and fall weekends, the lowest traffic levels currently exist on the approach roads to Floyd Bennett Field. The expected increase of 1,100 cars and 20 buses per day (about 400 vehicles per hour) would cause only short (several second) intermittent delays at major intersections, and traffic flow would continue to operate smoothly.

On summer weekdays, when undisrupted traffic flow is mixed with intermittent congestion, the expected increase of 1,300 cars and 25 buses (about 500 vehicles per hour) would cause minor delays in the traffic flow in the Flatbush corridor, causing some increased delays near the Kings Plaza shopping center. Again, visitor traffic would not aggravate rush-hour traffic because most visitors would be traveling southbound in the morning and northbound in the afternoon. On the Belt Parkway, the direction of the majority of park visitor traffic, eastbound in the morning and westbound in the afternoon, would likewise not aggravate rush-hour traffic. No major traffic delays on the Belt Parkway would result from the proposal.

These conditions of undisrupted traffic flow represent 90 percent of the year, all but the summer weekends.

Intermittent congestion occurs on many of the summer weekends and holidays. At these times, the travel time from the subway station at the intersection of Flatbush and Nostrand avenues to the Breezy Point unit takes from 45 minutes to 1½ hours. Travel on the Belt Parkway, in either direction, is often congested on weekends, and travel time from the Van Wyck Expressway interchange, about 8 miles east (which takes about 15 minutes on weekdays), takes about 45 minutes.

The plan proposes to reduce some of the congestion caused by the backup from the Gil Hodges Bridge toll booths. About 3,000 parking spaces, eventually to be removed from the Breezy Point unit, would be provided

at Floyd Bennett Field, and shuttle buses would provide access to the beaches. This would remove about 2,000 vehicles from the traffic flow over the bridge, replacing those vehicles with about 150 bus trips. This would reduce the traffic congestion at the bridge. The opportunity to shift present auto users to the shuttle at a congested location would likely reduce overall energy consumption and lower emission levels.

The proposed access improvements would facilitate existing traffic flow patterns. Activities at Floyd Bennett Field on summer weekend days can be expected to attract 3,000 to 5,000 vehicles per day. The proposed new entrances along Flatbush Avenue would raise the entrance capacity to 700-800 vehicles per hour, and the addition of access ramps from the Belt Parkway would accommodate at least an additional 500 vehicles per hour, raising the total entrance capacity to 1,200-1,500 vehicles per hour. This would be considerably more than the required design hourly volume for the expected level of use, as shown in appendix 3.

In summary, the existing roadways have, at most times, the capacity available to accommodate the traffic volumes expected to be attracted to Floyd Bennett Field. This would hold true even if 100 percent of the trips during most periods were made by people who were new users of the park. The majority of visitors would probably be people who are already taking advantage of the recreational opportunities at Gateway. Assuming that 50 percent of the future summer weekend visitors to Floyd Bennett Field are already Gateway users, the peak use would not adversely affect the traffic flows on the surrounding roadways at any time. At times the Belt Parkway would continue to be severely congested (traffic level of service F) in the vicinity of Flatbush Avenue. However, this condition might be improved as a result of the proposed access improvements, which include new park entrances on Flatbush Avenue and a ramp on the Belt Parkway. All improvements would be coordinated with the New York City and State Departments of Transportation and with the NYC Department of City Planning.

Estimates of users arriving by bus indicate a need for additional bus service on the local bus routes serving the park. Average summer weekday conditions would require 30 additional daily bus trips provided 100 percent of the visitors were new users of the Green Line bus. If 50 percent of the visitors were first time users, 15 additional trips would be required. This probably represents two additional bus trips in the peak hour. The impact on present local users would be more frequent bus service. The addition of weekday service on the B-9 60th Street and B-46 Utica Avenue bus routes, which currently serve Riis Park on summer weekends, would afford additional access for Brooklyn residents.

#### SUMMARY COMPARISON OF ALTERNATIVE IMPACTS

The following is a brief comparison of the major impacts of the proposal (alternative 2) and the other alternatives that were considered.

### Impacts on Natural Resources

Alternatives 1 and 2 would leave much of the field in a natural condition and would have no significant adverse effect on existing plant and animal communities. Most of the site would remain in open grasslands. In contrast, alternatives 3, 4, and 5 each contain one or more actions that would require a major alteration of the environment.

Alternative 3 calls for the creation of extensive new wetlands. The dredging to create the new seawater channels called for in this alternative would initially destroy both wetland and upland vegetation. Eventually, extensive communities of salt marsh vegetation would become established along the edges of the channels, creating new feeding and nursery habitat for shorebirds and aquatic animals. Upland habitat would also recover to a degree, but the invasion of saltwater and the reduction in the underground freshwater aquifer would cause a decline in those upland species that could not tolerate the increase in groundwater salinity. Dredging activities would cause sedimentation of bay waters and could potentially result in the introduction of toxic materials into the bay. As a result of the greatly expanded shoreline, there would be increased erosion with resulting increased siltation of the bay.

The construction work to build the dikes called for in alternative 4 would cover large areas of grasslands with new landfill and have short-term adverse effects on resident birds. Efforts would be made to reestablish grassland communities between the canals. Depending upon their use, some of the waterways might provide resting and breeding habitat for waterfowl.

Under alternative 5 new construction could potentially cover portions of the field that are currently undeveloped. Construction of a platform jetty would involve extensive pile driving, which would have locally severe short-term effects on the water quality and benthic organisms in Jamaica Bay. Once in place the jetty would act as an artificial reef, creating habitat for marine invertebrates and finfish. The jetty would help to reduce erosion along the eastern shore of the field.

None of the alternatives call for new development within the 100-year floodplain.

### Impacts on Cultural Resources

The historic appearance of Hangar Row would be altered to some degree in all of the alternatives. The alteration would be minimal under alternative 1, but even in that alternative the addition of such features as sports fields, nursery areas, and garden plots would create a more parklike setting at the old municipal airfield. Alternatives 2 through 5 include provisions for landscaping and other outdoor changes that would further transform the site's former austere appearance; in each case, however, the runway pattern and the huge hangar complexes within the historic district would be preserved, imposing the unmistakable mark of the former airfield on whatever new facility was created. Only modest outdoor improvements would occur within the historic district in

alternatives 2 and 3. In alternative 4 flooding the runways would change the appearance of the site by introducing canals where pavement used to be; however, the relationship of open spaces to buildings would be retained. The greatest change in the appearance of the site would occur under alternative 5 because of the extensive new construction it would involve. New construction along Hangar Row would have to be undertaken with great care to avoid unacceptably altering the historic scene.

Impacts on individual structures within the historic district would be expected to be similar under alternatives 2 through 5. In each case the rehabilitation, continued maintenance, and long-term preservation of the significant structures in the district would be ensured by establishing adaptive uses in all of these buildings. The only alternative in which this would not occur is alternative 1, which provides only for the stabilization of the hangars, administration building, and certain support structures. Although this level of treatment would retard further deterioration, it would not ensure the buildings' continued maintenance and long-term preservation.

The potential for adversely affecting archeological sites would vary with the amount of new construction included in each of the alternatives. No major construction is included in alternatives 1 or 2. Alternatives 3, 4, and 5 would require more extensive archeological investigation to ensure that archeological resources were not destroyed during site alteration.

#### Impacts on Transportation

The potential for adversely affecting traffic flow on the Belt Parkway and Flatbush Avenue became a major planning issue during the review of the original DCP alternatives. Alternatives 3, 4, and 5 did not address the problems of providing adequate entrance capacity at the field or ensuring that additional park traffic would not significantly increase traffic congestion on the major park access corridors. In response to the concerns over these matters raised at the public meetings, the transportation issue was studied at length during the development of alternative 2, and it was concluded that the expected levels of use could be accommodated with no adverse effects on traffic. Similar analyses were not accomplished for alternatives 3, 4, and 5.

## CONSULTATION AND COORDINATION

In December of 1974, the planning effort for Gateway National Recreation Area began. Early in 1975 the team issued contracts to a number of consultants, both in New York and within the National Park Service, for the procurement of basic information. Public involvement in the planning for Gateway was also initiated in July of that year.

A primary objective of National Park Service planning at Gateway has been to involve the public as individuals as well as through public interest groups and organizations at the earliest possible stage in the planning process and, in all cases, before planning decisions have been made.

From September 1975 to February 1976, the Gateway planning team conducted the first phase of its public involvement program, which was to acquaint the region's population with the planning issues at Gateway. Community opinion leaders were initially identified by contacting the offices of borough presidents, the mayor's offices of community planning in New York, and city, county, and municipal agencies in New Jersey. Telephone calls and mailback response cards, which led to a master mailing list, were used to enlist group and organization leaders in setting up more than 500 informal interviews and meetings. Brochures and slide shows were used to show the park's existing facilities and recreational possibilities. These personal contacts led to additional interviews with people who were interested in Gateway planning issues.

The first phase of Gateway public involvement included six public workshops held in October 1975, one at each Gateway unit, one in Manhattan, and one in Newark. The ideas and opinions heard were incorporated into planning alternatives, as were many of the specific suggestions voiced to the team after January 1975. In April 1976 an Environmental Assessment presenting three planning alternatives that reflected the major values and opinions expressed during the public involvement process was released for public review.

The second phase of public involvement at Gateway began in February 1976 and extended to May 15. Informal public meetings were held to present the planning alternatives to citizens and community leaders with expertise in planning as well as valuable knowledge of the needs and expectations of their constituencies. These meetings provided essential information for the assessment of alternatives.

Following full public review of the planning alternatives, comments were evaluated and plan proposals selected. A Discussion Draft General Management Plan was prepared and released for public review in September 1976.

Analysis of the comments on the draft plan offered in writing or at public meetings showed that a rather representative cross section of the region's communities and organizations had become involved in the planning process.

The public comments on the draft plan were summarized in the "Here's What We Heard" paper issued in April 1977. During 1977 the plan was revised. At the same time certain subsections of the park--North and South Beaches and Sandy Hook; Great Kills and Miller Field; Staten Island; Tip Beach, Tankel Beach, and Fort Tilden; Breezy Point; and Spring Creek Park and Jamaica Bay--were given additional detailed planning (called development concept planning) to ready them for comprehensive design and construction during the early phases of plan implementation.

During 1977 a Draft Environmental Statement was also prepared, which described and assessed all Gateway proposals, whether at a policy or generalized planning level or at a more detailed development concept plan level. The draft statement was released in April 1978, along with a "Decisions Paper" explaining the reasoning behind any revisions to the draft plan proposals.

During early 1978 the "Decisions Paper" and the Draft Environmental Statement were the subject of a series of public meetings. They were also extensively distributed through the press, library systems, local governmental offices, and concerned citizen organizations. A Gateway telephone "hotline" was established to receive comments and to distribute copies of the documents to all who called to request them. A year later, after thorough review and analysis of all the proposals, the Gateway General Management Plan and Final Environmental Statement were released in August 1979. These documents were the subject of a series of public meetings and were sent out to over 8,000 individuals and groups, including all the relevant governmental and private institutions.

This Floyd Bennett Field Development Concept Plan is a continuation of the same planning process. In October 1980, a report entitled "Environmental Inventory and Preliminary Land Use Programs" was completed by a joint venture group led by M. Paul Friedberg and Partners, consultants to the National Park Service. Three assessed alternative proposals for Floyd Bennett Field were included. Public meetings were held to discuss the raw data and the alternative proposals. The Advisory Council on Historic Preservation and the state historic preservation officer of New York were each sent a copy of the alternatives for comment.

Following the publication of the three alternatives, the National Park Service was subjected to new fiscal constraints, as were most other federal agencies. Based upon reactions by the public and NPS managers to the three original alternatives, the National Park Service developed a new, preferred alternative.

A draft plan describing the preferred alternative was published in December 1981. Press releases and news articles were published in several of the local newspapers, and several thousand copies of the draft plan were distributed for review. Several informal meetings and two formal public meetings were held to present the proposals to the public, answer any questions, and solicit reactions. About 350 people attended these meetings and discussed the plan with National Park Service representatives. Over 30 written responses were received, nine from

governmental agencies and the remainder from private organizations and individuals.

The Gateway Advisory Commission approved the concepts of the plan. Of the federal agencies that responded, the Advisory Council on Historic Preservation supported the plan, as did the Army Corp of Engineers, Environmental Protection Agency, and Fish and Wildlife Service (Department of the Interior). The U.S. Coast Guard (Department of Transportation) opposed the removal of the fence along Flatbush Avenue and also opposed the proposal to relocate their runway. Both of these proposals have subsequently been revised, as reflected in the final plan. The General Services Administration responded with no comment.

The New York Department of Transportation supported the plan and especially supported the transportation proposals.

The borough president of Brooklyn supported the plan and specifically the private sector involvement in Hangar Row, and he requested the opportunity to review a request for proposals (RFP) before its issuance. Community Board #10 also supported the plan.

The Gateway Citizens Committee was very concerned about the proposed private sector involvement and requested a review of the RFP. This was also the position of the National Parks and Conservation Association, the Natural Resources Defense Council, and the Parks Council. The Central Brooklyn Coordinating Council supported the plan and specifically the private sector involvement in the Hangar Row area. The Audubon Society of New York City supported the plan generally but expressed concern over the proposed fence removal, the reforestation of specific areas, and the general protection of the natural environment. These concerns have been addressed in the final plan. Similarly, the New York City Sierra Club was concerned about natural areas and specifically about the proposed location of a picnic area on the eastern shore. The picnic area has been relocated in the final plan.

Of the letters received from individuals, two were generally supportive and three were generally opposed. The issues raised by individuals were opposition to the removal of the fence (2), opposition to autos on the field (2), and opposition to the transportation plan (1).

With the revisions based upon these public comments, the final plan for Floyd Bennett Field reflects the needs of the community and region, as expressed throughout the public involvement process, as well as the character of the resource and the mission of the National Park Service. The National Park Service remains committed, throughout the implementation of this plan, to maintaining public involvement on all significant actions.

The following agencies were sent copies of the draft DCP for review and will also receive this final plan for their information.

Federal Agencies

Advisory Council on Historic Preservation  
Department of Agriculture  
    Soil Conservation Service  
Department of the Army, Corps of Engineers  
Department of Commerce  
    National Oceanic and Atmospheric Administration, National Marine  
    Fisheries Service  
Department of Education  
Department of Energy  
Department of Housing and Urban Development  
Department of the Interior  
    Bureau of Land Management  
    Fish and Wildlife Service  
    Geological Survey  
Department of Labor  
Department of Transportation  
    Coast Guard  
    Federal Aviation Administration  
    Federal Highway Administration  
    Urban Mass Transit Administration  
Environmental Protection Agency  
Federal Emergency Management Agency  
General Services Administration

New York State Agencies

A-95 Clearinghouse

New York City Agencies

Department of City Planning

APPENDIX 1: PROPOSED VISITOR USE

	Element A		Element B		Element C	
	Daily	Total	Daily	Total	Daily	Total
Summer Average Weekend Day (33)	700	23,100	6,000	198,000	7,000*	231,000
Average Weekday (67)	560	37,520	4,000	268,000	5,000	335,000
Spring & Fall Average Weekend Day (21)	420	12,600	3,000	63,000	4,000	84,000
Average Weekday (55)	420	23,100	2,000	110,000	3,000	165,000
Winter Average Day (189)	42	<u>7,938</u>	1,500	<u>283,500</u>	1,500	<u>283,500</u>
Total Annual Use		<u>+105,000</u>		<u>+920,000</u>		<u>+1,100,000</u>

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Note: These use levels are rough estimates based upon existing use patterns, and projections of use levels for the proposed activities. They are used for impact identification, but they should not be considered firm proposals for purposes of estimating revenues. The actual use levels will, to a great extent, be affected by the specific activities and attractions that are permitted into the Gateway Village.

\* Approximately 2,000 of these visitors will be using the bus shuttle to Breezy Point, thereby decreasing slightly the Gil Hodges Memorial Bridge traffic.

## APPENDIX 2: DEVELOPMENT COST ESTIMATES

The following estimates are in 1982 dollars, based on similar types of facilities.

### Element A

Remove portions of Flatbush Avenue fence	\$ 80,000
Minor landscaping	300,000
Rehabilitate first floor of administration building	200,000
Stabilize hangar complexes 3, 4, and 6 @ \$500,000	1,500,000
Stabilize support structures	200,000
General cleanup	400,000
Establish sportsfields	100,000
Tree nursery (trees supplied by others)	200,000
Rehabilitate exteriors of other structures (interiors by others)	1,000,000
Transportation	
Upgrade signal	95,000
Establish new driveways	25,000
Establish new bus stop	25,000
New signs	55,000
	<hr/>
Total, element A	\$4,180,000

### Element B

Manage natural area, clean up, establish tree nursery, picnic areas	\$1,500,000
Rehabilitate facility for boat launch	50,000
Various picnic areas	500,000
Upgrade Plumb Beach	200,000
Demolish derelict structures	1,500,000
New lookout tower	200,000
Rehabilitate administration building	2,000,000
Rehabilitate hangars (approx. \$5,000,000 by lessee)	4,000,000
Support structures	350,000
Landscaping of grounds in Hangar Row	1,500,000
Gateway Village exhibits and interiors	1,500,000
Rehabilitate support buildings in village	400,000
Rehabilitate buildings in institutional area	1,000,000
Access and parking	
Signal Upgrading	150,000
New traffic lanes	250,000
Signal coordination	30,000
New signs	75,000
Construction of shuttle road	100,000
Purchase bus vehicles	400,000
	<hr/>
Total, element B	\$15,705,000

Element C

All the costs associated with element B are also included in element C plus the following access improvements:

Ramps from Belt Parkway	\$1,200,000
Ferry dock	400,000
Pedestrian overpass	<u>500,000</u>
\$2,100,000	
Total, element C	\$ 2,100,000
Plus element B	<u>15,700,000</u>
Total, elements B and C	\$17,800,000

### APPENDIX 3: ESTIMATE OF VEHICLE USE

This estimate of summer vehicle use by visitors to Floyd Bennett Field is based upon the projected number of average daily users on summer weekends and weekdays once the field is operating at full development (see appendix 1). Assumptions about the modal split, vehicle occupancy rates, and approach directions reflect current travel patterns.

#### PROJECTED AVERAGE SUMMER WEEKEND TRAFFIC

##### Vehicle Trips Per Day

Assume:	Daily Use	7,000 visitors
Assume:	Modal Split	
	84% car	5,880 visitors
	14% bus	980 visitors
	2% other (bike, walk)	140 visitors
Assume:	Vehicle Occupancy	
	5,880 visitors ÷ 3/car	1,960 cars/day
	980 visitors ÷ 30/bus	33 buses/day
Assume:	1 bus is the equivalent of 2 cars in terms of traffic volume.	
Estimate:	Daily Traffic Volume (both directions)	
	(2 x 1,960 autos) +	
	2 (2 x 33 buses)	4,052 vehicle trips/day
Assume:	Approach Direction	
	85% Flatbush Avenue southbound	
	(2,026 vehicles x 0.85)	1,722 vehicle trips/day
	15% Flatbush Avenue northbound	
	(2,026 vehicles x 0.15)	304 vehicle trips/day

##### Average Annual Daily Traffic (AADT)

Average summer weekend traffic for Gil Hodges Memorial Bridge is 1.80 average annual daily traffic.

$$\begin{aligned}4,052 &= 1.80 \text{ AADT} \\4,052 \quad 1.80 &= \text{AADT} \\ \text{AADT} &= 2,250\end{aligned}$$

##### Design Hourly Volume (DHV)

The range for design hourly volume based on average summer weekend use is computed from formulas developed by the Federal Highway Research Board, in which DHV is assumed to be 0.30 AADT if overall

road use is substantially recreational, or 0.34 AADT if road use is primarily recreational.

$$\begin{aligned} \text{DHV1} &= 0.30 \times 2,250 \\ &= 675 \text{ vehicles/hour} \end{aligned}$$

$$\begin{aligned} \text{DHV2} &= 0.34 \times 2,250 \\ &= 765 \text{ vehicles/hour} \end{aligned}$$

### PROJECTED AVERAGE SUMMER WEEKDAY TRAFFIC

#### Vehicle Trips Per Day

Assume:	Daily Use	5,000 visitors
Assume:	Modal Split	
	85% car	4,250 visitors
	14% bus	700 visitors
	1% other (bike, walk)	50 visitors
Assume:	Vehicle Occupancy	
	4,250 visitors - 3 people/car	1,417 cars/day
	700 visitors - 30 people/bus	23 buses/day
Estimate:	Daily Traffic Volume (both directions) (2 x 1,417) + 2 (2 x 23)	2,926 vehicle trips/day
Assume:	Approach Direction	
	85% Flatbush Avenue southbound	1,244 vehicle trips/day
	15% Flatbush Avenue northbound	219 vehicle trips/day

#### Average Annual Daily Traffic (AADT)

Average summer weekday traffic on the Gil Hodges Memorial Bridge is 1.38 average annual daily traffic.

$$\begin{aligned} 2,926 &= 1.38 \text{ AADT} \\ 2,926 - 1.38 &= \text{AADT} \\ \text{AADT} &= 2,120 \end{aligned}$$

APPENDIX 4: SUMMARY OF MARKET AND  
ECONOMIC FEASIBILITY STUDY

Prepared by Branch of Concessions Management  
Professional Support Division  
Denver Service Center

I. STUDY METHODOLOGY

A two-phase on-site study was conducted by two concessions specialists. The first phase involved preparation of a preliminary feasibility report of possible revenue-producing functions. The second phase involved a limited market analysis which included interviews with local chambers of commerce, the board of education, police department, city planning board, etc.

This study deals with hangar complexes 5 and 6 and the Blue Hangar at Floyd Bennett Field. Hangar complex 5 is currently undergoing some exterior stabilization, including construction of a new roof. The Blue Hangar is in somewhat better exterior condition, but all of the hangars will require complete interior renovation.

II. BROOKLYN STATISTICS

Brooklyn is the fourth largest city in America with a population of 2.5 million people. The population is projected to remain the same in 1990. Overall population has decreased 3.9 percent since 1970.

The population decline has occurred in age groups under 20 and over 45. In the age group between 21 and 44 there has been an increase in population. The basic target group for use of the facilities anticipated at Floyd Bennett Field would be people age 44 and under. Obviously this does not exclude use and interest by individuals over 44.

III. ALTERNATIVES

A. Blue Hangar Alternatives

Alternative 1: Offices/Shops

This alternative evaluates use of the hangar for 54 office spaces (25' x 30'), four shops (50' x 20'), and 12 restrooms. The offices would be arranged around a central atrium and would rise three levels running lengthwise on each side of the hangar. The four shops would be located on the side of the hangar on the first level. Entrance and exit would be from the ends of the atrium and from the shop side of the hangar. The entire bottom floor would be terrazzo while flooring in the offices would be left to the discretion of the lessee.

Initial Investment Costs (20-year costs)	\$3,097,480
Recurring Expenses	\$6,494,715
Annual Revenue at 100% Occupancy	\$ 643,200
Annual Revenue at 80% Occupancy	\$ 514,560

Conclusion: The benefit/cost ratio would be 1.6 over a 20-year period. This suggests an economically feasible operation.

The ROI (return on investment) for the first year would be only 6.4% before FIT (federal income tax), which is not considered economically feasible. The ROI would not reach an acceptable level until year 15, but by year 20 it would become 128%. The average over the 20-year period would be 22.1%, which is acceptable.

Although this appears to be a feasible operation over the long run, the market study indicates that there is no demand for office space. Rental rates for office space appear to average somewhere between \$5 and \$8 per square foot in already existing buildings, as opposed to the \$14 to \$15 per square foot used in the financial analysis of this operation.

A more extensive market study by a developer may uncover a demand for office space in this area. The positive aspects (free parking, for example) should not be overlooked.

#### Alternative 2: Bowling Alley

In this alternative the hangar would be used for a 28-lane bowling alley. A large central game room would have 14 bowling lanes on each side, 10 pool tables, 2 billiard tables, and 20 other assorted coin-operated game machines. Support facilities would include a pro shop, snack bar, shoe rental, coat room, meeting room, office, boiler room, and restrooms.

Initial Investment Costs	\$2,213,700
Recurring Expenses	\$ 942,980
Annual Revenues	\$1,409,226

Conclusion: The ROI before FIT would be 21%, which is considered economically feasible.

#### Alternative 3: Exhibition Hall/Convention Center

This alternative was not market researched. However, since the Blue Hangar offers good potential for this type of service, it should be considered.

The hangar would provide 28,800 feet of clear span space that could be divided into any number of smaller areas. The storage (lean-to) area could be used as conference rooms.



From this analysis, it would seem that regulation size roller and ice rinks are not feasible at this time by themselves. A smaller multipurpose area including a recreational roller and ice rink is discussed in one of the alternatives for hangar complexes 5 and 6.

B. Hangar Complex Alternatives

Alternative 1: Ethnic Food Restaurants/Markets

This alternative evaluates the use of one of the hangar complexes for 12 separate food preparation and sales areas with a large common seating space in the center. The common dining area would seat approximately 310 people. The kitchen/sales area would be 750 feet with four 20-foot entrances.

The economic feasibility of this alternative was assessed for four possible developer/operator arrangements.

1. Lessee/developer subleases restaurant space:

Initial Investment Costs	\$ 905,730
Recurring Expenses	\$ 230,831
Annual Revenues	\$ 234,000

Conclusion: This demonstrates an unacceptable ROI, which makes this type of operation totally infeasible.

2. Lessee/developer operates all restaurants, assuming that each shop would generate a minimum of \$321,750:

Initial Investment Costs \$905,730 plus \$90,000/unit for equipment	\$1,985,730
Recurring Expenses	\$3,257,336
Annual Revenues	\$3,861,000

Conclusion: The ROI before FIT would be 30.4%. This alternative is economically feasible.

3. Lessee/developer subleases market space: Costs and revenues would be similar to 1.

Conclusion: Not economically feasible.

4. Lessee/developer operates market:

Initial Investment Costs	\$1,387,380
Recurring Expenses	\$4,205,640
Annual Revenues	\$4,680,000

Conclusion: The ROI before FIT would be 34.2%, making this operation feasible.

Alternative 2: Recreation

This alternative encompasses both hangar bays, but each side has been costed out separately.

One side would contain 14 racquetball courts, 2 saunas, lockers, showers, and toilets. This space would hopefully attract office people on their lunch hours if offices were installed in the Blue Hangar.

The other side would have an ice-skating rink, rentals, restrooms, snack bar, and game machines. The ice rink would have a multipurpose floor so it could be used also for roller skating. This rink could be used for recreational skating only; a regulation rink suitable for hockey could not be accommodated.

1. Racquetball and sauna:

Initial Investment Costs	\$1,037,930
Recurring Expenses	\$ 167,432
Annual Revenue	\$ 378,560

Conclusion: This operation would produce an ROI before FIT of 16.1%, which would be feasible.

2. Rink, game room, and snack bar:

Initial Investment Costs	\$ 716,045
Recurring Expenses	\$ 246,396
Annual Revenue	\$ 388,388

Conclusion: This operation would produce an ROI before FIT of 19.8%, making this a feasible alternative.

IV. CONCLUSIONS

The assessment of alternatives indicates the following:

Blue Hangar

Alternative 1: Offices/Shops. Apparently not feasible from the comments received; however, companies whose employees are not

dependent on public transportation and which desire proximity to the airport might find this location advantageous.

Alternative 2: Bowling Alley. Economically feasible.

Alternative 3: Exhibition Hall/Convention Center. In the absence of market research, no conclusions.

Alternative 4: Roller/Ice Rink. A regulation size is not feasible.

#### Hangar Complexes

Alternative 1: Ethnic Food Restaurants/Markets. Feasible only with the lessee as operator; infeasible as a sublease program.

Alternative 2: Recreation (racquetball, etc.). As a separate entity, this operation is marginal. As a part of the overall development, it becomes feasible.

#### Transportation/Traffic

The assessment of the alternatives, as listed above, indicates a probable feasible development. The overlying deterrent is the present lack of adequate entrance capacity for the park. All evaluations were based on sufficient entrance capacity to accommodate 1,300 to 1,600 automobiles per day on weekdays and 4,000 or more per day on weekends. Therefore, unless this problem can be resolved, the feasibility of such a development would be seriously questioned. It is further concluded that in the absence of a solution to the entrance problem, finding investors would be difficult.

#### Tax Incentives

Section 2124 of the Tax Reform Act of 1976 (PL 94-455) provides for tax incentives for the preservation and rehabilitation of certain historic structures. It is possible that these provisions may be applicable to the above proposed rehabilitation/adaptive use projects. This program was administered by the Heritage Conservation and Recreation Service, whose functions are in the process of being transferred to the National Park Service.

#### Retention of Fees for Maintenance Programs

The National Historic Preservation Act has been amended to allow proceeds from any lease for use of certain historic properties to be used to "defray the costs of administration, maintenance, repair, and related expenses incurred by the agency" making the lease. The administrative policies of this provision are now being prepared by the NPS Washington Office.

## APPENDIX 5: BUILDINGS TO BE DEMOLISHED

The following structures will be demolished as part of the full development of the field:

Building 107, a steel skeleton on the northern edge of the field

Building 238, a concrete block storehouse at the north end of Hangar Row

Buildings 126, 232, and 233, concrete block sheds at the south end of Hangar Row

2 bus shelters, one (224) near present south entrance and one (unnumbered) near the Job Corps area

Building 67, the foundations of a demolished structure near the park headquarters

Building 95, a frame building used as a recycling center, near hangar B

Buildings 127, 92, 93, and 147, cluster of unnumbered metal sheds near hangar B

Building 206, a small shed over an underground oil tank  
(The oil in the tank must first be removed.)

Building 87, a dilapidated structure near Jamaica Bay headquarters, adjacent to the swimming pool

Building 118, a former communications building

The several unnumbered oil tanks near the navy property at the dock

Of these structures, buildings 126, 238, and the fuel tank west of the Blue Hangar are within the boundaries of the Floyd Bennett Field historic district, but they are not contributing elements. In addition, buildings 118, 232, and 233 are included on the NPS List of Classified Structures. The impacts and legal and policy requirements connected with demolition of these structures are discussed in the text.

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As the nation's principal conservation agency, the Department of the Interior has basic responsibilities to protect and conserve our land and water, energy and minerals, fish and wildlife, parks and recreation areas, and to ensure the wise use of all these resources. The department also has major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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