ENVIRONMENTAL ASSESSMENT FOR THE CONSTRUCTION OF A GOLD COURSE ADDITION NCBC GULFPORT MS

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Environmental Assessment

for the

Construction of a Golf Course Addition at Naval Construction Battalion Center Gulfport, Mississippi

Southern Division, Naval Facilities Engineering Command
North Charleston, South Carolina

March 1996
95-5280-15

Environmental Assessment
for the
Construction of a Golf Course Addition at
Naval Construction Battalion Center
Gulfport, Mississippi

Responsible Agency: Southern Division, Naval Facilities Engineering Command
North Charleston, South Carolina

Action: The Commanding Officer at Naval Construction Battalion Center (NCBC) Gulfport, Mississippi, is responsible for providing for the morale, welfare, and recreation (MWR) of all active-duty and reserve personnel assigned to NCBC Gulfport. This environmental assessment was completed to address the proposed expansion of an existing nine-hole golf course at NCBC Gulfport to an eighteen-hole golf course. This facility would be used by base personnel, their dependents, and retired military personnel in the region.

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Designation: Environmental Assessment

Abstract: This assessment contains an analysis of the potential environmental impacts of the construction of an additional nine holes to the existing nine-hole golf course at NCBC Gulfport, Mississippi. The proposed golf course expansion would be constructed in the northwestern quadrant of the base, adjacent to the existing course. The proposed action would take place in areas that previously have been disturbed or are planted in slash pine. Individual links on the proposed course have been microdesigned by walking the proposed layout of the course and adjusting the layout to avoid wetlands and stands of cypress and hardwood trees to the greatest extent possible. Instead of continuous fairways found on many courses, the links have been designed to preserve wetlands on the course and incorporate them into the layout as golf hazards. The wetlands would be maintained by fire or the use of bushhog mowers. Raised boardwalks would be constructed where golf carts and golfers would cross wetland areas. The proposed project would result in the loss of less than 20 acres of slash pine

forest. Less than 0.5 acre of palustrine forested wetland habitat would be filled by wooden supports for the elevated boardwalks and the construction of the green for hole 18. Approximately 1.5 acres of forested wetland habitat would be cleared of trees during the construction of the additional nine holes. Trees required to be removed from Installation Restoration (IR) sites or wetlands during construction of the fairways would be cut at ground level and the stumps ground to below the ground surface. Routine maintenance would fill holes, as needed, that may appear as the stumps degrade. A new 2-acre lake/wetland would be constructed in the expanded golf course area. This new lake/wetland area would fill naturally from groundwater and from surface water runoff.

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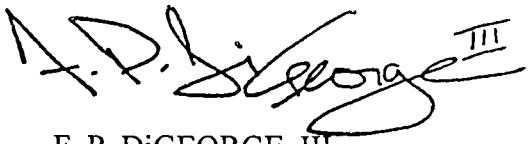
EXECUTIVE SUMMARY

This environmental assessment reflects plans to construct the back nine holes for Pine Bayou Golf Course. The design was carefully prepared to minimize impact on wetlands and environmental restoration sites, while providing new wetlands to replace the minimal areas effected by construction. The concept enhances wetlands, wildlife habitat and forest diversity, while constructing a links type course which blends naturally with the environment.

The existing nine hole golf course at Naval Construction Battalion Center, Gulfport, was constructed in 1977, through a combination of Seabees, civilian and contractor labor. Pine Bayou is one of the most challenging golf courses on the Gulf Coast, and provides superb habitat for a diversity of wildlife; the combination of marginal forest and enhanced wetlands supports waterfowl, game birds, hawks, fish and fur bearing animals. The wildlife population includes racoons, foxes, opossums, rabbits, squirrels, nutria, egrets, herons, ducks, geese, coots, a wide variety of songbirds, bass, bream, and catfish. The forest consists primarily of pine, with abundant bald cypress, swamp bay, magnolia, oaks, Chinese tallow and a variety of brushy shrubs.

Plans for construction of the course and enhancement of adjacent wetlands have been closely coordinated with the Army Corps of Engineers. Mississippi Fish and Game has greatly assisted with enhancement of habitat for fish and wildlife, while the U.S. Department of Agriculture has been extremely helpful in preparing a complimentary report on erosion protection for the Center. The University of Southern Mississippi is serving as a consultant for protection and enhancement of adjacent wetlands which include an elevated nature trail which protects the environment while providing access for people. Local Scout Troops are also assisting with various wildlife management projects on or near the existing golf course and proposed construction site.

Only two holes actually impact on wetlands...numbers 10 and 18. In each case, the impact is minimized by narrow fairways; adjusting the layout to save existing cypress, oak, magnolia and bay trees; preparing links type landing areas vice open fairways; using wetlands as hazards to be avoided; and construction of elevated wood pathways for golf carts. Existing wetlands adjacent to the layout will be expanded and new wetlands constructed to enhance wildlife habitat, scenic beauty, and challenge of the course. In addition to providing access to a beautiful area of the Center, the course will provide much needed revenue to support morale, welfare and recreation programs, and further enhance the lakes, waterways and forests for wildlife and coast residents.



F. P. DiGEORGE, III
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Commanding Officer

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Purpose and Need

1.1 PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of this environmental assessment (EA) is to document the impacts of the proposed construction of nine additional holes to an existing nine-hole golf course at the Naval Construction Battalion Center (NCBC) Gulfport, Mississippi. The expanded course would be used by active-duty and reserve personnel assigned to NCBC Gulfport, their dependents, and retired military personnel in the region. Authorized civilian guests also would be permitted to use the course.

In accordance with the National Environmental Policy Act (NEPA) of 1969 as implemented by the Council on Environmental Quality regulations (40 CFR Parts 1500–1508), the Navy has prepared this EA to evaluate the environmental effects of the proposed construction and future use of the nine additional golf course holes. The Commanding Officer, NCBC Gulfport, is responsible for providing, as appropriate, support to the Naval Construction Force. One important aspect of this support is to provide for the morale, welfare, and recreation (MWR) of all active-duty and reserve personnel assigned to NCBC Gulfport.

The MWR Department at NCBC Gulfport is charged with providing recreational facilities, such as the existing nine-hole golf course, where base personnel can participate in outdoor recreational activities. Although Category A and B facilities and functions of MWR are supported by Department of Defense funding allocations to the base, Category C functions such as the golf course must rely on fees collected for its use to support it (Crane 1995). All of the fifteen civilian golf courses within thirty miles of NCBC Gulfport are eighteen-hole courses (Harrison County Tourism Commission 1995). Expanding the existing course on base to eighteen holes would increase its capacity, attract more people to use the facilities, and improve the quality of the recreational experience. In addition, as the number of players using the course increases, the increased revenue generated would be used to support other MWR functions and facilities on base. Completion of this proposed project also would satisfy the original eighteen-hole golf course design concept for the base.

1.2 LOCATION OF THE PROPOSED ACTION

NCBC Gulfport is located in Harrison County, Mississippi, approximately midway between New Orleans, Louisiana, and Mobile, Alabama. Located in the southeastern part of Mississippi, the base is approximately 2 miles inland from the Mississippi Sound of the Gulf of Mexico (Figure 1-1). The base is within the Gulfport city limits and is west of downtown Gulfport. It is bounded on the north by 28th Street, and Old Pass Road and Railroad Street are located to the south (Figure 1-2). Klondike Road is west of the base, and Highway 49 is

approximately 1 mile east of the base. Major highways providing access to the NCBC Gulfport are Interstate 10 approximately 7 miles to the north, and U.S. Highway 90, approximately 2 miles to the south.

Of the 1,100 acres within NCBC Gulfport, 125 acres are under management for forestry use (SOUTHNAVFACENGCOM 1987) and may be suitable for outdoor recreation activities. The remainder of the installation is highly urbanized and contains minimal open space.

Three sites were considered for the construction of the nine additional holes for the golf course. All three sites were located in the vicinity of the existing golf course at the western end of the base (Figure 1-3). The Alternative 1 site and course layout has been selected as the preferred location of the proposed action. The proposed action includes clearing selected forested areas, grinding the stumps below the ground surface in wetlands and on IR sites, grading and constructing the greens and tees, constructing a new 2-acre lake/wetland on the expanded golf course, and maintaining the expanded facility.

1.3 SCOPE OF THE ENVIRONMENTAL REVIEW

The Navy has prepared this document in accordance with NEPA of 1969, as implemented by the regulations of the President's Council on Environmental Quality (40 CFR Parts 1500–1508). In addition, this EA follows Navy Regulation (OPNAVINST) 5090.1B, which implements both NEPA and the Council on Environmental Quality regulations within the Navy system. This document examines the current physical, biological, and socioeconomic conditions in the vicinity of NCBC Gulfport and reviews the potential consequences of the proposed action to expand the existing golf course. This document provides the Chief of Naval Operations and other decision-makers the information required to understand the environmental consequences of the proposed action.

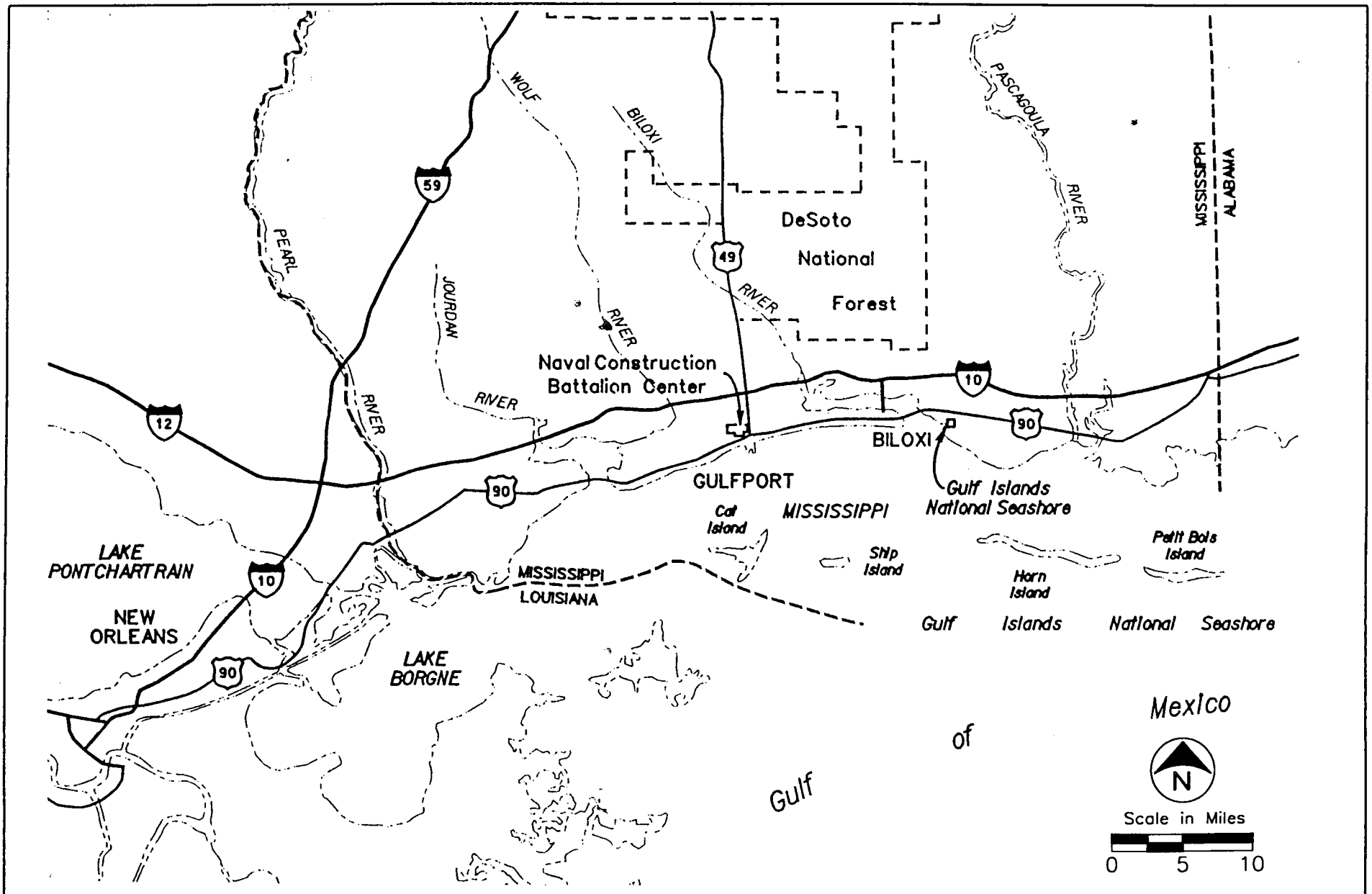

Figure 1-1.
Regional Location of NCBC Gulfport, Mississippi

Source: National Park Service 1989.

NCBC Gulfport
Environmental Assessment

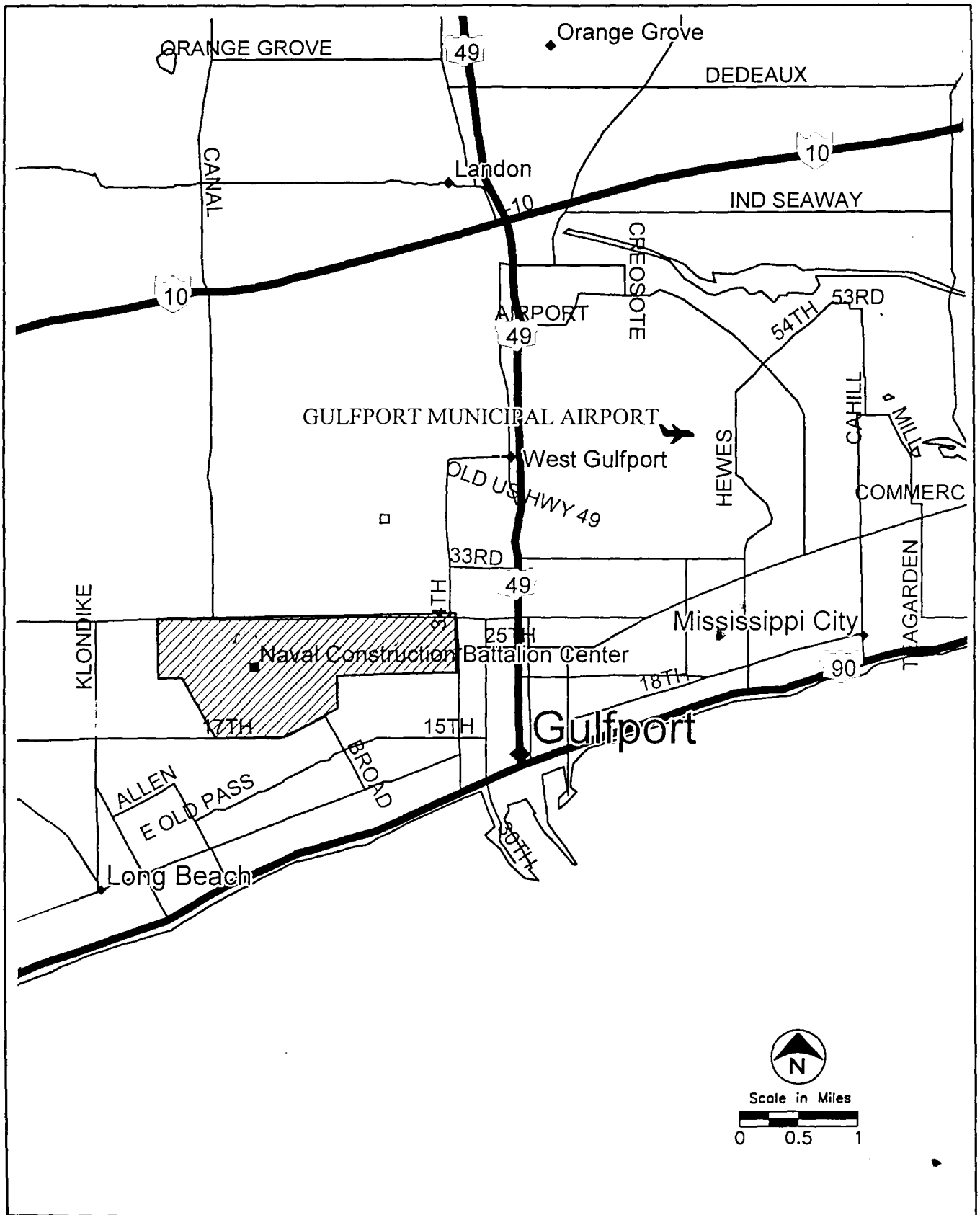

Figure 1-2.
Roadways in the Vicinity of NCBC Gulfport, Missippi

Source: DeLorme Mapping 1994

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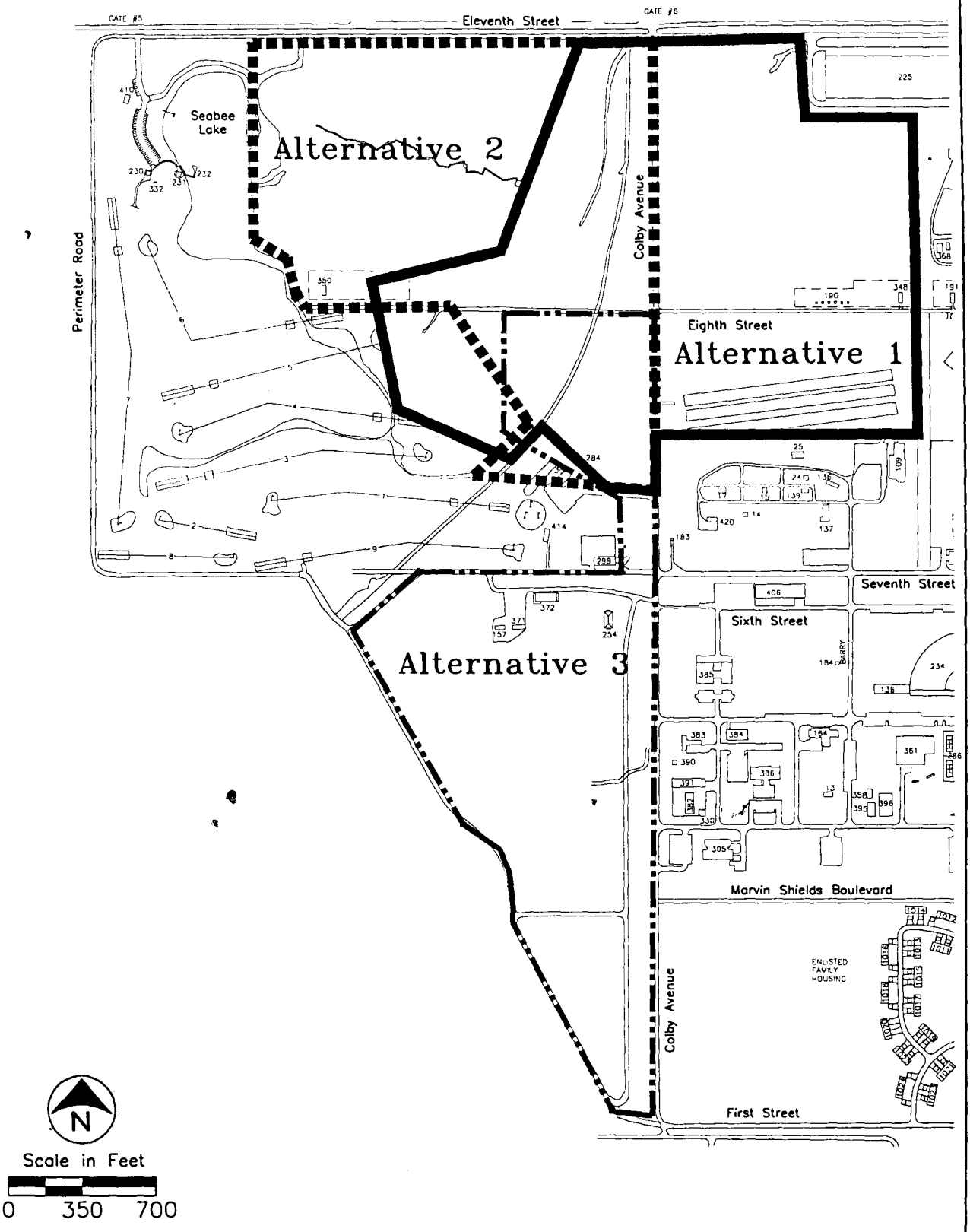

Figure 1-3.
Alternative Locations Considered for the Construction of the Golf Course Addition on NCBC Gulfport

Source: NCBC Gulfport 1995.

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Alternatives Including the Proposed Action

2.1 DESCRIPTION OF THE ACTION

NCBC Gulfport is the home of the Atlantic Fleet Seabees. The primary missions for the base are the support of four battalions of the Naval Construction Force, support of the Naval Construction Training Center, and the storage and maintenance of prepositioned war reserve material stock. Support of the Naval Construction Force consists of both homeport services and deployed support. The Naval Construction Training Center trains members of all three branches of the military. Secondary missions of NCBC Gulfport are tenant support and support to other installations in the region.

The Navy has proposed to expand the existing nine-hole golf course to eighteen holes, thereby increasing the recreational opportunities provided in support of the Naval Construction Force and the nearby retired military community. Although there are 15 public golf courses within 30 miles of NCBC Gulfport, green fees at these courses are at least 25 percent higher than on the base. Future increases in the number of tourists attracted by casinos in the area could increase use of area golf courses and could result in higher green fees charged by the courses. Expansion of the existing course would increase its capacity and quality. In addition, the increased revenue generated by the increased number of players would be used to support other morale, welfare, and recreation (MWR) functions and facilities on base. Completion of this proposed project also would satisfy the original eighteen-hole golf course design concept for the base. Sites considered for the golf course addition are located in the vicinity of the existing golf course at the western end of the base.

Various sites and layouts were evaluated for the golf course expansion during the initial design phase of this project. Major assumptions at the beginning of the design process were that the final design should result in the elimination of the least amount of forested areas and wetlands possible, impacts to installation restoration (IR) sites were to be avoided if possible, and the course would not impact the existing mission of the base. The goal was to provide an eighteen-hole course that was challenging and enjoyable to play, did not require excessive walking or riding on golf carts between greens and the following tees, and was not cost prohibitive to construct or maintain.

Figures 2-1 illustrates the proposed location for the additional nine golf course holes located northeast of the existing golf course. Implementation of this layout would require the clearing of less than 20 acres of slash pine forests. Less than 0.5 acre of palustrine forested wetland habitat would be filled by wooden supports for the elevated boardwalks and construction of the green for hole 18. Approximately 1.5 acres of forested wetland habitat would be cleared

of trees during the construction of the additional nine holes. The elevated boardwalks would be 6 to 8 feet wide to allow two carts (or a pedestrian and a cart) to pass each other on the boardwalk. A new 2-acre lake/wetland would be constructed on the expanded golf course. The proposed layout would result in players playing over IR sites 3 and 7 on the fairways, and no excavation of the IR sites would be required. Construction of link 14 would require the construction of the tee on top of IR site 2, but no excavation would be required. No threatened or endangered species or cultural resources would be impacted by the proposed action. Use of this area for the expansion of the golf course would be compatible with future uses projected for the area in the base master plan (SOUTHNAVFACENGCOM 1990).

2.2 ALTERNATIVES TO THE PROPOSED ACTION CONSIDERED

2.2.1 No-Action Alternative

Under the no-action alternative, the existing golf course would not be expanded to eighteen holes. This would avoid all potential environmental impacts from the proposed action. This alternative would not allow the improvement in course capacity and quality needed to serve the active and retired military and civilian communities in the area. It also would not allow the associated increase in funds that would be made available to support other MWR functions and facilities on base. Additionally, the expansion of existing wetlands, the construction of new wetlands, and the enhancement of wildlife habitat that are peripheral benefits to the golf course design would be lost.

2.2.2 Alternative Construction Sites

Two additional alternative sites were considered during the design process for the expansion of the golf course. One site (Alternative 2) was north of the existing course, bounded on the north by Eleventh Street and on the east by Colby Avenue (Figure 2-2). Use of this area would result in the loss of approximately 34 acres of slash pine forest and would impact approximately 20 acres of palustrine forested wetlands. The course design proposed for this site required the construction of two greens and one tee on top of IR Sites 3 and 4. This site was projected for the expansion of the golf course in the base master plan (SOUTHNAVFACENGCOM 1990).

The other site considered (Alternative 3) for the expansion of the golf course was primarily south of the existing course (Figure 2-3). Holes 10 through 17 would be located in the southwest corner of the base, bounded on the north by Seventh Street, on the east by Colby Avenue, and on the southwest by the perimeter fence. The 18th hole would be located on the east side of the existing course, north of Seventh Street and west of Colby Avenue. The course layout proposed for this site required that both a green (hole 15) and a tee (hole 16) be constructed on IR site 5. The second shot on hole 17 also would be a potential hazard for golfers on the tee for hole 12 and the green for hole 11. The location of hole 18 would result in golfers finishing far from the existing pro shop (building 36).

Although much of the Alternative 3 site has been disturbed previously for use as an Equipment Operator training area, use of this area would result in the additional loss of

approximately 17 acres of slash pine forest and would impact less than 1 acre of palustrine forested wetlands by clearing trees for the fairways for holes 14 and 18. As illustrated in Figure 2-3, future land uses for the area south of the existing golf course presently include family housing and continued use of the area for Equipment Operator training (Crane 1995). The Naval Construction Training Center trains personnel of all three military branches. NCBC Gulfport requires this Equipment Operator training area, and use of this area for a golf course would require the demolition and reconstruction of the Equipment Operator training facilities. Permanent structures located within this training area include four buildings used for classrooms, applied construction, equipment repair and maintenance, and a wash rack. The wash rack (building 254) and the highbay Material Storage building (building 372) were constructed within the past five years.

Table 2-1 summarizes the environmental impacts of each of the alternatives considered for the proposed expansion of the existing 54-acre golf course. Impacts to each alternative site are discussed in detail in Section 4. As indicated in the table, no threatened or endangered species or cultural resources would be impacted by the implementation of any of the alternatives. The proposed layout (Alternative 1) would be impacted by IR sites 2, 3, and 7. However, players would play over Sites 3 and 7 only on the fairways, and no excavation of the IR sites would be required. Construction of link 14 would require the construction of the tee on top of IR site 2, but no excavation would be required. The estimated cost to construct the expanded course would be only slightly lower under Alternative 1 than for the other two alternatives.

Alternative 2 would require the construction of two greens and one tee on top of IR sites 3 and 4. Alternative 2 would impact the greatest amount of forested land (approximately 34 acres) and wetlands (approximately 20 acres).

Alternative 3 would require the location of one tee and one green on top of IR site 5. Although implementation of Alternative 3 would result in the least impact to slash pine forest, use of this area would not be compatible with projected future land uses.

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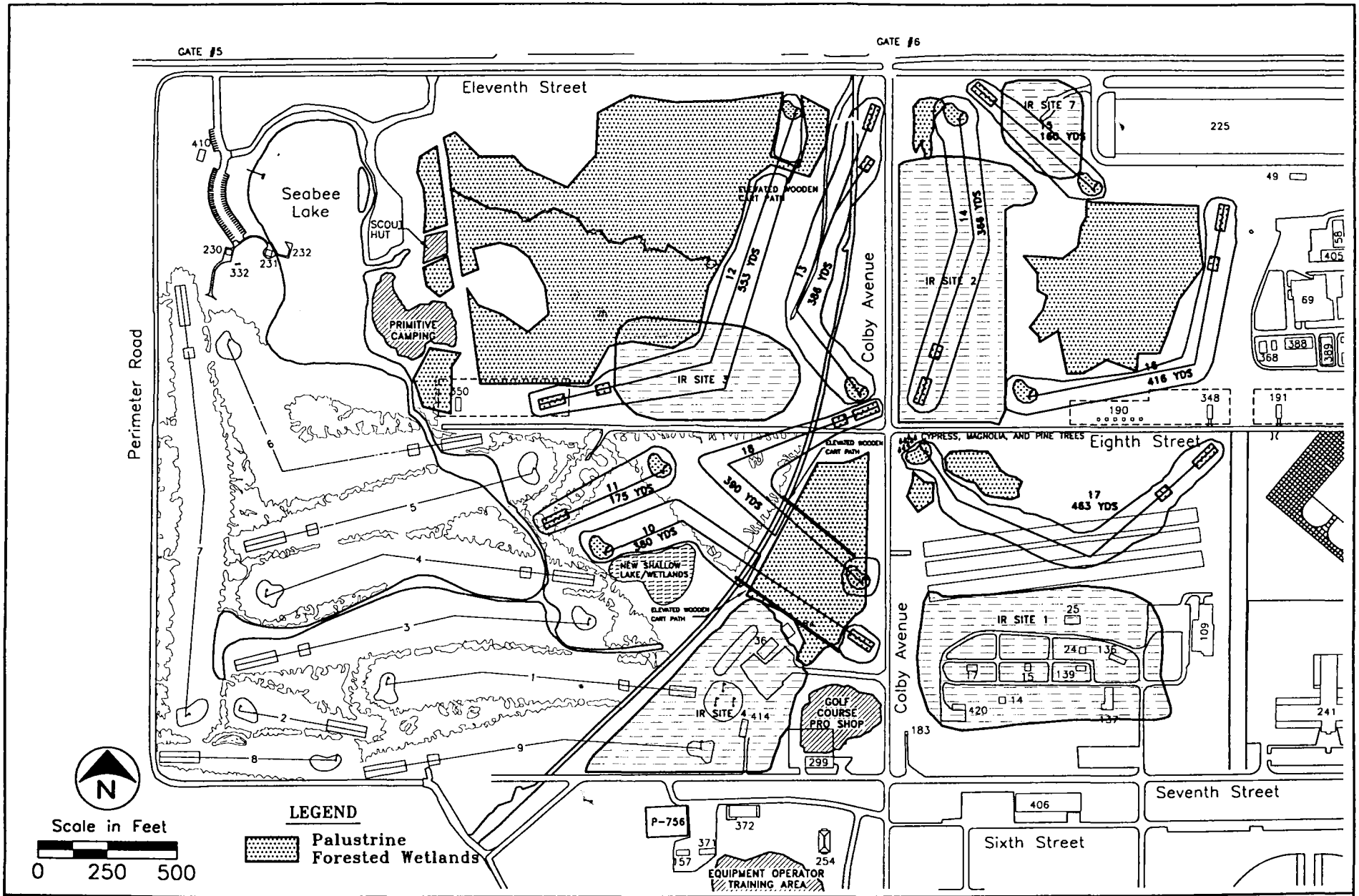

Figure 2-1.
Proposed Layout of Additional Holes (10-18) to the Golf Course under Alternative 1

Source: NCBC Gulfport 1995.

NCBC Gulfport Environmental Assessment

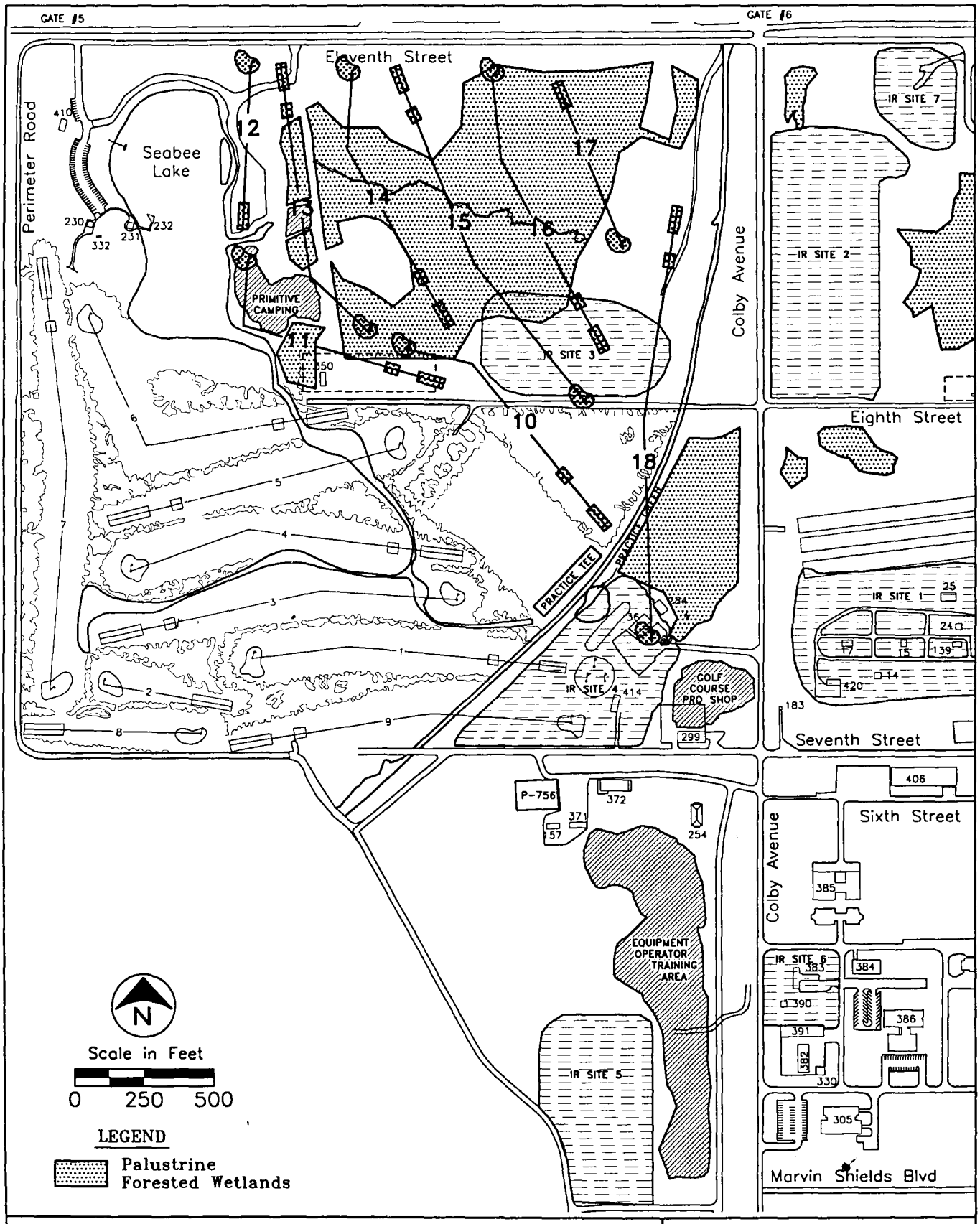

Figure 2-2.
Proposed Layout of Additional Holes (10-18) to the Golf Course under Alternative 2

Source: NCBC Gulfport 1995.

NCBC Gulfport
Environmental Assessment

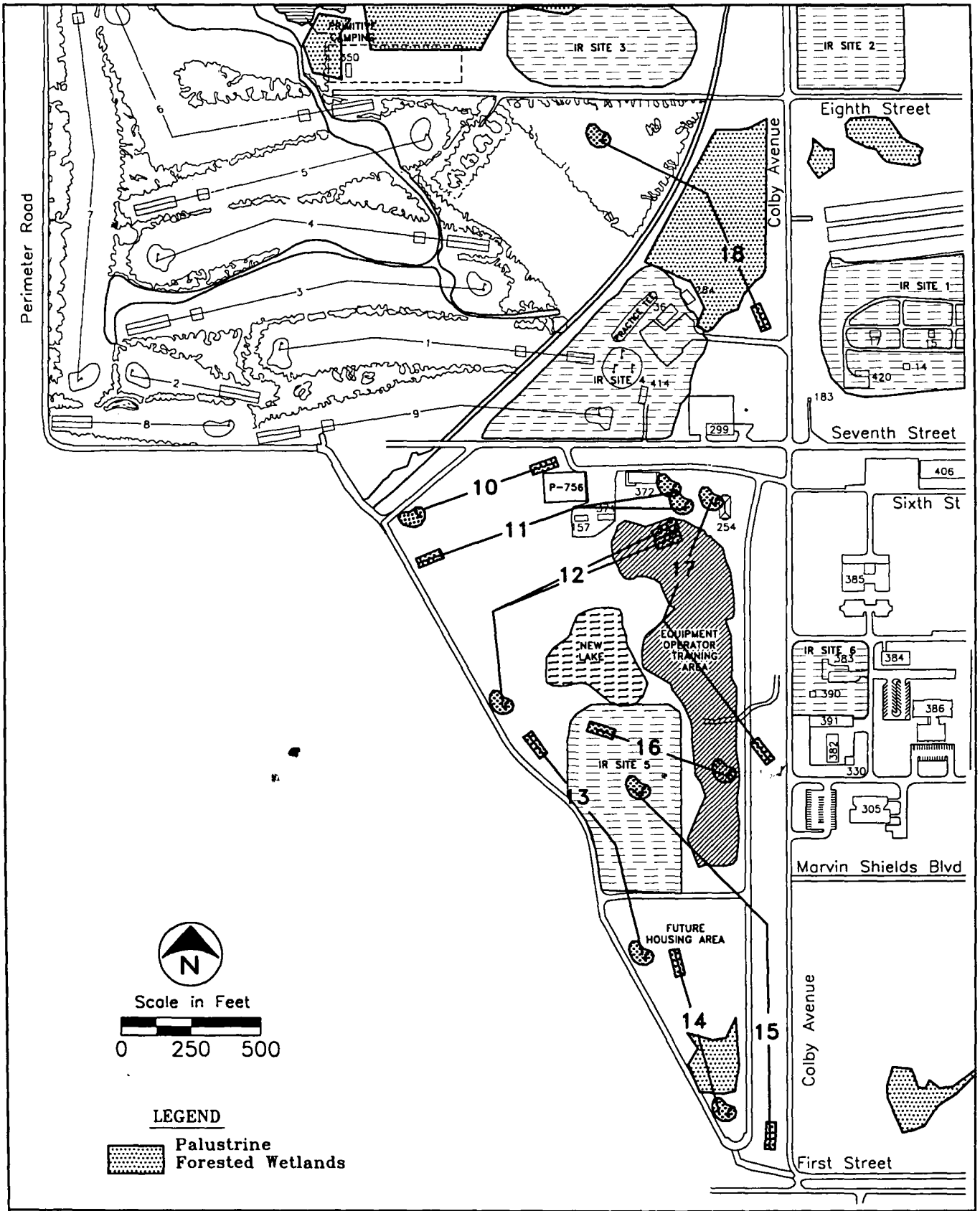

Figure 2-3.
Proposed Layout of Additional Holes (10-18) to the Golf Course under Alternative 3

Source: NCBC Gulfport 1995.

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Table 2-1. Evaluation of Alternative Sites for the Proposed Golf Course Addition

Evaluation Criteria	Alternative 1	Alternative 2	Alternative 3	No-Action Alternative
IR sites impacted	2, 3, 7	3, 4	5	None
Forest impacted (acres)	<20	<34	<17	0
Wetlands impacted (acres)	<2	<20	<1	0
Threatened and endangered species	None	None	None	None
Land use compatibility	Yes	Yes	No	N/A
Length of course (yards)	3,364	3,109	2,878	N/A
Cultural resources impacts	None	None	None	None
Mission compatibility	Yes	Yes	No	Yes
Cost to construct (millions)	$1.0	$1.1	$1.2	N/A

NOTES: (1) IR = installation restoration
(2) N/A = not applicable

3

Existing Environment

The proposed action for this environmental assessment is the expansion of an existing nine-hole golf course to eighteen holes. Because of the limited scope of the proposed action and the projected minimal impact to environmental resources in the region, this document addresses only broad descriptions of existing resources except where potential impacts resulting from the proposed action occur, in which case a more detailed description of these potentially impacted resources is given.

3.1 PHYSICAL RESOURCES

3.1.1 Physiography, Topography, and Soils

The Mississippi Gulf Coast is underlain by a complex series of southwestward-dipping deltaic and estuarine sediments consisting primarily of clay, silt, and sand. Over time, these sediments have accumulated in a narrow band along the Mississippi Sound to a depth that probably exceeds 30,000 feet (SOUTHNAVFACENGCOM 1986; Newcome et al. 1968).

NCBC Gulfport is located within the Coastal Lowlands subdivision of the Eastern Gulf Coastal Plain. The topographic relief of NCBC Gulfport is characterized by broad, nearly level flats that are broken by scattered drainageways and numerous low ridges where the soils are gently sloping. Elevations generally range between 15 feet to slightly more than 30 feet above msl, with an average elevation of 23 feet msl.

Soil types found on the western side of NCBC Gulfport primarily belong to the Atmore-Harleston-Plummer association (Figure 3-1). Atmore soils are on the broad flats and in drainageways and depressional areas. They are poorly drained and have a silt loam surface layer and a subsoil that is silt loam in the upper part and becomes clayey with depth. Harleston soils are on the low ridges. They are moderately well drained and have a fine sandy loam surface layer and subsoil. The Plummer soils are poorly drained and have a thick loamy sand surface layer and a sandy loam subsoil. Three small areas with Ocilla soils also are present on the western side of the base. The Ocilla soils are on slightly higher flats that have better drainage than the Plummer soils. If adequately drained, the Atmore-Harleston-Plummer association is suited to lawn grasses, ornamental shrubs, pasture plants, and pine trees. Use of these soil types for residential, commercial, or recreational development is severely limited in most areas by a seasonal high water table or flooding (Smith 1975).

3.1.2 Surface Water

The Gulfport area is located in the Coastal Pine Meadows region. This is a low-lying region of slight relief. Groundwater lies near the surface and forms marshes and swamps. The

streams that flow through this region are sluggish and sinuous, with sandy bottoms and clear, amber-colored, peaty water (Lowe 1921).

NCBC Gulfport is somewhat protected from tidal surges associated with hurricanes and tropical storm activity because of its elevation and its location approximately 2 miles inland. No tidal surges or major flooding occurred on the base when Hurricane Camille passed through the area in 1969 with a storm surge of greater than 23 feet.

Surface waters on the southern part of NCBC Gulfport drain into the Bayou Portage (Brickyard Bayou), and the northern part drains into Turkey Creek, which then discharges to Big Lake. This lake is interconnected to the Back Bay of Biloxi and to Biloxi Bay. Total distance for surface runoff from the base to travel to Biloxi Bay is approximately 12 miles. Stormwater discharges from the base are composed entirely of runoff from the base. No significant stormwater flows onto NCBC Gulfport from outlying areas (SOUTHNAVFACENGCOM 1994).

The majority of NCBC Gulfport is above the 500-year floodplain. Drainage on most of the base is excellent with the base suffering no damage or facility intrusion from heavy rains associated with the 500 year flood event in the summer of 1995 (DiGeorge 1995). A small portion of the eastern end of the base is classified as Zone B, areas of moderate potential flood hazard located between the 100- and 500-year flood lines. Prolonged heavy rainfall can cause flooding of this low uninhabited area at the eastern end of the base (SOUTHNAVFACENGCOM 1990).

Wetlands on NCBC Gulfport have been delineated (Hazclean Environmental Consultants 1995, Water & Air Research 1995) and verified by the U.S. Army Corps of Engineers. Wetlands in the vicinity of the three sites considered for the proposed golf course addition are illustrated in Figures 2-1 through 2-3. These palustrine forested wetlands are a mixture of slash pine forest and other hardwoods, including bald cypress and swamp bay. Most of these wetlands have water depths of less than 6 inches, with water present only during portions of the year. Although standing water occurred only in the primary ditches found on site during site surveys in October 1995 (Water & Air Research 1995), evidence of wetland hydrology was noted as a primary consideration in the determination of the jurisdictional wetlands on the site (Hazclean Environmental Consultants 1995).

Seabee Lake is the only freshwater lake at NCBC Gulfport. This 7-acre lake is located in the northwest corner of the base and is approximately 5 feet deep. This human-made lake was completed in 1972. Water from Seabee Lake flows into the canals and ponds on the golf course. During dry periods, water for irrigating the existing course is pumped from the canals.

3.1.3 Groundwater

A deep well drilled at Gulfport in the mid 1980s indicated that the freshwater zone extended to at least 2,400 feet below the surface. Flowing wells with an artesian head as high as 60 to 75 feet above sea level were typical evidence of the rich groundwater resources of the Mississippi Gulf Coast in the early 20th century. The potentiometric surface in Gulfport was 70 feet above the ground prior to intensive groundwater development (Newcome et al. 1968). As groundwater resources have been developed in the coastal area, the potentiometric surface has declined. By the 1980s, groundwater levels in the Biloxi-Gulfport area were depressed as far as 50 feet below sea level, approximately 100 feet below the earliest reported levels. Evidence indicates saltwater intrusion into shallow unconfined aquifers in hydraulic connection with coastal streams (Colson and Boswell 1985).

NCBC Gulfport obtains its water supply from a series of deep wells located on the base. Deep wells have been a popular water source in the area because the water requires little or no treatment for general use (Newcome et al. 1968). By 1903, 119 wells had been drilled in the region (Brown et al. 1944); by 1979, the U.S. Geological Survey reported 4,200 wells drilled within 6 miles of the coastline. Between 1984 and 1986, more than 800 new wells were drilled. No evidence of salt water intrusion has been found in the deep wells located at NCBC Gulfport.

3.1.4 Air Quality

Gulfport is in the Mobile–Pensacola–Panama City–Southern Mississippi Interstate (Alabama-Florida-Mississippi) Air Quality Control Region. Air quality has been qualitatively described as "good" for the entire state. The Gulfport area, as well as the entire state, is considered to be in attainment for five of the six federal criteria pollutants (particulates less than 10 micrometers, ozone, carbon monoxide, sulfur dioxide, and lead). Nitrogen dioxide is not monitored in Mississippi, so the state remains unclassified for this pollutant. Monitoring data from 1994 indicated no violation of the standards for these pollutants (Norcom 1995).

3.1.5 Golf Course Applications of Pesticides, Herbicides, Fungicides, and Fertilizers

Various pesticides, herbicides, fungicides, and fertilizers are used on the existing golf course each year as needed. Applications of these products on the golf course are listed below (Pyle 1995). Activity periods for each compound are based on information provided by Pyle (1995) and McCarty (1995). The products used on the existing course are among the safest products available for the uses to which they are being applied (McCarty 1995).

Orthene is applied twice each year, if needed, for the control of mole crickets. It is applied only to the tees and greens (a total area of 2.5 to 3 acres) at an estimated rate of 9 pounds per application. Orthene has an activity period of approximately two days. Being light sensitive, it biodegrades rapidly in the environment.

Carbaryl (Sevin) is applied once each year, if needed, to the greens only (approximately 2 acres) for the control of fall army worms. Carbaryl has been applied by NCBC Gulfport pest control personnel only once in the past three years. The application rate was 12 pounds of Carbaryl (600 gallons of solution) sprayed over the area. Carbaryl has an activity period of approximately fourteen days. Because Carbaryl is extremely toxic to aquatic and estuarine invertebrates, it is never applied near areas with standing water.

Herbicide is applied once a year over the fairways (25 acres). MSMA and Sencor are mixed in the tank and applied in the same application, such that each acre receives 3 pounds of MSMA and 4 ounces of Sencor. These products have an activity period of five to seven days and are applied only when no rainfall is forecast during the next 24 hours. Areas treated are not irrigated for at least 24 hours following application of the products.

Fungicide is applied once each year, if needed, in February or March. Maneb is applied at a rate of 8 ounces per 1,000 square feet on the greens. Because Maneb is toxic to fish, it is never sprayed near Seabee Lake. Daconil also is applied once each year, if needed, on the greens and tees. Each application takes 200 gallons, which contains approximately 16 ounces of active ingredient. The activity period for these fungicides is approximately two weeks but is significantly shortened by precipitation and irrigation. These fungicides are applied only when no rainfall is forecast for 24–48 hours following the application, and treated areas are not irrigated.

Fertilizer is applied to the greens each month. Agricultural-grade fast-release nitrogen (13-13-13) is applied every other month and ammonium nitrate is applied on the alternate months. The application rate of both fertilizers is 250 pounds per acre (for 2 acres of greens), and the agricultural-grade fertilizer is effective for approximately six weeks. Fertilizer also is applied three times each year to the fairways at a rate of 250 pounds per acre (for 25 acres of fairways). In the spring and fall, ammonium nitrate is applied to the fairways, and in the summer 13-13-13 is applied.

3.1.6 Hazardous Waste

No active hazardous waste disposal sites are at NCBC Gulfport. Hazardous waste generated on the base is managed in accordance with a Hazardous Waste Management Plan to ensure compliance with Resources Conservation and Recovery Act regulations. Generated waste is collected and disposed of by a private contractor in accordance with applicable state and federal regulations (SOUTHNAVFACENGCOM 1990).

The base has an Installation Restoration (IR) Program that has identified and characterized the various old dump sites on base. Six known IR sites are located in the vicinity of the alternative sites considered for the expansion of the existing golf course facilities. These IR sites are illustrated in Figures 2-1 through 2-3 and are described below. The sites have been evaluated under the Relative Risk Program. Although contaminants exist at these sites, the risks have been identified and the exposure risk to humans is minimal.

3.1.6.1 Site 1—Disaster Recovery Disposal Area

NCBC Gulfport currently uses 20 acres of the base as a disaster recovery training area. From 1942 to 1948, chemical wastes reportedly were deposited at the site by trench burial of containerized materials—55-gallon drums were buried in trenches 8 feet deep. Principal wastes included paints, oils, solvents, paint strippers, and cleaning compounds. An excavation in 1984 revealed several drums with xylene, toluene, and 1,2-dichloroethane. An Initial Assessment Study (IAS) was completed in 1985, a Verification Study was completed in 1987, Basewide Sampling was performed in 1994, and a Geophysical Survey was performed in 1995. Findings indicate low levels of semivolatile organic compounds, metals, and dioxins. All but bis(2-ethylhexyl)phthalate and lead were at concentrations that were less than federal standards. The Geophysical Survey indicated five large primary areas, which may represent high concentrations of large metallic objects in burial pits, and five smaller secondary areas, all of which were located 1 to 15 feet below land surface.

3.1.6.2 Site 2—World War II Landfill

NCBC Gulfport used 11 acres of the base as a general trash landfill from 1942 to 1948. Waste was burned in the northern part of the site and buried in 8-foot trenches in the southern part of the site. Principal wastes include paper, cardboard, wood, paints, paint thinners, solvents, oils, and fuels. This site now is covered with pines and underbrush. An IAS was completed in 1985, a Verification Study was completed in 1987, and Basewide Sampling was performed in 1994. Findings indicate low levels of volatile and semivolatile organic compounds, metals, dioxins, and pesticides, all at concentrations that were less than federal standards.

3.1.6.3 Site 3—Northwest Landfill and Burn Pit

NCBC Gulfport operated 4 acres of the base as a landfill from 1948 to 1965. Waste was burned using diesel fuel and was pushed into a trench within the landfill and covered. The pit was used for firefighting training from 1955 to 1965 and wastes include: paints, paint thinners, waste fuels, and solvents. The pit was filled with soil and closed in 1965. An IAS was completed in 1985, a Verification Study was completed in 1987, and Basewide Sampling was performed in 1994. Findings indicate low levels of volatile and semivolatile organic compounds, dioxins, metals, and pesticides in groundwater samples. Lead and thallium were found at concentrations exceeding federal standards; and other analytes were found at concentrations less than federal standards.

3.1.6.4 Site 4—Golf Course Landfill

NCBC Gulfport operated 5.8 acres of the base as a landfill from 1966 to 1972. This landfill received all waste produced at the base. Currently used as part of a golf course, this landfill received approximately 16,000 tons of solid waste and 200,000 gallons of liquids, including paints, paint thinners, fuels, oils, and solvents. The materials were burned and buried in trenches in the landfill. Rubble from Hurricane Camille (1969) also was placed in the landfill and covered with 10 feet of fill. An IAS was completed in 1985, a Verification Study was completed in 1987, Basewide Sampling was performed in 1994, and a Geophysical Survey

was performed in 1995. Findings indicated low levels of volatile and semivolatile organic compounds, dioxins, metals, and pesticides in the groundwater samples. Three metals (arsenic, lead, and thallium), methylene chloride, bis(2-ethylhexyl)phthalate, and dioxin were found at concentrations exceeding federal standards. The Geophysical Survey indicated four large primary areas, which may represent high concentrations of large metallic objects in burial pits, and eight smaller secondary areas, all of which were 1 to 15 feet below land surface.

3.1.6.5 SITE 5—EQUIPMENT TRAINING AREA LANDFILL

From 1972 to 1976, NCBC Gulfport used 5.5 acres of the base for disposal of 6,000 cubic yards of trash, tree cuttings, and other solid materials. Additionally drums, powdered pesticides, and unknown quantities of liquids (such as paints, paint thinners, waste fuels, and solvents) were disposed of at the site. The landfill was closed and covered with a 4 to 6 foot layer of fill dirt. The site is currently used an a heavy equipment training area. An IAS was completed in 1985, a Verification Study was completed in 1987, a Basewide Sampling was performed in 1994, and a Geophysical Survey was completed in 1995. The Geophysical indicated eleven primary and thirteen secondary areas having dimensions similar to long disposal trenches. Findings indicated low levels of volatile and semivolatile organic compounds, pesticides, metals, and dioxins, all at concentrations that were below federal standards. Two metals, lead and thallium, and bis(2-ethylhexyl)phthalate were found at concentrations higher than federal standards.

3.1.6.6 SITE 7—RUBBLE DISPOSAL AREA

From 1978 to 1984, NCBC Gulfport used 3.3 acres of the base for the disposal of concrete, lumber, scrap metal, and other debris that was placed just below land surface. Additionally, tree clippings, sawdust, lumber, and concrete have been placed above ground in the southeastern part of the site. An IAS was completed in 1985, a Verification Study was completed in 1987, and Basewide Sampling was performed in 1994. Findings indicated low levels of volatile and semivolatile organic compounds, metals, dioxins, and pesticides, all at concentrations that were below federal standards.

3.2 BIOLOGICAL RESOURCES

3.2.1 Vegetation

Upland forests of the coastal Mississippi mainland include longleaf pine–oak and moist pineland associations (see Appendix B for the scientific names of all plants and animals referenced in this environmental assessment). Longleaf pine–oak areas usually are found on xeric sandy sites above the 10-foot contours. This community is adapted to periodic ground fires to maintain an open character and exclude invading hardwoods. The moist pineland association has a higher water table than the longleaf pine–oak community. In many areas, the moist pinelands form a strip between swamps and the upland pine–oak forest. Slash pine is the most common species. A dense understory can form when fire is excluded (USACE 1984).

The biological communities of NCBC Gulfport are dominated by urban land uses. Domestic grasses such as bermuda, carpet, bahia, and centipede are the primary groundcover on the base. Although many of the soils on the base limit the type of construction possible because of their degree of wetness, much of the area has been drained and subsequently developed. Drainage canals and roadside ditches are typical features of the landscape (SOUTHNAVFACENGCOM 1990).

The areas that have not been developed are subject to forest management. Since the early 1960s, the Navy has pursued an aggressive forest management program at NCBC Gulfport. Many areas were planted to slash pine trees, not only for aesthetics but also to reduce grounds maintenance costs (SOUTHNAVFACENGCOM 1987). Typical upland systems are dominated by slash pine trees in stands of uniform age. Trees in these forested areas are periodically thinned to promote tree growth. Fire management, which has been scheduled every few years, is used to promote the pine forest and to limit the understory growth. Evidence of recent burns were noted in the forested communities during field surveys for this project in October 1995 (Water & Air Research 1995). Ink berry is a typical shrub species found in the forest management areas. Groundcover consists of a variety of herbaceous grasses and sedges tolerant of fire.

Jurisdictional wetlands have been identified on the base (Hazclean Environmental Consultants 1995, Water & Air Research 1995) and verified by the U.S. Army Corps of Engineers. These palustrine forested wetlands are a mixture of pine forest and other hardwoods, including bald cypress and swamp bay. Portions of the wetlands have been invaded by exotic species, including Chinese tallowtree and hedge privet. Groundcover consists of wetland grasses, sedges, and ferns. Species common to pitcher plant communities (including pitcher plants and sundews) may be found in some of the wetland areas of the base. Although standing water occurred only in the primary ditches found on site during site surveys in October 1995 (Water & Air Research 1995), evidence of wetland hydrology was noted as a primary consideration in the determination of the jurisdictional wetlands on the site (Hazclean Environmental Consultants 1995).

3.2.2 Wildlife

Because of the diversity of habitats in the Gulf Coastal region, a considerable diversity of wildlife is found in the area. However, the extensive urban development on and surrounding NCBC Gulfport has limited use of the area by wildlife. Resident mammal species adapted to the urbanized areas of NCBC Gulfport include squirrels, rabbit, raccoon, black rat, Norway rat, and the house mouse. Bird species that commonly occur include the mockingbird, house sparrow, brown thrasher, cardinal, blue jay, mourning dove, crows, purple martins, snowy egrets, red tailed hawks, and blue herons. The base also supports a variety of snakes, turtles, crayfish, frogs, etc. No hunting program exists because of a lack of game animals and the inadequate size of the area to support a population that could sustain hunting (SOUTHNAVFACENGCOM 1991).

Mammals commonly observed in the forested areas of the base include the nine-banded armadillo, cottontail rabbit, opossum, red fox, and nutria. Armadillos usually burrow in dry sandy areas, whereas nutria inhabit both freshwater and saltwater marshes. Besides many of the birds listed above, additional birds observed in the forested areas during a brief field survey in October included rufous-sided towhee and killdeer (Water & Air Research 1995).

Seabee Lake is managed for largemouth bass, bluegill, crappie, redear sunfish, and channel catfish. Water clarity is generally greater than a depth of 2 feet. An aggressive restocking program has been practiced during the past several years, including fertilizing the lake to increase algae and other food supplies for the fish (Pyle 1995). The base also has been cooperating with local Boy Scout troops in creating artificial fish reefs from wooden pallets in the lake, improving the camping area, and installation of bird houses on base.

Seabee Lake and the drainage canals throughout the existing golf course are of sufficient size to support alligators. However, the alligators are removed when discovered and released in less populated areas (SOUTHNAVFACENGCOM 1991, DiGeorge 1995).

3.2.3 Endangered and Threatened Species

Although listing by the Mississippi Natural Heritage Program (MNHP) does not provide any formal legal protection for plants, wildlife listed by the Mississippi Department of Wildlife, Fisheries, and Parks are protected under Mississippi Statute 49-5-109. Table 3-1 lists federally and state-listed plants and animals known to occur in coastal pine meadows in Harrison County (MNHP 1995).

No federally or state-listed plant or wildlife species have been reported at NCBC Gulfport, but no detailed surveys have been conducted (SOUTHNAVFACENGCOM 1991). No federally or state-listed plants or animals were observed at NCBC Gulfport during the brief field visit conducted for this environmental assessment (Water & Air Research 1995), nor were any discovered during a 1995 survey of the base for wetlands by a contractor and USACE personnel, nor by Department of Agriculture agents in conjunction with a 1995 survey of areas subject to erosion (DiGeorge 1995).

3.2.4 Unique and Critical Habitats

No known unique or critical habitats are present on NCBC Gulfport. Wetlands and forested areas on the base provide a greater diversity of habitats for wildlife in the area, but no habitat critical for the continued existence of any species on the base is known to be present.

3.3 SOCIOECONOMIC RESOURCES

Expansion of the existing golf course at NCBC Gulfport from nine holes to eighteen is not expected to significantly impact the socioeconomic resources of the region. Therefore, only minimal discussion is provided of existing socioeconomic resources in the area.

NCBC Gulfport is located within the city limits of Gulfport, Mississippi (Figure 1-1). The City of Gulfport is part of the Biloxi-Gulfport Metropolitan Statistical Area that includes Harrison, Hancock, and Stone Counties. The City of Gulfport, platted in 1885 and incorporated in 1898, is the Harrison County seat and an active commercial port (SOUTHNAVFACENGCOM 1990).

Harrison County is the second most populous county in Mississippi. The resident population in the county has increased slowly each decade since 1970 (Table 3-2). In 1990 Gulfport accounted for 24.7 percent of the total county population. In comparison, the average daily population of NCBC Gulfport in 1990 included 4,258 military and 1,863 civilian employees (SOUTHNAVFACENGCOM 1990). The base population decreased to 3,450 military and 875 civilian employees in 1995 (Crane 1995). The on-base population is projected to increase in 1996 with construction of 120 additional family housing units and 1,700 additional Army and Air Force "A" school students for joint training at the Naval Construction Training Center. The additional on-base housing is needed because off-base housing is becoming expensive.

During fiscal year 1995 (October 1–September 30), 14,784 golfers used the existing golf course on base (Pyle 1995). This number is expected to increase with the increase in on-base family housing and the aggressive improvements to the existing nine-hole course.

Vital sectors of the Mississippi Gulf Coast economy include tourism, seafood harvesting and processing, ship building, manufacture of container-handling cranes, chemical products, and scientific optics. The presence of federal installations also is significant. During fiscal year 1994, NCBC Gulfport economically impacted the Gulf Coast community by spending $121 million for salaries and goods (Crane 1995). Besides NCBC Gulfport, Keesler Air Force Base (including the Air Force Medical Facility), the Stennis Space Center, Naval Home Residential Care Facility, and the Veterans Administration Hospital are major generators of economic activity in coastal Mississippi.

The cities of Gulfport and Biloxi have comprehensive plans, zoning and subdivision regulations, and flood prevention ordinances. Harrison County and the two cities maintain a building and housing permit system. All three of the sites considered for expansion of the existing golf course are on NCBC Gulfport. NCBC Gulfport, as a military facility, is under federal jurisdiction and not subject to local comprehensive plans and land development regulations except as a matter of base policy on intergovernmental coordination.

Harrison County and the county municipalities draw their potable water from groundwater sources. The artesian aquifers used for supply provide water that meets or exceeds drinking water standards. Gulfport maintains a 12.0-million-gallons-per-day potable water system with storage capacity of 3.0 million gallons per day.

According to the State of Mississippi Department of Archives and History, no properties of historical significance or archeological sites are on NCBC Gulfport. A 1993 survey (see

April 7, 1993, letter of R.G. Walker in Appendix A) of surviving World War II–era buildings on the base concluded that none of them appeared to be eligible for listing in the *National Register of Historic Places*. However, three ammunition bunkers (Structures 190, 191, and 192) and one concrete parade ground were recommended to be preserved for possible reconsideration of their National Register eligibility.

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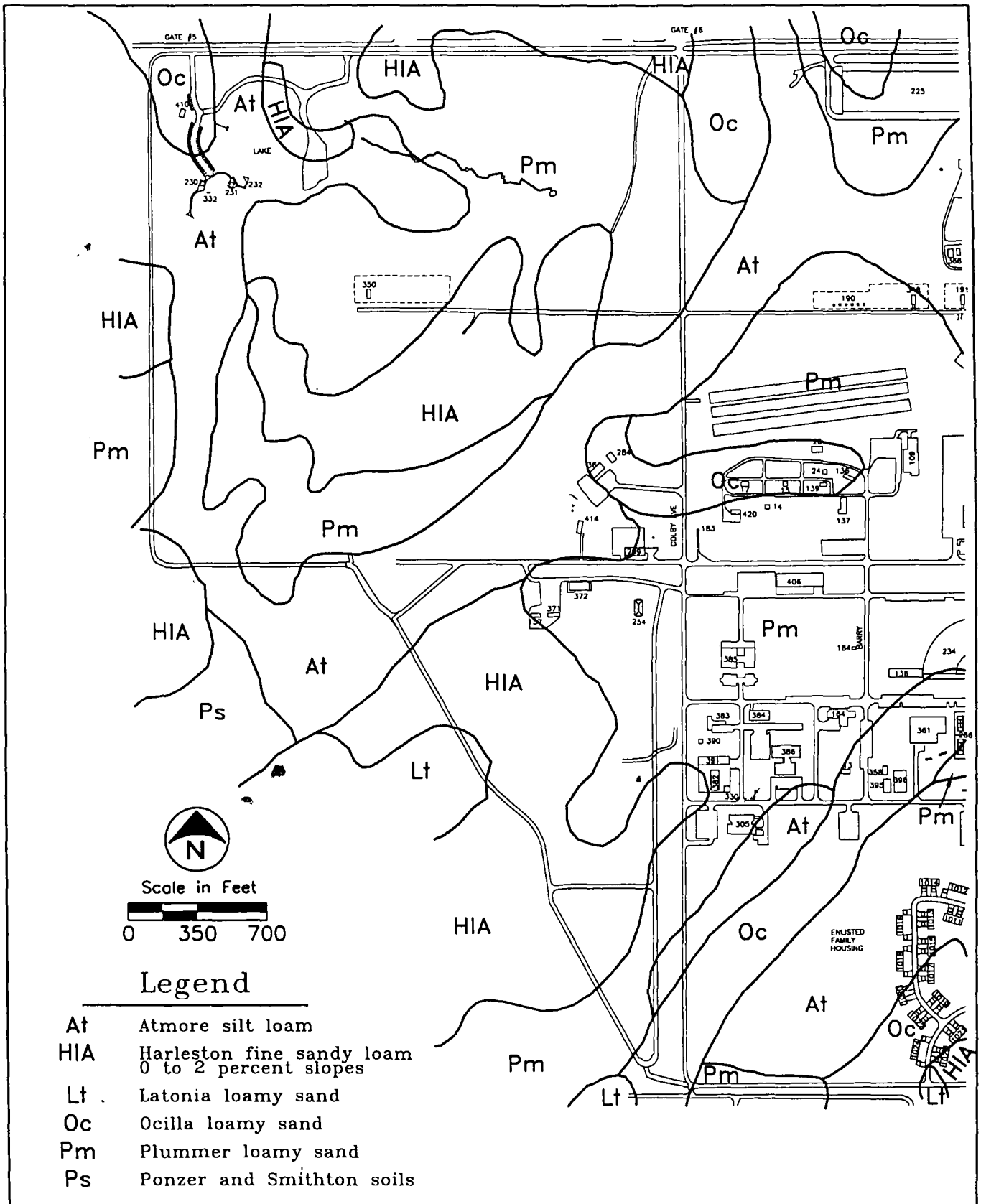

Figure 3-1.
Soil Types Present on the Western Side of NCBC Gulfport

Source: NCBC Gulfport 1995; Smith 1975.

NCBC Gulfport Environmental Assessment

Table 3-1. Federally and State-Listed Endangered, Threatened, and Candidate Species that Occur in the Coastal Pine Meadows of Harrison County (Page 1 of 2)

Common Name	Scientific Name	Status	
		Federal	State
Plants			
Bog spice bush	*Lindera subcoriacea*	C2	
Carolina lilaeopsis	*Lilaeopsis carolinensis*	3C	
Chapman's butterwort	*Pinguicula planifolia*	C2	
Crimson pitcher-plant	*Sarracenia leucophylla*	C2	
Drummond's yellow-eyed grass	*Xyris drummondii*	C2	
Harper's yellow-eyed grass	*Xyris scabrifolia*	C2	
Incised groovebur	*Agrimonia incisa*	C2	
Juneberry holly	*Ilex amelanchier*	3C	
Naked-stemmed panic grass	*Panicum nudicaule*	C2	
Pineland bogbutton	*Lachnocaulon digynum*	C2	
Yellow fringeless orchid	*Platanthera integra*	3C	
Mammals			
None listed			
Birds			
Bachman's sparrow	*Aimophila aestivalis*	C2	
Bald eagle	*Haliaeetus leucocephalus*	T	E
Black rail	*Lateralius jamaicensis*	C2	
Bewick's wren	*Thryomanes bewickii*		E
Mississippi sandhill crane	*Grus canadensis pulla*	E	E
Piping plover	*Charadrius melodus*	T	E
Red-cockaded woodpecker	*Picoides borealis*	E	E
Reddish egret	*Egretta rufescens*	C2	
Snowy plover	*Charadrius alexandrinus*		E
Reptiles and amphibians			
American alligator	*Alligator mississippiensis*	T/SA	
Black pine snake	*Pituophis melanoleucus lodingi*	C2	E
Dusky gopher frog	*Rana capito sevosa*	C1	

Table 3-1. Federally and State-Listed Endangered, Threatened, and Candidate Species that Occur in the Coastal Pine Meadows of Harrison County (Page 2 of 2)

Common Name	Scientific Name	Status	
		Federal	State
Eastern indigo snake	*Drymarchon corais couperi*	T	E
Gopher tortoise	*Gopherus polyphemus*	T	E
Gulf salt marsh snake	*Nerodia clarkii clarlii*		
Southern hognose snake	*Heterodon simus*	C2	E
Invertebrates			
Gopher tortoise onthophagus	*Onthophagus polyphemi*	C2	
Speckled burrowing crayfish	*Fallicambarus danielae*	C2	
Spiny-tailed crayfish	*Procambarus fitzpatricki*	C2	

Federal (U.S. Fish and Wildlife Service)

- E = Taxa formally listed as endangered
- T = Taxa formally listed as threatened
- T/SA = Taxa listed as threatened due to similarity of appearance.
- C1 and C2 = Candidate species are not federally protected under the Endangered Species Act, but the USFWS encourages their consideration in environmental planning (U.S. FR Vol. 55, No. 24, pp. 6184–6229).
- 3C = Taxa that have proven to be more abundant or widespread than was previously believed and/or those that are not subject to any identifiable threat.

State (Mississippi Department of Wildlife, Fisheries, and Parks)

- E = Endangered

SOURCE: MNHP 1995.

Table 3-2. Population Trends for Harrison County, Gulfport, and Biloxi, Mississippi

Area	1970	1980	1990	1995
Harrison County	134,582	157,665	165,365	173,868
Gulfport	40,791	39,676	40,775	66,296
Biloxi	48,486	49,311	46,319	53,403
NCBC Gulfport			6,121	4,325
Golfers using course				14,784

SOURCES: Bureau of Census 1970, 1994.
Harrison County Tourism Commission 1995.
SOUTHNAVFACENGCOM 1990.
Crane 1995.
Pyle 1995.

4

Environmental Consequences (Direct and Indirect) of the Proposed Action

4.1 ANALYSIS OF IMPACTS OF REASONABLE ALTERNATIVES

This section addresses the physical, biological, and socioeconomic impacts of expansion of the existing nine-hole golf course on NCBC Gulfport to eighteen holes. Both positive and negative consequences of this proposed action are considered. Under the no-action alternative, no environmental impacts would occur and present land uses would continue until another use was designated for the undeveloped land. Although the no-action alternative would have no direct environmental impacts, it also would not achieve the objectives of the Morale, Welfare, and Recreation Department. The lack of significant impacts from the proposed action while achieving department objectives makes the proposed action preferable to the no-action alternative.

4.1.1 Physical Resources

4.1.1.1 Physiography, Topography, and Soils

No significant direct or indirect impacts upon the physiography or topography of the area are anticipated to result from any of the three action alternatives considered in this environmental assessment. The expansion of the golf course under any of the three alternatives would result in minor localized topographic changes from grading or filling of areas on the course to create the new tees and greens. However, the final grade of the course under any of the action alternatives would be consistent with surrounding topographic features. Based on the soil types present at all three alternative sites, construction of additional golf course holes would be a reasonable use of these respective areas.

4.1.1.2 Surface Water

No significant direct or indirect effects upon surface water resources are anticipated to result from the proposed action. During construction of the nine additional holes, some temporary increase in soil erosion may occur during storms. Best Management Practices, including proper erosion and sediment controls, would be used by the contractors as required by state and local regulations. A review of the project plans by the Harrison County Engineer would determine what types of temporary erosion controls would be required.

Expansion of the existing golf course to eighteen holes would not result in a significant increase in impermeable surfaces on the base. However, a National Pollutant Discharge Elimination System (NPDES) permit for stormwater associated with construction of the course would be required since the surface area to be disturbed during construction of the expanded course would be greater than 5 acres (SOUTHNAVFACENGCOM 1994). The NPDES

general permit would require erosion control and certain other stormwater control measures that would minimize potential construction impacts to on-site jurisdictional wetlands and other surface waters.

Implementing Alternative 2 as originally designed would have impacted approximately 20 acres of wetlands by the construction of portions of the fairways for all of the additional holes except hole 12. Alternative 3 design plans projected that less than 1 acre of wetlands would be impacted by the fairways for holes 14 and 18. Preliminary design plans also projected the construction of one new lake under Alternative 3 and no new lakes under Alternative 2.

By microdesigning the individual links on the proposed course at the Alternative 1 site, existing wetlands and young stands of cypress and hardwoods have been avoided to the maximum extent practicable. Instead of continuous straight-edged fairways found on many courses, the links have been designed to preserve wetlands on the course and incorporate them into the layout as golf hazards. The wetlands would be maintained by fire or the use of bushhog mowers. Raised boardwalks would be constructed where golf carts would cross wetlands on holes 10, 12, and 18 (Figure 2-1). This layout would result in filling less than 0.5 acre of palustrine forested wetlands by installation of wooden support posts for the elevated golf cart boardwalks and the construction of the green for hole 18. The boardwalks would be approximately 6 to 8 feet wide to permit two carts or a cart and a pedestrian to pass on the bridge. The boardwalks would be elevated approximately 3 feet to minimize shading of vegetation under the boardwalk. Approximately 1.5 acres of forested wetland habitat would be cleared of trees during the construction of the additional nine holes. Trees required to be removed in wetlands or IR sites during construction of the fairways would be cut at ground level and the stumps ground to below the ground surface. Routine maintenance would fill holes if needed that may appear as the stumps degrade. A new 2-acre lake/wetland also would be created on the expanded course as part of the proposed action. This lake/wetland area would fill naturally from groundwater and from surface water runoff.

As discussed in Section 4.1.1.6, the golf course has endorsed a new program to act in accordance with the Audubon Society of New York's national program designed to help golf courses become more environmentally friendly. The golf course has established a goal for fiscal year 1996 to reduce the amount of all chemicals used on the course by one-half, thereby reducing potential impacts to surface waters. This policy would be continued following expansion of the course. Thus, the total amount of chemicals applied to the expanded course would be only slightly larger, if any, than the annual amounts applied in the past several years.

4.1.1.3 GROUNDWATER

The existing golf course is irrigated when needed with surface water pumped from canals and ponds on the course. NCBC Gulfport has proposed to convert to groundwater for irrigation of the expanded golf course by connecting to the existing base water supply system. The

irrigation system would require a system capable of delivering 600 gpm at 120 psi and may require a booster pump at the golf course. Use of surface water during dry periods has tended to further draw down these surface water features. Use of groundwater from the base water supply system would result in more stable water elevations in Seabee Lake and permit habitat enhancement (a shallow marsh area) proposed on the western shore of Seabee Lake.

Application of fertilizers and chemicals on the expanded golf course is not expected to contaminate groundwater supplies. Applications are made only when needed, not on a set annual schedule. The products used on the existing course are among the safest products available for the uses to which they are being applied, and break down rapidly in the environment (Section 3.1.5). Applications are made only when no precipitation is forecast for the period specified in the product's precautions and application directions. Inappropriate application of the product when rain is forecast, or subsequent irrigation of the course, would result in significantly reduced effectiveness of the product applied and wasted financial resources for chemicals and application labor.

4.1.1.4 AIR QUALITY

No significant long-term impacts to regional air quality are expected to result from the proposed expansion of the existing golf course to eighteen holes. Some localized temporary impacts on air quality would result during construction of the expanded course. Dust and particulate matter levels temporarily would increase locally during tree clearing and grading of the proposed course. Vehicle exhaust emissions also would increase temporarily from operation of the construction vehicles and equipment used to clear and grade the proposed site.

4.1.1.5 NOISE

Sound energy is measured in decibels, weighted on the A-scale (dBA). Short-term noise impacts are often determined by instantaneous or maximum noise levels measure in dBA. The potential noise impacts resulting from expansion of the existing golf course would primarily result during construction of the expanded course. Construction noise would be temporary and primarily limited to chain saws and stump grinding equipment during land clearing operations and the use of earth-moving equipment during construction of the tees and greens. Similar equipment is currently being used in the Equipment Operators training area south of the existing course at the site of the proposed golf course expansion under Alternative 3. The maximum noise level produced by such land clearing equipment is approximately 90 dBA at 50 feet (UE&C 1992). The nearest off-base residences at the western end of the base are located north of 28 Street and, therefore, greater than 100 feet from any proposed locations for tees or greens under Alternatives 1 and 2. Since noise attenuates by approximately 6 dBA per doubling of distance from the source, the maximum instantaneous noise expected at the nearest off base residences would be approximately 84 dBA. This moderate level is only expected to occur during the period required to construct the tees and greens and would occur during normal working hours. Therefore, no significant impact from noise is expected.

Sources of noise during operation of the completed expanded course primarily would be from operation of lawn maintenance equipment. Although larger than a typical home lawn mower, this equipment would not produce significantly more noise. Long-term use of lawn maintenance equipment on the expanded course would not result in any noticeable impact on the nearest off-base residences.

4.1.1.6 Golf Course Application of Pesticides, Herbicides, Fungicides, and Fertilizers

Expansion of the existing nine-hole golf course to eighteen holes would approximately double the land area on the base that is dedicated to golf tees, fairways, and greens. Application rates and frequency for pesticides, herbicides, fungicides, and fertilizers used on the golf course would be expected to remain the same as currently applied. However, the area treated during each application would approximately double. As stated in Section 3.1.5, the chemical products currently used on the course are among the environmentally safest products registered for their respective uses (McCarty 1995). The pesticides, herbicides, and fungicides break down rapidly in the environment. Applications are made only when no precipitation is forecast for the period specified in the product's precautions and application directions. Inappropriate application of the product when rain is forecast, or subsequent irrigation of the course, would result in significantly reduced effectiveness of the product applied and wasted financial resources for chemicals and application labor.

Fertilizers applied to the existing golf course are nontoxic. The fertilizers are effective significantly longer (up to four to six weeks following application) than the other chemical products applied and may result in enrichment of lakes and ponds on the golf course if the fertilizer is carried into them by surface runoff. However, NCBC Gulfport has recently been adding fertilizer to Seabee Lake to promote algal growth and enhance fish production in the lake. Chemical application rates on the golf course and frequency of application are reasonable and within recommended manufacturer's application rates for the intended use (McCarty 1995).

The golf course has endorsed a new program to act in accordance with the Audubon Society of New York's national program designed to help golf courses become more environmentally friendly. To receive accreditation in the program, a golf course must act in accordance with its requirements for responsible stewardship. The U.S. Golf Association has endorsed this program and has developed an awards program based on a seven-point conservation approach. Efforts include decreasing pesticide use, finding alternatives to pesticides, and encouraging wildlife communities to settle on the course. The end result of this program is increased habitat available to wildlife and increased savings by the golf course because of more unmowed natural areas and the use of less water and fewer chemicals.

The golf course has established a goal for fiscal year 1996 to reduce by one-half the amount of all chemicals used on the course including pesticides, herbicides, fungicides, and fertilizers. This policy would be continued following expansion of the course. Thus, the total amount of

chemicals applied to the expanded course would be only slightly greater, if any, than the annual amounts applied in the past several years.

4.1.1.7 HAZARDOUS WASTE

No significant impacts to the management of hazardous wastes would occur as a result of the proposed action. The Navy established the Installation Restoration (IR) Program in 1987 as part of a program that requires the U.S. Department of Defense to expeditiously remediate environmental contamination from hazardous substances management or disposal practices. The IR Program was designed to identify, prioritize, investigate, and clean contaminated sites in a manner consistent with federal and state regulations.

Portions of the expanded golf course are projected to encompass portions of several IR Program sites under any of the three alternatives. The proposed layout for Alternative 1 would result in players playing over IR sites 3 and 7 on the fairways and no excavation of the IR sites would be required. Construction of link 14 would require the construction of the tee on top of IR site 2 but no excavation would be required. Alternative 2 would require the construction of two greens and one tee on top of IR Sites 3 and 4. As proposed in Alternative 3, both a green (hole 15) and a tee (hole 16) would be constructed on IR site 5.

All of these landfill and disposal areas were covered with fill dirt when they were closed. Chemical testing of these IR sites indicated that all compound levels were less than federal standards for Sites 2 and 7 (see Section 3.1.6). Compounds found at concentrations exceeding federal standards at the remaining sites were lead and thallium (Site 3); arsenic, lead, thallium, dioxin, bis(2-ethylhexyl)phthalate, and methylene chloride (Site 4); and lead, thallium, and bis(2-ethylhexyl)phthalate (Site 5). Contaminants were detected below the surface and should pose no health threat to golfers or personnel engaged in golf course construction.

During construction of the expanded golf course, any trees present on the IR sites within proposed links would be cut and cleared and the stumps ground below ground surface. Any depressions formed following decomposition of the stumps would be filled during routine maintenance. No excavation of IR sites would be required for construction of the course, and additional fill dirt may be added prior to seeding these areas with grass. Expansion of the golf course within the proposed sites would not preclude future cleanup of the IR sites as soon as funding becomes available.

4.1.2 Biological Resources

4.1.2.1 VEGETATION

Areas proposed for expansion of the existing golf course under the three alternatives consist of forested, developed, and disturbed areas. Existing forest stands on the western side of NCBC Gulfport are illustrated in Figure 4-1. Expansion of the existing golf course would result in the loss of less than 20, 34, and 17 acres of slash pine forested habitat under Alternatives 1, 2, and 3, respectively. Forest stands within the area proposed for the expansion of the golf course under Alternative 1 originated in 1948, 1954, and 1963. These stands

represent relatively mature stands of sawtimber (larger than 9.6 inches in diameter at breast height) and poletimber and have been thinned periodically. Forest stands within the area proposed for the expansion of the golf course under Alternative 2 originated in 1948 and 1954, are of poletimber size, and have been thinned periodically. Forest stands within the area proposed for expansion of the golf course under Alternative 3 are among the oldest and largest forest stands on the base. These stands originated in 1948 and represent relatively mature stands of sawtimber with little understory growth present (SOUTHNAVFACENGCOM 1987).

The expansion of the golf course under each of the proposed alternatives would result in the conversion of portions of these areas from slash pine forest to maintained lawn areas or preserved wetlands cleared of trees. Strips of slash pines would be left between the fairways and would result in an increase in the amount of edge-effect habitat available for plants and animals.

4.1.2.2 WILDLIFE

The wildlife populations at NCBC Gulfport would not be significantly impacted under any of the alternatives. Noise from the operation of land clearing and construction equipment and disturbance of habitats during development of the expanded course would result in the temporary displacement of wildlife in the vicinity of the construction. Although expansion of the golf course would result in the loss of slash pine forested areas under all three of the proposed alternatives, wildlife use of the area actually may be enhanced by the creation of edge-effect habitat. The implementation of Alternative 2 would result in the greatest impact to palustrine forested wetland wildlife habitat, as discussed in Section 4.1.1.2.

As part of the golf course policy endorsement to reduce the use of all chemicals (fertilizers, pesticides, herbicides, fungicides) and to enhance wildlife habitat on the course, additional trees are being planted, and purple martin bird houses have been erected on the golf course. The base would continue to cooperate with local Boy Scout troops to enhance wildlife habitat on and around the golf course by installation of additional bluebird and purple martin houses and duck boxes, and the enhancement of fish habitat on the expanded golf course.

4.1.2.3 THREATENED AND ENDANGERED SPECIES

The expansion of the golf course would not impact any protected natural wildlife populations or vegetation on or adjacent to NCBC Gulfport.

4.1.2.4 UNIQUE AND CRITICAL HABITATS

None of the alternative sites for the expansion of the existing golf course represent unique or critical habitat.

4.1.3 Socioeconomic Consequences

The expansion of the existing golf course to eighteen holes would not result in significant impacts to regional population, employment, income, housing, transportation, schools, solid

waste, or utilities. Use of the proposed areas under Alternatives 1 and 2 would be compatible with projected land uses in the northwestern portion of the base (SOUTHNAVFACENGCOM 1990). However, expansion of the golf course south of the existing course, as proposed under Alternative 3, would conflict with future land uses projected for the area. As illustrated in Figure 2-3, this area is projected to continue to be used as an Equipment Operator training area for frontend loaders, graders, dump trucks, cranes, and other heavy equipment. The southern portion of the area is projected for development as a family housing area (Crane 1995).

The proposed action would benefit the Morale, Welfare, and Recreation Department with increased revenue from the expected increase in golfers using the course following its expansion to eighteen holes and would benefit personnel associated with the base in terms of increased recreational opportunities. Although 15 public golf courses are located within 30 miles of NCBC Gulfport, green fees at these courses are at least 25 percent higher than on the base. Increases in the number of tourists attracted by increasing numbers of casinos in the area would further increase use of area golf courses and could result in higher green fees charged by public courses.

Construction of the expanded course could provide temporary employment for civilian equipment operators and landscape personnel, unless construction of the facility were done by Seabees stationed at the base. The 20th Naval Construction Regiment is continuously seeking work in the community to provide quality Equipment Operator training. Construction of the additional nine holes to the golf course would provide an excellent training opportunity for Atlantic Fleet Seabees homeported at NCBC Gulfport. Estimated costs to construct the expanded course are very similar for the three alternatives, as indicated in Table 2-1 and account of revenue received from sale of cleared trees. Operation of the completed course would not require any additional ground maintenance personnel or pro shop personnel.

Potential impacts to archaeological and cultural resources on the base have been evaluated in compliance with Section 106 of the National Historic Preservation Act (of 1966), as amended, and in consultation with the Mississippi State Historic Preservation Office. According to the State of Mississippi Department of Archives and History, no properties of historical significance or archeological sites are on NCBC Gulfport. Three World War II–era ammunition bunkers (Structures 190, 191, and 192) and one concrete parade ground were recommended to be preserved for possible reconsideration of their National Register eligibility. No adverse effects to these structures are expected under any of the three alternatives. Cultural resource discoveries identified during the proposed construction work would be brought to the attention of the Mississippi State Historic Preservation Office or State Archaeologist.

4.2 SUMMARY OF IMPACTS OF THE PROPOSED ACTION

Based on these analyses, the preferred site and layout for the proposed action is Alternative 1, illustrated in Figure 4-2. Implementation of this alternative design would expand the existing

54-acre course to eighteen holes on approximately 124 acres. The greater course length and diversity of hole layouts under Alternative 1 would make playing this course more interesting and challenging than the layouts proposed under the other two alternatives. No threatened or endangered species or cultural resources would be impacted by the proposed action.

No IR sites would be excavated during the construction of the expanded course. All of these landfill and disposal areas were covered with fill dirt when they were closed. Contaminants present at the IR sites should pose no health threat to golfers or personnel engaged in golf course construction. Expansion of the golf course at this site would not preclude the future cleanup of IR sites when funded.

As indicated in Figure 4-2, the links located near roadways and pedestrian areas have been designed to direct the initial drives from the tees away from roadways. Individual links have been microdesigned to avoid wetlands and stands of cypress and hardwood trees to the greatest extent possible. Instead of the continuous fairways found on many courses, the links have been designed to preserve wetlands on the course and to incorporate them into the layout as golf hazards. During the final design of the course, the green for hole 13 will be relocated north of the illustrated site to move it farther away from the tee for hole 18. The green for hole 14 also will be relocated farther southeast to provide a buffer area for the wetland on the west side of the green.

Raised boardwalks would be constructed where golf carts and pedestrians would have to cross wetland areas. The boardwalks would be approximately 6 to 8 feet wide and would be elevated approximately 3 feet to minimize shading under the boardwalks. Less than 0.5 acre of palustrine forested wetlands would be filled by the construction of wooden support structures for the elevated boardwalks on holes 10, 12, and 18 and the construction of the green for hole 18. Wetlands in front of the number 12 and 18 greens would be designated "must carry" areas for golfers (balls must be shot over the wetlands and not played within the wetlands).

The proposed action would result in the removal of less than 20 acres of slash pine forest. Approximately 1.5 acres of forested wetland would be cleared of trees for the construction of the fairways for holes 10, 12, and 18. Trees to be removed from wetland or IR site areas would be cut at ground level and the stumps ground to below the ground surface. Routine maintenance would fill holes that may appear as the stumps degrade. The wetlands would be maintained by fire or the use of bushhog mowers.

Impacts to these wetland areas would be mitigated by the creation of a new 2-acre lake/wetland and the enhancement of existing wetlands. Although not required by the USACE, NCBC Gulfport will enhance both wildlife and aesthetic values on the base by planting 2 acres of various wetland-tolerant hardwood trees around or adjacent to Seabee Lake and in other locations having wetland characteristics as suggested by the USFWS (Appendix A). NCBC Gulfport will monitor the tree planting efforts to ensure at least 75 percent survival of

75 percent of the trees survive at the end of the third growing season, additional trees will be planted to achieve at least 75 percent survival.

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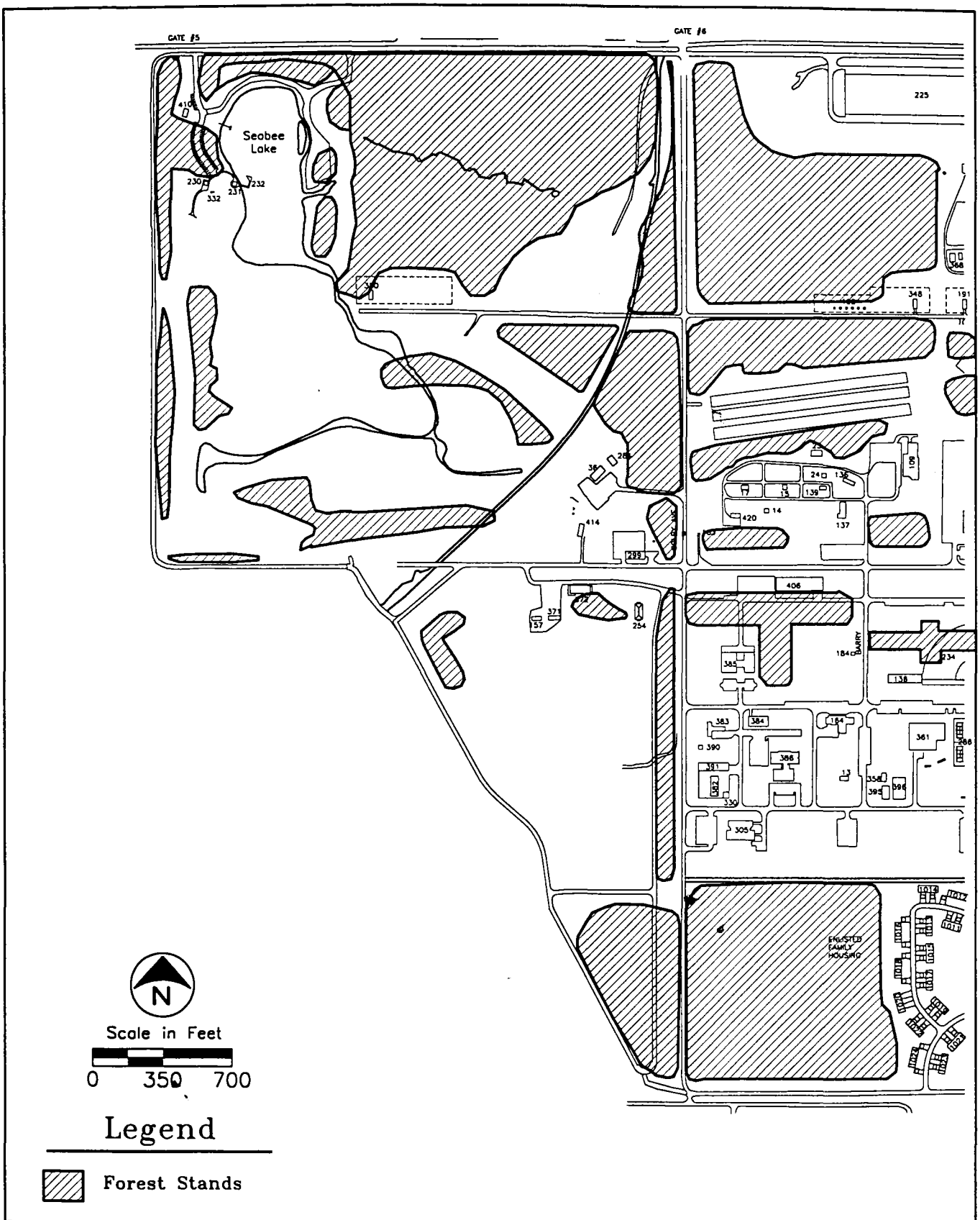
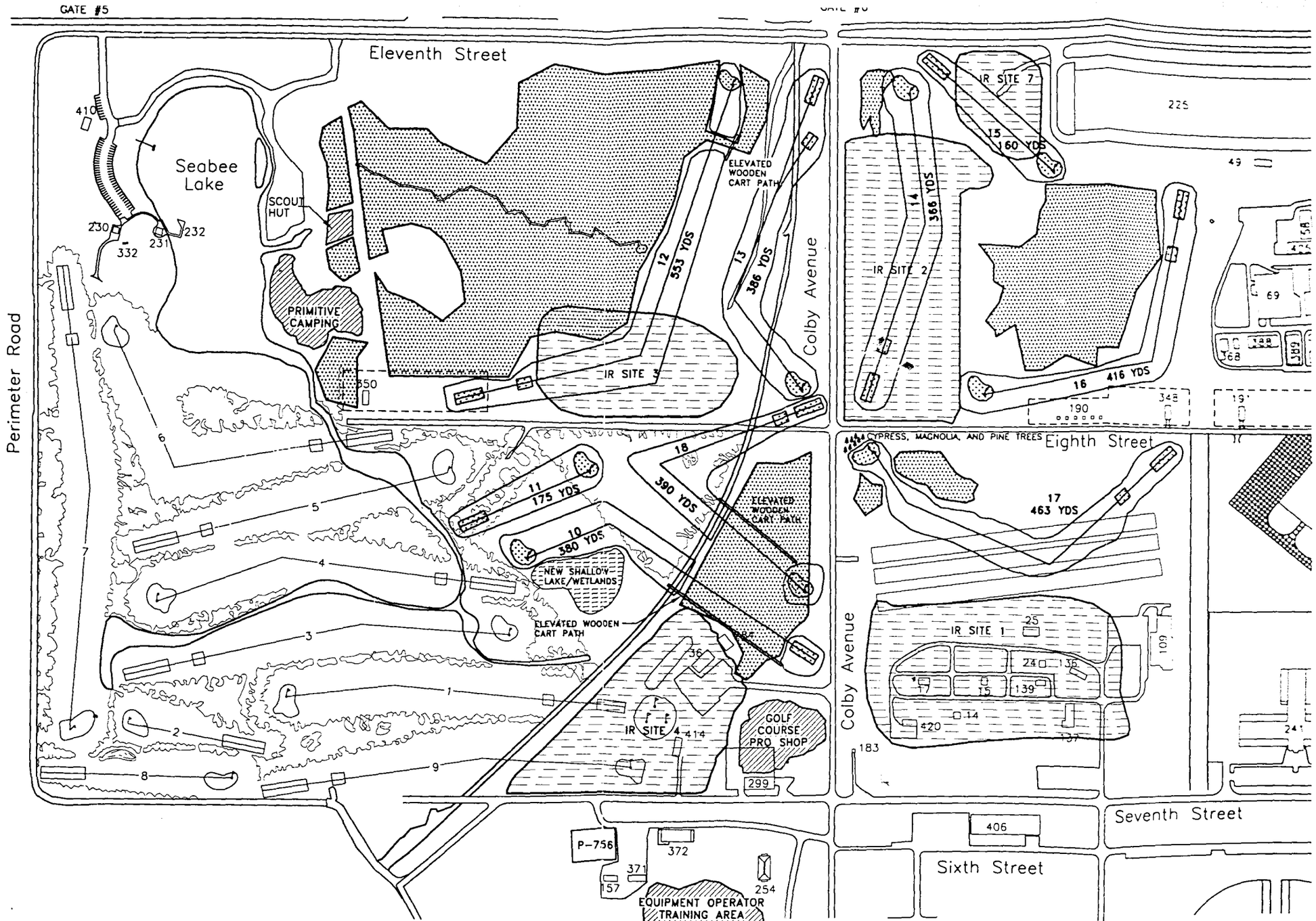


Figure 4-1.
Forested Areas on the Western Side of NCBC Gulfport

Source: SOUTHNAVFACENGCOM 1990.

NCBC Gulfport Environmental Assessment



ested Wetlands

5

Cumulative Impacts

Cumulative impacts are the incremental effects over time of a proposed action when added to the past, present, or reasonably foreseeable similar or related actions. No other significant projects are known to be planned by the Navy or any other federal agency in the area that, combined with the proposed action, would be likely to create significant cumulative effects. Therefore, the cumulative impacts would be the sum of the impacts projected in this document.

The cumulative impacts of this project to the physical, biological, and socioeconomic resources of the area are negligible. Because of the relatively modest levels of potential impacts attributable to this project, the cumulative impacts are anticipated to be minor. The most visible cumulative impact would be the conversion of slash pine forested areas to maintained lawn areas and preserved wetlands cleared of trees. Construction of the expanded course would result in increased edge-effect wildlife habitat communities and the creation of a new 2-acre lake/wetland. Expansion of the existing golf course in the proposed area would not preclude future cleanup of IR sites as soon as money becomes available.

6

Relationship of the Proposed Action to Federal, State, and Local Land Use Plans, Policies, and Controls for the Area Concerned

6.1 FEDERAL LAND USE POLICY AND REGULATION

This environmental assessment (EA) has been prepared in accordance with the following regulations:

- Section 102(2)(c) of the 1969 National Environmental Policy Act (NEPA)
- The Council on Environmental Quality NEPA Regulations (40 CFR Parts 1500–1508 of November 29, 1978)
- OPNAVINST 5090.1B, which implements, within the Department of the Navy, the requirements set forth by NEPA

A summary of the various laws and coordination requirements and the extent to which the proposed action to expand the existing golf course at NCBC Gulfport complies or conflicts with each of these laws and requirements are presented in this section.

6.1.1 National Environmental Policy Act

NEPA directs that "to the fullest extent possible...all agencies of the Federal Government shall...insure that presently unquantified environmental amenities and values may be given appropriate consideration in decision-making along with economic and technical considerations." This EA has been prepared to comply with the provisions of NEPA. It presents statements of potential impacts on the natural and human environment. Final compliance with NEPA would be effective upon the signing and distribution of the Finding of No Significant Impact, if appropriate.

6.1.2 National Historic Preservation Act

Section 106 of the National Historic Preservation Act of 1966 requires federal agencies to consider the potential effects of a proposed action on the historical, architectural, or archaeological resources that are eligible for inclusion in the *National Register of Historic Places* and to afford the President's Advisory Council on Historic Preservation an opportunity to comment. Section 110 of the act requires federal agencies to identify, evaluate, inventory, and protect National Register resources on properties they control.

As discussed in Section 4.1.3, potential impacts to archaeological and cultural resources on NCBC Gulfport have been evaluated in compliance with Section 106 of the National Historic Preservation Act. According to the State of Mississippi Department of Archives and History,

no archeological sites or properties of historical significance are on NCBC Gulfport. Three World War II–era ammunition bunkers (Structures 190, 191, and 192) and one concrete parade ground were recommended to be preserved for possible reconsideration of their National Register eligibility. No adverse effects are expected to these structures during the proposed expansion of the course. Cultural resource discoveries identified during the proposed construction work would be brought to the attention of the Mississippi State Historic Preservation Office or the State Archaeologist.

6.1.3 Coastal Zone Management Act

The Coastal Zone Management Act of 1972 (16 U.S. Code [USC] 1451 *et seq.*), as amended, provides for the preservation, protection, development, and, where feasible, restoration or enhancement of the nation's coastal zone resources. The Navy is obligated to ensure that any of its activities that would directly affect or that would be conducted in the coastal zone are carried out in a manner that is, to the maximum extent practicable, consistent with approved coastal zone management programs.

Section 57-15-6 of the Mississippi Code established Hancock, Harrison, and Jackson Counties as the coastal area in which the Mississippi Coastal Program is binding. The coastal area includes these counties, and all adjacent coastal waters. The provisions of the program apply to all state agency actions in the coastal area. Excluded from the coastal area are lands owned, leased, held in trust, or whose use is otherwise by law subject solely to the discretion of the federal government, its officers, or agents. However, with the approval of the Mississippi Coastal Program under the Coastal Zone Management Act, federal activities affecting the coastal area must be conducted or supported in a manner that is consistent with the program to the maximum extent practicable (Bureau of Marine Resources 1980).

The regulation of wetlands under the Mississippi Coastal Program is limited to areas below the watermark of ordinary high tide, except in two situations: (1) where upland activities are filling into coastal wetlands and (2) where structures are being erected on suitable sites for water-dependent industry. No tidal wetlands would be filled under the proposed action, and no structures would be erected in coastal waters.

6.1.4 Executive Order 11988

Executive Order 11988—Floodplain Management (issued May 24, 1977)—requires that federal agencies avoid activities that directly or indirectly result in the development of floodplain areas. The area proposed for expansion of the existing golf course is located above the 100- and 500-year floodplain elevations. Therefore, the proposed action would not result in development or degradation of floodplain areas.

6.1.5 Executive Order 11990

Executive Order 11990—Protection of Wetlands (issued May 24, 1977)—requires that federal agencies minimize the loss or degradation of wetlands and protect wetlands on their property.

The U.S. Army Corps of Engineers (USACE) protects wetlands under Section 404 of the Clean Water Act.

Under the preferred alternative, impacts to wetlands within the area proposed for the expansion of the existing golf course have been avoided to the maximum extent practicable during project design. Individual links have been microdesigned to avoid wetlands and stands of cypress and hardwood trees to the greatest extent possible. Instead of continuous fairways found on many courses, the links have been designed to preserve the palustrine forested wetlands on the course and incorporate them into the layout as golf hazards. Less than 0.5 acre of palustrine forested wetland habitat would be filled for the construction of the green for hole 18 and by the placement of wooden supports for the elevated boardwalks. Approximately 1.5 acres of forested wetland habitat would be cleared of trees for the construction of the fairways for holes 10, 12, and 18. Trees within the wetlands would be cut at ground level and the stumps ground below the ground surface. The wetlands would be maintained by fire or the use of bushhog mowers. Raised boardwalks would be constructed where golf carts and pedestrians would have to cross wetland areas on holes 10, 12, and 18. The elevated boardwalks would be 6 to 8 feet wide to allow two carts (or a pedestrian and a cart) to pass on the boardwalk. The boardwalk would be elevated approximately three feet to minimize shading of vegetation under the boardwalk.

6.1.6 Executive Order 12898

Executive Order 12898—Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (issued February 11, 1994)—requires that each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high or adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. Within the Navy, SECNAV Notice 5090 (27 May 1994) establishes policy and assigns responsibility for implementing Executive Order 12898.

SECNAV Notice 5090, in particular, directs Department of the Navy commands, to the greatest extent practicable and permitted by law, to make environmental justice part of their mission by

- ensuring that all programs or activities under its control that receive federal financial assistance and that affect human health or the environment do not directly, or through contractual or other arrangements, use criteria or other methods or practices that discriminate on the basis of race, color, or national origin
- analyzing the environmental effects, including human health, economic, and social effects, of Department of the Navy actions, including effects on minority communities and low-income communities, when such analysis is required by NEPA
- ensuring that mitigation measures outlined or analyzed in an EA, environmental impact statement, or record of decision, whenever feasible, address significant and adverse environmental effects of proposed federal actions on minority communities and low-income communities

- ensuring that opportunities for community input into the NEPA process are provided, including (1) identifying potential effects and mitigation measures in consultation with affected communities and (2) improving the accessibility of meetings, crucial documents, and notices

The proposed action involves the expansion of the existing golf course on NCBC Gulfport to eighteen holes. The proposed action would have no significant disproportionate human health, economic, or social effects on minority, low-income, or other communities in the vicinity of NCBC Gulfport.

6.1.7 Executive Order 12902

Executive Order 12902—Energy Efficiency and Water Conservation at Federal Facilities (issued March 8, 1994)—requires that federal agencies develop and implement projects that promote energy efficiency, water conservation, and the use of renewable energy sources, such as solar, geothermal, and wind energy. In particular, Section 305 requires all federal agencies to reduce the use of petroleum in their buildings and facilities and, where practical and cost effective, to switch to natural gas, solar energy, and other renewable energy sources. Section 306 requires that the design and construction of new federal facilities (1) minimize the life cycle cost of the facility by using energy efficiency, water conservation, or solar or other renewable energy technologies and (2) use passive solar design and adopt active solar technologies where they are cost effective.

No new buildings are being constructed under the proposed action, and the use of irrigation to water the fairways and greens would be kept to a minimum. As stated in Section 4.1.1.6, the golf course has established a goal for fiscal year 1996 to reduce by one-half the amount of all chemicals used on the course in compliance with the objectives of the U.S. Golf Association's seven-point conservation program. This policy would be continued following the expansion of the course. Thus, the total amount of chemicals applied to the expanded course would be only slightly greater, if any, than the annual amounts applied in the past several years.

6.1.8 Clean Water Act

The Clean Water Act, as amended, regulates sources of pollution affecting surface waters and the dredging and filling of freshwater and coastal wetlands. Section 404 (33 USC 1344) of the Clean Water Act prohibits the discharge of dredged or fill material into waters (including wetlands) of the United States without first obtaining a permit from the USACE. Wetlands are regulated in accordance with federal Nontidal Wetlands Regulations (Sections 401 and 404).

Less than 0.5 acre of wetlands would be filled by the construction of the green for hole 18 and the construction of the elevated boardwalks where carts and golfers would cross the wetland areas on holes 10, 12, and 18 under the proposed action (Figure 4-2). The boardwalks would be elevated three feet to minimize shading of the vegetation under the boardwalks. The Navy will coordinate with the USACE to ensure compliance with Section 404 prior to development of the expanded course.

Section 401 of the Clean Water Act (33 USC 1341) requires applicants to obtain state certification for activities that may result in a discharge of pollutants into waters of the United States. This typically includes industrial point sources and sanitary wastewater discharges into streams or rivers, which are covered under the National Pollutant Discharge Elimination System (NPDES) program. The NPDES program was amended to include stormwater conveyances for many industrial activities and for construction areas comprising 5 or more acres. Because the proposed action would disturb more than 5 acres, a NPDES permit for stormwater associated with construction activities would be required for the project.

Water quality concurrence would be permitted under Section 401 of the Clean Water Act if discharges meet state water quality standards. Stormwater discharges from construction sites would be treated by appropriate methods, and stormwater controls would be incorporated into the site design, as required by federal and state regulations. No other direct discharges to surface waters are associated with the proposed action.

6.1.9 Clean Air Act

The Clean Air Act of 1970 and its amendments provide for the protection and enhancement of the nation's air resources. The U.S. Environmental Protection Agency regulates more than 200,000 existing stationary air emission sources throughout the United States through its permitting programs, some of which are administered by the Mississippi Department of Environmental Quality, Office of Pollution Control.

This EA will be provided to the U.S. Environmental Protection Agency in compliance with Section 309 of the Clean Air Act. Copies also will be provided to appropriate state agencies to ensure conformity of the proposed action with the Mississippi State Implementation Plan, in accordance with Section 176(c) of the Clean Air Act and the state's air quality regulations. No exceedance of the federal and state ambient air quality standards is expected to result under the proposed action.

6.1.10 Fish And Wildlife Coordination Act

Section 10 of the Fish and Wildlife Coordination Act (16 USC 661–666) directs federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS), the National Marine Fisheries Service, and state agencies before authorizing alterations to water bodies. The purpose of the act is to assure that wildlife conservation receives equal consideration and that it is coordinated with other features of water resource programs.

The Navy has, through its contractor, notified the USFWS and state wildlife agencies about the anticipated environmental effects of the expansion of the existing golf course (Appendix A). The views and recommendations of these agencies have been considered fully in the preparation of this EA. No alterations to open water bodies (Seabee Lake) are expected under the proposed action. Locations of jurisdictional wetlands on NCBC Gulfport have been considered during the design of the layout for the additional golf course holes and have been

avoided to the maximum extent practicable. A new 2-acre lake/wetland would be created on the expanded course and wildlife habitat would continue to be enhanced on base.

6.1.11 Endangered Species Act

The Endangered Species Act of 1973 (16 USC 1531 et seq.) requires that any action authorized by a federal agency not be likely to jeopardize the continued existence of an endangered or threatened species or result in the destruction or adverse modification of any habitat of such species that is determined to be critical. Section 7 of the Endangered Species Act of 1973, as amended, requires the responsible federal agency to consult the USFWS and the National Marine Fisheries Service concerning endangered and threatened species under their jurisdictions. The Navy has coordinated the preparation of this EA for expansion of the existing golf course to eighteen holes with the USFWS and state agencies, including the Department of Marine Resources and the Natural Heritage Program office.

No federally listed threatened or endangered species are known to inhabit the area proposed for expansion of the golf course. As stated by the USFWS and the Natural Heritage Program office in Appendix A, no known records of federally or state-listed protected species are present at NCBC Gulfport.

6.1.12 Farmland Protection Policy Act

The purpose of the Farmland Protection Policy Act is to minimize the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses. No soil types classified as prime farmland are within the area proposed for expansion of the golf course.

6.1.13 Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA), 42 USC 6901, was established to protect human health and the environment from the hazards associated with solid wastes and hazardous waste generation, transportation, treatment, storage, and disposal. Subtitle C of RCRA imposes on the owners and operators of hazardous waste facilities specific requirements for developing spill contingency plans. The Hazardous and Solid Waste Amendments of 1984 amended RCRA to include the cleanup through corrective action of past releases of hazardous wastes at RCRA-regulated facilities. RCRA provides for the tracking of hazardous wastes through a record-keeping system that requires the manifesting of hazardous waste shipments from point of generation to ultimate disposal.

The Installation Restoration Program established at NCBC Gulfport encompasses all known sites on the base. All sites of potential contamination identified through this program will continue to be evaluated and remediated by the Navy, as necessary, until all sites have been determined to require no further action. Expanding the golf course as proposed is a reasonable use for this land area and would not preclude cleanup of the IR sites when funding becomes available.

6.1.14 NCBC Gulfport Master Plan and Natural Resource Management Plans

The major goals of the 1990 Master Plan for NCBC Gulfport were to provide an integrated and comprehensive guide to the future development of the base and to ensure the logical and efficient use of facilities and real estate (SOUTHNAVFACENGCOM 1990). The master plan was designed to ensure that activity projects were sited to meet operational, safety, and environmental requirements and to ensure that road and utility infrastructure and site improvements have been considered. Expansion of the existing golf course to eighteen holes was projected in the Capital Improvements Plan section of the NCBC Gulfport Master Plan. However, the proposed golf course expansion depicted in the Capital Improvements Plan proposed a layout designed prior to the implementation of laws regulating wetlands. This proposed layout was similar to that illustrated in Figure 2-2.

As discussed in Section 2.2.2, existing and proposed land uses, locations of IR sites, and impacts to wetlands were considered during the preliminary design layout of the expanded golf course. Expansion of the existing golf course as proposed would not conflict with future land uses projected in the Master Plan or policies in the Natural Resources Management Plan.

6.2 STATE AND LOCAL LAND USE POLICY AND REQUIREMENTS

As a part of the federal government's landholdings, NCBC Gulfport is exempt from most state and local zoning and planning regulations. Navy policy has been to work closely with state and local officials and to comply with state and local regulations to the maximum extent practicable while remaining consistent with mission and operational requirements. Expansion of the existing golf course on base to eighteen holes does not conflict with any state or local land use or growth management regulations.

7

Means to Mitigate and/or Monitor Adverse Environmental Impacts

A variety of measures would be implemented as necessary during the construction of the additional nine holes to the existing golf course to ensure compliance with all applicable federal and state regulations. Best Management Practices, including proper erosion and sediment controls, would be used by the contractors as required by state and local regulations. Noise impacts from construction of the additional holes would be temporary and would be reduced by limiting construction activities to normal daylight working hours.

Less than 0.5 acre of palustrine forested wetland would be filled by the construction of the green for hole 18 and the wooden supports for the elevated boardwalks. Approximately 1.5 acres of forested wetland habitat would be cleared of trees during the construction of fairways for holes 10, 12, and 18. Impacts to these wetland areas would be mitigated by the creation of a new 2-acre lake/wetland and the enhancement of existing wetlands. Although not required by the U.S. Army Corps of Engineers, NCBC Gulfport will enhance both wildlife and aesthetic values on the base by planting 2 acres of various wetland-tolerant hardwood trees around or adjacent to Seabee Lake and in other locations having wetland characteristics as suggested by the U.S. Fish and Wildlife Service (Appendix A). NCBC Gulfport will monitor the tree planting efforts to ensure at least 75 percent survival of all planted trees by the end of the third growing season (Bessette 1996). If less than 75 percent of the trees survive at the end of the third growing season, additional trees will be planted to achieve at least 75 percent survival.

8

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9

List of Agencies and Persons Consulted

Federal, state, and local agencies were consulted prior to and during the preparation of this environmental assessment. Agencies were notified of the proposed action by mailings, by scheduled meetings, or by telephone conversations. The agencies' viewpoints were solicited with regard to activities within their jurisdiction. The agencies contacted include, but are not limited to, those listed below.

9.1 FEDERAL AGENCIES

- Department of the Interior
  U.S. Fish and Wildlife Service, Ecological Service Office, 2001-A Highway 98, P.O. Box 1190, Daphne, Alabama 36526
- Department of Defense
  U.S. Army Corps of Engineers, P.O. Box 2288, Mobile, Alabama 36628-0001

9.2 STATE AGENCIES

- Mississippi Department of Archives and History, Historic Preservation Division, P.O. Box 571, Jackson, Mississippi 39205-0571.
- Mississippi Department of Environmental Quality, P.O. Box 10385, Jackson, Mississippi 39289-0385
- Mississippi Department of Marine Resources, 152 Gateway Drive, Biloxi, Mississippi 39531
- Mississippi Department of Wildlife, Fisheries, and Parks, Mississippi Natural Heritage Program, 111 North Jefferson Street, Jackson, Mississippi 39202

9.3 LOCAL GOVERNMENTS AND AGENCIES

- Harrison County Tourism Commission, P.O. Box 6128, Gulfport, Mississippi 39506–6128

Common and Scientific Names of Plants and Animals Referenced in this Environmental Assessment

Common Name	Scientific Name
Flora	
Grasses, Rushes, and Sedges	
Bahia grass	*Paspalum notatum*
Bermuda grass	*Cynodon dactylon*
Carpet grass	*Axonopus affinis*
Centipede grass	*Eremochloa ophiuroides*
Herbs	
Louisiana blue-star	*Amsonia ludoviciana*
Hooded pitcher-plant	*Sarracenia minor*
Pitcher plants	*Sarracenia* sp.
Sundew	*Drosera* sp.
Shrubs and Vines	
Hedge privet	*Ligustrum sinense*
Ink berry	*Ilex glabra*
Trees	
Bald cypress	*Taxodium distichum*
Chinese tallowtree	*Sapium sebiferum*
Southern magnolia	*Magnolia grandiflora*
Pines	
Longleaf	*Pinus palustris*
Pond	*Pinus serotina*
Slash	*Pinus elliottii*
Swamp bay (sweetbay)	*Magnolia virginiana*
Fauna	
Mammals	
Cottontail rabbit	*Sylvilagus floridanus*
House mouse	*Mus musculus*
Nine-banded armadillo	*Dasypus novemcinctus*
Nutria	*Myocastor coypus*
Opossum	*Didelphis virginiana*
Raccoon	*Procyon lotor*
Rats	
Black	*Rattus rattus*
Norway	*Rattus norvegicus*
Red fox	*Vulpes fulva*

Common and Scientific Names of Plants and Animals Referenced in this Environmental Assessment

Common Name	Scientific Name
Squirrels	
Fox	*Sciurus niger*
Gray	*Sciurus carolinensis*
Birds	
American peregrine falcon	*Falco peregrinus gnatum*
Bald eagle	*Haliaeetus leucocephalus*
Great blue heron	*Ardea herodias*
Blue jay	*Cyanocitta cristata*
Brown thrasher	*Toxostoma rufum*
Cardinal	*Cardinalis cardinalis*
Common crow	*Corvus brachyrhynchos*
Eastern bluebird	*Sialia sialis*
English house sparrow	*Passer domesticus*
Killdeer	*Charadrius wilsonia*
Least tern	*Sterna antillarum*
Mockingbird	*Mimus polyglottos*
Purple martin	*Progne subis*
Red-tailed hawks	*Buteo jamaicensis*
Snowy egrets	*Egretta thula*
Fish	
Bluegill	*Lepomis macrochirus*
Channel catfish	*Ictalurus punctarus*
Crappie	*Pomoxis* sp.
Fathead minnow	*Pimephales promelas*
Largemouth bass	*Micropterus salmoides*
Redear sunfish	*Lepomis microlophus*
Reptiles	
Alligator	*Alligator mississippiensis*
Turtles	
Box turtle	*Terrapene carolina*
Spiny softshell turtle	*Trionyx spiniferus*
Snapping turtle	*Chelydra serpentina*
Snakes	
Common garter snake	*Thamnophis sirtalis*
Copperhead	*Agkistrodon contortrix*

Common and Scientific Names of Plants and Animals Referenced in this Environmental Assessment

Common Name	Scientific Name
King snake	*Lampropeltis getulus*
Rat snake	*Elaphe obsoleta*
Water moccasin	*Agkistrodon piscivorus*
Southern Water snake	*Nerodia fasciata*