

CHAPTER 9

WETLANDS CONSERVATION

9.1 Wetlands Protection

In their natural condition, wetlands provide many benefits including food and habitat for fish and wildlife, water quality improvement, flood protection, shoreline erosion control, natural products for human use and opportunities for outdoor recreational and aesthetic appreciation. Camp Lejeune recognizes the ecologic and economic value of these unique environments and ensures that operations, activities and projects comply with the national policy to minimize the loss of wetlands and to preserve their natural functions and associated values.

The total number of wetlands on Camp Lejeune is estimated to be over 55,000 acres, about 44% of the base's land area. Many types of wetlands can be found on Base. They are generally forested palustrine and coastal estuarine systems. Dominant wetland communities include wet pine flatwoods, blackwater bottomland hardwoods, pocosins, vernal pools and small depression ponds, and coastal salt marshes.

Fig. 9-1. Black Gum (*Nyssa aquatica*) and White Water Lilly (*Nymphaea odorata*) in Holover Creek



Section 404 of the Clean Water Act establishes the major federal program that regulates and permits activities in wetlands. A Section 401 Clean Water Act, Water Quality Certification is required whenever a Section 404 permit is required. Management and protection of these areas also requires compliance with Section 10 of the Rivers and Harbors Act, Executive Order, 11990 Protection of Wetlands, the Coastal Zone Management Act, and Marine Corps Order P5090.2A Environmental Compliance and Protection Manual.

In order to comply with regulations for activities in wetlands and waters of the U.S., Camp Lejeune will take actions necessary to minimize the destruction or degradation of wetlands, and will avoid undertaking new construction located in wetlands to the practicable extent possible. Camp Lejeune will also obtain Section 10 and Section 404 permits from the USACE for structures, work, or discharges of dredged or fill material into waters of the U.S. and wetlands. Camp Lejeune's intent is to preserve the natural and beneficial value of wetlands when conducting activities and implementing programs affecting land use whenever possible.

9.2 Wetland Surveys

Jurisdictional wetland delineation and mapping of the base is performed in support of plans to improve facilities or ranges. Such plans must consider the ecological consequences of wetland impacts when proposing new ranges, facilities or activities that may adversely affect wetlands. Wetland delineations will be performed on sections of the base identified by trainers and facility planners in cooperation with the Base Environmental Conservation Branch, to ensure those priority areas most likely considered for development are delineated. Wetlands will be defined using the Routine On-Site Determination method as described in the 1987 "Corps of Engineers Wetlands Delineation Manual".

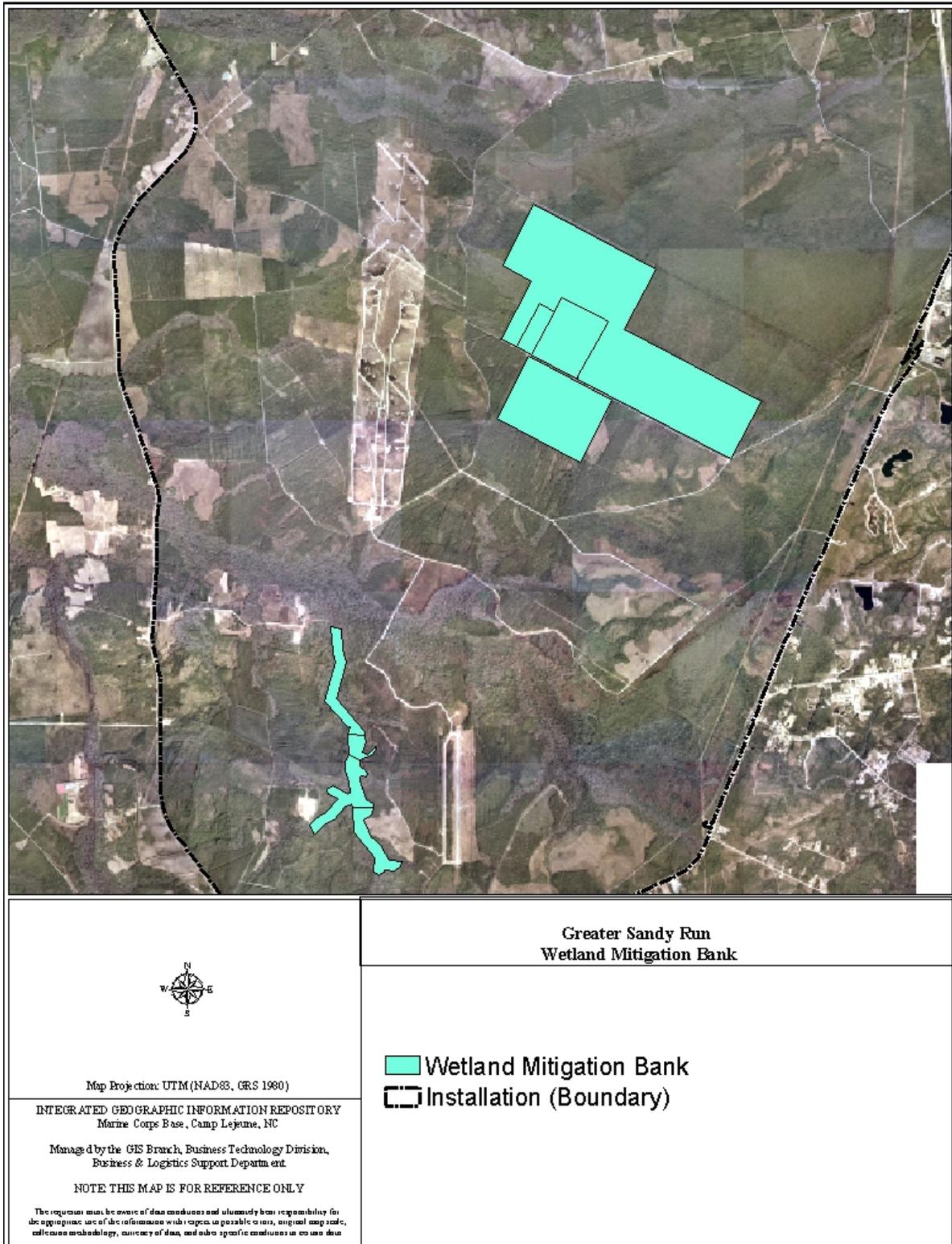
All wetland delineations are verified and approved by the US Army Corps of Engineers. Once approved, digital files of the official delineation are then processed and integrated into Camp Lejeune's Integrated Geographic Information Repository (IGIR).

9.3 Greater Sandy Run Wetland Mitigation Bank

9.3.1 Background

A wetland mitigation bank (Wetlands Mitigation Bank Instrument) totaling 1,250.5 acres was established in the Greater Sandy Run Area (GSRA) on Camp Lejeune in November 2000. The goal of the mitigation bank is to restore, enhance, and preserve pocosin, pine flat and bottomland hardwood wetland systems and their functions and values to compensate for unavoidable, non-tidal, freshwater wetland impacts. The bank was created specifically to mitigate impacts authorized by Clean Water Act Permits issued for range and infrastructure development in the GSRA. The GSRA was once owned by the International Paper Company. Vast wetland areas were ditched and drained to facilitate intensive timber management practices of the time. Camp Lejeune identified drained wetlands suitable for restoration and implemented plans to establish the GSRA Mitigation Bank and restore and enhance wetlands in these areas.

Figure 9-2. The Greater Sandy Run Mitigation Bank.



The Bank is divided into three main areas: 1) Burned Pine Plantation, 2) Pocosin area, and 3) Big Shakey Swamp.

9.3.2 Burned Pine Plantation

The burned pine plantation was enhanced by plugging the existing ditches at key locations and by the placement of water control structures that allow surface water to flow into adjacent pocosin areas of the mitigation bank. The burned pine plantation was also planted with cypress and various oak and pine species. The planting plan called for a bottomland hardwood area surrounded by a pond pine and longleaf pine forest. The burn pine plantation includes 135.5 acres of pine flatwoods and 84.8 acres of bottomland hardwoods.

Fig. 9-3. The burned pine plantation shown during site preparation in 1999 and current conditions with young Bald Cypress (*Taxodium distichum*) and Wool Grass (*Scirpus cyperinus*).



9.3.3 Pocosin Area

The pocosin area was restored by plugging ditches at key points throughout the extensive drained network. The plugs elevate the groundwater back to levels experienced prior to silvicultural drainage activities. The 886.8 acre pocosin restoration area also receives surface water from the burned pine plantation.

Fig. 9-4. Ditch Plug in the Pocosin Area.



9.3.4 Big Shakey Swamp

Big Shakey Swamp had been previously channelized to promote drainage of surrounding wetland forests. It was enhanced, by placing timber dams at 400 ft intervals within the existing channel. These dams allow the system to retain water and realize overbank, flooding conditions of the 143.4-acre area, similar to the historical, natural state.

Fig. 9-5. Timber check dam in Big Shakey Swamp.



9.3.5 Monitoring

Hydrology and vegetation monitoring of the GSRA Mitigation Bank has been conducted annually each growing season since 1994. Hydrologic restoration activities undertaken in the mitigation bank include plugging of ditches and the installation of water control structures and wooden check-dams. Hydrologic monitoring allows managers to evaluate the effectiveness of the restoration work. Vegetation sampling is performed to determine if the bank supports a planted-tree survival density of at least 320 trees per acre. Vegetation data is also analyzed to identify changes in plant communities as they respond to hydrological changes associated with the restoration effort.

9.3.6 Summary

In January 2004, the Mitigation Bank Review Team and the US Army Corps of Engineers agreed that 50.7% of the total banking area (633.9 acres) had met success criteria. The remaining 616.6 acres (49.3%) continue to be monitored. Field observations during the 2004 and 2005 growing season were positive and indicated the remaining acreage in the bank will meet success performance criteria as established in the approved 2002 Mitigation Banking Instrument. Inspections of the bank and maintenance of access roads and water control structures are performed annually.

OBJECTIVE WET1: Integrate wetland conservation into Camp Lejeune's facility and range development process.

- **Action 09-01:** *Delineate wetlands and update Camp Lejeune's GIS wetland layer.*
- **Action 09-02:** *Comply with Section 404 CWA permits issued by the USACE for DOD action on MCBCL*
- **Action 09-03:** *Identify and develop suitable wetland restoration areas.*

OBJECTIVE WET2: Conserve wetlands so that training lands remain available for military training.

- **Action 09-02:** *Comply with Section 404 CWA permits issued by the USACE for DOD action on MCBCL*
- **Action 09-04:** *Monitor sensitive wetland areas to ensure impacts are minimized/mitigated.*
- **Action 7-12:** *Use Best Management Practices for all forestry-related activities.*

OBJECTIVE WET3: Establish full success criteria in the GSRA Mitigation Bank

- **Action 09-05:** *Continue maintenance and monitoring of the GSRA Mitigation Bank until performance criteria are met.*
- **Action 09-06:** *Perform Annual Inspections of the GSRA Mitigation Bank*