

**National Park Service
U.S. Department of the Interior**



**Cane River Creole National Historical Park
Natchitoches, Louisiana**

EMERGENCY STABILIZATION/EROSION CONTROL ON THE BANK OF CANE RIVER LAKE, OAKLAND PLANTATION

**Finding of No Significant Impact
July 2011**

INTRODUCTION

Cane River Creole National Historical Park (the park) is located in northwestern Louisiana, approximately 150 miles northwest of Baton Rouge and 70 miles southwest of Shreveport within the Natchitoches Parish, Louisiana. The park is comprised of two separate units, the Oakland Plantation and the Magnolia Plantation. The proposed project is located within the Oakland Plantation on Cane River Lake ten miles south of the town of Natchitoches. The 44-acre plantation includes the entire remaining core plantation infrastructure of 40 buildings, ranging from the main house and the 1835 bottle garden to numerous outbuildings, including the plantation store, large seed house, workshops, and pigeonniers.

In October 2007, two heavy storms hit the Natchitoches area, bringing nearly 17 inches of rain in a 36 hour period. This heavy rain caused flooding damage at Oakland Plantation and a major washout of several spots along the Cane River Lake bank and the roadside swale. Erosion has increased the steepness of the lake bank, causing it to have a slope of less than 1(V):1(H) in some places, with gullies and scour washout spots apparent along the top of the bank down to the toe. Despite some previous attempts to stabilize the bank by the National Park Service (NPS) staff, the bank has continued to severely erode.

In addition to the erosion caused by the storm water runoff, other forces are causing erosion near the top and side of the bank. Although the lake does not have a substantial current flow, local boat traffic that travels along the lake creates wakes that contribute to the erosion of the toe of the lake bank. Wave action bouncing off of the newly constructed seawalls along portions of Cane River Lake also has contributed to the erosion of the bank, particularly along the toe of the bank.

The combination of storm water runoff and wave action has lead to the bank eroding into the water. If the erosion remains untreated, existing utilities, vegetation, and the adjacent

State Highway LA 494/119 will be threatened. Existing utilities include aboveground power lines, as well as underground telephone and power lines. In addition to roadway and utility stability issues, the erosion and steep slope of the bank can cause an additional traffic hazard if a vehicle were to swerve off the road or if an accident were to occur.

The purpose of this project is to provide stabilization and erosion control on the bank of Cane River Lake along the thin strip of land located east of Oakland Plantation. In order to protect the lake bank from further erosion caused by runoff, the drainage flow will be directed to two new drainage outfall chutes. The project will also stabilize the bank and toe in the project area. Existing non-native vegetation will be removed and replaced with native wetland species. This will add to the stabilization effort and a return of native species along the bank. Additionally, the project will help restore the natural view that is characteristic of the area, and preserve the cultural landscape of the park.

SELECTED ALTERNATIVE

Selected Alternative – Gabion Basket

The Selected Alternative is described as the stabilization of the bank of Cane River Lake along the plantation property. In addition to bank stabilization, proposed drainage improvements under the Selected Alternative will include re-grading the drainage ditches on both sides of the roadway, installing culvert crossings, installing a catch basin, and constructing a drainage outfall chute into the lake at the north end of the project site. The Selected Alternative includes the use of gabion retaining structures to stabilize soils along the proposed project area. Gabion retaining structures are rectangular, galvanized, wire mesh baskets filled with rocks to form flexible, permeable, monolithic structures used for erosion control and bank stabilization. For installation of the gabion baskets, a 3-foot deep by 3-foot wide trench will run the shoreline for approximately 1,200-linear feet. These gabion baskets will be placed in the trench and the bottom 2-feet will be filled with 6 inch to 8 inch rocks. The gabion baskets will then be filled with the excavated sediment that was previously removed from the trench and the top 1-foot will have intermittent rocks and sediment that will be filled to the top of the baskets leaving “no voids”. This will allow for the plants to take root and not be impeded by the presence of rock below the surface and no settling should occur. The side of the basket closest to the water’s edge will be smaller than the 3-foot to accommodate the natural slope downward to the water. The same ratio of rock will apply to the water side of the baskets. The baskets will be covered on the top of the embankment by a Macmat and a soil mat with previously excavated vegetation from the trenching process. The minimum thickness of the soil mat will be 3 inches and affixed to the Macmat with soil staples. This will be the preferred method fortified with the approved wetland seed mix and or seedlings. In the event that existing vegetation is not present, an approved pre-vegetated soil mat will be applied to the top of the Macmat and affixed with soil staples. The Selected Alternative offers the best toe protection since the gabion baskets conform to ground movement, dissipate energy from flowing water, and drain freely.

The compacted clay fill will be placed at a slope of 1.8(H):1(V) on the face of the existing embankment. The embankment footprint will be extended approximately 5.0

feet into the lake. The roadway shoulder will be sloped at 10(H):1(V) and the area between it and the top of the new lake bank would be graded to gradually slope down at 8(H):1(V) into the lake to allow for natural water flow into the lake. This will allow for natural drainage, rather than drainage through a lakeside ditch.

The site will need to be cleared of vegetation in preparation for the fill and installment of the gabion baskets. During construction, it may be necessary to install a temporary dam along the Cane River Lake in order to perform earthwork below pool water elevation. One lane of traffic along State Highway LA 494/119 will be kept open at all times.

After the installation is complete, the area will be re-vegetated with appropriate native plant species. Within the wetland areas, salvaged wetland plants removed prior to installation of the gabion baskets and fill material will be replanted on the Macmat. Additional wetland vegetation will be planted along the shoreline. Species will potentially include river cane (*Arundinaria gigantea*), giant cutgrass (*Zizaniopsis miliacea*), common sneezeweed (*Helenium autumnale*), deertongue (*Dichanthelium clandestinum*), fowl mannagrass (*Glyceria striata*), fox sedge (*Carex vulpinoidea*), Louisiana iris (*Iris brevicaulis*, *I. fulva*, *I. hexagona*, *I. giganticaerulea*, and *I. nelsonii*), and sassafras (*Sassafras albidum*). In addition, river cane will also be planted surrounding the proposed drainage outfall chute and in an area adjacent to the abandoned steel truss bridge. A seed mix containing a slope stabilizing native grass mix will be sown into 12 inches of topsoil within the upland area. Species that will be used include switch grass (*Panicum virgatum*), Indian grass (*Sorghastrum nutans*), and little bluestem (*Schizachyrium scoparium*). Approximately 400 to 500 container plants which will include one to three gallon shrubs will be planted randomly throughout the site between the native grass mix and wetland edge mix. In addition approximately 30 to 40 15-gallon container trees/shrubs will be planted randomly throughout the site. Potential species include common buttonbush (*Cephalanthus occidentalis*), blackhaw viburnum (*Viburnum prunifolium*), swamp dogwood (*Cornus amomum*), American black elderberry (*Sambucus nigra* spp. *canadensis*.), fragrant sumac (*Rhus aromatica*), and spicebush (*Lindera* sp.). Proper establishment of the native plants is essential to help anchor the soil and stabilize the lake bank. It is estimated that full vegetative cover can be reestablished in two years.

An aggressive exotic species removal plan which will entail controlling invasive species such as Chinese privet and Chinese tallow or other like invasive species will be implemented to help establish a more natural wetland littoral zone in this previously disturbed area. While very few exotic invasive species are currently located on the site, the plan aims to ensure that no invasive species recruitment occurs following the shoreline stabilization activities. Visual inspections will take place on a monthly basis. Hand and/or chemical treatment removal techniques will be implemented for the eradication of undesirables and exotic species. Hand removal will be monitored by a qualified biologist/botanist/Arborist that is familiar with the local flora. Qualified personnel will mark all of the trees for removal prior to commencement. Chemical treatment will be applied by trained and licensed personnel so as to prevent the inadvertent over-spraying onto native plants and trees. Only approved herbicides may be used during eradication events, such as Garlon 3 or 4 or other U.S. Department of

Agriculture approved herbicides for aquatic environments. A baseline inspection/monitoring report will be prepared prior to construction that will describe the current conditions and nuisance cover. Success will be determined by the natural recruitment of the native wetland groundcover species that are proposed for planting. The project site will be monitored monthly for one year to ensure that coverage of exotic or invasive plant species do not exceed 5 percent. If nuisance/exotic species are greater than 5 percent cover or coverage of native species falls below 80 percent, a Remedial Action Plan will be implemented, subject to National Park Service approval.

OTHER ALTERNATIVES CONSIDERED

In addition to the Selected Alternative, the NPS analyzed the No Action Alternative and three additional alternative designs for the bank stabilization.

No Action Alternative

Under the No Action Alternative, the NPS would not reconstruct or stabilize the existing lake bank along Cane River Lake. Erosion of the lake bank would continue from surface drainage runoff during storm events. Wave action from boating on the lake and seawall would also continue to erode the bank. The continuing erosion of the project site would become more severe because the problem will not be remediated. If the erosion remains untreated, existing utilities, vegetation, and the adjacent State Highway LA 494/119 would be threatened.

Action Alternatives

Alternative 1: Turf Reinforcement Mat Protected Embankment

Alternative 1 includes the reconstruction and stabilization of the eroded shoreline along Cane River Lake. Drainage improvements would include re-grading the drainage ditches on both sides of the roadway, installing culvert crossings, installing a new culvert outfall into the lake, and constructing a drainage outfall chute into the lake at the north end of the project site. A Turf Reinforcement Mat (TRM) system would be installed along the lake bank and along the channel of the chute. Compacted clay fill would be placed at a slope of 1.7(H):1(V) on the face of the existing embankment. The embankment footprint would be extended approximately 5.6 feet into Cane River Lake. The roadway shoulder would be sloped at 8(H):1(V), and the area between shoulder and the top of the new lake bank would be graded to gradually slope down into the lake to allow for natural water flow into the lake. A geosynthetic scour mat would be placed at the toe of the embankment to prevent erosion at the toe. In order to construct a new embankment below the normal water elevation at the lake, a temporary inflatable dam and dewatering system would be installed until the base can be built above the existing water surface. A barge would also be required within the lake in order to perform construction near the water's edge.

The project site would be cleared of vegetation in preparation for the fill and installation of the TRM. The construction period would last approximately four to six months. During the initial earthwork activities along State Highway LA 494/119, temporary road or lane closures may be necessary. After installation is complete, the area would be re-vegetated with native species using hydro-seeding and container planting methods. It is estimated that full vegetated cover would be re-established within two years.

Alternative 2: Vegetated Reinforcement Embankment

Proposed drainage improvement under Alternative 2 would be the same as those described for the Selected Alternative. Alternative 2 would restore the lake bank with a geogrid reinforced embankment system and would protect the new ground surface with a TRM system. The toe of the new lake bank would be protected with a Marine Mattress system. The existing bank slope would be returned to 1.65(H):1(V), and the toe of the embankment footprint would be extended approximately 14 feet into the lake. The park would install a temporary inflatable dam and dewatering system because construction would occur below the normal water elevation. A barge would also be required in order to perform construction near the water's edge. In addition, temporary road and lane closures may be required on State Highway LA 494/119.

The project site would be cleared of vegetation in preparation for installation of the geogrid reinforcement and TRM systems. The construction period would last approximately four to six months. After installation is complete, the area would be re-vegetated using four planting techniques including hydro-seeding, container planting, super cell plugs, and deep cell plugs. It is estimated that full vegetated cover would be re-established within two years.

Alternative 3: Sheet Pile Retaining Wall

Proposed drainage improvements under Alternative 3 would be the same as those described for the Selected Alternative. Alternative 3 consists of restoring the lake bank by installing a cantilevered sheet pile wall and constructing an embankment slope of 2(H):1(V) behind the sheet pile wall that would be lined with a TRM. A 12-inch thick marine mattress would be placed on the lake side of the sheet pile wall. The sheet pile wall would be placed approximately 5 feet from the existing toe of the lake. A barge would also be required in order to perform construction near the water's edge. In addition, temporary road and lane closures may be required on State Highway LA 494/119.

The project site would be cleared of vegetation in preparation for installation of the sheet pile wall and TRM systems. A temporary turbidity barrier would be required during the clearing of vegetation. The construction period would last four to six months. After installation is complete, the area would be re-vegetated using hydro-seeding, container plantings, and super cell plugs.

Alternative 4: Turf Reinforcement Mat Protected Embankment with Riprap

Proposed drainage improvements under Alternative 4 would be the same as described for the Selected Alternative. Alternative 4 consists of restoring the existing and eroded lake bank with a compacted clay fill embankment above a riprap/stone base and protecting it with a TRM system. This alternative consists of excavating the existing slope and placing riprap at a slope of 1.6(H):1(V). The toe of the embankment footprint would extend approximately 8.5 feet into the lake. A barge would also be required in order to perform construction near the water's edge. In addition, temporary road and lane closures may be required on State Highway LA 494/119.

The project site would be cleared of vegetation in preparation for installation of the riprap embankment and TRM systems. A temporary turbidity barrier would be required during the clearing of vegetation. The construction period would last four to six months. After installation is complete, the area would be re-vegetated using hydro-seeding, container plantings, and super cell plugs.

ENVIRONMENTALLY PREFERRED ALTERNATIVE

The environmentally preferred alternative is determined by applying the criteria from Section 2.7 (D) of NPS Director's Order 12. These are the same criteria outlined in the National Environmental Policy Act (NEPA), which is implemented through the Council on Environmental Quality (CEQ) regulations. CEQ regulations provide direction that "the environmentally preferable alternative is the alternative that will best promote the national environmental policy" as expressed in Section 101(b) of NEPA:

1. Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. Assure for all generations safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
3. Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
4. Preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
5. Achieve a balance between population and resource use that would permit high standards of living and a wide sharing of life's amenities; and
6. Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

Simply put, this means that the environmentally preferred alternative is the alternative that causes the least damage to the biological and physical environment; it also means it is the alternative that best protects, preserves, and enhances historic, cultural, and natural resources.

The Selected Alternative (gabion basket) was selected as the Environmentally Preferred Alternative for the proposed bank stabilization project. The Selected Alternative would meet park purposes and NEPA goals by providing long-term environmental protection of the west bank of Cane River Lake, protecting important cultural resources, and providing visitor safety, as well as assuring aesthetically and culturally pleasing surroundings. The Selected Alternative is the Environmentally Preferred Alternative because it would provide the best protection to historic resources for which the park was established and would contribute towards improving visitor safety at the park. The Selected Alternative would extend the erosion control measures 5.0 feet from the water's edge, which is the least intrusive of all the alternatives.

THE PREFERRED ALTERNATIVE AND SIGNIFICANCE CRITERIA

As defined in 40 CFR §1508.27, significance is determined by examining the following criteria:

Impacts that may have both beneficial and adverse aspects and which on balance may be beneficial, but that may still have significant adverse impacts which require analysis in an Environmental Impact Statement (EIS):

During the construction phase of the bank stabilization project for the Selected Alternative, there will be short-term, minor, adverse impacts to air quality, noise, soils, hydrology, water quality, vegetation, wildlife, aquatic resources, historic resources, cultural landscapes, aesthetics, public health and safety, energy resources, infrastructure, visitor use and experience, and park operations. In addition, long-term, minor, adverse impacts to wetlands are expected to occur, as 0.1 acres of palustrine emergent wetlands would be permanently impacted. However, due to self-compensation, no net loss of wetlands is expected and overall beneficial impacts to wetlands would occur from re-vegetation with salvaged wetland plants and other native species and through the reduction of future erosion. Short-term, beneficial impacts are also expected during the construction period to environmental justice due to the increase in job opportunities related to the bank stabilization.

Following construction, the stabilized bank will create long-term, beneficial impacts to soils, topography, water quality, floodplains, wetlands, aquatic resources, cultural resources, aesthetics, infrastructure, visitor use and experience, and park operations. The Cane River Lake bank will no longer erode and will not cause a threat to the existing resources. Long-term, negligible impacts following construction will occur to vegetation from the removal of mature trees throughout the project area and to hydrology from the change in water elevations and drainage.

No significant adverse impacts were found that will require analysis in an EIS.

The degree to which the action affects public health and safety:

During the construction period, short-term, minor, adverse impacts to public health and safety will occur during the four to six month construction period. Safety hazards will result from construction along State Highway LA 449/119. Drivers will need to use caution since construction workers and equipment will be located along the edge of the road. In addition, lane closures may be necessary; therefore traffic control will be required and applicable signage will be implemented. Park visitors will be discouraged from crossing the highway and entering the project area. To minimize risk of injury, the project site will be blocked off from visitors. Boaters and fishermen will also be discouraged from driving boats along the west bank of the shoreline during the construction period.

Unique characteristics of the geographic area such as proximity to historic or cultural resources, parklands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas:

The Selected Alternative will have a long-term, beneficial impact to archaeological resources since the stabilized bank will prevent further erosion. Short-term, minor, adverse impacts to historic resources and the cultural landscape will occur during the construction period, since vegetation removal and associated activities will impact the viewshed for Oakland Plantation and a historic steel truss bridge. Following construction, a long-term, beneficial impact is expected to historic resources and the cultural landscape because the lake bank will be re-vegetated with native plant species and shoreline erosion will no longer occur. Approximately 0.10 total acres of palustrine wetlands and 0.1 acres of the 100-year floodplain would be permanently affected by this project. However, no net loss of wetlands is expected since this project is self-compensating and palustrine emergent wetlands would be re-established using salvaged wetland plants and other native species. The mitigation proposed in exchange for the wetland impacts would assure no net loss of wetlands acreage or wetland function.

There are no prime farmlands, wild and scenic rivers, ecological critical areas, or designated natural areas within the proposed project area for the Selected Alternative; therefore, no impacts will occur.

Degree to which the effects on the quality of the human environment are likely to be highly controversial:

The overall effects on the human environment will be beneficial as a result of the implementation of the Selected Alternative. The Selected Alternative will have a short-term, beneficial impact on the minority or low-income populations within Natchitoches Parish by providing temporary jobs for the duration of the construction period. Although, short-term, adverse impacts to the aesthetics and infrastructure of the area will occur during the construction period, in the long term, the improvements to the lake bank will create beneficial impacts as the gentle slope of the stabilized bank and planted trees,

shrubs, and grasses will be more aesthetically pleasing. The stabilization of the bank will also prevent further erosion from occurring, which is a threat to the existing road and utility lines.

There were no highly controversial effects identified during the preparation of the EA or the public review period associated with the project. The EA was made available for a 34-day public review from December 18, 2010, through January 20, 2011. Two public comments were received, both supporting the proposed project and Selected Alternative.

Degree to which the possible effects on the quality of human environment are highly uncertain or involve unique or unknown risks:

No uncertain risks associated with the reconstruction and stabilization of the Cane River Lake bank are expected.

Unique or unknown risks associated with the reconstruction and stabilization of the Cane River Lake bank are expected to be low to none.

Degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration:

The reconstruction and stabilization of the Cane River Lake bank neither establishes a precedent for future actions with significant effects nor represents a decision in principle for future consideration.

Whether the action is related to other actions with individually insignificant but cumulatively significant impacts:

When impacts associated with the Selected Alternative are added to other past, present, or future actions within the Natchitoches Parish area, long-term, negligible, cumulative impacts are expected to air quality, hydrology, water quality, and aquatic resources. Long-term, minor, adverse cumulative impacts are expected to topography, floodplains, wetlands, vegetation, and wildlife. Short-term, minor, adverse, cumulative impacts will occur to noise, public health and safety, and energy resources. Long-term, beneficial, cumulative impacts are expected to soil, cultural resources, environmental justice, aesthetics, infrastructure, visitor use and experience, and park operations.

No cumulative impacts to special status species will occur.

Degree to which the action may adversely affect districts, sites, highways, or objects listed on the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources:

The Selected Alternative will have long-term, beneficial impacts on inland archaeological resources by preventing continued erosion of the lake bank. Short-term, minor, adverse impacts to the viewshed of the historic resources within the project area will occur during

the construction period; however, long-term, beneficial impacts will result after the area is re-vegetated and erosion of the historic bridge and highway is prevented. The vegetation removal, construction, and staging area will result in short-term, minor, adverse impacts on the viewshed for the Oakland Plantation cultural landscape. Re-vegetation of the lake bank will include planting only native species in the area, which will have a long-term, beneficial impact on the cultural landscape.

A consultation letter describing the proposed project was mailed to the Louisiana Division of Archaeology/Louisiana Office of Historic Preservation on August 3, 2010. This agency also had the opportunity to review and comment on the EA. The Deputy State Historic Preservation Officer responded on September 14, 2010, recommending that a professional archaeologist monitor all ground disturbing activities.

Degree to which the action may adversely affect an endangered or threatened species or its critical habitat:

Consultation between the NPS and U.S. Fish and Wildlife Service (USFWS), Louisiana Department of Natural Resources (DNR), and the Cane River Waterway Commission occurred in August 2010. Responses were received from the USFWS and the Louisiana DNR stating that the proposed project will have no effect on special status species. In addition, the Alabama Natural Heritage Program conducted a botanical survey in July 2009 for plants of conservation importance along the west bank of Cane River Lake falling within the jurisdictional boundary of the Oakland Plantation. No plants of special importance were identified during the survey. Therefore, no impact to endangered or threatened species or its critical habitat will occur under the Selected Alternative.

Whether the action threatens a violation of federal, state, or local environmental protection law:

The Selected Alternative will not violate federal, state, or local environmental protection laws.

IMPAIRMENT STATEMENT

The NPS has determined that implementation of the Selected Alternative will not constitute an impairment to the park's resources and values. This conclusion is based on a thorough analysis of the environmental impacts described in the EA, the public comments received, collected data, and the professional judgment of the decision maker guided by the direction in the NPS *Management Policies 2006*. Although the project will have some adverse impacts, in most cases the adverse impacts will be the result of installation of the bank stabilization materials. Overall, the Selected Alternative will result in benefits to soils, topography, water quality, floodplains, wetlands, aquatic resources, vegetation, cultural resources, aesthetics, infrastructure, visitor use and experience, and park operations. Implementation of the Selected Alternative will not result in major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the

park, (2) key to the natural or cultural integrity of the park, or (3) identified as a goal in the park's general management plan or other relevant NPS planning documents.

MITIGATION MEASURES FOR THE PREFERRED ALTERNATIVE

To minimize resource impacts, the following mitigation measures were part of the analyses in the EA and will be followed during implementation of the Selected Alternative. These actions have been proven to be very effective in reducing environmental impacts on previous projects and will lessen the potential for adverse effects of the Selected Alternative.

MITIGATION MEASURES

Impact Topic	Mitigation Measure(s)
Soils	The removal of vegetation along the Cane River Lake bank will result in exposed soils during construction, presenting the possibility for erosion at the proposed project area. To minimize impacts, best management practices will be used to prevent or reduce soils from erosion and to minimize soil erosion entering Cane River Lake.
Noise	Construction activities will produce noise at the project site. Impacts to noise will be mitigated by restricting construction activities to daylight hours.
Water Quality	Because disturbed sediments are susceptible to erosion and can affect water quality, best management practices and sediment and erosion control measures will be used during the implementation of the Selected Alternative.
Wetlands	Impacts to 0.1 acre of wetlands are anticipated as a result of fill material to be placed on the Cane River Lake bank. A wetland mitigation plan has been proposed and is included in the Wetland Statement of Findings. Wetland impacts will be mitigated by planting salvaged wetland plants and other native wetland vegetation along the shoreline.
Vegetation	To mitigate impacts to vegetation, following the installation of the bank stabilization material, the project area will be re-vegetated with native trees, shrubs, and grasses.
Aquatic Resources	To minimize impacts to aquatic resources, sediment and erosion control plans will be implemented.
Public Health and Safety	To reduce the risk of injuries, the project area will be blocked off or barricaded from public access.
Infrastructure	To minimize impacts to traffic delays, barricades may be placed around the active construction site, which will allow traffic to use both the north and south bound lanes. If closures are necessary, detour signage will be used at the site.
Archaeological Resources	To reduce the risk of impacts to archaeological resources, a professional archaeologist will be on site monitoring all ground disturbing activities.

PUBLIC INVOLVEMENT

Both internal and external (public) scoping was conducted to inform various agencies and the public about the proposed reconstruction and stabilization of the Cane River Lake bank. Internal scoping included a site assessment by engineers who evaluated the project area and determined the cause of the severe erosion in July 2009. After the site assessment, the project engineers developed multiple alternatives to stop the erosion from progressing. In May 2010, a site visit and project meeting occurred between park staff and biologists. During this visit, a wetland delineation was performed and potential impacts to the area were identified. The project team conducted a Value Analysis and Choosing by Advantages workshop in June 2010. During this workshop, the final alternatives to be carried forward through analysis and the Preferred Alternative were determined.

External Scoping included a scoping newsletter, which was mailed to 54 individuals, organizations, stakeholders, and agencies in order to notify the public that an Environmental Assessment (EA) was being completed for this project. In addition a press release was prepared and published in The Natchitoches Times on June 12, 2010 to notify the public of the project newsletter. The newsletter provided the project history, current conditions at the site, a project description, a description of the NEPA process, and a description of the public scoping period. The public had the opportunity to comment on the proposed project for a total of 32 days (June 12, 2010 through July 14, 2010) using the NPS Planning, Environment, and Public Comment (PEPC) website. No comments were received on the newsletter.

A consultation letter was mailed to local and federal agencies on August 3, 2010 requesting consultation and comments regarding the proposed project at the park. Responses were received from the USFWS, Louisiana DNR, Louisiana Department of Transportation and Development, and the Louisiana Deputy State Historic Preservation Officer.

The EA was distributed to agencies, tribal governments, and the public for review and comment for a 34-day public review from December 18, 2010, through January 20, 2011. A press release was prepared and published in The Natchitoches Times on December 18, 2010. Two public comments were received, both stating support of the proposed project and Selected Alternative.

CONCLUSION

The Selected Alternative does not constitute an action that normally requires preparation of an EIS. The Selected Alternative will not have a significant adverse effect on the human environment. There are no unmitigated adverse effects to physical resources, water resources, natural resources, cultural resources, or other unique resources within the region. No highly uncertain or controversial impacts, unique or unknown risks, or known cumulative effects were identified.

After careful and thorough consideration of the facts contained herein, the undersigned finds that the proposed Federal actions are consistent with existing national environmental policies and objectives as set forth in Section 101(a) of NEPA and that they will not significantly affect the quality of the human environment or otherwise include any condition requiring consultation pursuant to Section 102 (2)(c) of NEPA.

Based on the foregoing, it has been determined that an EIS is not required for this project and thus will not be prepared.

Recommended:

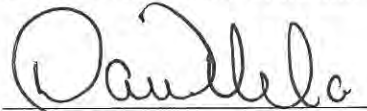


Laura Gates
Superintendent
Cane River Creole National Historical Park

Date:

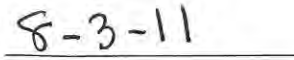


Approved:



David Vela
Regional Director
Southeast Region

Date:



CANE RIVER CREOLE NATIONAL HISTORICAL PARK

EMERGENCY STABILIZATION/EROSION CONTROL ON THE BANK OF CANE RIVER LAKE, OAKLAND PLANTATION

ENVIRONMENTAL ASSESSMENT

ERRATA

The following changes have been made to the Environmental Assessment for the *Emergency Stabilization/Erosion Control on the Bank of Cane River Lake, Oakland Plantation* at Cane River Creole National Historical Park to include the addition of a new alternative with a reduced footprint, which was selected as the Preferred Alternative.

Preferred Alternative – Gabion Basket

The Preferred Alternative is described as the stabilization of the bank of Cane River Lake along the plantation property. In addition to bank stabilization, proposed drainage improvements under the Preferred Alternative would include re-grading the drainage ditches on both sides of the roadway, installing culvert crossings, installing a catch basin, and constructing a drainage outfall chute into the lake at the north end of the project site. The Preferred Alternative includes the use of gabion retaining structures to stabilize soils along the proposed project area. Gabion retaining structures are rectangular, galvanized, wire mesh baskets filled with rocks to form flexible, permeable, monolithic structures used for erosion control and bank stabilization. For installation of the gabion baskets, a 3-foot deep by 3-foot wide trench would run the shoreline for approximately 1,200-linear feet. These gabion baskets would be placed in the trench and the bottom 2-feet would be filled with 6 inch to 8 inch rocks. The gabion baskets would then be filled with the excavated sediment that was previously removed from the trench and the top 1-foot would have intermittent rocks and sediment that would be filled to the top of the baskets leaving “no voids”. This would allow for the plants to take root and not be impeded by the presence of rock below the surface and no settling should occur. The side of the basket closest to the water’s edge would be smaller than the 3-foot to accommodate the natural slope downward to the water. The same ratio of rock would apply to the water side of the baskets. The baskets would be covered on the top of the embankment by a Macmat and a soil mat with previously excavated vegetation from the trenching process. The minimum thickness of the soil mat would be 3 inches and affixed to the Macmat with soil staples. This would be the preferred method fortified with the approved wetland seed mix and or seedlings. In the event that existing vegetation is not present, an approved pre-vegetated soil mat would be applied to the top of the Macmat and affixed with soil staples. The preferred alternative offers the best toe protection since the gabion baskets conform to ground movement, dissipate energy from flowing water, and drain freely.

The compacted clay fill would be placed at a slope of 1.8(H):1(V) on the face of the existing embankment. The embankment footprint would be extended approximately 5.0 feet into the lake. The roadway shoulder would be sloped at 10(H):1(V) and the area between it and the top of the new lake bank would be graded to gradually slope down at 8(H):1(V) into the lake to allow for natural water flow into the lake. This would allow for natural drainage, rather than drainage through a lakeside ditch.

The site will need to be cleared of vegetation in preparation for the fill and installment of the gabion baskets. During construction, it may be necessary to install a temporary dam along the Cane River Lake in order to perform earthwork below pool water elevation. One lane of traffic along State Highway LA 494/119 will be kept open at all times.

After the installation is complete, the area would be re-vegetated with appropriate native plant species. Within the wetland areas, salvaged wetland plants removed prior to installation of the gabion baskets and fill material would be replanted on the Macmat. Additional wetland vegetation would be planted along the shoreline. Species would potentially include river cane (*Arundinaria gigantea*), giant cutgrass (*Zizaniopsis miliacea*), common sneezeweed (*Helenium autumnale*), deertongue (*Dichanthelium clandestinum*), fowl mannagrass (*Glyceria striata*), fox sedge (*Carex vulpinoidea*), Louisiana iris (*Iris brevicaulis*, *I. fulva*, *I. hexagona*, *I. giganteaerulea*, and *I. nelsonii*), and sassafras (*Sassafras albidum*). In addition, river cane would also be planted surrounding the proposed drainage outfall chute and in an area adjacent to the abandoned steel truss bridge. A seed mix containing a slope stabilizing native grass mix would be sown into 12 inches of topsoil within the upland area. Species that would be used include switch grass (*Panicum virgatum*), Indian grass (*Sorghastrum nutans*), and little bluestem (*Schizachyrium scoparium*). Approximately 400 to 500 container plants which would include one to three gallon shrubs would be planted randomly throughout the site between the native grass mix and wetland edge mix. In addition approximately 30 to 40 15-gallon container trees/shrubs would be planted randomly throughout the site. Potential species include common buttonbush (*Cephalanthus occidentalis*), blackhaw viburnum (*Viburnum prunifolium*), swamp dogwood (*Cornus amomum*), American black elderberry (*Sambucus nigra* spp. *canadensis*), fragrant sumac (*Rhus aromatica*), and spicebush (*Lindera* sp.). Proper establishment of the native plants is essential to help anchor the soil and stabilize the lake bank. It is estimated that full vegetative cover can be reestablished in two years.

An aggressive exotic species removal plan which would entail controlling invasive species such as Chinese privet and Chinese tallow or other like invasive species would be implemented to help establish a more natural wetland littoral zone in this previously disturbed area. While very few exotic invasive species are currently located on the site, the plan aims to ensure that no invasive species recruitment occurs following the shoreline stabilization activities. Visual inspections would take place on a monthly basis. Hand and/or chemical treatment removal techniques would be implemented for the eradication of undesirables and exotic species. Hand removal would be monitored by a qualified biologist/botanist/Arborist that is familiar with the local flora. Qualified personnel would mark all of the trees for removal prior to commencement. Chemical treatment would be applied by trained and licensed personnel so as to prevent the inadvertent over-spraying onto native plants and trees. Only approved herbicides may be used during eradication events, such as Garlon 3 or 4 or other U.S. Department of Agriculture approved herbicides for aquatic environments. A baseline inspection/monitoring report would be prepared prior to construction that would describe the current conditions and nuisance cover. Success would be determined by the natural recruitment of the native wetland groundcover species that are proposed for planting. The project site would be monitored monthly for one year to ensure that coverage of exotic or invasive plant species do not exceed 5 percent. If nuisance/exotic species are greater than 5 percent cover or coverage of native species falls below 80 percent, a Remedial Action Plan would be implemented, subject to National Park Service approval.

The Preferred Alternative provides the greatest slope stability for the embankment by the use of gabion baskets at the toe of the bank. Advantages of the new design include the following:

- Best toe protection can be achieved.
- Use of gabion basket conforms to ground movement, dissipates energy from flowing water, and drains freely.
- Reduces velocity of surface runoff and diverts flow away from eroding cross sections.
- Limits mass movement of disturbed slopes (soil movement) and offers effective erosion control.
- Flexibility – gabion baskets tolerate movement.
- Allows vegetation growth.

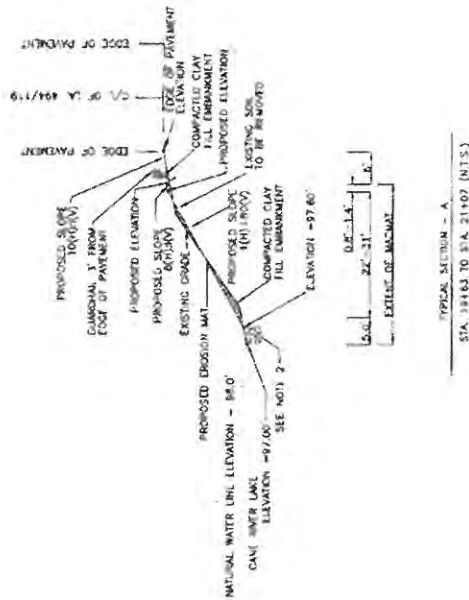
- Greater than 75 year life span.
- Rapid blending into the environment.
- Easily vegetated.
- Reduced permanent impacts to wetlands.
- Reduced number of mature trees to be removed.

Impacts associated with the Preferred Alternative would be similar to those described under Alternative 1 in the Environmental Assessment; however, the reduced footprint would have fewer impacts on wetlands and vegetation. The Preferred Alternative consists of extending the embankment footprint approximately 5.0 feet into the lake (at water pool elevation of 98 feet) within the palustrine emergent wetland.

Approximately 0.10 acres of fill material along the bank classified as palustrine, emergent wetland would permanently impact this wetland. However, salvaged wetland plants and other native wetland species would be used to re-vegetate the area; therefore, no net loss of wetland acreage and wetland function would occur. There would be no permanent impact to the riverine wetland. When compared to the action alternatives, the Preferred Alternative reduces permanent wetland impacts by 58 percent. The Preferred Alternative would preserve more of the existing mature trees along the lake bank when compared to the other action alternatives. The Preferred Alternative would include the removal of three mature trees from the project area including one watroak (*Quercus nigra*) and two sycamores (*Platanus occidentalis*).

Figure 1 Proposed Design Layout for Bank Stabilization at Cane River Lake





NOTE

- 1 DESIGN BASED UPON MINIMUM REQUIREMENTS OF OKLAHOMA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
- 2 STANDARD SIZE OF CABLE BOX IS 3' X 3' X 12"(REFERENCE MACCARTHEE INC) DIMENSIONS AND SHAPE WILL BE ADJUSTED TO MATCH SLOPE AND THE NATURAL RIVER BOTTOM
- 3 PROPOSED JOHNSON WAY IN MANUFACTURE IS MACCAT REB. EXTENT OF MACCAT WILL BE AS SHOWN IN SELECTIVE CROSS SECTION. TOP END OF MACCAT WILL BURIED INTO THE SOIL. MACCAT WILL COVER THE CABLE BOX AND WILL PROVIDE BASE FOR TOPSOIL
- 4 ALL PROPOSED SLOPES SHOWN IN CROSS SECTIONS ARE MAXIMUM SLOPES. GUARD RAILS ARE PROPOSED AND WILL BE INSTALLED BY CHOWEN CONSTRUCTION INC-FLORIDA

90% DESIGN

TYPICAL SECTIONS

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1

100

17

24

Errata Sheet
Cane River Ch

July 2011

Figure 3. Details of Gabion Baskets for Proposed Bank Stabilization

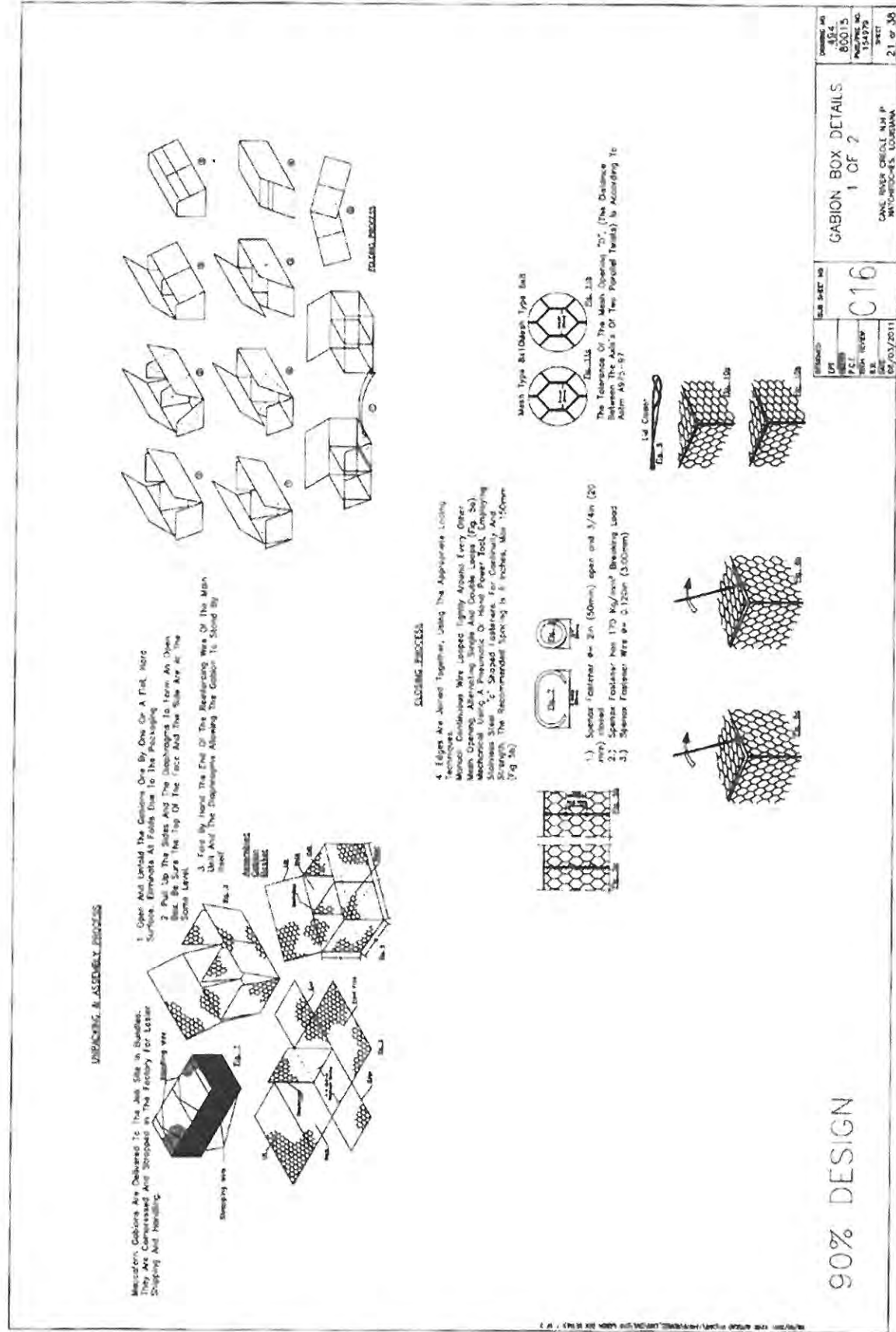
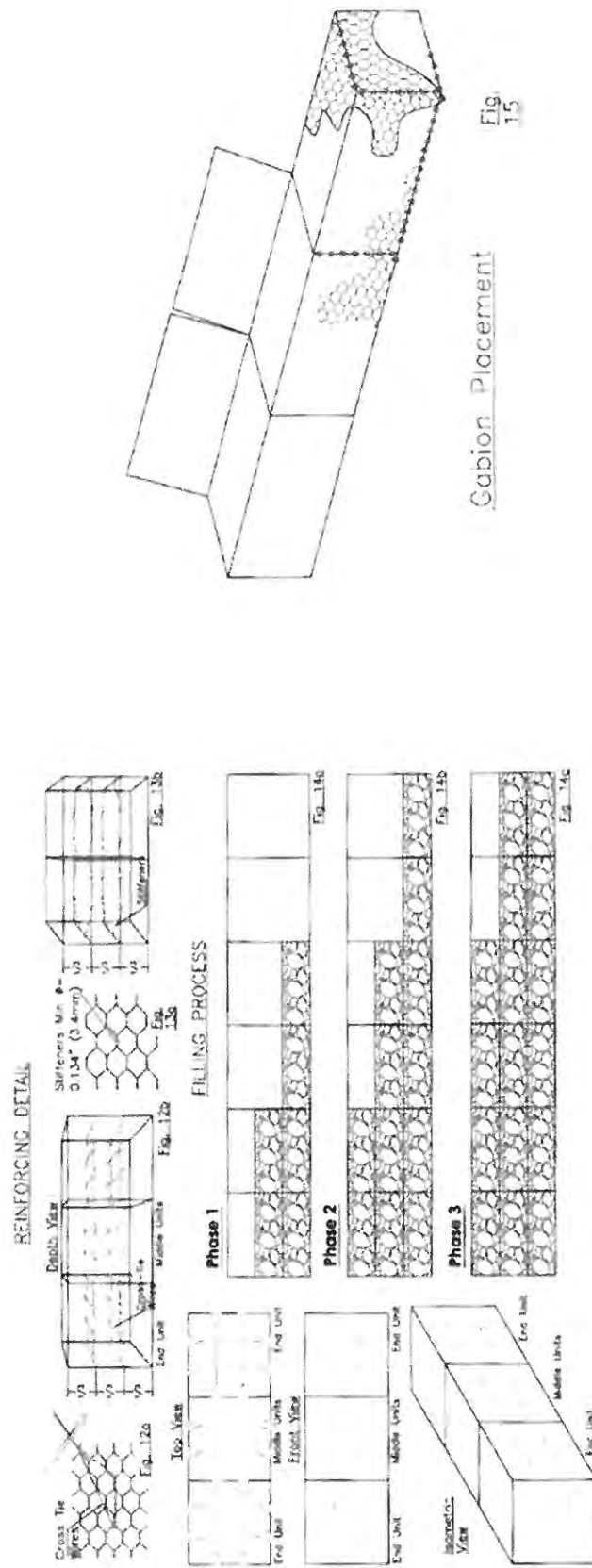


Figure 3 Continued. Details of Gabion Baskets for Proposed Bank Stabilization



90% DESIGN

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