

ATTACHMENT 2

DRAFT

RESTORATION IMPLEMENTATION AND MONITORING PLAN

**Bayou Grand Coteau Coastal Forested Wetland Conversion Project
(LA2002_1204_1200 [Duck Lake 2002])**

DRAFT

RESTORATION IMPLEMENTATION AND MONITORING PLAN

COMPENSATORY RESTORATION PROJECT
FOR THE DUCK LAKE CRUDE OIL DISCHARGE
(LA2002_1204_1200 [Duck Lake 2002])

BAYOU GRAND COTEAU COASTAL FORESTED WETLAND CONVERSION

DECEMBER 2008

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1. INTRODUCTION

This document is a Restoration Implementation and Monitoring Plan (RIMP), as defined in section II.Q of the Settlement Agreement for NRDA case file #LA2002_1204_1200 [Duck Lake 2002]), developed by the Louisiana state trustees¹, (referred to herein as the “Trustees”), in cooperation with Hilcorp Energy Company (referred to herein as “Hilcorp”) for the Bayou Grand Coteau Coastal Forested Wetland Conversion compensatory restoration project (referred to herein as the “restoration project”). The restoration project was selected in the Final Damage Assessment and Restoration Plan (Final DARP [Attachment 1 of the Settlement Agreement for NRDA case file #LA2002_1204_1200 [Duck Lake 2002]) to recover damages for injuries to natural resources and services resulting from an unauthorized discharge of crude oil into the surrounding swamp located approximately 1.5 miles southwest of Duck Lake, St. Martin Parish, Louisiana (referred to herein as the “incident”). Hilcorp was identified as the responsible party for the incident and will be implementing the restoration project pursuant to the settlement of natural resource damage claims in the State of Louisiana. In addition, Hilcorp will be responsible for successfully completing all requirements and achieving all performance standards identified in this RIMP. Pursuant to the Forest Management Agreement (Attachment 3 of the Settlement Agreement for NRDA case file #LA2002_1204_1200 [Duck Lake 2002]), the Landowner will be responsible for implementing and successfully completing the Forest Management Plan (FMP) after Hilcorp has successfully completed the requirements identified in the RIMP.

This RIMP: 1) defines the restoration goal and objective of the restoration project that aim to make the public whole for injuries to natural resources and services resulting from the incident; 2) identifies the performance criteria and standards that will be used to quantify project performance and assure that the desired outcome of the restoration project is achieved; 3) identifies the construction goals, activities and reporting requirements for implementation of the restoration project; 4) specifies forest management activities and monitoring protocols pertaining to sampling design, sampling frequency, sampling techniques, data procurement and analysis, scheduling of site visits, and report deadlines; and 5) describes contingencies related to mid-course corrections and corrective actions.

1.1. Project Description

The restoration project is located approximately five miles north-northeast of Houma, on non-industrial, privately owned land and is situated north of and adjacent to the Bayou Grand Coteau Mitigation Area (BGCMA) (Figure 1). The BGCMA comprises the southern portion of the property and is a U.S Army Corps of Engineers-approved mitigation area for the planting of bottomland hardwoods and bald cypress trees. A

¹ The Louisiana state trustee agencies for NRDA case file #LA2002_1204_1200 [Duck Lake 2002]) are as follows: 1) the Louisiana Oil Spill Coordinator’s Office, Office of the Governor (LOSCO); 2) the Louisiana Department of Wildlife and Fisheries (LDWF); and 3) the Louisiana Department of Environmental Quality (LDEQ).

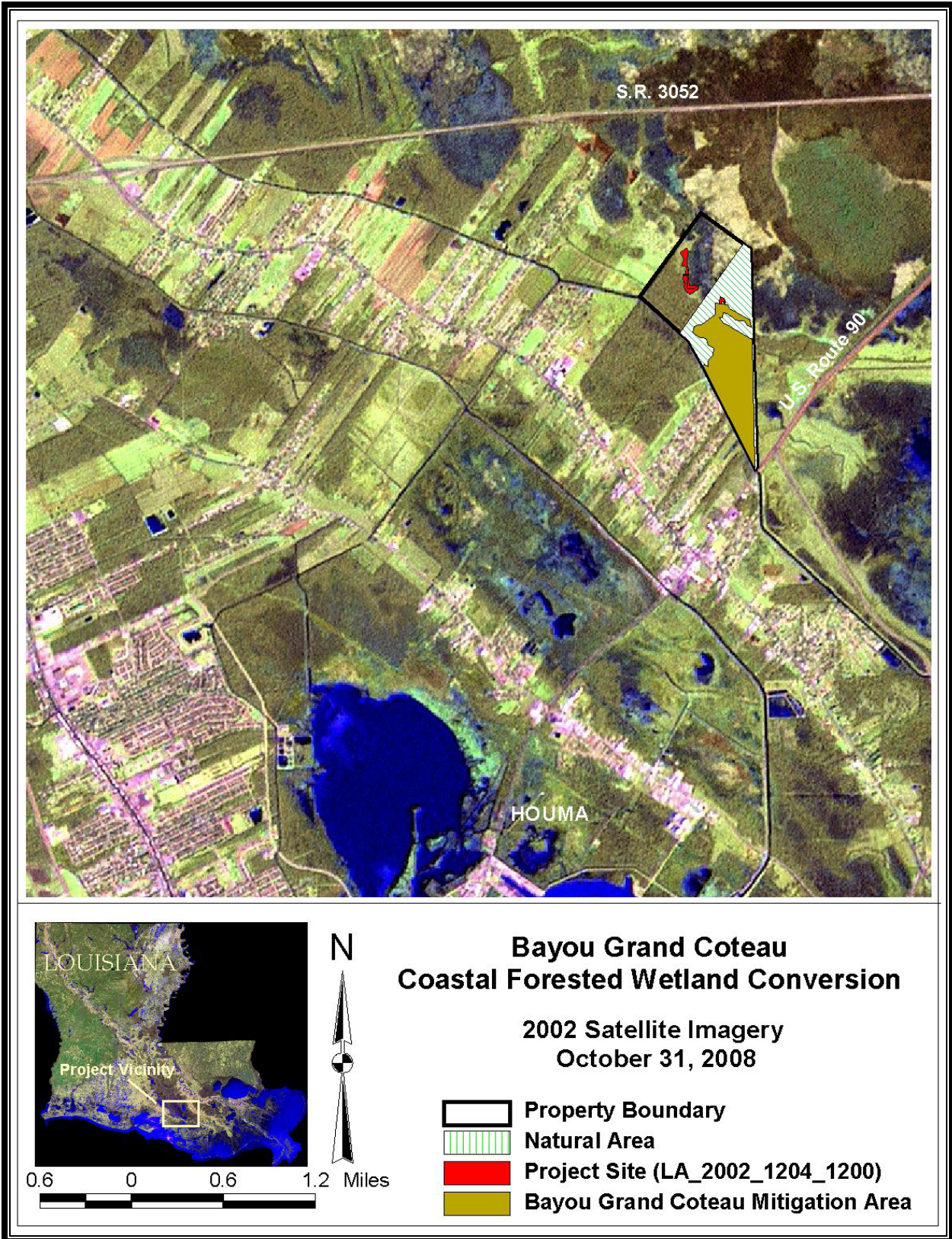


Figure 1. Vicinity map of the restoration project site located north of Houma, Louisiana and adjacent to the BGCMA.

perpetual conservation servitude encumbers the portion of the property that includes the BGCMA and a ~67-acre “natural area” (buffer), which lies to the north (referred to herein as the “BGCMA Conservation Servitude” [Attachment 5 of the Settlement Agreement for NRDA case file #LA2002_1204_1200 [Duck Lake 2002]). The restoration project will be designed to convert at least 7.81 acres of seasonally flooded and semi-permanently flooded black willow (*Salix nigra*) swamp and Chinese tallow (*Triadica sebifera* (L.) Small) thicket to bald cypress - water tupelo (*Taxodium distichum* (L.) L.C. Rich - *Nyssa aquatica* L.) swamp. Approximately 0.75 acres of the 7.81-acre restoration project will be constructed in the “natural area” and will be protected by the existing BGCMA conservation servitude. The remaining 7.06 acres of the restoration project, which lies outside the “natural area” and is not protected by the BGCMA Conservation Servitude, will be encumbered by an additional conservation servitude established by the Trustees, Hilcorp and the Landowner for a period of at least 60 years (Attachment 4 of the Settlement Agreement for NRDA case file #LA2002_1204_1200 [Duck Lake 2002]). As discussed in section 5.3.3 of the Final DARP (Attachment 1 of the Settlement Agreement for NRDA case file # LA2002_1204_1200 [Duck Lake 2002]), the restoration project was scaled for and is intended to provide ecological services for 60 years. Both conservation servitudes are held by the Louisiana Conservation Corporation and are recorded in the conveyance records of Lafourche Parish, Louisiana.

The intent of the restoration project is to facilitate the natural succession of the area from black willow swamp and Chinese tallow thicket to bald cypress - water tupelo swamp habitat. This purpose will be accomplished by: 1) initially treating the black willow with an herbicide to eradicate the dominant overstory species at the site, thereby allowing more sunlight to reach the forest floor; 2) planting bald cypress and water tupelo saplings at the site to reestablish a climax community of bald cypress and water – tupelo trees; and 3) periodically treating the Chinese tallow trees and other undesirable tree species, presently pervasive at the site, with an herbicide for a period of approximately 15 years to allow the planted saplings to achieve canopy closure. Once canopy closure has been achieved, it is anticipated that the bald cypress and water – tupelo trees will effectively shade-out future recruits of Chinese tallow and other undesirable species and become the climax species at the restoration project site.

1.2. Restoration Goal

The restoration goal of this project is to create sustainable, structurally and functionally equivalent, bald cypress - water tupelo swamp habitat that compensates the public for lost services and resources resulting from the incident.

1.3. Restoration Objective

The restoration objective of this project is to convert at least 7.81 acres of black willow swamp and Chinese tallow thicket to bald cypress - water tupelo swamp habitat.

2. PERFORMANCE CRITERIA AND STANDARDS

This section identifies the performance criteria and standards that will be used during the initial five years of the 60-year restoration project to assess whether the restoration project is on track to provide ecological services sufficient to compensate the public for interim service losses resulting from the incident. Performance criteria are measurable sets of targets, quantified through the collection of data in accordance with a prescribed monitoring protocol or methodology, that reflect the structural, functional, and/or temporal objectives of a restoration project. Performance standards specify a minimum acceptable performance level for each criterion and provide a means for determining whether the restoration project will be successful in reaching its specific goals and objectives.

Table 1 presents the performance criteria and standards that will be used to determine whether: 1) the project objective has been met and the desired restoration outcome has been achieved and 2) corrective actions are necessary (see section 3.9). Spatial extent of the planted saplings will be evaluated after the saplings have been planted, which will be considered the construction phase of the period of performance monitoring. The data will be used to assess whether the minimum acreage of bald cypress and water tupelo saplings was planted. Sapling survival will also be evaluated during construction, approximately 2 years after planting, to assess whether the surviving stand of planted saplings is sufficiently dense to reach canopy closure by Year 15, as anticipated by the Trustees and Hilcorp. Forest productivity (i.e. sapling density) will be evaluated during the post-construction phase of the period of performance monitoring, approximately 5 years after planting, to assess whether the stand of bald cypress and water tupelo trees is sufficiently dense to reach canopy closure by Year 15. If any of the performance standards depicted in table 1 are not achieved during the period of performance monitoring, corrective actions may be required by the Trustees.

2.1. Spatial Extent

Spatial extent of the planted saplings (i.e. total acreage planted) will be evaluated after planting during the construction period of performance monitoring.

Construction Performance Standard: At least 7.81 acres of bald cypress and water tupelo saplings will be planted at an appropriate density (i.e. 436 ac^{-1})² along the restoration project.

Post-Construction Performance Standard: None

² The Trustees preferred a dense planting scheme at the project site in order to increase the likelihood that the planted saplings and their recruits would reach canopy closure by Year 15. In the event that stand density is negatively affecting habitat quality at Year 15, the Trustees may require thinning (for more on thinning, see section 2.8 of Appendix A of the Forest Management Agreement [Attachment 3 of the Settlement Agreement for NRDA case file # LA2002_1204_1200 [Duck Lake 2002]]).

Table 1. Performance Criteria and Standards during Period of Performance Monitoring

Performance Criteria	Period of Performance Monitoring - Hilcorp (RIMP)			Forest Management - Landowner (FMP)
	Construction		Post-Construction	
	Post-Planting Standard	Year 2 Standard	Year 5 Standard	Year 5-60
Spatial Extent	≥7.81 ac			
Sapling Survival		50% for entire area >218 saplings ac ⁻¹		
Forest Productivity			≥200 alive stems ac ⁻¹	

2.2. Sapling Survival

Sapling survival will be evaluated during the construction period of performance monitoring no less than 2 years following the completion of plantings.

Construction Performance Standard: At least 50% of the planted saplings (i.e. 218 trees ac⁻¹ [of 436 ac⁻¹ planted]) in each monitoring parcel must be alive at Year 2 (see section 3.3.3 for a description of monitoring parcels).

Post-Construction Performance Standard: None

2.3. Forest Productivity

Forest productivity will be evaluated during the post-construction period of performance monitoring no less than 5 years following the completion of plantings.

Construction Performance Standard: None

Post-Construction Performance Standard: The stem density of bald cypress and water tupelo trees must be at least 200 alive stems ac⁻¹ in each monitoring parcel at Year 5 (see section 3.3.2 for a description of parcels). All planted bald cypress and water tupelo saplings as well as recruits of those species will be acceptable.

3. PROJECT IMPLEMENTATION

This section: 1) identifies the construction goal of the restoration project; 2) describes the construction activities and reporting requirements for implementation of the restoration project; 3) provides a schedule of the performance monitoring related to measurement of the performance criteria identified in the previous section and the forest management activities that will be conducted by Hilcorp during the initial 5 years of the restoration project (i.e. during implementation of this RIMP); 4) specifies monitoring protocols pertaining to sampling design, sampling frequency, sampling techniques, data procurement and analysis, scheduling of site visits, and report deadlines; and 5) describes contingencies related to mid-course corrections and corrective actions.

3.1. Construction Goal

The goal of construction is to plant bald cypress and water tupelo saplings that will result in the establishment of at least 7.81 acres of bald cypress - water tupelo swamp habitat.

3.2. Schedule and Reporting of Construction Activities

3.2.1. Design and Construction Plan

Hilcorp will submit a Design and Construction Plan to the Trustees following the effective date of the Settlement Agreement for NRDA case file #LA2002_1204_1200 (Duck Lake 2002). This plan will provide details on the scope and design of the restoration project, as well as a schedule of anticipated construction activities. The report, developed in consultation with the Trustees, should include, at a minimum, the following information:

- a. A brief description and map of the restoration project area;
- b. Drawings showing anticipated location and preliminary design of planting scheme;
- c. Proposed locations of sampling plots and similar sized monitoring parcels for biological monitoring;
- d. Identification of plant materials;
- e. A schedule for implementing the restoration project, including anticipated dates for: 1) commencing and completing all planting activities, 2) submittal of the Final Construction Report, as specified below (see section 3.2.5), and 3) conducting all performance monitoring and forest management activities (i.e. control of undesirables) through Year 5; and
- f. Copies of all permits, leases, access agreements or other authorizations required to implement and monitor the restoration project, if applicable.

The Trustees will review and approve or provide comments on the Design and Construction Plan according to the procedures set forth in section 3.6.

3.2.2. Notice to Proceed with Plantings

Upon approval of the Design and Construction Plan, the Trustees will issue a Notice to Proceed with Plantings. Once Hilcorp has received this notice, they shall plant saplings during the next available planting season (i.e. January through March) or on a schedule set forth in the Design and Construction Plan. Should Hilcorp decide to plant prior to execution of the Settlement Agreement for NRDA case file #LA2002_1204_1200 (Duck Lake 2002), they do so at their own risk and will still be required to satisfy all requirements and performance standards identified in this RIMP (in this circumstance, a Notice to Proceed with Plantings will not be issued following approval of the Design and Construction Plan).

3.2.3. Completion of Vegetative Plantings

Upon completion of plantings, Hilcorp or their designee shall notify the LAT in writing that the planting has been completed. An inspection of the plantings will be conducted by the Trustees. The site visit will be arranged as set forth in section 3.5 and may coincide with the performance monitoring for sapling survival determination. During the period of performance monitoring, Hilcorp must notify the Trustees of any additional or unscheduled planting activities not specified in the Design and Construction Plan and may be required to provide additional documentation on the scope of the unscheduled plantings.

3.2.4. Sapling Survival Determination

Sapling survival data will be collected jointly with Trustee and Hilcorp (or their designee) participation. This survey will be conducted at least two years following the Planting Completion Date during the construction phase of performance monitoring. The data will be evaluated by the Trustees and Hilcorp to determine whether the performance standard for sapling survival has been met. If the performance standard is achieved, a Final Construction Report (see section 3.2.5) shall be prepared by Hilcorp (or their designee) and submitted to the LAT for dissemination to the Trustees for final approval. If the Trustees determine that the plantings have failed to meet the specified performance standard, or are not in accordance with the requirements of this RIMP and the Design and Construction Plan, Hilcorp shall provide a plan, and will undertake such activities as are necessary, to satisfy all requirements. Once the standard for sapling survival has been achieved, Hilcorp will resubmit the Final Construction Report to the LAT for distribution to the Trustees for final approval.

3.2.5. Final Construction Report

The Final Construction Report should provide final documentation on the planting activities and a schedule of anticipated monitoring during the post-construction phase of performance monitoring. This report, prepared in consultation with the Trustees, should include, at a minimum, the following information:

- a. Description and date(s) of all planting activities conducted during the construction period;
- b. Final as-built drawings or schematics showing the locations of the planted saplings;
- c. Summary of sapling survival data and calculations demonstrating that the prescribed performance standards for spatial extent and sapling survival have been met;
- d. All pertinent Global Positioning System (GPS) data and Geographic Information System (GIS) files in digital format that were generated during construction;
- e. Ground photography of the planted saplings;
- f. Changes in project design and differences in final construction, if any;
- g. Significant construction dates, including the Planting Completion Date;
- h. Map(s) of the restoration project area showing the final location of all sampling plots, including their coordinates, and a delineation of all monitoring parcels to be used during performance monitoring; and
- i. Performance monitoring schedule (see section 3.3.5).

Within 30 days of receipt of the Final Construction Report, and upon finding that construction is in accordance with the requirements of this RIMP and the Design and Construction Plan, the Trustees, through the LAT, will approve the Final Construction Report and provide written notice to Hilcorp (or their designee) certifying the completion of construction.

3.3. Performance Monitoring and Forest Management

Performance monitoring and forest management activities will be conducted by Hilcorp (or their designee) during the initial 5 years of the restoration project (Table 2). The purpose of performance monitoring is to ensure that the restoration project is on track to provide the anticipated ecological service flows over the life of the restoration project. Monitoring data will be collected during construction to determine whether the planted saplings have met the prescribed performance standards for spatial extent and sapling survival. During post-construction (not less than 5 years following planting), monitoring data will be collected to evaluate whether the restoration project has met the prescribed performance standard for forest productivity. Annual site visits will also occur during the period of performance monitoring to collect ground-based photography and document conditions of the planted saplings. All data will be collected by the RP (or their designated representative) with Trustee participation. The following sections provide further detail on the monitoring activities that will occur during construction and post-construction.

The goal of forest management is to control undesirable species at the restoration project site in order to facilitate the development of bald cypress water – tupelo dominated swamp habitat. The forest management activities are specifically related to habitat improvement and will not be evaluated based on performance criteria. The first five years of forest management will be conducted by Hilcorp as part of the

Table 2. **Performance Monitoring and Forest Management Activities.**

Performance Monitoring/ Forest Management Activity	Period of Performance Monitoring – Hilcorp (RIMP)					Forest Management – Landowner (FMP)
	Construction		Post-Construction			
	Post-Planting	Year 2	Year 3	Year 4	Year 5	Year 5-60
GPS Survey		Spatial Extent				
Vegetation Survey		Sapling Survival			Stem Density	
Ground-Based Photography		✓	✓	✓	✓	
Control of Undesirables	✓	✓ ³	✓	✓ ³	✓	✓

implementation of this RIMP. Starting in either Year 1 or Year 2, undesirables will be controlled at least every other year for the duration of this RIMP. After successful completion of this RIMP, as specified in the Certificate of Completion of the Restoration Project (see section 3.8), forest management activities will be conducted by the Landowner for a period of 55 years. The control of undesirables will be conducted during the FMP from Year 5 to Year 15. For a more detailed description and schedule of these activities, see the Forest Management Agreement (Attachment 3 of the Settlement Agreement for NRDA case file #LA2002_1204_1200 [Duck Lake 2002]).

3.3.1. GPS Survey

A Global Positioning System (GPS) will be used to delineate the perimeter of the areas planted during construction. The GPS survey will be conducted once during the construction period and the data will be evaluated to quantify spatial extent of the planted areas and determine whether the performance standard for spatial extent has been met. The GPS survey data will be provided in the Final Construction Report.

3.3.2. Vegetation Survey

Vegetation surveys will be conducted at least twice during the performance monitoring period. Sapling survival will be measured during the third growing season following planting (i.e., no less than 2 years following the Planting Completion Date [Year 2]). Stem density will be measured during the sixth growing season following planting (i.e. no less than 5 years following the Planting Completion Date [Year 5])⁴. The sapling

³ Required site visits to eradicate Chinese tallow in Year 1 and thereafter will coincide with control efforts at other non-project-related sites on the property in either Year 2 and Year 4 or Year 3 and Year 5, depending on the schedule of control efforts offsite.

⁴ All vegetation surveys conducted during the monitoring period that are in addition to the required Year 2 (sapling survival) and Year 5 (forest productivity) surveys are considered optional and will be at the discretion of Unocal.

survival data will be evaluated to determine whether the performance standard for sapling survival has been met. For a given planting, a minimum of 50% of the planted saplings (i.e. 218 saplings acre⁻¹ per monitoring parcel) must be alive at the beginning of the third growing season following planting. The sapling survival data and analysis will be included in the Final Construction Report. The stem density data will be evaluated to assess whether the final performance standard for forest productivity has been met. By the sixth growing season (Year 5), the restoration project area must have a stem density of at least 200 bald cypress and water tupelo trees acre⁻¹ per monitoring parcel. This survey may be conducted at any time during the sixth growing season but must be at least five years after the Planting Completion Date. The stem density data and analysis will be included in the Final Monitoring Report.

Monitoring Parcels

The restoration project area will be subdivided into monitoring parcels in order to qualify those areas meeting or exceeding the prescribed performance standards and disqualify any areas that fail to meet the minimum performance standard. This approach will enable the Trustees to identify “problem areas” and direct corrective actions, if needed, to those areas that are underperforming. Any parcel meeting or exceeding the 50% standard for sapling survival at Year 2 will be regarded as a “qualifying” parcel. All qualifying parcels shall be available for measurement of forest productivity at Year 5, as described above. If sapling survival in any parcel is less than 50% at Year 2, the parcel will be regarded as a “non-qualifying” parcel for survival and a replanting in that parcel will be conducted during the next available planting season or sooner if possible. In the case of replanting, sapling survival will be measured in all non-qualifying parcels two years after the completion date of the replanting (e.g. if replanting occurs on March 1 of Year 3 then sapling survival will be measured on or after March 1 of Year 5). If sapling survival of the replanted parcel subsequently meets or exceeds 50%, the parcel will be regarded as a qualifying parcel and available for measurement of forest productivity three years following the completion date of the replanting (i.e. on or after March 1 of Year 8). Any remaining non-qualifying parcels will be subject to replanting and a subsequent survival measurement after two years (e.g. if replanting occurs on March 1 of Year 6 then sapling survival will be measured on or after March 1 of Year 8). For the forest productivity measurement, if stem density in any parcel is less than the specified 200 alive stems ac⁻¹, the parcel will be regarded as a “non-qualifying” parcel for productivity and corrective actions (see section 3.9) may be required by the Trustees.

Field Sampling Methods

Performance monitoring for vegetation surveys will employ a systematic random sampling methodology. This approach will utilize an organized layout of sampling plots spread over a regular grid, which is randomly located over the entire restoration project area (Figure 2). Nine transect lines labeled A through I are defined across the restoration project area and have a north-south orientation⁵. Transect A is established 135 feet (2 chains) west of the eastern boundary of the restoration project area. All subsequent transects to the west are spaced a distance of 165 feet (2.5 chains) apart.

⁵ The transect lines are perpendicular to the contours and drainage pattern of the project area.

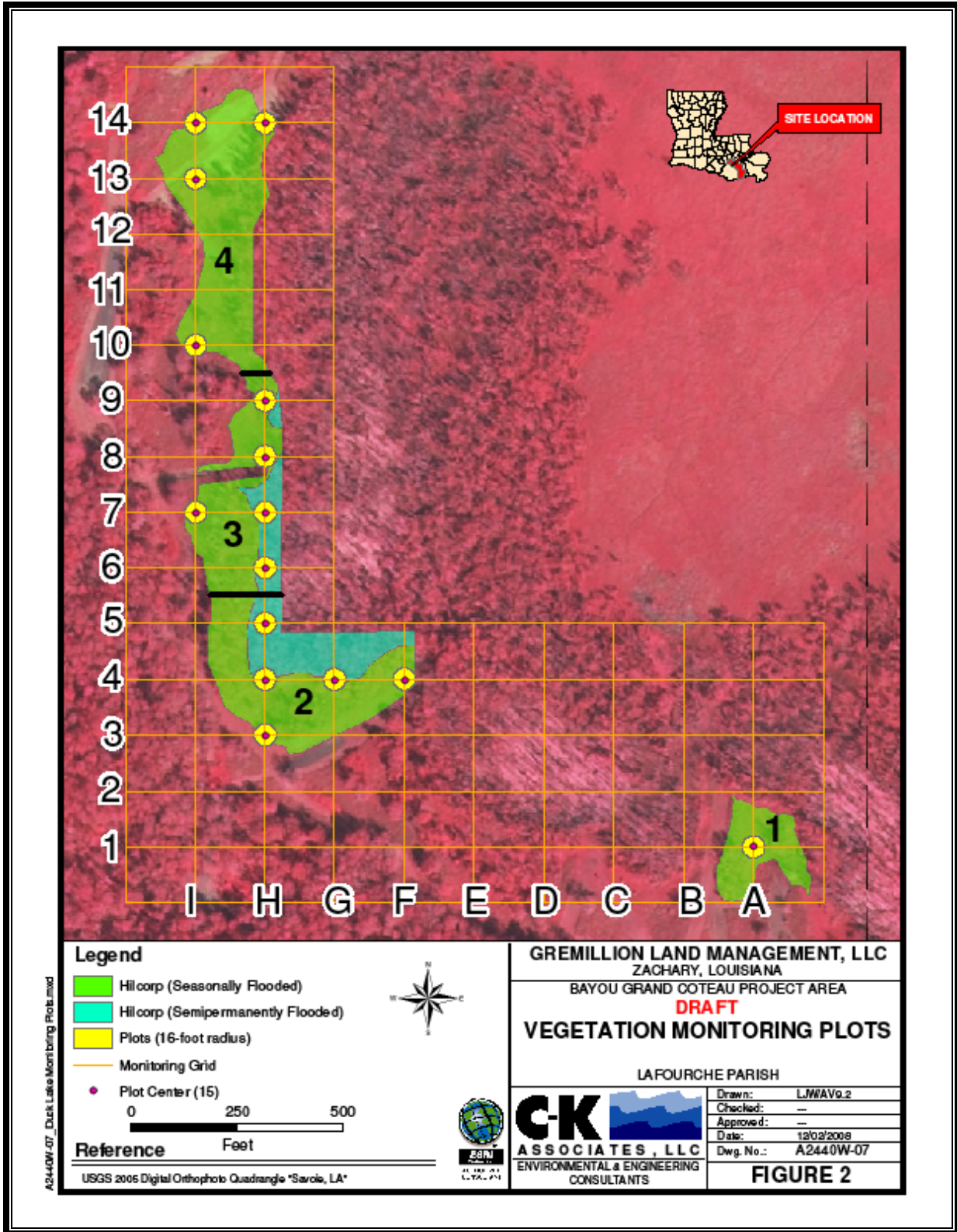


Figure 2. Layout of sampling plots and monitoring parcels along the restoration project site.

Fourteen traversing lines labeled 1 through 14 traverse these transects in a perpendicular manner across the restoration project area and have an east-west orientation. Line 1 is established 127 feet (1.95 chains) north of the southern boundary of the restoration project area. All subsequent traversing lines to the north are spaced a distance of 132 feet (2 chains) apart. Sampling plots are located at the intersection of each transect and traversing line that falls within the restoration project area for a total of 15 plots. Therefore, given the dimensions of the grid layout, each sampling plot is centered within a rectangular area, equal to ½ an acre (21,780 ft²), that represents approximately 6.67% or 1/15th of the total restoration project area.

Sampling plots are located in one of four monitoring parcels defined across the restoration project area as depicted in Figure 2 and Table 3. Each sampling plot is fixed in size and covers a circular area of 1/20 of an acre (radius of 26.3 ft from center of plot). Monitoring parcel 1 represents approximately 10% of the total restoration project area and contains 1 sampling plot. Monitoring parcels 2 through 4 each represent approximately 30% of the total restoration project area and contain either four or five sampling plots. All sampling plots will be reoccupied during all vegetation and photo-monitoring surveys. The geographic coordinates of each sampling plot will be defined using AutoCAD and/or GIS software and provided in the Final Construction Report (see section 3.2.5). Prior to site visits, these coordinates will be loaded into a Differential GPS and used in the field to navigate to each sampling plot location. In the event weather or site-specific conditions (e.g. canopy cover) affect DGPS reception, sampling plots will be located by traversing the restoration project site along each transect line using a compass and measuring between plots either by pacing or using instrumentation such as hip-chains or survey tapes.

Table 3. Sampling Plots in each Monitoring Parcel.

Monitoring Parcel	Corresponding Sampling Plots
1	A1
2	F4, G4, H3 H4, H5
3	H6, H7, H8, H9, I7
4	H14, I10, I13, I14

Site markers (e.g. cane/PVC poles, wooden stakes) will be established at each sampling plot location during construction to facilitate navigation to each plot during subsequent monitoring events. If during monitoring sampling plots located near the restoration project edge (e.g. F4, H3, H8, H14, I7, I10, and I14) are affected by boundary overlap, whereby the circular area covered by the sampling plot does not completely lie within the restoration project area, the mirage method will be employed to ensure saplings or stem counts are not underestimated. Using this method, the sampler measures the distance from the sampling plot center to the restoration project edge. Next, a sampling plot is established outside the restoration project area with the plot center being the same distance from the restoration project edge as the in-bounds sampling plot center. Finally, all saplings or stems that lie within the restoration project

area, where the outside and inside sampling plots overlap (i.e. the intersection of the two circular plots), are tallied twice.

Sapling Survival

During the construction survey, sapling survival data will be collected to determine the percentage of alive saplings in each monitoring parcel as expressed in the following formula:

$$\% \text{ survival in each parcel} = \# \text{ alive} / \# \text{ planted (436 ac}^{-1}\text{)}$$

All saplings, living or dead, within the sampling plot (26.3 ft radius) will be inventoried by species, height and circular quadrant (i.e. northeast, northwest, southeast and southwest). Sapling survival acre^{-1} will be determined in each parcel by applying an expansion factor, or multiplier of 20 (each sampling plot covers a circular area of 1/20 of an acre), to each individual plot tally of alive saplings and then averaging all sampling plots within each parcel. Each monitoring parcel will then be “qualified” based on whether it meets the required performance standard for sapling survival (see section 2.2). The sapling survival data and analysis will be provided in the Final Construction Report.

Forest Productivity

During the post-construction survey at Year 5, stem density data will be collected to determine the number of alive bald cypress and water – tupelo trees acre^{-1} in each monitoring parcel. All alive stems within the plot radius (26.3 feet) will be inventoried by species, height and circular quadrant (i.e. northeast, northwest, southeast and southwest). Stem density will be determined in each parcel by counting alive bald cypress and water tupelo stems (i.e. planted saplings and recruits) in each sampling plot, applying an expansion factor, or multiplier, of 20 to each individual plot tally and then averaging all sampling plots within each parcel. The stem density data and analysis will be provided in the Final Monitoring Report.

3.3.3. Ground-Based Photography

Ground-based photography will provide a snapshot of the condition of the planted vegetation along the restoration project site. Fixed photo monitoring stations will be established at and coincide with the center of each sampling plot. Four digital photographs facing each cardinal direction (i.e. north, south, east, and west) will be taken during the sapling survival and forest productivity surveys, at Year’s 2 and 5, and at Year 3 and 4. These photographs will document conditions at each sampling plot from a uniform vantage point over the course of the 5-year monitoring period. Additional monitoring stations may be established at other locations, if deemed appropriate. Ground photographs may also be taken, as needed, to document conditions such as herbivory damage and fauna observed at the restoration project site.

3.3.4. Performance Monitoring Schedule

Hilcorp will monitor the performance of the restoration project at the beginning of the growing season during the months of March through June. A schedule of these anticipated monitoring events will be provided in the Final Construction Report as specified in section 3.2.5.

3.4. Reporting Requirements

Hilcorp shall submit monitoring reports to the LAT within 60 days of each monitoring event. Reports should include ground-based photography, field measurements, and a summary of results. The Trustees shall review the report and provide comments as specified in section 3.6. A **Final Monitoring Report** will be submitted by Hilcorp after the Year 5 vegetation survey has been completed. This report will provide a compilation of monitoring results through Year 5. After reviewing the Final Monitoring Report, and upon finding that project performance is in accordance with the requirements of this RIMP, the Trustees, through the LAT, will provide written notice to Hilcorp or their designee approving the final report. If the Trustees determine that project performance is not in accordance with the requirements of this RIMP, the Trustees may withhold approval of the report until project performance is determined to be in accordance with this RIMP.

3.5. Procedures for Site Visits

Prior to any required site visits, Hilcorp will give the Trustees 21 days notice prior to the planned trip and will provide ATV transportation for the Trustees to accompany Hilcorp on the site visit. Within one week of notice (i.e., 14 days before the scheduled visit), the LAT will confirm the number of Trustees who will attend the site visit. The date of the site visit may be changed upon agreement of Hilcorp and the Trustees if weather conditions, or other circumstances, justify rescheduling the trip. In the event of a tropical cyclone passage, the trustees may require an unscheduled site visit to visually inspect the restoration project.

3.6. Trustee Review and Approval of Reports

The Trustees will review and provide comments on any plan, report or other document within 30 days of receipt. The Trustees may approve documents in whole or in part, or disapprove documents. For any disapproval or partial approval, the Trustees will set forth the basis of the disapproval. Within 30 days, Hilcorp shall provide a revised document that either integrates the comments or provides an explanatory response to the Trustee's comments. Any requests for time extension by either the Trustees or Hilcorp will be made within these specified time periods.

3.7. Mid-Course Corrections

Mid-course corrections are defined as any action(s) taken by Hilcorp during the 5-Year monitoring period (see Table 2) but before the final (Year-5) monitoring event. Mid-course corrections aim(s) to increase the likelihood of achieving the performance

standards of the restoration project and may include but are not limited to plantings saplings during construction. At any time during the monitoring period, Hilcorp may submit recommendations for mid-course corrections to the LAT for approval by the Trustees. These recommendations shall specify the actions to be undertaken by Hilcorp and a schedule of proposed activities. The Trustees may also recommend but not require mid-course corrections to be undertaken by Hilcorp. Prior to implementing any mid-course corrections, Hilcorp must obtain approval from the Trustees of such action. If Hilcorp implements mid-course corrections at any time during the post-construction monitoring period, they do so at their expense.

3.8. Certificate of Completion of the Restoration Project

Following trustee approval of the Final Monitoring Report, Hilcorp may submit a request for a Certificate of Completion of the Restoration Project. This letter will state the closing date of this RIMP as well as the date of commencement of the Forest Management Agreement (Attachment 3 of the Settlement Agreement for NRDA case file #LA2002_1204_1200 [Duck Lake 2002]). The Trustees, through the LAT, shall issue a Certificate of Completion of the Restoration Project within a reasonable time following receipt of the request stating that the RIMP has been completed in a satisfactory manner.

3.9. Corrective Actions

Corrective actions are defined as any action(s) deemed necessary by the Trustees after the restoration project fails to meet any of the performance standards during the period of performance monitoring. Examples of corrective actions may include but are not limited to replanting saplings after Year 5 monitoring is completed or implementing another restoration project. If the Trustees require corrective actions, Hilcorp shall undertake any required corrective actions at their expense. In addition, Hilcorp will be required to submit a Corrective Action Plan for approval by the Trustees. This Plan shall specify the corrective actions to be undertaken by Hilcorp and provide a schedule of performance monitoring beyond Year 5. During this period, Hilcorp must perform the monitoring described in the Corrective Action Plan and meet the performance criteria identified in the Plan. The Corrective Action Plan should be submitted to the LAT for approval by the Trustees within 45 days of notification from the Trustees requiring corrective actions. Prior to implementing any corrective action, Hilcorp must obtain approval from the Trustees of such action. If Hilcorp implements corrective actions after Year 5, and if Hilcorp has demonstrated best efforts⁶ to satisfy the performance standards through Year 5, then Hilcorp may not be required to implement corrective actions past the end of the performance monitoring described in the Corrective Action Plan.

⁶ Best efforts are defined as Unocal's efforts to anticipate and address any potential failure to meet the performance standards.