

Lee County
Deep Lagoon Preserve
Site No. 78
Conceptual Restoration Plan
March 2009

Prepared For:
Lee County Parks & Recreation
3410 Palm Beach Boulevard
Fort Myers, FL 33916

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Introduction

The majority of Deep Lagoon Site No. 78 consists of wetlands (both freshwater and saltwater) that were cleared, drained, and converted to agriculture over 50 years ago. The goal for restoring this property is to return to the natural form and functions of the site by replacing the exotic and problematic species of vegetation with native habitats by using established restoration techniques.

Conceptual Restoration Plan

Although exotic vegetation removal activities (i.e., primarily Brazilian pepper removal) have commenced on-site, various exotic and nuisance species currently exist throughout the Deep Lagoon Site No. 78. Among these are Australian pines, located primarily within the southwest portion of the site and along the perimeter of the property, both on and off-site. Brazilian pepper is growing along with the Australian pines within the southwest portion of the site as well. Cattail has infested the freshwater marshes on-site. Torpedo grass, and various other exotic and nuisance species (e.g., Bermuda grass, dogfennel, carpet grass, climbing hempvine, etc.), currently occupy the existing farm fields. The following methods are suggested to remove exotic vegetation and restore the property to a natural system.

Methods

- 1) It is suggested that all mowing activities currently cease. This will allow the farm field plants, primarily weedy exotic and nuisance species, to grow and later be identified. Identification of existing plant species will be necessary in order to guide the restoration process. Also, the interior fencing and cattle should be removed from the site.
- 2) Remove exotic tree species, including Brazilian pepper, Australian pine, melaleuca, and earleaf acacia, from the southwest portion of the property and any perimeter areas of the entire property, such as along A & W Bulb Road, that can be accessed without trespassing onto adjacent properties. These trees should be cut, stump treated with Garlon 3A or similar herbicide, then physically removed from the native forested areas and/or rights of way. In the case of the native forested area located at the southwest portion of the property (i.e., the buttonwood and white mangrove areas), the physical removal of exotic species should be confined to the first 75 feet of the eastern edge of the forested area. The remainder of these exotic trees may be cut, stump treated, then stacked in place. Cutting and stacking in place minimizes damage to the native forested wetlands.

All woody material removed from the native areas should be placed in piles, preferably within established central portions of the property and at least 300 feet interior of the site's boundary. These piles may later be burned to eradicate this

woody material. This will require detailed coordination with the Iona-McGregor Fire District (personal communication with Carl T. Checklick, Battalion Chief, has been established) and the Florida Division of Forestry. In lieu of burning the piles, chipping may be used to break the material down. The chipped wood should be removed from the site.

- 3) There are several scattered shrubs, primarily wax myrtle and saltbush, throughout the farm field area. These shrubs should be hand cut with chainsaws as close to the ground as possible, then stacked in piles as mentioned above.
- 4) The existing farm fields will require multiple broadcast applications of herbicide. Systemic broad spectrum herbicides containing 50 percent glyphosate, such as Roundup Pro or Credit Extra, are recommended. After each herbicide treatment the plants will be allowed to die before disking the fields as described below.
- 5) Cross disking is the method of choice for this restoration plan. One cross disk treatment consists of using a tractor to pull a heavy disk (e.g., 13 feet wide with 26 inch blades) in one direction (e.g., east-to-west), then cross cutting the same area at a 90° angle (e.g., north-to-south). Follow-up herbicide treatments will be conducted shortly after each cross disk effort.

Timing of Herbicide Treatments

It will be important for an ecologist to inspect the treated areas after each cross disk event in order to determine which areas should receive additional herbicide. As these restoration activities proceed native species will begin to re-establish themselves in localized areas. These areas will be identified and they should not require further disking, but spot herbicide treatments will continue. The goal is for the native vegetation to increase after each disk/herbicide treatment, thereby reducing the work effort required during subsequent treatments. Eventually the disk will no longer be required. Herbicide treatments will continue as needed.

- 6) Cattail infestations in the freshwater marshes should be eradicated with herbicide. If the cattails produce seed heads prior to herbiciding then these seed heads should be bagged and removed from the site to prevent cattail seed dispersal into other areas of the property.
- 7) At least one ditch plug will be required at the northwest portion of the property. This will require a permit (i.e., Nationwide, or USACE/SFWMD). A hydrological connection exists between the north-south ditch, located just east of the old airstrip footprint, and the mangrove forest that borders the north end of the property. This connection will need to be plugged with a small earthen berm to prevent water from exiting the property during the summer wet season.

In addition, future considerations should be made regarding the placement of a salinity barrier in each of the Iona Drainage District canals, located at the north and south boundaries of the property. Salinity barriers would improve fresh

water resources on the property. However, the installation of these structures is not required to complete the restoration outlined in this plan.

- 8) Using these restoration techniques, it is anticipated that native species will begin to re-establish themselves from the natural seed bank. Regeneration of native species should be thoroughly inspected and mapped by an ecologist. This mapping effort will help to guide the restoration process by allowing recruited native species to determine which plant communities may require supplemental plantings, if any.
- 9) Ultimately, a detailed monitoring plan should be established to track the progress of the restoration efforts.

In general, higher spoil areas associated with the historic ditching may be left as is and planted with appropriate native species. Also, the small pond located in the west central portion of the property, just east of the old airstrip, should be left intact. Both these higher areas and this small pond provide habitat and aquatic refugia for desirable wildlife species. In addition, the cabbage palms located throughout the farm fields should be retained. Cabbage palms provide habitat and a food source for native wildlife species.

This property is located within the active territory of bald eagle nest LE-038. Restoration activities within the primary protection zone of the active nest will not be conducted during the nesting season (October 1 – May 15). Restoration activities within the secondary protection zone during the nesting season will be conducted in accordance with the most recent U.S. Fish and Wildlife Service Bald Eagle Monitoring Guidelines and under the advisement of Lee County's Eagle Technical Advisory Committee.

Tentative Schedule

| <u>Task</u> | <u>Date</u> |
|---|------------------------|
| Allow farm fields to grow | March 2009 |
| Woody exotic vegetation removal and stump treatment | April 2009 |
| Burn wood piles | May/June 2009 |
| Permitting issues to plug ditches | April - September 2009 |
| Initial herbiciding of farm fields | October 2009* |
| Initial cross disk treatment | November 2009* |
| Follow-up herbiciding of farm fields | December 2009 |
| Follow-up cross disk treatment | January 2010 |
| Follow-up herbiciding of farm fields | February/March 2009 |

* Depending on site conditions (i.e., water levels).

Conclusion

The Deep Lagoon Site No. 78 restoration plan incorporates both established exotic vegetation removal methods and wetland restoration techniques. The goal of the plan is to return the property to a more natural system, consisting of native vegetation communities appropriate for this region. Restoring the property will replace significant ecosystem functions that were formerly lost, including valuable habitat for native wildlife species.

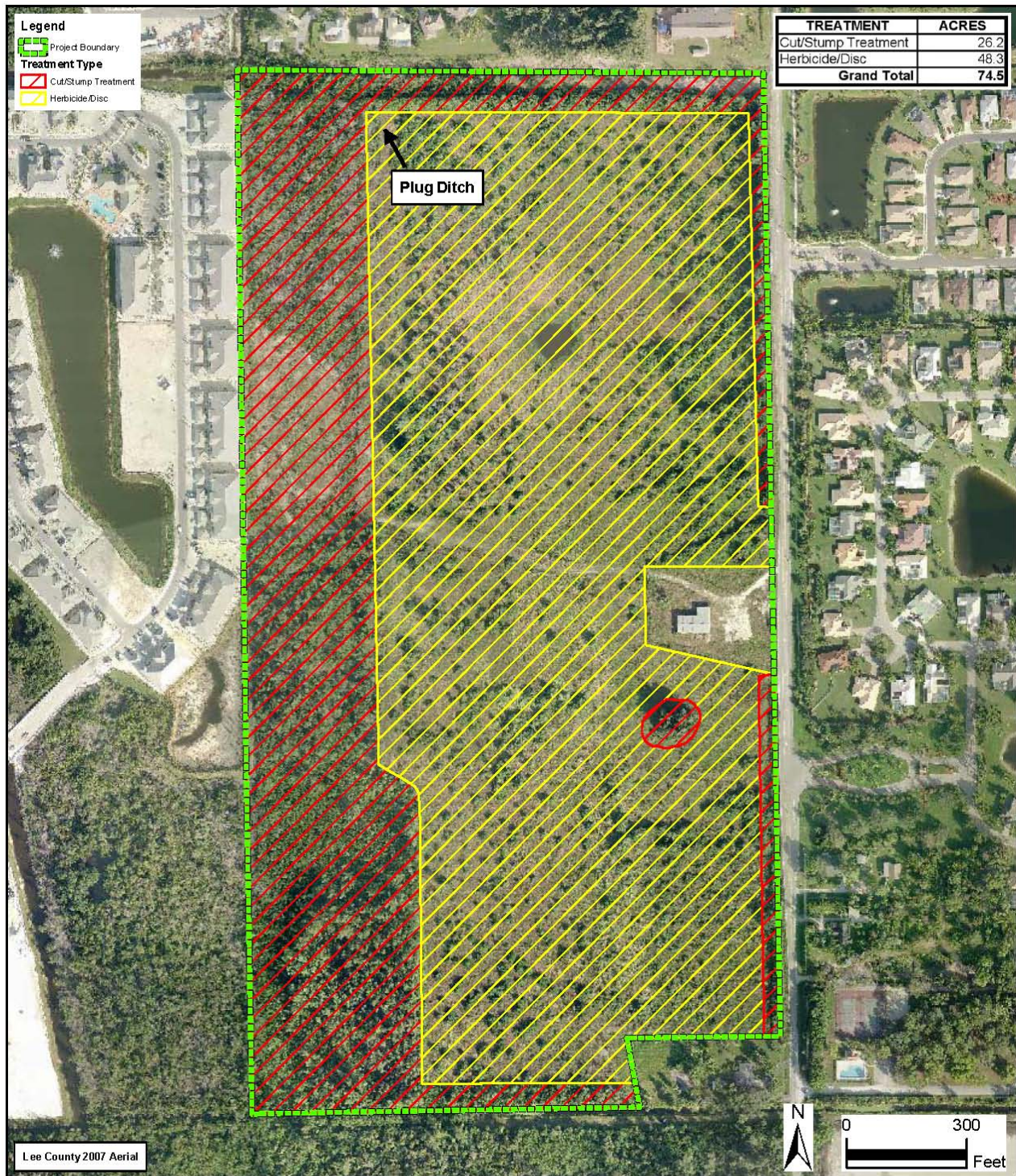


Figure 1. Deep Lagoon Exotic Vegetation Removal

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|------------------|--------------------------------------|----------------------|
| Date: 3/24/09 | Title: Exotic Removal | Project No: LEEDL106 |
| Revision Date: | | |
| Aerial Source: | Lee County 2007 Aerial | |
| Drawing Contact: | Scarlett Collier (239) 337-1505 x114 | |



Figure 2. Deep Lagoon Anticipated Restoration Outcome

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|---|--------------------------------------|---------------------|
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| 2077 Bayside Parkway Ft. Myers, Florida 33901 (239) 337-1505 | | |
| Date: 5-08-08 | File: Restoration | Project No: LEED106 |
| Revision Date: | Lee County 2007 Aerial | |
| Drawing Contact: | Scarlett Collier (239) 337-1505 x114 | |



Deep Lagoon Elevation Data and Well Locations Map



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| 2077 Bayside Parkway Ft. Myers, Florida 33901 (239) 337-1505 | | |
| Date: 12-5-08 | File: ELEVATIONS | Project No: LEEDL106 |
| Revision Date: | | |
| Comments: | | |