

**Rainbow Springs State Park Cogongrass & Garden Exotics
Maintenance Projects Including:
Griffits Addition – Phase 4 New Cogongrass Treatment and
Maintenance of Phase 1, 2 & 3
2009-2010**

Working Group

Withlacoochee Region Invasive Exotic Plant Working Group

Site Manager

Joe Smyth, Park Manager
Rainbow Springs State Park
19158 SW 81st Place Road
Dunnellon, FL 34432
Phone: (352)489-8503
Fax: (352) 465-7855

(Alternate Contact: Anne Barkdoll, Environmental Specialist II
District 2 Administration, 4801 Camp Ranch Rd, Gainesville, FL 32641
(352)955-2135, FAX (352)955-2139)
Anne.Barkdoll@dep.state.fl.us

Method of Control

Contractual Services
And In-house treatment

Project Goals

This is a two part project. Part one pertains to cogongrass control in the Griffits addition of Rainbow Springs and is prioritized within Part one. Part two pertains to exotics in and around the garden area of Rainbow Springs and that is prioritized within Part two. **Part 1 is the highest overall priority.**

Part 1: This is a combined maintenance and new acreage project for 2009-2010 that will continue maintenance control of cogongrass (*Imperata cylindrica*) in the Phase 1, 2 & 3 projects that were begun in 2005-2006 and continued through 2008 in the Griffiths Addition to Rainbow Springs State Park. In addition new Cogongrass acreage in Phase 4 in the Griffiths Addition property will be treated. Phase 4 will also include treatment of Skunk vine (*Paederia foetida*), Japanese climbing fern (*Lygodium japonicum*), Camphor (*Cinnamomum camphora*) and Mimosa (*Albizia julibrissin*) that are present on the Griffiths property in the cogongrass in some areas. Control of cogongrass is the first phase of a long-term restoration plan for sandhill community on the Griffiths Addition. Phases 1, 2 & 3 have treated 110 acres of cogongrass. Phase 4, contains 20 acres of cogongrass, 4.8 acres of skunk vine and Japanese climbing fern and 0.5 acres where mimosa seedlings or adults are mixed with cogongrass. During Phase 4 all of the initial treatment of cogongrass acres in the Griffiths property will be completed and previously treated acres will be retreated. Control of cogongrass on the Griffiths Addition is also important in limiting cogongrass spread north into high quality sandhill within Rainbow Springs State Park.

The original treatment of Cogongrass in Phase 1, 2 & 3 has been quite effective but will continue to need long term follow-up. The population now consists of a much less dense growth consisting mainly of individual sprigs or small scattered clumps spread out over 110 acres. Our goal is to eliminate as much Cogongrass as possible before removing the sand pine canopy when they become merchantable. Sand pine removal will expose the remaining Cogongrass to sun and stimulate its growth. Our preference would be to eradicate the Cogongrass before removing the sand pine and beginning native groundcover restoration. However it may not be feasible to eradicate the Cogongrass. In this case we will remove the Cogongrass as much as possible and continue to treat its reduced population.

Part 2: This is also a maintenance project to treat 71.5 acres that contain a variety of exotics in and around the garden area. All of these areas have been treated previously through a combination of BIPM grants, Lygodium Strike team and In-House treatment with the District exotic Rover, Staff, AmeriCorps and volunteers. Species to be treated in various parts of Part 2 of this grant, not in priority order, are: Japanese climbing fern, skunkvine, airpotato, ardisia, mimosa, camphor, elephant ear and taro. These are delineated by zone on a map in the body of the grant. Although District 2 of the Florida Park Service employs full time staff to spray exotics as well as contractors, there are insufficient resources to do all of the exotic treatment and follow-up needed. For this reason we are applying for maintenance funding along with funding to expand the treatment area to include as yet untreated cogongrass.

PROJECT LOCATION

The project is located at Rainbow Springs State Park. The Part 1 portion of the project is located on a recently acquired addition to Rainbow Springs State Park (Sections 30 of Township 16 S, Range 19 E). Part 2 of the project is at the northern end of the park around the head springs and surrounding area. Rainbow Springs State Park is owned by the State of Florida and managed by FDEP, Division of Recreation and Parks. This park is located north of Dunnellon, Florida. The Part 1 project can be accessed by turning south on 180th Ave Rd from State Road 40 east of US 41 or from CR 484 east of Dunnellon (See Vicinity Map). Part 2 is accessed through the main park entrance. The Project location is depicted on the Project Map (Griffits Maintenance Phase 1, 2 & 3 and Phase 4 Project Areas Map).

PROJECT DESCRIPTION

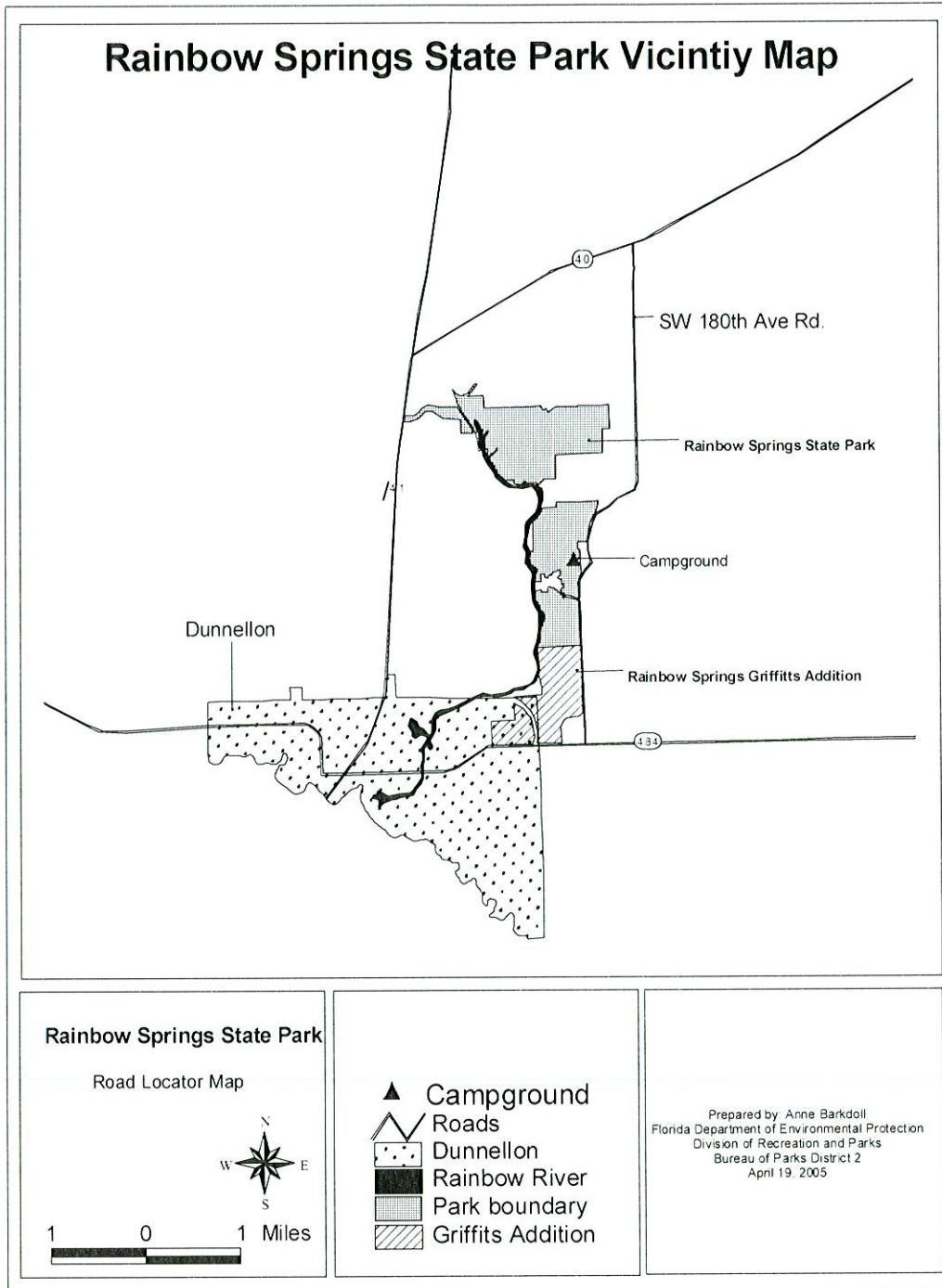
The Griffiths addition was added to Rainbow Springs State Park in 2004. The entirety of Rainbow Springs State Park is 1,449 acres of which the Griffiths addition is 365. The addition extends State property to the south toward the City of Dunnellon along the east side of the Rainbow River. This tract was purchased to provide a buffer from encroaching development, to preserve sandhill community of which there is very little left in the areas surrounding the park, and to allow the relocation of a planned recreational facility (tubing exit) to a less environmentally sensitive area than the original planned location. The tract was previously privately owned and was largely managed for timber production, though pastures are also present on the property. The tract has an extensive infestation of Cogongrass.

The natural communities of the Griffiths Addition are largely sandhill (some converted to pasture (35 acres) and some degraded by silvicultural conversion to sand pine, approximately 270 acres) grading into mesic flatwoods then hydric hammock directly adjacent to the Rainbow River.

Of the total 365 acres of the Griffiths Addition the majority has been surveyed for cogongrass. Phases 1 & 2 contain 75 acres of Cogongrass and have been treated with grants and in-house during the 2005-2006, 2006-2007 and 2007-2008 fiscal years. The Phase 3 project of 21.9 new acres plus the retreatment acres was funded internally in 2008-2009. The remaining sandhill and pasture portion of the Griffiths property is also infested with Cogongrass and is included in this proposal to be treated as new acres. We decided to treat the property in phases because of the large number of infested acres and the amount of follow-up involved.

In general the scope of the Part 2 project contains all sorts of exotics infestations around the head springs of Rainbow Springs State Park, some of them in garden areas. At least 25 EPPC Category I and II plant species have occurred in the park and of those, 15 species have sizable established populations. Most exotics in the park can be traced to the ornamental gardens that went untended for almost 20 years prior to State acquisition, although some species have recently

naturalized from other sources (skunk vine, cogongrass, Japanese climbing fern, Chinese tallow). Most of the exotics in the park are currently limited to the entrance drive, areas in the ornamental gardens, and areas surrounding the ornamental gardens with the notable exception of the cogongrass infestation on the Griffiths Addition.



Total Acreages

Part 1: This scope of work is for the maintenance retreatment of 110 acres of cogongrass in Phase 1, 2 & 3 and new treatment acres of 19.7 acres of cogongrass, 0.5 acres of Mimosa (*Albizzia julibrissin*) and Camphor (*Cinnamomum camphora*), 4.8 acres of Skunkvine (*Paederia foetida*) and Japanese climbing fern (*Lygodium japonicum*) in Phase 4. Maintenance of Phase 1, 2 & 3 is our 1st priority if all of the proposal can not be funded. Treatment of 19.7 acres of new cogongrass is our 2nd priority and treatment of the remaining species new exotic acres is our 3rd priority.

Of the Phase 1, 2 & 3 maintenance 110 acres:

- Approximately 90 acres occurs as understory in sandhill community with a dense, young canopy (approximately 12 yrs old) of sand pine. In this situation the density of cogongrass originally varied from very dense to moderately dense where there are gaps in the canopy and near edges (approximately 60% of the area). This area now has mostly scattered sprigs and occasional patches of cogongrass. The remaining areas are in low-light situations where cogongrass is patchy and sparse (40 % of the area). These areas will hereafter be referred to as “cogon/sand pine areas”.
- Fifteen acres of the cogongrass infestation occurs in a 21 acre block of formerly good quality sandhill that, though logged, was never converted to sand pine. Within this patch of sandhill where cogon has not invaded, the groundcover is in-tact and for a typical sandhill only large stature longleaf are missing (approximately 6 acres). In a little over half of the area of cogongrass infestation the cogongrass had reached a very dense monoculture and had eliminated or suppressed most species of native groundcover. These areas now mostly have sprigs of cogongrass and scattered patches with some species of native groundcover plants returning (*Licania michauxii*, *Croton argyranthemus*, *Tragia urens*, *Sericocarpus tortifolius* and others. In the other portion of the cogon infestation (a little under half of the area: 6-7 acres) cogongrass density was lower and cogongrass sprigs are intermixed with desirable groundcover (hereafter referred to as “open cogon/native groundcover mix”). In this situation cogon can be in small patches or sparse with lone blades intermixed with native groundcover.
- About 5 acres of cogongrass is located in pasture without a sandpine canopy. This area was dense cogongrass and is now scattered patches and sprigs of cogongrass.

Phase 4 new treatment areas

- There are approximately 19.7 new acres of contract cogongrass to treat. This ranges from dense cover on some roadsides, pasture areas, and forest openings to scattered sprigs of cogongrass in densely shaded areas under young sandpine or more mature hardwood canopy.
- There are also 7.1 new acres of in-house cogon grass treatment which consist of very sparsely scattered sprigs.

- The other exotics in this phase are 4.8 acres of skunk vine and Japanese climbing fern and 0.5 acres where mimosa seedlings or adults and some camphor are mixed with cogongrass.

Phase 4 In-House Match Actions

- The 7.1 acres of scattered cogon grass will be treated in house. Small outlier patches of cogongrass will be treated in-house. Access to the treatment sites via old logging roads will be cleared by staff.

(see Project Areas Map).

Part 2: This part of the project is a mix of ornamental gardens and disturbed areas that were part of the attraction before the State acquired the park. There are 71.5 acres of exotics to be treated. These acres have been divided in to priorities 1-8 as delineated on the accompanying map.

In-kind match involves in-house treatment via weekly garden exotic removal workdays by park staff and the District Exotic Rover working in both the garden and natural areas.

WORK SPECIFICATIONS

Part 1:

Only the methods described below may be used for herbicide application:

Cogongrass retreatment areas: In cogon/sand pine or pasture and open areas, cogongrass will be treated with a glyphosate herbicide as per label rates mixed with 0.5% arsenal. These areas consist mostly of scattered blades, sprigs and small clumps of cogongrass. Herbicide will be sprayed just on the target plant and every effort will be made to reduce over spraying.

- In the open cogon/native groundcover mix areas, cogongrass will be treated with glyphosate herbicide only as per label rates. The contractor shall take extra care in these areas to avoid damage to native groundcover.

New Cogongrass treatment areas:

- All cogongrass in the new treatment areas will be treated with glyphosate herbicide as per label rates.
- Skunkvine and Japanese climbing fern will be treated with aquatic glyphosate
- Mimosa and Camphor will be treated via the hack and squirt method.

Work performed will consist of furnishing all labor, equipment, and supplies (including herbicides and adjuvants), and performing all operations for meeting the above stated Project Goals in the areas described in Project Description or delineated on the Project Maps. Every effort shall be made by the contractor to avoid damage to native vegetation or wildlife. There are many Gopher tortoises in the treatment area so the contractor may only drive on existing woods roads.

The contractor is responsible for the control of all cogongrass within the Phase 1, 2 & 3 maintenance project area and the Phase 4 new Cogongrass acreage as well as the skunkvine, Japanese climbing fern, mimosa and camphor. Cogongrass will require at least one treatment in this fiscal year.

Part 2: Any treatment near the Springs or in sinkholes must use herbicide labeled for aquatic use. Glyphosate or Garlon products may be used depending on the species. Contractors must be extremely careful in the formal garden areas to only spray the target species.

Herbicides should be used with a marker dye to indicate treatment and overspray.

Other Requirements and Provisions

Part 1: The nearest water source is located at the park tubing access point, approximately 0.5 miles north of the bulk of the infestation. Herbicide mixing areas will be a minimum of 75 feet from the river or sinkholes and will be approved by park management.

Access to the Griffiths Addition is currently limited to 2 or 3 gates. Main roadways and some fence lines will be cleared by the park (see Access Map). Many areas of the infestation will be not accessible to truck mounted sprayers. **In retreatment areas backpack sprayers should be used to reduce the volume of herbicide applied.** Contractors will make every effort to avoid damage to gopher tortoise burrows, longleaf pines and native groundcover.

Throughout the tract, gopher tortoises are present. The contractor shall exercise care in driving vehicles to avoid injuring individuals and to avoid damage to burrows. Within the 21 acre open sandhill block, gopher tortoise density is high. Contractors shall use only backpack sprayers in treating interior sections of this tract to minimize potential impact to tortoises.

Part 2: An appropriate water source and mixing area will be designated by the park manager. This is a high use area of the garden and the workers must be very careful not to spray non target plants. They must also be very sensitive to the presence of park visitors.

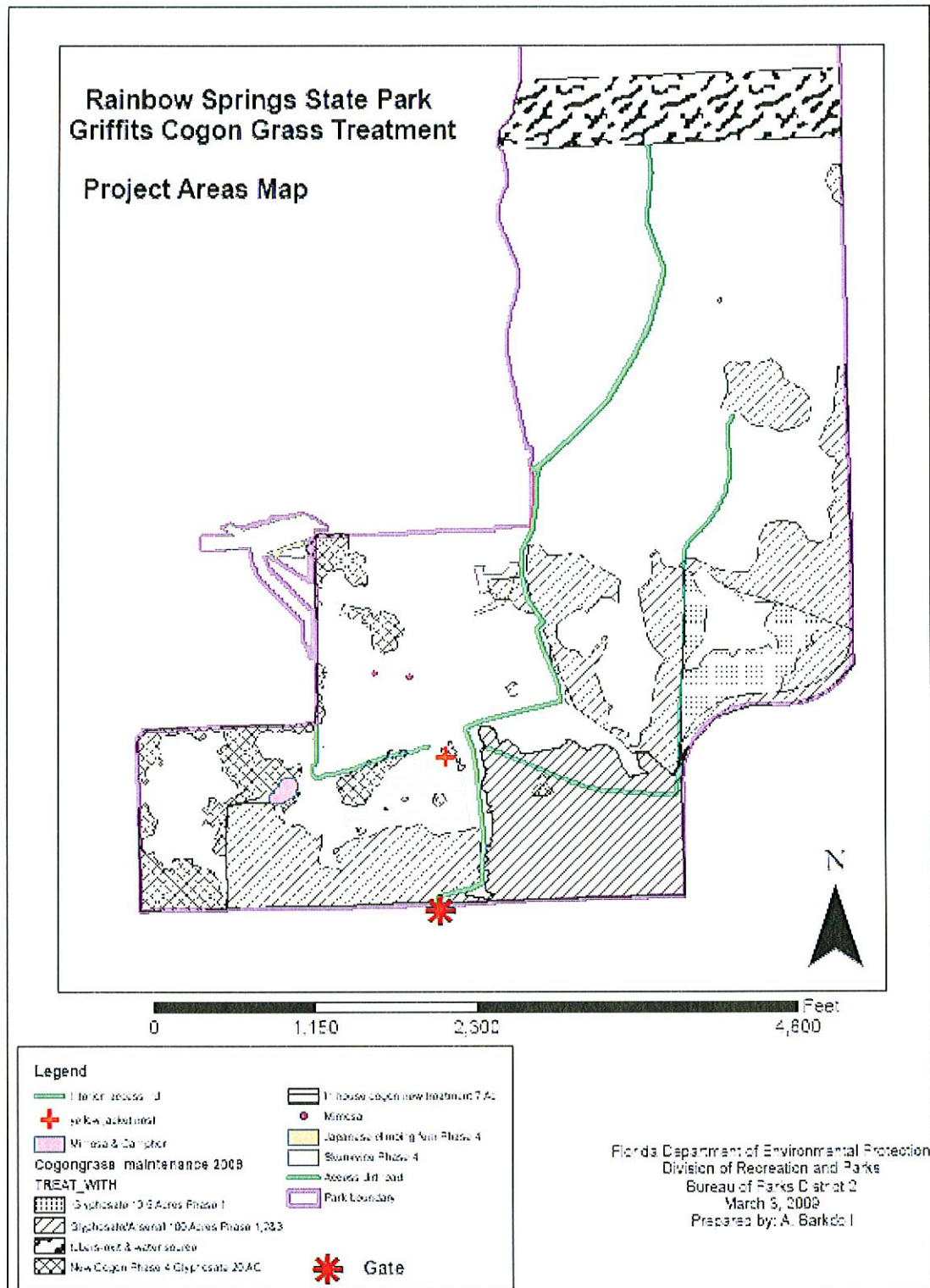
Herbicide containers will be disposed of following all applicable rules and laws.

PROJECT TIME FRAME

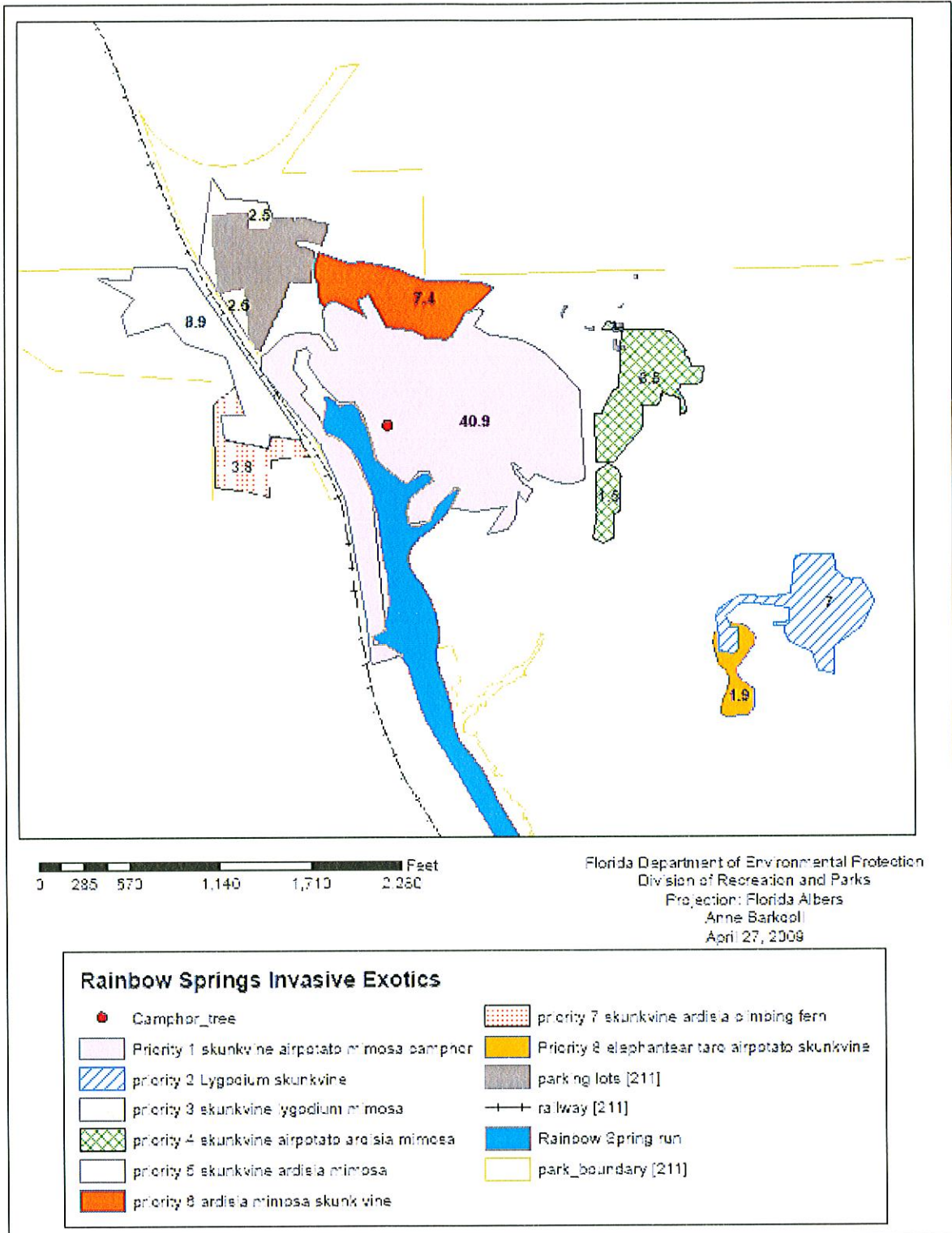
Part 1: One treatment of cogongrass will be required. The treatment will occur in fall prior to the first frost (September, October). All treatments must be completed and billed by June 15, 2010 to allow time for invoicing and payment prior to the end of the fiscal year on June 30, 2010.

The Part 2 treatment areas may be sprayed either in the fall or the spring however the plants must be actively growing. All treatments must be completed and billed by June 15, 2010 to allow time for invoicing and payment prior to the end of the fiscal year on June 30, 2010.

Part 1 Project Area



Part 2 Project Area with Acreages



PROPOSAL INFORMATION

Conservation Land Qualification

Rainbow Springs State Park is managed by the Division of Recreation and Parks, Florida Department of Environmental Protection. The Mission Statement of Florida State Parks explicitly states a management goal of removal of invasive exotic plants. This park is listed in Florida Conservation Lands 2001 published by the Florida Natural Areas Inventory.

Ability to Maintain Site After Initial Treatment

District 2 of the Florida Park Service employs one Exotic Rover OPS staff who does follow-up and maintenance of previous exotic control projects at parks throughout District 2. This staff person also scouts and treats new exotic infestations. Staff and volunteers at various parks also provide maintenance control for previously funded exotic grants. In the past in-house funding has been used to pay contractors to control exotics in previously funded exotics projects. This funding is no longer available.

Given the large acreage of the Part 1 & Part 2 of this grant and the current exotic control responsibilities of the OPS Exotic Rover, the maintenance of the this overall project is beyond the park or Exotic Rover staff ability at this time. As the density and extent of cogongrass is reduced in the Griffiths property maintenance by staff may become more feasible. At this point in time the density in the previously treated areas has decreased significantly to mostly single sprigs or scattered clumps of cogongrass. The garden area will always need extensive follow-up.

Examples of the ways the Florida Park Service currently provides for re-treatment of previous grant sites at Rainbow Springs State Park are as follows:

- The park has initiated "Exotics Wednesdays" where the park staff spends time conducting exotic plant control primarily in and around the head springs and garden.
- The District OPS Exotics Control Rover also assists the park in exotic control efforts on a very regular basis.
- AmeriCorps teams spend time at the park removing exotics and the District 2 AmeriCorps member works on exotic removal at parks several times per month.
- Alternative spring break volunteers have spent a week each year for the past several years removing ardisia and air potato.
- The park utilizes members of the citizen's support organization, community service workers, and other volunteers to accomplish exotic plant control objectives.

Past exotics control projects at the park have been funded by the Bureau of Invasive Plant Management. The primary scopes of those projects were control

of skunk vine and co-occurring vines in discrete patches throughout the park and on control of air potato in areas north of the ornamental gardens. Follow-up treatments for previously funded projects have been conducted primarily in house by park staff and the District 2 Exotic Rover OPS staff. The success of follow-up treatments has been greater for the air potato and woody plants than for skunk vine. New infestations of skunk vine continually appear, presumably from bird deposited seeds from on and off site infestations. Treatment of new and re-treatment of old skunk vine infestations will continue to be treated by park staff and the District OPS Rover.

Restoration Plan for Native Plants

The restoration of native sandhill groundcover in The Phase 1, 2, 3 & 4 Cogongrass site is part of a long term project that is part of the greater Griffiths Addition Restoration Plan. Phase 1 contains two distinct zones:

- Twenty-one acres that does not have a sand pine overstory, which contains a 6 acre block of intact sandhill groundcover.
- A 160 acre block with a relatively dense sand pine overstory of which approximately 49 acres is infested with cogongrass. Scattered remnant native sandhill groundcover occurs throughout under the sand pine and in some areas is mixed with cogongrass. Gopher tortoises are scattered throughout the area.

Phase 2 & 3 contains a dense fairly young sand pine plantation with a closed canopy as well as a portion of bahia grass pasture. It does not contain any blocks of intact native sandhill ground cover. Instead scattered remnant native sandhill groundcover including wiregrass, lopsided Indian grass, gopher apple and other species occur throughout under the sand pine and in some areas is mixed with cogongrass. Cogongrass ranges from previously very dense on the forest/pasture interface to areas of about 25% cover of cogongrass to scattered patches and very sparse individual sprigs of cogongrass. Gopher tortoises and their burrows are also very prevalent.

Phase 4 has not yet been treated and ranges from very dense cogongrass to scattered sprigs. Most of the area is under sandpine plantation but there are some areas of older hardwoods and pasture.

For all zones, the first step in the restoration is control of Cogongrass. Protection of the 21 acre block of sandhill from further Cogongrass encroachment and preventing the movement of Cogongrass to adjacent park properties to the north are the highest priorities. In the sand pine blocks, sand pines will be left in place during cogongrass control. Shading of cogongrass by the sandpine during treatment is providing easier control.

Once Cogongrass is under control sand pines will be removed. Sand pine removal will probably occur in phases. Also the harvest areas will need to be large enough to be economically viable. Direct seeding of native sandhill species will be required for all zones where cogongrass has been removed and

in areas that are currently under sand pines where subsequent to logging, remaining groundcover will be too sparse to carry fires. The reintroduction of prescribed fire after sand pine removal will be important for the control of seedling sand pines, to stimulate reproduction of remaining groundcover, and to provide a good seedbed for planting native sandhill groundcover seed. The need to control regenerating sand pines via methods other than fire is anticipated.

The District 2 Office of the Florida Park Service owns an ATV mounted seed harvester that is and has been used to collect groundcover seed for restoration throughout the District. The portion of Rainbow Springs State Park to the north that is directly contiguous with the Griffiths property has sandhill with intact native groundcover as do areas of the park east of the headsprings. These sandhills will be used as donor sites for groundcover seed. The park has been actively burning the sandhills and improving its quality so they should provide a quality seed source when it is time for that phase of the restoration. After native groundcover is established longleaf pine will be planted.

The Biological Staff at District 2 has experience with native groundcover restoration via direct seeding. Supplies and temporary staff can be funded through sale of sand pine and possibly from the Florida Park Service Statewide Resource Restoration Budget Item. Seed supply will create limitations to amounts that can be direct seeded per year, thus restoration will occur in phases. We anticipate beginning restoration once cogongrass control is achieved and sand pines are removed.

T&E Species or Habitats

Numerous rare species are known from Rainbow Springs State Park. At present, the gopher tortoise is the only listed species that has been positively documented within the project area. Though gopher tortoise burrows are found in stands of cogon, encroachment of cogongrass into more sandhill degrades tortoise habitat.

As restoration of sandhill progresses, the habitat will be appropriate for use by fox squirrels, eastern indigo snakes, Florida pine snakes, Florida mouse, and Bachman's sparrow. The Florida mouse has been trapped on the portion of the park immediately north of the boundary to the Griffiths property, and sightings of indigo snakes are relatively common in sandhill habitats within the park north of the project area. Furthermore, Suwannee cooters commonly use similar natural communities for nesting.

Public Education Program

Rainbow Springs State Park currently has a diverse and expanding public education program that includes educating the public about invasive exotic plant species. They have partnerships with Dunnellon middle school and are in the process of developing partnerships with Dunnellon high school and elementary school. Students come once a month for programs and volunteer in the park gardens. Because of the history of the park as a private zoo and garden

attraction, invasive exotic plants and the problems they cause are part of the school programs. Students spend time volunteering for exotic plant removal in the gardens. The park, with Dunnellon middle school, also hosts PAWS (Promoting Awesome Watershed Stewardship), which has an invasive exotic component. Other schools in the area participate in park nature outreach programs on an individual basis.

Twice a year the park offers the Florida Friendly Yards and Neighborhoods 2-3 day course taught by the University of Florida Extension Service. Part of the curriculum addresses invasive exotic plants. Concurrent with the course is a native plant sale at the gardens. Year round the park leads canoeing, gardening, or snorkeling tours, all of which include information on invasive exotic plants. There is also a permanent poster along the garden walk on the impacts of invasive exotics plants including Cogongrass.

The park's citizen support organization, currently comprised of about 150 members, is incredibly active in the day-to-day operations at the park. Each of these members has become educated about exotic plants through involvement with the park. They have been instrumental in funding the renovation of the park gardens, removal of exotics, and funding a gardener who continues to remove exotics.

As a component of the 2005-2006 Phase 1 grant the Florida Park Service District 2 staff contacted the Marion County Transportation Department about the cogongrass growing in their road right of ways adjacent to Rainbow Springs State Park. Marion County Transportation Department is not currently funded to control cogongrass on their right of ways. However they did give us a permit to remove cogongrass on the road right of way adjacent to the grant area. A permit will be requested to continue to remove Cogongrass on the right of way for Phase 4.

Also as part of the Phase 1, 2 & 3 grant the District 2 staff contacted the farmer directly to the south of the project area. His pasture is being invaded by cogongrass. He participated in the project, hired the contractor to spray 5 acres of cogongrass in his property that abuts Rainbow Springs State Park and continues to participate in control efforts.

A Cooperative Invasive Species Management Program for Marion County has been funded by a National Fish and Wildlife Foundation Pulling Together Initiative grant. Its primary goal is to coordinate multi-agency and public-private efforts to control cogongrass county wide. The group first met in February 2006 and a District 2 Environmental Specialist and other representatives of the Florida Park Service attended and continue to be involved with this group.

Regional Criteria Issues Not Addressed Above

The Griffiths Addition to Rainbow Springs State Park is directly contiguous with a good quality sandhill in the park. At present the Cogongrass has not spread

from the Griffiths property into the adjacent park sandhill. This maintenance control project will continue to keep the cogongrass south and away from the good quality sandhill. In addition the Marjorie Carr Cross Florida Greenway abuts the Griffiths Addition to the south across CR 484. Control of cogon in the project will positively affect other properties connected by the greenway.

The roadsides along the property (CR 484 and SW 180th Ave Rd.) also contain cogongrass. In the initial grant phases we worked with the Marion County Transportation Department to control Cogongrass along the roadsides in this area and will continue to do so in Phase 4 both directly and through the new Cooperative Invasive Species Management Program for Marion County. We will continue to work with the farmer to the south to help him follow-up on the cogongrass control that was begun during 2005-2006.