

## SECTION 3. NATURAL RESOURCE MANAGEMENT

### Restoration

Brooker Creek Preserve has been altered for years by many human impacts. Ditching, plow lines, roads and development have altered the hydrology of the Preserve. A Brooker Creek Watershed Study is currently underway that will produce a Storm Water Management Model (SWMM) for the hydrology of the entire watershed. This project is jointly funded by Pinellas County and the Southwest Florida Water Management District (SWFWMD). The Hillsborough County portion of the data was previously collected from another modeling effort. These data will be incorporated into the new watershed model. The consultant will also model specific areas with Preserve to determine the potential effects of the restoration projects on the hydrology. The model will also be used to help determine ways to alleviate current flooding problems within developed areas on the Pinellas County side of the watershed.

Hydrology alteration is only one type of impact that has occurred within the Preserve. The biodiversity in many areas of the Preserve has also been reduced due to the absence of land management and the suppression of wildfires before the creation of the Preserve in 1991. Prior to County ownership, the property was used extensively for activities including cattle grazing, unregulated horseback riding, four-wheeling, dirt biking, mud bogging, camping, hunting, target practice, clay disposal, clear-cut timber harvesting, and trash dumping. All these uses have had an impact on the current state of the Preserve.

Much of the Preserve is in relatively good ecological condition at present and only requires fire re-introduction, establishment of regular burn regimes, mechanical vegetation reduction, and/or routine exotic vegetation control to improve and maintain these natural habitats for wildlife. Other areas were more severely impacted and require more extensive restoration as detailed below.

#### *Completed Restoration Projects* (Figure 24)

##### Alcohol Community Treatment Services center MWL88 1988 (~1 acre)

This project provided wetland mitigation permit requirements for the construction of the Alcohol Community Treatment Services (ACTS) center. The created herbaceous wetland with shrub and tree fringe is located on old pastureland in the area of the Scenic Horse Trail. The project was completed through funding from Pinellas County Public Works. The site currently receives regular exotic vegetation maintenance.

##### Bi-County (Trinity Boulevard) 1993: WC1 (~2.5 acres), WC2 (~7 acres), Upland Enhancement (~5 acres)

These three sites are all located in the Scenic Horse Trail part of the Preserve. Soil surveys indicate that these three sites were located on pine flatwoods and slough

community soils. However, previous owners converted both of these natural communities to grazing pastureland. WC1 and WC 2 were planted as herbaceous wetlands with a shrub and cypress tree fringe. The upland enhancement site was planted to mimic an oak–pine upland with canopy dominated by longleaf and slash pines. These sites were originally restored as mitigation for a private entity but after 1 ½ years the County took over the project. This site is still under observation for planting success and receives regular exotic vegetation maintenance. Subsequent replantings, monitoring and maintenance to meet the permit requirements have been funded through Pinellas County Public Works.

Bi-County Floodplain Compensation (Trinity Boulevard) 1993 (~15 acres)

This site is located in the northwest corner of the Scenic Horse Trail area. Previous owners converted the pine flatwoods to pastureland. The site was excavated to meet flood compensation permit requirements associated with the construction of Trinity Boulevard. The site is an open herbaceous marsh with pockets of wetland shrubs. This project was completed through private funding and is monitored by ELD for any exotic vegetation encroachment.

60-inch Water Pipeline Mitigation approx. 1997(~2 acres)

This site was part of the wetland mitigation permit requirements for the installation of Pinellas County Utilities' (PCU) 60-inch potable water supply line. This waterline runs through the Preserve adjacent to the old pipe that it replaced due to its undersize and deteriorating condition. As indicated on historical aerials and soil maps, the site was originally a pine flatwoods, but now is an open marsh with a wetland shrub and tree fringe. The completed project was funded by PCU.

East Lake Road Phase I & II 1998 (~17 acres)

This area of the Preserve was restored as part of the wetland mitigation permit requirements of the East Lake Road expansion south of Keystone Road. The soil survey indicates the site contains Myakka soils that coincide with pine flatwoods community. Prior to the mitigation work, the area consisted of mainly improved pasture. The site was cut to elevations indicative of forested wetlands in the area, and planted with cypress and other wetland species. This project was funded and is still monitored by Pinellas County Public Works.

East Lake Road: Keystone to Pasco County Line M90 1998 (~2 acres)

This 2-acre site in the north part of the Preserve addressed wetland mitigation permit requirements for the East Lake Road expansion north of Keystone Road. Prior owners of this tract ran a dairy operation. As part of this operation the pine flatwoods were cleared for pasture grazing land. This mitigation site is located on part of this old pastureland and the area was planted with wetland trees and shrubs. This project was funded and is still monitored by Pinellas County Public Works.

#### Channel A Crossing at Main Powerline 2000 (~7 acres)

This restoration effort was completed as part of the wetland mitigation requirements of the Pinellas County Solid Waste Facility expansion. Flow had been altered into two adjacent areas where Channel A crossed the main powerline. This restoration included cutting the powerline access road down to the same elevation as the surrounding wetlands. Geoweb filled with limestone was installed in the access road to provide a stable driving surface while allowing the water to flow freely in the historical channel width. Supplemental native plantings were installed in areas beyond the road that were disturbed during construction. Exotic vegetation within the restoration site boundaries was also removed. This completed project was funded through Pinellas County Department of Solid Waste Operations.

#### Boot Ranch Office Park Wetland Mitigation and Trail Grading 2000 (~2 acres)

These sites are located in the Ridgemoor area of the Preserve. This project helped meet mitigation permit requirements of the McMullen-Booth Road construction where it joins East Lake Road. The location of the wetland restoration is in an area previously altered by the diagonal powerline that traverses this area. The site was excavated down to the elevation of the adjoining cypress and forested wetlands that are also part of the sheet flow of Channel L.

An old plowline/trail was also brought up to grade as part of this mitigation project. The "trail" was up to several feet below grade. Prior bringing the trail up to grade the sheet flow across a large cypress strand was altered. These projects are complete and were financed by Pinellas County Public Works and private funds.

#### Mount Brooker Clay Removal 2002 (~36 acres)

A previous owner used this location of the Preserve as a clay fill disposal site. In the early 2000's the clay mounds were removed. Final restoration of this site is being completed as wetland mitigation for several County projects. Although historical soils indicate much of this site was mesic to hydric flatwoods, staff determined that restoring the area to wetlands would be more successful due to the alterations to the soil column. Clay removal was funded through Pinellas County Public Works.

#### East-West Connector Road Mitigation 2002 (~7 acres)

This site is located in the Mount Brooker Clay Removal area (see above). The project helped meet the wetland mitigation requirements for the expansion of Forest Lakes Boulevard. This site contains open water and herbaceous and forested wetland plantings. Restoration was funded by Pinellas County Public Works and is site still monitored for plant success and undergoes regular exotic vegetation control.

#### BCPEEC & Parking Lot Native Landscaping/Restoration 2004 (~3 acres)

Construction of the BCPEEC and associated parking lots created cleared areas in need of restoration. The parking lot was planted with species found in other Brooker Creek Preserve sandhills. The dry retention areas were planted primarily with muhly grass and fast-growing lovegrasses. The parking lot does not have a traditional landscape but instead resembles a more natural area. Prescribed burning will be used to help maintain the area by reducing overgrowth and stimulating native seed production.

The disturbed areas around the BCPEEC were also planted to mimic a natural system with a more traditional planting scheme along the concrete walk and auditorium. Native plants were chosen that grow in flatwoods or transitional forested wetlands depending on the location within the BCPEEC complex. Some shrubs and trees were strategically planted to block views of infrastructure such as the lift station and service entrance doors. A butterfly garden was also incorporated in the landscaped area as an educational tool. This project was funded primarily through the County Tree Bank and, to a lesser extent, a grant from the Tampa Bay Estuary Program.

#### Channel L Crossing at the Main Powerline 2005 (~7 acres)

Flow had been altered where Channel L crossed the main powerline. This restoration included cutting the powerline access road down to the same elevation as the surrounding wetlands. Geoweb filled with limestone was installed in the access road to provide a stable driving surface while allowing the water to flow freely in the historical channel width. Supplemental native plantings were installed in areas beyond the road that were disturbed during construction. Exotic vegetation within the restoration site boundaries was also removed. This project was funded through a SWFWMD Surface Water and Improvement Management Program (SWIM) grant.

#### Channel F Crossing at the 60" Waterline 2005 (~0.5 acre)

Flow had been altered where Channel F crossed the Pipeline Trail access road. This restoration effort included cutting the access road down to the same elevation as the surrounding wetlands. This project was done in the same manner as the previously discussed Channel L Crossing. This project was funded through a SWFWMD SWIM grant.

#### Culvert Replacements 2005

Several culverts associated with the main channel of Brooker Creek (Channel A) were replaced in 2004/05. During the hurricanes of 2004 Pinellas County Public Works determined that some areas around the county were experiencing flooding in part due to undersized or collapsed pipes. As part of a federal emergency grant the County received funds to replace some culverts within Brooker Creek Preserve. The Preserve's Lora Lane dirt access road crosses Channel A. The original pipes were rotting, partially filled, and too small allow the natural flow of the creek under this road so these were replaced. The

pipes in the Tall Pines area of the Preserve were also addressed with one unneeded pipe completely removed and the channel restored to its natural contour. Some pipes outside the Preserve boundary near the Lora Lane gate were replaced. While this work was completed the pipe just inside the gate was also replaced using ELD operating funds. This is a key access point for staff and emergency vehicles and the flow was not impeded so it did not qualify for the emergency flood fund. The narrow access with the existing pipe length made crossing of larger vehicles difficult. The pipe was also beginning to rot on the exposed edges causing the access drive over the pipes to narrow slowly each year.

#### BCPEEC and Boardwalk Construction Mitigation 2005 (~4 acres)

This restoration project is located in the Mount Brooker Clay Removal area (see above). The site was planted as forested wetlands grading up into a hydric flatwoods and met the wetland mitigation requirements of the BCPEEC and boardwalk construction. Funding was provided through the Brooker Creek Preserve Habitat Restoration Capital Improvement Project (CIP).

#### BCP Picnic Area Native Landscaping/Restoration 2006 (~1 acre)

Prior to this site becoming part of the Preserve, some citizens used the one-acre site to strip copper wire by burning off the outer insulation. This activity caused arsenic, barium, cadmium, copper and lead contamination of the soil. In 1999, the soil was tested, and the contaminated portions were removed and disposed of properly offsite. This site is located south of the parking lot of the BCPEEC and Wildlands Hiking Trails. The area also contains a picnic pavilion so, instead of a traditional restoration, this area was replanted as a more formalized landscape. Pods of trees, shrubs and grasses were planted, leaving some open mowed areas that could be used by visitors for various BCPEEC programs and special events. All plants are Florida natives with most being found within the BCP. This project was funded through a memorial fund with the Friends of Brooker Creek Preserve, Inc., County Tree Bank, and the ELD operating budget.

#### Midland Trail Gradework 2007 (~1.2 miles)

This Preserve access trail/road was below grade resulting in alterations to natural sheet flow, excessive draining of wetlands, and limited access of Preserve vehicles during high water times. About 0.5 miles of this access trail is also part of the public Wildlands Hiking Trails, but this portion was closed frequently because of areas of deep water. Fill was obtained from a marsh creation project in the Allen's Creek Management Area. The restored trail is monitored for growth of any unexpected exotic vegetation and treated as necessary. This project was completed by Preserve staff with the use of rented and County-owned equipment. The equipment rental was funded through the Brooker Creek Preserve Habitat Restoration CIP. Transportation costs to acquire fill from the Allen's Creek restoration site was paid for by a SWFWMD SWIM grant.

St. Petersburg-Clearwater International Airport Expansion 2007 (~3 acres)

This site is located in the Mount Brooker Clay Removal area (see above). The restoration project met the wetland mitigation permit requirements for the St. Petersburg-Clearwater International Airport expansion. The site was excavated and planted as an herbaceous marsh. Monitoring for planting success and exotic vegetation control continues on this project that was funded by the Clearwater-St. Petersburg International Airport.

Unknown Mitigation Site (no DEM/ELD record) (~1 acre)

This site is located north of a flatwoods near the Windemere subdivision and contains herbaceous vegetation fringed by wetland shrub and tree plantings. There is no record of this site so it is unknown for which project this mitigation site was created. Historical aeriels and soil surveys indicate the area was previously pine flatwoods.

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*Future Restoration Projects*  
(Figure 25)

Brooker-Anclote Corridor Old Field (~3.5 acres)

The understory on this site was cleared and planted with exotic bahia pasture grass and other ornamental vegetation by a previous owner of the property. Scattered mature longleaf pines remain along with areas of remnant native groundcover. These remaining native plants, along with soils maps, indicate that this site would originally have supported scrubby to mesic flatwoods. Recognized pasture grass removal and direct seeding techniques will be used to restore the understory vegetation of this site (Appendix 16). This work will involve staff hours, prescribed burning, herbicide purchase and application, disking, consultation fees, and seed purchase or on-site collection/spreading by a contractor.

Four Lakes Hammock Borrow Pits/Old Nursery (~47 acres)

This area contains four borrow pit ponds. The previous owner created these ponds during a soil mining operation. Many of the pond banks have very steep slopes and, consequently, have no littoral zones. Survey work has been completed to determine pond slopes and depths. After the surveys have been reviewed, staff will determine how best to alter these borrow pits into more natural habitats. It is likely that fill and grading will be required to create littoral shelves and make the bank slopes less steep. After earthwork is completed, the pond edges will be planted with appropriate native vegetation. Maintenance of nuisance vegetation control will then be required. Without adjusting existing steep slopes, the ponds will otherwise require installation of six-foot fences around their perimeters for safety. This is not a desirable alternative.

Also found on this site is a small area of uplands once used by a previous owner as a landscape plant nursery. Much of the irrigation plumbing, old pots, weed cloth and other debris have been removed through service projects performed by primitive campsite users. Exotic vegetation has also been treated through contractor work. The remaining debris will be removed from the site and will most likely need to be replanted as natural recruitment of understory vegetation is expected to be very limited due to the extensive disturbances.

Scenic Horse Trail Timber/Old Dairy (~380 acres)

This site is north of Keystone Road and is the location of the existing Scenic Horse Trail. Prior to Pinellas County ownership, this land was known as the Sall's Dairy. During the dairy operation extensive areas of uplands were cleared and planted with bahia pasture grass. In 1988-89, after the County purchased the land, slash pines were planted. Successful portions of pine plantation shaded out the exotic grasses and have allowed limited natural recruitment of native understory vegetation. These pines will be thinned to three to four times optimal flatwoods densities when the pines are 20+ years of age. The groundcover will then be restored, using a recognized method of direct seeding (see

Brooker-Anclote Corridor Old Field above). The areas where the pine plantations were not successful largely remain as bahia pasture and will also be restored.

Staff will also consider whether to timber parts of the pine and replant new plantations. A cost-benefit analysis will be done to see if this operation would help generate funds to be used toward maintenance of the natural resources throughout the Preserve. The proposed PWR-2 FLUM Overlay (see The Future Land Use Map and Zoning, Proposed on page 1-21) will also impact priority of any restoration or replants of timber plantations.

#### BCP Administrative Office Area (~21 acres)

The existing ELD administrative office sits partially on an old landing strip. Parts of the asphalt runway still exist to the north and south of the office complex. Areas surrounding the actual runway have also been impacted. Large patches of bahia pasture grass and weedy ruderal vegetation are located here. A previous owner planted laurel and live oak trees in the northern extent of this site. To restore this site the asphalt runway will be removed along with grade work, exotic pasture grass removal, direct seeding, and supplemental plantings.

#### 1001 Lora Lane Driveway/Old Homestead (~3 acres)

This was the site of a residential home that was used as the ELD office for several years. The house and shed were removed in 2003. The condition of the septic tank is unknown, though it may have collapsed during the house demolition and removal process. If the tank is found to be intact it will be pumped if needed and then crushed or filled. The asphalt drive is still in place and will be removed. Any exotic sod grasses still on the old home site will be treated and the area seeded or replanted if necessary.

#### Tall Pines Old Stable Area (~5 acres)

The site contains three dilapidated stables, various outbuildings, fencing and concrete pads associated with previous owners' uses. These building were once used as a maintenance shop/equipment storage area for the Preserve. The conditions of the buildings have declined to a point that makes the buildings unusable except for limited equipment and lumber storage. The buildings are beyond repair and will be removed along with all other structures on site. A small frog pond on site may be altered to create better wildlife habitat. Exotic vegetation, including pasture grass, will be treated. Much native vegetation exists on-site including several mature long-leaf pines and oak trees, so natural seed recruitment is expected to be high. The area will be planted and/or seeded with native vegetation if needed. Initial mowing will be used to reduce dog fennel and long-term exotic vegetation maintenance will be required.

#### Tall Pines West Flatwoods (~9 acres)

The groundcover on this site was cleared and planted with bahia pasture grass by a previous owner. Large mature longleaf pines are found throughout this tract but very little native groundcover remains. A small artificial pond may be modified to increase wildlife value. To restore the rest of this area to pine flatwoods the exotic pasture grass will be removed and the groundcover re-established using a recognized method of direct seeding restoration (Appendix 16).

#### Tall Pines Old Nursery/Ditching (~9 acres)

A previous owner of this site used the property as part of a landscape nursery business. Approximately half the site contains large mature exotic landscape trees left from this operation. The other half of the site remains in very good condition with scattered pines and native understory and groundcover. There is a rim ditch around the entire site, presumably installed to drain the land for the nursery. The effects of filling this ditch on local hydrology will be examined through the SWMM watershed computer model that is now being developed. Native nursery trees have already been removed and used for landscaping in public areas within the Preserve. The remaining exotic trees will be removed from the site, along with the irrigation hardware and ground cloth. Natural recruitment of native groundcover is expected to be high due to the surrounding vegetation, but the area will be monitored long-term for exotic vegetation maintenance and some short-term maintenance mowing will be conducted to keep dog fennel under control until desirable native vegetation becomes established.

#### Old Field Sandhill/Flatwoods (~97 acres)

Previous owners used these pockets of uplands as pastureland. Exotic grasses are found throughout these sites. Soils and remnant native vegetation indicate that most of these uplands were sandhill fringed with pine flatwoods. These sites have been burned twice since 1997, had longleaf pine seedlings planted twice, and have had wiregrass and lopsided Indian grass plugs installed in some areas. The site just north of the BCPEEC was planted in the mid-1990's with pines that are doing well but will need to be thinned to sandhill density before the groundcover restoration begins. The initial pine plantings in the other areas had a 0% success rate due to excessively dry conditions. The second planting in 2002 was much more successful, and the trees are currently maturing beyond the "grass" stage of growth. The exotic pasture grass will be removed and the groundcover restored using a recognized method of direct seeding restoration (Appendix 16). Modifications to this method will be made to minimize loss of the young planted pines. Some oaks may be thinned but pockets of hammocks will be left on the sites as they provide diversity to the overall location. Care will be used during this restoration process to protect the large gopher tortoise populations on these sites.

#### Moe's Trail Sandhill (~20 acres)

This area is succeeding into a xeric hammock due to long-term fire suppression. Scattered mature longleaf pines, some remnant turkey oaks, and patches of open sandhill groundcover vegetation still remain throughout the site. The dominant live and sand live

oaks will be thinned with a hydro-axe by an outside contractor. Patches of mature hammock will be left to provide additional biodiversity to the site. All gopher tortoise burrows and trees that are to remain will be marked before the work begins. An initial burn will be done within 2-3 years following completion of this work.

#### Mount Brooker (~35 acres)

A previous owner used this location of the Preserve as a clay fill disposal site. In the early 2000's the clay mounds were removed from the largest northeastern site. This site is being restored through wetland mitigation for several County projects. Although historical soils indicate much of this site was mesic to hydric flatwoods, staff determined that restoring the area to wetlands would prove to be more successful due to the alterations to the soil column.

The two western sites still have mounds of clay fill that will require removal. If there are needs for additional wetland mitigation, these sites will most likely have similar wetland restoration projects as have been conducted on the northeastern site.

#### Main Powerline Hydrology Restoration Projects

The installation of the main Progress Energy transmission corridor, some time between 1951 and 1967, altered the historical hydrology in the Preserve. During construction of the powerline large areas of open shallow marshes were created when fill was dug for the access road and tower pads. There is also a large ditch, presumably dug to provide fill and to drain the access road. Because this location has been so drastically altered, it will not be restored to original historical hydrology. The goal, rather, is to make improvements that will positively affect the wetlands up- and downstream of the area. The SWMM model now under construction, will help direct and prioritize these restoration efforts. Any work done on this powerline will require a written agreement with Progress Energy and cannot block its access.

The following projects describe sites along the corridor that are expected to be targeted for restoration to improve hydrology.

##### *Main Powerline Ditch*

A ditch runs along the east side of the main Progress Energy transmission corridor. The ditch appears to cause excessive drainage of groundwater and adjacent wetlands. The water flows south along this powerline ditch. At the junction of the diagonal powerline, the flow is partially diverted southwest through pipes under the access road, and the remaining flow continues south. Historically, water flowed through several channels and strand wetlands westward across the transmission corridor. The SWMM model, now under construction, will be used to simulate the effects of ditch blocking or filling of the entire ditch.

### Channel Q Crossing on Main Powerline

Flow has been altered where Channel Q crosses the main powerline. The access road acts as a dirt weir. Water backs up in the east wetland when the water falls below the access road level. This means the flow of water to the downstream wetlands to the west is cut off during the beginning of the wet season and at the onset of the dry season. Currently, the project is under the planning and design phase to be restored as part of the wetland mitigation requirements for the Pinellas County Utilities' water blending plant. The site is expected to be restored in a similar fashion as two other channel crossings that have already been completed. This type of restoration includes cutting the access road down to the same elevation as the surrounding wetlands. Geoweb filled with limestone is then installed in the access road to provide a stable driving surface while allowing the water to flow freely in the historical channel width. It should also be noted that stone larger than #57 will be used in the top 2–4 inches of Geoweb due to the displacement of this smaller stone by vehicular traffic when the site is holding water. Plantings will be installed in areas beyond the road that are disturbed during construction. Exotic vegetation in the restoration site boundaries will also be removed as part of this project.

### Channel S Crossing on Main Powerline

The dirt access road along the powerline has altered the flow of Channel S in this location. The road sits at a higher elevation than the wetlands on either side. The water currently flows through a few 6-inch PVC pipes and through small washouts along the road. The Main Powerline Ditch discussed previously also runs through this area. This ditch further complicates the flow patterns in this area and the SWMM computer model will be used to help determine which of these two projects should be completed first. The Channel S project will have a similar restoration plan as the Channel Q Crossing on Main Powerline project previously described above.

### Other Potential Channel Crossings on Main Powerline

Historical aerials and existing flow patterns will be examined to determine if other wetland flow connections can be made along this main powerline to improve hydrology of the Preserve wetlands. When completed, the SWMM model should help in this process.

### Lora Lane Ditch

This ditch was installed to help drain the residential communities in the Lora Lane area. When this ditch enters the Preserve, it continues south until it drains into the main channel of Brooker Creek (Channel A). It is unlikely that this ditch will be altered due to the negative flooding impacts that would likely occur to the residents along Lora Lane.

However, the ditch continues south past Channel A and from past field observations water flows north into Channel A along this area of the ditch. The SWMM model will be used to determine impacts of filling the southern portion of this ditch as it appears only to drain water from surrounding Preserve flatwoods and wetlands. A spur ditch runs east-west just after the main ditch enters the Preserve. This spur runs alongside part of The Friends Trail. The water in this ditch flows east or west depending on the water level in the main Lora Lane ditch. The model will again be used to determine the impacts of filling this spur ditch.

### Diagonal Powerline Ditches

Ditches run in different areas along the diagonal powerline. It is assumed that these were dug during the installation of the powerline to provide fill for the access road and to keep this road drained. The SWMM model will be used to determine the effects of ditch blocking or filling of these ditches.

### Channel L at Lora Lane and Diagonal Powerline

This project will include two dirt access roads areas that intersect Channel L. Due to their close proximity, this will be treated as one restoration project. The side that crosses the Diagonal Powerline includes flow alteration due to the road sitting at a higher elevation and a ditch that runs parallel to the road. The Lora Lane crossing has the same problem of the road sitting at a higher elevation than the adjoining wetlands. The SWMM model will be used to show the impact the cutting down these access roads to the elevations of the surrounding wetlands. The model will also determine the prioritization of this project with the “Diagonal Powerline Ditch” project as these two will have an affect on one another. The restoration will also include the installation of Geoweb filled with limestone along the access roads similar to that discussed in the *Channel Q Crossing on Main Powerline* project.

### Hawks Landing Ditch

A rim ditch was installed to drain the land before the establishment of the Hawks Landing Subdivision. The ditch was initially dug when the site was agricultural and contained only one residential structure and horse pasture. Today the land has been subdivided, with additional fill brought in and many new homes built. The rim ditch meanders in and out of the Preserve boundary. This ditch has had detrimental hydrologic impacts to the surrounding wetlands within the Preserve. The SWMM model will be used to determine if any ditch blocking within the Preserve boundary will have positive impacts on the wetlands hydrology along with any potential flooding impacts to the neighboring Hawks Landing subdivision.

## Trail Gradework

Many of the Preserve's access trails/roads are below-grade which alters natural sheet flow, causes excessive draining of wetlands, and limits access of Preserve staff during high water times. Limited vehicular access during times of high water decreases opportunities to perform prescribed fires in some parts of the Preserve due to the inability to get brush trucks around the burn units. Care will be taken on where fill is obtained to prevent the introduction of new seed sources of exotic nuisance vegetation. Filled areas will need to be monitored for growth of any unexpected exotic plants and treated as necessary.

## **Wetland Mitigation**

Several wetland mitigation projects have been completed within the Preserve. These were mainly done as compliance for environmental impacts from County road construction projects. Sites in need of restoration were targeted for this mitigation work. Through this process the County mitigation requirements were met and areas were restored at no cost to the Preserve, resulting in a win-win situation.

This cooperative work has benefited the Preserve and the County in general. As undeveloped land becomes scarce, however, care must be taken on future mitigation projects within Preserve boundaries. The Environmental Lands Division will continue to provide sites for wetland mitigation as long as the desired restoration goals of the Preserve are met. Good quality ecosystems, not targeted for restoration, will not be destroyed to meet permit requirements for wetland impacts. Additionally, uplands in need of restoration will not automatically be looked at as sites for wetland mitigation. Almost 50% of the Preserve is classified as wetlands. Hence, pockets of uplands throughout the Preserve are extremely valuable ecosystems and will be conserved as such.

## **Prescribed Burning**

Fire is extremely important in the maintenance of healthy Florida ecosystems. These natural communities have evolved to depend on fire. Each type burns at different frequencies due to characteristics of various plant species and hydrologic conditions. Higher and drier communities with light, herbaceous fuels generally burn more frequently than more hydric areas with larger, heavier fuels.



**Drip torch used to start a prescribed burn**

Due to the dense suburban development surrounding the Preserve, wildfires started by lightning strikes can no longer sweep across the natural landscape as they would

historically. Because wildfire suppression in Pinellas has occurred for decades, high fuel loads have built up in many locations throughout the Preserve. Wildfires that occur in these areas with 20+ years of fire suppression burn much more intensely and pose higher danger to surrounding homes. To help prevent ignition or decrease the intensity of natural wildfires, prescribed burns are conducted within the Preserve.

In order to conduct prescribed burns, firebreaks must be installed and maintained. Firebreaks also help in the containment of wildfires. Firebreaks in the Preserve are generally 10'–12' wide mineral soil trails that are maintained by disking. Mowing new firebreaks before plowing and bulldozing the vegetation down to mineral soil helps prevent the firebreaks from getting cut far below the grade of the adjacent areas. Firebreaks are not installed in wetlands and transition zones unless unavoidable. If this needs to occur, the breaks are directed through the shortest route.



**Mineral soil firebreak**

The Preserve is partially broken into a number of fire units. The size of the units is somewhat limited due to the highly urbanized areas surrounding the Preserve. After reviewing past prescribed burns and consultation with the Florida Division of Forestry (FDOF), ELD staff has determined that burn unit size for this Preserve should be 30–100 acres in size and much smaller near the boundaries (<20 acres). Burns near the perimeter of the Preserve require 100% mop-up to avoid prolonged smoke in neighboring residential areas. As these burn units fall under a normal fire regime and the heavy vegetative loads and duff are burned off, some firebreaks will be allowed to grow over so small units can be combined into larger units. Lower fuel loads and duff removal allows for safer and faster burn times, less smoke production, and less mop-up requirements. However, it must be kept in mind that this is a long-range goal. The short-term goal is to get the rest of the Preserve broken into defined burn units and to incorporate these new units into the existing prescribed burn program.



**Mop-up**

The large amounts of intertwined wetlands throughout the Preserve make breaking the remaining areas up into fire units a challenge. Originally, it was thought that these extensive forested wetlands could be used as natural firebreaks. However, most of these wetlands naturally dry out for portions of the year, making them ineffective firebreaks. Optimal ecological burning mimics the natural wildfire growing season burns, but to get the Preserve under a regular fire schedule, burns must be conducted year round. Therefore, it is necessary to install mineral firebreaks around any new units.

To restore and maintain the health of the natural communities and provide safety for surrounding neighborhoods, prescribed burning and firebreak installation are top priorities in the management of the Preserve. After an initial prescribed burn is completed on a unit, future burns in that area will be conducted based on its natural fire frequency. Natural plant communities that occur on Brooker Creek Preserve and their natural fire frequencies include:

- Sandhill, 2-5 years
- Mesic Flatwoods, 1-8 years
- Wet Flatwoods, 3-10 years
- Basin Marsh, 1-10 years
- Basin Swamp, 5-100 years
- Strand Swamp, 30-200 years

Other areas in the Preserve will require either fire exclusion or application. Xeric hammocks are formed from 30+ years of fire suppression. Fire should not be introduced to those areas where it is desirable to maintain this successional climax community. Conversely, fire will be used as a step toward the restoration of sandhills and flatwoods that are now dominated by old bahia grass pasture.

Prescribed fires and mop-up of wildfires are conducted by County staff. The County established the Wildlands Fire Team in 1997 to handle the prescribed fires on Environmental Lands and later Park Department properties. Since the creation of the team, almost 2,300 acres at the Preserve have been burned through prescribed burns and wildfires. Prescription preparation, planning, and scheduling of fires are done by the respective agencies in charge of the properties (Appendix 17). The team is composed of County staff mainly from the Department of Environmental Management and the Culture, Education, and Leisure Department with a few members from other departments. Team members all have regular County jobs but are on a call-out list when burns are to be conducted. The team member must pass the FDOF's Basic Fire Management (S-130 and S-190) classes. They must also pass an annual physical or the moderate field stress test to remain an active member. To support the prescribed burn program, the Environmental Lands Division is equipped with two 300-gallon slide-on units, two 300-gallon brush trucks, 400-gallon water buffalo, 850-gallon modified old military M35 (aka deuce and half), 50-gallon spray tank for an ATV utility cart, small Honda pumps for drafting out of surface water, drip torches, backpack sprayers, and miscellaneous hand tools.

The FDOF plays an important role in the prescribed burn program. FDOF assists with prescribed burning including ignition, spotting and, at times, provides a ranger with a tractor plow unit stationed the day of the burn, if requested by the burn boss. FDOF also helps with firebreak installation and maintenance.

### **Mechanical Vegetation Thinning**

Suppression of wildfires in Pinellas County has resulted in fire dependent communities within the Preserve that have not burned in 20+ years. This lack of fire has caused a decline in plant biodiversity and movement toward a near monoculture of palmetto understory within the pine flatwoods. Fire re-introduction alone has proven to be ineffective at reducing palmetto density. In these cases mechanical techniques are used. Each flatwoods is evaluated before and after a burn to determine if the area needs to be roller-chopped to reduce the palmetto density. Roller-chopping is usually conducted 2-6 months after a burn since the palmetto cuts better than if done shortly after a fire. Care is taken to stay 10-12 feet away from the base of mature pine trees to prevent damage. Soil conditions are checked before an area is roller-chopped. To minimize soil disturbance the site should not be holding water and the soils should not be wet. Since 2001, over 200 acres of Preserve flatwoods have been roller-chopped.

Roller-chopping is usually done after a fire because of the high number of hidden stumps within the Preserve's flatwoods. Inability to see these stumps with the overgrown conditions has, in the past, caused damage to the equipment. In extremely overgrown areas where the units are either close to the boundary of the Preserve or there is the concern that severe pine damage will occur if fire is introduced, roller-chopping has been done prior to the application of fire. In these cases a tractor with a front-end loader or bulldozer blade lowered close to ground will be used to help prevent damage from any hidden stumps.



**Roller-chopping in pine flatwoods**

Hydro-axing is another option that has been used to thin vegetation before fire is re-introduced into an area and help restore biodiversity. This equipment will continue to be used in flatwoods to reduce palmetto and hardwood encroachment and to restore sandhills by reducing oak dominance. Although fire is the best way to maintain these natural habitats in areas where prescribed burning will be difficult to perform safely, this may be an option as a way to maintain these units. The Division does not currently own a hydro-axe so the equipment will be leased or the work performed by an outside contractor. Twelve acres of overgrown flatwoods have been hydro-axed at the Preserve through a FDOF wildfire mitigation fund. There may be an option in the future to purchase or have a long-term lease on a hydro-axe from future timber harvest profits (see **Timber Thinning** on page 3-20).



Hydro-axing in pine flatwoods

## **Invasive Exotic Species Control**

### *Floral*

Exotic plants have an adverse impact on the structure, function, and integrity of native plant communities. As such, exotic vegetation control is an important and continuing process at the Preserve. Emphasis is placed on control of Category I and II species (Appendix 18), but other non-natives are also targeted. Exotic vegetation treatment is conducted by ELD staff and through contracted work. It is important to maintain an area after initial treatment is conducted so as to prevent re-infestation by exotic vegetation. Mechanical removal, fire and herbicide application are all methods used to help control exotic vegetation within the Preserve. Proper chemical selection and application techniques are followed to prevent damaging effects to the surrounding environment.

## *Faunal*

Since they are detrimental to native flora and faunal, exotic species are eradicated whenever possible. Feral pigs were once found in the areas north of Keystone Road. These hogs were trapped and removed in the early 2000's. The group that leases the land for cattle, timber and hunting also eliminated this troublesome species from the adjacent property, which likely accounts for the successful removal from the Preserve. The area north of Keystone Road is occasionally monitored for any signs of hog damage. If needed in the future, a trapper will be hired to remove this nuisance species.

There are a few other species that require staff action. When found, Cuban treefrogs (*Osteopilus septentrionalis*) and walking catfish (*Clarias batrachus*) are removed from the Preserve. Feral cats and dogs appear to be uncommon within the Preserve but, if found, they are trapped and taken to Pinellas County Animal Services.

## **Timber Thinning**

In 2002, Pinellas County hired a timber contractor to thin pines on approximately 130 acres of pine flatwoods east of the main power transmission line. This selective timber harvesting was done to reduce the pine density to that of a healthy flatwoods and to simultaneously reduce the pyrogenic understory. Introduction of prescribed fire in these areas without reducing these excessively dense stands of pines would have created extremely hot, intense fires that would likely have killed most of the mature pines on site. Death of mature pines was seen on several sites burned either by wildfire or prescribed fire with similar pine densities and understory growth.

New pines have already begun to recruit on the timber-thinned site and, with the canopy opened up, the understory vegetation is thriving. Besides improving the overall flatwoods community this effort has also generated over \$90,000 for Pinellas County.

Several flatwood areas in the Preserve would benefit from pine thinning. This would help preserve the mature pines and reduce the threat of catastrophic wildfires. Areas in the Preserve that would benefit from pine thinning will be mapped out, a schedule developed, and the current County forestry consultant will be contracted to oversee the harvests. These future timber-harvesting profits will be requested to be placed in a specific fund to be used for the management of the natural resources of Brooker Creek Preserve including the potential purchase of a hydro-axe (see **Mechanical Vegetation Thinning** on page 3-18). Also see **Restoration, Scenic Horse Trail Timber /Old Dairy** on page 3-9 for additional timber harvesting funds that would be used toward the management of the Preserve.



**Pre-Timber Thinning**



**Feller Buncher used to cut and carry trees**



**Two months Post –Timber Thinning**



**Two years Post –Timber Thinning**

### **Species Inventories**

Extensive floral and faunal inventories were performed for the first 1993 management plan. A well-respected group of biologists conducted these surveys. These lists are kept up-to-date as Preserve staff identify new species and add voucher specimens to the County herbarium (Appendices 19 & 20). Currently, there are 626 verified floral species of which 524 are native to the area. Also verified are 20 mammal, 196 bird, and 194 invertebrate species. Preserve staff has also been compiling vouchered arthropods over the last several years, representing close to 1,000 specimens to date.

### **Natural Communities Mapping**

Geographic Information System (GIS) is used extensively for various natural resource management activities. The natural habitat mapping for the Preserve is based on a modified Florida Land Use, Cover and Forms Classification System (FLUCCS) digital map, altered to incorporate the Florida Natural Areas Inventory natural community types. Through aerial interpretation and field verification, adjustments to delineations between natural community lines will be needed in the future to create a more accurate map for the Preserve to help in the management of the natural resources.

## **Research and Monitoring**

Extensive research and monitoring has provided insight into the ecology of Brooker Creek Preserve, especially the natural and anthropogenic impacts it faces. In fact, Brooker Creek Preserve is likely one of the most intensively-studied natural areas in the region. Research conducted at Brooker Creek Preserve to date by staff members includes studies of groundwater-augmented wetlands, responses of flora and fauna to pine flatwoods management practices, population demography and habitat requirements of the State-threatened Catesby's lily, abundance and distribution of coyote and other mammals, wildlife mortality caused by vehicles along Keystone Road, distribution of gopher tortoise burrows and associated commensal species, habitat requirements of the Tampa butterfly orchid, nesting success of eastern bluebirds, and occurrence and relative abundance of plants, butterflies, fishes, and birds. In addition, partnerships have been established with researchers from other agencies and institutions. Authorized research projects conducted to date by partners include investigations of the diet and genetics of coyote, surveillance of exotic ticks, nesting sites and reproductive success of the short-tailed hawk and American swallow-tailed kite, wildlife responses to wetland augmentation, occurrence and abundance of gopher frogs, water quality conditions of Brooker Creek, and the use of sensors to provide information to the Environmental Distance Learning program.

The Pinellas County Biological Field Station (PCBFS) is located at Brooker Creek Preserve. This facility provides overnight accommodations, small-group conference facilities, and standard equipment for use by visiting scientists to facilitate their authorized research at properties managed by ELD. PCBFS also houses an herbarium, various taxidermy and study skins, and a collection of arthropods; these research collections are accessible to those interested in learning more about the taxonomy and identification of these diverse groups. Efforts to communicate with other administrators of national and international field stations have been supported through an institutional membership and active participation in the Organization of Biological Field Stations.

The benefits of long-term monitoring have been revealed at Brooker Creek Preserve. These efforts have identified unforeseen trends in species richness and abundance, enhanced our understanding of ecological interactions, identified threats faced by wildlife, and documented rates of change in the environment. Because information obtained from these efforts translates into enhanced and targeted natural resource management, they will be maintained and supported. Similarly, the benefits of partnering with other agencies and institutions have been realized at Brooker Creek Preserve; research partners bring expertise and resources that allow for detailed investigations beyond the scope of local government. Such partnerships, especially those that promote applied ecological research, will continue to be encouraged. These collaborations will become even more important in a climate of severe cuts to the ELD operating budget.

Given the solid foundation provided by ecological studies conducted to date, exciting opportunities exist for future research at Brooker Creek Preserve. Pinellas County resources are invested largely into on-going, long-term studies. Because such efforts are

expected to continue into the future, additional basic and applied research likely will need to be conducted by partner scientists from external agencies and institutions. Future research could include (but certainly not limited to) studies designed to understand the responses of natural communities to anthropogenic and natural disturbances, to document the invasibility of exotic species to natural communities, to predict the consequences of a changing global environment, to understand the role of this property to regional dynamics, to document the genetic structure and population bottlenecks of isolated populations, to understand the ecological interactions between native and exotic species, and to quantify the ecosystem services provided by a large, intact natural area embedded within an urban landscape. Such studies will be encouraged and supported to the greatest extent possible.

### **Land Acquisition**

The Environmental Lands Division submitted a request for acquisition of 900+ acres in the northeast corner of the County under the renewed “Penny for Pinellas” (FY11-FY20) environmentally sensitive lands acquisition program. This land is currently owned by the Wilde Trust (862 acres) and CSX Transportation, Inc. (38 acres) (Figure 26). Hillsborough County Environmental Lands Acquisition Protection Program (ELAPP) recently acquired property east of the Pinellas/Hillsborough County line from the Wilde Trust.

Purchase of the Wilde Trust property would be consistent with the County’s Comprehensive Plan; the 2005 Recreation, Open Space, and Culture Systems Master Plan; and the BCC Strategic Plan 2007-12. The property is a mosaic of wetlands and uplands that links the north and south portions of the Preserve and Hillsborough County’s ELAPP property. Such a purchase would create a large conservation area in northern Pinellas County to protect native biodiversity and local hydrology. Numerous State-threatened gopher tortoises and a nesting bald eagle pair are located within the property. The land is part of the County’s designated wellhead protection area, an important recharge area to the Floridan Aquifer, and potable water resource. The property is part of the existing Eldridge-Wilde Wellfield and would remain as an active potable water supply source if purchased as part of the Preserve. Pasture areas would be restored back to flatwood and the State-imperiled sandhill communities. The County will investigate the feasibility of installing a large wildlife underpass when Keystone Road is expanded in this area. This would not only create a more effective animal corridor by providing safe passage, but would also prevent car accidents caused by animals crossing this busy road.

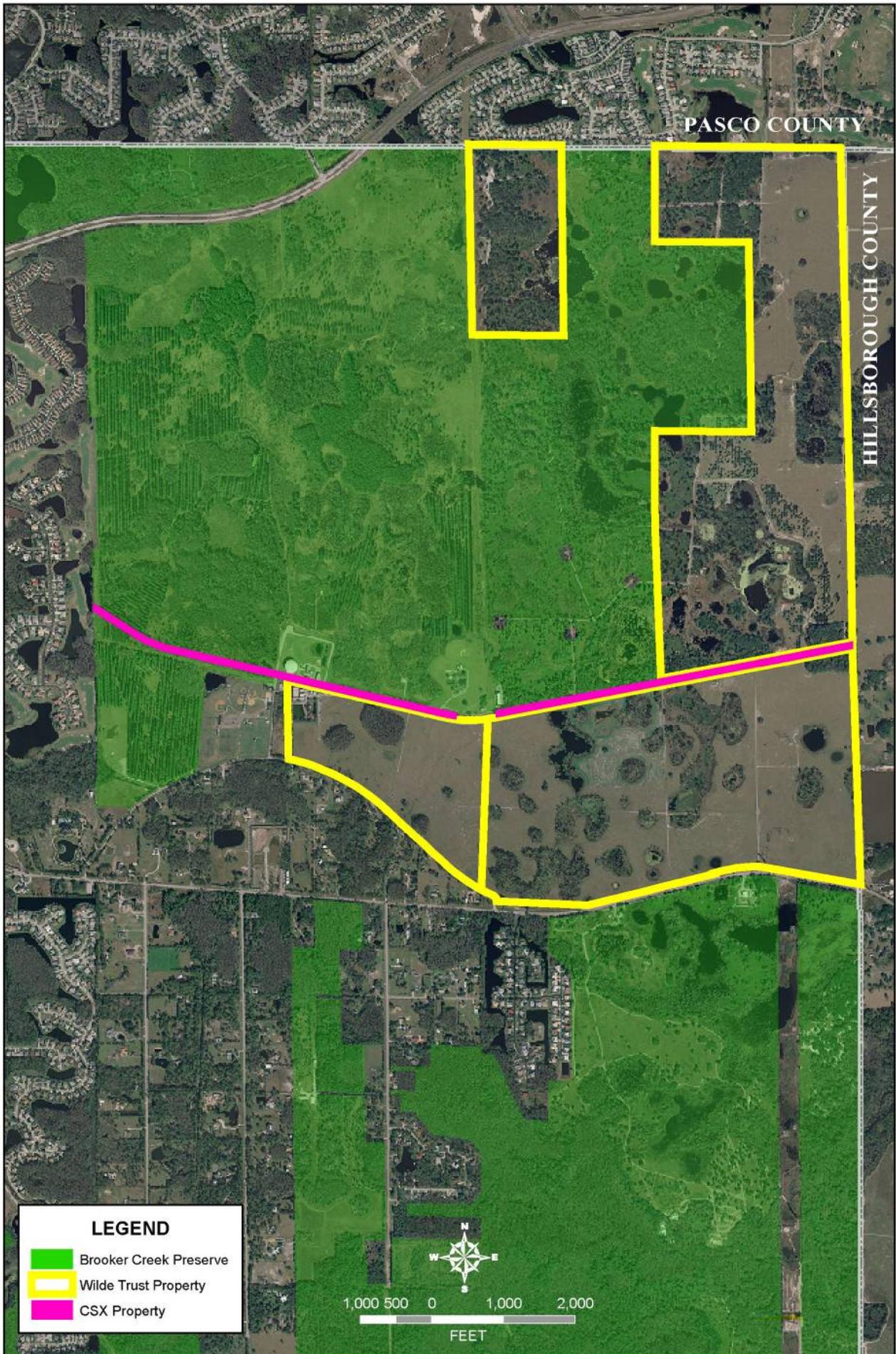


Figure 26. Brooker Creek Preserve Potential Acquisitions

## **Security**

### *Fencing*

Most of the Preserve boundary is currently fenced. The majority of the fence is 3-4' high cattle/field fence attached to metal posts. The rest of the fencing consists of six-foot chain link or barbed wire on wooden posts. As funding becomes available, the barbed wire and areas that are in disrepair will be replaced with new 4' cattle/field fence. A volunteer group walks the fence lines regularly and reports any repair needs to ELD staff.

### *Signage*

Boundary signs are posted at corners and at a maximum of 500' intervals along the perimeter of the Preserve. The volunteers that assist with monitoring the fence lines also report damaged or missing signs to ELD staff. Signs at public trail entrances display the Preserve rules. These rules are also listed in the trail brochures available at these entrances. Directional signs are posted along the public trails to guide visitors. Where public trails intersect staff access roads/trails signs are posted stating "PRESERVE STAFF ONLY" and, in many cases, a chain on posts blocks these access roads/trails.

### *Law Enforcement*

The Environmental Lands Unit (ELU) of the Pinellas County Sheriff's Office (PCSO) is contracted by the Department of Environmental Management to patrol all the Environmental Lands. Each year a contract is negotiated with the PCSO. Currently, six officers and one sergeant make up this specialized unit. PCSO street patrol officers also participate in Preserve protection and with emergency situations. As added protection, a ELU officer occupies a residence within the Preserve boundary. As part of the lease agreement, the officer makes himself available for emergency responses on the County's Environmental Lands and provides additional patrols when necessary.

## **Funding Sources**

Restoration projects are funded through the County's Capital Improvements Project (CIP) funds (Penny for Pinellas) and grants (e.g., SWIM and FDOT).

Prescribed burning is conducted by staff so the Division's operating budget covers salaries plus the cost of equipment upkeep and replacement of worn-out protective fire clothing.

Mechanical vegetation thinning is completed by staff and also through contract work. Roller-chopping is done with Division equipment so the normal maintenance falls under the operating budget. Hydro-axe work requires equipment rental or contract work and will be covered under the special operating budget Tree Bank Fund that receives money from assessed environmental penalties, and part of the CIP restoration funds.

Exotic vegetation treatments and removals are completed by ELD staff and through contract work. The Tree Bank Fund covers the cost of herbicides for the in-house work. Contract work is paid out of a CIP fund that is split between the north and mid-County Division properties.

The new CIP has \$18 million allotted for environmental land acquisition through FY2020. The 900-acre Wilde Trust and CSX Railroad properties have been submitted as top acquisition sites for the Environmental Lands Division.

Natural communities mapping, research, and monitoring will be completed by staff so salaries and supplies are covered under the operating budget. Some research and monitoring work will be conducted through collaborations with universities and other institutions.

### Estimated Schedule

FISCAL YEAR	2008	2009	2010	2011	2012	2013	2014
<b>RESTORATION:</b>							
Moe's Trail Sandhill							
Old Field Sandhill/Flatwoods							
Mount Brooker							
Four Lakes Hammock Borrow Pits/Old Nursery							
Channel Q Crossing on Main Powerline							
Trail Gradework				Work goes beyond 2014			
Tall Pines West Flatwoods							
Tall Pines Old Nursery/Ditching							
Scenic Horse Trail Timber/Old Dairy				Work goes beyond 2014			
Tall Pines Old Stable Area							
Channel S Crossing on Main Powerline						Work goes beyond 2014	
Main Powerline Ditch				Work goes beyond 2014			
Brooker-Anclote Corridor Old Field	Beyond this schedule's time frame and funding						
Lora Lane Ditch	Beyond this schedule's time frame and funding						
Diagonal Powerline Ditches	Beyond this schedule's time frame and funding						
Channel L at Lora Lane and Diagonal Powerline	Beyond this schedule's time frame and funding						
BCP Administrative Office Area	Beyond this schedule's time frame and funding						
1001 Lora Lane Driveway/Old Homestead	Beyond this schedule's time frame and funding						
Hawks Landing Ditch	Beyond this schedule's time frame and funding						
Other Potential Channel Crossings on Main Powerline	Beyond this schedule's time frame and funding						
<b>BROOKER CREEK WATERSHED STUDY/COMPUTER HYDROLOGY MODEL (SWMM)</b>							
<b>PRESCRIBED BURNING</b>	Work goes beyond 2014						
<b>MECHANICAL VEGETATION THINNING</b>	Work goes beyond 2014						
<b>INVASIVE EXOTIC SPECIES CONTROL</b>	Work goes beyond 2014						
<b>TIMBER THINNING</b>	Work goes beyond 2014						
<b>NATURAL COMMUNITIES MAPPING</b>							
<b>RESEARCH, MONITORING, AND SPECIES INVENTORIES</b>	Work goes beyond 2014						
<b>LAND ACQUISITION</b>							

 Shading denotes estimated timeframe for project completion

## Cost Estimates

(Based on FY07 costs)

Note: Staff salaries are a set expense covered by the Division's operating budget so staff time is listed a \$0 cost.

### *Moe's Trail Sandhill*

Hydro-axe oaks 20 acres x ~\$3,000/acre = \$60,000

**Total = \$60,000**

### *Old Field Sandhill/Flatwoods*

Consultation ~40hrs x \$115/hr = \$4,600

Burn area = staff time

Herbicide treatment: ~97acres x \$600/acre = \$58,200

Disk and roll area = staff time

Herbicide touch up: staff time & herbicide = \$800

Herbicide treatment: staff time & herbicide = \$800 (annually)

Seeding: ~97 acres x \$1250/acre = \$121,250

**Total = \$184,850**

**Annual maintenance = \$800 + staff time**

### *Mount Brooker (BCP Environmental Education Center/boardwalk mitigation)*

Replacement plants = \$11,000

Semi-annual monitoring: 2 x \$400 = \$800 (annually)

Quarterly maintenance: 4 x \$600 = \$2,400 (annually)

**Total = \$11,000**

**Annual maintenance = \$3,200**

### *Four Lakes Hammock Borrow Pits/Old Nursery*

Exotic vegetation treatment = \$20,000 (FY08)

Exotic vegetation treatment = \$10,000 (annually)

Gradework on pond banks: unknown needs at this time

Plantings = \$100,000 - \$160,000

**Total = \$120,000 - \$180,000 + gradework on pond banks**

**Annual maintenance = \$10,000**

### *Channel Q Crossing on Main Powerline*

Cost covered under mitigation for Utilities water blending plant

ELD staff time coordination

**Total cost to ELD = \$0 + staff time**

### *Trail Gradework*

In-house:

- Initial tree and shrub trimming/removal to widen trails to accommodate large fill moving equipment = staff time

- Equipment rental: 3 yd loader = **\$4,000/mo**, off road dump truck = **\$8,600/mo**, two staff = 192 hrs/mo

Contractor:

- **cost unknown**

*Tall Pines West Flatwoods*

Consultation ~40hrs x \$115/hr = \$4,600

Burn area = staff time

Herbicide treatment: 9 acres x \$600/acre = \$5,400

Disk and roll area = staff time

Herbicide touch up: staff time & herbicide = \$400

Herbicide treatment: staff time & herbicide = \$400 (annually)

Seeding: 9 acres x \$1250/acre = \$11,250

**Total = \$21,650**

**Annual maintenance = \$400 + staff time**

*Tall Pines Old Nursery/Ditching*

Hydro-axe exotic trees 5 acres x ~\$3,000/acre = \$15,000

Stump herbicide: staff time & herbicide = \$200

Burn area = staff time

Disk and roll area = staff time

Seeding: 5 acres x \$1250/acre = \$6,250

**Total = \$21,450**

*Scenic Horse Trail Timber/Old Dairy*

Timber: staff time (generates revenue)

Consultation ~120hrs x \$115/hr = \$13,800

Burn area = staff time

Disk and roll area = staff time

Spot herbicide: (380 acres x \$600) x 25% = \$57,000

Herbicide treatment: staff time & herbicide = \$800 (annually)

Seeding: 380 acres x \$1250/acre = \$475,000

**Total = \$545,800 (also generates revenue to offset cost) + staff time**

**Annual maintenance = \$800 + staff time**

*Tall Pines Old Stable Area*

Building demolition and removal = \$150,000

Herbicide treatment: 5 acres x \$600/acre = \$3,000

Herbicide treatment: staff time & herbicide = \$200 (annually)

**Total = \$153,000**

**Annual maintenance = \$200 + staff time**

*Chanel S Crossing on Main Powerline*

Estimate based on Channel L on main powerline = **\$500,000**

*Main Powerline Ditch*  
**Cost unknown**

*Brooker-Anclote Corridor Old Field*

Consultation ~40hrs x \$115/hr = \$4,600  
Burn area = staff time  
Herbicide treatment: ~3.5acres x \$600/acre = \$2,100  
Disk and roll area = staff time  
Herbicide touch up: staff time & herbicide = \$100  
Herbicide treatment: staff time & herbicide = \$100 (annually)  
Seeding: ~3.5 acres x \$1250/acre = \$4,375  
**Total = \$11,175**  
**Annual maintenance = \$100 + staff time**

*Diagonal Powerline Ditches*  
**Cost unknown**

*Channel L at Lora Lane and Diagonal Powerline*

Estimate based on Channel L on main powerline = **\$500,000**

*BCP Administrative Office Area*

Runway demolition & removal = **cost unknown**  
Consultation ~40hrs x \$115/hr = \$4,600  
Burn area = staff time  
Herbicide treatment: 21 acres x \$600/acre = \$12,600  
Disk and roll area = staff time  
Herbicide touch up: staff time & herbicide = \$400  
Herbicide treatment: staff time & herbicide = \$400 (annually)  
Seeding: 21 acres x \$1250/acre = \$26,250  
**Total = \$43,850 + runway demolition**  
**Annual maintenance = \$400 + staff time**

*1001 Lora Lane Driveway/Old Homestead*

Driveway demolition & removal = **cost unknown**  
Herbicide treatment: 21 x \$600 = \$12,600  
**Total = \$12,600 + driveway demolition**

*Hawks Landing Ditch*  
**Cost unknown**

*Other Potential Channel Crossings on Main Powerline*  
**Cost unknown**

*Brooker Creek Watershed Study/Computer Hydrology Model*

Consultant work = \$812,055 (includes 50% SWFWMD match)

Work remaining to date = \$434,428 (includes 50% SWFWMD match)  
**Total for Pinellas County = \$406,028**

*Prescribed Burning*

In-house: staff time  
Equipment maintenance = \$2000 (annually)  
Safety gear replacement = \$1,500 (annually)  
Class A foam and misc. supplies = \$1,500  
Fire Physicals: \$150 x 35 = \$5,250 (annually)  
\$3 hourly crew additional salary: \$3 x ~1500 staff hours = \$4,500 (annually)  
**Total annual cost = \$14,750 + staff time**

*Mechanical Vegetation Thinning*

In-house: staff time  
Equipment maintenance = \$8,300 (annually)  
**Total annual cost = \$8,300 + staff time**

*Invasive Exotic Species Control*

In-house: staff time  
Herbicides = \$3,000  
Contract work = \$25,000 - \$50,000 (annually)  
**Total annual = \$28,000 - \$53,000**

*Timber Thinning*

In-house: staff time  
**Total = \$0 (generates revenue) + staff time**

*Natural Communities Mapping*

In-house: staff time  
**Total = \$0 + staff time**

*Research and Monitoring*

In-house: staff time (including coordination with outside entities)  
Equipment and supplies = \$3000 (annual)  
**Total annual = \$3000 + staff time**

*Land Acquisition*

Acquisition = **\$18,000,000**  
Offset cost by submitting grant application with Florida Communities Trust Fund

*New and Replacement Fencing*

Four-foot field fence installed by contractor = **\$7/linear foot**

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