10-18-2001

THE EFFECT OF MULCHING ON HERBACEOUS WETLAND CREATION AREAS IN WEST-CENTRAL FLORIDA

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CERTIFICATE OF APPROVAL

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in the graduate degree program of
Botany
was approved on October 18, 2001
for the Masters of Science degree.

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A thesis submitted in partial fulfillment
of the requirements for the degree of
Masters of Science
Department of Biology
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THE EFFECT OF MULCHING ON HERBACEOUS WETLAND CREATION AREAS

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An Abstract

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Wetland mulching is the transfer of soil (often from a wetland area which is going to filled or otherwise impacted) onto the surface of a wetland creation area. The primary intent of mulching is to transfer wetland vegetation in the form of seeds and propagules, from the natural wetland to the creation area. This technique also is used to transfer organic matter and microbial fauna existing in the soil to the creation area. My study examines the effects that wetland mulching has on: 1) percent organic matter in the soil, 2) the wetland affinity of plant communities present, 3) species richness, 4) vegetative cover, 5) vegetative biomass production, 6) soil pH and 7) nutrient content. I examined a total of 33 herbaceous wetland creation areas (17 mulched and 16 non-mulched) in the immediate Hillsborough County, Florida area that were constructed between 5 and 11 years ago. A soil organic matter analysis was conducted in September 1999. Two vegetative analyses were conducted in November 1999 (at the end of the wet season) and in June 2000 (at the end of the dry season) using three 1-square meter quadrats per wetland. Soil nutrient and plant biomass analyses were conducted in August 2000 on a subsample of the wetland areas.

Mulched wetland areas had a significantly higher ($p<0.001$) mean percent soil organic matter in the soil than non-mulched wetlands (5.92% $\pm$ 0.48% v. 2.61% $\pm$ 0.33%, respectively). The wetland affinity weighted average (WA) of plant communities was significantly lower in the mulched than the non-mulched wetlands for both the November 1999 (1.45 $\pm$ 0.05 v. 1.82 $\pm$ 0.07) and June 2000 (1.79 $\pm$ 0.06 v. 2.04 $\pm$ 0.09) vegetative analysis events ($p<0.001$ and $p=0.05$, respectively). During the November 1999 event, the non-mulched wetlands had a greater mean species richness per quadrat (9.20 $\pm$ 0.46 v. 10.56 $\pm$ 0.52, $p<0.05$) and lower Total Percent Cover (TPC) per quadrat (82.49 $\pm$ 2.30 v. 76.21 $\pm$

2.31, p=0.04) than mulched wetlands. Fewer differences in the vegetative parameters were found between the mulched and non-mulched wetlands in June 2000, however these results were affected by drought conditions in the months leading up to the sampling.

In the subsample of wetland sites examined during the soil nutrient and biomass analysis (August 2000), the concentration of available secondary macronutrients: Mg, Ca and K was greater in the mulched than non-mulched wetlands. Differences were detected in Mg (60.28 $\pm$ 6.83 kg/ha and 29.54 $\pm$ 3.88 kg/ha, $p<0.001$), Ca (1181.68 $\pm$ 231.20 kg/ha and 195.34 $\pm$ 52.65 kg/ha, $p<0.001$) and K (66.01 $\pm$ 8.14 kg/ha and 33.12 $\pm$ 2.89 kg/ha, $p<0.001$). No significant differences were detected for primary nutrients, soil pH or above ground plant biomass. Based on this study and others conducted, wetland mulching seems to be most influential on vegetative parameters during the first few years of existence, however after five to ten years, the differences are still apparent but less substantial.

Abstract Approved: _____

Major Professor: Bruce C. Cowell, Ph.D.
Professor, Department of Biology

Date Approved: 16 November 2001

INTRODUCTION

Regulatory agencies throughout Florida and the United States routinely mandate mitigation for impacts to wetland areas, often in the form of wetland creation areas. The general purpose of this form of mitigation is to replace the wetland values and functions (e.g. floodwater attenuation, wildlife habitat, nutrient holding capacities and groundwater recharge) lost because of development. Creating wetland areas for mitigation is controversial because it is unclear how much of the wetland function is actually being replaced (see Brinson and Lee, 1989, Brinson and Rheinhardt, 1996, Mitsch and Wilson, 1996, and Zedler and Calloway, 1999). In a survey conducted by Erwin (1991) in south Florida, 24 of 40 wetland creation areas revisited 3 years (on average) after construction were deemed as either incomplete or failures. Most often, the hydrology of the sites were poorly designed and/or they were dominated by nuisance and/or exotic species. As the science of creating wetlands has progressed, there has been an increased focus on the initial construction techniques and methodologies employed to avoid these problems.

In west-central Florida, creating a wetland involves several stages. The proposed location of the wetland creation area is evaluated and selected to incorporate the desired characteristics in relation to future landscape and hydrological conditions. Once the general design is agreed upon by the planner and the reviewing regulatory agency, the proposed area is analyzed in the field. Because of the prevalence of wetlands in central Florida, most regulatory agencies prefer wetland creation projects that will be constructed immediately adjacent to an existing wetland. There are two important benefits to this approach; first, the created wetland will have similar water levels and hydroperiods

(duration) that can be estimated based on above ground indicators (e.g. stain lines, top of adventitious roots, the edge of hydrophytic vegetation, see Hull et. al., 1989) observed in the adjacent wetland. Second, the adjacent wetland becomes a source for plant colonization into the created wetland. Wetland creation areas that are surrounded by development and do not have a predictable hydrology are much more likely to fail (Mitsch and Wilson, 1996).

One of the more common problems faced by wetland managers is colonization by aggressive nuisance and/or exotic vegetation that out-competes more desirable native vegetation. Rapid colonization by native, hydrophytic vegetation in a wetland creation area is desired to reduce the establishment of undesirable vegetation. Several techniques can be used to expedite the establishment of native wetland vegetation. One common technique is 'mulching' the area. Wetland mulching is the transfer of soil (often from a wetland area which is going to be filled or otherwise impacted) onto the surface of a wetland creation area. The principle intent is to transfer the wetland vegetation (in the form of seeds and propagules) and soil microfauna from the natural wetland into the creation area. The transfer of these materials, in a substrate suitable for its propagation, generally has a positive effect on colonization by desirable vegetation in the newly constructed wetland. In several parts of the United States, mulching has been demonstrated to be an effective management tool to rapidly establish wetland vegetation in the early stages of a wetland creation or restoration area (see Brown and Bedford, 1997, Stauffer and Brooks, 1997). A sample cross section of a wetland creation area is illustrated in Figure 1.

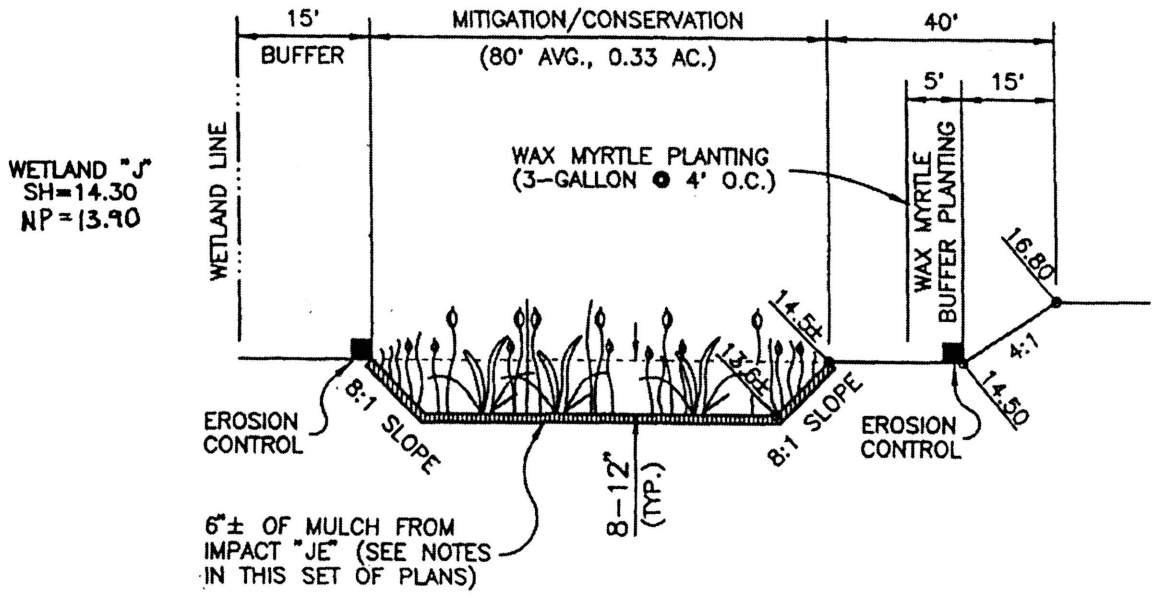

Figure 1. The typical cross section of a mulched wetland creation area. The figure is not to scale and the dashed line represents existing grade (taken from Environmental Protection Commission of Hillsborough County (EPC) Record Files, 1995). Seasonal high elevation is denoted 'SH' and normal pool elevation is denoted as 'NP'.

In addition to the transfer of an existing source of seeds, the other benefit of mulching is the addition of organic matter in the substrate. While not all natural wetland soils contain significant amounts of organic matter, (some are mineral soils deficient in organic matter), many natural wetland soils contain significant amounts of organic matter. There are several characteristics attributed to soils with high organic matter content (*Histosols*). Histosols tend to be more acidic, have a lower bulk density, a higher hydraulic conductivity and higher cation exchange capacity than wetlands with less organic matter (Mitsch and Gosselink, 2000, Sopher and Baird, 1982). Nutrient availability can be lower in Histosols if the nutrients are still bound in a botanical form. The organic matter in Histosols can vary from almost entirely decomposed (muck) to

being nearly unaltered from its origin (peat). As organic matter becomes more decomposed, the soil tends to increase in bulk density and decrease in hydraulic conductivity (Mitsch and Gosselink, 2000). In wetland creation areas built in phosphate mines sites in central Florida, Nair et. al (2001) determined that as total C (via organic matter accumulation) increased the amount of N and other nutrients available to plants also increased. Donahue, et. al. (1971) identified several benefits that wetlands derive from organic matter, including: reduced susceptibility to wind and water erosion, reduced evaporative losses, lower soil temperatures in the summer, warmer soil temperatures in the winter, and a more suitable substrate for soil microfauna. In Hillsborough County, the percent organic matter (POM) of natural freshwater wetlands can range from 1 and 8% (Basinger soils) to 25-35% (Chobee muck soils), according to *USDA-Soil Conservation Service Soil Survey of Hillsborough County, Florida* (Doolittle et. al, 1989). The soils of many freshwater marshes are classified within the Basinger, Holopaw and Samsula, depressional series where the organic matter tends to be decomposed muck. Within this soil series, organic matter at the surface can range from 1-8% for the Basinger soils, 6-10% for the Holopaw soils, to >20% for the Samsula soils (Doolittle et al., 1989).

To establish plant growth, hydrophytic vegetation is typically planted in newly created wetlands whether they are mulched or not. In central Florida herbaceous plants are typically planted on 3 ft (0.9 m) centers and usually are limited to several species (e.g., *Spartina bakeri* Merr., *Juncus effuses* L., *Pontederia cordata* L. and *Sagittaria lancifolia* L.). Given appropriate hydrologic conditions, planted vegetation can have high survivorship and can provide cover and reproductive stock quickly. Since planting

establishes vegetative cover, it is unclear whether mulching has any long term significance/benefit on vegetative recruitment, cover and diversity of the wetland creation area. Mulching is an expensive process compared to simply excavating a non-mulched wetland area generally increasing the cost by 20% because of the additional earthmoving required (Personal communication, Mr. Terry Huber, Larkin Contracting, Inc., 2001).

The goal of this study was to determine whether significant differences in vegetative and soil characteristics exist between herbaceous wetland creation areas (five years old or older) that were mulched and those that were not. In particular, does mulching (the 'treatment') affect: 1) soil organic matter content; 2) the type, amount and diversity of wetland vegetation that either survives or colonizes the wetland creation areas; and 3) the above ground vegetative biomass and soil nutrient content? The study was conducted by sampling mulched and non-mulched wetland creation areas for these parameters. All wetland creation areas were mitigation for wetland impacts and were subjected to a monitoring and maintenance period (typically 3 years) immediately following creation. To determine the effects that mulching may have on wetland plant communities, sampling was conducted two times during the year, at the end of the 1999 wet season and the end of the 2000 dry season. I anticipated that mulching would have a significant effect on the soil organic matter content, the wetland affinity of plant community present, the vegetative cover, the above ground vegetation biomass and the soil nutrient content.

METHODS AND MATERIALS

Selection of Wetland Creation Areas

A list of prospective mulched and non-mulched wetland creation areas was compiled based upon a review of EPC record files and from my personal knowledge as an environmental consultant. An important consideration during the selection of prospective wetlands was to be able to isolate (to the greatest extent possible) the treatment effect from other environmental effects that also influence wetland plant communities (see Huston, 1997). To reduce climatic effects, only wetland creation areas located in the immediate area of Hillsborough County, Florida were considered for this study. In addition, each wetland creation area had to meet all of the following criteria:

Age of the Wetland Creation Area - Wetland creation areas had to be at least five years old to assess an established community structure. Mitch and Wilson (1996) reported that five years may or may not be sufficient time for an herbaceous wetland creation area to reach a vegetative steady state. However increasing the age threshold and meeting the other criteria would have significantly decreased the number of sites available for this study.

Location and Purpose of the Wetland Creation Area in the Surrounding Landscape - The location and purpose of the wetland creation area relative to the surrounding landscape was carefully considered. The wetland creation area had to be situated adjacent to a larger existing wetland or body of water. This guideline is generally

preferred by regulatory agencies to provide predictable water levels and hydroperiods. The wetland creation area could not be part of a stormwater treatment system. Planted littoral areas are often created as secondary water quality treatment for stormwater runoff. Because of the abnormally higher levels of nutrients and pollutants, stormwater pond littoral areas were excluded from this study. Wetland creation areas that were adjacent to other sources of anthropogenic runoff also were excluded from consideration. For example, no wetland creation areas that were exposed to direct golf course or roadway run-off were considered. Many Florida wetland creation areas failed because of the proximity to human altered landscape (Erwin, 1991). Preference was given to wetland creation areas that were created within a natural landscape or had a vegetated upland buffer.

Designed Conditions of the Wetland Creation Area - Through the review of the EPC records, details regarding the initial design of the wetland creation area were examined. For mulched wetland creation areas to be considered, the site had to be mulched (by design) to a depth of at least 15 cm and no more than 30 cm; mulching depth is usually 15 cm and rarely deeper. Also, because this study examined the herbaceous component of the wetland creation areas, only created marsh areas were considered. Although most forested wetland creation areas still maintain an herbaceous understory, the potential for a shading effect on herbaceous plant cover eliminated these areas from consideration. Thus, wetland creation areas with only sporadic tree plantings were considered.

Current Management Status of the Wetland Creation Area - Wetland creation areas were only considered if they had successfully met success criteria established by regulatory agencies. Areas that appeared to be actively managed or maintained were excluded from the study.

Based on this screening process and a preliminary site review of each prospective area (conducted in September 1999 to confirm the design conditions noted in the EPC records), a total of thirty-three (33) wetland creation areas were selected [seventeen (17) mulched and sixteen (16) non-mulched]. Permission was acquired from all property owners prior to accessing any site. All wetland creation areas selected were located in the immediate area of Hillsborough County (Figure 2). Background information was collected from the EPC files for each wetland creation area including its location (regionally and in the surrounding landscape), size, date of construction and planting, mulch depth, water level and hydroperiod information, and a copy of a grading/planting plan or cross section. All wetland creation areas were planted except for WC M-26B which was designed to rely on strictly mulch. A synopsis of the size and construction specifications collected for each wetland creation area appears in Appendix A.

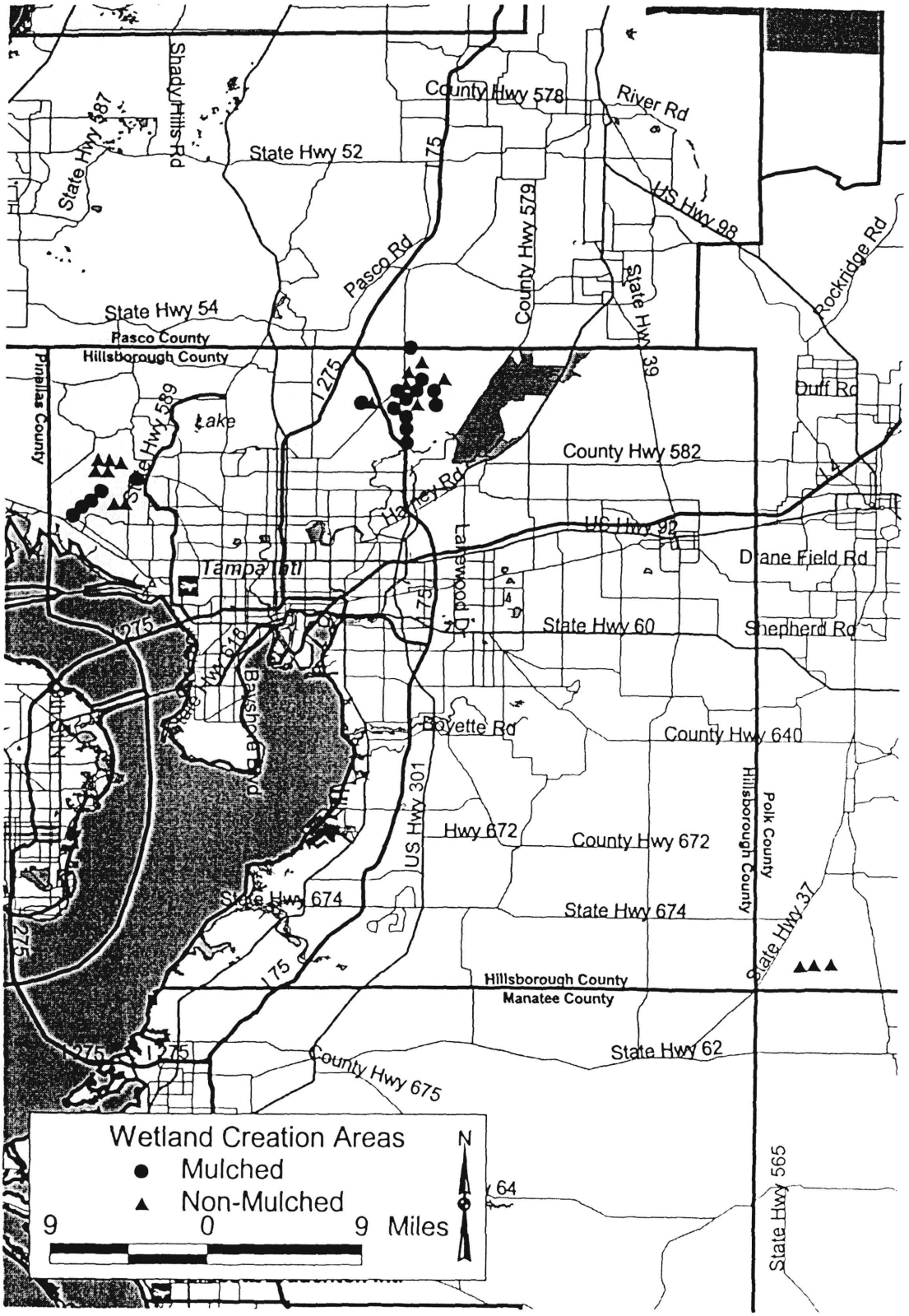

Figure 2. Approximate Location of Wetland Creation Areas Sampled in the Hillsborough County, Florida Region, 1999-2000.

Soil Organic Matter Analysis

During the September 1999 site review of each wetland creation area, the top 20 cm of the soil surface was examined at five locations. Each location was randomly selected 1 m landward of the approximate normal pool (average water level) elevation boundary (as determined by the cross sections and site designs obtained from the EPC file and based on the observed hydrologic conditions). A soil probe was used at each of the sampling locations to assess soil conditions throughout the wetland and to confirm that the mulched areas were constructed as designed (some subsidence of mulch was observed and considered normal). Using the probe, a soil sample was collected from the top 20 cm at each sampling location. The samples were combined into a single soil sample for each wetland creation area and used for the organic matter analysis.

In the laboratory, each wetland creation area soil sample was thoroughly mixed and a subsample (approximately 20 g) was weighed. Each sample was oven dried at 100° C for 10 to 12 hours and then ignited in a muffle furnace at 550° C for 4 hours to remove all organic matter. The organic matter percentage was calculated for each wetland creation area soil sample. Subsequently, a t-test was conducted on the POM data (transformed to meet assumptions, as needed) to determine if a difference in means occurred between the mulched and non-mulched samples.

Vegetative Analysis

Two vegetative analyses were conducted to determine the effect of mulching on the community structure, cover and species richness. The first was conducted between 13 November and 6 December 1999 and the second was conducted between 10 and 29 June 2000. For each wetland creation area, three (3) plot markers (wooden lathes) were

randomly placed approximately 1 m landward of the normal pool elevation boundary. A 1 m^2 quadrat was used to determine the vegetative composition and other conditions for this wetland zone, including: 1) identification of each plant species present, 2) approximate percent cover of each species in the quadrat, 3) water depth/soil moisture condition in the quadrat, and 4) the horizontal line-intercept of all vegetation in the plot determined at 1.0 m and 0.5 m heights.

Vegetation was identified to the species level whenever possible. Three sources were used for plant identification: *Aquatic and Wetland Plants of Southeastern United States: Monocotyledons and Dicotyledons* (Godfrey and Wooten, 1979), *Guide to the Vascular Plants of Florida* (Wunderlin, 1998) and *Florida Wetland Plants: An Identification Manual* (Tobe, et. al., 1998). Using the vegetative information, the Total Percent Cover (TPC), defined as the summation of percent cover provided by each species in a quadrat, and species richness for each quadrat was determined. For each species identified, its wetland affinity category (i.e., obligate wetland, facultative wetland, facultative, facultative upland and upland) was determined based on Chapter 62-340 of the Florida Administrative Code. This list is based on the *Categories of Wetland Plants of the United States of America* prepared by Reed (1986) and has been adjusted to be more applicable to wetland plants in the State of Florida. Because the Florida Administrative Code list does not distinguish between facultative upland and upland affinities, the *Categories of Wetland Plants of the United States of America* list was used to separate any species affinity listed as upland on the Florida list. Wetland affinity categories and frequencies of occurrence are listed in Table 1.

Table 1. Wetland Affinity Categories of Wetland Plants of the United States of America (Reed, 1986)

Wetland Affinity Category	Frequency of Occurrence in Wetlands
Obligate	Always (greater than 99%)
Facultative Wetland	Usually (67% - 99%)
Facultative	Sometimes (34% - 66%)
Facultative Upland	Seldom (1% - 33%)
Upland	Never (less than 1%)

Estimates of plant cover within each quadrat were rounded to increments of 5% (estimates less than 2.5% was rounded to 1%). A wetland affinity index (WAI) ranking was allocated for each wetland affinity category (Table 2) and a weighted average (WA) was derived for each quadrat sampled (Wentworth and Johnson, 1986) using the following formula:

$$W_j = \frac{\sum_{i=1}^{p} I_{ij}E_i}{\sum_{i=1}^{p} I_{ij}}$$

where:

W_j = weighted average of the quadrat j
I_{ij} = cover for species i in quadrat j
E_i = WAI ranking for species i; and
p = number of species occurring in the quadrat.

Table 2. Wetland Affinity Index Ranking for Wetland Affinity Categories (Wentworth and Johnson, 1986)

Wetland Affinity Category	WAI Ranking
Obligate	1
Facultative Wetland	2
Facultative	3
Facultative Upland	4
Upland	5

These data also were used to compare the effect of mulching on species richness and the TPC. The mean WA and the TPC collected during the vegetative sampling events, were compared with t-tests (transformed, as needed) to determine whether a significant difference occurred between the mulched and non-mulched wetlands. Using the species cover data, an evaluation was also made on the type of vegetation observed in the wetland creation area plots. The TPC was determined and compared for the following vegetation types: 1) Mosses, 2) Ferns, 3) Grasses/Reeds, 4) Sedges/Rushes, 5) Other Flowering Monocots, 6) Vines, 7) Tree/Shrub Seedlings, and 8) Other Flowering Dicots. A list of every species (with full nomenclature) observed during the vegetative analyses is grouped by vegetation type in Appendix B.

To provide preliminary information regarding the biomass in each plot, the horizontal line-intercept of all vegetation in the plot was determined at 1.0 m and 0.5 m heights. The percent of the horizontal lines intercepted by vegetation at 1.0 m and 0.5 m heights was estimated using the profile of all vegetation in each quadrat and was rounded to 5% increments, as per the TPC estimations. To determine if a significant difference occurred between the mulched and non-mulched wetlands, t-tests were conducted on these data (transformed, as needed).

No data were recorded in several plots during the June 2000 vegetative sampling event (Appendix F). Plot markers for FR-I1 (#1), HG M-2-11(N) (#2) and WC M-26A (#3) could not be located. Plot areas for HG M-1-6(N3) (#1 and 2), and HG M-1-6(S1) (#3) were extensively damaged by feral hogs, so no data was collected from these areas. Also, extensive damage was caused by off-road vehicles to all plots in TE 2 and this entire wetland could not be analyzed for the June 2000 event.

It is important to note that conditions during the June 2000 vegetative sampling event were drier than normal. According to National Oceanic & Atmospheric Administration data (NOAA, 1999 and 2000), rainfall between the two events for Hillsborough County was well below normal. Rainfall at the NOAA- Tampa International Airport Climatological Station (west Hillsborough County) was 26.3 cm below normal for December 1999 through May 2000. Rainfall at the NOAA- Plant City Climatological Station (east Hillsborough County) was 18.2 cm below normal for December 1999 through May 2000.

Nutrient Content and Biomass Analyses

To determine the effect of mulching on biomass production, pH and nutrient content, subsets of the wetlands sampled during the vegetative analyses were utilized. A total of seven (7) mulched and seven (7) non-mulched wetland creation areas were selected and sampled for above ground biomass, pH and nutrient content in August 2000. For each wetland creation area used, Plot Nos. 1 and 2 were sampled. Using a 0.25 m^2 quadrat from the plot marker, all above ground vegetative biomass was cut at ground level, bagged and returned to the laboratory. After removing the vegetation, a 20 cm soil sample was collected from the center of the 0.25 m^2 quadrat plot with a 10 cm diameter

soil-auger. Each soil sample was carefully bagged, returned to the laboratory, and kept refrigerated at approximately 4° C until processing.

Collected biomass for each plot was dried at room temperature for approximately 14 days and then oven-dried at 70° C for 36 hours and weighed. Soil samples for each plot were thoroughly mixed and a representative subsample was extracted and processed for pH and nutrient content. Soil samples were specifically tested for nutrients (Total P [P] and NO_3-N [NN]) and macroelements (Ca, Mg and K). Nutrients levels were extracted with ammonium acetate (pH 4.8) and reported as kilograms per hectare. The soil tests for this study were conducted by Central Florida Soil Laboratory (P.O. Box 2508, Bartow, FL, 33831) on 14 October 2000.

Statistical Analysis

For all three experimental analyses, a two-tailed t-test was conducted using Systat 9.0 (SPSS Inc., Chicago, IL, USA) to compare the mean values of each parameter for mulched and non-mulched wetlands. If necessary, data were transformed to meet the assumptions of normality and equal variances. When assumptions for parametric statistics could not be met, a Mann-Whitney Rank Sum Test was conducted using SigmaStat 2.0 (SPSS Inc., Chicago, IL, USA). All p-values reported are based on standard t-tests, unless otherwise noted. P-values <0.05 are considered significant and <0.01 are considered highly significant. Comparisons of means (or medians) were made between mulched and non-mulched wetland creation areas in: 1) percent soil organic

matter determined during the Soil Organic Matter Analysis, 2) WA, species richness, TPC and horizontal line-intercept (at 1.0 m and 0.5 m) of all quadrats for both the November 1999 and June 2000 Vegetative Analysis events, and 3) plant biomass weight, soil pH, and nutrient content of all quadrats examined for the Nutrient Content and Biomass Analysis. A comparison also was made between the November 1999 and June 2000 events for both mulched and non-mulched wetlands to see if seasonal changes had varying effects on wetland creation areas.

RESULTS

Soil Organic Matter Analysis

In September 1999, the POM for each wetland area was determined and is tabulated in Appendix A. As expected, a marked difference was detected between the mean POM found in mulched and non-mulched wetland creation areas ($p<0.001$), 5.92% $\pm$ 0.48% and 2.61% $\pm$ 0.33%, respectively (Figure 3).

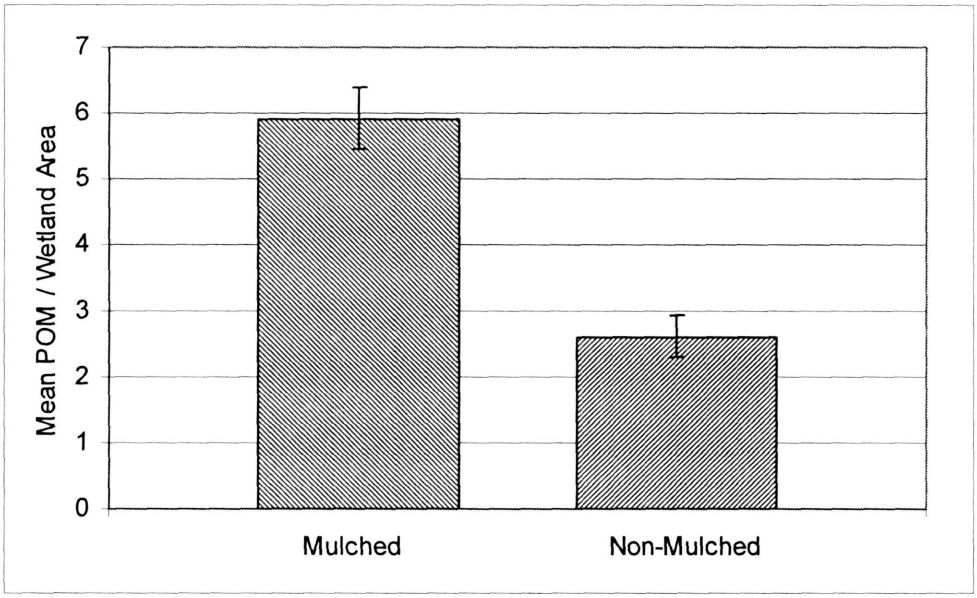

Figure 3. Mean ($\pm$ 1 Standard Error) Percent Organic Mater (POM) per Wetland Area of Mulched and Non-Mulched Wetland Creation Areas in September 1999.

For the non-mulched wetland creation areas, this study offered an opportunity to also evaluate the accumulation of organic matter on wetlands over a known period of time. Unlike the mulched wetland creation areas, these wetlands were simply excavated with no added mulch and therefore had no (or only trace amounts) of organic matter when they were first constructed. However, based on the data collected in this study (Figure 4), no trend in organic matter accumulation was determined.

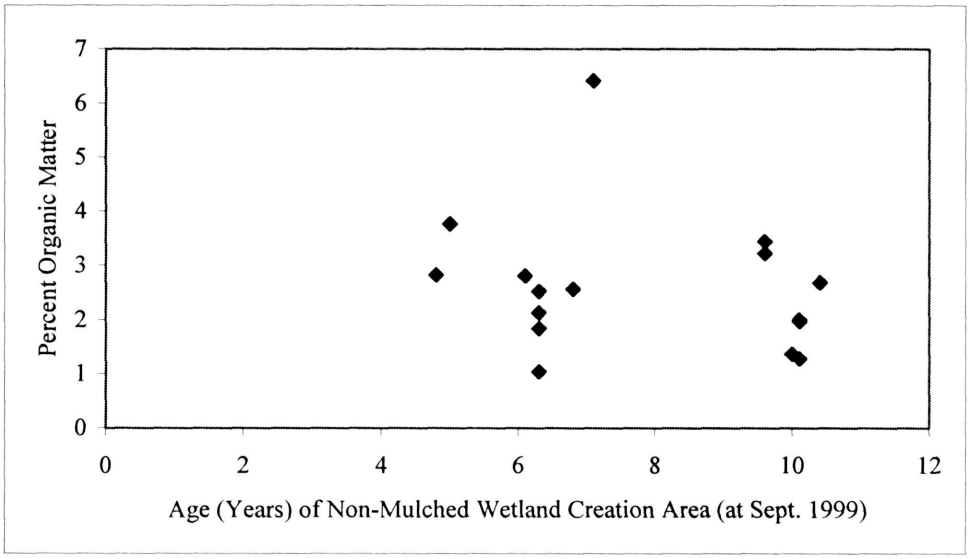

Figure 4. The Percent Organic Matter and Age (Years) for each Non-Mulched Wetland Creation Area Sampled in September 1999.

Vegetative Analysis

The WA of the plant communities was significantly lower in the mulched than the non-mulched wetlands for both the November 1999 and June 2000 vegetative analysis events (Table 3). The mean WA of mulched wetlands increased between the two sampling events. During November 1999, the non-mulched wetlands had a greater mean

species richness per quadrat and lower TPC per quadrat than mulched wetlands (Table 3). Fewer differences between vegetative parameters were detected in June 2000 event. A listing of the November 1999 vegetation, cover and WA calculations for each mulched and non-mulched wetland quadrat are provided in Appendix C and D, respectively. A listing of the June 2000 vegetation, cover and WA calculations for each mulched and non-mulched wetland quadrat are provided in Appendix E and F, respectively. A synopsis of the vegetative analysis data of each mulched and non-mulched wetland creation area (for both events) are tabulated in Appendix G.

Table 3. Mean (± 1 Standard Error) Experimental Quadrat Values for November 1999 and June 2000 Vegetative Analysis Data of Mulched and Non-Mulched Wetland Creation Areas.

		Mean Experimental Quadrat Values	
Vegetative Variable	Quadrat Type	November 1999	June 2000
WA	Mulched	1.45 (± 0.05) [a,e]	1.79 (± 0.06) [bz]
	Non-mulched	1.82 (± 0.07)	2.04 (± 0.09)
Species Richness	Mulched	9.20 (±0.46) [c,fz]	7.54 (± 0.40)
	Non-mulched	10.56 (± 0.52) [h]	6.68 (± 0.43)
Total Percent Cover	Mulched	82.49 (±2.30) [d,g]	54.57 (± 3.36)
	Non-Mulched	76.21 (±2.31) [iz]	48.52 (±3.24)
Horizontal Line-Intercept (%)	Mulched	11.41 (± 1.65)	2.41 (± 0.73)
(1.0 meter)	Non-Mulched	8.27 (± 1.17)	1.55 (± 0.61)
Horizontal Line-Intercept (%)	Mulched	50.88 (± 3.64)	21.65 (± 3.34)
(0.5 meter)	Non-Mulched	33.88 (± 3.03)	15.75 (± 3.27)

[a] $p<0.001$ for WA between mulched and non-mulched quadrats for Nov 1999
[b] $p=0.05$ for WA between mulched and non-mulched quadrats for Jun 2000
[c] $p=0.05$ for Species Richness between mulched and non-mulched quadrats for Nov 1999
[d] $p=0.04$ for TPC between mulched and non-mulched quadrats for Nov 1999
[e] $p<0.001$ for WA between Nov 1999 and Jun 2000 for mulched quadrats
[f] $p<0.001$ for Species Richness between Nov 1999 and Jun 2000 for mulched quadrats
[g] $p<0.001$ for TPC between Nov 1999 and Jun 2000 for mulched quadrats
[h] $p<0.001$ for Species Richness between Nov 1999 and Jun 2000 for non-mulched quadrats
[i] $p<0.001$ for TPC between Nov 1999 and Jun 2000 for non-mulched quadrats
[z] Statistical significance detected using Mann-Whitney Rank Sum Test

In November 1999, a total of 100 species were identified in the mulched wetland plots and 107 were identified in the non-mulched wetland plots. These totals dropped to 82 and 77 respectively during the June 2000 event (Table 4). In each wetland type and during each event, several species that were predominant (providing at least 5 percent of the overall cover) were noted (Table 4). The predominant species in the mulched

wetland creation areas in November 1999 included: *Panicum hemitomon* Schult. (OBL), *Juncus effusus* L. (OBL), *Sagittaria lancifolia* L. (OBL) and *Leersia hexandra* Sw. (OBL). These four obligate wetland species comprised approximately 33% of the entire TPC recorded in the mulched wetland creation areas during this sampling (Table 4). Predominant species in non-mulched wetland creation areas during the November 1999 vegetative analysis event were *Andropogon virginicus* L. (FAC), *J. effusus* (OBL), and *Ludwigia repens* Forst. (OBL). These three species comprised approximately 25% of the TPC recorded in all the non-mulched wetland creation areas reviewed during this event. *A. virginicus* was dominant accounting for approximately 13% of the vegetative cover (Table 4).

The predominant species in the mulched wetland creation areas during June 2000 included: *J. effusus* (OBL), *P. hemitomon* (OBL), *A. virginicus* (FAC), and *Spartina bakeri* Merr. (FACW). These four species comprised approximately 31% of the entire TPC recorded in the mulched wetland creation areas. Predominant species in the non-mulched wetland creation areas during the June 2000 event included: *A. virginicus* (FAC), *J. effusus* (OBL), *S. bakeri* (FACW), *Mikania scandens* Willd. (FACW), and *Panicum repens* L. (FACW). These five species comprised approximately 45% of the TPC recorded in all non-mulched wetland creation area plots during the event. *A. virginicus* was also particularly dominant during this event accounting for approximately 19% of the vegetative cover.

Table 4. Species Average Total Percent Cover (TPC) and Number of Occurrences per Quadrat: Mulched and Non-Mulched Wetland Creation Areas- November 1999 and June 2000.

		November 1999				June 2000			
		Mulched		Non-Mulched		Mulched		Non-Mulched	
Species	Wetland Affinity	TPC /Plot	No./ Plot	TPC /Plot	No./ Plot	TPC /Plot	No./ Plot	TPC /Plot	No./ Plot
Acer rubrum	FACW	--	--	0.04	0.04	--	--	0.05	0.05
Alternanthera philoxeroides	OBL	0.06	0.06	--	--	0.22	0.04	0.02	0.02
Amaranthus australis	OBL	--	--	--	--	--	--	0.02	0.02
Ampelopsis arborea	FAC	--	--	--	--	--	--	0.02	0.02
Amphicarpum muhlenbergianum	FACW	0.20	0.04	0.87	0.08	0.87	0.07	0.93	0.05
Andropogon glomeratus	FACW	0.59	0.06	0.75	0.08	0.48	0.09	0.18	0.09
Andropogon virginicus	FAC	3.14	0.22	9.94	0.52	3.15	0.28	9.25	0.50
Axonopus affinis	FAC	0.69	0.04	0.65	0.12	0.43	0.02	--	--
Axonopus furcatus	FAC	--	--	0.29	0.12	--	--	0.07	0.07
Baccharis halimifolia	FAC	0.20	0.04	--	--	1.50	0.41	0.18	0.09
Bacopa caroliniana	OBL	0.02	0.02	1.25	0.17	0.22	0.02	0.25	0.07
Bacopa monnieri	OBL	--	--	0.10	0.02	--	--	--	--
Bidens mitis	OBL	0.10	0.02	0.12	0.04	--	--	--	--
Boehmeria cylindrica	OBL	0.12	0.04	--	--	--	--	--	--
Boltonia diffusa	FACW	0.78	0.04	0.21	0.04	0.76	0.04	--	--
Canna flaccida	OBL	--	--	0.77	0.10	--	--	0.02	0.02
Carex albolutescens	FACW	0.10	0.02	0.02	0.02	0.15	0.07	--	--
Carex stipata	OBL	0.22	0.06	0.02	0.02	--	--	--	--
Centalla asiatica	FACW	0.57	0.25	2.65	0.46	1.09	0.30	1.80	0.45
Cephalanthus occidentalis	OBL	0.02	0.02	--	--	0.22	0.02	--	--
Chamaecrista nictitans	FACU	--	--	--	--	0.04	0.04	0.14	0.05
Cladium jamaicense	OBL	0.69	0.04	0.10	0.02	1.20	0.07	--	--
Commelina diffusa	FACW	1.47	0.10	--	--	0.24	0.04	--	--
Cynodon dactylon	FAC	--	--	1.15	0.02	--	--	1.16	0.05
Cyperus brevifolius	FACW	--	--	0.10	0.02	--	--	--	--
Cyperus globulosus	FAC	--	--	--	--	0.02	0.02	--	--
Cyperus haspan	OBL	0.29	0.14	0.29	0.12	0.04	0.04	--	--
Cyperus polystachos	FACW	0.04	0.04	0.15	0.15	0.65	0.02	0.05	0.05
Cyperus surinamensis	FACW	0.02	0.02	--	--	--	--	0.02	0.02
Dicanthelium sp.	FACW	0.02	0.02	0.15	0.06	0.04	0.04	0.09	0.09
Digitaria serotina	FAC	0.02	0.02	0.02	0.02	--	--	--	--

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Table 4. (Continued)

		November 1999				June 2000			
		Mulched		Non-Mulched		Mulched		Non-Mulched	
Species	Wetland Affinity	TPC /Plot	No./ Plot	TPC /Plot	No./ Plot	TPC /Plot	No./ Plot	TPC /Plot	No./ Plot
Diodia virginiana	FACW	0.02	0.02	0.12	0.04	0.02	0.02	--	--
Drosera brevifolia	FACW	--	--	0.35	0.10	--	--	0.05	0.05
Eclipta alba	FACW	0.02	0.02	--	--	0.37	0.09	--	--
Eleocharis baldwinii	OBL	0.84	0.10	2.08	0.31	0.22	0.02	0.11	0.02
Eleocharis cellulosa	OBL	2.75	0.06	--	--	2.61	0.07	--	--
Eleocharis sp.	OBL	0.10	0.02	--	--	--	--	--	--
Eleocharis vivipara	OBL	0.90	0.12	1.98	0.15	--	--	0.02	0.02
Eragrostis elliottii	FAC	0.39	0.06	--	--	--	--	--	--
Eragrostis sp.	FAC	--	--	1.21	0.19	--	--	0.05	0.05
Erechites hieracifolia	FAC	--	--	--	--	1.22	0.13	0.57	0.05
Erianthus giganteus	OBL	0.71	0.04	0.04	0.04	0.11	0.02	--	--
Erigeron vernus	FACW	--	--	0.02	0.02	--	--	--	--
Eriocaulon decangulare	OBL	--	--	0.65	0.08	--	--	0.48	0.07
Eriocaulon sp.	OBL	0.02	0.02	0.94	0.06	--	--	--	--
Eupatorium capillifolium	FAC	0.67	0.18	0.90	0.23	1.63	0.39	1.11	0.30
Eupatorium leptophyllum	OBL	0.51	0.08	--	--	--	--	--	--
Eustachys petraea	FAC	--	--	--	--	0.22	0.02	--	--
Euthamia minor	FAC	0.24	0.08	0.33	0.06	0.30	0.11	0.05	0.05
Flaveria floridana	FACW	0.02	0.02	--	--	--	--	--	--
Fuirena scirpodea	OBL	--	--	0.23	0.04	0.22	0.04	0.57	0.07
Galium tinctorium	FACW	0.20	0.12	0.31	0.15	1.13	0.11	--	--
Gratiola virginiana	FACW	--	--	--	--	--	--	0.02	0.02
Gratiola pilosa	FACW	0.10	0.02	0.02	0.02	--	--	0.02	0.02
Gratiola ramosa	FACW	--	--	0.02	0.02	--	--	--	--
Hedyotis uniflora	FACU	0.02	0.02	--	--	--	--	--	--
Helianthus angustifolius	FACW	--	--	0.02	0.02	--	--	--	--
Hydrochloa caroliniensis	OBL	0.45	0.14	0.29	0.12	--	--	--	--
Hydrocotyle bonariensis	FACW	--	--	--	--	--	--	0.02	0.02
Hydrocotyle umbellata	FACW	1.00	0.41	2.06	0.50	--	--	0.16	0.07
Hypericum cistifolium	FACW	--	--	--	--	--	--	0.02	0.02
Hypericum fasciculatum	OBL	0.71	0.12	0.92	0.17	1.33	0.11	0.41	0.11
Hypericum hypericoides	FAC	0.02	0.02	--	--	0.02	0.02	--	--
Hypericum tetrapetalum	FAC	--	--	0.12	0.04	--	--	0.36	0.07

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Table 4. (Continued)

		November 1999				June 2000			
		Mulched		Non-Mulched		Mulched		Non-Mulched	
Species	Wetland Affinity	TPC /Plot	No./ Plot	TPC /Plot	No./ Plot	TPC /Plot	No./ Plot	TPC /Plot	No./ Plot
Ilex glabra	FACU	0.02	0.02	--	--	0.11	0.02	--	--
Imperata cylindrica	UPL	--	--	--	--	--	--	0.02	0.02
Indigofera hirusta	FAC	--	--	--	--	0.02	0.02	--	--
Ipomea sagittata	FAC	--	--	--	--	0.02	0.02	--	--
Iris hexagona	OBL	0.12	0.04	0.04	0.04	0.33	0.07	0.16	0.07
Juncus effusus	OBL	5.86	0.35	5.04	0.19	6.35	0.39	4.43	0.18
Juncus marginatus	FACW	0.02	0.02	0.42	0.02	0.15	0.07	--	--
Juncus megacephalus	OBL	0.02	0.02	1.37	0.10	0.13	0.04	1.07	0.16
Juncus polycephalus	OBL	--	--	0.02	0.02	--	--	--	--
Juncus scirpoides	OBL	0.24	0.06	0.96	0.10	0.22	0.04	0.82	0.07
Juncus sp.	OBL	0.02	0.02	--	--	--	--	--	--
Justicia ovata	OBL	--	--	--	--	0.02	0.02	--	--
Lachnathes caroliniana	FAC	1.06	0.20	1.25	0.27	1.17	0.22	1.23	0.23
Lachnocaulon beyrichianum	FACW	0.02	0.02	0.10	0.02	--	--	0.02	0.02
Leersia hexandra	OBL	4.61	0.18	0.73	0.06	0.24	0.04	--	--
Limnobium spongia	OBL	--	--	0.02	0.02	--	--	--	--
Lindernia grandiflora	FACW	0.20	0.02	0.56	0.08	--	--	--	--
Ludwigia decurrens	OBL	0.02	0.02	0.12	0.04	--	--	--	--
Ludwigia octovalis	OBL	0.61	0.08	0.02	0.02	--	--	--	--
Ludwigia peruviana	OBL	0.86	0.12	0.44	0.08	0.17	0.09	0.02	0.02
Ludwigia repens	OBL	3.51	0.47	4.15	0.37	0.50	0.11	0.91	0.14
Ludwigia sp.	OBL	--	--	0.15	0.06	0.22	0.04	0.02	0.02
Ludwigia suffruiticosa	FACW	0.22	0.04	0.10	0.02	0.24	0.07	--	--
Lycopus rubellus	OBL	2.02	0.14	--	--	0.15	0.07	--	--
Lythrum alatum	OBL	--	--	--	--	0.24	0.07	--	--
Mecardonia sp.	FAC	0.39	0.02	--	--	0.02	0.02	--	--
Mikania scandens	FACW	3.39	0.57	3.52	0.48	0.98	0.33	3.18	0.41
Myrica cerifera	FAC	--	--	0.17	0.08	--	--	0.16	0.07
Nymphaea odorata	OBL	0.29	0.06	--	--	--	--	--	--
Oxalis sp.	FACU	0.10	0.02	--	--	--	--	--	--
Oxypolis filiformis	OBL	0.20	0.02	0.02	0.02	0.04	0.04	--	--
Panicum anceps	FAC	--	--	0.21	0.02	--	--	--	--
Panicum hemitomon	OBL	10.53	0.41	1.92	0.23	4.26	0.46	1.84	0.30

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Table 4. (Continued)

		November 1999				June 2000			
		Mulched		Non-Mulched		Mulched		Non-Mulched	
Species	Wetland Affinity	TPC /Plot	No./ Plot	TPC /Plot	No./ Plot	TPC /Plot	No./ Plot	TPC /Plot	No./ Plot
Panicum repens	FACW	2.20	0.22	3.27	0.27	1.85	0.24	2.45	0.34
Panicum rigidulum	FACW	0.29	0.02	1.44	0.17	--	--	0.91	0.05
Panicum verrucosum	FACW	--	--	0.75	0.08	0.02	0.02	--	--
Panicum virgatum	FACW	0.02	0.02	0.10	0.02	--	--	0.48	0.05
Paspalum laeve	FACW	0.31	0.06	--	--	0.22	0.02	--	--
Paspalum urvillei	FAC	--	--	0.02	0.02	0.54	0.02	--	--
Phyla nodiflora	FAC	--	--	0.02	0.02	--	--	0.02	0.02
Pinus elliottii	UPL	--	--	0.65	0.06	--	--	0.91	0.05
Pluchea odorata	FACW	0.31	0.08	0.27	0.10	--	--	0.11	0.02
Pluchea rosea	FACW	0.16	0.08	0.02	0.02	1.59	0.24	0.84	0.09
Polygonum hydropiperoides	OBL	2.29	0.35	0.56	0.29	0.07	0.07	0.23	0.14
Polygonum punctatum	OBL	--	--	0.10	0.02	--	--	--	--
Polygonum sp.	OBL	--	--	--	--	0.35	0.07	--	--
Polypremum procumbens	FAC	--	--	--	--	0.02	0.02	--	--
Pontederia cordata	OBL	3.37	0.33	1.94	0.23	0.33	0.04	0.07	0.07
Proserpinaca pectinata	OBL	0.45	0.22	0.15	0.06	0.13	0.04	--	--
Ptilinium capillaceum	FACW	--	--	--	--	2.11	0.22	0.41	0.23
Rhexia mariana	FACW	--	--	0.10	0.02	--	--	0.23	0.02
Rhexia nutallii	FACW	0.25	0.08	0.04	0.04	0.02	0.02	0.25	0.07
Rhynchospera corniculata	OBL	0.20	0.02	--	--	0.11	0.02	--	--
Rhynchospora fascicularis	FACW	0.39	0.04	0.65	0.08	--	--	0.11	0.02
Rhynchospora globularis	FACW	--	--	--	--	--	--	0.02	0.02
Rhynchospora microcarpa	OBL	0.22	0.06	0.46	0.10	0.46	0.09	0.16	0.07
Rhynchospora microcephala	FACW	0.02	0.02	0.40	0.15	--	--	0.11	0.02
Rhynchospora odorata	OBL	0.20	0.04	--	--	--	--	--	--
Rhynchospora sp.	FACW	0.18	0.10	0.08	0.08	0.63	0.15	0.61	0.09
Rhynchospora tracyi	OBL	2.20	0.18	0.12	0.04	0.57	0.09	0.68	0.09
Rhynchospora wrightiana	FACW	0.02	0.02	0.33	0.08	--	--	0.02	0.02
Rubus argutus	FAC	0.22	0.06	--	--	--	--	--	--
Rubus sp.	FAC	--	--	--	--	0.02	0.02	--	--
Sabatia grandiflora	FACW	--	--	0.02	0.02	--	--	--	--
Sacciolepis striata	OBL	0.04	0.04	0.02	0.02	--	--	--	--
Sagittaria graminea	OBL	0.25	0.10	0.02	0.02	--	--	0.11	0.02

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Table 4. (Continued)

		November 1999				June 2000			
		Mulched		Non-Mulched		Mulched		Non-Mulched	
Species	Wetland Affinity	TPC /Plot	No./ Plot	TPC /Plot	No./ Plot	TPC /Plot	No./ Plot	TPC /Plot	No./ Plot
Sagittaria lancifolia	OBL	5.90	0.39	2.02	0.21	2.46	0.33	0.75	0.16
Sagittaria latifolia	OBL	0.39	0.02	0.02	0.02	--	--	--	--
Salix caroliniana	OBL	0.10	0.02	0.85	0.06	0.02	0.02	0.45	0.05
Scirpus validus	OBL	0.51	0.04	--	--	0.13	0.04	0.02	0.02
Scleria oligantha	FACW	--	--	0.21	0.02	--	--	--	--
Scleria reticularis	FACW	0.02	0.02	0.12	0.04	--	--	--	--
Scoparia dulcis	FACW	0.12	0.04	0.15	0.06	--	--	0.23	0.05
Sesbania sp.	FAC	--	--	--	--	0.02	0.02	0.02	0.02
Seteria geniculata	FAC	--	--	1.31	0.15	0.13	0.04	1.02	0.14
Sphagnum sp.	OBL	--	--	0.12	0.04	--	--	--	--
Solidago fistulosa	FACW	3.88	0.33	0.50	0.15	2.24	0.26	0.30	0.11
Solidago sp.	FACW	1.08	0.08	0.02	0.02	0.87	0.11	0.02	0.02
Solidago stricta	FACW	--	--	--	--	0.11	0.02	--	--
Spartina bakeri	FACW	2.37	0.14	1.90	0.12	3.04	0.13	2.41	0.14
Sporobolus indicus	FACU	--	--	0.12	0.04	--	--	--	--
Syngonathus flavidulus	FACW	0.10	0.02	--	--	0.02	0.02	--	--
Typha sp.	OBL	--	--	0.62	0.06	--	--	--	--
Urena lobata	FACU	--	--	0.02	0.02	--	--	--	--
Utricularia sp.	OBL	--	--	0.10	0.02	--	--	--	--
Vigna luteola	FACW	0.02	0.02	0.02	0.02	0.04	0.04	0.11	0.02
Woodwardia virginica	FACW	0.78	0.06	--	--	0.13	0.04	--	--
Xyris brevifolius	OBL	--	--	0.17	0.17	--	--	--	--
Xyris elliotii	OBL	0.20	0.02	1.87	0.08	0.02	0.02	2.27	0.05
Xyris jupicai	FACW	--	--	0.75	0.12	--	--	--	--
Xyris smalliana	OBL	0.10	0.02	0.15	0.06	--	--	--	--
Xyris sp.	OBL	0.02	0.02	--	--	--	--	--	--
Total		82.49	9.20	76.21	10.56	54.57	7.54	48.52	6.68

Wetland Affinity Weighted Average (WA) - The mean WA for mulched wetland creation areas was significantly lower than the non-mulched areas in November 1999 and June 2000 (Table 3). The mean WA in both mulched and non-mulched areas increased between the November 1999 and June 2000, however only the mulched wetland areas

increased significantly ($p<0.001$ compared to $p=0.06$ for non-mulched wetland areas). The mean WA only increased by 0.22 (12%) in the non-mulched wetland creation areas as opposed to 0.34 (23%) in the mulched wetland creation areas (Figure 5).

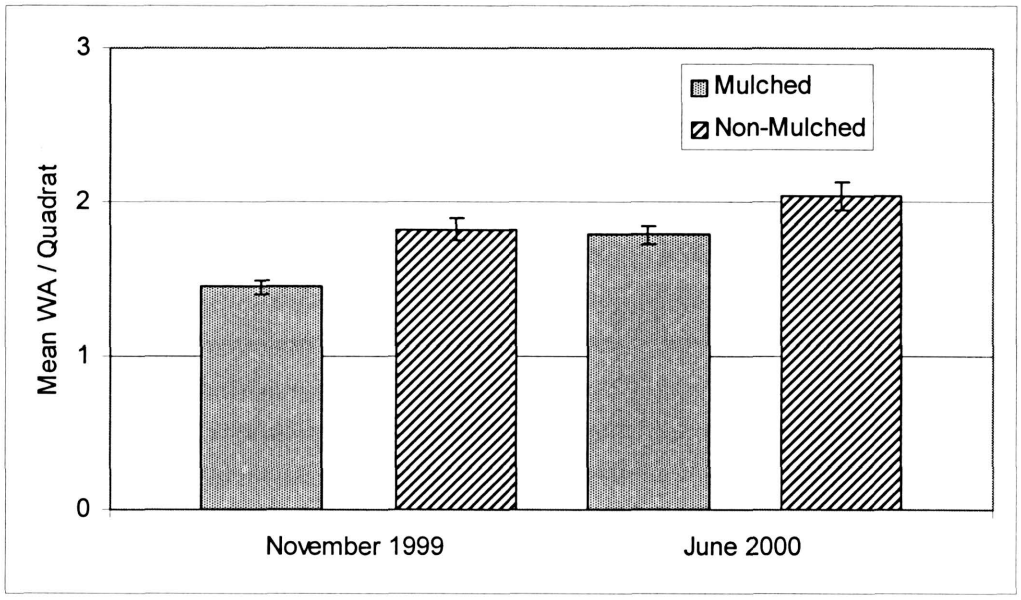

Figure 5. Mean (± 1 Standard Error) Weighted Average (WA) per Quadrat of Mulched and Non-Mulched Wetland Creation Areas for the November 1999 and June 2000 Vegetative Analysis Events.

In November 1999, the mulched wetland creation areas were dominated by OBL and FACW vegetation, constituting over 91% of the overall mean TPC (Table 5). Non-mulched wetlands had a greater contribution by FAC vegetation than the mulched wetlands and the OBL and FACW vegetation only constituted 76% of the mean TPC (Table 5). In June 2000, the mulched wetlands still had a mean WA that was significantly lower than the non-mulched wetlands, however, only the mulched wetland WA was significantly higher than its November 1999 mean (1.45 ± 0.05 to 1.79 ± 0.06). The non-mulched wetland WA also increased, but not significantly. The increase in the mean WA for mulched wetlands can be attributed to the substantial decrease in OBL

vegetation and the increase in FAC vegetation (Table 5). The shift in vegetative composition in non-mulched wetlands was smaller and therefore the WA was less affected.

Table 5. Total Percent Cover (TPC) and Number of Occurrences per Quadrat Plot for each Wetland Affinity: Mulched and Non-Mulched Wetland Creation Areas-November 1999 and June 2000.

	November 1999				June 2000			
	Mulched		Non-Mulched		Mulched		Non-Mulched	
Wetland Affinity	TPC /Plot	No./ Plot	TPC /Plot	No./ Plot	TPC /Plot	No./ Plot	TPC /Plot	No./ Plot
OBL	53.8	4.9	34.1	4.4	23.9	2.7	15.9	2.0
FACW	21.5	3.3	23.7	4.1	20.1	2.9	16.3	2.8
FAC	7.0	0.9	17.6	1.9	10.5	1.8	15.3	1.7
FACU	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1
UPL	0.0	0.0	0.6	0.1	0.0	0.0	0.9	0.1
Total	82.5	9.2	76.2	10.6	54.6	7.5	48.5	6.7

Species Richness - A significant difference in mean species richness was detected between the mulched and non-mulched wetland creation areas for the November 1999 event, but not for the June 2000 event (Table 3). The mean species richness dropped significantly between seasons for both mulched and non-mulched wetland areas (Figure 6). The mulched wetland creation areas dropped 1.66 species (18%) between the two events while the non-mulched dropped 3.88 (37%).

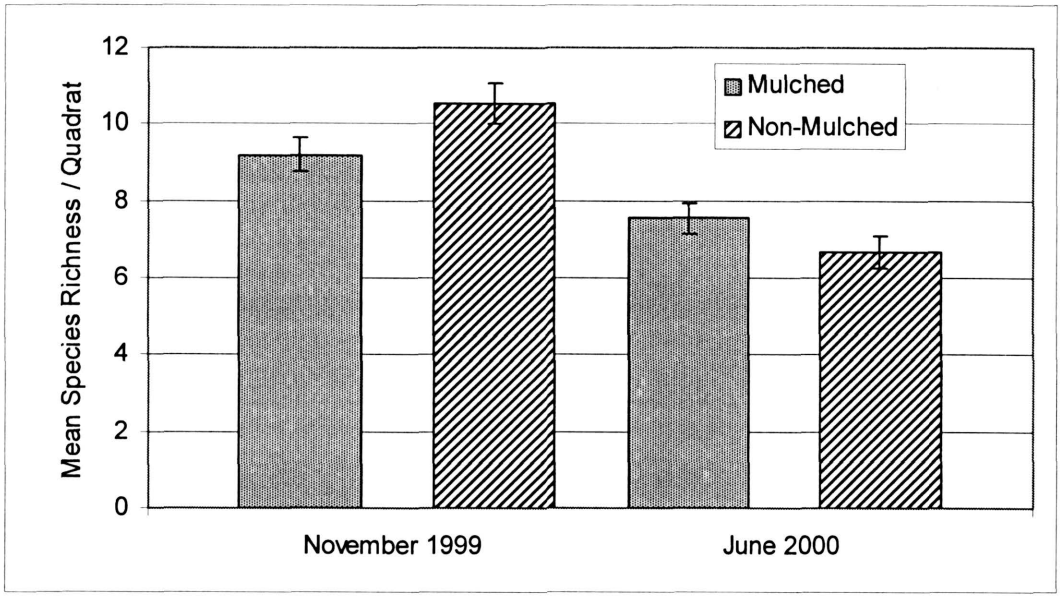

Figure 6. Mean (± 1 Standard Error) Species Richness per Quadrat of Mulched and Non-Mulched Wetland Creation Areas for the November 1999 and June 2000 Vegetative Analysis Events Vegetative Analysis Events.

Using the November 1999 and June 2000 vegetative analysis data, each observed species was categorized by vegetation type (Table 6). During both events the Grasses/Reeds contributed the largest amount to the overall mean TPC for both mulched and non-mulched wetland areas (ranging between 16.8% and 27.3% TPC per quadrat). Other Flowering Dicots, Sedges/Rushes, and Other Flowering Monocots also contributed substantially to the overall TPC (19.9% to 7.8%, 15.4% to 8.8%, and 13.0% to 5.1%, respectively) for each wetland type (Table 6). During both events, Other Flowering Dicots contained more species (between 3.5 and 2.1 per quadrat) than any other vegetation type for both mulched and non-mulched wetlands. Grasses/Reeds and the Other Flowering Monocots also exhibited an above average species richness range (2.6 to 1.6 and 1.6 to 0.7 per quadrat, respectively) for both wetland types.

Table 6. Mean Total Percent Cover (TPC) and Number of Occurrences per Quadrat Plot for each Vegetation Type: Mulched and Non-Mulched Wetland Creation Areas- November 1999 and June 2000.

	November 1999				June 2000			
	Mulched		Non-Mulched		Mulched		Non-Mulched	
Vegetation Type	TPC /Plot	No./ Plot	TPC /Plot	No./ Plot	TPC /Plot	No./ Plot	TPC /Plot	No./ Plot
Mosses	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Ferns	0.8	0.1	0.0	0.0	0.1	0.0	0.0	0.0
Grasses/Reeds	27.3	1.7	27.3	2.6	16.8	1.6	20.9	1.9
Sedges/Rushes	15.4	1.6	15.1	1.9	12.7	1.2	8.8	1.0
Other Flowering Monocots	13.0	1.3	11.3	1.6	4.6	0.7	5.1	0.7
Vines	3.6	0.6	3.5	0.5	1.1	0.4	3.3	0.5
Tree/Shrub Seedlings	2.5	0.4	3.2	0.6	3.3	0.7	2.6	0.5
Other Flowering Dicots	19.9	3.5	15.7	3.4	16.0	2.9	7.8	2.1
Total	82.5	9.2	76.2	10.6	54.6	7.5	48.5	6.7

In November 1999, the cover by different vegetation types was not drastically different between mulched and non-mulched wetlands (Table 6). Greater differences occurred in June 2000 where mulched wetlands had a greater TPC/plot of Sedges/Rushes (12.7 to 8.8) and Other Flowering Dicots (16.0 to 7.8) and less TPC/plot of Grasses/Reeds (16.8 to 20.9) (Table 6). The large decreases in TPC of Sedges/Rushes and Other Flowering Dicots during the June event was not attributable to a few species but was the general trend among many species of these vegetation types. The differences in TPC of Grasses/Reeds between mulched and non-mulched wetland was attributable to the seasonal decline of *P. hemitomon* and *L. hexandra* (predominant in the mulched wetlands) and the persistence of *A. virginicus* in the non-mulched wetlands during both events.

Vegetative Cover - TPC was the only cover parameter where a significant difference was detected between the mulched and non-mulched wetland creation areas during the November 1999 event (however not during the June 2000 event) (Table 3). All other mean cover values between the mulched and non-mulched were non-significant. The lack of statistical significance for the mean horizontal line-intercepts at 1.0 m and 0.5 m were attributable to high standard deviations. Despite the lack of statistical significance, all three cover parameters followed a similar trend of greater cover by the mulched wetland creation areas. Both wetland creation area types also followed a similar trend of decreasing vegetative cover in response to the extreme dry season between the two vegetative analysis events (Figure 7).

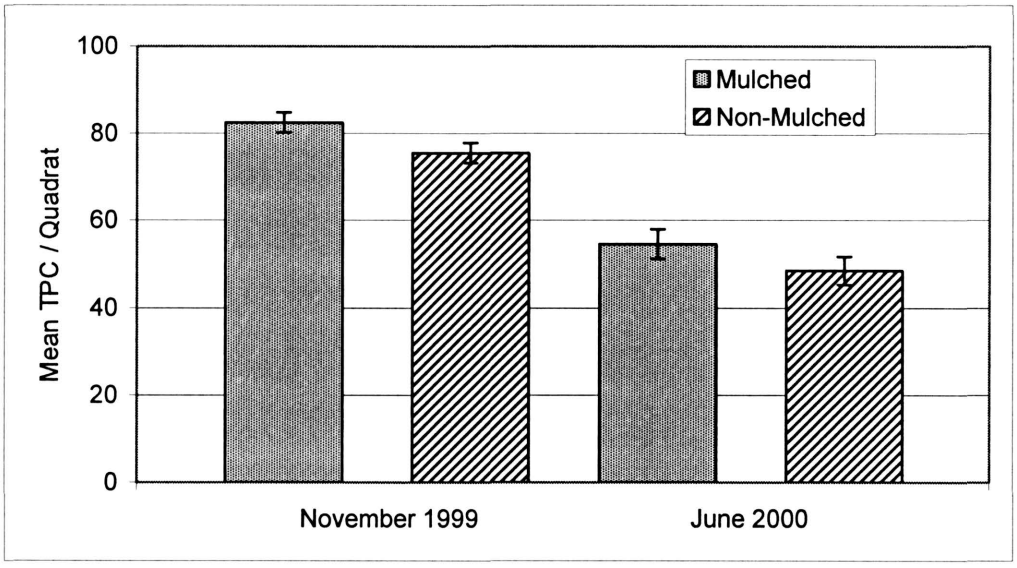

Figure 7. Mean (± 1 Standard Error) Total Percent Cover (TPC) Per Quadrat of Mulched and Non-Mulched Wetland Creation Areas for the November 1999 and June 2000 Vegetative Analysis Events.

Nutrient Content and Biomass Analyses

The biomass and soil samples for this analysis were collected on 12 and 13 August 2000. No significant difference between the mulched and non-mulched wetland creation areas were detected for above ground biomass (87.22 $\pm$ 13.57 g and 80.02 $\pm$ 11.11 g, respectively) ($p=0.68$), pH (5.75 $\pm$ 0.24 and 5.31 $\pm$ 0.18, respectively) ($p=0.16$), NN (33.14 $\pm$ 3.76 kg/ha and 35.39 $\pm$ 1.77 kg/ha, respectively) ($p=0.15$, as per Mann-Whitney Ranks Sum Test) and P (10.97 $\pm$ 1.53 kg/ha and 8.25 $\pm$ 0.72 kg/ha, respectively) ($p=0.13$) (Table 7). Significant differences were detected between mulched and non-mulched wetlands for levels of Mg (60.28 $\pm$ 6.83 kg/ha and 29.54 $\pm$ 3.88 kg/ha, respectively) ($p<0.001$), Ca (1181.68 $\pm$ 231.20 kg/ha and 195.34 $\pm$ 52.65 kg/ha, respectively) ($p<0.001$) and K (66.01 $\pm$ 8.14 kg/ha and 33.12 $\pm$ 2.89 kg/ha, respectively) ($p<0.001$).

Table 7. Mean (± 1 Standard Error) Experimental Quadrat Values for the Nutrient Content and Biomass Analyses Data of Mulched and Non-Mulched Wetland Creation Areas- August 2000.

	Mean Experimental Quadrat Values	
Experimental Variable	Mulched Wetland Creation Areas	Non-Mulched Wetland Creation Areas
Biomass Dry Weight (g)	87.22 (± 13.57)	80.02 (± 11.11)
pH	5.75 (±0.24)	5.31 (± 0.18)
NN (kg/ha)	33.14 (± 3.76)	35.39 (± 1.77)
P (kg/ha)	10.97 (± 1.53)	8.25 (± 0.72)
Mg (kg/ha)	60.28 (± 6.83) [a]	29.54 (± 3.88)
Ca (kg/ha)	1181.68 (± 231.20) [b]	195.34 (± 52.65)
K (kg/ha)	66.01 (± 8.14) [c]	33.12 (± 2.89)

[a] $p<0.001$ for Mg (kg/ha) between mulched and non-mulched soil samples
[b] $p<0.001$ for Ca (kg/ha) between mulched and non-mulched soil samples
[c] $p<0.001$ for K (kg/ha) between mulched and non-mulched soil samples

DISCUSSION

Soil Organic Matter Analysis

As expected, the mulched wetland creation areas exhibited a higher mean POM than the non-mulched wetland creation areas. The mean was 3.31% greater in the mulched wetland creation areas than in non-mulched wetlands. The ranges for both wetland types were consistent with other studies conducted on wetland creation areas. Stauffer and Brooks (1997) reported that wetland creation plots in Pennsylvania treated with salvaged marsh surface contained between 3.2% and 5.5% POM, where as non-mulched plots contained less than 1% after the first two growing seasons. Comparisons with other studies can be noteworthy, but they should be done with caution. In addition to regional and ecological differences, comparisons with other studies can be difficult because of spatial and temporal differences. For instance, the amount of organic matter can vary spatially within any wetland, particularly within wetlands that are only seasonally inundated. Portions of wetland areas located in deeper areas may be subject to longer inundation and therefore have longer durations of anaerobic conditions. As the duration of anaerobic conditions becomes longer, microbial activity decreases and greater organic matter accumulation may occur (McLatchey and Reddy, 1998). For this study, all soil sampling locations were located at the approximate normal pool elevation in an attempt to minimize the effect that variable hydrology would have on POM.

The lack of a trend in organic matter accumulation in 5-10 year old non-mulched wetland creation areas is consistent with other findings in Oregon and Pennsylvania (see Shaffer and Ernst, 1999 and Bishel-Machung, et. al., 1996). However, an exception that is closer to this study area, a trend analysis of wetland creation area soils was conducted on phosphate mine sites in central Florida. Graetz et. al. (1995) evaluated five wetlands (non-mulched) constructed in similar situations to each other, but at different ages (ranging from 1 year to 16 years). They reported an increase in organic C with the age of the wetland. Specifically organic C ranged from <0.5% for the newest wetland area to 6% for the 16-year old wetland area. Based on the assumption that organic C constitutes 58% of organic matter (Graetz, 1995), the POM ranged from less than 1% at the 1-year old wetland, approximately 5.0% at the 4-year old wetland, 7.8% at the 10-year old wetland and 9.7% for the 16-year old wetland. All organic matter determinations were based on samples taken "within" the wetland and were likely to be greater in the central portion where hydroperiod is the longest and greater accumulation may occur. In addition, Graetz reported that the bulk density of the soil surface layer and the C/N ratio decreased with age.

Vegetative Analysis

As designed for the Organic Matter Analysis, all quadrats for the vegetative analyses were located at the approximate normal pool elevation in an attempt to minimize the effect that variable hydrology would have on the measured parameters. During the

sampling events, all plots ranged from saturated to inundated (no deeper than 0.4 ft. [0.12 m]) during the November 1999 event, and from dry to slightly moist during the June 2000 event. Furthermore, all vegetative data associated with the sampled wetlands was examined relative to wetland creation age. Wetlands ranged in age from 5 years to over 11 years old, however no correlation was detected between any of the parameters and the age of the wetland creation areas.

Wetland Affinity Weighted Average (WA) - As expected, the mulched wetland creation areas contained a plant composition that had a significantly lower mean WA than quadrats sampled in the non-mulched areas. This result occurred in both vegetative analysis events. The differences in the WA can likely be attributed to the higher levels of organic matter in the soil. With increased amounts of organic matter, the supporting substrate in mulched wetlands are able to retain more moisture longer and therefore support a plant composition with a lower WA value (i.e., more OBL and fewer FAC species).

In the June 2000 vegetative sampling, both the mulched and non-mulched wetland areas had a higher mean WA compared to the November 1999 event, however only the mulched wetland areas had a difference that was statistically significant. This was because of the type of vegetation that predominated the mulched wetland areas. In November 1999, the predominant vegetation in the mulched wetland quadrats included several species that normally become dormant during the dry or cold seasons. Species such as *Panicum hemitomon* Schult., *Sagittaria lancifolia* L. and *Leersia hexandra*

Swartz (each an OBL) were all predominant in the mulched wetland creation areas during June. None of these species were predominant in the non-mulched wetland creation areas during the November 1999. In June 2000, both the mulched and non-mulched areas showed significant decreases in total vegetative cover, however, the mulched areas lost a greater proportion of OBL species to seasonal dormancy (see Table 5). Consequently, the mean WA of mulched wetlands was more affected than that of the non-mulched wetlands. Based on my observations, this decrease in cover and increase in WA is typical between the dry and wet seasons but was likely exacerbated by the drought conditions experienced during this season.

In general, the composition of the vegetation between the mulched and non-mulched wetland areas was not drastically different. Table 4 shows that many of the predominant species observed in the mulched areas were also present in the non-mulched areas. The presence of *Andropogon virginicus* L. was probably the most influential factor affecting the increase in mean WA between events. *A. virginicus* is a common Floridian species that is adapted to sandy soils, often abundantly colonizing areas that are exposed at times of low water (Godfrey and Wooten, 1979). The actual cover amount of *A. virginicus* observed did not change dramatically between the two vegetative analysis events, a slight decline occurred in both types of wetland creation areas during June 2000. However, with the decline of many other species, the mean WA of both types of wetland areas was more affected by the persistence of *A. virginicus*.

Species Richness - The non-mulched wetland creation areas had a statistically higher mean species richness per quadrat than the mulched wetland areas during the November 1999 event, but not in June 2000. This was expected given the likelihood for non-mulched wetland creation areas to support more facultative/transitional species in addition to the hydrophytic vegetation that seasonally colonizes during the summer. The placement of organic matter influenced the collective wetland affinity of vegetation sampled. The mulched wetlands were more likely to be dominated by hydrophytic/obligate species. The dominance of the OBL vegetation and the less suitable, wetter substrate conditions effectively precluded many facultative/transitional species from occurring. Consequently species richness should be smaller in mulched wetlands. During June 2000, conditions were seasonally dry and both mulched and non-mulched wetlands were colonized by vegetation adapted to these conditions. Under this scenario, it was expected that species richness would be similar between wetland types.

Other investigators have found mixed results regarding species richness and wetland mulching. After examining thirty-five wetland creation areas (22 mulched and 13 non-mulched) in central Florida phosphate mine reclamation areas, Brown, et. al. (1997) found no discernable difference in species richness. Brown and Bedford (1997) found highly significant differences in species richness (at three different elevation levels) using mulching on wetland restoration sites in northern New York. However, these results were based on sites only two years after construction. Given the variable parameters regarding hydroperiod, age of the wetland creation area and other site-specific factors; it is difficult to compare the results of different studies. For this study, mulching seems to

have a positive effect on species richness. Specifically, mulching may help to maintain plant type and diversity during the dry season and even more importantly, during a stressful event such as the drought experienced during this study. While non-mulched wetlands in this study had a greater species richness during November 1999, these areas also had a much greater decrease during the June 2000 event.

Vegetative Cover - The mean TPC was statistically higher in the mulched wetland creation areas than the non-mulched areas during the November 1999 event, but not during the June 2000 event. The lack of a significant difference during the June 2000 event was unexpected. I hypothesized that the supplemental organic matter in the soil of the mulched wetland creation areas would provide a better substrate for wetland vegetation, particularly in the dry season. Perhaps this would be the case in a normal dry season, but under the extremely dry conditions that occurred during this study the beneficial effects may have been negated.

In other studies, significant differences in the amount of vegetation coverage provided in mulched versus non-mulched wetland creation areas have been found. Stauffer and Brooks (1997) reported greater coverage by vegetation in central Pennsylvania wetland creation areas with salvaged marsh surface used as a soil amendment versus those that were not. Likewise, Brown and Bedford (1997) found greater wetland vegetation cover in the mulched wetland restoration areas than in non-mulched areas. In central Florida, Brown et al. (1997) cautiously reported that mulched wetland creation areas seemed to have a positive effect on the amount of coverage provided by wetland vegetation based

on their review of over 40 wetland creation area monitoring reports. Furthermore, the vegetative percent cover in the non-mulched wetland creation areas did not increase significantly over the four to five year monitoring period. This was in contrast to the mulched wetlands that increased annually by an average 35% and were generally at or above 100% cover after five years. Brown et al. cautioned that in some cases, they could not discern whether the reports included shrub cover with their overall percent coverage and therefore the findings were considered tentative. It was also not clear if the data reviewed in these reports were collected at the same time of the year. As determined in this study, the time of year that percent cover data is collected can have a significant effect on the amount reported.

My data shows that mulching seems to have a positive effect on the percent cover of vegetation in mulched wetland creation areas. Based on the other studies reviewed, this seems to be particularly true during the first two or three years following construction. As non-mulched wetland areas become established (after five years or more) the vegetative cover tends to 'catch-up' with that of the mulched wetland areas. Despite the lack of statistical significance, the results of the horizontal line-intercept analysis also indicate that mulching wetlands seems to have a positive effect on the biomass produced.

Nutrient Content and Biomass Analyses

The lack of a significant difference in mean biomass dry weight between the mulched and non-mulched wetlands was unexpected. Based on other investigations and the TPC

and horizontal line-intercept data of this study, I expected the mulched areas to have a greater biomass. Using the November 1999 vegetative analysis data for these specific wetlands, the TPC and horizontal line-intercept data were compared to the biomass weights determined in August 2000 (see Appendix H). In November 1999, the mulched wetlands had a smaller mean TPC than the non-mulched wetlands (76.43% v. 81.29%, respectively), however the horizontal line-intercept at 1.0 m (13.14% v. 9.36%) and 0.5 m (55.71% v. 35.00%) were higher. In general, non-mulched quadrats had more low growing vegetation that provided a slightly greater TPC than the mulched areas. However, the mulched wetland areas had more vertical growth than the non-mulched areas. These mixed cover results (albeit from the 2000 growing season) provide a better understanding why the mulched and non-mulched biomass figures were not significantly different. Perhaps, if a larger sample size was analyzed, the difference in biomass weights would be significant. However, the results of this analysis demonstrate that horizontal cover and biomass production are not necessarily correlated and that one parameter should not be used to gauge the other.

The mean pH of non-mulched wetland creation areas was slightly more acidic than the mulched wetland creation areas, although the differences were not statistically significant. This result was somewhat unexpected, but other investigators have also had difficulty discerning differences between the soil pH of mulched and non-mulched wetland (see Stauffer and Brooks, 1997). I can only conclude that mulching does not have an effect on the pH of wetland creation areas in the 5 to 10-year age. Perhaps the

difference may have been more substantial during the earlier years of the wetland creation areas.

Another somewhat surprising result was the minor differences between the amounts of nitrate-nitrogen (NN) and phosphorous (P) determined during this analysis. It appears that NN is limiting in both mulched and non-mulched wetland creation areas. The NN/P ratio for mulched and non-mulched wetland creation areas was approximately 3:1 and 4:1, respectively. Both wetland types fall below the optimum N/P plant growth ratio of 8:1 determined by Shaver and Melillo (1984). Given the higher levels of decomposed organic matter in the soil, higher amounts of overall nutrient content were expected in the mulched wetland creation areas, but my data do not reflect this. Given the analysis was conducted in the middle of the growing season (August), it is possible that the amount of NN in the soil had already been depleted by the above ground vegetation. However, if this were the case we would expect to see some difference in the biomass produced between wetland types. Thus, I cannot conclude that mulching has an effect on NN or P content during this stage of the wetland creation areas. As with some of the other parameters evaluated, perhaps the differences were greater during the earlier years of the wetland creation areas when the non-mulched wetlands had scarce to no accumulation of organic matter.

The only nutrients that were significantly higher in the mulched wetland creation areas were the secondary macronutrients: Mg, Ca and K. The higher levels of these nutrients were expected given the higher cation exchange capacity that typically occurs with increased organic matter (Mitsch and Gosselink, 2000). The non-mulched wetlands

would tend to lose more of these nutrients via leaching as the ground water table recedes, seasonally.

CONCLUSIONS

This investigation shows that for established herbaceous wetlands in west-central Florida, mulching has a positive effect on the amount of organic matter in the soil, the recruitment and retention of hydrophytic vegetation, and the amount of the secondary nutrients Mg, Ca and K in the soil. It also can be tentatively concluded that mulching has a positive effect on species richness (maintaining the number of species present between seasons) and increased vegetative cover. Based on the review of other investigations, mulching seems to have its greatest effect on all these parameters in the first two to three years after the construction of the wetland area. After five to ten years, the mulching effect is still present but to a lesser degree.

The results of this study indicate that the accumulation of organic matter in soils may be a long process. The non-mulched wetlands showed no indication of continued organic matter accumulation between 5-years and 10-years old. The different WA of the plant communities between the wetland types suggests that the non-mulched soils retain less moisture and are exposed to more aerobic conditions during the year. These conditions may reduce the rate of organic matter accumulation. This may be further compounded if non-mulched wetlands are incapable of producing the amount of vegetative biomass that mulched wetlands can (the results of this study are inconclusive on this matter). The type and amount of vegetative communities occurring at a wetland will likely affect the

amount and accumulation of organic matter. Therefore, wetland soils that contain an appreciable amount of organic matter may help to support the hydrological conditions and vegetative regime necessary to maintain its condition.

This study strictly examined the wetland zone near normal pool elevation. This was designed as an attempt to negate the effect of varying hydrology on the different parameters tested. Because the duration of standing water below normal pool level can vary significantly between wetlands (regardless of whether or not it was mulched), sampling the interior and deeper portions of each wetland creation area to determine the effect of mulching would be difficult. The hydroperiod of each wetland can have a direct effect on soil composition, vegetation type and cover, nutrient content and biomass (see Botts and Cowell, 1988, Olila et. al., 1997, Moore et. al, 1992, and Martin et. al, 1997). A carefully designed study that examined hydroperiod and its effect on vegetative biomass and organic matter accumulation would be extremely beneficial. This investigation attempted to separate the effects of mulching and hydroperiod, however the complete separation of these factors may be impossible in a non-experimental field investigation. It is probable that the differences between mulched and non-mulched wetland creation areas would be even less significant in deeper portions of the wetland. Given the increased hydroperiod in the interior portion of all wetland areas, parameters such as WA and species richness would reflect the increased saturated and anaerobic conditions and would be affected less by the presence of organic matter. Other parameters such as vegetative cover and biomass would still be positively affected by the increase of organic matter.

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Table 8. Construction Specifications for Wetland Creation Areas Sampled-November 1999 and June 2000.

Site	Size (ha)	Date Planted	Mulch Depth (cm)
WC M-36	0.1	Feb. 92	15-30
WC M-41A	0.2	Sept. 92	15-30
HG M-1-5	1.3	May 88	15
HG M-1-6 (N3)	2.0	May 88	15-30
HG M-1-6 (C)	1.1	May 88	15-30
HG M-1-6 (S1)	0.4	May 88	15-30
HG M-2-11 (S)	1.2	Jan. 89	15-30
HG M-1-6 (S2)	0.5	May 88	15-30
HG M-2-11 (N)	1.2	Jan. 89	15-30
US 1	0.4	Aug. 92	15
HG M-2-3	0.05	May 88	15-30
HG M-1-3	0.3	May 88	15-30
CC MB2	0.2	Nov. 92	15
PC	1.1	Apr. 88	15
CP	1.3	Oct. 90	15
WC M-26B	0.5	Mar. 92	15
WC M-26A	0.2	Mar. 92	15
IM 1	12.7	Aug. 89	None
IM 2	8.8	Aug. 89	None
IM 3	15.1	Aug. 89	None
CC M10	1.9	1989	None
CC ME	0.04	Sept. 94	None
CC MB1	0.3	Nov. 92	None
US 2	0.2	Aug. 92	None
HG M-3-12	0.4	Apr. 89	None
FR H1	0.1	Jun. 93	None
FR 2.2 Ac.	0.9	Jun. 93	None
FR I1	1.3	Jun. 93	None
FR H10	0.2	Aug. 93	None
FR F2	0.4	Jun. 93	None
TE 1	0.2	Feb. 90	None
TE 2	0.2	Feb. 90	None
HG M-10-9	0.3	Dec. 94	None

APPENDIX B

VEGETATION TYPE FOR SPECIES OBSERVED DURING VEGETATIVE ANALYSES-

NOVEMBER 1999 AND JUNE 2000

Mosses

Sphagnum sp.

Ferns

Woodwardia virginica (L.) J. E. Smith

Grasses and Reeds

Amphicarpum muhlenbergianum (Schult.) Hitchc.
Andropogon glomeratus (Walter) BSP
Andropogon virginicus L.
Axonopus affinis Chase
Axonopus furcatus (Flugge) Hitchc.
Cladium jamaicense Crantz
Cynodon dactylon (L.) Pers.
Dicanthelium sp.
Digitaria serotina (Walt.) Michx.
Eragrostis elliottii S. Wats.
Eragrostis sp.
Erianthus giganteus (Walt.) Muhl.
Eustachys petracea (Sw.) Desv.
Hydrochloa caroliniensis Beauv.
Imperata cylindrica (L.) Beauv.
Leersia hexandra Swartz
Panicum anceps Michx.
Panicum hemitomon Schult.
Panicum repens L.
Panicum rigidulum Nees
Panicum verrucosum Muhl.
Panicum virgatum L.
Paspalum laeve Michx.
Paspalum urvillei Steud.
Sacciolepis striata (L.) Nash
Seteria geniculata (Lam.) Beauv.
Spartina bakeri Merr.
Sporobolus indicus (L.) Pr. B.

Sedges and Rushes

Carex albolutescens Schw.
Carex stipitata Muhl. Ex Willd
Cyperus brevifolius (Rottb.) Endl. Ex Hassk.
Cyperus globulosus Aubl.
Cyperus haspan L.
Cyperus polystachos Rottb.
Cyperus surinamensis Rottb.
Eleocharis baldwinii (Torr.) Chapm.

Sedges and Rushes (Cont'd)

Eleocharis cellulosa Torr.
Eleocharis sp.
Eleocharis vivipara Link
Fuirena scirpodea Michx.
Juncus effusus L.
Juncus marginatus Rostk.
Juncus megacephalus M. A. Curtis
Juncus polycephalus Michx.
Juncus scirpoides Lam.
Juncus sp.
Rhynchospera corniculata (Lam.) Gray
Rhynchospora fascicularis (Michx.) Vahl
Rhynchospora globularis (Chapm.) Small
Rhynchospora microcarpa Baldw. Ex Gray
Rhynchospora microcephala Britt. ex Small
Rhynchospora odorata C. Wright ex Griseb.
Rhynchospora sp.
Rhynchospora tracyi Britt.
Rhynchospora wrightiana Boeckl.
Scirpus validus Vahl
Scleria oligantha Michx.
Scleria reticularis Michx.

Other Flowering Monocots

Canna flaccida Salisb.
Commelina diffusa Burm. f.
Eriocaulon decangulare L.
Eriocaulon sp.
Iris hexagona Walt.
Lachnathes caroliniana (Lam.) Dandy
Lachnocaulon beyrichianum Sporleder ex Korn.
Limnobium spongia (Bosc.) Steud.
Pontederia cordata L.
Sagittaria graminea Michx.
Sagittaria lancifolia L.
Sagittaria latifolia Willd.
Syngonathus flavidulus (Michx.) Ruhl. In Engler
Typha sp.
Xyris brevifolia Michx.
Xyris elliotii Chapm.
Xyris jupicai L. C. Rich.
Xyris smalliana Nash
Xyris sp.

Vines

Ampelopsis arborea (L.) Koehne
Ipomea sagittata Poir. In Lam.
Mikania scandens (L.) Willd.
Rubus argutus Link
Rubus sp.
Vigna luteola (Jacq.) Benth.

Tree and Shrub Seedlings

Acer rubrum L.
Baccharis halimifolia L.
Cephalanthus occidentalis L.
Hypericum cistifolium Lam.
Hypericum fasciculatum Lam.
Hypericum tetrapetalum Lam.
Ilex glabra (L.) Gray
Ludwigia octovalis (Jacq.) Raven
Ludwigia peruviana (L.) Hara
Myrica cerifera L.
Pinus elliottii Engelm.
Salix caroliniana Michx.

Other Flowering Dicots

Alternanthera philoxeroides (Mart.) Griseb.
Amaranthus australis (Gray) Sauer
Bacopa caroliniana (Walt.) Robbins.
Bacopa monnieri (L.) Pennell
Bidens mitis (Michx.) Sherff
Boehmeria cylindrica (L.) Sw.
Boltonia diffusa Elliott
Centalla asiatica (L.) Urban
Chamaecrista nictitans (L.) Moench
Diodia virginiana L.
Drosera breviflora Pursh
Eclipta alba (L.) Hassk.
Erechites hieracifolia (L.) Raf.
Erigeron vernus (L.) T. & G.
Eupatorium capillifolium (Lam.) Small
Eupatorium leptophyllum DC.
Euthamia minor (Michx.) Greene
Flaveria floridana J. R. Johnston
Galium tinctorium L.
Gratiola virginiana L.
Gratiola pilosa Michx.
Gratiola ramosa Walt.
Hedyotis uniflora (L.) Lam.
Helianthus angustifolius L.

Other Flowering Dicots (Cont'd)

Hydrocotyle bonariensis Lam.
Hydrocotyle umbellata L.
Hypericum hypericoides (L.) Crantz
Indigofera hirusta Harvey
Justicia ovata (Walt.) Lindau in Urban
Lindernia grandiflora Nutt.
Ludwigia decurrens Walt.
Ludwigia repens Forst.
Ludwigia sp.
Ludwigia suffruiticosa Walt.
Lycopus rubellus Moench.
Lythrum alatum Pursh
Mecardonia sp.
Nymphaea odorata Ait.
Oxalis sp.
Oxypolis filiformis (Walt.) Britt.
Phyla nodiflora (L.) Greene
Pluchea odorata (L.) Cass.
Pluchea rosea Godfrey
Polygonum hydropiperoides Michx.
Polygonum punctatum Ell.
Polygonum sp.
Polypremum procumbens L.
Proserpinaca pectinata Lam.
Ptilinium capillaceum (Michx.) Raf.
Rhexia mariana L.
Rhexia nutallii James
Sabatia grandiflora (Gray) Small
Scoparia dulcis L.
Sesbania sp.
Solidago fistulosa Mill.
Solidago sp.
Solidago stricta Ait.
Urena lobata L.
Utricularia sp.

APPENDIX C:

VEGETATIVE ANALYSIS DATA SHEETS

NOVEMBER 1999

MULCHED WETLAND CREATION AREAS

Wetland Creation Area: WC M-36
Sampling Date: 13 Nov 99

Plot No.: 1
Water Level/Cond.: Sat. soil
1.0 m. Horz. Line-Inter.: 1%
0.5 m. Horz. Line-Inter.: 30%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Ludwigia repens	20	OBL	1	20
Ludwigia peruviana	1	OBL	1	1
Panicum repens	10	FACW	2	20
Pontederia cordata	30	OBL	1	30
Total	61			71
WA	1.16			

Plot No.: 2
Water Level/Cond.: 0.1 ft.
1.0 m. Horz. Line-Inter.: 1%
0.5 m. Horz. Line-Inter.: 40%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Ludwigia repens	35	OBL	1	35
Polygonum hydropiperoides	1	OBL	1	1
Sagittaria lancifolia	25	OBL	1	25
Hydrocotyle umbellata	1	FACW	2	2
Panicum repens	10	FACW	2	20
Cyperus polystachyos	1	FACW	2	2
Pontederia cordata	5	OBL	1	5
Hedyotis uniflora	1	FACU	4	4
Cyperus haspan	1	OBL	1	1
Total	80			95
WA	1.19			

Plot No.: 3
Water Level/Cond.: 0.1 ft.
1.0 m. Horz. Line-Inter.: 1%
0.5 m. Horz. Line-Inter.: 25%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Sagittaria lancifolia	20	OBL	1	20
Polygonum hydropiperoides	20	OBL	1	20
Panicum repens	10	FACW	2	20
Ludwigia repens	35	OBL	1	35
Hydrocotyle umbellata	1	FACW	2	2
Ludwigia octovalis	1	OBL	1	1
Rhynchospora sp.	1	FACW	2	2
Total	88			100
WA	1.14			

Wetland Creation Area: WC M-41A
Sampling Date: 13 Nov 99

Plot No.: 1
Water Level/Cond.: 0.1 ft.
5%
Plot No.: 45%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Panicum hemitomon	5	OBL	1	5
Pontederia cordata	30	OBL	1	30
Sagittaria lancifolia	15	OBL	1	15
Hydrocotyle umbellata	15	FACW	2	30
Mikania scandens	1	FACW	2	2
Alternanthera philoxeroides	1	OBL	1	1
Ludwigia repens	1	OBL	1	1
Total	68			84
WA	1.24			

Plot No.: 2
Water Level/Cond.: 0.1 ft. to sat. soil
1.0 m. Horz. Line-Inter.: 10
0.5 m. Horz. Line-Inter.: 50

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Sagittaria lancifolia	40	OBL	1	40
Mikania scandens	25	FACW	2	50
Boehmeria cylindrica	5	OBL	1	5
Hydrocotyle umbellata	5	FACW	2	10
Panicum repens	5	FACW	2	10
Alternanthera philoxeroides	1	OBL	1	1
Total	81			116
WAI	1.43			

Plot No.: 3
Water Level/Cond.: sat. soil
1.0 m. Horz. Line-Inter.: 5
0.5 m. Horz. Line-Inter.: 50

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Ludwigia peruviana	30	OBL	1	30
Mikania scandens	30	FACW	2	60
Boehmeria cylindrica	1	OBL	1	1
Alternanthera philoxeroides	1	OBL	1	1
Centella asiatica	1	FACW	2	2
Ludwigia repens	1	OBL	1	1
Vigna luteola*	1	FACW	2	2
Rubus argutus	1	FAC	3	3
Sagittaria lancifolia	10	OBL	1	10
Panicum repens	5	FACW	2	10
Hydrocotyle umbellata	1	FACW	2	2
Juncus effusus	1	OBL	1	1
Total	83			123
WAI	1.48			

Wetland Creation Area: HG M-1-5
Sampling Date: 18 Nov 99

Plot No.: 1
Water Level/Cond.: sat. soil to 0.4 ft.
Galium tinctorium 30%
Total 70%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Juncus effusus	50	OBL	1	50
Lycopus rubellus	50	OBL	1	50
Iris hexagona	5	OBL	1	5
Pontederia cordata	10	OBL	1	10
Carex albolutescens	5	FACW	2	10
Mikania scandens	5	FACW	2	10
Leersia hexandra	5	OBL	1	5
Ludwigia repens	5	OBL	1	5
Eleocharis vivipara	5	OBL	1	5
Galium tinctorium	1	FACW	2	2
Total	141			152
WA	1.08			

Plot No.: 2
Water Level/Cond.: sat. soil to 0.1 ft.
1.0 m. Horz. Line-Inter.: 15%
0.5 m. Horz. Line-Inter.: 80%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Juncus effusus	60	OBL	1	60
Woodwardia virginica	10	FACW	2	20
Mikania scandens	1	FACW	2	2
Polygonum hydropiperoides	5	OBL	1	5
Andropogon glomeratus	5	FACW	2	10
Commelina diffusa	5	FACW	2	10
Ludwigia repens	1	OBL	1	1
Lycopus rubellus	1	OBL	1	1
Ludwigia suffruticosa	10	FACW	2	20
Spartina bakeri	1	FACW	2	2
Total	99			131
WA	1.32			

Plot No.: 3
Water Level/Cond.: sat. soil to 0.4 ft.
1.0 m. Horz. Line-Inter.: 20%
0.5 m. Horz. Line-Inter.: 80%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Spartina bakeri	45	FACW	2	90
Panicum hemitomon	15	OBL	1	15
Polygonum hydropiperoides	15	OBL	1	15
Solidago sp.	5	FACW	2	10
Juncus effusus	5	OBL	1	5
Lycopus rubellus	5	OBL	1	5
Galium tinctorium	1	FACW	2	2
Iris hexagona	1	OBL	1	1
Mikania scandens	1	FACW	2	2
Total	93			145
WA	1.56			

Wetland Creation Area: HG M-1-6 (C)
Sampling Date: 18 Nov 99

Plot No.: 1
Water Level/Cond.: 0.1 ft.
Juncus effusus 20%
Lachnathes caroliniana 20%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Solidago fistulosa	25	FACW	2	50
Pontederia cordata	5	OBL	1	5
Hypericum fasciculatum	5	OBL	1	5
Andropogon glomeratus	5	FACW	2	10
Eupatorium capillifolium	1	FAC	3	3
Polygonum hydropiperoides	15	OBL	1	15
Eleocharis vivipara	10	OBL	1	10
Rhynchospora tracyii	10	OBL	1	10
Proserpinaca pectinata	1	OBL	1	1
Juncus effusus	1	OBL	1	1
Lachnathes caroliniana	1	FAC	3	3
Total	79			113
WA 1.43				

Plot No.: 2
Water Level/Cond.: 0.1 ft.
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 25%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Solidago sp.	25	FACW	2	50
Pontederia cordata	10	OBL	1	10
Rhynchospora tracyii	40	OBL	1	40
Andropogon virginicus	1	FAC	3	3
Proserpinaca pectinata	1	OBL	1	1
Juncus effusus	1	OBL	1	1
Lachnathes caroliniana	1	FAC	3	3
Paspalum laeve	5	FACW	2	10
Polygonum hydropiperoides	5	OBL	1	5
Total	89			123
WA 1.38				

Plot No.: 3
Water Level/Cond.: 0.1 ft.
1.0 m. Horz. Line-Inter.: 10%
0.5 m. Horz. Line-Inter.: 75%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Solidago sp.	20	FACW	2	40
Polygonum hydropiperoides	5	OBL	1	5
Panicum hemitomon	10	OBL	1	10
Leersia hexandra	40	OBL	1	40
Juncus effusus	15	OBL	1	15
Paspalum laeve	1	FACW	2	2
Rhynchospora tracyii	1	OBL	1	1
Nymphaea odorata	5	OBL	1	5
Proserpinaca pectinata	1	OBL	1	1
Total	98			119
WA 1.21				

Wetland Creation Area: HG M-1-6 (N3)
Sampling Date: 18 Nov 99

Plot No.: 1
Water Level/Cond.: sat. soil to 0.4 ft.
Total 1%
WA 15%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Oxypolis filiformis	10	OBL	1	10
Panicum hemitomon	5	OBL	1	5
Leersia hexandra	40	OBL	1	40
Salix caroliniana	5	OBL	1	5
Eleocharis baldwinii	35	OBL	1	35
Hydrocotyle umbellata	5	FACW	2	10
Centella asiatica	1	FACW	2	2
Sagittaria graminea	1	OBL	1	1
Solidago fistulosa	1	FACW	2	2
Total	103			110
WA	1.07			

Plot No.: 2
Water Level/Cond.: 0.1 ft.
1.0 m. Horz. Line-Inter.: 1%
0.5 m. Horz. Line-Inter.: 35%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Leersia hexandra	70	OBL	1	70
Solidago fistulosa	5	FACW	2	10
Rhynchospora corniculata	10	OBL	1	10
Lycopus rubellus	1	OBL	1	1
Ludwigia repens	1	OBL	1	1
Rhynchospora sp.	1	FACW	2	2
Mikania scandens	1	FACW	2	2
Eriocaulon sp.	1	OBL	1	1
Total	90			97
WA	1.08			

Plot No.: 3
Water Level/Cond.: 0.2 ft. to sat. soils
1.0 m. Horz. Line-Inter.: 1%
0.5 m. Horz. Line-Inter.: 25%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Panicum hemitomon	15	OBL	1	15
Solidago fistulosa	5	FACW	2	10
Lycopus rubellus	35	OBL	1	35
Ludwigia repens	1	OBL	1	1
Leersia hexandra	10	OBL	1	10
Bacopa caroliniana	1	OBL	1	1
Eleocharis vivipara	15	OBL	1	15
Juncus sp.	1	OBL	1	1
Total	83			88
WA	1.06			

Wetland Creation Area: HG M-1-6 (S1)
Sampling Date: 18 Nov 99

Plot No.: 1
Water Level/Cond.: 0.1 to 0.2 ft
Leersia hexandra 1%
Cyperus surinamensis 10%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Ludwigia peruviana	10	OBL	1	10
Polygonum hydropiperoides	25	OBL	1	25
Mikania scandens	10	FACW	2	20
Pontederia cordata	5	OBL	1	5
Cyperus haspan	5	OBL	1	5
Proserpinaca pectinata	1	OBL	1	1
Nymphaea odorata	5	OBL	1	5
Scleria reticularis	1	FACW	2	2
Ludwigia repens	1	OBL	1	1
Leersia hexandra	5	OBL	1	5
Cyperus surinamensis	1	FACW	2	2
Panicum hemitomon	5	OBL	1	5
Total	74			86
WA	1.16			

Plot No.: 2
Water Level/Cond.:
1.0 m. Horz. Line-Inter.: 15%
0.5 m. Horz. Line-Inter.: 70%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Panicum hemitomon	55	OBL	1	55
Pontederia cordata	5	OBL	1	5
Solidago fistulosa	10	FACW	2	20
Polygonum hydropiperoides	5	OBL	1	5
Mikania scandens	5	FACW	2	10
Hydrochloa caroliniensis	5	OBL	1	5
Rhynchospora sp.	5	FACW	2	10
Cyperus haspan	1	OBL	1	1
Total	91			111
WA	1.22			

Plot No.: 3
Water Level/Cond.: sat. soils to 0.1 ft.
1.0 m. Horz. Line-Inter.: 10%
0.5 m. Horz. Line-Inter.: 35%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Pontederia cordata	15	OBL	1	15
Leersia hexandra	55	OBL	1	55
Solidago sp.	5	FACW	2	10
Lachnathes caroliniana	1	FAC	3	3
Proserpinaca pectinata	5	OBL	1	5
Flaveria floridana	1	FACW	2	2
Sagittaria graminea	1	OBL	1	1
Mikania scandens	1	FACW	2	2
Total	84			93
WA	1.11			

Wetland Creation Area: HG M-2-11(S)
Sampling Date: 18 Nov 99

Plot No.: 1
Water Level/Cond.: 0.2 ft. to 0.00 ft
Plot No.: 50%
Water Level/Cond.: 90%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Solidago fistulosa	15	FACW	2	30
Panicum hemitomon	20	OBL	1	20
Andropogon virginicus	20	FAC	3	60
Lachnathes caroliniana	20	FAC	3	60
Rhynchospora tracyii	15	OBL	1	15
Eleocharis baldwinii	1	OBL	1	1
Total	91			186
WA 2.04				

Plot No.: 2
Water Level/Cond.: 0.2 ft. to 0.00 ft
1.0 m. Horz. Line-Inter.: 20%
0.5 m. Horz. Line-Inter.: 90%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Solidago fistulosa	20	FACW	2	40
Panicum hemitomon	85	OBL	1	85
Total	105			125
WA 1.19				

Plot No.: 3
Water Level/Cond.: 0.2 ft. to 0.00 ft
1.0 m. Horz. Line-Inter.: 15%
0.5 m. Horz. Line-Inter.: 75%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Solidago fistulosa	20	FACW	2	40
Woodwardia virginica	20	FACW	2	40
Panicum hemitomon	55	OBL	1	55
Rhynchospora tracyii	10	FACW	2	20
Rhynchospora microcarpa	5	FACW	2	10
Ludwigia repens	1	OBL	1	1
Total	111			166
WA 1.5				

Wetland Creation Area: HG M-1-6 (S2)
Sampling Date: 18 Nov 99

Plot No.: 1
Water Level/Cond.: 0.2 ft. to sat. soils
20%
Plot No.: 65%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Panicum hemitomon	30	OBL	1	30
Solidago fistulosa	10	FACW	2	20
Pontederia cordata	30	OBL	1	30
Lycopus rubellus	10	OBL	1	10
Mikania scandens	5	FACW	2	10
Hydrochloa caroliniensis	1	OBL	1	1
Polygonum hydropiperoides	1	OBL	1	1
Total	87			102
WA	1.17			

Plot No.: 2
Water Level/Cond.: 0.2 ft. to sat soils
1.0 m. Horz. Line-Inter.: 30%
0.5 m. Horz. Line-Inter.: 80%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	30	FAC	3	90
Eragrostis elliottii	5	FACW	2	10
Pontederia cordata	5	OBL	1	5
Rhynchospora tracyii	10	OBL	1	10
Pluchea odorata	5	FACW	2	10
Mikania scandens	5	FACW	2	10
Solidago fistulosa	5	FACW	2	10
Panicum hemitomon	5	OBL	1	5
Proserpinaca pectinata	1	OBL	1	1
Sagittaria graminea	1	OBL	1	1
Eleocharis vivipara	5	OBL	1	5
Polygonum hydropiperoides	5	OBL	1	5
Eupatorium capillifolium	1	FAC	3	3
Ludwigia repens	1	OBL	1	1
Total	84			166
WA	1.98			

Plot No.: 3
Water Level/Cond.: 0.2 ft. to sat. soils
1.0 m. Horz. Line-Inter.: 20%
0.5 m. Horz. Line-Inter.: 85%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Eupatorium capillifolium	5	FAC	3	15
Mikania scandens	15	FACW	2	30
Panicum hemitomon	60	OBL	1	60
Pontederia cordata	5	OBL	1	5
Solidago fistulosa	5	FACW	2	10
Andropogon virginicus	5	FAC	3	15
Sagittaria graminea	5	OBL	1	5
Centella asiatica	1	FACW	2	2
Eleocharis sp.	5	OBL	1	5
Total	106			147
WA	1.39			

Wetland Creation Area: HG M-2-11 (N)
Sampling Date: 18 Nov 99

Plot No.: 1
Water Level/Cond.: 0.3 ft. to 0.0 ft.
WA 15%
50%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Solidago fistulosa	30	FACW	2	60
Andropogon virginicus	25	FAC	3	75
Hypericum fasciculatum	5	OBL	1	5
Rhynchospora tracyii	20	FACW	2	40
Xyris sp.	1	OBL	1	1
Hydrocotyle umbellata	1	FACW	2	2
Eleocharis baldwinii	1	OBL	1	1
Ludwigia repens	1	OBL	1	1
Total	84			185
WA	2.2			

Plot No.: 2
Water Level/Cond.: 0.2 ft. to sat. soils
1.0 m. Horz. Line-Inter.: 10%
0.5 m. Horz. Line-Inter.: 35%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Solidago fistulosa	15	FACW	2	30
Andropogon virginicus	15	FAC	3	45
Lachnathes caroliniana	10	FAC	3	30
Xyris smalliana	5	OBL	1	5
Syngonathus flavidulus	5	FACW	2	10
Ludwigia repens	5	OBL	1	5
Euthamia minor	1	FAC	3	3
Centella asiatica	5	FACW	2	10
Rhynchospora microcephala	1	FACW	2	2
Rhexia nuttallii	1	FACW	2	2
Erianthus giganteus	1	OBL	1	1
Panicum virgatum	1	FACW	2	2
Eupatorium capillifolium	1	FAC	3	3
Eleocharis baldwinii	1	FACW	2	2
Total	67			150
WA	2.24			

Plot No.: 3
Water Level/Cond.: 0.2 ft. to sat. soils
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 25%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	5	FAC	3	15
Hypericum fasciculatum	10	OBL	1	10
Panicum rigidulum	15	FACW	2	30
Pluchea odorata	5	FACW	2	10
Rhynchospora fascicularis	10	FACW	2	20
Rhynchospora microcarpa	5	OBL	1	5
Lachnathes caroliniana	5	FAC	3	15
Centella asiatica	5	FACW	2	10
Proserpinaca pectinata	5	OBL	1	5
Gratiola pilosa	5	FACW	2	10
Rhexia nuttallii	1	FACW	2	2
Xyris elliotii	10	OBL	1	10
Ilex glabra	1	FACU	4	4
Polygonum hydropiperoides	1	OBL	1	1
Total	83			147
WA	1.77			

Wetland Creation Area: US 2
Sampling Date: 19 Nov 99

Plot No.: 1
Water Level/Cond.: 0.5 ft. to sat soils
Mikania scandens 30%
Centella asiatica 80%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Erianthus giganteus	35	OBL	1	35
Hypericum fasciculatum	10	OBL	1	10
Andropogon virginicus	10	FAC	3	30
Panicum hemitomon	5	OBL	1	5
Pluchea odorata	5	FACW	2	10
Carex stipata	1	FACW	2	2
Spartina bakeri	5	FACW	2	10
Juncus scirpoides	1	OBL	1	1
Nymphaea odorata	5	OBL	1	5
Mikania scandens	1	FACW	2	2
Centella asiatica	1	FACW	2	2
Sagittaria lancifolia	1	OBL	1	1
Total	80			113
WA	1.41			

Plot No.: 2
Water Level/Cond.: sat. soils
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 70%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Cladium jamaicense	15	OBL	1	15
Andropogon glomeratus	20	FACW	2	40
Spartina bakeri	15	FACW	2	30
Baccharis halimifolia	5	FAC	3	15
Sagittaria lancifolia	5	OBL	1	5
Hydrocotyle umbellata	1	FACW	2	2
Mikania scandens	1	FACW	2	2
Pluchea odorata	1	FACW	2	2
Polygonum hydropiperoides	1	OBL	1	1
Rhexia nuttallii	1	FACW	2	2
Eleocharis vivipara	1	OBL	1	1
Cyperus haspan	1	OBL	1	1
Total	67			116
WA	1.73			

Plot No.: 3
Water Level/Cond.: 0.3 ft. to sat. soil
1.0 m. Horz. Line-Inter.: 25%
0.5 m. Horz. Line-Inter.: 90%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Juncus effusus	20	OBL	1	20
Eupatorium leptophyllum	10	OBL	1	10
Hypericum fasciculatum	5	FACW	2	10
Rhexia nuttallii	10	FACW	2	20
Eleocharis baldwinii	5	OBL	1	5
Sagittaria lancifolia	10	OBL	1	10
Mikania scandens	5	FACW	2	10
Eleocharis vivipara	10	OBL	1	10
Juncus scirpoides	10	OBL	1	10
Hydrocotyle umbellata	1	FACW	2	2
Centella asiatica	1	FACW	2	2
Pluchea rosea	1	FACW	2	2
Lachnocaulon beyrichianum	1	FACW	2	2
Total	89			113
WA	1.27			

Wetland Creation Area: HG M-2-3
Sampling Date: 19 Nov 99

Plot No.: 1
Water Level/Cond.: 0.0 ft. to 0.3 ft.
WA 30%
80%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Sagittaria lancifolia	35	OBL	1	35
Mikania scandens	5	FACW	2	10
Galium tinctorium	1	FACW	2	2
Cyperus polystachyos	1	FACW	2	2
Cyperus haspan	1	OBL	1	1
Boltonia diffusa	15	FACW	2	30
Polygonum hydropiperoides	1	OBL	1	1
Juncus effusus	5	OBL	1	5
Total	64			86
WA 1.34				

Plot No.: 2
Water Level/Cond.: sat soils. to 0.3 ft.
1.0 m. Horz. Line-Inter.: 25%
0.5 m. Horz. Line-Inter.: 50%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Boltonia diffusa	25	FACW	2	50
Sagittaria lancifolia	35	OBL	1	35
Mikania scandens	5	FACW	2	10
Polygonum hydropiperoides	1	OBL	1	1
Total	66			96
WA 1.45				

Plot No.: 3
Water Level/Cond.: 0.1 ft.
1.0 m. Horz. Line-Inter.: 10%
0.5 m. Horz. Line-Inter.: 50%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Sagittaria lancifolia	25	OBL	1	25
Juncus effusus	30	OBL	1	30
Commelina diffusa	10	FACW	2	20
Cyperus haspan	5	OBL	1	5
Galium tinctorium	5	FACW	2	10
Total	75			90
WA 1.2				

Wetland Creation Area: HG M-1-3
Sampling Date: 19 Nov 99

Plot No.: 1
Water Level/Cond.: sat soils
Polygonum hydropiperoid 1%
Total 65%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Juncus effusus	15	OBL	1	15
Pontederia cordata	5	OBL	1	5
Sagittaria lancifolia	10	OBL	1	10
Woodwardia virginica	10	FACW	2	20
Mikania scandens	10	FACW	2	20
Hydrochloa caroliniensis	5	OBL	1	5
Galium tinctorium	1	FACW	2	2
Ludwigia repens	1	OBL	1	1
Hydrocotyle umbellata	1	FACW	2	2
Polygonum hydropiperoides	1	OBL	1	1
Total	59			81
WA	1.37			

Plot No.: 2
Water Level/Cond.: sat soils
1.0 m. Horz. Line-Inter.: 1%
0.5 m. Horz. Line-Inter.: 50%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Juncus effusus	40	OBL	1	40
Rubus argutus	5	FAC	3	15
Mikania scandens	20	FACW	2	40
Hydrochloa caroliniensis	5	OBL	1	5
Ludwigia repens	10	OBL	1	10
Pontederia cordata	5	OBL	1	5
Hydrocotyle umbellata	1	FACW	2	2
Polygonum hydropiperoides	5	OBL	1	5
Ludwigia suffruticosa	1	OBL	1	1
Total	92			123
WA	1.34			

Plot No.: 3
Water Level/Cond.: sat soils
1.0 m. Horz. Line-Inter.: 10%
0.5 m. Horz. Line-Inter.: 25%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Sagittaria lancifolia	25	OBL	1	25
Mikania scandens	1	FACW	2	2
Rhynchospora microcarpa	1	OBL	1	1
Oxalis sp.	5	FACU	4	20
Proserpinaca pectinata	1	OBL	1	1
Ludwigia repens	5	OBL	1	5
Axonopus affinis	15	FAC	3	45
Rubus argutus	5	FAC	3	15
Sacciolepis striata	1	OBL	1	1
Hypericum hypericoides	1	FAC	3	3
Total	60			118
WA	1.97			

Wetland Creation Area: CC MB2
Sampling Date: 19 Nov 99 3

Plot No.: 1
Water Level/Cond.: sat soils to 0.1 ft.
Juncus effusus 5%
Panicum repens 25%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Ludwigia octovalis	20	OBL	1	20
Sagittaria lancifolia	5	OBL	1	5
Panicum hemitomon	1	OBL	1	1
Eupatorium leptophyllum	5	OBL	1	5
Eragrostis elliottii	10	FAC	3	30
Sacciolepis striata	1	FAC	3	3
Eupatorium capillifolium	1	FAC	3	3
Pontederia cordata	1	OBL	1	1
Cyperus haspan	1	OBL	1	1
Juncus effusus	5	OBL	1	5
Panicum repens	1	FACW	2	2
Dicanthelium sp.	1	FAC	3	3
Euthamia minor	5	FAC	3	15
Solidago fistulosa	1	FACW	2	2
Galium tinctorium	1	FACW	2	2
Hydrocotyle umbellata	1	FACW	2	2
Ludwigia repens	1	OBL	1	1
Hydrochloa caroliniensis	1	OBL	1	1
Total	62			102
WA				

Plot No.: 2
Water Level/Cond.: sat soils to 0.1 ft.
1.0 m. Horz. Line-Inter.: 40%
0.5 m. Horz. Line-Inter.: 85%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Solidago fistulosa	25	FACW	2	50
Cladium jamaicense	20	OBL	1	20
Andropogon virginicus	10	FAC	3	30
Eupatorium leptophyllum	10	OBL	1	10
Euthamia minor	5	FAC	3	15
Ludwigia octovalis	5	OBL	1	5
Axonopus affinis	20	FAC	3	60
Rhynchospora tracyii	1	OBL	1	1
Rhynchospora wrightiana	1	FACW	2	2
Ludwigia repens	1	OBL	1	1
Hydrocotyle umbellata	1	FACW	2	2
Total	99			196
WA	1.98			

Plot No.: 3
Water Level/Cond.: sat soils to 0.1 ft.
1.0 m. Horz. Line-Inter.: 20%
0.5 m. Horz. Line-Inter.: 35%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	35	FAC	3	105
Ludwigia octovalis	5	OBL	1	5
Baccharis halimifolia	5	FAC	3	15
Eupatorium leptophyllum	1	OBL	1	1
Juncus effusus	5	OBL	1	5
Solidago fistulosa	5	FACW	2	10
Hydrochloa caroliniensis	5	OBL	1	5
Eragrostis elliottii	5	FAC	3	15
Lachnathes caroliniana	5	FAC	3	15
Sagittaria lancifolia	5	OBL	1	5
Rhynchospora tracyii	5	OBL	1	5
Euthamia minor	1	FAC	3	3
Rhynchospora fascicularis	10	FACW	2	20
Mikania scandens	1	FACW	2	2
Total	92			211
WA	2.29			

Wetland Creation Area: PC
Sampling Date: 19 Nov 99

Plot No.: 1
Water Level/Cond.: 0.1 to sat soils
Carex stipata 1%
Juncus scirpoides 60%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Lachnathes caroliniana	5	FAC	3	15
Sagittaria lancifolia	5	OBL	1	5
Eupatorium capillifolium	5	FAC	3	15
Panicum repens	55	FACW	2	110
Panicum hemitomon	5	OBL	1	5
Bidens mitis	5	OBL	1	5
Pluchea rosea	1	FACW	2	2
Proserpinaca pectinata	1	OBL	1	1
Ludwigia decurrens	1	OBL	1	1
Carex stipata	5	FACW	2	10
Juncus scirpoides	1	OBL	1	1
Centella asiatica	1	FACW	2	2
Total	90			172
WA	1.91			

Plot No.: 2
Water Level/Cond.: 0.1 to sat soils
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 40%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Eupatorium capillifolium	5	FAC	3	15
Sagittaria lancifolia	5	OBL	1	5
Rhynchospora odorata	5	FACW	2	10
Andropogon virginicus	5	FAC	3	15
Mikania scandens	5	FACW	2	10
Carex stipata	5	FACW	2	10
Leersia hexandra	5	OBL	1	5
Panicum repens	5	FACW	2	10
Panicum hemitomon	5	OBL	1	5
Sagittaria latifolia	20	OBL	1	20
Hydrochloa caroliniensis	1	OBL	1	1
Juncus marginatus	1	OBL	1	1
Total	67			107
WA	1.6			

Plot No.: 3
Water Level/Cond.: 0.1 to sat soils
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 50%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Eupatorium capillifolium	10	FAC	3	30
Sagittaria lancifolia	15	OBL	1	15
Juncus effusus	30	OBL	1	30
Leersia hexandra	5	OBL	1	5
Ludwigia peruviana	1	OBL	1	1
Centella asiatica	5	FACW	2	10
Mikania scandens	1	FACW	2	2
Panicum repens	5	FACW	2	10
Lycopus rubellus	1	OBL	1	1
Rhynchospora sp.	1	FACW	2	2
Rhynchospora odorata	5	FACW	2	10
Panicum repens	5	OBL	1	5
Lachnathes caroliniana	5	FAC	3	15
Diodia virginiana	1	FACW	2	2
Hydrocotyle umbellata	1	FACW	2	2
Total	91			140
WA	1.54			

Wetland Creation Area: CP
Sampling Date: 1 Dec 99

Plot No.: 1
Water Level/Cond.: 0.0 to sat soils
Plot No.: 5%
Water Level/Cond.: 75%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Eleocharis cellulosa	35	OBL	1	35
Commelina diffusa	5	FACW	2	10
Eclipta alba	1	FACW	2	2
Mikania scandens	5	FACW	2	10
Spartina bakeri	5	FACW	2	10
Ludwigia repens	1	OBL	1	1
Total	52			68
WA	1.31			

Plot No.: 2
Water Level/Cond.: 0.0 to sat soils
1.0 m. Horz. Line-Inter.: 10%
0.5 m. Horz. Line-Inter.: 95%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Eleocharis cellulosa	65	OBL	1	65
Spartina bakeri	20	FACW	2	40
Mikania scandens	1	FACW	2	2
Hydrocotyle umbellata	1	FACW	2	2
Sagittaria lancifolia	5	OBL	1	5
Ludwigia peruviana	1	OBL	1	1
Total	93			115
WA	1.24			

Plot No.: 3
Water Level/Cond.: 0.0 to sat soils
1.0 m. Horz. Line-Inter.: 20%
0.5 m. Horz. Line-Inter.: 75%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Spartina bakeri	30	FACW	2	60
Eleocharis cellulosa	40	OBL	1	40
Mikania scandens	5	FACW	2	10
Sagittaria lancifolia	5	OBL	1	5
Total	80			115
WA	1.44			

Wetland Creation Area: WC M26B
Sampling Date: 1 Dec 99

Plot No.: 1
Water Level/Cond.:
0%
Plot No.: 20%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Panicum hemitomon	65	OBL	1	65
Proserpinaca pectinata	5	OBL	1	5
Centella asiatica	1	FACW	2	2
Juncus effusus	1	OBL	1	1
Hydrocotyle umbellata	1	FACW	2	2
Lachnathes caroliniana	1	FAC	3	3
Rhynchospora sp.	1	FACW	2	2
Total	75			80
WA	1.07			

Plot No.: 2
Water Level/Cond.: 0.3 ft to moist soil
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 20%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Panicum hemitomon	50	OBL	1	50
Pluchea rosea	5	FACW	2	10
Ludwigia repens	1	OBL	1	1
Centella asiatica	1	FACW	2	2
Hydrocotyle umbellata	1	FACW	2	2
Total	58			65
WA	1.12			

Plot No.: 3
Water Level/Cond.: sat. soil
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 30%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Panicum hemitomon	40	OBL	1	40
Juncus effusus	10	OBL	1	10
Pluchea rosea	1	FACW	2	2
Centella asiatica	1	FACW	2	2
Hydrocotyle umbellata	5	FACW	2	10
Ludwigia repens	5	OBL	1	5
Proserpinaca pectinata	1	OBL	1	1
Total	63			70
WA	1.11			

Wetland Creation Area: WC M26A
Sampling Date: 1 Dec 99

Plot No.: 1
Water Level/Cond.: moist soil to 0.3 ft.
Juncus megacephalus 1%
Cephalanthus occidentalis 30%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Scirpus validus	25	OBL	1	25
Pontederia cordata	1	OBL	1	1
Hydrocotyle umbellata	5	FACW	2	10
Centella asiatica	5	FACW	2	10
Lindernia gratifolia	10	FACW	2	20
Polygonum hydropiperoides	5	OBL	1	5
Hypericum fasciculatum	1	OBL	1	1
Amphicarpum muhlenbergianum	5	FACW	2	10
Panicum hemitomon	1	OBL	1	1
Juncus megacephalus	1	OBL	1	1
Cephalanthus occidentalis	1	OBL	1	1
Juncus effusus	5	OBL	1	5
Panicum repens	1	FACW	2	2
Total	66			92
WA 1.39				

Plot No.: 2
Water Level/Cond.: moist soil to 0.3 ft.
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.:

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Pontederia cordata	5	OBL	1	5
Commelina diffusa	50	FACW	2	100
Eupatorium capillifolium	5	FAC	3	15
Hydrocotyle umbellata	1	FACW	2	2
Ludwigia peruviana	1	OBL	1	1
Ludwigia repens	5	OBL	1	5
Mikania scandens	1	FACW	2	2
Scoparia dulcis	1	FAC	3	3
Digitaria serotina	1	FAC	3	3
Total	70			136
WA 1.94				

Plot No.: 3
Water Level/Cond.: moist soil to 0.3 ft.
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 0%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Ludwigia repens	40	OBL	1	40
Scoparia dulcis	5	FAC	3	15
Paspalum laeve	10	FACW	2	20
Scirpus validus	1	OBL	1	1
Sagittaria graminea	5	OBL	1	5
Amphicarpum muhlenbergianum	5	FACW	2	10
Commelina diffusa	5	FACW	2	10
Hydrocotyle umbellata	1	FACW	2	2
Mecardonia sp.	20	FACW	2	40
Mikania scandens	1	FACW	2	2
Solidago fistulosa	1	FACW	2	2
Total	94			147
WA 1.56				

APPENDIX D:

VEGETATIVE ANALYSIS DATA SHEETS

NOVEMBER 1999

NON-MULCHED WETLAND CREATION AREAS

Wetland Creation Area: HG M-3-12
Sampling Date: 18 Nov 99

Plot No.: 1
Water Level/Cond.: moist soils to 0.2 ft.
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 50%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Hypericum fasciculatum	20	OBL	1	20
Andropogon virginicus	20	FAC	3	60
Rhynchospora fascicularis	10	FACW	2	20
Eriocaulon decangulare	10	OBL	1	10
Galium tinctorium	1	FACW	2	2
Ludwigia repens	20	OBL	1	20
Boltonia diffusa	5	FACW	2	10
Mikania scandens	1	FACW	2	2
Polygonum hydropiperoides	1	OBL	1	1
Bacopa caroliniana	1	OBL	1	1
Eleocharis baldwinii	1	OBL	1	1
Gratiola ramosa	1	FACW	2	2
Centella asiatica	1	FACW	2	2
Pontederia cordata	5	OBL	1	5
Lachnathes caroliniana	1	FAC	3	3
Total	98			159
WA	1.62			

Plot No.: 2
Water Level/Cond.: moist soils to 0.2 ft.
1.0 m. Horz. Line-Inter.: 10%
0.5 m. Horz. Line-Inter.: 50%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	35	FAC	3	105
Eriocaulon decangulare	5	OBL	1	5
Euthamia minor	5	FAC	3	15
Myrica cerifera	5	FAC	3	15
Solidago fistulosa	10	FACW	2	20
Polygonum hydropiperoides	5	OBL	1	5
Ludwigia repens	20	OBL	1	20
Bacopa caroliniana	1	OBL	1	1
Eleocharis baldwinii	1	OBL	1	1
Mikania scandens	5	FACW	2	10
Hypericum tetrapetulum	5	FAC	3	15
Eragrostis sp.	1	FACW	2	2
Xyris elliotii	5	OBL	1	5
Centella asiatica	1	FACW	2	2
Total	104			221
WA	2.13			

Plot No.: 3
Water Level/Cond.: sat. soils to 0.3 ft.
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 30%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	15	FAC	3	45
Eriocaulon decangulare	15	OBL	1	15
Ludwigia repens	5	OBL	1	5
Ludwigia decurrens	5	OBL	1	5
Solidago fistulosa	5	FACW	2	10
Polygonum hydropiperoides	10	OBL	1	10
Eleocharis baldwinii	10	OBL	1	10
Centella asiatica	1	FACW	2	2
Pluchea odorata	5	FACW	2	10
Eragrostis sp.	1	FAC	3	3
Mikania scandens	1	FACW	2	2
Hypericum tetrapetulum	1	FAC	3	3
Cyperus polystachyos	1	FACW	2	2
Bacopa caroliniana	1	OBL	1	1
Galium tinctorium	1	FACW	2	2
Rhynchospora microcephala	1	FACW	2	2
Vigna luteola	1	FACU	4	4
Myrica cerifera	1	FAC	3	3
Hydrocotyle umbellata	1	FACW	2	2
Total	81			136
WA	1.68			

Wetland Creation Area: TE 1
Sampling Date: 13 Nov 99

Plot No.: 1
Water Level/Cond.: 0.1 ft.
1.0 m. Horz. Line-Inter.: 15%
0.5 m. Horz. Line-Inter.: 25%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	10	FAC	3	30
Xyris smalliana	5	OBL	1	5
Rhynchospora microcarpa	5	OBL	1	5
Eleocharis vivipara	40	OBL	1	40
Proserpinaca pectinata	1	OBL	1	1
Xyris jupicai	5	FACW	2	10
Lachnathes caroliniana	5	FAC	3	15
Total	71			106
WA	1.49			

Plot No.: 2
Water Level/Cond.: sat. soil
1.0 m. Horz. Line-Inter.: 20%
0.5 m. Horz. Line-Inter.: 50%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Spartina bakeri	20	FACW	2	40
Solidago sp.	10	FAC	3	30
Rhynchospora fascicularis	15	FACW	2	30
Proserpinaca pectinata	5	OBL	1	5
Eleocharis vivipara	20	OBL	1	20
Xyris jupicai	5	FACW	2	10
Rhexia nutallii	1	FACW	2	2
Cladium jamaicense	5	OBL	1	5
Eupatorium capillifolium	5	FAC	3	15
Centella asiatica	1	FACW	2	2
Rhynchospora microcarpa	1	OBL	1	1
Xyris brevifolius	1	OBL	1	1
Total	89			161
WA	1.81			

Plot No.: 3
Water Level/Cond.: sat. soil
1.0 m. Horz. Line-Inter.: 1%
0.5 m. Horz. Line-Inter.: 10%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	5	FAC	3	15
Lachnathes caroliniana	5	FAC	3	15
Xyris jupicai	5	FACW	2	10
Panicum repens	10	FACW	2	20
Total	25			60
WA	2.4			

Wetland Creation Area: TE 2
Sampling Date: 13 Nov 99

Plot No.: 1
Water Level/Cond.: sat. soil
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 60%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	15	FAC	3	45
Panicum hemitomon	10	OBL	1	10
Sporobolus indicus*	5	FACU	4	20
Rhynchospora microcarpa	10	OBL	1	10
Scleria oligantha	10	FACW	2	20
Eragrostis sp.	5	FAC	3	15
Lachnathes caroliniana	10	FAC	3	30
Xyris jupicai	1	FACW	2	2
Sagittaria lancifolia	1	OBL	1	1
Eupatorium capillifolium	1	FAC	3	3
Hydrocotyle umbellata	10	FACW	2	20
Panicum repens	10	FACW	2	20
Eleocharis vivipara	5	OBL	1	5
Cyperus haspan	1	OBL	1	1
Total	94			202
WA	2.15			

Plot No.: 2
Water Level/Cond.: sat. soil
1.0 m. Horz. Line-Inter.: 1%
0.5 m. Horz. Line-Inter.: 45%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Eupatorium capillifolium	10	FAC	3	30
Scoparia dulcis	5	FAC	3	15
Xyris jupicai	15	FACW	2	30
Hydrocotyle umbellata	5	FACW	2	10
Panicum repens	20	FACW	2	40
Eleocharis vivipara	10	OBL	1	10
Rhynchospora fascicularis	5	FACW	2	10
Digitaria serotina	1	FAC	3	3
Cyperus polystachyos	1	FACW	2	2
Rhynchospora microcarpa	1	OBL	1	1
Total	73			151
WA	2.07			

Plot No.: 3
Water Level/Cond.: sat. soils
1.0 m. Horz. Line-Inter.: 1%
0.5 m. Horz. Line-Inter.: 35%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Eupatorium capillifolium	20	FAC	3	60
Rhynchospora microcephala	5	FACW	2	10
Mikania scandens	1	FACW	2	2
Hydrocotyle umbellata	1	FACW	2	2
Andropogon virginicus	1	FACW	2	2
Panicum repens	10	FACW	2	20
Xyris jupicai	5	FACW	2	10
Xyris brevifolius	1	OBL	1	1
Panicum verrucosum	10	FACW	2	20
Total	54			127
WA	2.35			

Wetland Creation Area: FR F-2
Sampling Date: 13 Nov 99

Plot No.: 1
Water Level/Cond.: sat.soil
1.0 m. Horz. Line-Inter.: 10%
0.5 m. Horz. Line-Inter.: 50%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Juncus megacephalus	30	OBL	1	30
Andropogon virginicus	25	FAC	3	75
Sphagnum sp.	5	OBL	1	5
Centella asiatica	5	FACW	2	10
Hydrocotyle umbellata	1	FACW	2	2
Solidago fistulosa	1	FACW	2	2
Drosera brevifolia	1	FACW	2	2
Dicanthelium sp.	1	FAC	3	3
Axonopus affinis	5	FAC	3	15
Total	74			144
WA	1.95			

Plot No.: 2
Water Level/Cond.: sat.soil
1.0 m. Horz. Line-Inter.: 10%
0.5 m. Horz. Line-Inter.: 50%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	20	FAC	3	60
Dicanthelium sp.	5	FACW	2	10
Pinus elliottii	15	UPL	5	75
Juncus megacephalus	15	OBL	1	15
Centella asiatica	10	FACW	2	20
Drosera brevifolia	5	FACW	2	10
Acer rubrum	1	FACW	2	2
Axonopus furcatus	5	FAC	3	15
Axonopus affinis	5	FAC	3	15
Xyris smalliana	1	OBL	1	1
Xyris brevifolius	1	OBL	1	1
Hypericum fasciculatum	1	OBL	1	1
Total	84			225
WAI	2.68			

Plot No.: 3
Water Level/Cond.: sat.soil
1.0 m. Horz. Line-Inter.: 25%
0.5 m. Horz. Line-Inter.: 65%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	45	FAC	3	135
Pinus elliottii	15	UPL	5	75
Centella asiatica	5	FACW	2	10
Axonopus furcatus	1	FAC	3	3
Drosera brevifolia	1	FACW	2	2
Juncus megacephalus	1	OBL	1	1
Acer rubrum	1	FACW	2	2
Amphicarpum muhlenbergianum	10	FACW	2	20
Rhynchospora sp.	1	FACW	2	2
Sphagnum sp.	1	OBL	1	1
Total	81			251
WAI	3.09			

Wetland Creation Area: FR H-10
Sampling Date: 13 Nov 99

Plot No.: 1
Water Level/Cond.: sat. soil to 0.1 ft.
1.0 m. Horz. Line-Inter.: 20%
0.5 m. Horz. Line-Inter.: 60%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	45	FAC	3	135
Rhynchospora microcephala	1	FACW	2	2
Panicum hemitomon	10	OBL	1	10
Centella asiatica	5	FACW	2	10
Eleocharis baldwinii	5	OBL	1	5
Axonopus furcatus	1	FAC	3	3
Total	67			165
WA	2.46			

Plot No.: 2
Water Level/Cond.: moist.soil to 0.3 ft.
1.0 m. Horz. Line-Inter.: 40%
0.5 m. Horz. Line-Inter.: 85%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	75	FAC	3	225
Centella asiatica	1	FACW	2	2
Solidago sp.	1	OBL	1	1
Spartina bakeri	10	FACW	2	20
Rhynchospora fascicularis	1	FACW	2	2
Total	88			250
WA	2.84			

Plot No.: 3
Water Level/Cond.: moist.soil to 0.3 ft.
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 15%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	20	FAC	3	60
Spartina bakeri	1	FACW	2	2
Bacopa caroliniana	10	OBL	1	10
Hydrocotyle umbellata	1	FACW	2	2
Rhynchospora sp.	1	FACW	2	2
Axonopus affinis	5	FAC	3	15
Centella asiatica	1	FACW	2	2
Axonopus furcatus	1	FAC	3	3
Total	40			96
WA	2.4			

Wetland Creation Area: FR I-1
Sampling Date: 13 Nov 99

Plot No.: 1
Water Level/Cond.: moist soil
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 15%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Oxypolis filiformis	1	OBL	1	1
Andropogon virginicus	15	FAC	3	45
Lachnathes caroliniana	5	FAC	3	15
Juncus megacephalus	15	OBL	1	15
Rhynchospora microcephala	1	FACW	2	2
Centella asiatica	25	FACW	2	50
Xyris elliotii	10	OBL	1	10
Rhynchospora tracyii	5	OBL	1	5
Rhynchospora wrightiana	5	FACW	2	10
Eriocaulon decangulare	1	OBL	1	1
Drosera brevifolia	5	FACW	2	10
Total	88			164
WA	1.86			

Plot No.: 2
Water Level/Cond.: 0.1 ft. to sat. soil
1.0 m. Horz. Line-Inter.: 15%
0.5 m. Horz. Line-Inter.: 25%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	10	FAC	3	30
Xyris elliotii	45	OBL	1	45
Eragrostis sp.	5	FAC	3	15
Pluchea odorata	5	FACW	2	10
Helianthus angustifolius	1	FACW	2	2
Scleria reticularis	5	FACW	2	10
Xyris brevifolius	1	OBL	1	1
Panicum verrucosum	1	FACW	2	2
Hypericum fasciculatum	1	OBL	1	1
Hydrocotyle umbellata	1	FACW	2	2
Rhexia nutallii	1	FACW	2	2
Bacopa caroliniana	1	OBL	1	1
Drosera brevifolia	5	FACW	2	10
Dicanthelium sp.	1	FACW	2	2
Centella asiatica	1	FACW	2	2
Hydrochloa caroliniensis	1	OBL	1	1
Ludwigia repens	1	OBL	1	1
Total	86			137
WA	1.59			

Plot No.: 3
Water Level/Cond.: sat. soil to 0.0 ft.
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 30%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Amphicarpum muhlenbergianum	30	FACW	2	60
Xyris elliotii	30	OBL	1	30
Centella asiatica	10	FACW	2	20
Hypericum fasciculatum	1	OBL	1	1
Bacopa caroliniana	5	OBL	1	5
Carex stipata	1	OBL	1	1
Lachnathes caroliniana	1	FAC	3	3
Ludwigia repens	1	OBL	1	1
Xyris brevifolius	1	OBL	1	1
Rhynchospora microcarpa	5	OBL	1	5
Pluchea odorata	1	FACW	2	2
Hydrocotyle umbellata	1	FACW	2	2
Total	87			131
WA	1.51			

Wetland Creation Area: FR 2.2ac.
Sampling Date: 13 Nov 99

Plot No.: 1
Water Level/Cond.: 0.1 ft. to sat. soil
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 10%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Bacopa caroliniana	40	OBL	1	40
Hydrocotyle umbellata	5	FACW	2	10
Centella asiatica	25	FACW	2	50
Galium tinctorium	1	FACW	2	2
Sporobolus indicus	1	FACU	4	4
Canna flaccida	1	OBL	1	1
Iris hexagona	1	OBL	1	1
Polygonum hydropiperoides	1	OBL	1	1
Panicum hemitomon	1	OBL	1	1
Fuirena scirpodea	1	OBL	1	1
Cyperus haspan	1	OBL	1	1
Total	78			112
WA	1.44			

Plot No.: 2
Water Level/Cond.: 0.1 ft. to sat. soil
1.0 m. Horz. Line-Inter.: 1%
0.5 m. Horz. Line-Inter.: 5%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Panicum repens	20	FACW	2	40
Xyris brevifolius	1	OBL	1	1
Lindernia grandiflora	20	FACW	2	40
Centella asiatica	10	FACW	2	20
Iris hexagona	1	OBL	1	1
Hydrocotyle umbellata	1	FACW	2	2
Scleria reticularis	1	FACW	2	2
Pinus elliottii	1	UPL	5	5
Myrica cerifera	1	FAC	3	3
Andropogon virginicus	5	FAC	3	15
Amphicarpum muhlenbergianum	1	FACW	2	2
Panicum hemitomon	1	OBL	1	1
Lachnathes caroliniana	1	FAC	3	3
Eupatorium capillifolium	1	FAC	3	3
Bacopa caroliniana	1	OBL	1	1
Eleocharis baldwinii	1	OBL	1	1
Xyris smalliana	1	OBL	1	1
Axonopus furcatus	1	FAC	3	3
Total	69			144
WA	2.09			

Plot No.: 3
Water Level/Cond.: 0.1 ft. to sat. soil
1.0 m. Horz. Line-Inter.: 1%
0.5 m. Horz. Line-Inter.: 15%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Panicum hemitomon	20	OBL	1	20
Pontederia cordata	5	OBL	1	5
Sagittaria lancifolia	1	OBL	1	1
Ludwigia repens	5	OBL	1	5
Hydrocotyle umbellata	1	FACW	2	2
Centella asiatica	15	FACW	2	30
Urena lobata*	1	FACU	4	4
Phyla nodiflora	1	FAC	3	3
Xyris brevifolius	1	OBL	1	1
Rhynchospora microcephala	1	FACW	2	2
Erigeron vernus	1	FACW	2	2
Andropogon virginicus	1	FAC	3	3
Lindernia grandiflora	1	FACW	2	2
Axonopus furcatus	5	FAC	3	15
Total	59			95
WA	1.61			

Wetland Creation Area: FR H-1
Sampling Date: 13 Nov 99

Plot No.: 1
Water Level/Cond.: sat. soil
1.0 m. Horz. Line-Inter.: 10%
0.5 m. Horz. Line-Inter.: 25%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Panicum rigidulum	15	FACW	2	30
Panicum verrucosum	5	FACW	2	10
Andropogon virginicus	5	FAC	3	15
Juncus megacephalus	5	OBL	1	5
Hypericum fasciculatum	10	OBL	1	10
Ludwigia repens	10	OBL	1	10
Diodia virginiana	1	FACW	2	2
Eriocaulon sp.	10	OBL	1	10
Axonopus affinis	1	FAC	3	3
Sabatia grandiflora	1	FACW	2	2
Amphicarpum muhlenbergianum	1	FACW	2	2
Total	64			99
WA	1.55			

Plot No.: 2
Water Level/Cond.: 0.1 ft.
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 20%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Juncus marginatus	20	OBL	1	20
Andropogon virginicus	15	FAC	3	45
Lachnathes caroliniana	5	FAC	3	15
Eriocaulon sp.	15	OBL	1	15
Ludwigia repens	10	OBL	1	10
Hypericum fasciculatum	1	OBL	1	1
Total	66			106
WA	1.61			

Plot No.: 3
Water Level/Cond.: sat. soils
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 20%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Panicum verrucosum	20	FACW	2	40
Andropogon virginicus	15	FAC	3	45
Eriocaulon sp.	20	OBL	1	20
Hypericum fasciculatum	5	OBL	1	5
Xyris brevifolius	1	OBL	1	1
Juncus polycephalus	1	OBL	1	1
Pluchea odorata	1	FACW	2	2
Total	63			114
WA	1.81			

Wetland Creation Area: US 1
Sampling Date: 19 Nov 99

Plot No.: 1
Water Level/Cond.: sat. to moist soils
1.0 m. Horz. Line-Inter.: 1%
0.5 m. Horz. Line-Inter.: 20%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Juncus effusus	20	OBL	1	20
Canna flaccida	15	OBL	1	15
Ludwigia peruviana	10	OBL	1	10
Myrica cerifera	1	FAC	3	3
Seteria geniculata	25	FAC	3	75
Panicum rigidulum	5	FACW	2	10
Galium tinctorium	5	FACW	2	10
Polygonum hydropiperoides	1	OBL	1	1
Paspalum urvillei	1	FAC	3	3
Total	83			147
WA	1.77			

Plot No.: 2
Water Level/Cond.: sat. to moist soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 5%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	15	FAC	3	45
Panicum virgatum	5	FACW	2	10
Canna flaccida	5	OBL	1	5
Axonopus affinis	10	FAC	3	30
Eragrostis sp.	15	FAC	3	45
Seteria geniculata	25	FAC	3	75
Diodia virginiana	5	FACW	2	10
Lachnathes caroliniana	1	FAC	3	3
Scoparia dulcis	1	FAC	3	3
Polygonum hydropiperoides	1	OBL	1	1
Mikania scandens	1	FACW	2	2
Ludwigia sp.	1	OBL	1	1
Total	85			230
WA	2.71			

Plot No.: 3
Water Level/Cond.: sat. to moist soils
1.0 m. Horz. Line-Inter.: 1%
0.5 m. Horz. Line-Inter.: 20%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Canna flaccida	15	OBL	1	15
Ludwigia sp.	5	OBL	1	5
Panicum anceps	10	FAC	3	30
Mikania scandens	15	FACW	2	30
Juncus effusus	20	OBL	1	20
Sagittaria lancifolia	10	OBL	1	10
Seteria geniculata	5	FAC	3	15
Ludwigia repens	1	OBL	1	1
Proserpinaca pectinata	1	OBL	1	1
Hydrochloa caroliniensis	5	OBL	1	5
Galium tinctorium	1	FACW	2	2
Ludwigia suffruticosa	5	OBL	1	5
Cyperus polystachyos	1	FACW	2	2
Carex albolutescens	1	FACW	2	2
Polygonum hydropiperoides	1	OBL	1	1
Total	96			144
WA	1.5			

Wetland Creation Area: CC MB1
Sampling Date: 19 Nov 99

Plot No.: 1
Water Level/Cond.: 0.0 to 0.1 ft.
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 40%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	15	FAC	3	45
Eragrostis sp.	10	FAC	3	30
Panicum hemitomon	10	OBL	1	10
Lachnocaulon beyrichianum	5	FACW	2	10
Eupatorium capillifolium	1	FAC	3	3
Pluchea rosea	1	FACW	2	2
Centella asiatica	1	FACW	2	2
Hypericum fasciculatum	5	OBL	1	5
Gratiola pilosa	1	FACW	2	2
Rhynchospora microcephala	5	FACW	2	10
Juncus scirpoides	1	OBL	1	1
Eleocharis baldwinii	5	OBL	1	5
Total	60			125
WA	2.08			

Plot No.: 2
Water Level/Cond.: 0.0 to 0.1 ft.
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 20%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	15	FAC	3	45
Rhynchospora microcephala	5	FACW	2	10
Eupatorium capillifolium	1	FAC	3	3
Cyperus haspan	1	OBL	1	1
Lachnathes caroliniana	5	FAC	3	15
Eleocharis baldwinii	25	OBL	1	25
Solidago fistulosa	1	FACW	2	2
Eragrostis sp.	15	FAC	3	45
Rhexia mariana	5	FACW	2	10
Lachnathes caroliniana	5	FAC	3	15
Centella asiatica	1	FACW	2	2
Ludwigia decurrens	1	OBL	1	1
Euthamia minor	1	FAC	3	3
Total	81			177
WA	2.19			

Plot No.: 3
Water Level/Cond.: 0.0 to 0.1 ft.
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 35%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	20	FAC	3	60
Juncus scirpoides	15	OBL	1	15
Eupatorium capillifolium	1	FAC	3	3
Eleocharis baldwinii	20	OBL	1	20
Lachnathes caroliniana	1	FAC	3	3
Eragrostis sp.	1	FAC	3	3
Rhynchospora wrightiana	1	FACW	2	2
Erianthus giganteus	1	OBL	1	1
Total	60			107
WA	1.78			

Wetland Creation Area: CC ME
Sampling Date: 19 Nov 99

Plot No.: 1
Water Level/Cond.: 0.0 to 0.1 ft.
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 50%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Juncus effusus	50	OBL	1	50
Galium tinctorium	5	FACW	2	10
Eupatorium capillifolium	1	FAC	3	3
Sagittaria lancifolia	10	OBL	1	10
Mikania scandens	5	FACW	2	10
Ludwigia repens	5	OBL	1	5
Total	76			88
WA	1.16			

Plot No.: 2
Water Level/Cond.: 0.0 to 0.1 ft.
1.0 m. Horz. Line-Inter.: 20%
0.5 m. Horz. Line-Inter.: 55%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Sagittaria lancifolia	20	OBL	1	20
Juncus effusus	20	OBL	1	20
Solidago sp.	1	FACW	2	2
Ludwigia repens	50	OBL	1	50
Hydrocotyle umbellata	5	FACW	2	10
Eleocharis baldwinii	5	OBL	1	5
Ludwigia repens	5	OBL	1	5
Polygonum hydropiperoides	1	OBL	1	1
Total	107			113
WA	1.06			

Plot No.: 3
Water Level/Cond.: 0.0 to 0.1 ft.
1.0 m. Horz. Line-Inter.: 10%
0.5 m. Horz. Line-Inter.: 75%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Juncus effusus	65	OBL	1	65
Sagittaria lancifolia	10	OBL	1	10
Mikania scandens	15	FACW	2	30
Eupatorium capillifolium	1	FAC	3	3
Pontederia cordata	1	OBL	1	1
Ludwigia repens	1	OBL	1	1
Leersia hexandra	5	OBL	1	5
Galium tinctorium	1	FACW	2	2
Total	99			117
WA	1.18			

Wetland Creation Area: CC M10
Sampling Date: 19 Nov 99

Plot No.: 1
Water Level/Cond.: 0.0 ft.
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 70%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Juncus effusus	55	OBL	1	55
Sagittaria lancifolia	15	OBL	1	15
Panicum repens	5	FACW	2	10
Mikania scandens	5	FACW	2	10
Ludwigia repens	5	OBL	1	5
Cyperus haspan	1	OBL	1	1
Hydrochloa caroliniensis	1	OBL	1	1
Centella asiatica	1	FACW	2	2
Total	88			99
WA	1.13			

Plot No.: 2
Water Level/Cond.: 0.0 ft.
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 5%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Solidago sp.	10	OBL	1	10
Juncus scirpoides	5	OBL	1	5
Panicum repens	25	FACW	2	50
Panicum hemitomon	5	OBL	1	5
Ludwigia peruviana	5	OBL	1	5
Rhynchospora tracyii	1	OBL	1	1
Mikania scandens	1	FACW	2	2
Cyperus haspan	5	OBL	1	5
Centella asiatica	1	FACW	2	2
Total	58			85
WA	1.47			

Plot No.: 3
Water Level/Cond.: 0.0 ft.
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 20%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Juncus scirpoides	20	OBL	1	20
Euthamia minor	10	FAC	3	30
Panicum repens	10	FACW	2	20
Ludwigia repens	45	OBL	1	45
Sagittaria graminea	1	OBL	1	1
Mikania scandens	1	FACW	2	2
Rhynchospora sp.	1	FACW	2	2
Erianthus giganteus	1	OBL	1	1
Hydrocotyle umbellata	1	FACW	2	2
Total	90			123
WA	1.37			

Wetland Creation Area: HG M-10-9
Sampling Date: 19 Nov 99

Plot No.: 1
Water Level/Cond.: sat soil to 0.2 ft.
1.0 m. Horz. Line-Inter.: 10%
0.5 m. Horz. Line-Inter.: 45%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Lachnathes caroliniana	15	FAC	3	45
Panicum hemitomon	10	OBL	1	10
Sagittaria lancifolia	5	OBL	1	5
Mikania scandens	10	FACW	2	20
Juncus effusus	1	OBL	1	1
Ludwigia repens	5	OBL	1	5
Hydrocotyle umbellata	5	FACW	2	10
Bidens mitis	5	OBL	1	5
Rhynchospora wrightiana	5	FACW	2	10
Eleocharis vivipara	10	OBL	1	10
Andropogon virginicus	5	FAC	3	15
Solidago fistulosa	5	FACW	2	10
Bacopa monnieri	5	OBL	1	5
Hydrochloa caroliniensis	1	OBL	1	1
Cyperus polystachyos	1	FACW	2	2
Polygonum hydropiperoides	1	OBL	1	1
Eupatorium capillifolium	1	FAC	3	3
Solidago sp.	1	FACW	2	2
Total	91			160
WA	1.76			

Plot No.: 2
Water Level/Cond.: sat soil to 0.2 ft.
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 10%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Sagittaria lancifolia	20	OBL	1	20
Ludwigia peruviana	5	OBL	1	5
Mikania scandens	10	FACW	2	20
Ludwigia repens	5	OBL	1	5
Fuirena scirpodea	10	OBL	1	10
Hydrochloa caroliniensis	5	OBL	1	5
Ludwigia sp.	1	OBL	1	1
Polygonum hydropiperoides	1	OBL	1	1
Solidago fistulosa	1	FACW	2	2
Total	58			69
WA	1.19			

Plot No.: 3
Water Level/Cond.: sat soil to 0.2 ft.
1.0 m. Horz. Line-Inter.: 1%
0.5 m. Horz. Line-Inter.: 20%
Vert Cover 60%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon glomeratus	5	FACW	2	10
Eragrostis sp.	5	FAC	3	15
Mikania scandens	10	FACW	2	20
Panicum hemitomon	10	OBL	1	10
Juncus effusus	10	OBL	1	10
Scoparia dulcis	1	FAC	3	3
Centella asiatica	5	FACW	2	10
Hydrocotyle umbellata	1	FACW	2	2
Sagittaria lancifolia	5	OBL	1	5
Rhynchospora wrightiana	5	FACW	2	10
Hydrochloa caroliniensis	1	OBL	1	1
Juncus scirpoides	5	OBL	1	5
Ludwigia repens	5	OBL	1	5
Bidens mitis	1	OBL	1	1
Eleocharis baldwinii	1	OBL	1	1
Boltonia diffusa	5	FACW	2	10
Sacciolepis striata	1	OBL	1	1
Total	76			119
WA	1.57			

Wetland Creation Area: IM 1
Sampling Date: 6 Dec 99

Plot No.: 1
Water Level/Cond.: sat soils to 0.2 ft.
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 10%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Typha sp.	15	OBL	1	15
Cyperus polystachyos	1	FACW	2	2
Hydrocotyle umbellata	15	FACW	2	30
Ludwigia octovalis	1	OBL	1	1
Panicum rigidulum	5	FACW	2	10
Seteria geniculata	1	FAC	3	3
Pontederia cordata	15	OBL	1	15
Mikania scandens	5	FACW	2	10
Eleocharis baldwinii	5	OBL	1	5
Rhynchospora sp.	1	FACW	2	2
Panicum repens	1	FACW	2	2
Lindernia grandiflora	5	FACW	2	10
Salix caroliniana	1	OBL	1	1
Total	71			106
WA 1.49				

Plot No.: 2
Water Level/Cond.: sat soils
1.0 m. Horz. Line-Inter.: 10%
0.5 m. Horz. Line-Inter.: 30%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Typha sp.	5	OBL	1	5
Panicum rigidulum	40	FACW	2	80
Polygonum hydropiperoides	1	OBL	1	1
Mikania scandens	1	FACW	2	2
Hydrocotyle umbellata	15	FACW	2	30
Pontederia cordata	1	OBL	1	1
Pluchea odorata	1	FACW	2	2
Ludwigia peruvianau	1	OBL	1	1
Lindernia grandiflora	1	FACW	2	2
Cyperus polystachyos	1	FACW	2	2
Axonopus affinis	5	FAC	3	15
Total	72			141
WA 1.96				

Plot No.: 3
Water Level/Cond.: sat soils
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 10%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Typha sp.	10	OBL	1	10
Cynodon dactylon	55	FAC	3	165
Mikania scandens	5	FACW	2	10
Hydrocotyle umbellata	5	FACW	2	10
Polygonum hydropiperoides	1	OBL	1	1
Seteria geniculata	1	FAC	3	3
Sagittaria latifolia	1	OBL	1	1
Total	78			200
WA 2.56				

Wetland Creation Area: IM 2
Sampling Date: 6 Dec 99

Plot No.: 1
Water Level/Cond.: 0.2 to 0.1 ft.
1.0 m. Horz. Line-Inter.: 10%
0.5 m. Horz. Line-Inter.: 35%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Pontederia cordata	15	OBL	1	15
Mikania scandens	20	FACW	2	40
Andropogon glomeratus	10	FACW	2	20
Panicum hemitomon	10	OBL	1	10
Hydrocotyle umbellata	1	FACW	2	2
Solidago fistulosa	1	FACW	2	2
Limnobium spongia	1	OBL	1	1
Utricularia sp.	5	OBL	1	5
Total	63			95
WA	1.51			

Plot No.: 2
Water Level/Cond.: sat soils to 0.1 ft.
1.0 m. Horz. Line-Inter.: 15%
0.5 m. Horz. Line-Inter.: 25%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Solidago sp.	15	OBL	1	15
Panicum hemitomon	5	OBL	1	5
Pontederia cordata	20	OBL	1	20
Cyperus brevifolius	5	FACW	2	10
Mikania scandens	1	FACW	2	2
Cyperus polystachyos	1	FACW	2	2
Cyperus haspan	5	OBL	1	5
Hydrocotyle umbellata	1	FACW	2	2
Eleocharis vivipara	5	OBL	1	5
Andropogon glomeratus	1	FACW	2	2
Panicum rigidulum	1	FACW	2	2
Seteria geniculata	1	FAC	3	3
Total	61			73
WA	1.2			

Plot No.: 3
Water Level/Cond.: sat soils
1.0 m. Horz. Line-Inter.: 15%
0.5 m. Horz. Line-Inter.: 35%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Salix caroliniana	25	OBL	1	25
Andropogon glomeratus	20	FACW	2	40
Spartina bakeri	15	FACW	2	30
Mikania scandens	15	FACW	2	30
Panicum rigidulum	1	FACW	2	2
Panicum repens	1	FACW	2	2
Hydrocotyle umbellata	1	FACW	2	2
Eleocharis baldwinii	5	OBL	1	5
Pontederia cordata	1	OBL	1	1
Total	84			137
WA	1.63			

Wetland Creation Area: IM 3
Sampling Date: 6 Dec 99

Plot No.: 1
Water Level/Cond.: sat soils to 0.1 ft.
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 1%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Leersia hexandra	25	OBL	1	25
Panicum repens	20	FACW	2	40
Pontederia cordata	5	OBL	1	5
Polygonum punctatum	5	OBL	1	5
Polygonum hydropiperoides	1	OBL	1	1
Hydrocotyle umbellata	5	FACW	2	10
Mikania scandens	20	FACW	2	40
Total	81			126
WA 1.56				

Plot No.: 2
Water Level/Cond.: sat soils to 0.2 ft.
1.0 m. Horz. Line-Inter.:
0.5 m. Horz. Line-Inter.:

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Pontederia cordata	15	OBL	1	15
Solidago sp.	15	FACW	2	30
Panicum repens	10	FACW	2	20
Hydrocotyle umbellata	15	FACW	2	30
Leersia hexandra	5	OBL	1	5
Mikania scandens	1	FACW	2	2
Eleocharis baldwinii	10	OBL	1	10
Panicum rigidulum	1	FACW	2	2
Total	72			114
WA 1.58				

Plot No.: 3
Water Level/Cond.: sat soils to 0.2 ft.
1.0 m. Horz. Line-Inter.: 10%
0.5 m. Horz. Line-Inter.: 60%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Spartina bakeri	30	FACW	2	60
Mikania scandens	20	FACW	2	40
Panicum repens	15	FACW	2	30
Seteria geniculata	5	FAC	3	15
Hydrocotyle umbellata	1	FACW	2	2
Eleocharis baldwinii	5	OBL	1	5
Canna flaccida	1	OBL	1	1
Polygonum hydropiperoides	1	OBL	1	1
Juncus effusus	1	OBL	1	1
Eleocharis vivipara	5	OBL	1	5
Panicum rigidulum	1	FACW	2	2
Total	85			162
WA 1.91				

APPENDIX E:

VEGETATIVE ANALYSIS DATA SHEETS

JUNE 2000

MULCHED WETLAND CREATION AREAS

Wetland Creation Area: WC M-36
Sampling Date: 10 Jun 00

Plot No.: 1
Water Level/Cond.: sat. soils
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 25%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Ptilinium capillaceum	20	FACW	2	40
Solidago sp.	5	FACW	2	10
Eupatorium capillifolium	5	FAC	3	15
Sagittaria lancifolia	5	OBL	1	5
Panicum repens	5	FACW	2	10
Baccharis halimifolia	5	FAC	3	15
Total	45			95
WA 2.11				

Plot No.: 2
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 40%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Sagittaria lancifolia	15	OBL	1	15
Polygonum hydropiperoides	1	OBL	1	1
Ptilinium capillaceum	20	FACW	2	40
Panicum repens	10	FACW	2	20
Eupatorium capillifolium	1	FAC	3	3
Ludwigia repens	15	OBL	1	15
Baccharis halimifolia	1	FAC	3	3
Cyperus haspan	1	OBL	1	1
Total	64			98
WA 1.53				

Plot No.: 3
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 1%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Sagittaria lancifolia	5	OBL	1	5
Baccharis halimifolia	1	FAC	3	3
Panicum repens	15	FACW	2	30
Erechites hieracifolia	5	FAC	3	15
Ptilinium capillaceum	15	FACW	2	30
Ludwigia repens	1	OBL	1	1
Chamaecrista nictitans	1	FACU	4	4
Mikania scandens	1	FACW	2	2
Total	44			90
WA 2.05				

Wetland Creation Area: WC M-41A
Sampling Date: 10 Jun 00

Plot No.: 1
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 1%
0.5 m. Horz. Line-Inter.: 40%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Juncus effusus	20	OBL	1	20
Juncus megacephalus	1	OBL	1	1
Vigna luteola	1	FACU	4	4
Ludwigia peruviana	5	OBL	1	5
Mikania scandens	1	FACW	2	2
Centella asiatica	1	FACW	2	2
Baccharis halimifolia	1	FAC	3	3
Solidago fistulosa	5	FACW	2	10
Panicum repens	1	FACW	2	2
Total	36			49
WA	1.36			

Plot No.: 2
dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 50%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Sagittaria lancifolia	25	OBL	1	25
Mikania scandens*	5	FACW	2	10
Vigna luteola	1	FACU	4	4
Ptilinium capillaceum	10	FACW	2	20
Andropogon virginicus	5	FAC	2	10
Panicum hemitomon	1	OBL	1	1
Panicum repens	5	FACW	2	10
Alternanthera philoxeroides	5	OBL	1	5
Total	57			85
WA	1.49			

Plot No.: 3
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 1%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Mikania scandens	1	FACW	2	2
Pontederia cordata	5	OBL	1	5
Alternanthera philoxeroides	5	OBL	1	5
Sagittaria lancifolia	5	OBL	1	5
Chamaecrista nictitans	1	FACU	4	4
Panicum hemitomon	5	OBL	1	5
Justicia ovata	1	OBL	1	1
Ptilinium capillaceum	15	FACW	2	30
Total	38			57
WA	1.5			

Wetland Creation Area: HG M-1-5
Sampling Date: 11 Jun 00

Plot No.: 1
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 1%
0.5 m. Horz. Line-Inter.: 5%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Juncus effusus	15	OBL	1	15
Iris hexagona	5	OBL	1	5
Panicum repens	1	FACW	2	2
Total	21			22
WA 1.05				

Plot No.: 2
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 10%
0.5 m. Horz. Line-Inter.: 75%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Juncus effusus	70	OBL	1	70
	5	FACW	2	10
Polygonum sp.	5	OBL	1	5
Carex albolutescens	1	FACW	2	2
Lycopus rubellus	1	OBL	1	1
Spartina bakeri	5	FACW	2	10
Total	87			98
WA 1.13				

Plot No.: 3
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 25%
0.5 m. Horz. Line-Inter.: 85%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Spartina bakeri	50	FACW	2	100
Panicum hemitomon	10	OBL	1	10
Polygonum sp.	10	OBL	1	10
Rhynchospora sp.	1	FACW	2	2
Juncus effusus	5	OBL	1	5
Galium tinctorium	10	FACW	2	20
Ptilinium capillaceum	5	FACW	2	10
Carex albolutescens	5	FACW	2	10
Total	96			167
WA 1.74				

Wetland Creation Area: HG M-1-6 (N3)
Sampling Date: 11 Jun 00

Plot No.: 1
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 10%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Centella asiatica	5	FACW	2	10
Eleocharis baldwinii	10	OBL	1	10
Fuirena scirpodea	5	OBL	1	5
Amphicarpum muhlenbergianum	30	FACW	2	60
Solidago fistulosa	5	FACW	2	10
Total	55			95
WA 1.73				

Plot No.: 2
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 1%
0.5 m. Horz. Line-Inter.: 1%

	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Leersia hexandra	1	OBL	1	1
Solidago fistulosa	25	FACW	2	50
Eupatorium capillifolium	1	FAC	3	3
Amphicarpum muhlenbergianum	5	FACW	2	10
Andropogon virginicus	5	FAC	3	15
Juncus effusus	1	OBL	1	1
Total	38			80
WA 2.11				

Plot No.: 3
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 0%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Panicum hemitomon	10	OBL	1	10
Euthamia minor	1	FAC	3	3
Rhynchospora sp.	5	FACW	2	10
Rhynchospora sp.	1	FACW	2	2
Amphicarpum muhlenbergianum	5	FACW	2	10
Lythrum alatum	1	OBL	1	1
Total	23			36
WA 1.57				

Wetland Creation Area: HG M-1-6 (C)
Sampling Date: 11 jun 00

Plot No.: 3
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 10%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Solidago fistulosa	10	FAC	3	30
Panicum hemitomon	5	OBL	1	5
Iris hexagona	5	OBL	1	5
Eupatorium capillifolium	1	FAC	3	3
Total	21			43
WA 2.05				

Wetland Creation Area: HG M-1-6 (S1)
Sampling Date: 18 Jun 00

Plot No.: 1
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 5%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Eupatorium capillifolium	15	FAC	3	45
Baccharis halimifolia	1	FAC	3	3
Pluchea rosea	1	FACW	2	2
Cyperus haspan	1	OBL	1	1
Rhynchospora sp.	1	FACW	2	2
Hypericum hypericoides	1	OBL	1	1
Solidago fistulosa	5	FAC	3	15
Ludwigia repens	5	OBL	1	5
Panicum hemitomon	1	OBL	1	1
Total	31			75
WA	2.42			

3
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 20%
0.5 m. Horz. Line-Inter.: 65%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Solidago fistulosa	25	FAC	3	75
Panicum hemitomon	30	OBL	1	30
Carex albolutescens	1	FACW	2	2
Eupatorium capillifolium	1	FAC	3	3
Total	57			110
WA	1.93			

Wetland Creation Area: HG M-2-11(S)
Sampling Date: 11 Jun 00

Plot No.: 1
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 55%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Solidago sp.	15	FACW	2	30
Andropogon virginicus	45	FAC	3	135
Lachnathes caroliniana	10	FAC	3	30
Rhynchospora tracyi	5	OBL	1	5
Total	75			200
WA 2.67				

Plot No.: 2
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 10%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
	10	FAC	3	30
Andropogon virginicus	1	FAC	2	2
Panicum hemitomon	40	OBL	1	40
Total	51			72
WA 1.41				

Plot No.: 3
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 25%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Solidago sp.	10	FAC	2	20
Woodwardia virginica	1	FACW	2	2
Panicum hemitomon	10	OBL	1	10
Andropogon virginicus	25	FAC	3	75
Ludwigia sp.	5	OBL	1	5
Rhynchospora microcarpa	5	OBL	1	5
Total	56			117
WA 2.09				

Wetland Creation Area: HG M-1-6 (S2)
Sampling Date: 11-Jun-00

Plot No.: 1
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 10%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Panicum hemitomon	15	OBL	1	15
Eupatorium capillifolium	10	FAC	3	30
Baccharis halimifolia	5	FAC	3	15
Erechites hieracifolia	1	FAC	3	3
Polygonum hydropiperoides	1	OBL	1	1
Total	32			64
WA	2			

Plot No.: 2
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 5%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon glomeratus	1	FACW	2	2
Rhexia nutallii	1	FACW	2	2
Pluchea rosea	5	FACW	2	10
Panicum hemitomon	5	OBL	1	5
Rhynchospora tracyi	1	OBL	1	1
Eupatorium capillifolium	5	FAC	3	15
Total	18			35
WA	1.94			

Plot No.: 3
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 10%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Eupatorium capillifolium	5	FAC	3	15
Panicum hemitomon	10	OBL	1	10
Baccharis halimifolia	1	FAC	3	3
Solidago stricta	5	FAC	3	15
Andropogon virginicus	1	FAC	3	3
Paspalum laeve	10	FACW	2	20
Pluchea rosea	1	FACW	2	2
Total	33			68
WA	2.06			

Wetland Creation Area: HG M-2-11 (N)
Sampling Date: 11 Jun 00

Plot No.: 1
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 1%
0.5 m. Horz. Line-Inter.: 10%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Solidago fistulosa	15	FAC	3	45
Andropogon virginicus	20	FAC	3	60
Hypericum fasciculatum	10	OBL	1	10
Rhynchospora tracyi	10	OBL	1	10
Rhynchospora sp.	6	FACW	2	12
Panicum hemitomon	1	OBL	1	1
Lachnathes caroliniana	5	FAC	3	15
Ludwigia suffruiticosa	5	OBL	1	5
Total	72			158
WA	2.19			

Plot No.: 3
dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 25%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	25	FAC	3	75
Hypericum fasciculatum	15	OBL	1	15
Eupatorium capillifolium	1	FAC	3	3
Xyris elliottii	1	OBL	1	1
Rhynchospora tracyi	10	OBL	1	10
Rhynchospora microcarpa	5	OBL	1	5
Lachnathes caroliniana	10	FAC	3	30
Centella asiatica	5	FACW	2	10
Syngonathus flavidulus	1	OBL	1	1
Ludwigia suffruiticosa	5	OBL	1	5
Pluchea rosea	5	FACW	2	10
Lachnathes caroliniana	15	FAC	3	45
Ilex glabra	5	FACU	4	20
Solidago fistulosa	5	FAC	3	15
Total	108			245
WA	2.27			

Wetland Creation Area: US 2
Sampling Date: 19 Jun 00

Plot No.: 1
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 10%
0.5 m. Horz. Line-Inter.: 50%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Erianthus giganteus	5	OBL	1	5
Hypericum fasiculatum	20	OBL	1	20
Sagittaria lancifolia	5	OBL	1	5
Andropogon virginicus	10	FAC	3	30
Pluchea rosea	5	FACW	2	10
Solidago fistulosa	5	FAC	3	15
Panicum hemitomon	1	OBL	1	1
Baccharis halimifolia	1	FAC	3	3
Spartina bakeri	5	FACW	2	10
Eupatorium capillifolium	1	FAC	3	3
Centella asiatica	5	FACW	2	10
Total	63			112
WA	1.78			

Plot No.: 2
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 20%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	1	FAC	3	3
Centella asiatica	1	FACW	2	2
Juncus effusus	1	OBL	1	1
Solidago fistulosa	1	FAC	3	3
Mikania scandens	1	FACW	2	2
Sagittaria lancifolia	20	OBL	1	20
Baccharis halimifolia	5	FAC	3	15
Spartina bakeri	15	FACW	2	30
Cladium jamaicense	25	OBL	1	25
Total	70			101
WA	1.44			

Plot No.: 3
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 35%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Juncus scirpoides	5	OBL	1	5
Baccharis halimifolia	5	FAC	3	15
Mikania scandens	1	FACW	2	2
Juncus effusus	5	OBL	1	5
Sagittaria lancifolia	5	OBL	1	5
Ludwigia peruviana	1	OBL	1	1
Lythrum alatum	5	OBL	1	5
Andropogon virginicus	1	FAC	3	3
Eupatorium capillifolium	15	FAC	3	45
Centella asiatica	1	FACW	2	2
Hypericum fasiculatum	15	OBL	1	15
Total	59			103
WA	1.75			

Wetland Creation Area: HG M-2-3
Sampling Date: 18 Jun 00

Plot No.: 1
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 1%
0.5 m. Horz. Line-Inter.: 20%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Commelina diffusa	10	FAC	3	30
Erechites hieracifolia	25	FAC	3	75
Galium tinctorium	30	FACW	2	60
Sagittaria lancifolia	5	OBL	1	5
Mikania scandens	1	FACW	2	2
Eclipta alba	1	FACW	2	2
Seteria geniculata	1	FAC	3	3
Juncus effusus	20	OBL	1	20
Total	93			197
WA 2.12				

Plot No.: 2
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 5%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Erechites hieracifolia	10	FAC	3	30
Seteria geniculata	5	FAC	3	15
Andropogon virginicus	5	FAC	3	15
Sagittaria lancifolia	1	OBL	1	1
Centella asiatica	5	FACW	2	10
Boltonia diffusa	15	FACW	2	30
Galium tinctorium	10	FACW	2	20
Total	51			121
WA 2.37				

Plot No.: 3
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 10%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Boltonia diffusa	20	FACW	2	40
Erechites hieracifolia	5	FAC	3	15
Sagittaria lancifolia	10	OBL	1	10
Oxypolis filiformis	1	OBL	1	1
Baccharis halimifolia	1	FAC	3	3
Juncus effusus	5	OBL	1	5
Galium tinctorium	1	FACW	2	2
Ptilinium capillaceum	1	FAC	3	3
Mikania scandens	1	FACW	2	2
Centella asiatica	1	FACW	2	2
Total	46			83
WA 1.8				

Wetland Creation Area: HG M-1-3
Sampling Date: 18-Jun-00

Plot No.: 1
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 30%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Juncus effusus	15	OBL	1	15
Andropogon glomeratus	1	FAC	3	3
Sagittaria lancifolia	5	OBL	1	5
Ludwigia repens	1	OBL	1	1
Solidago fistulosa	1	FAC	3	3
Ptilinium capillaceum	5	FACW	2	10
Baccharis halimifolia	1	FAC	3	3
Eclipta alba	5	FACW	2	10
Total	34			50
WA	1.47			

Plot No.: 2
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 30%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Juncus effusus	65	OBL	1	65
Lycopus rubellus	5	OBL	1	5
Panicum hemitomon	5	OBL	1	5
Ptilinium capillaceum	5	FACW	2	10
Galium tinctorium	1	FACW	2	2
Ludwigia suffruticosa	1	OBL	1	1
Total	82			88
WA	1.07			

Plot No.: 3
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 1%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Oxypolis filiformis	1	OBL	1	1
Mikania scandens	1	FACW	2	2
Lythrum alatum	5	OBL	1	5
Iris hexagona	5	OBL	1	5
Juncus effusus	5	OBL	1	5
Axonopus affinis	20	FAC	3	60
Solidago sp.	5	FAC	3	15
Total	42			93
WA	2.21			

Wetland Creation Area: CC MB2
Sampling Date: 11 Jun 00

Plot No.: 1
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 5%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Ludwigia peruviana	1	OBL	1	1
Sagittaria lancifolia	1	OBL	1	1
Panicum hemitomon	1	OBL	1	1
Juncus marginatus	1	OBL	1	1
Indigofera hirusta	1	FAC	3	3
Polypremum procumbens	1	FAC	3	3
Ptilinium capillaceum	1	FACW	2	2
Mecardonia sp.	1	FACW	2	2
Dicanthelium sp.	1	FAC	3	3
Lachnathes caroliniana	1	FAC	3	3
Eupatorium capillifolium	5	FAC	3	15
Juncus megacephalus	5	OBL	1	5
Andropogon virginicus	1	FAC	3	3
Juncus effusus	5	OBL	1	5
Panicum repens	1	FACW	2	2
Total	27			50
WA	1.85			

Plot No.: 2
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 20%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Cladium jamaicense	25	OBL	1	25
Eupatorium capillifolium	5	FAC	3	15
Polygonum hydropiperoides	1	OBL	1	1
Andropogon glomeratus	15	FACW	2	30
Rhynchospora microcarpa	1	OBL	1	1
Salix caroliniana	1	OBL	1	1
Juncus effusus	5	OBL	1	5
Juncus marginatus	1	OBL	1	1
Total	54			79
WA	1.46			

Plot No.: 3
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 1%
0.5 m. Horz. Line-Inter.: 20%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon glomeratus	5	FACW	2	10
Juncus marginatus	5	OBL	1	5
Baccharis halimifolia	10	FAC	3	30
Cladium jamaicense	5	OBL	1	5
Juncus effusus	10	OBL	1	10
Panicum repens	1	FACW	2	2
Ludwigia peruviana	1	OBL	1	1
Rhynchospora microcarpa	10	OBL	1	10
Lachnathes caroliniana	1	FAC	3	3
Sagittaria lancifolia	1	OBL	1	1
Pluchea rosea	5	FACW	2	10
Eupatorium capillifolium	1	FAC	1	1
Total	55			88
WA	1.6			

Wetland Creation Area: PC
Sampling Date: 11 Jun 00

Plot No.: 1
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 0%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Lachnathes caroliniana	1	FAC	3	3
Sagittaria lancifolia	5	OBL	1	5
Panicum repens	35	FACW	2	70
Pluchea rosea	1	FACW	2	2
Proserpinaca pectinata	1	OBL	1	1
Centella asiatica	1	FACW	2	2
Total	44			83
WA	1.89			

Plot No.: 2
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 1%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Lachnathes caroliniana	1	FAC	3	3
Rhynchospora sp.	10	FACW	2	20
Mikania scandens	1	FACW	2	2
Pluchea rosea	5	FACW	2	10
Panicum repens	10	FACW	2	20
Total	27			55
WA	2.04			

Plot No.: 3
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 20%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Juncus effusus	30	OBL	1	30
Centella asiatica	5	FACW	2	10
Mikania scandens	1	FACW	2	2
Panicum repens	1	FACW	2	2
Lycopus rubellus	1	OBL	1	1
Baccharis halimifolia	5	FAC	3	15
Rhynchospora sp.	5	FACW	2	10
Panicum hemitomon	5	OBL	1	5
Total	53			75
WA	1.42			

Wetland Creation Area: Cit P
Sampling Date: 18 Jun 00

Plot No.: 1
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 0%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Eleocharis cellulosa	50	OBL	1	50
Ludwigia sp.	5	OBL	1	5
Erechites hieracifolia	10	FAC	3	30
Mikania scandens	5	FACW	2	10
Commelina diffusa	1	FAC	3	3
Baccharis halimifolia	1	FAC	3	3
Euthamia minor	1	FAC	3	3
Eclipta alba	1	FACW	2	2
Ludwigia repens	1	OBL	1	1
Total	75			107
WA	1.43			

Plot No.: 2
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 50%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Eleocharis cellulosa	35	OBL	1	35
Spartina bakeri	10	FACW	2	20
Mikania scandens	10	FACW	2	20
Eclipta alba	10	FACW	2	20
Paspalum urvillei	25	FAC	3	75
Total	90			170
WA	1.89			

Plot No.: 3
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 80%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Spartina bakeri	55	FACW	2	110
Eleocharis cellulosa	35	OBL	1	35
Mikania scandens	10	FACW	2	20
Eupatorium capillifolium	1	FAC	3	3
Total	101			168
WA	1.66			

Wetland Creation Area: WC M26B
Sampling Date: 18 Jun 00

Plot No.: 1
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 5%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Panicum hemitomon	10	OBL	1	10
Proserpinaca pectinata	5	OBL	1	5
Panicum verrucosum	1	FACW	2	2
Juncus effusus	5	OBL	1	5
Centella asiatica	5	FACW	2	10
Dicanthelium sp.	1	FAC	3	3
Lachnathes caroliniana	5	FAC	3	15
Euthamia minor	1	FAC	3	3
Total	33			53
WA	1.61			

Plot No.: 2
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 0%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Panicum hemitomon	25	OBL	1	25
Pluchea rosea	5	FACW	2	10
Sesbania sp.	1	FAC	3	3
Polygonum sp.	1	OBL	1	1
Diodia virginiana	1	FACW	2	2
Solidago fistulosa	1	FAC	3	3
Hypericum fasiculatum	1	OBL	1	1
Euthamia minor	1	FAC	3	3
Eupatorium capillifolium	1	FAC	3	3
Centella asiatica	5	FACW	2	10
Lachnathes caroliniana	5	FAC	3	15
Total	47			76
WA	1.62			

Plot No.: 3
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 5%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Panicum hemitomon	1	OBL	1	1
Juncus effusus	5	OBL	1	5
Pluchea rosea	25	FACW	2	50
Centella asiatica	5	FACW	2	10
Euthamia minor	10	FACW	2	20
Ipomea sagittata	1	FAC	3	3
Rhynchospora corniculata	5	OBL	1	5
Total	52			94
WA	1.81			

Wetland Creation Area: WC M26A
Sampling Date: 18 Jun 00

Plot No.: 1
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 25%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Leersia hexandra	10	OBL	1	10
Rubus sp.	1	FAC	3	3
Fuirena scirpodea	5	OBL	1	5
Centella asiatica	5	FACW	2	10
Woodwardia virginica	5	FACW	2	10
Pluchea rosea	15	FACW	2	30
Juncus scirpoides	5	OBL	1	5
Solidago sp.	5	FAC	3	15
Scirpus validus	1	OBL	1	1
Panicum hemitomon	5	OBL	1	5
Bacopa caroliniana	10	OBL	1	10
Cephalanthus occidentalis	10	OBL	1	10
Juncus effusus	10	OBL	1	10
Bacciolepis indica	5	FAC	3	15
Total	92			139
WA	1.51			

Plot No.: 2
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 1%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Pontederia cordata	10	OBL	1	10
Eustachys petraea	10	FAC	3	30
Eupatorium capillifolium	1	FAC	3	3
Scirpus validus	5	OBL	1	5
Mikania scandens	5	FACW	2	10
Cyperus globulosus	1	FAC	3	3
Cyperus polystachos	30	FACW	2	60
Total	62			121
WA	1.95			

APPENDIX F:

VEGETATIVE ANALYSIS DATA SHEETS

JUNE 2000

NON-MULCHED WETLAND CREATION AREAS

Wetland Creation Area: HG M-3-12
Sampling Date: 11 Jun 00

Plot No.: 1
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 1%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Hypericum fasciculatum	1	OBL	1	1
Andropogon virginicus	10	FAC	3	30
Rhynchospora microcarpa	1	OBL	1	1
Eriocaulon decangulare	5	OBL	1	5
Hypericum tetrapetalum	1	FAC	3	3
Ludwigia repens	5	OBL	1	5
Gratiola virginiana	1	FACW	2	2
Rhexia nutallii	1	FACW	2	2
Ptilinium capillaceum	1	FACW	2	2
Solidago fistulosa	5	FAC	3	15
Myrica cerifera	1	FAC	3	3
Centella asiatica	1	FACW	2	2
Pontederia cordata	1	OBL	1	1
Total	34			72
WA	2.12			

Plot No.: 2
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 1%
0.5 m. Horz. Line-Inter.: 10%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	20	FAC	3	60
Eriocaulon decangulare	1	OBL	1	1
Rhynchospora sp.	1	FACW	2	2
Euthamia minor	1	FAC	3	3
Myrica cerifera	5	FAC	3	15
Eupatorium capillifolium	5	FAC	3	15
Ludwigia repens	10	OBL	1	10
Ptilinium capillaceum	5	FACW	2	10
Mikania scandens	1	FACW	2	2
Hypericum tetrapetulum	10	FAC	3	30
Pluchea rosea	15	FACW	2	30
Rhynchospora microcarpa	5	OBL	1	5
Centella asiatica	1	FACW	2	2
Total	80			185
WA	2.31			

Plot No.: 3
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 1%
0.5 m. Horz. Line-Inter.: 5%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	10	FAC	3	30
Eriocaulon decangulare	15	OBL	1	15
Ludwigia repens	5	OBL	1	5
Polygonum hydropiperoides	1	OBL	1	1
Ptilinium capillaceum	1	FACW	2	2
Pluchea rosea	20	FACW	2	40
Euthamia minor	1	FAC	3	3
Mikania scandens	1	FACW	2	2
Hypericum tetrapetalum	5	FAC	3	15
Vigna luteola	5	FACU	4	20
Myrica cerifera	1	FAC	3	3
Total	65			136
WA	2.09			

Wetland Creation Area: TE 1
Sampling Date: 18-Jun-00

Plot No.: 1
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 1%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	20	FAC	3	60
Lachnathes caroliniana	10	FAC	3	30
Sagitaria graminea	5	OBL	1	5
Sagittaria lancifolia	10	OBL	1	10
Panicum virgatum	20	FACW	2	40
Panicum repens	5	FACW	2	10
Rhynchospora tracyii	5	OBL	1	5
Total	75			160
WA	2.13			

Plot No.: 2
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 1%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Mikania scandens	1	FACW	2	2
Andropogon virginicus	5	FAC	3	15
Rhynchospora fascicularis	5	FACW	2	10
Eleocharis baldwinii	5	OBL	1	5
Cyperus polystachos	1	FACW	2	2
Sesbania sp.	1	FAC	3	3
Rhexia nutallii	5	FACW	2	10
Panicum repens	15	OBL	1	15
Eupatorium capillifolium	20	FAC	3	60
Centella asiatica	1	FACW	2	2
Rhynchospora wrightiana	1	FACW	2	2
Hydrocotyle umbellata	5	FACW	2	10
Lachnathes caroliniana	20	FAC	3	60
Total	85			196
WA	2.31			

Plot No.: 3
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 1%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	10	FAC	3	30
Rhynchospora tracyii	10	OBL	1	10
Eupatorium capillifolium	10	FAC	3	30
Mikania scandens	1	FACW	2	2
Ptilinium capillaceum	1	FACW	2	2
Panicum repens	15	FACW	2	30
Hydrocotyle umbellata	1	FACW	2	2
Centella asiatica	1	FACW	2	2
Rhexia mariana	10	FACW	2	20
Lachnathes caroliniana	5	FAC	3	15
Total	64			143
WA	2.23			

Wetland Creation Area: FR F-2
Sampling Date: 10 Jun 00

Plot No.: 1
Water Level/Cond.: dry soil
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 35%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Panicum hemitomon	1	OBL	1	1
Andropogon virginicus	10	FAC	3	30
Juncus megacephalus	25	OBL	1	25
Dicanthelium sp.	1	FAC	3	3
Total	37			59
WA 1.59				

Plot No.: 2
Water Level/Cond.: dry soil
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 40%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Pinus elliottii	30	UPL	5	150
Andropogon virginicus	20	FAC	3	60
Acer rubrum	1	FACW	2	2
Juncus megacephalus	5	OBL	1	5
Drosera brevifolia	1	FACW	2	2
Axonopus furcatus	1	FAC	3	3
Centella asiatica	1	FACW	2	2
Dicanthelium sp.	1	FAC	3	3
Total	60			227
WA 3.78				

Plot No.: 3
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 10%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	20	FAC	3	60
Juncus megacephalus	5	OBL	1	5
Pinus elliottii	10	UPL	5	50
Centella asiatica	1	FACW	2	2
Dicanthelium sp.	1	FAC	3	3
Axonopus furcatus	1	FAC	3	3
Amphicarpum muhlenbergianum	1	FACW	2	2
Acer rubrum	1	FACW	2	2
Total	40			127
WA 3.18				

Wetland Creation Area: FR H-10
Sampling Date: 10 Jun 00

Plot No.: 1
Water Level/Cond.: dry soil
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 70%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	40	FAC	3	120
Spartina bakeri	10	FACW	2	20
Rhynchospora tracyii	5	OBL	1	5
Panicum hemitomon	5	OBL	1	5
Rhexia nutallii	5	FACW	2	10
Erechites hieracifolia	5	FAC	3	15
Centella asiatica	5	FACW	2	10
Mikania scandens	1	FACW	2	2
Total	76			187
WA	2.46			

Plot No.: 2
Water Level/Cond.: dry soil
1.0 m. Horz. Line-Inter.: 20%
0.5 m. Horz. Line-Inter.: 75%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	25	FAC	3	75
Centella asiatica	5	FACW	2	10
Chamaecrista nictitans	1	FACU	4	4
Mikania scandens	1	FACW	2	2
Erechites hieracifolia	20	FAC	3	60
Spartina bakeri	20	FACW	2	40
Rhynchospora tracyi	10	OBL	1	10
Total	82			201
WA	2.45			

Plot No.: 3
Water Level/Cond.: dry soil
1.0 m. Horz. Line-Inter.: 1%
0.5 m. Horz. Line-Inter.: 5%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	40	FAC	3	120
Centella asiatica	10	FACW	2	20
Bacopa caroliniana	5	OBL	1	5
Total	55			145
WA	2.64			

Wetland Creation Area: FR I-1
Sampling Date: 10 Jun 00

Plot No.: 2
Water Level/Cond.: dry soil
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 1%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	5	FAC	3	15
Xyris elliotii	70	OBL	1	70
Centella asiatica	5	FACW	2	10
Hypericum fasciculatum	5	OBL	1	5
Bacopa caroliniana	1	OBL	1	1
Drosera breviflora	1	FACW	2	2
Total	87			103
WA 1.18				

Plot No.: 3
Water Level/Cond.: dry soil
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 1%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Amphicarpum muhlenbergianum	40	FACW	2	80
Xyris elliotii	30	OBL	1	30
Centella asiatica	5	FACW	2	10
Lachnathes caroliniana	1	FAC	3	3
Total	76			123
WA 1.62				

Wetland Creation Area: FR 2.2ac.
Sampling Date: 10 Jun 00

Plot No.: 1
Water Level/Cond.: dry soil
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 1%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Fuirena scirpodea	15	OBL	1	15
Iris hexagona	1	OBL	1	1
Panicum repens	1	FACW	2	2
Canna flaccida	1	OBL	1	1
Amaranthus australis	1	OBL	1	1
Centella asiatica	10	FACW	2	20
Juncus megacephalus	1	OBL	1	1
Polygonum hydropiperoides	1	OBL	1	1
Total	31			42
WA 1.35				

Plot No.: 2
Water Level/Cond.: dry soil
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 0%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Centella asiatica	5	FACW	2	10
Iris hexagona	5	OBL	1	5
Andropogon virginicus	20	FAC	3	60
Panicum repens	5	FACW	2	10
Panicum hemitomon	10	OBL	1	10
Dicanthelium sp.	1	FAC	3	3
Total	46			98
WA 2.13				

Plot No.: 3
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 1%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Fuirena scirpodea	5	OBL	1	5
Panicum hemitomon	5	OBL	1	5
Panicum repens	1	FACW	2	2
Centella asiatica	1	FACW	2	2
Phyla notiflora	1	FAC	3	3
Iris hexagona	1	OBL	1	1
Andropogon virginicus	5	FAC	3	15
Axonopus furcatus	1	FAC	3	3
Total	20			36
WA 1.8				

Wetland Creation Area: FR H-1
Sampling Date: 10 Jun 00

Plot No.: 1
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 1%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	50	FAC	3	150
Juncus megacephalus	1	OBL	1	1
Centella asiatica	5	FACW	2	10
Hypericum fasiculatum	1	OBL	1	1
Total	57			162
WA 2.84				

Plot No.: 2
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 1%
0.5 m. Horz. Line-Inter.: 25%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Rhynchospora sp.	20	FACW	2	40
Andropogon virginicus	25	FAC	3	75
Lachnathes caroliniana	5	FAC	3	15
Solidago sp.	1	FACW	1	1
Total	51			131
WA 2.57				

Plot No.: 3
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 10%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	30	FAC	3	90
Juncus megacephalus	5	OBL	1	5
Hypericum fasiculatum	10	OBL	1	10
Total	45			105
WA 2.33				

Wetland Creation Area: US 1
Sampling Date: 19-Jun-00

Plot No.: 1
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 1%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Juncus effusus	20	OBL	1	20
Scoparia dulcis	5	FAC	3	15
Polygonum hydropiperoides	1	OBL	1	1
Ampelopsis arborea	1	FAC	3	3
Baccharis halimifolia	1	FAC	3	3
Total	28			42
WA	1.5			

Plot No.: 2
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 0%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Scoparia dulcis	5	FAC	3	15
Seteria geniculata	10	FAC	3	30
Rhynchospora sp.	1	FACW	2	2
Andropogon glomeratus	1	FACW	2	2
Total	17			49
WA	2.88			

Plot No.: 3
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 1%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Juncus effusus	20	OBL	1	20
Seteria geniculata	5	FAC	3	15
Sagittaria lancifolia	1	OBL	1	1
Total	26			36
WA	1.38			

Wetland Creation Area: CC MB1
Sampling Date: 11 Jun 00

Plot No.: 1
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 10%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	20	FAC	3	60
Lachnathes caroliniana	5	FAC	3	15
Panicum hemitomon	1	OBL	1	1
Lachnocaulon beyrichianum	1	FACW	2	2
Rhynchospora golbularis	1	FACW	2	2
Pluchea rosea	1	FACW	2	2
Centella asiatica	1	FACW	2	2
Eupatorium capillifolium	1	FAC	3	3
Hypericum fasciculatum	1	OBL	1	1
Gratiola pilosa	1	FACW	2	2
Total	33			90
WA	2.73			

Plot No.: 2
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 1%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	10	FAC	3	30
Rhynchospora microcephala	5	FACW	2	10
Eupatorium capillifolium	1	FAC	3	3
Eragrostis sp.	1	FAC	3	3
Lachnathes caroliniana	1	FAC	3	3
Pluchea rosea	1	FACW	2	2
Total	19			51
WA	2.68			

Plot No.: 3
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 1%
0.5 m. Horz. Line-Inter.: 10%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon virginicus	10	FAC	3	30
Juncus scirpoides	15	OBL	1	15
Eupatorium capillifolium	5	FAC	3	15
Lachnathes caroliniana	1	FAC	3	3
Total	31			63
WA	2.03			

Wetland Creation Area: CC ME
Sampling Date: 11 Jun 00

Plot No.: 1
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 45%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Juncus effusus	50	OBL	1	50
Baccharis halimifolia	1	FAC	3	3
Mikania scandens	1	FACW	2	2
Ludwigia repens	5	OBL	1	5
Total	57			60
WA	1.05			

Plot No.: 2
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 1%
0.5 m. Horz. Line-Inter.: 15%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Sagittaria lancifolia	1	OBL	1	1
Juncus effusus	10	OBL	1	10
Solidago fistulosa	1	FAC	3	3
Baccharis halimifolia	5	FAC	3	15
Eupatorium capillifolium	1	FAC	3	3
Ludwigia repens	10	OBL	1	10
Panicum hemitomon	1	OBL	1	1
Total	29			43
WA	1.48			

Plot No.: 3
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 5%
0.5 m. Horz. Line-Inter.: 70%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Juncus effusus	50	OBL	1	50
Mikania scandens	10	FACW	2	20
Ludwigia repens	5	OBL	1	5
Solidago fistulosa	1	FAC	3	3
Total	66			78
WA	1.18			

Wetland Creation Area: CC M10
Sampling Date: 11 Jun 00

Plot No.: 1
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 50%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Juncus effusus	30	OBL	1	30
Sagittaria lancifolia	1	OBL	1	1
Panicum repens	5	FACW	2	10
Ptilinium capillaceum	1	FACW	2	2
Mikania scandens	1	FACW	2	2
Panicum hemitomon	1	OBL	1	1
Centella asiatica	5	FACW	2	10
Total	44			56
WA	1.27			

Plot No.: 2
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 0%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Juncus scirpoides	1	OBL	1	1
Panicum repens	15	FACW	2	30
Eupatorium capillifolium	1	FAC	3	3
Ptilinium capillaceum	1	FACW	2	2
Rhynchospora microcarpa	1	OBL	1	1
Hypericum cistifolium	1	OBL	1	1
Centella asiatica	5	FACW	2	10
Total	25			48
WA	1.92			

Plot No.: 3
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 10%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Juncus scirpoides	20	OBL	1	20
Panicum repens	5	FACW	2	10
Lachnathes caroliniana	1	FAC	3	3
Mikania scandens	1	FACW	2	2
Eupatorium capillifolium	1	FAC	3	3
Total	28			38
WA	1.36			

Wetland Creation Area: HG M-10-9
Sampling Date: 19 jun 00

Plot No.: 1
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 15%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Panicum hemitomon	5	OBL	1	5
Sagittaria lancifolia	10	OBL	1	10
Mikania scandens	5	FACW	2	10
Juncus effusus	10	OBL	1	10
Alternanthera philoxeroides	1	OBL	1	1
Juncus megacephalus	5	OBL	1	5
Eleocharis vivipara	1	OBL	1	1
Panicum repens	5	FACW	2	10
Centella asiatica	10	FACW	2	20
Total	52			72
WA	1.38			

Plot No.: 2
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 5%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Sagittaria lancifolia	5	OBL	1	5
Ludwigia peruviana	1	OBL	1	1
Solidago fistulosa	1	FAC	3	3
Panicum hemitomon	1	OBL	1	1
Fuirena scirpodea	5	OBL	1	5
Ludwigia sp.	1	OBL	1	1
Rhynchospora microcarpa	5	FACW	2	10
Total	19			26
WA	1.37			

Plot No.: 3
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 10%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Panicum hemitomon	5	OBL	1	5
Juncus effusus	5	OBL	1	5
Eupatorium capillifolium	1	FAC	3	3
Lachnathes caroliniana	5	FAC	3	15
Andropogon virginicus	1	FAC	3	3
Total	17			31
WA	1.82			

Wetland Creation Area: IM 1
Sampling Date: 29 Jun 00

Plot No.: 1
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 0%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Salix caroliniana	5	OBL	1	5
Ptilinium capillaceum	1	FACW	2	2
Polygonum hydropiperoides	1	OBL	1	1
Cyperus polystachos	1	FACW	2	2
Eupatorium capillifolium	1	FAC	3	3
Bacopa caroliniana	5	OBL	1	5
Chamaecrista nictitans	5	FACU	4	20
Seteria geniculata	10	FAC	3	30
Panicum rigidulum	5	FACW	1	5
Total	34			73
WA	2.15			

Plot No.: 2
Water Level/Cond.: moist soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 15%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Cynodon dactylon	1	FAC	3	3
Panicum rigidulum	35	FACW	2	70
Polygonum hydropiperoides	5	OBL	1	5
Mikania scandens	5	FACW	2	10
Seteria geniculata	10	FAC	3	30
Pluchea odorata	5	FACW	2	10
Total	61			128
WA	2.1			

Plot No.: 3
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 0%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Seteria geniculata	5	FAC	3	15
Mikania scandens	5	FACW	2	10
Polygonum hydropiperoides	1	OBL	1	1
Cynodon dactylon	50	FAC	3	150
Total	61			176
WA	2.89			

Wetland Creation Area: IM 2
Sampling Date: 6 Dec 99

Plot No.: 1
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 10%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Eupatorium capillifolium	1	FAC	3	3
Mikania scandens	40	FACW	2	80
Andropogon glomeratus	1	FACW	2	2
Panicum hemitomon	20	OBL	1	20
Pontederia cordata	1	OBL	1	1
Solidago fistulosa	5	FAC	3	15
Sagittaria lancifolia	5	FACW	2	10
Total	73			131
WA	1.79			

Plot No.: 2
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 1%
0.5 m. Horz. Line-Inter.: 15%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Salix caroliniana	15	OBL	1	15
Panicum hemitomon	1	OBL	1	1
Pontederia cordata	1	OBL	1	1
Cyperus surinamensis	1	FACW	2	2
Eupatorium capillifolium	1	FAC	3	3
Mikania scandens	5	FACW	2	10
Andropogon glomeratus	5	FACW	2	10
Spartina bakeri	1	FACW	2	2
Ptilinium capillaceum	1	FACW	2	2
Baccharis halimifolia	1	FAC	3	3
Imperata cylindrica	1	UPL	5	5
Panicum repens	1	FACW	2	2
Seteria geniculata	5	FAC	3	15
Total	39			71
WA	1.82			

Plot No.: 3
Water Level/Cond.: moist soils
1.0 m. Horz. Line-Inter.: 1%
0.5 m. Horz. Line-Inter.: 10%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Andropogon glomeratus	1	FACW	2	2
Spartina bakeri	20	FACW	2	40
Eragrostis sp.	1	FAC	3	3
Panicum repens	5	FACW	2	10
Total	27			55
WA	2.04			

Wetland Creation Area: IM 3
Sampling Date: 29 Jun 00

Plot No.: 1
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 0%
0.5 m. Horz. Line-Inter.: 1%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Ptilinium capillaceum	5	FACW	2	10
Panicum repens	20	FACW	2	40
Scirpus validus	1	OBL	1	1
Mikania scandens	40	FACW	2	80
Total	66			131
WA	1.98			

Plot No.: 2
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 10%
0.5 m. Horz. Line-Inter.: 40%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Spartina bakeri	25	FACW	2	50
Panicum repens	5	FACW	2	10
Centella asiatica	1	FACW	2	2
Mikania scandens	1	FACW	2	2
Hydrocotyle umbellata	1	FACW	2	2
Total	33			66
WA	2			

Plot No.: 3
Water Level/Cond.: dry soils
1.0 m. Horz. Line-Inter.: 15%
0.5 m. Horz. Line-Inter.: 65%

Species Present	% Cover	Hyd. Cat.	WAI No.	Cov.x WAI No.
Spartina bakeri	30	FACW	2	60
Mikania scandens	20	FACW	2	40
Panicum hemitomon	25	OBL	1	25
Panicum repens	5	FACW	2	10
Hydrocotyle bonariensis	1	FACW	2	2
Ptilinium capillaceum	1	FACW	2	2
Panicum virgatum	1	FACW	2	2
Total	83			141
WA	1.7			

APPENDIX G:

VEGETATIVE ANALYSIS DATA SYNOPSIS

Table 9. Vegetative Analysis Data Synopsis: Mulched Wetland Creation Areas - November 1999

Site	% OM	Plot No.	WA No.	No. Species	Total % Cover	1.0 m Horz Line-Inter. (%)	0.5 m Horz Line-Inter. (%)
		1	1.16	4	61	1	30
WC M-36	3.94	2	1.19	9	80	1	40
		3	1.14	7	88	1	25
		1	1.24	7	68	5	45
WC M-41A	4.11	2	1.43	6	81	10	50
		3	1.48	12	83	5	50
		1	1.08	10	141	30	70
HG M-1-5	4.56	2	1.32	10	99	15	80
		3	1.56	9	93	20	80
		1	1.07	9	103	1	15
HG M-1-6(N3)	5.82	2	1.08	8	90	1	35
		3	1.06	8	83	1	25
		1	1.43	11	79	20	20
HG M-1-6 (C)	6.54	2	1.38	9	89	5	25
		3	1.21	9	98	10	75
		1	1.16	12	74	1	10
HG M-1-6 (S1)	4.86	2	1.22	8	91	15	70
		3	1.11	8	84	10	35
		1	2.04	6	91	50	90
HG M-2-11 (S)	11.56	2	1.19	2	105	20	90
		3	1.50	6	111	15	75
		1	1.17	7	87	20	65
HG M-1-6 (S2)	4.18	2	1.98	14	84	30	80
		3	1.39	9	106	20	85
		1	2.20	8	84	15	50
HG M-2-11 (N)	6.32	2	2.24	14	67	10	35
		3	1.77	14	83	5	25
		1	1.41	12	80	30	80
US 2	6.06	2	1.73	12	67	5	70
		3	1.27	13	89	25	90
		1	1.34	8	64	30	80
HG M-2-3	9.38	2	1.45	4	66	25	50
		3	1.20	5	75	10	50
		1	1.37	10	59	1	65
HG M-1-3	4.95	2	1.34	9	92	1	50
		3	1.97	10	60	10	25
		1	1.65	18	62	5	25
CC MB2	5.92	2	1.98	11	99	40	85
		3	2.29	14	92	20	35
		1	1.91	12	90	1	60
PC	4.95	2	1.60	12	67	5	40
		3	1.54	15	91	1	60
		1	1.31	6	52	5	75
CP	4.41	2	1.24	6	93	10	95
		3	1.44	4	80	20	75
		1	1.07	7	75	0	20
WC M-26B	6.02	2	1.12	5	58	0	20
		3	1.11	7	63	0	30
		1	1.39	13	66	1	30
WC M-26A	7.03	2	1.94	9	70	0	10
		3	1.56	11	94	0	0
Avg	5.92		1.45	9.20	82.49	11.41	50.88
St. Dev	1.98		0.34	3.30	16.46	11.76	25.99
St. Err	0.48		0.05	0.46	2.30	1.65	3.64

Table 10. Vegetative Analysis Date Synopsis: Non-Mulched Wetland Creation Areas - November 1999

Site	% OM	Plot No.	WA No.	No. Species	Total % Cover	1.0 m Horz Line-Inter. (%)	0.5 m Horz Line-Inter. (%)
		1	1.49	13	71	5	10
IM 1	1.97	2	1.96	11	72	10	30
		3	2.56	7	78	5	10
		1	1.51	8	63	10	35
IM 2	2.00	2	1.20	12	61	15	25
		3	1.63	9	84	15	35
		1	1.56	7	81	0	1
IM 3	1.28	2	1.58	8	72	15	40
		3	1.91	11	85	10	60
		1	1.13	8	88	5	70
CC M10	1.36	2	1.47	9	58	0	5
		3	1.26	9	90	0	20
		1	1.16	6	76	5	50
CC ME	3.76	2	1.06	8	107	20	55
		3	1.18	8	99	10	75
		1	2.08	12	60	5	40
CC MB1	2.56	2	2.19	13	81	5	20
		3	1.78	8	60	5	35
		1	1.77	9	83	1	20
US 1	6.41	2	2.71	12	85	0	5
		3	1.50	15	96	1	20
		1	1.62	15	98	5	50
HG M-3-12	2.68	2	2.13	14	104	10	50
		3	1.68	19	81	5	30
		1	1.55	11	64	5	15
FR H1	1.04	2	1.61	6	66	15	25
		3	1.81	7	63	5	30
		1	1.44	11	78	0	10
FR 2.2 Ac.	2.52	2	2.09	18	69	1	5
		3	1.61	13	59	1	15
		1	1.86	11	88	5	15
FR I1	1.84	2	1.59	17	86	15	25
		3	1.51	12	87	5	30
		1	2.46	6	67	20	60
FR H10	2.80	2	2.84	5	88	40	85
		3	2.40	8	40	5	15
		1	1.95	9	74	10	50
FR F2	2.13	2	2.68	12	84	10	50
		3	3.09	10	81	25	65
		1	1.49	7	71	15	25
TE 1	3.22	2	1.81	12	89	20	50
		3	2.40	4	25	1	10
		1	2.15	14	94	5	60
TE 2	3.44	2	2.07	10	73	1	45
		3	2.35	9	54	1	35
		1	1.76	18	91	10	45
HG M-10-9	2.82	2	1.19	9	58	0	10
		3	1.57	17	76	20	60
Avg	2.61		1.82	10.56	76.21	8.27	33.88
St. Dev	1.27		0.48	3.60	16.00	8.09	20.96
St. Err	0.32		0.07	0.52	2.31	1.17	3.03

Table 11. Vegetative Analysis Date Synopsis: Mulched Wetland Creation Areas - June 2000

Site	% OM	Plot No.	WA No.	No. Species	Total % Cover	1.0 m Horz Line-Inter. (%)	0.5 m Horz Line-Inter. (%)
		1	2.11	6	45	5	25
WC M-36	3.94	2	1.53	8	64	0	40
		3	2.05	8	44	0	1
		1	1.36	9	36	1	40
WC M-41A	4.11	2	1.49	8	57	0	50
		3	1.50	8	38	0	1
		1	1.05	3	21	1	5
HG M-1-5	4.56	2	1.13	6	87	10	75
		3	1.74	8	96	25	85
		1	1.73	5	55	0	10
HG M-1-6(N3)	5.82	2	2.11	6	38	1	1
		3	1.57	6	23	0	0
		1	--	--	--	--	--
HG M-1-6 (C)	6.54	2	--	--	--	--	--
		3	2.05	4	21	0	10
		1	2.42	9	31	0	5
HG M-1-6 (S1)	4.86	2	--	--	--	--	--
		3	1.93	4	57	20	65
		1	2.67	4	75	0	55
HG M-2-11 (S)	11.56	2	1.41	3	51	0	10
		3	2.09	6	56	0	25
		1	2.00	5	32	0	10
HG M-1-6 (S2)	4.18	2	1.94	6	18	0	5
		3	2.06	7	33	0	10
		1	2.19	8	72	1	10
HG M-2-11 (N)	6.32	2	--	--	--	--	--
		3	2.27	14	108	0	25
		1	1.78	11	63	10	50
US 2	6.06	2	1.44	9	70	5	20
		3	1.75	11	59	5	35
		1	2.12	8	93	1	20
HG M-2-3	9.38	2	2.37	7	51	0	5
		3	1.80	10	46	0	10
		1	1.47	8	34	5	30
HG M-1-3	4.95	2	1.07	6	82	5	30
		3	2.21	7	42	0	1
		1	1.85	15	27	0	5
CC MB2	5.92	2	1.46	8	54	5	20
		3	1.60	12	55	1	20
		1	1.89	6	44	0	0
PC	4.95	2	2.04	5	27	0	1
		3	1.42	8	53	0	20
		1	1.43	9	75	0	0
CP	4.41	2	1.89	5	90	0	50
		3	1.66	4	101	5	80
		1	1.61	8	33	0	5
WC M-26B	6.02	2	1.62	11	47	0	0
		3	1.81	7	52	0	5
		1	1.51	14	92	5	25
WC M-26A	7.03	2	1.95	7	62	0	1
		3	--	--	--	--	--
Avg	5.92		1.79	7.54	54.57	2.41	21.65
St. Dev	1.98		0.64	3.48	27.49	4.88	22.87
St. Err	0.48		0.09	0.50	3.97	0.70	3.30

Table 12. Vegetative Analysis Date Synopsis: Non-Mulched Wetland Creation Areas - June 2000

Site	% OM	Plot No.	WA No.	No. Species	Total % Cover	1.0 m Horz Line-Inter. (%)	0.5 m Horz Line-Inter. (%)
		1	2.15	9	34	0	0
IM 1	1.97	2	2.10	6	61	0	15
		3	2.89	4	61	0	0
		1	1.79	7	73	0	10
IM 2	2.00	2	1.82	13	39	1	15
		3	2.04	4	27	1	10
		1	1.98	4	66	0	1
IM 3	1.28	2	2.00	5	33	10	40
		3	1.70	7	83	15	65
		1	1.27	7	44	0	50
CC M10	1.36	2	1.92	7	25	0	0
		3	1.36	5	28	0	10
		1	1.05	4	57	5	45
CC ME	3.76	2	1.48	7	29	1	15
		3	1.18	4	66	5	70
		1	2.73	10	33	0	10
CC MB1	2.56	2	2.68	6	19	0	1
		3	2.03	4	31	1	10
		1	2.12	13	34	0	1
HG M-3-12	2.68	2	2.31	13	80	1	10
		3	2.09	11	65	1	5
		1	2.84	4	57	0	1
FR H1	1.04	2	2.57	4	51	1	25
		3	2.33	3	45	0	10
		1	1.35	8	31	0	1
FR 2.2 Ac.	2.52	2	2.13	6	47	0	0
		3	1.80	8	20	0	1
		1	1.50	5	28	0	1
US 1	6.41	2	2.88	4	17	0	0
		3	1.38	3	26	0	1
		1	--	--	--	--	--
FR I1	1.84	2	1.18	6	87	0	1
		3	1.62	4	76	0	1
		1	2.46	8	76	5	70
FR H10	2.80	2	2.45	7	82	20	75
		3	2.64	3	55	1	5
		1	1.59	4	37	0	35
FR F2	2.13	2	3.78	8	60	0	40
		3	3.18	8	40	0	10
		1	1.38	9	52	0	15
HG M-10-9	2.82	2	1.37	7	19	0	5
		3	1.82	5	17	0	10
		1	2.13	7	75	0	1
TE 1	3.22	2	2.31	13	85	0	1
		3	2.23	10	64	0	1
		1	--	--	--	--	--
TE 2	3.44	2	--	--	--	--	--
		3	--	--	--	--	--
Avg	2.61		2.04	6.68	48.52	1.55	15.75
St. Dev	1.27		0.66	3.00	22.43	4.00	21.55
St. Err	0.33		0.10	0.45	3.38	0.60	3.25

Table 13. Biomass Dry Weight (g), Soil Sample pH, and November 1999 Vegetative Cover Data for Mulched Wetland Creation Areas in the Nutrient Availability and Biomass Analysis- August 2000 (TPC= Total Percent Cover and HL-I= Horizontal Line-Intercept)

Mulched Wetland	Quadrat	August 2000		November 1999		
Creation Areas	#	Biomass weight (g)	pH	TPC	HL-I (1m)	HL-I (0.5 m)
WC M36	1	112.15	6.2	61	1	30
	2	22.86	6.2	80	1	40
WCM41A	1	118.42	6.1	68	5	45
	2	47.87	6.0	81	10	50
HG M-1-6(N3)	1	83.51	5.0	90	1	35
	2	186.76	4.8	83	1	25
HG M-1-6(S2)	1	180.29	5.0	87	20	65
	2	78.96	4.6	84	30	80
HG M-2-3	1	34.04	5.9	64	30	80
	2	32.22	6.1	66	25	50
CC MB2	1	109.55	4.9	62	5	25
	2	79.00	5.0	99	40	85
CP	1	53.27	7.4	52	5	75
	2	82.22	7.3	93	10	95
Mean		87.22	5.75	76.43	13.14	55.71
St. Dev		50.79	0.90	14.12	13.26	23.93
St. Err		13.57	0.24	3.77	3.54	6.39

Table 14. Biomass Dry Weight (g), Soil Sample pH, and November 1999 Vegetative Cover Data for Non-Mulched Wetland Creation Areas in the Nutrient Availability and Biomass Analysis- August 2000 (TPC= Total Percent Cover and HL-I= Horizontal Line-Intercept)

Non-Mulched Wetland	Quadrat	August 2000		November 1999		
Creation Areas	#	Biomass weight (g)	pH	TPC	HL-I (1m)	HL-I (0.5 m)
CC M10	1	43.68	5.8	88	5	70
	2	71.16	5.1	58	0	5
CC MB1	1	47.43	5.0	60	5	40
	2	32.54	4.9	81	5	20
HG M-3-12	1	107.24	7.0	98	5	50
	2	107.76	6.1	104	10	50
FR F1	1	54.96	5.4	88	5	15
	2	90.42	5.2	86	15	25
FR 2.2	1	42.53	5.4	78	0	10
	2	19.89	5.7	69	1	5
FR I1	2	138.62	5.0	86	15	25
	3	154.40	4.9	87	5	30
FR H10	1	116.36	4.2	67	20	60
	2	93.35	4.6	88	40	85
Mean		80.02	5.31	81.29	9.36	35.00
St. Dev		41.55	0.69	13.50	10.65	24.96
St. Err		11.11	0.18	3.61	2.85	6.67

Appendix I

Table 15. Nutrient Content (kg/Ha) for Mulched Wetland Creation Areas in the Nutrient Availability and Biomass Analysis (August 2000)

Mulched Wetland Creation Areas	Quadrat #	NN (kg/ha)	P (kg/ha)	Mg (kg/ha)	Ca (kg/ha)	K (kg/ha)
WC M36	1	25.78	5.6	67.25	907.87	35.87
	2	20.17	10.09	70.61	1625.20	53.80
WCM41A	1	26.90	14.57	97.51	1602.79	112.08
	2	28.02	5.6	118.81	2039.91	57.16
HG M-1-6(N3)	1	22.42	8.97	24.66	145.71	49.32
	2	19.05	8.97	53.80	571.62	61.65
HG M-1-6(S2)	1	38.11	13.45	33.62	358.67	79.58
	2	22.42	8.97	43.71	481.96	54.92
HG M-2-3	1	70.61	6.72	47.07	1076.00	70.61
	2	50.44	7.85	35.87	1154.46	49.95
CC MB2	1	31.38	8.97	70.61	448.33	141.22
	2	30.26	7.85	54.92	594.04	85.18
CP	1	43.71	24.66	75.10	2779.66	44.83
	2	34.75	21.3	50.44	2757.24	28.02
Mean		33.14	10.97	60.28	1181.68	66.01
St. Dev		14.06	5.72	25.55	865.09	30.46
St. Err		3.76	1.53	6.83	231.20	8.14

Table 16. Nutrient Content (kg/ha) for Non-Mulched Wetland Creation Areas in the Nutrient Availability and Biomass Analysis (August 2000)

Mulched Wetland Creation Areas	Quadrat #	NN (kg/ha)	P (kg/ha)	Mg (kg/ha)	Ca (kg/ha)	K (kg/ha)
CC M10	1	33.62	8.97	25.78	89.67	39.23
	2	35.87	7.85	20.17	33.62	25.78
CC MB1	1	50.44	7.85	68.37	325.04	28.02
	2	25.78	7.85	51.56	414.71	40.35
HG M-3-12	1	29.14	15.69	26.90	459.54	52.68
	2	32.50	8.97	35.87	594.04	49.32
FR F1	1	36.99	6.72	17.93	33.62	28.78
	2	31.38	4.48	28.02	145.71	19.05
FR 2.2	1	32.50	7.85	15.69	269.00	24.66
	2	31.38	8.97	30.26	302.62	21.30
FR I1	2	36.99	6.72	19.05	11.21	31.38
	3	31.38	4.48	21.30	11.21	43.71
FR H10	1	42.59	8.97	32.50	33.62	21.30
	2	44.83	10.09	20.17	11.21	38.11
Mean		35.39	8.25	29.54	195.34	33.12
St. Dev		6.63	2.70	14.53	196.99	10.82
St. Err		1.77	0.72	3.88	52.65	2.89