

WETLAND ASSESSMENT PROCEDURE INSTRUCTION MANUAL (2004 VERSION)

1.0. INTRODUCTION

This instruction manual is designed to guide the user through the steps necessary to prepare a wetland for monitoring and to perform the periodic evaluations that make up the Wetland Assessment Procedure (WAP). The WAP was originally developed in 2000 as part of the Environmental Management Plan (EMP) – a plan used to manage the Central System wellfields included in Tampa Bay Water's Consolidated Water Use Permit. This instruction manual constitutes the first revision of the original WAP, and replaces Attachments C through F of the EMP (March 4, 2000).

The objective of the WAP is to collect information on vegetation, **hydrology**, soils, and other pertinent variables in monitored wetlands to accurately characterize the ongoing biological condition and health of each wetland. This information will be used for a variety of water management purposes, including wellfield operations, the development of minimum flows and levels, and the assessment of recovery in areas that have experienced historic hydrologic and biologic degradation due to ground-water withdrawals. It is important to understand that although the WAP seeks to document and monitor many aspects of wetland health, its focus is on wetland health effects caused by hydrologic changes due to ground-water withdrawals. Many wetlands are also subject to negative health impacts caused by surrounding land management and drainage practices, encroaching development, cattle operations, **exotic plant** species introduction, disease, and other variables, but the WAP attempts to focus on biologic impacts caused by the hydrologic impacts of ground-water withdrawals.

Note that certain words and phrases used throughout this manual (presented in bold type) are defined in Appendix C. Abbreviated definitions are sometimes included within the text of this instruction manual, but the user should review the more detailed definition of terms in Appendix C. Please be aware that some definitions have been modified for the WAP and may deviate from generic definitions.

The results of the WAP include health assessment scores, data collection, observations, and other general information. One critical aspect of the procedure is the written documentation requested to explain various decisions made by the evaluator, as well as a written, ongoing history of each site. The written comments are intended to document the evaluators logic in deriving scores, provide a basis for ongoing quality control (as well as future correction of errors), and provide the evaluator the ability to document potentially important wetland health-related observations that may not be fully included in the current procedure. Therefore, it is important to realize that the written comments and history are critical products of the WAP, and should not be considered optional.

An attempt has been made to make the following instructions as comprehensive as possible. However, if an evaluator finds a situation that is apparently not included in these instructions, the situation should be documented, and the documentation forwarded as soon as possible to the SWFWMD for clarification or resolution before long-term decisions are made.

2.0. DATA REPORTING AND FORMATS

2.1. Documentation of site installation

All currently monitored wetlands on which the WAP will be implemented shall be assessed for conformity to the revised methodology. If the existing **transect**, reference elevations, appropriate field markers, and other requirements of this methodology are determined to meet the requirements of the revised WAP methodology, documentation of the established monitoring site shall be submitted to the SWFWMD in either electronic or paper report format for review by December 31, 2004. If the existing field installation needs to be changed to meet the requirements of the revised methodology, the new **transect** and related installations should be installed, and the documentation of the work shall be submitted to the SWFWMD in either electronic or paper report format for review by June 30, 2005. Information in the reports should include the following:

- a) All reference elevations, including **historic normal pool**, **historic wetland edge**, **NP-6**, hydric soils elevations, elevations related to well construction information, and staff elevations (including ground elevation and any appropriate conversions to NGVD). The benchmarks used for all measurements should be clearly documented (i.e., survey markers, **staff gages**, etc.)
- b) Any necessary GPS locations for all of the reference elevation markers or locations.
- c) Available documentation of well and staff installations.
- d) A narrative on how **historic normal pool** and **historic wetland edge** were determined, including any necessary intermediate surveyed elevations (such as biologic indicators, **saw palmetto fringe**, etc.).
- e) A narrative of why the **transect** was chosen, and map of its location (including GPS coordinates)

Any necessary changes to the site installation should be fully documented and reported to the SWFWMD with the Annual Reports.

2.2. WAP data reporting

All data and information collected as part of the WAP must be recorded into a mutually compatible electronic format and submitted to the SWFWMD as part of the Annual Reports listed under Section 13A of the Consolidated Wellfield Water Use Permit (#20011771.000). The construction of the electronic format shall be decided in conjunction with the Permittee no later than September 1, 2004. This format shall be used for all WAP reporting events beginning with Water Year 2004. All field sheets and supporting notes used to construct the electronic database should be readily available upon request.

2.3. Locational data reporting

The Permittee shall provide locational data (i.e., section, township, and range, and latitude and longitude) to 0.01 seconds, within 30 days of installation of monitoring wells and **staff gages**. Also, well construction data i.e., depth, diameter, screened interval, and Chapter 40D-3 permit number shall be submitted with the locational data.

2.4. Water level data reporting

Pursuant to Condition 9.D.3 of the Consolidated Water Use Permit, EMP monitor well and **staff gage** water level data shall be submitted to the SWFWMD by the 15th of each month. Water level measurements shall take place twice monthly, with measurements for a given point occurring during

the same weeks of each month. The staff gages shall be scaled in one-tenth foot increments and shall be placed in the **wetland interior**. Water levels shall be reported to the Permits Data Section (using SWFWMD forms) on or before the 15th day of the following month. All water level measurement sites shall be surveyed so that measured levels are relative to NGVD within three years of issuance of this permit. Should water levels recede so as not to allow the gage to be read, the Permittee shall properly install and survey an additional staff gage or well within 30 days of such an occurrence. Monitored surface-water and wetland sites that go dry shall be equipped with an appropriately constructed surficial aquifer monitor well placed near the **staff gage**, capable of measuring below ground-water levels down to the applicable underlying confinement layer.

3.0. ACTIVITIES TO BE PERFORMED FOR INITIAL WETLAND SETUP

3.1. Historical Assessment

A history of the wetland should be established (referred to as the "wetland history" throughout this document). The wetland history should include an initial evaluation on the status of the wetland based on several factors, which may include 1) study of **historical** aerial photography, 2) interviews with previous evaluators, 3) review of previous studies in the area, and 4) initial field visits to the wetland. The purpose of the **historical** assessment is to provide information on the condition and potential existing and **historical** stresses in the area. The wetland history should be included in the database and periodically updated (see Section 4.0 below).

3.2. Transect Selection and Setup

Once a wetland is chosen for monitoring, the following steps are necessary to establish the **transect**. Unless the **transect** needs to be moved or reestablished, this process should only need to be performed once.

Transect selection. All vegetation assessments will be conducted via a **transect**. A **transect** from the **historic wetland edge** to the **wetland interior** should be chosen that provides the best opportunity to fully assess all aspects of the wetland, including the **transition zone** (see below). Practical considerations, such as access issues, minimizing vegetation disturbances while monitoring, and lines of sight, should be taken into account when choosing a **transect** as well. If a **wetland well, upland well**, and/or a **staff gage** have been previously established, consideration should be given to including their location in the **transect** centerline. If wells and/or a **staff gage** have not been established, they should be installed as close to the **transect** centerline as possible.

The width of the **transect** will be the visual range of the wetland from the **transect** centerline, or at least 10 meters in width, whichever is greater. Where the visual range from the **transect** is greater than 10 meters, however, the assessments should not exceed the distance in which species can accurately be identified. In wetland systems such as cypress marshes, the entire wetland should be evaluated as one system with appropriate comments that detail the wetland's **zonation** etc.

Establishment of Historic Normal Pool and other reference points. Once a **transect** is chosen, the **historic normal pool** and **historic wetland edge** need to be established. Appendix D contains the definitions and procedures necessary to make these determinations. Once these elevations are determined, the elevation six-inches below **historic normal pool (NP-6)** should be established along the **transect**. This elevation will be used to mark the boundary between the **transition zone** and the **deep zone** of the wetland. Note that the **NP-6** elevation may not coincide with existing vegetational indicators of the **transition zone/deep zone** boundary due to impacts to

the wetland, or possible short-term natural fluctuations. The **NP-6** elevation must be permanently marked, preferably with a stake, for future reference. If possible, stakes should be also placed at the **historic wetland edge**, as well as the **wetland interior**. The **staff gage** can serve as the **wetland interior** marker if it is placed appropriately. All three points should also be recorded using the Geographic Positioning System (GPS), as well as detailed notes, for future reference.

If the **transition zone** of the wetland is very narrow, an assessment of the **transition zone** may not be practical or appropriate. **The transition zone** can be narrow naturally, it can become narrow due to disturbance by surrounding land use activities, or it can have become narrow due to **subsidence** in the wetland. If possible, the **transect** should be chosen in a portion of the wetland with a **transition zone** that is wide enough for adequate monitoring. However, if no such area exists, or if an existing **transect** has a narrow **transition zone**, and the assessor determines that the value of the maintaining the existing **transect** outweighs the value of moving the **transect**, the **transition zone** should not be monitored. In this case, **NA** (not applicable) should be chosen for all **transition zone** evaluations, and an appropriate comment should be included in the field sheet. Additionally, the wetland history should explain any permanent decision not to assess the **transition zone**. A **transition zone** that is too narrow for practical evaluation is generally considered to be one meter or less in width (from the **historic wetland edge** to the **NP-6** elevation), but the determination of whether or not a **transition zone** is too narrow for evaluation is a decision of the assessor (subject to SWFWMD consensus).

In cases of very shallow wetland systems, no **NP-6** elevation may be able to be established (i.e., the wetland has no **deep zone**). In these cases, the entire wetland should be assessed as **transition zone**, and the **deep zone** evaluations should be marked **NA** (not applicable). As above, the comments and wetland history should explain the decision.

The **transect** and supporting elevations should be fully documented once established, and the documentation should be forwarded to the SWFWMD. Based on the documentation and specific wetland situation, an on-site verification may be required. If the **transect** needs to be moved during the course of wetland monitoring, all appropriate elevations should be re-established, and the information on the new **transect** must be submitted to the SWFWMD.

4.0. ACTIVITIES TO BE PERFORMED AT LEAST EVERY FIVE YEARS

4.1. Soils Assessment

To be performed by soil scientist. The delineation of hydric soils within the wetland will be determined as set forth by the USDA Natural Resources Conservation Service and the Florida Association of Environmental Soil Scientists (Carlisle and Hurt, 2000) and will be performed at least every five years by a qualified soil scientist. When practical, the hydric soils delineation should be marked with an iron rebar topped with a suitable diameter PVC pipe, painted blue, and clearly marked with the date of hydric soils determination. Any marking alternatives should be done such that anyone can relocate the exact point of delineation (e.g., documentation of distance and direction of the hydric soil indicator from some monument such as tree, well or other unrelated stake, and GPS location). In wetlands where hydric soil indicators are absent, determine the depth to seasonal high saturation at the edge of the wetland. Notes on which indicator was used to set the hydric soils delineation, the individual performing the delineation, as well as survey notes should be added to the wetland history.

To be performed by the environmental scientist. The environmental scientist should perform a thorough assessment of the condition of the soils. Any significant findings should be added to the wetland history.

The assessor should attempt to walk the entire wetland, looking for signs of soil **oxidation** or general **subsidence**. Indications of the spatial distribution and depth of **oxidation** or **subsidence** should be documented. The following should be used as guidance:

- Substantial soil **subsidence/oxidation**: This condition occurs when **subsidence** greater than or equal to 6 inches is observed.
- Moderate soil **subsidence/oxidation**: This condition occurs when **subsidence** greater than 2 inches but less than 6 inches is observed.
- Little or no evidence of soil **subsidence/oxidation**: This condition occurs when **subsidence** less than 2 inches is observed, and when no other evidence of oxidized conditions is apparent.

See Appendix C for more details.

4.2. Wetland History Update

Update the wetland history with any significant new observations based on the semi-annual evaluations, soils assessments, and other information. The evaluator is encouraged to update the wetland history on a more frequent basis.

4.3. Observations of Long-term Hydrologic Indicators

Document the general condition of long-term biologic indicators of **hydrology**, such as moss collars and lichen lines. In general, document the conditions if these indicators are not present or at tree bases, indistinct or abnormally low, or distinct and appropriate.

5.0. ACTIVITIES TO BE PERFORMED SEMI-ANNUALLY

The following information must be collected semi-annually during the early summer (May/June) and fall (September/October) seasons. All of the data must be entered into an approved electronic data base. A form for use in data collection in the field is provided in Appendix B. The following describes the information to be collected during the semi-annual evaluations.

WELLFIELD	Identify wellfield associated with the wetland assessment (if any).
STATION ID	Identify the wetland station ID (use the same ID as the Tampa Bay Water database).
HISTORIC FLUCFCS CODE	Identify the historical Florida Land Use, Cover and Forms Classification System (FLUCFCS) code for the wetland. A table is provided in the EMP that cross-references the FLUCFCS , Florida Natural Areas Inventory (FNAI) and SWFWMD codes.

WETLAND TYPE	Identify wetland type from Appendix E that most closely represents the wetland being assessed
PERSONNEL	Identify firm and person(s) conducting the wetland assessment
DATE	Date (early summer or fall semi-annual wetland assessments, or other for as-needed wetland assessments).
TIME	Time of arrival

GROUND PHOTOGRAPHY

Photos Photos should be taken in each cardinal direction at the **wetland well** or **staff gage** and **NP-6** stake. Optionally, if the wetland has been monitored for several years, photos should be taken at previously chosen photo points. In this case, the photo points must be clearly described in the wetland documentation and identified by accurate GPS coordinates (if possible) to assure photo views are the same for each assessment. The photography must be slide transparency or digital formats (digital format highly preferred). Slide or digital images should be clearly labeled with wetland ID, photo point, cardinal direction, and date (label slide mount or digital file), and stored in an appropriate database.

Roll/Card Note unique identification code for each roll of film or memory card.

Photo Frame # Number of each photo frame, as designated by the camera, for the direction the photo is taken. Stored film or memory card views should be labeled so that the photo view and date of the photo is consistent from one monitoring season to the next.

Direction Cardinal directions North = 0, East = 90, South = 180, and West = 270. Note that if the views from the cardinal directions are not indicative of the wetland, the photo-directions can be changed to best represent the wetland; however, they must be permanently designated so that the same view is taken during each assessment. Note that the photo directions should be re-evaluated when appropriate to insure that the photos content remains useful.

WATER LEVEL

Describe water level conditions in the wetland at the time of the assessment. Water levels from existing **staff gage** should be noted, and an estimate of the percent of the wetland inundated should be mentioned. If there is no standing water in the wetland, an estimate of soil moisture or saturation, and, if possible, depth to water, should be made. Saturation can be determined by rolling a golf ball-sized ball of soil in your palm. If soil is saturated moisture will appear on the soil and in your palm. Depth to water can be estimated by the degree of soil saturation, or through the use of the **wetland well**. The goal of this evaluation is to provide a general description of water level conditions at the time of the assessment.

VEGETATION TRENDS

The following section provides direction to assess the **cover**, **composition**, and **zonation** of the most common **groundcover**, **shrub**, and **tree** species in the monitored wetland. The vegetation assessment will be conducted via the **transect** described earlier. The purpose is to assess vegetation characteristics and distribution with respect to **hydrology**. It is assumed that normal **cover** and **zonation** of species is a result of normal wetland **hydrology**. Altered **hydrology** is assumed to affect **composition**, plant **zonation** (i.e., species currently occurring in different wetland **zones** than where they occurred historically) and **cover** (i.e., **FACW** and **FAC** species occurring in greater abundance than they historically occurred).

Only vegetation growing within the **historic wetland edge** should be included in the assessment. Vegetation growing on **hummocks**, vegetation overhanging from the uplands (such as saw palmetto), or **vines** in the **canopy** that originate from outside the **historic wetland edge** are considered to be growing in **uplands**, and should not be included in the assessment.

The ranking scales for all categories are from 1 – 5 (see details below). Assigning half points between categories is not acceptable. For all categories evaluated, a choice of 1-5 must be made, or **NA** must be chosen. The main factors in the rank chosen must be documented in the comments section. If **NA** is chosen, clearly explain the reason, and, if a permanent condition, include in the wetland history.

Appendix A contains the Vegetative Index (from Chapter 62-340 F.A.C), as well as an extended Vegetative Index list containing some common species not on the Vegetative Index (for reference). Chapter 62-340 F.A.C. provides several references to be used for species identification or to resolve any uncertainty about the nomenclature or taxonomy of any plant. Other useful references to be used include Wunderlin, R.P. (1997). The Vegetative Index and Vegetative Index Extension in Appendix A should be used exclusively to assign Wetland Status for each identified species in the WAP.

GROUNDCOVER

Groundcover is defined as all woody species less than 1.0 meter in height, and all non-woody species (regardless of height). **Vines** originating from the **transition zone** or **deep zone** (but not on **hummocks**) should be considered **groundcover**.

Groundcover Species Cover Percentages

List the most common **groundcover** species that occur within each wetland **zone**, as well as all noteworthy species that may affect your overall wetland evaluation (such as **weedy** species, **exotic plants**, upland species, etc.). Also, estimate the percent **cover** of each species, and record the Wetland Status designation for each species, as per the Vegetative Index (Chapter 62-340, F.A.C) and Vegetative Index Extension in Appendix A. Each percentage should be the percent of the wetland **zone** covered by the specific species. Total Groundcover Percentage should also be estimated. Although the total of the percent **cover** of the individual species should usually approximate the Total Groundcover Percentage, because of layering, the percent **cover** for the individual species do not have to equal the Total Groundcover Percentage within the **zone**. Note that **groundcover** that is significantly disturbed by paths or trails used to enter the wetland should not be considered in the assessment.

Add any comments necessary to explain the results of the Groundcover Species Cover Percentages.

Groundcover Zonation

Indicate the category that best describes the **groundcover zonation**, and provide comments that explain the reasons for your choice. Examples of abnormal **zonation** include upland species growing on the wetland floor (not on **hummocks**). **Upland species** are abnormal in both the **transition** and **deep zones**. **FAC** species are expected in limited abundance in the **transition zone**, but not the **deep zone** (**FAC** species can be abnormal in the **transition zone** depending upon abundance and position of particular species - scientific judgment needed). **FACW** species are always considered normal in the **transition zone**, but can be abnormal depending upon abundance and position in the **deep zone** (scientific judgment needed). Expansive growth of an **OBL** such as maidencane in the **deep zone** is considered abnormal.

1. Many signs of abnormal **groundcover zonation** all through wetland
 2. Many signs of abnormal **groundcover zonation** in the **transition zone** and outer **deep zone** (if no **transition zone** or no plants in **transition zone** select 2.)
 3. Some signs of abnormal **groundcover zonation** in the **transition zone** and outer **deep zone** (if no **transition zone** or no plants in **transition zone** select 3.)
 4. Some signs of abnormal **groundcover zonation** limited to the **transition zone**
 5. Normal **groundcover zonation**
- N/A Not enough **groundcover** to make evaluation

Add any comments necessary to explain the results of the Groundcover Zonation evaluation.

SHRUBS AND SMALL TREES

Shrubs and small trees are defined as woody species less than 4 centimeters **Diameter at Breast Height (DBH)** and greater than 1.0 meter in height. For WAP purposes, only **shrubs and small trees** rooted in the ground and not on **hummocks** will be considered in this section.

Shrub and Small Tree Species Cover Percentages (only consider plants rooted in the ground)
List the most common **shrub and small tree** species that occur within each wetland **zone**, as well as all noteworthy species that may affect your overall wetland evaluation (such as **weedy** species, **exotic plants**, upland species, etc.). Also, estimate the percent **cover** of each species, and record the Wetland Status designation for each species, as per the Vegetative Index (Chapter 62-340, F.A.C) and Vegetative Index Extension in Appendix A. Each percentage should be the percent of the wetland **zone** covered by the specific species. Total Shrub and Small Tree Cover Percentage should also be estimated. Although the total of the percent **cover** of the individual species should usually approximate the Total Shrub and Small Tree Cover Percentage, because of layering, the percent **cover** for the individual species does not have to equal the Total Shrub and Small Tree Cover Percentage within the **zone**. If there are no **shrubs and small trees** rooted on the ground in the **transition zone** or in the **deep zone** write "None".

Add any comments necessary to explain the results of the Shrub and Small Tree Species Cover Percentages.

Shrub and Small Tree Zonation (only consider plants rooted in the ground)

Indicate the category that best describes the **shrub and small tree zonation**, and provide comments that explain the reasons for your choice. Examples of **abnormal zonation** include upland species growing on the wetland floor. **Upland species** are abnormal in both the **transition** and **deep zones**. **FAC** species are expected in limited abundance in the **transition zone**, but not

the **deep zone** (**FAC** species can be abnormal in the **transition zone** depending upon abundance and position of particular species - scientific judgment needed). **FACW** species are always considered normal in the **transition zone**, but can be abnormal depending upon abundance and position in the **deep zone** (scientific judgment needed). Expansive growth of an **OBL** such as red maple in the **deep zone** might be considered abnormal (scientific judgment needed).

1. Many signs of **abnormal shrub and small tree zonation** all through wetland
 2. Many signs of **abnormal shrub and small tree zonation** in the **transition zone** and outer **deep zone** (if no **transition zone** or no plants in **transition zone** select 2)
 3. Some signs of **abnormal shrub and small tree zonation** in the **transition zone** and outer **deep zone** (if no **transition zone** or no plants in **transition zone** select 3)
 4. Some signs of **abnormal shrub and small tree zonation** limited to the **transition zone**
 5. **Normal shrub and small tree zonation**
- N/A Not enough **shrub and small tree cover** to make evaluation

Add any comments necessary to explain the results of the Shrub and Small Tree Zonation evaluation.

Stress of Appropriate Shrub and Small Tree Species (only consider plants rooted in the ground)

Indicate the category that best describes the presence of **shrub and small tree stress** for species appropriate for the wetland type. Species such as wax myrtle that are in an inappropriate **zone** within the wetland are assessed under the "inappropriate" category below. Include any standing **shrubs and small trees** that are dead.

1. >50 percent exhibit **stress**
 2. 25-50 percent exhibit **stress**
 3. 10-25 percent exhibit **stress**
 4. 5-10 percent exhibit **stress**
 5. <5 percent exhibit **stress**
- N/A Not enough **cover** to make evaluation

Add any comments necessary to explain the results of the Stress of Appropriate Shrub and Small Tree Species evaluation.

Stress of Inappropriate Shrub and Small Tree Species (only consider plants rooted in the ground)

Indicate the category that best describes the presence of **shrub and small tree stress** for species not appropriate for the wetland type or that are in an inappropriate wetland **zone**. Include any standing **shrubs and small trees** that are dead.

1. <5 percent exhibit **stress**
2. 5-10 percent exhibit **stress**
3. 10-25 percent exhibit **stress**
4. 25-50 percent exhibit **stress**
5. >50 percent exhibit **stress**

N/A Not enough **cover** to make evaluation

Add any comments necessary to explain the results of the Stress of Inappropriate Shrub and Small Tree Species evaluation.

TREES

Trees are defined as woody species greater than 4 centimeters **Diameter at Breast Height (DBH)** and greater than 1.0 meter in height. Some non-forested wetlands such as marshes may have enough **trees** to provide useful information. The **Tree** category should be scored if the evaluator believes that useful information can be obtained from scoring.

Tree Species Cover Percentages

List the most common **tree** species that occur within each wetland **zone**, as well as all noteworthy species that may affect your overall wetland evaluation (such as **weedy** species, **exotic plants**, upland species, etc.). Also, estimate the percent **cover** of each species, and record the Wetland Status designation for each species, as per the Vegetative Index (Chapter 62-340, F.A.C) and Vegetative Index Extension in Appendix A. Each percentage should be the percent of the wetland **zone** covered by the specific species. Total Tree Cover Percentage should also be estimated. Although the total of the percent **cover** of the individual species should usually approximate the Total Tree Cover Percentage, because of layering, the percent **cover** for the individual species do not have to equal the Total Tree Cover Percentage within the **zone**.

Add any comments necessary to explain the results of the Tree Species Cover Percentages.

Tree Zonation

Indicate the category that best describes the **tree zonation**, and provide comments that explain the reasons for your choice. Evaluate **tree** species encroachment (**inappropriate species** for the **zone** that it occurs). **Upland species** are abnormal in both the transition and **deep zones**. **FAC** species are expected in limited abundance in the **transition zone**, but not the **deep zone** (**FAC** species **groundcover** can be abnormal in the **transition zone** depending upon abundance and position of particular species - scientific judgment needed). **FACW** species are always considered normal in the **transition zone** but can be abnormal depending upon abundance and position in the **deep zone** (scientific judgment needed). Expansive growth of an **OBL** such as red maple in the **deep zone** might be considered abnormal (scientific judgment needed).

1. Many signs of **abnormal tree zonation** all through wetland
 2. Many signs of **abnormal tree zonation** in the **transition zone** and outer **deep zone**
(if no **transition zone** or no plants in **transition zone** select 2)
 3. Some signs of **abnormal tree zonation** in the **transition zone** and outer **deep zone**
(if no **transition zone** or no **trees** in **transition zone** select 3)
 4. Some signs of **abnormal tree zonation** limited to the **transition zone**
 5. **Normal tree zonation**
- N/A Not enough tree **cover** to make evaluation

Add any comments necessary to explain the results of the Tree Zonation evaluation.

Leaning or Dead Trees

Indicate the category that best describes the presence of leaning or dead **trees** within the entire wetland. Include **trees** that are dead on the ground or are known to have died during the period of wetland observation and are no longer in the wetland. Do not include any standing dead **trees** (include them as **stressed**) or any timbered **trees**. Restrict analysis to species appropriate for the wetland type.

1. >25 percent of **trees** dead or leaning
 2. 15-25 percent **trees** dead or leaning
 3. 5-15 percent of **trees** dead or leaning
 4. <5 percent of **trees** dead or leaning, but inappropriate percentage for wetland type
 5. Normal numbers of dead or **leaning trees** for wetland type
- N/A Not enough **cover** to make evaluation

Add any comments necessary to explain the results of the Leaning or Dead **Trees** evaluation.

Canopy Stress of Appropriate Tree Species

Indicate the category that best describes the presence of **tree canopy stress**. Restrict analysis to species appropriate for the wetland type. Include any standing **trees** that are dead. If most of **tree** trunk is still standing consider this a dead standing **tree**.

1. >50 percent exhibit **stress**
 2. 25-50 percent exhibit **stress**
 3. 10-25 percent exhibit **stress**
 4. 5-10 percent exhibit **stress**
 5. <5 percent exhibit **stress**
- N/A Not enough **cover** to make evaluation

Add any comments necessary to explain the results of the Canopy Stress of Appropriate Species evaluation.

Canopy Stress of Inappropriate Tree Species

Indicate the category that best describes the presence of **tree canopy stress**. Restrict analysis to species inappropriate for the wetland type. Include any standing **trees** that are dead. If most of **tree** trunk is still standing consider this a dead standing **tree**.

1. <5 percent exhibit **stress**
 2. 5-10 percent exhibit **stress**
 3. 10-25 percent exhibit **stress**
 4. 25-50 percent exhibit **stress**
 5. >50 percent exhibit **stress**
- N/A Not enough **cover** to make evaluation

Add any comments necessary to explain the results of the Canopy Stress of Inappropriate Species evaluation.

GENERAL INFORMATION

This section seeks miscellaneous information concerning the state and conditions of the wetland. Some of this information may directly relate to the hydrologic condition of the wetland, while the relationship of some information to the hydrologic condition of the wetland may be unclear. Some of the information requested may assist in the eventual interpretation of wetland health. Please answer all questions to the best of your ability through your observations – no significant analysis or expertise in each issue is expected. Include pertinent information in the wetland history, especially if the new condition is permanent.

Disturbance

Only check the following if it is your opinion that such an **extensive** amount of physical alteration of the wetland (clearly not related to ground-water withdrawals) has occurred that you do not believe it makes sense to use the wetland data for purposes such as MFL development, recovery assessment, etc. Such impacts could include **extensive** fill, **extensive** clearing, severe fire damage, significant fragmentation by roads or other construction, etc. If this comment is checked, please fully explain, and include the explanation in the wetland history.

____ May not want to analyze/compare with other wetlands due to the **extensive** level of non-ground-water withdrawal related disturbance.

Explain in detail (include in wetland history)_____

Only check the following if it is your opinion that such an **extensive** amount of **subsidence** of the wetland has occurred that you do not believe it makes sense to use the wetland data for purposes such as MFL development, recovery assessment, etc. Such impacts could include severe soil loss, karstic activity that has substantially lowered the wetland bottom, etc. If this comment is checked, please fully explain, and include the explanation in the wetland history.

____ May not want to analyze/compare with other wetlands due to the **extensive** level of **subsidence**.

Explain in detail (include in wetland history)_____

Are any of the following conditions apparent and obvious?

- ____ Wetland edges have been filled or disturbed
- ____ Excessive dumping or trash in wetland
- ____ Hog disturbance
- ____ Significant impact from cattle (trampling, etc.)
- ____ Vehicles driving through wetland (including bicycles)
- ____ Insect damage
- ____ Disease
- ____ Other (specify)

Comments_____

Are there signs of fire? Yes ___ No ___ Not Sure ___
Approximate year of fire? _____ Not Sure _____
Expanse of fire? **Extensive** ___ **Localized** ___
Intensity of fire? High ___ Low ___

Fire Comments _____

Hydrology

Is the wetland being **augmented**? Yes ___ No ___ Not Sure ___
If yes, was **augmentation** taking place at the time of your visit? Yes ___ No ___ Not Sure ___

Augmentation comments _____

Is there clear evidence of direct stormwater inflow via a ditch or other manmade conveyance? Yes ___ No ___ Not Sure ___

Is there clear evidence of direct drainage from the wetland via ditch or other manmade conveyance? Yes ___ No ___ Not Sure ___

Are there any other drainage activities in the area of note? Yes ___ No ___ Not Sure ___

Drainage comments _____

Soils

Are there any new signs of soils disturbance (since last 5-year review)? Yes ___ No ___ Not Sure ___

Comments _____

For lakes only

Indicate the category that best describes the docks for the entire lake.

1. Docks completely out of the water.
2. Docks touching the water or with <50% of the dock over water.
3. Docks >50% over water.

Is the littoral zone stranded? Yes _____ No _____

Protected Wildlife and Plants

Note any **protected species** of plants and animals that are observed directly or can be identified by call, tracks or scat during the wetland assessment. Also include the activity noted such as nesting, foraging, feeding, mating, resting, burrowing, etc. and any additional notes or observations.

Species _____ Activity _____ Notes: _____
 Species _____ Activity _____ Notes: _____
 Species _____ Activity _____ Notes: _____
 Species _____ Activity _____ Notes: _____

Note any **wetland dependent species** of animals that are observed directly or can be identified by call, tracks, or scat during the wetland assessment. List birds, fishes, reptiles, mammals or amphibians.

Species _____ Activity _____ Notes: _____
 Species _____ Activity _____ Notes: _____
 Species _____ Activity _____ Notes: _____
 Species _____ Activity _____ Notes: _____

Activity codes (M = mating, F = foraging, FT = flyover/traveling, N = nesting, OT = other)
 Observation codes (O = observed, S = sign [scat, tracks, call or other signs of presence])

Protected and Wetland Dependent Species Comments _____

Recovery and Stress

- Are young **trees** (appropriate to the wetland type) starting to grow in wetland locations in a way that would suggest recovery from groundwater withdrawal stress is taking place?
 Yes ____ No ____ Not Sure ____ Not applicable ____

Comments (include species) _____

- Are **vines** (inappropriate to the wetland type and rooted in the wetland), dropping leaves or dying in a way that would suggest recovery from groundwater withdrawal stress is taking place?
 Yes ____ No ____ Not Sure ____ Not applicable ____

Comments (include species) _____

APPENDIX A

The Vegetative Index

Botanical Name	Common Name	Wetland Status
<i>Abildgaardia ovata</i>	rush, flat-spike	FACW
<i>Acacia auriculiformis</i>	ear-leaved acacia	FAC
<i>Acer negundo</i>	box-elder	FACW
<i>Acer rubrum</i>	maple, red	FACW
<i>Acer saccharinum</i>	maple, silver	OBL
<i>Acoelorrhaphe wrightii</i>	Palm, paurotis	OBL
<i>Acrostichum</i> spp.	leather fern	OBL
<i>Aeschynomene indica</i>	Joint-vetch, India	FACW
<i>Aeschynomene pratensis</i>	Joint-vetch, meadow	OBL
<i>Agalinis aphylla</i>	False-foxglove, scale-leaf	FACW
<i>Agalinis linifolia</i>	False-foxglove, flax-leaf	OBL
<i>Agalinis maritima</i>	False-foxglove, saltmarsh	OBL
<i>Agalinis pinetorum</i> (<i>A. pulchella</i>)	False-foxglove	FACW
<i>Agalinis purpurea</i>	False-foxglove, large purple	FACW
<i>Agarista populifolia</i>	hobble-bush	FACW
<i>Agrostis stolonifera</i>	redtop	FACW
<i>Aletris</i> spp.	Colic-root	FAC
<i>Alisma subcordatum</i>	water-plantain, subcordate	OBL
<i>Alnus serrulata</i>	Alder, hazel	OBL
<i>Alopecurus carolinianus</i>	foxtail, tufted	FAC
<i>Alternanthera maritima</i>	beach alternanthera	FACW - Keys only
<i>Alternanthera paronychioides</i>	smooth chaff-flower	FAC - Keys only
<i>Alternanthera philoxeroides</i>	alligator-weed	OBL
<i>Alternanthera sessilis</i>	alligator-weed, sessile	OBL
<i>Amaranthus australis</i>	Amaranth, southern	OBL
<i>Amaranthus cannabinus</i>	Amaranth, tidemarsch	OBL
<i>Amaranthus floridanus</i>	Amaranth, Florida	OBL
<i>Ammannia</i> spp.	Toothcup	OBL
<i>Amorpha fruticosa</i>	indigo-bush	FACW
<i>Ampbicularpum mublenbergianum</i>	blue maidencane	FACW
<i>Amsonia rigida</i>	slimpod, stiff	FACW
<i>Amsonia tabernaemontana</i>	slimpod, eastern	FACW
<i>Anagallis pumila</i>	pimpernel, Florida	FAC
<i>Andropogon arctatus</i> (Campbell)	bluestem, savannah	FAC
<i>Andropogon brachystachys</i> (Campbell)	bluestem, short-spike	FAC
<i>Andropogon gerardii</i> (Campbell)	bluestem, big	FAC
<i>Andropogon glomeratus</i> (Campbell)	bluestem, bushy	FACW
<i>Andropogon liebmanii</i> var. <i>pungensis</i> (Campbell) (<i>A. mohrii</i>)	bluestem, Mohr's	FACW
<i>Andropogon perangustatus</i> (Campbell)	bluestem, slim	FAC
<i>Andropogon virginicus</i> (Campbell)	broom-sedge	FAC
<i>Annona glabra</i>	Pond apple	OBL
<i>Anthraenantia rufa</i>	silky-scale, purple	FACW
<i>Apteria aphylla</i>	nodding nixie	FACW
<i>Ardisia</i> spp.	Marlberry	FAC
<i>Arenaria godfreyi</i>	stitchwort, Godfrey's	FACW

Botanical Name	Common Name	Wetland Status
<i>Arisaema</i> spp.	jack-in-the-pulpit; green-dragon	FACW
<i>Aristida affinis</i>	three-awn grass, long-leaf	OBL
<i>Aristida purpurascens</i> (s.l.)	three-awn grass, wand-like	FAC
<i>Aristida rhizomophora</i>	three-awn grass, rhizomatous	FAC
<i>Aristida spiciformis</i>	bottlebrush, three-awn	FAC
<i>Aristida stricta</i>	three-awn grass, pineland	FAC
<i>Armoracia aquatica</i>	Lakecress	OBL
<i>Arnoglossum diversifolium</i>	indian-plantain, variable-leaf	FACW
<i>Arnoglossum ovatum</i>	indian-plantain, egg-leaf	FACW
<i>Arnoglossum sulcatum</i>	indian-plantain, Georgia	OBL
<i>Aronia arbutifolia</i>	red chokeberry	FACW
<i>Arundinaria gigantea</i>	Giant cane	FACW
<i>Arundo donax</i>	Reed, giant	FAC
<i>Asclepias connivens</i>	Milkweed, large-flower	FACW
<i>Asclepias incarnata</i>	Milkweed, swamp	OBL
<i>Asclepias lanceolata</i>	Milkweed, fen-flower	OBL
<i>Asclepias longifolia</i>	Milkweed, long-leaf	FACW
<i>Asclepias pedicellata</i>	Milkweed, savannah	FACW
<i>Asclepias perennis</i>	Milkweed, aquatic	OBL
<i>Asclepias rubra</i>	Milkweed, red	OBL
<i>Asclepias viridula</i>	Milkweed, southern	FACW
<i>Aster carolinianus</i>	Aster, climbing	OBL
<i>Aster chapmanii</i>	Aster, savannah	FACW
<i>Aster dumosus</i>	Aster, bushy	FAC
<i>Aster elliotii</i>	Aster, Elliott's	OBL
<i>Aster eryngiifolius</i>	Aster, coyote-thistle	FACW
<i>Aster lateriflorus</i>	Aster, calico	FACW
<i>Aster spinulosus</i>	Aster, bog	FACW
<i>Aster subulatus</i>	Aster, saltmarsh	OBL
<i>Aster tenuifolius</i>	Aster, saltmarsh	OBL
<i>Aster umbellatus</i>	Aster, flat-top white	FAC
<i>Aster vimineus</i>	Aster, small white	FACW
<i>Athyrium filix-femina</i>	fern, subarctic lady	FACW
<i>Atriplex patula</i>	saltbush, halberd-leaf	FACW
<i>Avicennia germinans</i>	Mangrove, black	OBL
<i>Axonopus</i> spp.	carpet grass	FAC
<i>Baccharis angustifolia</i>	False-willow	OBL
<i>Baccharis dioica</i>	False-willow, broom-bush	FAC
<i>Baccharis glomeruliflora</i>	Groundsel tree	FAC
<i>Baccharis halimifolia</i>	False-willow, eastern	FAC
<i>Bacopa</i> spp.	water-hyssop	OBL
<i>Balduina atropurpurea</i>	honeycomb-head, purple	FACW
<i>Balduina uniflora</i>	honeycomb-head, one-flower	FACW
<i>Bartonia</i> spp.	Screwstem	FACW
<i>Batis maritima</i>	saltwort	OBL
<i>Betula nigra</i>	Birch, river	OBL
<i>Bidens bipinnata</i>	Spanish needles	U
<i>Bidens pilosa</i>	beggar-ticks, white	FAC
<i>Bidens</i> spp.	beggar-ticks	OBL
<i>Bigelovia nudata</i>	golden-rod, rayless	FACW

Botanical Name	Common Name	Wetland Status
<i>Blechnum serrulatum</i>	swamp fern	FACW
<i>Boehmeria cylindrica</i>	False-nettle, small-spike	OBL
<i>Boltonia</i> spp.	boltonia	FACW
<i>Borrchia</i> spp.	sea oxeye	OBL
<i>Brachiaria purpurascens</i>	paragrass	FACW
<i>Bucida buceras</i>	gregory wood	FAC
<i>Bumelia celastrina</i>	bumelia, coastal	FAC
<i>Bumelia lycioides</i>	bumelia, buckthorn	FAC
<i>Bumelia reclinata</i>	Bumelia	FAC
<i>Burmannia</i> spp.	burmannia	OBL
<i>Byrsonima lucida</i>	locust-berry	FAC - Keys only
<i>Cacalia suaveolens</i>	indian-plantain, sweet-scent	FACW
<i>Calamovilfa curtissii</i>	Curtiss' reed grass	FACW
<i>Callitriche</i> spp.	water-starwort	OBL
<i>Calopogon</i> spp.	Grass-pinks	FACW
<i>Calyocarpum hyonii</i>	cupseed	FACW
<i>Campanula americana</i>	bellflower, American	FAC
<i>Campanula floridana</i>	bellflower	OBL
<i>Canna</i> spp.	canna	OBL
<i>Canna x generalis</i>	canna, common	FAC
<i>Caperonia</i> spp.	caperonia	FACW
<i>Capparis flexuosa</i>	caper-tree	FACW
<i>Cardamine bulbosa</i>	bitter-cress	OBL
<i>Cardamine pensylvanica</i>	spring-cress	OBL
<i>Carex atlantica</i>	sedge, prickly bog	OBL
<i>Carex comosa</i>	sedge, bearded	OBL
<i>Carex crinita</i>	sedge, fringed	OBL
<i>Carex crus-corvi</i>	sedge, raven-foot	OBL
<i>Carex decomposita</i>	sedge, cypress-knee	OBL
<i>Carex elliotii</i>	sedge, Elliott's	OBL
<i>Carex folliculata</i>	sedge, long	OBL
<i>Carex gigantea</i>	sedge, large	OBL
<i>Carex howei</i>	sedge, Howe's	OBL
<i>Carex hyalinolepis</i>	sedge, shoreline	OBL
<i>Carex leptalea</i>	sedge, bristly-stalk	OBL
<i>Carex louisianica</i>	sedge, Louisiana	OBL
<i>Carex lupulina</i>	sedge, hop	OBL
<i>Carex lurida</i>	sedge, shallow	OBL
<i>Carex</i> spp.	sedges	FACW
<i>Carex stipata</i>	sedge, stalk-grain	OBL
<i>Carex walteriana</i>	sedge, Walter's	OBL
<i>Carphoborus carnosus</i>	chaffhead, pineland	FACW
<i>Carphoborus odoratissimus</i>	vanilla plant	FAC
<i>Carphoborus paniculatus</i>	Deer-tongue	FAC
<i>Carphoborus pseudoliatris</i>	chaffhead, bristle-leaf	FACW
<i>Carpinus caroliniana</i>	hornbeam, American	FACW
<i>Carya aquatica</i>	hickory, water	OBL
<i>Casuarina</i> spp.	casuarina	FAC
<i>Cayaponia quinqueloba</i>	cayaponia, five-lobe	FAC
<i>Celtis laevigata</i>	sugar-berry; hackberry	FACW

Botanical Name	Common Name	Wetland Status
<i>Centella asiatica</i>	coinwort	FACW
<i>Cephalanthus occidentalis</i>	buttonbush	OBL
<i>Cestrum diurnum</i>	day jessamine	FAC
<i>Chamaecyparis thyoides</i>	cedar, Atlantic white	OBL
<i>Chaptalia tomentosa</i>	sunbonnet; pineland daisy	FACW
<i>Chasmanthium latifolium</i>	spanglegrass	FAC
<i>Chasmanthium sessiliflorum</i>	Long-leaf Chasmanthium	FAC
<i>Chasmanthium</i> spp.	spanglegrass	FACW
<i>Chiococca</i> spp.	snowberry	FAC
<i>Chrysobalanus icaco</i>	cocoplum	FACW
<i>Cicuta</i> spp.	water-hemlock	OBL
<i>Cirsium lecontei</i>	thistle, Leconte's	FACW
<i>Cirsium muticum</i>	thistle, swamp	OBL
<i>Cirsium nuttallii</i>	thistle, Nuttall's	FACW
<i>Cladium</i> spp.	sawgrass	OBL
<i>Cleistes divaricata</i>	rosebud	OBL
<i>Clethra alnifolia</i>	sweet pepper bush	FACW
<i>Cliftonia monophylla</i>	buckwheat-tree	FACW
<i>Colocasia esculenta</i>	elephant's ear	OBL
<i>Colubrina asiatica</i>	snakewood, Asian	FAC
<i>Commelina erecta</i>	dayflower, sandhill	U
<i>Commelina</i> spp.	dayflower	FACW
<i>Conocarpus erectus</i>	buttonwood	FACW
<i>Conoclinium coelestinum</i>	mistflower	FAC
<i>Coreopsis falcata</i>	tickseed, sickle	FACW
<i>Coreopsis floridana</i>	tickseed, Florida	FACW
<i>Coreopsis gladiata</i>	tickseed, southeastern	FACW
<i>Coreopsis integrifolia</i>	tickseed, ciliate-leaf	FACW
<i>Coreopsis leavenworthii</i>	tickseed, Leavenworth's	FACW
<i>Coreopsis linifolia</i>	tickseed, Texas	FACW
<i>Coreopsis nudata</i>	tickseed, Georgia	OBL
<i>Coreopsis tripteris</i>	tickseed, tall	FAC
<i>Cornus amomum</i>	dogwood, silky	OBL
<i>Cornus foemina</i>	dogwood, swamp	FACW
<i>Crataegus aestivalis</i>	mayhaw	OBL
<i>Crataegus marshallii</i>	Haw, parsley	FACW
<i>Crataegus viridis</i>	Haw, green	FACW
<i>Crinum americanum</i>	swamp-lily, southern	OBL
<i>Croton elliotii</i>	croton, Elliott's	FACW
<i>Ctenitis submarginalis</i>	Fern, brown-hair comb	FACW
<i>Ctenium</i> spp.	toothache grass	FACW
<i>Cupaniopsis anacardioides</i>	carrotwood	FAC
<i>Cuphea aspera</i>	common waxweed	FACW
<i>Cuphea carthagenensis</i>	waxweed, Columbia	FAC
<i>Cyperus alternifolius</i>	flatsedge, alternate-leaf	OBL
<i>Cyperus articulatus</i>	flatsedge, jointed	OBL
<i>Cyperus cuspidatus</i>	flatsedge, coastal-plain	FAC
<i>Cyperus difformis</i>	flatsedge, variable	OBL
<i>Cyperus distinctus</i>	flatsedge, marshland	OBL
<i>Cyperus drummondii</i>	flatsedge	OBL

Botanical Name	Common Name	Wetland Status
<i>Cyperus entrerianus</i>	flatsedge	OBL
<i>Cyperus erythrorhizos</i>	flatsedge, red-root	OBL
<i>Cyperus esculentus</i>	flatsedge	FAC
<i>Cyperus filiculmis</i>	flatsedge, sandhill	U
<i>Cyperus giganteus</i>	flatsedge	FAC
<i>Cyperus globulosus</i>	flatsedge, baldwin	FAC
<i>Cyperus haspan</i>	flatsedge, sheathed	OBL
<i>Cyperus huarmensis</i>	flatsedge, black knotty-root	FAC
<i>Cyperus lanceolatus</i>	flatsedge, epiphytic	OBL
<i>Cyperus metzii</i>	flatsedge	FAC
<i>Cyperus ovalaris</i>	flatsedge	U
<i>Cyperus papyrus</i>	flatsedge, papyrus	OBL
<i>Cyperus reflexus</i>	flatsedge	U
<i>Cyperus refractus</i>	flatsedge	U
<i>Cyperus retrofractus</i>	flatsedge	U
<i>Cyperus retrorsus</i>	flatsedge	FAC
<i>Cyperus rotundus</i>	flatsedge, purple	FAC
<i>Cyperus</i> spp.	flatsedge	FACW
<i>Cyperus tetragonus</i>	flatsedge	U
<i>Cypselea humifusa</i>	panal	FAC
<i>Cyrilla racemiflora</i>	cyrilla, swamp	FAC
<i>Decodon verticillatus</i>	swamp-loosestrife	OBL
<i>Dichondra caroliniensis</i>	pony-foot	FAC
<i>Dichromena colorata</i>	white-top sedge, starbrush	FACW
<i>Dichromena floridensis</i>	white-top sedge, Everglades	FACW
<i>Dichromena latifolia</i>	white-top sedge, giant	OBL
<i>Dicliptera brachiata</i>	mudwort, wild	FACW
<i>Digitaria pauciflora</i>	everglades grass	FACW
<i>Digitaria serotina</i>	crabgrass, dwarf	FAC
<i>Diodia virginiana</i>	button-weed	FACW
<i>Dionaea muscipula</i>	Venus' flytrap	FACW
<i>Diospyros virginiana</i>	persimmon, common	FAC
<i>Distichlis spicata</i>	saltgrass, seashore	OBL
<i>Drosera brevifolia</i>	sundew, dwarf	FACW
<i>Drosera capillaris</i>	sundew, pink	FACW
<i>Drosera filiformis</i>	sundew, thread-leaf	OBL
<i>Drosera intermedia</i>	sundew, spoon-leaf	OBL
<i>Drosera tracyi</i>	sundew, Gulf coast	OBL
<i>Drymaria cordata</i>	West Indian chickweed	FAC
<i>Dryopteris ludoviciana</i>	shield-fern, southern	FACW
<i>Dulichium arundinaceum</i>	sedge, three-way	OBL
<i>Dyschoriste humistrata</i>	dyschoriste, swamp	FACW
<i>Echinochloa</i> spp.	jungle-rice; cockspear grass	FACW
<i>Echinodorus</i> spp.	burhead	OBL
<i>Eclipta alba</i>	yerba de Tajo	FACW
<i>Eleocharis</i> spp.	spikerush	OBL
<i>Elyonurus tripsacoides</i>	balsam-scale, Pan-American	FACW
<i>Elytraria caroliniensis</i>	scaly-stem, Carolina	FAC
<i>Equisetum hyemale</i>	horsetail	FACW
<i>Eragrostis</i> spp.	lovegrass	FAC

Botanical Name	Common Name	Wetland Status
<i>Erechtites hieracifolia</i>	fireweed	FAC
<i>Erianthus brevibarbis</i>	plumegrass, short-beard	FACW
<i>Erianthus giganteus</i>	plumegrass, sugarcane	OBL
<i>Erianthus strictus</i>	plumegrass, narrow	OBL
<i>Erigeron quercifolius</i>	fleabane	FAC
<i>Erigeron vernus</i>	fleabane, early whitetop	FACW
<i>Eriocaulon</i> spp.	pipewort	OBL
<i>Eriochloa</i> spp.	cupgrass	FACW
<i>Erithralis fruticosa</i>	black torchwood	FAC
<i>Ernodea littoralis</i>	golden-creeper	FAC - Keys only
<i>Eryngium aquaticum</i>	Corn snakeroot	OBL
<i>Eryngium baldwinii</i>	coyote-thistle, Baldwin's	FAC
<i>Eryngium integrifolium</i>	coyote-thistle, blue-flower	FACW
<i>Eryngium prostratum</i>	coyote-thistle, creeping	FACW
<i>Eryngium yuccifolium</i>	rattlesnake master	FACW
<i>Erythrodes querceticola</i>	erythrodes, low	FACW
<i>Eulophia alta</i>	coco, wild	FACW
<i>Eupatoriadelphus fistulosus</i>	joe-pye-weed	FACW
<i>Eupatorium leptophyllum</i>	marsh thoroughwort	OBL
<i>Eupatorium leucolepis</i>	thoroughwort, white-bract	FACW
<i>Eupatorium mikanioides</i>	thoroughwort, semaphore	FACW
<i>Eupatorium perfoliatum</i>	boneset	FACW
<i>Eupatorium</i> spp.	thoroughworts	FAC
<i>Euphorbia humistrata</i> (<i>Chamaesyce humistrata</i>)	broomsurge, spreading	FACW
<i>Euphorbia inundata</i>	spurge, Florida	FACW
<i>Euphorbia polyphylla</i>	spurge, many-leaved	FACW
<i>Eustachys glauca</i> (<i>Chloris glauca</i>)	fingergrass, saltmarch	FACW
<i>Eustachys petracea</i>	fingergrass	FAC
<i>Eustoma exaltatum</i>	prairie-gentian	FACW
<i>Euthamia</i> spp.	bushy goldenrod	FAC
<i>Evolvulus convolvuloides</i>	evolvulus	FACW
<i>Evolvulus sericeus</i>	silky bindweed	FACW
<i>Ficus aurea</i>	fig, Florida strangler	FAC
<i>Fimbristylis annua</i>	fringe-rush, annual	FACW
<i>Fimbristylis puberula</i>	fringe-rush, Vahl's hairy	FACW
<i>Fimbristylis spathacea</i>	hurricane-grass	FAC
<i>Fimbristylis</i> spp.	fringe-rush	OBL
<i>Flaveria bidentis</i>	yellowtop	FAC
<i>Flaveria floridana</i>	yellowtop	FACW
<i>Flaveria linearis</i>	yellowtop	FACW
<i>Flaveria trinervia</i>	yellowtop	FAC
<i>Forestiera acuminata</i>	privet, swamp	FACW
<i>Forestiera segregata</i>	privet, Florida	FAC
<i>Fothergilla gardenii</i>	witch-alder, dwarf	FACW
<i>Fraxinus americana</i>	ash, white	U
<i>Fraxinus</i> spp.	ash	OBL
<i>Fuirena</i> spp.	umbrella-sedge	OBL
<i>Galium tinctorium</i>	bedstraw, stiff marsh	FACW
<i>Gaylussacia dumosa</i>	dwarf huckleberry	FAC
<i>Gaylussacia frondosa</i>	dangleberry	FAC

Botanical Name	Common Name	Wetland Status
<i>Gaylussacia mosieri</i>	woolly-berry	FACW
<i>Gentiana</i> spp.	gentian	FACW
<i>Gleditsia aquatica</i>	water-locust	OBL
<i>Gleditsia triacanthos</i>	honey-locust	FACW
<i>Glyceria striata</i>	fowl mannagrass	OBL
<i>Gordonia lasianthus</i>	Bay, loblolly	FACW
<i>Gratiola hispida</i>	hyssop, hispid	FAC
<i>Gratiola</i> spp.	hedgelyssop	FACW
<i>Guapira discolor</i>	blolly	FAC - Keys only
<i>Habenaria</i> spp.	Rein orchid	FACW
<i>Halesia diptera</i>	silver-bell	FACW
<i>Harperocallis flava</i>	Harper's beauty	FACW
<i>Hartwrightia floridana</i>	hartwrightia, Florida	FACW
<i>Hedychium coronarium</i>	ginger	FACW
<i>Helenium amarum</i>	sneezeweed, pasture	FAC
<i>Helenium</i> spp.	sneezeweed	FACW
<i>Helianthus agrestis</i>	sunflower, southeastern	FACW
<i>Helianthus angustifolius</i>	sunflower, swamp	FACW
<i>Helianthus carnosus</i>	sunflower, lakeside	FACW
<i>Helianthus floridanus</i>	sunflower, Florida	FAC
<i>Helianthus heterophyllus</i>	sunflower, wetland	FACW
<i>Helianthus simulans</i>	sunflower, muck	FACW
<i>Heliotropium curassavicum</i>	heliotrope, seaside	FAC
<i>Heliotropium polyphyllum</i>	heliotrope	FAC
<i>Heliotropium procumbens</i>	heliotrope, four-spike	FACW
<i>Hemicarpha</i> spp.	dwarf-bullrush	FACW
<i>Heteranthera reniformis</i>	mud-plantain, kidney-leaf	OBL
<i>Hibiscus aculeatus</i>	rosemallow	FACW
<i>Hibiscus coccineus</i>	rosemallow, scarlet	OBL
<i>Hibiscus grandiflorus</i>	rosemallow, swamp	OBL
<i>Hibiscus laevis</i>	rosemallow, halberd-leaf	OBL
<i>Hibiscus moscheutos</i>	rosemallow, swamp	OBL
<i>Hibiscus tiliaceus</i>	rosemallow, sea	FAC
<i>Hydrochloa carolinensis</i>	watergrass	OBL
<i>Hydrocleis nymphoides</i>	water-poppy	OBL
<i>Hydrocotyle ranunculoides</i>	pennywort, floating	OBL
<i>Hydrocotyle</i> spp.	pennywort	FACW
<i>Hydrolea</i> spp.	false-fiddle-leaf	OBL
<i>Hygrophila</i> spp.	hygrophila	OBL
<i>Hymenachne amplexicaulis</i>	trompetilla	OBL
<i>Hymenocallis</i> spp.	spider-lily	OBL
<i>Hypericum chapmanii</i>	St. John's-wort, Chapman's	OBL
<i>Hypericum cumulicola</i>	St. John's-wort, scrub	U
<i>Hypericum drummondii</i>	St. John's-wort, Drummond's	U
<i>Hypericum edisonianum</i>	St. John's-wort, Edison's	OBL
<i>Hypericum fasciculatum</i>	St. John's-wort, marsh	OBL
<i>Hypericum gentianoides</i>	pineweed	U
<i>Hypericum hypericoides</i>	St. Andrew's cross	FAC
<i>Hypericum lissophloeus</i>	St. John's-wort, smooth-bark	OBL
<i>Hypericum microsepalum</i>	St. John's-wort, small-sepal	U

Botanical Name	Common Name	Wetland Status
<i>Hypericum nitidum</i>	St. John's-wort, Carolina	OBL
<i>Hypericum prolificum</i>	St. John's-wort, shrubby	U
<i>Hypericum punctatum</i>	St. John's-wort, dotted	U
<i>Hypericum reductum</i>	St. John's-wort, Atlantic	U
<i>Hypericum</i> spp.	St. John's-wort	FACW
<i>Hypericum tetrapetalum</i>	St. John's-wort, four-petal	FAC
<i>Hypolepis repens</i>	fern, bead	FACW
<i>Hypoxis</i> spp.	stargrasses, yellow	FACW
<i>Hyptis alata</i>	musky mint	FACW
<i>Ilex amelanchier</i>	holly, sarvis	OBL
<i>Ilex cassine</i>	holly, dahoon	OBL
<i>Ilex coriacea</i>	holly, bay-gall	FACW
<i>Ilex decidua</i>	holly, deciduous	FACW
<i>Ilex myrtifolia</i>	holly, myrtle	OBL
<i>Ilex opaca</i> var. <i>opaca</i>	American holly	FAC
<i>Ilex verticillata</i>	winterberry	OBL
<i>Ilex vomitoria</i>	yaupon holly	FAC
<i>Illicium floridanum</i>	anise, Florida	OBL
<i>Illicium parviflorum</i>	Star anise	FACW
<i>Impatiens capensis</i>	touch-me-not, spotted	OBL
<i>Iris</i> spp.	Iris	OBL
<i>Iris verna</i>	dwarf iris	U
<i>Isoetes</i> spp.	quillwort	OBL
<i>Itea virginica</i>	virginia willow	OBL
<i>Iva frutescens</i>	marsh elder	OBL
<i>Iva microcephala</i>	little marsh elder	FACW
<i>Jacquinia keyensis</i>	joewood	FAC
<i>Juncus marginatus</i>	rush	FAC
<i>Juncus</i> spp.	rush	OBL
<i>Juncus tenuis</i>	rush	FAC
<i>Justicia brandegeana</i>	shrimp plant	U
<i>Justicia</i> spp.	water-willow	OBL
<i>Kalmia latifolia</i>	laurel, mountain	FACW
<i>Kosteletzkya pentasperma</i>	mallow, coastal	FAC
<i>Kosteletzkya virginica</i>	mallow, seashore	OBL
<i>Lachnanthes caroliniana</i>	redroot	FAC
<i>Lachnocaulon anceps</i>	bogbutton, white-head	FACW
<i>Lachnocaulon beyrichianum</i>	bogbutton, southern	FACW
<i>Lachnocaulon digynum</i>	bogbutton, pineland	OBL
<i>Lachnocaulon engleri</i>	bogbutton, Engler's	OBL
<i>Lachnocaulon minus</i>	bogbutton, Small's	OBL
<i>Laguncularia racemosa</i>	mangrove, white	OBL
<i>Laportea canadensis</i>	wood-nettle, Canada	FACW
<i>Leersia</i> spp.	cutgrass	OBL
<i>Leitneria floridana</i>	corkwood	OBL
<i>Leptochloa</i> spp.	sprangle-top	FACW
<i>Leptochloa virgata</i>	sprangle-top, tropic	FAC
<i>Leucothoe</i> spp.	dog-hobble	FACW
<i>Liatris garberi</i>	gayfeather, garber's	FACW
<i>Liatris gracilis</i>	blazing star	FAC

Botanical Name	Common Name	Wetland Status
<i>Liatris spicata</i>	gayfeather, spiked	FAC
<i>Lilaeopsis</i> spp.	lilaeopsis	OBL
<i>Lilium catesbaei</i>	Lily, southern red	FAC
<i>Lilium iridollae</i>	Lily, panhandle	OBL
<i>Limnobia spongia</i>	frogbit	OBL
<i>Limnophila</i> spp.	marshweed	OBL
<i>Limonium carolinianum</i>	Sea-lavender	OBL
<i>Lindera benzoin</i>	spicebush, northern	FACW
<i>Lindera melissaefolia</i>	spicebush, southern	OBL
<i>Lindernia crustacea</i>	false-pimpernel, Malayan	FAC
<i>Lindernia</i> spp.	false-pimpernel	FACW
<i>Linum carteri</i>	flax, Carter's	FACW
<i>Linum floridanum</i>	flax, Florida yellow	FAC
<i>Linum medium</i>	flax, stiff yellow	FAC
<i>Linum striatum</i>	flax, ridged yellow	FACW
<i>Linum westii</i>	flax, West's	OBL
<i>Liparis elata</i> (<i>L. nervosa</i>)	liparis, tall	OBL
<i>Lipocarpha</i> spp.	lipocarpha	FACW
<i>Liquidambar styraciflua</i>	sweetgum	FACW
<i>Liriodendron tulipifera</i>	tulip tree	FACW
<i>Listera</i> spp.	twayblade	FACW
<i>Litsea aestivalis</i>	pondspice	OBL
<i>Lobelia cardinalis</i>	flower, cardinal	OBL
<i>Lobelia floridana</i>	lobelia, Florida	OBL
<i>Lobelia</i> spp.	lobelia	FACW
<i>Lophiola americana</i>	golden-crest	FACW
<i>Ludwigia birtella</i>	seedbox, hairy	FACW
<i>Ludwigia maritima</i>	seedbox, seaside	FACW
<i>Ludwigia</i> spp.	ludwigia; water-primrose	OBL
<i>Ludwigia suffruticosa</i>	seedbox, headed	FACW
<i>Ludwigia virgata</i>	seedbox, savanna	FACW
<i>Lycium carolinianum</i>	Christmas berry	OBL
<i>Lycopodium</i> spp.	clubmoss	FACW
<i>Lycopus</i> spp.	bugleweed	OBL
<i>Lyonia ligustrina</i>	maleberry	FAC
<i>Lyonia lucida</i>	fetter-bush	FACW
<i>Lyonia mariana</i>	fetter-bush	FACW
<i>Lysimachia</i> spp.	loosestrife	OBL
<i>Lythrum</i> spp.	marsh loosestrife	OBL
<i>Macbridea</i> spp.	birds-in-a-nest	FACW
<i>Macranthera flammea</i>	flameflower	OBL
<i>Magnolia virginiana</i> var. <i>australis</i>	magnolia, sweetbay	OBL
<i>Malaxis spicata</i>	adder's-mouth, Florida	OBL
<i>Manilkara bahamensis</i>	wild dilly	FAC - Keys only
<i>Manisuris cylindrica</i>	jointgrass, pitted	FAC
<i>Manisuris</i> spp.	jointgrass	FACW
<i>Marshallia graminifolia</i>	barbara's-buttons, grass-leaf	FACW
<i>Marshallia tenuifolia</i>	barbara's-buttons, slim-leaf	FACW
<i>Maxillaria crassifolia</i>	orchid, hidden	OBL
<i>Maytenus phyllanthoides</i>	Florida mayten	FAC

Botanical Name	Common Name	Wetland Status
<i>Mecardonia</i> spp.	mecardonia	FACW
<i>Melaleuca quinquenervia</i>	punk tree	FAC
<i>Melanthera nivea</i>	squarestem	FACW
<i>Melanthium virginicum</i>	bunchflower, Virginia	OBL
<i>Melochia corchorifolia</i>	chocolate-weed	FAC
<i>Metopium toxiferum</i>	poison wood	FAC
<i>Micranthemum</i> spp.	baby tears	OBL
<i>Micromeria brownei</i> (<i>Satureja brownei</i>)	savory, Brown's	OBL
<i>Mimosa pigra</i>	mimosa, black	FAC
<i>Mimulus alatus</i>	monkey-flower	OBL
<i>Mitreola</i> spp.	hornpod	FACW
<i>Monanthochloe littoralis</i>	keygrass	OBL
<i>Morinda royoc</i>	Keys rhubarb	FACW - Keys only
<i>Morus rubra</i>	mulberry, red	FAC
<i>Muhlenbergia capillaris</i>	muhly grass	OBL
<i>Muhlenbergia expansa</i>	cutover muhly	FAC
<i>Muhlenbergia schreberi</i>	nimblewill	FACW
<i>Murdannia</i> spp.	dewflower	FAC
<i>Myosurus minimus</i>	mouse-tail, tiny	FAC
<i>Myrica cerifera</i>	bayberry, southern	FAC
<i>Myrica heterophylla</i>	bayberry, evergreen	FACW
<i>Myrica inodora</i>	bayberry, odorless	FACW
<i>Myrsine guianensis</i>	myrsine, guiana	FAC
<i>Nasturtium</i> spp.	water-cress	OBL
<i>Nelumbo</i> spp.	water-lotus	OBL
<i>Nemastylis floridana</i>	pleatleaf, fall-flowering	FACW
<i>Nemophila aphylla</i>	baby-blue-eyes, small-flower	FACW
<i>Neprolepis</i> spp.	sword ferns	FAC
<i>Neyraudia reynaudiana</i>	reed, silk	FAC
<i>Nuphar luteum</i>	cow-lily, yellow	OBL
<i>Nymphaea</i> spp.	water-lily	OBL
<i>Nymphoides</i> spp.	floating-hearts	OBL
<i>Nyssa aquatica</i>	tupelo, water	OBL
<i>Nyssa ogeche</i>	tupelo, ogeechee	OBL
<i>Nyssa sylvatica</i> var. <i>biflora</i>	tupelo, swamp	OBL
<i>Oldenlandia</i> spp.	bluets, water	FACW
<i>Onoclea sensibilis</i>	fern, sensitive	FACW
<i>Oplismenus setarius</i>	grass, woods	FAC
<i>Orontium aquaticum</i>	golden club	OBL
<i>Oryza sativa</i>	rice, cultivated	FAC
<i>Osmunda cinnamomea</i>	fern, cinnamon	FACW
<i>Osmunda regalis</i>	fern, royal	OBL
<i>Oxypolis</i> spp.	water drop-wort	OBL
<i>Panicum abscissum</i> (Hall)	cut-throat grass	FACW
<i>Panicum anceps</i>	panicum, beaked	FAC
<i>Panicum commutatum</i>	panicum	FAC
<i>Panicum dichotomiflorum</i>	panicum, fall	FACW
<i>Panicum dichotomum</i>	panicum	FACW
<i>Panicum ensifolium</i>	panic grass	OBL
<i>Panicum erectifolium</i>	witchgrass, erect-leaf	OBL

Botanical Name	Common Name	Wetland Status
<i>Panicum gymnocarpon</i>	panicum, savannah	OBL
<i>Panicum hemitomon</i>	maiden-cane	OBL
<i>Panicum hians</i>	panicum, gaping	FAC
<i>Panicum longifolium</i>	panicum, tall thin	OBL
<i>Panicum pinetorum</i>	panicum	FACW
<i>Panicum repens</i>	grass, torpedo	FACW
<i>Panicum rigidulum</i>	panicum, red-top	FACW
<i>Panicum scabriusculum</i>	panicum, woolly	OBL
<i>Panicum scoparium</i>	panicum	FACW
<i>Panicum spretum</i>	panicum	FACW
<i>Panicum strigosum</i>	panicum	FAC
<i>Panicum tenerum</i>	panicum, bluejoint	OBL
<i>Panicum tenue</i>	panicum	FAC
<i>Panicum verrucosum</i>	panicum, warty	FACW
<i>Panicum virgatum</i>	switchgrass	FACW
<i>Parietaria</i> spp.	pellitory	FAC
<i>Parnassia</i> spp.	grass-of-parnassus	OBL
<i>Paspalidium geminatum</i>	water panicum	OBL
<i>Paspalum acuminatum</i>	paspalum, brook	FACW
<i>Paspalum boscianum</i>	paspalum, bull	FACW
<i>Paspalum conjugatum</i>	paspalum, sour	FAC
<i>Paspalum dilatatum</i>	dallisgrass	FAC
<i>Paspalum dissectum</i>	paspalum, mudbank	OBL
<i>Paspalum distichum</i>	paspalum, joint	OBL
<i>Paspalum fimbriatum</i>	paspalum, Panama	FAC
<i>Paspalum floridanum</i>	paspalum, Florida	FACW
<i>Paspalum laeve</i>	paspalum, field	FACW
<i>Paspalum monostachyum</i>	paspalum, gulf	OBL
<i>Paspalum plicatulum</i>	paspalum, brown-seed	FAC
<i>Paspalum praecox</i>	paspalum, early	OBL
<i>Paspalum pubiflorum</i>	paspalum, hairy-seed	FACW
<i>Paspalum repens</i>	paspalum, water	OBL
<i>Paspalum setaceum</i>	paspalum, thin	FAC
<i>Paspalum urvillei</i>	grass, vasey	FAC
<i>Pavonia spicata</i>	mangrove mallow	FACW
<i>Peltandra</i> spp.	arum; spoon flower	OBL
<i>Pennisetum purpureum</i>	elephant ear grass	FAC
<i>Penthorum sedoides</i>	ditch stoncrop	OBL
<i>Pentodon pentandrus</i>	pentodon, Hall's	OBL
<i>Persea palustris</i>	bay, swamp	OBL
<i>Phalaris</i> spp.	grass, canary	FAC
<i>Philoxerus vermicularis</i>	silverhead	FACW
<i>Phragmites australis</i>	reed, common	OBL
<i>Phyla</i> spp.	frog-fruit	FAC
<i>Phyllanthus caroliniensis</i>	leaf-flower, Carolina	FACW
<i>Phyllanthus liebmannianus</i>	leaf-flower, Florida	FACW
<i>Phyllanthus urinaria</i>	leaf-flower, water	FAC
<i>Physostegia godfreyi</i>	dragon-head, Godfrey's	OBL
<i>Physostegia leptophylla</i>	dragon-head, slender-leaf	OBL
<i>Physostegia purpurea</i>	dragon-head, purple	FACW

Botanical Name	Common Name	Wetland Status
<i>Physostegia virginiana</i>	dragon-head, false	FACW
<i>Pieris phillyreifolia</i>	fetter-bush, climbing	FACW
<i>Pilea</i> spp.	clearweed	FACW
<i>Pinckneya bracteata</i> (<i>P. pubens</i>)	fever-tree	OBL
<i>Pinguicula</i> spp.	butterwort	OBL
<i>Pinus glabra</i>	pine, spruce	FACW
<i>Pinus serotina</i>	pine, pond	FACW
<i>Piriqueta caroliniana</i>	piriqueta	FAC
<i>Pisonia rotundata</i>	pisonia	FAC - Keys only
<i>Pithecellobium keyense</i>	blackbead	FAC - Keys only
<i>Pithecellobium unguis-cati</i>	catclaw	FAC - Keys only
<i>Planera aquatica</i>	planer tree	OBL
<i>Platanthera</i> spp.	orchid, fringed	OBL
<i>Platanus occidentalis</i>	sycamore	FACW
<i>Pilea tenuifolia</i>	rush-featherling	OBL
<i>Pluchea</i> spp.	camphor-weed	FACW
<i>Pogonia ophioglossoides</i>	pogonia, rose	OBL
<i>Polygala cymosa</i>	milkwort, tall	OBL
<i>Polygala leptostachys</i>	milkwort, sandhill	U
<i>Polygala lewtonii</i>	milkwort, scrub	U
<i>Polygala polygama</i>	milkwort, racemed	U
<i>Polygala</i> spp.	milkwort	FACW
<i>Polygala verticillata</i>	milkwort, whorled	U
<i>Polygonum argyrocoleon</i>	smartweed, silversheath	U
<i>Polygonum</i> spp.	smartweed	OBL
<i>Polygonum virginianum</i>	jumpseed	FACW
<i>Polypogon</i> spp.	grass, rabbit-foot	FAC
<i>Polypernum procumbens</i>	rustweed	FAC
<i>Pontederia cordata</i>	pickerelweed	OBL
<i>Ponthiera racemosa</i>	shadow-witch	FACW
<i>Populus deltoides</i>	cottonwood, eastern	FACW
<i>Populus heterophylla</i>	cottonwood, swamp	OBL
<i>Proserpinaca</i> spp.	mermaid-weed	OBL
<i>Psidium cattleianum</i>	guava, strawberry	FAC
<i>Psilocarya</i> spp.	baldrush	OBL
<i>Psychotria</i> spp.	wild coffee	FAC
<i>Pteris tripartita</i>	brake, giant	FACW
<i>Ptilimnium capillaceum</i>	mock bishop-weed	FACW
<i>Pycnanthemum nudum</i>	mountain-mint, coastal-plain	FACW
<i>Quercus laurifolia</i>	oak, laurel	FACW
<i>Quercus lyrata</i>	oak, overcup	OBL
<i>Quercus michauxii</i>	oak, swamp chestnut	FACW
<i>Quercus nigra</i>	oak, water	FACW
<i>Quercus pagoda</i>	oak, cherry-bark	FACW
<i>Quercus phellos</i>	oak, willow	FACW
<i>Randia aculeata</i>	box briar	FAC - Keys only
<i>Ranunculus</i> spp.	butter-cup	FACW
<i>Reimarochloa oligostachya</i>	grass, Florida reimar	FACW
<i>Reynosa septentrionalis</i>	darling plum	FAC - Keys only
<i>Rhapidophyllum hystrix</i>	palm, needle	FACW

Botanical Name	Common Name	Wetland Status
<i>Rhexia parviflora</i>	meadow-beauty, white	OBL
<i>Rhexia salicifolia</i>	meadow-beauty, panhandle	OBL
<i>Rhexia</i> spp.	meadow-beauty	FACW
<i>Rhizophora</i>	mangle mangrove, red	OBL
<i>Rhododendron viscosum</i>	azalea, swamp	FACW
<i>Rhodomyrtus tomentosus</i>	downy rose myrtle	FAC
<i>Rhynchospora cephalantha</i>	beakrush, clustered	OBL
<i>Rhynchospora chapmanii</i>	beakrush, Chapman's	OBL
<i>Rhynchospora corniculata</i>	beakrush, short-bristle	OBL
<i>Rhynchospora decurrens</i>	beakrush, swamp-forest	OBL
<i>Rhynchospora divergens</i>	beakrush, spreading	OBL
<i>Rhynchospora grayi</i>	beakrush, Gray's	U
<i>Rhynchospora harperi</i>	beakrush, Harper's	OBL
<i>Rhynchospora intermedia</i>	beakrush, pinebarren	U
<i>Rhynchospora inundata</i>	beakrush, horned	OBL
<i>Rhynchospora macra</i>	beakrush, large	OBL
<i>Rhynchospora megalocarpa</i>	beakrush, giant-fruited	U
<i>Rhynchospora microcarpa</i>	beakrush, southern	OBL
<i>Rhynchospora miliacea</i>	beakrush, millet	OBL
<i>Rhynchospora mixta</i>	beakrush, mingled	OBL
<i>Rhynchospora oligantha</i>	beakrush, few-flower	OBL
<i>Rhynchospora</i> spp.	beakrush	FACW
<i>Rhynchospora stenophylla</i>	beakrush, Chapman's	OBL
<i>Rhynchospora tracyi</i>	beakrush, Tracy's	OBL
<i>Rorippa</i> spp.	yellow-cress	OBL
<i>Rosa palustris</i>	rose, swamp	OBL
<i>Rotala ramosior</i>	toothcup	OBL
<i>Roystonea</i> spp.	palm, royal	FACW
<i>Rubus</i> spp.	blackberries	FAC
<i>Rudbeckia fulgida</i>	coneflower, orange	FACW
<i>Rudbeckia graminifolia</i>	coneflower, grass-leaf	FACW
<i>Rudbeckia laciniata</i>	coneflower, cut-leaf	FACW
<i>Rudbeckia mobrii</i>	coneflower, Mohr's	OBL
<i>Rudbeckia nitida</i>	coneflower, shiny	FACW
<i>Ruellia brittoniana</i>	wild-petunia, Britton's	FAC
<i>Ruellia caroliniensis</i>	wild-petunia	FAC
<i>Ruellia noctiflora</i>	wild-petunia, night-flowering	FACW
<i>Rumex</i> spp.	dock	FACW
<i>Sabal minor</i>	palmetto, dwarf	FACW
<i>Sabal palmetto</i>	palm, cabbage	FAC
<i>Sabatia bartramii</i>	rose-gentian, Bartram's	OBL
<i>Sabatia calycina</i>	rose-gentian, coast	OBL
<i>Sabatia dodecandra</i>	rose-gentian, large	OBL
<i>Sabatia</i> spp.	rose-gentian	FACW
<i>Sacciolepis indica</i>	grass, glenwood	FAC
<i>Sacciolepis striata</i>	cupscale, American	OBL
<i>Sachsia polycephala</i>	sachsia	FACW
<i>Sagittaria</i> spp.	arrowhead	OBL
<i>Salicornia</i> spp.	glasswort	OBL
<i>Salix</i> spp.	willow	OBL

Botanical Name	Common Name	Wetland Status
<i>Sambucus canadensis</i>	elderberry	FAC
<i>Samolus</i> spp.	pimpernel, water	OBL
<i>Sapium sebiferum</i>	tallow-tree, Chinese	FAC
<i>Sarracenia minor</i>	pitcher-plant, hooded	FACW
<i>Sarracenia</i> spp.	pitcher-plant	OBL
<i>Saururus cernuus</i>	lizard's tail	OBL
<i>Schinus terebinthifolius</i>	pepper-tree, Brazilian	FAC
<i>Schizachyrium</i> spp.	bluestem	FAC
<i>Schoenolirion croceum</i>	sunny bells	FACW
<i>Schoenolirion elliotii</i>	sunny bells	FACW
<i>Schoenus nigricans</i>	black-sedge	FACW
<i>Scirpus</i> spp.	bulrush	OBL
<i>Scleria</i> spp.	nutrush	FACW
<i>Sclerolepis uniflora</i>	hardscale, one-flower	FACW
<i>Scoparia dulcis</i>	sweet broom	FAC
<i>Scutellaria floridana</i>	skullcap	FAC
<i>Scutellaria integrifolia</i>	skullcap, rough	FAC
<i>Scutellaria lateriflora</i>	skullcap, blue	OBL
<i>Scutellaria racemosa</i>	skullcap	OBL
<i>Sebastiania fruticosa</i>	sebastian-bush, gulf	FAC
<i>Selaginella apoda</i>	spike-moss, meadow	FACW
<i>Senecio aureus</i>	ragwort, golden	OBL
<i>Senecio glabellus</i>	butterweed	OBL
<i>Sesbania</i> spp.	rattle-bush	FAC
<i>Sesuvium</i> spp.	sea-purslane	FACW
<i>Setaria geniculata</i>	grass, bristle	FAC
<i>Setaria magna</i>	foxtail	OBL
<i>Seymeria cassioides</i>	black senna	FAC
<i>Sisyrinchium atlanticum</i>	blue-eye-grass, eastern	FACW
<i>Sisyrinchium capillare</i>	blue-eye-grass	FACW
<i>Sisyrinchium mucronatum</i>	blue-eye-grass, Michaux's	FACW
<i>Sium suave</i>	water-parsnip	OBL
<i>Solanum bahamense</i>	canker-berry	FACW
<i>Solanum erianthum</i>	nightshade, shrub	FACW
<i>Solidago elliotii</i>	golden-rod, Elliott's	OBL
<i>Solidago fistulosa</i>	golden-rod, marsh	FACW
<i>Solidago leavenworthii</i>	golden-rod, leavenworth's	FACW
<i>Solidago patula</i>	golden-rod, rough-leaf	OBL
<i>Solidago rigosa</i>	golden-rod, wrinkled	FAC
<i>Solidago sempervirens</i>	golden-rod, seaside	FACW
<i>Solidago stricta</i>	golden-rod, willow-leaf	FACW
<i>Sophora tomentosa</i>	coast sophora	FACW
<i>Sparganium americanum</i>	burreed	OBL
<i>Spartina alterniflora</i>	cordgrass, saltmarsh	OBL
<i>Spartina bakeri</i>	cordgrass, sand	FACW
<i>Spartina cynosuroides</i>	cordgrass, big	OBL
<i>Spartina patens</i>	cordgrass, saltmeadow	FACW
<i>Spartina spartinae</i>	cordgrass, gulf	OBL
<i>Spergularia marina</i>	sandspurry, saltmarsh	OBL
<i>Spermacoce glabra</i>	button-plant, smooth	FACW

Botanical Name	Common Name	Wetland Status
<i>Sphagnum</i> spp.	sphagnum moss	OBL
<i>Sphenoclea zeylandica</i>	chicken-spike	FACW
<i>Sphenopobolus pennsylvanica</i>	wedgescale, swamp	OBL
<i>Sphenostigma coelestinum</i>	ixia, Bartram's	FACW
<i>Spigelia loganioides</i>	pink-root	FACW
<i>Spilanthes americana</i>	spotflower, creeping	FACW
<i>Spiranthes</i> spp.	ladies'-tresses	FACW
<i>Sporobolus floridanus</i>	dropseed, Florida	FACW
<i>Sporobolus virginicus</i>	dropseed, seashore	OBL
<i>Stachys lythroides</i>	hedgenettle	OBL
<i>Staphylea trifolia</i>	bladdernut, American	FACW
<i>Stenandrium floridanum</i>	stenandrium	FACW
<i>Stenanthium gramineum</i>	feather-bells, eastern	FACW
<i>Stillingia aquatica</i>	corkwood	OBL
<i>Stillingia sylvatica</i> var. <i>tennis</i>	queen's-delight, marsh	FAC
<i>Stipa avenacioides</i>	grass, Florida needle	FACW
<i>Stokesia laevis</i>	stokesia	FACW
<i>Strumpfia maritima</i>	strumpfia	FACW - Keys only
<i>Styrax americana</i>	snowbell; storax	OBL
<i>Suaeda</i> spp.	sea-blite	OBL
<i>Suriana maritima</i>	bay-cedar	FAC
<i>Syngonanthus flavidulus</i>	bantam-buttons	FACW
<i>Syzygium</i> spp.	Java plum	FAC
<i>Taxodium ascendens</i>	cypress, pond	OBL
<i>Taxodium distichum</i>	cypress, bald	OBL
<i>Teucrium canadense</i>	germander, American	FACW
<i>Thalia geniculata</i>	thalia; fire flag	OBL
<i>Thalictrum</i> spp.	meadow-rue	FACW
<i>Thelypteris</i> spp.	shield fern	FACW
<i>Thespesia populnea</i>	seaside mahoe	FAC
<i>Thrinax radiata</i>	Florida thatch palm	FAC - Keys only
<i>Tilia americana</i>	American basswood	FACW
<i>Tofieldia racemosa</i>	false-asphodel, coastal	OBL
<i>Toxicodendron vernix</i>	poison sumac	FACW
<i>Trachelospermum diffusum</i>	climbing-dogbane	FACW
<i>Tradescantia fluminensis</i>	trailing spiderwort	FAC
<i>Trema</i> spp.	trema	FAC
<i>Trepocarpus aethusae</i>	trepocarpus, aethusa-like	FACW
<i>Triadenum</i> spp.	St. John's-wort, marsh	OBL
<i>Trianthema portulacastrum</i>	horse-purslane	FACW
<i>Tridens ambiguus</i>	tridens, savannah	FACW
<i>Tridens strictus</i>	tridens, long-spike	FACW
<i>Triglochin striata</i>	arrow-grass	OBL
<i>Tripodora</i> spp.	pogonias, nodding	FACW
<i>Tripsacum dactyloides</i>	grass, eastern gama	FAC
<i>Typha</i> spp.	cattail	OBL
<i>Ulmus rubra</i>	elm, slippery	U
<i>Ulmus</i> spp.	elm	FACW
<i>Urechites lutea</i>	allamanda, wild	FACW
<i>Utricularia</i> spp.	bladderwort	OBL

Botanical Name	Common Name	Wetland Status
<i>Utricularia floridana</i>	bellwort, Florida	FACW
<i>Vaccinium corymbosum</i>	blueberry, highbush	FACW
<i>Vaccinium elliotii</i>	blueberry, Elliott	FAC
<i>Verbena scabra</i>	vervain, sandpaper	FACW
<i>Verbesina chapmanii</i>	crownbeard, Chapman's	FACW
<i>Verbesina heterophylla</i>	crownbeard, diverse-leaf	FACW
<i>Verbesina virginica</i>	crownbeard, white	FAC
<i>Vernonia angustifolia</i>	ironweed, narrow-leaf	U
<i>Vernonia</i> spp.	ironweed	FACW
<i>Veronica anagallis-aquatica</i>	speedwell, water	OBL
<i>Veronicastrum virginicum</i>	culver's-root	FACW
<i>Viburnum dentatum</i>	arrow-wood	FACW
<i>Viburnum nudum</i>	viburnum, possum-haw	FACW
<i>Viburnum obovatum</i>	viburnum, walter	FACW
<i>Vicia acutifolia</i>	vetch, four-leaf	FACW
<i>Vicia floridana</i>	vetch, Florida	FACW
<i>Vicia ocalensis</i>	vetch, Ocala	OBL
<i>Viola affinis</i>	violet, Leconte's	FACW
<i>Viola esculenta</i>	violet, edible	FACW
<i>Viola lanceolata</i>	violet, lance-leaf	OBL
<i>Viola primulifolia</i>	violet, primrose-leaf	FACW
<i>Websteria confervoides</i>	water-meal	OBL
<i>Wedelia trilobata</i>	creeping ox-eye	FAC
<i>Woodwardia aereolata</i>	chainfern	OBL
<i>Woodwardia virginica</i>	chainfern	FACW
<i>Xanthorhiza simplicissima</i>	yellow-root, shrubby	FACW
<i>Xanthosoma sagittifolium</i>	elephant ear	FACW
<i>Xyris caroliniana</i>	yellow-eyed grass, Carolina	FACW
<i>Xyris jupicai</i>	yellow-eyed grass, tropical	FACW
<i>Xyris</i> spp.	yellow-eyed grass	OBL
<i>Yeatesia viridiflora</i>	yeatesia, green-flower	FACW
<i>Zephyranthes atamasco</i>	lily, atamasco	FACW
<i>Zigadenus densus</i>	crow poison	FACW
<i>Zigadenus glaberrimus</i>	deathcamas, atlantic	FACW
<i>Zizania aquatica</i>	Wildrice	OBL
<i>Zizaniopsis miliacea</i>	Wildrice, southern	OBL

The Vegetative Index Extension

The following species are often found in wetlands in the Hillsborough, Pasco, and Pinellas County area, but are not included in the Vegetative Index of Chapter 62-340, F.A.C. The following table states the wetland status of each species as per the following reference:

National list of plant species that occur in wetlands: Southeast Region (Region 2). Reed, P.B., Jr. 1988. U.S. Fish and Wildlife Service Biological Rep. 88(26.3).
<http://wetlands.fws.gov/bha/download/1988/region2.txt>

Botanical Name	Common Name	Wetland Status	Notes
<i>Pinus elliottii</i>	slash pine	FACW	
<i>Ampelopsis arborea</i>	Peppervine	FAC	
<i>Berberia scandens</i>	Rattan vine	FACW	
<i>Campsis radicans</i>	Trumpet creeper	FAC	
<i>Paederia foetida</i>	Skunkvine	FACU	Exotic
<i>Smilax bona-nox</i>	Saw greenbrier	FAC	
<i>Smilax glauca</i>	Cat greenbrier	FAC	
<i>Smilax laurifolia</i>	Bamboo vine	FACW	
<i>Smilax pumila</i>	Sarsaparilla vine	----	No designation
<i>Smilax rotundifolia</i>	Roundleaf greenbrier	FAC	
<i>Smilax walteri</i>	Coral greenbrier	OBL	
<i>Toxicodendron radicans</i>	Eastern poison ivy	FAC	
<i>Vitis aestivalis</i>	Summer grape	FAC	
<i>Vitis cinerea</i>	Graybark grape	FAC	
<i>Vitis rotundifolia</i>	Muscadine	FAC	
<i>Vitis shuttleworthii</i>	Calloose grape	FAC	
<i>Vitis vulpina</i>	Frost grape	FAC	

APPENDIX B

Wetland Assessment Procedure Field Form

(To be added)

APPENDIX C

Wetland Assessment Procedure Definitions

Appropriate Species

Used to describe **shrub and small tree** and **tree stress** of plant species that are suitable to the wetland type being assessed or plant species that are located in a wetland **zone** where they would normally be expected.

Assemblage

Vegetative community composed of several to many different species of plants that assemble themselves based on specific site conditions and the presence of seed.

Augmentation

The procedure or practice of artificially adding freshwater to a surface-water body. Augmentation can be done as part of a mitigation measure or can be part of an overall aesthetic or functional hydrologic plan to increase the amount of water that a wetland or water body receives. Augmentation can include water sources such as ground water, storm water, or water diverted from surface flows.

Canopy

The top layer of the forest. The definition further qualifies the characteristics as woody plants or palms with a main trunk at least 10 centimeters in diameter at a point 4.5 feet above the base of the tree (**Diameter at Breast Height (DBH)**). If the **tree** is on a slope, the **DBH** is measured from the mid-point of the base of the tree on the slope. Cabbage palms are considered canopy only when greater than 18 feet in height. **Vines** are not considered as canopy species (F.A.C. Section 62-340.200).

Composition

The **assemblage** of plant species that occur within a plant community or plant community **zone**. For the purposes of the WAP, composition is defined as the species that make up the different **strata** in a wetland **zone**. The stratum includes **tree**, **shrub**, and **groundcover** species (if present).

Cover

The area of ground covered by the vertical projection of the aerial parts of plants of one or more species.

Deep Zone

The lower portion of the **transect** extending from the **NP-6** marker to the **wetland interior**. The deep zone has the longest hydroperiod and at the greatest depth of any of the zones found in a wetland.

Diameter at Breast Height (DBH)

The diameter of a plant's trunk or main stem at a height of 4.5 feet above ground.

Exotic plant

A plant not indigenous to the local area.

Extensive

A description used to characterize the categories of Disturbance, Drainage or Fire that indicates that > 50% of the assessed portion of the wetland (as determined by the **transect**) has been influenced. (See definition of **localized**).

FAC plants (Facultative)

Species of plants that are so problematic in their distribution as to render them inappropriate for indicating inundation or soil saturation. Specifically included are **exotic plants** with a **weedy** distribution (F.A.C. Section 62-340.200).

FACW plants (Facultative Wet)

Species of plants that under natural conditions typically exhibit their maximum **cover** in areas subject to surface water inundation and/or soil saturation, but can also be found in uplands (F.A.C. Section 62-340.200).

FLUCFCS

The Florida Department of Transportation developed a standardized numeric code called the Florida Land Use Forms and Cover Classification System (FLUCFCS) for the classification of land use and plant communities. The code is used to identify natural and manmade land features using numbers codes (levels). Typically three or four digit numbers are used. A manual with descriptions of each code is available to assist with classifications.

For the Wetland Assessment, Level III FLUCFCS code is used to identify wetland types.

Groundcover

Groundcover includes all non-woody species and woody species (**trees, shrubs** and **vines**) that are less than 1.0 meter tall. Groundcover is the lower most of the three layers of vegetation. For the purposes of the WAP, *Eupatorium* spp., *Typha* spp., and *Rubus* spp., and certain other species generally thought of as herbaceous even though greater than 1.0 meter will only be assessed as groundcover.

Historical

Characteristics assumed to be indicators of non-impacted or pre-impacted conditions. Historical wetland characteristics occur because of decades of normal ecological conditions.

Historic Normal Pool

The normal pool elevation of a wetland that formed under non-impacted natural or unaltered conditions is considered the historic normal pool. Historic normal pool can be determined from those normal pool indicators that change only extremely slowly with the absence of surface water. See Appendix D for details on establishing historic normal pool.

Historic Wetland Edge

The boundary between wetland and upland vegetation and soils prior to any hydrologic impacts. The **historic normal pool** is the most landward edge of the **transect** or the landward edge of the **transition zone**. The assessment of the transition zone begins at the wetland edge. See Appendix D for details on establishing historic wetland edge.

Hummock

A raised substrate (at or above the mean high water) in a wetland generally comprised of congregated root masses associated with **trees, shrubs** or some species of **groundcover** such as ferns. Hummocks can also include old tree bases and stumps that have been subsequently colonized by vegetation other than or including the species comprising the

majority of plant matter that constitutes the hummock. Hummocks are associated with plant growth in frequently inundated wetlands versus the wetland floor.

Hydrology

Hydrology can be defined as the properties that deal with the distribution and circulation of water within a wetland or upland/wetland matrix.

Inappropriate Species

Used to describe **shrub and small tree** and **tree stress** of plant species that are not suitable to the wetland type being assessed, or plant species which are located in a wetland zone where they would not normally be expected. Plant species listed in Appendix A as **weedy** or **exotic** are inappropriate plant species. Plant species that occur in a wetland zone where they would not normally be expected are inappropriate.

Localized

A description used to characterize the categories of Disturbance, Drainage and Fire where greater than 50% of the assessed portion of the wetland (as determined by the **transect**) has been influenced. (See definition of **extensive**)

Leaning Trees

Trees that are generally at a 45-degree angle (or greater) due to uprooting or loss of support. The reasons for leaning trees are many and varied, and include soil **subsidence** where the soil support for trees roots has been impacted to the point that a tree cannot stand, or wind throw due to severe storm events.

Normal Pool

A water level elevation based on consideration, utilizing reasonable scientific judgment, of biological indicators of sustained inundation. The indicators include: the lower limit of epiphytic mosses and liverworts intolerant of sustained inundation, the upper limit of the root crown on fetterbush (*Lyonia lucida*) growing on tree tussocks, the upper limit of adventitious roots on *Hypericum fasciculatum* and other species that exhibit this morphological response to sustained inundation and other indicators that can be demonstrated to represent a similar period of sustained inundation (40D-8.633, F.A.C). The normal pool can also be determined by the evaluations of long-term hydrological data.

NP-6

The elevation 6 inches below **historic normal pool**. For purposes of the WAP, the NP-6 represents the boundary between the **transition zone** and the **deep zone** of the wetland.

Obligate plants (OBL)

OBL plants are those species that under natural conditions are only found or achieve their greatest abundance in an area that is subject to surface water inundation and/or soil saturation. Some OBL plant species can be observed in upland, especially under a controlled environment. Included in this category are the littoral plants and emergent aquatics, such as *Nymphaea* spp. (water lilies), *Nelumbo* spp. (lotus), and *Nuphar luteum* (spatterdock).

As defined by the USACE, OBL species are those plants that occur almost always (estimated probably > 99%) in wetlands under natural conditions (USACE 1987).

Oxidation

A condition in which organics in the soils react with free oxygen. The result of soil oxidation is loss of organic constituents and possible lowering of the soil surface. The lowering of the soil surface is also called **subsidence**.

Fire within a wetland causes rapid oxidation. Fire, under dry conditions, can burn organic soils causing soil oxidation and/or soil **subsidence**. When oxidation is recorded, special care to determine signs of fire and other environmental conditions should be noted.

Protected Species

Species that include both flora and fauna that have some degree of protection under the law by local, State, and Federal agencies. Official lists have been developed for these species.

Federally Protected Flora and Fauna Species are listed by:
U.S. Fish and Wildlife Service (Endangered or Threatened Species). 50 CFR 17 (animals) and 50 CFR 23 (plants)
<http://endangered.fws.gov/wildlife.htm#species>

State Protected Fauna Species are listed by:
Florida Game and Freshwater Fish Commission (Endangered, Threatened Species and Species of Special Concern) Rules 3927.003-.005, Florida Administrative Code (F.A.C.)
<http://fac.dos.state.fl.us/faonline/chapter68.pdf>

Florida State Protected Flora Species are list by:
The Florida Department of Agriculture & Consumer Services (Endangered, Threatened Species and Commercially Exploited). Chapter 5B-40 F.A.C.
<http://fac.dos.state.fl.us/faonline/chapter05.pdf>

Saw Palmetto Fringe

The rooted base of saw palmetto (*Serenoa repens*) nearest the wetland edge.

Shrubs and Small Trees

Woody plants greater than 1.0 meter (approximately 3.25 feet) in height and less than 4 centimeters **DBH** (approx. 1.6 inches) are considered shrubs and small trees. Shrubs usually have multiple permanent stems and are smaller than trees. When greater than 1.0 meter, *Hypericum* spp. and *Ilex glabra* are considered shrubs. For the purposes of the WAP, cabbage palms with trunks greater than 1.0 meter and height less than 18 feet are considered shrubs.

Staff Gage

A water level measuring device used to measure above-ground surface water levels in a wetland. The staff gage is normally placed in a **deep zone** of the wetland, preferably in the **wetland interior**.

Strata

The defined layers of the vegetation community found within an ecosystem **zone**. For the purposes of the WAP, each wetland system can contain any and all of the three following strata: **Groundcover**, **Shrubs and Small Trees**, and **Trees**.

Stress

A physiological condition of a plant, as a result of external or internal conditions, which inhibits the normal growth and functions of a plant. Stress can occur for short term or long-term periods of time. Severe stress to a plant can result in plant death (for purposes of the WAP, dead standing **shrubs and small trees** and **trees** should be considered stressed).

Indications of physiologic stress manifested during the growing season (generally during March - September) that include: reduced numbers of leaves on stems/branches (a sparsely vegetated appearance), chlorosis of leaf tissue (green turns a pale green, yellow or red/brown hue), leaf wilting (curling at edges, drooping of normally erect leaf tissue), or abscission (leaf drop). In addition, late leaf-out at the onset of the growing season (delayed onset of growth) or premature senescence of leaves prior to the fall may be indicators of stress.

As guidance for the WAP, stress can be caused by a variety of reasons aside from water stress. The assessor should be aware of signs of other factors that may be contributing to the observed indicators (i.e., excessive flooding of less tolerant species, insect damage, disease, fire stress, frost damage, mechanical injury/damage to bark or root systems). Suspicion of non-water related stress should be discussed in comments.

Subsidence

The lowering of the soil levels caused by a variety of mechanisms, including **oxidation**, compaction, and karst activity (sinkholes). Subsidence is evident when the lowering of soil can be measured as a decrease in the soil volume and soil structure. Soil subsidence in wetlands can occur in highly organic soils that have experienced long periods of depressed water levels. In forested wetlands, subsidence often results in tree root exposure. In non-forested wetlands, subsidence is often evident by the appearance of soil fissures. In various types of wetlands, cattle trampling and karst activity can cause subsidence, which is apparent as soil slumping between **trees** or abnormal lowering of the wetland soil surface levels.

Transect

For the purposes of the WAP, a strip of ground within the wetland that extends from the **historic wetland edge** to the **wetland interior**. The width of the transect is the visual range of the assessor from transect centerline, or 10 meters, whichever is greater.

Groundcover, shrubs and small trees, and **trees** are assessed in the **transition zone** and **deep zone** sections of the transect.

Transition Zone

The upper portion of the **transect** extending from the **historic wetland edge** to the **NP-6** marker. The transitional zone contains one vegetation community, or an arbitrary grouping of more than one vegetation community, with a shorter hydroperiod than the **deep zone**.

Trees

Woody plants that are greater than or equal to 1.0 meter in height and greater than or equal to 4 centimeters **DBH** (approximately 1.6 inches) are considered trees. . For the purposes of the WAP, cabbage palms taller than 18 feet are considered trees. Wax myrtle, *Lyonia* spp. and other woody plants with multiple stems that are greater than 1.0 meter tall are assessed as **shrub and small trees** and not trees.

Note that trees that are greater than or equal to 4 centimeters **DBH** (approximately 1.6 inches) and less than 10 centimeters **DBH** (3.9 inches) are considered the sub-canopy and trees greater than or equal to 10 centimeters are considered the tree **canopy**

Trees, Small

For the purposes of the WAP, woody tree species greater than 1.0 meter (approximately 3.25 feet) in height and less than 4 centimeters **DBH** (approximately 1.6 inches). The size class is the same as **shrubs** and is intended to specify tree species at the sapling stage.

Upland species (U)

Upland species are those species that under natural conditions are only found or achieve their greatest abundance in an area that is considered upland. Note that all species not listed in the Vegetative Index or Vegetative Index Extension in Appendix A should be considered upland species.

Upland Well

A surficial aquifer monitor well installed outside of the **historic wetland edge**, as required by the EMP. Some monitored wetlands do not have upland wells due to practical considerations (such as land management conflicts, private land access problems, etc.), or have a surficial aquifer monitor well installed in the **transition zone**, which substitutes for the upland well. All monitor wells require a construction permit from the SWFWMD, must be drilled by a licensed well driller, and should be constructed using the standards set forth in Chapter 40D-2, FAC. For WAP purposes, all monitor wells should fully penetrate the surficial aquifer underlying and in connection with the monitored wetland (as per the judgment of a professional geologist or engineer).

Vines

For the purposes of the WAP, vines are considered to be linear woody or non-woody vegetation that utilize the tree **canopy**, sub-canopy or **shrub strata**, where they exist, for physical support. Where these **strata** are not present, vines will utilize **groundcover** vegetation and the forest floor as the physical substrate for support. All vines originating from the wetland floor should be assessed as groundcover, while all others should not be included in the wetland assessment.

Weedy

A description of indigenous and non-indigenous species that interfere with management goals and objectives and are therefore unwanted (Randall 1997). This definition is also known by the term "natural-area weed." More generically, weed is defined by the Weed Science Society of America as "a plant growing where it is not desired." Moreover, the presence of natural-area weeds infers that conditions within that ecosystem are such that the ecosystem's typical or characteristic species are replaced with species that are not typical of the ecosystem under natural hydrological or ecological conditions.

For the WAP, only weeds growing on the ground (and not on **hummocks**) will be considered.

Wetland Delineation Line

A boundary delineating the landward extent of wetlands under the current conditions using Chapter 62-340 FAC criteria. If a wetland has experienced hydrologic or other impacts, the wetland delineation line may not correspond with the **historic wetland edge**.

Wetland Dependent Species

Wildlife species that are closely associated with wetlands. The existence of individuals of wetland dependent species is threatened if wetland function is absent or there is a significant degradation of a wetland function. Wetland water levels, the duration of water levels, and the existence of aquatic plant and animal species may affect individuals of wetland dependent species.

Wetland Interior

The deepest part(s) of a wetland.

Wetland Plant Species

Plant species that have demonstrated ability (presumably because of morphological and/or physiological adaptations and/or reproductive strategies) to achieve maturity and reproduce in an environment where all or portions of the soil within the root zone become, periodically or continuously, saturated or inundated during the growing season (Reed 1988).

Wetland Well

A surficial aquifer monitor well installed within the **deep zone** of a wetland, preferably within the **wetland interior**, as required by the EMP. All monitor wells require a construction permit from the SWFWMD, must be drilled by a licensed well driller, and should be constructed using the standards set forth in Chapter 40D-2, FAC. For WAP purposes, all monitor wells should fully penetrate the surficial aquifer underlying and in connection with the monitored wetland (as per the judgment of a professional geologist or engineer).

Zonation

For the purposes of the WAP, zonation describes the distribution of plant species within a stratum. Three vegetation strata are designated in the WAP (**groundcover, shrubs and small trees**, and **trees**). Environmental conditions that may influence zonation include but are not limited to variation in **hydrology**, direct physical disturbance, and fire.

Zonation, Abnormal

The occurrence of plant species that typify the upland or the **transition zone** or **deep zone** of a wetland in an inappropriate **zone** of a wetland. Abnormal zonation is a potential indicator of change (natural or not) in hydrological or ecological (i.e., fire suppression) conditions. For WAP, zonation is always assessed where the plant is rooted on the ground (plants on **hummocks** are not considered).

Indications of zonation change include:

- the occurrence of species characteristic of shallower **zones**, i.e. **FAC** species on the ground in the **deep zone**.
- vigorous colonization of the ground in the **transition zone** by **FAC** species such as *Andropogon virginicus* and *Myrica cerifera*
- colonization of the ground in the **deep zone** by ferns
- ground surface colonization of the **deep zone** by **FACW** tree species such as slash pine (*Pinus elliottii*) or laurel oak (*Quercus laurifolia*)
- colonization of the **transition zone** by pasture grasses
- expansive growth of maidencane in the **deep zone**
- shifts in the vertical elevation of vegetation **zones** in marshes

For WAP purposes, slash pine (*Pinus elliottii*) is not considered an example of abnormal zonation in the **transition zone**, unless historic evidence indicates otherwise. Also, cabbage palm (*Sabal palmetto*) although **FAC** is not considered an example of abnormal zonation in either the transitional or **deep zone** unless historic evidence indicates otherwise.

Zonation, Normal

The occurrence of plant species that typify the **transition zone** or **deep zone** of a wetland in an appropriate **zone** of a wetland. Normal zonation is a potential indicator of natural hydrological or ecological conditions. For WAP purposes, zonation is always assessed where the plant is rooted on the ground (plants on **hummocks** are not considered).

Zone

The areal **cover** of a similar plant **assemblage** or **composition** that experiences similar environmental conditions within an ecosystem is considered a zone. For the purposes of the WAP, monitored wetlands can be divided into a maximum of two zones: **transition** and **deep zones**.

APPENDIX D

Methodology for Establishing Historic Normal Pool and Historic Wetland Edge

The **normal pool** of a wetland is an elevation datum established to standardize measured water levels and facilitate comparison among wetlands. The **normal pool** elevation is commonly used in the design of wetland storm water treatment systems (SWFWMD, 1988). This level can be consistently identified in cypress swamps based on the similar vertical locations of several indicators of inundation (Hull et al, 1989; Biological Research Associates, 1996). In wetlands where declining water levels have caused the downward migration of certain **normal pool** indicators, or if significant **subsidence** has occurred as to physically lower all or parts of the wetland, more persistent indicators of the unaltered **normal pool** elevation must be used to establish the datum. The datum determined by the persistent, unaltered indicators, is herein referred to as **historic normal pool**.

The **historic wetland edge** is a concept developed specifically for the Wetland Assessment Procedure (WAP), and refers to the boundary between wetland and upland vegetation and soils prior any hydrologic impacts. In a wetland that has not experienced any negative hydrologic impacts, this boundary would be the **wetland delineation line**. However, in wetlands that may have experienced hydrologic impacts, other biologic indicators must be used to identify the **historic wetland edge**.

Historic normal pool and **historic wetland edge** elevations will be established at environmental monitoring sites within one year of the initiation of the monitoring program. Where possible, the elevations of at least five replicate **normal pool** indicators will be established in the field based on biological or physical indicators of sustained inundation. The final **historic normal pool** levels will be based on an average of these levels, after the removal of any inappropriate indicators or outliers from the dataset. Tampa Bay Water will survey **historic normal pool**, **historic wetland edge**, supporting indicators used to develop these elevations, as well as all other **transect**-related elevations, to NGVD 29. Together with the other information included with the establishment of a monitored wetland (see WAP Instruction Manual), the **historic normal pool** and **historic wetland edge** elevations and the information used to determine them must be fully documented, and submitted to the SWFWMD. If necessary, Tampa Bay Water and the SWFWMD will perform field evaluations to verify the various levels and **transect** choice.

When present, the preferred indicator of **historic wetland edge** is the rooted base of saw palmetto (*Serenoa repens*) immediately surrounding the wetland (referred to as the **saw palmetto fringe**). An average of this indicator derived from multiple sites surrounding the wetland should be used. This indicator may not be reliable for wetlands if there is clear evidence that the **saw palmetto fringe** has been significantly altered by land management practices. In cases where the **saw palmetto fringe** has been altered, or where no **saw palmetto fringe** exists, other indicators should be used for **historic wetland edge**. Alternatives include **historic normal pool** minus 0.2 feet (Carr and others, 2004), the elevation of the base of the outermost cypress plus 0.3 feet (Carr and others, 2004), hydric soil indicators, or escarpments. In these cases, the final choice will be by consensus of

Tampa Bay Water and the SWFWMD. If the wetland edge has been partially filled, the edge of the fill within the wetland should be considered the **historic wetland edge**.

Historic normal pool will be set (with final approval by the SWFWMD) by one of the following methods using a professional land surveyor:

1. If the wetland is a cypress system, or any wetland system containing cypress trees, the following biologic indicators of sustained inundation should be used (if present):
 - a. The elevation of the root crown of mature specimens of fetterbush (*Lyonia lucida*) on cypress trees or **hummocks**.
 - b. The lower limit of epiphytic bryophytes (aka moss collars) growing on cypress trees (*taxodium* spp.).
 - c. The inflection point on the buttress of cypress trees.
 - d. If none of the above indicators are present or reliable, the ground elevation of cypress trees growing at the outside edge of the dome, plus 0.5 feet (SWFWMD, 2004).

If there is evidence that declining water levels have caused the downward migration of certain **normal pool** indicators, or if significant **subsidence** has occurred as to physically lower all or parts of the wetland, the above indicators may not be reliable. Several sources of information and field observation should be used to make this determination, which may include investigation of **historical** aerial photography; identification of signs of severe soil **oxidation** or compaction; obvious indications of sinkhole activity; long-term declines in **hydrology** (as observed in collected data); and changes in surveyed elevations. If the **normal pool** elevation determined by the above methods is found to be below the **historic wetland edge** of the wetland, it may not be representative of **historic normal pool** (Carr and others, 2004). In this case, or if none of the listed biologic indicators are present, then **historic normal pool** should be determined by one of the methodologies below.

2. If the wetland is a non-forested system, a hardwood wetland without cypress trees, or a wetland system containing cypress without reliable examples of the biologic indicators listed above, the following biologic indicators should be used:
 - a. The elevation of the rooted base of saw palmetto (*Serenoa repens*) immediately surrounding the wetland (referred to as the **saw palmetto fringe**), plus 0.2 feet (Carr and others, 2004). An average of this indicator derived from multiple sites surrounding the wetland should be used. This indicator may not be reliable for wetlands if there is clear evidence that the **saw palmetto fringe** has been significantly altered by land management practices.
 - b. Indicators of hydric soil surrounding the wetland, as determined by a qualified soils scientist. This indicator may not be reliable in wetlands with evidence of significant soil **oxidation**.
 - c. Evidence of historic escarpment. This method may not be reliable in wetlands with clear evidence of significant filling along the wetland edge.

The **saw palmetto fringe**, if present, is the most reliable datum of the three indicators above, and should be used when possible.

3. If none of the indicators previously listed exist, a **historic normal pool** elevation should be proposed based on any form of evidence thought to be reasonable, including other biologic indicators, aerial photographic interpretation, etc.

Whenever possible and appropriate, using an average of the more reliable biologic indicators will provide a more dependable **historic normal pool** elevation.

APPENDIX E

Wetland Type Definition

All monitored wetlands should be classified as one of the following wetland types. It is recognized that some wetlands may be difficult to classify, so the evaluator will need to sometimes make a difficult judgment. However, the classification system is for convenience and data management purposes only. In the future, it may be determined that the classification of specific wetlands or the definition of wetland types may change.

For purposes of this classification system, the term "isolated" refers to a wetland system that has no significant and regular channelized inflow. For example, some cypress wetlands may have channelized outflows to riverine systems, but since significant and regular channelized inflow is absent, they are considered isolated cypress wetlands. Systems that are not isolated by this definition will be referred to as "flow" systems.

The wetland types are:

Cypress Isolated --- Commonly known as "cypress domes", although their shape and size vary. The forested stand is dominated by cypress - nearly always pond cypress.

Hardwood Isolated --- Commonly known as "bay swamps" or "gum swamps". Bays and gums usually dominate the forested stand.

Marsh Isolated --- Isolated wetlands with very few or no **trees**. Marshes are typically vegetated with broad-leaved herbaceous species such as pickerelweed, duck potato, water lily, and spatterdock in deeper areas, and grasses and sedges in shallower areas. Marshes are typically 1 to 3 feet in depth.

Cypress Marsh Isolated --- Isolated wetlands with well-developed cypress and marsh areas. Typically, cypress surrounds, or nearly surrounds, the deep-water marsh area. Cypress marshes should be composed of at least 20 percent cypress tree coverage or marsh area

Wet Prairie Isolated --- Isolated wetlands with very few or no **trees**. Typically, grasses and sedges dominate both shallow and deep-water areas of wet prairies. Wet Prairies differ from marshes in being shallower (usually <1 foot deep at the deepest point).

Cypress Continuous --- Flow systems dominated by cypress (typically bald cypress).

Hardwood Continuous --- Flow systems dominated by hardwoods (typically pop ash, elm, gum, red maple, water oak, and laurel oak)

Mixed Hardwood/Cypress Continuous --- Flow systems where a mixture of hardwoods and cypress occur and neither appears dominant.

Marsh Continuous --- Flow systems with very few or no **trees**. Marshes are typically vegetated with sawgrass and broad-leaved herbaceous species such as pickerelweed, duck potato, water lily, and spatterdock.

Lake Wetlands --- Wetlands similar to those described above but occurring contiguous to lakes.

APPENDIX F

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