ORDINANCE NO. 04-39

AN ORDINANCE OF MANATEE COUNTY, FLORIDA, REGARDING PHOSPHATE MINING, AMENDING AND RESTATING MANATEE COUNTY ORDINANCE 81-22 RELATING TO THE REGULATION OF PHOSPHATE MINING AND RECLAMATION ACTIVITIES IN MANATEE COUNTY; PROVIDING FOR A SHORT TITLE; PROVIDING FOR A PURPOSE; PROVIDING FOR APPLICABILITY; PROVIDING FOR MINING RESTRICTIONS; PROVIDING FOR EXEMPTIONS; PROVIDING SPECIAL PROTECTION FOR WATERSHEDS; PROVIDING FOR ADMINISTRATION OF THE ORDINANCE; PROVIDING FOR FEES; PROVIDING FOR DEFINITIONS; PROVIDING MINIMUM MINING STANDARDS AND REQUIREMENTS; PROVIDING FOR APPLICATION REQUIREMENTS; PROVIDING FOR MASTER MINING PLAN APPLICATION SUBMITTAL CRITERIA; PROVIDING FOR EFFECT OF MASTER MINING PLAN APPROVAL; PROVIDING FOR OPERATING PERMIT SUBMITTAL CRITERIA; PROVIDING FOR EFFECT OF OPERATING PERMIT APPROVAL; PROVIDING FOR APPLICATION REVIEW PROCEDURES; PROVIDING FOR INITIAL APPLICATION; PROVIDING FOR ANNUAL PROGRESS REPORTS AND RECLAMATION APPROVAL (RELEASE); PROVIDING FOR MASTER MINING PLAN AND OPERATING PERMIT AMENDMENTS, SUBSEQUENT PERMIT PROCEDURES, TRANSFERS, WAIVERS AND FOR APPEAL OF DECISIONS OF THE DIRECTOR; PROVIDING FOR ENFORCEMENT OF THE ORDINANCE; PROVIDING FOR LIABILITY FOR COSTS AND DAMAGES; PROVIDING FOR INSPECTIONS; PROVIDING FOR VIOLATIONS; PROVIDING FOR ADMINISTRATIVE ENFORCEMENT PROCEDURES; PROVIDING FOR SUSPENSION OR REVOCATION OF APPROVALS AND PERMITS; PROVIDING FOR JUDICIAL ENFORCEMENT PROCEDURES; PROVIDING FOR THE MANATEE COUNTY ENVIRONMENTAL RESTORATION FUND; PROVIDING FOR PROCEEDINGS AGAINST BONDS; PROVIDING FOR SEVERABILITY; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, Manatee County is a political subdivision of the State of Florida, and

WHEREAS, the Board of County Commissioners of the County (hereinafter "Board") is empowered by Section 125.01(1)(g), to adopt and enforce environmental regulations for the County; and

WHEREAS, the Board recognizes that phosphate is an essential ingredient in fertilizer, and is necessary for the strong and healthy growth of ornamental plants and food crops; and

WHEREAS, parts of the County, overlie the Peace River Formation, which contains the Bone Valley member, a geologic feature that holds the most extensive phosphate deposits in the United States; and

WHEREAS, mining of phosphate, and associated activities such as beneficiation and transportation, if not carried out in accordance with the requirements set forth below, has the potential to pose a threat to the health, safety and welfare of persons, plants and animals in the County, and to the beneficial enjoyment thereof in the County; and

WHEREAS, Manatee County owns and operates a drinking water reservoir known as Lake Manatee in connection with the maintenance and operation of a potable water treatment and distribution system, which serves as the primary source of drinking water for more than 280,000 people in a region comprising unincorporated Manatee County; the cities of Anna Maria, Holmes Beach, Bradenton Beach, the Town of Longboat Key; and a substantial portion of the northern part of Sarasota County, Florida; and

WHEREAS, the City of Bradenton also owns and operates a drinking water reservoir known as Evers Reservoir, which serves as the primary source of drinking water for more than 50,000 people within the incorporated City of Bradenton, but whose watershed area lies predominantly within the unincorporated area of Manatee County; and

WHEREAS, the Peace River, which has a portion of its headwaters in Manatee County, provides drinking water to approximately 99,000 residents of Charlotte County; to additional customers in DeSoto and Sarasota Counties; and is a backup source of potable water for the citizens of Manatee County; and

WHEREAS, in 1981 the Board adopted Ordinance 81-22, codified as Section 2-20 of the Manatee County Code of Laws (the "Phosphate Mining Ordinance"), which regulated mining in Manatee County; and

WHEREAS, advances in knowledge and technology related to mining and reclamation, dictates the need to revise the Phosphate Mining Ordinance; and

WHEREAS, the Board finds that phosphate mining in the watersheds of Lake Manatee and Evers Reservoir and the Peace River has the potential to pose a threat to the public health, safety and welfare, and could impact Manatee County's potable water system; and

WHEREAS, unregulated mining can cause impacts on habitat, water quality and water quantity within the twenty-five year floodplains of the County's surface waterbodies;

WHEREAS, it is in the best interest of the public, and necessary for the protection of the health, safety and welfare of the public, to amend and restate the Phosphate Mining Ordinance as provided herein, to protect Manatee County's citizens and natural resources from potential adverse environmental impacts of phosphate exploration, mining, processing, transportation and reclamation in the County; and

WHEREAS, the Board finds this amended and restated Phosphate Mining Ordinance to be consistent with the Manatee County Comprehensive Plan.

NOW, THEREFORE, BE IT ORDAINED by the Board of County Commissioners of Manatee County, Florida, as follows:

I. GENERAL

A. AMENDMENT AND RESTATEMENT OF PRIOR ORDINANCE

Manatee County Ordinance No. 81-22, codified as Section 2-20 of the Manatee County Code of Laws, is hereby amended and restated in its entirety as set forth herein, and the text of Section 2-20 of the Manatee County Code of Laws shall be replaced in its entirety by the text of this Ordinance. Most of the restrictions and requirements set forth herein are substantively the same as those imposed under Ordinance No. 81-22 (although some have been revised for purposes of clarity, conciseness and organization), and it is the Board's intent that the provisions of this Ordinance that represent a restatement of the provisions of Ordinance No. 81-22 be applied to regulated property in the same manner as were the provisions of Ordinance No. 81-22. Mining activities under operating permits and master mining plans issued and approved prior to the effective date of this Ordinance, pursuant to Ordinance No. 81-22, shall be governed by this Ordinance in accordance with Section I.D. hereof.

B. SHORT TITLE

This Ordinance shall be known and may be cited as "The Manatee County Phosphate Mining Code."

C. PURPOSE

The purpose of this Ordinance is to protect the public health, safety and general welfare; to ensure the orderly development and recovery of phosphate resources in a manner compatible with the overall development of the County; to conserve natural and environmental resources for present and future generations; to minimize the adverse impacts of mining; to provide for uniform reclamation standards; to provide for financial responsibility; and to ensure that phosphate mining is carried out in such a manner as not to preclude future normal and beneficial

uses of mined-out lands; and to ensure that phosphate mining activities are conducted in compliance with the Manatee County Comprehensive Plan, as it may be amended from time to time.

D. APPLICABILITY

1. This Ordinance shall apply to master mining plans and operating permits for which applications were filed on or after July 1, 2004, and to significant amendments to master mining plans or operating permits existing on the effective date of this Ordinance, for which applications were filed on or after July 1, 2004, pursuant to the regulations and requirements established herein

2. Master mining plans approved prior to the effective date of this Ordinance shall remain in full force and effect. Provided, however, in the event the holder of such a master mining plan applies for a significant amendment thereto, the approval of a significant amendment shall meet the requirements of this Ordinance, unless such significant amendment, or a portion thereof, is exempted from this Ordinance pursuant to Section 5 or 6, below. The County may require additional changes to the master mining plan not subject to the significant amendment to bring it into further compliance with this Ordinance, except to the extent such master mining plan is exempted from this Ordinance pursuant to Section 5 or 6, below.

3. Operating permits approved prior to the effective date of this Ordinance shall remain in full force and effect, and all mining activities conducted pursuant to such operating permits shall be deemed to comply with this Ordinance if such mining activities are conducted in accordance with the original Ordinance No. 81-22. Provided, however, in the event the holder of such an operating permit applies for a significant amendment thereto, the approval of the significant amendment shall meet the requirements of this Ordinance, unless such significant amendment, or a portion thereof, is exempted from this Ordinance pursuant to Section 5 or 6 hereof. The County may require additional changes to the operating permit not subject to the significant amendment to bring it into compliance with this Ordinance, except to the extent such operating permit is exempted from this Ordinance pursuant to Section 5 or 6, below. Upon the expiration date of such an operating permit, any application for a new operating permit, whether or not governed by a master mining plan approved prior to the effective date of this Ordinance, shall meet the requirements of this Ordinance, except to the extent such operating permit is exempted from this Ordinance pursuant to Section 5 or 6, below.

4. All applications for new master mining plans and operating permits for mining within areas covered by such new master mining plans filed on or after the effective date of this Ordinance, and all mining activities conducted pursuant thereto, shall meet the requirements of this Ordinance, except to the extent exempted from this Ordinance pursuant to Section 6, below.

5. An applicant seeking an operating permit, or approval of a significant amendment thereto, or approval of a significant amendment to a previously approved master mining plan, may apply for and may be granted a vested rights exemption from one or more of the requirements of this Ordinance, provided the following conditions are met:

a. The applicant shall specifically (i) identify those provisions from which it seeks a vested rights exemption; (ii) state the reasons why such a vested rights exemption should be granted; and (iii) describe in detail how the applicant will meet the requirements of Section I.D.5.d., below, if the vested rights exemption is granted;

b. An operating permit, or significant amendment thereto, for which the applicant seeks a vested rights exemption shall be governed by, and meet the requirements of, an existing master mining plan applicable to the same area that is subject to the operating permit, that was approved prior to the effective date of this Ordinance, or, in the case of a significant amendment to a master mining plan, the significant amendment shall satisfy the original intent of the County in its approval of the existing master mining plan;

c. The Board shall make a specific finding that failure to grant the vested rights exemption will deprive the applicant of a vested property right, based upon (i) whether the applicant has relied in good faith, (ii) upon the standards and requirements applicable pursuant to the original Ordinance No. 81-22, and (iii) as a result, has made a substantial change or has incurred such extensive obligations and expenses that it would be highly inequitable and unjust to destroy the rights acquired by the applicant; and

d. The Board shall make a specific finding that the elements or aspects of the operating permit, or significant amendment thereto, or significant amendment to the master mining plan, that are the subject of the vested rights exemption would have met the requirements of the original Ordinance No. 81-22 were it in effect.

Except as provided below, a vested rights exemptions will be considered for approval concurrently with the consideration of the master mining plan, operating permit or significant amendment to which such vested rights exemption pertains. Provided, however, an applicant may request a single preliminary vested rights exemption, to be considered for approval in advance of the hearings for the application for the master mining plan, operating permit or significant amendment to which such vested rights exemption pertains (hereinafter, a "preliminary vested rights exemption"). A vested rights exemption shall exempt an applicant from only those requirements of this Ordinance specifically identified in the vested rights exemption.

6. An applicant seeking a master mining plan, an operating permit, or approval of a significant amendment thereto, may apply for and be granted a specific approval for an exemption from one or more of the requirements of this Ordinance, provided the following conditions are met:

a. The applicant shall specifically (i) identify those provisions from which it seeks an exemption; (ii) state the reasons why such an exemption should be granted; and (iii) describe in detail show the applicant will meet the requirements of Section I.D.6.c.below if the exemption is granted;

b. The Board shall make a specific finding that granting the exemption will substantially satisfy the intent and purpose of this Ordinance; and

c. The Board shall make a specific finding that the elements or aspects of the master mining plan, operating permit, or significant amendment thereto, that are the subject of the exemption would have met the requirements of the original Ordinance No. 81-22 were it still in effect.

7. The approval of a master mining plan and/or the issuance of an operating permit for which the County received an application before July 1, 2004, shall not be subject to the provisions of this Ordinance, but shall comply with the original provisions of Ordinance No. 81-22, unless such application expires or is substantially amended to increase the adverse impacts of the subject mining activities, in which case such application will be deemed to have been filed on the date of such amendment.

E. MINING RESTRICTIONS

1. No mining activities shall be conducted in the absence of an approved master mining plan and operating permit.

2. With the exception of temporary crossings, as identified and approved in a master mining plan and operating permit, phosphate mining activities below the 25-year floodplain elevation shall be prohibited, unless the applicant can demonstrate through competent and substantial evidence that mining activities could occur in the 25-year floodplain and that the floodplain system could be reclaimed or recreated without adverse effects to water quality, water quantity or natural habitats therein.

3. There shall be no mining activities, as defined in this Ordinance, in wetlands that are functionally integrated with 25-year floodplains or perennial streams unless the applicant can demonstrate through competent and substantial evidence that mining could occur in such wetlands and that they could be reclaimed or recreated without adverse effects to water quality, water quantity or natural habitats or species therein.

F. EXEMPTIONS

1. Minor and/or major earthmoving activities that are subject to the provisions of Section 732 of the Manatee County Land Development Code, or its successor provisions, shall not be considered phosphate mining activities, and shall not be subject to the provisions of this Ordinance, and phosphate mining activities shall not be subject to the provisions of the Land Development Code, except as specifically stated herein or in the Land Development Code.

2. Construction and/or operation of a phosphate fertilizer manufacturing plant shall not be subject to the provisions of this Ordinance.

3. No provision of this Ordinance shall be construed to exempt mining activities from the requirements of the Comprehensive Plan, including, without limitation, the wetlands avoidance requirements set forth in Comprehensive Plan Policy 3.3.1.1., as amended, or its successor provision.

G. SPECIAL PROTECTION FOR WATERSHEDS

1. Because the watershed of the Lake Manatee Reservoir, the watershed of the Evers Reservoir and the watershed of the Peace River occupy such a critical role in maintaining the health, safety and welfare of the people of Manatee County, the region and the State, no master mining plans or operating permits shall be approved that would allow mining activities in such watersheds, except where an applicant demonstrates, with competent and substantial evidence, that such mining activities will not cause a degradation of water quality and will not cause adverse impacts on water quantity within the affected watershed, according to the conditions set forth in Comprehensive Plan Policy 2.2.2.2.5(c), as amended, or its successor provision.

2 Any person authorized pursuant to Section I.G.1., above, to engage in mining activities in such a watershed shall employ the best possible technology and best operating practices.

3. No clay settling areas or beneficiation plants shall be located within any such watershed, and no processing of phosphate ore shall occur within any such watershed. No hazardous substances (within the meaning set forth in the Land Development Code) shall be stored within any such watershed unless specifically approved by the Board in accordance with the standards set forth in Section I.D.6., hereof.

H. ADMINISTRATION OF THE ORDINANCE

Except as otherwise provided herein, this Ordinance shall be administered, implemented, and enforced by the Director, subject to the review and authority of the Board. The Director shall coordinate the activities of all appropriate County agencies concerning the processing, review, monitoring, and inspection of phosphate mining activities within the boundaries of the County. This Section shall not limit the authority of the Board or any County agency to enforce or monitor compliance with other applicable statutes, ordinances, resolutions, regulations or permit conditions, including, without limitation, the Manatee County Comprehensive Plan.

I. FEES

The Board is authorized to set reasonable fees and charges for the implementation of this Ordinance. Such fees shall be set by resolution. Under no circumstances shall said fees or any part thereof be refunded for failure of the Board to approve an application.

II. DEFINITIONS

The terms used in this Ordinance shall have the following meanings, unless the context clearly indicates otherwise.

Acres Mined - shall mean all acres upon which mining operations have resulted in the extraction of phosphate rock.

Adjacent - shall mean, when referring to the location of land in proximity to other land upon which mining activities may occur, that such lands adjoin, or are in close proximity to, one another, whether or not contiguous. The separation of lands by a right-of-way for a highway, road, railroad, canal or utility, or a body of water, watercourse or other minor geographical division of a similar nature, running parallel with and between such lands, shall not prevent such lands from being treated as adjacent for purposes of this Ordinance.

Annual Progress Report - shall mean that report prepared annually and submitted by the applicant to the Director, in accordance with Section V.B.1, hereof, who shall determine whether the applicant has followed its master mining plan and operating permit for the preceding year and whether the applicant's plans for the coming year differ from those approved in the master mining plan and operating permit.

Applicant - shall refer to the person(s), entity or entities engaged or seeking to be engaged in phosphate mining activities.

Beneficiation - shall mean the step in phosphate processing whereby the matrix is physically and chemically treated to separate the phosphate rock, clay and sand fractions.

Best Operating Practices (BOPs) - shall refer to practices that are technologically and economically practicable and beneficial in preventing or reducing adverse impacts from phosphate mining activities. BOPs may include, but shall not be limited to: water reuse; augmentation of flows to surface or groundwater bodies that could be adversely affected by mining activities; special protections for sensitive habitats; increased frequency of certain types of monitoring and inspections; specialized training for mining personnel, and the like.

Best Possible Technology (BPT) - shall mean the most advanced technology that provides the maximum possible protection for the public health, safety and welfare, and which minimizes to the greatest degree possible any adverse impacts from mining activities in the Watershed Protection Overlay Districts. Best possible technology may include, but shall not be limited to: innovative reclamation techniques; augmentation of public water supplies that could be adversely affected by mining activities; construction of secondary containment structures or other measures to ensure against catastrophic failure of primary containment structures; below-grade clay settling areas; and elimination of mine site rock dryers; provided, however, that such measures shall not be required if the applicant demonstrates to the Director's satisfaction that they are technically infeasible or economically prohibitive.

Board - shall refer to the Board of County Commissioners of Manatee County, Florida.

Clays - shall mean the clay and water mixture and other fine mineral particles (generally under150 mesh in size) that are the by-product of processing the matrix to extract the phosphate rock.

Clay Settling Area - shall mean that area lying between earthen dams or within excavated areas, which is used primarily for impounding clays or other wastes, sometimes also referred to as a slime pond or an "initial" or "waste-clay" settling area. Specifically excluded are sand/clay reclamation sites.

County - shall mean the County of Manatee, a political subdivision of the State of Florida.

Cumulative Impacts - shall mean the impacts of past, current and reasonably foreseeable phosphate mining activities carried on within Manatee County on the natural resources of Manatee County, identified by a study conducted pursuant to the requirements of Appendix D of this Ordinance.

Degradation – shall mean a statistically significant negative change or violation of a local, State, or federal standard which results in the lowering of water quality conditions of a creek, stream, lake, or river.

Department - shall mean the Manatee County Environmental Management Department.

Development of Regional Impact (DRI) – in accordance with the provisions of Chapter 380, Florida Statutes, as amended, shall mean any development which, because of its character, magnitude, or location would have a substantial effect upon the health, safety or welfare of citizens of more than one (1) county.

Director - shall refer to the Director of the Department or his/her designee, who shall be charged by the County Administrator with ensuring implementation of this Ordinance and enforcing its requirements.

Disturbed Lands - shall mean the surface area of the land that is mined and all other land area in which the natural land surface has been disturbed as a result of, or incidental to, phosphate mining activities.

Existing Mining Operation - shall mean a phosphate mining operation that was ongoing under a valid master mining plan and operating permit as of the effective date of this Ordinance.

Exploration - shall mean those activities undertaken in an effort to determine the presence and location of the phosphate resource and its recoverability.

Exotic or Nuisance Species - shall mean those species not native to Florida, and which have been scientifically shown to have undesirable ecological impacts; such species shall include,

but not necessarily be limited to: Brazilian pepper (Schinus terebinthifolius); cajeput (Melaleuca quinquenervia) and Australian pine (Casuarina spp.).

Floodplain, Twenty-five (25) Year - shall mean that area delineated as such by the Southwest Florida Water Management District or the U.S. Geological Survey, whichever delineation encompasses the greater area. The applicant shall have the ability to delineate, through the use of proper hydrologic studies, an estimate of the 25-year floodplain area. Delineations provided by the applicant shall be subject to review and acceptance by the County.

Historic Resources - shall mean all areas, districts or sites containing properties listed as significant on the Florida Master Site File, the National Register of Historic Places, or designated by Manatee County as historically, architecturally or archaeologically significant.

Listed Species - shall mean flora and fauna as identified by the U.S. Fish and Wildlife Service's "List of Endangered and Threatened Wildlife and Plants" in 50 Code of Federal Regulations (CFR) 17.11-12; flora as identified by the Florida Department of Agriculture & Consumer Services as specified by the Preservation of Native Flora Act in Section 581.185-187, Florida Statutes (F.S.); and fauna identified by the Florida Fish and Wildlife Conservation Commission in Rules 39-27.003 and 39-27.004, Florida Administrative Code (F.A.C.). Endangered Species are so designated due to anthropogenic or natural factors that have placed them in imminent danger of extinction, while threatened species are so designated due to a rapid decline in number and/or habitat such that they may likely become endangered in the absence of corrective action.

Manatee County Comprehensive Plan, or Comprehensive Plan - shall mean the 2020 Manatee County Comprehensive Plan (Manatee County Ordinance 89-01, as amended from time to time).

Manatee County Land Development Code, or Land Development Code - shall mean Manatee County Ordinance 90-01, as amended, the code of land development regulations adopted by the Board to implement the Manatee County Comprehensive Plan.

Manatee County Phosphate Mining Reclamation Manual - shall mean that manual governing the reclamation of mined lands in Manatee County, as amended.

Master Mining Plan - shall mean a Board-approved plan that provides a description of proposed mining activities over the life of a mine, which shall allow review of the applicant's proposed pre-mining and mining activities, including the plan for reclamation.

Matrix - shall mean the combination of naturally-occurring materials (phosphate ore), including sands and clays, in which phosphate rock is imbedded.

Mine - shall mean an area of land upon which mining activities or operations have been conducted, are being conducted, or are planned to be conducted, as the term is commonly used in the industry.

Mining Activities or Phosphate Mining Activities - shall mean all functions, work, facilities and activities performed in connection with the development, extraction, drying, transporting or processing of matrix (phosphate ore), and all uses reasonably incidental thereto, including, without limitation, reclamation. The construction and use of recharge ditches and other ancillary activities, as well as reclamation, shall also be deemed "mining" for the purposes of this Ordinance. Exploration, site surveying, site preparation (e.g., grading, tree removal, grubbing, etc.), prospecting, coring, mapping, and other functions necessary solely for proper preparation of permit applications shall not be considered "mining activities."

Mining Extraction Activities – shall mean the following mining activities: operation of draglines and dredges for the removal of phosphate ore; construction and maintenance of recharge ditches; pumps greater than ten (10) horsepower; slurry wells and associated equipment; and slurry pipelines that are not secondarily contained.

Operating Permit - shall mean the written authorization, granted by the Board of County Commissioners through an adopted resolution, for an applicant to proceed with specified phosphate mining activities for a specified period of time, on a tract unit. An operating permit shall generally require that the applicant provide more site-specific information than that available at the time of Development of Regional Impact (DRI) and master mining plan review.

Overburden - shall mean the layer of sand and clay and/or other minerals that typically sits above the stratum of phosphate.

Perennial Streams - shall be any lake or stream shown as perennial on the most recent U.S. Geological Survey (USGS) Topographical Quadrangle Maps, or in the most recent Soil Survey of Manatee County, published by the United States Department of Agriculture, or as delineated by a method accepted by the County.

Person - shall mean an individual, group of individuals, firms, associations, joint ventures, partnerships, estates, trustees, business trusts, syndicates, fiduciaries, corporations, and all other groups or combinations thereof.

Phosphate Fertilizer Manufacturing Plant - shall mean a facility that manufactures sulfuric acid by sulfur burning, wet-process phosphoric acid, ammonium phosphate, normal superphosphate and triple superphosphate, and produces a by-product of phosphogypsum.

Planning Commission - shall mean the Commission created and governed by Section 302 of the Manatee County Land Development Code.

Reclamation - shall mean the reshaping and revegetation of land and waterbodies disturbed or affected by phosphate mining activities.

Sand/Clay Reclamation Site - shall refer to a location or locations where sand/clay mixtures are deposited and settled within dams or berms constructed over excavated areas as part of a final reclamation effort.

Significant Amendment - shall mean any proposed amendment to a master mining plan or operating permit that includes: any addition of substantial acreage to be mined; any substantial change in the location or manner of construction of a clay settling area, permanent roads or other transportation facilities; or any other change that might reasonably result in substantially increased adverse impacts.

Slimes - shall mean the clay-water mixture and associated chemicals that result from processing of the matrix.

Slime Pond - shall refer to a clay settling area.

Spoil - shall mean overburden displaced during the mining process.

Tailings - shall refer to sand particles that are generally between 16 and 150 mesh in size that have been separated from the matrix through beneficiation.

Tract Unit - shall mean that area of land, no greater than 6,500 acres in size that is encompassed by an individual operating permit. All tract units within the area covered by a master mining plan shall be contiguous to each other whenever possible.

Watershed of the Evers Reservoir - shall be defined as the geographic area encompassing the land and water surfaces which, by virtue of natural topography, contributes surface water flow to the Evers Reservoir. The Evers Reservoir Watershed area shall be as depicted on the Future Land Use Maps contained in the Manatee County Comprehensive Plan, or as otherwise delineated by the applicant through the use of appropriate hydrological studies, the results of which are acceptable to the Manatee County Environmental Management and Planning Departments.

Watershed of the Lake Manatee Reservoir - shall be defined as the geographic area encompassing the land and water surfaces which, by virtue of natural topography, contributes surface water flow to the Lake Manatee Reservoir. The Lake Manatee Reservoir Watershed area shall be as depicted on the Future Land Use Maps contained in the Manatee County Comprehensive Plan, or as otherwise delineated by the applicant through the use of appropriate hydrological studies, the results of which are acceptable to the Manatee County Environmental Management and Planning Departments.

Watershed of the Peace River - shall mean the geographic area encompassing the land and water surfaces which, by virtue of natural topography, contributes surface water flow to the Peace River. The Peace River Watershed shall be as depicted on the Future Land Use Maps contained in the Manatee County Comprehensive Plan, or as otherwise delineated by the applicant through the use of appropriate hydrological studies, the results of which are acceptable to the Manatee County Environmental Management and Planning Departments.

Watershed Protection Overlay Districts - shall mean those areas designated as such in the Comprehensive Plan to which special policies, goals and objectives apply.

Water Recirculation Facilities - shall mean those structures used for storing, routing, and treating mine and process waters, including but not limited to reservoirs, clay settling areas, canals, ditches and their associated dams and dikes.

Wetlands - shall be as defined in Rule 40D-4.021, F.A.C., as amended or its successor provisions.

Wetland Mitigation or Mitigation - shall mean actions including but not limited to restoration, enhancement, creation of wetlands, upland preservation or a combination of the above required to be taken to offset environmental impacts of permitted activities.

III. MINIMUM MINING STANDARDS AND REQUIREMENTS

The following minimum standards and requirements shall apply to all phosphate mining activities within Manatee County:

1. All mining activities conducted within Manatee County shall be in conformity with requirements of the Comprehensive Plan.

2. All proposed mining activities shall occur in a manner and sequence that results in the minimum adverse impacts necessary to carry out such mining activities, in light of both direct anticipated impacts of such mining activities, and the cumulative impacts of such mining activities together with the impacts of other mining activities addressed under a cumulative impacts assessment conducted pursuant to Appendix D hereto.

3. All mining activities shall provide reasonable protection and conservation of natural and environmental resources.

4. All mining activities shall employ best operating practices, and shall be conducted in a manner that will minimize undesirable effects of mining activities and maximize protection of public facilities and natural resources.

5. If approved by the Board, all mining activities proposed for Watershed Protection Overlay Districts - Evers Reservoir, Lake Manatee and Peace River Watershed areas - shall be consistent with the use of best possible technology as well as best operating practices.

6. Tract unit boundaries shall conform, wherever possible, with watershed or sub-basin boundaries, or conform to Florida Department of Environmental Protection Conceptual Reclamation Plan boundaries.

7. Clay settling areas shall be located only on lands that have been previously mined, or which have approval for future mining.

8. Phosphate mining activities or the construction of permanent buildings on historic resources shall be in compliance with the Comprehensive Plan.

9. All mining activities shall be in compliance with all local, State and federal noise regulations.

10. The conduct of pre-mining construction, mining activities, or the placement of isolator berms in areas where listed species have been identified, shall be in compliance with the Comprehensive Plan.

11. Unless otherwise specifically excluded, mining activities shall be subject to the setback limitations specified herein, which describe offsite conditions in effect at the time of application for master mining plan approval.

a. **Setback for Phosphate Mining Extraction Activities.** Except as authorized pursuant to Section e., below, no phosphate mining extraction activities shall be performed within:

1) One thousand feet (1,000') of any church, school or habitable structure on adjacent property not located within the boundary of the master mining plan and existing at the time of application for master mining plan approval;

2) Five hundred feet (500') of applicant's property line in areas where the structures listed in (1) immediately above are not present;

(3) Two hundred feet (200') of any existing public right-of-way in areas where the structures listed in (1) above are not present; or

(4) One thousand feet (1,000') of any wetlands on adjacent property not owned, leased or otherwise legally controlled by the applicant.

b. **Setback for Clay Settling Areas and Beneficiation Facilities.** Except as authorized pursuant to Section e., below, no clay settling areas or beneficiation facilities shall be located within:

(1) Two thousand five hundred feet (2,500') feet of any church, school or habitable structure that is not located within the boundary of the master mining plan and is existing at the time of application for master mining plan approval; and

(2) Five hundred feet (500') from the applicant's property line or any public right-of-way in areas where none of the structures listed in (1) immediately above is present.

c. **Setback for Stockpiles.** Except as authorized pursuant to Section e., below, no excavated materials or stockpiles shall be left on the applicant's property longer than sixty (60) days within:

(1) Five hundred feet (500') of any church, school, or habitable structure that is not located within the boundary of the master mining plan and is existing at the time of application for master mining plan approval; and

(2) One hundred feet (100') from applicant's property line or a public right-of-way or in areas that do not contain any of the structures or resources listed in c. (1) immediately above.

d. **Setback for Related Activities and Structures.** Except to the extent authorized pursuant to Section e. below, and notwithstanding that they are not included in the definition of mining extraction activities, pole barns; equipment storage and repair building; office buildings; recharge wells; potable wells; monitor wells; power lines, substations and poles; roads or detour roads; fences; isolator berms; non-process water pipelines; habitat enhancements and habitat management projects; and pumps less or equal to ten (10) horsepower, shall not be located within fifty feet (50') of the applicant's property line.

e. **Reduction of Setbacks.**

(1) The above setback requirements shall not apply where owners of the land protected by such restrictions have expressly consented to a reduction thereof by written instrument executed with the formality of a deed and recorded in the official records of Manatee County, Florida.

(2) Such consent and recordation must occur prior to commencement of any mining activities by the applicant in areas protected by this setback provision. Certified copies of said recorded instrument shall be furnished to the Director, who shall acknowledge receipt in writing.

(3) The applicant shall provide a stability analysis, performed by a Professional Engineer registered in the State of Florida, for consideration of setback reductions from roadways, utilities or public infrastructure.

(4) In no event shall any of the setbacks described above be reduced to less than fifty feet (50'), even if the applicant receives the setback waivers as described in subparagraph III.e.(1) immediately above, unless the property is adjacent to land controlled by a phosphate company, in which case the minimum setback is not required.

12. Post-reclamation lands, excluding land reclaimed over clay settling areas or land underlying disturbed areas reclaimed as lakes or wetlands, mined or disturbed, pursuant to an operating permit, shall meet the following radiation standards to be eligible for release:

a. The gamma radiation exposure rate at 1 meter (3.3 feet) above the surface at any measurement point shall not exceed 10 microroentgens per hour above the average pre-mining background for the tract unit;

b. The soil radium-226 concentration (average over a 1.8 meter (6-ft) core) at any measurement point shall not exceed five (5) picocuries per gram (pCi/g) above the average pre-mining background for the tract unit;

c. Gamma radiation measurements shall be taken at the density of one per acre, and soil cores shall be collected at the density of one per 20 acres;

d. All monitoring of radiation on reclaimed sites shall be conducted according to procedures approved by Manatee County and set forth in Appendix A hereto;

e. If the results reported for any measured site exceed either of the limits in 12. a. and b. above, additional sampling or measurements may be required, and the average over 100 square meters (or 1000 square feet) shall not exceed the above limits. Additional sampling and sampling densities may also be required by Manatee County to resolve anomalies; however, in lieu of additional testing, applicant may comply with subsection 12.h.

f. The above-described radiation standards shall apply to all disturbed lands, with the exception of land reclaimed over clay settling areas, and land underlying disturbed areas reclaimed as lakes or wetlands;

g. Radioactivity concentrations in all groundwater of reclaimed lands shall not exceed applicable standards in Chapter 62-520.400, Florida Administrative Code; and radioactivity concentrations in all surface waters in areas reclaimed as lakes or wetlands shall not exceed applicable standards in Chapter 62-302, Florida Administrative Code, as amended, or their successor provisions, regardless of whether such waters constitute "Waters of the State" as defined in Sections 373.019 and 403.031, Florida Statutes; and

h. No more than fifteen percent (15%) of such lands may exceed the above standards. For those portions of reclaimed lands that do not and cannot meet the above standards, the applicant shall record in official records of the County a clearly-stated notice informing the purchaser of the property that the land has been mined for phosphate, and exceeds the radiation standards set forth in this Ordinance, and that any habitable structures and appurtenances (e.g., potable wells) to be built or installed on the property should be constructed using radon resistant techniques.

13. No water shall be diverted from pre-mining perennial stream channels or lakes greater than five (5) acres in size that are not wholly owned by the applicant, unless specifically approved by the Board and all other applicable authorities. Stream diversions shall be permitted

only after a thorough analysis of stream flow conditions, and shall be limited to quantities that are not detrimental to upstream or downstream property owners or the environment.

14. Mining activities shall produce no vibrations exceeding the limits set forth in Section 723.3.3 of the Manatee County Land Development Code, as amended or renumbered.

15. Blasting or other use of explosives for mining purposes shall not be performed without the written permission of the Director, who may issue appropriate conditions for the public safety and control of nuisance conditions. Blasting or other use of dynamite and other explosives shall be directed and supervised by a person licensed in blasting operations.

16. All lighting associated with mining activities shall be in compliance with Section 723.3.5 of the Land Development Code, as amended, or its successor provisions.

17. Where the transportation analysis of the applicant's Development of Regional Impact or master mining plan indicates that the safety, circulation capacity, or stability of County-maintained roads or rights-of-way must be improved to allow utilization of such roads or rights-of-way by an operating permit applicant, the applicant shall design and construct such improvements, after such design has been approved by the Manatee County Transportation Department. An applicant shall not be required to make improvements relating to preexisting conditions unrelated to its activities, except when such improvements are an integral part of the work necessary to ensure the safety, circulation capacity, or stability of the affected roads or rights-of-way. Prior to any construction required under this Section, the applicant shall furnish a performance bond sufficient to indemnify the County against failure of the applicant to complete such construction.

18. Except for clay settling areas, no later than five (5) years after cessation of mining extraction activities on a specific reclamation unit, as identified in the master mining plan, the applicant shall have completed the backfilling, contouring and initial planting of the area in accordance with the reclamation plan approved in the master mining plan and operating permit.

IV. APPLICATION REQUIREMENTS

A. MASTER MINING PLAN APPLICATION SUBMITTAL CRITERIA

An applicant may submit to the Director a master mining plan, either simultaneously with or subsequent to submittal of the application for Development of Regional Impact (DRI) approval, if DRI approval is required. The master mining plan application shall be accompanied by twenty-four copies thereof, and shall include the following information:

1. The name, address, and telephone number of the applicant or its authorized agent and, if different, of the owner or owners of the property within the area of the master mining plan. If the applicant and/or property owner(s) are not individual natural persons or individual business entities, the application shall fully identify each person or entity having any interest in the mining activities or ownership of the land, and shall specifically identify the nature of such interests;

2. The name, address, and telephone number of the applicant's agent, upon whom service of legal papers can be made, and who may be contacted in case of need;

3. The legal description of all lands within the site upon which any phosphate mining activities are proposed, indicating whether owned, leased, or under option for purchase by the applicant; and, where fee simple ownership is not held by the applicant:

(a) the applicant shall submit a legal opinion, prepared by an attorney licensed to practice law in Florida, addressed to Manatee County, stating that the applicant has a legal right to engage in mining activities on the property, together with copies of all documents recorded in the public records of Manatee County, Florida, relied upon or referred to in the legal opinion; and

(b) the applicant shall notify the fee simple owner(s) of such lands at the time the application is submitted to Manatee County and prior to each public hearing on the application;

4. The materials to be mined, the estimated yearly production of ore, product, and by-product, and a map showing the locations of proposed tract units;

5. The proposed sequence and schedule of mining and reclamation, including specific reclamation units within tract units, for all tract units shown on a year-to-year basis;

6. A statement by the applicant identifying any material other than that proposed to be mined in the master mining plan that will be excavated from the property and marketed for use off the mine site;

7. An abstract and interpretation of the results of exploratory drilling, showing the elevation of the top and base of the ore zone, the geologic nature of the confining bed and overlying materials, and the pre-operational water levels encountered in the exploratory drilling (where exploratory drilling does not characterize the geologic nature of the confining bed, other available sources may be substituted);

8. A description of the beneficiation process used in the mine, including a schematic depiction of the process and process reagents to be used, along with their chemical composition and estimated application rates;

9. The purpose and location of any physical plant, structure, permanent pipeline or any other non-mobile object constructed as part of the proposed mining activities;

10. The location and dimension of proposed clay settling areas, water recirculation facilities and other impoundments, including the heights of dams and minimum freeboard;

11. An inventory of all existing wells on the property, including locations, estimated annual extraction rates, water use, and proposed disposition of wells;

12. A transportation analysis, to include estimates of vehicular and rail traffic and any other mode of transportation of materials and products leaving the applicant's property, and of raw materials entering the applicant's property, with emphasis on any disruption of normal traffic movements caused by, and any increase in rail movements, vehicular traffic and road deterioration resulting from, the proposed mining activities;

13. A depiction by the applicant, on maps or other suitable drawings, of any proposed crossings of County roads, easements or rights-of-way by draglines. No such crossings shall be permitted without the Board's approval;

14. Engineering estimates, certified by a registered professional engineer, of the quantity, temperature, chemical and physical properties (including radiological), frequency and duration, points and methods of disposal (whether on or off the applicant's property) of discharges of water, liquid wastes, effluents or sewage to be created. The applicant shall also specify the proposed time schedule for such disposal and estimates of the flow rates in receiving streams at the times of wastewater discharges. Such estimates shall separately and specifically identify and quantify discharges of all substances that could be generated by phosphate mining activities for which the State has promulgated water quality standards. In addition, estimates of the amounts (by volume and weight) of tailings and phosphatic clays to be created, plans for their storage and disposal and the proposed time schedule for disposal, together with the drawings showing the location of any treatment facilities, shall be provided;

15. A copy of all applications to or permits issued by all applicable federal, State, and regional agencies, unless such information has been previously submitted to the County;

16. Engineering estimates, certified by a registered professional engineer, of all air pollutants that could be emitted, and all emissions for which the State of Florida has promulgated air quality standards. This may be provided by submitting a copy of the Clean Air Act Title V permit for the activities proposed in the master mining plan area;

17. Engineering estimates, certified by a registered professional engineer, of the water balance for the projected highest, lowest and average annual rainfall sequence for the operating life of the mine, accounting for:

a. all sources of water input to water recirculation facilities and ore processing steps, including water contained in overburden and matrix, pump seal water, and deep well and surface water make-up;

b. all water outputs and losses from the system, including but not limited to water contained in the overburden, product, clay, reject materials, tailings, evaporation, seepage and recharge ditch systems, and discharges to ground and surface waters; and

c. an assessment of the impact of the proposed mining activities on surface and groundwater hydrology, including effects on peak and average stream base flow.

18. A detailed explanation of computational methods and models used in preparing the master mining plan, plus the assumptions that were used as inputs to the models and computations;

19. If the applicant requests approval to undertake construction of a beneficiation plant or water recirculation facility, the applicant shall also provide a conceptual flow diagram of beneficiation plant processes, illustrating the type and quantities of material flow between major equipment components, the functional size of such components, and a conceptual site plan and flow diagram showing the relationship between the beneficiation plant and water recirculation facilities;

20. Composite aerial photographs of the master mining plan area that, through overlays or other graphical depictions, clearly show:

a. the boundary of the area included in the master mining plan application;

b. relation of master mining plan area to any Watershed Protection Overlay Districts;

c. depiction of pre-mining land use onsite (residential, agricultural, commercial, school, etc.) and on adjacent properties within twenty six hundred feet (2,600') of the applicant's property boundaries;

d. onsite baseline data depicting specific location of habitats of listed animal species, and locations of listed plant species and historic resources. The applicant shall also include a narrative detailing how the above resources are to be protected, preserved, or relocated (if relocation is allowed by agencies exercising jurisdiction) during and after mining;

e. locations of tract units proposed for mining;

f. locations of proposed clay settling areas and other impoundments and their construction schedules;

g. locations of permanent pipelines, beneficiation plants, and other permanent structures;

h. the location and limits of all existing wetlands, lakes, rivers, reservoirs, streams, creeks and other waterbodies within the master mining plan area up to the 100-year floodplain created by those waterbodies, including a general description of all Waters of the State as defined in Section 403.031, Florida Statutes, and all navigable waters determined pursuant to Chapter 253, Florida Statutes;

i. the location of drainage and flood control features, including topographic contours at one (1) foot intervals before and after mining activities;

j. the location of all proposed storage and transportation facilities, including permanent roads, railroads, or other permanent means of transportation for products and raw materials shipped to and from the site; and

k. a depiction of the proposed FLUCFCS (Florida Land Use Cover and Forms Classification Code System, FDOT 1999) codes upon completion of reclamation.

Such composites and overlays shall be provided at a scale acceptable to the Director, and extending at least 2,600 feet beyond the property boundary;

21. An evaluation and scoring of all wetlands greater than one half acre (½ ac.) in size within the master mining plan area in according with Parts I and II of the Uniform Mitigation Assessment Methodology (UMAM) as employed by the Florida Department of Environmental Protection (FDEP) and as set forth in Chapter 62-345, Florida Administrative Code. Applicant's mitigation proposal shall conform to UMAM requirements. In the event that FDEP or a successor agency develops and implements a different methodology for evaluating and scoring wetlands, that methodology shall be employed;

22. An Environmental Monitoring Program developed in conformity with the requirements of Appendix A, hereto;

23. An analysis of the cumulative impacts on Manatee County of the proposed phosphate mining activities, taking into consideration past, current and reasonably foreseeable phosphate mining activities within Manatee County, on the County's natural resources, according to the guidelines set forth in Appendix D hereto;

24. A Reclamation Plan developed in conformity with the requirements of the Manatee County Phosphate Mining Reclamation Manual, which is Appendix E to this Ordinance;

25. The signature and seal of a registered professional engineer responsible for the preparation of the master mining plan and a written certification by said engineer that he or she is personally familiar with the proposed mining activities; that he or she has personally reviewed all elements of the master mining plan or such elements to which said engineer is certifying; and that all engineering methods, estimates or computations conform with generally accepted engineering practices;

26. The fee required for review of a master mining plan application, as prescribed in a fee resolution adopted by the Board pursuant to Section I.I. hereof;

27. Any application for a vested rights exemption; preliminary vested rights exemption or specific approval exemption, which shall identify the specific provisions of this Ordinance from which the applicant seeks an exemption, and the basis for granting such an exemption; and

28. Any other relevant information requested in writing by the Director at or no later than thirty (30) days after the pre-application conference.

B. EFFECT OF MASTER MINING PLAN APPROVAL

1. Approval of the master mining plan by the Planning Commission and the Board pursuant to Section V.A. hereof constitutes notice that the applicant has provided reasonable assurances that the major concerns have been resolved and that an operating permit may be issued if the approved master mining plan has not been significantly changed and the applicant satisfies all operating permit application requirements of this Ordinance. Approval of the master mining plan shall not vest the applicant with any rights to issuance of any operating permit, nor shall it entitle the applicant to initiate mining activities except as hereinafter provided.

2. A Board-approved master mining plan shall expire twenty-five (25) years after its effective (approval) date. At its sole discretion, the Board may extend this expiration date for just cause, so that the mine may be developed as permitted. Should an applicant's mining activities, as initially proposed, not be completed by the master mining plan's expiration date, and should the Board have not granted an extension of such expiration date, the applicant shall be required to submit a new master mining plan application, covering the incomplete areas, for the Board's review and approval. The Board shall not unreasonably withhold approvals for time extensions requested by the applicant to complete the mining and reclamation according to the originally approved Plan.

3. The applicant shall have a period of three (3) years from the date of Board approval of the master mining plan, or after the date that all appeals have been settled, including appeals of State and federal permits required to commence mining, whichever comes later, to submit an application for an operating permit. The Board may, in its discretion, extend the time limit. If an operating permit application has not been submitted after a three (3) year period, or within any authorized extension period, the master mining plan approval shall automatically expire.

4. No pre-mining construction activities preparatory to actual mining may be undertaken prior to issuance of an operating permit, unless specifically reviewed by the Director and expressly approved by the Board as part of master mining plan approval. An applicant desiring to undertake pre-mining construction activities prior to the issuance of an operating permit must submit, in conjunction with the master mining plan application, engineering design drawings and specifications for all proposed activities, and must comply with applicable final site plan requirements of Section 508 of the Land Development Code. Said drawings and specifications and any supporting computations shall be submitted in accordance with Section IV.C.5 of this Ordinance. If, after reviewing the above-required materials, the Director determines that the work is in fact necessary before overburden removal or mineral extraction can be undertaken, and the plans as submitted are in accordance with generally accepted engineering practices, he/she shall recommend to the Board in writing that such activities be approved.

5. Any pre-mining construction activities that the Board may approve shall be consistent with applicable operating permit criteria and shall be conducted at the applicant's risk, should the applicant subsequently fail to comply with operating permit criteria in effect at the time

of operating permit application. Approval of such pre-mining construction activities authorizes the applicant to submit all information needed to obtain building permits for approved activities.

C. OPERATING PERMIT APPLICATION SUBMITTAL CRITERIA

Prior to or subsequent to Board approval of the master mining plan, an applicant may submit to the Director an operating permit application for the tract unit to be mined. However, the operating permit cannot not be approved unless or until the Board approves the master mining plan, and Board review of each of these submittals shall be scheduled for separate public hearings. An application for an operating permit shall be accompanied by twenty-four (24) copies thereof, and shall include the following:

1. A copy of all applications to, and current permits granted by, all applicable federal, State and regional agencies, unless such items have already been submitted to the County;

2. Baseline data depicting pre-mining land uses (with the use of FLUCFCS codes) on the tract unit that is the subject of the operating permit, including specific location of habitats of listed animal species, and locations of listed plant species and historic resources, unless such information has previously been submitted to the County;

3. Confirmation that baseline radiation measurements for the area to be mined during the initial year of the operating permit have been conducted in accordance with the requirements of Section III.12, and Appendix A., herein. Confirmation of continued baseline monitoring shall be submitted with the annual reports;

4. The location and limits of all existing wetlands; and lakes, rivers, reservoirs, streams, creeks and other waterbodies within the tract unit area up to the 100-year floodplain created by those waterbodies, unless such information has previously been submitted to the County;

5. Engineering specifications and design drawings at suitable scale for all aspects of mining activities for the life of the operating permit for which specifications and drawings have not previously been submitted to the County as part of the master mining plan. Prior to construction of said facilities, the applicant or its engineer shall submit to the Director, for his or her written approval, construction drawings of such facilities. Prior to using said facilities, the applicant shall furnish as-built drawings and specifications of said facilities that reflect any changes made to the original plans. All specifications and drawings shall be signed and sealed by a Florida registered professional engineer, who shall certify that he or she is personally familiar with and has reviewed said drawings and specifications and found them to be consistent with generally accepted professional engineering practices. Approval of the Director shall not constitute building permit approval;

6. Plans or narrative showing how nonpoint sources of air and water pollution, including fugitive dust, shall be controlled in accordance with applicable State and local requirements;

7. Plans showing that clays, waste materials and other materials with high clay content shall be disposed of only within clay settling areas or sand/clay reclamation sites, unless such information has previously been submitted to the County;

8. Plans showing that all dams, dikes and berms constructed to impound or channel clays, spoil, tailings, clean water, process water, wastewater, or sand/clay mixtures will be located, designed, constructed and maintained in compliance with applicable State requirements and in accordance with generally accepted engineering practices, unless such information has previously been submitted to the County;

9. Identification on suitable maps or charts, to the extent practicable, of all reductions from the setback requirements of Section III.11. of this Ordinance that the applicant intends to request for mining of the tract unit. The applicant shall forecast impacts of proposed mining activities both with and without said reductions, if approval of the setback reductions has not been obtained by the time of application;

10. Plans showing that positive protection (e.g., alarms and containment systems) against any significant discharge, leak, or other release of materials from pipelines that are external to the rainfall catchment area of the water recirculation system shall be provided;

11. Plans or studies showing that increases to ambient noise resulting from mining activities shall not result in a nuisance;

12. A description of any proposed blasting or other uses of explosives;

13. A detailed description of any changes to the Environmental Monitoring Program of the approved master mining plan submitted in accordance with Section IV.A.22 of this Ordinance;

14. A spill prevention, containment and response plan developed in conformity with requirements set forth in Appendix B, hereto;

15. Form of the financial statements, proof of insurance and surety bonds that will be provided to satisfy the criteria set forth in Appendix C, hereto;

16. Any application for a vested rights exemption, preliminary vested rights exemption or specific approval exemption, which shall identify the specific provisions of this Ordinance from which the applicant seeks an exemption, and the basis for granting such an exemption; and

17. The fee required for review of an operating permit application, as prescribed in the fee resolution adopted by the Board pursuant to Section I.I. hereof.

D. EFFECT OF OPERATING PERMIT APPROVAL

Approval of an operating permit by the Board pursuant to Section V.A. hereof shall entitle the applicant to begin mining activities within a given tract unit. An applicant shall have one (1)

year from the date the operating permit is approved or from the date that all appeals have been settled, including appeals of State and federal permits required to commence mining, whichever comes later, to commence mining activities. If mining activities are not commenced within said time, the Board, in its discretion, may extend the operating permit upon a showing of good cause by the applicant. If the Board declines to approve an extension, the operating permit shall be considered null and void. Operating permit approvals issued pursuant to the requirements of this Ordinance shall be valid for a term of five (5) years from the date of approval unless suspended or revoked prior to that time.

V. APPLICATION REVIEW PROCEDURES

A. INITIAL APPLICATION

1. Within thirty (30) days after receipt of an application for a master mining plan or an operating permit, the Director shall examine the application and notify the applicant in writing that the application is complete or, alternatively, notify the applicant in writing of any apparent omissions or errors, and request any additional required information. If additional information is required, the applicant shall provide it within sixty (60) days, except that additional time may be allowed by the Director if the applicant demonstrates in writing that such extension is reasonable and necessary to prepare the requested information. The Director shall have sixty (60) days to review the additional information to determine completeness and shall advise the applicant in writing of such determination. If an applicant decides that the additional information cannot be furnished, the applicant shall advise the Director of its position and reasons therefore in writing, and the application shall then be processed as if it were complete. The Board may deny an application if the applicant, after receiving timely notice, fails to correct errors or omissions or to supply additional information, if such failure results in the requirements of this Ordinance not being met or unreasonably compromises the ability of the Board to determine whether the application meets such requirements.

2. After the Director has determined that the application for a master mining plan or operating permit is complete, the applicant shall be notified of such in writing. The application shall be reviewed by appropriate County departments and shall be referred to the Planning Commission and/or Board, as applicable, as expeditiously as possible, and in no event, more than 90 days after the Director has determined the application complete. Applications for master mining plan approval, or for preliminary vested rights exemption related thereto, shall be presented in duly-noticed Public Hearings before the Planning Commission and the Board of County Commissioners. Applications for operating permits, or for preliminary vested rights exemption related thereto, shall be presented in duly-noticed public hearings before the Board of County Commissioners.

3. Public notice requirements shall be as set forth in Section 502.5 of the Land Development Code, as amended or renumbered, or its successor provisions. The applicant shall be responsible for the cost of all public notices required herein.

4. The Planning Commission shall hear the master mining plan, or preliminary vested rights exemption, application under the procedures set forth in Section 302.3 of the Land Development Code, as amended or renumbered.

5. The Board shall hear the master mining plan or operating permit, or preliminary vested rights exemption, application under the procedures set forth in section 301.1 of the Land Development Code, as amended or renumbered, and shall render a final decision within a reasonable time after the close of the public hearing.

6. An operating permit shall be issued to an applicant only if the applicant demonstrates, with competent and substantial evidence, that the operating permit, and all mining activities to be conducted pursuant thereto, will meet the requirements of this Ordinance. Except where the Board may, for good cause, allow an exception, no operating permit shall be issued to an applicant that (i) has had an operating permit revoked (unless the conditions causing such revocation have been corrected to the satisfaction of the County) or (ii) has forfeited any bond or other security posted to comply with this Ordinance (unless the conditions causing such forfeiture have been corrected to the satisfaction of the County).

7. No master mining plan application shall be recommended by the Planning Commission or approved by the Board unless it is found that such application is consistent with the Comprehensive Plan and this Ordinance.

B. ANNUAL PROGRESS REPORTS AND RECLAMATION APPROVAL (RELEASE)

1. **Annual Progress Report**. Within forty-five (45) days after the anniversary date of each operating permit approval, the applicant shall file with the Director ten (10) hard copies of an Annual Progress Report, plus an electronic version in a format acceptable to the Director, such as an Adobe Acrobat Pdf file, including the following information:

a. The schedule of mining activities and completion of the tract unit, including identification of lands mined during the preceding year and lands expected to be mined during the current year;

b. A discussion of reclamation that has occurred during the report year, and reclamation that is planned for the coming year;

c. Recent aerial photographs, at a scale acceptable to the Director, showing areas that have been mined and areas yet to be mined within the tract unit. Aerials shall also depict areas lying a minimum of 2,600 feet outside the tract unit boundaries;

d. A table showing, for the tract unit, acreage and types of wetlands disturbed or eliminated, arrayed against acreage and types of wetland mitigation provided;

e. Detailed engineering plans and specifications for all mining activities scheduled for the current year that were not previously provided in the approved master mining plan and operating permit or amendments to those documents;

f. Results of the most recent prospecting defining the ore body and leach zone, if any, in the portion of the tract unit to be mined during the current year;

g. A summary of results of the previous year's Environmental Monitoring Program, indicating the magnitude and frequency with which air and water quality parameters and mass loadings of same exceeded applicable ambient or effluent emissions standards, if such exceedances have occurred during the reporting year. Any significant trends of ambient air and water quality shall also be discussed, along with any measures being taken to correct or improve the performance of pollution control systems;

h. A review and update of the applicant's Proof of Financial Responsibility in accordance with the provisions of Appendix C of this Ordinance;

i. Copies of all inspection reports not previously furnished to the Director that are required by State or federal regulatory agencies;

j. A listing of the status of permits and licenses by permit, agency, issue and expiration dates;

k. Baseline radiation monitoring as required by Section IV.C.3.; and

l. A certification by the applicant that, to the best of the applicant's knowledge, all information in the Annual Progress Report is true and correct.

2. **Certification by Engineer.** A Florida-registered professional engineer, familiar with the applicant's phosphate mining activities, shall certify in the Annual Progress Report that the project is being developed and operated in accordance with the conditions set forth in the approved master mining plan and operating permit and in accordance with generally accepted engineering practices.

3. **Failure to File.** Failure to file the required Annual Progress Report shall be grounds for suspension of the operating permit, in accordance with the procedures set forth in Section VII.E, hereinafter. An extension of time for filing may be granted by the Director upon written request from the applicant and for good cause shown.

4. **Reclamation Approval.** An applicant shall request approval (release) of reclaimed areas by identifying in the Annual Progress Report the specific parcels for which approval is sought. Reclamation of disturbed lands shall be deemed complete after a showing that the specific parcels have been reclaimed in accordance with the applicant's approved master mining plan and operating permit, the requirements set forth in the Manatee County Phosphate Mining Reclamation

Manual (Appendix E), and the requirements imposed by the Florida Department of Environmental Protection. An area which otherwise qualifies for release from reclamation may be released provided the applicant complies with Section III.12.h., and submits a copy of the recorded notice to Manatee County. Specific parcels shall be approved or denied for release in writing by the Director within sixty (60) days of the Director's determination that the Annual Progress Report is complete, and that requirements for release by all other applicable agencies have been satisfied. Specific reasons shall be cited for denial of release of any parcels. Within sixty (60) days of the Director's approval of the reclaimed parcels, the reclamation bond(s) shall be released or applied to parcels to be disturbed in the following year, as appropriate.

5. **Fees.** Submission of the Annual Progress Report shall be accompanied by an appropriate fee, as set forth in a fee resolution adopted by the Board pursuant to Section I.I. hereof.

VI. MASTER MINING PLAN AND OPERATING PERMIT AMENDMENTS, SUBSEQUENT PERMIT PROCEDURES, TRANSFERS, WAIVERS AND APPEAL OF DECISIONS OF THE DIRECTOR

A. AMENDMENT

1. If an applicant proposes to change its mining activities from those approved in a master mining plan or operating permit, it shall promptly file with the Director a written request for an amendment thereto, signed by the applicant's authorized agent. Upon receipt of a request for amendment, the Director shall determine whether or not the requested amendment is a significant amendment as defined herein. If the Director determines that the amendment is a significant amendment, the applicant shall have thirty (30) days from the date of determination to submit any request for a related vested rights exemption, preliminary vested rights exemption or specific approval exemption.

2. Any request for approval of a significant amendment, and any related vested rights exemption, preliminary vested rights exemption or specific approval exemption, shall comply with the procedures outlined for the original application as to the specific item(s) to be amended.

3. Non-significant amendments may be approved in writing by the Director within a reasonable time of submittal.

4. The process for the approval of significant amendments, and any related vested rights exemption, preliminary vested rights exemption or specific approval exemption, shall be the same as for initial applications.

B. SUBSEQUENT PERMIT PROCEDURES

At least six (6) months prior to the expiration of an operating permit, the applicant shall apply for a new operating permit under the provisions of this Ordinance. The procedures for

processing an application for a new operating permit shall follow those prescribed for obtaining an original operating permit. The then-current operating permit shall continue in existence until a final decision on the new permit is rendered by the Board. Upon issuance, new permits shall be valid for a period of five (5) years; provided, however, that the Board may prescribe a shorter permit term if a previous operating permit was revoked or suspended. The application for a new operating permit shall be accompanied by an appropriate fee, as prescribed in the fee resolution adopted by the Board pursuant to Section I.I hereof.

C. TRANSFERS

1. Prior to transfer of rights in, or relating to, a master mining plan and operating permit, the applicant and the prospective transferee must apply in writing to the Director. The prospective transferee of a master mining plan and operating permit must demonstrate that the transferee can comply with the terms and conditions of said master mining plan and operating permit. The prospective transferee of a master mining plan and operating permit must furnish proof of financial responsibility as required under Appendix C of this Ordinance, including, without limitation, new surety bonds or written evidence of transfer of existing surety bonds, to the satisfaction of the County. Transfers must be presented to the Board for approval. Upon the Board's written approval of a transfer, the transferee becomes the applicant under this Ordinance and assumes the responsibility of compliance with all requirements of this Ordinance effective on the date of transfer and all terms and conditions of the approved master mining plan and operating permit.

2. An application for transfer shall be approved by the Board unless it determines that the prospective transferee has not fulfilled the above requirements. Failure to comply with the terms of this Section shall be grounds for suspension or revocation of the master mining plan and/or operating permit and will result in both the original applicant and the transferee being in violation of this Ordinance until full compliance is established.

D. WAIVERS

Except where this Ordinance expressly prohibits certain actions, the Board may, in its discretion, by written instrument, waive any of the requirements of this Ordinance if the applicant demonstrates that the strict enforcement of such requirement or requirements would impose an unreasonable restriction on the use of the property, and that such waiver would not adversely affect the health, safety and welfare of the public, and is consistent with the Comprehensive Plan. In order to obtain such a waiver, the applicant shall apply in writing to the Director, describing the requirement sought to be waived, the environmental impacts of the requested waiver, and any proposed innovative techniques or alternative procedures to be employed. The Board's decision on the application for waiver from requirements of this Ordinance shall be made after receiving recommendations from appropriate County departments, and after the Board holds a duly-noticed public hearing. Public hearings on waiver requests may be held simultaneously with public hearings for approval of a master mining plan, application for an operating permit or significant amendment. Notice of requests, hearings and waivers shall also be sent to the appropriate State regulatory agencies by the Director, as deemed necessary.

E. APPEAL OF DECISIONS OF THE DIRECTOR

Applicants may appeal a decision of the Director to the Board. An appeal shall be filed with the Director within thirty (30) days of the rendition of the Director's decision to be appealed. The Director will set a date for the Board to hear the appeal within a reasonable time. In cases where the Board upholds a decision of the Director, the applicant may appeal the case to the Circuit Court in accordance with applicable law.

VII. ENFORCEMENT OF THE ORDINANCE

A. LIABILITY FOR COSTS AND DAMAGES

Each applicant for an operating permit, by submitting its application to the County, agrees that it shall be subject to strict liability to the County, without the necessity of a showing of fault or negligence, for any costs or damages incurred by the County as a direct result of (i) any failure or breach of any dam, spillway or other outlet structure of a clay settling area, or (ii) any failure of the applicant to comply with the requirements of this Ordinance. Costs or damages for which an applicant shall be liable shall include, without limitation, costs and damaged incurred by the County (a) through the exercise of its police powers to contain, remove or clean up the results of any aforementioned failure or breach, and to restore the water quality affected thereby, and (b) to carry out reclamation of mined lands or otherwise correct incidents of non-compliance with this Ordinance, to the extent that the security provided to the County to pay the cost of same is not adequate or available to pay such costs or damages.

B. INSPECTIONS

A representative of the Board is authorized to enter and remain upon the premises of the applicant's mine for the purpose of inspection at any reasonable time, in accordance with applicable federal, State and local regulations, to ensure compliance with the terms and conditions of the operating permit, this Ordinance and the approved master mining plan. Inspectors shall give the applicant reasonable notice of the proposed inspection and shall allow the applicant an opportunity to provide appropriate personnel to accompany the inspector while on the applicant's premises. A copy of the inspection report will be provided to the applicant at its request.

C. VIOLATIONS

1. In addition to those violations otherwise enumerated in prior sections of this Ordinance, it shall be a violation of this Ordinance:

   a. To fail to satisfy any of the terms, criteria, standards or requirements of this Ordinance;

b. To fail to obtain any permit or approval required by this Ordinance, or to violate or fail to comply with the terms of any approved master mining plan or operating permit condition, or any other approval adopted or issued by the Board or Director pursuant to this Ordinance;

c. Knowingly to make any false statement, representation or certification in any application, report, record, plan, map or other document filed or required to be maintained under this Ordinance, or to falsify, tamper with, or knowingly render inaccurate any monitoring device required to be maintained by this Ordinance or by any permit or approval issued under this Ordinance;

d. To fail to timely notify the Director of any changes from the approved master mining plan or operating permit, or changes ordered or required by federal or State agencies;

e. To fail to provide the Director with copies of any notice of violation, noncompliance order, stop-work order or other written notification by any State, federal or local agency relating to any mining activities that are also subject to an existing or pending master mining plan or operating permit within forty-eight (48) hours of receipt of such notification by the applicant; and

f. To violate any applicable statutes or regulatory requirements of federal, State and local agencies relating to the regulation of mining, which are made a part of this Ordinance.

2. Violations of this Ordinance may be subject to prosecution pursuant to this Section.

D. ADMINISTRATIVE ENFORCEMENT PROCEDURES

1. ***Noncompliance Letter*** - The Director may issue a Noncompliance Letter (NCL), via certified mail, to an applicant in cases where the violations are considered to be minor in nature. The NCL shall put the applicant on notice that there are deficiencies in performance. Such deficiencies may include, but shall not necessarily be limited to late filings of required reports.

2. ***Warning Letter (WL)*** - the Director may issue a Warning Letter, via certified mail, in cases where the NCL has failed to result in the applicant's compliance with an outstanding issue. If an agreement between the Department and the applicant is reached at this step, a Consent Order shall be executed between the Department and the applicant.

3. ***Notice of Violation (NOV)*** - If the previous two actions fail to result in compliance, or if the violation is deemed to pose a serious threat to the public health, safety or welfare or to the environment, the Director may issue, via hand delivery or certified mail, a Notice of Violation to the applicant, and shall order corrective action. Written notification may be dispensed with in the event that circumstances establish that irreparable harm may occur if immediate action is not taken. However, the County shall make a reasonable attempt to notify the

applicant by telephone or oral communication when immediate cessation of mining activity or corrective action is essential for the public health, safety and welfare.

4. ***Appeal*** - The applicant may request the Board to review and withdraw a NOV not later than ten (10) days after receipt thereof. An appeal does not authorize the applicant to continue or recommence the noticed activities, nor does it stay the effect of the NOV.

5. ***Compliance*** - Compliance with a Notice of Violation shall be reported to the Board by written confirmation of the Director. Should the violation not be corrected, or if an appeal is unsuccessful or not filed within the prescribed time, the Director shall recommend to the Board suspension of the operating permit.

E. SUSPENSION OR REVOCATION OF APPROVALS AND PERMITS

1. Upon the recommendation of the Director, the Board, by resolution, may suspend a previously approved master mining plan or operating permit as provided herein, if it determines that the applicant is in material violation of the terms of this Ordinance, the master mining plan or the operating permit.

2. Upon the recommendation of the Director, the Board, by resolution, may revoke a previously approved master mining plan or operating permit as provided herein only if it determines that the material violation constitutes or results in a present, immediate danger to the public health, safety or welfare.

3. Prior to any suspension or revocation, the Board shall give not less than fifteen (15) days written notification thereof by certified mail to the applicant. Such notification shall contain a statement of the reasons why the approved master mining plan or operating permit may be suspended or revoked. and reference to the applicable Ordinance provisions or permit conditions.

4. The applicant may file a written explanation no later than ten (10) days after notice of the proposed suspension of revocation is served upon it, and in such submission may request a public hearing before the Board.

5. No approved master mining plan or operating permit shall be suspended or revoked before the applicant is afforded notice and an opportunity for hearing before the Board. unless the Board determines that danger to the public is imminent, in which case it may order temporary suspension of specifically described activities until such time as a hearing is held.

F. JUDICIAL ENFORCEMENT PROCEDURES

In addition to any other remedies for violations of this Ordinance, the Board shall have the following judicial remedies available to it. These judicial remedies shall be cumulative and independent.

1. Each violation of this Ordinance may be prosecuted in the same manner as a first degree misdemeanor pursuant to section 125.69 of Florida Statutes, as amended, or its successor provision.

2. Each violation of this Ordinance shall constitute a non-criminal violation of the Manatee County Code of Laws that may be prosecuted pursuant to Part II of Chapter 162, Florida Statutes, as amended, or its successor provisions, for which the County may impose penalty in the amounts authorized in Section 162.09, Florida Statutes, as amended, or its successor provisions. Subject to the foregoing limitation, the Code Enforcement Board or Special Master charged with determining such penalties is authorized to impose fines exceeding the amounts authorized pursuant to 162.09(2)(a), Florida Statutes, as amended, or its successor provision, pursuant to Section 162.09(2)(d), Florida Statutes, as amended, or its successor provision. Each day of continuing violation shall constitute a separate offense.

3. The County may institute one or more civil actions to seek (i) injunctive relief to enforce compliance with this Ordinance, (ii) recovery of any costs or damages owed to the County pursuant to Section VII.A., hereof, or (iii) any other available remedy, legal or equitable.

G. MANATEE COUNTY ENVIRONMENTAL RESTORATION FUND

Any monies recovered by the Board (other than awards of costs and attorneys' fees) in an action against any person who has caused damage to natural resources or the environment of the County in violation of this Ordinance shall be used to restore the damaged areas that were the subject of the suit to its former condition. There is hereby created the Manatee County Environmental Restoration Fund, which is to be supervised and used by the Board to restore damaged areas of the County. This fund shall consist of all monies recovered as described above. The monies shall be disbursed first to pay all amounts necessary to restore the respective damaged areas that were the subjects of County actions. Any monies remaining in the fund shall then be used by the Board, as it deems appropriate, to pay for any work needed to restore areas that required more money than the County was able to obtain by Court action or otherwise, or to restore areas in which the County brought suit but was unable to recover any monies from the alleged violators.

H. PROCEEDINGS AGAINST BONDS

If at any time the applicant has failed satisfactorily to undertake corrective action in response to a Notice of Violation or Order for Suspension, the Board may initiate proceedings to draw upon the appropriate surety bond. Such proceedings shall not be commenced until the surety has been given sixty (60) days to require commencement of corrective action. In cases where the operating permit has been revoked, and the Director's Order of Revocation has been upheld by the Board, the Board shall initiate proceedings against the bond after rendering a formal decision on the Order of Revocation.

VIII. SEVERABILITY

If any section, sentence, clause, phrase, or word of this Ordinance is, for any reason, held or declared to be unconstitutional, inoperative or void, such holding of invalidity shall not affect

the remaining portions of the Ordinance; and it shall be construed to have been the legislative intent to pass this Ordinance without such unconstitutional, invalid or inoperative part therein; and the remainder of this Ordinance, after the exclusion of such part or parts, shall be deemed and held to be valid as if such parts had not been included herein.

IX. EFFECTIVE DATE

This Ordinance shall take effect immediately upon receipt of the official acknowledgment from the office of the Secretary of State for the State of Florida that this Ordinance has been filed with that office.

PASSED AND DULY ADOPTED, with a quorum present and voting, by the Board of County Commissioners of Manatee County, Florida this 2nd day of November, 2004.

BOARD OF COUNTY COMMISSIONERS
OF MANATEE COUNTY, FLORIDA

Chairman

ATTEST: R.B. SHORE,
CLERK OF THE CIRCUIT COURT

SEAL

APPENDIX A. ENVIRONMENTAL MONITORING PROGRAM

1. Each applicant shall develop an Environmental Monitoring Program, which shall be used to establish baseline conditions prior to mining activities, and subsequently shall be used to continually evaluate compliance with applicable standards established by local, regional, State and federal agencies over the life of the mine until the approved reclamation has been deemed complete by the Director. The Environmental Monitoring Program shall consist of monitoring the following areas:

a. Surface water quality;

b. Surface water quantity;

c. Groundwater quality in surficial, intermediate and Floridan aquifers;

d. Groundwater quantity;

e. Rainfall, monitored on the applicant's property on a daily basis. At least one rain gauge shall be located on each tract unit so as to provide a reasonable record of the rainfall on each tract. Historic data shall be made available to the Director upon request, and shall be provided in the applicant's Annual Report.

f. Air quality; and

g. Environmental radiation, monitoring for which is to be performed in accordance with the following procedures or by alternative procedures approved by the Director.

(1) Measurement grid. The land to be monitored in the radiation survey shall be divided into 20 acre areas for measurement purposes. External gamma radiation measurements shall be taken at the density of one per acre of land. A soil sampling site representative of the area shall be selected for each 20 acre area. For areas less than 20 acres, at least one radium-226 sampling site shall be required.

(2) Gamma Radiation Exposure Rate. Gamma radiation exposure rate measurements shall be taken at each gamma radiation measurement point (one per acre) with an instrument using a scintillation detector positioned one meter above the ground surface. The instrument shall be calibrated for microroentgens per hour response to an extended natural radiation field.

(3) Soil Sampling for Radium-226 Measurement. A core sample, six feet in depth, shall be collected at each designated site (one per twenty acres) using a powered drill or hand auger. The core shall be extracted and transferred to an appropriate container for transfer to a laboratory for subsequent analysis.

(4) Analysis of Radium-226 in Soil. Soil samples shall be dried, thoroughly mixed, and placed in containers with radon-tight seals. The sample weight shall be determined and the sealed containers shall be held for thirty (30) days to allow radon-222 and its decay products to reach equilibrium with the radium-226 in the sample. The samples shall then be analyzed with an appropriately calibrated gamma-ray spectrometry system (scintillation or semiconductor detector). A combination of sample size and counting time shall be used to provide sufficient sensitivity to detect 0.5 picocuries per gram (pCi/g) with a 95% confidence interval of 0.5 pCi/g. Typical conditions would be a sample of at least 350 grams of soil and a counting time of 30 minutes. The radium-226 concentration shall be determined from the gamma spectrum by a technique appropriate to the type of system used.

2. Specific requirements of the abovementioned components of the Environmental Monitoring Program shall be developed by the applicant and approved by the Director on a site-specific basis, according to the features of the site and the projected environmental impacts of mining activities.

3. Each component of the Environmental Monitoring Program shall consist of the following descriptive elements:

a. Sampling location;

b. Parameters and standards;

c. Sampling schedule;

d. Sampling and analysis methods;

e. Quality assurance; and

f. Data reduction and reporting.

4. The Environmental Monitoring Program shall also contain an introduction, describing the site and proposed activities.

5. The applicant shall submit copies of all environmental monitoring reports and data required by outside agencies for its mining activities in the County and in contiguous areas outside the County having demonstrable hydrologic or air shed linkages to the County. The data reports shall be submitted concurrent with submission to the requiring agency.

6. Modification of monitoring requirements may be made during the Annual Progress Report process. Requests by the applicant for changes in the monitoring program shall be submitted to the Director no less than sixty (60) days prior to the twelve (12) month period to which they apply. Proposed changes must be approved or denied by the Director within sixty (60) days of receipt.

The purpose of such modification is to add or delete sampling to reflect new developments in mining and sampling technology that may improve both sampling and environmental quality.

7. Changes in the Environmental Monitoring Program may be proposed by the County not less than sixty (60) days prior to the twelve (12) month period to which they apply. The applicant shall comment on the proposed changes in writing within thirty (30) days after receipt of such changes. Final decision on proposed changes shall be made by the Director within thirty (30) days of receiving the applicant's comments. If written comments are not received on time, the proposed changes will automatically take effect at the beginning of the next monitoring year.

8. Changes in the Environmental Monitoring Program that may be required by State or federal agencies shall be implemented according to schedules prescribed by law or agency permit.

APPENDIX B. SPILL PREVENTION, CONTAINMENT AND RESPONSE PLAN

The applicant shall develop and implement an effective spill prevention, containment and response plan to be followed in the event of a dam failure for each clay settling area, sand-clay mix area, water recirculation system, and reagent storage area currently active or to become active in the following operational year. The plan shall address issues such as inspection schedules, notification procedures, maintenance of warning systems, auxiliary water supply sources, water treatment procedures, and clean-up responsibilities. A site security plan, including necessary access restrictions, shall also be provided. Each plan shall include maps showing areas subject to downstream flooding and a list of local and State officials to be notified in the event of an emergency. All appropriate employees, agents and contractors of the applicant shall be trained in implementation of the spill prevention, containment and response plan. The applicant shall maintain records documenting such training. The applicant shall also furnish the Director with copies of all inspection reports not previously furnished that are required by State or federal regulatory agencies.

APPENDIX C. FINANCIAL RESPONSIBILITY

1. **Financial Statements.** The applicant shall provide financial statements, audited and certified by a Certified Public Accountant (CPA) that demonstrate to the Board or the Director of the Financial Management Department the ability to respond to liability in an amount determined according to the following schedules:

   a. Three thousand dollars ($3,000.00) for each acre of land to be disturbed by mining activities during the term of the operating permit; and

   b. Four thousand dollars ($4,000.00) for each acre-foot of above grade storage in the largest of the proposed or existing clay settling areas.

A qualified opinion shall render any financial statement inadequate to fulfill the requirements of this section.

2. **Insurance.** The applicant shall provide certificates of insurance showing that the applicant has liability insurance policies issued by an insurance company authorized to do business in the State, covering:

   a. Personal injury, including death, in an amount not less than five million dollars ($5,000,000.00);

   b. Property damage in an amount not less than five million dollars ($5,000,000.00); and

   c. Environmental damage, for the removal, neutralizing, or cleaning up outside the area of phosphate mining activities of any substance released or allowed to escape that caused environmental impairment or that could cause environmental impairment if not removed, neutralized, or cleaned up, in an amount equal to one thousand dollars ($1,000) for each acre-foot of storage (design capacity above the lowest toe elevation) expected to be contained in the largest active clay settling area existing or proposed in the County but not less than twenty-five million dollars ($25,000,000.00). Such insurance coverages shall be applicable over the term of the operating permit.

3. **General Surety Bond.**

   a. **Conditions of the Bond.** The applicant shall file with the Board a surety bond or bonds payable to the County with a principal amount equal to five hundred dollars ($500.00) for each acre of land to be disturbed during the term of the operating permit. Such bond(s) shall be conditioned upon the following:

      (1) Faithful performance of all the requirements of this Ordinance and the operating permit and satisfaction of all claims and demands incurred for the same;

(2) Full indemnification of the County from all costs and damages that the County might suffer by failure to do so;

(3) Full reimbursement and repayment to the County for outlays and expenses and costs, including reasonable attorneys' fees, the County may incur in making good any noncompliance or nonperformance, which shall include any judicial or administrative proceeding undertaken by the County because of violation of the terms of this Ordinance or of a particular operating permit, or of the approved master mining plan; and

(4) The applicant protecting, defending, indemnifying and holding harmless the County from any suits, actions, claims, losses or damage of any character (and from all expenses incidental thereto) based upon or arising from any act, omission, performance or nonperformance of the applicant, its officers, agents, servants, employees or others including the applicant's direction and control, but not including the sole negligence of the County.

4. **Reclamation/Wetland Mitigation Bond**. The applicants shall annually post a reclamation surety bond equal to one hundred ten percent (110%) of the reclamation cost for each acre of land to be disturbed during the coming year and all land previously disturbed by mining activities for which reclamation compliance has not been acknowledged by the Director. The accuracy of the bond areas and the costs of reclamation set forth by the applicant shall be certified by a registered professional engineer(s) retained by the applicant and shall be subject to the review and the express written approval of the Director. The applicant will include costs in the bond(s) to ensure that the applicant has carried out the approved wetlands mitigation project in accordance with the approved master mining plan and operating permit, and that the project meets the success criteria specified in the Manatee County Phosphate Mining Reclamation Manual; to ensure that the applicant will correct any deleterious effects on wetlands or adjacent areas that may result from its non-compliance with wetlands mitigation requirements of the master mining plan and operating permit; and to enable the County to take steps to restore the site in the event that the applicant defaults on the wetlands mitigation conditions of the master mining plan and operating permit.

In addition to land reclamation costs, the reclamation bond will include costs for tear-down and removal of mine infrastructure, such as beneficiation plants, dredges, pipelines, reagent storage areas and other facilities that will not be needed after mining and reclamation are completed. An action on this bond may be brought by the Board or any other person entitled to the benefits of the bond at any time prior to Reclamation approval by the Director. The applicant and surety shall be jointly and severally liable under the provisions of the bond, and actions against either or both may proceed without prior action against the other and both may be joined in one action. The County shall be entitled to the award of reasonable attorneys' fees if it prevails in proceedings against the bond.

The reclamation bond posted pursuant to this Section may name the Florida Department of Environmental Protection (FDEP) as an additional obligee or beneficiary, and may be used by the applicant to comply with financial responsibility requirements imposed by FDEP for similar reclamation costs, so long as (1) the County retains the unilateral right to draw upon such bond

without the consent of FDEP, and (2) the County remains the physical holder of the bond. In such case, the County may, with the approval of the Board, also hold such bond as agent for, or on behalf of, FDEP.

5. **Sureties; cancellation.** The surety or reclamation bond(s) may be secured by a corporate surety licensed to do business in the State and approved by the Board, or by deposit in a State banking institution. The bond shall be conditioned so that the surety cannot cancel the bond on or before the date of cancellation. The applicant shall provide a substitute bond to the Director at least thirty (30) days before the effective date of cancellation. Said substitute bond must be approved by the Director prior to cancellation of the original bond. Failure of the applicant to make an approved substitution shall result in automatic suspension of the operating permit and immediate cessation of mining activities.

APPENDIX D. METHODOLOGY AND CRITERIA FOR PERFORMING CUMULATIVE IMPACTS ASSESSMENTS

A. INTRODUCTION

Proposed mining plans may result in individually minor impacts, which, when looked at in the context of other approved or proposed mining plans are collectively significant. The cumulative impacts of interest are essentially the same as the direct or indirect impacts of an individual proposed mining and reclamation plan, just covering a larger geographic area, i.e., the basin(s) for which the individual mining application is located. Manatee County ("County") staff are tasked with evaluating a wide range of permit applications for numerous uses beyond just phosphate mining. Filling in or updating information regarding the land use changes/impacts for each permitted activity gives the County the most holistic approach to permit application evaluation on matters including, but not limited to, maintaining appropriate wildlife corridor connections and drainage or flow changes.

To accomplish this objective, the applicant shall provide the County with a cumulative impacts assessment prepared in accordance with the requirements of this Appendix. The cumulative impacts assessment must be submitted concurrently with the master mining plan application, which addresses lands not yet approved for phosphate mining. Cumulative impact assessments are not required as a prerequisite for renewals of mine operating permits or proposed changes to existing, approved master mining plans, unless such changes are Substantial Deviations, as defined in Chapter 380.06, Florida Statutes, which require Development of Regional Impact review prior to approval.

B. IMPACTS TO BE CONSIDERED

The purpose of the cumulative impact assessment is to provide the County with sufficient information regarding the cumulative impacts of a given phosphate mining proposal in the context of other past, present and reasonably foreseeable phosphate mining operations in the same basin(s). The scope of the analysis shall include:

1. Surface water quality and quantity;
2. Groundwater quality and quantity;
3. Wetlands;
4. Rivers supplying public water systems;
5. Listed species and their habitats; and
6. Air quality.

It is not the intent of the Board to create cumulative impact assessment requirements that duplicate similar requirements imposed upon phosphate mine operators by federal or State regulatory programs and/or scientific research funded or performed by public agencies such as the U.S. Geological Survey (USGS), the U.S. Environmental Protection Agency (EPA), the U.S. Army Corps of Engineers (ACOE), the Florida Department of Environmental Protection (FDEP), the Florida Institute of Phosphate Research (FIPR), the Southwest Florida Water Management District

(SWFWMD), or the Central Florida Regional Planning Council (CFRPC). For this reason, provided no significant change to such study results is contemplated by the subject application, a cumulative or regional impact assessment that has been completed by an applicant or prepared by or under the direction of a regulatory agency shall be considered sufficient for purposes of the cumulative impact assessments required to be submitted with master mining plans. Applicable studies by regulatory entities include, but are not limited to:

1. Surface water flow analyses submitted for watersheds where minimum flows have been established by SWFWMD that demonstrate conformance with the requirements of Chapter 40D-80, Florida Administrative Code (FAC);

2. Level I or II Water Quality Based Effluent Limitations (WQBELs) and/or Total Mass Daily Loadings (TMDLs) studies submitted to FDEP that demonstrate conformance with the requirements of Chapter 62-650 and/pr Chapter 62-304, FAC;

3. Groundwater modeling results submitted for aquifers where minimum levels have been established by SWFWMD that demonstrate conformance with the requirements of Chapters 40D-2 and/or 40D-80, FAC;

4. Groundwater quality analyses and/or modeling that demonstrate conformance with the requirements of Chapter 62-522, FAC;

5. Listed species observations, habitat analyses, and population analyses submitted to the Florida Fish and Wildlife Conservation Commission (FFWCC) in support of applications to manage listed species; and

6. Air quality impact projections provided to FDEP pursuant to Chapter 62-204 and/or 62-210, FAC.

C. DEFINITION OF PAST, PRESENT AND REASONABLY FORESEEABLE FUTURE ACTIONS

Map 1 illustrates the current approved boundaries of the phosphate mines operating in Manatee County (Four Corners and Wingate Creek) as well as the respective basin boundaries within which these mines are located, whether or not those basins are located entirely within Manatee County. As part of the cumulative impact assessment, the applicant shall provide and/or update phosphate industry information for each applicable basin affected by the proposed application. Map 1 will also denote the USGS gauging stations downstream of the proposed mining area that will be used as points for impact comparison analyses.

Map 2 illustrates the current boundaries of lands owned in Manatee County by phosphate mine operators for which master mining plans have not yet been approved by the Board, as well as lands adjacent to the properties of phosphate mine operators that may foreseeably be acquired for mining expansion. Thus, Map 2 represents the boundary of the existing and reasonably foreseeable future mining areas in Manatee County.

Divestitures of reclaimed mined lands shall be identified by the applicant and shall continue to be included in the cumulative impact assessment until such time that a subsequent owner alters the land use from that existing at the time of completion of reclamation.

As the phosphate cumulative impact assessment will only address changes affiliated with phosphate mining proposals, only the lands shown on Maps 1 and 2 will be considered in the phosphate mining cumulative impacts assessment. Other land use changes such as conversion of lands by third parties to agriculture, residential, commercial, industrial, utility or transportation uses will not be considered.

D. IMPACT ASSESSMENT METHODOLOGIES

The specific methodologies to be implemented in the preparation of phosphate mining cumulative impacts assessments shall be as follows:

1. Surface Water Quantity and Quality Analyses

The areal extent of the surface water quantity cumulative assessment will be the lands shown on Maps 1 and 2 within the primary watershed basin(s), e.g., Little Manatee, Manatee, Myakka, Big Slough, Horse Creek, etc., within which the proposed mining operations will occur. The applicant shall provide flow duration hydrographs prepared and sealed by a registered professional engineer that demonstrate the projected changes in the mean annual, 25-year and 100-year flood flows; base flows; and annual flow distribution at the USGS flow measurement locations downstream of the proposed mining area. The data sources for mine areas, mining and reclamation schedules, and post-reclamation conditions shall be master mining plans on file with the Manatee County Environmental Management Department (EMD), and/or Conceptual Reclamation Plans on file with the FDEP Bureau of Mine Reclamation. The temporal periods to be addressed are: (a) prior to any mining disturbance in the basin; (b) the year when the maximum areal extent of phosphate mining disturbance is projected to occur in the basin (i.e., the maximum number of acres mined, but not yet reclaimed); and (c) following completion of all approved and proposed mining and reclamation within a given basin.

The areal extent of the surface water quality cumulative impact assessment will be the lands shown on Maps 1 and 2 within the primary basin(s) in which the proposed mining activities will occur. The applicant shall provide estimates of the mass and concentration of each pollutant listed in Chapter 62-302, FAC that is proposed to be released by the proposed mining operations and all other existing or proposed mining operations, together with the results of an analysis prepared and sealed by a registered professional engineer assessing whether such discharges will cause the surface water quality standards published in Chapter 62-302, FAC to be exceeded.

Data that must be considered in the assessment include discharge monitoring reports by all phosphate mining operations in the basin on file with the Bureau of Mine Reclamation; mine water balances on file with EMD and SWFWMD; and other publicly-available water quality data from the watershed. Evaluation points will be the USGS monitoring station(s) located downstream of the proposed mining activities, per Map 1.

2. Groundwater Quantity and Quality Analyses

The areal extent of the surficial aquifer system groundwater quantity analysis shall be the lands shown on Maps 1 and 2 within the primary basin(s) in which the proposed mining activities will occur. The areal extent of the intermediate and upper Floridan aquifer systems groundwater analyses shall be the lands shown on Maps 1 and 2 that are within the groundwater basins delineated by SWFWMD where the proposed mining activities will occur.

The surficial aquifer system assessment shall, to the extent not provided as part of the surface water quantity analysis required under Subsection 1 above, present the results of the modeling analyses prepared by a professional geologist or engineer of groundwater base flows to the primary river(s) or named tributary(ies) within which the proposed mining activities will occur, together with modeled base flow contributions from all other lands in the basin(s) as shown on Maps 1 and 2. The data sources for mine areas, mining and reclamation schedules, and post-reclamation conditions shall be master mining plans on file with the Bureau of Mine Reclamation. The temporal periods to be assessed are: (a) prior to any mining disturbance in the basin; (2) the year when the maximum areal basin disturbance is projected to occur (i.e., the maximum number of acres mined, but not yet reclaimed); and (c) following completion of all approved and proposed mining and reclamation within a given basin.

If withdrawals from the intermediate and Floridan aquifer systems are proposed on the land addressed by the proposed master mining plan, the cumulative impact assessment shall present the results of modeling all proposed withdrawals from each aquifer by existing and foreseeable future phosphate mining activities in the groundwater basin within which the proposed mining activities will occur. Modeling procedures must be performed in accordance with Chapter 40D-2, FAC, and the Basis of Review published by SWFWMD. Modeling results must be sealed by a professional geologist or engineer registered in the State of Florida. Data to be utilized include mine water balances and phosphate industry water use permit applications on file with SWFWMD for withdrawals within he basin area delineated in Maps 1 and 2.

The applicant shall provide estimated volumes and the projected quality of each of the following discharges to the surficial aquifer that will result from the proposed mining operation: (a) recharge ditch hydration; (b) sand backfill of mine voids; (c) deposition of clay slurries in impoundments; and (d) any other proposed groundwater discharges. If the composition of any proposed discharges fails to meet the groundwater quality standards published in Chapter 62-550, FAC, the applicant shall provide modeling analyses, prepared by a professional geologist or engineer registered in the State of Florida, delineating the areal and vertical extent of the proposed groundwater discharge effects.

3. Wetlands

Using master mining plans on file with the Manatee County EMD and Conceptual Reclamation Plans, Environmental and Wetland Resource Permits and Applications on file with the FDEP Bureau of Mine Reclamation, the applicant shall present spatial and tabular analyses of the wetland habitat present on the proposed mining area and on all existing, approved, and foreseeable future mining areas within the boundary of the primary basin(s) within which the

proposed mining activities are to occur. The analyses shall present results on five (5) year intervals, beginning at the time of initial mining disturbances of wetlands contained in the proposed application, and continuing for at least five years past the completion of all revegetation on the proposed mining area.

4. **Wetlands Supplying Public Water Systems**

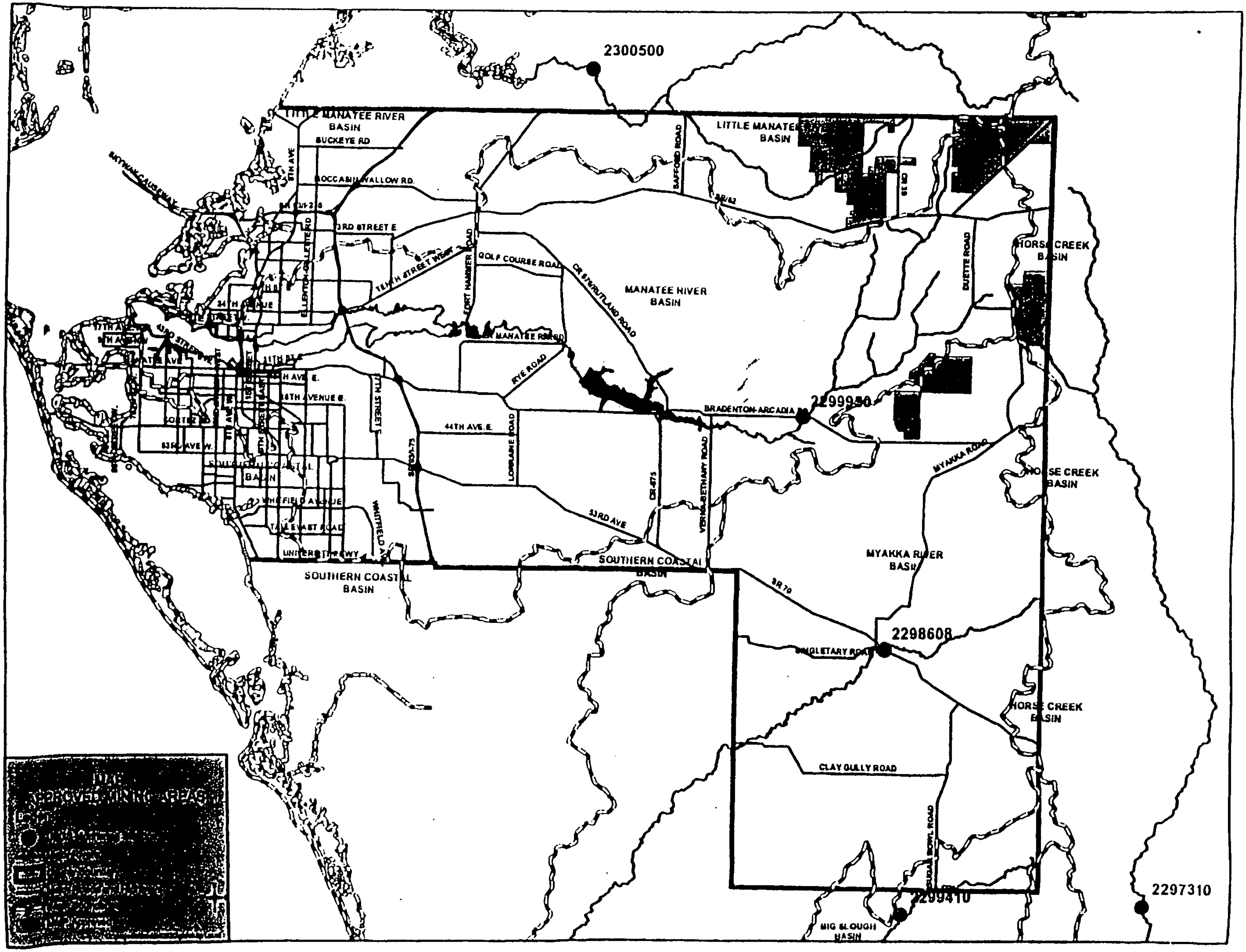
If all or a portion of a proposed mining area lies upstream of and/or within the same basin from which water is withdrawn for an existing public water system(s), the cumulative impact assessment shall project any reasonably foreseeable effects of the existing and proposed phosphate mining activities on this facility(ies). The assessment must include: (1) an analysis of projected changes in river flow duration(s) at the point of withdrawal and whether such changes will reasonably reduce the time periods or quantities of water that can be supplied by the facilities existing at the time of the assessment; and (2) an analysis of projected changes in water quality at the point of withdrawal and whether such changes will measurably increase the cost of treatment. The assessment will not address public water supply facilities (withdrawal points) that are not in existence at the time the application is submitted to the County.

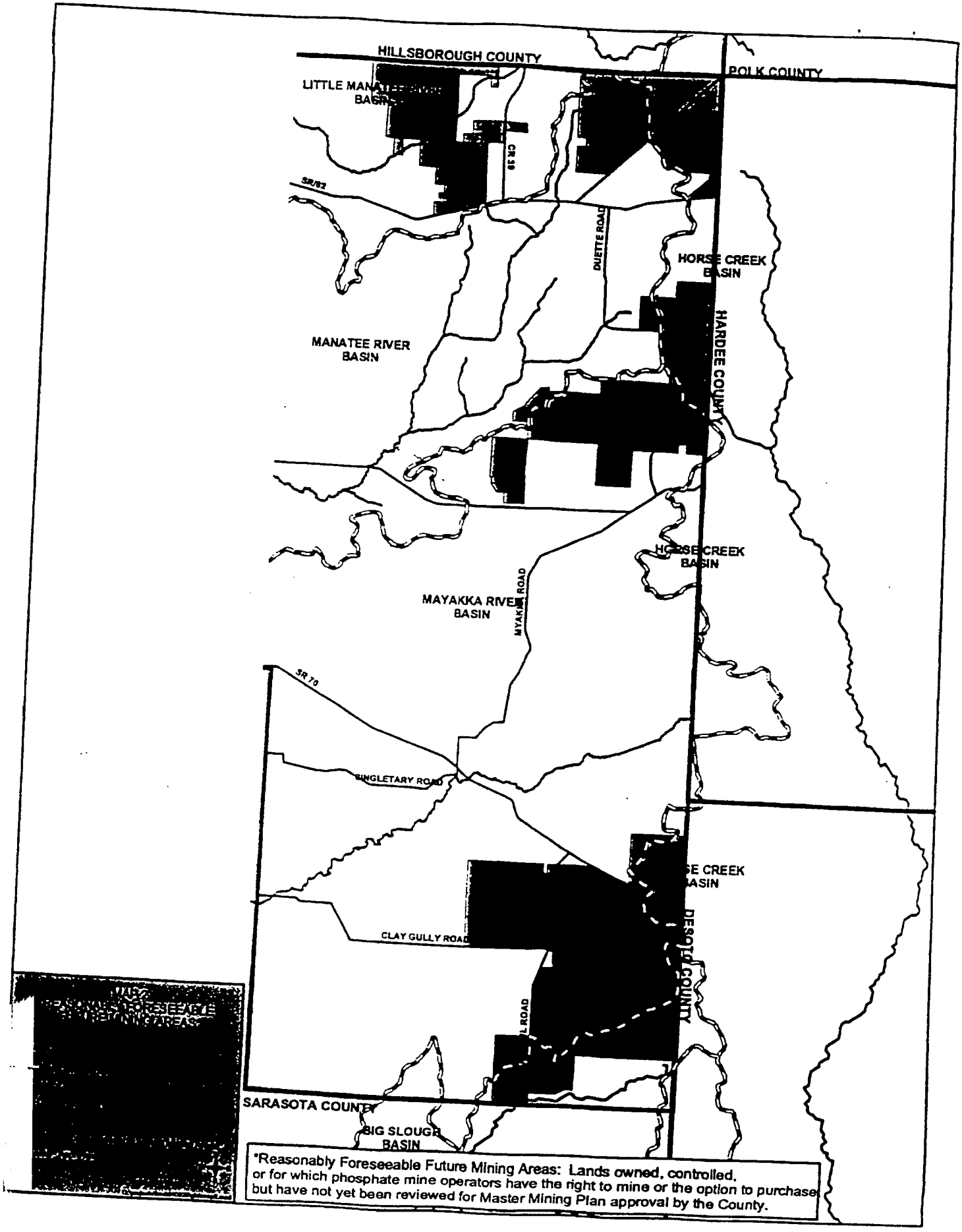
5. **Listed Species and Their Habitat**

Using Applications for Development approval, master mining plans, Conceptual Reclamation Plans, Applications for Wetland and Environmental Resource Permits, and applications to manage listed species on file with Manatee County EMD, FDEP, and FFWCC, as well as publicly-available records of observations, the applicant shall submit spacial and tabular analyses of the presence of the listed species observed on the proposed mining area on all of the lands shown on Maps 1 and 2, to the extent known. The assessment shall also present a summary of the most recent assessment of the status of each species observed on the proposed mining area and the plans by other mine operators to avoid or mitigate impacts to these species.

6. **Air Quality**

Using master mining plans on file with Manatee County EMD and permits issued by FDEP, the applicant shall present a summary of all point source emissions of air pollutants regulated by Chapters 62-204 and 62-210, FAC, as well as any proposed emission points associated with the proposed application. If any new emission points are proposed, a cumulative impact assessment shall be performed to address: (a) the existing conditions (i.e., prior to any mining disturbance on the proposed mining area); and (b) the year when the maximum areal phosphate mining disturbance is projected to occur in the basin (i.e., the maximum number of acres disturbed, but not yet reclaimed). The analysis format shall include tables and maps illustrating the magnitude and the location of the point source emissions.


2300500
LITTLE MANATEE RIVER BASIN
BUCKEYE RD
MOCCASIN WALLOW RD.
LITTLE MANATEE RIVER BASIN
SAFFORD ROAD
SR 62
CR 39
HORSE CREEK BASIN
DUETTE ROAD
MANATEE RIVER BASIN
GOLF COURSE ROAD
CR 675/RUTLAND ROAD
FORT HAMMER ROAD
3RD STREET E.
RYE ROAD
44TH AVE. E.
LORRAINE ROAD
BRADENTON-ARCADIA RD
2299950
MYAKKA ROAD
HORSE CREEK BASIN
CR 675
VERNA-BETHANY ROAD
53RD AVE
SOUTHERN COASTAL BASIN
WHITFIELD AVE
MYAKKA RIVER BASIN
SR 70
2298608
SINGLETARY ROAD
HORSE CREEK BASIN
CLAY GULLY ROAD
SUGAR BOWL ROAD
2299410
BIG SLOUGH BASIN
2297310
SKYWAY CAUSEWAY
SOUTHERN COASTAL BASIN
IDAE
APPROVED MINING AREAS


HILLSBOROUGH COUNTY
POLK COUNTY
LITTLE MANATEE RIVER BASIN
CR 39
SR/62
DUETTE ROAD
HORSE CREEK BASIN
HARDEE COUNTY
MANATEE RIVER BASIN
HORSE CREEK BASIN
MAYAKKA RIVER BASIN
MYAKKA ROAD
SR 70
SINGLETARY ROAD
HORSE CREEK BASIN
CLAY GULLY ROAD
DESOTO COUNTY
SARASOTA COUNTY
BIG SLOUGH BASIN
*Reasonably Foreseeable Future Mining Areas: Lands owned, controlled, or for which phosphate mine operators have the right to mine or the option to purchase but have not yet been reviewed for Master Mining Plan approval by the County.

APPENDIX E.

MANATEE COUNTY PHOSPHATE MINING RECLAMATION MANUAL

TABLE OF CONTENTS

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LIST OF TABLES

I. ADMINISTRATIVE

A. PURPOSE

The purpose of the development of the Phosphate Reclamation Manual is to protect the public health, safety, and general welfare; to insure the orderly development of mineral resources in a manner compatible with the overall development of the County; to conserve natural and environmental resources for present and future generations; to minimize the adverse impacts of mining; to insure that phosphate is carried out in such a manner so as not to preclude future uses of mined-out lands; and to insure that phosphate mining activities are consistent with the Manatee County Comprehensive Plan for Unincorporated Manatee County, as amended. Further, the purpose of this manual is to define the types of mined/disturbed lands to be reclaimed, as well as to establish performance standards for reclaiming land and in developing release criteria for post reclamation.

B. INTENT

It is the intent the Phosphate Reclamation Manual to provide for the following:

To insure that the usefulness, productivity and scenic values of all lands and mineral resources involved in mining within the county will receive the highest and best use, proper development, and the greatest practical degree of protection and reclamation;

Plans for mining operations shall include reasonable provisions for protection of the surrounding environment and to ensure for reclamation of the area of land affected by mining;

Protection of adjacent property from any adverse effects and impacts of the mining reclamation;

Protection of water quality and quantity; and

Protection of "threatened or endangered" species or species of special concern:

C. DEFINITIONS

Areal Coverage Shall mean the percent a growing substrate's view would be obscured within a predetermined area by a single vegetative stratum (canopy, shrub, groundcover/vines), as concluded by an overhead perspective (bird's eye view).
Ecosystem A dynamic, heterogeneous, complex of plant, animal, fungal and/or microorganism communities, or ecosystems, that interacts with the non-living environment. The scale of which is dependant on the focal species.
Forested Communities Shall typically mean a plant community with canopy coverage of 10 percent or greater.
Lake Shall mean a body of standing water occupying a natural basin or man-made depression in the earth's surface. Lakes are permanent, deep bodies of water that are waterward of their marginal wetlands and at some point are deeper than two meters.
Landscape A matrix of patches that are connected by corridors and collectively subject to change.
Landscape Change Natural or antropogenic alterations of the chemical, physical or biological composition within a landscape.
Landscape Corridor A linear conduit that allows biotic or abiotic migration from one patch to another.
Landscape Matrix A series of dissimilar landscape patches that collectively create a larger theme.

Landscape Patch Patches are nonlinear surface areas that differ in vegetation from their surroundings. They are units of land or habitat that are heterogeneous when compared to the whole. They include four different types: disturbance, remnant, environmental resource, and introduced: • Disturbance patches are either natural or artificial. They may result from various activities, including agriculture, forestry, urbanization, and weather. • Remnant patches result when humans alter the landscape in an area and then leave parcels of the old habitat behind. Remnant patches are generally more ecologically stable and persist longer than disturbance patches. • Environmental resource patches occur because of an environmental condition such as a topographic change. • Introduced patches are of anthropogenic origins such areas of nonnative plants or animals, or rearranged native species. Animals moving from one area to another can also bring in these nonnative elements.
Mine Shall mean an area of land on which mining operations have been conducted, are being conducted, or are planned to be conducted, as the term is commonly used in the trade.
Mined-out Land Shall mean land or area from which the matrix has been removed.
Native Species Shall mean flora and fauna, which naturally occur in the County.
Natural Plant Communities Shall mean naturally occurring stands of native plant associations exhibiting minimal signs of anthropogenic disturbance. Specific community types can be identified by characteristic dominant plant species composition. Community types found in Manatee County may include pine flatwoods, dry prairie, sand pine scrub, sandhill, xeric hammock, mesic hammock, hardwood swamps, cypress swamp, freshwater marsh, wet prairies, coastal marsh, mangrove swamp, coastal strand and marine grassbeds.
Preservation Preservation means the protection and maintenance of the integrity of a species and its habitat, or a natural plant community, from the direct and secondary impacts of development.
Rehabilitation Area (RA) A constructed landscape that is similar to pre-mine land classifications and/or natural plant communities in which the goal is to become Released Lands.

Sand tailings cap Sand tailings with or without additional materials such as organics, overburden and clay (with sufficient homogenization) to create a soil horizon below the top soil/vegetative inoculums that will contribute to desirable plant species and plant community's growth and reproduction by providing some or all of the following: macro/micronutrients, soil particle size, oxygen infusion, water holding capacity, proper pH, proper hydrology.
Tree Shall mean any self supporting woody plant which usually produces one (1) main trunk, has a more or less distinct and elevated head with many branches, normally grows to an overall height of at least fifteen (15) feet and has a diameter at breast height (DBH) greater than or equal to 4 inches in the environs of the County, and provides shade or is capable of providing shade at maturity.
Vegetative Inoculum Techniques that accelerate and enhance soil formation beneficial to plants and plant communities identified as desirable in this manual. Some techniques available may include: • 'Green manure' that consists of establishing a temporary, noninvasive, herbaceous cover crop on prepared land that is subsequently plowed into the substrate prior to the rehabilitation/restoration plant installation. • Containerized plants preinoculated with mycorrhizae. Mulches composed of noninvasive plant products (Benefits to woody vegetation may be outweighted by propensity of mulch to favor herbaceous weedy species).
Wildlife Any member of the animal kingdom, with the exception of man and domestic animals, including but not limited to any mammal, fish, bird, amphibian, reptile, mollusk, crustacean, arthropod, or other invertebrate.
Wildlife Corridors Linear conduits that facilitate the natural migratory patterns of wildlife and contribute to their overall habitat requirements (e.g., breeding, feeding).

D. ACRONYM LIST

BGS	BELOW GROUND SURFACE
BOPs	BEST OPERATING PRACTICES
DBH	DIAMETER AT BREAST HEIGHT
RA	REHABILITATION AREA
VAM	VESICULAR-ARBUSCULAR MYCORRHIZAE
FLEPPC	FLORIDA EXOTIC PEST PLANT COUNCIL

II. NATURAL PLANT COMMUNITIES

A. FLORA AND FAUNA

The intent of this subsection is to provide guidance for the reclamation and/or the rehabilitation of valuable functions and benefits associated with agricultural land, natural plant communities and their assemblage of wildlife species. The following principles shall be used for the reclamation/rehabilitation of uplands and wetlands in order to create a productive landscape following the mining of phosphate matrix. These guidelines are based on the best-available, accessible information to date. As new technology is developed the applicant is encouraged to employ the new technology with concurrence from Manatee County. The guidelines presented here are to assist the staff of Manatee County, as well as the applicant, regarding general landform reclamation. The applicant shall develop a Management Plan that details how impacts to agricultural lands, plant communities and wildlife resources will be minimized, reclaimed, restored, and/or rehabilitated (as determined by federal, state, and local regulations). As much of the technology and techniques presented here may be relatively new, reasonable scientific judgment, as agreed by Manatee County and the applicant, shall preside.

FLORA

a. For those areas that were natural plant communities in the pre-mining condition, the rehabilitated areas shall be designed to represent the local native diversity and plant community types (structure and function) that existed prior to mining.

b. A priority consideration for landscape design shall be to provide optimal wildlife habitat. In order to provide sufficient core area of natural plant communities for interior species, 75 acres should be

the minimal Rehabilitation Area (RA) size (Brown, Schaeffer and Brant 1990). The RA should not be isolated by intensive land uses in the final landscape. Low intensity land uses that may be acceptable include low-density housing, pine plantation, citrus, and other low-intensity agricultural activities (Hart 1995). Other land uses would be evaluated on a case-by-case basis.

c. Different plant communities shall be integrated to form a functional landscape. As a result, spatial arrangement and areal extent of each plant community must consider the needs of target wildlife species. However, the relative percent of each native plant community that is to be rehabilitated should approximate the pre-development condition after considering all applicable local, state and federal compensatory requirements. Exceptions may be considered for additional acreage of 'rare' communities indigenous to Manatee County and as defined by the Florida Natural Areas Inventory. Other options may include the use of, at the discretion of the applicant and concurrence with Manatee County, aerials, soil surveys, or other reasonable sources to determine historic land use.

d. Rehabilitation efforts shall be coordinated with existing conservation and habitat management plans of surrounding or adjacent properties.

e. Reclamation plans shall use readily available information in order to design RAs that will benefit rare/listed plant communities, flora, and fauna.

f. The various groups involved in reclamation/rehabilitation of previously mined lands should share information, to ensure that successes are repeated and failures are not.

g. Fire-dependent plant communities (donor site) that are to be a source of topsoil for a RA (recipient site), and would not result in a catastrophic fire, should be burned between one year and three years prior to translocation of the donor soils to the recipient site so that a diverse, viable seed bank is encouraged. Fire-dependent plant communities consist of Dry Prairie, Shrub and Brushland, Mixed Rangeland, Pine Flatwoods and Wet Prairie.

h. Direct transfer of native topsoil from areas slated for mining to reclamation sites should be implemented when available to provide a native seed bank and source of plant propagules, provided nuisance species do not exceed 10 percent. For the purposes of this determination, nuisance species shall include those species listed as invasive by the FLEPPC (most recent available list), in addition to bahiagrass (*Paspalum notatum*) and bermudagrass (*Cynodon dactylon*). In the event that nuisance species exceed 10 percent in the original plant community, long-term stockpiling (> 1 year) may be a means of eliminating the nuisance species seed bank (verification by germination tests may be necessary). The topsoil may also provide correct sand particle size, soil compaction, and the necessary soil chemistry suitable for germination parameters. It may also provide an inoculum of microflora and microfauna for those plant species that are vesicular-arbuscular mycorrhizae (VAM) symbiots. Generally, if immediate topsoil application is available for the RA, additional herbaceous planting may not be necessary. However, it has been documented that some upland plant species will not be represented during

germination of even direct transfer of topsoil and supplemental planting may be required (Jenkins 2003) which should tree spading/herbaceous plugs that will include the surrounding soil and microorganisms. Research indicates that soil disturbance, tillage, or vegetation free periods (fallow) may decrease VAM (Kabir 1999). However, research also indicates that VAM may rapidly increase during the restoration phase from natural colonization (Jenkins 2003). Alternate methods of site preparation may be evaluated by Manatee County as new techniques are developed and as the science of upland and wetland reclamation advances over time. Donor topsoil types should be used to reclaim the same vegetative assemblage. For example, if native scrub soil is obtained then it should be used to reclaim scrub habitat. All stockpiled soils shall be properly identified as to their originating donor plant community type (plans and field marked).

i. Upland communities shall generally receive complete coverage of the available topsoil inoculum, when available, after the initial mass grading of overburden and final grade of sand tailings. Studies indicate that it is preferable to evenly distribute the available topsoil throughout the target reclamation plant community in lieu of incomplete coverage with a thicker profile (Rokich 2000) (Zhang 2001) (Bissett 2004). Reclaimed sites with topsoil had aboveground habitat most similar to unmined sites (Mushinsky and McCoy 1996) in terms of vegetative cover.

j. It is preferred that muck soils to be used for reclamation of wetlands be kept moist during the stockpiling to ensure that the soil physical/chemical properties are retained, such as water absorption capabilities. There may be conditions where this situation is not the preferred alternative such as a prevalence of nuisance

specie(s) seed in the muck material or where seeds sources may be in close proximity to the stockpile.

k. For the reclamation of natural plant communities, the bio/chemical/physical characteristics shall approximate those characteristics found in the same type or better plant community as generally described in scientific literature such as Ecosystems of Florida, Myers and Ewel (1990) and by using the plant species tables included in this manual. Any modifications to plant species list provided by the selected reference method is subject to review and approval by Manatee County. Atypical representations of plant communities or portion thereof, as determined using reasonable scientific judgment, shall not be used in establishing a reference.

l. Introduction of snags, woody deadfall, brush piles, etc. should be placed randomly throughout the rehabilitated sites in both uplands and wetlands. This should occur during the first two years to "jump start" the creation of habitat structure for plant and animal communities (Hart 1995) (United States Fish and Wildlife Service 1978) (Brown 1991).

m. Guidelines for arrangement and vegetation density should be modeled after the descriptions of habitat types found in scientific literature. Vegetation selection beneficial to listed wildlife species may be favored above vegetation not beneficial to listed wildlife species.

n. Lack of habitat structure appears to be the greatest difference between the simplified, reclaimed, mined land and the complex, unmined, natural plant communities in regards to supported wildlife species (Mushinsky and McCoy 1996). The largest factor

contributing to this difference appears to be the lack of a developed shrub or mid-canopy layer. As a result, reclaimed/rehabilitated/restored forested communities/ecosystems shall consist of three foliage layers: ground cover, shrub, and canopy. Reclaimed/rehabilitated/restored shrubby communities shall consist of two foliage layers, ground cover vegetation and shrub. Reclaimed/rehabilitated/restored herbaceous communities must consist of a ground cover layer of vegetation. Each community may include a component of additional strata if it can be reasonably demonstrated to be beneficial to rare wildlife.

o. All existing listed plant species found on-site (refer to Chapter 5B-40.0055, Florida Administrative Code) should be re-established in the corresponding reclaimed/rehabilitated/restored plant community as a viable population by whatever means are most appropriate for the species, such as seeding, potted material, top soiling, or digging and replanting.

p. Except for cropland, pastureland, tree plantation areas, and slope stabilization, bahiagrass (*Paspalum notatum*) and Bermuda grass (*Cynodon dactylon*) shall not be planted or seeded. Rather, an annual grass or native grasses and forbs shall be seeded, especially when utilized for initial soil stabilization.

q. Florida is among the wettest regions of the United States, yet may suffer long periods of drought (Winsberg 1990). As a result, there are periods that supplemental irrigation may be necessary during initial plant establishment for both upland and wetland communities (Hawkins 1988). However, irrigation needs beyond the initial plant establishment (1-2 years) will preclude a designation of success and redesign may be necessary.

r. The use of operable water control features to regulate water depth may be advised (Miller 1988). Once water regimes are determined it is recommended that the features be made permanent.

s. Establishing the hydrologic regime of a RA is important even for upland plant communities. Evaluating plant communities with a narrow hydrologic regime for one growing season may be preferable prior to the planting of target plant species (Brown 1991). Unstable slopes may be sown with a temporary cover crop, annual grasses, or temporarily stabilized with other BOPs as agreed upon by the reviewing agencies and the applicant. However, benefits of fine-tuning the hydrology must be weighed against drawbacks of nuisance species invasion.

t. Where feasible, a RA should be located adjacent to desirable, existing habitat to facilitate the transfer of floral and faunal species (Miller 1988) (Brown 1991).

u. A portion of headwater wetlands and their hydrologic inputs should be preserved, where feasible, as they provide a 'bank' of diverse, water-dispersed seed to downstream areas.

v. Plant communities described as pyrogenic (ie. Dry Prairie, Shrub and Brushland, Mixed Rangeland, Pine Flatwoods, Wet Prairie) will require a prescribed burn management plan (PBMP). PBMPs should be tailored to minimize wetland edge breaks for prescribed burns for those wetland plant communities described as pyrogenic below (ie. Wet Prairie). Further, the overall design must address periodic burning in the context of future land uses, i.e. the design cannot be located in areas incompatible with prescribed burns such

as areas that can be reasonably expected to be developed as residential. This requirement does not preclude demonstrated alternative methods that produce the same floral/faunal characteristics as periodic prescribed burns (mechanical or chemical).

w. The introduction of rare and late successional species (such as shade dependent plant species) should be encouraged throughout the project monitoring period, especially listed floral/faunal species that would normally be 'taken' as part of any development process throughout central Florida.

x. The single-most important factor towards establishing sustainable landscapes is likely to be the preservation of existing, suitably located, high quality habitat combined with sufficient funds for perpetual management.

Developed Land Use/Cover

i. **Holding Ponds (Clay Settling Areas)**

Background (Rushton 1988): Typically one ton of clay waste is produced for each ton of phosphate rock. The volume of clay requires aboveground storage areas ranging from 200 to 1000 acres that are surrounded by earthen dams from 18 to 60 feet in height. Approximately 30 to 45 percent of the land proposed for mining in central Florida is designated for clay settling areas.

Landscape position: Variable

Hydrology: Variable

Soils: Variable

Design considerations:

Vegetation: (Tables 1, 2, and 3)

ii. **Cropland, Pastureland, Tree Plantations**

Background (FDOT 1999): This includes agricultural land that is managed for the production of row or field crops, improved, unimproved and woodland pastures, and timber production

Cropland, Pastureland, and Tree Plantations include:

1. Cropland harvested or land from which crops are harvested other than tree and bush crops and horticultural crops

2. Lands on which crops and pasture grasses are grown in rotation with one another

3. Pastureland used more or less permanently for livestock grazing

4. Forests generated by planting seedling stock or seeds. Typically, planted in uniform patterns for wood or forest products.

Field size and shape are highly variable depending upon topographic conditions as well as soil types, size of farms, kind of crops and pastures, capital investments, labor availability and other conditions.

Pastures may be drained and/or irrigated lands. Where the management objective is to establish or maintain stands of grasses, such as bahia, pangola or bermuda grass, either alone or in mixtures with white clover or other legumes, land is categorized as pastureland regardless of treatments. Much of the "permanent" pastures occur on land that usually is not tilled or used as cropland. Topographically rough land; stream floodplains, wooded areas and wetlands often may be used for pasture more or less permanently.

Florida is part of one of the most productive timber producing regions of the world due, in large part to the monoculture management practices prescribed by its private and industrial professional foresters as well as a climate that is conducive to the rapid growth of southern yellow pine of several species. Therefore, large parcels of land are devoted to tree plantations.

Landscape position: Variable

Hydrology: The hydrology will be dictated by the specific crop or vegetative cover requirements.

Soils: Soil characteristics will be dictated by the specific crop or vegetative cover requirements. The pH typically should be neutral to slightly acidic. Topography will be

generally flat. The land shall be sufficiently level and free of holes, gullies, and washouts to permit safe operation of conventional farm and agricultural equipment. The land shall have settled and firmed to the extent that it will support conventional farm and agricultural equipment and that livestock will be able to walk on the surface of the land.

Design considerations:

Vegetation: Dependent on land use.

Natural Communities/Cover

iii. **Dry Prairie**

Background (Florida Chapter of the Soil and Water Conservation Society 1989, Florida Department of Transportation 1999, Florida Natural Areas Inventory and Florida Department of Natural Resources 1990, Meyers 1991, and Soil Conservation Service 1981): Dry prairie is a treeless or nearly treeless prairie dominated by grasses, sedges, other forbs, and low shrubs. Dominant species are wiregrass, bluestems, and lovegrasses, but it is a highly diverse system that can support over 200 species. Sometimes it occurs as an almost treeless portion of a larger flatwoods system, or is an area that was previously logged or experienced catastrophic fire. It is similar in composition and structure to flatwoods, but with few to no trees. Dry prairies are a pyrogenic plant community. Typically, dry prairie is likely to burn every one to three years. This frequent regime may be the reason why pines do not become established in dry prairie. For purposes of this

manual, the distinction between wet prairie and dry prairie will be the application of Chapter 62-340, F.A.C. If the prairie does not meet wetland criteria then will be considered to be a 'dry prairie'.

Landscape position: Usually located intermediate in the landscape. Not as high in elevation as sandhill or scrub communities, but at elevations slightly above the shallow wetlands, albeit sometimes with differences as little as several inches. Dry prairies are found on moderately to poorly drained soils at median to lower median elevations in the reclaimed landscape.

Topography: Dry prairie topography is usually flat with a very gradual slope down to lower elevation habitat in the reclamation landscape.

Hydrology: This community may be periodically saturated/inundated, but the soils will not exhibit anaerobic characteristics indicative of reducing conditions.

Soils: Nearly level, the soils of dry prairie are quite variable. This community may vary from well drained to seasonally saturated/inundated for short durations. This landscape may have gradual topographic changes that affect relative soil moisture resulting in dramatically different 'dry prairie' plant associations. Dry prairies may or may not have a spodic horizon and hardpan. Most soils have low clay content, but can be up to 37 percent in parts of the soil horizon (Abrahamson and Hartnett 1990). Representative soils may include Broward, Cassia, Duette, EauGallie, Myakka, Ona,

Orlando, Orsino, Palmetto, Pomello, Tavares, Wabasso, Wauchula, Waveland, and Zolfo series that would have a pH range of 3.6 to 7.3. The seasonal high water table for these soil series range from less than 10 inches below ground surface (BGS) for up to 360 days to more than 72 inches BGS for up to 120 days. The low water table may drop to 72 inches BGS for up to 330 days.

Design considerations: Will generally require a 2-foot to 4-foot sand tailings cap (Brown 1991). Sand tailings is closer to the sandy characteristics of most flatwoods and dry prairie soils than overburden, which has very mixed characteristics, but often consists of the leached material in B horizons (USDA 1990). Wiregrass (*Aristida* spp.) a primary species in dry prairie, wet prairie, sandhill and pine flatwoods communities require a non-compacted, sandy soil for their establishment (Clewell 1996). The sand tailings must then be covered throughout the dry prairie RA with, in descending order of preference, 1) a layer of topsoil originating from a dry prairie or pine flatwood community or, 2) a vegetative inoculum (VI) layer of artificially created topsoil precursor (Segal 2001).

Vegetation: (Tables 1, 2, and 3)

iv. **Shrub and Brushland**

Background Florida Department of Transportation 1999: This category includes saw palmettos, gallberry, wax myrtle, and other shrubs and brush. Generally, saw palmetto is the most prevalent plant cover intermixed with a wide variety of other woody scrub plant species as well as various types of short herbs and grasses.

Landscape position: Same as dry prairie or pine flatwoods.

Topography: Same as dry prairie or pine flatwoods.

Hydrology: Same as dry prairie or pine flatwoods.

Soils: Similar to dry prairie or pine flatwoods.

Design considerations: Same as dry prairie or pine flatwoods.

Vegetation: (Tables 1, 2, and 3)

v. **Mixed Rangeland**

Background Florida Department of Transportation 1999: When more than one-third intermixture of either grassland or shrub-brushland range species occurs, the specific classification is changed to Mixed Rangeland. Where the intermixture is less than one-third, it is classified as the dominant type of rangeland, whether Grassland or Shrub and Brushland categories.

Landscape position: Same as dry prairie or pine flatwoods.

Topography: Same as dry prairie or pine flatwoods.

Hydrology: Same as dry prairie or pine flatwoods.

Soils: Similar to dry prairie or pine flatwoods.

Design considerations: Same as dry prairie or pine flatwoods.

Vegetation: (Tables 1, 2, and 3)

vi. **Pine Flatwoods**

Background (Florida Chapter of the Soil and Water Conservation Society 1989, Florida Department of Transportation 1999, Florida Natural Areas Inventory and Florida Department of Natural Resources 1990, Meyers 1991, and Soil Conservation Service 1981): Flatwoods may include several distinct communities including scrubby flatwoods and mesic flatwoods. Frequently within flatwoods there are small areas of other communities such as wet prairie, cypress swamps, or hydric flatwoods that form a mosaic in the landscape. The tree cover for flatwoods in central Florida may be sparse, and in many situations the system could be better described as a wet or dry prairie depending on the hydrology. Grasses, sedges, forbs, and low shrubs dominate these systems that can support over 200 species. Other flatwoods may consist of a palmetto (*Serenoa repens*) and/or gallberry (*Ilex glabra*) shrub layer that precludes the development of the aforementioned savannah-like system, although dominance of these species may be an anthropogenic artifact (Meyers 1991) (Soil

Conservation Service 1987) (Clewell 1996). The scrubby flatwoods has more shrubs, especially oak species, less groundcover, seldom develops anaerobic conditions in the upper 12 inches of soil, and is a more open system. Pine flatwoods is a pyrogenic plant community that typically burns on a 2 to 7 year burn cycle.

Landscape position: Usually located intermediate in the landscape, because of this plant community associates may be any of those listed in this reclamation manual.

Topography: Flatwoods topography is generally flat with gradual slopes and as little as several inches of topographical relief.

Hydrology: Drainage characteristics are usually dependent on the existence of a spodic horizon. If a spodic horizon exists this community may be periodically saturated/inundated during the rainy season allowing the development of anaerobic conditions. The spodic horizon is an effective aquaclude preventing the percolation of water. However, the spodic horizon may also inhibit upward movement of groundwater resulting in drained soils during the dry season.

Soils: The soils of pine flatwoods are quite variable. This plant community may vary from the well-drained scrubby flatwoods to the somewhat poorly drained hydric flatwoods. They may or may not have a spodic horizon and hardpan. Most soils have low clay content, but can be up to 37 percent in parts of the soil horizon (Abrahamson and Hartnett. 1990).

Representative soils may include Broward, Cassia, Duette, EauGallie, Hallandale, Myakka, Ona, Orlando, Orsino, Palmetto, Pinellas, Pomello, Tavares, Wabasso, Wauchula, Waveland, and Zolfo series that would have a pH range of 3.6 to 8.4. The seasonal high water table for these soil series ranges from less than 10 inches BGS for up to 360 days to 72 inches BGS for up to 120 days. The low water table may drop to72 inches BGS for up to 330 days.

Design considerations: Will generally require a one- to four-foot cap of sand tailings (Brown 1991) covered with, in descending order of preference, 1) a layer of topsoil originating from a pine flatwoods or dry prairie community or, 2) a vegetative inoculum (VI) layer of artificially created topsoil precursor. A spodic soil horizon may be required to generate appropriate hydrology for mesic flatwoods. Well-drained communities are usually considered to be scrubby flatwoods.

Vegetation: (Tables 1, 2, and 3)

vii. **Upland Hardwood Forests**

Background (Florida Chapter of the Soil and Water Conservation Society 1989, Florida Department of Transportation 1999, Florida Natural Areas Inventory and Florida Department of Natural Resources 1990, Meyers 1991, and Soil Conservation Service 1981): Upland hardwood forests in central Florida are usually hammocks or narrow bands between upland communities and lake, river, or floodplain forests. They often transition from xeric through mesic and hydric zones. Fire may burn into them from

upland communities, but generally a fire does not carry through the forest except under catastrophic conditions. Occasional flooding may influence the mesic hardwoods. Soil conditions and moisture also varies with its location in the landscape. Frequently perceived as a climax community, which has a diverse mast (acorns, nuts, berries) and structural habitat for wildlife.

Landscape position: Usually located intermediate in the landscape although with a significant gradient between the high elevation of sandhill and scrub communities and the lower elevations of the wetlands.

Topography: Upland Hardwood habitat can be located in flat to gently rolling or sloped topography.

Hydrology: The depth to the water table should be moderate to shallow with moderate to slow infiltration rates.

Soils: Generally, well-developed soil profiles with a distinct A horizon. Representative soils may include: Adamsville, Braden, Bradenton, Cassia, Duette, Orlando, Orsino, Pomello, Tavares, and Zolfo series that generally have a pH range of 4.5 to 7.3. The seasonal high water table for these soil series ranges from 10 inches BGS for 180 days to greater than 72 inches for up to 120 days. The low water table may drop to 72 inches BGS for up to 330 days.

Design considerations: This system will generally require a 2 to 3 foot cap of sand tailings (Brown 1991)/overburden mix with, in descending order of preference, 1) a layer of topsoil

originating from a temperate hardwood community or, 2) a vegetative inoculum (VI) layer of artificially created topsoil precursor.

Vegetation: (Tables 1, 2, and 3)

viii. **Hardwood – Conifer mixed**

Background Florida Department of Transportation 1999: This class is reserved for those forested areas in which neither upland conifers nor hardwoods achieve 66 percent crown canopy dominance.

Landscape position: Usually higher in the landscape than wetlands and pineflat woods.

Topography: Hardwood – Conifer mixed habitat can be located in flat to gently rolling or sloped topography.

Hydrology: The depth to the water table should be moderate to shallow with moderate to slow infiltration rates.

Soils: Representative soils may include: Adamsville, Braden, Bradenton, Cassia, Duette, Orlando, Orsino, Pomello, Tavares, and Zolfo series that generally have a pH range of 4.5 to 7.3. The seasonal high water table for these soil series ranges from 10 inches BGS for up to 180 days to 72 inches BGS for up to 120 days. The seasonal low water may drop to more than 72 inches for up to 330 days.

Design considerations: This system will generally require a 2 to 3 foot cap of sand tailings (Brown 1991)/overburden mix

with, in descending order of preference, 1) a layer of topsoil originating from a upland hardwood community, pine flatwoods, or a mix of the two or, 2) a vegetative inoculum (VI) layer of artificially created topsoil precursor.

Vegetation: (Tables 1, 2, and 3)

ix. **Streams and Waterways**

Background (Florida Chapter of the Soil and Water Conservation Society 1989, Florida Department of Transportation 1999, Florida Natural Areas Inventory and Florida Department of Natural Resources 1990, Meyers 1991, and Soil Conservation Service 1981): Streams and waterways include all linear wetlands and deepwater habitats confined by a channel and are typically contained within the reaches of a larger wetland or floodplain, although historic ditching or the topography of the adjacent uplands may create an incised system without peripheral wetlands. Most local waterways are categorized as blackwater streams that are high in tannins, particulates and dissolved organic matter. Water is normally confined within the stream banks during low flow conditions. During the rainy season the water overflows its banks and inundates the adjacent floodplain communities, which is an important occurrence for the life cycles of many dependent flora and fauna species. Flowing water is important in the dispersion of seeds and the preparation of flood-plain surfaces for the germination of seeds (Light 1993).

Landscape position: The extent of this community would be the thalwag/primary channel within other wetland systems..

Plant community associations may be any of those referenced in this manual.

Topography: This system will be the lowest area in the immediate vicinity.

Hydrology: Typically, year round flowing water within the central portion of the system. Ephemeral streams may have sporadic pools of standing water during no flow periods. Water pH typically ranges from 4.0 to 6.0.

Soils: Diverse in composition, a single streambed may include areas of thick muck (backwater or headwater area) or coarse sands (thalwag) depending on localized water velocity. Representative soils may include Canova/Anclote/Okeelanta, Delray/Pomona, and Felda/Wabasso series that would have a pH range of 3.6 to 8.4. The seasonal high water table for these soil series ranges from inundated for up to 270 days to less than 10 inches for 60 or more days. The low water table may drop to 40 inches BGS for up to 180 days.

Design considerations: Usually includes a deepwater channel with little or no vegetation. Emergents and floating vegetation usually occur at channel edges, slow moving areas, and backwater pools. Trees are usually present along bank slopes or at the top of bank and areas landward. Because of water velocity and substantial, but infrequent flooding events the understory and shrub composition of streams and waterways may be sparse. Both evergreen and deciduous species should be incorporated into the design.

Placement of snags and other structural diversity should be added in order to provide wildlife habitat.

The flow may be perennial or ephemeral in nature, but this classification should have standing 'pools' of water year round. Generally, these systems will be included as a component of forested wetlands (unless the original system has < 10 percent canopy coverage as measured from bank to bank), whether or not the tree's bases originate from the peripheral wetland or the upland. System diversity should require the installation of habitat structure such as snags, undercuts, pools, and bars. Basin grading should be broad and flat allowing water to cut its own channel during the initial rainfall events (Hawkins 1988) although other construction methodologies may be required by other regulatory agencies. Bank sloughing and erosional gullies should be anticipated during the establishment process and appropriate BOPs shall be implemented to capture turbidity and sediments prior to discharge to any existing waters or wetlands.

An underlayment of an aquaclude may be required unless it can be demonstrated via a pre-approved model that the hydrological conditions for this system can be met without an aquaclude. Hydrologic studies must be based on models fully calibrated and verified using existing phosphate mine reclamation projects of a similar design which meet all state water quality standards. Backwater areas should be incorporated into the overall design. Topsoiling should occur after the main and/or secondary channels are established.

Vegetation: (Tables 1, 2, and 3)

x. Lakes and Reservoirs

Background (Florida Chapter of the Soil and Water Conservation Society 1989, Florida Department of Transportation 1999, Florida Natural Areas Inventory and Florida Department of Natural Resources 1990, Meyers 1991, and Soil Conservation Service 1981): Lakes are permanent, deep bodies of water that are waterward of their marginal wetlands and at some point are deeper than two meters.

Landscape position: Usually located at the lowest level in a landscape position.

Hydrology: Permanent water, deepest part must be equal to or greater than 2 meters, but most natural lakes do not have anaerobic layers.

Soils: Substrate within open water bodies is referred to as sediments. As a result there are no representative soils.

Design considerations: Within each lake there shall be a minimum of 10 percent of the total water surface area designed as littoral shelves. The littoral shelves shall be less than 6 feet in depth relative to designed high water. The intent is to provide fisheries habitat and water quality treatment (Canfield 1992). Littoral shelf vegetation may include appropriate species that may be found in the freshwater marsh, wetland hardwood forest, or cypress swamp vegetation tables (Tables 1, 2, and 3). The

establishment of bird rookery 'islands' in this system is encouraged.

Vegetation: (Tables 1, 2, and 3)

xi. **Wetland Hardwood Forests**

Background (Florida Chapter of the Soil and Water Conservation Society 1989, Florida Department of Transportation 1999, Florida Natural Areas Inventory and Florida Department of Natural Resources 1990, Meyers 1991, and Soil Conservation Service 1981): A generalized category of forested wetland where no individual wetland hardwood species exceeds 66 percent dominance. For purposes of this manual bottomland hardwoods and floodplain forests will be treated as wetland hardwood forests. Topography is nearly level except for microtopography changes affiliated with hummocks and tussocks, and areas proximal to flowing water where topography may be quite diverse due to avulsion and accretion. A healthy wetland hardwood forest will have significant numbers of vines and epiphytes, which shall be considered when assessing the need to transplant mature plant material.

Landscape position: Low in the landscape, such as floodplains/bottomlands, lake margins, and depressions.

Topography: This habitat should be gently sloping to the watercourse or deeper wetlands.

Hydrology: Quite variable depending largely due to the nature of hydrological input whether rainfall, groundwater, surface waters, or a combination and/or the landscape position. Floodplain swamps may be saturated/inundated for as little as one month, while the lake fringe and other depressional swamps may be saturated/inundated for nine months or more.

Soils: Organic matter accumulation is low in areas of flowing water and high in stillwater swamps. PH value ranges from a low of 4.3 to a high of approximately 8.0. Representative soils may include Canova/Anclote/Okeelanta, Chobee, Delray, Delray/Pomona, Felda, Felda/Palmetto, Felda/Wabasso, Gator, Hallandale, Parkwood, St. John's, and St. John's/Myakka series that would have a pH range of 3.6 to 8.4. The seasonal high water table for these soil series ranges from inundation for 360 days to less than 15 inches BGS for up to 180 days. The low water table may drop to 40 inches BGS for up to 300 days.

Design considerations: This habitat should be at elevation to allow periodic flooding and saturation followed by drying.

If the design is for a stillwater swamp then sand tailings, overburden, or a combination of the two (Brown 1991) should be at least two foot in depth and are to be covered with, in descending order of preference, 1) a 3-inch layer of topsoil/muck originating from a wetland hardwood swamp community or, 2) a vegetative inoculum (VI) layer of artificially created topsoil precursor.

Vegetation: (Tables 1, 2, and 3)

xii. Cypress

Background (Florida Chapter of the Soil and Water Conservation Society 1989, Florida Department of Transportation 1999, Florida Natural Areas Inventory and Florida Department of Natural Resources 1990, Meyers 1991, and Soil Conservation Service 1981): This plant community may be composed of pond cypress (*Taxodium ascendens*) or bald cypress (*Taxodium distichum*) or a combination of the two species, although the latter is atypical. Common associates of the cypress plant community may include hardwood species. Several types of cypress-dominated systems include the cypress dome, cypress slough, cypress strand, and cypress lake fringe. Some cypress classifications may be fire-dependent in order to suppress hardwood invasion and maintain the coniferous system. Fire periods may be as high as every 5-7 years for the cypress swamp edges and every 100-150 for the center (U.S. Fish and Wildlife Service 1999). The characteristic dome shape of a cypress dome is believed to be a result of both the deep mucks present in the center of the wetland system that provide better nutrients and the exclusion of fire in the wetter center that often kills the trees at the periphery of the swamp.

Landscape position: Typically at lower elevations integrating between pine flatwoods and streams/waterways, lakes, or other wetland plant communities such as gum swamps.

Topography: These swamps should form local depressions near the lowest elevation of the landscape.

Hydrology: Inundation for four to nine months.

Soils: Typically sandy surfaces with a loamy subsoil along the outer periphery with increasing thickness of organics/muck towards the deeper interior of the swamp. Representative soils may include Chobee, and Floridana/Immokalee/Okeelanta series that would have a pH range of 3.6 to 7.8. The seasonal high water table for these soil series ranges from inundation for up to 270 days to 10 inches BGS for up to 270 days. The low water table may drop to 40 inches BGS for up to 180 days.

Design considerations: This system does require a period without inundation in order for seeds to germinate. It is preferred that pond cypress be utilized in stillwater swamps and bald cypress in communities designed with flowing water. The sand tailings (Brown 1991) should generally be at least two foot in depth and are to be covered with, in descending order of preference, 1) a 3-inch or greater layer of topsoil/muck originating from a cypress dominated wetland community or, 2) a vegetative inoculum (VI) layer of artificially created topsoil precursor of equal depth or greater.

Vegetation: (Tables 1, 2, and 3)

xiii. **Wetland Forested Mixed**

Background Florida Department of Transportation 1999: This category includes mixed wetlands forest communities in

which neither hardwoods nor conifers achieve a 66 percent dominance of the crown canopy composition.

Landscape position: Typically at an elevation between Wetland Hardwood and Cypress Swamps.

Topography: This habitat may be gently sloping or undulating to the watercourse or deeper wetlands.

Hydrology: Inundation from one to nine months.

Soils: Organic matter accumulation is low in areas of flowing water and high in stillwater swamps. PH value ranges from a low of 4.3 to a high of approximately 8.0 Representative soils may include Canova/Anclote/Okeelanta, Chobee, Delray, Delray/Pomona, Felda, Felda/Palmetto, Felda/Wabasso, Hallandale, St. John's, and St. John's/Myakka series that would have a pH range of 3.6 to 7.8. The seasonal high water table for these soil series ranges from inundation for up to 270 days to 15 inches BGS for more up to 180 days. The low water table may drop to 40 inches BGS for up to 300 days.

Design considerations: This habitat should be at elevation to allow periodic flooding and saturation followed by drying.

If the design is for a stillwater swamp then sand tailings (Brown 1991) should generally be at least two foot in depth and are to be covered with, in descending order of preference, 1) a 3-inch layer of topsoil/muck originating from a Wetland Hardwood Swamp, a Cypress Swamp, or a combination of the two or, 2) a vegetative inoculum (VI) layer of artificially created topsoil precursor.

Vegetation: (Tables 1, 2, and 3)

xiv. **Freshwater Marsh**

Background (Florida Chapter of the Soil and Water Conservation Society 1989, Florida Department of Transportation 1999, Florida Natural Areas Inventory and Florida Department of Natural Resources 1990, Meyers 1991, and Soil Conservation Service 1981): Whether due to frequent fire, prolonged inundation, or deep accumulations of muck/peat that preclude canopy development, freshwater marshes are devoid of canopy species except at their periphery or the occasional waterward swamp tupelo. Various plant assemblages can lead to further refinement to their classification, such as cattail marsh, flag marsh, sawgrass marsh, etc. Larger marshes frequently have at least a small open water component.

Landscape position: Typical and frequent interspersal among pine flatwoods and dry prairies, at other times a deeper portion of a forested wetland system. Also found as a 'littoral shelf' community of lake, pond, and stream edges. Occasionally found in association with xeric communities, especially in an area with an aquaclude (clay lens).

Topography: Freshwater marshes are relatively broad, slightly depressed areas where sheet runoff and seepage collect and detained.

Hydrology: Four to 12 months of inundation. Should be designed to intercept groundwater or accumulate surface

water. Hydrologic studies must be based on models fully calibrated and verified using existing phosphate mine reclamation projects of a similar design which meet all state water quality standards and which contain sediment loads that do not exceed pre-mining conditions.

Soils: Very poorly drained soils that are nearly level with thick organic surfaces and/or sand underlain by clay or sand. Representative soils may include Canova /Anclote /Okeelanta, Chobee, Delray, Delray /EauGallie, Delray /Pomona, Felda /Palmetto, Floridana, Gator, Manatee, and Tomoka series that would have a pH range of 3.6 to 7.3. The seasonal high water table for these soil series ranges from 360 days of inundation to less than 10 inches BGS for more than 60 days. The low water table may drop to greater than 40 inches BGS for up to 180 days.

Design considerations: May require an aquaclude for proper hydrological function. The sand tailings (Brown 1991) should generally be at least two foot in depth and are to be covered with, in descending order of preference, 1) a 6-inch layer of topsoil/muck originating from a marsh or wet prairie community or, 2) a vegetative inoculum (VI) layer of artificially created topsoil precursor of equal or greater depth.

Trees are optional as marginal plantings (<5% of total habitat) with the exception of swamp tupelo which is typically a deep water planting. Shrubs plantings are optional and shall consist of <5% of total habitat unless the system is to replaces a shrubby marsh or planted to enhance wildlife value such as the creation of a rookery 'island'.

Slopes should be low and protracted in order to support a wide transitional zone typified by the distinct zonation patterns characterizing many high quality marshes.

Vegetation: (Tables 1, 2, and 3)

xv. **Wet Prairie**

Background (Florida Chapter of the Soil and Water Conservation Society 1989, Florida Department of Transportation 1999, Florida Natural Areas Inventory and Florida Department of Natural Resources 1990, Meyers 1991, and Soil Conservation Service 1981): These ephemeral wetland systems are dominated with grasses, sedges, and rushes with a high number of interdispersed forbs. Unlike the freshwater marsh, the wet prairie is seldom dominated by a single species. The wet prairie is fire-dependent and burns with a frequency of every 2 – 4 years. Individual wet prairie areas may also be referred to as a slough system when they are connected and serve as flowways during periods of heavy or prolonged rainfall.

Landscape position: Wet prairies occur on relatively flat, poorly drained areas. Although it may be found in almost any upland community, its highest incident of occurrence is in pine flatwoods and in association with landward fringes of many other wetland communities.

Topography: Wet prairies are slightly depressed areas scattered throughout the landscape where sheet runoff and

seepage is collect and detained for relatively short periods of the growing season.

Hydrology: Shallow Inundation and/or saturation are brief, usually 1 to 4 months. Depths during seasonal high water seldom exceed 24 inches in the deepest locations.

Soils: Soils are nearly level and almost always consist of a sandy substrate. There may be slight buildup of organics in the deeper portions of a wet prairie. Representative soils may include Canova/Anclote/Okeelanta, Chobee, Delray, Delray/EauGallie, Delray/Pomona, Felda/Palmetto, Hallandale, Manatee, Pinellas, St. John's, St. John's/Myakka, and Wabasso series that would have a pH range of 3.6 to 8.4. The seasonal high water table for these soil series range from inundation for up to 270 days to less than 15 inches BGS for 60 or more days. The low water table may drop to 40 inches BGS for up to 300 days.

Design considerations: Due to narrow range of effective hydrologic regime, an evaluation of site hydrology may be necessary for one rainy season prior to planting of the desired plant community. During the interim an annual, non-invasive cover crop shall be established. However, benefits of fine-tuning the hydrology must be weighed against drawbacks of nuisance species invasion.

May require an aquaclude for proper hydrological function. The sand tailings (Brown 1991) generally should be at least two feet in depth and are to be covered with, in descending order of preference, 1) a 3-inch layer of topsoil/muck

originating from a pine flatwoods, dry prairie, freshwater marsh or wet prairie community or, 2) a vegetative inoculum (VI) layer of artificially created topsoil precursor of equal or greater depth.

Trees are optional as marginal plantings that shall be <5% of total habitat. Shrubs are also an optional planting that is to be at levels of <5% of total habitat unless the system is to replaces a shrubby marsh or planted to enhance wildlife value.

Vegetation: (Tables 1, 2, and 3)

FAUNA

a. Plant communities should be designed to restore the local native faunal diversity and relative abundance that existed prior to mining. To assist in this effort, the applicant shall provide Manatee County with a table cross referencing any Florida Land Use, Cover and Forms Classification System (FLUCFCS) (FDOT 1999) as required by the Bureau of Mine Reclamation of the Florida Department of Environmental Protection (DEP) with the equivalent plant community types listed in this Manual.

b. Areas adjacent to a mining unit or RA such as the 25-year floodplain that may serve wildlife habitat or those areas not scheduled for development within 5 years, should be pre-prepared (i.e., prescribed burns, nuisance species removal, planting of vegetation beneficial to the targeted wildlife, etc.) and subsequently managed as temporary wildlife refuges (through the course of mining reclamation including the monitoring period or permitted development, whichever comes first). The purpose is two fold:

direct faunal mortality is reduced and species that may not occur locally, but occur in the mining unit, are provided some opportunity for temporary relocation. Ideally, these may serve to re-colonize reclaimed habitat areas post mining (Mushinsky and McCoy 1996, 2001). The concept of increasing the carrying capacity for target species as well as native biological diversity through the implementation of various management strategies is based on fundamental concepts of ecological land management land practiced on preservation areas throughout the region (Brooker Creek Preserve Management Plan, 1992; Cypress Lakes Preserve Management Plan, 1993; Balm-Boyette Management Plan, 1996).

c. Direct wildlife mortality may be avoided by burning nondonor sites immediately prior to clearing. A directional burn towards any adjacent preservation area will also encourage some individuals towards the area that will not be mined. A burn removes cover and encourages some resident populations to locate in adjacent areas that still provide forage and cover. It also prepares the soils for use in rehabilitation efforts.

d. Rehabilitated wildlife habitat should have the same or significantly similar structure as the impacted wildlife habitat (areal extent of wildlife habitat, distance to adjacent wildlife habitats, vegetative strata, soils, hydrology, cover, and water availability.

e. Habitat RAs should be located adjacent to or have wildlife corridors to unmined areas of the same habitat. For example, an area being restored as a pine flatwoods should be located adjacent or connected to a pine flatwoods.

III. MANAGEMENT/MONITORING GUIDELINES, REPORTING, AND SUCCESS CRITERIA FOR REHABILITATION

A. MANAGEMENT/MONITORING GUIDELINES

Rehabilitated areas are to re-create the measurable, key elements of a natural plant community, commonly referred to as a 'functional analog'. Each natural plant community and each RA will be monitored, evaluated, and released based upon the mutually agreed methods discussed below. The rehabilitated areas may not necessarily exactly duplicate the original plant community in order to be considered successful. However, it is the intent of this manual that the applicant manages each plant community/RA throughout the monitoring period to enhance the target habitat characteristics (community composition, structure, and function) using the best available technology and techniques to the greatest practicable extent. Compliance assurance with these guidelines and intent shall not be the sole responsibility of Manatee County. The following elements must be included in the overall management plan in order for the plant community/RA area to be evaluated for success:

1. Category 1 and 2 nuisance exotic species (as defined by the Exotic Pest Plant Council, most recent available list) abundance shall not exceed 10 percent aggregate at any time in any RA, or within any individual plant community.

   The following species shall be considered 'limited tolerance' (<5 percent of total areal cover for any single species within any RA or

individual plant community) because of their propensity to invade plant communities undergoing reclamation, rehabilitation or restoration:

- Australian pine (*Casuarina* spp.)
- Bermudagrass (*Cynodon dactylon*)
- air potato (*Dioscorea bulbifera*)
- water-hyacinth (*Eichhornia crassipes*)
- hydrilla (*Hydrilla verticillata*)
- cogongrass (*Imperata* spp.)
- climbing fern (*Lygodium* spp.)
- skunkvine (*Paederia foetida*)
- bahiagrass (*Paspalum notatum*)
- downy rose myrtle (*Rhodomyrtus tomentosa*)
- Chinese tallowtree (*Sapium sebiferum*)
- Brazilian peppertree (*Schinus terebinthifolius*)
- tropical soda apple (*Solanum viarum*)
- punk tree *(Melaleuca quinquenervia)*

2. Sufficient consideration should be applied to the use, location, and 'control' of vine species to ensure their propensity to overrun a habitat is not detrimental to the establishment of other desirable species.

3. The RAs shall be actively managed until they maintain a self-sustaining vegetative community and structure appropriate for each reclaimed plant community, typically at least 7 years (Crisman 1997) (Brown 1991). "Appropriate," as used above, is defined by the success criteria parameters outlined in Section III.C. of this Manual.

4. Periodic management is encouraged in perpetuity, as even stable natural communities currently require management in order to maintain high quality systems.

5. For communities that are fire dependent (ie. Dry Prairie, Shrub and Brushland, Mixed Rangeland, Pine Flatwoods, and Wet Prairie), the self-sustaining period will occur after the initial prescribed burn for those systems with a burn cycle of less than 7 years. Burn patches may be recommended for systems with a burn cycle exceeding 7 years.

6. Where feasible, the reintroduction of locally extirpated, rare, and/or listed floral and faunal species should be encouraged once the plant community/RA has developed sufficiently to support the specie(s). An example would be to consider all suitable candidate sites to be restocked with gopher tortoises that are permitted to be displaced by development.

7. Feral hog population control within all RAs.

8. Cattle stocking should be limited to the densities (or lower) recommended by the Natural Resource Conservation Service for each of the natural plant communities. Cattle grazing should be discouraged for all natural plant communities or plant community classifications except for the predominately herbaceous upland systems.

9. Fences bounding or crossing rehabilitated natural plant communities or RAs should be of a design that will not to inhibit the normal movement of wildlife.

10. Monitor and correct for any point/nonpoint sources of pollution including erosion.

11. Monitor land management activities to determine their effectiveness. Changes should be made as appropriate (i.e., adaptive management). Significant changes may require concurrence with Manatee County.

12. Encourage additional scientific research on reclaimed/rehabilitated lands, especially uplands.

13. Appropriately designed staff gauges and water table monitoring wells shall be installed to provide representative hydrology for each RA.

14. Plant community (ies) shall be delineated (using a mutually agreed and pre-determined delineation method) and surveyed (traditional stake and survey, sub-meter capable GPS unit, or recent aerial photo interpretation) upon initial planting (by what ever means) of the RA. The delineation of each plant community will then be provided to the County as a table of coordinates and acreages. These tables will be compared against the permit conditions to determine if target acreages have been met for each plant community. Evaluation of plant community limits may be deferred

for one growing season to determine the approximate hydrology of the RA. Interim plantings may consist of annual grasses or other BOPs as agreed upon by the reviewing agency and the applicant.

15. Vegetative transects shall be located such that they are parallel to the ground slope of the reclaimed plant community and consist of 10m X 10m belt transects to document tree and shrub cover and 1m X 1m sub-quadrats shall be used to document ground cover species. Percent areal cover of vine species over shrubs and trees will be visually estimated and epiphytic relative density may be recorded as Abundant, Common, Occasional, and Rare. The applicant may provide definitions for these relative values provided they are consistent throughout the reporting period.

16. Fixed photo stations should be located so that they will not be obscured by vegetation during the first 5 years or more of the reclamation. The installation of elevated photostation structure(s) similar to hunting stands may be appropriate.

B. NOTIFICATION/INSPECTIONS/REPORTS

1. Reclamation Notification

A Reclamation Notification shall be submitted within 15 days of completion of planting of the plant communities/RA prior to the County site inspection. This notification shall include:

i. As-built surveys, or a statement from the project reclamation engineer that the site was constructed per the approved reclamation plan (including grading, soil stratification, soil

source, water control structures, etc). Soil cap tolerance will generally be +, - 6 inches.

ii. Approximate quantities, distribution and thickness of topsoil or artificial precursor for each plant community.

iii. A table of species installed in each plant community including tree-spaded material, which shall include approximate quantities and size of each species along with dates of installation.

iv. Initial water table/staff gauge readings. The locations of the gauges are to be marked on the plant community maps (see below).

v. Initial plant community boundary maps. Original plans may be used unless field adjustments were necessary. Limits of each community must be field marked and denoted on the plant community maps denoting the location of the markers.

2. Inspections

The success or failure of reclamation for individual plant communities is based on many of the interim steps in the process including the materials balance and filling stages, final grading and planting. To ensure that these phases of the reclamation process are within the guidelines of the reclamation manual and to increase the industry's chance of success of reclamation, a series of inspections by the County will be required. The industry is required to contact the County at key critical points of the reclamation process to schedule an inspection. These points include:

i. When sand tailings are deposited at the reclamation site.

ii. After the overburden and topsoil has been applied.

iii. At the completion of final grading.

iv. When final planting is completed.

The inspections are to provide general guidance by the County to ensure that the basic elements of the reclamation process as recommended by the manual are being adhered to. The success of reclamation process is ultimately the responsibility of the industry.

3. **Monitoring Reports**

Upon agency inspection and approval of the area(s), the monitoring program shall be initiated. Monitoring reports shall be submitted annually with one qualitative and one quantitative report per year until success criteria, as outlined in Section III.C of this Manual, are achieved. The quantitative report will be conducted at or near the end of the rainy season. Monitoring reports must be submitted to Manatee County as part of the annual report. Monitoring reports shall contain, at a minimum, the following information:

i. One permanently marked photo stations at each of the transect locations.

ii. Transect/quadrat information shall be provided in table form.

iii. Organic soil depth (or lack thereof) shall be recorded at each of the 1m quadrats for the wetland areas.

iv. Soil stabilization measures used or necessary.

v. Percent survival of each of the planted species based upon transect/quadrat extrapolation (first annual report only).

vi. Areal percent coverage of sampled species (for each stratum, as appropriate) and number of trees and/or shrubs per acre (extrapolated).

vii. Estimated areal percent coverage of nuisance species for each plant community and the RA (independent transect/quadrat data may be required). Document the efforts to control the nuisance species since the previous report and actions for the following year if levels exceed maximum thresholds.

viii. Indicator status (OBL, FACW, FAC, FACU, UPL) of all groundcover species sampled in 1m x 1m quadrats and all tree and/or shrub species sampled in the 10m belt transects.

ix. A list of other plant species observed within the community, but not sampled in the quadrats or belt transects, and an indication of their relative abundance (Abundant, Common, Occasional, Rare).

x. The number, species, size, planting locations/zones, and planting dates (beginning and ending) of plants replanted if

necessary to meet required coverage and survival requirements.

xi. Qualitative (visual) water quality observations (additional parameters may be required).

xii. Provide the readings of water level at each of the monitoring locations.

xiii. All observations of wildlife that inhabit, cross, or use habitats within and immediately adjacent to the monitored site is to be recorded. Recorded wildlife data will consist of both direct sightings and indirect observations (e.g., calls, scat, dens, tracks, burrows, feathers, scratchings, nests, or other evidence). The potential for the site being part of, or within, an important wildlife corridor should also be assessed. Wildlife use documentation may also include observations concurrent with other data collection events such as water table wells and vegetative transects.

xiv. Provide an overall ecological evaluation of each plant community and the RA.

xv. Describe any problems encountered and corrective actions implemented or needed (ex: nuisance vegetation removal, measures taken during flood/drought conditions, etc.).

C. SUCCESS CRITERIA

Release from the reclamation obligations imposed by the Manatee County Phosphate Ordinance will be in accordance with the in-effect rules at the time of permitting.

For rehabilitated areas to be considered successful and released from further monitoring or reclamation obligations, the following criteria will be met:

1. Plant communities must have the areal coverage/projected areal coverage, quantities, and diversity of trees, shrubs, and ground cover consistent with Table 4.

2. The landward extent and areas waterward of the proposed limits for rehabilitated/restored wetlands should meet criteria as described in Chapter 62-340, F.A.C. inclusive of vegetation and hydric soil characteristics.

3. At least one or more occurrences of flowering of 10 percent or more of the species from each stratum, exclusive of nuisance species, with viable seed set (may require standard germination test) for each of the natural plant communities. Seedlings, saplings, or other 'young' vegetation will be considered proof of flowering and/or viable seed.

4. Table 5 provides a list of native vertebrate species known or suspected to occur in Manatee County on existing or future phosphate-mined lands. These vertebrates form the pool from which representative species can be sampled to evaluate the

success of the rehabilitation area. Table 5 include both the permanent native resident fauna and migratory birds, which depend heavily on the Florida landscape for their survival and are an important component of the consumer food chain. Each RA will be evaluated separately unless connected by a wildlife corridor (exclusive of avifauna corridors). Success criteria will only use those vertabrate species appropriate for the plant communities contained within each of the RA i.e., fish criteria will not be used if the RA consists of only upland plant communities.

Wildlife Success Criteria for each RA

Fishes: For connected wetlands combined (forested and freshwater marshes), a minimum of four forage species (prey base primarily plants and invertebrates), and one top carnivore species (eats other fish).

Amphibians: For upland plant communities combined, a minimum of three anurian species, as documented by occurrence in the uplands or at their breeding ponds (isolated wet prairies or freshwater marshes). For connected wetlands combined (forested and freshwater wetlands), a minimum of three anurian species and one salamander species.

Birds: For upland plant communities combined, a minimum of 20 total species represented by at least three birds of prey species (*Falconiformes* or *Strigiformes*); one dove species (*Columbiformes*); one woodpecker species (*Piciformes*); and 10 song bird species (*Passeriformes*) represented by at least one member of the following families: Emberizidae,

Hirundinidae, Icteridae, Mimidae, Troglodytidae, Trannidae, and Vireonidae; and at least two members of the Parulidae.

For wetland plant communities combined, a total of 20 total species represented by at least two waterfowl species (*Anseriformes or Podicipediformes*), three shorebird species (*Charadriiformes*), four wading birds species (*Ciconiformes*), one member of cranes and their allies (*Guiformes*), two bird of prey species (*Falconiformes* or *Strigiformes*) and four song bird species (*Passeriformes*) from at least two families.

Reptiles: For upland plant communities combined, a minimum of two lizard species, one herbivorous turtle species, and three snake species with a total reptilian diversity of at least seven species. For wetland plant communities, a minimum of two turtle species (represented by at least one herbivore and one carnivore) and two snake species with a minimum reptilian diversity of at least five species.

Mammals: For upland plant communities combined, a minimum of eight total species represented by at least three small mammal species (*Insectivora* or *Rodentia*), one rabbit species (*Lagomorpha*), the opossum (*Marsupiala*), and two carnivore species (*Carnivora*). For wetland plant communities combined, a minimum of five total species represented by at least one small mammal species (*Rodentia*), one rabbit species (*Lagomorpha*), and two carnivore species (*Carnivora*).

Rehabilitated areas not meeting success criteria for a targeted plant community, due to lower than expected vegetative cover or diversity, may

be credited towards a similar system with less stringent coverage requirements upon presentation by the applicant and acceptance by Manatee County. However, it may not eliminate the need for additional rehabilitation in order to compensate for the loss of the original system.

Table 1

TREES		PLANT COMMUNITY															
Scientific Name	Common Name	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP		
Acer rubrum	Red maple							+	+		+	+	+	+			
Carpinus caroliniana	Musclewood							+	+		+	+	+				
Carya aquatica	Water hickory								+				+				
Carya glabra	Pignut hickory							+									
Celtis laevigata	Hackberry							+			+	+					
Diospyros virginiana	Persimmon			+	+	+	+	+			+	+		+	+		
Fraxinus caroliniana	Pop ash								+		+	+	+				
Gleditsia aquatica	Water locust										+	+	+				
Gordonia lasianthus	Loblolly bay										+	+					
Ilex cassine	Dahoon holly								+		+	+	+		+		
Juniperus virginiana	Southern red cedar						+	+			+	+					
Liquidambar styraciflua	Sweetgum					+	+	+			+	+					
Magnolia grandiflora	Grand magnolia						+	+									
Magnolia virginiana	Sweetbay								+		+	+	+				
Morus rubra	Red mulberry							+			+	+					
Nyssa sylvatica	Swamp tupelo										+	+	+	+	+		
Persea palustris	Swamp bay					+	+	+			+	+	+				
Persea borbonia	Red bay					+	+	+			+	+	+				
Pinus clausa	Sand pine					+											
Pinus elliottii	Slash pine		+	+	+	+	+	+			+	+					
Pinus palustris	Longleaf pine		+	+	+	+	+	+									

+ *Species occurrence within the denoted plant community*

Table 1

TREES		PLANT COMMUNITY															
Scientific Name	**Common Name**	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP		
Prunus caroliniana	Cherry laurel						+	+			+						
Prunus serotina	Black cherry							+			+						
Quercus geminata	Sand live oak						+	+									
Quercus laurifolia	Laurel oak		+	+	+	+	+	+	+		+	+	+	+	+		
Quercus nigra	Water oak			+	+	+	+	+	+		+	+	+	+	+		
Quercus virginiana	Live oak		+			+		+	+		+	+	+		+		
Sabal palmetto	Sabal palm		+			+		+	+		+	+	+		+		
Salix caroliniana	Carolina willow								+		+	+	+	+			
Taxodium ascendens	Pond cypress										+	+	+	+	+		
Taxodium distichum	Bald cypress								+		+	+	+				
Ulmus americana	American elm								+		+	+		+			
Zanthoxylum clava-herculis	Hercules-club						+	+									

\+ *Species occurrence within the denoted plant community*

Table 2

SHRUBS		PLANT COMMUNITY															
Scientific Name	**Common Name**	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP		
Amorpha fruticosa	False indigo bush							+									
Ardisia escallonoides	Marlberry							+									
Asimina obovata	Large flowered pawpaw		+	+	+	+											
Asimina reticulata	Netted pawpaw		+	+	+	+	+										
Asimina triloba	Common pawpaw							+			+	+					
Baccharis glomeruliflora	Silverling					+		+	+		+	+	+	+	+		
Baccharis halimifolia	Groundsel tree		+	+	+	+		+	+		+	+	+	+	+		
Bejaria racemosa	Tarflower		+	+	+	+											
Callicarpa americana	Beauty berry		+	+	+	+	+	+			+	+					
Cephalanthus occidentalis	Buttonbush										+	+	+	+			
Chionanthus virginicus	White fringetree							+	+								
Cornus foemina	Swamp dogwood								+		+	+	+				
Crataegus michauxii	Mixhaux's hawthorn						+										
Erythrina herbacea	Coral bean					+	+	+									
Garberia heterophylla	Garberia					+											
Gaylussacia dumosa	Dwarf huckleberry		+	+	+	+											
Gaylussacia frondosa	Dangleberry		+	+	+	+											
Hypericum cistifolium	Roundpod St. John's					+								+			

+ *Species occurrence within the denoted plant community*

Table 2

SHRUBS		PLANT COMMUNITY															
Scientific Name	Common Name	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP		
	wort																
Hypericum hypericoides	St. Andrew's cross		+	+	+	+	+	+			+	+			+		
Hypericum mutilum	Myrtleleaf St. John's wort					+					+	+		+	+		
Hypericum reductum	Atlantic St. John's wort		+	+	+												
Hypericum tetrapetalum	St. Andrew's cross		+	+	+	+								+	+		
Ilex glabra	Gallberry		+	+	+	+					+	+					
Itea virginica	Virginia willow										+	+					
Ludwigia octovalvis	Mexican seedbox								+	+	+	+	+	+	+		
Lyonia ferruginea	Rusty lyonia		+	+	+	+											
Lyonia fruticosa	Staggerbush		+	+	+	+											
Lyonia lucida	Shiny lyonia		+	+	+	+					+	+	+	+			
Myrica cerifera	Wax myrtle		+	+	+	+	+	+	+		+	+	+	+	+		
Rhapidophyllum hystrix	Needle palm										+	+					
Rhododendron viscosum	Swamp azalea										+	+					
Photinia pyrifolia	Red chokeberry					+			+		+	+	+	+			
Prunus umbellata	Flatwoods plum			+	+	+	+	+									
Psychotria nervosa	Wild coffee						+	+			+	+					
Psychotria sulzneri	Shortleaf wild coffee						+	+									
Quercus chapmanii	Chapman oak		+	+	+	+	+	+									
Quercus minima	Dwarf live oak		+	+	+	+	+	+									

+ *Species occurrence within the denoted plant community*

Table 2

SHRUBS		PLANT COMMUNITY															
Scientific Name	**Common Name**	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP		
Quercus myrtifolia	Myrtle oak		+	+	+	+	+	+									
Quercus pumila	Runner oak		+	+	+	+											
Rhus copallinum	Winged sumac		+	+	+	+	+	+									
Sabal minor	Dwarf palmetto										+	+					
Sambucus nigra	Elderberry								+		+	+	+	+			
Serenoa repens	Saw palmetto		+	+	+	+	+	+	+		+	+			+		
Sideroxylon reclinatum	Florida bully					+			+		+	+					
Sideroxylon tenax	Tough bumeilia			+	+		+										
Styrax americanus	Storax						+	+			+	+					
Vaccinium arboreum	Sparkleberry					+			+		+	+					
Vaccinium corymbosum	Highbush blueberry							+									
Vaccinium darrowii	Little blueberry		+	+	+	+	+										
Vaccinium myrsinites	Shiny blueberry		+	+	+	+	+										
Vaccinium stamineum	Deerberry					+	+	+									
Viburnum nudum	Possumhaw										+	+		+			
Viburnum obovatum	Walter's viburnum							+	+		+	+	+	+			
Ximenia americana	Hog plum					+	+	+									

+ *Species occurrence within the denoted plant community*

Table 3

GROUNDCOVER & VINES		PLANT COMMUNITY															
Scientific Name	**Common Name**	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP		
Acalypha gracilens	Slender threeseed mercury		+			+	+	+									
Acrostichum danaeifolium	Giant leather fern								+		+	+	+				
Agalinis fasciculata	Beach false foxglove		+	+	+	+	+										
Agalinis linifolia	Flaxleaf false foxglove		+	+	+	+	+		+		+		+				
Agalinis obtusifolia	Tenlobe false foxglove		+	+	+	+	+										
Ageratina jucunda	Hammock snakeroot						+	+									
Aletris lutea	Yellow colic-root		+	+	+	+									+		
Ambrosia artemisiifolia	Common ragweed		+	+	+	+	+	+							+		
Ampelopsis arborea	Peppervine		+	+	+	+	+	+	+		+	+	+	+	+		
Amphicarpum muhlenbergianum	Blue maidencane		+	+	+	+							+	+	+		
Andropogon brachystachyus	Short-spike bluestem		+	+	+	+									+		
Andropogon floridanus	Florida bluestem		+	+	+												
Andropogon glomeratus	Big chalky bluestem		+	+	+	+					+			+	+		
Andropogon gyrans	Elliott's bluestem		+	+	+	+	+										
Andropogon ternarius	Splitbeard bluestem		+	+	+	+	+										

+ *Species occurrence within the denoted plant community*

Table 3

GROUNDCOVER & VINES		PLANT COMMUNITY															
Scientific Name	**Common Name**	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP		
Andropogon virginicus	Bluestem		+	+	+	+	+	+			+			+	+		
Apios americana	Groundnut						+	+			+						
Aristida gyrans	Corkscrew threeawn		+	+	+	+	+										
Aristida patula	Tall threeawn		+	+	+	+								+	+		
Aristida purpurascens	Slim-spike threeawn		+	+	+	+	+								+		
Aristida spiciformis	Bottlebrush threeawn		+	+	+	+	+								+		
Aristida stricta	Wiregrass		+	+	+	+	+								+		
Arnoglossum floridanum	Florida Indian plantain		+	+	+	+	+										
Asclepias connivens	Largeflower milkweed		+	+	+	+	+	+						+	+		
Asclepias curtissii	Curtiss' milkweed		+	+	+	+	+	+									
Asclepias feayi	Florida milkweed		+	+	+	+											
Asclepias humistrata	Sandhill milkweed				+	+	+										
Asclepias incarnata	Swamp milkweed													+	+		
Asclepias lanceolata	Fewflower milkweed					+					+	+		+	+		
Asclepias longifolia	Longleaf milkweed					+					+	+		+	+		
Asclepias pedicellata	Savannah milkweed		+	+	+	+									+		
Asclepias pedicellata	Savannah milkweed		+	+	+	+	+										
Asclepias perennis	Swamp milkweed										+	+	+	+	+		
Asclepias tuberosa	Butterflyweed			+	+	+	+	+									
Axonopus fissifolius	Common carpetgrass		+	+	+	+	+	+			+	+		+	+		

+ *Species occurrence within the denoted plant community*

Table 3

GROUNDCOVER & VINES		PLANT COMMUNITY															
Scientific Name	Common Name	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP		
Axonopus furcatus	Big carpetgrass		+	+	+	+	+	+			+	+		+	+		
Azolla caroliniana	Carolina mosquito fern								+	+	+		+	+			
Bacopa caroliniana	Lemon bacopa					+							+	+	+		
Bacopa monnieri	Water hyssop					+								+	+		
Balduina angustifolia	Yellow buttons		+	+	+	+	+	+									
Baptisia lecontei	Pineland wild indigo					+	+	+									
Berchemia scandens	Rattan vine						+	+			+	+					
Berlandiera subacaulis	Greeneyes					+	+	+									
Bidens alba	Beggarticks		+	+	+	+	+	+							+		
Bidens bipinnata	Spanish needles										+	+			+		
Bidens laevis	Smooth beggarticks								+				+	+	+		
Bidens mitis	Smallfruit beggarticks								+		+	+	+	+			
Blechnum serrulatum	Swamp fern								+	+	+	+	+	+	+		
Boehmeria cylindrica	Bog hemp										+	+	+	+			
Buchnera americana	Bluehearts		+	+	+	+	+	+								+	
Bulbostylis ciliatifolia	Capillary hairsedge		+	+	+	+	+	+								+	
Bulbostylis warei	Ware's hairsedge		+	+	+	+	+	+									
Callisia ornata	Roseling		+	+	+	+	+										

\+ Species occurrence within the denoted plant community

Table 3

GROUNDCOVER & VINES		PLANT COMMUNITY															
Scientific Name	**Common Name**	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP		
Calopogon barbatus	Bearded grasspink					+					+	+	+	+	+		
Calopogon multiflorus	Manyflowered grasspink					+					+	+	+	+	+		
Campsis radicans	Trumpet creeper					+	+	+			+	+	+				
Campyloneurum phyllitidis	Long strap fern										+	+	+				
Canna flaccida	Yellow canna										+	+	+	+	+		
Carex longii	Long's sedge		+	+	+	+	+	+			+	+		+	+		
Carphephorus corymbosus	Florida paintbrush		+	+	+	+	+								+		
Carphephorus odoratissimus	Pineland purple		+	+	+	+	+										
Carphephorus paniculatus	Deertongue		+	+	+	+	+								+		
Cenchrus echinatus	Southern sandspur		+	+	+	+	+										
Cenchrus gracillimus	Slender sandspur		+	+	+	+	+										
Centella asiatica	Coinwort		+	+	+	+	+	+			+	+	+	+	+		
Centrosema virginianum	Butterfly pea		+	+	+	+	+	+									
Ceratophyllum demersum	Coontail									+							
Chamaecrista	partridge pea		+	+	+	+	+	+								+	

+ *Species occurrence within the denoted plant community*

Table 3

GROUNDCOVER & VINES		PLANT COMMUNITY															
Scientific Name	Common Name	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP		
fasciculata																	
Chamaecrista nictitans	Sensitive partridge pea		+	+	+	+	+	+									
Chapmania floridana	Chapman's pea		+	+	+	+	+	+								+	
Chaptalia tomentosa	Pineland daisy		+	+	+	+	+								+		
Chasmanthium laxum	Longleaf chasmanthium							+	+		+	+					
Chasmanthium nitidum	Shiny woodoats							+	+		+	+					
Chrysopsis scabrella	Golden aster		+	+	+	+	+										
Chrysopsis subulata	Scrubland goldenaster		+	+	+	+	+										
Cladium jamaicense	Sawgrass										+	+	+	+	+		
Clematis reticulata	Netleaf leather flower							+			+	+					
Clitoria mariana	Butterfly pea		+	+	+	+	+	+									
Cnidoscolus stimulosus	Tread softly		+	+	+	+	+										
Coelorachis cylindrica	Carolina jointtailgrass		+	+	+	+	+	+							+		
Coelorachis rugosa	Wrinkled jointtailgrass		+	+	+	+	+	+							+		
Commelina diffusa	Dayflower					+	+	+	+		+	+	+		+		
Commelina erecta	Dayflower		+	+	+	+	+										
Conoclinium coelestinum	Blue mistflower								+					+	+		
Coreopsis floridana	Florida tickseed		+	+	+	+									+		
Coreopsis leavenworthii	Leavenworth's tickseed		+	+	+	+									+		
Crotolaria rotundifolia	Rabbit bells		+	+	+	+	+										

+ *Species occurrence within the denoted plant community*

Table 3

GROUNDCOVER & VINES		PLANT COMMUNITY															
Scientific Name	**Common Name**	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP		
Croton glandulosus	Croton		+	+	+	+	+										
Croton michauxii	Rushfoil		+	+	+	+	+										
Cyperus articulatus	Jointed flatsedge								+	+	+	+	+	+	+		
Cyperus compressus	Poorland flatsedge		+	+	+	+									+		
Cyperus croceus	Baldwin's flatsedge		+	+	+	+	+	+					+		+		
Cyperus cuspidatus	Coastalplain flatsedge		+	+	+	+									+		
Cyperus distinctus	Swamp flatsedge					+	+				+	+	+	+	+		
Cyperus flavescens	Yellow flatsedge					+	+				+	+	+	+	+		
Cyperus haspan	Haspan flatsedge										+	+	+	+	+		
Cyperus ligularis	Swamp flatsedge					+	+				+	+	+	+	+		
Cyperus odoratus	Fragrant flatsedge					+	+				+	+	+	+	+		
Cyperus polystachyos	Manyspike flatsedge		+	+	+	+	+	+			+				+		
Cyperus retrorsus	Pinebarren flatsedge		+	+	+	+	+	+							+		
Cyperus stenolepis	Strawcolored flatsedge					+	+				+	+	+	+	+		
Cyperus strigosus	Strawcolored flatsedge					+	+				+	+	+	+	+		
Cyperus surinamensis	Tropical flatsedge					+	+				+	+	+	+	+		
Cyperus tetragonus	Fourangle flatsedge					+	+				+	+	+	+	+		
Dalea pinnata	Summer farewell		+	+	+	+	+										
Desmodium floridanum	Florida ticktrefoil		+	+	+	+	+	+									
Desmodum paniculatum	Panicledleaf ticktrefoil		+	+	+	+	+	+			+						

+ Species occurrence within the denoted plant community

Table 3

GROUNDCOVER & VINES		PLANT COMMUNITY														
Scientific Name	**Common Name**	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP	
Dichanthelium aciculare	Needlwleaf witchgrass		+	+	+	+	+	+								
Dichanthelium commutatum	Variable witchgrass					+					+	+	+	+	+	
Dichanthelium dichotomum	Cypress witchgrass										+	+	+	+	+	
Dichanthelium ensifolium	Witchgrass		+	+	+	+	+	+								
Dichanthelium erectifolium	Erectleaf witchgrass					+					+	+	+	+	+	
Dichanthelium laxiflorum	Openflower witchgrass		+	+	+	+	+	+								
Dichanthelium leucothrix	Witchgrass		+	+	+	+	+									
Dichanthelium portoricense	Witchgrass		+	+	+	+	+	+								
Dichanthelium strigosum	Witchgrass		+			+		+								
Dichondra carolinensis	Carolina ponysfoot					+					+	+			+	
Digitaria ciliaris	Southern crabgrass		+	+	+	+	+									
Digitaria filiformis	Slender crabgrass		+	+	+	+	+									
Digitaria serotina	Blanket crabgrass		+	+	+	+	+	+							+	
Diodia virginiana	Virginian buttonweed					+					+	+	+		+	
Drosera brevifolia	Dwarf sundew					+									+	
Drosera capillaries	Pink sundew					+									+	

+ *Species occurrence within the denoted plant community*

Table 3

GROUNDCOVER & VINES		PLANT COMMUNITY															
Scientific Name	**Common Name**	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP		
Drymaria cordata	Drymaria					+	+	+			+	+	+		+		
Dryopteris ludoviciana	Southern wood fern								+		+	+	+	+			
Dryopteris ludoviciana	Southern wood fern						+	+	+		+	+	+				
Dyschoriste oblongifolia	Twinflower		+	+	+	+	+										
Echinochloa walteri	Coast cockspur								+					+	+		
Eclipta prostrata	False daisy					+					+	+	+	+	+		
Eleocharis baldwinii	Baldwin's spikerush		+	+	+	+					+	+	+	+	+		
Eleocharis spp.	Spikerushes					+					+	+	+	+	+		
Elephantopus elatus	Elephant's foot		+		+	+	+	+			+						
Encyclia tampensis	Florida butterfly orchid						+	+	+		+	+	+				
Eragrostis elliottii	Eliott's lovegrass		+	+	+	+	+	+									
Eragrostis hypnoides	Teal lovegrass					+			+	+	+	+	+	+			
Eragrostis spectabilis	Purple lovegrass		+	+	+	+	+	+									
Eragrostis virginica	Meadow lovegrass		+	+	+	+	+	+									
Erechtites hieracifolius	Fireweed		+	+	+	+	+	+						+	+		
Erigeron quercifolius	oakleaf fleabane		+	+	+	+	+	+									
Erigeron vernus	Fleabane					+					+	+			+		
Eriocaulon spp.	Pipeworts					+					+	+	+	+	+		
Eryngium aromaticum	Fragrant eryngium		+	+	+	+	+										
Eryngium yuccifolium	Button snakeroot		+	+	+	+									+		

+ *Species occurrence within the denoted plant community*

Table 3

GROUNDCOVER & VINES		PLANT COMMUNITY															
Scientific Name	**Common Name**	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP		
Eulophia alta	Wild coco		+	+	+	+					+	+	+	+	+		
Eupatorium capillifolium	Dogfennel		+	+	+	+	+	+			+	+	+	+	+		
Eupatorium compositifolium	Yankeeweed					+					+	+		+	+		
Eupatorium leptophyllum	Falsefennel		+	+	+	+									+		
Eupatorium mohrii	Mohr's hoarhound		+	+	+	+									+		
Eupatorium rotundifolium	False hoarhound		+	+	+	+	+										
Euphorbia polyphylla	Lesser Florida spruge		+	+	+	+	+										
Eustachys glauca	Saltmarsh fingergrass		+	+	+	+	+	+									
Eustachys petraea	Pinewoods fingergrass		+	+	+	+	+	+							+		
Euthamia caroliniana	Flat-topped goldenrod		+	+	+	+									+		
Fimbristylis autumnalis	Slender fimbry		+	+	+	+					+			+	+		
Fimbristylis puberula	Hairy fimbry		+	+	+	+								+	+		
Froelichia floridana	Cottonweed		+	+	+	+	+										
Fuirena scirpoidea	Southern umbrellasedge								+					+	+		
Galactia elliottii	Elliott's milkpea		+	+	+	+	+	+							+		
Galactia regularis	Florida milkpea		+	+	+	+	+	+									
Galactia volubilis	Downy milkpea		+	+	+	+	+	+									
Galium hispidulum	Coastal bedstraw						+	+									
Galium pilosum	Hairy bedstraw							+									

\+ *Species occurrence within the denoted plant community*

Table 3

GROUNDCOVER & VINES		PLANT COMMUNITY														
Scientific Name	Common Name	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP	
Gamochaeta falcata	Narrowleaf purple everlasting		+	+	+	+	+									+
Gamochaeta pensylvanica	Pennsylvania everlasting		+	+	+	+	+	+							+	
Gelsemium sempervirens	Carolina jessamine				+	+	+	+			+					
Glandularia tampensis	Tampa mock vervain					+	+	+			+					
Gratiola hispida	Rough hedge-hyssop		+	+	+	+	+	+								
Gratiola pilosa	Shaggy hedge-hyssop		+	+	+	+	+									
Gratiola ramosa	Branching hedge-hyssop		+	+	+	+	+									
Gymnopogon chapmanianus	Chapman's skeletongrass		+	+	+	+										
Habenaria spp.	Rein orchids					+	+		+	+	+	+	+	+	+	
Helenium amarum	Bitterweed		+	+	+	+	+	+								
Helenium pinnatifidum	Southeastern sneezeweed					+									+	
Helianthemum corymbosum	Clustered rockrose		+	+	+	+	+	+								
Helianthemum nashii	Florida scrub frostweed		+	+	+	+	+	+								

+ *Species occurrence within the denoted plant community*

Table 3

GROUNDCOVER & VINES		PLANT COMMUNITY															
Scientific Name	Common Name	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP		
Helianthus agrestis	Southeastern sunflower													+	+		
Helianthus angustifolius	Narrow+leaved sunflower		+	+	+	+								+	+		
Helianthus radula	Rayless sunflower		+	+	+	+	+								+		
Heterotheca subaxillaris	Camphorweed		+	+	+	+	+										
Hibiscus grandiflorus	Swamp hibiscus										+	+	+	+			
Hieracium megacephalon	Hawks beard		+	+	+	+	+										
Houstonia uniflora	Clustered diamond-flower		+	+	+	+	+	+							+		
Hydrocotyle umbellata	Water pennywort		+			+		+		+	+	+	+	+	+		
Hydrolea corymbosa	Skyflower					+								+	+		
Hypericum brachyphyllum	Coastalplain St. John's wort					+								+	+		
Hypericum gentianoides	Pineweeds					+							+	+	+		
Hypericum myrtifolium	Myrtleleaf St. John's wort		+	+	+	+	+				+	+			+		
Hypolepis repens	Creeping bramble fern								+		+	+	+				
Hypoxis curtissii	Common yellow stargrass					+					+	+	+		+		

+ *Species occurrence within the denoted plant community*

Table 3

GROUNDCOVER & VINES		PLANT COMMUNITY															
Scientific Name	Common Name	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP		
Hypoxis juncea	Yellow stargrass					+					+	+	+		+		
Hyptis alata	Musky mint					+	+				+	+	+	+	+		
Indigofera caroliniana	Carolina indigo				+	+	+										
Ipomoea alba	Moonflower						+	+									
Ipomoea cordatotriloba	Tievine		+	+	+	+	+	+									
Ipomoea hederifolia	Scarletcreeper		+	+	+	+	+	+	+								
Ipomoea pandurata	Man-of-the-earth			+	+	+	+	+									
Iris hexagona	Prairie iris										+	+	+	+	+		
Iva microcephala	Piedmont marshelder													+			
Isoetes flaccida	Florida quillwort												+	+			
Juncus dichotomus	Forked rush		+	+	+	+					+	+		+	+		
Juncus effusus subsp. *solutus*	Soft rush								+		+	+	+	+	+		
Juncus elliottii	Elliott's rush								+		+	+	+	+	+		
Juncus marginatus	Grassleaf rush		+	+	+	+					+	+		+	+		
Juncus megacephalus	Bighead rush													+	+		
Juncus repens	Lesser creeping rush												+	+			
Juncus scirpoides	Needlepod rush										+	+	+	+	+		
Lachnanthes caroliniana	Redroot					+					+	+	+	+	+		
Lachnocaulon anceps	Bog buttons					+					+	+	+	+	+		

+ *Species occurrence within the denoted plant community*

Table 3

GROUNDCOVER & VINES		PLANT COMMUNITY															
Scientific Name	Common Name	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP		
Lachnocaulon minus	Small's bogbutton					+					+	+	+	+	+		
Leersia hexandra	Southern cutgrass								+		+	+	+	+	+		
Lemna spp.	Duckweed								+	+	+	+	+	+			
Liatris chapmanii	Chapman's blazing star		+	+	+	+	+	+									
Liatris garberi	Garber's blazing star		+	+	+	+	+	+									
Liatris gracilis	Slender blazing star		+	+	+	+	+	+									
Liatris spicata	Spiked blazing star		+	+	+	+	+	+							+		
Liatris tennuifolia	Shortleaf blazing star		+	+	+	+	+	+									
Licania michauxii	Gopher apple		+	+	+	+									+		
Lilium catesbaei	Pine lily					+	+			+			+	+			
Limnobium spongia	Frog's-bit					+									+	+	
Lindernia dubia	Yellowseed false pimpernel		+	+	+	+	+	+	+		+	+			+		
Linum grandiflorum	Flowering flax		+	+	+	+									+		
Linum medium	Stiff yellow flax		+	+	+	+											
Lobelia glandulosa	Glades lobelia		+	+	+	+									+		
Lobelia paludosa	White lobelia		+	+	+	+									+		
Ludwigia alata	Winged seedbox										+	+	+	+	+		
Ludwigia arcuata	Piedmont seedbox										+	+	+	+	+		
Ludwigia curtissii	Curtiss' seedbox										+	+	+	+	+		

\+ *Species occurrence within the denoted plant community*

Table 3

GROUNDCOVER & VINES		PLANT COMMUNITY														
Scientific Name	Common Name	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP	
Ludwigia erecta	Yerba de jicotea										+	+	+	+	+	
Ludwigia lanceolata	Lanceleaf seedbox										+	+	+	+	+	
Ludwigia leptocarpa	Anglestem seedbox								+		+	+	+	+	+	
Ludwigia linearis	Narowleaf seedbox										+	+	+	+	+	
Ludwigia maritima	Seaside primrose willow		+	+	+	+									+	
Ludwigia microcarpa	Smallfruit seedbox										+	+	+	+	+	
Ludwigia octovalvis	Mexican seedbox								+		+	+	+	+	+	
Ludwigia palustris	Marsh seedbox										+	+	+	+	+	
Ludwigia repens	Creeping seedbox					+					+	+	+	+	+	
Ludwigia suffruticosa	Shrubby primrose willow					+								+	+	
Lupinus diffusus	Skyblue lupine		+	+	+	+	+	+								
Luziola fluitans	Southern watergrass												+	+	+	
Lycopodiella alopecuroides	Foxtail club-moss					+						+	+	+	+	
Lycopodiella appressa	Southern club-moss					+						+	+	+	+	
Lycopodiella cernua	Nodding club-moss					+						+	+	+	+	
Lycopodiella prostrata	Feather-stem club-moss					+						+	+	+	+	
Lycopus rubellus	Waterhorehound								+		+	+	+	+	+	
Lygodesmia aphylla	Roserush		+	+	+	+	+								+	
Lythrum flagellare	Florida loosestrife													+	+	

+ *Species occurrence within the denoted plant community*

Table 3

GROUNDCOVER & VINES		PLANT COMMUNITY															
Scientific Name	Common Name	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP		
Mecardonia acuminata	Purple medardonia		+	+	+	+			+					+	+		
Melothria pendula	Creeping cucumber					+	+	+									
Mikania cordifolia	Florida keys hempvine					+		+			+	+	+	+			
Mimosa quadrivalis	Sensitive briar		+	+	+	+	+										
Mitchella repens	Partidgeberry						+	+			+						
Mitreola sessifolia	Miterwort					+									+		
Muhlenbergia capillaris	Muhly grass		+	+	+	+	+							+	+		
Myriophyllum heterophyllum	Variable-leaf milfoil								+	+							
Nuphar advena	Spatterdock									+				+			
Nymphaea odorata	Fragrant waterlily									+			+	+			
Nymphoides aquatica	big floatingheart								+	+			+	+			
Ophioglossum crotalophoroides	Bulbous adder's-tongue		+	+	+	+	+						+	+	+		
Ophioglossum petiolatum	Stalked adder's-tongue		+	+	+	+	+								+		
Oplismenus hirtellus	Basketgrass					+	+	+			+	+					
Opuntia humifusa	Prickly pear		+	+	+	+	+	+									
Opuntia stricta	Prickly pear						+	+									
Orontium aquaticum	Goldenclub								+					+			

\+ *Species occurrence within the denoted plant community*

Table 3

GROUNDCOVER & VINES		PLANT COMMUNITY															
Scientific Name	**Common Name**	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP		
Osmunda cinnamomea	Cinnamon fern								+		+	+	+				
Osmunda regalis	Royal fern								+		+	+	+				
Oxalis corniculata	Common yellow woodsorrel		+	+	+	+	+								+		
Oxypolis filiformis	Water dropwort					+								+	+		
Palafoxia feayi	Feay's palafox		+	+	+	+	+	+									
Palafoxia integrifolia	Coastalplain palafox		+	+	+	+	+	+									
Panicum anceps	Beaked panicum					+					+	+	+	+	+		
Panicum dichotomiflorum	Fall panicgrass					+							+	+	+		
Panicum hemitomon	Maidencane		+	+	+	+	+	+	+	+	+	+	+	+	+		
Panicum hians	Gaping panic grass		+	+	+	+								+	+		
Panicum longifolium	Panic grass		+	+	+	+					+	+		+	+		
Panicum rigidulum	Redtop panicum		+	+	+	+	+				+	+	+	+	+		
Panicum tenerum	Bluejoint panicum					+					+	+	+	+	+		
Panicum verrucosum	Warty panic grass		+	+	+	+					+	+		+	+		
Panicum virgatum	Switch grass		+	+	+	+								+	+		
Parthenocissus quinquefolia	Virginia creeper		+	+	+	+	+	+	+		+	+	+				
Paspalum caespitosum	Blue crowngrass		+	+	+	+	+								+		

+ *Species occurrence within the denoted plant community*

Table 3

GROUNDCOVER & VINES		PLANT COMMUNITY															
Scientific Name	Common Name	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP		
Paspalum conjugatum	Sour paspalum					+					+	+	+		+		
Paspalum distichum	Knotgrass					+							+	+	+		
Paspalum floridanum	Florida paspalum					+							+	+	+		
Paspalum laeve	Field paspalum		+	+	+	+					+	+		+	+		
Paspalum praecox	Early paspalum		+	+	+	+								+	+		
Paspalum setaceum	Thin paspalum		+	+	+	+	+	+			+	+			+		
Passiflora incarnata	Passion flower		+	+	+	+	+	+									
Pecluma ptilodon	Comb polypody										+	+	+				
Peltandra virginica	Green arrow arum										+	+	+	+			
Penstemon multiflorus	Manyflower beardtongue		+	+	+	+	+										
Phlebodium aureum	Golden polypody					+	+	+			+	+					
Phoebanthus grandiflorus	Phoebanthus		+	+	+	+	+										
Phyla nodiflora	Fogfruit		+	+	+	+								+	+		
Physalis arenicola	Ground cherry		+	+	+	+	+	+							+		
Physostegia purpurea	Purple dragonhead					+					+	+	+	+	+		
Piloblephis rigida	Pennyroyal		+	+	+	+	+										
Pinguicula lutea	Yellow butterwort					+							+	+	+		
Pinguicula pumila	Small butterwort					+							+	+	+		

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Table 3

GROUNDCOVER & VINES		PLANT COMMUNITY														
Scientific Name	**Common Name**	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP	
Piriqueta cistoides	Piriqueta		+	+	+	+	+								+	
Pityopsis graminifolia	Silver-leaved goldenaster		+	+	+	+	+									
Pleopeltis polypodioides	Resurrection fern						+	+	+		+	+	+			
Pluchea foetida	Stinking camphorweed										+	+	+	+	+	
Pluchea odorata	Saltmarsh camphorweed										+	+	+	+	+	
Pluchea rosea	Rosy camphor weed		+	+	+	+								+	+	
Polygala cruciata	Drumheads		+	+	+	+	+									
Polygala lutea	Orange milkwort		+	+	+	+									+	
Polygala rugellii	Yellow milkwort		+	+	+	+									+	
Polygala setacea	Coastalplain milkwort		+	+	+	+	+									
Polygala spp.	Milkworts		+	+	+	+	+							+	+	
Polygonella polygama	October flower					+	+	+								
Polygonella robusta	Sandhill wireweed					+	+	+								
Polygonum punctatum	Dotted smartweed								+		+	+	+	+	+	
Polygonum hydropiperoides	Swamp smartweed					+			+		+	+	+	+	+	
Pontederia cordata	Pickerelweed											+	+	+		
Potamogeton illinoensis	Illinois pondweed								+	+				+		
Proserpinaca palustris	Marsh mermaidweed												+	+	+	

+ *Species occurrence within the denoted plant community*

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GROUNDCOVER & VINES		PLANT COMMUNITY															
Scientific Name	**Common Name**	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP		
Proserpinaca pectinata	Combleaf mermaidweed												+	+	+		
Pseudognaphalium obtusifolium	Rabbit tobacco		+	+	+	+									+		
Psilotum nudum	Whisk fern							+			+	+	+				
Pteridium aquilinum	Bracken fern		+	+	+	+	+	+									
Pterocaulon pycnostachyum	Blackroot		+	+	+	+	+	+									
Pteroglossaspis ecristata	Giant orchid		+	+	+	+	+	+									
Rhexia cubensis	Meadowbeauty					+					+	+		+	+		
Rhexia mariana	Pale meadowbeauty					+									+		
Rhexia nashii	Meadowbeauty					+									+		
Rhexia nuttallii	Meadowbeauty					+									+		
Rhexia petiolata	Meadowbeauty					+									+		
Rhynchosia michauxii	Michaux's rhynchosia					+	+	+									
Rhynchospora caduca	Anglestem beaksedge					+	+	+			+	+			+		
Rhynchospora cephalantha	Bunched beaksedge													+	+		
Rhynchospora ciliaris	Fringed beaksedge					+								+	+		
Rhynchospora colorata	Starrush					+								+	+		
Rhynchospora corniculata	Shortbristle horned beaksedge								+		+	+	+				

+ *Species occurrence within the denoted plant community*

Table 3

GROUNDCOVER & VINES		PLANT COMMUNITY															
Scientific Name	**Common Name**	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP		
Rhynchospora divergens	Spreading beaksedge					+					+	+	+	+	+		
Rhynchospora fascicularis	Fascicled beaksedge		+	+	+	+								+	+		
Rhynchospora fernaldii	Fernald's beaksedge		+	+	+	+								+	+		
Rhynchospora filifolia	Threadleaf beaksedge					+					+	+	+	+	+		
Rhynchospora globularis	Globe beakrush					+					+	+	+	+	+		
Rhynchospora intermedia	Pinebarren beaksedge		+	+	+	+	+										
Rhynchospora inundata	Narrowfruit horned beaksedge										+	+	+	+	+		
Rhynchospora latifolia	Giant whitetop					+					+	+	+	+	+		
Rhynchospora megalocarpa	Sandyfield beaksedge		+	+	+	+	+										
Rhynchospora microcarpa	Southern beaksedge					+					+	+	+	+	+		
Rhynchospora microcephala	Bunched beaksedge					+								+	+		
Rhynchospora miliacea	Millet beaksedge										+	+	+				
Rhynchospora nitens	Shortbeak beaksedge					+								+	+		
Rhynchospora plumosa	Plumed beaksedge					+								+	+		
Rhynchospora spp.	Beaksedges		+	+	+	+	+	+	+		+	+	+	+	+		

+ Species occurrence within the denoted plant community

Table 3

GROUNDCOVER & VINES		PLANT COMMUNITY															
Scientific Name	**Common Name**	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP		
Rhynchospora tracyi	Tracy's beaksedge													+	+		
Rubus argutus	Sawtooth blackberry					+					+	+	+	+	+		
Rubus cuneifolius	Sand blackberry		+	+	+	+	+	+									
Rubus trivialis	Dewberry		+	+	+	+	+	+									
Ruellia caroliniensis	Carolina wild petunia		+	+	+	+	+	+									
Sabatia brevifolia	White sabatia		+	+	+	+									+		
Sabatia grandiflora	Large-flower marsh pink		+	+	+	+	+							+	+		
Saccharum giganteum	Sugarcane plumegrass					+					+	+	+	+	+		
Sacciolepis striata	Cupscale					+					+	+	+	+	+		
Sagittaria graminea	Grassy arrowhead					+					+	+	+	+	+		
Sagittaria lancifolia	Bulltongue arrowhead												+	+			
Sagittaria latifolia	Broadleaf arrowhead												+	+			
Salvia lyrata	Lyre-leaved sage		+	+	+	+	+	+							+		
Samolus ebracteatus	Water pimpernel					+								+	+		
Samolus valerandi subsp. *parviflorus*	Pineland pimpernel					+					+	+					
Saururus cernuus	Lizard's tail								+		+	+	+	+	+		
Schizachyrium scoparium	Little bluestem		+	+	+	+	+								+		
Schwalbea americana	Chaffseed		+	+	+	+	+	+			+	+	+		+		

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Table 3

GROUNDCOVER & VINES		PLANT COMMUNITY														
Scientific Name	**Common Name**	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP	
Scirpus lineatus	Drooping bulrush								+		+	+	+			
Scirpus pungens	Threesquare bulrush								+	+				+	+	
Scirpus tabernaemontani	Softstem bulrush								+	+				+		
Scleria ciliata	Nutrush		+	+	+	+									+	
Scleria georgiana	Nutrush		+	+	+	+									+	
Scleria reticularis	Nutrush		+	+	+	+					+	+	+	+	+	
Scleria triglomerata	Nutrush		+			+					+	+	+	+	+	
Scleria verticillata	Low nutrush					+					+	+	+	+	+	
Scoparia dulcis	Sweetbroom		+	+	+	+									+	
Scutellaria arenicola	Skullcap		+	+	+	+	+	+								
Scutellaria integrifolia	Helmet skullcap		+	+	+	+	+	+								
Sesbania herbacea	Danglepod		+	+	+	+	+	+			+	+	+	+	+	
Sesbania vesicaria	Bladderpod					+					+	+	+	+	+	
Setaria parviflora	Knotroot foxtail		+	+	+	+	+	+							+	
Seymeria pectinata	Piedmont blacksenna		+	+	+	+	+	+								
Sida acuta	Common fanpetals		+	+	+	+	+	+			+	+			+	
Sida rhombifolia	Cuban jute		+	+	+	+	+	+			+	+			+	
Sisyrinchium angustifolium	Blue-eyed grass		+	+	+	+								+	+	
Sisyrinchium	Scrub blue-eyed grass		+	+	+	+	+	+								

+ *Species occurrence within the denoted plant community*

Table 3

GROUNDCOVER & VINES		PLANT COMMUNITY															
Scientific Name	**Common Name**	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP		
xerophyllum																	
Smilax auriculata	Greenbrier		+	+	+	+	+	+			+	+	+				
Smilax bona+nox	Saw greenbriar					+	+	+			+	+	+				
Smilax glauca	Cat greenbrier					+	+	+			+	+	+				
Smilax laurifolia	Laurel greenbriar					+					+	+	+	+			
Smilax pumila	Sarsaparilla vine				+	+	+	+			+						
Smilax smallii	Lanceleaf greenbrier						+	+									
Solidago canadensis	Canada goldenrod		+	+	+	+	+	+									
Solidago fistulosa	Goldenrod		+	+	+	+									+		
Solidago odora	Chapman's goldenrod		+	+	+	+	+	+									
Solidago stricta	Slender goldenrod		+	+	+	+	+								+		
Sorghastrum secundum	Lopsided indiangrass		+	+	+	+	+								+		
Spartina bakeri	Sand cordgrass		+	+	+	+								+	+		
Sphagnum spp.	Sphagnum moss										+	+		+	+		
Sporobolus junceus	Pineland dropseed		+	+	+	+	+	+									
Stillingia sylvatica	Queen's delight		+	+	+	+	+	+									
Stipulicida setacea	Pineland scalypink		+	+	+	+	+	+									
Symphyotrichum carolinianum	Climbing aster					+			+		+	+	+	+			
Symphyotrichum	Bush aster		+	+	+	+	+	+						+	+		

+ *Species occurrence within the denoted plant community*

Table 3

GROUNDCOVER & VINES		PLANT COMMUNITY														
Scientific Name	Common Name	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP	
dumosum																
Symphyotrichum subulatum	Annual saltmarsh aster					+	+							+	+	
Syngonanthus flavidulus	Bantam buttons					+									+	
Tephrosia hispidula	Spreading hoary-pea		+	+	+	+	+									
Thalia geniculata	Alligator flag												+	+		
Thelypteris dentata	Downy maiden fern								+		+	+	+	+	+	
Thelypteris hispidula	Hairy maiden fern								+		+	+	+			
Thelypteris interrupta	Hottentot fern								+		+	+	+	+		
Thelypteris kunthii	Southern shield fern								+		+	+	+			
Thelypteris palustris	Marsh fern								+		+	+	+	+	+	
Thelypteris palustris	Marsh fern								+		+	+	+			
Tillandsia bartramii	Bartram's airplant						+	+			+	+	+			
Tillandsia fasciculata	Cardinal airplant						+	+			+	+	+			
Tillandsia recurvata	Ball moss					+	+	+			+	+	+			
Tillandsia setacea	Southern needleleaf					+	+	+			+	+	+			
Tillandsia usneoides	Spanish moss					+	+	+			+	+	+			
Tillandsia utriculata	Giant airplant					+	+	+			+	+	+			
Toxicodendron radicans	Eastern poison ivy					+	+	+			+	+	+			
Triadenum virginicum	Virginia marsh St.John's										+	+	+	+		

+ *Species occurrence within the denoted plant community*

Table 3

GROUNDCOVER & VINES		PLANT COMMUNITY															
Scientific Name	**Common Name**	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP		
	wort																
Trichostema dichotomum	Blue curls		+	+	+	+	+	+									
Triplasis purpurea	Purple sandgrass		+	+	+	+	+	+									
Tripsacum dactyloides	Eastern gamagrass					+					+	+	+				
Typha domingensis	Southern cattail								+	+	+	+	+	+			
Typha latifolia	Broadleaf cattail								+	+	+	+	+	+			
Utricularia spp.	Bladderpod					+			+	+			+	+	+		
Utricularia subulata	Zigzag bladderwort					+									+		
Vallisneria americana	Eel grass								+	+			+	+			
Verbesina virginica	White crownbeard					+	+	+			+	+					
Viola lanceolata	Lanceleaf violet		+			+									+		
Viola palmata	Southern coast violet		+			+									+		
Viola sororia	Common blue violet					+					+	+	+		+		
Vitis aestivalis	Summer grape					+	+	+									
Vitis rotundifolia	Muscadine grape			+	+	+	+	+			+	+					
Vitis shuttleworthii	Calloose grape			+	+	+	+	+									
Vittaria lineata	Shoestring fern						+	+			+	+					
Wolffiella gladiata	Florida mudmidget								+	+	+	+	+	+			
Wolffiella oblonga	Saber mudmidget								+	+	+	+	+	+			

+ *Species occurrence within the denoted plant community*

Table 3

GROUNDCOVER & VINES		PLANT COMMUNITY														
Scientific Name	**Common Name**	AG	DP	SB	MR	PF	HC	UH	SW	LK	WH	WFM	CY	FM	WP	
Woodwardia areolata	Netted chain fern								+		+	+	+			
Xyris ambigua	Yellow-eyed grass					+									+	
Xyris brevifolia	Yellow-eyed grass					+									+	
Xyris caroliniana	Yellow-eyed grass					+								+	+	
Xyris elliottii	Yellow-eyed grass					+									+	
Xyris platylepis	Yellow-eyed grass					+								+	+	
Xyris spp.	Yellow-eyed grass		+			+					+	+	+	+	+	
Yucca filamentosa	Yucca		+	+	+	+	+	+								
Zamia pumila	Coontie		+	+	+	+	+	+								
Zephyranthes atamasca	Treat's zephyrlily					+								+	+	
Zephyranthes simpsonii	Simpson's zephyrlily					+								+	+	

+ *Species occurrence within the denoted plant community*

Table 4. Vegetative Success Requirements			
Plant Community	**Strata**		
	Canopy Trees/acre avg.	Shrub Shrubs/acre avg.	Ground Cover & Vines % areal coverage
Dry Prairie	< 5% total cover	≥20 shrubs/ac (5-8 spp)	≥50 – 100% areal coverage (40 spp)
Shrub & Brushland/ Mixed Rangeland	< 5% total cover	≥100 shrubs/ac (5-8 spp)	≥50% areal coverage (40 spp)
Pine Flatwoods	15 – 100 trees/ac (3-4 spp) 10% closure	≥100 shrubs/ac (5-8 spp)	≥50% areal coverage (40 spp)
Upland Hardwood	≥200 trees/ac (8-10 spp) 30% closure	≥50 shrubs/ac (5 spp)	≥50% areal coverage (30 spp)
Hardwood/Conifer Mix	≥100 trees/ac (8-10 spp) 30% closure	≥50 shrubs/ac (5 spp)	≥50% areal coverage (30 spp)
Stream & Waterways	NA	NA	NA
Lakes & Reservoirs	NA	NA	NA
Wetland Hardwood	≥200 trees/ac (8-10 spp) 30% closure	≥50 shrubs/ac (5 spp)	≥75% areal coverage (30 spp)
Wetland Forest Mixed	≥200 trees/ac (10 spp) 30% closure	≥50 shrubs/ac (5 spp)	≥35% areal coverage (30 spp)
Cypress Swamps	≥200 trees/ac (3-4 spp) 30% closure	≥50 shrubs/ac (4 spp)	≥35% areal coverage (20 spp)
Freshwater Marsh	< 5% total cover	< 5% total cover	≥75% areal coverage (20 spp)
Wet Prairie	< 5% total cover	< 5% total cover	≥75% areal coverage (40 spp)

Table . Native Vertebrates Known or Suspected to Occur in Manatee Co. on Existing or Future Phosphate-Mined Lands.

Class	Order	Family	Scientific Name	Common Name	Listed Status	Prey Base[1]
AMPHIBIA	Anura	Bufonidae	Bufo quercicus	Oak toad		I
AMPHIBIA	Anura	Bufonidae	Bufo terrestris	Southern toad		I
AMPHIBIA	Anura	Hylidae	Acris gryllus dorsalis	Florida cricket frog		I
AMPHIBIA	Anura	Hylidae	Hyla cinerea	Green treefrog		I
AMPHIBIA	Anura	Hylidae	Hyla femoralis	Pine woods treefrog		I
AMPHIBIA	Anura	Hylidae	Hyla gratiosa	Barking treefrog		I
AMPHIBIA	Anura	Hylidae	Hyla squirella	Squirrel treefrog		I
AMPHIBIA	Anura	Hylidae	Limnaoedus ocularis	Little grass frog		I
AMPHIBIA	Anura	Hylidae	Pseudacris nigrita verrucosa	Florida chorus frog		I
AMPHIBIA	Anura	Microhylidae	Gastrophryne carolinensis	Eastern narrowmouth toad		I
AMPHIBIA	Anura	Pelobatidae	holbrookii	Eastern spadefoot toad		I
AMPHIBIA	Anura	Ranidae	Rana capito aesopus	Florida gopher frog	FL SSC	I, A
AMPHIBIA	Anura	Ranidae	Rana catesbeiana	Bullfrog		I
AMPHIBIA	Anura	Ranidae	Rana grylio	Pig frog		I
AMPHIBIA	Anura	Ranidae	Rana utricularia	Southern leopard frog		I
AMPHIBIA	Caudata	Amphiumidae	Amphiuma means	Two-toed amphiuma		I, F
AMPHIBIA	Caudata	Plethodontidae	Eurycea quadridigitata	Dwarf salamander		I
AMPHIBIA	Caudata	Salamandridae	Notophthalmus viridescens	Red-spotted newt		I
AMPHIBIA	Caudata	Sirenidae	Pseudobranchus striatus	Dwarf siren		I
AMPHIBIA	Caudata	Sirenidae	Siren intermedia intermedia	Eastern lesser siren		I
AMPHIBIA	Caudata	Sirenidae	Siren lacertina	Greater siren		I
AVES	Anseriformes	Anatidae	Aix sponsa	Wood duck		P
AVES	Anseriformes	Anatidae	Anas acuta	Northern pintail		P
AVES	Anseriformes	Anatidae	Anas americana	American wigeon		P
AVES	Anseriformes	Anatidae	Anas bahamensis	White-cheeked Pintail		P
AVES	Anseriformes	Anatidae	Anas clypeata	Northern shoveler		P
AVES	Anseriformes	Anatidae	Anas crecca	Green-winged teal		P
AVES	Anseriformes	Anatidae	Anas cyanoptera	Cinnamon teal		P
AVES	Anseriformes	Anatidae	Anas discors	Blue-winged teal		P
AVES	Anseriformes	Anatidae	Anas fulvigula	Mottled duck		P
AVES	Anseriformes	Anatidae	Anas penelope	Eurasian wigeon		P
AVES	Anseriformes	Anatidae	Anas platyrhynchos	Mallard		P
AVES	Anseriformes	Anatidae	Anas rubripes	American black duck		P
AVES	Anseriformes	Anatidae	Anas strepera	Gadwall		P
AVES	Anseriformes	Anatidae	Anser albifrons	Greater White-fronted Goose		P
AVES	Anseriformes	Anatidae	Aythya affinis	Lesser scaup		P

[1] A = amphibians, B = birds, F = fish, I = invertebrates, M = mammals, P = plants

Table 5. Native Vertebrates Known or Suspected to Occur in Manatee County on Existing or Future Phosphate-Mined Lands.

Class	Order	Family	Scientific Name	Common Name	Listed Status	Prey Base[1]
AVES	Anseriformes	Anatidae	Aythya americana	Redhead		P
AVES	Anseriformes	Anatidae	Aythya collaris	Ring-necked duck		P
AVES	Anseriformes	Anatidae	Aythya marila	Greater scaup		P
AVES	Anseriformes	Anatidae	Aythya valisineria	Canvasback		P
AVES	Anseriformes	Anatidae	Branta bernicla	Brant		P
AVES	Anseriformes	Anatidae	Branta canadensis	Canada goose		P
AVES	Anseriformes	Anatidae	Bucephala albeola	Bufflehead		P
AVES	Anseriformes	Anatidae	Bucephala clangula	Common goldeneye		P
AVES	Anseriformes	Anatidae	Chen caerulescens	Snow goose		P
AVES	Anseriformes	Anatidae	Chen rossii	Ross's Goose		P
AVES	Anseriformes	Anatidae	Clangula hyemalis	Oldsquaw		P
AVES	Anseriformes	Anatidae	Cygnus columbianus	Tundra Swan		P
AVES	Anseriformes	Anatidae	Dendrocygna bicolor	Fulvous whistling duck		P
AVES	Anseriformes	Anatidae	Lophodytes cucullatus	Hooded merganser		F
AVES	Anseriformes	Anatidae	Melanitta fusca	White-winged Scoter		I
AVES	Anseriformes	Anatidae	Melanitta nigra	Black Scoter		I
AVES	Anseriformes	Anatidae	Melanitta perspicillata	Surf Scoter		I
AVES	Anseriformes	Anatidae	Mergus merganser	Common Merganser		F
AVES	Anseriformes	Anatidae	Mergus serrator	Red-breasted merganser		F
AVES	Anseriformes	Anatidae	Nomonyx dominicus	Masked Duck		P
AVES	Anseriformes	Anatidae	Oxyura jamaicensis	Ruddy duck		P
AVES	Apodiformes	Apodidae	Chaetura pelagica	Chimney swift		I
AVES	Apodiformes	Apodidae	Chaetura vauxi	Vaux's Swift		I
AVES	Apodiformes	Trochilidae	Archilochus alexandri	Black-chinned Hummingbird		P, Nectar
AVES	Apodiformes	Trochilidae	Archilochus colubris	Ruby-throated hummingbird		P, Nectar
AVES	Apodiformes	Trochilidae	Selasphorus rufus	Rufous Hummingbird		P, Nectar
AVES	Caprimulgiformes	Caprimulgidae	Caprimulgus carolinensis	Chuck-will's-widow		I
AVES	Caprimulgiformes	Caprimulgidae	Caprimulgus vociferus	Whip-poor-will		I
AVES	Caprimulgiformes	Caprimulgidae	Chordeiles acutipennis	Lesser Nighthawk		I
AVES	Caprimulgiformes	Caprimulgidae	Chordeiles minor	Common nighthawk		I
AVES	Charadriiformes	Charadriidae	Charadrius alexandrinus	Snowy Plover		I
AVES	Charadriiformes	Charadriidae	Charadrius melodus	Piping plover	FL T, Fed T	I
AVES	Charadriiformes	Charadriidae	Charadrius montanus	Mountain Plover		I
AVES	Charadriiformes	Charadriidae	Charadrius semipalmatus	Semipalmated plover		I
AVES	Charadriiformes	Charadriidae	Charadrius vociferus	Killdeer		I
AVES	Charadriiformes	Charadriidae	Charadrius wilsonia	Wilson's plover		I

[1] A = amphibians, B = birds, F = fish, I = invertebrates, M = mammals, P = plants

Table . lative Vertebrates Known or Suspected to Occur in Manatee Cou on Existing or Future Phosphate-Mined Lands.

Class	Order	Family	Scientific Name	Common Name	Listed Status	Prey Base [1]
AVES	Charadriiformes	Charadriidae	Pluvialis dominica	American golden plover		I
AVES	Charadriiformes	Charadriidae	Pluvialis squatarola	Black-bellied plover		I
AVES	Charadriiformes	Charadriidae	Vanellus vanellus	Northern Lapwing		I
AVES	Charadriiformes	Haematopodidae	Haematopus palliatus	American oystercatcher	FL SSC	I
AVES	Charadriiformes	Laridae	Chlindonias niger	Black tern		F
AVES	Charadriiformes	Laridae	Larus argentatus	Herring gull		F, I
AVES	Charadriiformes	Laridae	Larus atricilla	Laughing gull		F, I
AVES	Charadriiformes	Laridae	Larus delawarensis	Ring-billed gull		F, I
AVES	Charadriiformes	Laridae	Larus fuscus	Lesser black-backed gull		F, I
AVES	Charadriiformes	Laridae	Larus marinus	Great Black-backed Gull		F, I
AVES	Charadriiformes	Laridae	Larus minutus	Little Gull		F, I
AVES	Charadriiformes	Laridae	Larus philadelphia	Bonaparte's gull		F, I
AVES	Charadriiformes	Laridae	Larus pipixcan	Franklin's Gull		F, I
AVES	Charadriiformes	Laridae	Larus ridibundus	Black-headed Gull		F, I
AVES	Charadriiformes	Laridae	Rynchops niger	Black skimmer	FL SSC	F
AVES	Charadriiformes	Laridae	Sterna antillarum	Least tern	FL T	F
AVES	Charadriiformes	Laridae	Sterna caspia	Caspian tern		F
AVES	Charadriiformes	Laridae	Sterna forsteri	Forster's tern		F
AVES	Charadriiformes	Laridae	Sterna hirundo	Common tern		F
AVES	Charadriiformes	Laridae	Sterna maxima	Royal tern		F
AVES	Charadriiformes	Laridae	Sterna nilotica	Gull-billed Tern		F
AVES	Charadriiformes	Laridae	Sterna sandvicensis	Sandwich tern		F
AVES	Charadriiformes	Recurvirostridae	Himantopus mexicanus	Black-necked stilt		I
AVES	Charadriiformes	Recurvirostridae	Recurvirostra americana	American avocet		I
AVES	Charadriiformes	Scolopacidae	Actitis macularia	Spotted sandpiper		I
AVES	Charadriiformes	Scolopacidae	Arenaria interpres	Ruddy Turnstone		I
AVES	Charadriiformes	Scolopacidae	Bartramia longicauda	Upland sandpiper		I
AVES	Charadriiformes	Scolopacidae	Calidris acuminata	Sharp-tailed Sandpiper		I
AVES	Charadriiformes	Scolopacidae	Calidris alba	Sanderling		I
AVES	Charadriiformes	Scolopacidae	Calidris alpina	Dunlin		I
AVES	Charadriiformes	Scolopacidae	Calidris bairdii	Baird's sandpiper		I
AVES	Charadriiformes	Scolopacidae	Calidris canutus	Red Knot		I
AVES	Charadriiformes	Scolopacidae	Calidris ferruginea	Curlew Sandpiper		I
AVES	Charadriiformes	Scolopacidae	Calidris fuscicollis	White-rumped sandpiper		I
AVES	Charadriiformes	Scolopacidae	Calidris himantopus	Stilt sandpiper		I
AVES	Charadriiformes	Scolopacidae	Calidris maritima	Purple Sandpiper		I

[1] A = amphiblans, B = birds, F = fish, I = invertebrates, M = mammals, P = plants

Table 5. Native Vertebrates Known or Suspected to Occur in Manatee County on Existing or Future Phosphate-Mined Lands.

Class	Order	Family	Scientific Name	Common Name	Listed Status	Prey Base[1]
AVES	Charadriiformes	Scolopacidae	Calidris mauri	Western sandpiper		I
AVES	Charadriiformes	Scolopacidae	Calidris melanotos	Pectoral Sandpiper		I
AVES	Charadriiformes	Scolopacidae	Calidris minutilla	Least sandpiper		I
AVES	Charadriiformes	Scolopacidae	Calidris pusilla	Semipalmated sandpiper		I
AVES	Charadriiformes	Scolopacidae	semipalmatus	Willet		I
AVES	Charadriiformes	Scolopacidae	Gallinago gallinago	Common snipe		I
AVES	Charadriiformes	Scolopacidae	Limnodromus griseus	Short-billed dowitcher		I
AVES	Charadriiformes	Scolopacidae	Limnodromus scolopaceus	Long-billed dowitcher		I
AVES	Charadriiformes	Scolopacidae	Limosa fedoa	Marbled Godwit		I
AVES	Charadriiformes	Scolopacidae	Limosa haemastica	Hudsonian Godwit		I
AVES	Charadriiformes	Scolopacidae	Limosa lapponica	Bar-tailed Godwit		I
AVES	Charadriiformes	Scolopacidae	Limosa limosa	Black-tailed Godwit		I
AVES	Charadriiformes	Scolopacidae	Numenius americanus	Long-billed Curlew		I
AVES	Charadriiformes	Scolopacidae	Numenius phaeopus	Whimbrel		I
AVES	Charadriiformes	Scolopacidae	Phalaropus fulicaria	Red Phalarope		F
AVES	Charadriiformes	Scolopacidae	Phalaropus lobatus	Red-necked Phalarope		F
AVES	Charadriiformes	Scolopacidae	Phalaropus tricolor	Wilson's phalarope		F
AVES	Charadriiformes	Scolopacidae	Philomachus pugnax	Ruff		I
AVES	Charadriiformes	Scolopacidae	Scolopax minor	American woodcock		I
AVES	Charadriiformes	Scolopacidae	Tringa flavipes	Lesser yellowlegs		I
AVES	Charadriiformes	Scolopacidae	Tringa melanoleuca	Greater yellowlegs		I
AVES	Charadriiformes	Scolopacidae	Tringa solitaria	Solitary sandpiper		I
AVES	Charadriiformes	Scolopacidae	Tryngites subruficollis	Buff-breasted sandpiper		I
AVES	Ciconiiformes	Ardeidae	Ardea alba	Great egret		F, A, R, I
AVES	Ciconiiformes	Ardeidae	Ardea herodia	Great blue heron		F, A, R, I
AVES	Ciconiiformes	Ardeidae	Botaurus lentiginosus	American bittern		F, A, I
AVES	Ciconiiformes	Ardeidae	Butorides virescens	Green heron		F, A, I
AVES	Ciconiiformes	Ardeidae	Egretta caerulea	Little blue heron	FL SSC	F
AVES	Ciconiiformes	Ardeidae	Egretta thula	Snowy egret	FL SSC	F
AVES	Ciconiiformes	Ardeidae	Egretta tricolor	Tricolored heron	FL SSC	F
AVES	Ciconiiformes	Ardeidae	Ixobrychus exilis	Least bittern		F, I
AVES	Ciconiiformes	Ardeidae	Nyctanassa violacea	Yellow-crowned night-heron		F, I
AVES	Ciconiiformes	Ardeidae	Nycticorax nycticorax	Black-crowned night-heron		F,
AVES	Ciconiiformes	Cathartidae	Cathartes aura	Turkey vulture		I
AVES	Ciconiiformes	Cathartidae	Coragyps atratus	Black vulture		Carion
AVES	Ciconiiformes	Ciconiidae	Mycteria americana	Wood stork	FL E, Fed E	Carion

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Table . Native Vertebrates Known or Suspected to Occur in Manatee Co on Existing or Future Phosphate-Mined Lands.

Class	Order	Family	Scientific Name	Common Name	Listed Status	Prey Base[1]
AVES	Ciconiiformes	Threskiornithidae	Ajaia ajaja	Roseate spoonbill	FL SSC	I, F
AVES	Ciconiiformes	Threskiornithidae	Eudocimus albus	White ibis	FL SSC	I, F
AVES	Ciconiiformes	Threskiornithidae	Eudocimus ruber	Scarlet Ibis		I, F
AVES	Ciconiiformes	Threskiornithidae	Plegadis chihi	White-faced Ibis		I, F
AVES	Ciconiiformes	Threskiornithidae	Plegadis falcinellus	Glossy ibis		I, F
AVES	Columbiformes	Columbidae	Columba leucocephala	White-crowned Pigeon		Fruit/P
AVES	Columbiformes	Columbidae	Columbia passerina	Common ground dove		P/Seed
AVES	Columbiformes	Columbidae	Zenaida macroura	Mourning dove		P/Seed
AVES	Coraciiformes	Alcedinidae	Ceryle alcyon	Belted kingfisher		F
AVES	Cuculiformes	Cuculidae	Coccyzus americanus	Yellow-billed cuckoo		I
AVES	Cuculiformes	Cuculidae	Coccyzus erythropthalmus	Black-billed cuckoo		I
AVES	Cuculiformes	Cuculidae	Crotophaga ani	Smooth-billed Ani		I
AVES	Cuculiformes	Cuculidae	Crotophaga sulcirostris	Groove-billed Ani		I
AVES	Falconiformes	Accipitridae	Accipiter cooperii	Cooper's Hawk		B
AVES	Falconiformes	Accipitridae	Accipiter gentilis	Northern Goshawk		M
AVES	Falconiformes	Accipitridae	Accipiter striatus	Sharp-shinned hawk		B
AVES	Falconiformes	Accipitridae	Aquila chrysaetos	Golden Eagle		M
AVES	Falconiformes	Accipitridae	Buteo brachyurus	Short-tailed hawk		B
AVES	Falconiformes	Accipitridae	Buteo jamaicensis	Red-tailed hawk		M, B
AVES	Falconiformes	Accipitridae	Buteo lagopus	Rough-legged Hawk		M
AVES	Falconiformes	Accipitridae	Buteo lineatus	Red-shouldered hawk		I, A
AVES	Falconiformes	Accipitridae	Buteo platypterus	Broad-winged hawk		M
AVES	Falconiformes	Accipitridae	Buteo regalis	Ferruginous Hawk		M
AVES	Falconiformes	Accipitridae	Buteo swainsoni	Swainson's hawk		M
AVES	Falconiformes	Accipitridae	Circus cyaneus	Northern harrier		M
AVES	Falconiformes	Accipitridae	Elanoides forficatus	Swallow-tailed kite		R
AVES	Falconiformes	Accipitridae	Elanus leucarus	White-tailed kite		R
AVES	Falconiformes	Accipitridae	Haliaeetus leucocephalus	Bald eagle	FL T, Fed T	F, B, Carion
AVES	Falconiformes	Accipitridae	Ictinia mississipplensis	Mississippi kite		
AVES	Falconiformes	Accipitridae	Pandion haliaetus	Osprey	FL SSC	F
AVES	Falconiformes	Accipitridae	Rostrhamus sociabilis	Snail kite	FL E, Fed E	I
AVES	Falconiformes	Falconidae	Caracara plancus auduboni	Crested caracara	Fed T, FL T	Carion
AVES	Falconiformes	Falconidae	Falco columbarius	Merlin		B, M
AVES	Falconiformes	Falconidae	Falco peregrinus	Peregrine falcon	peregrinus	B, M
AVES	Falconiformes	Falconidae	Falco peregrinus tundrius	Arctic peregrine falcon	FL E	B, M
AVES	Falconiformes	Falconidae	Falco sparverius	American kestrel		M, I

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Table 5. Native Vertebrates Known or Suspected to Occur in Manatee County on Existing or Future Phosphate-Mined Lands.

Class	Order	Family	Scientific Name	Common Name	Listed Status	Prey Base[1]
AVES	Falconiformes	Falconidae	Falco sparverius paulus	Southeastern American kestrel	FL T	I, R, M
AVES	Falconiformes	Falconidae	Falco tinnunculus	Eurasian Kestrel		I, R, M
AVES	Galliformes	Odontophoridae	Colinus virginianus	Northern bobwhite		P/Seed
AVES	Galliformes	Phasianidae	Meleagris gallopavo	Wild turkey		P, I
AVES	Gaviiformes	Gaviidae	Gavia immer	Common Loon		F
AVES	Gaviiformes	Gaviidae	Gavia stellata	Red-throated loon		F
AVES	Gruiformes	Aramidae	Aramus guarauna	Limpkin	FL SSC	I
AVES	Gruiformes	Gruidae	Grus americana	Whooping Crane		I
AVES	Gruiformes	Gruidae	Grus canadensis	Sandhill crane		I
AVES	Gruiformes	Gruidae	Grus canadensis pratensis	Florida sandhill crane	FL T	I
AVES	Gruiformes	Rallidae	Coturnicops noveboracensis	Yellow rail		I
AVES	Gruiformes	Rallidae	Fulica americana	American coot		P
AVES	Gruiformes	Rallidae	Gallinula chloropus	Common moorhen		P
AVES	Gruiformes	Rallidae	Laterallus jamaicensis	Black Rail		I
AVES	Gruiformes	Rallidae	Porphyrula martinica	Purple gallinule		I
AVES	Gruiformes	Rallidae	Porzana carolina	Sora		I
AVES	Gruiformes	Rallidae	Rallus elegans	King rail		I
AVES	Gruiformes	Rallidae	Rallus limicola	Virginia rail		I
AVES	Gruiformes	Rallidae	Rallus longirostris	Clapper Rail		I
AVES	Passeriformes	Bombycillidae	Bombycilla cedrorum	Cedar waxwing		P, I
AVES	Passeriformes	Cardinalidae	Cardinalis cardinalis	Northern cardinal		P, I
AVES	Passeriformes	Cardinalidae	Guiraca caerulea	Blue grosbeak		P, I
AVES	Passeriformes	Cardinalidae	Passerina amoena	Lazuli Bunting		P, I
AVES	Passeriformes	Cardinalidae	Passerina ciris	Painted bunting		P, I
AVES	Passeriformes	Cardinalidae	Passerina cyanea	Indigo bunting		P, I
AVES	Passeriformes	Cardinalidae	Pheucticus ludovicianus	Rose-breasted grosbeak		P, I
AVES	Passeriformes	Cardinalidae	Pheucticus melanocephalus	Black-headed Grosbeak		P, I
AVES	Passeriformes	Cardinalidae	Spiza americana	Dickcissel		P, I
AVES	Passeriformes	Certhidae	Certhia americana	Brown creeper		I
AVES	Passeriformes	Corvidae	Aphelocoma coerulescens	Florida scrub-jay	FL T, Fed T	I, P
AVES	Passeriformes	Corvidae	Corvus brachyrhynchos	American crow		Everything
AVES	Passeriformes	Corvidae	Corvus ossifragus	Fish crow		Everything
AVES	Passeriformes	Corvidae	Cyanocitta cristata	Blue jay		I
AVES	Passeriformes	Emberizidae	Aimophila aestivalis	Bachman's sparrow		P, I
AVES	Passeriformes	Emberizidae	Ammodramus henslowii	Henslow's sparrow		P, I
AVES	Passeriformes	Emberizidae	Ammodramus leconteii	LeConte's sparrow		P, I

[1] A = amphibians, B = birds, F = fish, I = invertebrates, M = mammals, P = plants

Table . Native Vertebrates Known or Suspected to Occur in Manatee Co on Existing or Future Phosphate-Mined Lands.

Class	Order	Family	Scientific Name	Common Name	Federal Listed Status	Prey Base[1]
AVES	Passeriformes	Emberizidae	Ammodramus savannarum	Grasshopper sparrow		P, I
AVES	Passeriformes	Emberizidae	Calcarius lapponicus	Lapland Longspur		P, I
AVES	Passeriformes	Emberizidae	Chondestes grammacus	Lark sparrow		P, I
AVES	Passeriformes	Emberizidae	Junco hyemalis	Dark-eyed Junco		P, I
AVES	Passeriformes	Emberizidae	Melospiza georgiana	Swamp sparrow		P, I
AVES	Passeriformes	Emberizidae	Melospiza lincolnii	Lincoln's sparrow		P, I
AVES	Passeriformes	Emberizidae	Melospiza melodia	Song sparrow		P, I
AVES	Passeriformes	Emberizidae	Passerculus sandwichensis	Savannah sparrow		P, I
AVES	Passeriformes	Emberizidae	Passerella iliaca	Fox sparrow		P, I
AVES	Passeriformes	Emberizidae	Pipilo chlorurus	Green-tailed Towhee		P, I
AVES	Passeriformes	Emberizidae	Pipilo erythrophthalmus	Eastern towhee		I, P
AVES	Passeriformes	Emberizidae	Pooecetes gramineus	Vesper sparrow		P, I
AVES	Passeriformes	Emberizidae	Spizella pallida	Clay-colored Sparrow		P, I
AVES	Passeriformes	Emberizidae	Spizella passerina	Chipping sparrow		P, I
AVES	Passeriformes	Emberizidae	Spizella pusilla	Field sparrow		P, I
AVES	Passeriformes	Emberizidae	Zonotichia albicollis	White-throated sparrow		P, I
AVES	Passeriformes	Emberizidae	Zonotichia leucophrys	White-crowned sparrow		P, I
AVES	Passeriformes	Emberizidae	Zonotrichia atricapilla	Golden-crowned Sparrow		P, I
AVES	Passeriformes	Emberizidae	Zonotrichia querula	Harris's Sparrow		P, I
AVES	Passeriformes	Fringillidae	Carduelis pinus	Pine siskin		P
AVES	Passeriformes	Fringillidae	Carduelis tristis	American goldfinch		P
AVES	Passeriformes	Fringillidae	Carpodacus purpureus	Purple finch		P, I
AVES	Passeriformes	Hirundinidae	Hirundo rustica	Barn swallow		I
AVES	Passeriformes	Hirundinidae	Petrochelidon fulva	Cave Swallow		I
AVES	Passeriformes	Hirundinidae	Petrochelidon pyrrhonota	Cliff swallow		I
AVES	Passeriformes	Hirundinidae	Progne subis	Purple martin		I
AVES	Passeriformes	Hirundinidae	Riparia riparia	Bank swallow		I
AVES	Passeriformes	Hirundinidae	Stelgidopterix serripennis	Northern rough-winged swallow		I
AVES	Passeriformes	Hirundinidae	Tachycineta bicolor	Tree swallow		I
AVES	Passeriformes	Icteridae	Agelaius phoeniceus	Red-winged blackbird		I
AVES	Passeriformes	Icteridae	Dolichonyx oryzivorus	Bobolink		I
AVES	Passeriformes	Icteridae	Euphagus carolinus	Rusty blackbird		I
AVES	Passeriformes	Icteridae	Euphagus cyanocephalus	Brewer's Blackbird		I
AVES	Passeriformes	Icteridae	Icterus bullockii	Bullock's Oriole		I
AVES	Passeriformes	Icteridae	Icterus galbula	Baltimore oriole		I
AVES	Passeriformes	Icteridae	Icterus spurius	Orchard oriole		I

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Table 5. Native Vertebrates Known or Suspected to Occur in Manatee County on Existing or Future Phosphate-Mined Lands.

Class	Order	Family	Scientific Name	Common Name	State Status	Prey Base[1]
AVES	Passeriformes	Icteridae	Molothrus aeneus	Bronzed cowbird		I
AVES	Passeriformes	Icteridae	Molothrus ater	Brown-headed cowbird		I
AVES	Passeriformes	Icteridae	Quiscalus major	Boat-tailed grackle		I
AVES	Passeriformes	Icteridae	Quiscalus quiscula	Common grackle		I
AVES	Passeriformes	Icteridae	Sturnella magna	Eastern meadowlark		I
AVES	Passeriformes	Icteridae	xanthocephalus	Yellow-headed blackbird		I
AVES	Passeriformes	Laniidae	Lanius ludovicianus	Loggerhead shrike		I, R
AVES	Passeriformes	Mimidae	Dumetella carolinensis	Gray catbird		I
AVES	Passeriformes	Mimidae	Mimus polyglottos	Northern mockingbird		I
AVES	Passeriformes	Mimidae	Toxostoma rufum	Brown thrasher		I
AVES	Passeriformes	Motacillidae	Anthus rubescens	American pipit		I, P
AVES	Passeriformes	Paridae	Baeolophus bicolor	Tufted titmouse		I
AVES	Passeriformes	Paridae	Poecile carolinensis	Carolina chickadee		I
AVES	Passeriformes	Parulidae	Dendroica caerulescens	Black-throated blue warbler		I
AVES	Passeriformes	Parulidae	Dendroica castanea	Bay-breasted warbler		I
AVES	Passeriformes	Parulidae	Dendroica cerulea	Cerulean warbler		I
AVES	Passeriformes	Parulidae	Dendroica chrysoparia	Golden-cheeked Warbler		I
AVES	Passeriformes	Parulidae	Dendroica coronata	Yellow-rumped warbler		I
AVES	Passeriformes	Parulidae	Dendroica discolor	Prairie warbler		I
AVES	Passeriformes	Parulidae	Dendroica dominica	Yellow-throated warbler		I
AVES	Passeriformes	Parulidae	Dendroica fusca	Blackburnian warbler		I
AVES	Passeriformes	Parulidae	Dendroica kirtlandii	Kirtland's Warbler		I
AVES	Passeriformes	Parulidae	Dendroica magnolia	Magnolia warbler		I
AVES	Passeriformes	Parulidae	Dendroica nigrescens	Black-throated gray warbler		I
AVES	Passeriformes	Parulidae	Dendroica palmarum	Palm warbler		I
AVES	Passeriformes	Parulidae	Dendroica pensylvanica	Chestnut-sided warbler		I
AVES	Passeriformes	Parulidae	Dendroica petechia	Yellow warbler		I
AVES	Passeriformes	Parulidae	Dendroica pinus	Pine warbler		I
AVES	Passeriformes	Parulidae	Dendroica striata	Blackpoll warbler		I
AVES	Passeriformes	Parulidae	Dendroica tigrina	Cape May warbler		I
AVES	Passeriformes	Parulidae	Dendroica townsendi	Townsend's Warbler		I
AVES	Passeriformes	Parulidae	Dendroica virens	Black-throated green warbler		I
AVES	Passeriformes	Parulidae	Geothlypis trichas	Common yellowthroat		I
AVES	Passeriformes	Parulidae	Helmitheros vermivorus	Worm-eating warbler		I
AVES	Passeriformes	Parulidae	Icteria virens	Yellow-breasted chat		I
AVES	Passeriformes	Parulidae	Limnothlypis swainsonii	Swainson's warbler		I

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Table 5. Native Vertebrates Known or Suspected to Occur in Manatee County on Existing or Future Phosphate-Mined Lands.

Class[1]	Order	Family	Scientific Name	Common Name	Reg Status	Prey Base
AVES	Passeriformes	Parulidae	Mniotilta varia	Black-and-white warbler		I
AVES	Passeriformes	Parulidae	Oporonis formosus	Kentucky warbler		I
AVES	Passeriformes	Parulidae	Oporornis agilis	Connecticut warbler		I
AVES	Passeriformes	Parulidae	Oporornis philadelphia	Mourning warbler		I
AVES	Passeriformes	Parulidae	Oporornis tolmiei	MacGillivray's Warbler		I
AVES	Passeriformes	Parulidae	Parula americana	Northern parula		I
AVES	Passeriformes	Parulidae	Protonotaria citrea	Prothonotary warbler		I
AVES	Passeriformes	Parulidae	Seiurus aurocapillus	Ovenbird		I
AVES	Passeriformes	Parulidae	Seiurus motacilla	Louslana waterthrush		I
AVES	Passeriformes	Parulidae	Seiurus noveboracensis	Northern waterthrush		I
AVES	Passeriformes	Parulidae	Setophaga ruticella	American redstart		I
AVES	Passeriformes	Parulidae	Vermivora celata	Orange-crowned warbler		I
AVES	Passeriformes	Parulidae	Vermivora chrysoptera	Golden-winged warbler		I
AVES	Passeriformes	Parulidae	Vermivora peregrina	Tennessee warbler		I
AVES	Passeriformes	Parulidae	Vermivora pinus	Blue-winged warbler		I
AVES	Passeriformes	Parulidae	Vermivora ruficapila	Nashville warbler		I
AVES	Passeriformes	Parulidae	Wilsonia canadensis	Canada warbler		I
AVES	Passeriformes	Parulidae	Wilsonia citrina	Hooded warbler		I
AVES	Passeriformes	Parulidae	Wilsonia pusilla	Wilson's warbler		I
AVES	Passeriformes	Regulidae	Regulus calendula	Ruby-crowned kinglet		I
AVES	Passeriformes	Regulidae	Regulus satrapa	Golden-crowned Kinglet		I
AVES	Passeriformes	Sittidae	Sitta canadensis	Red-breasted Nuthatch		I
AVES	Passeriformes	Sittidae	Sitta carolinensis	White-breasted Nuthatch		I
AVES	Passeriformes	Sittidae	Sitta pusilla	Brown-headed nuthatch		I
AVES	Passeriformes	Sylviidae	Polioptila caerulea	Blue-gray gnatcatcher		I
AVES	Passeriformes	Thraupidae	Piranga ludoviciana	Western Tanager		I
AVES	Passeriformes	Thraupidae	Piranga olivacea	Scarlet tanager		I
AVES	Passeriformes	Thraupidae	Piranga rubra	Summer tanager		I
AVES	Passeriformes	Troglodytidae	Cistothorus palustris	Marsh wren		I
AVES	Passeriformes	Troglodytidae	Cistothorus platensis	Sedge wren		I
AVES	Passeriformes	Troglodytidae	Thryomanes bewickii	Bewick's Wren		I
AVES	Passeriformes	Troglodytidae	Thryothorus ludovicianus	Carolina wren		I
AVES	Passeriformes	Troglodytidae	Troglodytes aedon	House wren		I
AVES	Passeriformes	Troglodytidae	Troglodytes troglodytes	Winter wren		I
AVES	Passeriformes	Turdidae	Catharus fuscescens	Veery		I
AVES	Passeriformes	Turdidae	Catharus guttatus	Hermit thrush		I

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Table . Native Vertebrates Known or Suspected to Occur in Manatee Co. on Existing or Future Phosphate-Mined Lands.

Class[1]	Order	Family	Scientific Name	Common Name	Listed Status	Prey Base[1]
AVES	Passeriformes	Turdidae	Catharus minimus	Gray-cheeked thrush		I
AVES	Passeriformes	Turdidae	Catharus ustulatus	Swainson's thrush		I
AVES	Passeriformes	Turdidae	Hylocichla mustelina	Wood thrush		I
AVES	Passeriformes	Turdidae	Sialis sialis	Eastern bluebird		I
AVES	Passeriformes	Turdidae	Turdus migratorius	American robin		I
AVES	Passeriformes	Tyrannidae	Contopus cooperi	Olive-sided Flycatcher		I
AVES	Passeriformes	Tyrannidae	Contopus virens	Eastern wood-pewee		I
AVES	Passeriformes	Tyrannidae	Empidonax alnorum	Alder Flycatcher		I
AVES	Passeriformes	Tyrannidae	Empidonax flaviventris	Yellow-bellied flycatcher		I
AVES	Passeriformes	Tyrannidae	Empidonax minimus	Least flycatcher		I
AVES	Passeriformes	Tyrannidae	Empidonax traillii	Willow Flycatcher		I
AVES	Passeriformes	Tyrannidae	Empidonax virescens	Acadian flycatcher		I
AVES	Passeriformes	Tyrannidae	Myiarchus cinerascens	Ash-throated Flycatcher		I
AVES	Passeriformes	Tyrannidae	Myiarchus crinitus	Great crested flycatcher		I
AVES	Passeriformes	Tyrannidae	Pyrocephalus rubinus	Vermilion Flycatcher		I
AVES	Passeriformes	Tyrannidae	Sayornis phoebe	Eastern phoebe		I
AVES	Passeriformes	Tyrannidae	Sayornis saya	Say's Phoebe		I
AVES	Passeriformes	Tyrannidae	Tyrannus dominicensis	Gray Kingbird		I
AVES	Passeriformes	Tyrannidae	Tyrannus forficatus	Scissor-tailed flycatcher		I
AVES	Passeriformes	Tyrannidae	Tyrannus melancholicus	Tropical Kingbird		I
AVES	Passeriformes	Tyrannidae	Tyrannus savana	Fork-tailed Flycatcher		I
AVES	Passeriformes	Tyrannidae	Tyrannus tyrannus	Eastern kingbird		I
AVES	Passeriformes	Tyrannidae	Tyrannus verticalis	Western kingbird		I
AVES	Passeriformes	Tyrannidae	Tyrannus vociferans	Cassin's Kingbird		I
AVES	Passeriformes	Vireonidae	Vireo bellii	Bell's Vireo		I
AVES	Passeriformes	Vireonidae	Vireo flavifrons	Yellow-throated vireo		I
AVES	Passeriformes	Vireonidae	Vireo flavoviridis	Yellow-green Vireo		I
AVES	Passeriformes	Vireonidae	Vireo gilvus	Warbling vireo		I
AVES	Passeriformes	Vireonidae	Vireo griseus	White-eyed vireo		I
AVES	Passeriformes	Vireonidae	Vireo olivaceus	Red-eyed vireo		I
AVES	Passeriformes	Vireonidae	Vireo philadelphicus	Philadelphia vireo		I
AVES	Passeriformes	Vireonidae	Vireo solitarius	Blue-headed vireo		I
AVES	Pelecaniformes	Anhingidae	Anhinga anhinga	Anhinga		F
AVES	Pelecaniformes	Fregatidae	Fregata magnificens	Magnificent frigatebird		F
AVES	Pelecaniformes	Pelecanidae	Pelecanus erythrorhynchos	American white pelican		F
AVES	Pelecaniformes	Pelecanidae	Pelecanus occidentalis	Brown pelican	FL SSC	F

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Table 1. Vertebrates Known or Suspected to Occur in Manatee County on Existing or Future Phosphate-Mined Lands.

Class	Order	Family	Scientific Name	Common Name	Listed Status	Prey Base[1]
AVES	Pelecaniformes	Phalacrocoracidae	Phalacrocorax auritus	Double-crested cormorant		F
AVES	Pelecaniformes	Phalacrocoracidae	Phalacrocorax carbo	Great Cormorant		F
AVES	Phoenicopteriformes	Phoenicopteridae	Phoenicopterus ruber	Greater Flamingo		F
AVES	Piciformes	Picidae	Colaptes auratus	Northern flicker		I
AVES	Piciformes	Picidae	Dryocopus pileatus	Pileated woodpecker		I
AVES	Piciformes	Picidae	Melanerpes carolinus	Red-bellied woodpecker		I
AVES	Piciformes	Picidae	Melanerpes erythrocephalus	Red-headed woodpecker		I
AVES	Piciformes	Picidae	Picoides borealis	Red-cockaded Woodpecker		I
AVES	Piciformes	Picidae	Picoides pubescens	Downy woodpecker		I
AVES	Piciformes	Picidae	Picoides villosus	Hairy woodpecker		I
AVES	Piciformes	Picidae	Sphyrapicus varius	Yellow-bellied sapsucker		I
AVES	Podicipediformes	Podicipedidae	Aechmophorus occidentalis	Western grebe		F
AVES	Podicipediformes	Podicipedidae	Podiceps auritus	Horned grebe		F
AVES	Podicipediformes	Podicipedidae	Podiceps dominicus	Least grebe		F
AVES	Podicipediformes	Podicipedidae	Podiceps grisegena	Red-necked grebe		F
AVES	Podicipediformes	Podicipedidae	Podiceps nigricollis	Eared grebe		F
AVES	Podicipediformes	Podicipedidae	Podilymbus podiceps	Pied-billed grebe		F
AVES	Strigiformes	Strigidae	Asio flammeus	Short-eared Owl		M
AVES	Strigiformes	Strigidae	Asio otus	Long-eared Owl		M
AVES	Strigiformes	Strigidae	Bubo virginianus	Great horned owl		M
AVES	Strigiformes	Strigidae	Otus asio	Eastern screech-owl		I, M
AVES	Strigiformes	Strigidae	Speotyto cunicularia	Burrowing owl	FL SSC	I, R, M
AVES	Strigiformes	Strigidae	Strix varia	Barred owl		M, I, R, A
AVES	Strigiformes	Tytonidae	Tyto alba	Barn owl		M
MAMMALIA	Artiodactyla	Cervidae	Odocoileus virginianus	White-tailed deer		P
MAMMALIA	Carnivora	Canidae	Urocyon cinereoargenteus	Gray fox		M, I, P
MAMMALIA	Carnivora	Felidae	Lynx rufus	Bobcat		M, B
MAMMALIA	Carnivora	Mustelidae	Lutra canadensis	River otter		F, I, A, R
MAMMALIA	Carnivora	Mustelidae	Mephitis mephitis	Striped skunk		M, I, Carion
MAMMALIA	Carnivora	Mustelidae	Mustela frenata	Long-tailed weasel		M, A, R, I
MAMMALIA	Carnivora	Mustelidae	Mustela vison	Mink		F, A, I
MAMMALIA	Carnivora	Mustelidae	Spilogale putorius	Spotted skunk		M, I, Carion
MAMMALIA	Carnivora	Procyonidae	Procyon lotor	Raccoon		I, F, A, R
MAMMALIA	Chiroptera	Molossidae	Tadarida brasiliensis	Mexican freetail bat		I
MAMMALIA	Chiroptera	Verpertilionidae	Eptesicus fuscus fuscus	Big Brown Bat		I
MAMMALIA	Chiroptera	Vespertilionidae	Lasiurus intermedius	Eastern Yellow Bat		I

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Table 5. Native Vertebrates Known or Suspected to Occur in Manatee County on Existing or Future Phosphate-Mined Lands.

Class	Order	Family	Scientific Name	Common Name	Listed Status	Prey Base[1]
MAMMALIA	Chiroptera	Vespertilionidae	Lasiurus seminolis	Seminole bat		I
MAMMALIA	Chiroptera	Vespertilionidae	Myotis austroriparius	Mississippi myotis		I
MAMMALIA	Chiroptera	Vespertilionidae	Nycticeius humeralis	Evening Bat		I
MAMMALIA	Chiroptera	Vespertilionidae	Pipistrellus subflavus	Eastern pipistrel		I
MAMMALIA	Insectivora	Soricidae	Blarina carolinensis	Shorttail shrew		I
MAMMALIA	Insectivora	Soricidae	Cryptotis parva	Least shrew		I
MAMMALIA	Insectivora	Talpidae	Scalopus aquaticus	Eastern mole		I
MAMMALIA	Lagomorpha	Leporidae	Sylvilagus floridanus	Eastern cottontail		P
MAMMALIA	Lagomorpha	Leporidae	Sylvilagus palustris	Marsh rabbit		P
MAMMALIA	Marsupiala	Didelphidae	Didelphis virginiana	Opossum		P, I
MAMMALIA	Rodentia	Geomyidae	Geomys pinetis	Southeastern pocket gopher		P
MAMMALIA	Rodentia	Muridae	Neofiber alleni	Round-tailed muskrat		P
MAMMALIA	Rodentia	Muridae	Neotoma floridana	Eastern woodrat		P
MAMMALIA	Rodentia	Muridae	Ochrotomys nuttalli	Golden mouse		P
MAMMALIA	Rodentia	Muridae	Oryzomys palustris	Rice rat		P
MAMMALIA	Rodentia	Muridae	Peromyscus gossypinus	Cotton mouse		P
MAMMALIA	Rodentia	Muridae	Peromyscus polionotus	Oldfield mouse		P
MAMMALIA	Rodentia	Muridae	Podomys floridanus	Florida mouse	FL SSC	P
MAMMALIA	Rodentia	Muridae	Reithrodontomys humilis	Eastern harvest mouse		P
MAMMALIA	Rodentia	Muridae	Sigmodon hispidus	Cotton rat		P
MAMMALIA	Rodentia	Sciuridae	Glaucomys volans	Southern flying squirrel		P
MAMMALIA	Rodentia	Sciuridae	Sciurus carolinensis	Gray squirrel		P
MAMMALIA	Rodentia	Sciuridae	Sciurus niger shermani	Sherman's fox squirrel	FL SSC	P
OSTEICHTHYES	Amiiformes	Amiidae	Amia calva	Bowfin		F, I
OSTEICHTHYES	Anguilliformes	Anguillidae	Anguilla rostrata	American eel		I
OSTEICHTHYES	Atheriniformes	Atherinidae	Labidesthes sicculus	Brook silverside		I
OSTEICHTHYES	Atheriniformes	Cyprinodontidae	Fundulus chrysotus	Golden topminnow		I
OSTEICHTHYES	Atheriniformes	Cyprinodontidae	Fundulus cingulatus	Banded topminnow		I
OSTEICHTHYES	Atheriniformes	Cyprinodontidae	Fundulus confluentus	Marsh killifish		I
OSTEICHTHYES	Atheriniformes	Cyprinodontidae	Fundulus lineolatus	Starhead topminnow		I
OSTEICHTHYES	Atheriniformes	Cyprinodontidae	Fundulus rubrifrons	Redface topminnow		I
OSTEICHTHYES	Atheriniformes	Cyprinodontidae	Fundulus seminolis	Seminole killifish		I
OSTEICHTHYES	Atheriniformes	Cyprinodontidae	Jordanella floridae	Flagfish		P
OSTEICHTHYES	Atheriniformes	Cyprinodontidae	Leptolucania ommata	Pygmy killifish		I
OSTEICHTHYES	Atheriniformes	Cyprinodontidae	Lucania goodei	Bluefin killifish		P
OSTEICHTHYES	Atheriniformes	Cyprinodontidae	Lucania parva	Rainwater killifish		P

[1] A = amphibians, B = birds, F = fish, I = invertebrates, M = mammals, P = plants

Table .Native Vertebrates Known or Suspected to Occur in Manatee Co on Existing or Future Phosphate-Mined Lands.

Class	Order	Family	Scientific Name	Common Name	Listed Status	Prey Base
OSTEICHTHYES	Atheriniformes	Poeciliidae	Gambusia holbrooki	Eastern mosquitofish		I
OSTEICHTHYES	Atheriniformes	Poeciliidae	Heterandria formosa	Least killifish		I
OSTEICHTHYES	Atheriniformes	Poeciliidae	Poecilia latipinna	Sailfin molly		I
OSTEICHTHYES	Clupeiformes	Clupeidae	Dorosoma cepedianum	American gizzard shad		I
OSTEICHTHYES	Clupeiformes	Clupeidae	Dorosoma petenense	Threadfin shad		I
OSTEICHTHYES	Cypriniformes	Catostomidae	Erimyzon sucetta	Lake chubsucker		I
OSTEICHTHYES	Cypriniformes	Cyprinidae	Notemigonus crysoleucas	Golden shiner		I
OSTEICHTHYES	Cypriniformes	Cyprinidae	Notropis chalybaeus	Ironcolor shiner		I
OSTEICHTHYES	Cypriniformes	Cyprinidae	Notropis maculatus	Taillight shiner		I
OSTEICHTHYES	Cypriniformes	Cyprinidae	Notropis petersoni	Coastal shiner		I
OSTEICHTHYES	Cypriniformes	Cyprinidae	Opsopoeodus emiliae	Pugnose minnow		
OSTEICHTHYES	Cypriniformes	Cyprinidae	Pteronotropis hypselopterus	Sailfin shiner		I
OSTEICHTHYES	Perciformes	Centrarchidae	Enneacanthus gloriosus	Bluespotted sunfish		I
OSTEICHTHYES	Perciformes	Centrarchidae	Enneacanthus obesus	Banded sunfish		
OSTEICHTHYES	Perciformes	Centrarchidae	Lepomis auritus	Redbreast sunfish		I
OSTEICHTHYES	Perciformes	Centrarchidae	Lepomis gulosus	Warmouth		I, F
OSTEICHTHYES	Perciformes	Centrarchidae	Lepomis macrochirus	Bluegill		I, F
OSTEICHTHYES	Perciformes	Centrarchidae	Lepomis marginatus	Dollar sunfish		I
OSTEICHTHYES	Perciformes	Centrarchidae	Lepomis microlophus	Redear sunfish		I
OSTEICHTHYES	Perciformes	Centrarchidae	Lepomis punctatus	Spotted sunfish		I
OSTEICHTHYES	Perciformes	Centrarchidae	Micropterus salmoides	Largemouth bass		F, A, I
OSTEICHTHYES	Perciformes	Centrarchidae	Pomoxis nigromaculatus	Black crappie		I, F
OSTEICHTHYES	Perciformes	Elassomatidae	Elassoma evergladei	Everglades pygmy sunfish		I
OSTEICHTHYES	Perciformes	Percidae	Etheostoma fusiforme	Swamp darter		I
OSTEICHTHYES	Percopsiformes	Aphredoderidae	Aphredoderus sayanus	Pirate perch		I, F
OSTEICHTHYES	Pleuronectiformes	Soleidae	Trinectes maculatus	Hogchoker		I
OSTEICHTHYES	Semionotiformes	Acipenseridae	Lepisosteus platyrhincus	Florida gar		F
OSTEICHTHYES	Siluriformes	Ictaluridae	Ameiurus catus	White catfish		F
OSTEICHTHYES	Siluriformes	Ictaluridae	Ameiurus natalis	Yellow bullhead		I, F
OSTEICHTHYES	Siluriformes	Ictaluridae	Ameiurus nebulosus	Brown bullhead		I, F
OSTEICHTHYES	Siluriformes	Ictaluridae	Ameiurus punctatus	Channel catfish		I, F
OSTEICHTHYES	Siluriformes	Ictaluridae	Noturus gyrinus	Tadpole madtom		I
REPTILIA	Crocodylia	Alligatoridae	Alligator mississippiensis	American alligator	T(S/A)	F, R, I
REPTILIA	Squamata	Amphisbaenidae	Rhineura floridana	Worm lizard		I
REPTILIA	Squamata	Anguidae	longicaudus	Eastern slender glass lizard		I
REPTILIA	Squamata	Anguidae	Ophisaurus compressus	Island glass lizard		I

[1] A = amphibians, B = birds, F = fish, I = invertebrates, M = mammals, P = plants

Table 5. Native Vertebrates Known or Suspected to Occur in Manatee County on Existing or Future Phosphate-Mined Lands.

Class	Order	Family	Scientific Name	Common Name	Listed Status	Prev Base[1]
REPTILIA	Squamata	Anguidae	Ophisaurus ventralis	Eastern glass lizard		I
REPTILIA	Squamata	Colubridae	coccinea	Florida scarlet snake		R
REPTILIA	Squamata	Colubridae	Coluber constrictor priapus	Southern black racer		R, M, A
REPTILIA	Squamata	Colubridae	punctatus	Southern ringneck snake		I
REPTILIA	Squamata	Colubridae	Drymarchon corais couperi	Eastern indigo snake	FL T, Fed T	R, M, A, F
REPTILIA	Squamata	Colubridae	Elaphe guttata guttata	Corn snake		M, B
REPTILIA	Squamata	Colubridae	Elaphe obsoleta quadrivittata	Yellow rat snake		M, B
REPTILIA	Squamata	Colubridae	Farancia abacura abacura	Eastern mud snake		A
REPTILIA	Squamata	Colubridae	Heterodon platirhinos	Eastern hognose snake		A
REPTILIA	Squamata	Colubridae	Heterodon simus	Southern hognose snake		A
REPTILIA	Squamata	Colubridae	Lampropeltis getula floridana	Florida kingsnake		R, M, B
REPTILIA	Squamata	Colubridae	elapsoides	Scarlet kingsnake		R
REPTILIA	Squamata	Colubridae	flagellum	Eastern coachwhip		R, M
REPTILIA	Squamata	Colubridae	Nerodia fasciata pictiventris	Florida water snake		F, A
REPTILIA	Squamata	Colubridae	Nerodia floridana	Florida green water snake		F
REPTILIA	Squamata	Colubridae	Nerodia taxispilota	Brown water snake		F
REPTILIA	Squamata	Colubridae	Opheodrys aestivus	Rough green snake		I
REPTILIA	Squamata	Colubridae	mugitus	Florida pine snake	FL SSC	M
REPTILIA	Squamata	Colubridae	Regina alleni	Striped crayfish snake		I
REPTILIA	Squamata	Colubridae	Rhadinea flavilata	Pine woods snake		I
REPTILIA	Squamata	Colubridae	Seminatrix pygaea	Black swamp snake		I, A
REPTILIA	Squamata	Colubridae	Stilosoma extenuatum	Short-tailed snake	FL-T	R
REPTILIA	Squamata	Colubridae	Storeria dekayi victa	Florida brown Snake	FL T	I
REPTILIA	Squamata	Colubridae	Tantilla relicta relicta	Peninsula crowned snake		I
REPTILIA	Squamata	Colubridae	Thamnophis sauritus sackeni	Peninsular ribbon snake	FL T	F, A
REPTILIA	Squamata	Colubridae	Thamnophis sirtalis sirtalis	Eastern garter snake		A, I
REPTILIA	Squamata	Elapidae	Micrurus fulvius fulvius	Eastern coral snake		R
REPTILIA	Squamata	Phrynosomatidae	undulatus	Southern fence lizard		I
REPTILIA	Squamata	Polychridae	Anolis carolinensis	Green anole		I
REPTILIA	Squamata	Scincidae	Eumeces egregius onocrepis	Penisula mole skink		I
REPTILIA	Squamata	Scincidae	Eumeces inexpectatus	Southeastern five-lined skink		I
REPTILIA	Squamata	Scincidae	Scincella lateralis	Ground skink		I
REPTILIA	Squamata	Teiidae	Aspidoscelis sexlineata	Six-lined racerunner		I
REPTILIA	Squamata	Viperidae	conanti	Florida cottonmouth		F, A
REPTILIA	Squamata	Viperidae	Crotalus adamanteus	Eastern diamondback rattlesnake		M
REPTILIA	Squamata	Viperidae	Sistrurus miliarius barbouri	Dusky pigmy rattlesnake		A, M

[1] A = amphibians, B = birds, F = fish, I = invertebrates, M = mammals, P = plants

Table Native Vertebrates Known or Suspected to Occur in Manatee Co. on Existing or Future Phosphate-Mined Lands.

Class	Order	Family	Scientific Name	Common Name	Listed Status	Prey Base[1]
REPTILIA	Testudines	Chelydridae	Chelydra serpentina osceola	Florida snapping turtle		F, A, I
REPTILIA	Testudines	Emydidae	chrysea	Florida chicken turtle		P
REPTILIA	Testudines	Emydidae	peninsularis	Peninsula cooter		P
REPTILIA	Testudines	Emydidae	Pseudemys nelsoni	Florida redbelly turtle		P
REPTILIA	Testudines	Emydidae	Terrapene carolina bauri	Florida box turtle		P
REPTILIA	Testudines	Kinosternidae	steindachneri	Florida mud turtle		I, F
REPTILIA	Testudines	Kinosternidae	Sternotherus odoratus	Stinkpot		I, F
REPTILIA	Testudines	Testudinidae	Gopherus polyphemus	Gopher tortoise	FL SSC	P
REPTILIA	Testudines	Trionychidae	Apalone ferox	Florida softshell		F, I, A

[1] A = amphibians, B = birds, F = fish, I = invertebrates, M = mammals, P = plants

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BOARD OF COUNTY COMMISSIONERS SEAL MANATEE CO. FLA.

STATE OF FLORIDA, COUNTY OF MANATEE
This is to certify that the foregoing is a true and correct copy of the documents on file in my office.
Witness my hand and official seal this 20th day of December 2004.
R.B. SHORE
Clerk of Circuit Court
By: Diane E Vollmer D.C.

BOARD OF COUNTY COMMISSIONERS SEAL MANATEE CO. FLA.

STATE OF FLORIDA, COUNTY OF MANATEE
This is to certify that the foregoing is a true and correct copy of the documents on file in my office.
Witness my hand and official seal this 9th day of November 2004.
R.B. SHORE
Clerk of Circuit Court
By: Diane E Vollmer D.C.

FLORIDA DEPARTMENT OF STATE
Glenda E. Hood
Secretary of State
DIVISION OF LIBRARY AND INFORMATION SERVICES

December 29, 2004

Honorable R. B. "Chips" Shore
Clerk of Circuit Court
Manatee County
Post Office Box 25400
Bradenton, Florida 34206

Attention: Diane E. Vollmer, Deputy Clerk

Dear Mr. Shore:

Pursuant to the provisions of Section 125.66, Florida Statutes, this will acknowledge receipt of your letter dated December 17, 2004 and corrected copy of Manatee County Ordinance No. 04-39, which was received in this office on December 28, 2004.

As requested, the date stamped copy is being returned for your records.

Sincerely,

Liz Cloud

Liz Cloud
Program Administrator

LC/kcs

Enclosure

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