

Meeting Date
September 16, 2014



AGENDA	
Section	Public Hearing
Item No.	III, F.

AGENDA REPORT
BREVARD COUNTY BOARD OF COUNTY COMMISSIONERS

SUBJECT:	Amendments to Chapter 62, Article X, Division 4 (Wetlands Protection) codifying Ordinance Nos. 12-33, 13-03, and 14-18, Comprehensive Plan Amendments (Glossary & Conservation Element)
DEPT/OFFICE:	Natural Resources Management Department (NRM)

Requested Action:

It is requested that the Board of County Commissioners approve modifications to Chapter 62, Article X, Division 4 (Wetlands Protection), codifying amendments to the Brevard County Comprehensive Plan Glossary and Conservation Element Objective 5. The proposed amendments address policies related to commercial, industrial, and agricultural land uses, and institutional and residential professional activities in wetlands.

Summary Explanation & Background:

At the October 2009 County Commission Workshop, the Board directed staff to review and amend several elements of the Comprehensive Plan (Plan). The Board appointed a stakeholder advisory committee (Working Group), consisting of residents and professionals from a wide spectrum of interests. The Working Group evaluated and recommended changes to Conservation Element Objective 5-Wetlands relative to those policies addressing commercial, industrial, and institutional land uses in wetlands.

- On November 1, 2011, and February 3, 2012, the Board reviewed the recommended amendments and gave staff direction to further modify the policies prior to transmittal to the Florida Department of Economic Opportunity (DEO) in April 2012.
- The Board adopted the amendments in October 2012 (Ordinance No. 12-33 – Attachment D). Concurrently, the Board approved the commission of a Countywide Wetlands Study to identify “High Functioning” and “Landscape Level” wetlands.
- A timely challenge to the adopted amendments was subsequently filed with the State of Florida Division of Administrative Hearings. A compliance agreement was negotiated by staff, including the insertion in Plan amendment text of enforcement policies interim to the Wetlands Study completion.
- The Board adopted these modifications in February 2013 (Ordinance No. 13-03 – Attachment E).
- The Wetlands Study was completed in September 2013.
- The Board adopted the final Plan modifications in May 2014 (Ordinance No. 14-18 – Attachment F). The Wetlands Study and Toolbox (Attachment C) were adopted by reference.
- The State Department of Economic Opportunity issued its Finding of Compliance on July 11, 2014.
- On August 11, 2014, the 31-day challenge period expired, finalizing the Policy adoption process (Attachment G).
- The Building and Construction Advisory Committee (BCAC) unanimously (3-0) recommended codification of the amendments at the August 13, 2014, meeting.
- The Local Planning Agency (LPA) unanimously (10-0) recommended codification of the amendments at the August 25, 2014, meeting.

Attached please find for your approval Chapter 62, Article X, Division 4 (Wetlands Protection), codifying amendments to the Brevard County Comprehensive Plan Glossary and Conservation Element Objective 5 (Attachment B). The proposed ordinance amendments direct commercial and industrial development toward I-95 interchanges, commercial/industrial corridors, and areas where commercial/industrial properties abut (i.e., infill). This approach serves to discourage sprawl development patterns and the extension of commercial and industrial uses into residential and agricultural areas. This will maintain destination trip generation on those commercial corridors with greater capacity, rather than less desirable public roadways with lesser capacity.

The ordinance amendments also provide clarification of application for the public, professionals in the engineering and development community, and staff. Clarification is also provided for agricultural, institutional, and residential professional land uses, and access to uplands. Finally, the proposed amendments address duplication of County and State regulations where they may have existed historically.

The attached Staff Report provides further information regarding this request (Attachment A).

Fiscal Impact: FY 13-14 – No Net Impact
FY 14-15 – No Net Impact

Name: Ernest N. Brown or Darcie McGee, Natural Resources Management Department
Phone: (321) 633-2016

Clerk to the Board instruction:

Exhibits Attached:

Attachment A – Staff Report

Attachment B – Ordinance No. 2014-

Attachment C – Wetlands Toolbox

Attachment D – Ordinance No. 12-33

Attachment E – Ordinance No. 13-03

Attachment F – Ordinance No. 14-18

Attachment G – Conservation Element, Objective 5

Contract /Agreement (If attached): Reviewed by County Attorney

Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>	PR	<input type="checkbox"/>
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County Manager

Assistant County Manager

Department Director / Extension

Stockton Whitten 

Mel Scott 

Ernest N. Brown/x52439 



Tammy Etheridge, Clerk to the Board, 400 South Street • P.O. Box 999, Titusville, Florida 32781-0999

Telephone: (321) 637-2001
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September 17, 2014

MEMORANDUM

TO: Ernest Brown, Natural Resources Management Director

RE: Item III.F., Amendments to Chapter 62, Article X, Division 4 (Wetlands Protection)
Codifying Ordinance Nos. 12-33, 13-03, and 14-18, Comprehensive Plan Amendments
(Glossary and Conservation Element)

The Board of County Commissioners, in regular session on September 16, 2014, adopted Ordinance No. 14-28, modifying Chapter 62, Article X, Division 4 (Wetlands Protection), codifying amendments to the Brevard County Comprehensive Plan Glossary and Conservation Element Objective 5, and the amendments address policies related to commercial, industrial, and agricultural land uses, and institutional and residential professional activities in wetlands. Enclosed is a certified copy of the Ordinance.

Your continued cooperation is greatly appreciated.

Sincerely yours,

BOARD OF COUNTY COMMISSIONERS
SCOTT ELLIS, CLERK

Tammy Etheridge, Deputy Clerk

Encl. (1)

ORDINANCE 2014 -28

AN ORDINANCE OF BREVARD COUNTY, FLORIDA, AMENDING CHAPTER 62, ARTICLE X, DIVISION 4, CODE OF ORDINANCES OF BREVARD COUNTY, FLORIDA, RELATING TO WETLANDS PROTECTION, SPECIFICALLY AMENDING SECTIONS 62-3691 DEFINITIONS; 62-3693 GENERAL PROVISIONS; 62-3694 PERMITTED USES; 62-3697 PENALTIES; ADDITIONAL REMEDIES; AND 62-3699 ADMINISTRATION; PROVIDING FOR THE INTERPRETATION OF CONFLICTING PROVISIONS; PROVIDING FOR SEVERABILITY; PROVIDING FOR AREA ENCOMPASSED; PROVIDING FOR INCLUSION IN CODE AND AN EFFECTIVE DATE.

WHEREAS the regulation of wetlands serves to protect the public health, safety and welfare of the citizens of Brevard County; and

WHEREAS the Board directed preparation of amendments to the Wetlands Protection ordinance related to commercial, industrial, and agricultural land uses, and institutional and residential professional activities in wetlands;

WHEREAS the ordinance amendments direct commercial and industrial development toward I-95 interchanges, commercial/industrial corridors, and areas where commercial/industrial properties abut (i.e., infill);

WHEREAS the ordinance amendments provide clarification of application for the public, professionals in the engineering and development community, and staff; and

WHEREAS the proposed amendments address duplication of County and State regulations where they may have existed historically.

NOW, THEREFORE BE IT ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF BREVARD COUNTY, FLORIDA, as follows:

SECTION 1. Chapter 62, Article X, Division 4, Section 62-3691, Definitions, Code of Ordinances of Brevard County is hereby amended as follows:

Sec. 62-3691. Definitions.

For the purpose of this division, certain terms and words pertain and are defined as follows:

Abandoned mine reclamation means the reclamation of altered lands which require intervention to be made safe, environmentally sound and capable of supporting land uses that are reasonable or economically viable and come into compliance with all other current environmental and land development regulations.

Abuts, for the purposes of this Division, means sharing all or a portion of a property boundary.

Altered lands means the land areas in which the natural land surface has been disturbed as the result of, or incidental to, land excavation or filling activities.

Best management practices means those practices as developed by the U.S. Department of Agriculture, the state department of agriculture or other appropriate agencies.

Commercial and Industrial Land Development Activity can include office, retail, manufacturing, processing, warehousing, packing plants, distribution and dispatching centers, and other activities found in the NAICS manual. Based upon the use, these activities could be in BU-1-A, BU-1, BU-2, TU-1, TU-2, PBP, PIP, IU and IU-1 zoning classifications. Exceptions to this definition would be those uses that meet the definition of redevelopment.

Forestry means the science, application and practice of controlling forest establishment, composition and growth through sound management techniques, based on the owner's management objectives.

High Functioning Wetlands means wetlands that score 0.66 or above as determined by the Wetlands Assessment Method established in the Countywide Wetlands Study, prepared BKI, Inc. Consulting Ecologists (September 30, 2013), adopted by the Board and incorporated herein by this reference. High Functioning Wetlands analyses shall be prepared by a Recognized Knowledgeable Environmental Professional.

Isolated wetlands means wetlands which do not require a U.S. Army Corps of Engineers permit for impact. In the absence of a U.S. Army Corps of Engineers clearance letter, a Recognized Knowledgeable Environmental Professional may provide an affidavit affirming that a wetland is isolated in accordance with 33 CFR Part 329 (Definition of Navigable Waters), and U.S. Army Corps Of Engineers 404 Determination of Jurisdiction. The use of an isolated wetland affidavit is exclusively for the purposes of this Division.

Landscape Level Wetlands means wetlands that are EITHER 1) five (5) acres or larger; OR 2) located within the Landscape Level Polygon depicted on Map 9 of the Brevard County Comprehensive Plan Conservation Element, AND the U.S. Army Corps of Engineers determines the wetland is hydrologically connected to the St. Johns River or Indian River Lagoon System. Landscape Level Wetlands analyses shall be prepared by a Recognized Knowledgeable Environmental Professional.

Mine means the altered lands that result from the process of removing minerals or other resources from the land including mining and smelting operations, borrow pits, and commercial borrow pits.

Mitigation means actions taken to offset the adverse effects of wetland losses.

Overriding public benefit means the result of a development action by a private property owner that substantially preserves, restores or enhances those natural functions which define areas of critical concern, environmentally sensitive areas, shorelines or water bodies, identified by the County Comprehensive Plan, NRM or state or federal agencies. An overriding public benefit shall include but not be limited to proposals which preserve, restore or enhance floodplain, wetland, shoreline or prime aquifer recharge functions and provide for the dedication of associated lands to the County or other acceptable public entity or agency.

Public Interest means demonstrable environmental, social, and economic benefits which would accrue to the public at large as a result of a proposed action, and which would clearly exceed all demonstrable environmental, social, and economic costs of the proposed action. In determining the public interest in a request for use, sale, lease, or transfer of interest in sovereignty lands or severance of materials from sovereignty lands, the board shall consider the ultimate project and purpose to be served by said use, sale, lease, or transfer of lands or materials.

Reclamation means the restructuring, reshaping and revegetation of altered lands and water bodies to achieve a safe, environmentally sound condition, capable of supporting land uses that are reasonable or economically viable, and come into compliance with all other current environmental and land development regulations.

Recognized Knowledgeable Environmental Professional means an individual with demonstrated professional education and experience in the environmental science field including the assessment of wetlands in accordance with: F.A.C. Chapters 62-340 (Delineation of the Landward Extent of Wetlands and Surface Waters) and 62-345 (Uniform Mitigation Assessment Method), 33 CFR Part 328 (Definition of Waters of the United States), 33 CFR Part 329 (Definition of Navigable Waters), and U.S. Army Corps Of Engineers 404 Determination of Jurisdiction. Acceptable experience shall include a minimum of four years of fulltime experience in the identification and evaluation of wetlands resources.

Redevelopment means renovation of a previously developed obsolete commercial or industrial parcel of land or building site which suffer from structural vacancy due to the expiration of their former use and require intervention to achieve a subsequent useful function and come into compliance with all other current environmental and land development regulations.

Release means any sudden or gradual spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing of hazardous materials, including the abandonment or discarding of barrels, containers and other receptacles containing any hazardous materials, into the environment, in such a manner as to endanger the public health, safety or welfare or the environment, or in violation of any federal, state or local law, rule or regulation.

Wetland boundary. The boundary of a wetland as defined by the Florida Department of Environmental Protection (FDEP) or St. Johns River Water Management District (SJRWMD) methodology, soil types, hydrological requirements, and vegetation types.

Wetland function. A functional wetland is determined by the ability of the wetland to provide a diversity of habitat and food sources for aquatic and wetland-dependent species, and for threatened and endangered species and species of special concern; to provide flood storage capacity; to provide for the protection of downstream and offshore water resources from siltation and pollution; or to provide for the stabilization of the water table.

Wetlands means wetlands as defined in Chapter 62-340, F.A.C., as amended.

SECTION 2. Chapter 62, Article X, Division 4, Section 62-3693, General Provisions, Code of Ordinances of Brevard County is hereby amended as follows:

Sec. 62-3693. General provisions.

The following regulations shall apply to development proposed in or adjacent to wetlands:

- (1) Any wetlands addressed by a FDEP or SJRWMD permit will be exempt from the county's mitigation standards provided that the FDEP or SJRWMD permit conditions result in "no net loss" of wetlands and is consistent with section 62-3694(e). Therefore, an applicant proposing to alter any wetland must provide the Natural Resources Management Department with a copy of the FDEP or SJRWMD permit conditions and if necessary, a copy of staff comments.
- (2) During development plans review, the Natural Resources Management Department shall use the National Wetlands Inventory maps, the county soil survey, aerial photography, information provided by the applicant, or any other applicable source of information, to determine whether wetlands are indicated on the site.
- (3) If these materials indicate that wetlands may exist on the property, a site inspection may be performed by the Natural Resources Management Department to determine:
 - a. If the wetlands are present;
 - b. If they are functional; and
 - c. The wetland boundary for each functional wetland on the property.
- (4) Based on this assessment, the Natural Resources Management Department shall make recommendations for development within or adjacent to functional wetlands, and required mitigation, if any, consistent with the provisions of sections 62-3694, 62-3695 and 62-3696. The Natural Resources Management Department's recommendations shall prioritize wetlands protective activities as avoidance of impacts as the first priority, minimization of impacts as the second priority, and mitigation for impacts as the third priority.

- (5) The Natural Resources Management Department may conduct a site visit to confirm wetland boundaries as provided by the applicant. This confirmation shall not be considered a formal wetland determination or delineation. The Natural Resources Management Department will not provide a survey sealed by a registered surveyor of a legal description of the wetland boundaries.
- (6) Projects or parcels that have an active Brevard County development order previously approved under Chapter 62, Article X, Division 4, allowing wetland impacts that would not comply with current Sec. 62-3694; project redesign may be permitted by the Director provided that there is a net reduction in environmental impacts, and the project modifications do not result in the requirement for additional wetland mitigation.
- (7) Prior to plan submittal, the applicant is strongly encouraged to meet with the Natural Resources Management Department to discuss the requirements of this Division.
- (8) An applicant proposing a project on a property with wetlands shall provide the Natural Resources Management Department with:
 - a. Site plan depicting proposed use of the property, including limits of all fill, excavation, and clearing.
 - b. Documentation confirming the year the property was legally established, if the project property is less than five acres.
 - c. Wetlands and their boundaries delineated pursuant to Chapter 62-340, Florida Administrative Code, as amended.
 - d. Identification of all applicable setbacks or buffers as may be required by this Division.
 - e. If applicable, a copy of the FDEP or SJRWMD permit conditions and a copy of staff comments.
 - f. All documentation related to High Functioning and Landscape Level wetland assessments; to include photographs, assessment matrix, map depicting wetland(s) location relative to the Landscape Level Polygon, map depicting wetland(s) location relative to I-95 interchange (if applicable), and map depicting surrounding land uses within 100 meters of the wetland(s).
 - g. Any other information that is necessary to determine compliance with the County's land development regulations.

Surveys shall be prepared by a professional land surveyor registered in the State of Florida. Documents related to wetland assessments, including wetlands

determinations, shall be prepared by a Recognized Knowledgeable Environmental Professional.

SECTION 3. Chapter 62, Article X, Division 4, Section 62-3694, Permitted Uses, Code of Ordinances of Brevard County is hereby amended as follows:

Sec. 62-3694. Permitted uses.

(a) The following uses shall be permitted provided they do not adversely affect the functions of wetlands within the county:

- (1) Non-bona fide agricultural and forestry operations utilizing best management practices, which do not result in permanent degradation or destruction of wetlands;
- (2) Recreation;
- (3) Fish and wildlife management; and
- (4) Open space.

Pursuant to the Florida Agricultural Lands and Practices Act (Chapter 163.3162(4), Florida Statutes), any activity of a Bona Fide Agricultural Use on land classified as agricultural land pursuant to Section 193.461, Florida Statute is exempt.

(b) As an alternative to filling, functional isolated wetlands may be utilized within the surface water management system of a project as approved by the county.

(c) The following land use and density restrictions are established as a maximum density or most intense land use within wetlands that may be considered only if other criteria established in Conservation Element Policy 5.2 of the Brevard County Comprehensive Plan are met:

- (1) Residential land uses within wetlands that are a part of a formal subdivision or site plan, on properties containing wetlands shall be limited to the following:
 - a. Residential land uses within wetlands shall be limited to not more than one (1) dwelling unit per five (5) acres unless strict application of this policy renders a legally established parcel as of September 9, 1988, which is less than five (5) acres, as unbuildable. The preceding limitation of one dwelling unit per five (5) acres within wetlands may be applied as a maximum percentage limiting wetland impacts to not more than 1.8% of the total non-commercial and non-industrial acreage on a cumulative basis as set forth in Sec. 65-3694(c)(6), for subdivisions and multi-family parcels greater than five acres in area, New Town Overlays, PUDs, and if applicable, mixed-use land development activities as specified in Sec. 65-3694(c)(5).

- b. For development activities on property greater than five (5) acres, density may be transferred to an upland portion of the site if consistent with all county land development regulations and compatible with adjacent uses.
 - c. Except as allowable in Sec. 65-3694(c)(1)a, subdivided lots and multi-family parcels shall contain sufficient uplands for the intended use and for any buffering necessary to maintain the function of the wetland(s), and shall be compatible with adjacent uses.
- (2) Residential land uses within wetlands and created by metes and bounds, which are not part of a formal subdivision, on properties containing wetlands shall be limited to the following:
- a. Residential land uses within wetlands shall be limited to not more than one (1) dwelling unit per five (5) acres unless strict application of this policy would render a legally established parcel as of September 9, 1988, which is less than five (5) acres, as unbuildable. The preceding limitation of one dwelling unit per five (5) acres within wetlands may be applied as a maximum percentage limiting wetland impacts as described in Sec. 65-3694(c)(1)a above. Application of the one-unit-per-five-acres limitation shall limit impacts to wetlands for single family residential development on a cumulative basis, to not more than 1.8% of the total property as defined in Sec. 65-3694(c)(6).
 - b. Except as allowable in Sec. 65-3694(c)(2)a, properties shall contain sufficient uplands for the intended use and for any buffering necessary to maintain the function of the wetland(s), and shall be compatible with adjacent uses.
 - c. In addition to impacts allowable in Sec. 65-3694(c)(2)a, on properties where sufficient uplands for the intended use and for any buffering necessary to maintain the function of the wetland(s) exist except for access, wetland impacts may be permitted for single access to the uplands.
- (3) Commercial and industrial land development activities shall be prohibited in wetlands contained in properties designated on the Future Land Use Map as commercial or industrial, and in surrounding upland buffers for such wetlands, except as provided below for I-95 interchanges, mitigation qualified roadways, abutting properties, and access to uplands. In no instance shall a proposed land development activity result in increased flooding on adjacent properties. Where the State does not require a buffer, wetland buffers shall be established in accordance with Section 62-3694(c)(10). Where impacts are permitted, the applicant is encouraged to propose innovative wetland preservation alternatives. Where the State does not require mitigation for any wetland impact, mitigation shall be provided to meet the County's no net loss policy as defined in Section 62-3696.
- a. I-95 Interchanges:

Impacts to wetlands are permissible for commercial or industrial land development activities on a property that is designated as commercial or industrial on the Future Land Use map, and the proposed wetland impacts are entirely located within one-half mile of the intersection of the off-ramp of the I-95 interchange with the connecting roadway. The one-half mile radius shall be measured from the end of the limited access boundary of I-95. This shall not include those interchanges where I-95 intersects a limited access highway as defined by Florida Statute.

b. Mitigation Qualified Roadways:

On properties with frontage on mitigation qualified roadways, commercial or industrial land development activities may be permitted in wetlands if the property is designated for commercial or industrial land uses on the Future Land Use Map. Mitigation qualified roadways are depicted and identified in a table on Map 8 of the Comprehensive Plan Conservation Element. An amendment to the Comprehensive Plan shall be required to add a mitigation qualified roadway to Map 8 and the associated table.

For a project that encompasses multiple properties assembled under one site plan development order, wetland impacts for those properties without direct frontage on the mitigation qualified roadway may be permitted only if the properties are combined so that any proposed wetland impact is contained within a property with direct frontage on the mitigation qualified roadway. The assemblage shall be deed restricted for commercial or industrial use.

Wetlands proposed for impact shall be assessed using methodologies established in the Countywide Wetlands Study, prepared BKI, Inc. Consulting Ecologists (September 30, 2013), to determine if they meet the criteria of High Functioning Wetlands or Landscape Level Wetlands. Impacts to high functioning and landscape level wetlands shall be prohibited unless the proposed impacts are found to be in the public interest, or of overriding public benefit.

c. Abutting Properties:

Commercial or industrial land development activities may be permitted in wetlands contained in properties designated for commercial or industrial land uses on the Future Land Use Map prior to February 23, 1996, if the property abuts land(s) developed as commercial or industrial as of December 31, 2010, and has sufficient infrastructure available to serve the commercial or industrial use. This shall not apply to properties that are addressed under Section 62-3694(c)(3)a, b, and d.

Wetlands proposed for impact shall be assessed using methodologies established in the Countywide Wetlands Study, prepared BKI, Inc. Consulting Ecologists (September 30, 2013), to determine if they meet the criteria of High Functioning

Wetlands or Landscape Level Wetlands. Impacts to high functioning and landscape level wetlands shall be prohibited unless the proposed impacts are found to be in the public interest, or of overriding public benefit.

d. Access to Uplands:

Impacts to wetlands for commercial or industrial land development activities limited solely to providing access to uplands, and for no other purpose than providing access as required by Brevard County land development regulations, may be permitted in wetlands contained in properties designated on the Future Land Use Map as commercial or industrial of February 23, 1996, only if all of the following criteria are met:

- (i) Sufficient uplands exist for the intended use except for access to uplands, and
- (ii) The property was not subdivided from a larger property after December 31, 2010. This shall not preclude a single shared access through wetlands for properties subdivided after December 31, 2010.

(4) Institutional and Residential Professional development activities within wetlands shall be limited to the following:

- a. Institutional or Residential Professional land development on properties which contain wetlands and which are designated on the Future Land Use Map as Neighborhood Commercial or Community Commercial shall be considered commercial as set forth in Section 62-3694(c)(3). The property shall have sufficient infrastructure available to serve the use.
- b. Institutional or Residential Professional land development on properties which contain wetlands and which are designated on the Future Land Use Map as residential shall be limited to properties of at least 5 acres unless strict application of this policy renders a legally established parcel as of September 9, 1988, which is less than 5 acres, as unbuildable.
- c. Wetland impacts for uses that are ancillary to institutional development and required by law shall be included in allowable impacts.

(5) Beginning on January 1, 2010, mixed-use land development activities may be permitted in wetlands only if all of the following are met:

- a. The land development activities that impact wetlands must be part of a mixed use development that includes a minimum of three of the following land uses: residential, commercial (retail services and/or office), recreation/open space and institutional uses. Industrial land uses shall be prohibited in mixed use land

development activities within wetlands. For purposes of this policy mixed use land development activities shall be consistent with the following criteria:

- (i) The mixed use land development activity includes a variety of densities, intensities and types designed to promote walking between uses and utilizes a variety of transportation modes such as bicycles, transit and automobiles; and
 - (ii) The residential component of the land development activity is an integrated part of the project and comprises not less than 30% of the gross square footage of land uses within the development as shown on a site plan or a Sketch Plan complying with the standards set forth in Chapter 11, Policy 9.9.2.
 - (iii) The development is in conformance with an integrated site plan or commercial subdivision which includes both vertical and horizontal mix of uses within a defined area.
- b. Impacts to wetlands from mixed-use development activities (including without limitation impacts resulting from associated improvements such as sidewalks, parking areas and driveways) do not exceed the limitation set forth in Sec. 65-3694(c)(6); and
 - c. To the extent direct impacts to wetlands are caused by a particular building or buildings within a mixed-use development, not less than 30% of the gross square footage of such building or buildings must be for residential use; or such building or buildings shall be physically attached to a building having not less than 30% of its gross square footage permitted for residential use.
- (6) Impacts to wetlands from residential and mixed-use land development activities, on a cumulative basis, shall not exceed 1.8% of the non-commercial and non-industrial acreage of a DRI, PUD, parcel acreage or, if the project is within a New Town Overlay (as defined in Chapter 11, Policy 9.2), 1.8% of the non-commercial and non-industrial acreage within the applicable New Town Overlay.
 - (7) Wetland impacts for activities listed in agricultural zoning classifications as permitted, permitted with conditions, or approved by the Board of County Commissioners as a Conditional Use on properties designated as bona fide agricultural lands per F.S. 193.461 and 823.14, may be allowed subject to the following criteria:
 - a. The property shall be classified as bona fide agricultural per F.S. 193.461 and 823.14 for not less than ten consecutive years as of the date of the proposed impact;

- b. The property shall have Agriculture Future Land Use designation or DRI Future Land Use designation and the proposed use is consistent with the defined agricultural uses under an approved DRI Development Order;
 - c. Upon approval of the impact, no less than 50 percent of the property area shall retain bona fide agricultural use pursuant to Section 62-3694(c)(7)a;
 - d. Wetlands proposed for impact shall be assessed using methodologies established in the Countywide Wetlands Study, prepared BKI, Inc. Consulting Ecologists (September 30, 2013), to determine if they meet the criteria of high functioning wetlands or landscape level wetlands. Impacts to high functioning or landscape level wetlands shall be prohibited unless the proposed impacts are found to be in the public interest, or of overriding public benefit;
 - e. The property shall have an agricultural zoning classification or be zoned PUD and the proposed use is consistent with the defined agricultural uses in the PUD zoning resolution or approved Preliminary Development Plan;
 - f. Where the State does not require mitigation for any wetland impact, mitigation shall be provided to meet the County's no net loss policy as defined in Section 62-3696;
 - g. Buffer setbacks shall be established in accordance with Section 62-3694(c)(10);
 - h. Where the allowable use is residential, residential policies shall apply; and
 - i. The property shall meet all other State regulatory criteria.
- (8) Redevelopment commercial and industrial land development activities that do not meet the criteria established in Section 62-3694(c)(3) may be permitted within wetlands only if the following criteria are met:
- a. Property must have been developed and designated on the Future Land Use Map as commercial or industrial prior to February 23, 1996.
 - b. Additions to existing structures and/or additions of new buildings on a site shall not be considered redevelopment.
 - c. Complies with all current regulations Land Development Regulations.
 - d. Wetlands proposed for impact shall be assessed using methodologies established in the Countywide Wetlands Study, prepared BKI, Inc. Consulting Ecologists (September 30, 2013), to determine if they meet the criteria of High Functioning Wetlands or Landscape Level Wetlands. Impacts to high functioning and landscape level wetlands shall be prohibited unless the proposed impacts are found to be in the public interest, or of overriding public benefit.

- e. Wetland impacts cannot be avoided through alteration of project location, design, or other related aspects.
 - f. Wetland impacts have been minimized to the greatest extent possible through project design and location.
 - g. Any allowed filling of wetlands for commercial, industrial, or institutional use shall be limited as outlined in section 62-3694(e).
 - h. Existing uncontrolled stormwater runoff is mitigated by meeting current stormwater requirements pursuant to Article X, Division 6 as may be amended.
 - i. Where the State does not require a buffer, wetland buffers shall be established in accordance with Section 62-3694(c)(10).
- (9) Abandoned mine reclamation plans shall be submitted to the Natural Resources Management Department for approval prior to the commencement of activity including, but not limited to, restructuring, reshaping, and revegetation of altered lands. Abandoned mine reclamation may be permitted within wetlands only if the following criteria are met:
- a. Compliance with all current Land Development Regulations.
 - b. Wetlands proposed for impact shall be assessed using methodologies established in the Countywide Wetlands Study, prepared BKI, Inc. Consulting Ecologists (September 30, 2013), to determine if they meet the criteria of High Functioning Wetlands or Landscape Level Wetlands. Impacts to high functioning and landscape level wetlands shall be prohibited unless the proposed impacts are found to be in the public interest, or of overriding public benefit.
 - c. Only wetland impacts necessary for the abandoned mine reclamation are proposed and wetland impacts have been minimized to the greatest extent possible.
- (10) Where the State does not require a buffer for those wetlands preserved under Sections 62-3694(c)(3) and (7), wetland buffers shall be established based on peer-reviewed publications to include, but not be limited to, Buffer Zones for Water, Wetlands, and Wildlife in the East Central Florida Region, (1990, Brown, M.T., Schaefer, and K. Brandt, published by the Center for Wetlands, University of Florida). Wetland buffer requirements shall be assessed on site-specific conditions to include:
- a. Water quality;
 - b. Water quantity/groundwater drawdown; and
 - c. Wetland wildlife habitat.

Wetland buffers shall be established by a Recognized Knowledgeable Environmental Professional, and reviewed and approved by the Natural Resources Management Department.

- (11) In the event that the denial of commercial or industrial development activities in wetlands results in an inordinate burden under the Bert Harris Property Rights Act or a taking under state or federal law, an affected property owner may appeal such denial to the board of county commissioners in the manner provided in section 62-507(b)(2) of this Code.

(d) All applications for development shall be reviewed by the Natural Resources Management Department to determine utilization or protection of wetlands.

(e) Any allowed wetland impact shall ensure the protection of wetlands and wetland functional values by prioritizing protective activities with avoidance of impacts as the first priority, minimization of impacts as the second priority, and mitigation for impacts as the third priority. Any wetland impact, authorized under this Division, for residential use shall be limited to the structural building area requirements for the primary use as defined by the zoning code, on-site disposal system requirements, and the 100-year flood elevation requirement for first floor elevations, and necessary ingress and egress. Any wetland impact, authorized under this Division, for commercial, industrial, or institutional use shall be limited to structural building and parking area requirements, onsite sewage disposal, the 100-year flood elevation requirement for first floor elevations, and ingress and egress to the on-site structures. The amount and extent of wetland impact shall be the minimum required to accomplish these purposes.

(f) Utility corridors developed or maintained by governmental or investor owned regulated utilities are permitted. Any adverse impact, degradation or destruction of wetlands must be mitigated as provided in section 62-3696.

SECTION 4. Chapter 62, Article X, Division 4, Section 62-3697, Penalties; Additional Remedies, Code of Ordinances of Brevard County is hereby amended as follows:

Sec. 62-3697. Penalties; additional remedies.

Penalties for violations of this division shall be specified in Section 125.69, Florida Statutes, or section 1-7 of the Code. In addition, mitigation shall be required. The director of the Natural Resources Management Department shall be responsible for reviewing and approving all restoration or mitigation plans. The provisions of this section are an additional and supplemental means of enforcing county codes and ordinances. Nothing in this section shall prohibit the county from enforcing this section by injunctive relief, or by any other means provided by law.

SECTION 5. Chapter 62, Article X, Division 4, Section 62-3699, Administration, Code of Ordinances of Brevard County is hereby amended as follows:

Sec. 62-3699. Administration.

The director of the Natural Resources Management Department, or the designee, shall be responsible for the general administration of this division of this article. The director shall be responsible for all reviews of all applications, in addition to providing the administrative decisions that pertain to this division. Upon request, the director shall provide written confirmation of any decision or findings relating to applications or reviews made pursuant to this division and letters of interpretation or intent.

SECTION 6. CONFLICTING PROVISIONS. In the case of a direct conflict between any provision of this ordinance and a portion or provision of any other appropriate federal, state or county law, rule, code or regulations, the more restrictive shall apply.

SECTION 7. SEVERABILITY. If any section, subsection, clause, phrase, word or provision of this ordinance is for any reason held invalid or unconstitutional by any court of competent jurisdiction, such invalid unconstitutional portion shall be deemed a separate, distinct and independent provision, and such holding shall not affect the validity of the remaining portions of this ordinance, provided the remaining portions effectuate purpose and intent of this ordinance.

SECTION 8. AREA ENCOMPASSED. This ordinance shall take effect within the unincorporated area of Brevard County, Florida.

SECTION 9. EFFECTIVE DATE. This ordinance shall become effective upon filing as provided by law. A certified copy of the ordinance shall be filed with the Office of the Secretary of State, State of Florida, within ten days of enactment.

DONE, ORDERED AND ADOPTED in Regular Session, this 16 day of September 2014.

ATTEST



Scott Ellis, Clerk

**BOARD OF COUNTY COMMISSIONERS
OF BREVARD COUNTY, FLORIDA**



Mary Bolin Lewis, Chairman

As approved by the Board of County
Commissioners on

9-16, 2014.

Reviewed for legal form and content by:



Christine Lepore, Assistant County Attorney



FLORIDA DEPARTMENT *of* STATE

RICK SCOTT
Governor

KEN DETZNER
Secretary of State

September 23, 2014

Honorable Scott Ellis
Clerk
Board of County Commissioners
Brevard County
Post Office Box 999
Titusville, Florida 32781-0999

Attention: Mr. John Lynch, Clerk to the Board

Dear Mr. Ellis:

Pursuant to the provisions of Section 125.66, Florida Statutes, this will acknowledge receipt of your electronic copy of Brevard County Ordinance No. 2014-28, which was filed in this office on September 23, 2014.

Sincerely,

Ernest L. Reddick
Program Administrator

ELR/lb

Donna Scott

From: Mcgee, Darcie A <Darcie.Mcgee@brevardcounty.us>
Sent: Wednesday, September 10, 2014 3:30 PM
To: Brown, Ernest N; Donna Scott
Subject: RE: Clean Ordinance for Item III.F. on 09-16-14 Agenda
Attachments: ARTICLE X DIVISION 4 Wetland Protection Clean.pdf; Ordinance 2014-__ ART X DIV 4 Clean.pdf

First document is a clean copy of the new ordinance. Second is a clean copy of the Ordinance document that needs to be signed. I had to insert Christine's signature on the clean copy (she signed the underline/strikethrough).

Darcie

From: Brown, Ernest N
Sent: Wednesday, September 10, 2014 2:07 PM
To: Donna Scott
Cc: Mcgee, Darcie A
Subject: RE: Clean Ordinance for Item III.F. on 09-16-14 Agenda

Darcie will send it over this afternoon!

Thanks a mil

E

From: Donna Scott [<mailto:donna.scott@brevardclerk.us>]
Sent: Wednesday, September 10, 2014 12:28 PM
To: Brown, Ernest N
Subject: Clean Ordinance for Item III.F. on 09-16-14 Agenda

Hi Ernie,

Please provide the clean ordinance for Item III.F. on September 16 Agenda that you asked about last night, because we do not have one.

Thank you,
Donna Scott
Clerk to the Board Office
49120

Under Florida law, all correspondence sent to the Clerk's Office, which is not exempt or confidential pursuant to Chapter 119 of the Florida Statutes, is public record. If you do not want the public record contents of your e-mail or your e-mail address to be provided to the public in response to a public records request, please do not send electronic mail to this entity. Instead, contact this office by phone or in writing.

Under Florida Law, email addresses are Public Records. If you do not want your e-mail address released in response to public record requests, do not send electronic mail to this entity. Instead, contact this office by phone or in writing.

ATTACHMENT A



BOARD OF COUNTY COMMISSIONERS

Natural Resources Management Department

2725 Judge Fran Jamieson Way
Building A, Room 219
Viera, Florida 32940

Staff Report

SUBJECT: Amendments to Chapter 62, Article X, Division 4 (Wetlands Protection) codifying Ordinance Nos. 12-33, 13-03, and 14-18, Comprehensive Plan Amendments (Glossary & Conservation Element)

DATE: September 16, 2014

AUTHORS: Natural Resources Management Department (NRM)

Attached please find for your approval Chapter 62, Article X, Division 4 (Wetlands Protection), codifying amendments to the Brevard County Comprehensive Plan Glossary and Conservation Element Objective 5. The proposed amendments address policies related to commercial, industrial, and agricultural land uses, and institutional and residential professional activities in wetlands.

The ordinance amendments direct commercial and industrial development toward I-95 interchanges, commercial/industrial corridors, and areas where commercial/industrial properties abut (i.e., infill). This approach serves to discourage sprawl development patterns and the extension of commercial and industrial uses into residential and agricultural areas. This will maintain destination trip generation on those commercial corridors with greater capacity, rather than less desirable public roadways with lesser capacity.

The ordinance amendments also provide clarification of application for the public, professionals in the engineering and development community, and staff. Clarification is provided for agricultural, institutional, and residential professional land uses, and access to uplands. Finally, the proposed amendments address duplication of County and State regulations where they may have existed historically.

BACKGROUND

At the October 2009 County Commission Workshop, the Board directed staff to review and amend several elements of the Comprehensive Plan (Plan). The Board appointed a stakeholder advisory committee (Working Group), consisting of residents and professionals from a wide spectrum of interests. The Working Group evaluated and recommended changes to Conservation Element Objective 5- Wetlands relative to those policies addressing commercial, industrial, and institutional land uses in wetlands.

On November 1, 2011, and February 3, 2012, the Board reviewed the recommended amendments and gave staff direction to further modify the policies prior to transmittal to the Florida Department of Economic Opportunity (DEO) in April 2012. The Board adopted the amendments in October 2012 (Ordinance No. 12-33 – Attachment D). Concurrently, the Board approved the commission of a Countywide Wetlands Study to identify “High Functioning” and “Landscape Level” wetlands. The intent being to prioritize these wetlands for protection, and to allow mitigation of wetlands of inferior quality for commercial, industrial, and institutional land development activities.

A timely challenge to the adopted amendments was subsequently filed with the State of Florida Division of Administrative Hearings. A compliance agreement was negotiated by staff, including the insertion in Plan amendment text of enforcement policies interim to the Wetlands Study completion. The Board adopted these modifications in February 2013 (Ordinance No. 13-03 – Attachment E).

The Wetlands Study, completed in September 2013, included a wetlands assessment “Toolbox,” a methodology to identify High Functioning and Landscape Level wetlands. In May 2014, the Board adopted the final Plan modifications (Ordinance No. 14-18 – Attachment F). The Wetlands Study and Toolbox (Attachment C) were adopted by reference.

The State Department of Economic Opportunity issued its Finding of Compliance on July 11, 2014 (Attachment G). On August 11, 2014, the 31-day challenge period expired, finalizing the Policy adoption process. Chapter 62, Article X, Division 4, entitled Wetlands Protection (Attachment B) codifies the amended Policies.

The Building and Construction Advisory Committee (BCAC) unanimously (3-0) recommended codification of the amendments at the August 13, 2014, meeting. The Local Planning Agency (LPA) unanimously (10-0) recommended codification of the amendments at the August 25, 2014, meeting.

**CHAPTER 62, ARTICLE X,
DIVISION 4.**

WETLAND PROTECTION

Sec. 62-3691. Definitions.

For the purpose of this division, certain terms and words pertain and are defined as follows:

Abandoned mine reclamation means the reclamation of altered lands which require intervention to be made safe, environmentally sound and capable of supporting land uses that are reasonable or economically viable and come into compliance with all other current environmental and land development regulations.

Abuts, for the purposes of this Division, means sharing all or a portion of a property boundary.

Altered lands means the land areas in which the natural land surface has been disturbed as the result of, or incidental to, land excavation or filling activities.

Best management practices means those practices as developed by the U.S. Department of Agriculture, the state department of agriculture or other appropriate agencies.

Commercial and Industrial Land Development Activity can include office, retail, manufacturing, processing, warehousing, packing plants, distribution and dispatching centers, and other activities found in the NAICS manual. Based upon the use, these activities could be in BU-1-A, BU-1, BU-2, TU-1, TU-2, PBP, PIP, IU and IU-1 zoning classifications. Exceptions to this definition would be those uses that meet the definition of redevelopment.

Forestry means the science, application and practice of controlling forest establishment, composition and growth through sound management techniques, based on the owner's management objectives.

High Functioning Wetlands means wetlands that score 0.66 or above as determined by the Wetlands Assessment Method established in the Countywide Wetlands Study, prepared BK1, Inc. Consulting Ecologists (September 30, 2013), adopted by the Board and incorporated herein by this reference. High Functioning Wetlands analyses shall be prepared by a Recognized Knowledgeable Environmental Professional.

Isolated wetlands means wetlands which do not require a U.S. Army Corps of Engineers permit for impact. In the absence of a U.S. Army Corps of Engineers clearance letter, a Recognized Knowledgeable Environmental Professional may provide an affidavit affirming that a wetland is isolated in accordance with 33 CFR Part 329 (Definition of Navigable Waters), and U.S. Army Corps Of Engineers 404 Determination of Jurisdiction. The use of an isolated wetland affidavit is exclusively for the purposes of this Division.

Landscape Level Wetlands means wetlands that are EITHER 1) five (5) acres or larger; OR 2) located within the Landscape Level Polygon depicted on Map 9 of the Brevard County Comprehensive Plan Conservation Element, AND the U.S. Army Corps of Engineers determines the wetland is hydrologically connected to the St. Johns River or Indian River Lagoon System. Landscape Level Wetlands analyses shall be prepared by a Recognized Knowledgeable Environmental Professional.

Mine means the altered lands that result from the process of removing minerals or other resources from the land including mining and smelting operations, borrow pits, and commercial borrow pits.

Mitigation means actions taken to offset the adverse effects of wetland losses.

Overriding public benefit means the result of a development action by a private property owner that substantially preserves, restores or enhances those natural functions which define areas of critical concern, environmentally sensitive areas, shorelines or water bodies, identified by the County Comprehensive Plan, NRM or state or federal agencies. An overriding public benefit shall include but not be limited to proposals which preserve, restore or enhance floodplain, wetland, shoreline or prime aquifer recharge functions and provide for the dedication of associated lands to the County or other acceptable public entity or agency.

Public Interest means demonstrable environmental, social, and economic benefits which would accrue to the public at large as a result of a proposed action, and which would clearly exceed all demonstrable environmental, social, and economic costs of the proposed action. In determining the public interest in a request for use, sale, lease, or transfer of interest in sovereignty lands or severance of materials from sovereignty lands, the board shall consider the ultimate project and purpose to be served by said use, sale, lease, or transfer of lands or materials.

Reclamation means the restructuring, reshaping and revegetation of altered lands and water bodies to achieve a safe, environmentally sound condition, capable of supporting land uses that are reasonable or economically viable, and come into compliance with all other current environmental and land development regulations.

Recognized Knowledgeable Environmental Professional means an individual with demonstrated professional education and experience in the environmental science field including the assessment of wetlands in accordance with: F.A.C. Chapters 62-340 (Delineation of the Landward Extent of Wetlands and Surface Waters) and 62-345 (Uniform Mitigation Assessment Method), 33 CFR Part 328 (Definition of Waters of the United States), 33 CFR Part 329 (Definition of Navigable Waters), and U.S. Army Corps Of Engineers 404 Determination of Jurisdiction. Acceptable experience shall include a minimum of four years of fulltime experience in the identification and evaluation of wetlands resources.

Redevelopment means renovation of a previously developed obsolete commercial or industrial parcel of land or building site which suffer from structural vacancy due to the expiration of their former use and require intervention to achieve a subsequent useful function

and come into compliance with all other current environmental and land development regulations.

Release means any sudden or gradual spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing of hazardous materials, including the abandonment or discarding of barrels, containers and other receptacles containing any hazardous materials, into the environment, in such a manner as to endanger the public health, safety or welfare or the environment, or in violation of any federal, state or local law, rule or regulation.

Wetland boundary. The boundary of a wetland as defined by the Florida Department of Environmental Protection (FDEP) or St. Johns River Water Management District (SJRWMD) methodology, soil types, hydrological requirements, and vegetation types.

Wetland function. A functional wetland is determined by the ability of the wetland to provide a diversity of habitat and food sources for aquatic and wetland-dependent species, and for threatened and endangered species and species of special concern; to provide flood storage capacity; to provide for the protection of downstream and offshore water resources from siltation and pollution; or to provide for the stabilization of the water table.

Wetlands means wetlands as defined in Chapter 62-340, F.A.C., as amended.

Sec. 62-3692. Purpose and intent.

It is the purpose and intent of this division to protect, preserve, restore, replace and enhance, where feasible, the natural functions of wetlands within the county as to achieve a "no net loss." It is also the intent of this division to apply the standards set out in this division for development in and adjacent to wetlands.

Sec. 62-3693. General provisions.

The following regulations shall apply to development proposed in or adjacent to wetlands:

- (1) Any wetlands addressed by a FDEP or SJRWMD permit will be exempt from the county's mitigation standards provided that the FDEP or SJRWMD permit conditions result in "no net loss" of wetlands and is consistent with section 62-3694(e). Therefore, an applicant proposing to alter any wetland must provide the Natural Resources Management Department with a copy of the FDEP or SJRWMD permit conditions and if necessary, a copy of staff comments.
- (2) During development plans review, the Natural Resources Management Department shall use the National Wetlands Inventory maps, the county soil survey, aerial photography, information provided by the applicant, or any other applicable source of information, to determine whether wetlands are indicated on the site.

- (3) If these materials indicate that wetlands may exist on the property, a site inspection may be performed by the Natural Resources Management Department to determine:
 - a. If the wetlands are present;
 - b. If they are functional; and
 - c. The wetland boundary for each functional wetland on the property.
- (4) Based on this assessment, the Natural Resources Management Department shall make recommendations for development within or adjacent to functional wetlands, and required mitigation, if any, consistent with the provisions of sections 62-3694, 62-3695 and 62-3696. The Natural Resources Management Department's recommendations shall prioritize wetlands protective activities as avoidance of impacts as the first priority, minimization of impacts as the second priority, and mitigation for impacts as the third priority.
- (5) The Natural Resources Management Department may conduct a site visit to confirm wetland boundaries as provided by the applicant. This confirmation shall not be considered a formal wetland determination or delineation. The Natural Resources Management Department will not provide a survey sealed by a registered surveyor of a legal description of the wetland boundaries.
- (6) Projects or parcels that have an active Brevard County development order previously approved under Chapter 62, Article X, Division 4, allowing wetland impacts that would not comply with current Sec. 62-3694; project redesign may be permitted by the Director provided that there is a net reduction in environmental impacts, and the project modifications do not result in the requirement for additional wetland mitigation.
- (7) Prior to plan submittal, the applicant is strongly encouraged to meet with the Natural Resources Management Department to discuss the requirements of this Division.
- (8) An applicant proposing a project on a property with wetlands shall provide the Natural Resources Management Department with:
 - a. Site plan depicting proposed use of the property, including limits of all fill, excavation, and clearing.
 - b. The year the property was legally established, if the project property is less than five acres.
 - c. Wetlands and their boundaries delineated pursuant to Chapter 62-340, Florida Administrative Code, as amended.

- d. Identification of all applicable setbacks or buffers as may be required by this Division.
- e. A copy of the FDEP or SJRWMD permit conditions and, if applicable, a copy of staff comments.
- f. All documentation related to High Functioning and Landscape Level wetland assessments; to include photographs, assessment matrix, map depicting wetland(s) location relative to the Landscape Level Polygon, map depicting wetland(s) location relative to I-95 interchange (if applicable), and map depicting surrounding land uses with 100 meters of the wetland(s).
- g. Any other information that is necessary to determine compliance with the County's land development regulations.

Surveys shall be prepared by a professional land surveyor registered in the State of Florida. Documents related to wetland assessments, including wetlands determinations, shall be prepared by a Recognized Knowledgeable Environmental Professional.

Sec. 62-3694. Permitted uses.

(a) The following uses shall be permitted provided they do not adversely affect the functions of wetlands within the county:

- (1) Non-bona fide agricultural and forestry operations utilizing best management practices, which do not result in permanent degradation or destruction of wetlands;
- (2) Recreation;
- (3) Fish and wildlife management; and
- (4) Open space.

Pursuant to the Florida Agricultural Lands and Practices Act (Chapter 163.3162(4), Florida Statutes), any activity of a Bona Fide Agricultural Use on land classified as agricultural land pursuant to Section 193.461, Florida Statute is exempt.

(b) As an alternative to filling, functional isolated wetlands may be utilized within the surface water management system of a project as approved by the county.

(c) The following land use and density restrictions are established as a maximum density or most intense land use within wetlands that may be considered only if other criteria established in Conservation Element Policy 5.2 of the Brevard County Comprehensive Plan are met:

- (1) Residential land uses within wetlands that are a part of a formal subdivision or site plan, on properties containing wetlands shall be limited to the following:
 - a. Residential land uses within wetlands shall be limited to not more than one (1) dwelling unit per five (5) acres unless strict application of this policy renders a legally established parcel as of September 9, 1988, which is less than five (5) acres, as unbuildable. The preceding limitation of one dwelling unit per five (5) acres within wetlands may be applied as a maximum percentage limiting wetland impacts to not more than 1.8% of the total non-commercial and non-industrial acreage on a cumulative basis as set forth in Sec. 65-3694(c)(6), for subdivisions and multi-family parcels greater than five acres in area, New Town Overlays, PUDs, and if applicable, mixed-use land development activities as specified in Sec. 65-3694(c)(5).
 - b. For development activities on property greater than five (5) acres, density may be transferred to an upland portion of the site if consistent with all county land development regulations and compatible with adjacent uses.
 - c. Except as allowable in Sec. 65-3694(c)(1)a, subdivided lots and multi-family parcels shall contain sufficient uplands for the intended use and for any buffering necessary to maintain the function of the wetland(s), and shall be compatible with adjacent uses.

- (2) Residential land uses within wetlands and created by metes and bounds, which are not part of a formal subdivision, on properties containing wetlands shall be limited to the following:
 - a. Residential land uses within wetlands shall be limited to not more than one (1) dwelling unit per five (5) acres unless strict application of this policy would render a legally established parcel as of September 9, 1988, which is less than five (5) acres, as unbuildable. The preceding limitation of one dwelling unit per five (5) acres within wetlands may be applied as a maximum percentage limiting wetland impacts as described in Sec. 65-3694(c)(1)a above. Application of the one-unit-per-five-acres limitation shall limit impacts to wetlands for single family residential development on a cumulative basis, to not more than 1.8% of the total property as defined in Sec. 65-3694(c)(6).
 - b. Except as allowable in Sec. 65-3694(c)(2)a, properties shall contain sufficient uplands for the intended use and for any buffering necessary to maintain the function of the wetland(s), and shall be compatible with adjacent uses.
 - c. In addition to impacts allowable in Sec. 65-3694(c)(2)a, on properties where sufficient uplands for the intended use and for any buffering necessary to maintain the function of the wetland(s) exist except for access, wetland impacts may be permitted for single access to the uplands.

(3) Commercial and industrial land development activities shall be prohibited in wetlands contained in properties designated on the Future Land Use Map as commercial or industrial, and in surrounding upland buffers for such wetlands, except as provided below for I-95 interchanges, mitigation qualified roadways, abutting properties, and access to uplands. In no instance shall a proposed land development activity result in increased flooding on adjacent properties. Where the State does not require a buffer, wetland buffers shall be established in accordance with Section 62-3694(c)(10). Where impacts are permitted, the applicant is encouraged to propose innovative wetland preservation alternatives. Where the State does not require mitigation for any wetland impact, mitigation shall be provided to meet the County's no net loss policy as defined in Section 62-3696.

a. I-95 Interchanges:

Impacts to wetlands are permissible for commercial or industrial land development activities on a property that is designated as commercial or industrial on the Future Land Use map, and the proposed wetland impacts are entirely is located within one-half mile of the intersection of the off-ramp of the I-95 interchange with the connecting roadway. The one-half mile radius shall be measured from the end of the limited access boundary of I-95. This shall not include those interchanges where I-95 intersects a limited access highway as defined by Florida Statute.

b. Mitigation Qualified Roadways:

On properties with frontage on mitigation qualified roadways, commercial or industrial land development activities may be permitted in wetlands if the property is designated for commercial or industrial land uses on the Future Land Use Map. Mitigation qualified roadways are depicted and identified in a table on Map 8 of the Comprehensive Plan Conservation Element. An amendment to the Comprehensive Plan shall be required to add a mitigation qualified roadway to Map 8 and the associated table.

For a project that encompasses multiple properties assembled under one site plan development order, wetland impacts for those properties without direct frontage on the mitigation qualified roadway may be permitted only if the properties are combined so that any proposed wetland impact is contained within a property with direct frontage on the mitigation qualified roadway. The assemblage shall be deed restricted for commercial or industrial use.

Wetlands proposed for impact shall be assessed using methodologies established in the Countywide Wetlands Study, prepared BKI, Inc. Consulting Ecologists (September 30, 2013), to determine if they meet the criteria of High Functioning Wetlands or Landscape Level Wetlands. Impacts to high functioning and landscape level wetlands shall be prohibited unless the proposed impacts are found to be in the public interest, or of overriding public benefit.

c. Abutting Properties:

Commercial or industrial land development activities may be permitted in wetlands contained in properties designated for commercial or industrial land uses on the Future Land Use Map prior to February 23, 1996, if the property abuts land(s) developed as commercial or industrial as of December 31, 2010, and has sufficient infrastructure available to serve the commercial or industrial use. This shall not apply to properties that are addressed under Section 62-3694(c)(3)a, b, and d.

Wetlands proposed for impact shall be assessed using methodologies established in the Countywide Wetlands Study, prepared BKI, Inc. Consulting Ecologists (September 30, 2013), to determine if they meet the criteria of High Functioning Wetlands or Landscape Level Wetlands. Impacts to high functioning and landscape level wetlands shall be prohibited unless the proposed impacts are found to be in the public interest, or of overriding public benefit.

d. Access to Uplands:

Impacts to wetlands for commercial or industrial land development activities limited solely to providing access to uplands, and for no other purpose than providing access as required by Brevard County land development regulations, may be permitted in wetlands contained in properties designated on the Future Land Use Map as commercial or industrial of February 23, 1996, only if all of the following criteria are met:

- (i) Sufficient uplands exist for the intended use except for access to uplands, and
- (ii) The property was not subdivided from a larger property after December 31, 2010. This shall not preclude a single shared access through wetlands for properties subdivided after December 31, 2010.

(4) Institutional and Residential Professional development activities within wetlands shall be limited to the following:

- a. Institutional or Residential Professional land development on properties which contain wetlands and which are designated on the Future Land Use Map as Neighborhood Commercial or Community Commercial shall be considered commercial as set forth in Section 62-3694(c)(3). The property shall have sufficient infrastructure available to serve the use.
- b. Institutional or Residential Professional land development on properties which contain wetlands and which are designated on the Future Land Use Map as residential shall be limited to properties of at least 5 acres unless strict application

of this policy renders a legally established parcel as of September 9, 1988, which is less than 5 acres, as unbuildable.

- c. Wetland impacts for uses that are ancillary to institutional development and required by law shall be included in allowable impacts.
- (5) Beginning on January 1, 2010, mixed-use land development activities may be permitted in wetlands only if all of the following are met:
- a. The land development activities that impact wetlands must be part of a mixed use development that includes a minimum of three of the following land uses: residential, commercial (retail services and/or office), recreation/open space and institutional uses. Industrial land uses shall be prohibited in mixed use land development activities within wetlands. For purposes of this policy mixed use land development activities shall be consistent with the following criteria:
 - (i) The mixed use land development activity includes a variety of densities, intensities and types designed to promote walking between uses and utilizes a variety of transportation modes such as bicycles, transit and automobiles; and
 - (ii) The residential component of the land development activity is an integrated part of the project and comprises not less than 30% of the gross square footage of land uses within the development as shown on a site plan or a Sketch Plan complying with the standards set forth in Chapter 11, Policy 9.9.2.
 - (iii) The development is in conformance with an integrated site plan or commercial subdivision which includes both vertical and horizontal mix of uses within a defined area.
 - b. Impacts to wetlands from mixed-use development activities (including without limitation impacts resulting from associated improvements such as sidewalks, parking areas and driveways) do not exceed the limitation set forth in Sec. 65-3694(c)(6); and
 - c. To the extent direct impacts to wetlands are caused by a particular building or buildings within a mixed-use development, not less than 30% of the gross square footage of such building or buildings must be for residential use; or such building or buildings shall be physically attached to a building having not less than 30% of its gross square footage permitted for residential use.
- (6) Impacts to wetlands from residential and mixed-use land development activities, on a cumulative basis, shall not exceed 1.8% of the non-commercial and non-industrial acreage of a DRI, PUD, parcel acreage or, if the project is within a New Town Overlay (as defined in Chapter 11, Policy 9.2), 1.8% of the non-commercial and non-industrial acreage within the applicable New Town Overlay.

- (7) Wetland impacts for activities listed in agricultural zoning classifications as permitted, permitted with conditions, or approved by the Board of County Commissioners as a Conditional Use on properties designated as bona fide agricultural lands per F.S. 193.461 and 823.14, may be allowed subject to the following criteria:
- a. The property shall be classified as bona fide agricultural per F.S. 193.461 and 823.14 for not less than ten consecutive years as of the date of the proposed impact;
 - b. The property shall have Agriculture Future Land Use designation or DRI Future Land Use designation and the proposed use is consistent with the defined agricultural uses under an approved DRI Development Order;
 - c. Upon approval of the impact, no less than 50 percent of the property area shall retain bona fide agricultural use pursuant to Section 62-3694(c)(7)a;
 - d. Wetlands proposed for impact shall be assessed using methodologies established in the Countywide Wetlands Study, prepared BKI, Inc. Consulting Ecologists (September 30, 2013), to determine if they meet the criteria of high functioning wetlands or landscape level wetlands. Impacts to high functioning or landscape level wetlands shall be prohibited unless the proposed impacts are found to be in the public interest, or of overriding public benefit;
 - e. The property shall have an agricultural zoning classification or be zoned PUD and the proposed use is consistent with the defined agricultural uses in the PUD zoning resolution or approved Preliminary Development Plan;
 - f. Where the State does not require mitigation for any wetland impact, mitigation shall be provided to meet the County's no net loss policy as defined in Section 62-3696;
 - g. Buffer setbacks shall be established in accordance with Section 62-3694(c)(10);
 - h. Where the allowable use is residential, residential policies shall apply; and
 - i. The property shall meet all other State regulatory criteria.
- (8) Redevelopment commercial and industrial land development activities that do not meet the criteria established in Section 62-3694(c)(3) may be permitted within wetlands only if the following criteria are met:
- a. Property must have been developed and designated on the Future Land Use Map as commercial or industrial prior to February 23, 1996.

- b. Additions to existing structures and/or additions of new buildings on a site shall not be considered redevelopment.
 - c. Complies with all current regulations Land Development Regulations.
 - d. Wetlands proposed for impact shall be assessed using methodologies established in the Countywide Wetlands Study, prepared BKI, Inc. Consulting Ecologists (September 30, 2013), to determine if they meet the criteria of High Functioning Wetlands or Landscape Level Wetlands. Impacts to high functioning and landscape level wetlands shall be prohibited unless the proposed impacts are found to be in the public interest, or of overriding public benefit.
 - e. Wetland impacts cannot be avoided through alteration of project location, design, or other related aspects.
 - f. Wetland impacts have been minimized to the greatest extent possible through project design and location.
 - g. Any allowed filling of wetlands for commercial, industrial, or institutional use shall be limited as outlined in section 62-3694(e).
 - h. Existing uncontrolled stormwater runoff is mitigated by meeting current stormwater requirements pursuant to Article X, Division 6 as may be amended.
 - i. Where the State does not require a buffer, wetland buffers shall be established in accordance with Section 62-3694(c)(10).
- (9) Abandoned mine reclamation plans shall be submitted to the Natural Resources Management Department for approval prior to the commencement of activity including, but not limited to, restructuring, reshaping, and revegetation of altered lands. Abandoned mine reclamation may be permitted within wetlands only if the following criteria are met:
- a. Compliance with all current Land Development Regulations.
 - b. Wetlands proposed for impact shall be assessed using methodologies established in the Countywide Wetlands Study, prepared BKI, Inc. Consulting Ecologists (September 30, 2013), to determine if they meet the criteria of High Functioning Wetlands or Landscape Level Wetlands. Impacts to high functioning and landscape level wetlands shall be prohibited unless the proposed impacts are found to be in the public interest, or of overriding public benefit.
 - c. Only wetland impacts necessary for the abandoned mine reclamation are proposed and wetland impacts have been minimized to the greatest extent possible.

(10) Where the State does not require a buffer for those wetlands preserved under Sections 62-3694(c)(3) and (7), wetland buffers shall be established based on peer-reviewed publications to include, but not be limited to, Buffer Zones for Water, Wetlands, and Wildlife in the East Central Florida Region, (1990, Brown, M.T., Schaefer, and K. Brandt, published by the Center for Wetlands, University of Florida). Wetland buffer requirements shall be assessed on site-specific conditions to include:

- a. Water quality;
- b. Water quantity/groundwater drawdown; and
- c. Wetland wildlife habitat.

Wetland buffers shall be established by a Recognized Knowledgeable Environmental Professional, and reviewed and approved by the Natural Resources Management Department.

(11) In the event that the denial of commercial or industrial development activities in wetlands results in an inordinate burden under the Bert Harris Property Rights Act or a taking under state or federal law, an affected property owner may appeal such denial to the board of county commissioners in the manner provided in section 62-507(b)(2) of this Code.

(d) All applications for development shall be reviewed by the Natural Resources Management Department to determine utilization or protection of wetlands.

(e) Any allowed wetland impact shall ensure the protection of wetlands and wetland functional values by prioritizing protective activities with avoidance of impacts as the first priority, minimization of impacts as the second priority, and mitigation for impacts as the third priority. Any wetland impact, authorized under this Division, for residential use shall be limited to the structural building area requirements for the primary use as defined by the zoning code, on-site disposal system requirements, and the 100-year flood elevation requirement for first floor elevations, and necessary ingress and egress. Any wetland impact, authorized under this Division, for commercial, industrial, or institutional use shall be limited to structural building and parking area requirements, onsite sewage disposal, the 100-year flood elevation requirement for first floor elevations, and ingress and egress to the on-site structures. The amount and extent of wetland impact shall be the minimum required to accomplish these purposes.

(f) Utility corridors developed or maintained by governmental or investor owned regulated utilities are permitted. Any adverse impact, degradation or destruction of wetlands must be mitigated as provided in section 62-3696.

Sec. 62-3695. Prohibitions.

(a) All other development, except as provided in section 62-3694, shall be prohibited in functional wetlands unless access to the water or shoreline hardening is permitted in accordance

with Chapter 62, Article X, Division 3, Surface Water Protection. Any permitted wetland impacts must meet the requirements of Sections 62-3694(e) and 62-3696.

- (b) Dumping or disposal of solid or liquid wastes shall be prohibited.
- (c) Applying or storing pesticides and herbicides should be prohibited unless such application is required for protection of the public health or removal of invasive, exotic, or nuisance plant species for management and mitigation or conservation purposes approved by Brevard County or removal of invasive, exotic, or nuisance plant species for management and mitigation or conservation purposes approved by Brevard County.
- (d) Public facilities should not be located within wetland areas unless the following apply:
 - (1) The facilities are water dependent, such as mosquito control facilities;
 - (2) The facilities are water related, such as boat ramps, docks or surface water management facilities;
 - (3) The facilities are not adversely affected by periodic flooding or standing water, such as highway bridges and some recreational facilities;
 - (4) The building structures are floodproofed and located above the 100-year flood elevation, or removed from the floodplain by appropriately constructed dikes or levees; or
 - (5) The facilities are found to be in the public interest and there is no feasible alternative.
- (e) If an activity is undertaken which degrades or destroys a functional wetland, the person authorizing or performing such an activity shall be responsible for repairing and maintaining the wetland. In the event that it is not feasible or desirable for the responsible person to perform the repair and maintenance of the wetland, then the responsible person shall mitigate for the wetland loss.

Sec. 62-3696. Mitigation.

Any development in wetlands shall provide wetlands for wetland losses as to achieve a "no net loss" of functional wetlands. Mitigation shall be provided as required by Chapter 62-345 *Uniform Mitigation Assessment Method*, Florida Administrative Code, as may be amended. In cases where the *Uniform Mitigation Assessment Method* does not apply, mitigation shall occur at a ratio of two to one for each acre or portion thereof. Mitigation should be in-kind and on-site; however, alternative wetland community types and mitigation sites may be considered in lieu of in-kind and on-site mitigation. If mitigation in this manner is not feasible, then such practices as land banking and wetland enhancement may be considered. All such mitigation projects shall be reviewed and approved by the county and agreed to by the property owner prior to the issuance of a development order by the county. The approved mitigation plan shall become part of the approved site plan or subdivision plat. Mitigation may include, but is not limited to wetland

restoration, wetland replacement, wetland enhancement, monetary compensation, and wetland preservation. In keeping with the "no net loss" goal of this ordinance, wetland preservation may not be the only form of mitigation provided for wetland impacts.

Sec. 62-3697. Penalties; additional remedies.

Penalties for violations of this division shall be specified in Section 125.69, Florida Statutes, or section 1-7 of the Code. In addition, mitigation shall be required. The director of the Natural Resources Management Department shall be responsible for reviewing and approving all restoration or mitigation plans. The provisions of this section are an additional and supplemental means of enforcing county codes and ordinances. Nothing in this section shall prohibit the county from enforcing this section by injunctive relief, or by any other means provided by law.

Sec. 62-3698. Appeals.

The county local planning agency shall hear appeals relating to any administrative decision or determination concerning implementation or application of the provisions of this division pursuant to the provisions set forth in section 62-507(a), (b) and (c).

Sec. 62-3699. Administration.

The director of the Natural Resources Management Department, or the designee, shall be responsible for the general administration of this division of this article. The director shall be responsible for all reviews of all applications, in addition to providing the administrative decisions that pertain to this division. Upon request, the director shall provide written confirmation of any decision or findings relating to applications or reviews made pursuant to this division and letters of interpretation or intent.

Secs. 62-3700--62-3720. Reserved.

ATTACHMENT B

ORDINANCE 2014 - ____

AN ORDINANCE OF BREVARD COUNTY, FLORIDA, AMENDING CHAPTER 62, ARTICLE X, DIVISION 4, CODE OF ORDINANCES OF BREVARD COUNTY, FLORIDA, RELATING TO WETLANDS PROTECTION, SPECIFICALLY AMENDING SECTIONS 62-3691 DEFINITIONS; 62-3693 GENERAL PROVISIONS; 62-3694 PERMITTED USES; 62-3697 PENALTIES; ADDITIONAL REMEDIES; AND 62-3699 ADMINISTRATION; PROVIDING FOR THE INTERPRETATION OF CONFLICTING PROVISIONS; PROVIDING FOR SEVERABILITY; PROVIDING FOR AREA ENCOMPASSED; PROVIDING FOR INCLUSION IN CODE AND AN EFFECTIVE DATE.

WHEREAS the regulation of wetlands serves to protect the public health, safety and welfare of the citizens of Brevard County; and

WHEREAS the Board directed preparation of amendments to the Wetlands Protection ordinance related to commercial, industrial, and agricultural land uses, and institutional and residential professional activities in wetlands;

WHEREAS the ordinance amendments direct commercial and industrial development toward I-95 interchanges, commercial/industrial corridors, and areas where commercial/industrial properties abut (i.e., infill);

WHEREAS the ordinance amendments provide clarification of application for the public, professionals in the engineering and development community, and staff; and

WHEREAS the proposed amendments address duplication of County and State regulations where they may have existed historically.

NOW, THEREFORE BE IT ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF BREVARD COUNTY, FLORIDA, as follows:

SECTION 1. Chapter 62, Article X, Division 4, Section 62-3691, Definitions, Code of Ordinances of Brevard County is hereby amended as follows:

Sec. 62-3691. Definitions.

For the purpose of this division, certain terms and words pertain and are defined as follows:

Abandoned mine reclamation means the reclamation of altered lands which require intervention to be made safe, environmentally sound and capable of supporting land uses that are reasonable or economically viable and come into compliance with all other current environmental and land development regulations.

Abuts, for the purposes of this Division, means sharing all or a portion of a property boundary.

Altered lands means the land areas in which the natural land surface has been disturbed as the result of, or incidental to, land excavation or filling activities.

Best management practices means those practices as developed by the U.S. Department of Agriculture, the state department of agriculture or other appropriate agencies.

~~*Commercial and Industrial Land Development Activity* means non-manufacturing business establishments, manufacturing, processing, warehousing, packaging or treatment of products, including those uses as may be permitted in zoning districts BU-1-A, BU-1, BU-2, TU-1, TU-2, PBP, PIP, IU, and IU-1 except where it meets the definition of redevelopment.~~

Commercial and Industrial Land Development Activity can include office, retail, manufacturing, processing, warehousing, packing plants, distribution and dispatching centers, and other activities found in the NAICS manual. Based upon the use, these activities could be in BU-1-A, BU-1, BU-2, TU-1, TU-2, PBP, PIP, IU and IU-1 zoning classifications. Exceptions to this definition would be those uses that meet the definition of redevelopment.

Forested wetland map means a land-use map generated or adopted by Brevard County utilizing wetland information provided by St. Johns River Water Management District wetland data that defines the wetlands within commercial and industrial land use designations prior to February 23, 1996. That map includes the following Florida Land Use, Cover and Forms, Classification System (FLUCCS) codes: Stream and Lake Swamp (FLUCCS) 615, Cypress (FLUCCS 621), Atlantic White Cedar (FLUCCS 623), Wetland Forested Mixed (FLUCCS 630), or Wet Prairies (FLUCCS 643).

Forestry means the science, application and practice of controlling forest establishment, composition and growth through sound management techniques, based on the owner's management objectives.

High Functioning Wetlands means wetlands that score 0.66 or above as determined by the Wetlands Assessment Method established in the Countywide Wetlands Study, prepared BKI, Inc. Consulting Ecologists (September 30, 2013), adopted by the Board and incorporated herein by this reference. High Functioning Wetlands analyses shall be prepared by a Recognized Knowledgeable Environmental Professional.

Isolated wetlands means wetlands which are not hydrologically connected to a surface water body and which may only be inundated on a seasonal basis. Included would be perched wetlands, among others do not require a U.S. Army Corps of Engineers permit for impact. In the absence of a U.S. Army Corps of Engineers clearance letter, a Recognized Knowledgeable Environmental Professional may provide an affidavit affirming that a wetland is isolated in accordance with 33 CFR Part 329 (Definition of Navigable Waters), and U.S. Army Corps Of Engineers 404 Determination of Jurisdiction. The use of an isolated wetland affidavit is exclusively for the purposes of this Division.

Landscape Level Wetlands means wetlands that are EITHER 1) five (5) acres or larger; OR 2) located within the Landscape Level Polygon depicted on Map 9 of the Brevard County Comprehensive Plan Conservation Element, AND the U.S. Army Corps of Engineers determines the wetland is hydrologically connected to the St. Johns River or Indian River Lagoon System. Landscape Level Wetlands analyses shall be prepared by a Recognized Knowledgeable Environmental Professional.

Mine means the altered lands that result from the process of removing minerals or other resources from the land including mining and smelting operations, borrow pits, and commercial borrow pits.

Mitigation means actions taken to offset the adverse effects of wetland losses.

Overriding public benefit means the result of a development action by a private property owner that substantially preserves, restores or enhances those natural functions which define areas of critical concern, environmentally sensitive areas, shorelines or water bodies, identified by the County Comprehensive Plan, NRM or state or federal agencies. An overriding public benefit shall include but not be limited to proposals which preserve, restore or enhance floodplain, wetland, shoreline or prime aquifer recharge functions and provide for the dedication of associated lands to the County or other acceptable public entity or agency.

Public Interest means demonstrable environmental, social, and economic benefits which would accrue to the public at large as a result of a proposed action, and which would clearly exceed all demonstrable environmental, social, and economic costs of the proposed action. In determining the public interest in a request for use, sale, lease, or transfer of interest in sovereignty lands or severance of materials from sovereignty lands, the board shall consider the ultimate project and purpose to be served by said use, sale, lease, or transfer of lands or materials.

Reclamation means the restructuring, reshaping and revegetation of altered lands and water bodies to achieve a safe, environmentally sound condition, capable of supporting land uses that are reasonable or economically viable, and come into compliance with all other current environmental and land development regulations.

Recognized Knowledgeable Environmental Professional means an individual with demonstrated professional education and experience in the environmental science field including the assessment of wetlands in accordance with: F.A.C. Chapters 62-340 (Delineation of the Landward Extent of Wetlands and Surface Waters) and 62-345 (Uniform Mitigation Assessment Method), 33 CFR Part 328 (Definition of Waters of the United States), 33 CFR Part 329 (Definition of Navigable Waters), and U.S. Army Corps Of Engineers 404 Determination of Jurisdiction. Acceptable experience shall include a minimum of four years of fulltime experience in the identification and evaluation of wetlands resources.

Redevelopment means renovation of a previously developed obsolete commercial or industrial parcel of land or building site which suffer from structural vacancy due to the

expiration of their former use and require intervention to achieve a subsequent useful function and come into compliance with all other current environmental and land development regulations.

Release means any sudden or gradual spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing of hazardous materials, including the abandonment or discarding of barrels, containers and other receptacles containing any hazardous materials, into the environment, in such a manner as to endanger the public health, safety or welfare or the environment, or in violation of any federal, state or local law, rule or regulation.

Substantially surrounded means when a parcel of land is bordered on two sides by land developed as commercial or industrial. Such commercial or industrial development should abut the subject land and be on the same side of the road as the subject property.

Suitability means the degree to which the existing characteristics and limitations of land and water are compatible with a proposed use or development.

Water's edge wetlands means wetlands which have a surface water connection to a surface water body. Any canal, ditch, swale, channel, culvert, pipe, stream, river, slough or other manmade or natural water body will be considered to be a surface water connection. It is not essential that the water flow be uniform or uninterrupted. Water from natural springs will be classified as surface water when water exits from the spring onto the earth's surface.

Wetland boundary. The boundary of a wetland is determined by the criteria contained within the Management and Storage of Surface Waters Handbook of the St. Johns River Water Management District as as defined by the Florida Department of Environmental Protection (FDEP) or St. Johns River Water Management District (SJRWMD) methodology, soil types, hydrological requirements, and vegetation types.

Wetland function. A functional wetland is determined by the ability of the wetland to provide a diversity of habitat and food sources for aquatic and wetland-dependent species, and for threatened and endangered species and species of special concern; to provide flood storage capacity; to provide for the protection of downstream and offshore water resources from siltation and pollution; or to provide for the stabilization of the water table.

Wetlands means wetlands as defined by the Florida Department of Environmental Protection (FDEP) and St. Johns River Water Management District (SJRWMD) methodology, soil types, hydrological requirements, and vegetation types in Chapter 62-340, F.A.C., as amended.

SECTION 2. Chapter 62, Article X, Division 4, Section 62-3693, General Provisions, Code of Ordinances of Brevard County is hereby amended as follows:

Sec. 62-3693. General provisions.

The following regulations shall apply to development proposed in or adjacent to wetlands:

- (1) Any wetlands addressed by a FDEP or SJRWMD permit will be exempt from the county's mitigation standards provided that the FDEP or SJRWMD permit conditions result in "no net loss" of wetlands and is consistent with section 62-3694(e). Therefore, an applicant proposing to alter any wetland must provide the ~~natural resources management office~~ Natural Resources Management Department with a copy of the FDEP or SJRWMD permit conditions and if necessary, a copy of staff comments.
- (2) During development plans review, the ~~natural resources management office~~ Natural Resources Management Department shall use the National Wetlands Inventory maps, the county soil survey, aerial photography, information provided by the applicant, or any other applicable source of information, to determine whether wetlands are indicated on the site.
- (3) If these materials indicate that wetlands may exist on the property, a site inspection will may be performed by the ~~natural resources management office~~ Natural Resources Management Department to determine:
 - a. If the wetlands are present;
 - b. If they are functional; and
 - c. The wetland boundary for each functional wetland on the property.
- (4) Based on this assessment, the ~~natural resources management office~~ Natural Resources Management Department shall make recommendations for development within or adjacent to functional wetlands, and required mitigation, if any, consistent with the provisions of sections 62-3694, 62-3695 and 62-3696. The ~~natural resources management office's~~ Natural Resources Management Department's recommendations shall prioritize wetlands protective activities as avoidance of impacts as the first priority, minimization of impacts as the second priority, and mitigation for impacts as the third priority.
- (5) The ~~natural resources management office~~ Natural Resources Management Department may conduct a site visit to confirm wetland boundaries as provided by the applicant. This confirmation shall not be considered a formal wetland determination or delineation. The ~~natural resources management office~~ Natural Resources Management Department will not provide a survey sealed by a registered surveyor of a legal description of the wetland boundaries.
- (6) Projects or parcels that have an active Brevard County development order previously approved under Chapter 62, Article X, Division 4, allowing wetland impacts that would not comply with current Sec. 62-3694; project redesign may be permitted by the Director provided that there is a net reduction in environmental impacts, and the

project modifications do not result in the requirement for additional wetland mitigation.

- (7) Prior to plan submittal, the applicant is strongly encouraged to meet with the Natural Resources Management Department to discuss the requirements of this Division.
- (8) An applicant proposing a project on a property with wetlands shall provide the Natural Resources Management Department with:
- a. Site plan depicting proposed use of the property, including limits of all fill, excavation, and clearing.
 - b. Documentation confirming the year the property was legally established, if the project property is less than five acres.
 - c. Wetlands and their boundaries delineated pursuant to Chapter 62-340, Florida Administrative Code, as amended.
 - d. Identification of all applicable setbacks or buffers as may be required by this Division.
 - e. If applicable, a copy of the FDEP or SJRWMD permit conditions and a copy of staff comments.
 - f. All documentation related to High Functioning and Landscape Level wetland assessments; to include photographs, assessment matrix, map depicting wetland(s) location relative to the Landscape Level Polygon, map depicting wetland(s) location relative to I-95 interchange (if applicable), and map depicting surrounding land uses within 100 meters of the wetland(s).
 - g. Any other information that is necessary to determine compliance with the County's land development regulations.

Surveys shall be prepared by a professional land surveyor registered in the State of Florida. Documents related to wetland assessments, including wetlands determinations, shall be prepared by a Recognized Knowledgeable Environmental Professional.

SECTION 3, Chapter 62, Article X, Division 4, Section 62-3694, Permitted Uses, Code of Ordinances of Brevard County is hereby amended as follows:

Sec. 62-3694. Permitted uses.

- (a) The following uses shall be permitted provided they do not adversely affect the functions of wetlands within the county:

- (1) Non-bona fide agricultural and forestry operations utilizing best management practices, which do not result in permanent degradation or destruction of wetlands;
- (2) Recreation;
- (3) Fish and wildlife management; and
- (4) Open space.

Pursuant to the Florida Agricultural Lands and Practices Act (Chapter 163.3162(4), Florida Statutes), any activity of a Bona Fide Agricultural Use on land classified as agricultural land pursuant to Section 193.461, Florida Statute is exempt.

(b) As an alternative to filling, functional isolated wetlands may be utilized within the surface water management system of a project as approved by the county.

(c) The following land use and density restrictions are established as a maximum density or most intense land use within wetlands that may be considered only if other criteria established in Conservation Element Policy 5.2 of the Brevard County Comprehensive Plan are met:

- (1) Residential land uses within wetlands that are a part of a formal subdivision or site plan, on properties containing wetlands shall be limited to the following:
 - a. Residential land uses within wetlands shall be limited to not more than one (1) dwelling unit per five (5) acres unless strict application of this policy renders a legally established parcel as of September 9, 1988, which is less than five (5) acres, as unbuildable. The preceding limitation of one dwelling unit per five (5) acres within wetlands may be applied as a maximum percentage limiting wetland impacts to not more than 1.8% of the total non-commercial and non-industrial acreage on a cumulative basis as set forth in Sec. 65-3694(c)(6), for subdivisions and multi-family parcels greater than five acres in area, New Town Overlays, PUDs, and if applicable, mixed-use land development activities as specified in Sec. 65-3694(c)(5).
 - b. For development activities on property greater than five (5) acres, density may be transferred to an upland portion of the site if consistent with all county land development regulations and compatible with adjacent uses.
 - c. Except as allowable in Sec. 65-3694(c)(1)a, subdivided lots and multi-family parcels shall contain sufficient uplands for the intended use and for any buffering necessary to maintain the function of the wetland(s), and shall be compatible with adjacent uses.
- (2) Residential land uses within wetlands and created by metes and bounds, which are not part of a formal subdivision, on properties containing wetlands shall be limited to the following:

- a. Residential land uses within wetlands shall be limited to not more than one (1) dwelling unit per five (5) acres unless strict application of this policy would render a legally established parcel as of September 9, 1988, which is less than five (5) acres, as unbuildable. The preceding limitation of one dwelling unit per five (5) acres within wetlands may be applied as a maximum percentage limiting wetland impacts as described in Sec. 65-3694(c)(1)a above. Application of the one-unit-per-five-acres limitation shall limit impacts to wetlands for single family residential development on a cumulative basis, to not more than 1.8% of the total property as defined in Sec. 65-3694(c)(6).
 - b. Except as allowable in Sec. 65-3694(c)(2)a, properties shall contain sufficient uplands for the intended use and for any buffering necessary to maintain the function of the wetland(s), and shall be compatible with adjacent uses.
 - c. In addition to impacts allowable in Sec. 65-3694(c)(2)a, on properties where sufficient uplands for the intended use and for any buffering necessary to maintain the function of the wetland(s) exist except for access, wetland impacts may be permitted for single access to the uplands.
- (3) ~~Commercial and industrial land development activities shall be prohibited in wetlands contained in properties designated on the Future Land Use Map as commercial and industrial after February 23, 1996, and in surrounding buffers for such wetlands, with specifications based on the *Buffer Zones for Water, Wetlands, and Wildlife in the East Central Florida Region*, (1990, Brown, M.T., Schaefer, and K. Brandt, published by the Center for Wetlands, University of Florida), except for certain commercial development at [I-95] interchanges that are consistent with the following criteria:~~
- a. ~~There will be no less than 100,000 square feet of commercial building within a project;~~
 - b. ~~There is current over capacity on the adjacent roadways, and it is projected that roadway capacity within four (4) miles of the intersection will be no more than 80 percent of the congestion ratio (the ratio of projected volume to maximum allowable volume) after 500,000 square feet of commercial space has been developed within one-half mile of the intersection of the off ramp with the connecting roadway;~~
 - e. ~~Wetland mitigation shall equal or exceed 125 percent of the mitigation which is otherwise required;~~
 - d. ~~The development is located within one-half mile of the intersection of the off ramp with the connecting roadway;~~

- e. ~~There will be no more than two curb cuts on each quadrangle of the interchange within one-half mile of the connection of the off ramp and the connecting roadway; and~~
 - f. ~~A maximum of 40 acres shall be allotted in proximity to the interchange, counting both sides.~~
- (4) ~~Commercial and industrial land development activities may be permitted in wetlands contained in properties designated on the Future Land Use Map as commercial and industrial prior to February 23, 1996, only if all of the following criteria are met:~~
- a. ~~The property is substantially surrounded by land(s) developed as commercial or industrial as of February 23, 1996, and has sufficient infrastructure in place to serve the commercial or industrial use.~~
 - b. ~~The proposed land development activity will not result in increased flooding problems on adjacent properties.~~
 - e. ~~The wetland is not classified by the Florida Land Use, Cover and Forms Classification System, 1985 (FLUCCS) as a Stream and Lake Swamp (FLUCCS 615), Cypress (FLUCCS 621), Atlantic White Cedar (FLUCCS 623), Wetland Forested Mixed (FLUCCS 630), or Wet Prairies (FLUCCS 643).~~

~~For wetlands classified in section 62-3694(c)3(e), the wetland functionality shall be maintained and protected by a 15-foot natural, native vegetative buffer for isolated wetlands and by a 50-foot natural, native vegetative buffer for other wetlands.~~

~~The Forested Wetlands Location Map depicts the location of the following wetland types (FLUCCS 615, 621, 623, 630 and 643), which also possess commercial or industrial zoning classifications and Future Land Use Map designations as of February 23, 1996, and is incorporated herein by this reference.~~

- (3) Commercial and industrial land development activities shall be prohibited in wetlands contained in properties designated on the Future Land Use Map as commercial or industrial, and in surrounding upland buffers for such wetlands, except as provided below for I-95 interchanges, mitigation qualified roadways, abutting properties, and access to uplands. In no instance shall a proposed land development activity result in increased flooding on adjacent properties. Where the State does not require a buffer, wetland buffers shall be established in accordance with Section 62-3694(c)(10). Where impacts are permitted, the applicant is encouraged to propose innovative wetland preservation alternatives. Where the State does not require mitigation for any wetland impact, mitigation shall be provided to meet the County's no net loss policy as defined in Section 62-3696.
- a. I-95 Interchanges:

Impacts to wetlands are permissible for commercial or industrial land development activities on a property that is designated as commercial or industrial on the Future Land Use map, and the proposed wetland impacts are entirely located within one-half mile of the intersection of the off-ramp of the I-95 interchange with the connecting roadway. The one-half mile radius shall be measured from the end of the limited access boundary of I-95. This shall not include those interchanges where I-95 intersects a limited access highway as defined by Florida Statute.

b. Mitigation Qualified Roadways:

On properties with frontage on mitigation qualified roadways, commercial or industrial land development activities may be permitted in wetlands if the property is designated for commercial or industrial land uses on the Future Land Use Map. Mitigation qualified roadways are depicted and identified in a table on Map 8 of the Comprehensive Plan Conservation Element. An amendment to the Comprehensive Plan shall be required to add a mitigation qualified roadway to Map 8 and the associated table.

For a project that encompasses multiple properties assembled under one site plan development order, wetland impacts for those properties without direct frontage on the mitigation qualified roadway may be permitted only if the properties are combined so that any proposed wetland impact is contained within a property with direct frontage on the mitigation qualified roadway. The assemblage shall be deed restricted for commercial or industrial use.

Wetlands proposed for impact shall be assessed using methodologies established in the Countywide Wetlands Study, prepared BKI, Inc. Consulting Ecologists (September 30, 2013), to determine if they meet the criteria of High Functioning Wetlands or Landscape Level Wetlands. Impacts to high functioning and landscape level wetlands shall be prohibited unless the proposed impacts are found to be in the public interest, or of overriding public benefit.

c. Abutting Properties:

Commercial or industrial land development activities may be permitted in wetlands contained in properties designated for commercial or industrial land uses on the Future Land Use Map prior to February 23, 1996, if the property abuts land(s) developed as commercial or industrial as of December 31, 2010, and has sufficient infrastructure available to serve the commercial or industrial use. This shall not apply to properties that are addressed under Section 62-3694(c)(3)a, b, and d.

Wetlands proposed for impact shall be assessed using methodologies established in the Countywide Wetlands Study, prepared BKI, Inc. Consulting Ecologists

(September 30, 2013), to determine if they meet the criteria of High Functioning Wetlands or Landscape Level Wetlands. Impacts to high functioning and landscape level wetlands shall be prohibited unless the proposed impacts are found to be in the public interest, or of overriding public benefit.

d. Access to Uplands:

Impacts to wetlands for commercial or industrial land development activities limited solely to providing access to uplands, and for no other purpose than providing access as required by Brevard County land development regulations, may be permitted in wetlands contained in properties designated on the Future Land Use Map as commercial or industrial of February 23, 1996, only if all of the following criteria are met:

- (i) Sufficient uplands exist for the intended use except for access to uplands, and
- (ii) The property was not subdivided from a larger property after December 31, 2010. This shall not preclude a single shared access through wetlands for properties subdivided after December 31, 2010.

(4) Institutional and Residential Professional development activities within wetlands shall be limited to the following:

- a. Institutional or Residential Professional land development on properties which contain wetlands and which are designated on the Future Land Use Map as Neighborhood Commercial or Community Commercial shall be considered commercial as set forth in Section 62-3694(c)(3). The property shall have sufficient infrastructure available to serve the use.
- b. Institutional or Residential Professional land development on properties which contain wetlands and which are designated on the Future Land Use Map as residential shall be limited to properties of at least 5 acres unless strict application of this policy renders a legally established parcel as of September 9, 1988, which is less than 5 acres, as unbuildable.
- c. Wetland impacts for uses that are ancillary to institutional development and required by law shall be included in allowable impacts.

(5) Beginning on January 1, 2010, mixed-use land development activities may be permitted in wetlands only if all of the following are met:

- a. The land development activities that impact wetlands must be part of a mixed use development that includes a minimum of three of the following land uses: residential, commercial (retail services and/or office), recreation/open space and institutional uses. Industrial land uses shall be prohibited in mixed use land

development activities within wetlands. For purposes of this policy mixed use land development activities shall be consistent with the following criteria:

- (i) The mixed use land development activity includes a variety of densities, intensities and types designed to promote walking between uses and utilizes a variety of transportation modes such as bicycles, transit and automobiles; and
 - (ii) The residential component of the land development activity is an integrated part of the project and comprises not less than 30% of the gross square footage of land uses within the development as shown on a site plan or a Sketch Plan complying with the standards set forth in Chapter 11, Policy 9.9.2.
 - (iii) The development is in conformance with an integrated site plan or commercial subdivision which includes both vertical and horizontal mix of uses within a defined area.
- b. Impacts to wetlands from mixed-use development activities (including without limitation impacts resulting from associated improvements such as sidewalks, parking areas and driveways) do not exceed the limitation set forth in Sec. 65-3694(c)(6); and
- c. To the extent direct impacts to wetlands are caused by a particular building or buildings within a mixed-use development, not less than 30% of the gross square footage of such building or buildings must be for residential use; or such building or buildings shall be physically attached to a building having not less than 30% of its gross square footage permitted for residential use.
- (6) Impacts to wetlands from residential and mixed-use land development activities, on a cumulative basis, shall not exceed 1.8% of the non-commercial and non-industrial acreage of a DRI, PUD, parcel acreage or, if the project is within a New Town Overlay (as defined in Chapter 11, Policy 9.2), 1.8% of the non-commercial and non-industrial acreage within the applicable New Town Overlay.
- (7) Wetland impacts for activities listed in agricultural zoning classifications as permitted, permitted with conditions, or approved by the Board of County Commissioners as a Conditional Use on properties designated as bona fide agricultural lands per F.S. 193.461 and 823.14, may be allowed subject to the following criteria:
- a. The property shall be classified as bona fide agricultural per F.S. 193.461 and 823.14 for not less than ten consecutive years as of the date of the proposed impact;

- b. The property shall have Agriculture Future Land Use designation or DRI Future Land Use designation and the proposed use is consistent with the defined agricultural uses under an approved DRI Development Order;
 - c. Upon approval of the impact, no less than 50 percent of the property area shall retain bona fide agricultural use pursuant to Section 62-3694(c)(7)a;
 - d. Wetlands proposed for impact shall be assessed using methodologies established in the Countywide Wetlands Study, prepared BKI, Inc. Consulting Ecologists (September 30, 2013), to determine if they meet the criteria of high functioning wetlands or landscape level wetlands. Impacts to high functioning or landscape level wetlands shall be prohibited unless the proposed impacts are found to be in the public interest, or of overriding public benefit;
 - e. The property shall have an agricultural zoning classification or be zoned PUD and the proposed use is consistent with the defined agricultural uses in the PUD zoning resolution or approved Preliminary Development Plan;
 - f. Where the State does not require mitigation for any wetland impact, mitigation shall be provided to meet the County's no net loss policy as defined in Section 62-3696;
 - g. Buffer setbacks shall be established in accordance with Section 62-3694(c)(10);
 - h. Where the allowable use is residential, residential policies shall apply; and
 - i. The property shall meet all other State regulatory criteria.
- (78) Redevelopment commercial and industrial land development activities that do not meet the criteria established in Section 62-3694(c)(3) may be permitted within wetlands only if the following criteria are met:
- a. Property must have been developed and designated on the Future Land Use Map as commercial or industrial prior to February 23, 1996.
 - b. Additions to existing structures and/or additions of new buildings on a site shall not be considered redevelopment.
 - c. Complies with all current regulations Land Development Regulations.
 - d. ~~The wetlands are defined as low function or low quality as defined by state law.~~ Wetlands proposed for impact shall be assessed using methodologies established in the Countywide Wetlands Study, prepared BKI, Inc. Consulting Ecologists (September 30, 2013), to determine if they meet the criteria of High Functioning Wetlands or Landscape Level Wetlands. Impacts to high functioning and

landscape level wetlands shall be prohibited unless the proposed impacts are found to be in the public interest, or of overriding public benefit.

- e. Wetland impacts cannot be avoided through alteration of project location, design, or other related aspects.
- f. Wetland impacts have been minimized to the greatest extent possible through project design and location.
- g. Any allowed filling of wetlands for commercial, industrial, or institutional use shall be limited as outlined in section 62-3694(e).
- h. Existing uncontrolled stormwater runoff is mitigated by meeting current stormwater requirements pursuant to Article X, Division 6 as may be amended.
- i. Where the State does not require a buffer, wetland buffers shall be established in accordance with Section 62-3694(c)(10).

(89) Abandoned mine reclamation plans shall be submitted to the Natural Resources Management ~~Office~~ Department for approval prior to the commencement of activity including, but not limited to, restructuring, reshaping, and revegetation of altered lands. Abandoned mine reclamation may be permitted within wetlands only if the following criteria are met:

- a. Compliance with all current Land Development Regulations.
- b. The wetlands are defined as low function or low quality as defined by state law. Wetlands proposed for impact shall be assessed using methodologies established in the Countywide Wetlands Study, prepared BKI, Inc. Consulting Ecologists (September 30, 2013), to determine if they meet the criteria of High Functioning Wetlands or Landscape Level Wetlands. Impacts to high functioning and landscape level wetlands shall be prohibited unless the proposed impacts are found to be in the public interest, or of overriding public benefit.
- c. Only wetland impacts necessary for the abandoned mine reclamation are proposed and wetland impacts have been minimized to the greatest extent possible.

(10) Where the State does not require a buffer for those wetlands preserved under Sections 62-3694(c)(3) and (7), wetland buffers shall be established based on peer-reviewed publications to include, but not be limited to, Buffer Zones for Water, Wetlands, and Wildlife in the East Central Florida Region, (1990, Brown, M.T., Schaefer, and K. Brandt, published by the Center for Wetlands, University of Florida). Wetland buffer requirements shall be assessed on site-specific conditions to include:

- a. Water quality;

- b. Water quantity/groundwater drawdown; and
- c. Wetland wildlife habitat.

Wetland buffers shall be established by a Recognized Knowledgeable Environmental Professional, and reviewed and approved by the Natural Resources Management Department.

(911) In the event that the denial of commercial or industrial development activities in wetlands results in an inordinate burden under the Bert Harris Property Rights Act or a taking under state or federal law, an affected property owner may appeal such denial to the board of county commissioners in the manner provided in section 62-507(b)(2) of this Code.

(d) All applications for development shall be reviewed by the ~~natural resources management office~~ Natural Resources Management Department to determine utilization or protection of wetlands.

(e) Any allowed wetland impact shall ensure the protection of wetlands and wetland functional values by prioritizing protective activities with avoidance of impacts as the first priority, minimization of impacts as the second priority, and mitigation for impacts as the third priority. Any wetland impact, authorized under this Division, for residential use shall be limited to the structural building area requirements for the primary use as defined by the zoning code, on-site disposal system requirements, and the 100-year flood elevation requirement for first floor elevations, and necessary ingress and egress. Any wetland impact, authorized under this Division, for commercial, industrial, or institutional use shall be limited to structural building and parking area requirements, onsite sewage disposal, the 100-year flood elevation requirement for first floor elevations, and ingress and egress to the on-site structures. The amount and extent of wetland impact shall be the minimum required to accomplish these purposes.

(f) Utility corridors developed or maintained by governmental or investor owned regulated utilities are permitted. Any adverse impact, degradation or destruction of wetlands must be mitigated as provided in section 62-3696.

SECTION 4, Chapter 62, Article X, Division 4, Section 62-3697, Penalties; Additional Remedies, Code of Ordinances of Brevard County is hereby amended as follows:

Sec. 62-3697. Penalties; additional remedies.

Penalties for violations of this division shall be specified in Section 125.69, Florida Statutes, or section 1-7 of the Code. In addition, mitigation shall be required. The director of the ~~natural resources management office~~ Natural Resources Management Department shall be responsible for reviewing and approving all restoration or mitigation plans. The provisions of this section are an additional and supplemental means of enforcing county codes and ordinances. Nothing in this section shall prohibit the county from enforcing this section by injunctive relief, or by any other means provided by law.

111 F

SECTION 5. Chapter 62, Article X, Division 4, Section 62-3699, Administration, Code of Ordinances of Brevard County is hereby amended as follows:

Sec. 62-3699. Administration.

The director of the ~~natural resources management office~~ Natural Resources Management Department, or the designee, shall be responsible for the general administration of this division of this article. The director shall be responsible for all reviews of all applications, in addition to providing the administrative decisions that pertain to this division. Upon request, the director shall provide written confirmation of any decision or findings relating to applications or reviews made pursuant to this division and letters of interpretation or intent.

SECTION 6. CONFLICTING PROVISIONS. In the case of a direct conflict between any provision of this ordinance and a portion or provision of any other appropriate federal, state or county law, rule, code or regulations, the more restrictive shall apply.

SECTION 7. SEVERABILITY. If any section, subsection, clause, phrase, word or provision of this ordinance is for any reason held invalid or unconstitutional by any court of competent jurisdiction, such invalid unconstitutional portion shall be deemed a separate, distinct and independent provision, and such holding shall not affect the validity of the remaining portions of this ordinance, provided the remaining portions effectuate purpose and intent of this ordinance.

SECTION 8. AREA ENCOMPASSED. This ordinance shall take effect within the unincorporated area of Brevard County, Florida.

SECTION 9. EFFECTIVE DATE. This ordinance shall become effective upon filing as provided by law. A certified copy of the ordinance shall be filed with the Office of the Secretary of State, State of Florida, within ten days of enactment.

DONE, ORDERED AND ADOPTED in Regular Session, this ___ day of _____, 2014.

ATTEST

**BOARD OF COUNTY COMMISSIONERS
OF BREVARD COUNTY, FLORIDA**

Scott Ellis, Clerk

Mary Bolin Lewis, Chairman
As approved by the Board of County
Commissioners on

_____, 2014.

Reviewed for legal form and content by:



Christine Lepore, Assistant County Attorney

Wetland Assessment Toolbox

Developed by

B.K.I., Inc. and Ecospatial Analysts

For

Brevard County
Natural Resource Management Office

September 30, 2013

Brevard County - Wetland Assessment Method Toolbox

The toolbox has been developed in order to help end-users utilize the wetland assessment tool. The toolbox follows the assessment of a wetland throughout the process.

Wetlands are assessed on two criteria. The two criteria are whether the wetlands are “landscape level” or they are considered “high-functioning.”

First determine if the wetland is or part of a landscape level wetland system. This is done by analyzing a combination of parameters that include location, hydrologic connectivity and size of the wetland system. If the wetland system is located within the landscape level polygon **AND** is defined as hydrologically connected to the St. Johns River or the Indian River watersheds **OR** five (5) acres or greater in size than the system is determined to be a landscape level system. Potential impacts to the wetland will have to be evaluated by the County Commission.

Then the wetland will be assessed to determine if it is a high-functioning wetland system. If the system is determined to be high-functioning, impacts to the system will have to be evaluated by the County Commission.

The high-functioning wetland assessment method is composed of three components: landscape, water environment, and vegetative community.

The steps of high-functioning wetland assessment are as follows::

1. Calculate the acreage of the surrounding land uses within a 100m buffer.
2. Start landscape component, input the acreage of each land use, the tool calculates LSI.
3. Estimate the water quality treatment category score – estimate the percentage of each category.
4. Determine the hydrologic indicator score based on the indicators observed within the wetland.
5. Determine the percentage of appropriate wetland vegetation coverage.
6. Determine the percentage of exotic or invasive plant species coverage.
7. Determine the final score.
8. If the score is 0.66 or greater the wetland is considered High-Functioning.

A spreadsheet has been developed to facilitate the calculations. The toolbox will utilize the spreadsheet for the calculations.

Landscape Level Analysis

IS the wetland five (5) acres or larger?

YES the wetland is considered
Landscape Level

NO Continue to location analysis

IS the wetland located within the Landscape Level Polygon and determined to be hydrologically connected to the St. Johns River or Indian River Lagoon watershed?

YES the wetland is considered
Landscape Level

NO Continue to evaluate if the wetland is High-Functioning

Landscape Assessment

The table calculates the percentage and multiplies the coefficient and percentage, then all the products of the calculations are summed, resulting in a score from 1-10.

If an exact FLUCFCS code is not included, the next closest code should be used for the calculations.

Assessment_matrix_locked.xlsx - Microsoft Excel

1	Landscape Location Score				
2	Exact FLUCFCS Report	Sum of Acres	LSI Value	Indirect Percent	Location Score (LSI Value * Indirect Percent)
3	1000 Low Density Urban	2.22	0.000	0.000	0.000
4	1000 Residential, Low Density	2.4	0.000	0.000	0.000
5	1200 Residential, Medium Density	2.81	0.000	0.000	0.000
6	1500 High Density Urban	3.91	0.000	0.000	0.000
7	1300 Residential, High Density	2.71	0.004	0.000	0.000
8	4000 Commercial and Services	0.31	0.000	0.000	0.000
9	5000 Industrial	1.87	0.000	0.000	0.000
10	K600 Holding Ponds	9.68	0.000	0.000	0.000
11	1000 Institutional	2.14	0.000	0.000	0.000
12	8200 Golf courses	2.42	0.000	0.000	0.000
13	8850 Parks and Zoos	3.42	0.000	0.000	0.000
14	8900 Open Land	3.42	0.000	0.000	0.000
15	2000 Improved Pasture	4.58	0.000	0.000	0.000
16	2400 Unimproved/Woodland Pasture	8.03	0.000	0.000	0.000
17	2100 Woodland Pasture	8.03	0.000	0.000	0.000
18	2200 Crops	7.82	0.000	0.000	0.000
19	2240 Abandoned Groves & Orchards	8.87	0.000	0.000	0.000
20	2500 Specialty Farms	3.33	0.000	0.000	0.000
21	3230 Other Shrub and Brush	3.1	0.000	0.000	0.000
22	410 Pine Flatwoods	0.0	0.000	0.000	0.000
23	420 Longleaf Pine - Xeric Oak	0.0	0.000	0.000	0.000
24	4300 Upland Hardwood Forest	0.0	0.000	0.000	0.000
25	4280 Cabbage Palm	0.0	0.000	0.000	0.000
26	4320 Sand Live Oak	0.0	0.000	0.000	0.000
27	4340 Hardwood - Coniferous Mixed	2.4	0.045	1.453	0.000
28	4360 Upland Scrub, Pine and Hardwoods	0.0	0.000	0.000	0.000
29	4370 Australian Pine	8.27	0.000	0.000	0.000
30	4400 Coniferous Plantations	5.34	0.000	0.000	0.000
31	5000 Swamps and Marshes	0.0	0.000	0.000	0.000
32	5200 Natural Lakes & Ponds	0.0	0.000	0.000	0.000
33	5300 Reservoirs	4.0	0.223	2.235	0.000
34	5420 Estuarine	0.0	0.000	0.000	0.000
35	5700 Major Bodies of Water	0.0	0.000	0.000	0.000
36	6100 Bay Swamps	0.0	0.000	0.000	0.000
37	6200 Mangrove Swamp	0.0	0.000	0.000	0.000
38	6500 Swamps and Lake Swamps (Bottomland)	0.0	0.000	0.000	0.000
39	6700 Mixed Wetland Hardwoods	0.0	0.000	0.000	0.000
40	6290 Cypress	0.0	0.000	0.000	0.000
41	6240 Cypress - Pine - Cabbage Palm	0.0	0.000	0.000	0.000
42	6250 Hydro Pine Flatwoods	0.0	0.000	0.000	0.000
43	6270 Slash Pine Swamp Forest	0.0	0.000	0.000	0.000
44	6280 Wet Coniferous Plantations	0.0	0.000	0.000	0.000
45	6300 Wetland Forest/Mixed	0.0	0.000	0.000	0.000
46	6310 Wetland Shrub	0.0	0.000	0.000	0.000
47	6430 Freshwater Marshes	2.3	0.128	1.285	0.000
48	6420 Saltwater Marsh	0.0	0.000	0.000	0.000
49	6430 Wet Prairie	0.0	0.000	0.000	0.000
50	6440 Freshwater Marshes	0.0	0.000	0.000	0.000
51	6500 Non-Vegetated	0.0	0.000	0.000	0.000
52	6510 Tidal Flats	0.0	0.000	0.000	0.000
53	6520 Shorelines	0.0	0.000	0.000	0.000
54	7400 Disturbed Land	9.68	0.000	0.000	0.000
55	7430 Spud Area	3.61	0.000	0.000	0.000
56	8120 Fields	2.43	0.000	0.000	0.000
57	9140 Roads	1.91	0.000	0.000	0.000
58	#200 Utilities	2.43	0.000	0.000	0.000
59	TOTAL	17.9	0.31	16.93	7.725

This score is forwarded to the Wetland Score tab.

Landscape Assessment

The landscape assessment is evaluated using a Landscape Support Index

1. Input the acreage of each surrounding landscape type in a 100m buffer surrounding the wetland
2. Coefficients for each landscape type are identified in the table, by typing the FLUCFCS_Legend the table populates the LSI_Value

The screenshot displays a Microsoft Excel spreadsheet titled 'Assessment_matrix.xlsx'. The main table lists various landscape types (e.g., 0000 Open Land, 0010 Residential, Low Density, etc.) with columns for 'Area', 'LSI Value', and 'LSI Value'. A red arrow points to the 'LSI Value' column. An inset window shows a list of landscape types with their corresponding LSI coefficients.

Land Use Code	Area	LSI Value	LSI Value
0000 Open Land	1.00	1.00	1.00
0010 Residential, Low Density	1.00	1.00	1.00
0020 Residential, Medium Density	1.00	1.00	1.00
0030 Residential, High Density	1.00	1.00	1.00
0040 Commercial and Services	1.00	1.00	1.00
0050 Industrial	1.00	1.00	1.00
0060 Holding Ponds	1.00	1.00	1.00
0070 Institutional	1.00	1.00	1.00
0080 Golf courses	1.00	1.00	1.00
0090 Parks and Zoos	1.00	1.00	1.00
0100 Open Land	1.00	1.00	1.00
0110 Improved Pasture	1.00	1.00	1.00
0120 Unimproved Pasture	1.00	1.00	1.00
0130 Woodland Pastures	1.00	1.00	1.00
0140 Row Crops	1.00	1.00	1.00
0150 Field Crops	1.00	1.00	1.00
0160 Tree Crops	1.00	1.00	1.00
0170 Citrus	1.00	1.00	1.00
0180 Abandoned Groves & Orchards	1.00	1.00	1.00
0190 Feeding Operations	1.00	1.00	1.00
0200 Nurseries and Vineyards	1.00	1.00	1.00
0210 Tree Nurseries	1.00	1.00	1.00

The inset window shows a list of landscape types with their corresponding LSI coefficients:

Land Use Code	LSI Value
00-Low Density Urban	3.22
00-Residential, Low Density	3.57
00-Residential, Medium Density	2.81
00-High Density Urban	0.91
00-Residential, High Density	2.72
00-Commercial and Services	0.91
00-Cemeteries	3.42
00-Industrial	1.87
00-Extractive	2.22
00-Strip Mines	2.22
00-Sand & Gravel Pits	2.22
00-Rock Quarries	2.22
60-Holding Ponds	0.68
00-Institutional	1.14
00-Golf courses	3.42
00-Parks and Zoos	3.42
60-Community rec. facilities	3.42
00-Open Land	1.42
10-Improved Pasture	6.96
21-2100-Unimproved Pasture	8.03
22-2130-Woodland Pastures	8.67
23-2140-Row Crops	6.07
24-2150-Field Crops	6.07
25-2200-Tree Crops	7.02
26-2210-Citrus	7.02
27-2200-Abandoned Groves & Orchards	8.67
28-2300-Feeding Operations	3.33
29-2400-Nurseries and Vineyards	8.03
30-2410-Tree Nurseries	7.02

Brevard County - Wetland Assessment Method Toolbox

Water Environment

The water quality and timing is assessed using observational data in two parts.

Part 1:

The water quality is assessed by evaluating the water quality treatment that the contributing basin is providing. The percentage of each treatment type is estimated.

The value equals 0 – 5

1. Enter the percentage of each water quality treatment.

Note: If the contributing basin is entirely closed and rain fed a value of 100% is entered for the “Only Rainfall Dependent - no contributing basin” – Water Quality Treatment Score of 4.6

Water Quality Treatment			
Enter Percentage of surrounding landcover that contributes to the Water Quality Treatment	Category	Coefficient	Water Quality Treatment Score
45	Natural	5	2.25
4	Only rainfall - no contributing basin	4.6	0
30	Wet detention with swales	4.2	1.26
	Wet detention with dry detention	4.2	0
25	Combination grass swales with dry detention	3.3	0.825
	Grass swales only / vegetative buffer strip	1.7	0
	Dry Detention only	1.7	0
	No treatment	0	0
100	Correct		4.335

Hydrological Indicator	
Indicators	Indicator Descriptions
Severely altered with strong evidence of transitional/upland or open water plant	Severely altered with strong evidence of
Inadequate to maintain a viable wetland	<ul style="list-style-type: none"> Wetland hydrology severely Hydroperiod will not support Substantial evidence that u Wetland plants dying-off b Substantial soil subsidence
Adequate to maintain a viable wetland features may affect wetland hydrology	
Maintaining a viable, high functioning w	
	Inadequate to maintain a viable wetland
	Hydroperiod not adequate

The table indicates if the input equals 100% by displaying the red **Correct**.

Brevard County - Wetland Assessment Method Toolbox

Water Environment

Part 2:

The hydrology is evaluated by hydrologic indicators in the wetland, ie. adventitious rooting, lichen lines, staining, upland vegetation encroachment, etc.

The values are 0, 1.7, 3.3 or 5

1. Enter the value for the hydrologic indicator score

Hydrological Indicator	
Indicators	Coefficient
Severely altered with strong evidence of succession to transitional/upland or open water plant community	0
Inadequate to maintain a viable wetland system	1.7
Adequate to maintain a viable wetland system, external features may affect wetland hydrology	3.3
Maintaining a viable, high functioning wetland system	5

Enter Hydrologic Indicator Score

5

Assessment_matrix_locked.xlsx - Microsoft Excel

Water Environment	Score	Thresholds
Water Quality Treatment	4.335	a perfect water environment would have a maximum score of 10
Hydrologic Indicator	5	
Sum	9.335	Water Environment Score

The spreadsheet will sum the water environment scores and forward the summed value to the Wetland Score tab.

Water Environment

Indicator Descriptions:

Severely altered with strong evidence of succession to transitional/upland or open water plant community

- Wetland hydrology severely modified
- Hydroperiod will not support wetland plant species associated with the particular community type
- Substantial evidence that upland plant species are encroaching into the wetland because of decreased hydroperiod
- Wetland plants dying-off because of increased hydroperiod
- Substantial soil subsidence of organic soil substrates

Inadequate to maintain a viable wetland system

- Hydroperiod not adequate to maintain the type of wetland system that is being assessed
- Appropriate vegetation stressed or dying from too much or too little water; encroachment of transitional/upland plant species into wetland
- Evidence of soil subsidence of organic soil substrates

Adequate to maintain a viable wetland system, external features may affect wetland hydrology

- Hydroperiod appears adequate, but conditions (canals, ditches, swales, berms, reduced drainage area, culverts, pumps, control elevations, or wellfields) are possibly influencing the hydroperiod of the wetland being assessed
- Plants appear healthy, but some signs of improper hydrology are present
- Little evidence of soil subsidence of organic soil substrates

Maintaining a viable, high functioning wetland system

- Plants appear healthy, no signs of stress from improper hydrology are present
- Wetland has natural hydroperiod
- Not adjacent to features (canals, ditches, swales, berms, reduced drainage area, culverts, pumps, control elevations, or wellfields) that could negatively impact the wetland
- No sign of soil subsidence of organic soil substrates

The spreadsheet will sum the water environment scores and forward the summed value to the Wetland Score tab.

Examples of Water Quality Treatment Categories

Natural



Grass swales with dry detention / vegetative buffer strips



Examples of Hydrologic Indicators

Inadequate to maintain a viable wetland system – Note the pine and facultative broomsedge encroachment



Adequate to maintain a viable wetland system, external features may affect wetland hydrology



Vegetative Community

Vegetative Community is evaluated in two parts

Part 1

1. Estimate what percentage of vegetation is considered appropriate for the wetland type (ie. Facultative Wet or Obligate).
2. Enter the percentage in the spreadsheet

Assessment_matrix_locked.xlsx - Microsoft Excel

	A	B	C	D	E	F	G	H	I
1						Wetland Vegetation			
2		Enter Percentage of Wetland Vegetation	Score			%	score		
3	Wetland Vegetation	95	11			0	0		
4						10	0		
5						20	0		
6						30	2		
7						40	3		
8						50	6		
9						60	8		
10						70	9		
11						80	10		
12						90	11		
13						100	12		
14									
15									

Vegetative Community

Part 2

1. Estimate what percentage of vegetation is considered exotic or invasive species
2. Enter the percentage in the spreadsheet
3. The spreadsheet will calculate the score as the average of the appropriateness score and exotic score

Enter Percentage of Exotic Vegetation		Score
Exotic Vegetation	5	8

Exotic Vegetation	
%	Score
0	8
15	7
25	5
30	4
50	2
100	0

The table will average the vegetative scores, unless the exotic value exceeds the wetland value at which point the score will be zero.

The spreadsheet forwards the vegetative score to the Wetland Score tab.

Vegetative Community

Observation of percentage of appropriateness of wetland vegetation – Notice encroachment of pines and facultative broomsedge

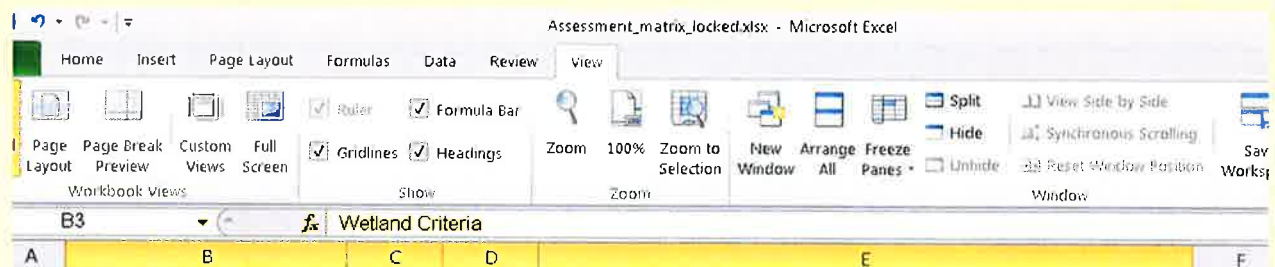


Observation of percentage of exotics or invasive vegetation – Notice density of Brazilian pepper versus no exotic vegetation



Wetland Score

- The overall wetland assessment score is calculated by summing all three section scores and dividing by 30
- Highest functioning wetlands will have a score near 1.0



Wetland Criteria	Score	Thresholds
Landscape	7.72	a perfect landscape would have a maximum score of 10
Water Environment	9.335	a perfect water environment would have a maximum score of 10
Vegetative Community	9.5	a perfect vegetative community would have a maximum score of 10
Assesment Score	0.885	a perfect wetland would have a score of 1.0

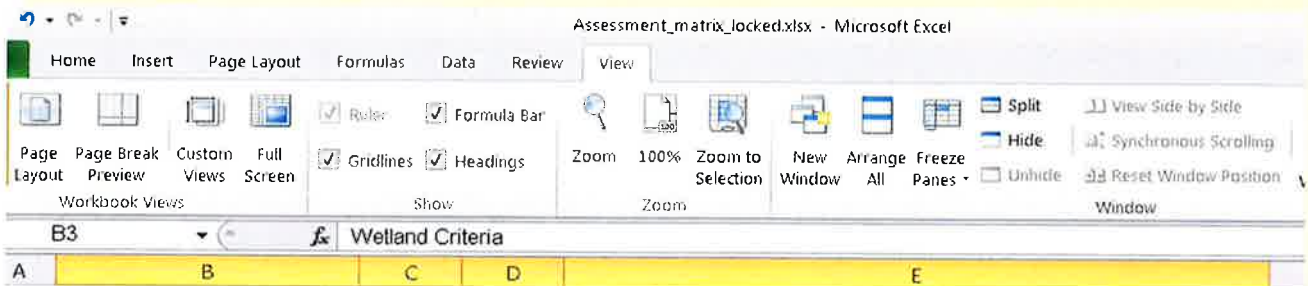


This example wetland ended with a calculated score of 0.885, which would indicate it is a High-Functioning wetland system. This system would require Commission **approval** to allow any impact.

The threshold for assessing if a wetland is considered “High-Functioning” has been determined to be **0.66** or higher.

Wetland Score

- In this example, the wetland is in poor condition
- The score depicts that the wetland has impacted surroundings, degraded water quality, and a vegetative community composed of 20% exotic plants.



Assessment_matrix_locked.xlsx - Microsoft Excel

Home Insert Page Layout Formulas Data Review View

Page Layout Page Break Custom Full Ruler Formula Bar Zoom 100% Zoom to New Arrange Freeze Split View Side by Side
Layout Preview Views Screen Gridlines Headings Selection Window All Panes Hide Synchronous Scrolling
Workbook Views Show Zoom Reset Window Position Window

B3 Wetland Criteria

A B C D E

<i>Wetland Criteria</i>	<i>Score</i>	<i>Thresholds</i>
Landscape	5.16	a perfect landscape would have a maximum score of 10
Water Environment	4.96	a perfect water environment would have a maximum score of 10
Vegetative Community	6.5	a perfect vegetative community would have a maximum score of 10
Assessment Score	0.554	a perfect wetland would have a score of 1.0



This example wetland ended with a calculated score of 0.554, which would indicate it is not a High-Functioning wetland system and could be impacted **without** Commission approval.

Brevard County – Wetland Assessment Method

September, 2013

**Developed for Brevard County
By
BKI, Inc. and Ecospatial Analysts, Inc.**

Brevard County – Wetland Assessment Method

The intent is to develop a wetland assessment method used by Brevard County to identify high functioning wetlands. The method evaluates three criteria to assess the functionality of a wetland system. The three criteria are: landscape location, water environment, and vegetative community.

1) Landscape Location:

Landscape location evaluates the surrounding landscape and the influences the landscape has on the wetland. The influences would include impacts or enhancement of water quality, wildlife utilization, and potential introduction of exotic species. A score is calculated by using a landscape support index (LSI). The LSI quantifies the proportions of different land uses within a 100m buffer around the wetland to be assessed. The percentage that a specific land use contributes to that buffer is multiplied by the established coefficient for that specific land use (Table 1 coefficient values range from 1 to 10). All of the values are summed and the value will range within 1 to 10.

Land Use	LSI Coefficient
Natural Community	10.00
Natural Open water	10.00
Pine Plantation	9.36
Recreational / Open Space (Low-intensity)	9.08
Woodland Pasture (with livestock)	8.87
Pasture (without livestock)	8.03
Low Intensity Pasture (with livestock)	7.32
Citrus	7.02
High Intensity Pasture (with livestock)	6.96
Row crops	6.07
Single Family Residential (Low-density)	3.57
Recreational / Open Space (High-intensity)	3.42
High Intensity Agriculture (Dairy farm)	3.33
Single Family Residential (Med-density)	2.81
Single Family Residential (High-density)	2.72
Mobile Home (Medium density)	2.56
Highway (2 lane)	2.43
Low Intensity Commercial	2.22
Institutional	2.14
Highway (4 lane)	1.91
Mobile Home (High density)	1.90
Industrial	1.87
Multi-family Residential (Low rise)	1.49
High Intensity Commercial	0.91
Multi-family Residential (High rise)	0.90
Central Business District (Average 2 stories)	0.64
Central Business District (Average 4 stories)	0.00

Based on coefficients developed by Reiss and Brown, 2005 as described in Bardi et al., 2005

For example, an approximate 24 acre wetland that has a 100m buffer (39.6 acres) that includes 40% woodland pasture and 60% single family low-density residential would be 0.4 (percentage expressed as decimal) times the 8.87 (coefficient) plus 0.6 times the 3.57, respectively. The resulting LSI value is 5.69 (3.548 + 2.142).

The coefficients were proposed and developed by several authors including Bardi et al. 2005, Reiss and Brown 2005, Cohen et al. 2004, Lane et al. 2004, and Doherty et al. 1999. The coefficients were developed by evaluating the potential effects of adjacent land-use on wetland systems.

2) Water Environment:

The hydrologic functions of the wetland being assessed are evaluated for two criteria including water quality and hydrology (depth and duration of inundation). Water quality is assessed by evaluating the treatment that water inflows undergo prior to entering to the wetland. The hydrology is assessed by reviewing plant morphological characteristics and the plant community structure.

Water Quality Treatment Category Score

The water quality treatment is assessed utilizing criteria developed for Wetland Rapid Assessment Procedure (WRAP) analysis of wetlands (Miller and Gunsalus, 1999). The treatment is assessed based on the analysis of the contributing watershed lands surrounding the wetland and the water quality treatment that the lands provide. Treatment of stormwater pollution can be achieved by several methods. Wet detention can achieve up to 90 percent reduction for nutrients and solids. Treatment by dry retention is considered to be inferior to wet detention. If the treatment system present is not operational then the score should reflect the condition of the system.

Therefore, if the wetland being assessed is in a larger wetland system, then the water quality treatment category is natural. The analysis determines which type of water quality treatment, if any, is occurring. If a system is entirely cut-off from its natural contributing basin and is solely rainfall dependent, a standard score of 4.6 is entered.

Category	Coefficient
Natural undeveloped area	5.0
Only rainfall dependent – no contributing basin	4.6
Wet detention with swales	4.2
Wet detention with dry detention	4.2
Combination grass swales with dry detention	3.3
Grass swales only / vegetative buffer strip	1.7
Dry Detention only	1.7
No treatment	0

Coefficients were based on values developed and utilized by Miller and Gunsalus, 1999

The coefficient is multiplied by the percentage (expressed as decimal) that the surrounding area contributes to the treatment type. The different treatment types are then summed resulting in a value between 0 and 5. For example a wetland buffer with 50% *natural*, 25% *wet detention with swales*, and

25% dry detention only ($0.50 \times 5.0 + 0.25 \times 4.2 + 0.25 \times 1.7=3.975$) would result in a water quality treatment score of 3.975.

Hydrologic Indicators Score

The wetland is assessed based on evaluation of indicators of the hydrologic conditions present in the wetland which describe the hydrologic regime and the water environment. These scores result in values between 0 and 5.

Indicators	Coefficient
Hydrology severely altered with strong evidence of succession to transitional/upland or open water plant community <ul style="list-style-type: none"> • Hydrology severely modified • Hydroperiod will not support wetland plant species associated with the particular community type • Substantial evidence that upland plant species are encroaching into the wetland because of decreased hydroperiod • Wetland plants dying-off because of increased hydroperiod • Substantial soil subsidence of organic soil substrates 	0
Hydrology inadequate to maintain a viable wetland system <ul style="list-style-type: none"> • Hydroperiod not adequate to maintain the type of wetland system that is being assessed • Appropriate vegetation stressed or dying from too much or too little water; encroachment of transitional/upland plant species into wetland • Evidence of soil subsidence of organic soil substrates 	1.7
Hydrology adequate to maintain a viable wetland system, external features may affect wetland hydrology <ul style="list-style-type: none"> • Hydroperiod appears adequate, but adjacent features (canals, ditches, swales, berms, reduced drainage area, culverts, pumps, control elevations, or wellfields) are possibly influencing the hydroperiod of the wetland being assessed • Plants appear healthy, but some signs of improper hydrology are present • Little evidence of soil subsidence of organic soil substrates 	3.3
Hydrology maintaining a viable, high functioning wetland system <ul style="list-style-type: none"> • Plants appear healthy, no signs of stress from improper hydrology are present • Wetland has natural hydroperiod • Not adjacent to features (canals, ditches, swales, berms, reduced drainage area, culverts, pumps, control elevations, or wellfields) that could negatively impact the wetland • No sign of soil subsidence of organic soil substrates 	5.0

Coefficients were based on values developed and utilized by Miller and Gunsalus, 1999

Indicators of negative conditions would include would be shifts in vegetation from wetland species (Obligate and Facultative Wet) to more transitional (Facultative) species and Upland species. An

additional negative indicator could be large amounts of soil subsidence. Die-offs of plant species due to inappropriate, increased inundation would also be a negative indicator.

Positive indicators could include, appropriate plant species composition, stain and lichen lines, moss collars, and appropriate adventitious rooting.

The Hydrologic Indicator Score is a value between 0 and 5.

The two water criteria values are summed and produce a total water environment score that ranges from 0 to 10. This represents the overall water environment score for the assessment wetland. If the example wetland had a hydrologic indicator score of 3.3, then the water environment score would be 7.275

3) Vegetative Community:

The Vegetative Community Score is developed by evaluating the species of vegetation present in the wetland being assessed. There are two scoring matrixes; one score evaluates the percentages of wetland vegetative species present and the other evaluates the percentages of exotic or invasive species present. The Vegetative Community Score is the average of the scores from the matrixes, unless 1) the wetland vegetation is less than 30 percent or 2) the percent of exotic vegetation is greater than the percent of wetland vegetation. If either of these two conditions exists the Vegetative Community Score will equal zero. For example, if the percentage of wetland vegetation is approximately 40% than Wetland Vegetation Score is 3 (see Table 1. Wetland Vegetation Score). If the wetland that you are scoring includes a small percentage (10%) of Brazilian pepper the Exotic Vegetation Score would be 8 (see Table 2. Exotic Vegetation Score). The Total Vegetative Community score would be $(3+8)/2$ or 5.5.

The rationale for the plant community scoring is derived from literature that indicates the plant community shifts in response to conditions in the wetland. Drier conditions will allow less wetland vegetation to be established in a wetland. The introduction of exotic species typically occurs in systems that are undergoing disturbance or stress (Zedler and Kercher, 2004). Additionally, a wetland may exist with a low level of exotics for many years. When the density of exotic species reaches a particular threshold, the exotic species out compete the native species and the community will undergo a shift to becoming an exotic monoculture. This shift is believed to occur when a system becomes approximately 30% exotic species. This value is supported by regulatory agencies since agencies will not give mitigation credit for exotic removal until a system includes approximately 30% exotic plant species.

Table 1. Wetland Vegetation Score

%	score
0	0
10	0

20	0
30	2
40	3
50	6
60	8
70	9
80	10
90	11
100	12

Table 2. Exotic Vegetation Score

%	Score
0	8
15	7
25	5
30	4
50	2
100	0

Table 3. Vegetation Score

Vegetation Criteria	Percentages (from other tabs)	Score	Thresholds
Wetland Vegetation	40	3	a perfect wetland would have a maximum score of 10
Exotic Vegetation	10	8	
Total Percentage	50	5.5	Vegetative Community Score (average) The Vegetative Community Score is calculated as the average of the wetland vegetation score and the exotic vegetation score unless; 1) the wetland vegetation is < 30% or 2) if the percent of exotic vegetation is > the percent of wetland vegetation. If either of these two conditions exist the Community Vegetative Score will = 0.

Evaluation Score

Overall scores are summed and divided by thirty. The resulting calculation ranges from 0 to 1 and is the value that predicts if the assessed system is considered a high functioning system. A pristine system free from any anthropomorphic effects would score 1 (30 divided by 30). The anticipated value of high

functioning wetlands will be approximately 0.66 or above. This value could also be interpreted that the system is operating at 66% of its functional potential.

References:

Bardi, E., Brown M.T., Reiss, K.J., and M. Cohen. "UMAM Uniform Mitigation Assessment Method Training Manual." Howard T. Odum Center for Wetlands, University of Florida. 2005. Microsoft Power Point File, Howard T. Odum Center for Wetlands, University of Florida. 2005.

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Vivas, M.B. and M.T. Brown. *Landscape development intensity index*. *Environmental Monitoring and Assessment* 101 (2005):289-309. Web. Feb. 2013.

Zedler, J.B. and S. Kercher. *Causes and consequences of invasive plants in wetlands: opportunities, opportunists, and outcome*. *Critical Reviews in Plant Sciences* 23(2004):431-452. Web. Sept. 2013.

Reference Wetlands

Brevard County Natural Resource Management



Developed by

B.K.I., Inc. and Ecospatial Analysts, Inc.

For

Brevard County

Natural Resource Management Office

September 30, 2013

Reference Wetlands

Brevard County Natural Resource Management

The document describes and assesses wetland systems located throughout Brevard County. These reference wetlands were chosen to be representative of different types of high-quality wetlands within Brevard County.

The wetlands were assessed utilizing the Brevard County-Wetland Assessment Method. The method was developed to evaluate wetlands and identify if a wetland is considered high functioning.

The assessment includes data for each reference wetland. The data includes: location map, description of the wetland vegetation and hydrology, large-scale location map, functional assessment data, functional assessment scores, and aerial map of wetland.

The reference wetlands were developed to be used for comparison while completing assessment of a subject wetland. Utilizing the reference wetlands should result in more consistency in the assessment of wetlands.

Table of Contents for Reference Wetlands (RW)

- RW1 – Mangrove Swamp
- RW2 – Mangrove Swamp
- RW6 – Mixed Wetland Hardwoods
- RW7 – Freshwater Marsh
- RW10 – Freshwater Marsh
- RW11 – Hydric Pine Flatwoods
- RW12 – Wet Prairie
- RW14 – Saltwater Marsh
- RW15 – Saltwater Marsh
- RW16 – Mangrove Swamp
- RW17 – Wetland Scrub
- RW18 – Wetland Scrub
- RW19 – Bay Swamp
- RW21 – Cabbage Palm Hammock
- RW22 – Cabbage Palm Hammock
- RW24 – Cypress
- RW29 – Wetland Forest Mixed
- RW30 – Saltwater Marsh
- RW 31 – Wet Prairie

Mangrove Swamp

Thousand Island Conservation Area

Brevard County Natural Resource Management
Reference Wetland Community



OVERVIEW

LOCATION

Brevard County
Latitude 28.3063049442 N, Longitude -80.6209608436 E

COMMUNITY DESCRIPTION

Mangrove swamp is a dense forest occurring along relatively flat, low wave energy, marine and estuarine shorelines. The dominant plants of mangrove swamp are red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia germinans*), white mangrove (*Laguncularia racemosa*), and buttonwood (*Conocarpus erectus*). These four species can occur either in mixed stands or often in differentiated, monospecific zones that reflect varying degrees of tidal influence, levels of salinity, and types of substrate. Red mangrove often dominates the lowest (or deep-water) zone, followed by black mangrove in the



Mangrove Swamp

Thousand Island Conservation Area

Brevard County Natural Resource Management
Reference Wetland Community

COMMUNITY DESCRIPTION (cont)

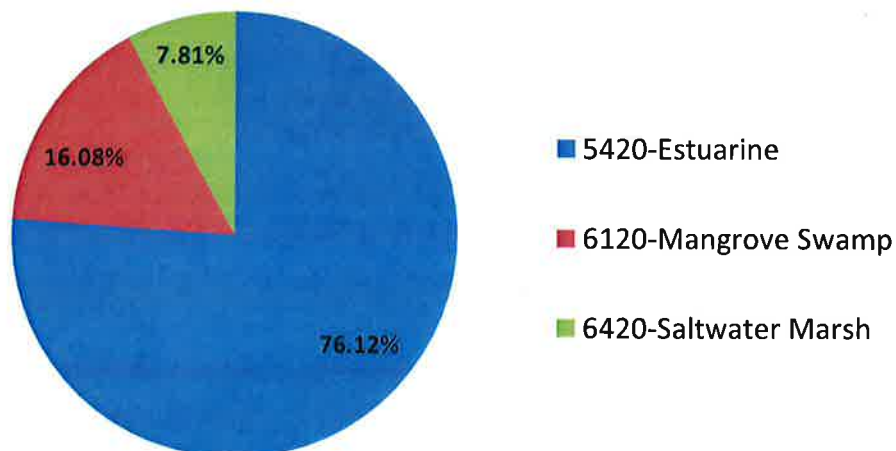
intermediate zone, and white mangrove and buttonwood in the highest, least tidally-influenced zone. Buttonwood often occupies an ecotone, or transition zone, to the adjacent upland community.

FUNCTIONAL WETLAND ASSESSMENT

- Landscape Location Score
Landscape Scale Index (LSI)

<i>FLUCFCS_legend</i>	<i>Sum of Acres</i>	<i>LSI_Value</i>	<i>Landcover Percent</i>	<i>Landscape Location Score (=LSI_Value* Landcover Percent)</i>
5420-Estuarine	58.28	10	0.761	7.612
6120-Mangrove Swamp	12.31	10	0.161	1.608
6420-Saltwater Marsh	5.98	10	0.078	0.781
TOTAL	76.57	30.00	1.00	10.00

Landcover Percent within 100 m buffer



FUNCTIONAL WETLAND ASSESSMENT (cont)

➤ Water Environment

<i>Water Environment</i>	<i>Score¹</i>
Water Quality Treatment Score	5
Hydrologic Indicator Score	5
<i>Water Environment Score</i>	10.0

¹ The Water Environment Score is a sum of the Water Quality Treatment and the Hydrologic Indicator Score.

➤ Vegetative Community

<i>Vegetative Community</i>	<i>Percentage</i>	<i>Score²</i>
Wetland Vegetation	100	12
Exotic Vegetation		8
<i>Vegetative Community Score</i>		10.0

² The Vegetative Community Score is calculated as the average of the wetland vegetation and the exotic vegetation score unless; 1) the wetland vegetation is < 30% or 2) the percent of exotic vegetation is greater than the percent of wetland vegetation. If either of these two conditions exist the Vegetative Community Score equals zero (0).

Invasive exotics are not present

Florida Exotic Pest Plant Council (FLEPPC) Category I Species

None

ASSESSMENT SCORE

$$(10.0 + 10.0 + 10.5) / 30 = 1.00$$

Mangrove Swamp Thousand Island Conservation Area

Brevard County Natural Resource Management



**Location Map - Mangrove Swamps
Thousand Island Conservation Area
Brevard County, Florida**

-  6120-Mangrove Swamp
-  Thousand Islands Conservation Area

Mangrove Swamp Ulumay Wildlife Sanctuary

Brevard County Natural Resource Management
Reference Wetland Community



OVERVIEW

LOCATION

Brevard County

Latitude 28.3785424759 N, Longitude -80.6781411412 E

COMMUNITY DESCRIPTION

Mangrove swamp is a dense forest occurring along relatively flat, low wave energy, marine and estuarine shorelines. The dominant plants of mangrove swamp are red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia germinans*), white mangrove (*Laguncularia racemosa*), and buttonwood (*Conocarpus erectus*). These four species can occur either in mixed stands or often in differentiated, monospecific zones that reflect varying degrees of tidal influence, levels of salinity, and types of substrate. Red mangrove often dominates the lowest (or deep-water) zone, followed by black mangrove in the



Mangrove Swamp Ulumay Wildlife Sanctuary

Brevard County Natural Resource Management
Reference Wetland Community

COMMUNITY DESCRIPTION (cont)

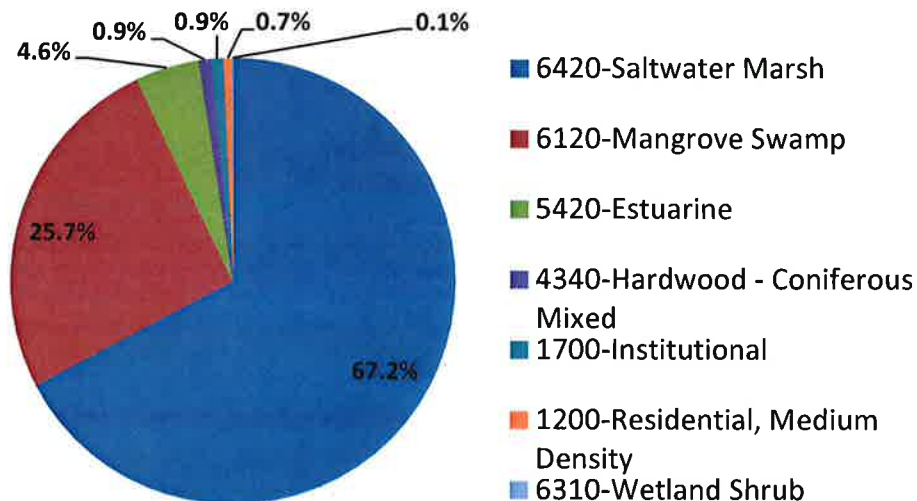
intermediate zone, and white mangrove and buttonwood in the highest, least tidally-influenced zone. Buttonwood often occupies an ecotone, or transition zone, to the adjacent upland community.

FUNCTIONAL WETLAND ASSESSMENT

➤ Landscape Location Score Landscape Scale Index (LSI)

<i>FLUCFCS_legend</i>	<i>Sum of Acres</i>	<i>LSI_Value</i>	<i>Landcover Percent</i>	<i>Landscape Location Score (=LSI_Value* Landcover Percent)</i>
6420-Saltwater Marsh	113.60	10.00	0.672	6.72
6120-Mangrove Swamp	43.50	10.00	0.257	2.57
5420-Estuarine	7.75	10.00	0.046	0.46
4340-Hardwood - Coniferous Mixed	1.51	10.00	0.009	0.09
1700-Institutional	1.44	2.14	0.009	0.02
1200-Residential, Medium Density	1.13	2.81	0.007	0.02
6310-Wetland Shrub	0.12	10.00	0.001	0.01
TOTAL	169.03	54.95	1.00	9.89

Landcover Percent within 100 m buffer



FUNCTIONAL WETLAND ASSESSMENT (cont)

➤ Water Environment

Water Environment	Score¹
Water Quality Treatment Score	5
Hydrologic Indicator Score	5
Water Environment Score	10.0

¹ The Water Environment Score is a sum of the Water Quality Treatment and the Hydrologic Indicator Score.

➤ Vegetative Community

Vegetative Community	Percentage	Score²
Wetland Vegetation	95	11
Exotic Vegetation	5	8
Vegetative Community Score		9.5

² The Vegetative Community Score is calculated as the average of the wetland vegetation and the exotic vegetation score unless; 1) the wetland vegetation is < 30% or 2) the percent of exotic vegetation is greater than the percent of wetland vegetation. If either of these two conditions exist the Vegetative Community Score equals zero (0).

Invasive exotics are present in less than 15%.

Florida Exotic Pest Plant Council (FLEPPC) Category I Species

Brazilian pepper (Schinus terebinthifolius)

ASSESSMENT SCORE

$$(9.89 + 10.0 + 9.5) / 30 = 0.980$$

Mangrove Swamp Ulumay Wildlife Sanctuary

Brevard County Natural Resource Management
Reference Wetland Community



**Location Map - Mangrove Swamps
Ulumay Wildlife Sanctuary
Brevard County, Florida**

-  6120-Mangrove Swamp
-  Ulumay Wildlife Sanctuary

Mixed Wetland Hardwoods

Buck Lake Conservation Area

Brevard County Natural Resource Management
Reference Wetland Community



OVERVIEW

LOCATION

Brevard County

Latitude 28.6875918253 N, Longitude -80.8868622564 E

COMMUNITY DESCRIPTION

Mixed wetland hardwoods are composed of a large variety of hardwood species tolerant of hydric conditions yet exhibit an ill defined mixture of species. The evergreen hardwood and/or palm forest has a variable understory typically dominated by palms and ferns occurring on moist soils. While species composition varies, the community generally has a closed canopy of oaks and palms, an open understory, and a sparse to a moderate groundcover of grasses and ferns. The canopy is dominated by swamp laurel oak (*Quercus laurifolia*) and/or live oak (*Q. virginiana*) with varying amounts of cabbage palm (*Sabal palmetto*), American elm (*Ulmus americana*), sweetbay (*Magnolia virginiana*), red cedar (*Juniperus virginiana*), red maple (*Acer rubrum*) and sugarberry (*Celtis laevigata*).



Mixed Wetland Hardwoods

Buck Lake Conservation Area

Brevard County Natural Resource Management
Reference Wetland Community

COMMUNITY DESCRIPTION (cont)

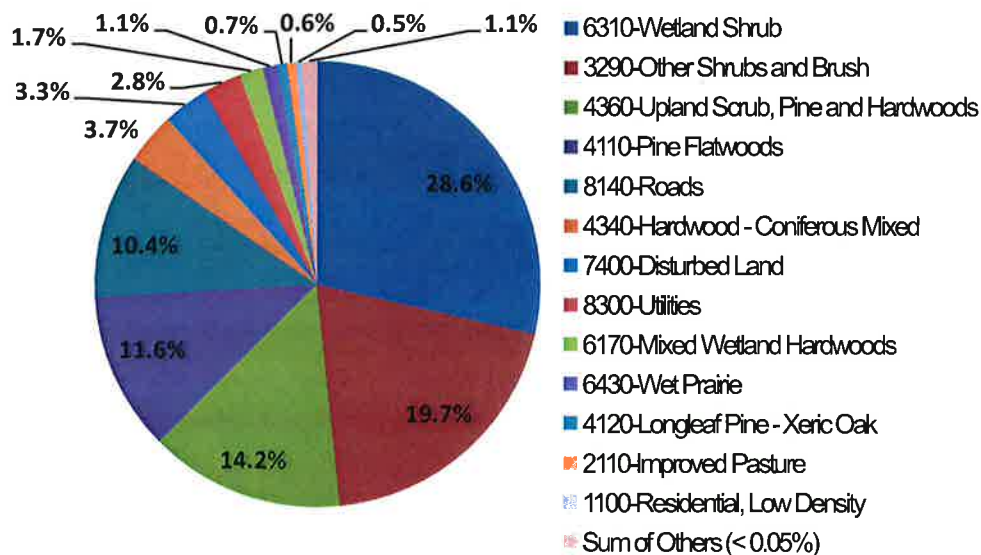
Cabbage palm is a common to dominant component of hydric hammock. Slash pine (*Pinus elliottii*) and Loblolly pine (*Pinus taeda*) may be frequent in some areas. In addition to saplings of canopy species, the understory may contain a number of small trees and shrubs. Various woody species that may be present including swamp dogwood (*Cornus foemina*), small-leaf viburnum (*Viburnum obovatum*), common persimmon (*Diospyros virginiana*), swamp bay (*Persea palustris*), wax myrtle (*Myrica cerifera*), dwarf palmetto (*Sabal minor*), American beautyberry (*Callicarpa americana*), and needle palm (*Rhaphidophyllum hystrix*). Vines may be frequent and diverse; common species are eastern poison ivy (*Toxicodendron radicans*), peppervine (*Ampelopsis arborea*), greenbriers (*Smilax* spp.), summer grape (*Vitis aestivalis*), and muscadine (*Vitis rotundifolia*).

FUNCTIONAL WETLAND ASSESSMENT

➤ Landscape Location Score Landscape Scale Index (LSI)

FLUCFCS_legend	Sum of Acres	LSI_Value	Landcover Percent	Landscape Location Score (=LSI_Value* Landcover Percent)
6310-Wetland Shrub	150.18	10	0.285	2.85
3290-Other Shrubs and Brush	103.86	10	0.197	1.97
4360-Upland Scrub, Pine and Hardwoods	74.78	10	0.142	1.42
4110-Pine Flatwoods	60.83	10	0.116	1.16
8140-Roads	54.73	1.91	0.104	0.20
4340-Hardwood - Coniferous Mixed	19.55	10	0.037	0.37
7400-Disturbed Land	17.40	9.08	0.033	0.30
8300-Utilities	14.94	2.43	0.028	0.07
6170-Mixed Wetland Hardwoods	8.98	10	0.017	0.17
6430-Wet Prairie	5.59	10	0.011	0.11
4120-Longleaf Pine - Xeric Oak	3.53	10	0.007	0.07
2110-Improved Pasture	3.32	6.96	0.006	0.04
1100-Residential, Low Density	2.40	3.57	0.005	0.02
6410-Freshwater Marshes	2.02	10	0.004	0.04
6210-Cypress	1.08	10	0.002	0.02
6300-Wetland Forested Mixed	0.77	10	0.001	0.01
1820-Golf courses	0.77	3.42	0.001	0.00
2500-Specialty Farms	0.72	3.33	0.001	0.00
6440-Freshwater Marshes	0.51	10	0.001	0.01
TOTAL	525.96	150.70	1.00	8.84

Landcover Percent within 100 m buffer



Mixed Wetland Hardwoods

Buck Lake Conservation Area

Brevard County Natural Resource Management
Reference Wetland Community

FUNCTIONAL WETLAND ASSESSMENT (cont)

➤ Water Environment

Water Environment	Score¹
Water Quality Treatment Score	4.505
Hydrologic Indicator Score	5
Water Environment Score	9.505

¹ The Water Environment Score is a sum of the Water Quality Treatment and the Hydrologic Indicator Score.

➤ Vegetative Community

Vegetative Community	Percentage	Score²
Wetland Vegetation	80	10
Exotic Vegetation	15	7
Vegetative Community Score		8.5

² The Vegetative Community Score is calculated as the average of the wetland vegetation and the exotic vegetation score unless; 1) the wetland vegetation is < 30% or 2) the percent of exotic vegetation is greater than the percent of wetland vegetation. If either of these two conditions exist the Vegetative Community Score equals zero (0).

Invasive exotics present in less than 15%

Florida Exotic Pest Plant Council (FLEPPC) Category I Species

Brazilian pepper (Schinus terebinthifolius)

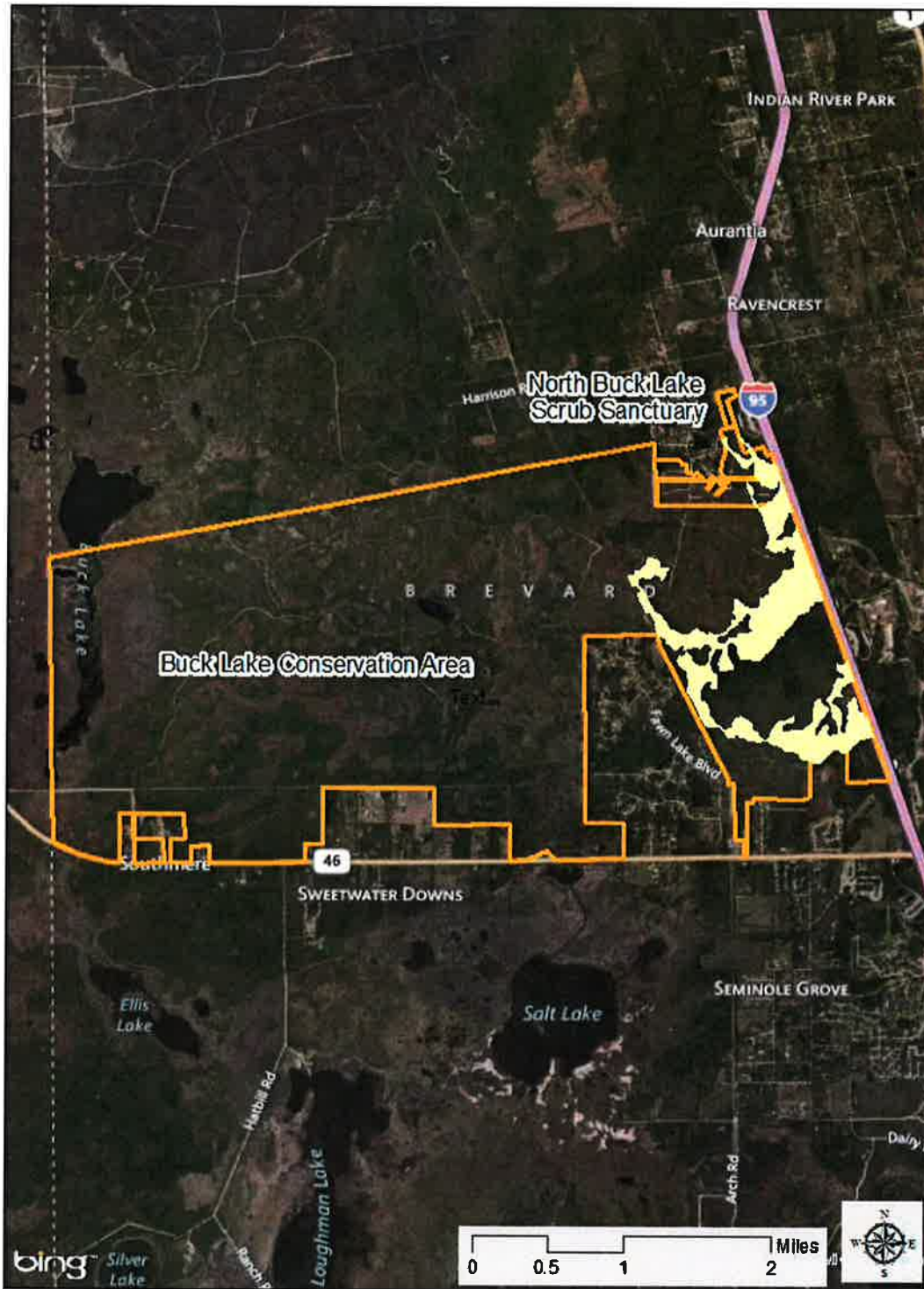
ASSESSMENT SCORE

$$(8.846 + 9.505 + 8.5) / 30 = 0.895$$



Mixed Wetland Hardwoods

Buck Lake Conservation Area

Brevard County Natural Resource Management



**Location Map - Mixed Wetland Hardwoods
Buck Lake Conservation Area/
North Buck Lake Scrub Sanctuary
Brevard County, Florida**

-  6170-Mixed Wetland Hardwoods
-  North Buck Lake Scrub Sanctuary
-  Buck Lake Conservation Area

Freshwater Marsh

St. Sebastian River Preserve State Park

Brevard County Natural Resource Management
Reference Wetland Community



OVERVIEW

LOCATION

Brevard County

Latitude 27.8513090723 N, Longitude -80.558021893 E

COMMUNITY DESCRIPTION

Freshwater marshes are regularly inundated herbaceous wetlands that may occur in a variety of situations and may be within a fire-maintained matrix community. Species composition is heterogeneous both within and between marshes but can generally be divided into submersed, floating-leaved, emergent, and grassy zones from deepest to shallowest portions; shrub patches may be present within any of these zones. The emergent zone may have pickerelweed (*Pontederia cordata*), bulltongue arrowhead (*Sagittaria lancifolia*), southern cattail (*Typha domingensis*), sawgrass (*Cladium jamaicense*), and softstem bulrush (*Scirpus tabernaemontani*); the grassy zone is typically



Freshwater Marsh

St. Sebastian River Preserve State Park

Brevard County Natural Resource Management
Reference Wetland Community

COMMUNITY DESCRIPTION (cont)

characterized by maidencane (*Panicum hemitomon*), smooth beggarticks (*Bidens laevis*), dotted smartweed (*Polygonum punctatum*), and sand cordgrass (*Spartina bakeri*), accompanied by a diverse mixture forbs such as sweetscent (*Pluchea odorata*), spadeleaf (*Centella asiatica*), and lemon bacopa (*Bacopa caroliniana*). Coastalplain willow (*Salix caroliniana*), common buttonbush (*Cephalanthus occidentalis*), elderberry (*Sambucus nigra* ssp. *canadensis*), and wax myrtle (*Myrica cerifera*) are common shrubby components.

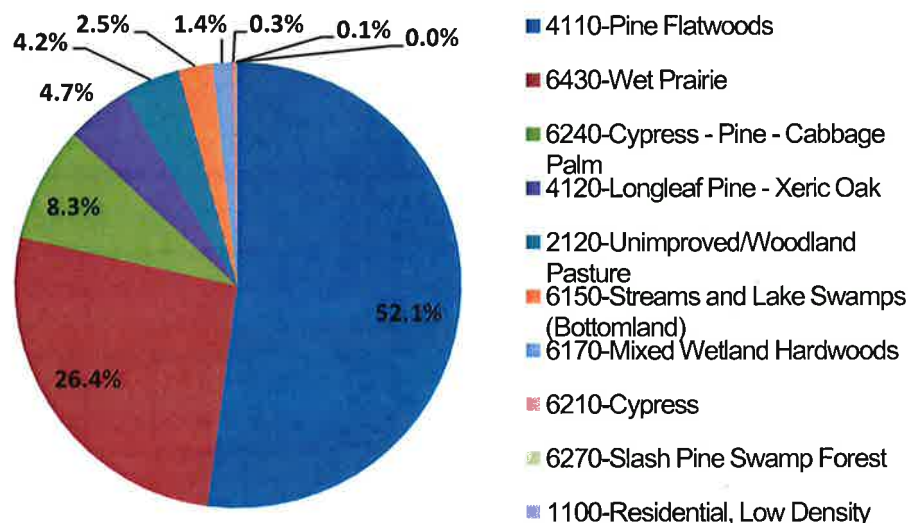
FUNCTIONAL WETLAND ASSESSMENT

➤ Landscape Location Score

Landscape Scale Index (LSI)

<i>FLUCFCS_legend</i>	<i>Sum of Acres</i>	<i>LSI_Value</i>	<i>Landcover Percent</i>	<i>Landscape Location Score (=LSI_Value* Landcover Percent)</i>
4110-Pine Flatwoods	199.28	10	0.521	5.213
6430-Wet Prairie	100.91	10	0.264	2.639
6240-Cypress - Pine - Cabbage Palm	31.83	10	0.083	0.832
4120-Longleaf Pine - Xeric Oak	18.11	10	0.047	0.474
2120-Unimproved/Woodland Pasture	15.96	8.03	0.042	0.335
6150-Streams and Lake Swamps (Bottomland)	9.50	10	0.025	0.248
6170-Mixed Wetland Hardwoods	5.25	10	0.014	0.137
6210-Cypress	1.06	10	0.003	0.028
6270-Slash Pine Swamp Forest	0.41	10	0.001	0.011
1100-Residential, Low Density	0.03	3.57	0.000	0.000
TOTAL	382.31	91.60	1.00	9.92

Landcover Percent within 100 m buffer



FUNCTIONAL WETLAND ASSESSMENT (cont)

➤ Water Environment

Water Environment	Score¹
Water Quality Treatment Score	4.75
Hydrologic Indicator Score	5
Water Environment Score	9.75

¹ The Water Environment Score is a sum of the Water Quality Treatment and the Hydrologic Indicator Score.

➤ Vegetative Community

Vegetative Community	Percentage	Score²
Wetland Vegetation	95	11
Exotic Vegetation	5	8
Vegetative Community Score		9.5

² The Vegetative Community Score is calculated as the average of the wetland vegetation and the exotic vegetation score unless; 1) the wetland vegetation is < 30% or 2) the percent of exotic vegetation is greater than the percent of wetland vegetation. If either of these two conditions exist the Vegetative Community Score equals zero (0).

Invasive exotics present in less than 5%

Florida Exotic Pest Plant Council (FLEPPC) Category I Species

Brazilian pepper (Schinus terebinthifolius)

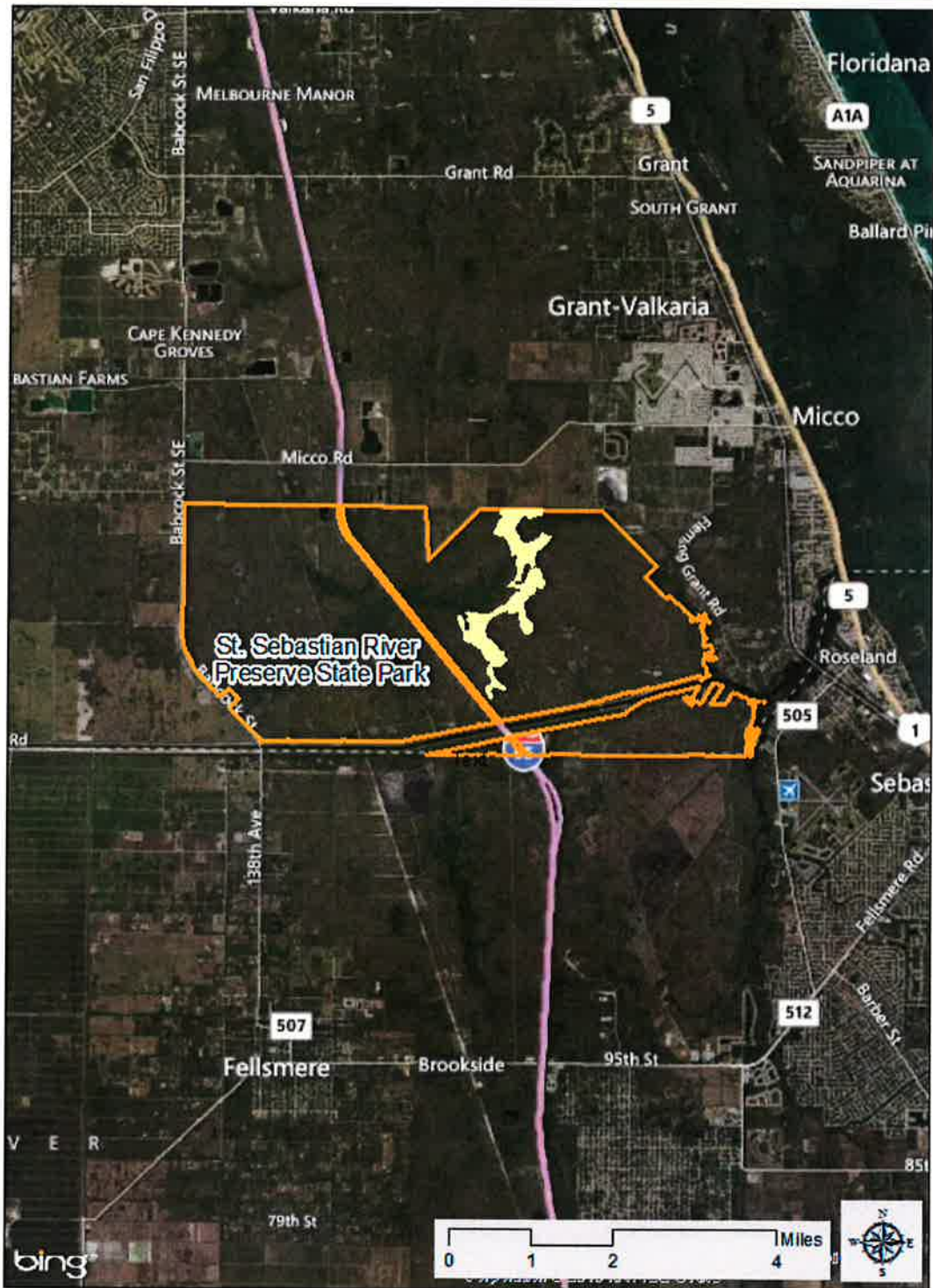
ASSESSMENT SCORE

$$(9.917 + 9.75 + 8.5) / 30 = 0.972$$

Freshwater Marsh

St. Sebastian River Preserve State Park

Brevard County Natural Resource Management



**Location Map - Freshwater Marsh
St. Sebastian River Preserve State Park
Brevard County, Florida**

-  6410-Freshwater Marshes
-  St. Sebastian River Preserve State Park

Freshwater Marsh Buck Lake Conservation Area

Brevard County Natural Resource Management
Reference Wetland Community



OVERVIEW

LOCATION

Brevard County

Latitude 28.6910319585 N, Longitude -80.9086244882 E

COMMUNITY DESCRIPTION

Freshwater marshes are regularly inundated herbaceous wetlands that may occur in a variety of situations and may be within a fire-maintained matrix community. Species composition is heterogeneous both within and between marshes but can generally be divided into submersed, floating-leaved, emergent, and grassy zones from deepest to shallowest portions; shrub patches may be present within any of these zones. The emergent zone may have pickerelweed (*Pontederia cordata*), bulltongue arrowhead (*Sagittaria lancifolia*), southern cattail (*Typha domingensis*), sawgrass (*Cladium jamaicense*), and softstem bulrush (*Scirpus tabernaemontani*); the grassy zone is typically



Freshwater Marsh Buck Lake Conservation Area

Brevard County Natural Resource Management
Reference Wetland Community

COMMUNITY DESCRIPTION (cont)

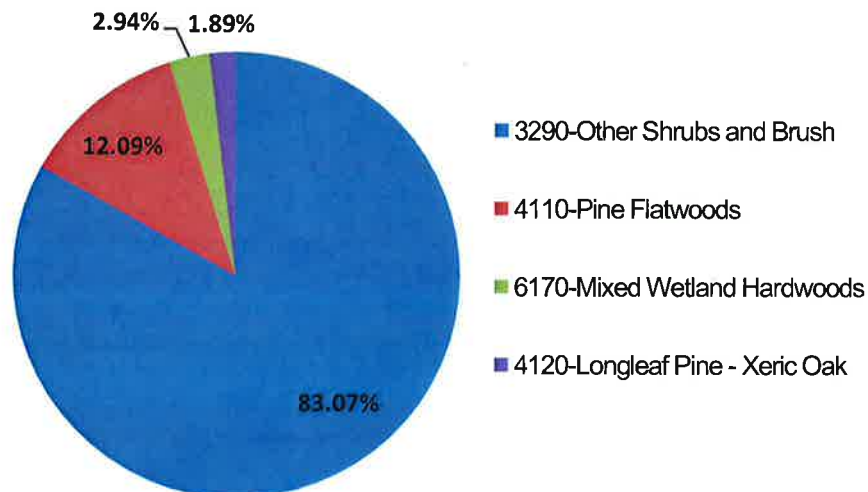
characterized by maidencane (*Panicum hemitomon*), smooth beggarticks (*Bidens laevis*), dotted smartweed (*Polygonum punctatum*), and sand cordgrass (*Spartina bakeri*), accompanied by a diverse mixture forbs such as sweetscent (*Pluchea odorata*), spadeleaf (*Centella asiatica*), and lemon bacopa (*Bacopa caroliniana*). Coastalplain willow (*Salix caroliniana*), common buttonbush (*Cephalanthus occidentalis*), elderberry (*Sambucus nigra* ssp. *canadensis*), and wax myrtle (*Myrica cerifera*) are common shrubby components.

FUNCTIONAL WETLAND ASSESSMENT

➤ Landscape Location Score Landscape Scale Index (LSI)

<i>FLUCFCS_legend</i>	<i>Sum of Acres</i>	<i>LSI_Value</i>	<i>Landcover Percent</i>	<i>Landscape Location Score (=LSI_Value* Landcover Percent)</i>
3290-Other Shrubs and Brush	20.318	10	0.831	8.307
4110-Pine Flatwoods	2.958	10	0.121	1.209
6170-Mixed Wetland Hardwoods	0.719	10	0.029	0.294
4120-Longleaf Pine - Xeric Oak	0.463	10	0.019	0.189
TOTAL	24.46	40.00	1.00	10.00

Landcover Percent within 100 m buffer



FUNCTIONAL WETLAND ASSESSMENT (cont)

➤ Water Environment

Water Environment	Score¹
Water Quality Treatment Score	5
Hydrologic Indicator Score	5
Water Environment Score	10

¹ The Water Environment Score is a sum of the Water Quality Treatment and the Hydrologic Indicator Score.

➤ Vegetative Community

Vegetative Community	Percentage	Score²
Wetland Vegetation	100	12
Exotic Vegetation	0	8
Vegetative Community Score		10

² The Vegetative Community Score is calculated as the average of the wetland vegetation and the exotic vegetation score unless; 1) the wetland vegetation is < 30% or 2) the percent of exotic vegetation is greater than the percent of wetland vegetation. If either of these two conditions exist the Vegetative Community Score equals zero (0).

Invasive exotics are not present

Florida Exotic Pest Plant Council (FLEPPC) Category I Species

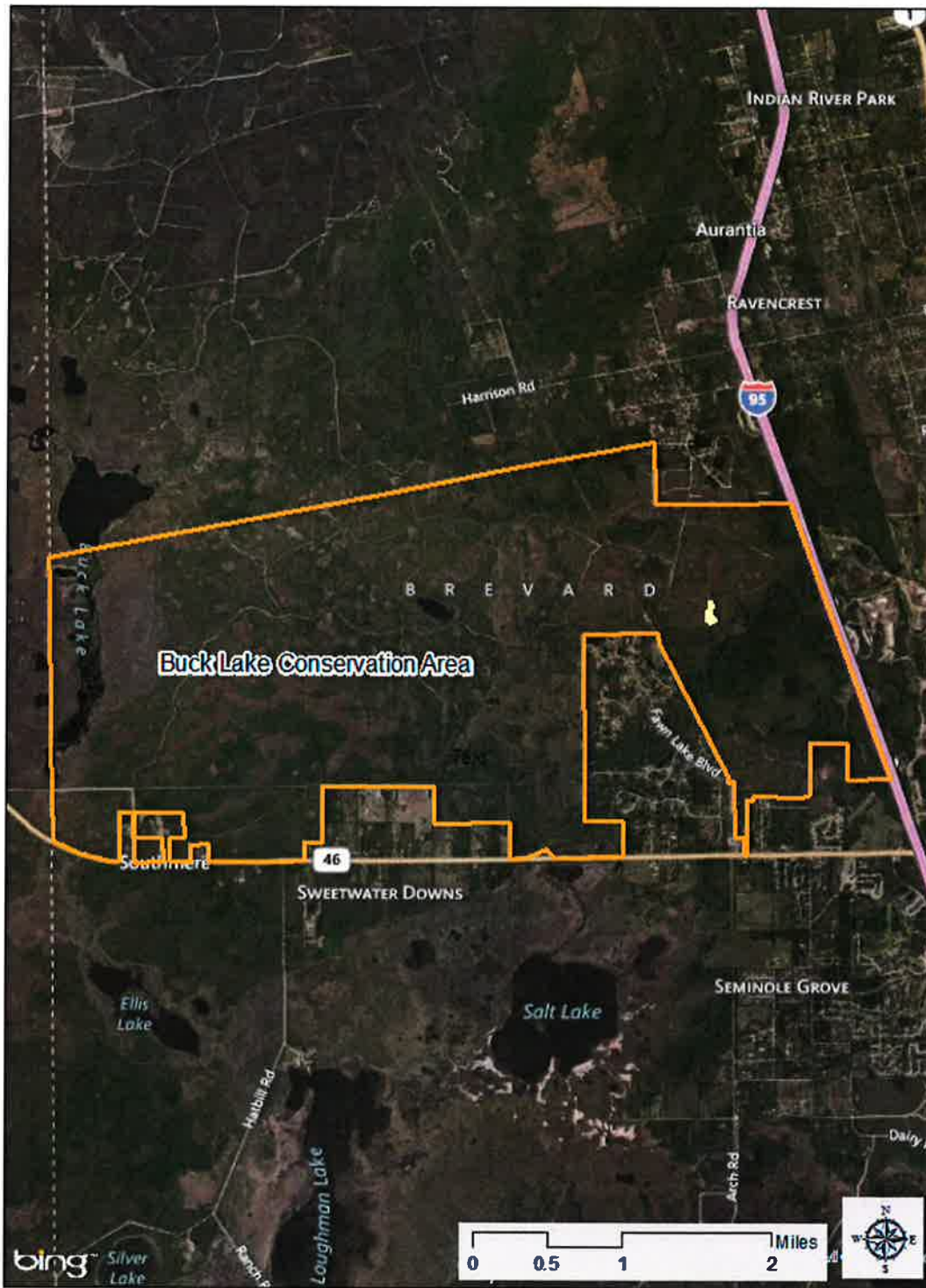
None

ASSESSMENT SCORE

$$(10 + 10 + 10) / 30 = 1.000$$

Freshwater Marsh Buck Lake Conservation Area

Brevard County Natural Resource Management



**Location Map - Freshwater Marsh
Buck Lake Conservation Area
Brevard County, Florida**

-  6410-Freshwater Marshes
-  Buck Lake Conservation Area

Hydric Pine Flatwoods

Buck Lake Conservation Area

Brevard County Natural Resource Management
Reference Wetland Community



OVERVIEW

LOCATION

Brevard County

Latitude 28.6910319585 N, Longitude -80.9086244882 E

COMMUNITY DESCRIPTION

Hydric pine flatwoods are pine forests with a sparse or absent midstory and a dense groundcover of hydrophytic grasses, herbs, and low shrubs. The pine canopy typically consists of one or a combination of longleaf pine (*Pinus palustris*), slash pine (*P. elliottii*), pond pine (*P. serotina*), or South Florida slash pine (*P. elliottii* var. *densa*). The subcanopy, if present, consists of scattered sweetbay (*Magnolia virginiana*), swamp bay (*Persea palustris*), loblolly bay (*Gordonia lasianthus*), pond cypress (*Taxodium ascendens*), dahoon (*Ilex cassine*), sabal palm (*Sabal palmetto*), or wax myrtle (*Myrica cerifera*).



Hydric Pine Flatwoods Buck Lake Conservation Area

Brevard County Natural Resource Management
Reference Wetland Community

COMMUNITY DESCRIPTION (cont)

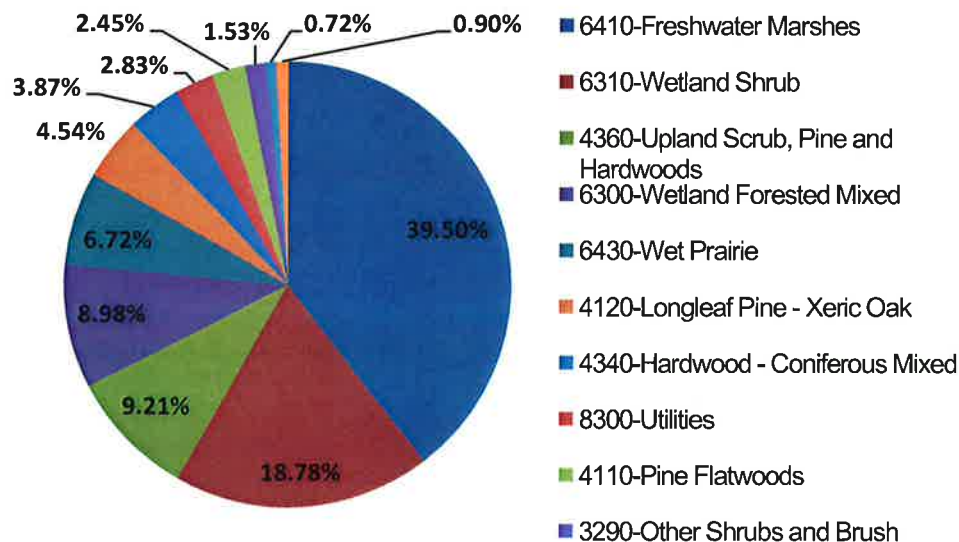
Shrubs include large gallberry (*Ilex coriacea*), fetterbush (*Lyonia lucida*), titi (*Cyrilla racemiflora*), sweet pepperbush (*Clethra alnifolia*), red chokeberry (*Photinia pyrifolia*), and azaleas (*Rhododendron canescens*, *R. viscosum*). Saw palmetto (*Serenoa repens*) and gallberry (*I. glabra*), species also found in mesic flatwoods sites, may be present. Herbs include wiregrass (*Aristida stricta* var. *beyrichiana*), blue maidencane (*Amphicarpum muhlenbergianum*), or hydrophytic species such as toothache grass (*Ctenium aromaticum*), Curtiss' sandgrass (*Calamovilfa curtissii*), cutover muhly (*Muhlenbergia expansa*), coastalplain yellow-eyed grass (*Xyris ambigua*), Carolina redroot (*Lachnanthes caroliana*), and beaksedges (*Rhynchospora chapmanii*, *R. latifolia*, *R. compressa*).

FUNCTIONAL WETLAND ASSESSMENT

➤ Landscape Location Score Landscape Scale Index (LSI)

FLUCFCS_legend	Sum of		Landscape Location Score (=LSI_Value* Landcover Percent)	
	Acres	LSI_Value	Percent	Percent
6410-Freshwater Marshes	89.98	10	0.395	3.950
6310-Wetland Shrub	42.77	10	0.188	1.878
4360-Upland Scrub, Pine and Hardwoods	20.98	10	0.092	0.921
6300-Wetland Forested Mixed	20.46	10	0.090	0.898
6430-Wet Prairie	15.32	10	0.067	0.672
4120-Longleaf Pine - Xeric Oak	10.34	10	0.045	0.454
4340-Hardwood - Coniferous Mixed	8.81	10	0.039	0.387
8300-Utilities	6.45	2.43	0.028	0.069
4110-Pine Flatwoods	5.58	10	0.024	0.245
3290-Other Shrubs and Brush	3.48	10	0.015	0.153
6440-Freshwater Marshes	1.65	10	0.007	0.072
Other Communities (<= 0.05%)	1.97	10	0.009	0.086
TOTAL	227.79	112.43	1.00	9.79

Landcover Percent within 100 m buffer



Hydric Pine Flatwoods Buck Lake Conservation Area

Brevard County Natural Resource Management
Reference Wetland Community

FUNCTIONAL WETLAND ASSESSMENT (cont)

➤ Water Environment

Water Environment	Score¹
Water Quality Treatment Score	4.735
Hydrologic Indicator Score	5
Water Environment Score	9.735

¹ The Water Environment Score is a sum of the Water Quality Treatment and the Hydrologic Indicator Score.

➤ Vegetative Community

Vegetative Community	Percentage	Score²
Wetland Vegetation	95	11
Exotic Vegetation	0	8
Vegetative Community Score		9.5

² The Vegetative Community Score is calculated as the average of the wetland vegetation and the exotic vegetation score unless; 1) the wetland vegetation is < 30% or 2) the percent of exotic vegetation is greater than the percent of wetland vegetation. If either of these two conditions exist the Vegetative Community Score equals zero (0).

Invasive exotics are not present

Florida Exotic Pest Plant Council (FLEPPC) Category I Species

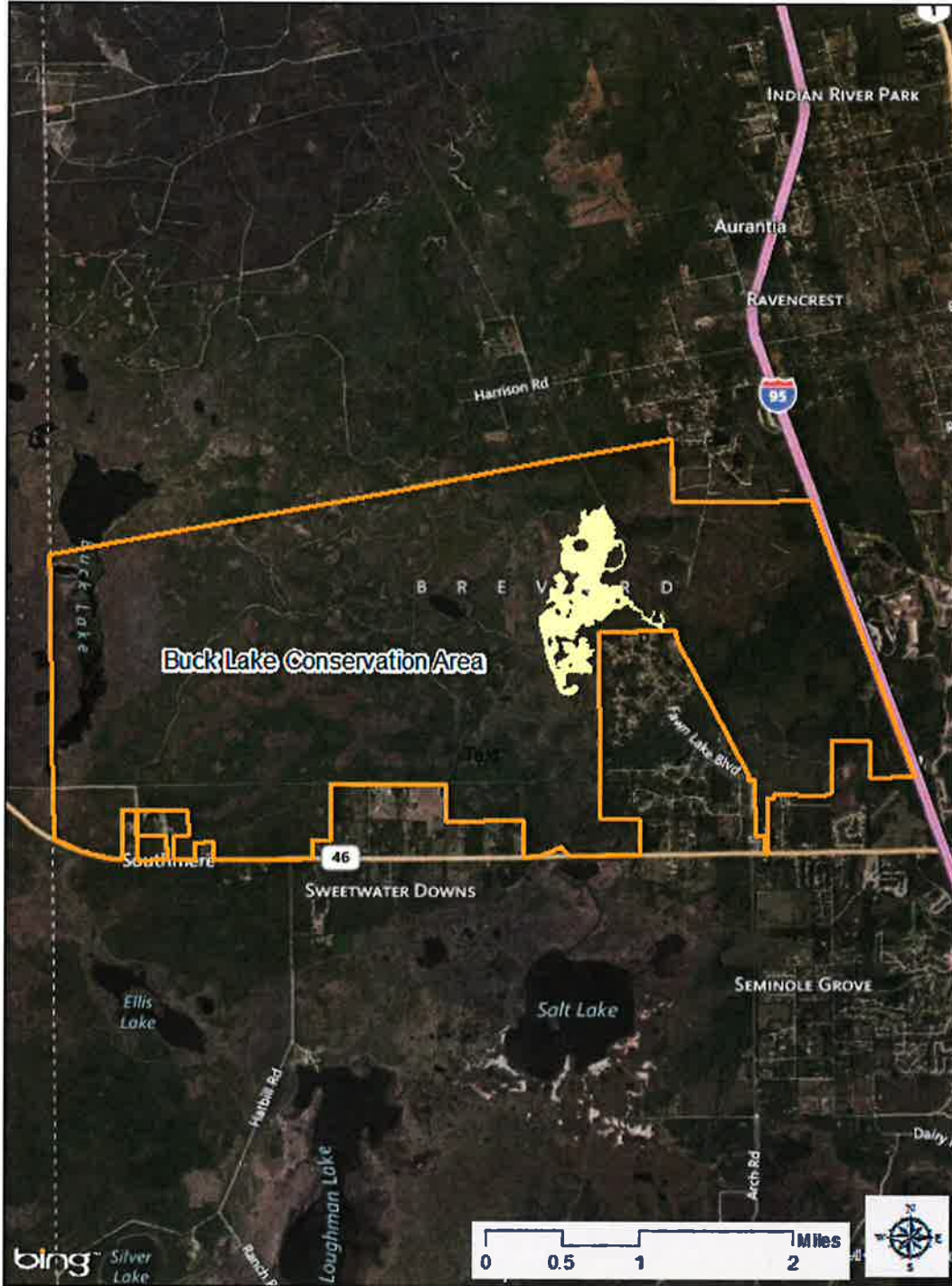
none

ASSESSMENT SCORE

$$(9.79 + 9.735 + 9.5) / 30 = 0.967$$

Hydric Pine Flatwoods Buck Lake Conservation Area

Brevard County Natural Resource Management
Reference Wetland Community



**Location Map - Hydric Pine Flatwoods
Buck Lake Conservation Area
Brevard County, Florida**

-  6250-Hydric Pine Flatwoods
-  Buck Lake Conservation Area

Wet Prairie

Merritt Island National Wildlife Refuge

Brevard County Natural Resource Management
Reference Wetland Community



OVERVIEW

LOCATION

Brevard County

Latitude 28.4542175366 N, Longitude -80.6691745545 E

COMMUNITY DESCRIPTION

Wet prairie is an herbaceous community found on continuously wet, but not inundated, soils on somewhat flat or gentle slopes between lower lying depression marshes, shrub bogs, or dome swamps and slightly higher wet or mesic flatwoods, or dry prairie. It is typically dominated by dense wiregrass (*Aristida stricta* var. *beyrichiana*) in the drier portions, along with foxtail club-moss (*Lycopodiella alopecuroides*), cutover muhly (*Muhlenbergia expansa*), yellow butterwort (*Pinguicula lutea*), and savannah meadowbeauty (*Rhexia alifanus*). In the wetter portions, wiregrass may occur with, or be replaced by, species in the sedge family, such as plumed



Wet Prairie

Merritt Island National Wildlife Refuge

Brevard County Natural Resource Management
Reference Wetland Community

COMMUNITY DESCRIPTION (cont)

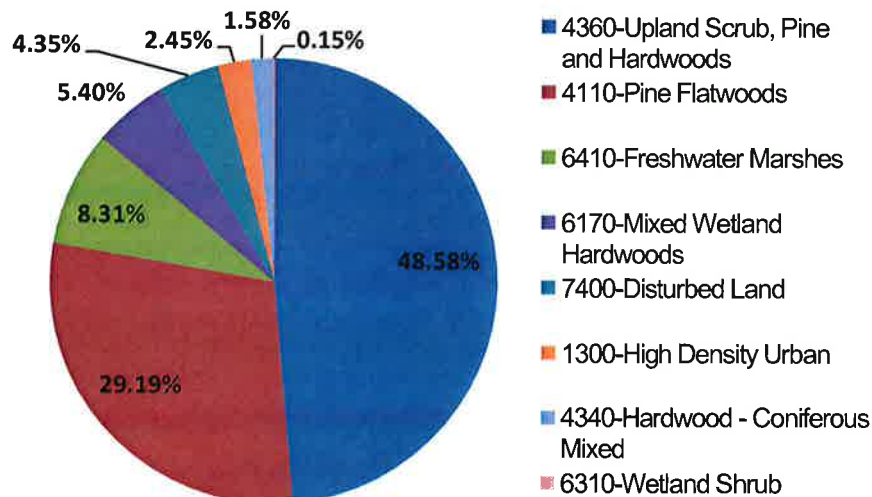
beaksedge (*Rhynchospora plumosa*), featherbristle beaksedge (*R. oligantha*), Baldwin's nutrush (*Scleria baldwinii*), or slenderfruit nutrush (*S. georgiana*), plus longleaved threeawn (*Aristida palustris*). Also common in wetter areas are carnivorous species, such as pitcher plants (*Sarracenia* spp.), sundews (*Drosera* spp.), butterworts (*Pinguicula* spp), and bladderworts (*Utricularia* spp.). Other characteristic species in this community include toothache grass (*Ctenium aromaticum*), pineland rayless goldenrod (*Bigelovia nudata*), flattened pipewort (*Eriocaulon compressum*), water cowbane (*Oxypolis filifolia*), and coastalplain yellow-eyed grass (*Xyris ambigua*).

FUNCTIONAL WETLAND ASSESSMENT

➤ Landscape Location Score Landscape Scale Index (LSI)

FLUCFCS_legend	Sum of		Landscape Location Score (=LSI_Value* Landcover)	
	Acres	LSI_Value	Percent	Percent
4360-Upland Scrub, Pine and Hardwoods	30.48	10	0.486	4.858
4110-Pine Flatwoods	18.31	10	0.292	2.919
6410-Freshwater Marshes	5.21	10	0.083	0.831
6170-Mixed Wetland Hardwoods	3.39	10	0.054	0.540
7400-Disturbed Land	2.73	9.08	0.043	0.395
1300-High Density Urban	1.53	0.91	0.024	0.022
4340-Hardwood - Coniferous Mixed	0.99	10	0.016	0.158
6310-Wetland Shrub	0.10	10	0.002	0.015
TOTAL	62.74	69.99	1.00	9.74

Landcover Percent within 100 m buffer



FUNCTIONAL WETLAND ASSESSMENT (cont)

➤ Water Environment

Water Environment	Score¹
Water Quality Treatment Score	5
Hydrologic Indicator Score	5
Water Environment Score	10

¹ The Water Environment Score is a sum of the Water Quality Treatment and the Hydrologic Indicator Score.

➤ Vegetative Community

Vegetative Community	Percentage	Score²
Wetland Vegetation	98	11
Exotic Vegetation	0	8
Vegetative Community Score		9.5

² The Vegetative Community Score is calculated as the average of the wetland vegetation and the exotic vegetation score unless; 1) the wetland vegetation is < 30% or 2) the percent of exotic vegetation is greater than the percent of wetland vegetation. If either of these two conditions exist the Vegetative Community Score equals zero (0).

Invasive exotics are not present

Florida Exotic Pest Plant Council (FLEPPC) Category I Species

none

ASSESSMENT SCORE

$$(9.74 + 10 + 9.5) / 30 = 0.975$$

Wet Prairie

Merritt Island National Wildlife Refuge

Brevard County Natural Resource Management
Reference Wetland Community



**Location Map - Wet Prairies
Merritt Island National Wildlife Refuge
Brevard County, Florida**

-  6430-Wet Prairie
-  Merritt Island National Wildlife Refuge

Saltwater Marsh

Merritt Island National Wildlife Refuge

Brevard County Natural Resource Management
Reference Wetland Community



OVERVIEW

LOCATION

Brevard County

Latitude 28.4542175366 N, Longitude -80.6691745545 E

COMMUNITY DESCRIPTION

Salt marsh is a largely herbaceous community that occurs in the portion of the coastal zone affected by tides and seawater and protected from large waves, either by the broad, gently sloping topography of the shore, by a barrier island, or by location along a bay or estuary. The width of the intertidal zone depends on the slope of the shore and the tidal range. Salt marsh may have distinct zones of vegetation, each dominated by a single species of grass or rush. Saltmarsh cordgrass (*Spartina alterniflora*) dominates the seaward edge and borders of tidal creeks, areas most frequently inundated by the tides.



Saltwater Marsh

Merritt Island National Wildlife Refuge

Brevard County Natural Resource Management
Reference Wetland Community

COMMUNITY DESCRIPTION (cont)

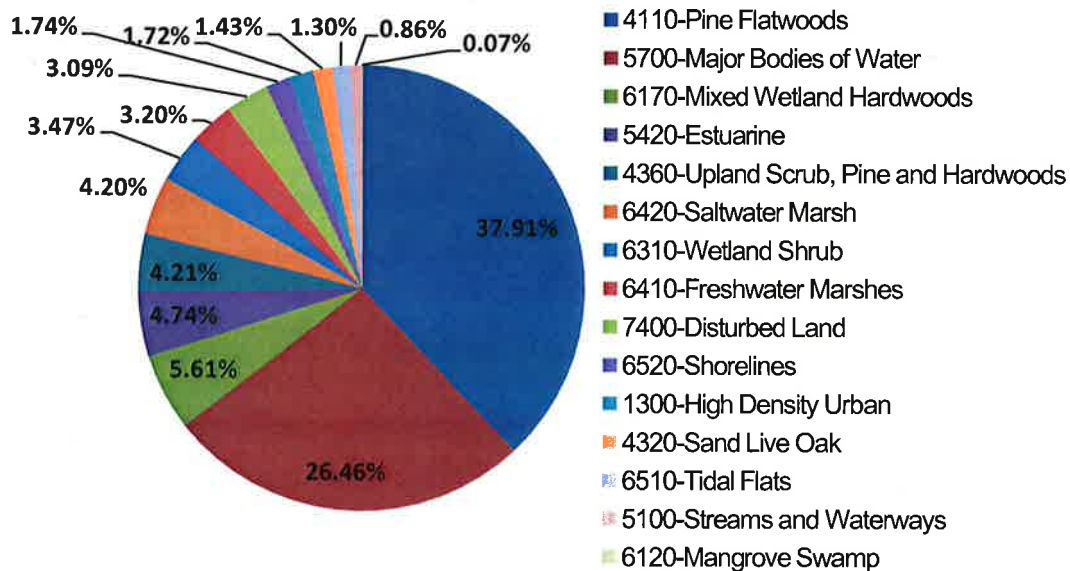
Needle rush (*Juncus roemerianus*) dominates higher, less frequently flooded areas. Other characteristic species include Carolina sea lavender (*Limonium carolinianum*), perennial saltmarsh aster (*Symphyotrichum tenuifolium*), wand loosestrife (*Lythrum lineare*), marsh fimbry (*Fimbristylis spadiccea*), and shoreline seapurslane (*Sesuvium portulacastrum*). The landward edge of the marsh is influenced by freshwater influx from the uplands and may be colonized by a mixture of high marsh and inland species, including needle rush, sawgrass (*Cladium jamaicense*), saltmeadow cordgrass (*Spartina patens*), Gulf cordgrass (*Spartina spartinae*), and sand cordgrass (*Spartina bakeri*), among others.

FUNCTIONAL WETLAND ASSESSMENT

➤ Landscape Location Score Landscape Scale Index (LSI)

FLUCFCS_legend	Sum of Acres	LSI_Value	Landcover Percent	Landscape Location Score (=LSI_Value* Landcover Percent)
4110-Pine Flatwoods	290.88	10	0.379	3.791
5700-Major Bodies of Water	203.01	10	0.265	2.646
6170-Mixed Wetland Hardwoods	43.03	10	0.056	0.561
5420-Estuarine	36.36	10	0.047	0.474
4360-Upland Scrub, Pine and Hardwoods	32.26	10	0.042	0.421
6420-Saltwater Marsh	32.22	10	0.042	0.420
6310-Wetland Shrub	26.64	10	0.035	0.347
6410-Freshwater Marshes	24.56	10	0.032	0.320
7400-Disturbed Land	23.67	9.08	0.031	0.280
6520-Shorelines	13.33	10	0.017	0.174
1300-High Density Urban	13.22	0.91	0.017	0.016
4320-Sand Live Oak	10.95	10	0.014	0.143
6510-Tidal Flats	9.97	10	0.013	0.130
5100-Streams and Waterways	6.62	10	0.009	0.086
6120-Mangrove Swamp	0.51	10	0.001	0.007
TOTAL	767.24	139.99	1.00	9.81

Landcover Percent within 100 m buffer



FUNCTIONAL WETLAND ASSESSMENT (cont)

➤ Water Environment

Water Environment	Score¹
Water Quality Treatment Score	4.9
Hydrologic Indicator Score	5
Water Environment Score	9.9

¹ The Water Environment Score is a sum of the Water Quality Treatment and the Hydrologic Indicator Score.

➤ Vegetative Community

Vegetative Community	Percentage	Score²
Wetland Vegetation	95	11
Exotic Vegetation	5	8
Vegetative Community Score		9.5

² The Vegetative Community Score is calculated as the average of the wetland vegetation and the exotic vegetation score unless; 1) the wetland vegetation is < 30% or 2) the percent of exotic vegetation is greater than the percent of wetland vegetation. If either of these two conditions exist the Vegetative Community Score equals zero (0).

Invasive exotics are present in less than 5%

Florida Exotic Pest Plant Council (FLEPPC) Category I Species

Brazilian pepper (Schinus terebinthifolius)

ASSESSMENT SCORE

$$(9.81 + 9.9 + 9.5) / 30 = 0.974$$



Saltwater Marsh

Merritt Island National Wildlife Refuge

Brevard County Natural Resource Management



Location Map - Saltwater Marshes
Merritt Island National Wildlife Refuge
Brevard County, Florida

-  6420-Saltwater Marsh
-  Merritt Island National Wildlife Refuge