Bio-Tech Consulting Inc.
Environmental and Permitting Services

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December 10, 2019

Nicole Martin
St. Johns River Water Management District
601 South Lake Destiny Road, Suite 200
Maitland, Florida 32751

Proj: Hartwood Marsh – Lake County, Florida
Sections 9, 10, 15 & 16, Township 23 South, Range 26 East
(BTC File #494-02)
Re: SJRWMD ERP Application

Dear Ms. Martin:

The purpose of this document is to provide the St. John River Water Management District (SJRWMD) with the environmental information associated with the approximately 115.9-acre Hartwood Marsh Subdivision. This site is located south of Hartwood Marsh Road and east of US-27, within Sections 9, 10, 15 & 16, Township 23 South, Range 26 East, Lake County, Florida (Figures 1, 2 & 3). This environmental assessment includes the following elements:

- review of soil types mapped within the site boundaries;
- evaluation of land use types/vegetative communities present;
- field review for occurrence of protected flora and fauna, and
- permitting summary.

SOILS

According to the Soil Survey of Lake County, Florida, prepared by the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), six (6) soil types occur within the subject property boundaries (Figure 4). These soils include the following:

Orlando: Main Office
3025 East South Street
Orlando, FL 32803

Vero Beach Office
4445 N A1A
Suite 221
Vero Beach, FL 32963

Jacksonville Office
1157 Beach Boulevard
Jacksonville Beach, FL 32250

Tampa Office
6011 Benjamin Road
Suite 101 B
Tampa, FL 33634

Key West Office
1107 Key Plaza
Suite 259
Key West, FL 33040

Aquatic & Land
Management Operations
3825 Rouse Road
Orlando, FL 32817

407.894.5969
877.894.5969
407.894.5970 fax

- **Candler sand, 0 to 5 percent slopes (#8)**
- **Candler sand, 5 to 12 percent slopes (#9)**
- **Myakka sand (#28)**
- **Placid sand, depressional (#38)**
- **Placid and Myakka sands, depressional (#40)**
- **Tavares sand, 0 to 5 percent slopes (#45)**

The following presents a brief description of each of the soil types mapped for the subject site:

Candler sand, 0 to 5 percent slopes (#8) is a nearly level to gently sloping, excessively drained soil found on rolling uplands of the central ridge. The surface layer of this soil type generally consists of dark gray sand about 7 inches thick. The water table for this soil type is at a depth of more than 120 inches. Permeability is very rapid throughout the profile of this soil type.

Candler sand, 5 to 12 percent slopes (#9) is a sloping to strongly sloping, excessively drained soil found on rolling uplands of the central ridge. Typically, the surface layer of this soil type consists of dark gray sand about 5 to 6 inches thick. The water table for this soil type is at a depth of more than 120 inches. Permeability is very rapid throughout the profile of this soil type.

Myakka sand (#28) is a nearly level, poorly drained soil that has a layer stained by organic matter at a depth of less than 30 inches. This soil usually occurs in broad areas on the flatwoods. The surface layer of this soil type generally consists of black sand about 4 inches thick. The water table for this soil type is normally at a depth of 10 to 40 inches. It is within a depth of 10 inches during the wet seasons and is at a depth of greater than 40 inches during extended dry seasons. Permeability of this soil type is rapid in the surface and subsurface layers and between 56 to 85 inches.

Placid sand, depressional (#38) is a nearly level, very poorly drained soil in low wet areas on the upland ridge and in the flatwoods. The surface layer of this soil type consists of sand about 18 inches thick. The upper 12 inches is black and the lower 6 inches is very dark gray mottled with very dark grayish brown and dark grayish brown. The water table for this soil type is at the surface for the most of the year. During extended dry periods it is within a depth of 15 inches. Shallow water covers many areas for 4 to 6 months in wet seasons. Permeability of this soil type is rapid throughout.

Placid and Myakka sands, depressional (#40) are nearly level, very poorly drained and poorly drained soils in low marshy depressions. The surface layer of Placid sand generally consists of sand about 18 inches thick. The upper 12 inches is black and the lower 6 inches is very dark gray mottled with very dark grayish brown and dark grayish brown. The surface layer of Myakka sand

generally consists of black sand about 4 inches thick. The water table in these soils is nearer the surface for longer periods than in Myakka sand, and the soil is covered with water for 4 to 6 months in most years.

Tavares sand, 0 to 5 percent slopes (#45) is a nearly level to gently sloping soil. It has a very dark grayish-brown sandy surface layer approximately 7 inches thick. Below this layer are 4 levels of sand beginning at 7 inches, 25 inches, 34 inches, and 61 inches. The water table for this soil type is at a depth of 40 to 60 inches for more than 6 months out of the year and below 60 inches during dry periods. This soil type is rapidly permeable throughout.

The Florida Association of Environmental Soil Scientists (FAESS) considers the main components of Placid sand, depressional (#38) and Placid and Myakka sands, depressional (#40) to be hydric. Furthermore, this Association considers inclusions present in Myakka sand (#28) to be hydric. This information can be found in the Hydric Soils of Florida Handbook, Third Edition (March, 2000).

LAND USE TYPES/VEGETATIVE COMMUNITIES

The Hartwood Marsh Site currently supports six (6) land use types/vegetative communities (Figure 5). These land use types were identified utilizing the Florida Land Use, Cover and Forms Classification System, Level III (FLUCFCS, FDOT, January 1999). The on-site upland land use types/vegetative communities are classified as Herbaceous (Dry Prairie) (310), Live Oak (427) and Coniferous Plantation (441). The wetland/surface water land use type/vegetative community found on the site are classified as Streams and Waterways (510), Willow and Elderberry (618), and Freshwater Marsh (641). The following provides a brief description of the on-site land use types/vegetative communities:

Uplands:

310 – Herbaceous (Dry Prairie)

There is a section to the west of the subject property that is most consistent with the Herbaceous (Dry Prairie) (310) FLUCFCS classification. Vegetation observed within this community type includes saltbush (*Baccharis halimifolia*), lantana (*Lantana camara*), cabbage palm (*Sabal palmetto*), blackberry (*Rubus cuneifolius*), dogfennel (*Eupatorium capillifolium*), pricklypear cactus (*Opuntia humifusa*), common ragweed (*Ambrosia artemisiifolia*), broomsedge (*Andropogon* virginicus) and field sandspur (*Cenchrus incertus*).

427 – Live Oak

An area located in the west-central portion of the project site is dominated by live oak and would be most consistent with the Live Oak (427) FLUCFCS classification. Vegetation observed includes live oak (*Quercus virginiana*), sand pine (*Pinus clausa*), sand live oak (*Quercus geminata*), myrtle oak (*Quercus myrtifolia*), American beautyberry (*Callicarpa americana*), blueberry (*Vaccinium darrowii*), greenbriar (*Smilax* sp.), winged sumac (*Rhus copallinum*), wiregrass (*Aristida stricta*), gopher apple (*Licania michauxii*), gallberry (*Ilex glabra*), and reindeer lichen (*Cladonia rangiferina*).

441 – Coniferous Plantation

The majority of the uplands associated with the project site are most consistent with the Coniferous Plantation (441) FLUCFCS classification. Vegetation observed within this community type includes slash pine (*Pinus elliottii*), black cherry (*Prunus serotina*), cabbage palm (*Sabal palmetto*), saltbush (*Baccharis halimifolia*), winged sumac (*Rhus copallium*), saw palmetto (*Serenoa repens*), blackberry (*Rubus cuneifolius*), dog fennel (*Eupatorium capillifolium*), broomsedge (*Andropogon* spp.), greenbriar (*Smilax* spp.), pokeweed (*Phytolacca americana*), pricklypear cactus (*Opuntia humifusa*), lantana (*Lantana camara*), muscadine vine (*Vitis rotundifolia*), caesarweed (*Urena lobata*), cogongrass (*Imperata cylindrica*), and chinaberry tree (*Melia azerarach*).

<u>Wetlands</u>

510 – Streams and Waterways

There is one area of the property that is best defined by FLUCFCS as Streams and Waterways (510). This swale-like feature traverses the site north to south and appears wet throughout much of the year. Vegetation occurring in the swale consists of primrose willow (*Ludwigia peruviana*), pickerelweed (*Pontederia cordata*), duck potato (*Sagittaria latifolia*), maidencane (*Panicum hemitomon*), and torpedo grass (*Panicum repens*).

618 – Willow and Elderberry

Along the southern boundary of the property there is a small area of wetland that is best described by FLUCFCS as Willow and Elderberry (618). Vegetation observed within this community includes saltbush (*Baccharis halimifolia*), wax myrtle (*Myrica cerifera*), black gum (*Nyssa*

sylvatica), red maple (*Acer rubrum*), Carolina willow (*Salix caroliniana*), cattail (*Typha* sp.), and spatterdock (*Nuphar lutea*).

641 – Freshwater Marshes

The two (2) wetland areas located on the western portion of the project site are most consistent with the Freshwater Marshes (641) FLUCFCS classification. Vegetation observed within this community type includes bushy bluestem (*Andropogon glomeratus*), primrose willow (*Ludwigia peruviana*), pickerelweed (*Pontederia cordata*), duck potato (*Sagittaria latifolia*), maidencane (*Panicum hemitomon*), saltbush (*Baccharis halimifolia*), wax myrtle (*Myrica cerifera*), and torpedograss (*Panicaum repens*).

PROTECTED SPECIES

Using methodologies outlined in the Florida's Fragile Wildlife (Wood, 2001); Measuring and Monitoring Biological Diversity Standard Methods for Mammals (Wilson, et al., 1996); and Florida Fish and Wildlife Conservation Commission's (FFWCC) Gopher Tortoise Permitting Guidelines (April 2008 - revised January 2017); an assessment for "listed" floral and faunal species was conducted at the site on February 2nd and 5th, 2018. This assessment, which covered approximately 100% of the subject site's developable area, included both direct observations and indirect evidence, such as tracks, burrows, tree markings and birdcalls that indicated the presence of species observed (Figure 6). The assessment focused on species that are "listed" by the FFWCC's Official Lists - Florida's Endangered Species, Threatened Species and Species of Special Concern (January 2017) that have the potential to occur in Lake County (Table 1).

No plant species listed by either The Florida Department of Agriculture (FDA) or U.S. Fish and Wildlife Service (USFWS) was identified on the project site during the assessment conducted. The following is a list of those wildlife species identified during the evaluation of the site:

Reptiles and Amphibians
American toad (*Anaxyrus americanus*)
black racer (*Coluber constrictor*)
brown anole (*Anolis sagrei*)
eastern fence lizard (*Sceloporus undulatus*)
gopher tortoise (*Gopherus polyphemus*)
green anole (*Anolis caroliniana*)
green treefrog (*Hyla cinerea*)
leopard frog (*Lithobates sphenocephalus*)
pig frog (*Lithobates grylio*)

sand skink (*Neoseps reynoldsi*)
six-lined racerunner (*Cnemidophorus sexlineatus sexlineatus*)

Birds
Black Vulture (*Coragyps atratus*)
Blue Jay (*Cyanocitta cristata*)
Cattle Egret (*Bubulcus ibis*)
Common Grackle (*Quiscalus quiscula*)
Downy Woodpecker (*Picoides pubescens*)
Great Blue Heron (*Ardea herodias*)
Great Egret (*Ardea alba*)
Mourning Dove (*Zenaida macroura*)
Northern Mockingbird (*Mimus polyglottos*)
Northern Cardinal (*Cardinalis cardinalis*)
Red-shouldered Hawk (*Buteo lineatus*)
Red-tailed Hawk (*Buteo jamaicensis*)
Red-winged Blackbird (*Agelaius phoeniceus*)
Turkey Vulture (*Cathartes aura*)

Mammals
common raccoon (*Procyon lotor*)
eastern cottontail rabbit (*Sylvilagus floridanus*)
eastern gray squirrel (*Sciurus carolinensis*)
nine-banded armadillo (*Dasypus novemcinctus*)
southeastern pocket gopher (*Geomys pinetis*)
Virginia opossum (*Didelphis virginiana*)
wild boar (*Sus scrofa*)

Two (2) of the above wildlife species, the gopher tortoise (*Gopherus polyphemus*) and sand skink (*Neoseps reynoldsi*), is identified in the FFWCC's Official Lists - Florida's Endangered Species, Threatened Species and Species of Special Concern (January 2017). The following provides a brief description of the species as it relates to the development of the Hartwood Marsh site.

Gopher Tortoise (Gopherus polyphemus)
State Listed as "Threatened" by FFWCC

Gopher tortoises *(Gopherus polyphemus)* have been identified within the site boundary. Currently the gopher tortoise *(Gopherus polyphemus)* is classified as a "Category 2 Candidate Species" by USFWS, and as of September 2007, is now classified as "Threatened" by FFWCC, and as

"Threatened" by FCREPA. The basis of the "Threatened" classification by the FFWCC for the gopher tortoise is due to habitat loss and destruction of burrows.

Gopher tortoises are commonly found in areas with well-drained soils associated with xeric pine-oak hammock, scrub, pine flatwoods, pastures and abandoned citrus groves. Several other protected species known to occur in Lake County have a possibility of occurring in this area, as they are gopher tortoise commensal species. These species include the eastern indigo snake *(Drymarchon corais couperi)*, Florida mouse *(Podomys floridanus)*, and the gopher frog *(Rana capito)*. However, none of these species were observed during the survey conducted.

The FFWCC provides three (3) options for developers that have gopher tortoises on their property. These options include: 1) avoidance (i.e., 25-foot buffer around burrow), 2) preservation of habitat, and 3) off-site relocation. As such, resolution of the gopher tortoise issue will need to be permitted through FFWCC prior to any construction activities.

Based on the tortoise population that exists on the site and the expected residential development plan, there is only one (1) potential option for resolving the gopher tortoise issue. This option is off-site relocation and would require that any tortoises within twenty-five (25) feet of proposed construction activities be relocated off-site to an approved recipient site.

***Bald Eagle* (*Haliaeetus leucocephalus*)**
State protected by F.A.C. 68A-16.002 and federally protected by both the Migratory Bird Treaty Act (1918) and the Bald and Golden Eagle Protection Act (1940)

In August of 2007, the US Fish and Wildlife Service (USFWS) removed the Bald Eagle from the list of federally endangered and threatened species. Additionally, the Bald Eagle was removed from FFWCC's imperiled species list in April of 2008. Although the Bald Eagle is no longer protected under the Endangered Species Act, it is still protected under the Bald and Golden Eagle Protection Act, the Migratory Bird Treaty Act, and FFWCC's Bald Eagle rule (Florida Administrative Code 68A-16.002 Bald Eagle (*Haliaeetus leucocephalus*).

In May of 2007, the USFWS issued the National Bald Eagle Management Guidelines. In April of 2008, the FFWCC adopted a new Bald Eagle Management Plan that was written to closely follow the federal guidelines. Under FFWCC's new management plans, buffer zones are recommended based on the nature and magnitude of the project or activity. The recommended protective buffer zone is 660 feet or less from the nest tree, depending on what activities or structures are already near the nest. A FFWCC Eagle permit is not needed for any activity occurring outside of the 660-foot buffer zone. No activities are permitted within 330 feet of a nest during the nesting season, October 1 through May 15 or when eagles are present at the nest.

In addition to the on-site evaluation for "listed" species, BTC conducted a review for any FFWCC recorded Bald Eagle nests on or in the vicinity of the subject property. This review revealed one Bald Eagle nest located within one (1) mile of the project boundaries (Figure 6). This nest, identified as LA197, is located approximately 3,300 feet to the southwest of the project boundary. Due to the fact that this nest lies outside of the 660-foot buffer, no issues with regards to the Bald Eagle and development of the subject site are expected to arise.

Sand Skink (Neoseps reynoldsi)
Federally Listed as "Threatened" by USFWS

The subject site falls within the Sand Skink Consultation Area for the United States Fish and Wildlife Service (USFWS). The sand skink is listed as "Threatened" by the USFWS. The sand skink exists in areas vegetated with sand pine *(Pinus clausa)* - rosemary *(Ceratiola ericoides)* scrub or a long leaf pine *(Pinus palustris)* - turkey oak *(Quercus laevis)* association. Habitat destruction is the primary threat to this species' survival. Citrus groves, residential, commercial and recreational facilities have depleted the xeric upland habitat of the sand skink. All properties within the limits of this consultation area that are located at elevations greater than 80' and contain suitable (moderate-to-well drained) soils are believed by USFWS to be areas of potential sand skink habitat.

The applicant has received a Federal Fish and Wildlife Permit from the USFWS in regards to the sand skink. On February 6, 2018 the USFWS issued TE80020-B-0 for the Hartwood Marsh Subdivision. As such, no further action is required as it pertains to sand skink.

SITE PLAN ANALYSIS

Site Features

This site is located south of Hartwood Marsh Road and east of US-27; Lake County, Florida. The uplands predominantly consist of pine plantation, oak habitat, and herbaceous areas. Wetlands onsite consist of two herbaceous wetlands.

Hydrologic/Wetland Conditions

The on-site wetlands are isolated and are not connect to waters offsite. Wetland hydrology within the subject site's wetlands and/or other surface waters appear sufficient to support these communities. The site is within the Palatlakaha River Nested drainage basin.

Hydrologic Regime

The overall hydrologic regime of the project site is normal for the systems being evaluated. Average rainfall and evapotranspiration levels based on season also contribute to the hydrologic regime of the watershed. Overall, the on-site wetlands and/or other surface waters receive runoff from the surrounding uplands and maintain the flow of water through the site to the off-site wetlands, ditches, and lakes**.**

Wetlands

On-site wetlands and surface waters were delineated by BTC in February 2018 using pink "Bio-Tech Consulting" flagging tape (Figure 7). Wetland/surface water flag locations have not yet been reviewed or approved by the appropriate regulatory agencies.

Wetland Impacts

Based on the site plan provided for the Hardwood Marsh Subdivision project site, the total area of wetlands/surface water that exists within the limits of the subject project is approximately 2.32 acres (W1- 2.16 and W2- 0.16) (Figure 6). As indicated on the submitted construction plans, the proposed development anticipates no impacts to onsite wetlands/surface waters (see site plans).

Hartwood Marsh Subdivision –Wetland Impacts Table						
Impact ID	FLUCFCS	Size (acres)	Impact Acres	Type	Purpose	UMAM Score
Wetland 1	641	2.55	0.00	641	N/A	0.00
Wetland 2	641	0.16	0.00	641	N/A	0.00
Wetland 3	618	1.08	0.00	618	N/A	0.00
SW 1	510	2.94	0.02	510	Outfall	0.00
					Total	**-0.00**
					Project Total	**-0.00**

A Project Wetland (WL) and Other Surface Water (SW) Summary (Table 1 – ERP Application) is also attached with this submittal. Tables 1, 2, and 3 outline the proposed mitigation. There are no proposed direct impacts to onsite wetlands.

The purpose of the proposed project is to provide a housing subdivision for the surrounding area.

Mitigation

Since no impacts have been proposed for the onsite wetlands, no mitigation is anticipated. There is a small 0.02 acre surface water impact proposed to SW 1 for the construction of an outfall. As mitigation for this small impact the applicant proposes to place conservation signage around the undisturbed areas abutting development. Please see the attached construction plans for the depiction of the signs.

Cultural Resources

A Cultural Resource Assessment Survey to identify the potential presence/absence of cultural resources listed or eligible for listing in the National Register of Historic Places (NRHP), or otherwise of historical, architectural, or archaeological significance has been completed. The survey showed that the proposed project will have no effect on cultural resources listed, or eligible for listing in the NRHP, or otherwise of archaeological, historical, or architectural significance within the survey area.

Erosion & Sediment Control

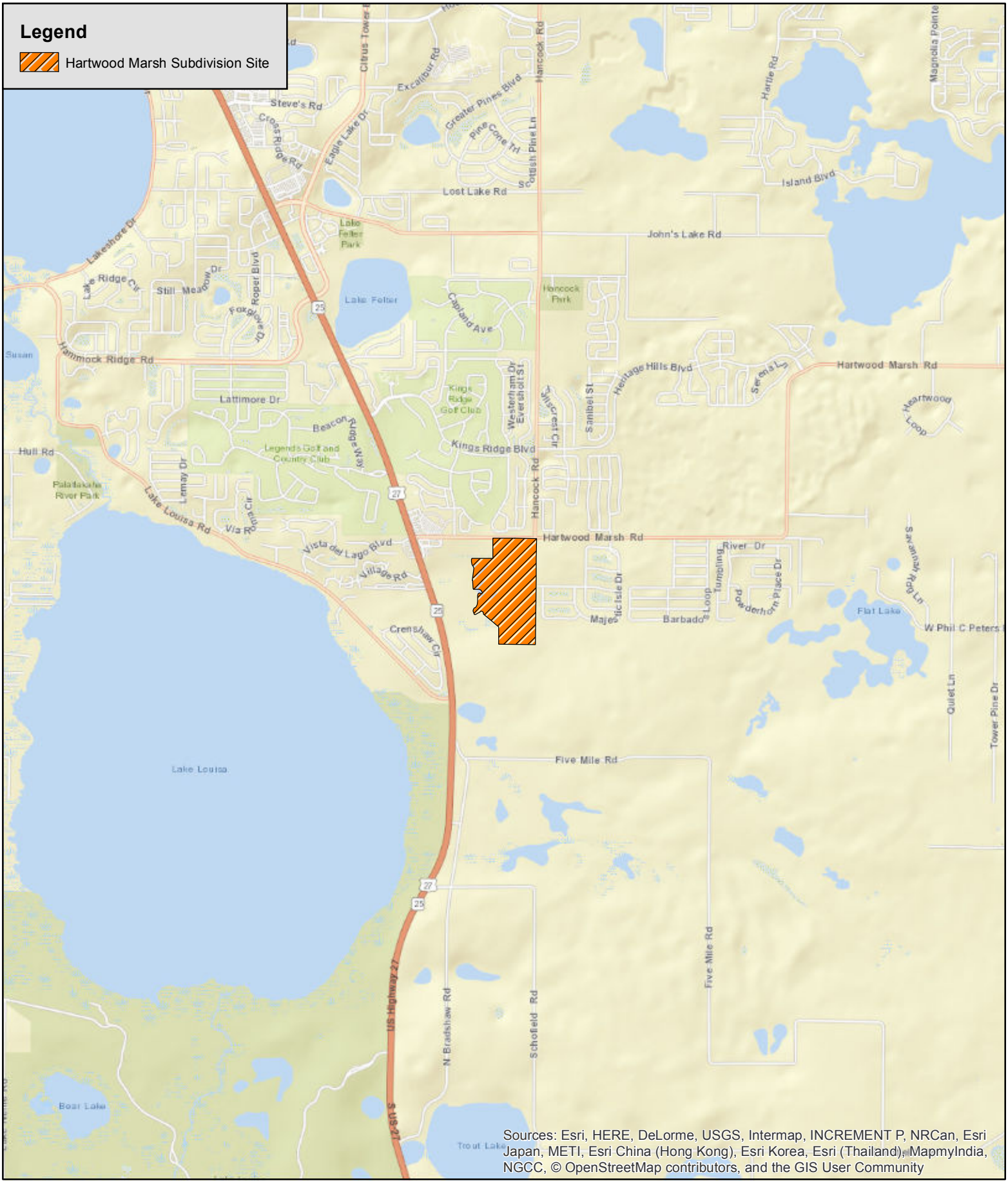
The applicant will implement and maintain erosion and sediment control measures both prior to and during the proposed project. This practice will insure that no adverse water quality impacts to receiving waters and adjacent lands will occur during the proposed work. Control measures will retain sediment on-site and prevent potential violations of State standards. Practices incorporated will be in accordance with Chapter 6 of the Florida Land Development Manual: A Guide to Sound Land and Water Management.

The environmental limitations described in this document are based on observations and technical information available on the date of the on-site evaluation. This report is for general planning purposes only. The limits of any on-site wetlands/surface waters can only be determined and verified through field delineation and/or on-site review by the pertinent regulatory agencies. The wildlife surveys conducted within the subject property boundaries do not preclude the potential for any listed species, as noted on Table 1 (attached), currently or in the future. Should you have any questions or require any additional information, please do not hesitate to contact our office at (407) 894-5969. Thank you.

Regards,

Mark Ausley
Project Manager

Bio-Tech Consulting Inc.
Environmental and Permitting Services



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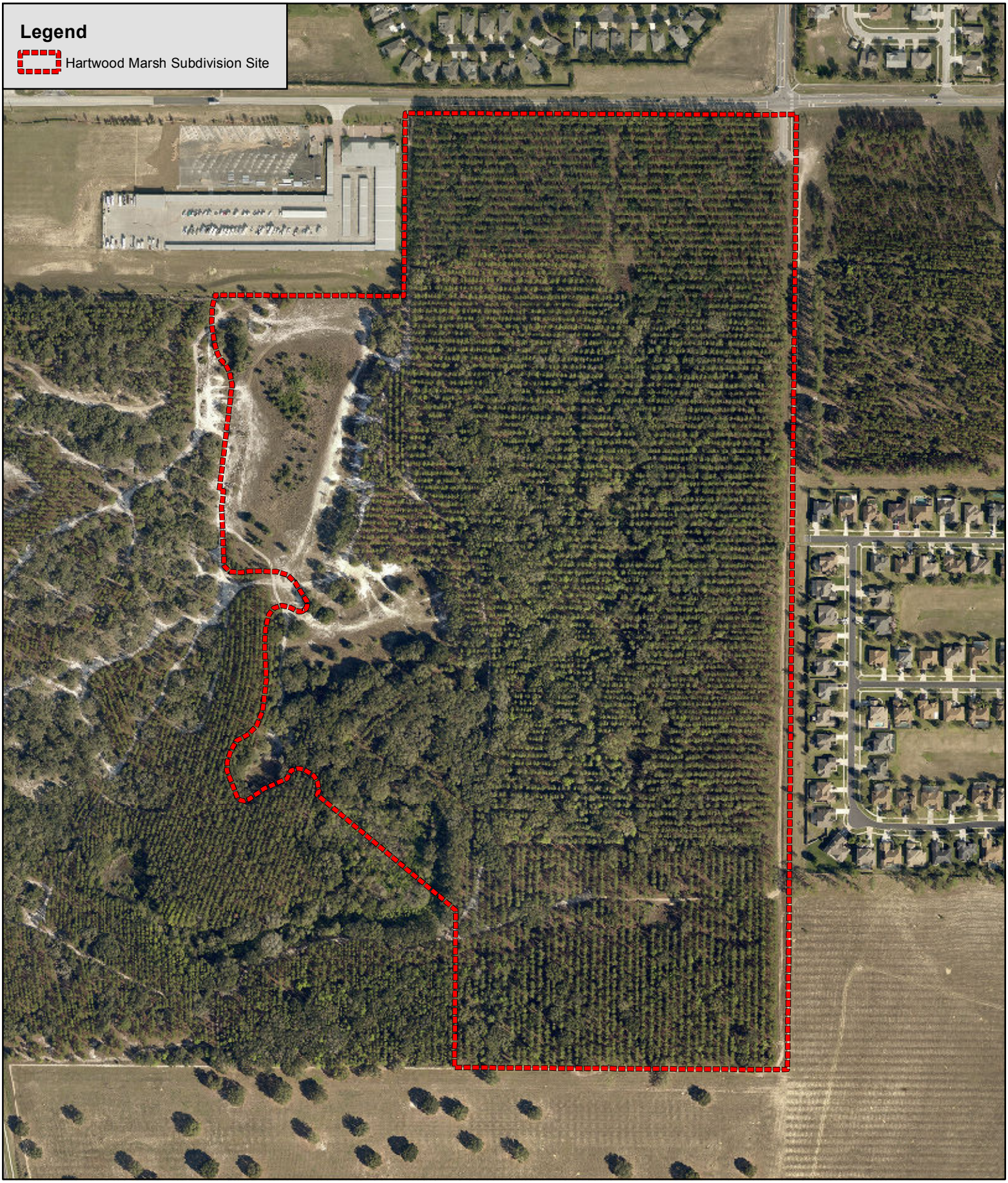
Hartwood Marsh Subdivision
Lake County, Florida
Figure 1
Location Map

N
W E
S

3,900
Feet
Project #: 494-02
Produced By: SEB
Date: 2-6-2018



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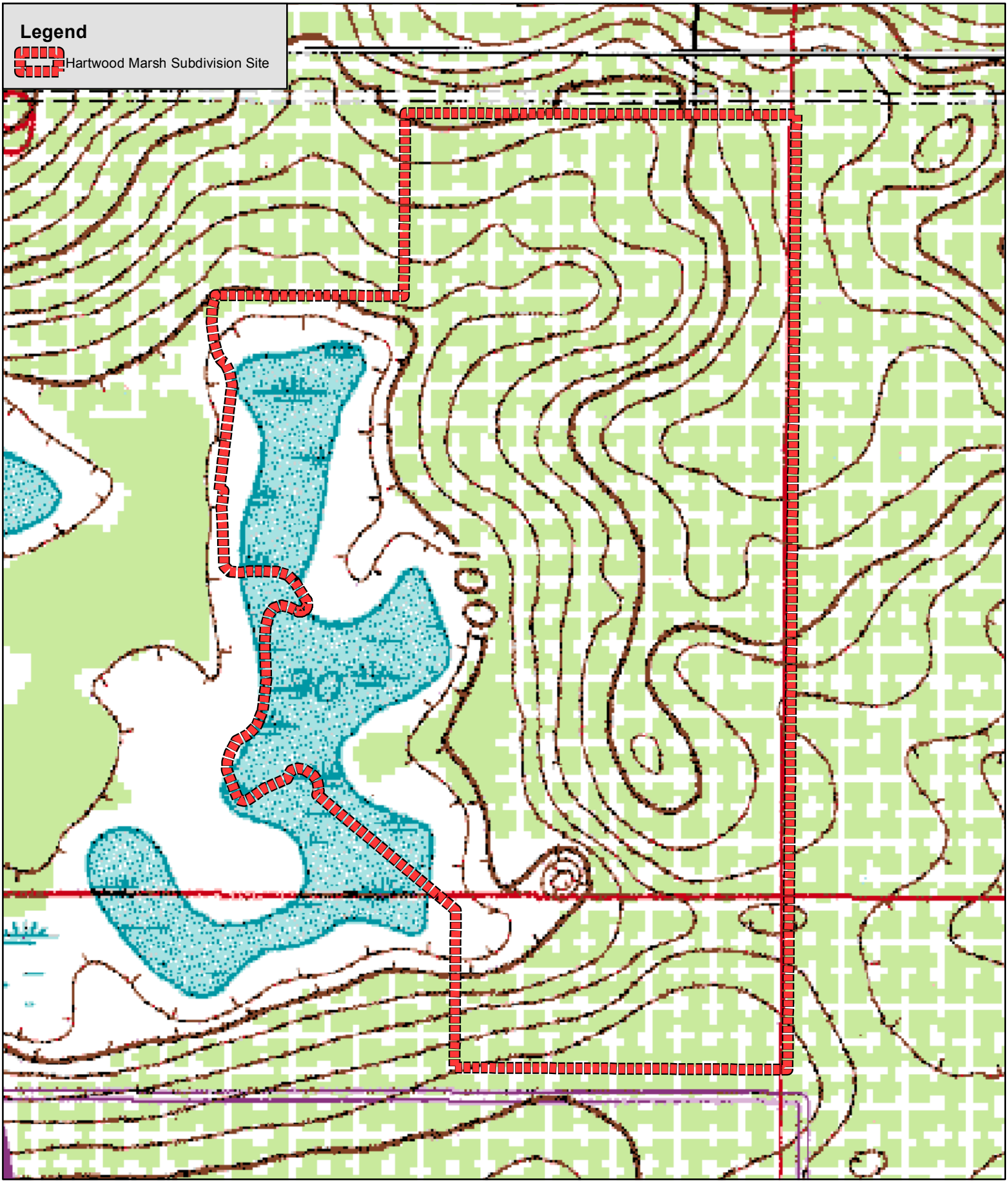
Hartwood Marsh Subdivision
Lake County, Florida
Figure 2
2017 Aerial Photograph

N
W E
S

300
Feet

Project #: 494-02
Produced By: SEB
Date: 2-6-2018



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Hartwood Marsh Subdivision
Lake County, Florida
Figure 3
USGS Topographic Map

N
W E
S

300
Feet

Project #: 494-02
Produced By: SEB
Date: 2-6-2018

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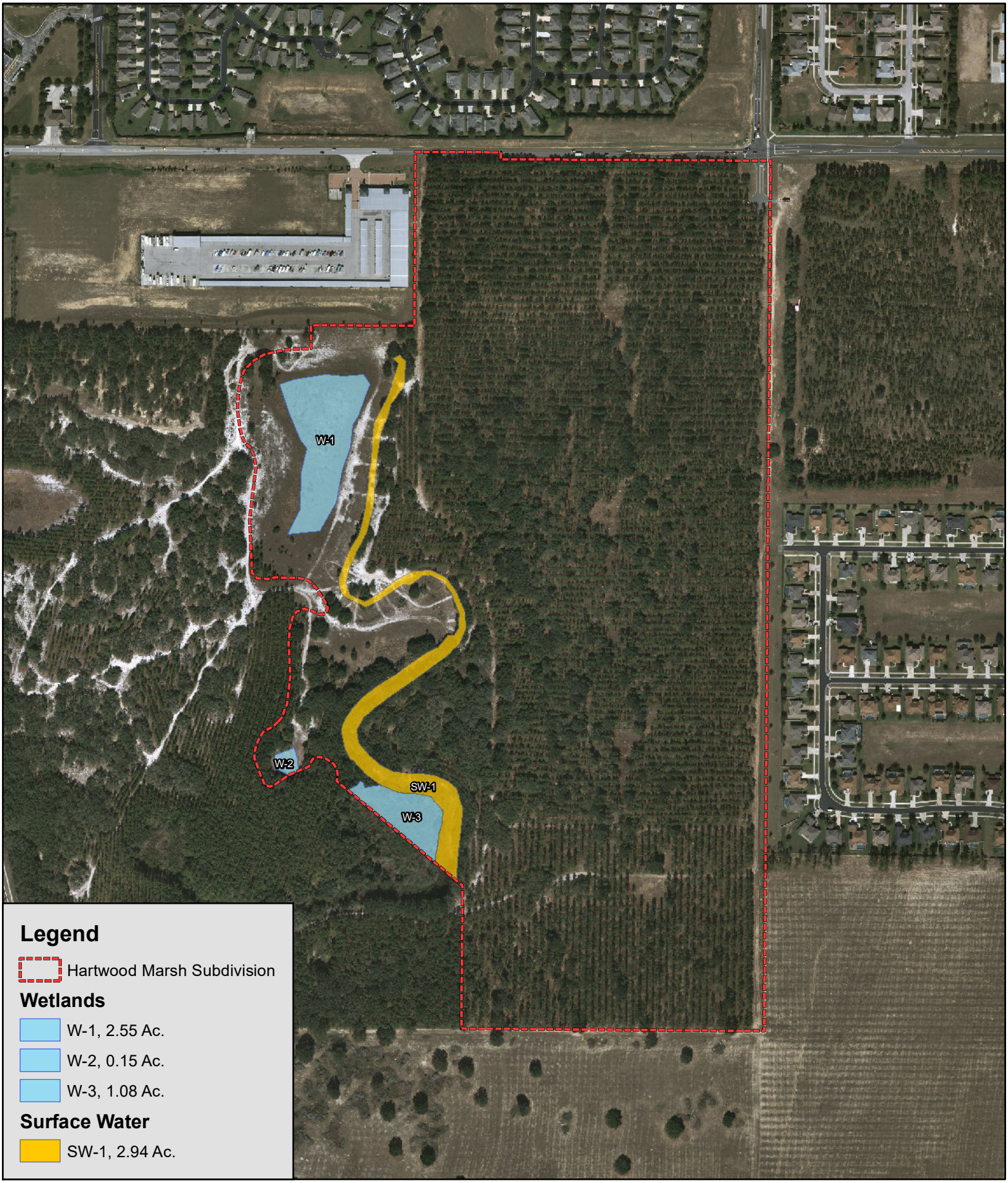
Hartwood Marsh Subdivision
Lake County, Florida
Figure 4
USDA/NRCS Soils Map

N
W E
S

300
Feet

Project #: 494-02
Produced By: SEB
Date: 2-6-2018



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Hartwood Marsh Subdivision
Lake County, Florida
Figure
Wetlands & Surface Waters

N
W E
S

500
Feet

Project #: 494-02
Produced By: JDH
Date: 10/11/2018